Full wwPDB EM Validation Report

Nov 28, 2022 – 08:37 PM EST

PDB ID	:	7SOM
EMDB ID	:	EMD-25361
Title	:	Ciliary C2 central pair apparatus isolated from Chlamydomonas reinhardtii
Authors	:	Gui, M.; Wang, X.; Dutcher, S.K.; Brown, A.; Zhang, R.
Deposited on	:	2021-11-01
Resolution	:	3.70 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

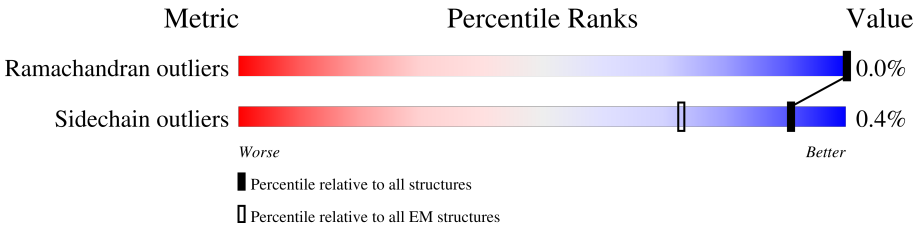
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.70 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AA	443	5% 97%
1	AC	443	97%
1	AE	443	97%
1	AG	443	97%
1	AI	443	96%
1	AK	443	97%
1	BA	443	7% 98%
1	BC	443	96%
1	BE	443	6% 97%

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Mol	Chain	Length	Quality of chain
1	BG	443	96%
1	BI	443	7% 97%
1	BK	443	96%
1	CA	443	96%
1	CC	443	96%
1	CE	443	96%
1	CG	443	96%
1	CI	443	96%
1	CK	443	96%
1	DC	443	96%
1	DE	443	96%
1	DG	443	96%
1	DI	443	96%
1	DK	443	5% 96%
1	EA	443	9% 96%
1	EC	443	6% 96%
1	EE	443	96%
1	EG	443	5% 96%
1	EI	443	5% 96%
1	EK	443	6% 96%
1	FA	443	5% 96%
1	FC	443	6% 96%
1	FE	443	96%
1	FG	443	96%
1	FI	443	96%

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Mol	Chain	Length	Quality of chain
1	FK	443	5% 96%
1	GC	443	6% 96%
1	GE	443	5% 96%
1	GG	443	5% 96%
1	GI	443	5% 96%
1	GK	443	6% 96%
1	GM	443	7% 96%
1	HC	443	18% 96%
1	HE	443	18% 95%
1	HG	443	13% 96%
1	HI	443	14% 95%
1	HK	443	16% 96%
1	HM	443	16% 95%
1	IC	443	11% 96%
1	IE	443	11% 96%
1	IG	443	10% 96%
1	II	443	10% 96%
1	IK	443	10% 96%
1	IM	443	10% 96%
1	JC	443	6% 95%
1	JE	443	96%
1	JG	443	96%
1	JI	443	96%
1	JK	443	96%
1	JM	443	5% 95%

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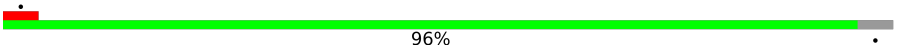
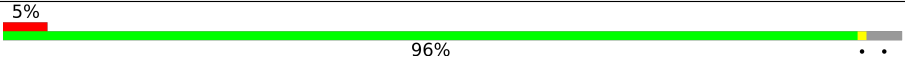
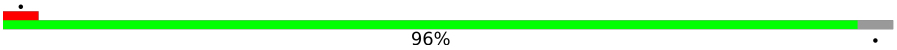
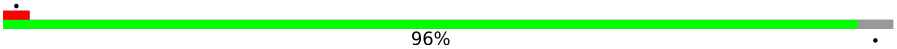
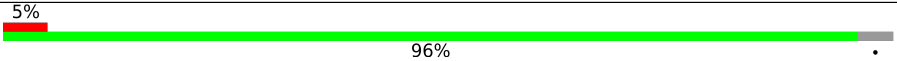
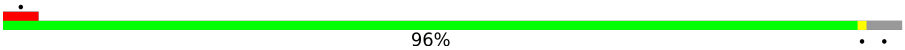
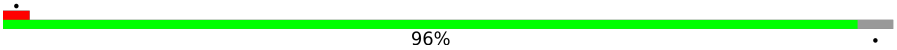
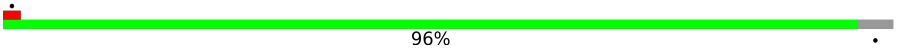
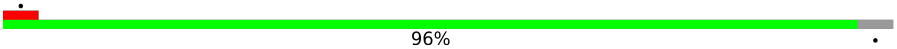
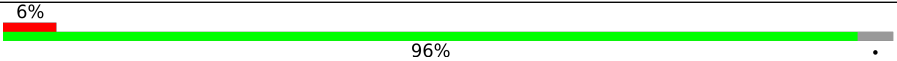
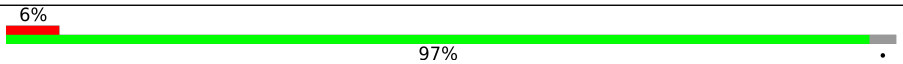
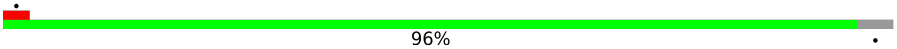
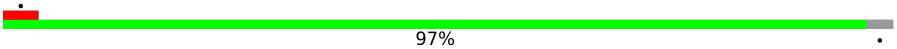
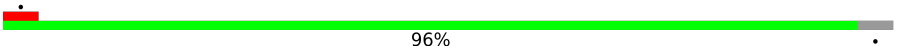
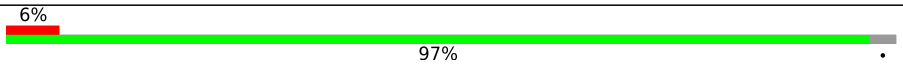
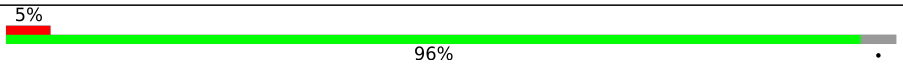
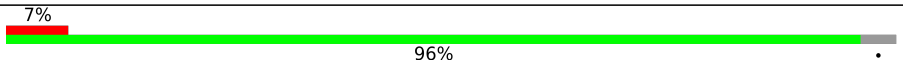
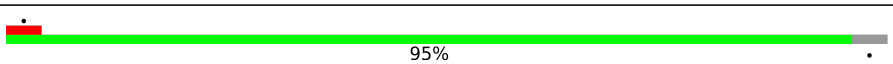
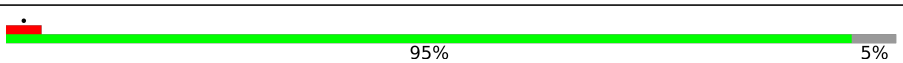
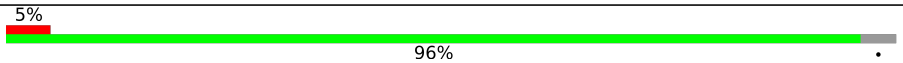
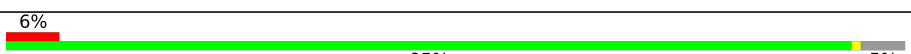
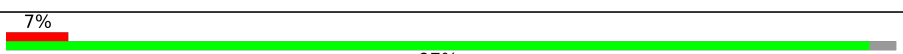
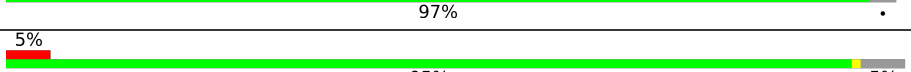
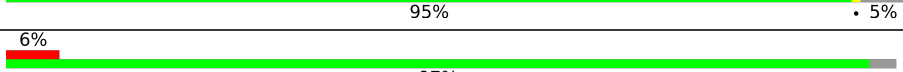
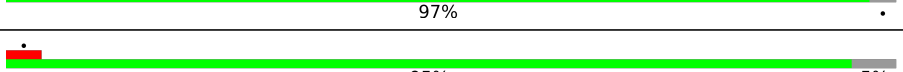
Mol	Chain	Length	Quality of chain
1	KC	443	
1	KE	443	
1	KG	443	
1	KI	443	
1	KK	443	
1	LC	443	
1	LE	443	
1	LG	443	
1	LI	443	
1	LK	443	
1	MC	443	
1	ME	443	
1	MG	443	
1	MI	443	
1	MK	443	
2	AB	451	
2	AD	451	
2	AF	451	
2	AH	451	
2	AJ	451	
2	AL	451	
2	BB	451	
2	BD	451	
2	BF	451	
2	BH	451	

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Mol	Chain	Length	Quality of chain
2	BJ	451	8% 97%
2	BL	451	7% 95% 5%
2	CB	451	95% 5%
2	CD	451	95% 5%
2	CF	451	95% 5%
2	CH	451	95% 5%
2	CJ	451	95% 5%
2	DB	451	95% 5%
2	DD	451	95% 5%
2	DF	451	95% 5%
2	DH	451	95% 5%
2	DJ	451	5% 95% 5%
2	DL	451	5% 95% 5%
2	EB	451	6% 97%
2	ED	451	8% 94% 5%
2	EF	451	5% 97%
2	EH	451	95% 5%
2	EJ	451	5% 97%
2	EL	451	7% 94% 5%
2	FB	451	6% 95% 5%
2	FD	451	5% 95% 5%
2	FF	451	95% 5%
2	FH	451	5% 94% 5%
2	FJ	451	95% 5%
2	FL	451	5% 95% 5%

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Mol	Chain	Length	Quality of chain
2	GD	451	7% 95% 5%
2	GF	451	95% 5%
2	GH	451	6% 95% 5%
2	GJ	451	5% 95% 5%
2	GL	451	6% 95% 5%
2	HD	451	16% 94% 5%
2	HF	451	11% 95% 5%
2	HH	451	14% 95% 5%
2	HJ	451	11% 95% 5%
2	HL	451	16% 95% 5%
2	ID	451	10% 95% 5%
2	IF	451	8% 95% 5%
2	IH	451	10% 95% 5%
2	IJ	451	7% 95% 5%
2	IL	451	11% 95% 5%
2	JB	451	5% 95% 5%
2	JD	451	6% 95% 5%
2	JF	451	5% 95% 5%
2	JH	451	5% 95% 5%
2	JJ	451	95% 5%
2	JL	451	5% 95% 5%
2	KB	451	5% 95% 5%
2	KD	451	7% 94% 5%
2	KF	451	94% 5%
2	KH	451	5% 95% 5%

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Mol	Chain	Length	Quality of chain
2	KJ	451	6% 94% 5%
2	KL	451	6% 94% 5%
2	LB	451	95% 5%
2	LD	451	5% 94% 5%
2	LF	451	95% 5%
2	LH	451	6% 95% 5%
2	LJ	451	5% 95% 5%
2	LL	451	6% 95% 5%
2	MB	451	7% 95% 5%
2	MD	451	8% 97%
2	MF	451	5% 95% 5%
2	MH	451	6% 98%
2	MJ	451	5% 95% 5%
2	ML	451	7% 97%
3	a	618	8% 53% 47%
3	b	618	14% 98%
3	c	618	13% 98%
3	d	618	6% 46% 52%
4	e	201	15% 92% 7%
4	f	201	13% 92% 7%
4	g	201	6% 72% 28%
5	h	758	17% 77% 23%
5	i	758	12% 77% 23%
5	j	758	16% 77% 23%
6	k	528	17% 73% 27%

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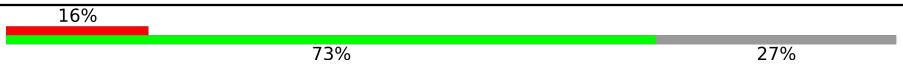
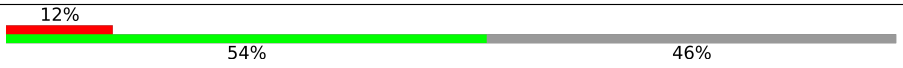
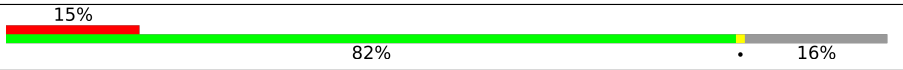
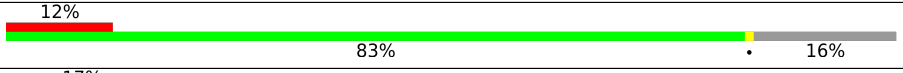
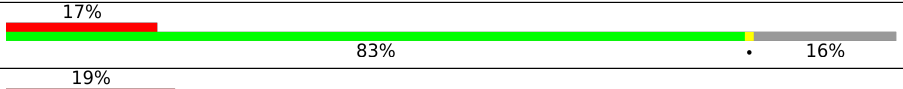
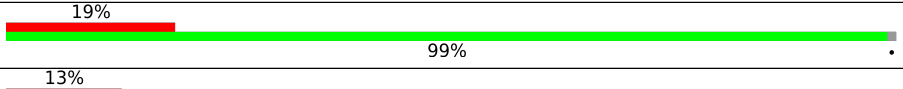
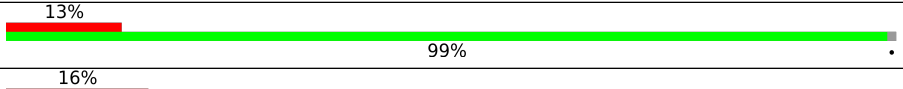
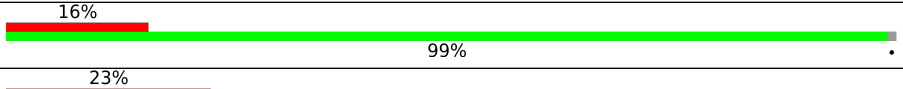
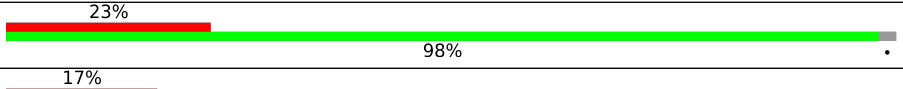
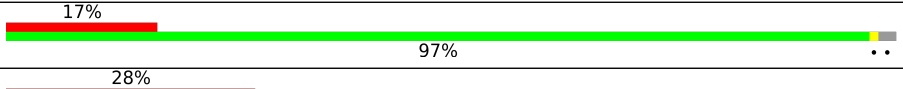
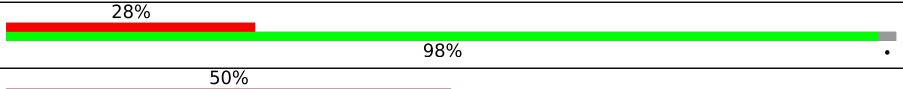
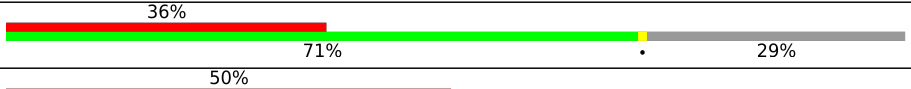
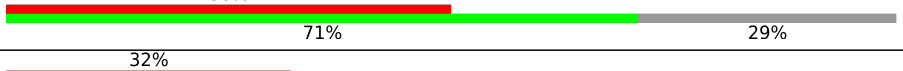
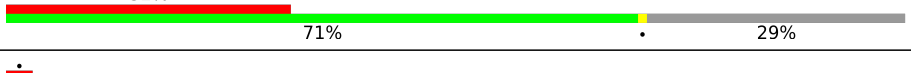
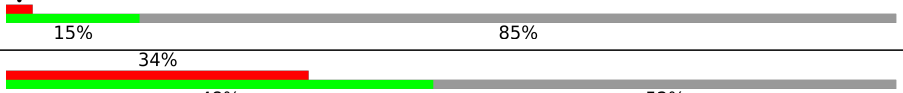
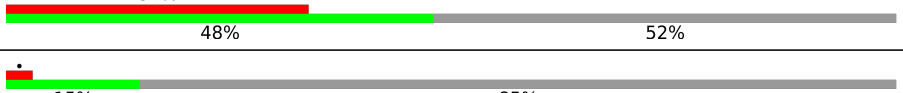
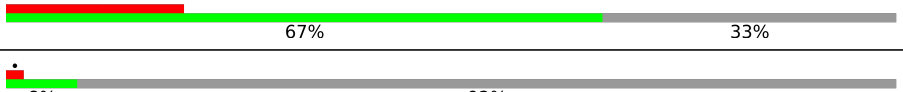
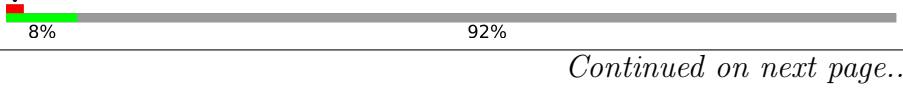
Mol	Chain	Length	Quality of chain
6	l	528	
6	s	528	
7	m	421	
7	n	421	
7	o	421	
8	p	89	
8	q	89	
8	r	89	
9	A	190	
9	B	190	
9	C	190	
10	P	606	
10	Q	606	
10	R	606	
10	S	606	
10	Z	606	
10	aa	606	
10	cc	606	
11	T	93	
11	U	93	
11	V	93	
11	W	93	
12	D	2257	
12	E	2257	
12	bb	2257	

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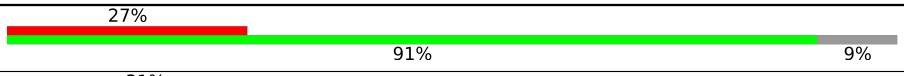
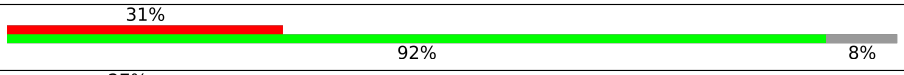
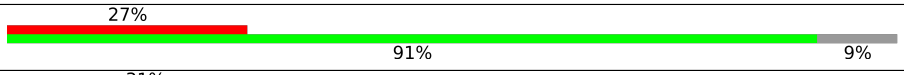
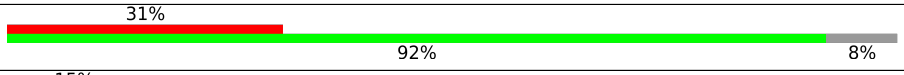
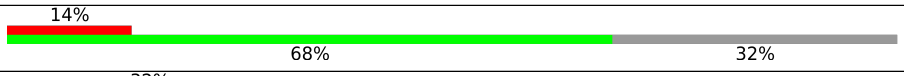
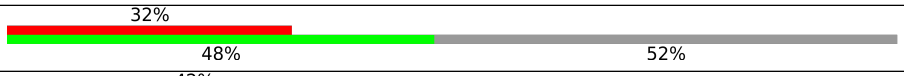
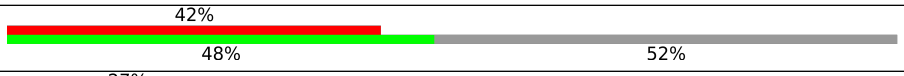
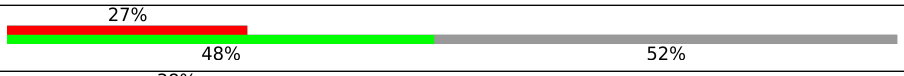
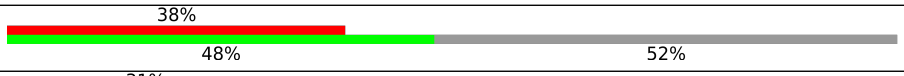
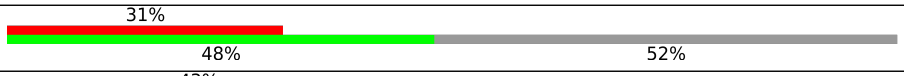
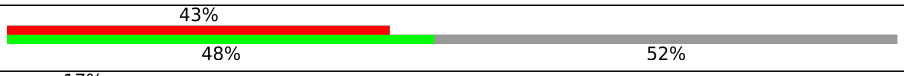
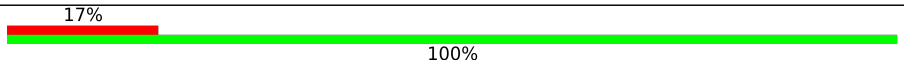
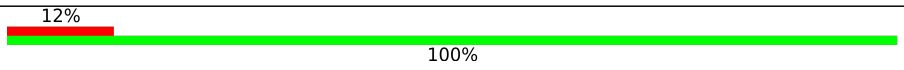
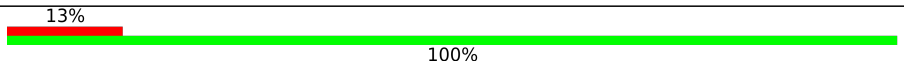
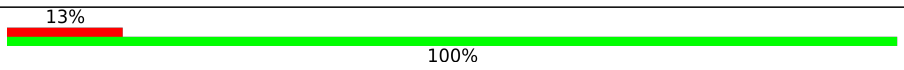
Mol	Chain	Length	Quality of chain
13	F	1074	
13	G	1074	
13	H	1074	
13	I	1074	
14	J	976	
14	K	976	
15	L	222	
15	M	222	
15	N	222	
15	O	222	
15	X	222	
15	Y	222	
16	A1	48	
17	A2	77	
17	A4	77	
18	A3	47	

2 Entry composition

There are 21 unique types of molecules in this entry. The entry contains 618760 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Tubulin beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	AA	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	AC	430	Total	C	N	O	S	0	0
			3370	2116	578	646	30		
1	AE	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	AG	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	AI	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	AK	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	BA	432	Total	C	N	O	S	0	0
			3388	2126	580	652	30		
1	BC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	BE	432	Total	C	N	O	S	0	0
			3388	2126	580	652	30		
1	BG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	BI	432	Total	C	N	O	S	0	0
			3388	2126	580	652	30		
1	BK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	CC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	CE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	CG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	CI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	CK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	DC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	DE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	DG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	DI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	DK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EA	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	EK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FA	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	FK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	GC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	GE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	GG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	GI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	GK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	GM	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	HM	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	IC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	IE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	IG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	II	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	IK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	IM	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	JC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	JE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	JG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	JI	426	Total	C	N	O	S	0	0
			3346	2103	574	639	30		
1	JK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	JM	426	Total	C	N	O	S	0	0
			3346	2103	574	639	30		
1	KC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	KE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	KG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	KI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	KK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	LC	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	LE	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	LG	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	LI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	LK	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	MC	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	ME	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	MG	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	MI	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		
1	MK	431	Total	C	N	O	S	0	0
			3379	2121	579	649	30		
1	CA	427	Total	C	N	O	S	0	0
			3354	2107	575	642	30		

- Molecule 2 is a protein called Tubulin alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	AB	432	Total	C	N	O	S	0	0
			3355	2124	570	639	22		
2	AD	432	Total	C	N	O	S	0	0
			3355	2123	570	640	22		
2	AF	432	Total	C	N	O	S	0	0
			3355	2124	570	639	22		
2	AH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	AJ	432	Total	C	N	O	S	0	0
			3355	2124	570	639	22		
2	AL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	BB	438	Total	C	N	O	S	0	0
			3393	2146	577	648	22		
2	BD	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	BF	438	Total	C	N	O	S	0	0
			3393	2146	577	648	22		
2	BH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	BJ	438	Total	C	N	O	S	0	0
			3393	2146	577	648	22		
2	BL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	CB	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	CD	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	CF	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	CH	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	CJ	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	DB	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	DD	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	DF	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	DH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	DJ	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	DL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	EB	438	Total	C	N	O	S	0	0
			3393	2146	577	648	22		
2	ED	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	EF	439	Total	C	N	O	S	0	0
			3399	2149	578	650	22		
2	EH	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	EJ	438	Total	C	N	O	S	0	0
			3393	2146	577	648	22		
2	EL	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		
2	FB	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	FD	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	FF	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	FH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	FJ	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	FL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	GD	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	GF	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	GH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	GJ	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	GL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	HD	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	HF	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	HH	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	HJ	428	Total	C	N	O	S	0	0
			3326	2108	566	630	22		
2	HL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	ID	429	Total	C	N	O	S	0	0
			3335	2113	567	633	22		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	IF	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	IH	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	IJ	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	IL	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	JB	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	JD	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	JF	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	JH	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	JJ	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	JL	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	KB	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	KD	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	KF	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	KH	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	KJ	429	Total 3335	C 2113	N 567	O 633	S 22	0	0
2	KL	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	LB	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	LD	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	LF	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	LH	430	Total 3341	C 2116	N 568	O 635	S 22	0	0
2	LJ	430	Total 3341	C 2116	N 568	O 635	S 22	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	LL	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	MB	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	MD	439	Total	C	N	O	S	0	0
			3399	2149	578	650	22		
2	MF	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	MH	440	Total	C	N	O	S	0	0
			3404	2152	579	651	22		
2	MJ	430	Total	C	N	O	S	0	0
			3341	2116	568	635	22		
2	ML	440	Total	C	N	O	S	0	0
			3404	2152	579	651	22		

- Molecule 3 is a protein called Cilia- and flagella-associated protein 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	a	325	Total	C	N	O	S	0	0
			2380	1491	422	453	14		
3	b	617	Total	C	N	O	S	0	0
			4537	2823	824	857	33		
3	c	617	Total	C	N	O	S	0	0
			4537	2823	824	857	33		
3	d	295	Total	C	N	O	S	0	0
			2180	1345	407	409	19		

- Molecule 4 is a protein called Unknown protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	e	186	Total	C	N	O	S	0	0
			1464	886	289	286	3		
4	f	186	Total	C	N	O	S	0	0
			1464	886	289	286	3		
4	g	145	Total	C	N	O	S	0	0
			1136	690	220	223	3		

- Molecule 5 is a protein called Unknown protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	h	585	Total	C	N	O	S	0	0
			4525	2788	856	866	15		

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Mol	Chain	Residues	Atoms					AltConf	Trace
5	i	585	Total	C	N	O	S	0	0
			4525	2788	856	866	15		
5	j	585	Total	C	N	O	S	0	0
			4525	2788	856	866	15		

- Molecule 6 is a protein called Unknown protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	k	388	Total	C	N	O	S	0	0
			3017	1857	582	572	6		
6	l	388	Total	C	N	O	S	0	0
			3017	1857	582	572	6		
6	s	285	Total	C	N	O	S	0	0
			2208	1369	420	415	4		

- Molecule 7 is a protein called FAP65.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	m	352	Total	C	N	O	S	0	0
			2737	1685	532	512	8		
7	n	352	Total	C	N	O	S	0	0
			2737	1685	532	512	8		
7	o	352	Total	C	N	O	S	0	0
			2737	1685	532	512	8		

- Molecule 8 is a protein called FAP70.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	p	88	Total	C	N	O	S	0	0
			698	432	135	129	2		
8	q	88	Total	C	N	O	S	0	0
			698	432	135	129	2		
8	r	88	Total	C	N	O	S	0	0
			698	432	135	129	2		

- Molecule 9 is a protein called FAP147.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	A	186	Total	C	N	O	S	0	0
			1530	982	266	275	7		
9	B	186	Total	C	N	O	S	0	0
			1530	982	266	275	7		

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Mol	Chain	Residues	Atoms	AltConf	Trace
9	C	186	Total C N O S 1530 982 266 275 7	0	0

- Molecule 10 is a protein called FAP178.

Mol	Chain	Residues	Atoms	AltConf	Trace
10	P	433	Total C N O S 2493 1507 495 486 5	0	0
10	Q	432	Total C N O S 2488 1504 494 485 5	0	0
10	R	433	Total C N O S 2493 1507 495 486 5	0	0
10	S	432	Total C N O S 2488 1504 494 485 5	0	0
10	aa	292	Total C N O 1435 850 292 293	0	0
10	cc	89	Total C N O S 758 475 147 131 5	0	0
10	Z	92	Total C N O S 775 486 150 134 5	0	0

- Molecule 11 is a protein called Flagellar WD repeat-containing protein Pf20.

Mol	Chain	Residues	Atoms	AltConf	Trace
11	T	63	Total C N O 312 186 63 63	0	0
11	U	58	Total C N O 287 171 58 58	0	0
11	V	67	Total C N O 332 198 67 67	0	0
11	W	63	Total C N O 312 186 63 63	0	0

- Molecule 12 is a protein called Flagellar associated protein.

Mol	Chain	Residues	Atoms	AltConf	Trace
12	bb	175	Total C N O S 1065 650 211 202 2	0	0
12	D	1516	Total C N O 7474 4442 1516 1516	0	0
12	E	1516	Total C N O 7474 4442 1516 1516	0	0

- Molecule 13 is a protein called FAP196.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	F	982	Total 4832	C 2868	N 982	O 982	0	0
13	G	993	Total 4884	C 2898	N 993	O 993	0	0
13	H	982	Total 4832	C 2868	N 982	O 982	0	0
13	I	993	Total 4884	C 2898	N 993	O 993	0	0

- Molecule 14 is a protein called FAP213.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	J	666	Total 3874	C 2350	N 768	O 752	S 4	0	0
14	K	666	Total 3874	C 2350	N 768	O 752	S 4	0	0

- Molecule 15 is a protein called FAP225.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	107	Total 841	C 534	N 154	O 149	S 4	0	0
15	Y	107	Total 841	C 534	N 154	O 149	S 4	0	0
15	L	107	Total 841	C 534	N 154	O 149	S 4	0	0
15	M	107	Total 841	C 534	N 154	O 149	S 4	0	0
15	N	107	Total 841	C 534	N 154	O 149	S 4	0	0
15	X	107	Total 841	C 534	N 154	O 149	S 4	0	0

- Molecule 16 is a protein called FAP239.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	A1	48	Total 240	C 144	N 48	O 48	0	0

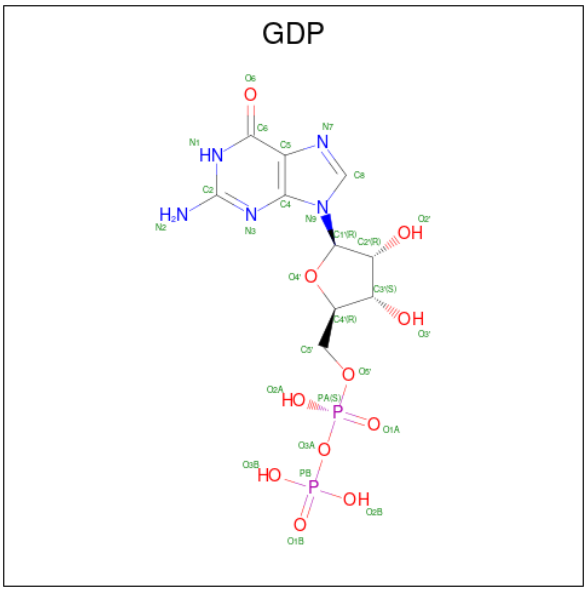
- Molecule 17 is a protein called FAP388.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	A2	77	Total 385	C 231	N 77	O 77	0	0
17	A4	77	Total 385	C 231	N 77	O 77	0	0

- Molecule 18 is a protein called FAP424.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	A3	47	Total 235	C 141	N 47	O 47	0	0

- Molecule 19 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



Mol	Chain	Residues	Atoms					AltConf
19	AA	1	Total 28	C 10	N 5	O 11	P 2	0
19	AC	1	Total 28	C 10	N 5	O 11	P 2	0
19	AE	1	Total 28	C 10	N 5	O 11	P 2	0
19	AG	1	Total 28	C 10	N 5	O 11	P 2	0
19	AI	1	Total 28	C 10	N 5	O 11	P 2	0
19	AK	1	Total 28	C 10	N 5	O 11	P 2	0

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Mol	Chain	Residues	Atoms					AltConf
19	BA	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	BC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	BE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	BG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	BI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	BK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	DC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	DE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	DG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	DI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	DK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	EA	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	EC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	EE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	EG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	EI	1	Total	C	N	O	P	0
			28	10	5	11	2	

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Mol	Chain	Residues	Atoms					AltConf
19	EK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FA	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	FK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	GM	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	HM	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	IC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	IE	1	Total	C	N	O	P	0
			28	10	5	11	2	

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Mol	Chain	Residues	Atoms					AltConf
19	IG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	II	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	IK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	IM	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	JM	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	KC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	KE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	KG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	KI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	KK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	LC	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	LE	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	LG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	LI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	LK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	MC	1	Total	C	N	O	P	0
			28	10	5	11	2	

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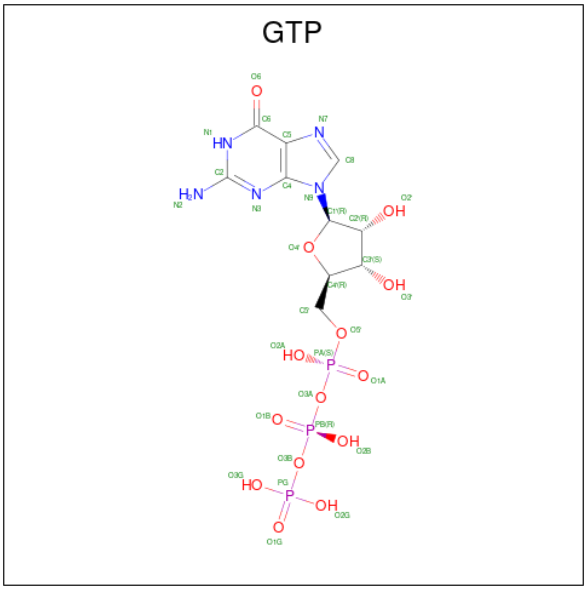
Mol	Chain	Residues	Atoms					AltConf
19	ME	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	MG	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	MI	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	MK	1	Total	C	N	O	P	0
			28	10	5	11	2	
19	CA	1	Total	C	N	O	P	0
			28	10	5	11	2	

- Molecule 20 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



Mol	Chain	Residues	Atoms					AltConf
20	AB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	AD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	AF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	AH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	AJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	AL	1	Total	C	N	O	P	0
			32	10	5	14	3	

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Mol	Chain	Residues	Atoms					AltConf
20	BB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	BD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	BF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	BH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	BJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	BL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	CB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	CD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	CF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	CH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	CJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	DL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	EB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	ED	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	EF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	EH	1	Total	C	N	O	P	0
			32	10	5	14	3	

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Mol	Chain	Residues	Atoms					AltConf
20	EJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	EL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	FL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	GD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	GF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	GH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	GJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	GL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	HD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	HF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	HI	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	HJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	HL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	ID	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	IF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	IH	1	Total	C	N	O	P	0
			32	10	5	14	3	

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Mol	Chain	Residues	Atoms					AltConf
20	IJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	IL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	JL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	KL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LB	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	LL	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	MB	1	Total	C	N	O	P	0
			32	10	5	14	3	

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Mol	Chain	Residues	Atoms					AltConf
20	MD	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	MF	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	MH	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	MJ	1	Total	C	N	O	P	0
			32	10	5	14	3	
20	ML	1	Total	C	N	O	P	0
			32	10	5	14	3	

- Molecule 21 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
21	AB	1	Total	Mg	0
			1	1	
21	AD	1	Total	Mg	0
			1	1	
21	AF	1	Total	Mg	0
			1	1	
21	AH	1	Total	Mg	0
			1	1	
21	AJ	1	Total	Mg	0
			1	1	
21	AL	1	Total	Mg	0
			1	1	
21	BB	1	Total	Mg	0
			1	1	
21	BD	1	Total	Mg	0
			1	1	
21	BF	1	Total	Mg	0
			1	1	
21	BH	1	Total	Mg	0
			1	1	
21	BJ	1	Total	Mg	0
			1	1	
21	BL	1	Total	Mg	0
			1	1	
21	CB	1	Total	Mg	0
			1	1	
21	CD	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms	AltConf
21	CF	1	Total Mg 1 1	0
21	CH	1	Total Mg 1 1	0
21	CJ	1	Total Mg 1 1	0
21	DB	1	Total Mg 1 1	0
21	DD	1	Total Mg 1 1	0
21	DF	1	Total Mg 1 1	0
21	DH	1	Total Mg 1 1	0
21	DJ	1	Total Mg 1 1	0
21	DL	1	Total Mg 1 1	0
21	EB	1	Total Mg 1 1	0
21	EE	1	Total Mg 1 1	0
21	EF	1	Total Mg 1 1	0
21	EH	1	Total Mg 1 1	0
21	EJ	1	Total Mg 1 1	0
21	EL	1	Total Mg 1 1	0
21	FB	1	Total Mg 1 1	0
21	FD	1	Total Mg 1 1	0
21	FF	1	Total Mg 1 1	0
21	FH	1	Total Mg 1 1	0
21	FJ	1	Total Mg 1 1	0
21	FL	1	Total Mg 1 1	0

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Mol	Chain	Residues	Atoms	AltConf
21	GD	1	Total Mg 1 1	0
21	GF	1	Total Mg 1 1	0
21	GH	1	Total Mg 1 1	0
21	GJ	1	Total Mg 1 1	0
21	GL	1	Total Mg 1 1	0
21	HD	1	Total Mg 1 1	0
21	HF	1	Total Mg 1 1	0
21	HH	1	Total Mg 1 1	0
21	HJ	1	Total Mg 1 1	0
21	HL	1	Total Mg 1 1	0
21	ID	1	Total Mg 1 1	0
21	IF	1	Total Mg 1 1	0
21	IH	1	Total Mg 1 1	0
21	IJ	1	Total Mg 1 1	0
21	IL	1	Total Mg 1 1	0
21	JB	1	Total Mg 1 1	0
21	JD	1	Total Mg 1 1	0
21	JF	1	Total Mg 1 1	0
21	JH	1	Total Mg 1 1	0
21	JJ	1	Total Mg 1 1	0
21	JL	1	Total Mg 1 1	0

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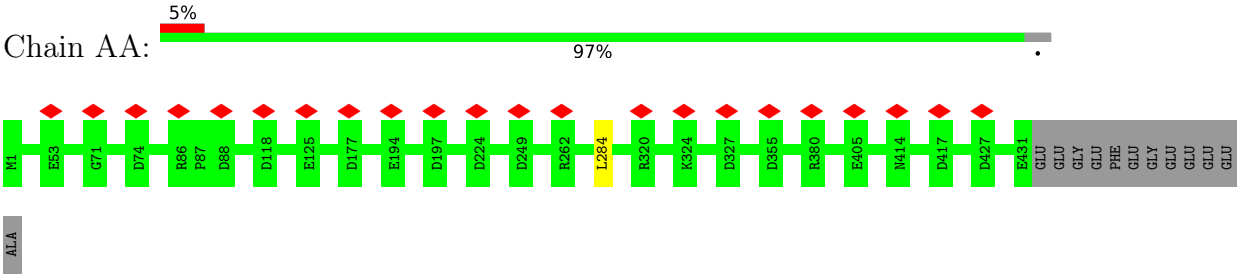
Mol	Chain	Residues	Atoms	AltConf
21	KB	1	Total Mg 1 1	0
21	KD	1	Total Mg 1 1	0
21	KF	1	Total Mg 1 1	0
21	KI	1	Total Mg 1 1	0
21	KJ	1	Total Mg 1 1	0
21	KL	1	Total Mg 1 1	0
21	LB	1	Total Mg 1 1	0
21	LD	1	Total Mg 1 1	0
21	LF	1	Total Mg 1 1	0
21	LH	1	Total Mg 1 1	0
21	LJ	1	Total Mg 1 1	0
21	LL	1	Total Mg 1 1	0
21	MB	1	Total Mg 1 1	0
21	MD	1	Total Mg 1 1	0
21	MF	1	Total Mg 1 1	0
21	MH	1	Total Mg 1 1	0
21	MJ	1	Total Mg 1 1	0
21	ML	1	Total Mg 1 1	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

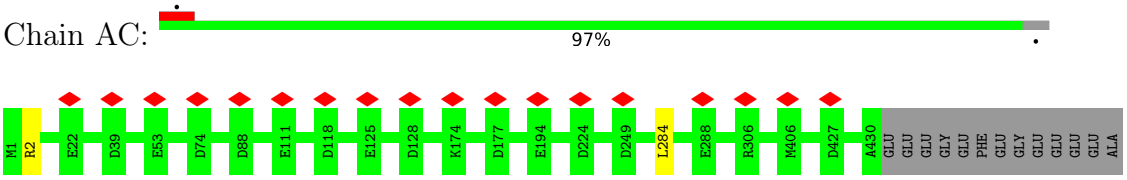
• Molecule 1: Tubulin beta

Chain AA:



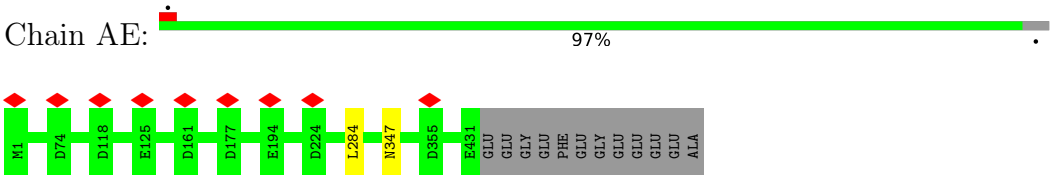
• Molecule 1: Tubulin beta

Chain AC:



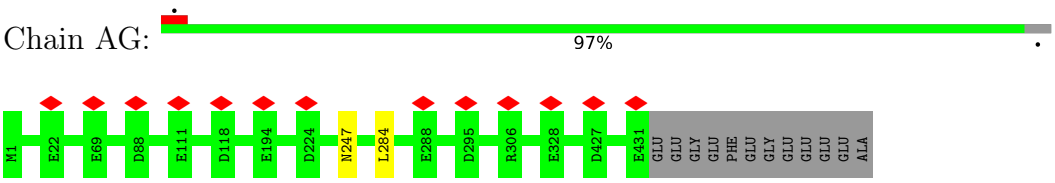
• Molecule 1: Tubulin beta

Chain AE:



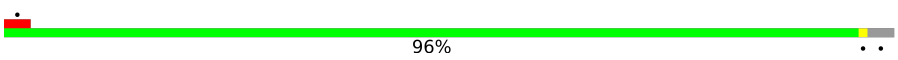
• Molecule 1: Tubulin beta

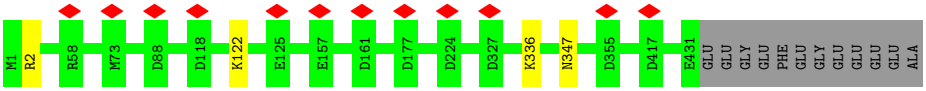
Chain AG:



• Molecule 1: Tubulin beta

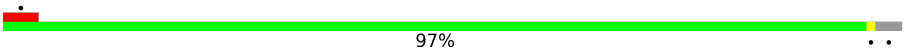
Chain AI:

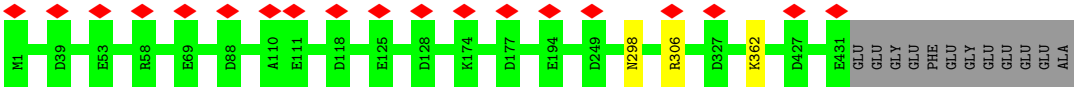




• Molecule 1: Tubulin beta

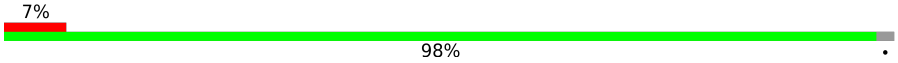
Chain AK:

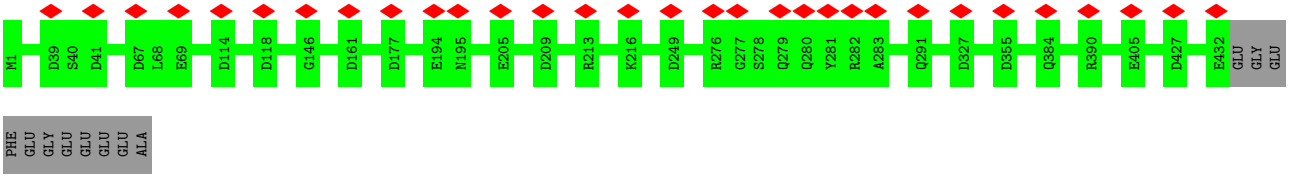




• Molecule 1: Tubulin beta

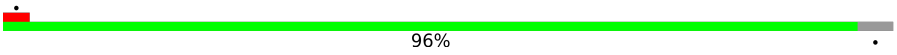
Chain BA:





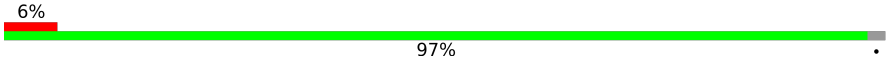
• Molecule 1: Tubulin beta

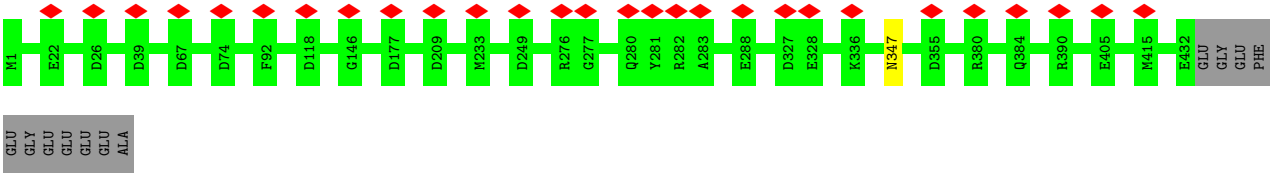
Chain BC:



• Molecule 1: Tubulin beta

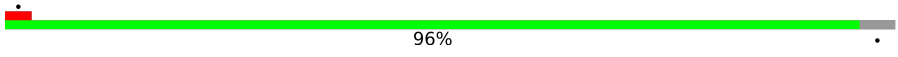
Chain BE:

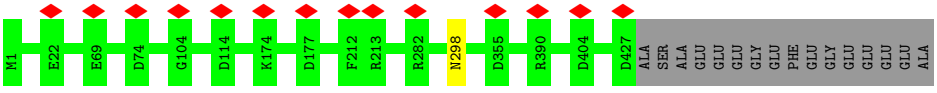




• Molecule 1: Tubulin beta

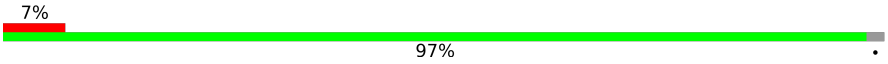
Chain BG:

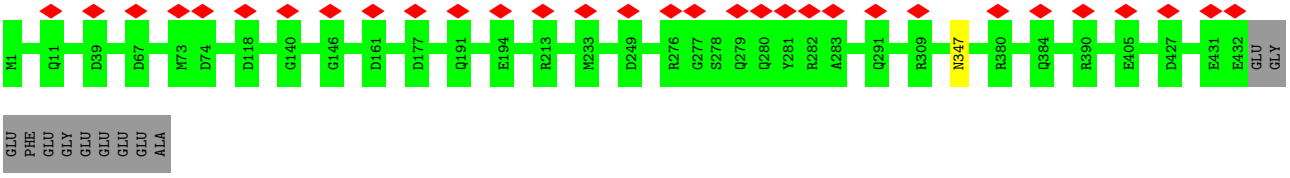




• Molecule 1: Tubulin beta

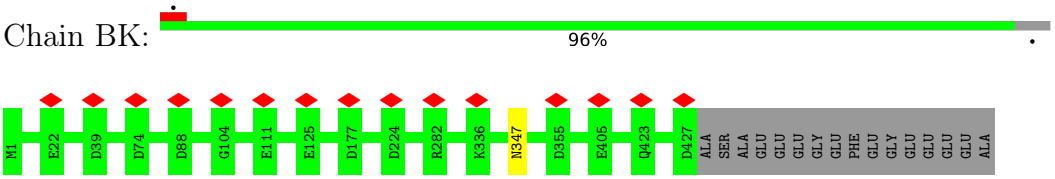
Chain BI:





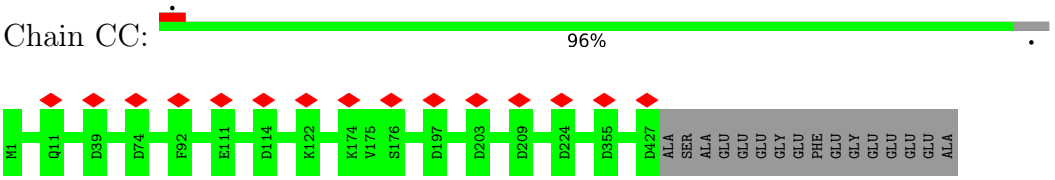
• Molecule 1: Tubulin beta

Chain BK:



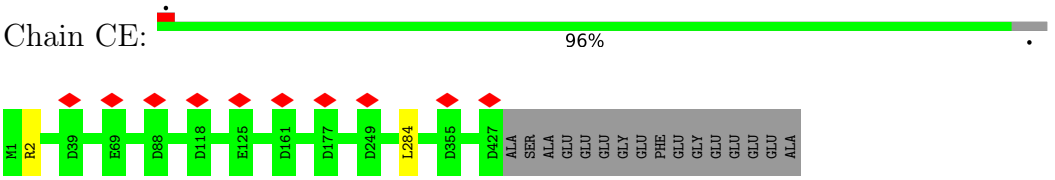
• Molecule 1: Tubulin beta

Chain CC:



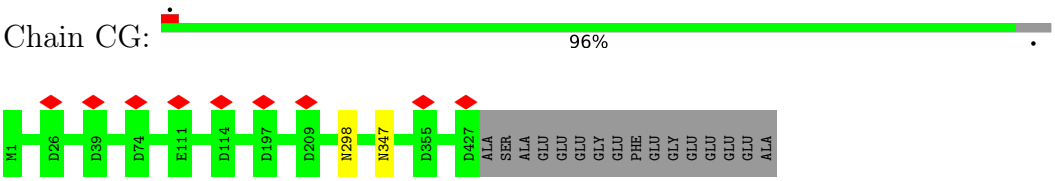
• Molecule 1: Tubulin beta

Chain CE:



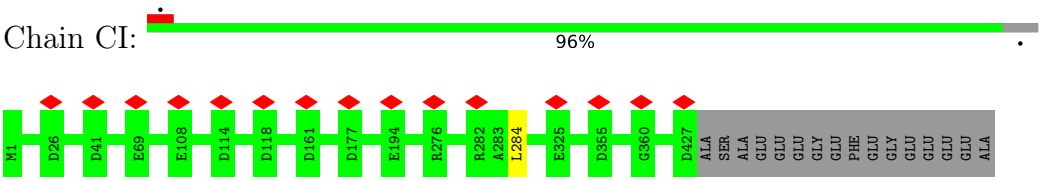
• Molecule 1: Tubulin beta

Chain CG:



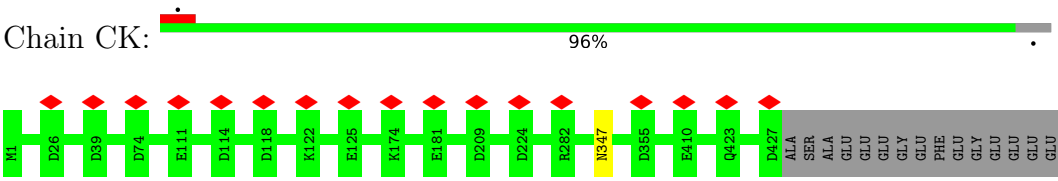
• Molecule 1: Tubulin beta

Chain CI:



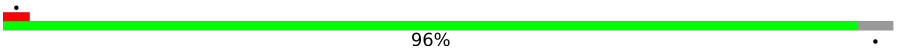
• Molecule 1: Tubulin beta

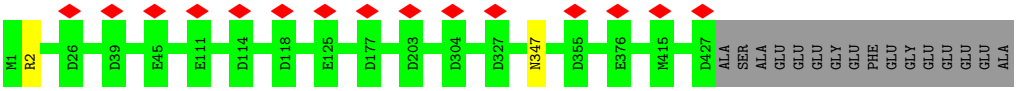
Chain CK:



• Molecule 1: Tubulin beta

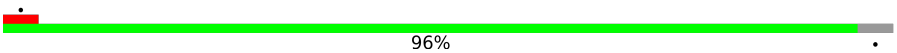
Chain DC:

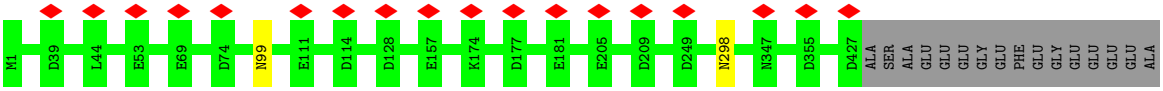




• Molecule 1: Tubulin beta

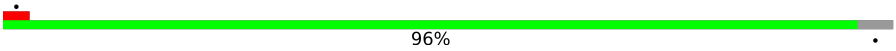
Chain DE:

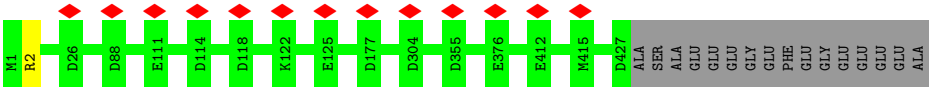




• Molecule 1: Tubulin beta

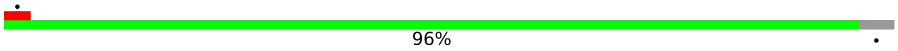
Chain DG:

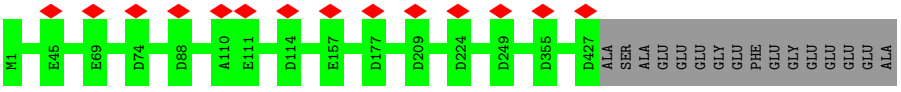




• Molecule 1: Tubulin beta

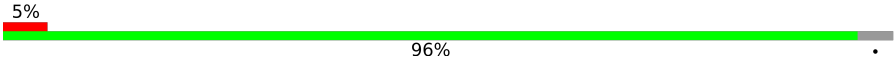
Chain DI:

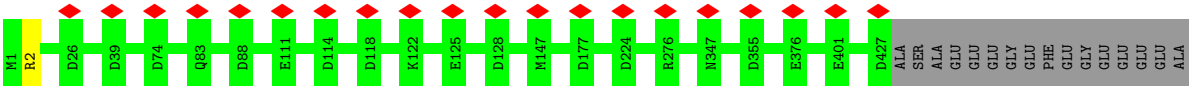




• Molecule 1: Tubulin beta

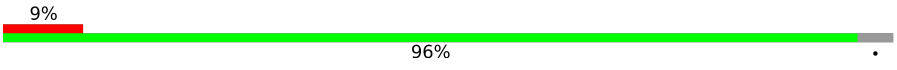
Chain DK:

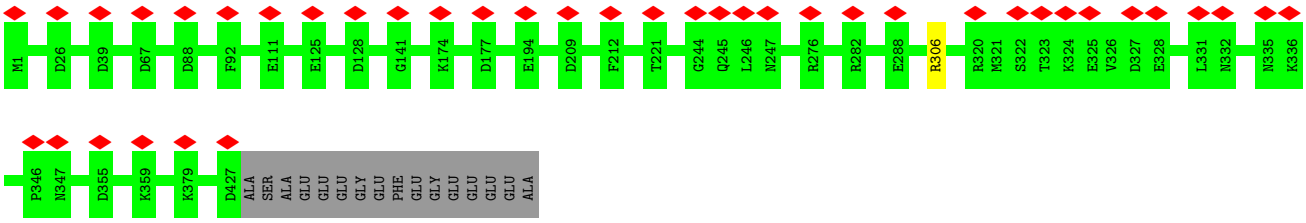




• Molecule 1: Tubulin beta

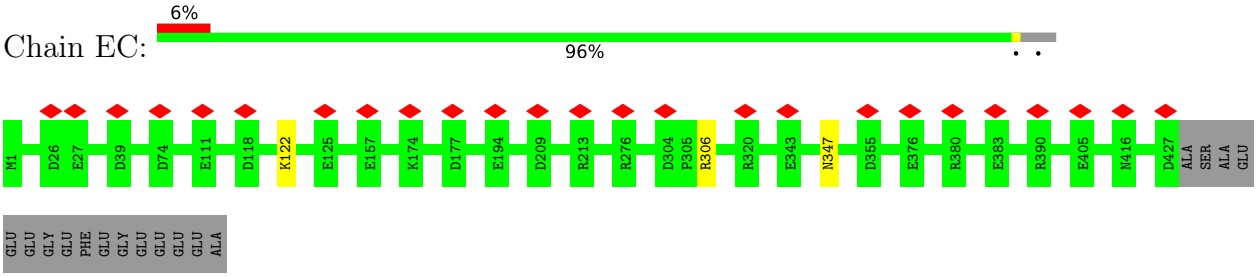
Chain EA:





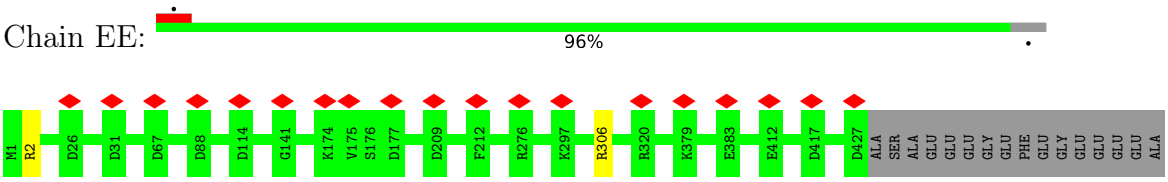
• Molecule 1: Tubulin beta

Chain EC:



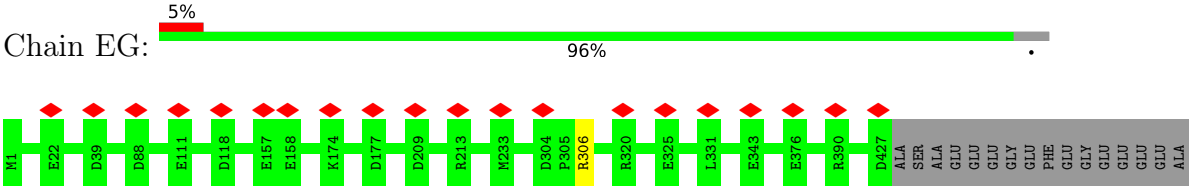
• Molecule 1: Tubulin beta

Chain EE:



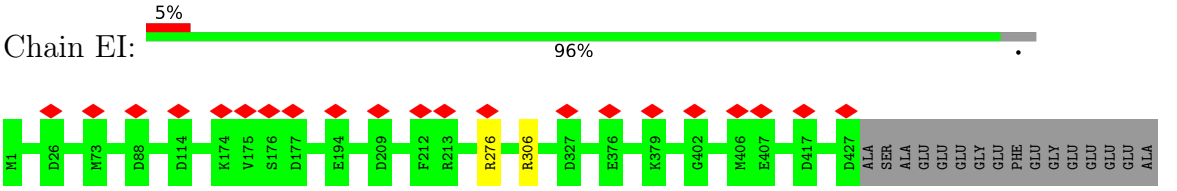
• Molecule 1: Tubulin beta

Chain EG:



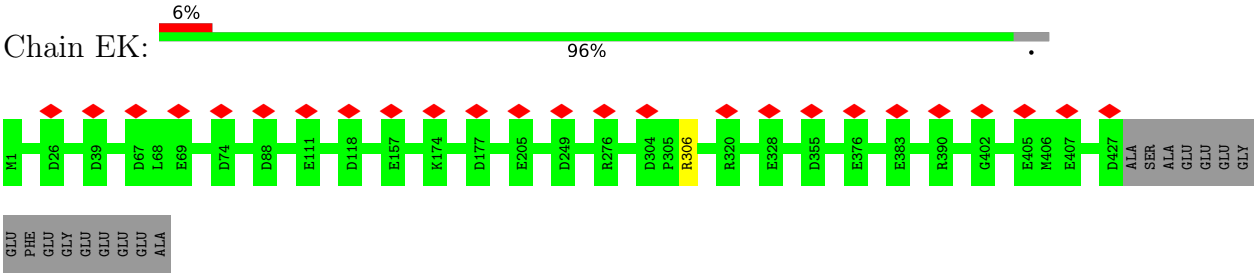
• Molecule 1: Tubulin beta

Chain EI:



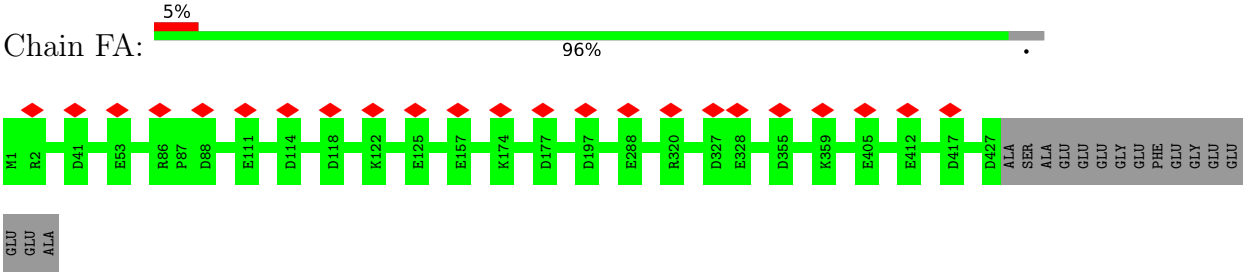
• Molecule 1: Tubulin beta

Chain EK:



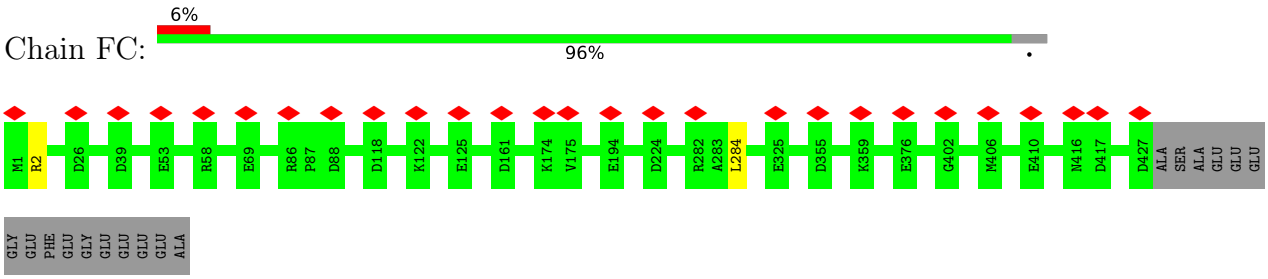
• Molecule 1: Tubulin beta

Chain FA:



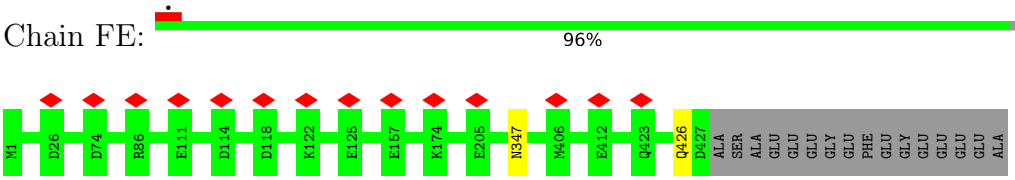
• Molecule 1: Tubulin beta

Chain FC:



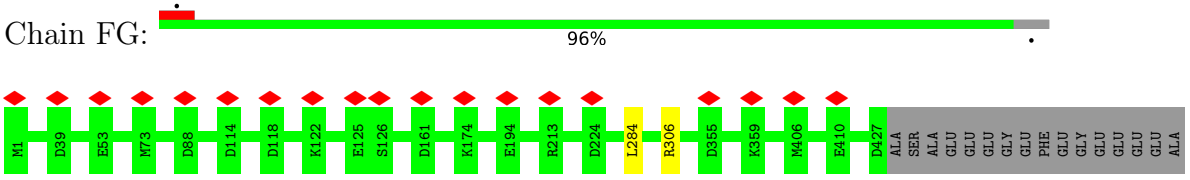
• Molecule 1: Tubulin beta

Chain FE:



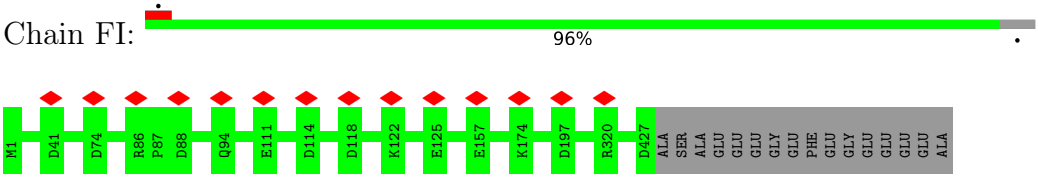
• Molecule 1: Tubulin beta

Chain FG:



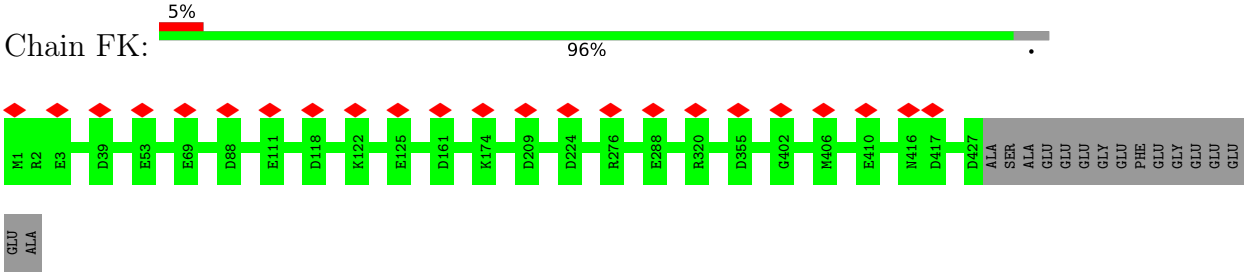
• Molecule 1: Tubulin beta

Chain FI:



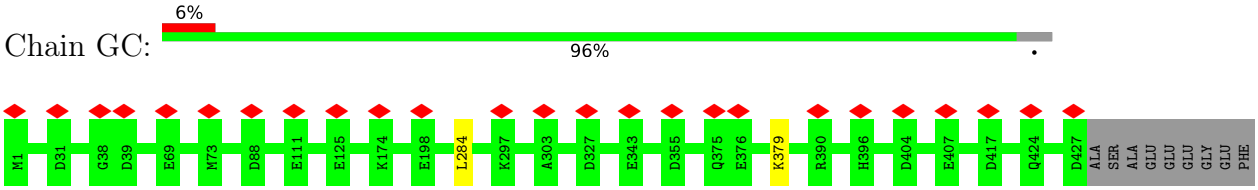
• Molecule 1: Tubulin beta

Chain FK:



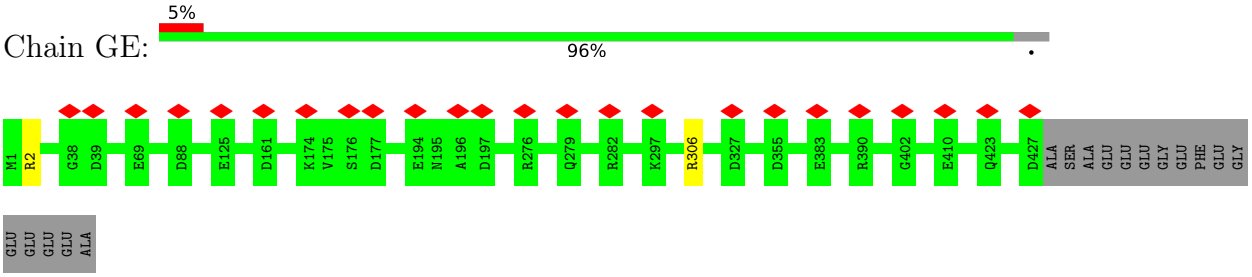
• Molecule 1: Tubulin beta

Chain GC:



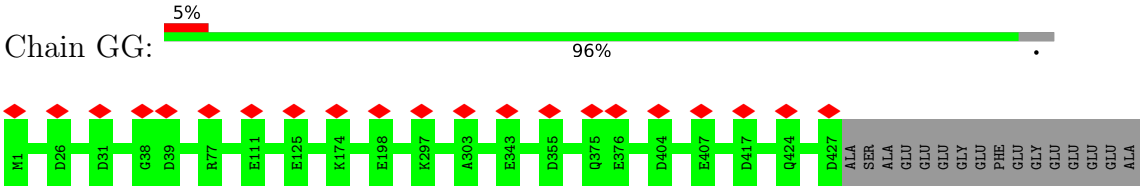
• Molecule 1: Tubulin beta

Chain GE:



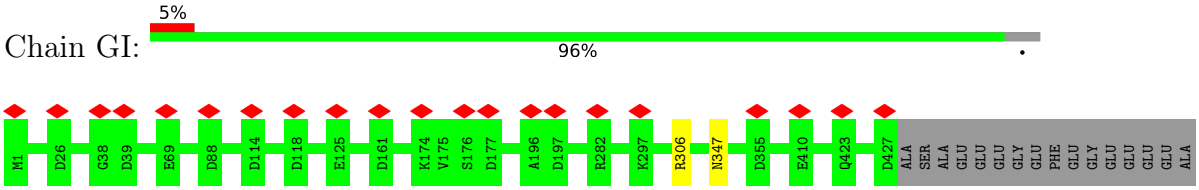
• Molecule 1: Tubulin beta

Chain GG:



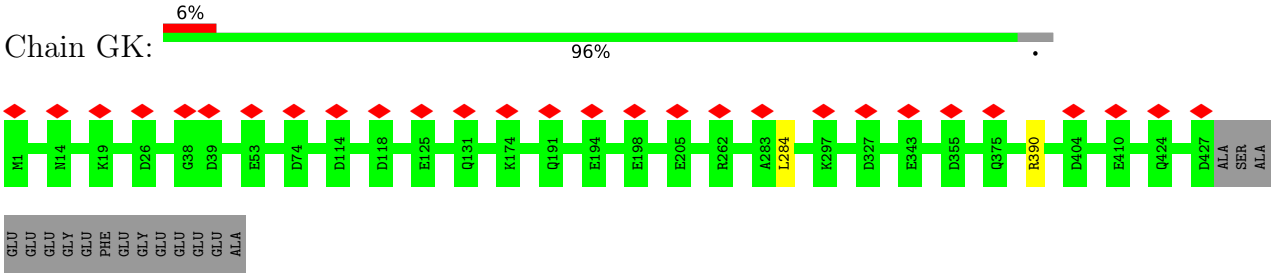
• Molecule 1: Tubulin beta

Chain GI:



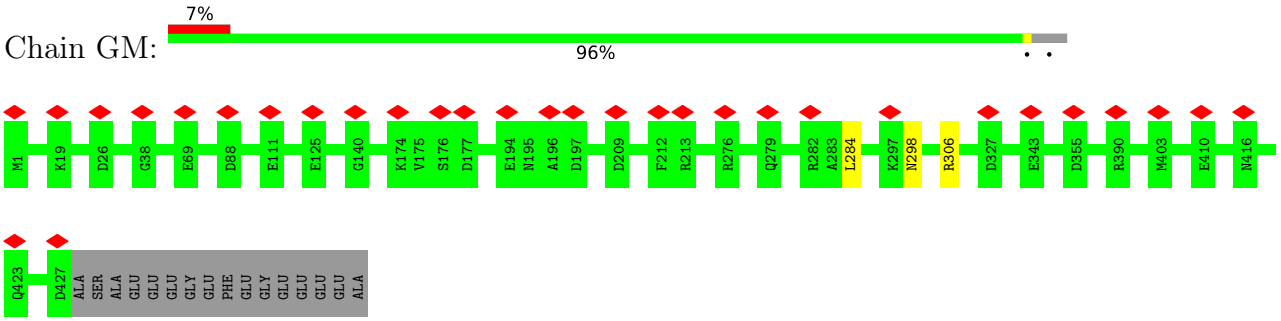
• Molecule 1: Tubulin beta

Chain GK:



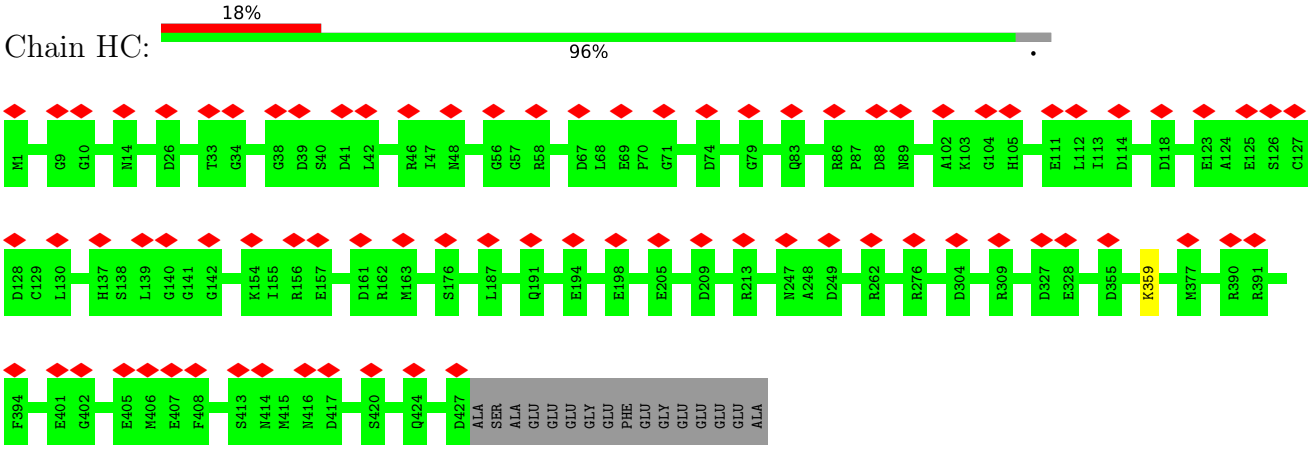
• Molecule 1: Tubulin beta

Chain GM:



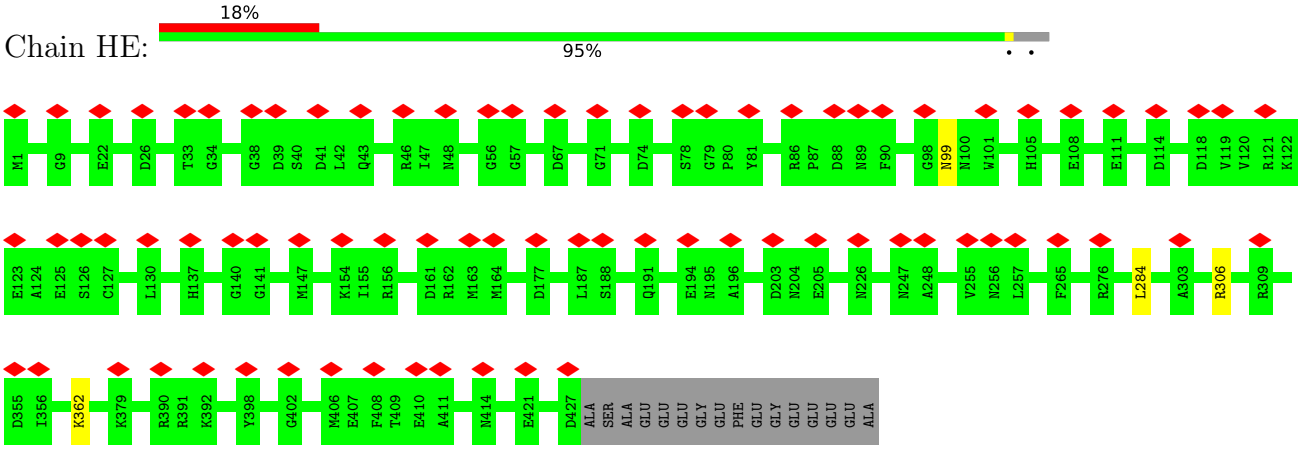
• Molecule 1: Tubulin beta

Chain HC:



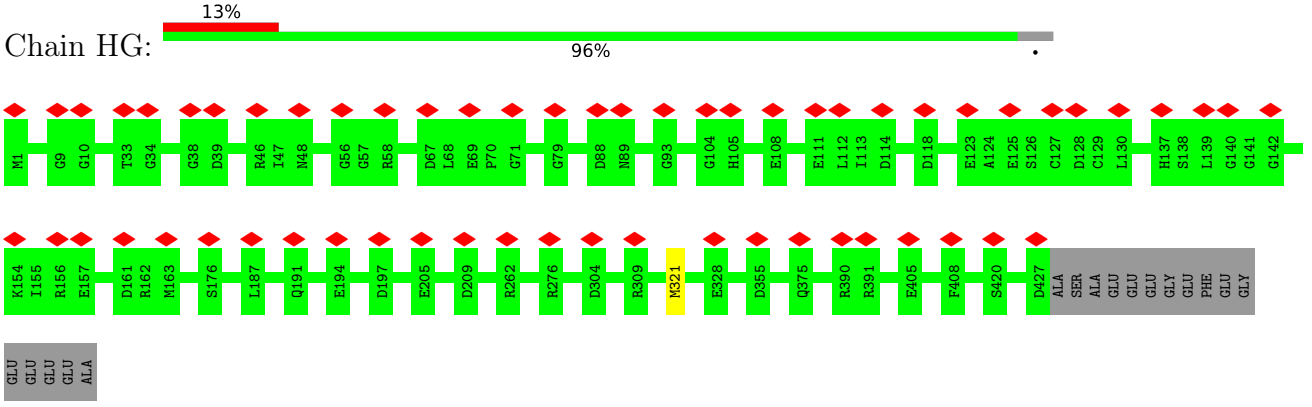
• Molecule 1: Tubulin beta

Chain HE:



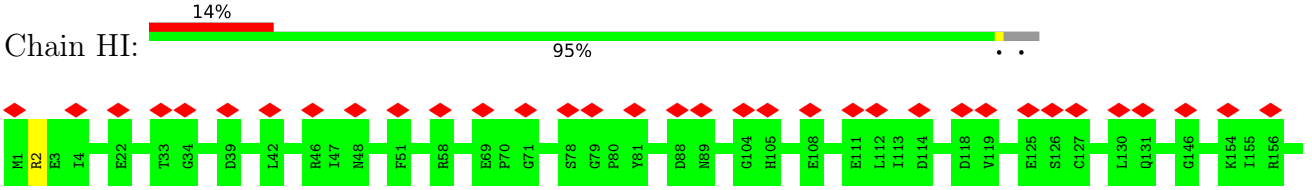
• Molecule 1: Tubulin beta

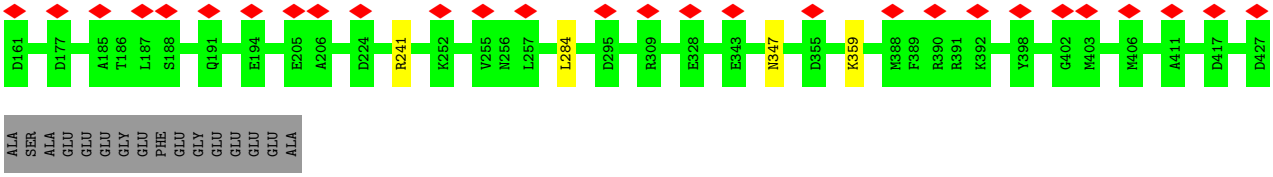
Chain HG:



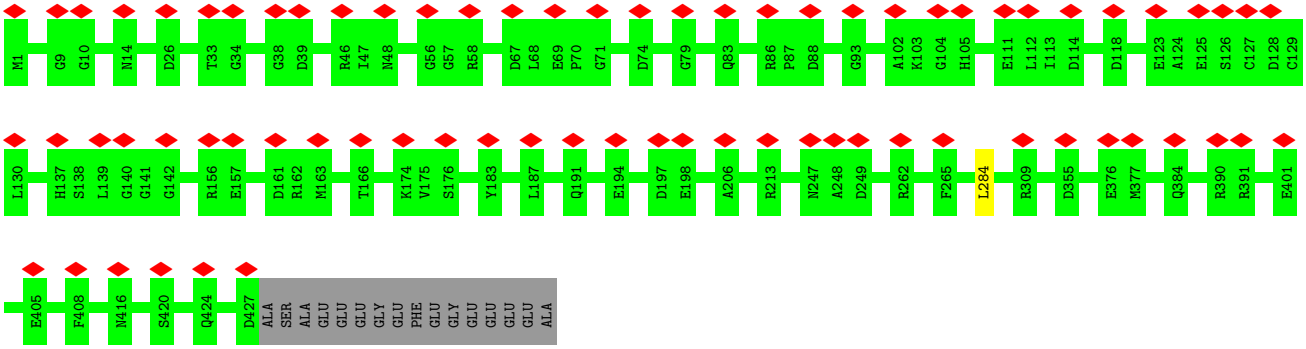
• Molecule 1: Tubulin beta

Chain HI:

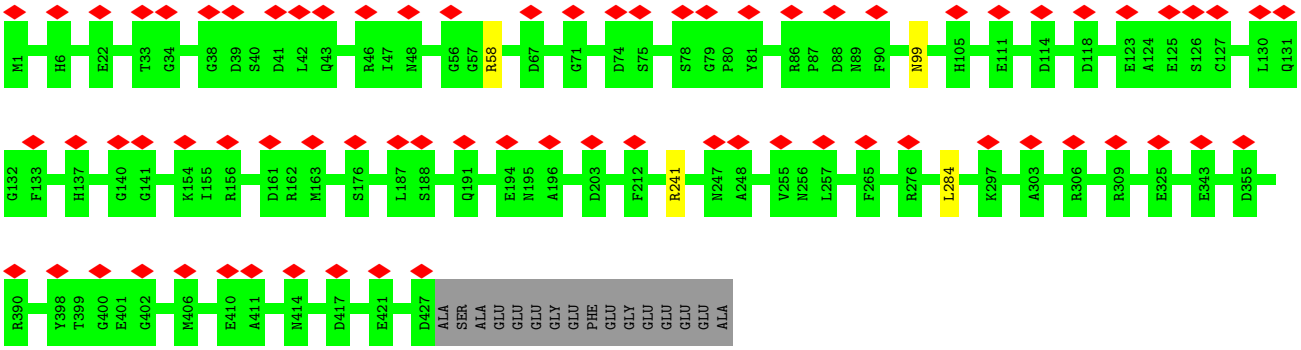




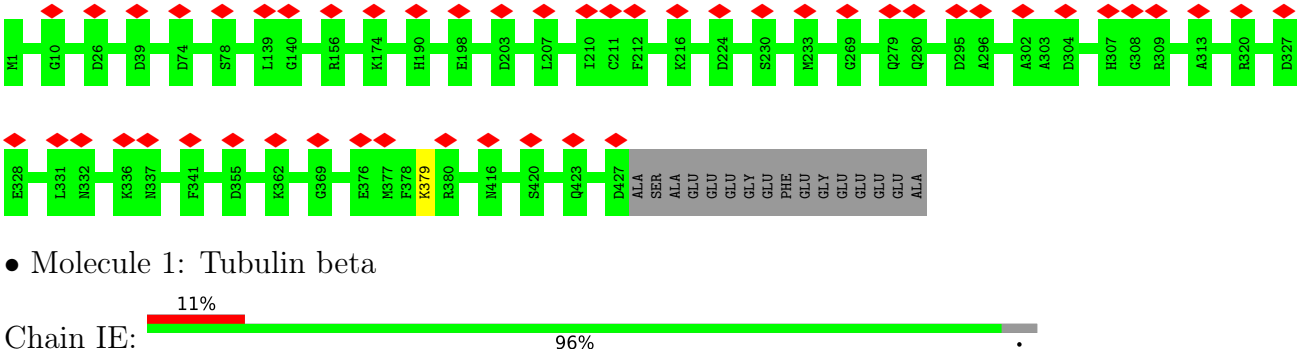
• Molecule 1: Tubulin beta



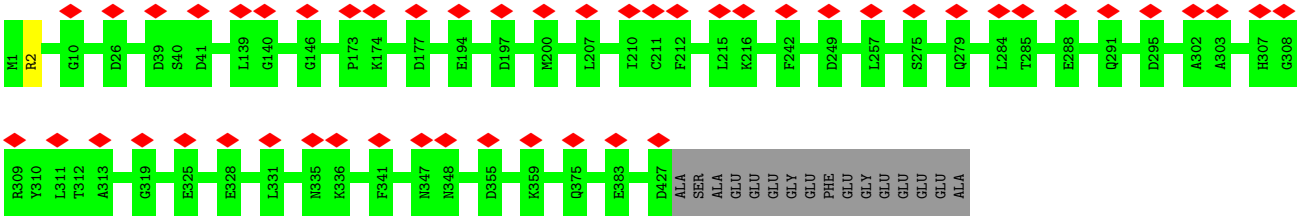
• Molecule 1: Tubulin beta



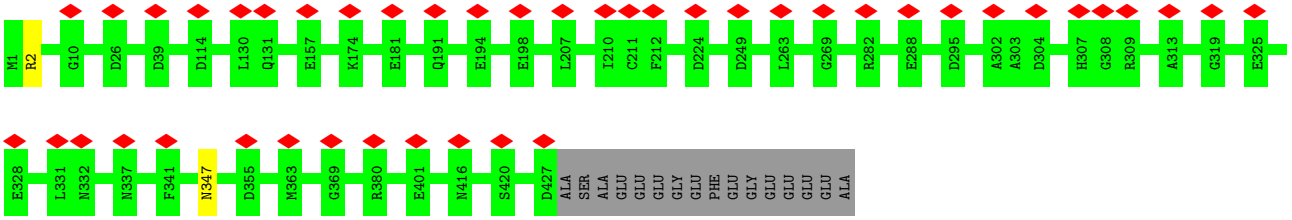
• Molecule 1: Tubulin beta



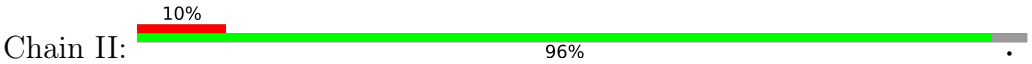
• Molecule 1: Tubulin beta

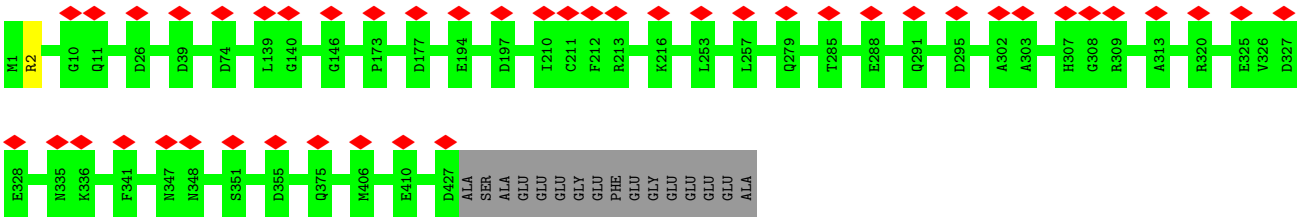


• Molecule 1: Tubulin beta

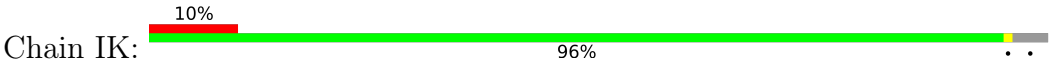


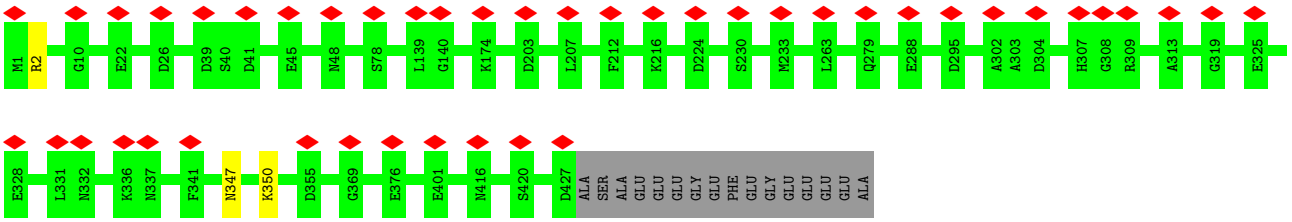
• Molecule 1: Tubulin beta



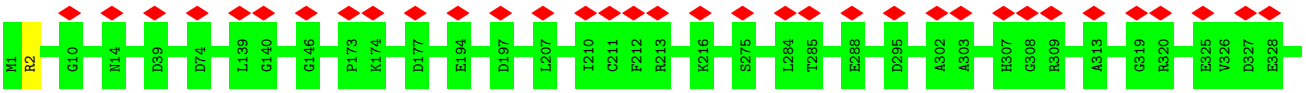


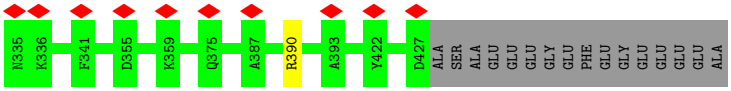
• Molecule 1: Tubulin beta





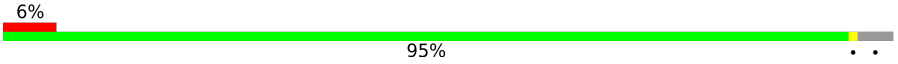
• Molecule 1: Tubulin beta

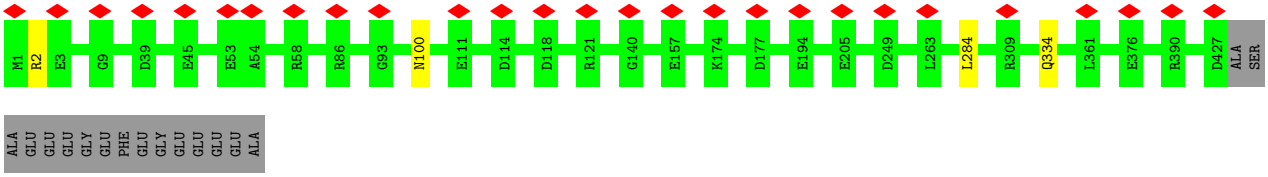




• Molecule 1: Tubulin beta

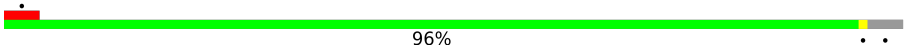
Chain JC:

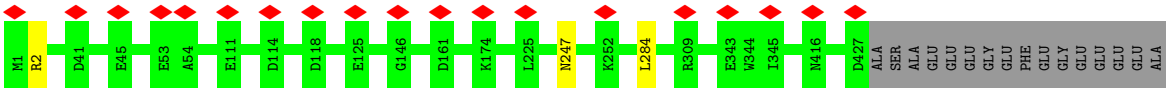




• Molecule 1: Tubulin beta

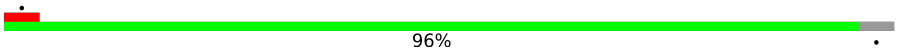
Chain JE:

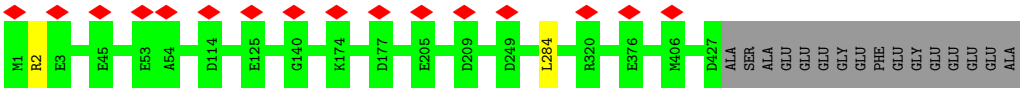




• Molecule 1: Tubulin beta

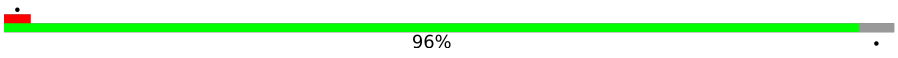
Chain JG:

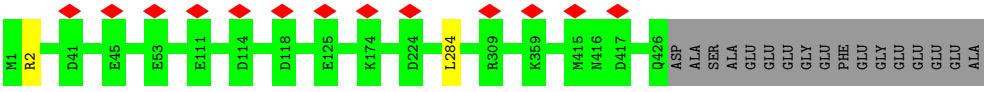




• Molecule 1: Tubulin beta

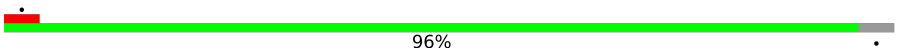
Chain JI:

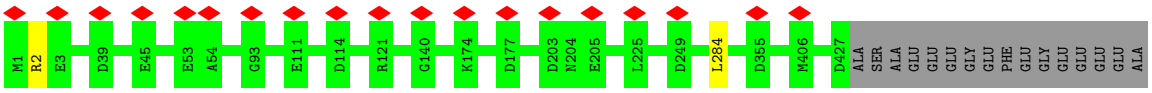




• Molecule 1: Tubulin beta

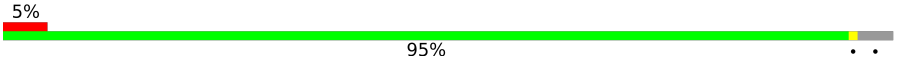
Chain JK:

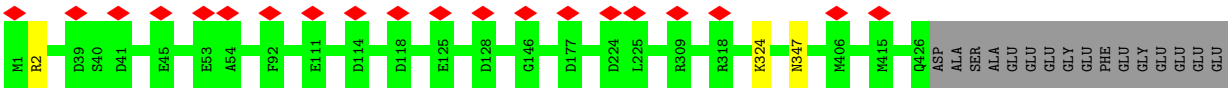




• Molecule 1: Tubulin beta

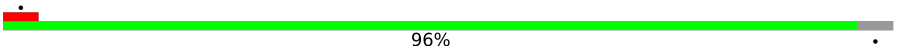
Chain JM:

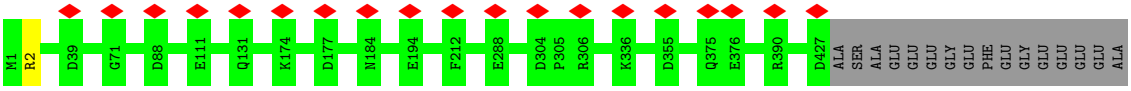




• Molecule 1: Tubulin beta

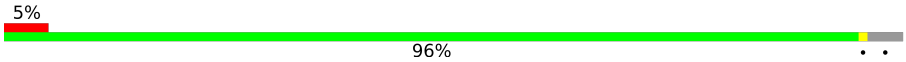
Chain KC:

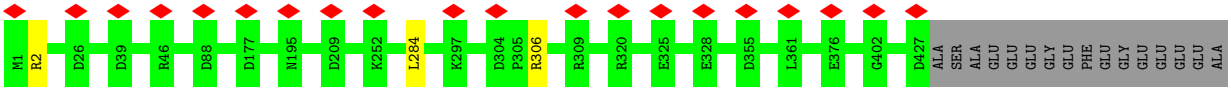




• Molecule 1: Tubulin beta

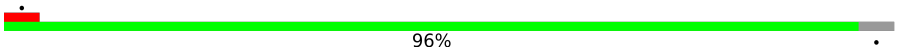
Chain KE:

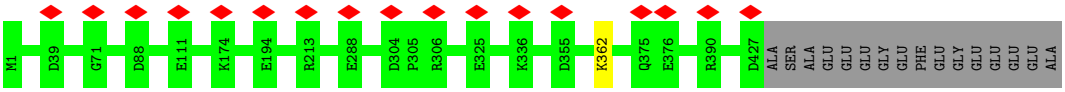




• Molecule 1: Tubulin beta

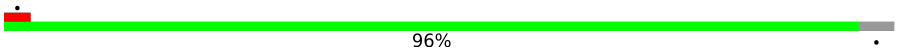
Chain KG:

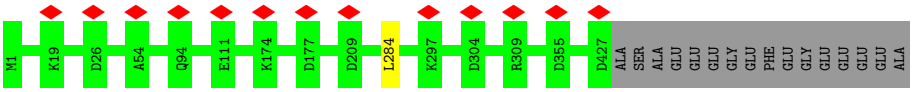




• Molecule 1: Tubulin beta

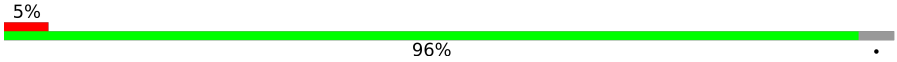
Chain KI:

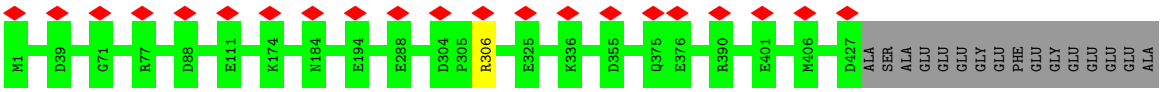




• Molecule 1: Tubulin beta

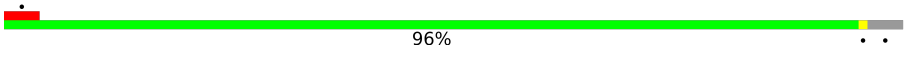
Chain KK:

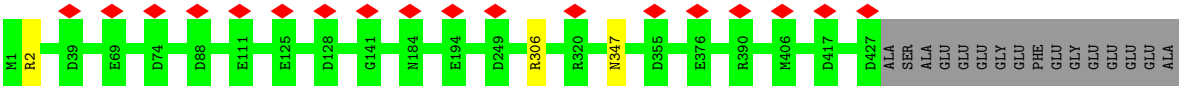




• Molecule 1: Tubulin beta

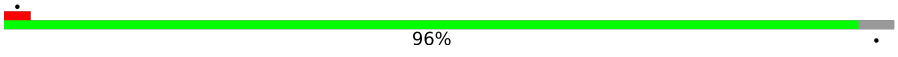
Chain LC:

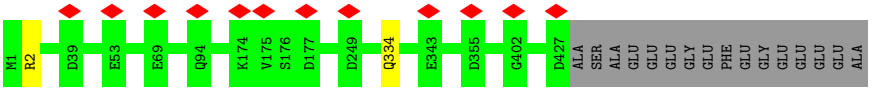




• Molecule 1: Tubulin beta

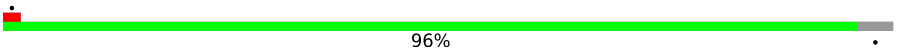
Chain LE:

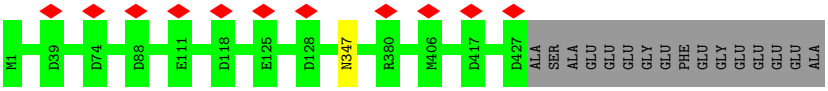




• Molecule 1: Tubulin beta

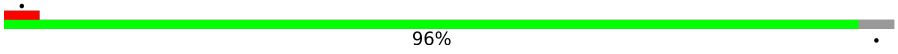
Chain LG:

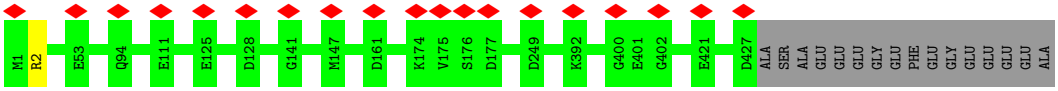




• Molecule 1: Tubulin beta

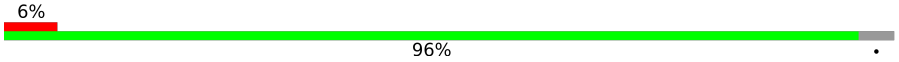
Chain LI:

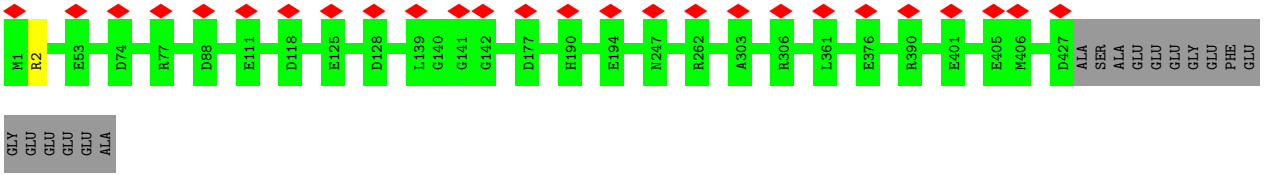




• Molecule 1: Tubulin beta

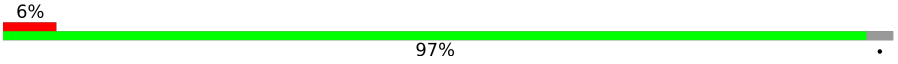
Chain LK:

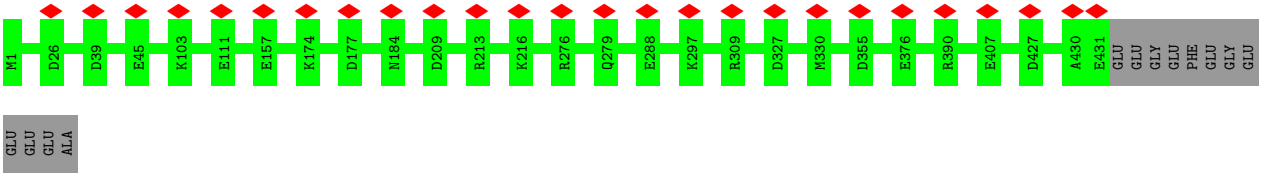




• Molecule 1: Tubulin beta

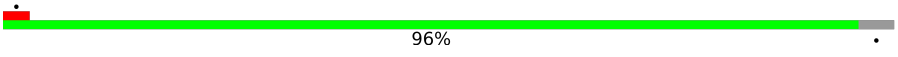
Chain MC:

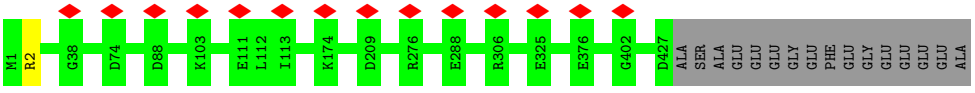




• Molecule 1: Tubulin beta

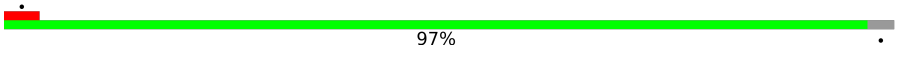
Chain ME:

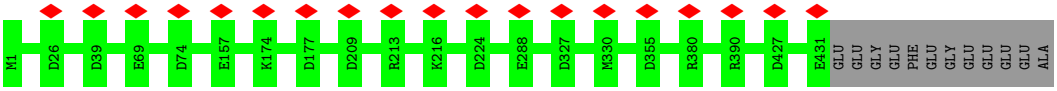




• Molecule 1: Tubulin beta

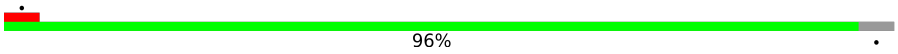
Chain MG:

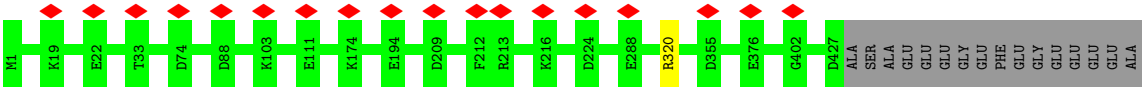




• Molecule 1: Tubulin beta

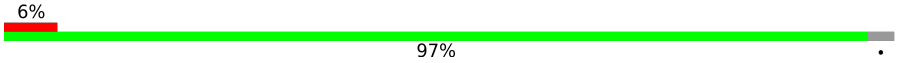
Chain MI:

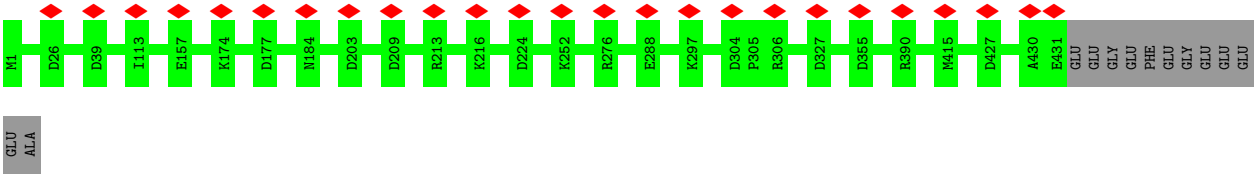




• Molecule 1: Tubulin beta

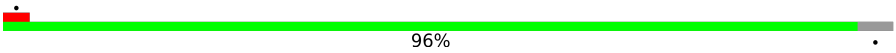
Chain MK:

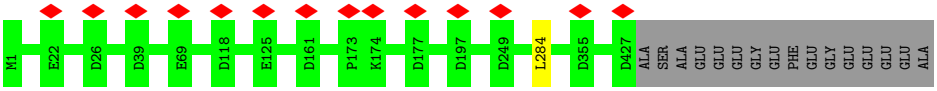




• Molecule 1: Tubulin beta

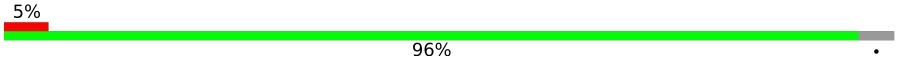
Chain CA:

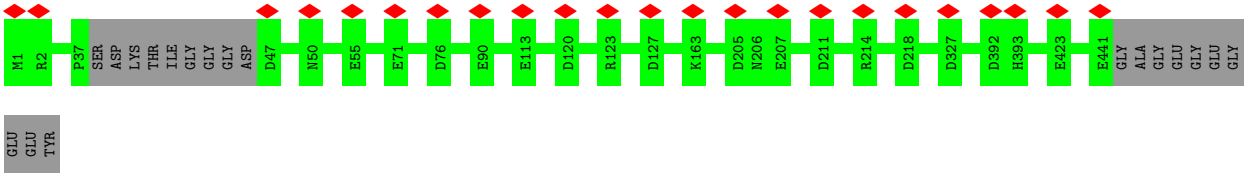




• Molecule 2: Tubulin alpha

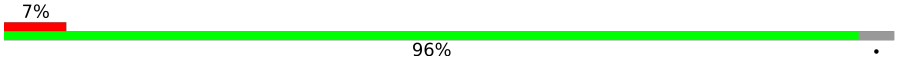
Chain AB:

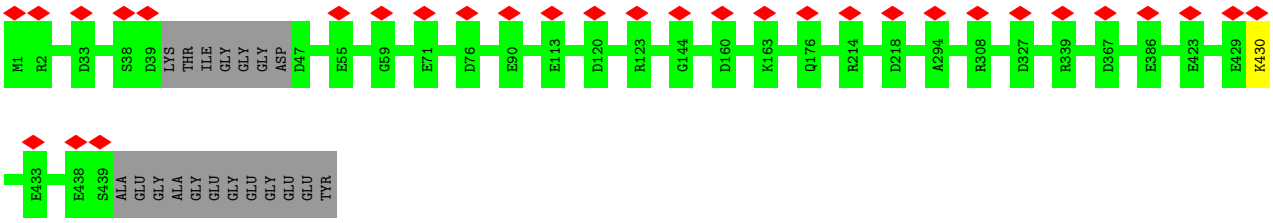




• Molecule 2: Tubulin alpha

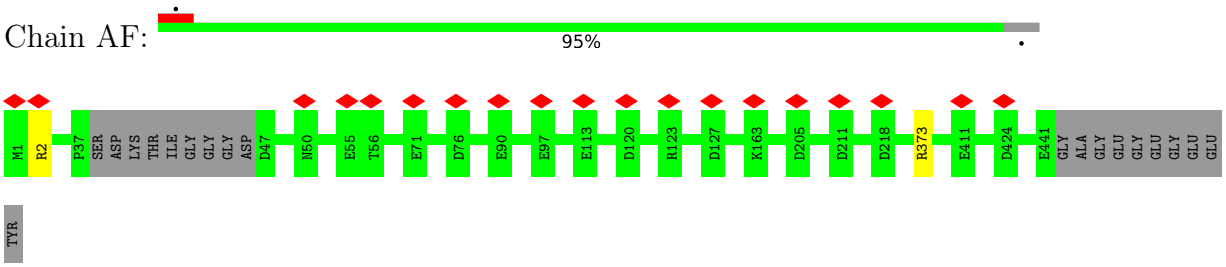
Chain AD:





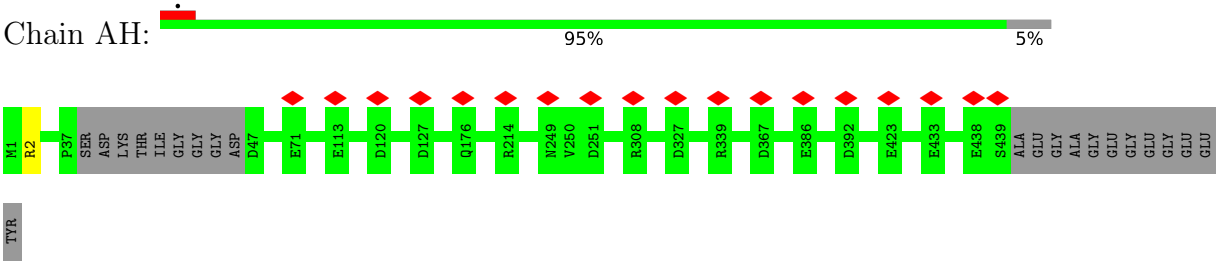
• Molecule 2: Tubulin alpha

Chain AF:



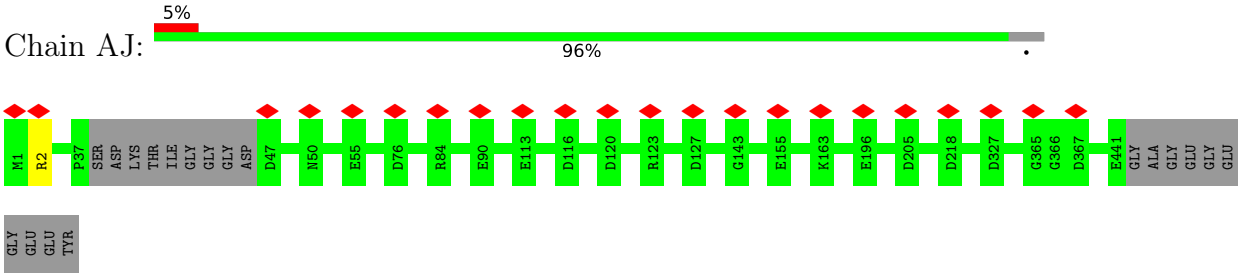
• Molecule 2: Tubulin alpha

Chain AH:



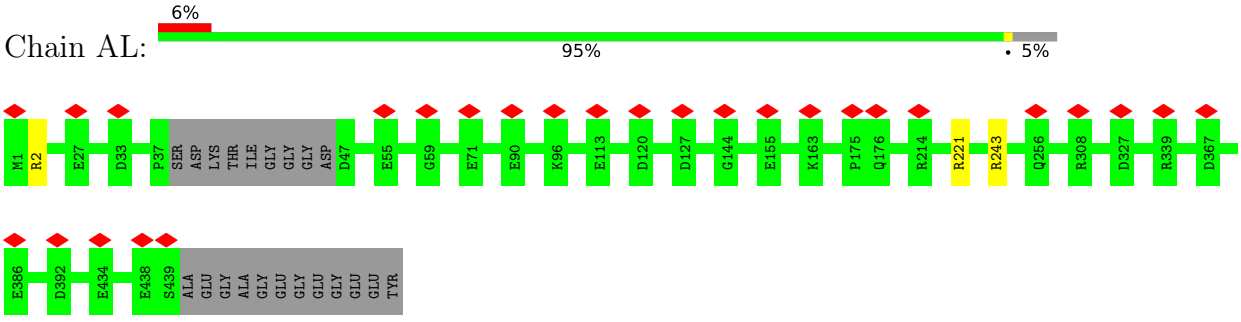
• Molecule 2: Tubulin alpha

Chain AJ:



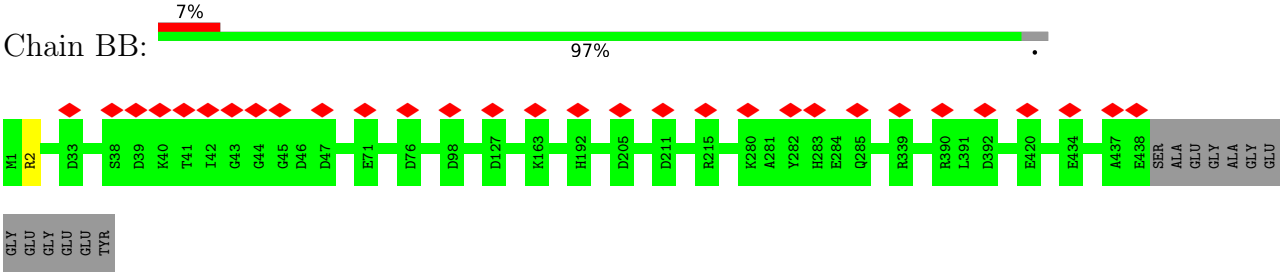
• Molecule 2: Tubulin alpha

Chain AL:



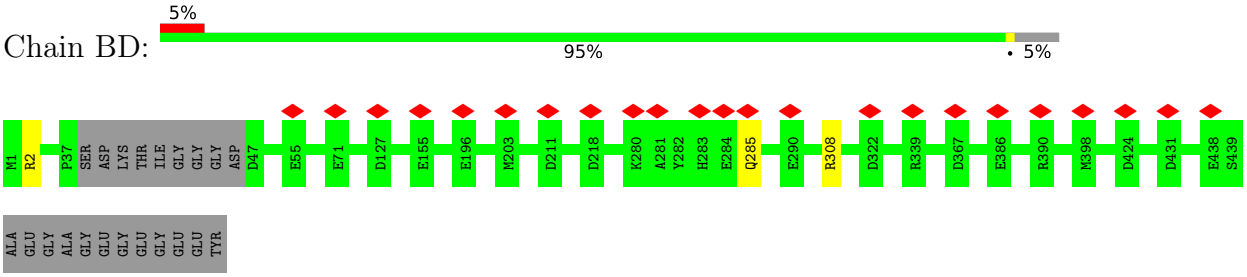
• Molecule 2: Tubulin alpha

Chain BB:



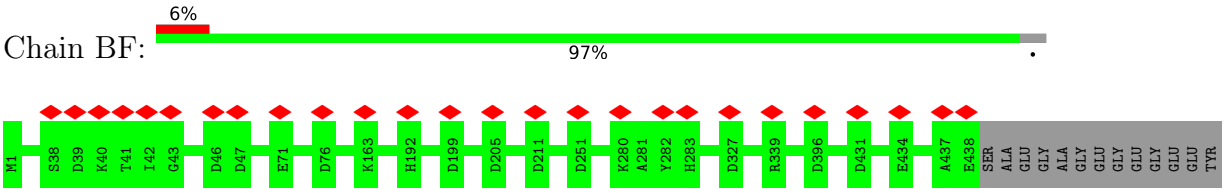
• Molecule 2: Tubulin alpha

Chain BD:



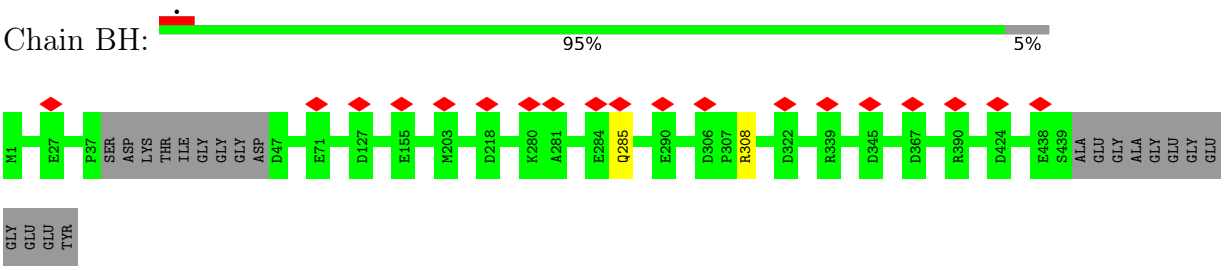
• Molecule 2: Tubulin alpha

Chain BF:



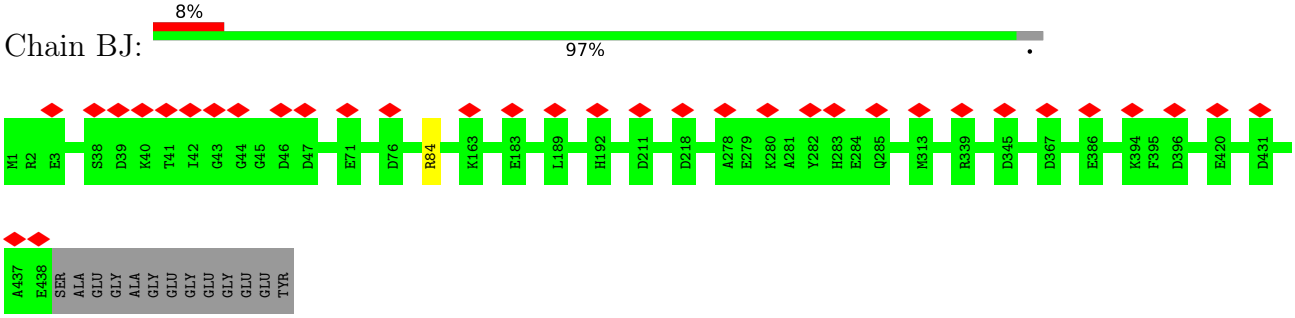
• Molecule 2: Tubulin alpha

Chain BH:



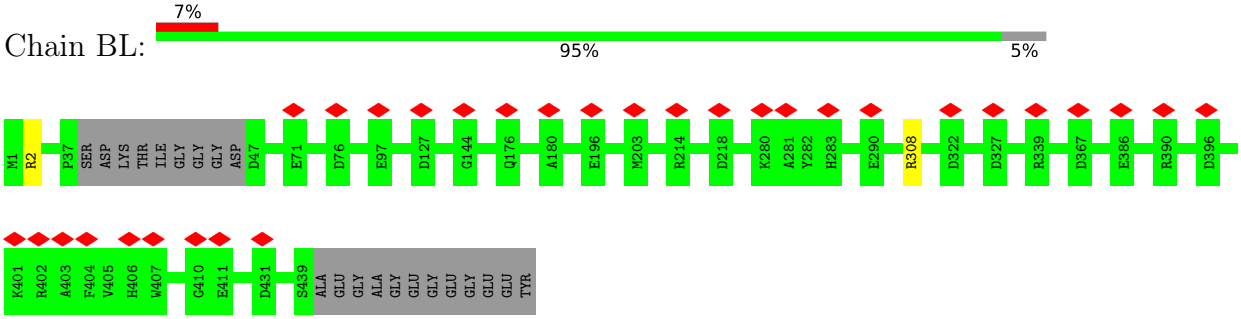
• Molecule 2: Tubulin alpha

Chain BJ:



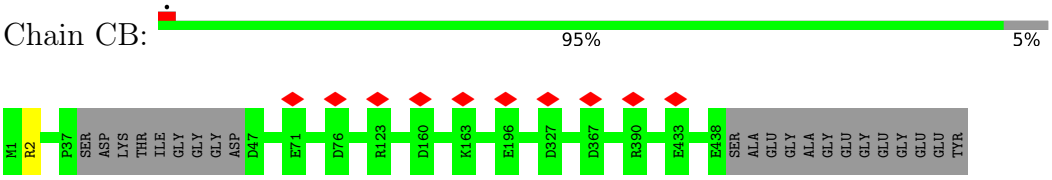
• Molecule 2: Tubulin alpha

Chain BL:



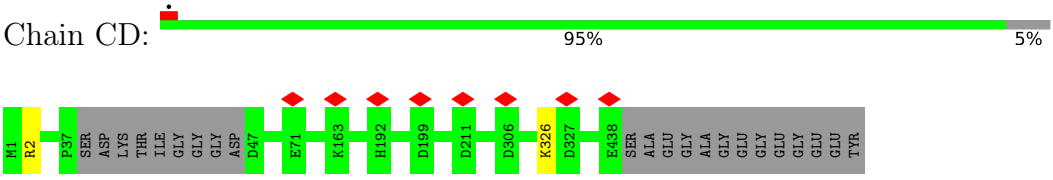
• Molecule 2: Tubulin alpha

Chain CB:



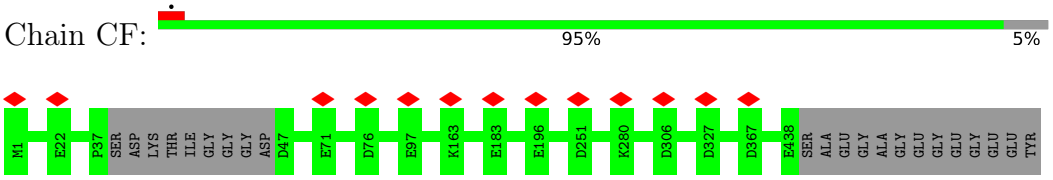
• Molecule 2: Tubulin alpha

Chain CD:



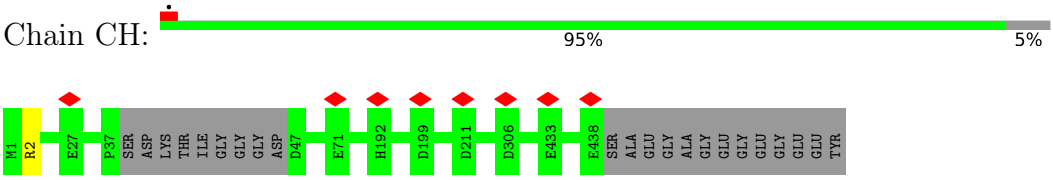
• Molecule 2: Tubulin alpha

Chain CF:



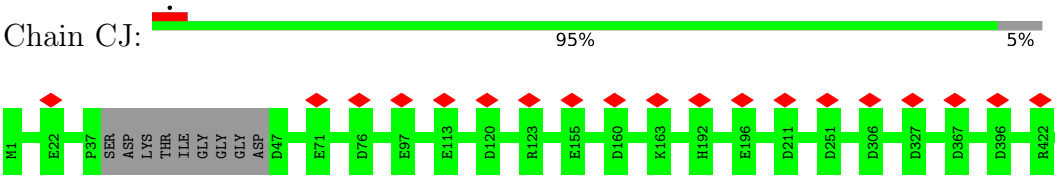
• Molecule 2: Tubulin alpha

Chain CH:



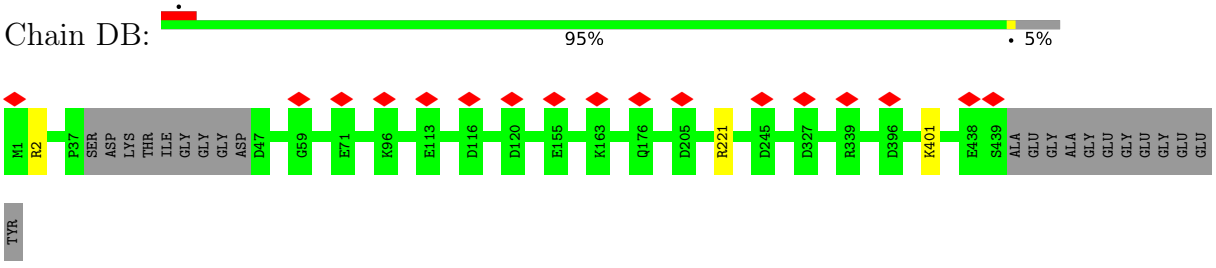
• Molecule 2: Tubulin alpha

Chain CJ:



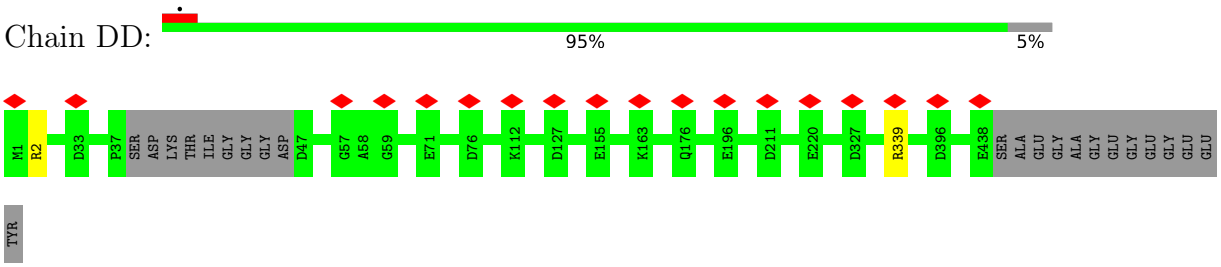
• Molecule 2: Tubulin alpha

Chain DB:



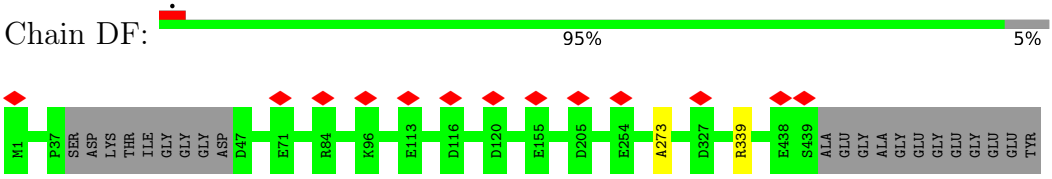
• Molecule 2: Tubulin alpha

Chain DD:



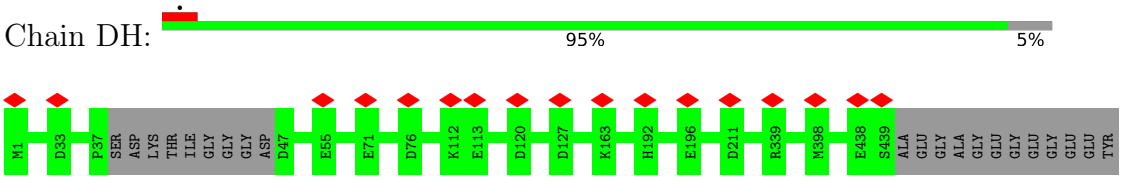
• Molecule 2: Tubulin alpha

Chain DF:



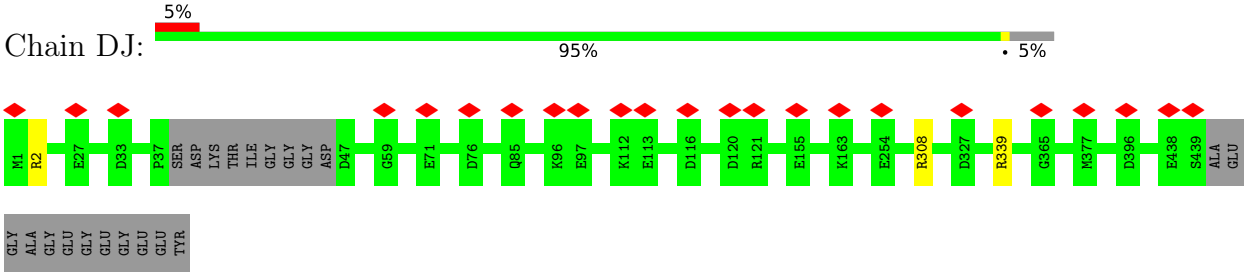
• Molecule 2: Tubulin alpha

Chain DH:



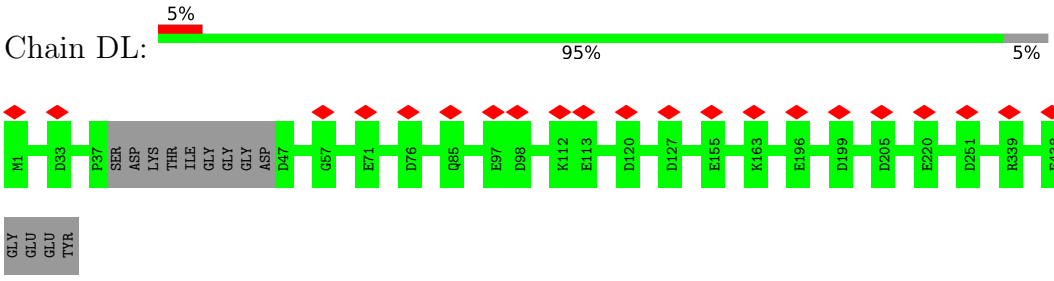
• Molecule 2: Tubulin alpha

Chain DJ:



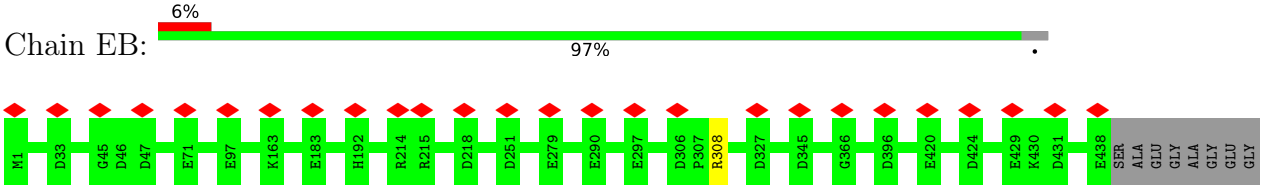
• Molecule 2: Tubulin alpha

Chain DL:



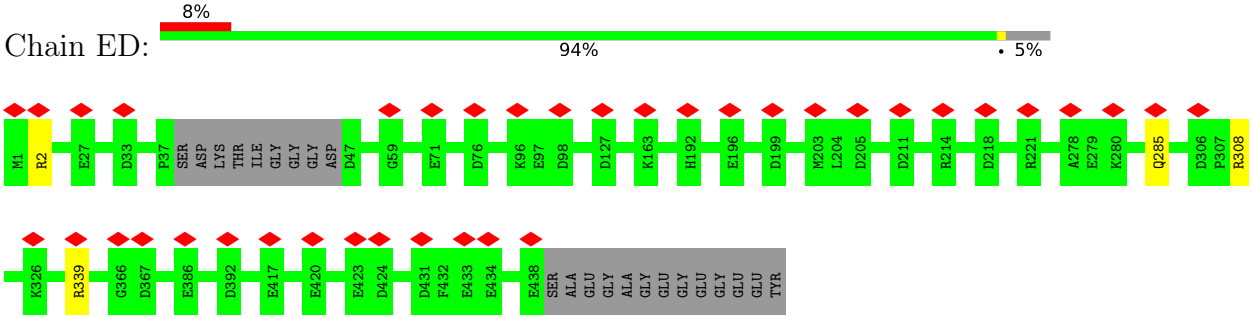
• Molecule 2: Tubulin alpha

Chain EB:



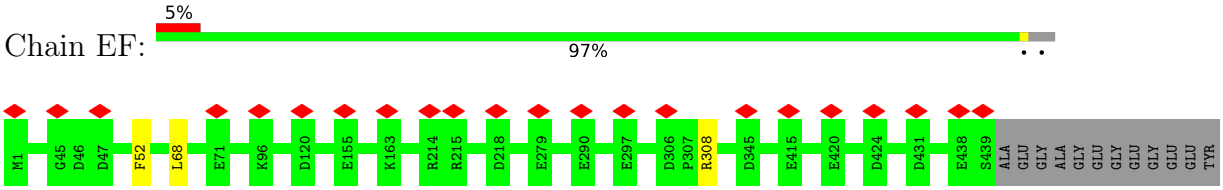
• Molecule 2: Tubulin alpha

Chain ED:



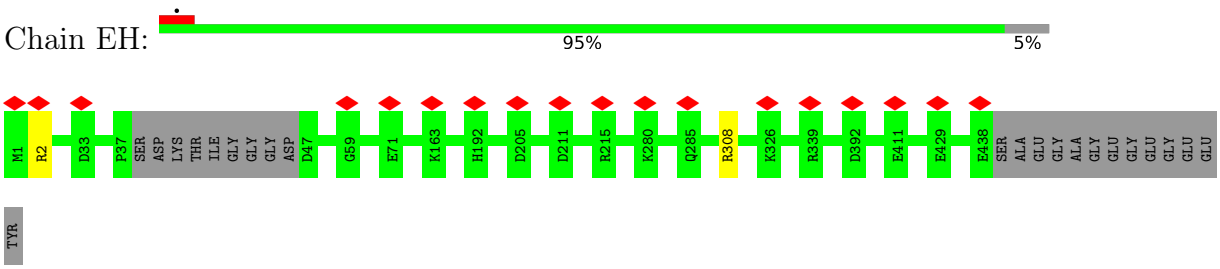
• Molecule 2: Tubulin alpha

Chain EF:



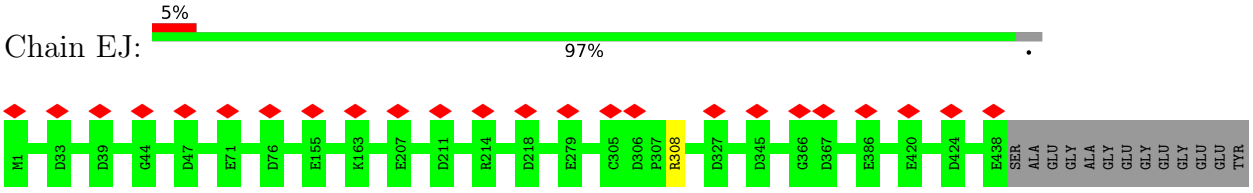
• Molecule 2: Tubulin alpha

Chain EH:



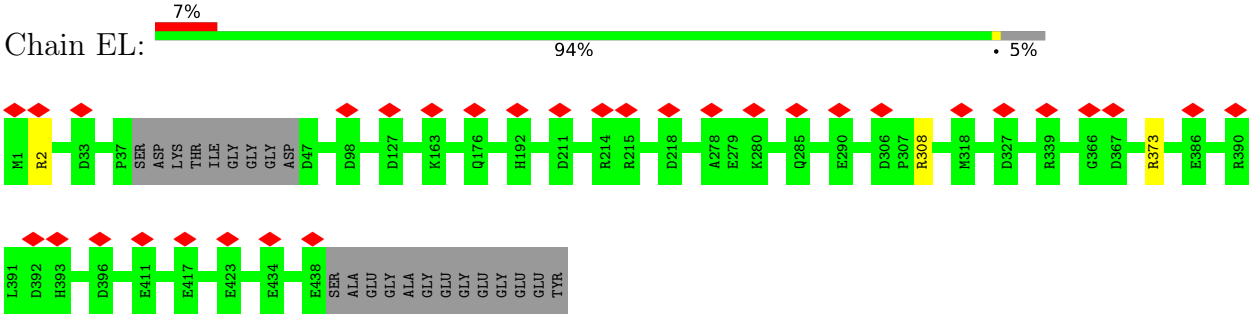
• Molecule 2: Tubulin alpha

Chain EJ:



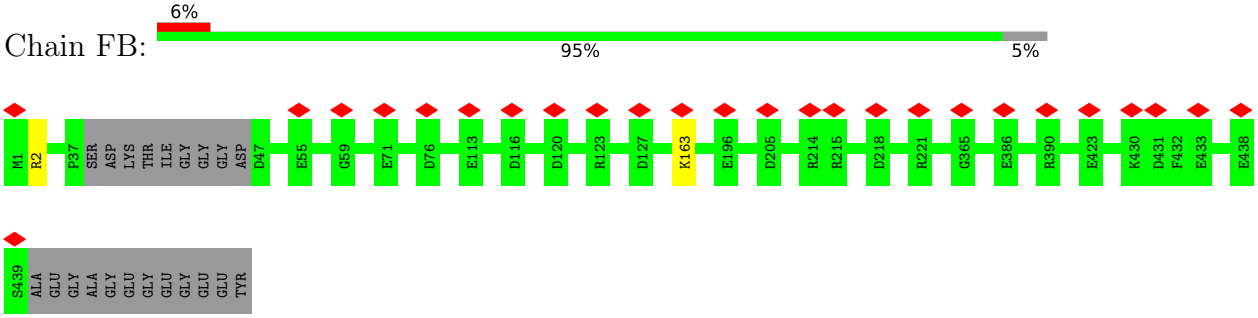
• Molecule 2: Tubulin alpha

Chain EL:



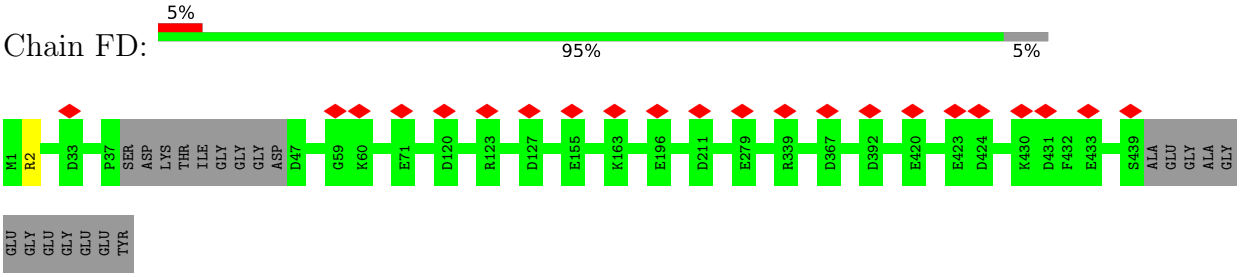
• Molecule 2: Tubulin alpha

Chain FB:



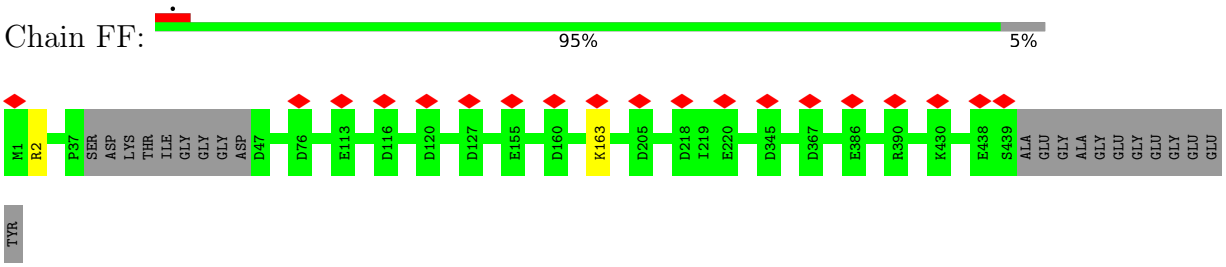
• Molecule 2: Tubulin alpha

Chain FD:



• Molecule 2: Tubulin alpha

Chain FF:



• Molecule 2: Tubulin alpha

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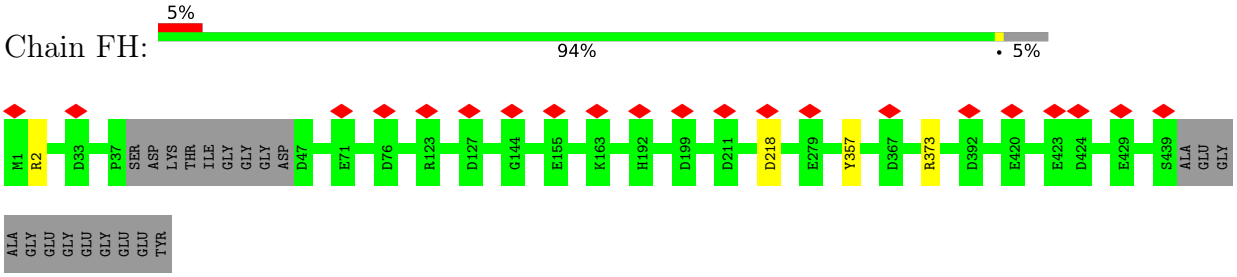
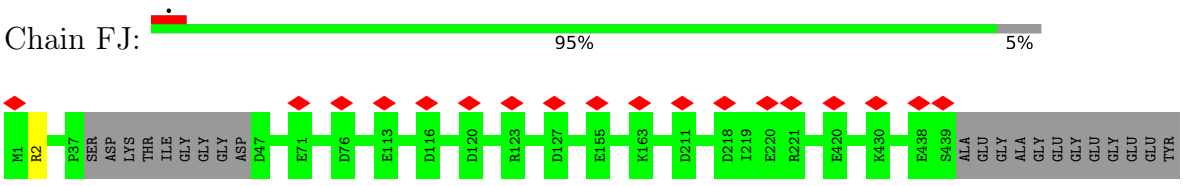


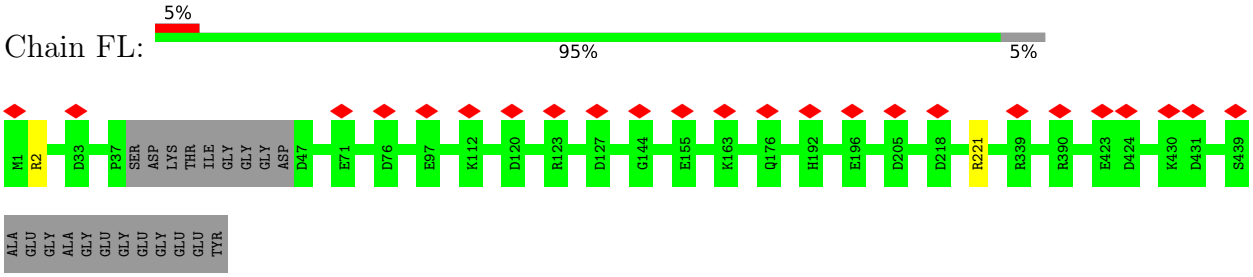
• Molecule 2: Tubulin alpha

Chain FJ:



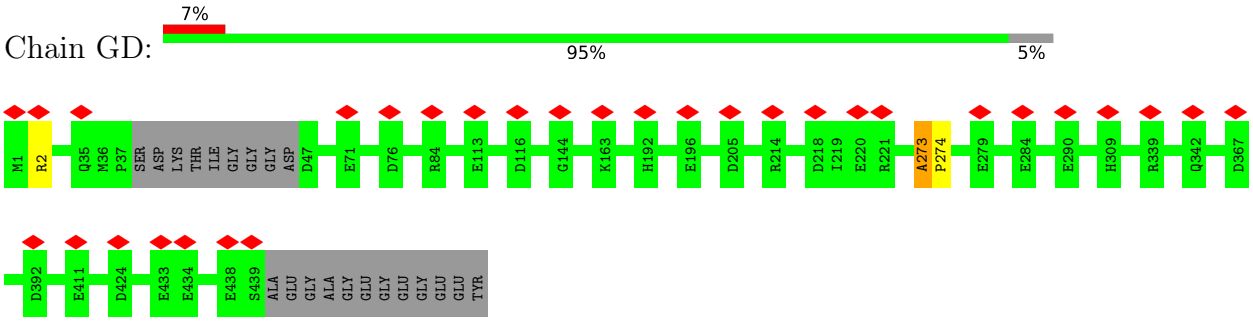
• Molecule 2: Tubulin alpha

Chain FL:



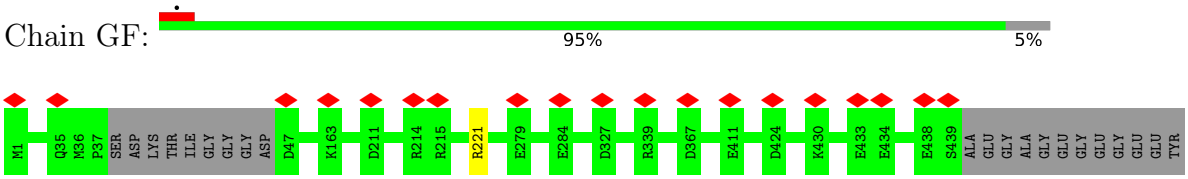
• Molecule 2: Tubulin alpha

Chain GD:



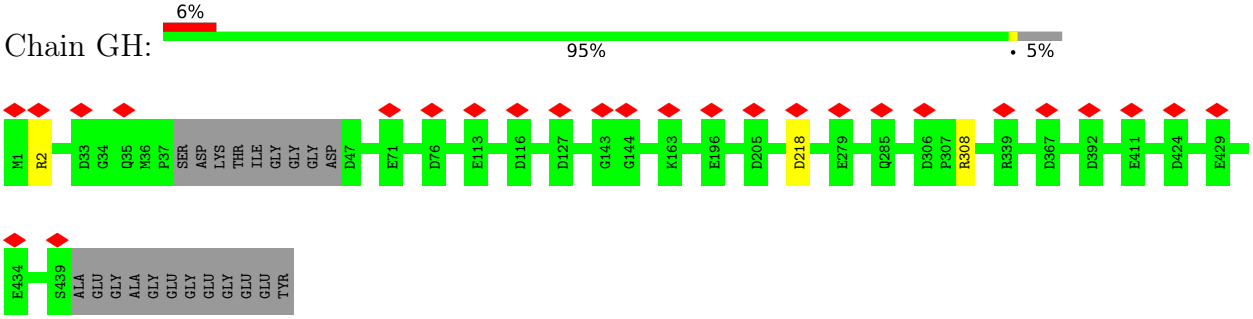
• Molecule 2: Tubulin alpha

Chain GF:



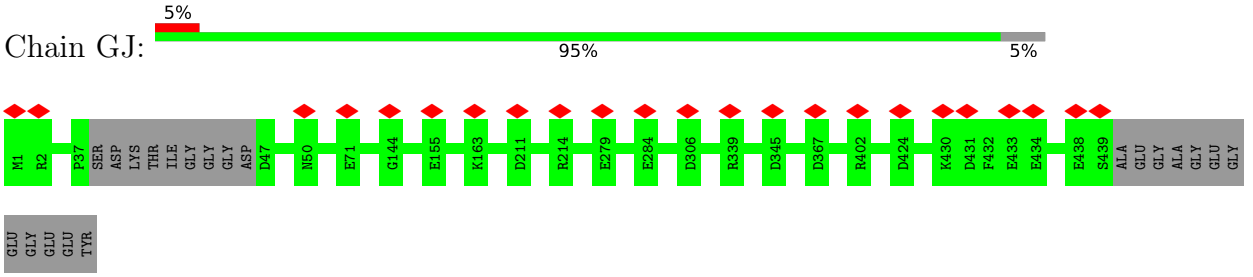
• Molecule 2: Tubulin alpha

Chain GH:



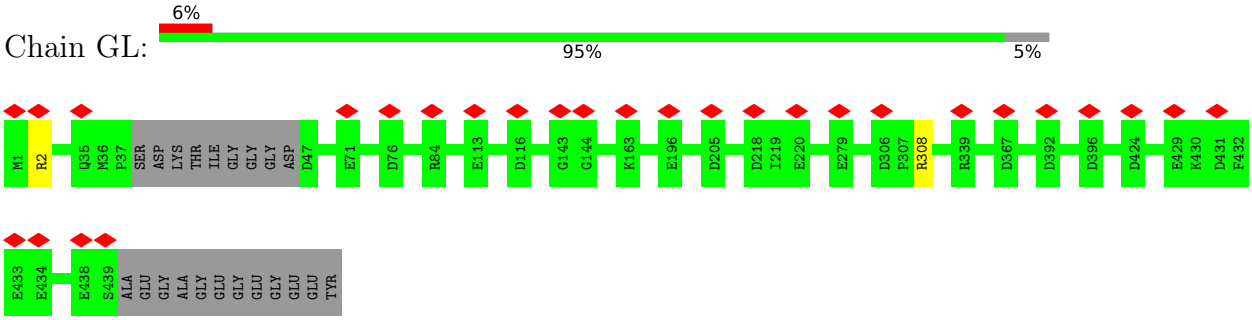
• Molecule 2: Tubulin alpha

Chain GJ:



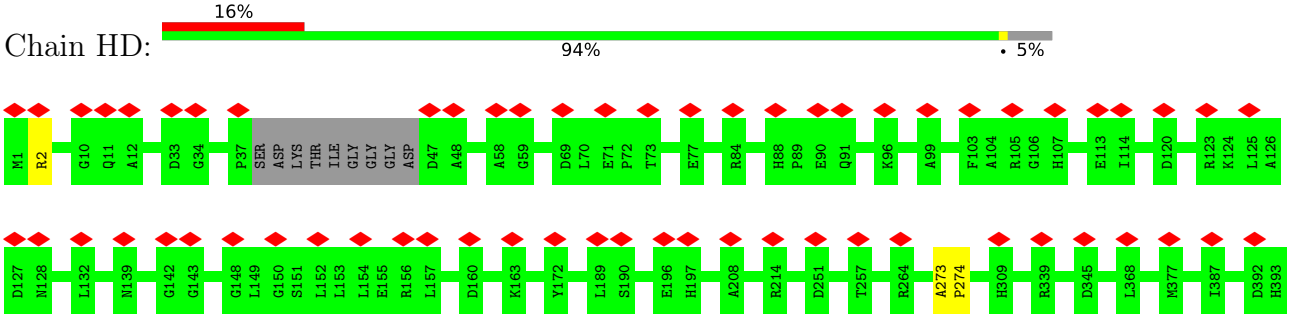
• Molecule 2: Tubulin alpha

Chain GL:



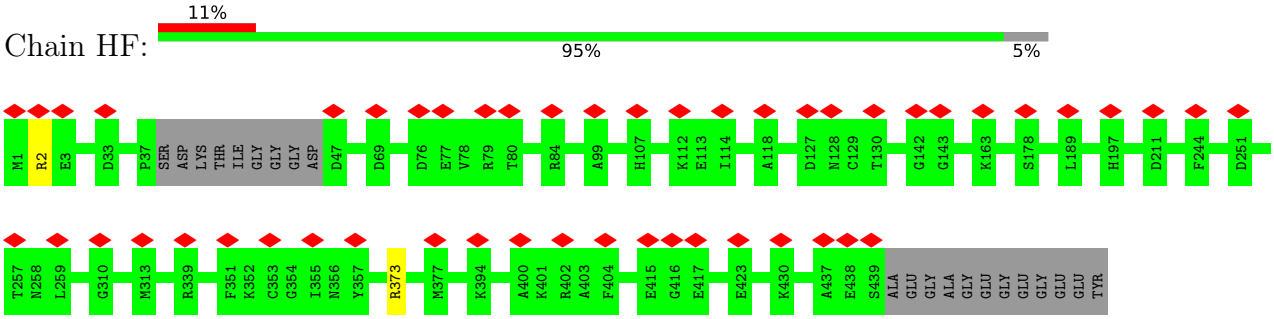
• Molecule 2: Tubulin alpha

Chain HD:



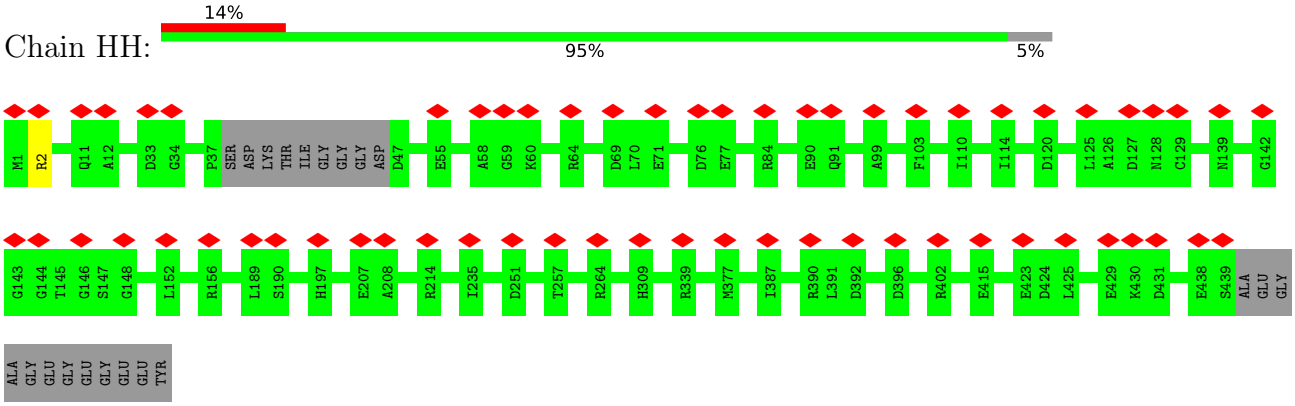
• Molecule 2: Tubulin alpha

Chain HF:



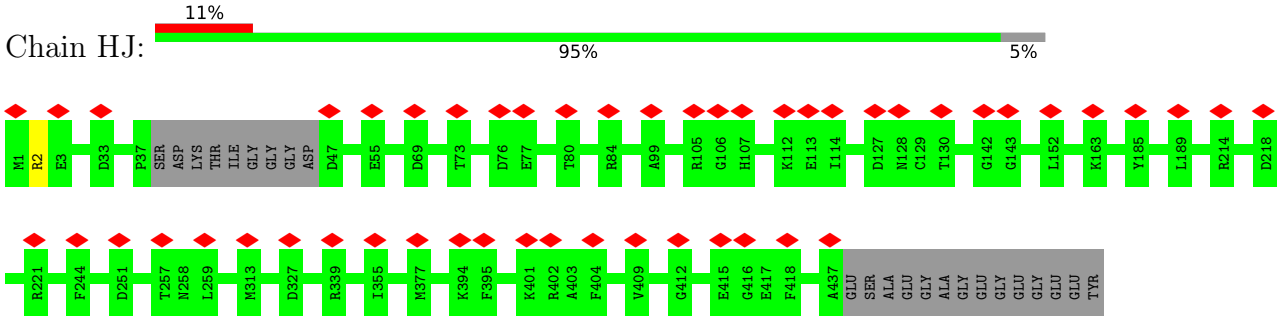
• Molecule 2: Tubulin alpha

Chain HH:



• Molecule 2: Tubulin alpha

Chain HJ:



• Molecule 2: Tubulin alpha

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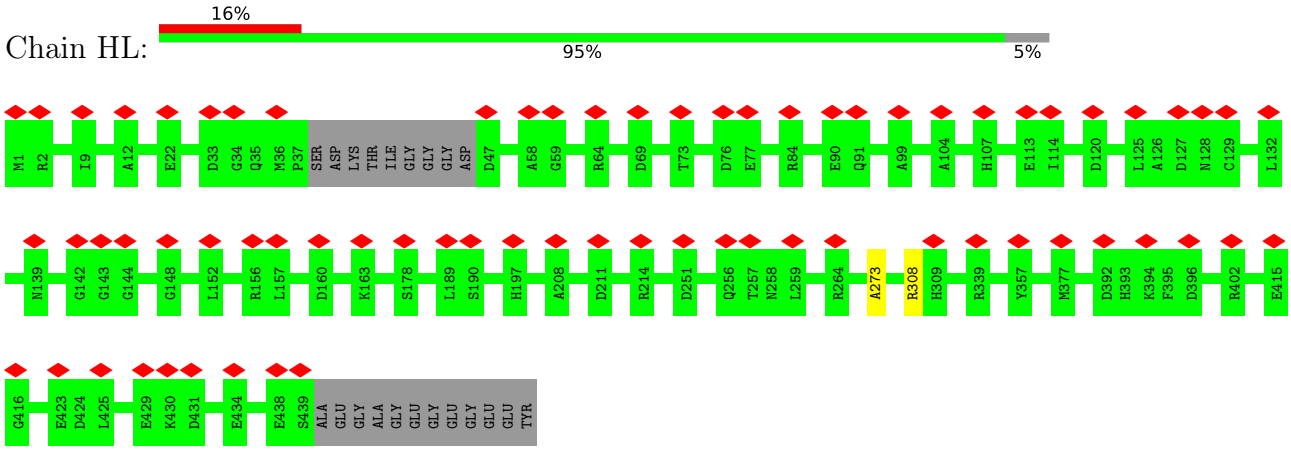

• Molecule 2: Tubulin alpha

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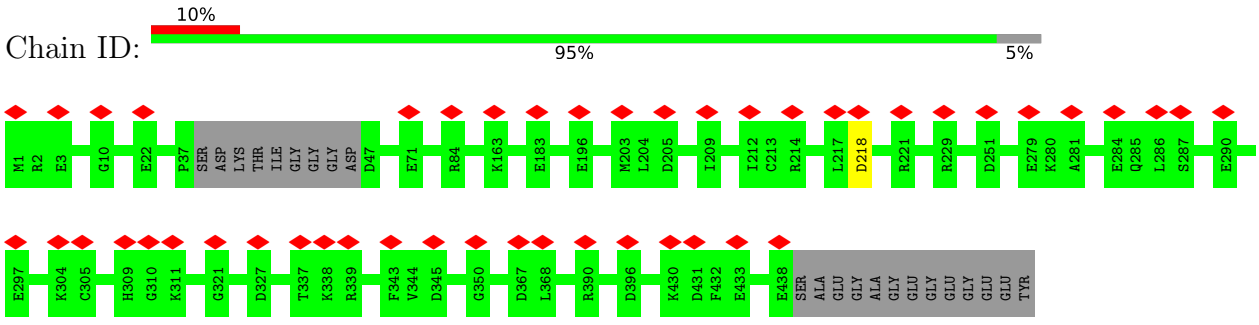
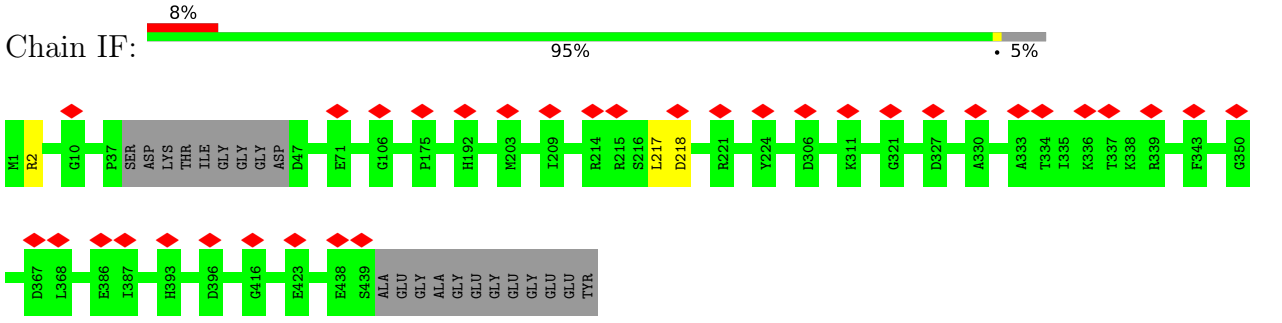


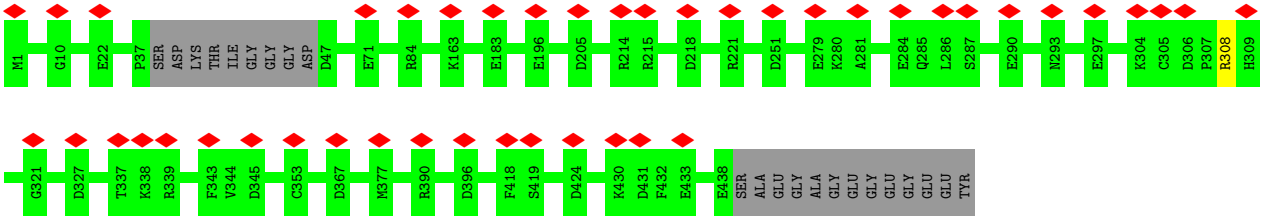
• Molecule 2: Tubulin alpha

Chain IF:

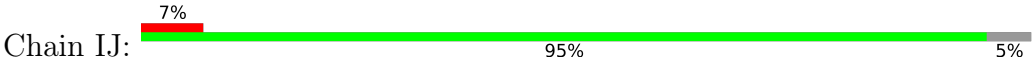


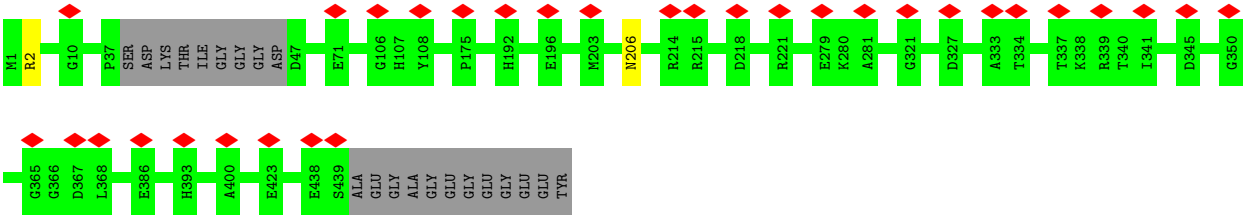
• Molecule 2: Tubulin alpha

Chain IH:

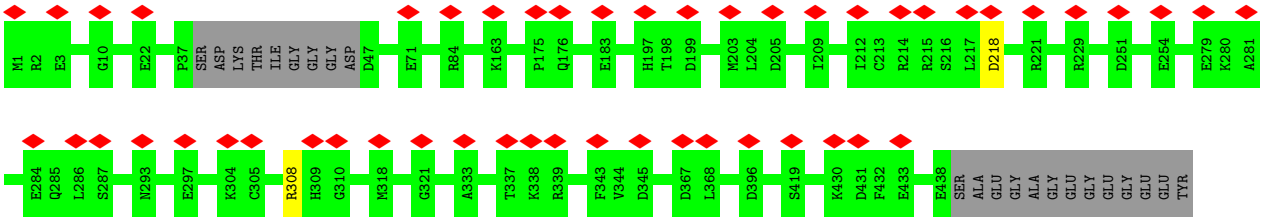


• Molecule 2: Tubulin alpha

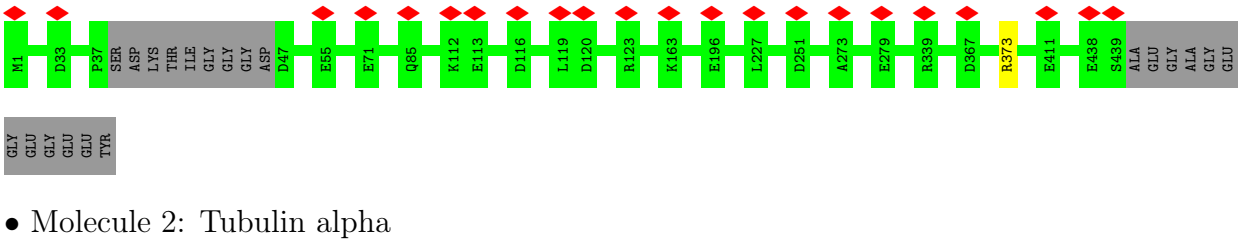




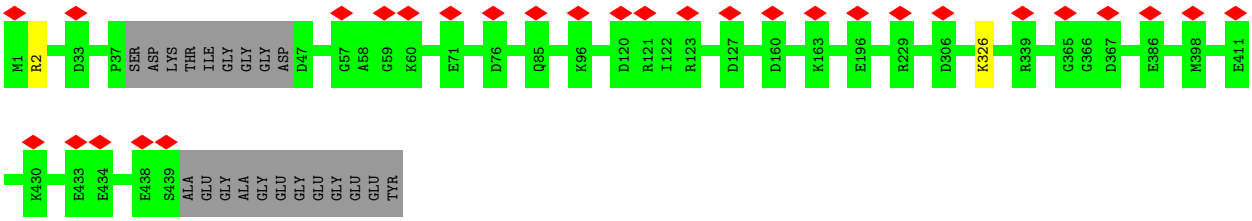
• Molecule 2: Tubulin alpha



• Molecule 2: Tubulin alpha

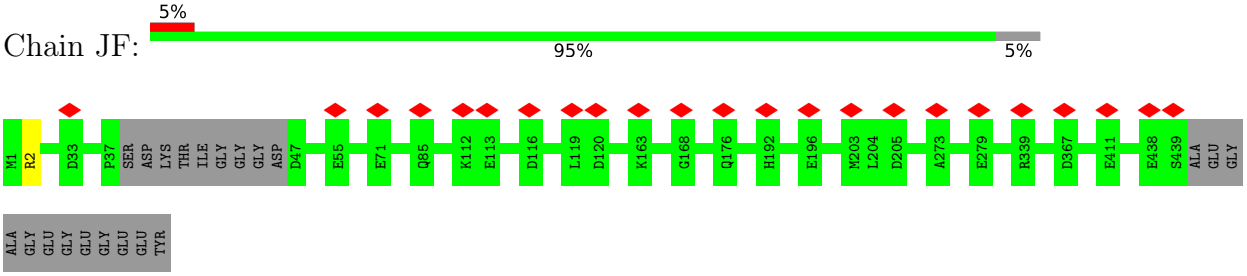


• Molecule 2: Tubulin alpha



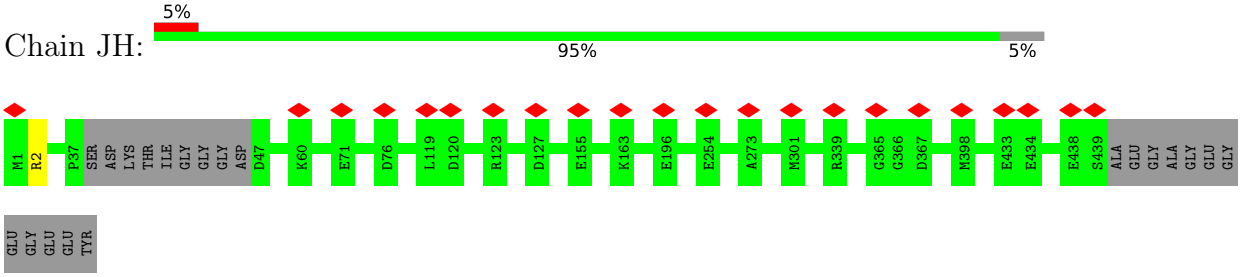
• Molecule 2: Tubulin alpha

Chain JF:



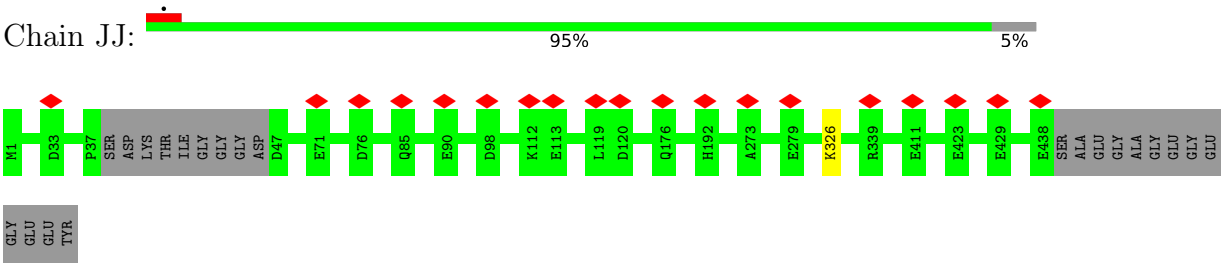
• Molecule 2: Tubulin alpha

Chain JH:



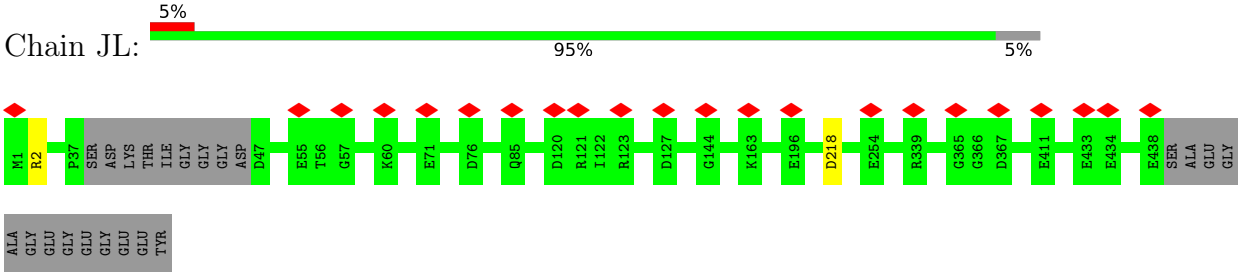
• Molecule 2: Tubulin alpha

Chain JJ:



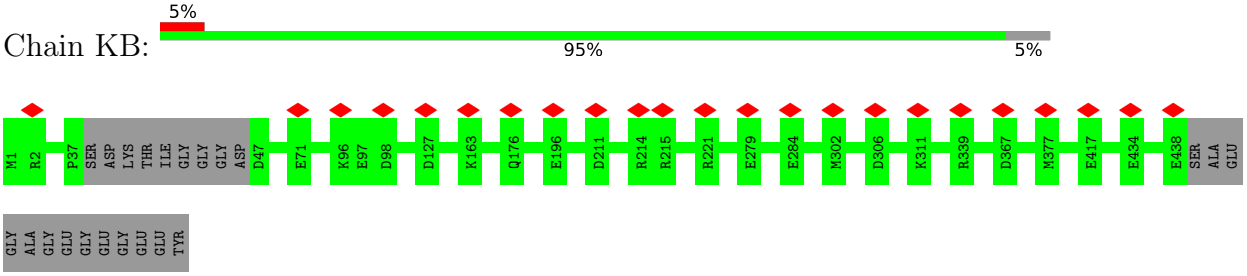
• Molecule 2: Tubulin alpha

Chain JL:



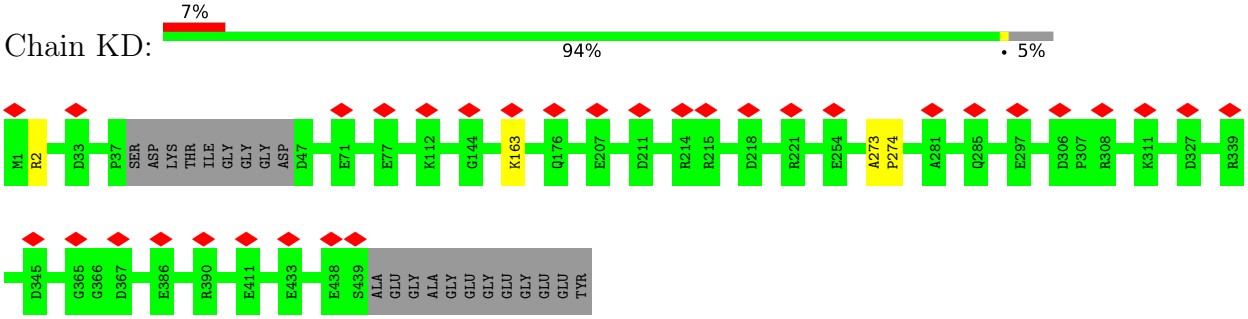
• Molecule 2: Tubulin alpha

Chain KB:



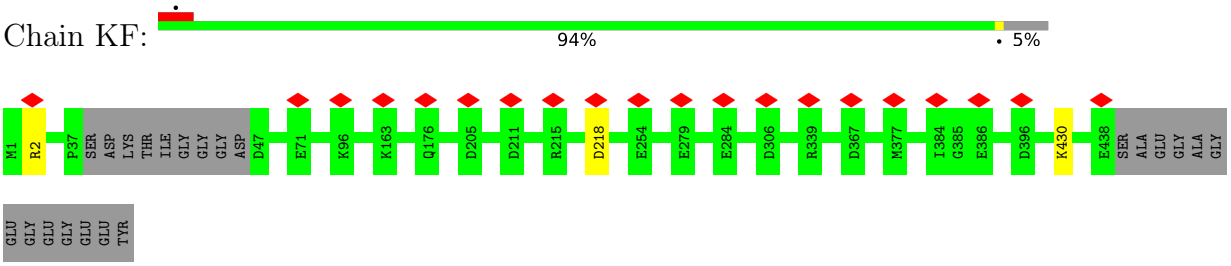
• Molecule 2: Tubulin alpha

Chain KD:



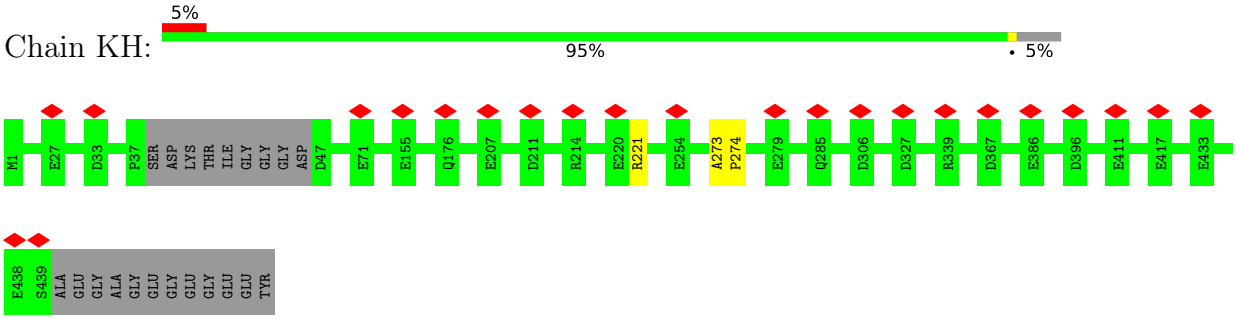
• Molecule 2: Tubulin alpha

Chain KF:



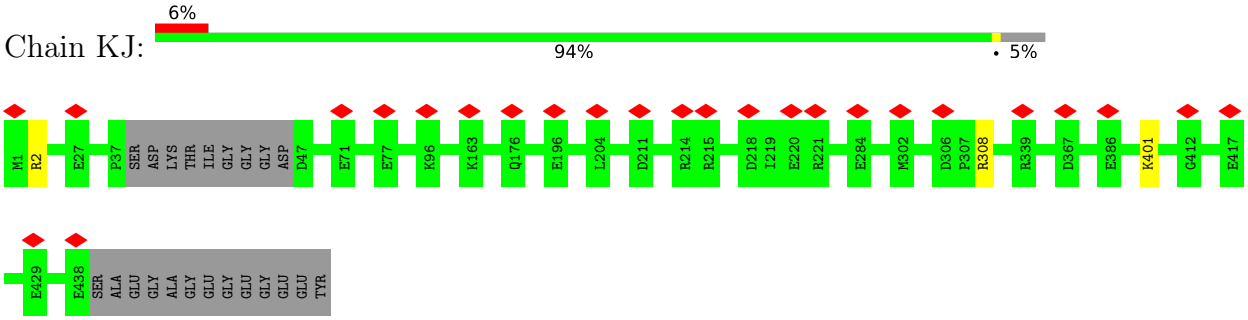
• Molecule 2: Tubulin alpha

Chain KH:



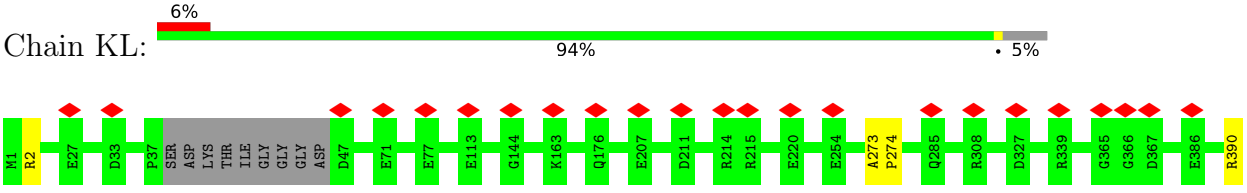
• Molecule 2: Tubulin alpha

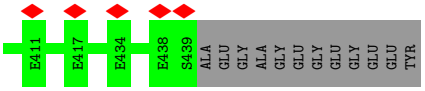
Chain KJ:



• Molecule 2: Tubulin alpha

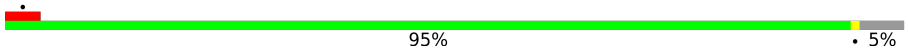
Chain KL:

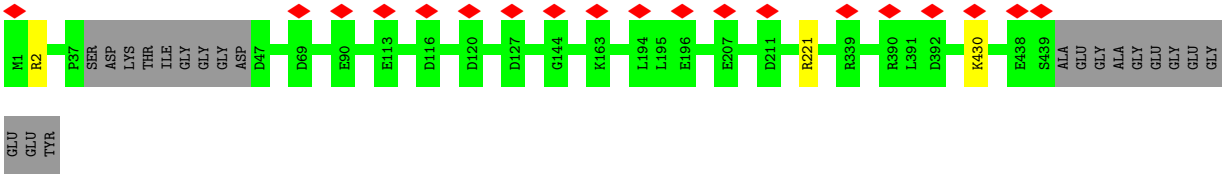




• Molecule 2: Tubulin alpha

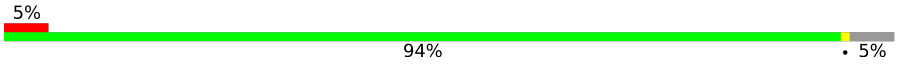
Chain LB:

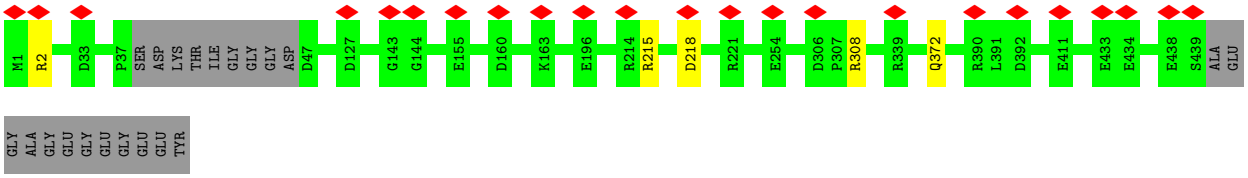




• Molecule 2: Tubulin alpha

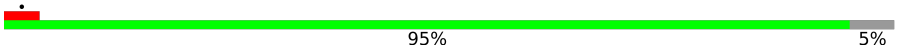
Chain LD:

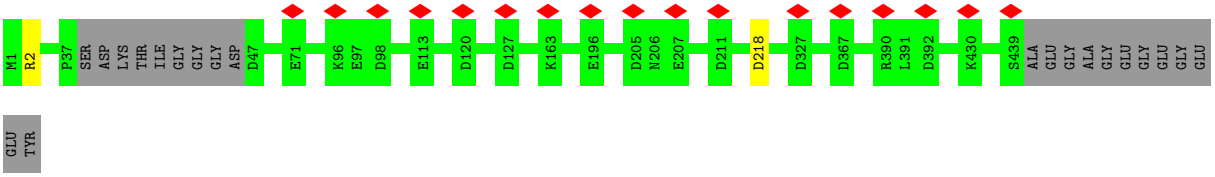




• Molecule 2: Tubulin alpha

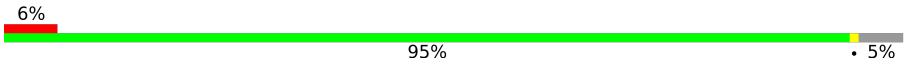
Chain LF:

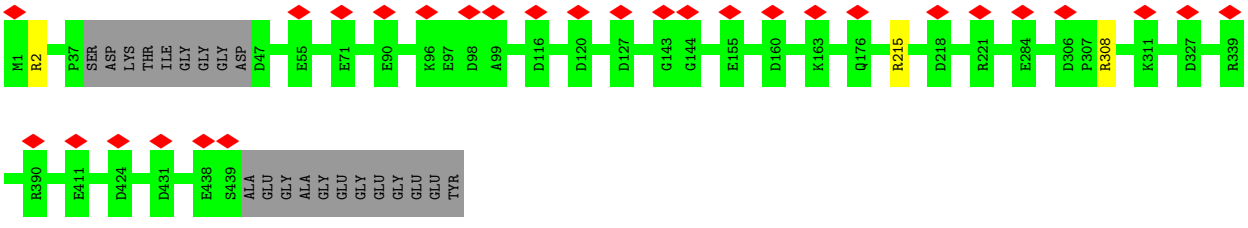




• Molecule 2: Tubulin alpha

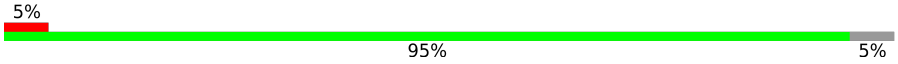
Chain LH:

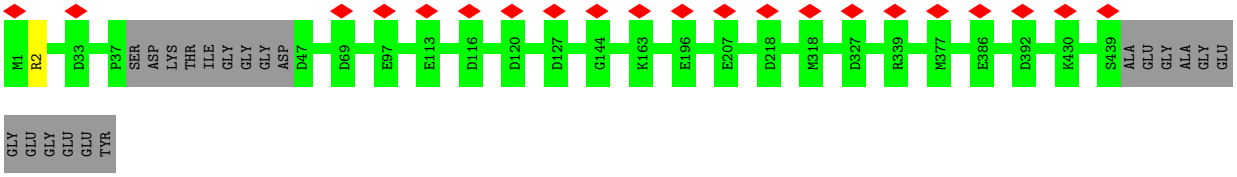




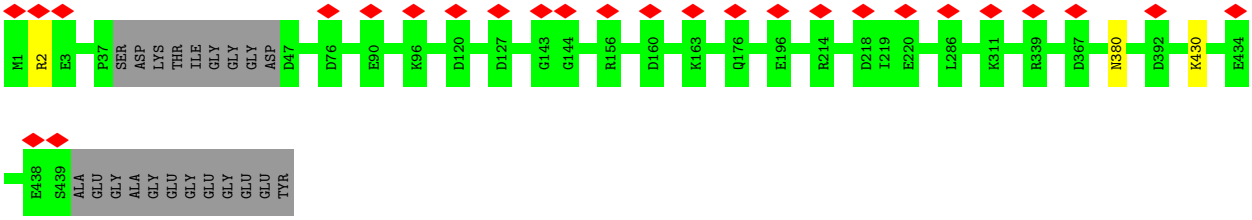
• Molecule 2: Tubulin alpha

Chain LJ:

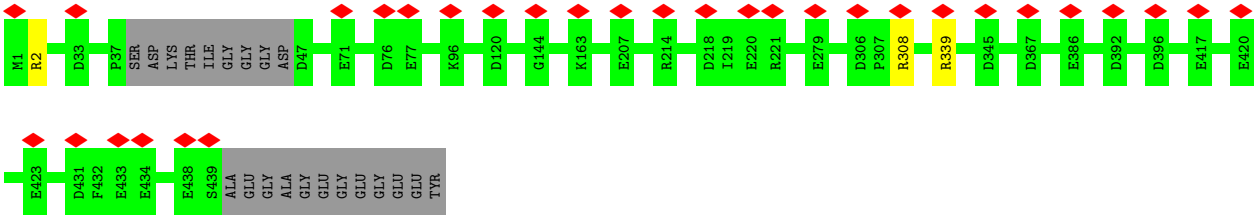




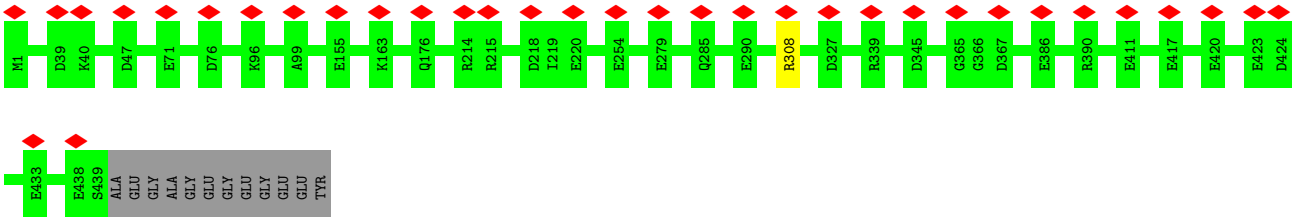
• Molecule 2: Tubulin alpha



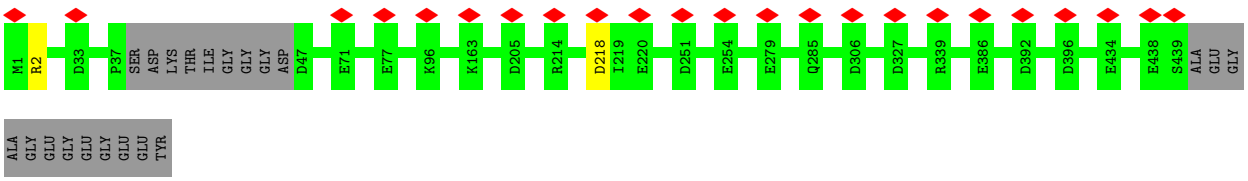
• Molecule 2: Tubulin alpha



• Molecule 2: Tubulin alpha

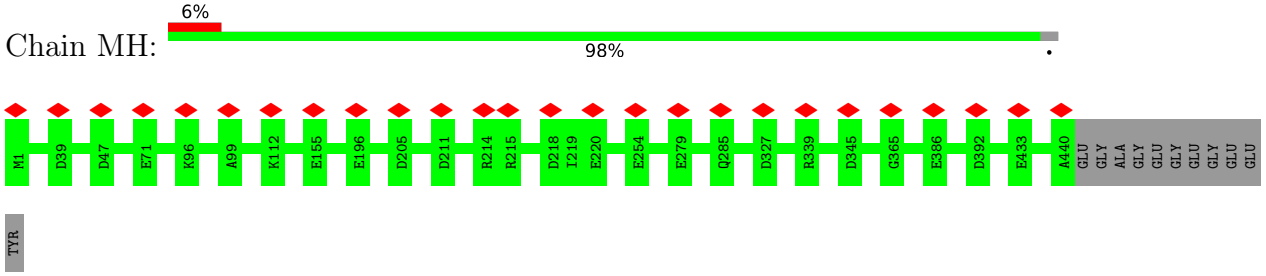


• Molecule 2: Tubulin alpha



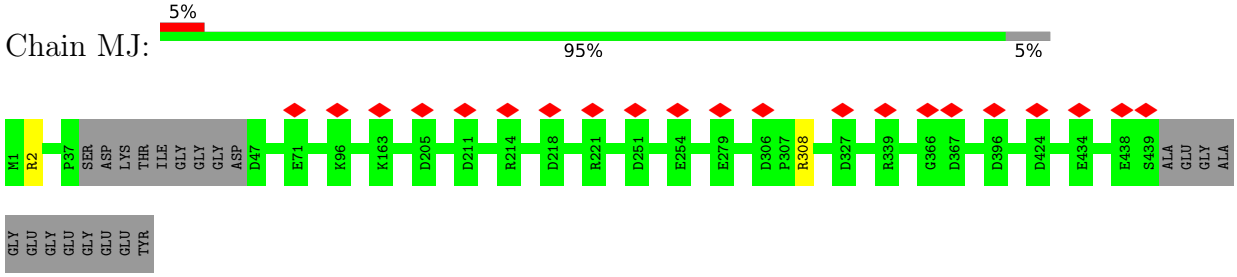
• Molecule 2: Tubulin alpha

Chain MH:



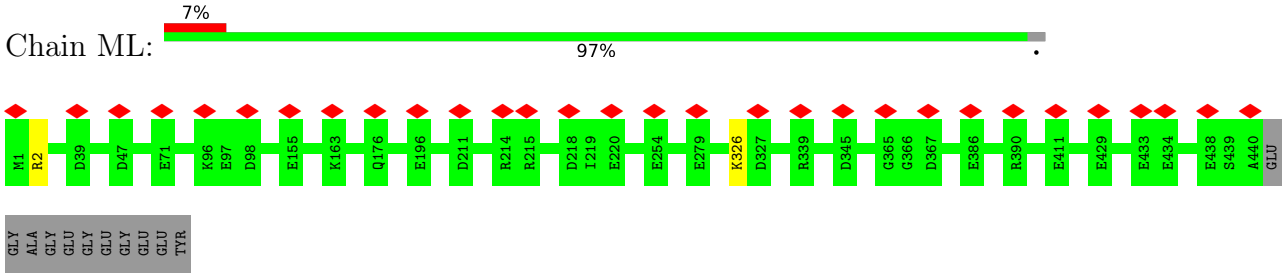
• Molecule 2: Tubulin alpha

Chain MJ:



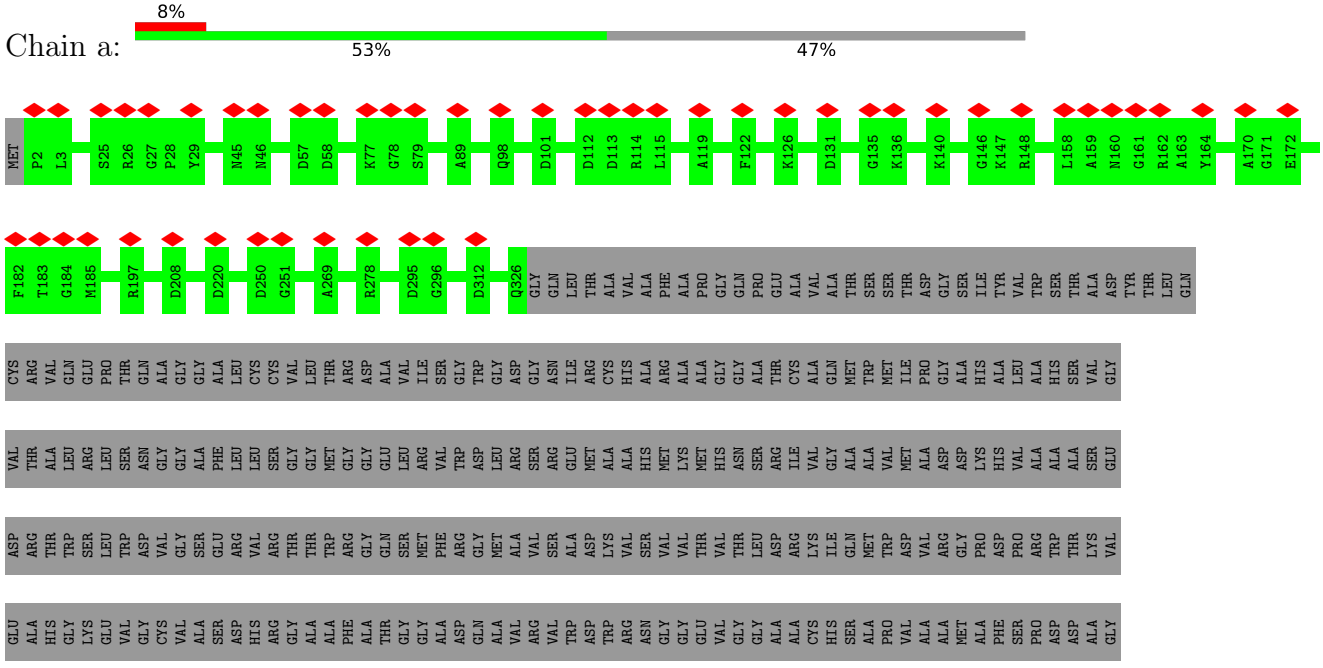
• Molecule 2: Tubulin alpha

Chain ML:



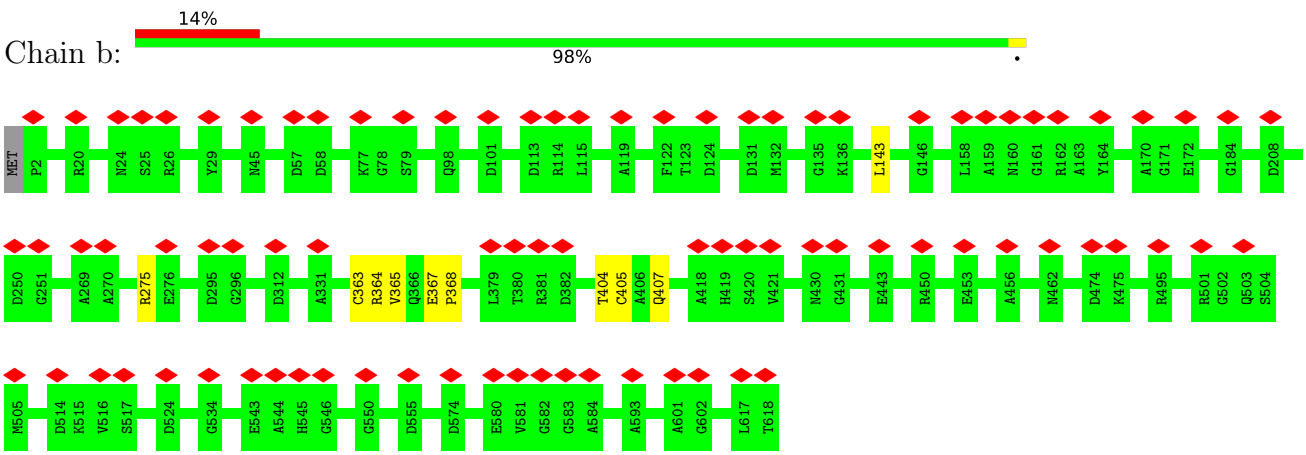
• Molecule 3: Cilia- and flagella-associated protein 20

Chain a:



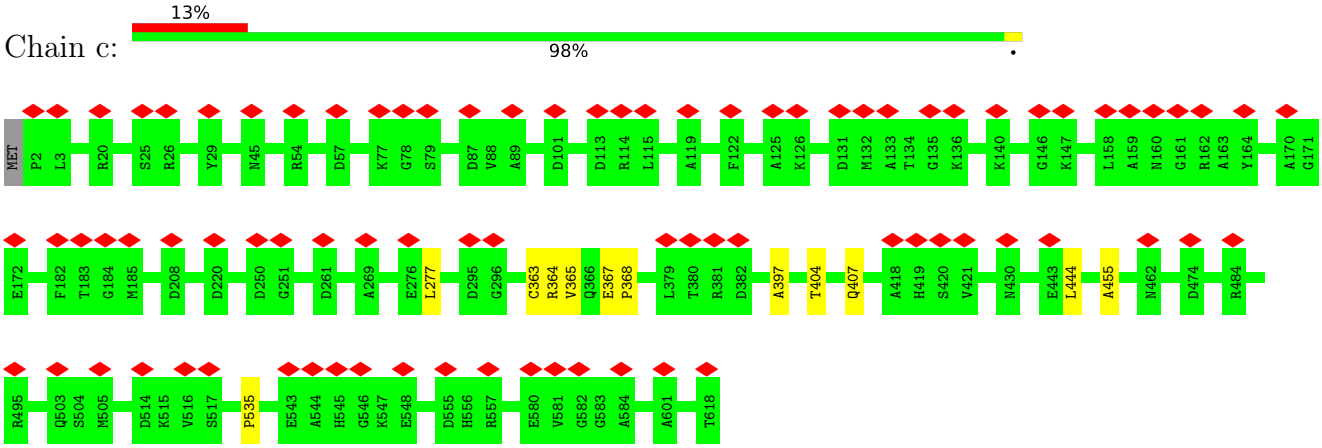
• Molecule 3: Cilia- and flagella-associated protein 20

Chain b:



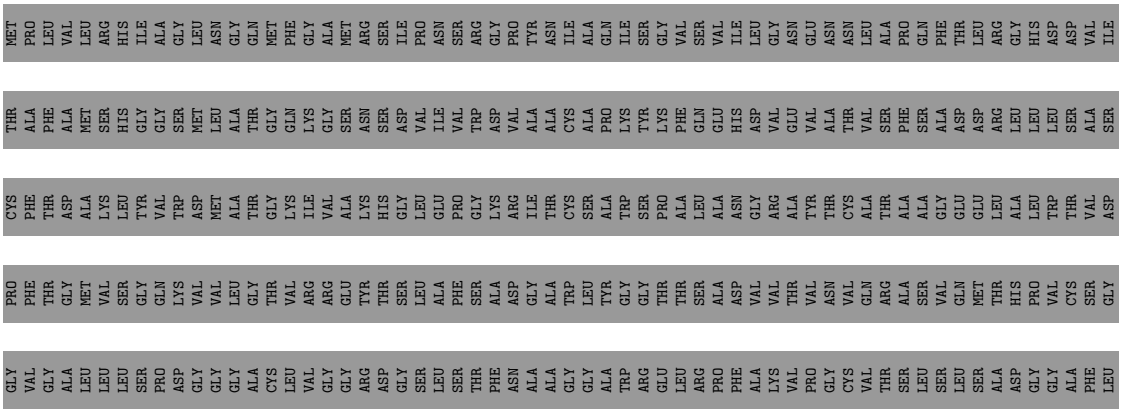
• Molecule 3: Cilia- and flagella-associated protein 20

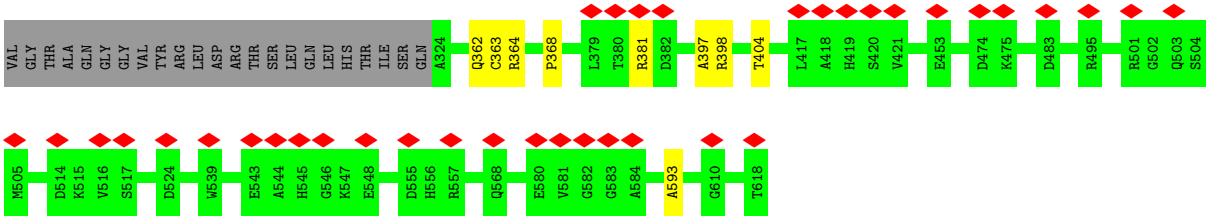
Chain c:



• Molecule 3: Cilia- and flagella-associated protein 20

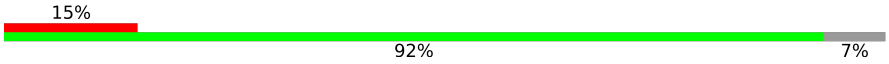
Chain d:

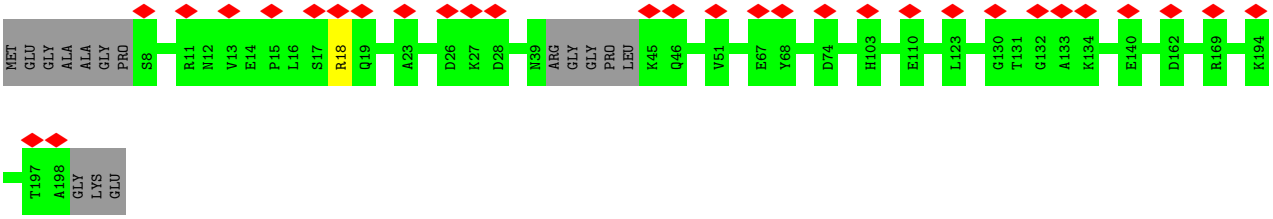




• Molecule 4: Unknown protein

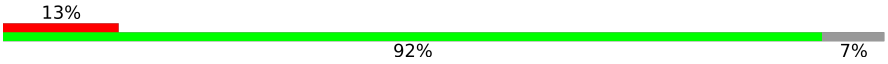
Chain e:

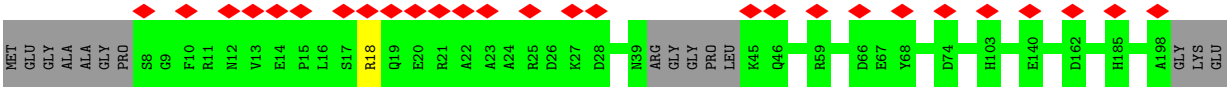




• Molecule 4: Unknown protein

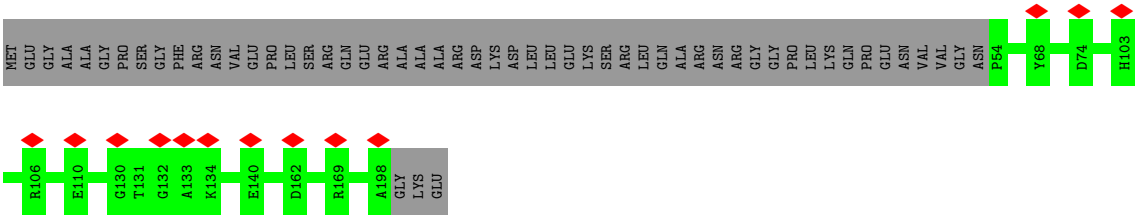
Chain f:





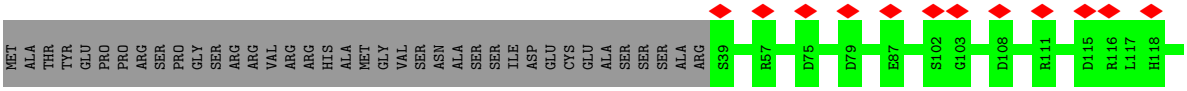
• Molecule 4: Unknown protein

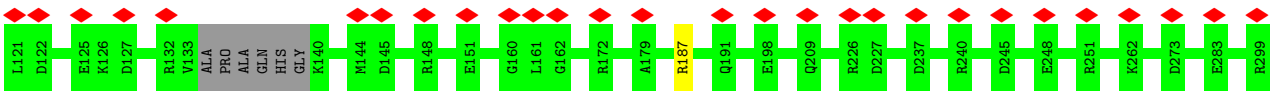
Chain g:

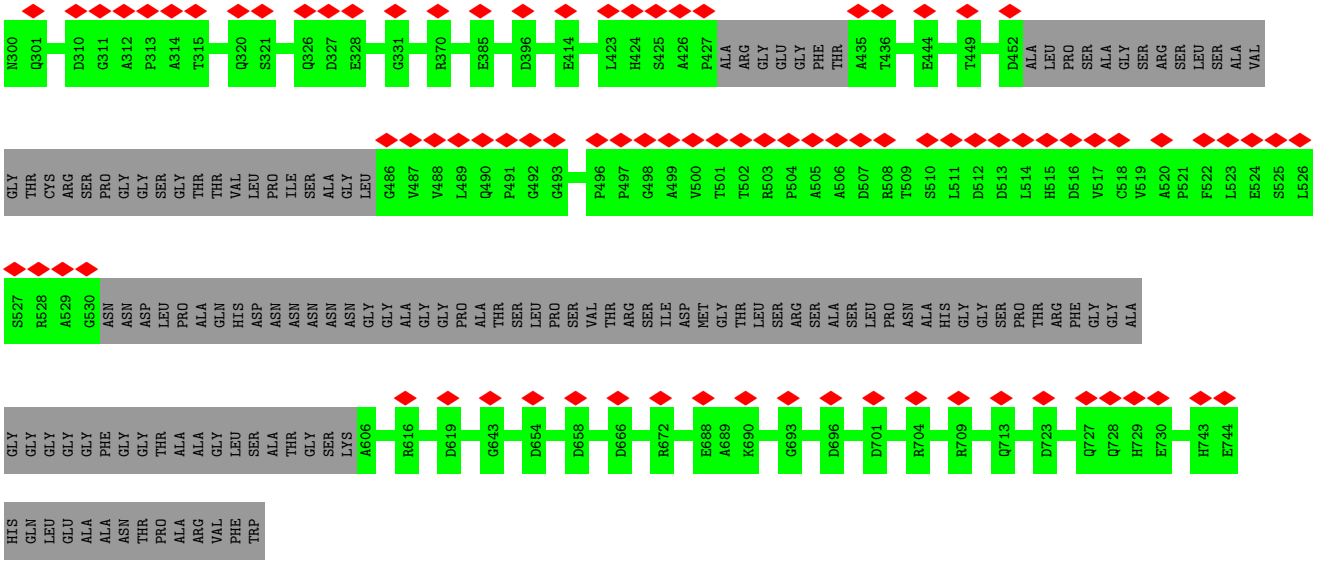


• Molecule 5: Unknown protein

Chain h:

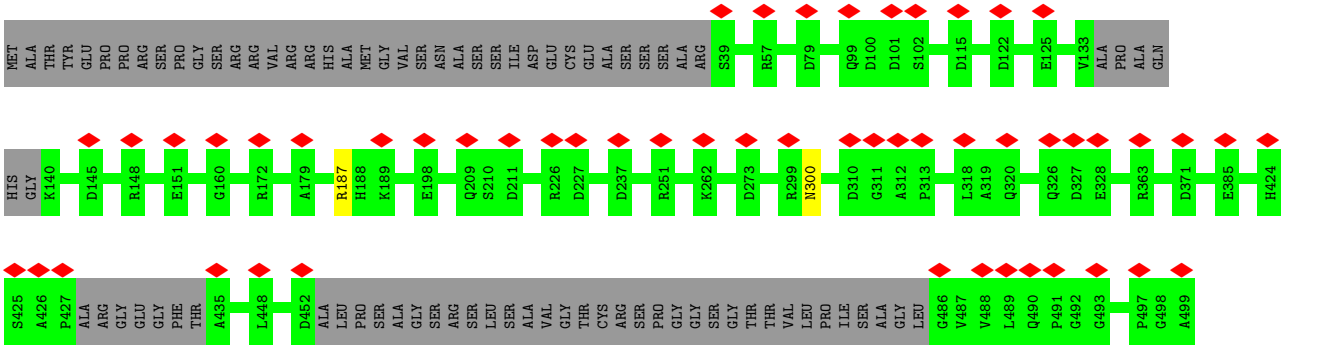






• Molecule 5: Unknown protein

Chain i:



• Molecule 5: Unknown protein

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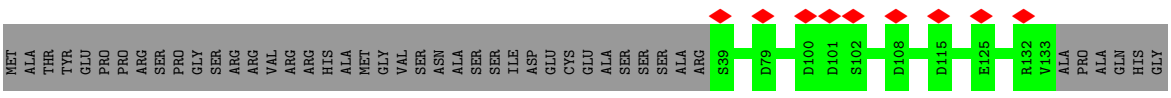
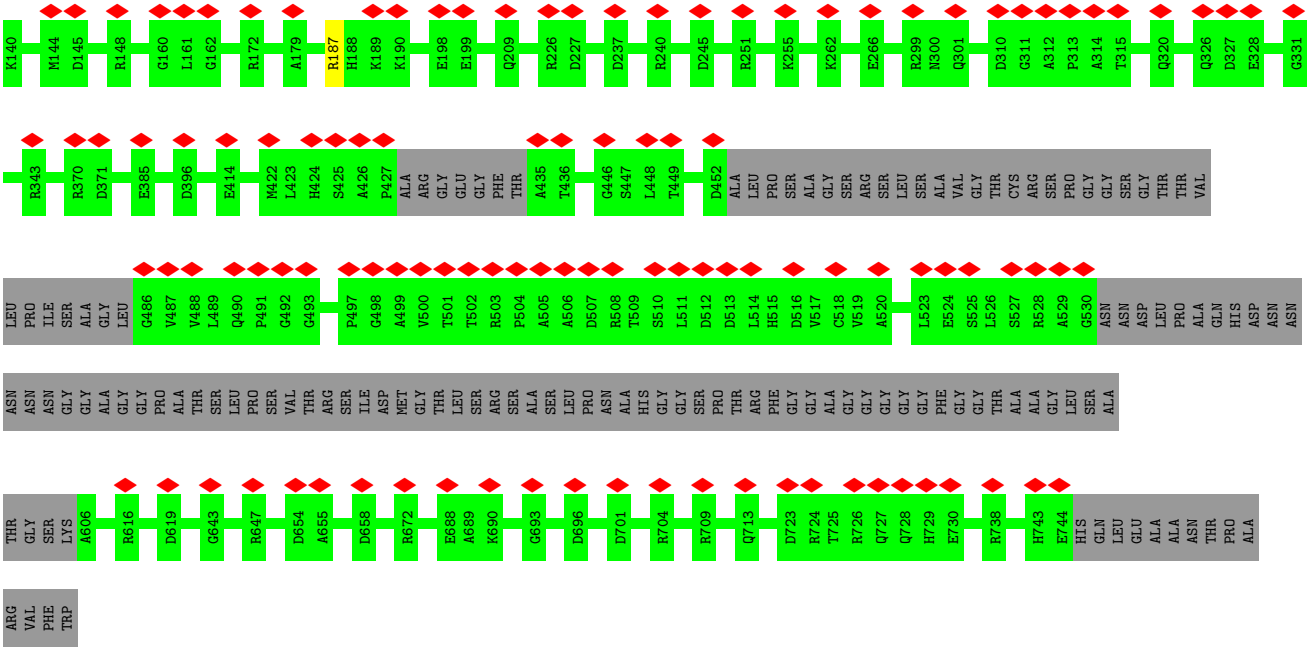
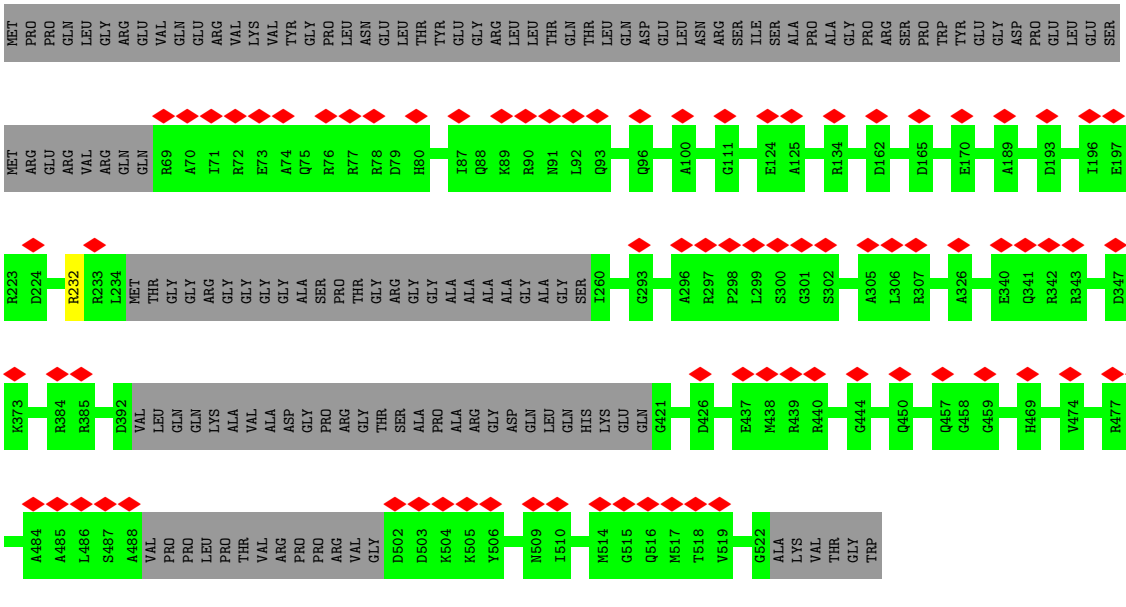




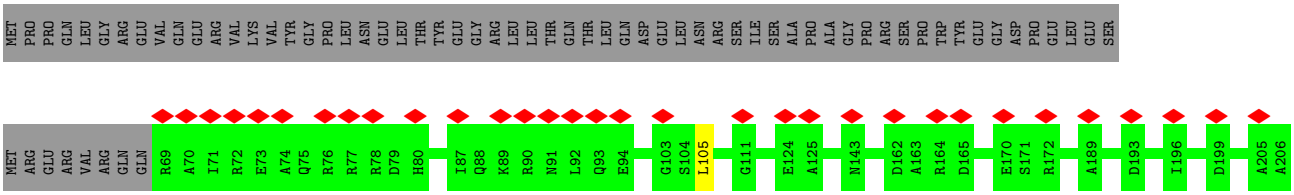
• Molecule 6: Unknown protein

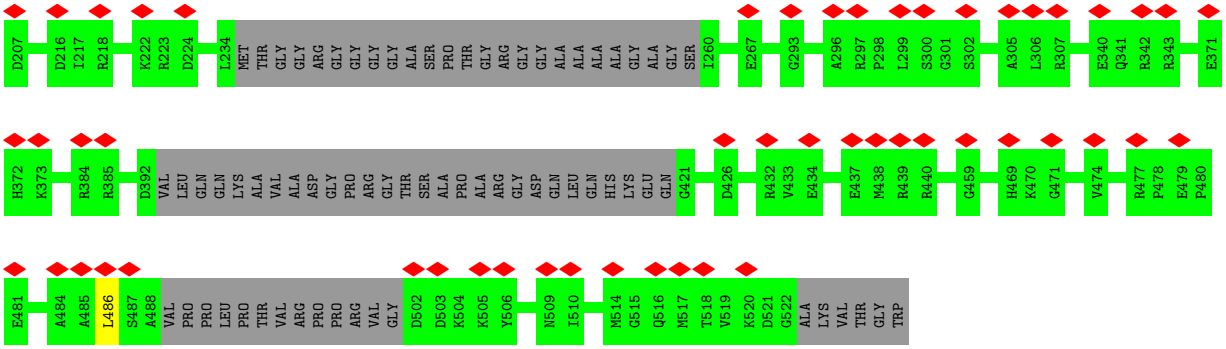
Chain k:



• Molecule 6: Unknown protein

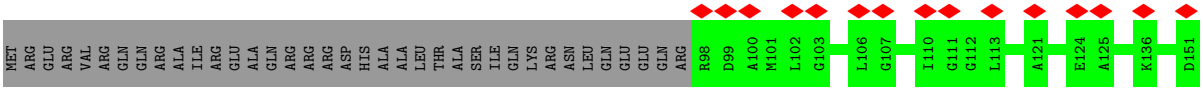
Chain l:

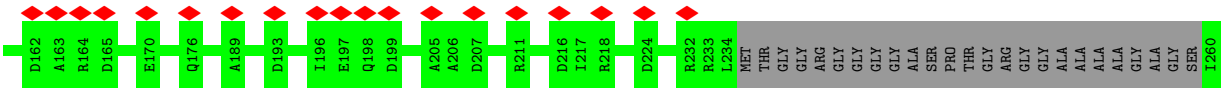


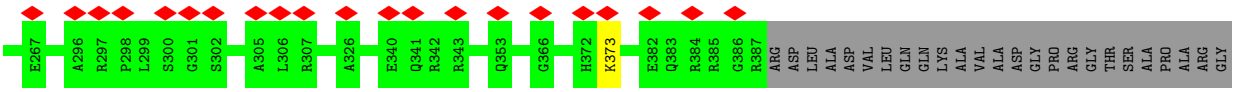


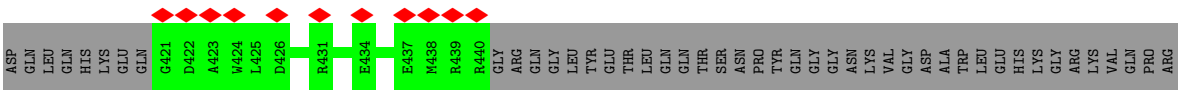
• Molecule 6: Unknown protein

Chain s:



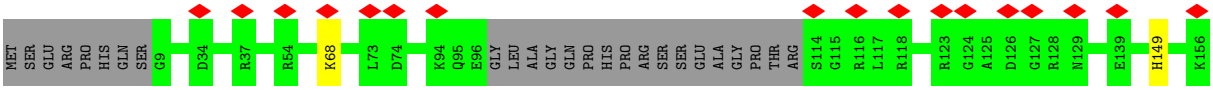


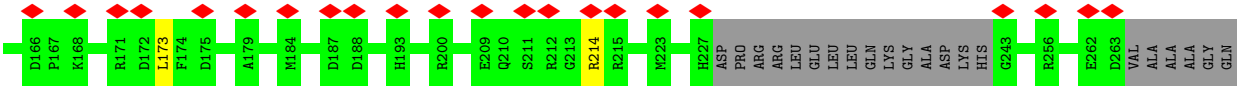


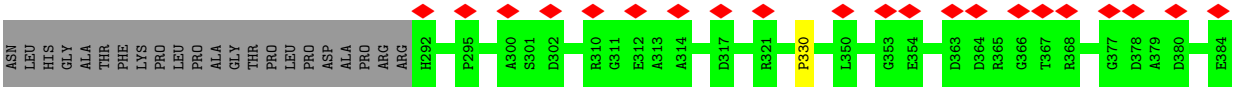


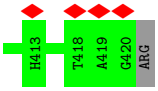
• Molecule 7: FAP65

Chain m:



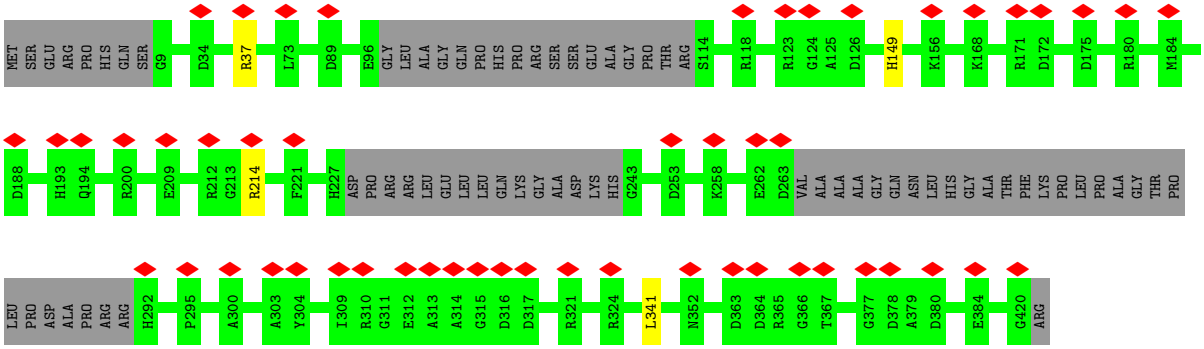






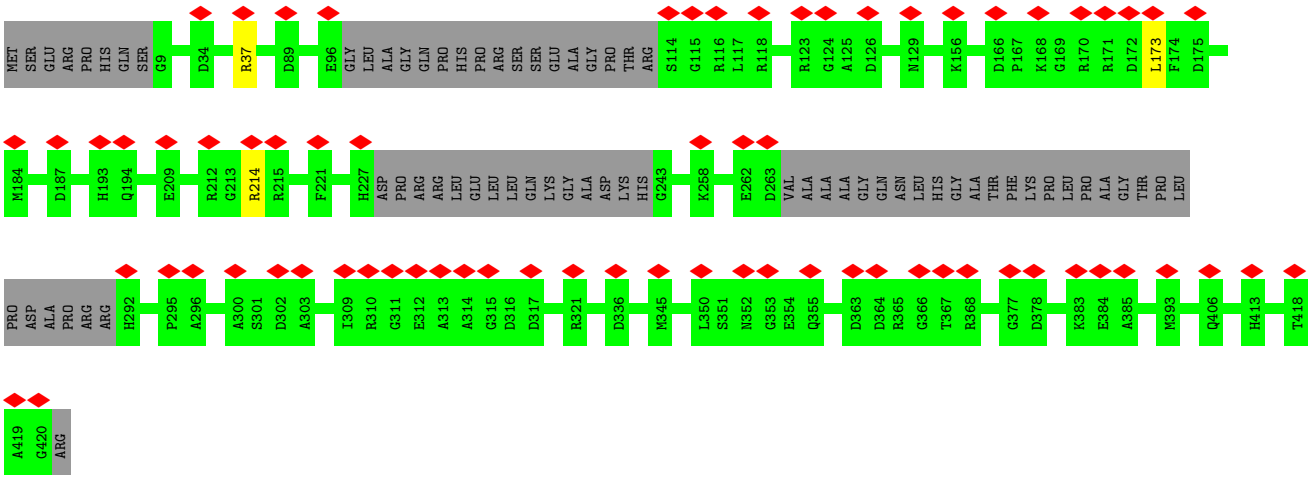
• Molecule 7: FAP65

Chain n:



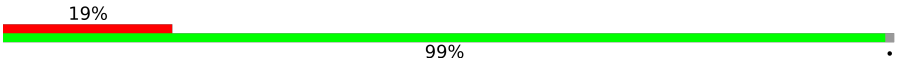
• Molecule 7: FAP65

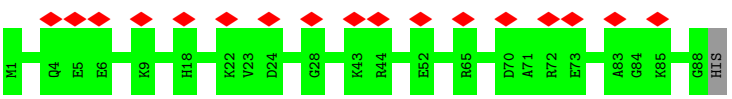
Chain o:



• Molecule 8: FAP70

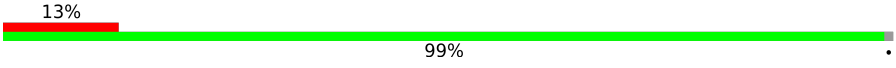
Chain p:

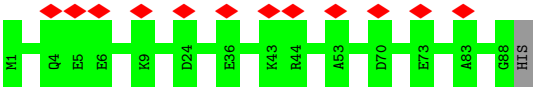




• Molecule 8: FAP70

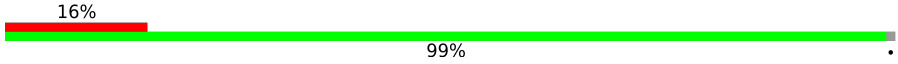
Chain q:

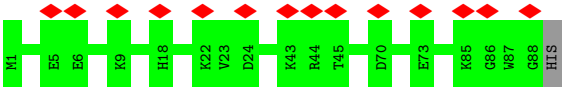




• Molecule 8: FAP70

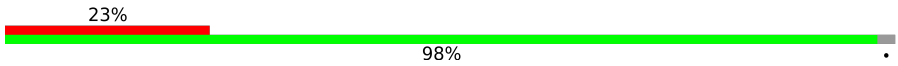
Chain r:

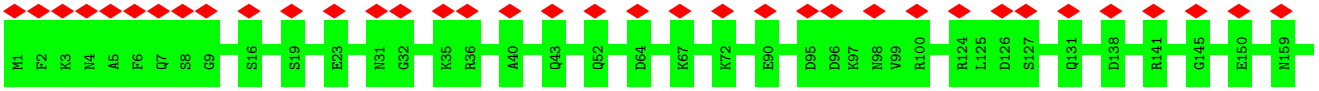


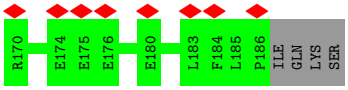


• Molecule 9: FAP147

Chain A:







• Molecule 9: FAP147

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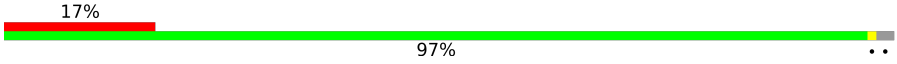
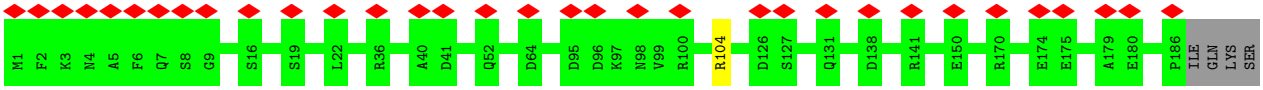
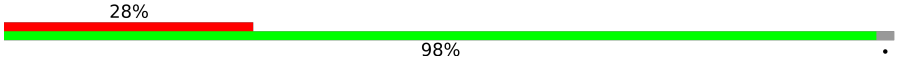
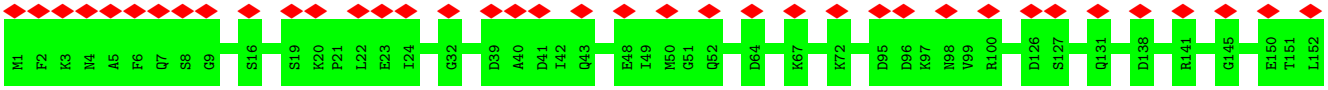


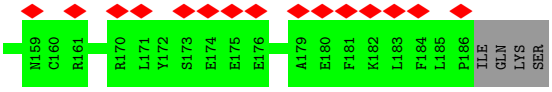


• Molecule 9: FAP147

Chain C:

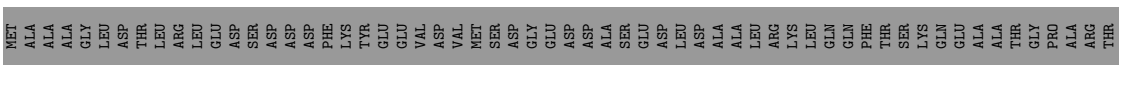


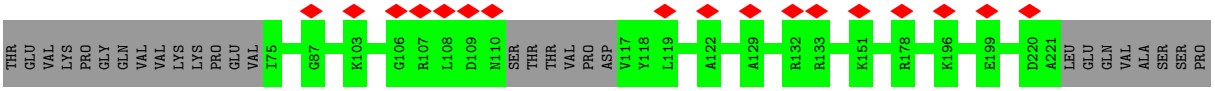


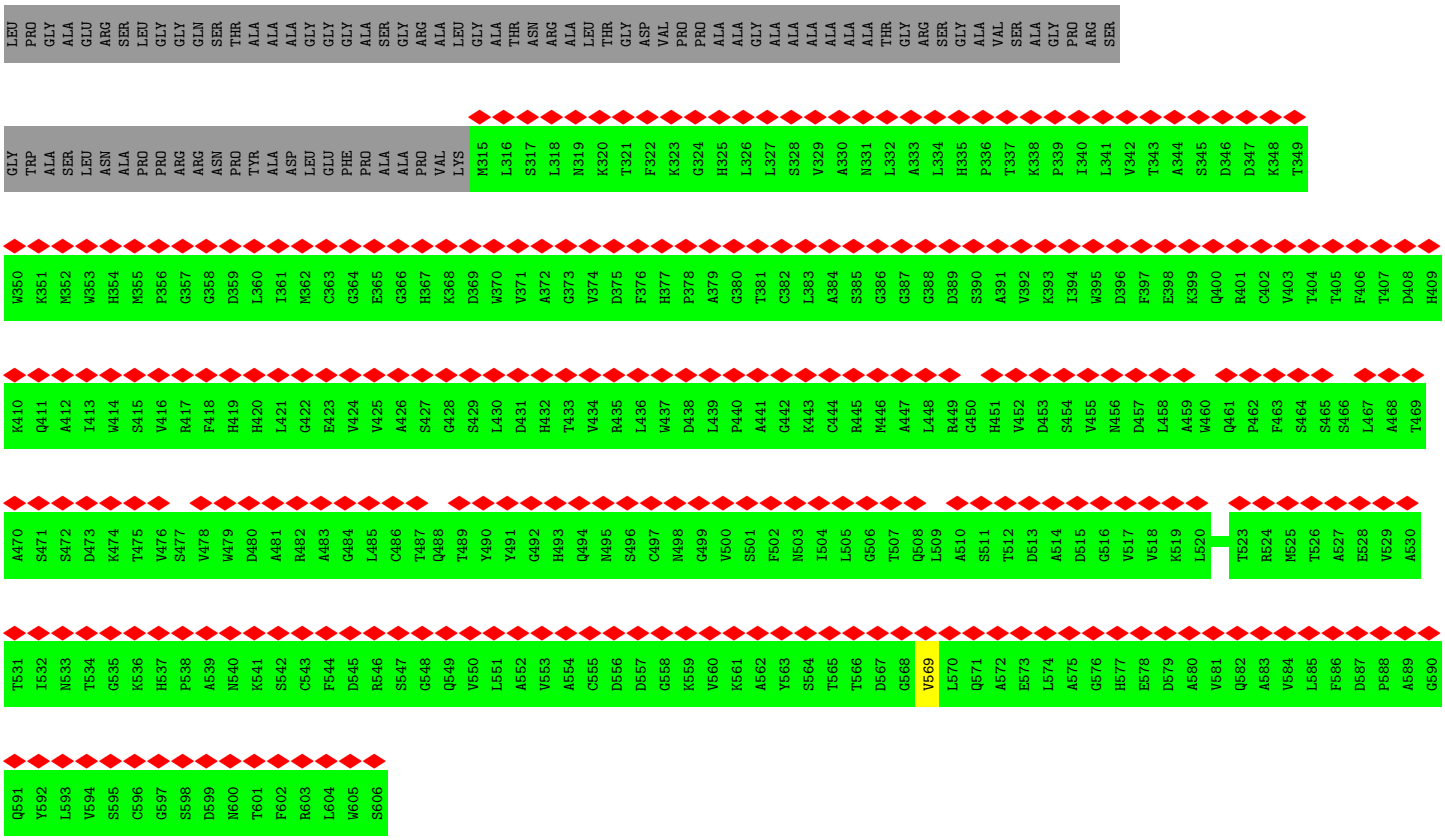


• Molecule 10: FAP178

Chain P:

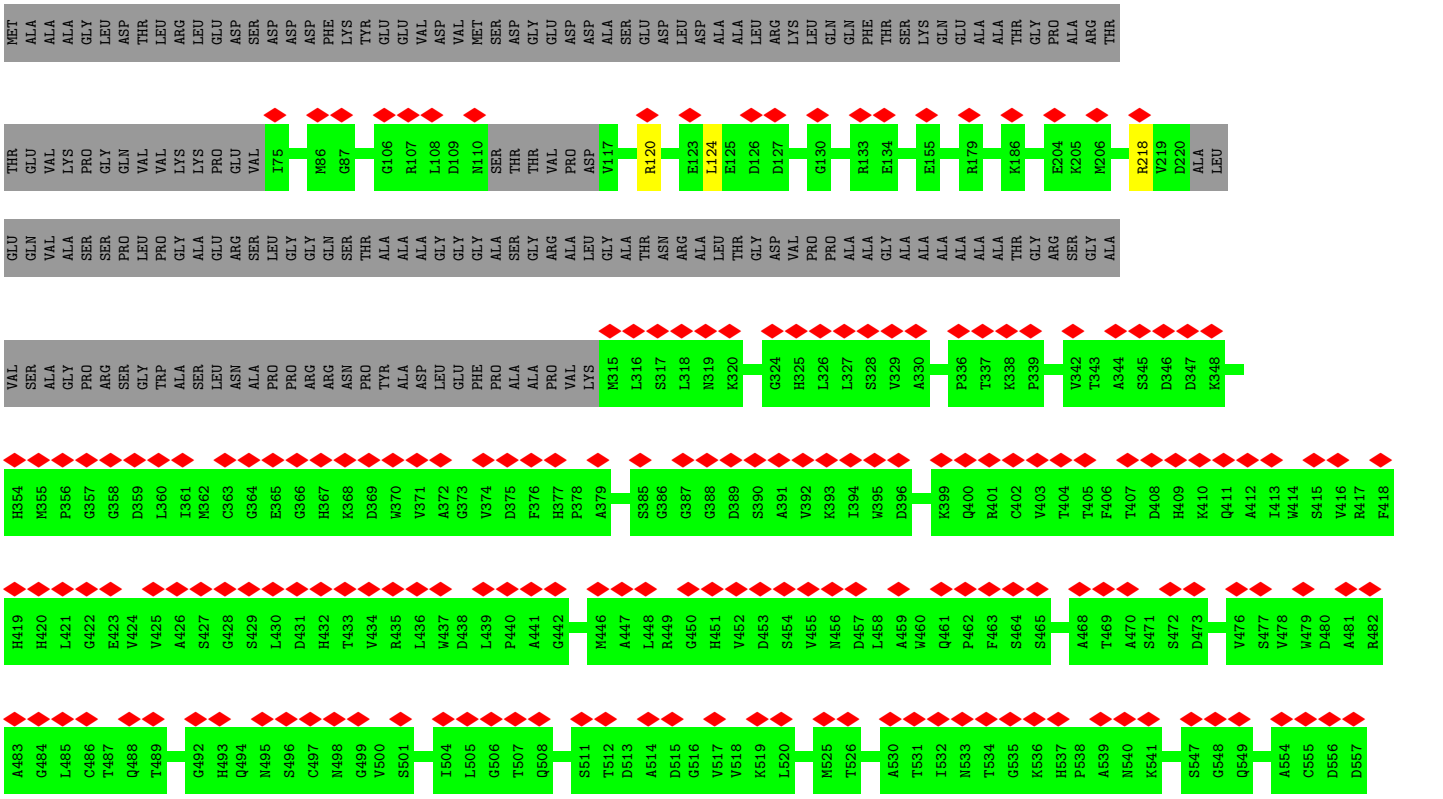


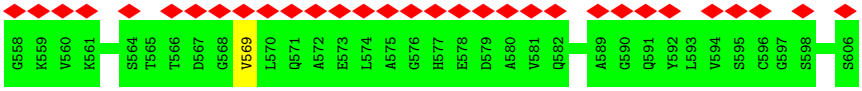




• Molecule 10: FAP178

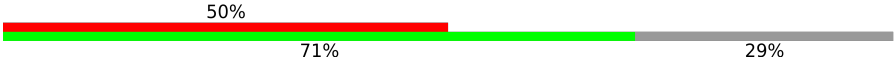
Chain Q:

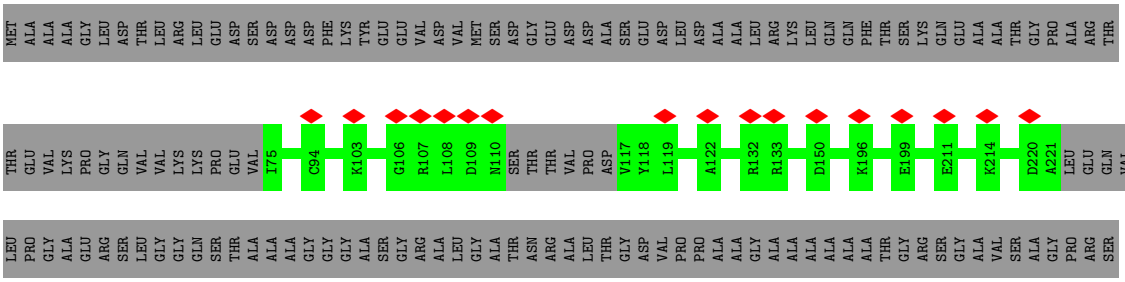




• Molecule 10: FAP178

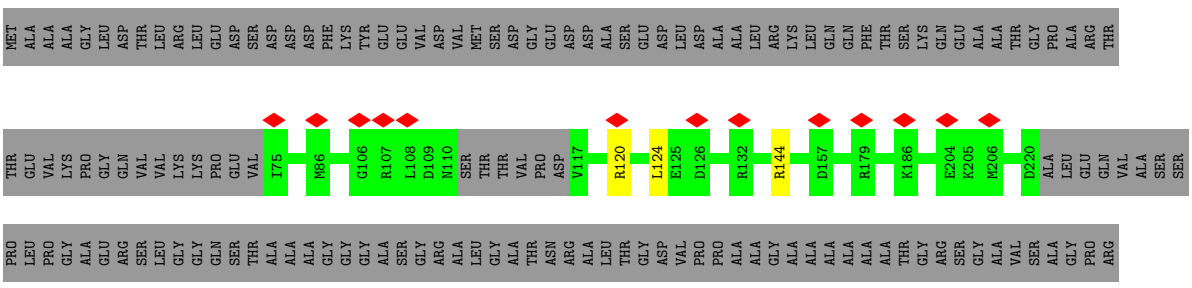
Chain R:

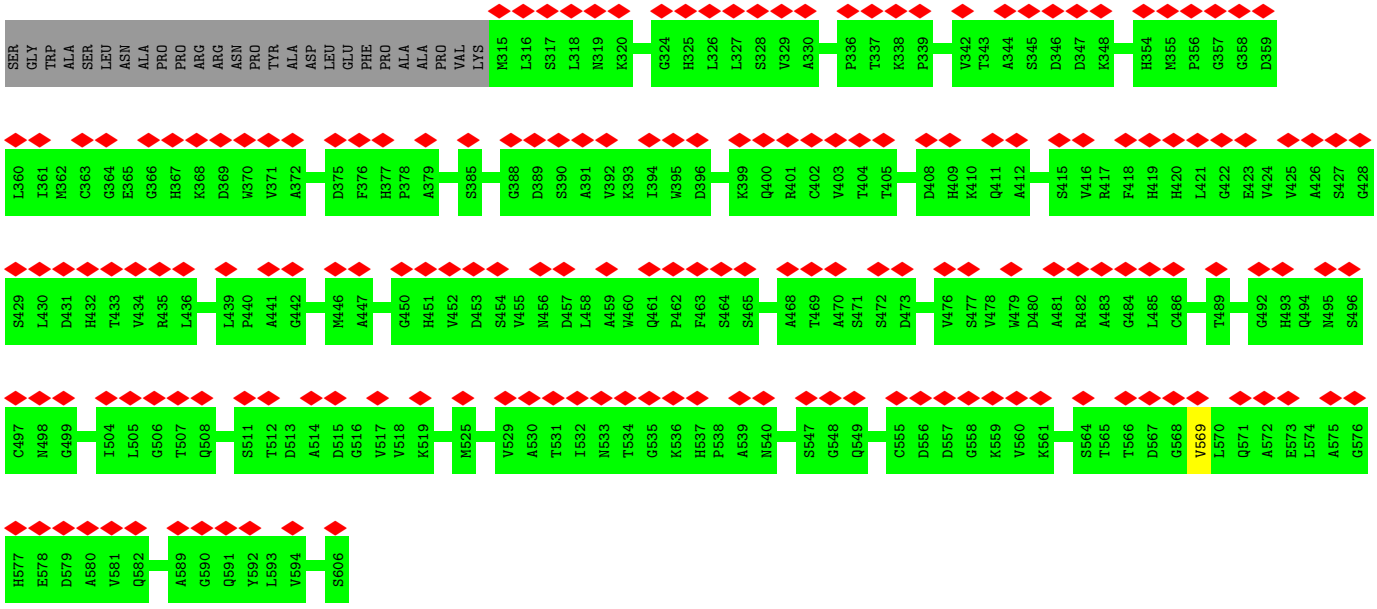




• Molecule 10: FAP178

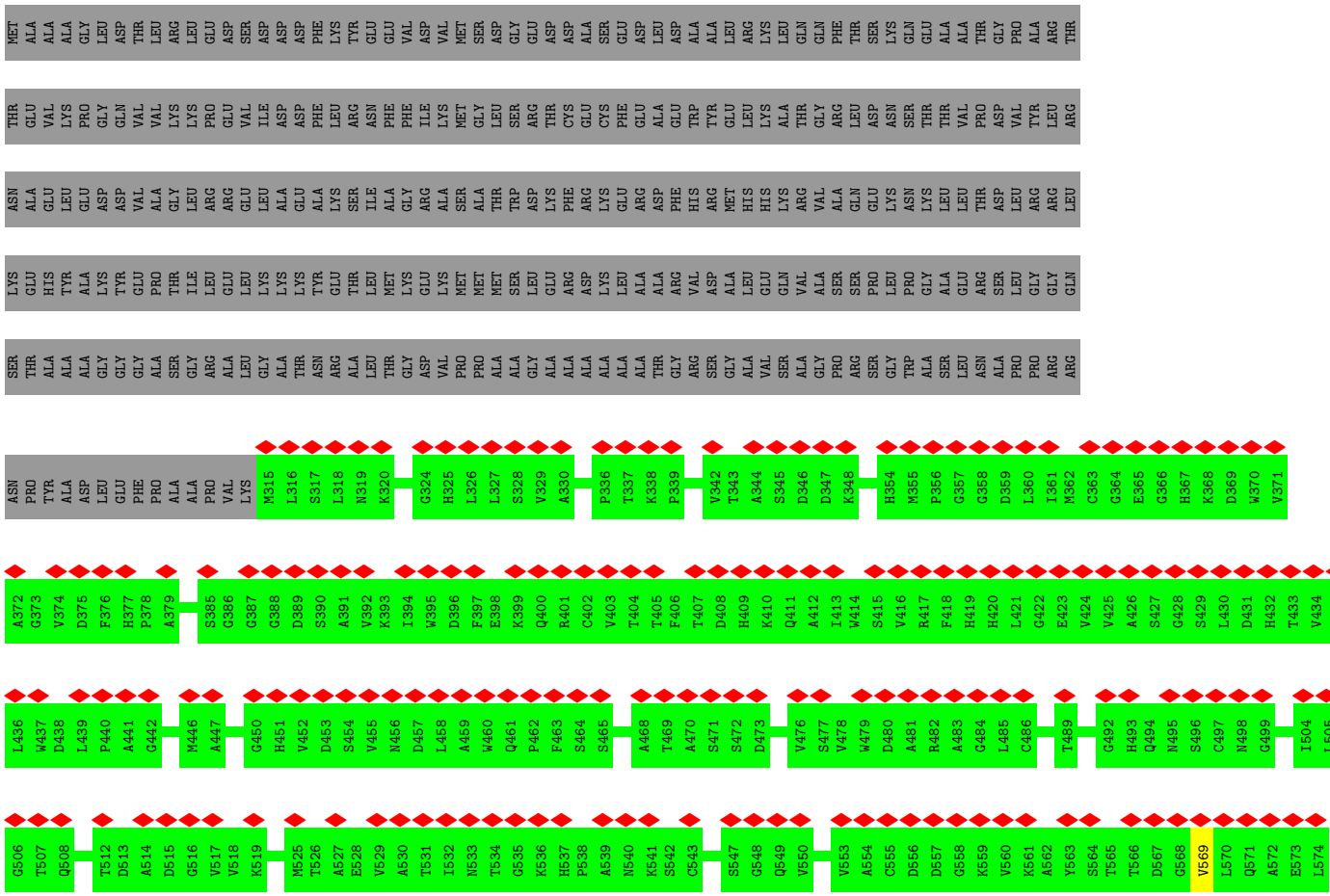
Chain S:

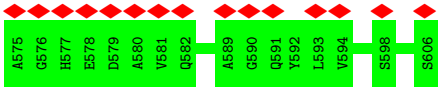




• Molecule 10: FAP178

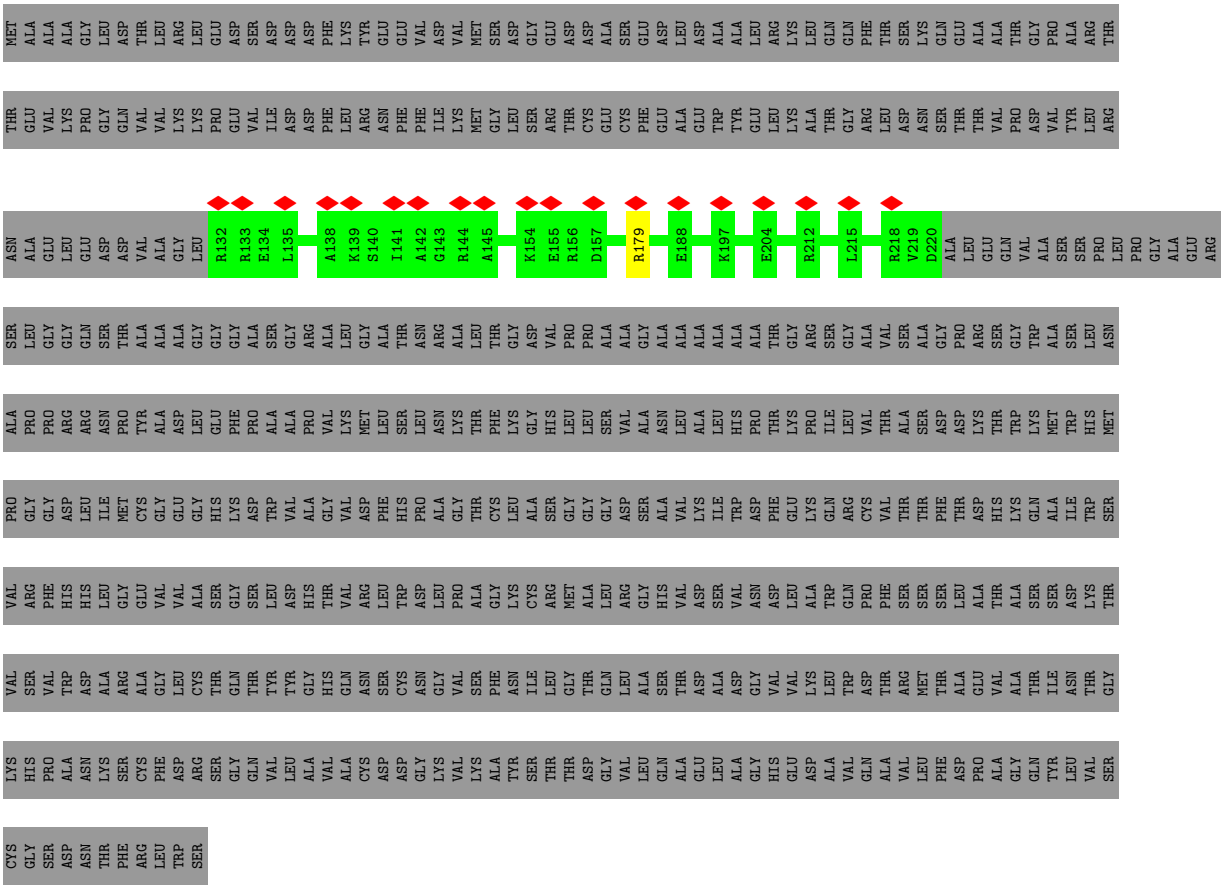
Chain aa:





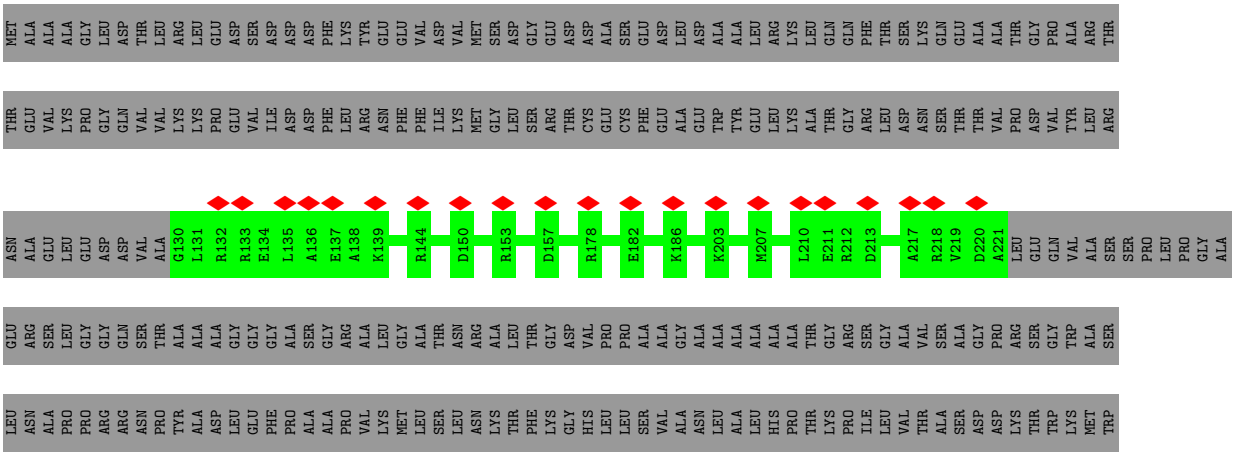
• Molecule 10: FAP178

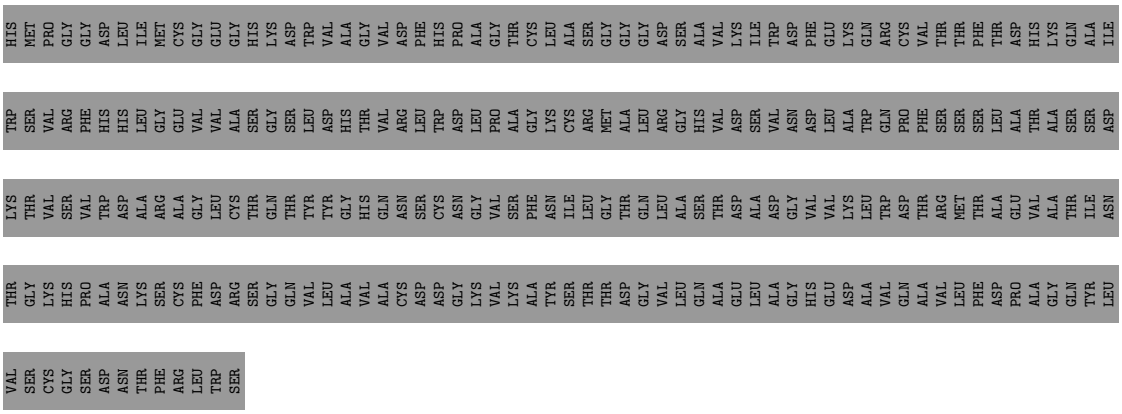
Chain cc:



• Molecule 10: FAP178

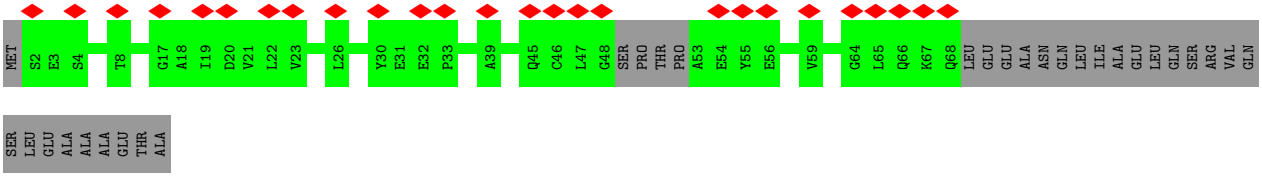
Chain Z:





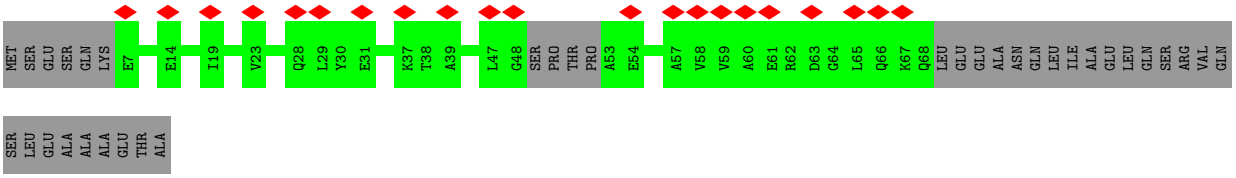
• Molecule 11: Flagellar WD repeat-containing protein Pf20

Chain T:



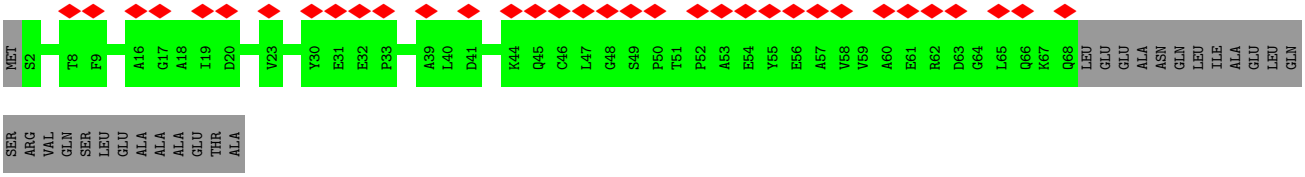
• Molecule 11: Flagellar WD repeat-containing protein Pf20

Chain U:



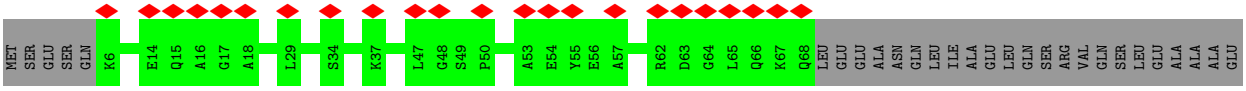
• Molecule 11: Flagellar WD repeat-containing protein Pf20

Chain V:



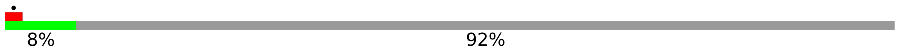
• Molecule 11: Flagellar WD repeat-containing protein Pf20

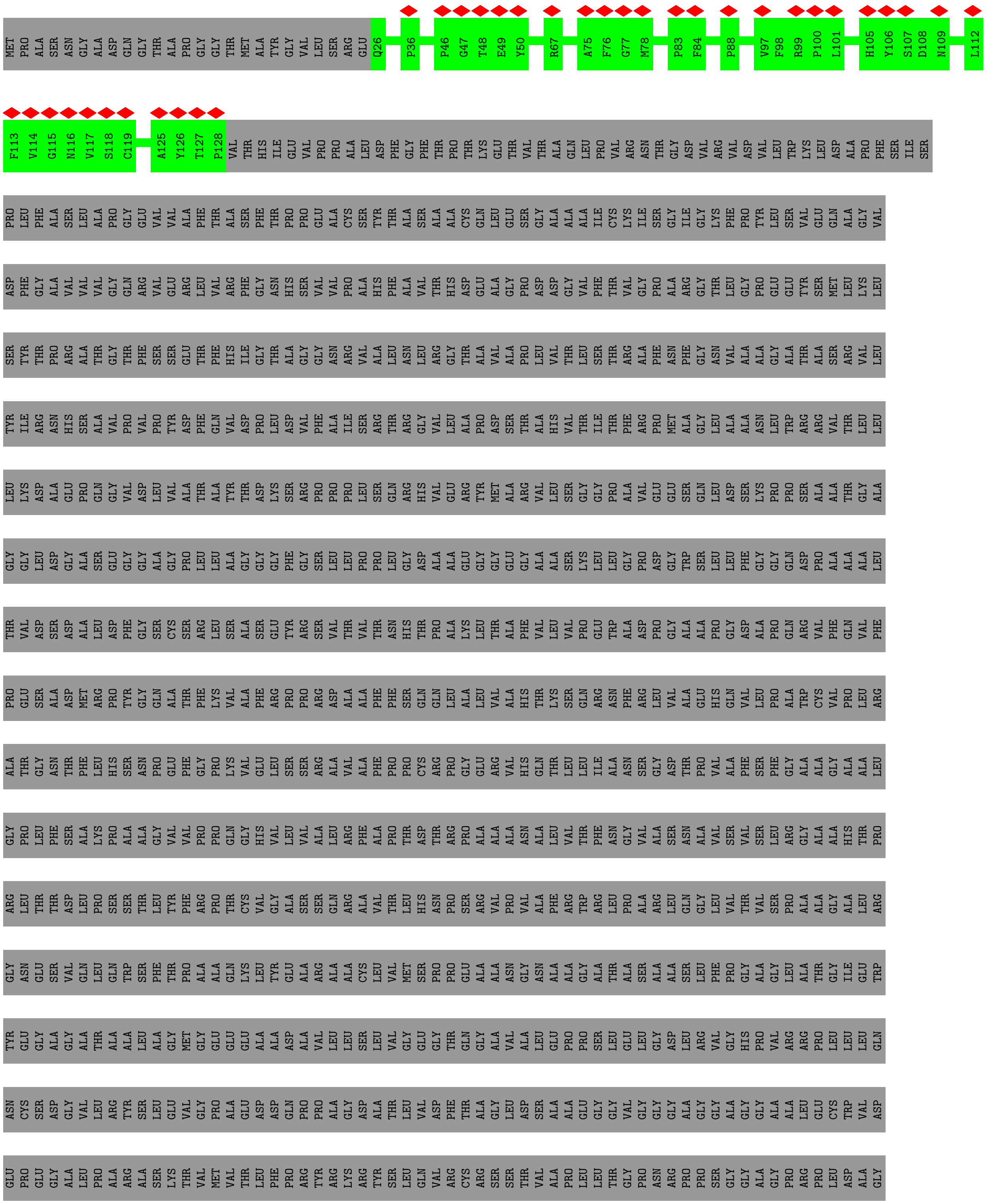
Chain W:

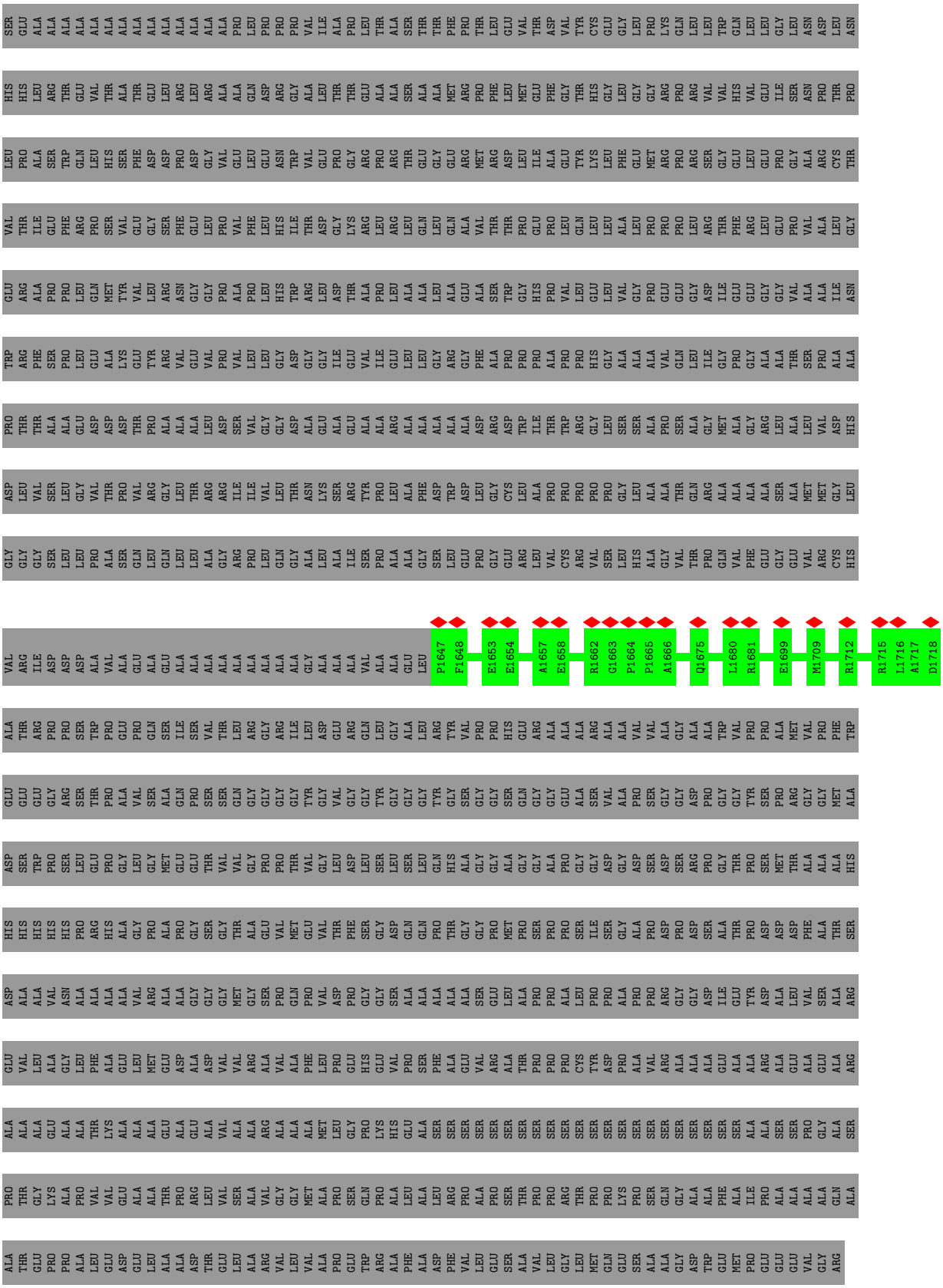


• Molecule 12: Flagellar associated protein

Chain bb:



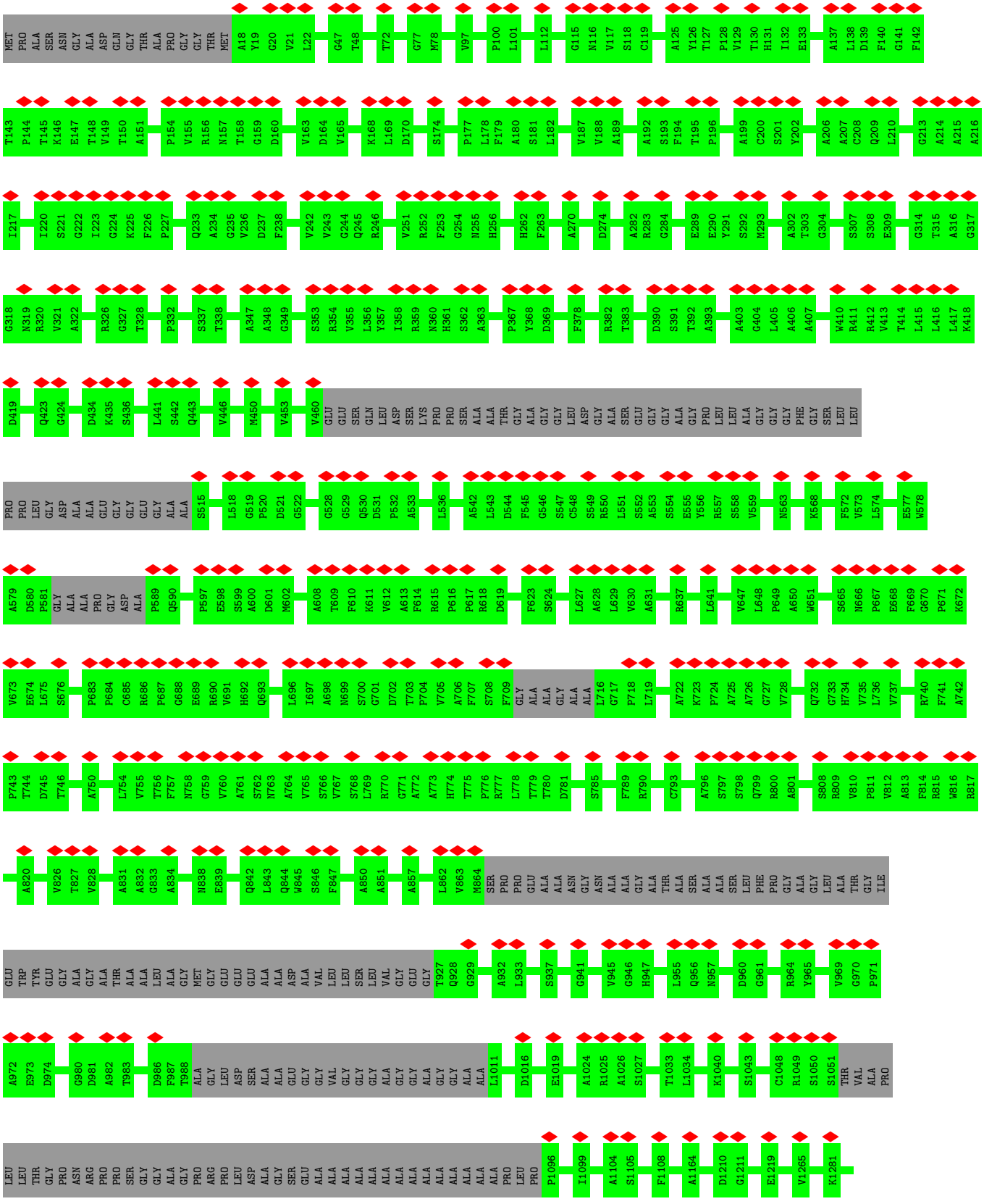




• Molecule 12: Flagellar associated protein

Chain D:


20%
67%
33%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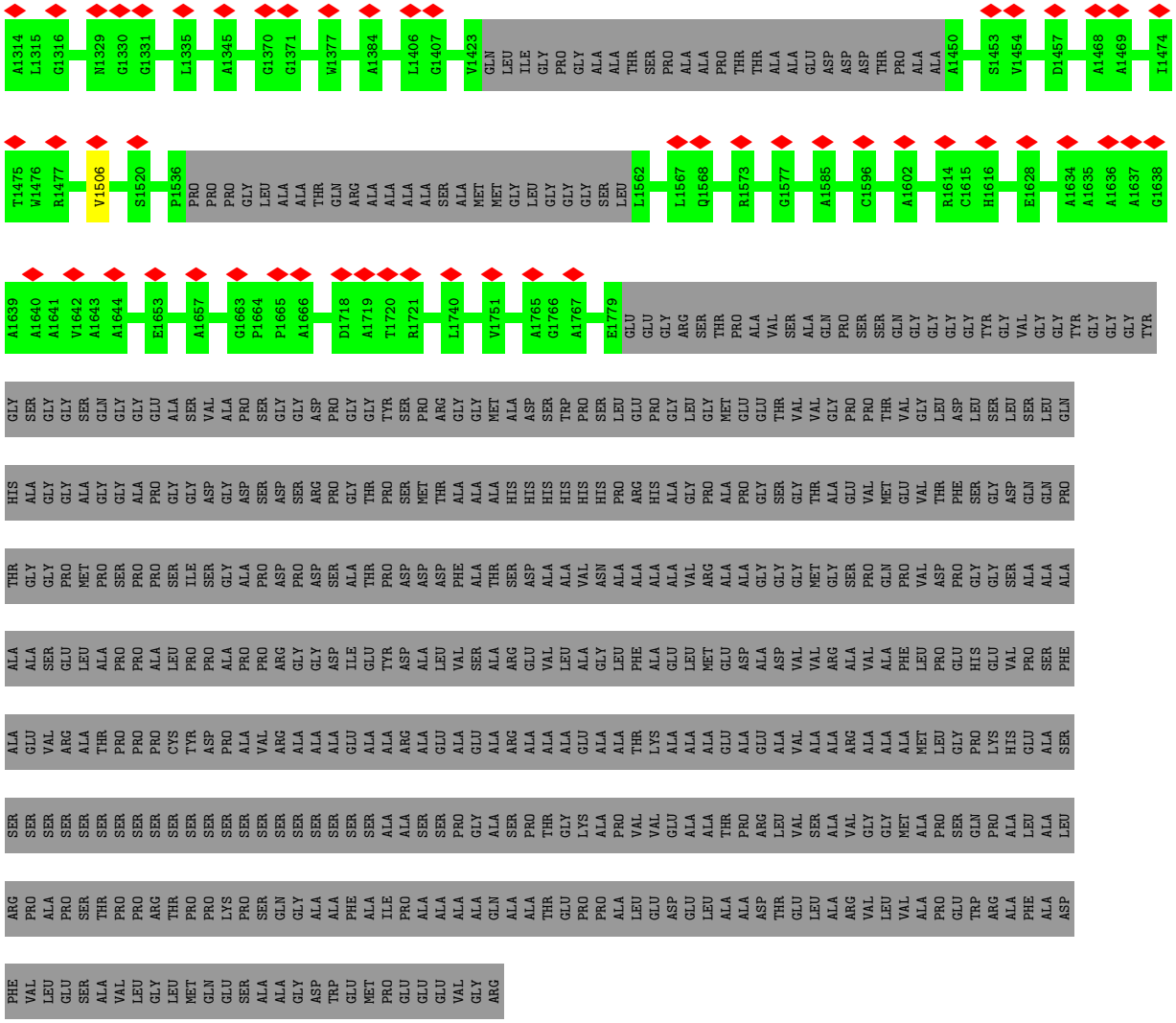
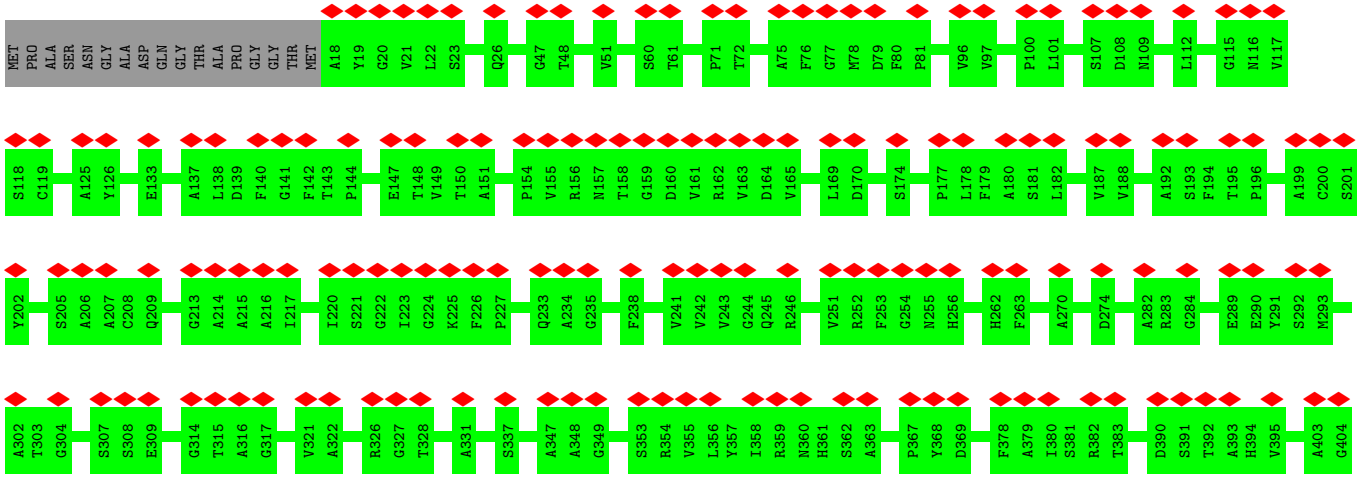
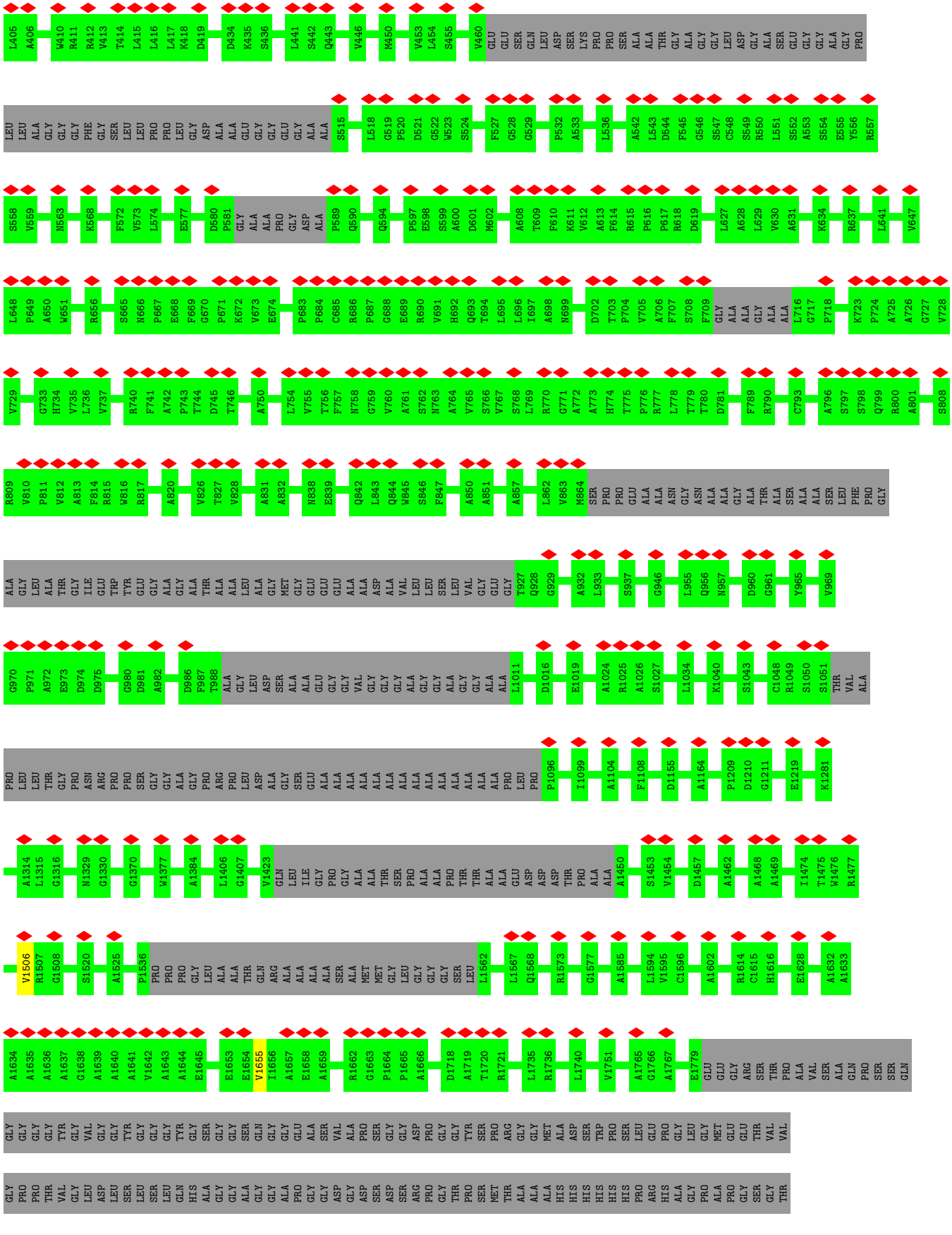
T143 P144 T145 K146 E147 T148 V149 T150 A151 P154 V155 R156 N157 T158 G159 D160 V163 D164 V165 K168 L169 D170 S174 P177 L178 F179 A180 S181 L182 V187 V188 A189 A192 S193 F194 T195 P196 A199 C200 S201 Y202 A206 A207 C208 Q209 L210 G213 A214 A215 A216
I217 I220 S221 G222 I223 G224 K225 F226 P227 Q233 A234 G235 V236 D237 F238 V242 V243 G244 Q245 R246 V251 R252 F253 G254 N255 H256 H262 F263 A270 D274 A282 R283 G284 E289 E290 Y291 S292 M293 A302 T303 G304 S307 S308 E309 G314 T315 A316 G317
G318 N319 R320 V321 A322 R326 G327 T328 P332 S337 T338 A347 A348 G349 S353 R354 V355 L356 Y357 I358 R359 N360 H361 S362 A363 P367 Y368 D369 F378 R382 T383 D390 S391 T392 A393 A403 G404 L405 A406 A407 W410 R411 R412 V413 T414 L415 L416 L417 K418
D419 Q423 G424 D434 K435 S436 L441 S442 Q443 V446 M450 V453 V460 GLU GLU SER GLN LEU ASP SER LYS PRO PRO SER ALA ALA THR GLY ALA GLY GLY LEU ASP GLY ALA SER GLU GLY GLY ALA GLY PRO LEU LEU ALA GLY GLY GLY PHE GLY SER LEU LEU
PRO PRO LEU GLY ASP ALA ALA GLU GLY GLY GLU GLY GLU GLY ALA ALA S515 L518 G519 P520 D521 G522 G528 G529 Q530 D531 P532 A533 L536 A542 L543 D544 F545 G546 S547 C548 S549 R550 L551 S552 A553 S554 E555 Y556 R557 S558 V559 N563 K568 F572 V573 L574 E577 W578
A579 D580 P581 GLY ALA ALA PRO GLY ASP ALA P589 Q590 P597 E598 S599 A600 D601 M602 A608 T609 F610 K611 V612 A613 F614 R615 P616 P617 R618 D619 F623 S624 L627 A628 L629 V630 A631 R637 L641 V647 L648 P649 A650 W651 S665 N666 P667 E668 F669 G670 P671 K672
V673 E674 L675 S676 P683 P684 C685 R686 P687 G688 E689 R690 V691 H692 Q693 L696 I697 A698 N699 S700 G701 D702 T703 P704 V705 A706 F707 S708 F709 GLY ALA ALA GLY ALA ALA L716 G717 P718 L719 A722 K723 P724 A725 A726 G727 V728 Q732 G733 H734 V735 L736 V737 R740 F741 A742
P743 T744 D745 T746 A750 L754 V755 T756 F757 W758 G759 V760 A761 S762 N763 A764 V765 S766 V767 S768 L769 R770 G771 A772 A773 H774 T775 P776 R777 L778 T779 T780 D781 S785 F789 R790 C793 A796 S797 S798 Q799 R800 A801 S808 R809 V810 P811 V812 A813 F814 R815 W816 R817
A820 V826 T827 V828 A831 A832 G833 A834 N838 E839 Q842 L843 Q844 W845 S846 F847 A850 A851 A857 L862 V863 M864 SER PRO PRO GLU ALA ALA ASN GLY ASN ALA ALA GLY ALA THR ALA SER ALA ALA SER LEU PHE PRO PRO GLY ALA GLY LEU ALA THR GLY ILE
GLU TRP TYR GLU GLY ALA GLY ALA THR ALA ALA ALA LEU ALA GLY MET GLY GLU GLU GLU ALA ALA ASP ALA VAL LEU LEU SER LEU VAL GLY GLU GLY T927 Q928 G929 A932 L933 S937 G941 V945 G946 H947 L955 Q956 N957 D960 G961 R964 Y965 V969 G970 P971
A972 E973 D974 G980 D981 A982 T983 D986 F987 T988 ALA GLY LEU ASP SER ALA ALA ALA GLU GLY GLY VAL GLY GLY GLY ALA GLY ALA GLY GLY ALA GLY GLY ALA ALA L1011 D1016 E1019 A1024 R1025 A1026 S1027 T1033 L1034 K1040 S1043 C1048 R1049 S1050 S1051 THR VAL ALA PRO
LEU LEU THR GLY PRO PRO ASN ARG PRO PRO PRO SER GLY GLY GLY ALA GLY PRO PRO LEU ASP ALA ALA GLY SER GLU GLY ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA PRO LEU PRO P1096 I1099 A1104 S1105 F1108 A1164 D1210 G1211 E1219 V1265 K1281



• Molecule 12: Flagellar associated protein

Chain E:

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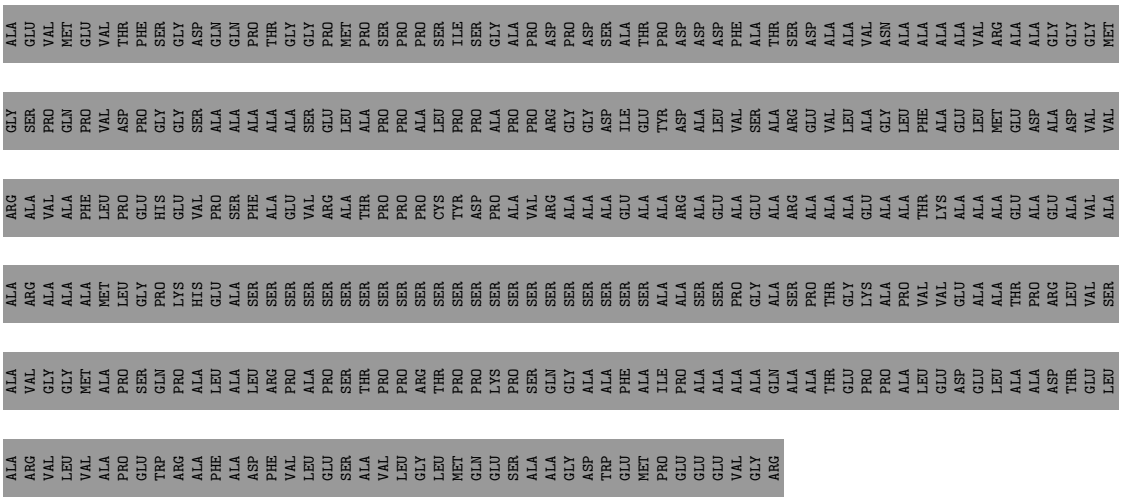
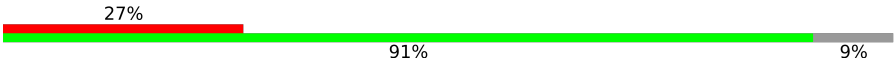
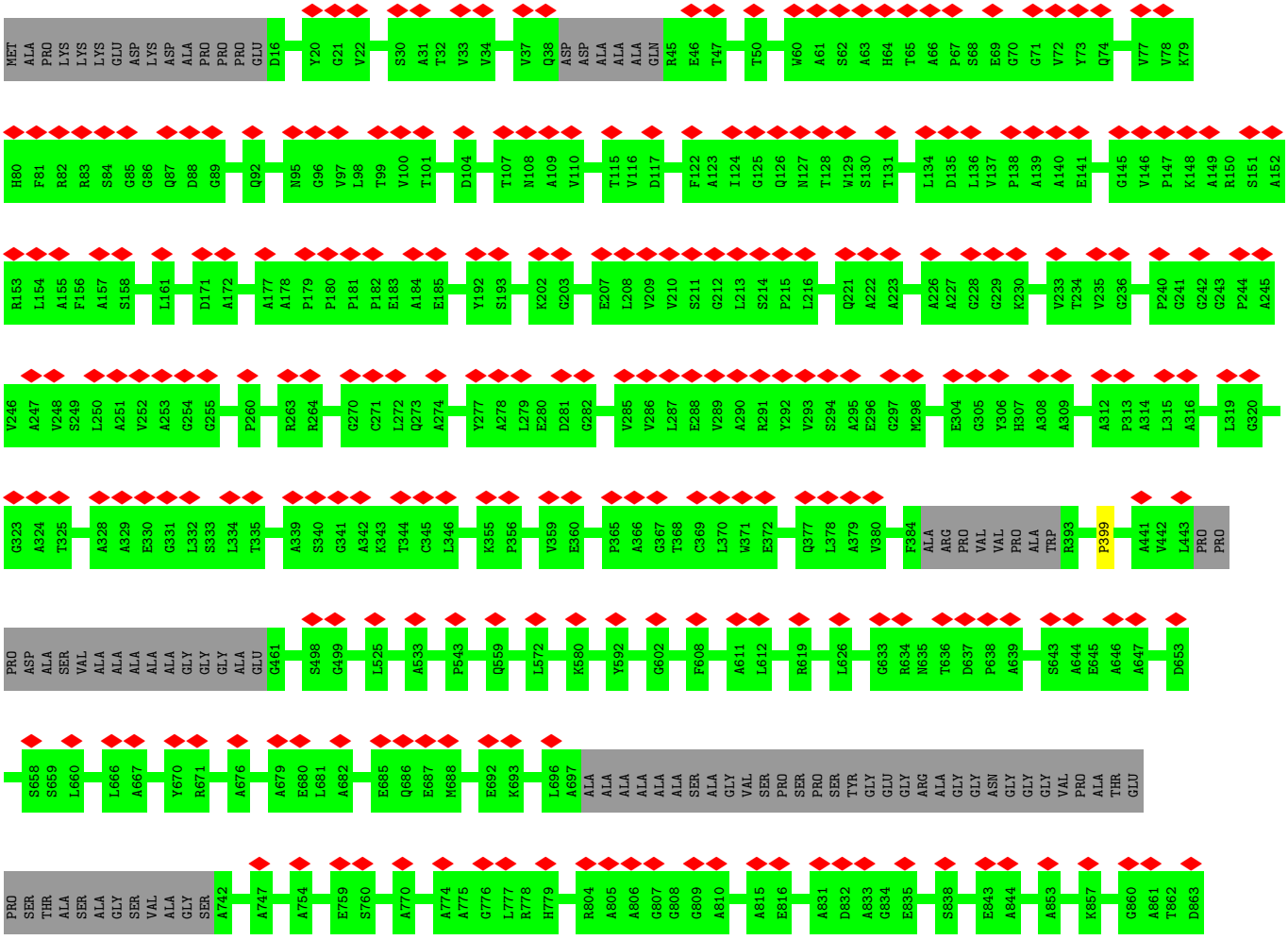
LEU LEU ALA GLY GLY GLY PHE GLY SER LEU LEU PRO PRO LEU GLY ASP ALA ALA ALA GLU GLY GLY GLU GLY ALA ALA S515 L518 G519 P520 D521 G522 W523 S524 F527 G528 G529 P532 A533 L536 A542 L543 D544 F545 G546 S547 C548 S549 R550 L551 S552 A553 S554 E555 Y556 R557
S558 V559 N563 K568 F572 V573 L574 E577 D580 P581 GLY ALA ALA PRO GLY ASP ALA P589 Q590 Q594 P597 E598 S599 A600 D601 M602 A608 T609 F610 K611 V612 A613 F614 R615 P616 P617 R618 D619 L627 A628 L629 V630 A631 K634 R637 L641 V647
L648 P649 A650 W651 R656 S665 N666 P667 E668 F669 G670 P671 K672 V673 E674 P683 P684 C685 R686 P687 G688 E689 R690 V691 H692 Q693 T694 L695 L696 I697 A698 N699 D702 T703 P704 V705 A706 F707 S708 F709 GLY ALA ALA GLY ALA ALA L716 G717 P718 K723 P724 A725 A726 G727 V728
V729 G733 H734 V735 L736 V737 R740 F741 A742 P743 T744 D745 T746 A750 L754 V755 T756 F757 N758 G759 V760 A761 S762 N763 A764 V765 S766 V767 S768 L769 R770 G771 A772 A773 H774 T775 P776 R777 L778 T779 T780 D781 F789 R790 C793 A796 S797 S798 Q799 R800 A801 S808
R809 V810 P811 V812 A813 F814 R815 W816 R817 A820 V826 T827 V828 A831 A832 N838 E839 Q842 L843 Q844 W845 S846 F847 A850 A851 A857 L862 V863 M864 SER PRO PRO GLU ALA ALA ASN GLY ASN ALA ALA GLY ALA THR ALA SER ALA ALA SER LEU PHE PRO GLY
ALA GLY LEU ALA THR GLY ILE GLU TRP TYR GLU GLY GLY ALA GLY ALA THR ALA ALA ALA LEU ALA GLY MET GLY GLU GLU GLU GLY ALA ALA ASP ALA VAL LEU LEU LEU SER LEU VAL GLY GLU GLY T927 Q928 G929 A932 L933 S937 G946 L955 Q956 N957 D960 G961 Y965 V969
G970 P971 A972 E973 D974 D975 G980 D981 A982 D986 F987 T988 ALA GLY LEU ASP SER ALA ALA GLU GLY GLY VAL GLY GLY GLY GLY ALA GLY GLY GLY ALA GLY GLY GLY ALA ALA L1011 D1016 E1019 A1024 R1025 A1026 S1027 L1034 K1040 S1043 C1048 R1049 S1050 S1051 THR VAL ALA
PRO LEU LEU THR GLY PRO ASN ARG PRO PRO SER GLY GLY ALA GLY PRO ARG PRO LEU ASP ALA GLY SER GLU ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA PRO LEU PRO P1096 I1099 A1104 F1108 D1155 A1164 P1209 D1210 G1211 E1219 K1281
A1314 L1315 G1316 N1329 G1330 G1370 W1377 A1384 L1406 G1407 V1423 GLN LEU ILE GLY PRO GLY ALA ALA THR SER PRO ALA ALA ALA PRO THR THR ALA ALA GLU ASP ASP ASP THR PRO ALA ALA A1450 S1453 V1454 D1457 A1462 A1468 A1469 I1474 T1475 W1476 R1477
V1506 R1507 G1508 S1520 A1525 P1536 PRO PRO PRO GLY LEU ALA ALA ALA THR GLN ARG ALA ALA ALA ALA SER ALA ALA MET MET GLY LEU GLY GLY GLY GLY SER LEU L1562 L1567 Q1568 R1573 G1577 A1585 L1594 V1595 C1596 A1602 R1614 C1615 H1616 E1628 A1632 A1633
A1634 A1635 A1636 A1637 G1638 A1639 A1640 A1641 V1642 A1643 A1644 E1645 E1653 E1654 V1655 Y1656 A1657 E1658 A1659 R1662 G1663 P1664 P1665 A1666 D1718 A1719 T1720 R1721 L1735 R1736 L1740 V1751 A1765 G1766 A1767 E1779 GLU GLU GLY ARG SER THR PRO ALA VAL SER ALA GLN PRO SER SER GLN
GLY GLY GLY GLY TYR GLY VAL GLY GLY TYR GLY GLY GLY TYR GLY SER GLY GLY GLY SER GLN GLY GLY GLU ALA SER VAL ALA PRO SER GLY GLY ASP PRO GLY GLY TYR SER PRO ARG GLY GLY MET ALA ASP SER TRP PRO SER LEU GLU PRO GLY LEU GLY MET GLU GLU THR VAL VAL
GLY PRO PRO THR VAL GLY LEU ASP LEU SER LEU SER LEU GLN HIS ALA GLY GLY ALA GLY GLY ALA PRO GLY GLY ASP GLY ASP SER ASP SER ARG PRO GLY THR PRO SER MET THR ALA ALA ALA HIS HIS HIS HIS HIS PRO ARG HIS ALA GLY PRO ALA PRO GLY SER GLY THR

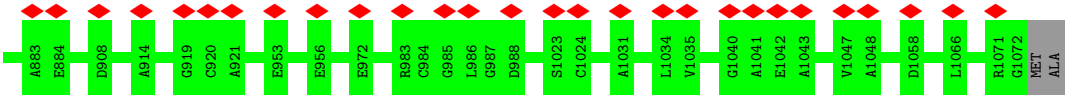


• Molecule 13: FAP196

Chain F:

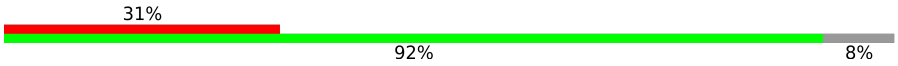


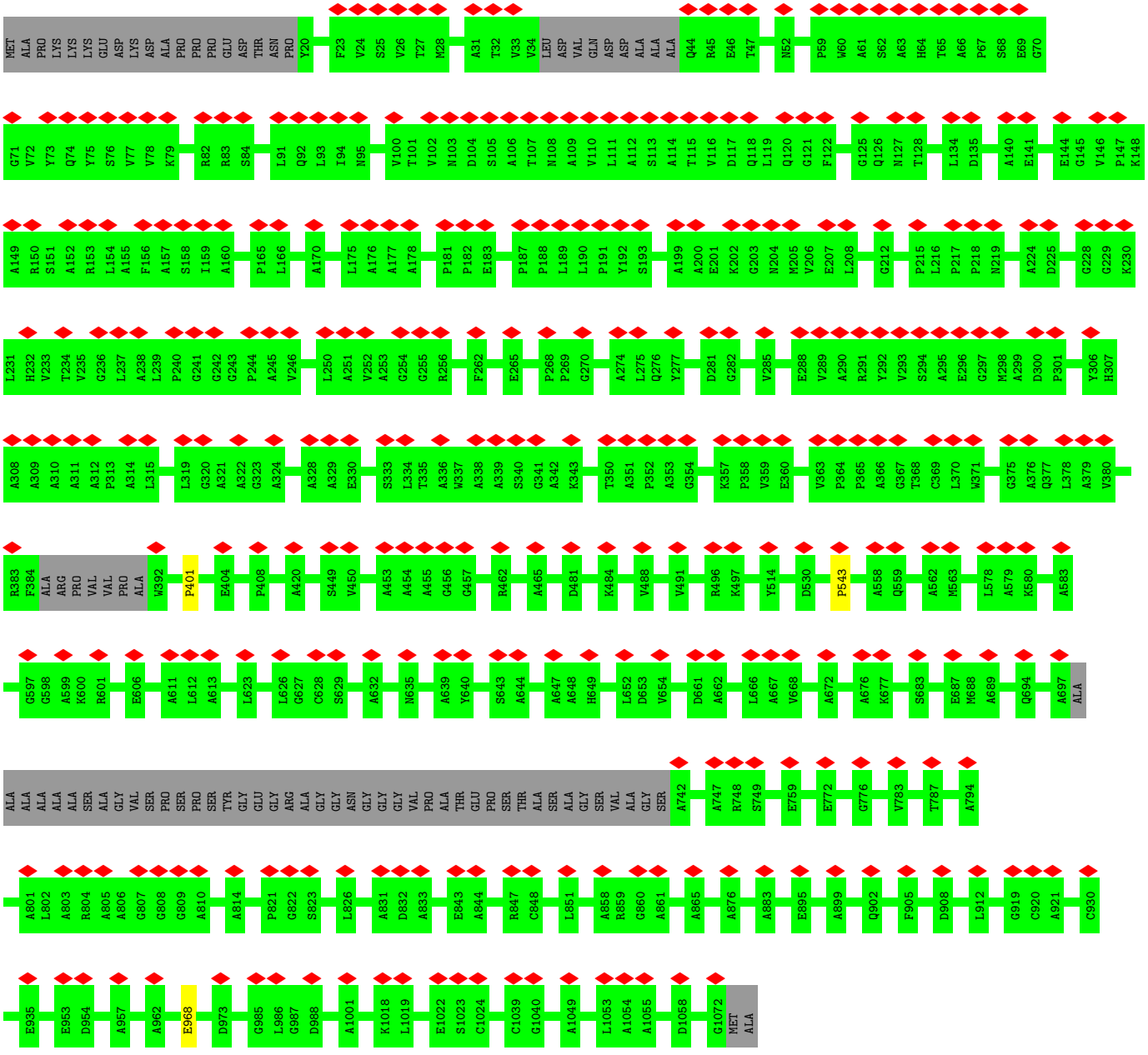




• Molecule 13: FAP196

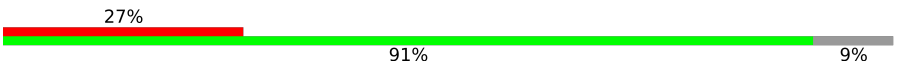
Chain G:

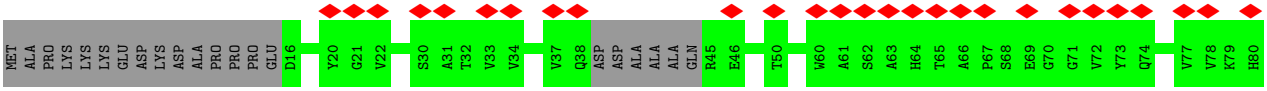


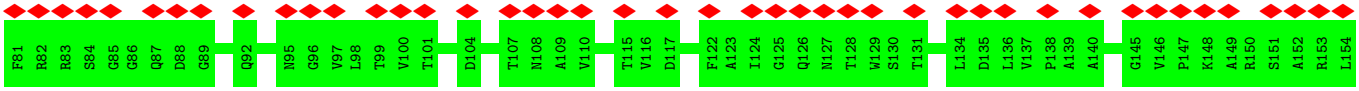


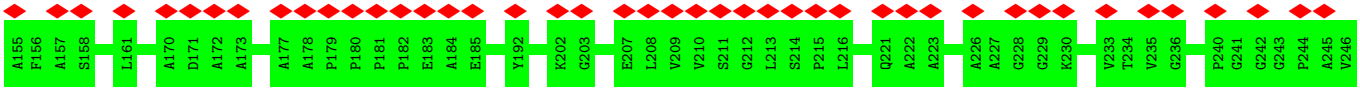
• Molecule 13: FAP196

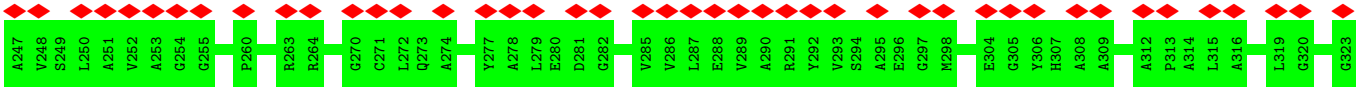
Chain H:

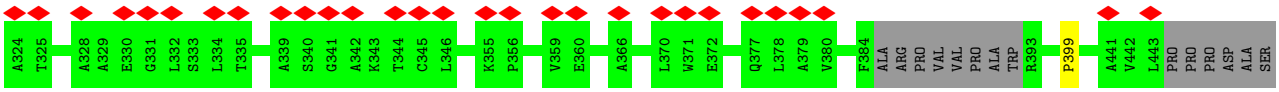


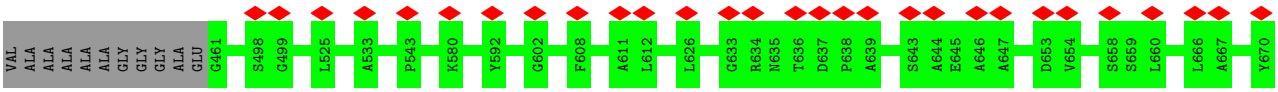


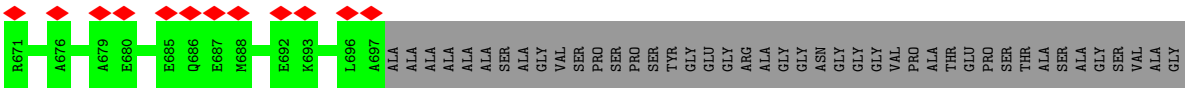


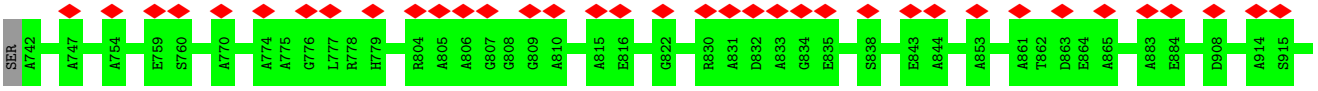


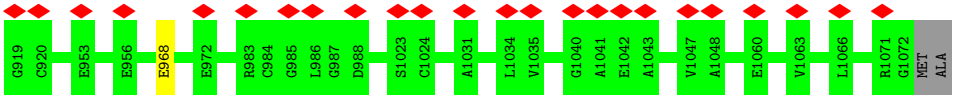






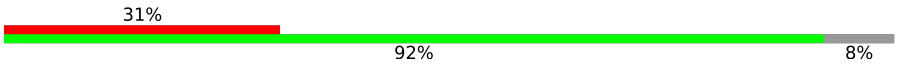


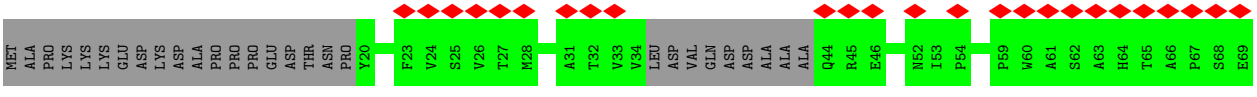


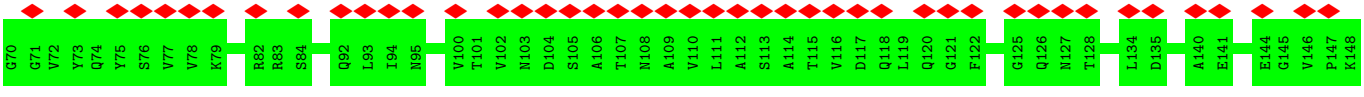


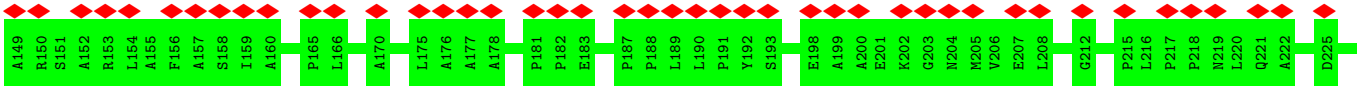
• Molecule 13: FAP196

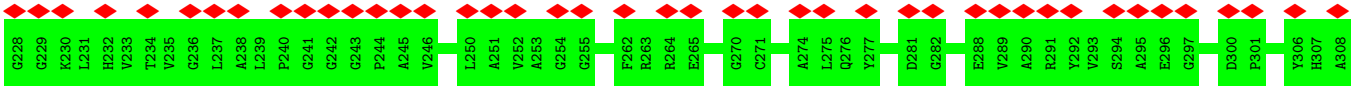
Chain I:

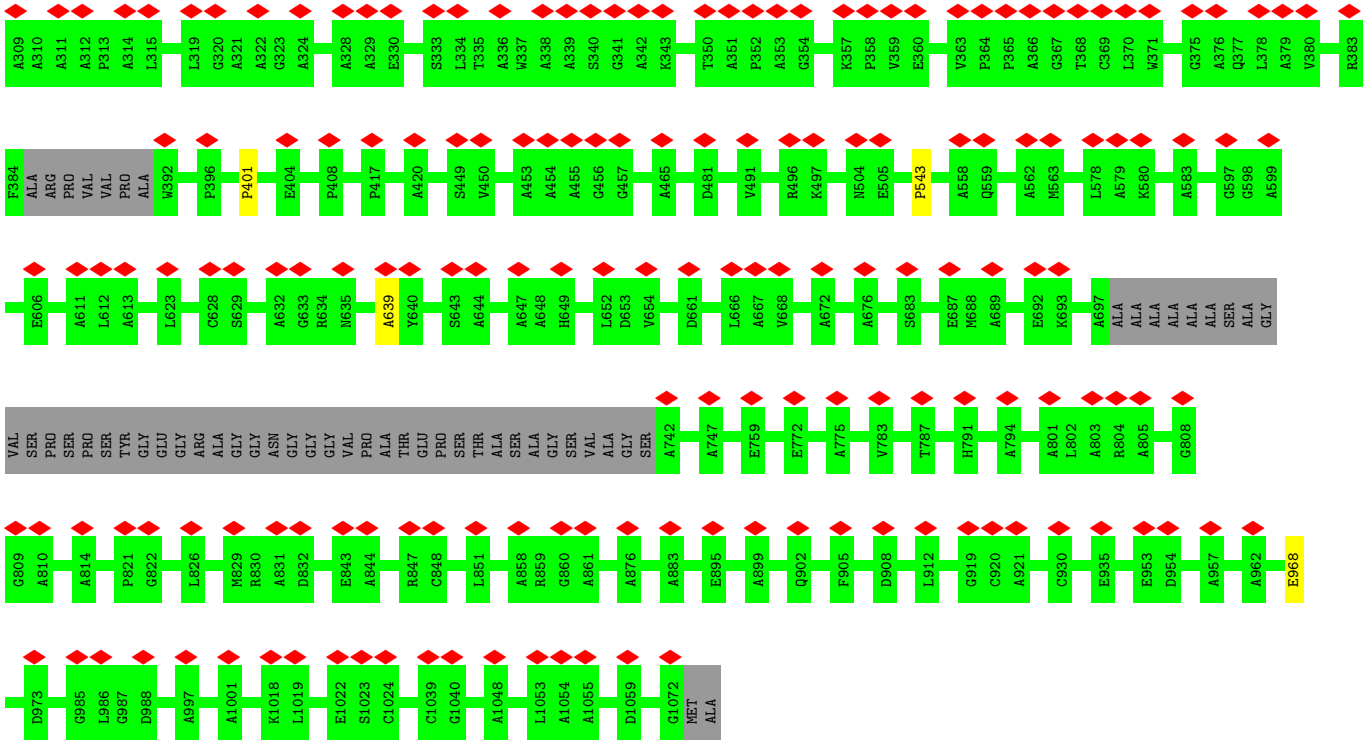






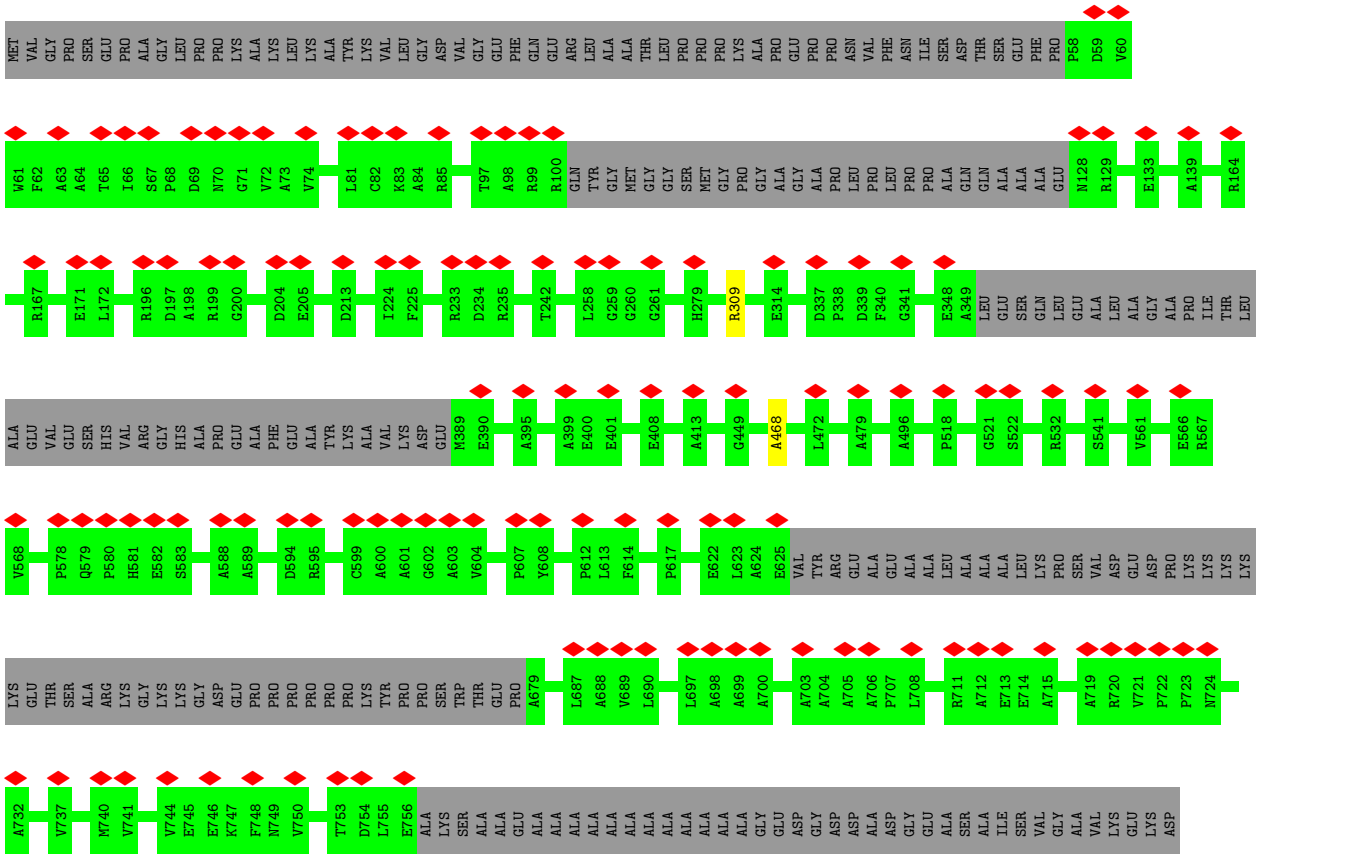


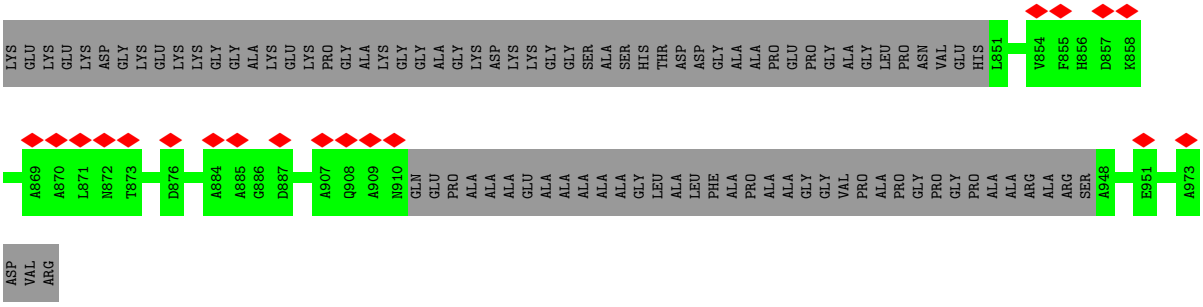




- Molecule 14: FAP213

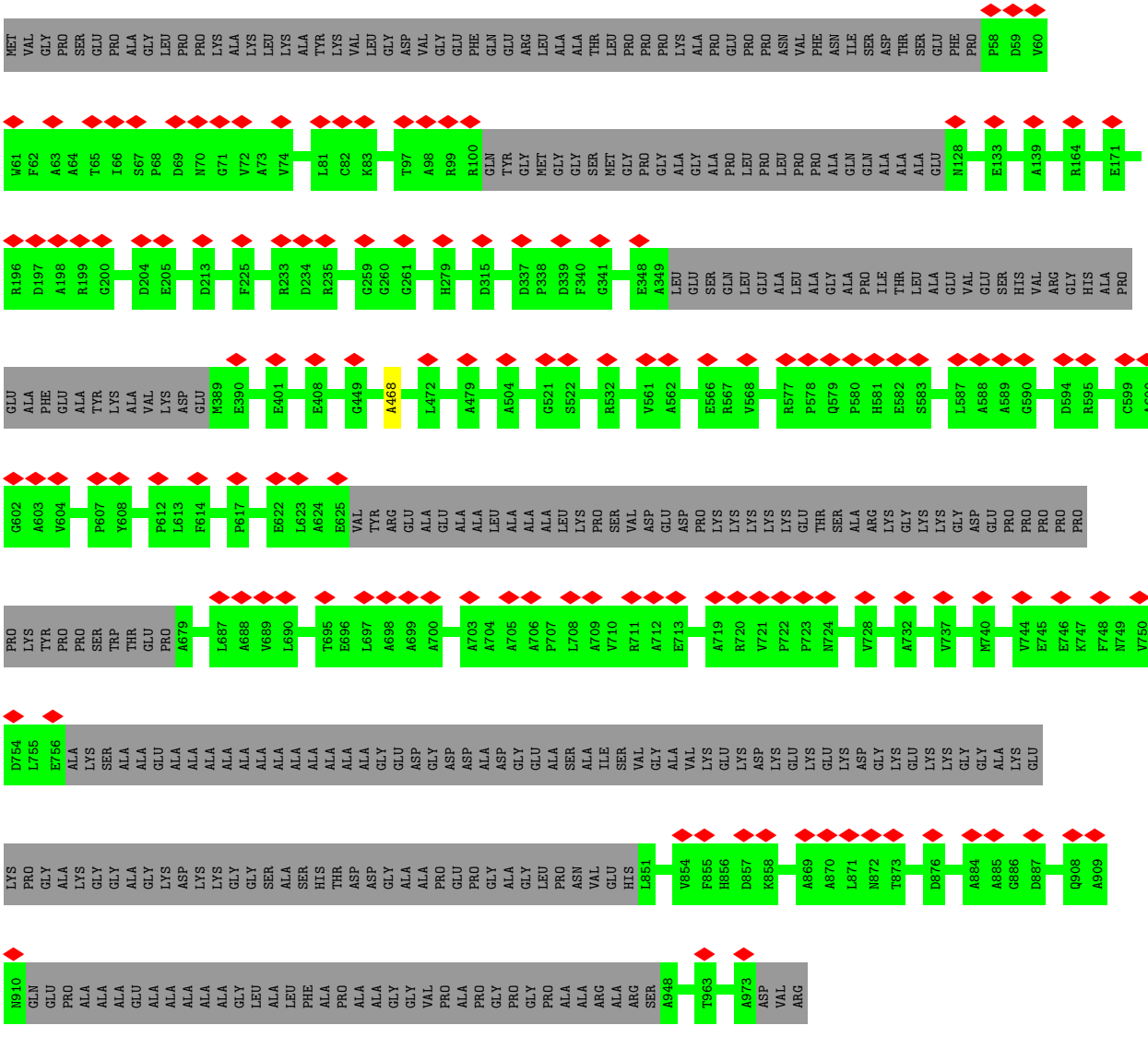
Chain J:





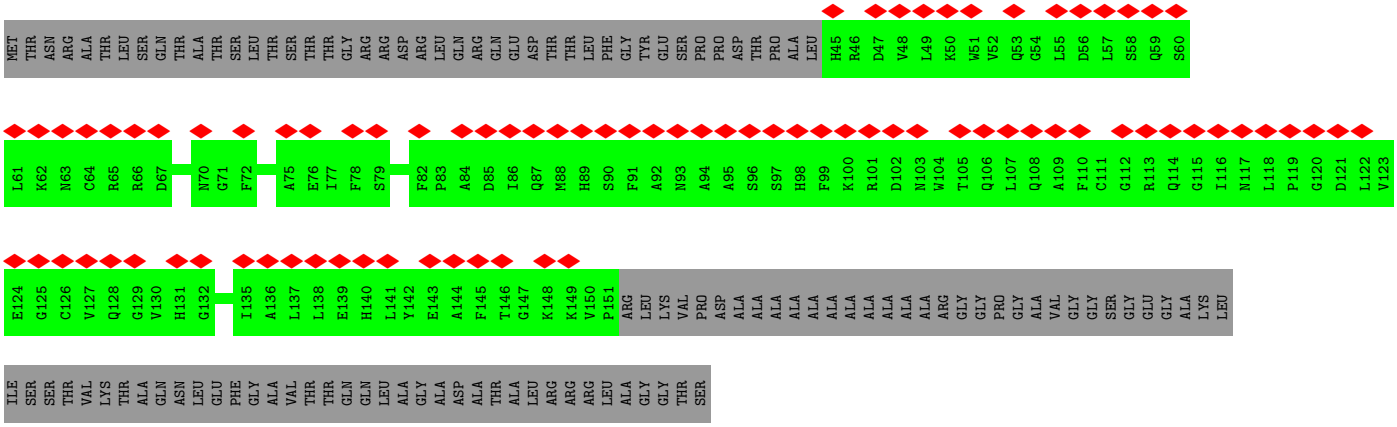
• Molecule 14: FAP213

Chain K:



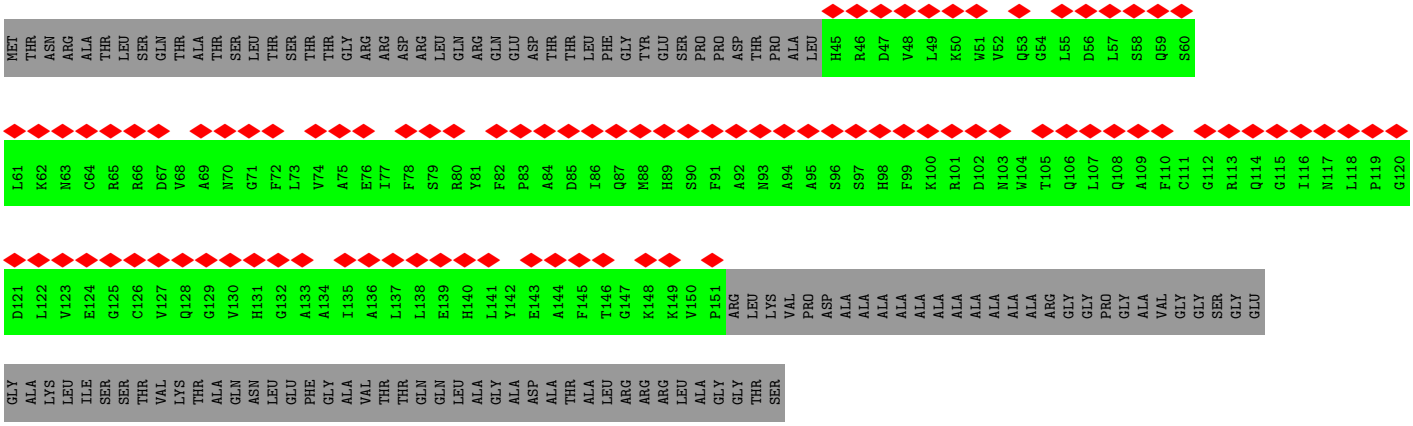
• Molecule 15: FAP225

Chain O:



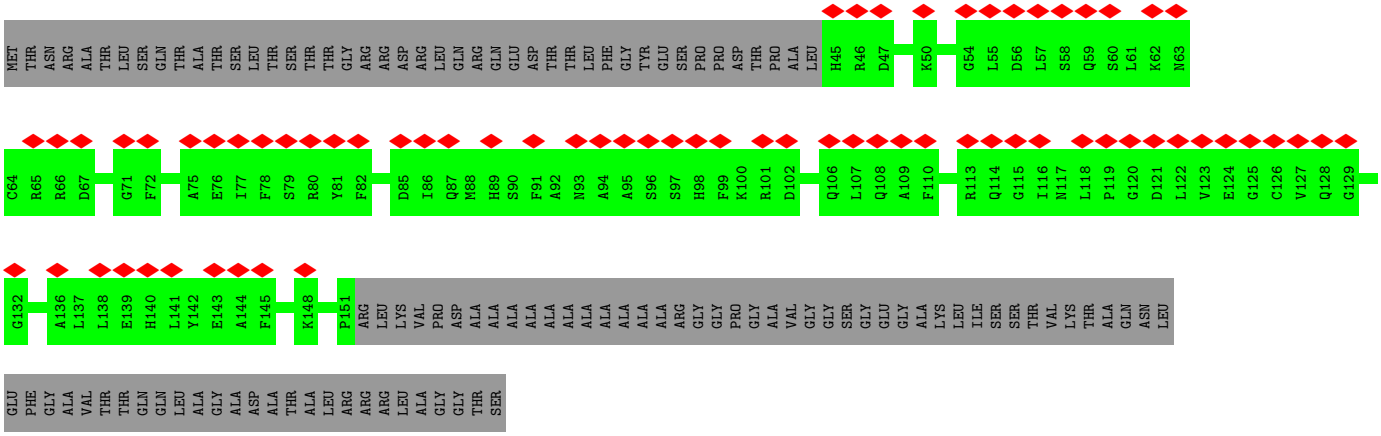
• Molecule 15: FAP225

Chain Y:



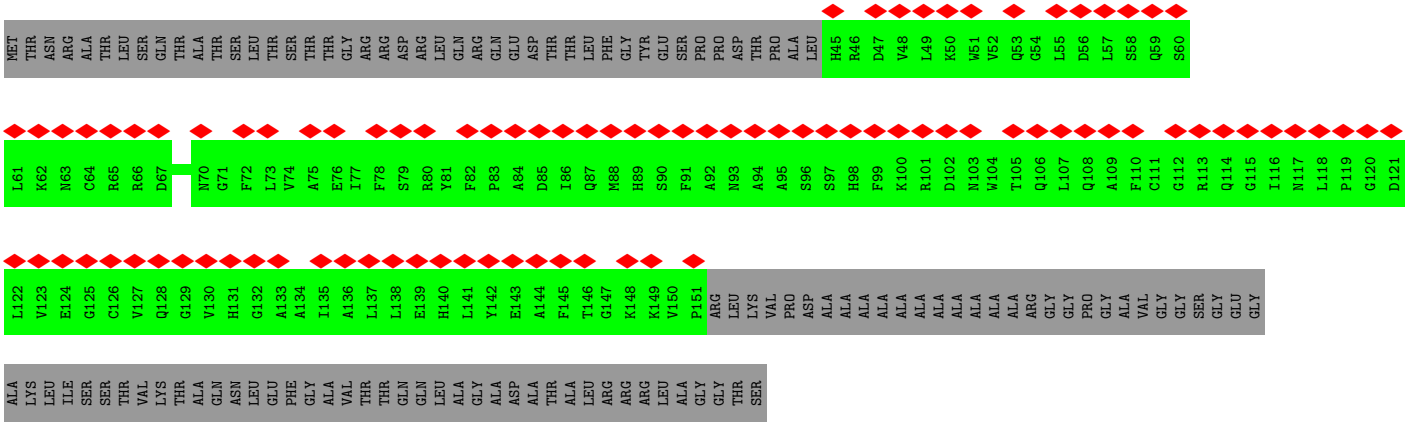
• Molecule 15: FAP225

Chain L:



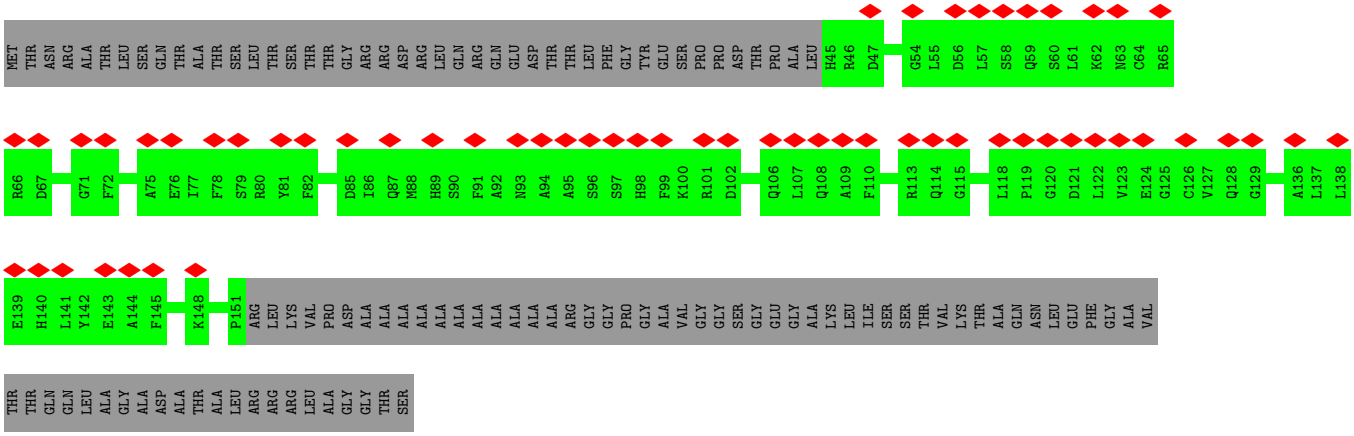
• Molecule 15: FAP225

Chain M:



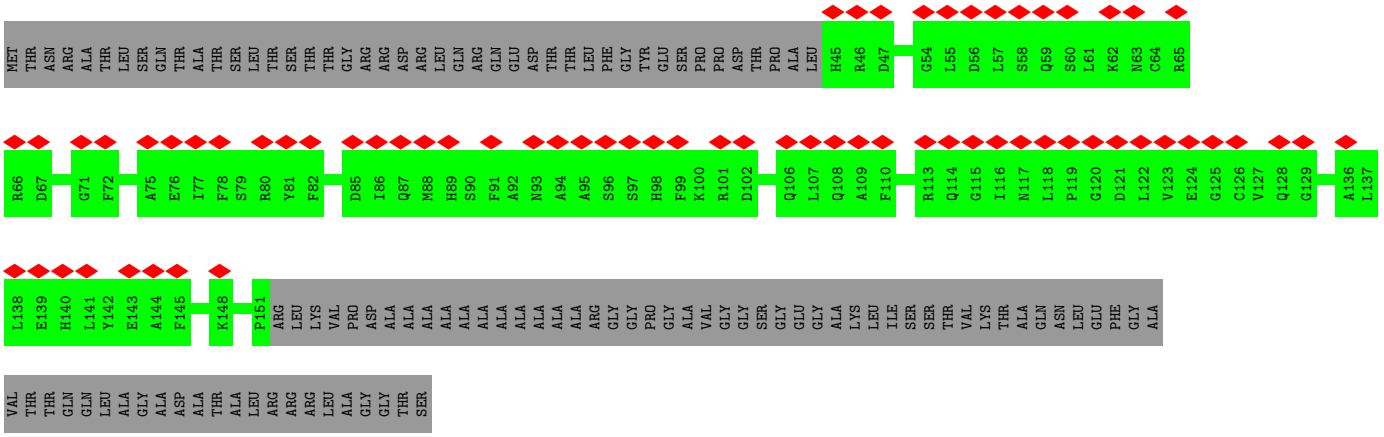
• Molecule 15: FAP225

Chain N:



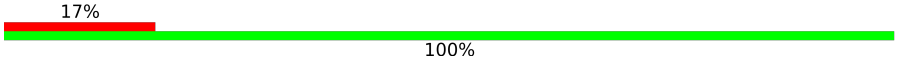
• Molecule 15: FAP225

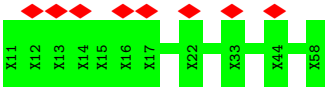
Chain X:



• Molecule 16: FAP239

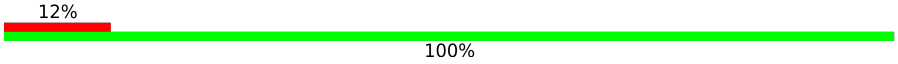
Chain A1:

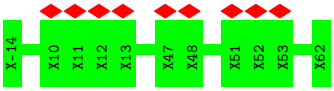




• Molecule 17: FAP388

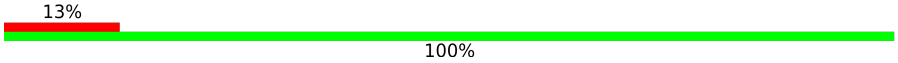
Chain A2:

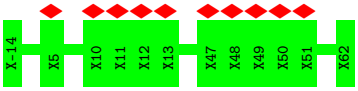




• Molecule 17: FAP388

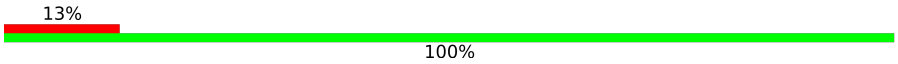
Chain A4:

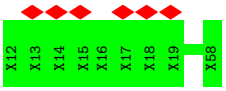




• Molecule 18: FAP424

Chain A3:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	104806	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	39.6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.998	Depositor
Minimum map value	0.000	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.050	Depositor
Recommended contour level	0.2	Depositor
Map size (Å)	711.68, 711.68, 711.68	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.39, 1.39, 1.39	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GTP, GDP, MG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	AA	0.27	0/3453	0.52	1/4673 (0.0%)
1	AC	0.27	0/3444	0.53	1/4661 (0.0%)
1	AE	0.28	0/3453	0.54	1/4673 (0.0%)
1	AG	0.29	0/3453	0.54	1/4673 (0.0%)
1	AI	0.27	0/3453	0.52	0/4673
1	AK	0.26	0/3453	0.52	0/4673
1	BA	0.27	0/3462	0.52	0/4685
1	BC	0.27	0/3428	0.53	0/4639
1	BE	0.28	0/3462	0.52	0/4685
1	BG	0.28	0/3428	0.54	0/4639
1	BI	0.27	0/3462	0.51	0/4685
1	BK	0.27	0/3428	0.53	0/4639
1	CA	0.26	0/3428	0.51	1/4639 (0.0%)
1	CC	0.28	0/3428	0.52	0/4639
1	CE	0.28	0/3428	0.53	1/4639 (0.0%)
1	CG	0.28	0/3428	0.52	0/4639
1	CI	0.27	0/3428	0.53	1/4639 (0.0%)
1	CK	0.27	0/3428	0.52	0/4639
1	DC	0.27	0/3428	0.51	0/4639
1	DE	0.27	0/3428	0.51	0/4639
1	DG	0.29	0/3428	0.51	0/4639
1	DI	0.28	0/3428	0.52	0/4639
1	DK	0.27	0/3428	0.52	0/4639
1	EA	0.27	0/3428	0.51	0/4639
1	EC	0.27	0/3428	0.52	0/4639
1	EE	0.28	0/3428	0.52	0/4639
1	EG	0.29	0/3428	0.53	0/4639
1	EI	0.27	0/3428	0.51	0/4639
1	EK	0.27	0/3428	0.52	0/4639
1	FA	0.27	0/3428	0.52	0/4639
1	FC	0.26	0/3428	0.52	1/4639 (0.0%)
1	FE	0.28	0/3428	0.54	0/4639

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
1	FG	0.27	0/3428	0.53	1/4639 (0.0%)
1	FI	0.27	0/3428	0.52	0/4639
1	FK	0.27	0/3428	0.53	0/4639
1	GC	0.27	0/3428	0.52	1/4639 (0.0%)
1	GE	0.27	0/3428	0.52	0/4639
1	GG	0.27	0/3428	0.53	0/4639
1	GI	0.28	0/3428	0.52	0/4639
1	GK	0.27	0/3428	0.52	1/4639 (0.0%)
1	GM	0.27	0/3428	0.53	1/4639 (0.0%)
1	HC	0.26	0/3428	0.52	0/4639
1	HE	0.27	0/3428	0.53	1/4639 (0.0%)
1	HG	0.28	0/3428	0.54	0/4639
1	HI	0.26	0/3428	0.54	1/4639 (0.0%)
1	HK	0.26	0/3428	0.53	1/4639 (0.0%)
1	HM	0.26	0/3428	0.54	1/4639 (0.0%)
1	IC	0.26	0/3428	0.52	0/4639
1	IE	0.26	0/3428	0.53	0/4639
1	IG	0.27	0/3428	0.53	0/4639
1	II	0.27	0/3428	0.54	0/4639
1	IK	0.27	0/3428	0.53	0/4639
1	IM	0.27	0/3428	0.52	0/4639
1	JC	0.26	0/3428	0.52	1/4639 (0.0%)
1	JE	0.27	0/3428	0.53	1/4639 (0.0%)
1	JG	0.27	0/3428	0.53	1/4639 (0.0%)
1	JI	0.29	0/3420	0.55	1/4628 (0.0%)
1	JK	0.27	0/3428	0.54	1/4639 (0.0%)
1	JM	0.26	0/3420	0.52	0/4628
1	KC	0.27	0/3428	0.52	0/4639
1	KE	0.28	0/3428	0.54	1/4639 (0.0%)
1	KG	0.28	0/3428	0.53	0/4639
1	KI	0.28	0/3428	0.55	1/4639 (0.0%)
1	KK	0.27	0/3428	0.52	0/4639
1	LC	0.27	0/3428	0.51	0/4639
1	LE	0.27	0/3428	0.53	0/4639
1	LG	0.28	0/3428	0.52	0/4639
1	LI	0.28	0/3428	0.53	0/4639
1	LK	0.26	0/3428	0.52	0/4639
1	MC	0.27	0/3453	0.52	0/4673
1	ME	0.28	0/3428	0.53	0/4639
1	MG	0.29	0/3453	0.52	0/4673
1	MI	0.28	0/3428	0.52	0/4639
1	MK	0.28	0/3453	0.52	0/4673
2	AB	0.27	0/3426	0.53	0/4644

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
2	AD	0.26	0/3426	0.52	0/4644
2	AF	0.28	0/3426	0.53	0/4644
2	AH	0.29	0/3412	0.54	0/4625
2	AJ	0.26	0/3426	0.51	0/4644
2	AL	0.26	0/3412	0.52	0/4625
2	BB	0.26	0/3465	0.53	0/4697
2	BD	0.28	0/3412	0.52	0/4625
2	BF	0.28	0/3465	0.55	0/4697
2	BH	0.28	0/3412	0.53	0/4625
2	BJ	0.27	0/3465	0.53	0/4697
2	BL	0.26	0/3412	0.52	0/4625
2	CB	0.28	0/3406	0.53	0/4617
2	CD	0.28	0/3406	0.53	0/4617
2	CF	0.28	0/3406	0.52	0/4617
2	CH	0.28	0/3406	0.54	0/4617
2	CJ	0.27	0/3412	0.52	0/4625
2	DB	0.28	0/3412	0.54	0/4625
2	DD	0.28	0/3406	0.53	0/4617
2	DF	0.28	0/3412	0.55	0/4625
2	DH	0.28	0/3412	0.52	0/4625
2	DJ	0.27	0/3412	0.52	0/4625
2	DL	0.27	0/3412	0.53	0/4625
2	EB	0.27	0/3465	0.53	0/4697
2	ED	0.27	0/3406	0.53	0/4617
2	EF	0.29	0/3471	0.54	1/4705 (0.0%)
2	EH	0.28	0/3406	0.54	0/4617
2	EJ	0.27	0/3465	0.53	0/4697
2	EL	0.27	0/3406	0.52	0/4617
2	FB	0.27	0/3412	0.52	0/4625
2	FD	0.26	0/3412	0.51	0/4625
2	FF	0.28	0/3412	0.53	0/4625
2	FH	0.29	0/3412	0.56	2/4625 (0.0%)
2	FJ	0.27	0/3412	0.52	0/4625
2	FL	0.26	0/3412	0.52	0/4625
2	GD	0.27	0/3412	0.54	1/4625 (0.0%)
2	GF	0.27	0/3412	0.55	0/4625
2	GH	0.28	0/3412	0.53	1/4625 (0.0%)
2	GJ	0.28	0/3412	0.53	0/4625
2	GL	0.27	0/3412	0.53	0/4625
2	HD	0.27	0/3412	0.54	0/4625
2	HF	0.27	0/3412	0.55	0/4625
2	HH	0.27	0/3412	0.53	0/4625
2	HJ	0.27	0/3397	0.54	0/4605

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
2	HL	0.26	0/3412	0.52	0/4625
2	ID	0.27	0/3406	0.54	1/4617 (0.0%)
2	IF	0.27	0/3412	0.55	2/4625 (0.0%)
2	IH	0.27	0/3406	0.52	0/4617
2	IJ	0.27	0/3412	0.54	0/4625
2	IL	0.27	0/3406	0.54	1/4617 (0.0%)
2	JB	0.26	0/3412	0.54	0/4625
2	JD	0.27	0/3412	0.52	0/4625
2	JF	0.27	0/3412	0.55	0/4625
2	JH	0.28	0/3412	0.52	0/4625
2	JJ	0.27	0/3406	0.53	0/4617
2	JL	0.27	0/3406	0.53	1/4617 (0.0%)
2	KB	0.27	0/3406	0.52	0/4617
2	KD	0.27	0/3412	0.53	0/4625
2	KF	0.28	0/3406	0.54	1/4617 (0.0%)
2	KH	0.28	0/3412	0.54	0/4625
2	KJ	0.27	0/3406	0.53	0/4617
2	KL	0.27	0/3412	0.53	0/4625
2	LB	0.26	0/3412	0.52	0/4625
2	LD	0.27	0/3412	0.53	1/4625 (0.0%)
2	LF	0.28	0/3412	0.54	1/4625 (0.0%)
2	LH	0.27	0/3412	0.54	0/4625
2	LJ	0.27	0/3412	0.53	0/4625
2	LL	0.26	0/3412	0.51	0/4625
2	MB	0.27	0/3412	0.52	0/4625
2	MD	0.27	0/3471	0.51	0/4705
2	MF	0.28	0/3412	0.53	1/4625 (0.0%)
2	MH	0.28	0/3476	0.53	0/4712
2	MJ	0.28	0/3412	0.52	0/4625
2	ML	0.27	0/3476	0.52	0/4712
3	a	0.27	0/2428	0.58	0/3300
3	b	0.28	0/4634	0.61	1/6298 (0.0%)
3	c	0.28	0/4634	0.64	3/6298 (0.0%)
3	d	0.27	0/2228	0.62	0/3026
4	e	0.26	0/1484	0.57	0/1994
4	f	0.27	0/1484	0.54	0/1994
4	g	0.28	0/1154	0.52	0/1553
5	h	0.26	0/4608	0.56	0/6234
5	i	0.27	0/4608	0.58	0/6234
5	j	0.26	0/4608	0.56	0/6234
6	k	0.26	0/3072	0.58	0/4147
6	l	0.27	0/3072	0.58	2/4147 (0.0%)
6	s	0.26	0/2253	0.56	0/3048

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
7	m	0.27	0/2808	0.60	1/3798 (0.0%)
7	n	0.27	0/2808	0.63	1/3798 (0.0%)
7	o	0.26	0/2808	0.60	1/3798 (0.0%)
8	p	0.25	0/714	0.58	0/962
8	q	0.26	0/714	0.58	0/962
8	r	0.25	0/714	0.58	0/962
9	A	0.26	0/1564	0.58	0/2113
9	B	0.26	0/1564	0.57	0/2113
9	C	0.26	0/1564	0.58	0/2113
10	P	0.27	0/2503	0.51	0/3420
10	Q	0.26	0/2498	0.52	1/3413 (0.0%)
10	R	0.27	0/2503	0.53	0/3420
10	S	0.26	0/2498	0.53	1/3413 (0.0%)
10	Z	0.23	0/786	0.47	0/1041
10	aa	0.24	0/1434	0.47	0/1989
10	cc	0.23	0/769	0.48	0/1018
11	T	0.24	0/310	0.33	0/429
11	U	0.24	0/285	0.30	0/394
11	V	0.25	0/331	0.39	0/460
11	W	0.23	0/311	0.34	0/432
12	D	0.26	0/7465	0.45	0/10373
12	E	0.26	0/7465	0.45	0/10373
12	bb	0.27	0/1076	0.57	0/1482
13	F	0.26	0/4827	0.40	0/6703
13	G	0.26	0/4880	0.40	0/6777
13	H	0.26	0/4827	0.40	0/6703
13	I	0.26	0/4880	0.40	0/6777
14	J	0.26	0/3904	0.49	0/5372
14	K	0.26	0/3904	0.49	0/5372
15	L	0.26	0/861	0.47	0/1163
15	M	0.26	0/861	0.47	0/1163
15	N	0.27	0/861	0.47	0/1163
15	O	0.26	0/861	0.48	0/1163
15	X	0.27	0/861	0.47	0/1163
15	Y	0.26	0/861	0.48	0/1163
All	All	0.27	0/625065	0.53	48/848033 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	DB	0	1
2	DF	0	1
2	GD	0	1
2	HD	0	1
2	HL	0	1
2	KD	0	1
2	KH	0	1
2	KL	0	1
3	c	0	1
3	d	0	1
13	G	0	1
13	H	0	1
13	I	0	1
All	All	0	13

There are no bond length outliers.

All (48) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	o	173	LEU	CA-CB-CG	6.77	130.88	115.30
3	c	277	LEU	CA-CB-CG	6.68	130.68	115.30
7	m	173	LEU	CA-CB-CG	6.59	130.46	115.30
1	CE	284	LEU	CA-CB-CG	6.44	130.10	115.30
1	AG	284	LEU	CA-CB-CG	6.27	129.71	115.30
2	ID	218	ASP	CB-CG-OD1	6.18	123.87	118.30
1	JK	284	LEU	CA-CB-CG	6.14	129.43	115.30
1	FG	284	LEU	CA-CB-CG	6.07	129.25	115.30
1	JI	284	LEU	CA-CB-CG	5.93	128.95	115.30
1	CI	284	LEU	CA-CB-CG	5.88	128.81	115.30
1	FC	284	LEU	CA-CB-CG	5.85	128.75	115.30
1	JE	284	LEU	CA-CB-CG	5.82	128.69	115.30
1	HK	284	LEU	CA-CB-CG	5.71	128.44	115.30
1	HM	284	LEU	CA-CB-CG	5.70	128.42	115.30
1	KE	284	LEU	CA-CB-CG	5.68	128.37	115.30
7	n	341	LEU	CA-CB-CG	5.68	128.36	115.30
2	IL	218	ASP	CB-CG-OD1	5.63	123.36	118.30
2	IF	217	LEU	CA-CB-CG	5.61	128.20	115.30
1	CA	284	LEU	CA-CB-CG	5.60	128.19	115.30
1	GM	284	LEU	CA-CB-CG	5.58	128.12	115.30
1	JC	284	LEU	CA-CB-CG	5.52	127.99	115.30
1	AE	284	LEU	CA-CB-CG	5.51	127.98	115.30
10	Q	124	LEU	CA-CB-CG	5.50	127.95	115.30
1	JG	284	LEU	CA-CB-CG	5.49	127.92	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	HE	284	LEU	CA-CB-CG	5.47	127.89	115.30
6	l	105	LEU	CA-CB-CG	5.46	127.86	115.30
2	GH	218	ASP	CB-CG-OD1	5.44	123.19	118.30
1	KI	284	LEU	CA-CB-CG	5.41	127.75	115.30
1	AC	284	LEU	CA-CB-CG	5.38	127.68	115.30
1	GK	284	LEU	CA-CB-CG	5.35	127.61	115.30
2	LF	218	ASP	CB-CG-OD1	5.35	123.12	118.30
2	KF	218	ASP	CB-CG-OD1	5.35	123.12	118.30
2	LD	218	ASP	CB-CG-OD1	5.33	123.09	118.30
1	AA	284	LEU	CA-CB-CG	5.30	127.49	115.30
6	l	486	LEU	CA-CB-CG	5.29	127.48	115.30
2	MF	218	ASP	CB-CG-OD1	5.27	123.04	118.30
2	FH	357	TYR	C-N-CA	-5.26	108.55	121.70
3	c	444	LEU	CA-CB-CG	5.23	127.34	115.30
2	GD	273	ALA	C-N-CD	-5.23	109.10	120.60
2	FH	218	ASP	CB-CG-OD1	5.22	123.00	118.30
1	HI	284	LEU	CA-CB-CG	5.21	127.28	115.30
10	S	124	LEU	CA-CB-CG	5.18	127.22	115.30
1	GC	284	LEU	CA-CB-CG	5.11	127.06	115.30
3	c	535	PRO	C-N-CA	5.10	134.45	121.70
2	JL	218	ASP	CB-CG-OD1	5.08	122.87	118.30
2	EF	68	LEU	CA-CB-CG	5.05	126.92	115.30
2	IF	218	ASP	CB-CG-OD1	5.03	122.83	118.30
3	b	143	LEU	CA-CB-CG	5.00	126.80	115.30

There are no chirality outliers.

All (13) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	DB	401	LYS	Peptide
2	DF	273	ALA	Peptide
13	G	968	GLU	Peptide
2	GD	273	ALA	Peptide
13	H	968	GLU	Peptide
2	HD	273	ALA	Peptide
2	HL	273	ALA	Peptide
13	I	968	GLU	Peptide
2	KD	273	ALA	Peptide
2	KH	273	ALA	Peptide
2	KL	273	ALA	Peptide
3	c	455	ALA	Peptide
3	d	593	ALA	Peptide

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	AA	429/443 (97%)	417 (97%)	12 (3%)	0	100	100
1	AC	428/443 (97%)	412 (96%)	16 (4%)	0	100	100
1	AE	429/443 (97%)	414 (96%)	15 (4%)	0	100	100
1	AG	429/443 (97%)	417 (97%)	12 (3%)	0	100	100
1	AI	429/443 (97%)	416 (97%)	13 (3%)	0	100	100
1	AK	429/443 (97%)	415 (97%)	14 (3%)	0	100	100
1	BA	430/443 (97%)	421 (98%)	9 (2%)	0	100	100
1	BC	425/443 (96%)	416 (98%)	9 (2%)	0	100	100
1	BE	430/443 (97%)	417 (97%)	13 (3%)	0	100	100
1	BG	425/443 (96%)	415 (98%)	10 (2%)	0	100	100
1	BI	430/443 (97%)	418 (97%)	12 (3%)	0	100	100
1	BK	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	CA	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	CC	425/443 (96%)	410 (96%)	15 (4%)	0	100	100
1	CE	425/443 (96%)	416 (98%)	9 (2%)	0	100	100
1	CG	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	CI	425/443 (96%)	415 (98%)	10 (2%)	0	100	100
1	CK	425/443 (96%)	410 (96%)	15 (4%)	0	100	100
1	DC	425/443 (96%)	415 (98%)	10 (2%)	0	100	100
1	DE	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	DG	425/443 (96%)	415 (98%)	10 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	DI	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	DK	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	EA	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	EC	425/443 (96%)	410 (96%)	15 (4%)	0	100	100
1	EE	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	EG	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	EI	425/443 (96%)	415 (98%)	10 (2%)	0	100	100
1	EK	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	FA	425/443 (96%)	408 (96%)	17 (4%)	0	100	100
1	FC	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	FE	425/443 (96%)	408 (96%)	17 (4%)	0	100	100
1	FG	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	FI	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	FK	425/443 (96%)	407 (96%)	18 (4%)	0	100	100
1	GC	425/443 (96%)	410 (96%)	15 (4%)	0	100	100
1	GE	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	GG	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	GI	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	GK	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	GM	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	HC	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	HE	425/443 (96%)	405 (95%)	20 (5%)	0	100	100
1	HG	425/443 (96%)	408 (96%)	17 (4%)	0	100	100
1	HI	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	HK	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	HM	425/443 (96%)	407 (96%)	18 (4%)	0	100	100
1	IC	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	IE	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	IG	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	II	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	IK	425/443 (96%)	413 (97%)	12 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	IM	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	JC	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	JE	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	JG	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	JI	424/443 (96%)	407 (96%)	17 (4%)	0	100	100
1	JK	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	JM	424/443 (96%)	412 (97%)	12 (3%)	0	100	100
1	KC	425/443 (96%)	410 (96%)	15 (4%)	0	100	100
1	KE	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	KG	425/443 (96%)	413 (97%)	12 (3%)	0	100	100
1	KI	425/443 (96%)	408 (96%)	17 (4%)	0	100	100
1	KK	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	LC	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	LE	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	LG	425/443 (96%)	411 (97%)	14 (3%)	0	100	100
1	LI	425/443 (96%)	414 (97%)	11 (3%)	0	100	100
1	LK	425/443 (96%)	412 (97%)	13 (3%)	0	100	100
1	MC	429/443 (97%)	413 (96%)	16 (4%)	0	100	100
1	ME	425/443 (96%)	406 (96%)	19 (4%)	0	100	100
1	MG	429/443 (97%)	414 (96%)	15 (4%)	0	100	100
1	MI	425/443 (96%)	409 (96%)	16 (4%)	0	100	100
1	MK	429/443 (97%)	418 (97%)	11 (3%)	0	100	100
2	AB	428/451 (95%)	415 (97%)	13 (3%)	0	100	100
2	AD	428/451 (95%)	411 (96%)	17 (4%)	0	100	100
2	AF	428/451 (95%)	413 (96%)	15 (4%)	0	100	100
2	AH	426/451 (94%)	411 (96%)	15 (4%)	0	100	100
2	AJ	428/451 (95%)	418 (98%)	10 (2%)	0	100	100
2	AL	426/451 (94%)	414 (97%)	12 (3%)	0	100	100
2	BB	436/451 (97%)	422 (97%)	14 (3%)	0	100	100
2	BD	426/451 (94%)	412 (97%)	14 (3%)	0	100	100
2	BF	436/451 (97%)	418 (96%)	18 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	BH	426/451 (94%)	408 (96%)	18 (4%)	0	100	100
2	BJ	436/451 (97%)	420 (96%)	16 (4%)	0	100	100
2	BL	426/451 (94%)	411 (96%)	15 (4%)	0	100	100
2	CB	425/451 (94%)	409 (96%)	16 (4%)	0	100	100
2	CD	425/451 (94%)	413 (97%)	12 (3%)	0	100	100
2	CF	425/451 (94%)	411 (97%)	14 (3%)	0	100	100
2	CH	425/451 (94%)	410 (96%)	15 (4%)	0	100	100
2	CJ	426/451 (94%)	412 (97%)	14 (3%)	0	100	100
2	DB	426/451 (94%)	411 (96%)	15 (4%)	0	100	100
2	DD	425/451 (94%)	412 (97%)	13 (3%)	0	100	100
2	DF	426/451 (94%)	408 (96%)	18 (4%)	0	100	100
2	DH	426/451 (94%)	414 (97%)	12 (3%)	0	100	100
2	DJ	426/451 (94%)	412 (97%)	14 (3%)	0	100	100
2	DL	426/451 (94%)	413 (97%)	13 (3%)	0	100	100
2	EB	436/451 (97%)	421 (97%)	15 (3%)	0	100	100
2	ED	425/451 (94%)	407 (96%)	18 (4%)	0	100	100
2	EF	437/451 (97%)	419 (96%)	17 (4%)	1 (0%)	47	78
2	EH	425/451 (94%)	411 (97%)	14 (3%)	0	100	100
2	EJ	436/451 (97%)	420 (96%)	16 (4%)	0	100	100
2	EL	425/451 (94%)	412 (97%)	13 (3%)	0	100	100
2	FB	426/451 (94%)	413 (97%)	13 (3%)	0	100	100
2	FD	426/451 (94%)	406 (95%)	20 (5%)	0	100	100
2	FF	426/451 (94%)	415 (97%)	11 (3%)	0	100	100
2	FH	426/451 (94%)	409 (96%)	17 (4%)	0	100	100
2	FJ	426/451 (94%)	409 (96%)	17 (4%)	0	100	100
2	FL	426/451 (94%)	413 (97%)	13 (3%)	0	100	100
2	GD	426/451 (94%)	411 (96%)	14 (3%)	1 (0%)	47	78
2	GF	426/451 (94%)	407 (96%)	19 (4%)	0	100	100
2	GH	426/451 (94%)	417 (98%)	9 (2%)	0	100	100
2	GJ	426/451 (94%)	409 (96%)	17 (4%)	0	100	100
2	GL	426/451 (94%)	409 (96%)	17 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	HD	426/451 (94%)	412 (97%)	13 (3%)	1 (0%)	47 78
2	HF	426/451 (94%)	409 (96%)	17 (4%)	0	100 100
2	HH	426/451 (94%)	409 (96%)	17 (4%)	0	100 100
2	HJ	424/451 (94%)	406 (96%)	18 (4%)	0	100 100
2	HL	426/451 (94%)	412 (97%)	14 (3%)	0	100 100
2	ID	425/451 (94%)	411 (97%)	14 (3%)	0	100 100
2	IF	426/451 (94%)	415 (97%)	11 (3%)	0	100 100
2	IH	425/451 (94%)	408 (96%)	17 (4%)	0	100 100
2	IJ	426/451 (94%)	410 (96%)	16 (4%)	0	100 100
2	IL	425/451 (94%)	407 (96%)	18 (4%)	0	100 100
2	JB	426/451 (94%)	413 (97%)	13 (3%)	0	100 100
2	JD	426/451 (94%)	411 (96%)	15 (4%)	0	100 100
2	JF	426/451 (94%)	416 (98%)	10 (2%)	0	100 100
2	JH	426/451 (94%)	413 (97%)	13 (3%)	0	100 100
2	JJ	425/451 (94%)	411 (97%)	14 (3%)	0	100 100
2	JL	425/451 (94%)	408 (96%)	17 (4%)	0	100 100
2	KB	425/451 (94%)	410 (96%)	15 (4%)	0	100 100
2	KD	426/451 (94%)	414 (97%)	11 (3%)	1 (0%)	47 78
2	KF	425/451 (94%)	410 (96%)	15 (4%)	0	100 100
2	KH	426/451 (94%)	411 (96%)	14 (3%)	1 (0%)	47 78
2	KJ	425/451 (94%)	406 (96%)	19 (4%)	0	100 100
2	KL	426/451 (94%)	415 (97%)	10 (2%)	1 (0%)	47 78
2	LB	426/451 (94%)	410 (96%)	16 (4%)	0	100 100
2	LD	426/451 (94%)	412 (97%)	14 (3%)	0	100 100
2	LF	426/451 (94%)	412 (97%)	14 (3%)	0	100 100
2	LH	426/451 (94%)	409 (96%)	17 (4%)	0	100 100
2	LJ	426/451 (94%)	412 (97%)	14 (3%)	0	100 100
2	LL	426/451 (94%)	412 (97%)	14 (3%)	0	100 100
2	MB	426/451 (94%)	407 (96%)	19 (4%)	0	100 100
2	MD	437/451 (97%)	422 (97%)	15 (3%)	0	100 100
2	MF	426/451 (94%)	414 (97%)	12 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	MH	438/451 (97%)	422 (96%)	16 (4%)	0	100	100
2	MJ	426/451 (94%)	412 (97%)	14 (3%)	0	100	100
2	ML	438/451 (97%)	424 (97%)	14 (3%)	0	100	100
3	a	323/618 (52%)	295 (91%)	28 (9%)	0	100	100
3	b	615/618 (100%)	558 (91%)	55 (9%)	2 (0%)	41	74
3	c	615/618 (100%)	551 (90%)	62 (10%)	2 (0%)	41	74
3	d	293/618 (47%)	259 (88%)	32 (11%)	2 (1%)	22	59
4	e	182/201 (90%)	172 (94%)	10 (6%)	0	100	100
4	f	182/201 (90%)	170 (93%)	12 (7%)	0	100	100
4	g	143/201 (71%)	134 (94%)	9 (6%)	0	100	100
5	h	575/758 (76%)	549 (96%)	26 (4%)	0	100	100
5	i	575/758 (76%)	547 (95%)	28 (5%)	0	100	100
5	j	575/758 (76%)	546 (95%)	29 (5%)	0	100	100
6	k	380/528 (72%)	355 (93%)	25 (7%)	0	100	100
6	l	380/528 (72%)	357 (94%)	23 (6%)	0	100	100
6	s	279/528 (53%)	267 (96%)	12 (4%)	0	100	100
7	m	344/421 (82%)	319 (93%)	23 (7%)	2 (1%)	25	62
7	n	344/421 (82%)	311 (90%)	32 (9%)	1 (0%)	41	74
7	o	344/421 (82%)	323 (94%)	21 (6%)	0	100	100
8	p	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
8	q	86/89 (97%)	80 (93%)	6 (7%)	0	100	100
8	r	86/89 (97%)	84 (98%)	2 (2%)	0	100	100
9	A	184/190 (97%)	175 (95%)	9 (5%)	0	100	100
9	B	184/190 (97%)	173 (94%)	11 (6%)	0	100	100
9	C	184/190 (97%)	173 (94%)	11 (6%)	0	100	100
10	P	427/606 (70%)	420 (98%)	6 (1%)	1 (0%)	47	78
10	Q	426/606 (70%)	415 (97%)	10 (2%)	1 (0%)	47	78
10	R	427/606 (70%)	418 (98%)	8 (2%)	1 (0%)	47	78
10	S	426/606 (70%)	417 (98%)	8 (2%)	1 (0%)	47	78
10	Z	90/606 (15%)	89 (99%)	1 (1%)	0	100	100
10	aa	290/606 (48%)	283 (98%)	6 (2%)	1 (0%)	41	74

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	cc	87/606 (14%)	87 (100%)	0	0	100	100
11	T	59/93 (63%)	55 (93%)	4 (7%)	0	100	100
11	U	54/93 (58%)	53 (98%)	1 (2%)	0	100	100
11	V	65/93 (70%)	60 (92%)	5 (8%)	0	100	100
11	W	61/93 (66%)	57 (93%)	4 (7%)	0	100	100
12	D	1498/2257 (66%)	1457 (97%)	40 (3%)	1 (0%)	51	83
12	E	1498/2257 (66%)	1459 (97%)	37 (2%)	2 (0%)	51	83
12	bb	171/2257 (8%)	161 (94%)	10 (6%)	0	100	100
13	F	972/1074 (90%)	931 (96%)	40 (4%)	1 (0%)	51	83
13	G	985/1074 (92%)	942 (96%)	41 (4%)	2 (0%)	47	78
13	H	972/1074 (90%)	938 (96%)	33 (3%)	1 (0%)	51	83
13	I	985/1074 (92%)	939 (95%)	43 (4%)	3 (0%)	41	74
14	J	654/976 (67%)	634 (97%)	19 (3%)	1 (0%)	47	78
14	K	654/976 (67%)	633 (97%)	20 (3%)	1 (0%)	47	78
15	L	105/222 (47%)	100 (95%)	5 (5%)	0	100	100
15	M	105/222 (47%)	101 (96%)	4 (4%)	0	100	100
15	N	105/222 (47%)	102 (97%)	3 (3%)	0	100	100
15	O	105/222 (47%)	101 (96%)	4 (4%)	0	100	100
15	X	105/222 (47%)	101 (96%)	4 (4%)	0	100	100
15	Y	105/222 (47%)	101 (96%)	4 (4%)	0	100	100
All	All	81498/94154 (87%)	78546 (96%)	2920 (4%)	32 (0%)	100	100

All (32) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	GD	274	PRO
2	HD	274	PRO
2	KD	274	PRO
2	KH	274	PRO
2	KL	274	PRO
3	d	368	PRO
7	m	330	PRO
13	F	399	PRO
13	G	401	PRO
13	G	543	PRO

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Mol	Chain	Res	Type
13	H	399	PRO
13	I	401	PRO
13	I	543	PRO
3	b	368	PRO
3	c	397	ALA
3	d	397	ALA
10	P	569	VAL
10	Q	569	VAL
10	S	569	VAL
10	aa	569	VAL
3	c	368	PRO
10	R	569	VAL
3	b	275	ARG
7	m	149	HIS
14	J	468	ALA
2	EF	52	PHE
7	n	149	HIS
13	I	639	ALA
14	K	468	ALA
12	D	1506	VAL
12	E	1506	VAL
12	E	1655	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	AA	370/379 (98%)	370 (100%)	0	100	100
1	AC	369/379 (97%)	368 (100%)	1 (0%)	92	96
1	AE	370/379 (98%)	369 (100%)	1 (0%)	92	96
1	AG	370/379 (98%)	369 (100%)	1 (0%)	92	96
1	AI	370/379 (98%)	366 (99%)	4 (1%)	73	85
1	AK	370/379 (98%)	367 (99%)	3 (1%)	81	89
1	BA	371/379 (98%)	371 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	BC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	BE	371/379 (98%)	370 (100%)	1 (0%)	92	96
1	BG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	BI	371/379 (98%)	370 (100%)	1 (0%)	92	96
1	BK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	CA	368/379 (97%)	368 (100%)	0	100	100
1	CC	368/379 (97%)	368 (100%)	0	100	100
1	CE	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	CG	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	CI	368/379 (97%)	368 (100%)	0	100	100
1	CK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	DC	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	DE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	DG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	DI	368/379 (97%)	368 (100%)	0	100	100
1	DK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	EA	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	EC	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	EE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	EG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	EI	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	EK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	FA	368/379 (97%)	368 (100%)	0	100	100
1	FC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	FE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	FG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	FI	368/379 (97%)	368 (100%)	0	100	100
1	FK	368/379 (97%)	368 (100%)	0	100	100
1	GC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	GE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	GG	368/379 (97%)	368 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	GI	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	GK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	GM	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	HC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	HE	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	HG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	HI	368/379 (97%)	364 (99%)	4 (1%)	73	85
1	HK	368/379 (97%)	368 (100%)	0	100	100
1	HM	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	IC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	IE	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	IG	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	II	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	IK	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	IM	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	JC	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	JE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	JG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	JI	367/379 (97%)	366 (100%)	1 (0%)	92	96
1	JK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	JM	367/379 (97%)	364 (99%)	3 (1%)	81	89
1	KC	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	KE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	KG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	KI	368/379 (97%)	368 (100%)	0	100	100
1	KK	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	LC	368/379 (97%)	365 (99%)	3 (1%)	81	89
1	LE	368/379 (97%)	366 (100%)	2 (0%)	88	94
1	LG	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	LI	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	LK	368/379 (97%)	367 (100%)	1 (0%)	92	96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	MC	370/379 (98%)	370 (100%)	0	100	100
1	ME	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	MG	370/379 (98%)	370 (100%)	0	100	100
1	MI	368/379 (97%)	367 (100%)	1 (0%)	92	96
1	MK	370/379 (98%)	370 (100%)	0	100	100
2	AB	363/374 (97%)	363 (100%)	0	100	100
2	AD	364/374 (97%)	363 (100%)	1 (0%)	92	96
2	AF	363/374 (97%)	361 (99%)	2 (1%)	86	93
2	AH	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	AJ	363/374 (97%)	362 (100%)	1 (0%)	92	96
2	AL	362/374 (97%)	359 (99%)	3 (1%)	81	89
2	BB	367/374 (98%)	366 (100%)	1 (0%)	92	96
2	BD	362/374 (97%)	359 (99%)	3 (1%)	81	89
2	BF	367/374 (98%)	367 (100%)	0	100	100
2	BH	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	BJ	367/374 (98%)	366 (100%)	1 (0%)	92	96
2	BL	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	CB	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	CD	361/374 (96%)	359 (99%)	2 (1%)	86	93
2	CF	361/374 (96%)	361 (100%)	0	100	100
2	CH	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	CJ	362/374 (97%)	362 (100%)	0	100	100
2	DB	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	DD	361/374 (96%)	359 (99%)	2 (1%)	86	93
2	DF	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	DH	362/374 (97%)	362 (100%)	0	100	100
2	DJ	362/374 (97%)	359 (99%)	3 (1%)	81	89
2	DL	362/374 (97%)	362 (100%)	0	100	100
2	EB	367/374 (98%)	366 (100%)	1 (0%)	92	96
2	ED	361/374 (96%)	357 (99%)	4 (1%)	73	85
2	EF	368/374 (98%)	367 (100%)	1 (0%)	92	96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	EH	361/374 (96%)	359 (99%)	2 (1%)	86	93
2	EJ	367/374 (98%)	366 (100%)	1 (0%)	92	96
2	EL	361/374 (96%)	358 (99%)	3 (1%)	81	89
2	FB	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	FD	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	FF	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	FH	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	FJ	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	FL	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	GD	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	GF	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	GH	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	GJ	362/374 (97%)	362 (100%)	0	100	100
2	GL	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	HD	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	HF	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	HH	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	HJ	360/374 (96%)	359 (100%)	1 (0%)	92	96
2	HL	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	ID	361/374 (96%)	361 (100%)	0	100	100
2	IF	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	IH	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	IJ	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	IL	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	JB	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	JD	362/374 (97%)	360 (99%)	2 (1%)	86	93
2	JF	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	JH	362/374 (97%)	361 (100%)	1 (0%)	92	96
2	JJ	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	JL	361/374 (96%)	360 (100%)	1 (0%)	92	96
2	KB	361/374 (96%)	361 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	KD	362/374 (97%)	360 (99%)	2 (1%)	86 93
2	KF	361/374 (96%)	359 (99%)	2 (1%)	86 93
2	KH	362/374 (97%)	361 (100%)	1 (0%)	92 96
2	KJ	361/374 (96%)	358 (99%)	3 (1%)	81 89
2	KL	362/374 (97%)	360 (99%)	2 (1%)	86 93
2	LB	362/374 (97%)	359 (99%)	3 (1%)	81 89
2	LD	362/374 (97%)	358 (99%)	4 (1%)	73 85
2	LF	362/374 (97%)	361 (100%)	1 (0%)	92 96
2	LH	362/374 (97%)	359 (99%)	3 (1%)	81 89
2	LJ	362/374 (97%)	361 (100%)	1 (0%)	92 96
2	LL	362/374 (97%)	359 (99%)	3 (1%)	81 89
2	MB	362/374 (97%)	359 (99%)	3 (1%)	81 89
2	MD	368/374 (98%)	367 (100%)	1 (0%)	92 96
2	MF	362/374 (97%)	361 (100%)	1 (0%)	92 96
2	MH	368/374 (98%)	368 (100%)	0	100 100
2	MJ	362/374 (97%)	360 (99%)	2 (1%)	86 93
2	ML	368/374 (98%)	366 (100%)	2 (0%)	88 94
3	a	247/462 (54%)	247 (100%)	0	100 100
3	b	461/462 (100%)	454 (98%)	7 (2%)	65 81
3	c	461/462 (100%)	455 (99%)	6 (1%)	69 83
3	d	216/462 (47%)	210 (97%)	6 (3%)	43 67
4	e	151/159 (95%)	150 (99%)	1 (1%)	84 91
4	f	151/159 (95%)	150 (99%)	1 (1%)	84 91
4	g	116/159 (73%)	116 (100%)	0	100 100
5	h	478/598 (80%)	477 (100%)	1 (0%)	93 97
5	i	478/598 (80%)	475 (99%)	3 (1%)	86 93
5	j	478/598 (80%)	477 (100%)	1 (0%)	93 97
6	k	304/410 (74%)	303 (100%)	1 (0%)	92 96
6	l	304/410 (74%)	304 (100%)	0	100 100
6	s	224/410 (55%)	223 (100%)	1 (0%)	91 95
7	m	278/331 (84%)	276 (99%)	2 (1%)	84 91

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
7	n	278/331 (84%)	276 (99%)	2 (1%)	84 91
7	o	278/331 (84%)	276 (99%)	2 (1%)	84 91
8	p	72/73 (99%)	72 (100%)	0	100 100
8	q	72/73 (99%)	72 (100%)	0	100 100
8	r	72/73 (99%)	72 (100%)	0	100 100
9	A	172/176 (98%)	172 (100%)	0	100 100
9	B	172/176 (98%)	171 (99%)	1 (1%)	86 93
9	C	172/176 (98%)	172 (100%)	0	100 100
10	P	91/482 (19%)	91 (100%)	0	100 100
10	Q	91/482 (19%)	89 (98%)	2 (2%)	52 72
10	R	91/482 (19%)	91 (100%)	0	100 100
10	S	91/482 (19%)	89 (98%)	2 (2%)	52 72
10	Z	80/482 (17%)	80 (100%)	0	100 100
10	cc	79/482 (16%)	78 (99%)	1 (1%)	69 83
12	bb	57/1666 (3%)	57 (100%)	0	100 100
14	J	165/697 (24%)	164 (99%)	1 (1%)	86 93
14	K	165/697 (24%)	165 (100%)	0	100 100
15	L	87/166 (52%)	87 (100%)	0	100 100
15	M	87/166 (52%)	87 (100%)	0	100 100
15	N	87/166 (52%)	87 (100%)	0	100 100
15	O	87/166 (52%)	87 (100%)	0	100 100
15	X	87/166 (52%)	87 (100%)	0	100 100
15	Y	87/166 (52%)	87 (100%)	0	100 100
All	All	61147/69759 (88%)	60901 (100%)	246 (0%)	91 95

All (246) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	AC	2	ARG
2	AD	430	LYS
1	AE	347	ASN
2	AF	2	ARG
2	AF	373	ARG
1	AG	247	ASN

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Mol	Chain	Res	Type
2	AH	2	ARG
1	AI	2	ARG
1	AI	122	LYS
1	AI	336	LYS
1	AI	347	ASN
2	AJ	2	ARG
1	AK	298	ASN
1	AK	306	ARG
1	AK	362	LYS
2	AL	2	ARG
2	AL	221	ARG
2	AL	243	ARG
2	BB	2	ARG
1	BC	306	ARG
2	BD	2	ARG
2	BD	285	GLN
2	BD	308	ARG
1	BE	347	ASN
1	BG	298	ASN
2	BH	285	GLN
2	BH	308	ARG
1	BI	347	ASN
2	BJ	84	ARG
1	BK	347	ASN
2	BL	2	ARG
2	BL	308	ARG
2	CB	2	ARG
2	CD	2	ARG
2	CD	326	LYS
1	CE	2	ARG
1	CG	298	ASN
1	CG	347	ASN
2	CH	2	ARG
1	CK	347	ASN
2	DB	2	ARG
2	DB	221	ARG
1	DC	2	ARG
1	DC	347	ASN
2	DD	2	ARG
2	DD	339	ARG
1	DE	99	ASN
1	DE	298	ASN

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Mol	Chain	Res	Type
2	DF	339	ARG
1	DG	2	ARG
2	DJ	2	ARG
2	DJ	308	ARG
2	DJ	339	ARG
1	DK	2	ARG
1	EA	306	ARG
2	EB	308	ARG
1	EC	122	LYS
1	EC	306	ARG
1	EC	347	ASN
2	ED	2	ARG
2	ED	285	GLN
2	ED	308	ARG
2	ED	339	ARG
1	EE	2	ARG
1	EE	306	ARG
2	EF	308	ARG
1	EG	306	ARG
2	EH	2	ARG
2	EH	308	ARG
1	EI	276	ARG
1	EI	306	ARG
2	EJ	308	ARG
1	EK	306	ARG
2	EL	2	ARG
2	EL	308	ARG
2	EL	373	ARG
2	FB	2	ARG
2	FB	163	LYS
1	FC	2	ARG
2	FD	2	ARG
1	FE	347	ASN
1	FE	426	GLN
2	FF	2	ARG
2	FF	163	LYS
1	FG	306	ARG
2	FH	2	ARG
2	FH	373	ARG
2	FJ	2	ARG
2	FL	2	ARG
2	FL	221	ARG

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Mol	Chain	Res	Type
1	GC	379	LYS
2	GD	2	ARG
1	GE	2	ARG
1	GE	306	ARG
2	GF	221	ARG
2	GH	2	ARG
2	GH	308	ARG
1	GI	306	ARG
1	GI	347	ASN
1	GK	390	ARG
2	GL	2	ARG
2	GL	308	ARG
1	GM	298	ASN
1	GM	306	ARG
1	HC	359	LYS
2	HD	2	ARG
2	HD	430	LYS
1	HE	99	ASN
1	HE	306	ARG
1	HE	362	LYS
2	HF	2	ARG
2	HF	373	ARG
1	HG	321	MET
2	HH	2	ARG
1	HI	2	ARG
1	HI	241	ARG
1	HI	347	ASN
1	HI	359	LYS
2	HJ	2	ARG
2	HL	308	ARG
1	HM	58	ARG
1	HM	99	ASN
1	HM	241	ARG
1	IC	379	LYS
1	IE	2	ARG
2	IF	2	ARG
1	IG	2	ARG
1	IG	347	ASN
2	IH	308	ARG
1	II	2	ARG
2	IJ	2	ARG
2	IJ	206	ASN

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Mol	Chain	Res	Type
1	IK	2	ARG
1	IK	347	ASN
1	IK	350	LYS
2	IL	308	ARG
1	IM	2	ARG
1	IM	390	ARG
2	JB	373	ARG
1	JC	2	ARG
1	JC	100	ASN
1	JC	334	GLN
2	JD	2	ARG
2	JD	326	LYS
1	JE	2	ARG
1	JE	247	ASN
2	JF	2	ARG
1	JG	2	ARG
2	JH	2	ARG
1	JI	2	ARG
2	JJ	326	LYS
1	JK	2	ARG
2	JL	2	ARG
1	JM	2	ARG
1	JM	324	LYS
1	JM	347	ASN
1	KC	2	ARG
2	KD	2	ARG
2	KD	163	LYS
1	KE	2	ARG
1	KE	306	ARG
2	KF	2	ARG
2	KF	430	LYS
1	KG	362	LYS
2	KH	221	ARG
2	KJ	2	ARG
2	KJ	308	ARG
2	KJ	401	LYS
1	KK	306	ARG
2	KL	2	ARG
2	KL	390	ARG
2	LB	2	ARG
2	LB	221	ARG
2	LB	430	LYS

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Mol	Chain	Res	Type
1	LC	2	ARG
1	LC	306	ARG
1	LC	347	ASN
2	LD	2	ARG
2	LD	215	ARG
2	LD	308	ARG
2	LD	372	GLN
1	LE	2	ARG
1	LE	334	GLN
2	LF	2	ARG
1	LG	347	ASN
2	LH	2	ARG
2	LH	215	ARG
2	LH	308	ARG
1	LI	2	ARG
2	LJ	2	ARG
1	LK	2	ARG
2	LL	2	ARG
2	LL	380	ASN
2	LL	430	LYS
2	MB	2	ARG
2	MB	308	ARG
2	MB	339	ARG
2	MD	308	ARG
1	ME	2	ARG
2	MF	2	ARG
1	MI	320	ARG
2	MJ	2	ARG
2	MJ	308	ARG
2	ML	2	ARG
2	ML	326	LYS
3	b	363	CYS
3	b	364	ARG
3	b	365	VAL
3	b	367	GLU
3	b	404	THR
3	b	405	CYS
3	b	407	GLN
3	c	363	CYS
3	c	364	ARG
3	c	365	VAL
3	c	367	GLU

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Mol	Chain	Res	Type
3	c	404	THR
3	c	407	GLN
3	d	362	GLN
3	d	363	CYS
3	d	364	ARG
3	d	381	ARG
3	d	398	ARG
3	d	404	THR
4	e	18	ARG
4	f	18	ARG
5	h	187	ARG
5	i	187	ARG
5	i	300	ASN
5	i	704	ARG
5	j	187	ARG
6	k	232	ARG
7	m	68	LYS
7	m	214	ARG
7	n	37	ARG
7	n	214	ARG
7	o	37	ARG
7	o	214	ARG
6	s	373	LYS
9	B	104	ARG
10	Q	120	ARG
10	Q	218	ARG
10	S	120	ARG
10	S	144	ARG
10	cc	179	ARG
14	J	309	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (138) such sidechains are listed below:

Mol	Chain	Res	Type
2	AB	101	ASN
1	AC	99	ASN
2	AD	258	ASN
1	AG	94	GLN
1	AG	247	ASN
2	AH	258	ASN
1	AI	416	ASN
1	BA	298	ASN

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Mol	Chain	Res	Type
2	BB	329	ASN
1	BE	256	ASN
2	BF	329	ASN
2	BH	101	ASN
2	BH	206	ASN
1	BI	298	ASN
2	CB	101	ASN
1	CC	99	ASN
1	CC	256	ASN
1	CC	375	GLN
2	CD	15	GLN
1	CE	247	ASN
2	CF	380	ASN
1	CG	105	HIS
2	CH	91	GLN
2	CH	258	ASN
2	CJ	258	ASN
1	DC	83	GLN
2	DD	11	GLN
2	DD	15	GLN
2	DD	258	ASN
1	DE	99	ASN
2	DF	206	ASN
2	DF	258	ASN
2	DF	342	GLN
1	DI	99	ASN
2	DJ	258	ASN
1	DK	291	GLN
1	DK	426	GLN
1	EA	131	GLN
2	EB	101	ASN
1	EE	99	ASN
1	EG	347	ASN
1	EI	11	GLN
1	EI	348	ASN
1	EI	414	ASN
2	EJ	226	ASN
2	EJ	329	ASN
1	FE	298	ASN
1	FE	347	ASN
1	FE	426	GLN
2	FF	91	GLN

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Mol	Chain	Res	Type
1	FI	298	ASN
1	FK	195	ASN
1	GC	279	GLN
2	GF	88	HIS
2	GF	206	ASN
2	GH	101	ASN
1	GI	191	GLN
1	GI	256	ASN
1	GK	247	ASN
1	GK	347	ASN
2	GL	85	GLN
2	GL	356	ASN
1	GM	6	HIS
1	GM	191	GLN
2	HD	11	GLN
2	HD	15	GLN
1	HE	375	GLN
1	HI	184	ASN
1	HI	256	ASN
2	HJ	372	GLN
1	HK	99	ASN
1	HK	131	GLN
1	HK	329	GLN
1	HK	375	GLN
2	HL	283	HIS
2	HL	329	ASN
1	HM	247	ASN
1	IE	6	HIS
1	IE	256	ASN
1	IE	416	ASN
2	IF	101	ASN
2	IH	197	HIS
1	IK	99	ASN
1	IK	134	GLN
1	JC	100	ASN
1	JC	334	GLN
2	JD	206	ASN
1	JE	426	GLN
2	JF	88	HIS
2	JH	206	ASN
1	JI	11	GLN
1	JI	348	ASN

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Mol	Chain	Res	Type
1	JK	11	GLN
1	JK	99	ASN
1	JK	416	ASN
2	JL	206	ASN
1	JM	191	GLN
1	JM	414	ASN
2	KB	15	GLN
2	KB	88	HIS
2	KD	88	HIS
1	KE	131	GLN
2	KF	358	GLN
1	KG	99	ASN
2	KH	11	GLN
2	KH	15	GLN
2	KH	61	HIS
1	KI	184	ASN
2	KJ	15	GLN
1	KK	334	GLN
1	KK	347	ASN
2	LB	31	GLN
1	LC	6	HIS
1	LC	245	GLN
1	LG	256	ASN
2	LH	258	ASN
1	LI	256	ASN
1	LI	279	GLN
2	LJ	11	GLN
2	LJ	15	GLN
1	LK	247	ASN
2	MB	101	ASN
1	MC	99	ASN
2	MD	11	GLN
2	MD	15	GLN
2	MH	380	ASN
1	MI	245	GLN
3	c	98	GLN
3	d	362	GLN
4	e	143	ASN
4	f	185	HIS
5	j	171	GLN
5	j	515	HIS
6	l	185	ASN

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Mol	Chain	Res	Type
6	l	516	GLN
7	m	413	HIS
10	Q	121	ASN
10	Z	162	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 222 ligands modelled in this entry, 74 are monoatomic - leaving 148 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
19	GDP	JC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.25	4 (13%)
19	GDP	AK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.23	3 (10%)
19	GDP	LE	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.24	4 (13%)
19	GDP	CC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.29	4 (13%)
20	GTP	AB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.64	7 (21%)
20	GTP	MJ	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.61	7 (21%)
20	GTP	DL	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.69	7 (21%)
19	GDP	HM	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.26	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
19	GDP	IE	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
20	GTP	MF	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.70	7 (21%)
20	GTP	CF	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.64	7 (21%)
19	GDP	GG	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.29	4 (13%)
19	GDP	MG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.29	4 (13%)
20	GTP	MH	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.69	7 (21%)
19	GDP	HG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.29	4 (13%)
19	GDP	FA	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.31	4 (13%)
19	GDP	BG	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.31	5 (16%)
19	GDP	LK	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.28	4 (13%)
20	GTP	HD	501	21	26,34,34	1.14	2 (7%)	32,54,54	1.68	7 (21%)
20	GTP	JF	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.66	8 (25%)
19	GDP	AC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.26	4 (13%)
19	GDP	IK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.25	4 (13%)
20	GTP	FJ	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.73	7 (21%)
20	GTP	KH	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.67	7 (21%)
20	GTP	CB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.67	7 (21%)
19	GDP	JG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.27	5 (16%)
19	GDP	CA	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.31	4 (13%)
19	GDP	JK	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.35	5 (16%)
20	GTP	HJ	501	21	26,34,34	1.15	2 (7%)	32,54,54	1.71	6 (18%)
19	GDP	FI	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.28	4 (13%)
19	GDP	BK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.37	4 (13%)
19	GDP	KK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
20	GTP	EH	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.61	7 (21%)
19	GDP	KE	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.33	4 (13%)
19	GDP	HE	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.25	4 (13%)
19	GDP	DG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.21	4 (13%)
19	GDP	JM	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.37	4 (13%)
19	GDP	MC	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
20	GTP	FF	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.63	7 (21%)
19	GDP	GK	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.26	4 (13%)
19	GDP	EE	502	-	24,30,30	0.97	1 (4%)	30,47,47	1.23	3 (10%)
20	GTP	DF	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.69	7 (21%)
20	GTP	EJ	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.60	7 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
20	GTP	GJ	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.71	7 (21%)
20	GTP	KJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.67	7 (21%)
20	GTP	HL	501	21	26,34,34	1.15	2 (7%)	32,54,54	1.71	7 (21%)
20	GTP	LL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.61	7 (21%)
20	GTP	DJ	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.71	7 (21%)
19	GDP	AE	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.32	4 (13%)
19	GDP	GM	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.32	4 (13%)
19	GDP	IG	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.25	4 (13%)
19	GDP	LG	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.32	4 (13%)
19	GDP	HC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.27	4 (13%)
19	GDP	DE	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.38	4 (13%)
20	GTP	LH	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.68	6 (18%)
20	GTP	GD	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.71	7 (21%)
19	GDP	AA	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.34	4 (13%)
19	GDP	DC	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.27	4 (13%)
19	GDP	BI	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.25	4 (13%)
20	GTP	JH	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.58	7 (21%)
20	GTP	KF	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.68	7 (21%)
20	GTP	JJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	LI	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.27	4 (13%)
20	GTP	FH	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.68	7 (21%)
19	GDP	IC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.29	4 (13%)
20	GTP	IJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
20	GTP	CJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.68	7 (21%)
20	GTP	LF	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.71	7 (21%)
20	GTP	DD	501	21	26,34,34	1.17	1 (3%)	32,54,54	1.63	7 (21%)
20	GTP	JL	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.69	7 (21%)
19	GDP	EK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	4 (13%)
20	GTP	JD	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.59	8 (25%)
20	GTP	KB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.70	7 (21%)
19	GDP	EG	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.26	4 (13%)
19	GDP	EC	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.28	4 (13%)
19	GDP	DK	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.27	4 (13%)
20	GTP	ID	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.64	7 (21%)
19	GDP	AG	501	-	24,30,30	1.01	1 (4%)	30,47,47	1.21	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
20	GTP	BD	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.68	7 (21%)
20	GTP	MB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.62	7 (21%)
20	GTP	BL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	II	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.39	5 (16%)
20	GTP	EF	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.60	7 (21%)
20	GTP	MD	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.78	7 (21%)
19	GDP	HI	502	-	24,30,30	0.96	1 (4%)	30,47,47	1.26	4 (13%)
20	GTP	CD	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.69	7 (21%)
20	GTP	BJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.69	7 (21%)
20	GTP	KL	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.62	7 (21%)
19	GDP	GE	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.32	4 (13%)
20	GTP	ED	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	AI	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.31	4 (13%)
19	GDP	JI	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.33	4 (13%)
20	GTP	EB	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.63	7 (21%)
19	GDP	LC	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.30	4 (13%)
19	GDP	GC	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.32	4 (13%)
20	GTP	FL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.67	7 (21%)
20	GTP	LD	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.60	7 (21%)
19	GDP	MI	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.33	4 (13%)
20	GTP	IL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
20	GTP	AF	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	ME	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.30	4 (13%)
20	GTP	BH	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.68	7 (21%)
19	GDP	CE	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.26	4 (13%)
19	GDP	FK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	4 (13%)
20	GTP	DH	501	21	26,34,34	1.23	1 (3%)	32,54,54	1.78	8 (25%)
19	GDP	CI	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.29	4 (13%)
19	GDP	FC	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.27	4 (13%)
19	GDP	EI	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.29	4 (13%)
19	GDP	BC	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.35	4 (13%)
19	GDP	IM	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.31	4 (13%)
20	GTP	GH	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.71	7 (21%)
20	GTP	ML	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.73	7 (21%)
20	GTP	AJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.66	7 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
20	GTP	FB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.68	7 (21%)
20	GTP	HF	501	21	26,34,34	1.14	2 (7%)	32,54,54	1.67	7 (21%)
19	GDP	DI	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.31	4 (13%)
20	GTP	BF	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.62	7 (21%)
20	GTP	AD	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.66	7 (21%)
20	GTP	HI	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.70	6 (18%)
20	GTP	GF	501	21	26,34,34	1.16	2 (7%)	32,54,54	1.74	6 (18%)
19	GDP	BA	501	-	24,30,30	0.91	1 (4%)	30,47,47	1.26	4 (13%)
20	GTP	IH	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	HK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	4 (13%)
20	GTP	CH	501	21	26,34,34	1.19	2 (7%)	32,54,54	1.71	7 (21%)
20	GTP	EL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.66	7 (21%)
19	GDP	FE	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.31	4 (13%)
20	GTP	AL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	BE	501	-	24,30,30	1.00	1 (4%)	30,47,47	1.20	4 (13%)
19	GDP	MK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.31	4 (13%)
20	GTP	JB	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.66	7 (21%)
20	GTP	KD	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.66	7 (21%)
19	GDP	KC	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.28	4 (13%)
19	GDP	FG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.22	4 (13%)
19	GDP	GI	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.26	4 (13%)
20	GTP	GL	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.65	7 (21%)
19	GDP	KG	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
20	GTP	FD	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.66	7 (21%)
20	GTP	LJ	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.69	7 (21%)
19	GDP	EA	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	4 (13%)
20	GTP	LB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.67	7 (21%)
19	GDP	KI	502	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
19	GDP	CK	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.29	4 (13%)
20	GTP	BB	501	21	26,34,34	1.17	2 (7%)	32,54,54	1.64	7 (21%)
20	GTP	IF	501	21	26,34,34	1.20	2 (7%)	32,54,54	1.69	7 (21%)
20	GTP	AH	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.67	7 (21%)
19	GDP	CG	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.15	4 (13%)
20	GTP	DB	501	21	26,34,34	1.18	2 (7%)	32,54,54	1.67	8 (25%)
19	GDP	JE	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.27	4 (13%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	GDP	JC	501	-	-	1/12/32/32	0/3/3/3
19	GDP	AK	501	-	-	4/12/32/32	0/3/3/3
19	GDP	LE	501	-	-	1/12/32/32	0/3/3/3
19	GDP	CC	501	-	-	5/12/32/32	0/3/3/3
20	GTP	AB	501	21	-	4/18/38/38	0/3/3/3
20	GTP	MJ	501	21	-	4/18/38/38	0/3/3/3
20	GTP	DL	501	21	-	6/18/38/38	0/3/3/3
19	GDP	HM	501	-	-	5/12/32/32	0/3/3/3
19	GDP	IE	501	-	-	3/12/32/32	0/3/3/3
20	GTP	MF	501	21	-	5/18/38/38	0/3/3/3
20	GTP	CF	501	21	-	3/18/38/38	0/3/3/3
19	GDP	GG	501	-	-	0/12/32/32	0/3/3/3
19	GDP	MG	501	-	-	0/12/32/32	0/3/3/3
20	GTP	MH	501	21	-	6/18/38/38	0/3/3/3
19	GDP	HG	501	-	-	1/12/32/32	0/3/3/3
19	GDP	FA	501	-	-	1/12/32/32	0/3/3/3
19	GDP	BG	501	-	-	1/12/32/32	0/3/3/3
19	GDP	LK	501	-	-	0/12/32/32	0/3/3/3
20	GTP	HD	501	21	-	4/18/38/38	0/3/3/3
20	GTP	JF	501	21	-	1/18/38/38	0/3/3/3
19	GDP	AC	501	-	-	0/12/32/32	0/3/3/3
19	GDP	IK	501	-	-	3/12/32/32	0/3/3/3
20	GTP	FJ	501	21	-	4/18/38/38	0/3/3/3
20	GTP	KH	501	21	-	3/18/38/38	0/3/3/3
20	GTP	CB	501	21	-	5/18/38/38	0/3/3/3
19	GDP	JG	501	-	-	5/12/32/32	0/3/3/3
19	GDP	CA	501	-	-	0/12/32/32	0/3/3/3
19	GDP	JK	501	-	-	2/12/32/32	0/3/3/3
20	GTP	HJ	501	21	-	3/18/38/38	0/3/3/3
19	GDP	FI	501	-	-	0/12/32/32	0/3/3/3
19	GDP	BK	501	-	-	4/12/32/32	0/3/3/3
19	GDP	KK	501	-	-	0/12/32/32	0/3/3/3
20	GTP	EH	501	21	-	6/18/38/38	0/3/3/3
19	GDP	KE	501	-	-	7/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	GDP	HE	501	-	-	5/12/32/32	0/3/3/3
19	GDP	DG	501	-	-	2/12/32/32	0/3/3/3
19	GDP	JM	501	-	-	0/12/32/32	0/3/3/3
19	GDP	MC	501	-	-	0/12/32/32	0/3/3/3
20	GTP	FF	501	21	-	5/18/38/38	0/3/3/3
19	GDP	GK	501	-	-	0/12/32/32	0/3/3/3
19	GDP	EE	502	-	-	7/12/32/32	0/3/3/3
20	GTP	DF	501	21	-	4/18/38/38	0/3/3/3
20	GTP	EJ	501	21	-	6/18/38/38	0/3/3/3
20	GTP	GJ	501	21	-	6/18/38/38	0/3/3/3
20	GTP	KJ	501	21	-	5/18/38/38	0/3/3/3
20	GTP	HL	501	21	-	5/18/38/38	0/3/3/3
20	GTP	LL	501	21	-	6/18/38/38	0/3/3/3
20	GTP	DJ	501	21	-	5/18/38/38	0/3/3/3
19	GDP	AE	501	-	-	0/12/32/32	0/3/3/3
19	GDP	GM	501	-	-	1/12/32/32	0/3/3/3
19	GDP	IG	501	-	-	0/12/32/32	0/3/3/3
19	GDP	LG	501	-	-	0/12/32/32	0/3/3/3
19	GDP	HC	501	-	-	3/12/32/32	0/3/3/3
19	GDP	DE	501	-	-	2/12/32/32	0/3/3/3
20	GTP	LH	501	21	-	4/18/38/38	0/3/3/3
20	GTP	GD	501	21	-	4/18/38/38	0/3/3/3
19	GDP	AA	501	-	-	0/12/32/32	0/3/3/3
19	GDP	DC	501	-	-	2/12/32/32	0/3/3/3
19	GDP	BI	501	-	-	3/12/32/32	0/3/3/3
20	GTP	JH	501	21	-	6/18/38/38	0/3/3/3
20	GTP	KF	501	21	-	5/18/38/38	0/3/3/3
20	GTP	JJ	501	21	-	6/18/38/38	0/3/3/3
19	GDP	LI	501	-	-	0/12/32/32	0/3/3/3
20	GTP	FH	501	21	-	4/18/38/38	0/3/3/3
19	GDP	IC	501	-	-	5/12/32/32	0/3/3/3
20	GTP	IJ	501	21	-	2/18/38/38	0/3/3/3
20	GTP	CJ	501	21	-	4/18/38/38	0/3/3/3
20	GTP	LF	501	21	-	3/18/38/38	0/3/3/3
20	GTP	DD	501	21	-	8/18/38/38	0/3/3/3
20	GTP	JL	501	21	-	7/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	GDP	EK	501	-	-	1/12/32/32	0/3/3/3
20	GTP	JD	501	21	-	4/18/38/38	0/3/3/3
20	GTP	KB	501	21	-	4/18/38/38	0/3/3/3
19	GDP	EG	501	-	-	4/12/32/32	0/3/3/3
19	GDP	EC	501	-	-	1/12/32/32	0/3/3/3
19	GDP	DK	501	-	-	2/12/32/32	0/3/3/3
20	GTP	ID	501	21	-	3/18/38/38	0/3/3/3
19	GDP	AG	501	-	-	0/12/32/32	0/3/3/3
20	GTP	BD	501	21	-	5/18/38/38	0/3/3/3
20	GTP	MB	501	21	-	5/18/38/38	0/3/3/3
20	GTP	BL	501	21	-	4/18/38/38	0/3/3/3
19	GDP	II	501	-	-	7/12/32/32	0/3/3/3
20	GTP	EF	501	21	-	7/18/38/38	0/3/3/3
20	GTP	MD	501	21	-	4/18/38/38	0/3/3/3
19	GDP	HI	502	-	-	3/12/32/32	0/3/3/3
20	GTP	CD	501	21	-	7/18/38/38	0/3/3/3
20	GTP	BJ	501	21	-	2/18/38/38	0/3/3/3
20	GTP	KL	501	21	-	7/18/38/38	0/3/3/3
19	GDP	GE	501	-	-	2/12/32/32	0/3/3/3
20	GTP	ED	501	21	-	3/18/38/38	0/3/3/3
19	GDP	AI	501	-	-	1/12/32/32	0/3/3/3
19	GDP	JI	501	-	-	2/12/32/32	0/3/3/3
20	GTP	EB	501	21	-	4/18/38/38	0/3/3/3
19	GDP	LC	501	-	-	0/12/32/32	0/3/3/3
19	GDP	GC	501	-	-	0/12/32/32	0/3/3/3
20	GTP	FL	501	21	-	4/18/38/38	0/3/3/3
20	GTP	LD	501	21	-	7/18/38/38	0/3/3/3
19	GDP	MI	501	-	-	4/12/32/32	0/3/3/3
20	GTP	IL	501	21	-	6/18/38/38	0/3/3/3
20	GTP	AF	501	21	-	3/18/38/38	0/3/3/3
19	GDP	ME	501	-	-	3/12/32/32	0/3/3/3
20	GTP	BH	501	21	-	5/18/38/38	0/3/3/3
19	GDP	CE	501	-	-	0/12/32/32	0/3/3/3
19	GDP	FK	501	-	-	2/12/32/32	0/3/3/3
20	GTP	DH	501	21	-	7/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	GDP	CI	501	-	-	2/12/32/32	0/3/3/3
19	GDP	FC	501	-	-	0/12/32/32	0/3/3/3
19	GDP	EI	501	-	-	0/12/32/32	0/3/3/3
19	GDP	BC	501	-	-	4/12/32/32	0/3/3/3
19	GDP	IM	501	-	-	4/12/32/32	0/3/3/3
20	GTP	GH	501	21	-	6/18/38/38	0/3/3/3
20	GTP	ML	501	21	-	4/18/38/38	0/3/3/3
20	GTP	AJ	501	21	-	6/18/38/38	0/3/3/3
20	GTP	FB	501	21	-	4/18/38/38	0/3/3/3
20	GTP	HF	501	21	-	4/18/38/38	0/3/3/3
19	GDP	DI	501	-	-	2/12/32/32	0/3/3/3
20	GTP	BF	501	21	-	3/18/38/38	0/3/3/3
20	GTP	AD	501	21	-	5/18/38/38	0/3/3/3
20	GTP	HI	501	21	-	3/18/38/38	0/3/3/3
20	GTP	GF	501	21	-	6/18/38/38	0/3/3/3
19	GDP	BA	501	-	-	7/12/32/32	0/3/3/3
20	GTP	IH	501	21	-	5/18/38/38	0/3/3/3
19	GDP	HK	501	-	-	2/12/32/32	0/3/3/3
20	GTP	CH	501	21	-	5/18/38/38	0/3/3/3
20	GTP	EL	501	21	-	5/18/38/38	0/3/3/3
19	GDP	FE	501	-	-	1/12/32/32	0/3/3/3
20	GTP	AL	501	21	-	3/18/38/38	0/3/3/3
19	GDP	BE	501	-	-	2/12/32/32	0/3/3/3
19	GDP	MK	501	-	-	0/12/32/32	0/3/3/3
20	GTP	JB	501	21	-	7/18/38/38	0/3/3/3
20	GTP	KD	501	21	-	5/18/38/38	0/3/3/3
19	GDP	KC	501	-	-	2/12/32/32	0/3/3/3
19	GDP	FG	501	-	-	1/12/32/32	0/3/3/3
19	GDP	GI	501	-	-	2/12/32/32	0/3/3/3
20	GTP	GL	501	21	-	6/18/38/38	0/3/3/3
19	GDP	KG	501	-	-	1/12/32/32	0/3/3/3
20	GTP	FD	501	21	-	3/18/38/38	0/3/3/3
20	GTP	LJ	501	21	-	4/18/38/38	0/3/3/3
19	GDP	EA	501	-	-	6/12/32/32	0/3/3/3
20	GTP	LB	501	21	-	3/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	GDP	KI	502	-	-	5/12/32/32	0/3/3/3
19	GDP	CK	501	-	-	6/12/32/32	0/3/3/3
20	GTP	BB	501	21	-	3/18/38/38	0/3/3/3
20	GTP	IF	501	21	-	5/18/38/38	0/3/3/3
20	GTP	AH	501	21	-	7/18/38/38	0/3/3/3
19	GDP	CG	501	-	-	3/12/32/32	0/3/3/3
20	GTP	DB	501	21	-	6/18/38/38	0/3/3/3
19	GDP	JE	501	-	-	4/12/32/32	0/3/3/3

All (220) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
20	DH	501	GTP	C5-C6	-4.39	1.38	1.47
20	IF	501	GTP	C5-C6	-4.32	1.38	1.47
20	AF	501	GTP	C5-C6	-4.30	1.38	1.47
20	FH	501	GTP	C5-C6	-4.29	1.38	1.47
20	EF	501	GTP	C5-C6	-4.27	1.38	1.47
20	IH	501	GTP	C5-C6	-4.26	1.38	1.47
20	FF	501	GTP	C5-C6	-4.25	1.38	1.47
20	MF	501	GTP	C5-C6	-4.24	1.38	1.47
20	DL	501	GTP	C5-C6	-4.23	1.38	1.47
20	DF	501	GTP	C5-C6	-4.23	1.38	1.47
20	LH	501	GTP	C5-C6	-4.23	1.38	1.47
20	BF	501	GTP	C5-C6	-4.22	1.38	1.47
20	MH	501	GTP	C5-C6	-4.22	1.38	1.47
20	JF	501	GTP	C5-C6	-4.21	1.38	1.47
20	EH	501	GTP	C5-C6	-4.21	1.38	1.47
20	FJ	501	GTP	C5-C6	-4.21	1.38	1.47
20	FD	501	GTP	C5-C6	-4.21	1.38	1.47
20	AB	501	GTP	C5-C6	-4.21	1.38	1.47
20	CF	501	GTP	C5-C6	-4.20	1.38	1.47
20	EB	501	GTP	C5-C6	-4.20	1.38	1.47
20	IJ	501	GTP	C5-C6	-4.20	1.38	1.47
20	LF	501	GTP	C5-C6	-4.20	1.38	1.47
20	FL	501	GTP	C5-C6	-4.20	1.38	1.47
20	CH	501	GTP	C5-C6	-4.20	1.38	1.47
20	DB	501	GTP	C5-C6	-4.19	1.38	1.47
20	CD	501	GTP	C5-C6	-4.18	1.38	1.47
20	DJ	501	GTP	C5-C6	-4.18	1.38	1.47
20	DD	501	GTP	C5-C6	-4.18	1.38	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
20	IL	501	GTP	C5-C6	-4.18	1.38	1.47
20	AH	501	GTP	C5-C6	-4.18	1.38	1.47
20	JL	501	GTP	C5-C6	-4.18	1.38	1.47
20	KD	501	GTP	C5-C6	-4.18	1.38	1.47
20	ML	501	GTP	C5-C6	-4.18	1.38	1.47
20	BJ	501	GTP	C5-C6	-4.18	1.38	1.47
20	HI	501	GTP	C5-C6	-4.18	1.38	1.47
20	ID	501	GTP	C5-C6	-4.17	1.38	1.47
20	KF	501	GTP	C5-C6	-4.17	1.38	1.47
20	MB	501	GTP	C5-C6	-4.17	1.38	1.47
20	LD	501	GTP	C5-C6	-4.17	1.38	1.47
20	BB	501	GTP	C5-C6	-4.17	1.38	1.47
20	MJ	501	GTP	C5-C6	-4.17	1.38	1.47
20	LL	501	GTP	C5-C6	-4.17	1.38	1.47
20	KB	501	GTP	C5-C6	-4.17	1.38	1.47
20	AJ	501	GTP	C5-C6	-4.16	1.39	1.47
20	AL	501	GTP	C5-C6	-4.16	1.39	1.47
20	LB	501	GTP	C5-C6	-4.16	1.39	1.47
20	GH	501	GTP	C5-C6	-4.16	1.39	1.47
20	ED	501	GTP	C5-C6	-4.15	1.39	1.47
20	JJ	501	GTP	C5-C6	-4.15	1.39	1.47
20	EL	501	GTP	C5-C6	-4.15	1.39	1.47
20	GL	501	GTP	C5-C6	-4.15	1.39	1.47
20	FB	501	GTP	C5-C6	-4.14	1.39	1.47
20	KJ	501	GTP	C5-C6	-4.14	1.39	1.47
20	JB	501	GTP	C5-C6	-4.13	1.39	1.47
20	CJ	501	GTP	C5-C6	-4.13	1.39	1.47
20	EJ	501	GTP	C5-C6	-4.13	1.39	1.47
20	JH	501	GTP	C5-C6	-4.12	1.39	1.47
20	LJ	501	GTP	C5-C6	-4.12	1.39	1.47
20	JD	501	GTP	C5-C6	-4.12	1.39	1.47
20	CB	501	GTP	C5-C6	-4.12	1.39	1.47
20	KL	501	GTP	C5-C6	-4.12	1.39	1.47
20	KH	501	GTP	C5-C6	-4.11	1.39	1.47
20	GD	501	GTP	C5-C6	-4.11	1.39	1.47
20	BH	501	GTP	C5-C6	-4.10	1.39	1.47
20	MD	501	GTP	C5-C6	-4.10	1.39	1.47
20	BL	501	GTP	C5-C6	-4.09	1.39	1.47
20	HL	501	GTP	C5-C6	-4.08	1.39	1.47
20	AD	501	GTP	C5-C6	-4.07	1.39	1.47
20	HJ	501	GTP	C5-C6	-4.06	1.39	1.47
20	GJ	501	GTP	C5-C6	-4.06	1.39	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
20	BD	501	GTP	C5-C6	-4.05	1.39	1.47
20	GF	501	GTP	C5-C6	-4.04	1.39	1.47
20	HD	501	GTP	C5-C6	-4.00	1.39	1.47
20	HF	501	GTP	C5-C6	-3.98	1.39	1.47
19	BE	501	GDP	C6-N1	-2.93	1.33	1.37
19	AG	501	GDP	C6-N1	-2.79	1.33	1.37
19	GI	501	GDP	C6-N1	-2.73	1.33	1.37
19	IM	501	GDP	C6-N1	-2.67	1.33	1.37
19	LC	501	GDP	C6-N1	-2.65	1.33	1.37
19	DE	501	GDP	C6-N1	-2.65	1.33	1.37
19	EE	502	GDP	C6-N1	-2.64	1.33	1.37
19	AE	501	GDP	C6-N1	-2.64	1.33	1.37
19	BG	501	GDP	C6-N1	-2.63	1.34	1.37
19	HI	502	GDP	C6-N1	-2.62	1.34	1.37
19	CA	501	GDP	C6-N1	-2.62	1.34	1.37
19	II	501	GDP	C6-N1	-2.62	1.34	1.37
19	HC	501	GDP	C6-N1	-2.61	1.34	1.37
19	FE	501	GDP	C6-N1	-2.61	1.34	1.37
19	HM	501	GDP	C6-N1	-2.60	1.34	1.37
19	CE	501	GDP	C6-N1	-2.60	1.34	1.37
19	EG	501	GDP	C6-N1	-2.60	1.34	1.37
19	GC	501	GDP	C6-N1	-2.59	1.34	1.37
19	GE	501	GDP	C6-N1	-2.59	1.34	1.37
19	HG	501	GDP	C6-N1	-2.59	1.34	1.37
19	EI	501	GDP	C6-N1	-2.59	1.34	1.37
19	GM	501	GDP	C6-N1	-2.59	1.34	1.37
19	JI	501	GDP	C6-N1	-2.59	1.34	1.37
19	KI	502	GDP	C6-N1	-2.59	1.34	1.37
19	BC	501	GDP	C6-N1	-2.58	1.34	1.37
19	KG	501	GDP	C6-N1	-2.58	1.34	1.37
19	MI	501	GDP	C6-N1	-2.58	1.34	1.37
19	LE	501	GDP	C6-N1	-2.58	1.34	1.37
19	LK	501	GDP	C6-N1	-2.58	1.34	1.37
19	EK	501	GDP	C6-N1	-2.58	1.34	1.37
19	CG	501	GDP	C6-N1	-2.57	1.34	1.37
19	AC	501	GDP	C6-N1	-2.57	1.34	1.37
19	GG	501	GDP	C6-N1	-2.57	1.34	1.37
19	ME	501	GDP	C6-N1	-2.57	1.34	1.37
19	LI	501	GDP	C6-N1	-2.56	1.34	1.37
19	BI	501	GDP	C6-N1	-2.56	1.34	1.37
19	GK	501	GDP	C6-N1	-2.56	1.34	1.37
19	EA	501	GDP	C6-N1	-2.56	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
19	EC	501	GDP	C6-N1	-2.56	1.34	1.37
19	FC	501	GDP	C6-N1	-2.56	1.34	1.37
19	DI	501	GDP	C6-N1	-2.56	1.34	1.37
19	AI	501	GDP	C6-N1	-2.55	1.34	1.37
19	FG	501	GDP	C6-N1	-2.55	1.34	1.37
19	CC	501	GDP	C6-N1	-2.55	1.34	1.37
19	KE	501	GDP	C6-N1	-2.55	1.34	1.37
19	MG	501	GDP	C6-N1	-2.55	1.34	1.37
19	DC	501	GDP	C6-N1	-2.53	1.34	1.37
19	CI	501	GDP	C6-N1	-2.53	1.34	1.37
19	IC	501	GDP	C6-N1	-2.53	1.34	1.37
19	FA	501	GDP	C6-N1	-2.52	1.34	1.37
19	HK	501	GDP	C6-N1	-2.52	1.34	1.37
19	MC	501	GDP	C6-N1	-2.52	1.34	1.37
19	BK	501	GDP	C6-N1	-2.52	1.34	1.37
19	DG	501	GDP	C6-N1	-2.52	1.34	1.37
19	IG	501	GDP	C6-N1	-2.52	1.34	1.37
19	LG	501	GDP	C6-N1	-2.51	1.34	1.37
19	AA	501	GDP	C6-N1	-2.51	1.34	1.37
19	JM	501	GDP	C6-N1	-2.51	1.34	1.37
19	CK	501	GDP	C6-N1	-2.51	1.34	1.37
19	FI	501	GDP	C6-N1	-2.51	1.34	1.37
19	IK	501	GDP	C6-N1	-2.50	1.34	1.37
19	JC	501	GDP	C6-N1	-2.50	1.34	1.37
19	FK	501	GDP	C6-N1	-2.50	1.34	1.37
19	KC	501	GDP	C6-N1	-2.50	1.34	1.37
19	IE	501	GDP	C6-N1	-2.48	1.34	1.37
19	MK	501	GDP	C6-N1	-2.48	1.34	1.37
19	JK	501	GDP	C6-N1	-2.48	1.34	1.37
19	AK	501	GDP	C6-N1	-2.47	1.34	1.37
19	HE	501	GDP	C6-N1	-2.47	1.34	1.37
19	KK	501	GDP	C6-N1	-2.46	1.34	1.37
19	DK	501	GDP	C6-N1	-2.42	1.34	1.37
19	JG	501	GDP	C6-N1	-2.41	1.34	1.37
19	JE	501	GDP	C6-N1	-2.40	1.34	1.37
19	BA	501	GDP	C6-N1	-2.36	1.34	1.37
20	EB	501	GTP	C2-N3	2.20	1.38	1.33
20	DL	501	GTP	C2-N3	2.20	1.38	1.33
20	GL	501	GTP	C2-N3	2.19	1.38	1.33
20	FF	501	GTP	C2-N3	2.19	1.38	1.33
20	AJ	501	GTP	C2-N3	2.18	1.38	1.33
20	EF	501	GTP	C2-N3	2.18	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
20	HD	501	GTP	C2-N3	2.18	1.38	1.33
20	FD	501	GTP	C2-N3	2.17	1.38	1.33
20	LJ	501	GTP	C2-N3	2.17	1.38	1.33
20	HJ	501	GTP	C2-N3	2.17	1.38	1.33
20	GD	501	GTP	C2-N3	2.17	1.38	1.33
20	JD	501	GTP	C2-N3	2.17	1.38	1.33
20	KH	501	GTP	C2-N3	2.17	1.38	1.33
20	LB	501	GTP	C2-N3	2.17	1.38	1.33
20	FJ	501	GTP	C2-N3	2.17	1.38	1.33
20	MB	501	GTP	C2-N3	2.16	1.38	1.33
20	DJ	501	GTP	C2-N3	2.16	1.38	1.33
20	CJ	501	GTP	C2-N3	2.16	1.38	1.33
20	GH	501	GTP	C2-N3	2.16	1.38	1.33
20	AD	501	GTP	C2-N3	2.15	1.38	1.33
20	HL	501	GTP	C2-N3	2.15	1.38	1.33
20	MJ	501	GTP	C2-N3	2.15	1.38	1.33
20	JJ	501	GTP	C2-N3	2.15	1.38	1.33
20	MD	501	GTP	C2-N3	2.15	1.38	1.33
20	LD	501	GTP	C2-N3	2.15	1.38	1.33
20	FB	501	GTP	C2-N3	2.15	1.38	1.33
20	KL	501	GTP	C2-N3	2.15	1.38	1.33
20	EJ	501	GTP	C2-N3	2.15	1.38	1.33
20	EL	501	GTP	C2-N3	2.14	1.38	1.33
20	BB	501	GTP	C2-N3	2.14	1.38	1.33
20	CB	501	GTP	C2-N3	2.14	1.38	1.33
20	MF	501	GTP	C2-N3	2.14	1.38	1.33
20	CH	501	GTP	C2-N3	2.13	1.38	1.33
20	ED	501	GTP	C2-N3	2.13	1.38	1.33
20	IF	501	GTP	C2-N3	2.13	1.38	1.33
20	JF	501	GTP	C2-N3	2.12	1.38	1.33
20	BL	501	GTP	C2-N3	2.11	1.38	1.33
20	FL	501	GTP	C2-N3	2.11	1.38	1.33
20	IH	501	GTP	C2-N3	2.11	1.38	1.33
20	FH	501	GTP	C2-N3	2.11	1.38	1.33
20	LL	501	GTP	C2-N3	2.11	1.38	1.33
20	ID	501	GTP	C2-N3	2.11	1.38	1.33
20	BJ	501	GTP	C2-N3	2.11	1.38	1.33
20	LF	501	GTP	C2-N3	2.11	1.38	1.33
20	CF	501	GTP	C2-N3	2.10	1.38	1.33
20	ML	501	GTP	C2-N3	2.10	1.38	1.33
20	KJ	501	GTP	C2-N3	2.10	1.38	1.33
20	JH	501	GTP	C2-N3	2.10	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
20	JL	501	GTP	C2-N3	2.10	1.38	1.33
20	HF	501	GTP	C2-N3	2.09	1.38	1.33
20	AB	501	GTP	C2-N3	2.09	1.38	1.33
20	IL	501	GTP	C2-N3	2.09	1.38	1.33
20	MH	501	GTP	C2-N3	2.09	1.38	1.33
20	JB	501	GTP	C2-N3	2.09	1.38	1.33
20	BD	501	GTP	C2-N3	2.09	1.38	1.33
20	BH	501	GTP	C2-N3	2.08	1.38	1.33
20	AL	501	GTP	C2-N3	2.08	1.38	1.33
20	KD	501	GTP	C2-N3	2.08	1.38	1.33
20	BF	501	GTP	C2-N3	2.07	1.38	1.33
20	GF	501	GTP	C2-N3	2.07	1.38	1.33
20	KB	501	GTP	C2-N3	2.06	1.38	1.33
20	DB	501	GTP	C2-N3	2.06	1.38	1.33
20	AH	501	GTP	C2-N3	2.06	1.38	1.33
20	EH	501	GTP	C2-N3	2.06	1.38	1.33
20	CD	501	GTP	C2-N3	2.05	1.38	1.33
20	IJ	501	GTP	C2-N3	2.05	1.38	1.33
20	HI	501	GTP	C2-N3	2.04	1.38	1.33
20	LH	501	GTP	C2-N3	2.04	1.38	1.33
20	DF	501	GTP	C2-N3	2.03	1.38	1.33
20	GJ	501	GTP	C2-N3	2.03	1.38	1.33
20	AF	501	GTP	C2-N3	2.02	1.38	1.33
20	KF	501	GTP	C2-N3	2.01	1.38	1.33

All (816) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	DH	501	GTP	PB-O3B-PG	-4.74	116.55	132.83
20	MD	501	GTP	PB-O3B-PG	-4.64	116.91	132.83
20	ML	501	GTP	PB-O3B-PG	-4.63	116.92	132.83
19	DE	501	GDP	PA-O3A-PB	-4.62	116.98	132.83
20	IH	501	GTP	PB-O3B-PG	-4.56	117.17	132.83
20	MD	501	GTP	PA-O3A-PB	-4.56	117.18	132.83
20	DJ	501	GTP	PA-O3A-PB	-4.53	117.28	132.83
20	DF	501	GTP	PA-O3A-PB	-4.50	117.37	132.83
20	DH	501	GTP	PA-O3A-PB	-4.50	117.38	132.83
20	LH	501	GTP	PA-O3A-PB	-4.48	117.45	132.83
20	KB	501	GTP	PA-O3A-PB	-4.47	117.47	132.83
20	CD	501	GTP	PB-O3B-PG	-4.46	117.51	132.83
20	AH	501	GTP	PB-O3B-PG	-4.46	117.51	132.83
20	KH	501	GTP	PA-O3A-PB	-4.46	117.52	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	DB	501	GTP	PA-O3A-PB	-4.43	117.61	132.83
20	KJ	501	GTP	PA-O3A-PB	-4.43	117.63	132.83
20	EL	501	GTP	PB-O3B-PG	-4.43	117.64	132.83
20	HI	501	GTP	PA-O3A-PB	-4.42	117.67	132.83
20	FL	501	GTP	PB-O3B-PG	-4.42	117.67	132.83
20	FJ	501	GTP	PA-O3A-PB	-4.40	117.72	132.83
20	LF	501	GTP	PA-O3A-PB	-4.40	117.73	132.83
20	CH	501	GTP	PB-O3B-PG	-4.39	117.75	132.83
20	FH	501	GTP	PB-O3B-PG	-4.39	117.76	132.83
20	BL	501	GTP	PB-O3B-PG	-4.39	117.77	132.83
20	HJ	501	GTP	PB-O3B-PG	-4.39	117.78	132.83
20	GD	501	GTP	PA-O3A-PB	-4.38	117.80	132.83
20	DL	501	GTP	PB-O3B-PG	-4.38	117.80	132.83
20	EB	501	GTP	PB-O3B-PG	-4.37	117.83	132.83
20	JF	501	GTP	PA-O3A-PB	-4.36	117.86	132.83
20	BH	501	GTP	PB-O3B-PG	-4.36	117.86	132.83
20	BF	501	GTP	PB-O3B-PG	-4.35	117.89	132.83
20	GF	501	GTP	PA-O3A-PB	-4.32	118.00	132.83
20	GJ	501	GTP	PA-O3A-PB	-4.32	118.02	132.83
20	IF	501	GTP	PA-O3A-PB	-4.31	118.05	132.83
20	LJ	501	GTP	PA-O3A-PB	-4.31	118.05	132.83
20	FD	501	GTP	PB-O3B-PG	-4.30	118.07	132.83
20	GF	501	GTP	PB-O3B-PG	-4.30	118.07	132.83
19	MI	501	GDP	PA-O3A-PB	-4.29	118.11	132.83
20	BJ	501	GTP	PB-O3B-PG	-4.28	118.14	132.83
20	HD	501	GTP	PA-O3A-PB	-4.28	118.14	132.83
20	FB	501	GTP	PA-O3A-PB	-4.28	118.15	132.83
19	DI	501	GDP	PA-O3A-PB	-4.28	118.16	132.83
20	MF	501	GTP	PA-O3A-PB	-4.27	118.16	132.83
19	JI	501	GDP	PA-O3A-PB	-4.27	118.17	132.83
20	ED	501	GTP	PA-O3A-PB	-4.25	118.23	132.83
20	HL	501	GTP	PB-O3B-PG	-4.25	118.24	132.83
20	CF	501	GTP	PB-O3B-PG	-4.24	118.27	132.83
20	BB	501	GTP	PB-O3B-PG	-4.24	118.27	132.83
20	FJ	501	GTP	PB-O3B-PG	-4.24	118.28	132.83
20	JB	501	GTP	PB-O3B-PG	-4.23	118.31	132.83
20	MJ	501	GTP	PB-O3B-PG	-4.23	118.32	132.83
20	BD	501	GTP	PB-O3B-PG	-4.22	118.35	132.83
20	CJ	501	GTP	PB-O3B-PG	-4.22	118.36	132.83
20	GH	501	GTP	PB-O3B-PG	-4.22	118.36	132.83
20	LL	501	GTP	PB-O3B-PG	-4.20	118.41	132.83
20	AL	501	GTP	PA-O3A-PB	-4.20	118.43	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	EH	501	GTP	PB-O3B-PG	-4.19	118.43	132.83
20	GJ	501	GTP	PB-O3B-PG	-4.18	118.47	132.83
20	KF	501	GTP	PA-O3A-PB	-4.18	118.49	132.83
19	ME	501	GDP	PA-O3A-PB	-4.17	118.50	132.83
20	LF	501	GTP	PB-O3B-PG	-4.17	118.51	132.83
20	AF	501	GTP	PB-O3B-PG	-4.17	118.51	132.83
20	IJ	501	GTP	PB-O3B-PG	-4.17	118.51	132.83
20	HF	501	GTP	PA-O3A-PB	-4.17	118.52	132.83
20	IF	501	GTP	PB-O3B-PG	-4.17	118.52	132.83
20	KD	501	GTP	PA-O3A-PB	-4.17	118.52	132.83
20	AD	501	GTP	PA-O3A-PB	-4.17	118.53	132.83
20	CH	501	GTP	PA-O3A-PB	-4.16	118.57	132.83
20	LB	501	GTP	PB-O3B-PG	-4.16	118.57	132.83
20	JL	501	GTP	PA-O3A-PB	-4.15	118.57	132.83
19	BC	501	GDP	PA-O3A-PB	-4.14	118.61	132.83
20	GL	501	GTP	PB-O3B-PG	-4.14	118.61	132.83
20	ID	501	GTP	PA-O3A-PB	-4.14	118.62	132.83
20	IL	501	GTP	PA-O3A-PB	-4.14	118.63	132.83
20	FB	501	GTP	PB-O3B-PG	-4.13	118.66	132.83
20	MH	501	GTP	PA-O3A-PB	-4.12	118.68	132.83
20	LJ	501	GTP	PB-O3B-PG	-4.12	118.69	132.83
20	MB	501	GTP	PB-O3B-PG	-4.12	118.69	132.83
20	GH	501	GTP	PA-O3A-PB	-4.11	118.71	132.83
20	CB	501	GTP	PB-O3B-PG	-4.10	118.77	132.83
20	MF	501	GTP	PB-O3B-PG	-4.09	118.80	132.83
20	EJ	501	GTP	PB-O3B-PG	-4.08	118.82	132.83
20	AJ	501	GTP	PA-O3A-PB	-4.07	118.85	132.83
20	JL	501	GTP	PB-O3B-PG	-4.07	118.85	132.83
19	AE	501	GDP	PA-O3A-PB	-4.07	118.86	132.83
20	LB	501	GTP	PA-O3A-PB	-4.07	118.87	132.83
19	JM	501	GDP	PA-O3A-PB	-4.06	118.91	132.83
20	KB	501	GTP	PB-O3B-PG	-4.05	118.91	132.83
20	GD	501	GTP	PB-O3B-PG	-4.05	118.94	132.83
20	AJ	501	GTP	PB-O3B-PG	-4.04	118.95	132.83
20	KJ	501	GTP	PB-O3B-PG	-4.03	119.00	132.83
20	IL	501	GTP	PB-O3B-PG	-4.03	119.00	132.83
20	JJ	501	GTP	PA-O3A-PB	-4.03	119.00	132.83
20	ML	501	GTP	PA-O3A-PB	-4.02	119.02	132.83
19	KE	501	GDP	PA-O3A-PB	-4.02	119.02	132.83
20	EF	501	GTP	PB-O3B-PG	-4.02	119.02	132.83
19	GE	501	GDP	PA-O3A-PB	-4.02	119.02	132.83
19	BK	501	GDP	PA-O3A-PB	-4.02	119.02	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	AD	501	GTP	PB-O3B-PG	-4.02	119.02	132.83
20	ED	501	GTP	PB-O3B-PG	-4.02	119.03	132.83
20	MH	501	GTP	PB-O3B-PG	-4.02	119.04	132.83
20	LH	501	GTP	PB-O3B-PG	-4.01	119.06	132.83
19	IE	501	GDP	PA-O3A-PB	-4.00	119.11	132.83
20	JB	501	GTP	PA-O3A-PB	-4.00	119.12	132.83
20	KF	501	GTP	PB-O3B-PG	-3.99	119.12	132.83
20	HJ	501	GTP	PA-O3A-PB	-3.99	119.13	132.83
20	DL	501	GTP	PA-O3A-PB	-3.99	119.14	132.83
20	IJ	501	GTP	PA-O3A-PB	-3.97	119.20	132.83
20	ID	501	GTP	PB-O3B-PG	-3.97	119.20	132.83
20	CJ	501	GTP	PA-O3A-PB	-3.96	119.22	132.83
19	MK	501	GDP	PA-O3A-PB	-3.96	119.23	132.83
20	AL	501	GTP	PB-O3B-PG	-3.95	119.27	132.83
20	HI	501	GTP	PB-O3B-PG	-3.95	119.27	132.83
20	DJ	501	GTP	PB-O3B-PG	-3.93	119.34	132.83
20	KD	501	GTP	PB-O3B-PG	-3.92	119.36	132.83
20	AB	501	GTP	PB-O3B-PG	-3.92	119.37	132.83
19	BG	501	GDP	PA-O3A-PB	-3.92	119.38	132.83
20	BD	501	GTP	PA-O3A-PB	-3.92	119.38	132.83
20	HL	501	GTP	PA-O3A-PB	-3.91	119.40	132.83
19	MG	501	GDP	PA-O3A-PB	-3.91	119.40	132.83
20	EL	501	GTP	PA-O3A-PB	-3.89	119.47	132.83
19	II	501	GDP	PA-O3A-PB	-3.87	119.55	132.83
19	AI	501	GDP	PA-O3A-PB	-3.87	119.56	132.83
20	FF	501	GTP	PB-O3B-PG	-3.86	119.58	132.83
20	BJ	501	GTP	PA-O3A-PB	-3.86	119.60	132.83
19	GM	501	GDP	PA-O3A-PB	-3.84	119.66	132.83
19	MC	501	GDP	PA-O3A-PB	-3.83	119.69	132.83
20	LD	501	GTP	PB-O3B-PG	-3.83	119.70	132.83
19	LG	501	GDP	PA-O3A-PB	-3.82	119.71	132.83
19	KK	501	GDP	PA-O3A-PB	-3.82	119.72	132.83
19	KG	501	GDP	PA-O3A-PB	-3.81	119.73	132.83
20	DD	501	GTP	PB-O3B-PG	-3.81	119.75	132.83
20	AB	501	GTP	PA-O3A-PB	-3.76	119.91	132.83
19	JK	501	GDP	PA-O3A-PB	-3.76	119.92	132.83
20	HD	501	GTP	PB-O3B-PG	-3.76	119.93	132.83
20	JJ	501	GTP	PB-O3B-PG	-3.75	119.95	132.83
19	AK	501	GDP	PA-O3A-PB	-3.73	120.01	132.83
20	JH	501	GTP	PB-O3B-PG	-3.73	120.04	132.83
19	FE	501	GDP	PA-O3A-PB	-3.72	120.05	132.83
19	GC	501	GDP	PA-O3A-PB	-3.72	120.05	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	AF	501	GTP	PA-O3A-PB	-3.71	120.11	132.83
20	KL	501	GTP	PA-O3A-PB	-3.69	120.15	132.83
19	GG	501	GDP	PA-O3A-PB	-3.69	120.16	132.83
20	BH	501	GTP	PA-O3A-PB	-3.69	120.17	132.83
19	HG	501	GDP	PA-O3A-PB	-3.67	120.24	132.83
19	GK	501	GDP	PA-O3A-PB	-3.66	120.25	132.83
19	AA	501	GDP	PA-O3A-PB	-3.66	120.27	132.83
19	HI	502	GDP	PA-O3A-PB	-3.66	120.27	132.83
19	CA	501	GDP	PA-O3A-PB	-3.66	120.28	132.83
19	FC	501	GDP	PA-O3A-PB	-3.63	120.36	132.83
19	LK	501	GDP	PA-O3A-PB	-3.63	120.38	132.83
19	EE	502	GDP	PA-O3A-PB	-3.62	120.39	132.83
19	EI	501	GDP	PA-O3A-PB	-3.62	120.39	132.83
20	FF	501	GTP	PA-O3A-PB	-3.62	120.39	132.83
20	KL	501	GTP	PB-O3B-PG	-3.61	120.45	132.83
19	JE	501	GDP	PA-O3A-PB	-3.61	120.45	132.83
19	KI	502	GDP	PA-O3A-PB	-3.60	120.47	132.83
19	EA	501	GDP	PA-O3A-PB	-3.59	120.51	132.83
20	CB	501	GTP	PA-O3A-PB	-3.58	120.53	132.83
20	KH	501	GTP	PB-O3B-PG	-3.57	120.59	132.83
19	FK	501	GDP	PA-O3A-PB	-3.56	120.62	132.83
19	CI	501	GDP	PA-O3A-PB	-3.54	120.68	132.83
19	EC	501	GDP	PA-O3A-PB	-3.54	120.68	132.83
19	FA	501	GDP	PA-O3A-PB	-3.53	120.70	132.83
20	DD	501	GTP	PA-O3A-PB	-3.53	120.70	132.83
20	HF	501	GTP	PB-O3B-PG	-3.53	120.70	132.83
19	AC	501	GDP	PA-O3A-PB	-3.53	120.72	132.83
19	BI	501	GDP	PA-O3A-PB	-3.52	120.75	132.83
20	JF	501	GTP	PB-O3B-PG	-3.52	120.75	132.83
20	DF	501	GTP	PB-O3B-PG	-3.52	120.75	132.83
19	IG	501	GDP	PA-O3A-PB	-3.52	120.76	132.83
19	CK	501	GDP	PA-O3A-PB	-3.51	120.77	132.83
20	FH	501	GTP	PA-O3A-PB	-3.51	120.77	132.83
20	FD	501	GTP	PA-O3A-PB	-3.51	120.78	132.83
19	CC	501	GDP	PA-O3A-PB	-3.51	120.78	132.83
20	CF	501	GTP	PA-O3A-PB	-3.50	120.81	132.83
19	FI	501	GDP	PA-O3A-PB	-3.47	120.91	132.83
19	LC	501	GDP	PA-O3A-PB	-3.47	120.92	132.83
19	JC	501	GDP	PA-O3A-PB	-3.47	120.93	132.83
19	HC	501	GDP	PA-O3A-PB	-3.46	120.94	132.83
19	KC	501	GDP	PA-O3A-PB	-3.46	120.96	132.83
19	BA	501	GDP	PA-O3A-PB	-3.45	120.97	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	DK	501	GDP	PA-O3A-PB	-3.45	120.99	132.83
19	LE	501	GDP	PA-O3A-PB	-3.44	121.03	132.83
19	IM	501	GDP	PA-O3A-PB	-3.43	121.05	132.83
19	DC	501	GDP	PA-O3A-PB	-3.42	121.08	132.83
20	JD	501	GTP	PA-O3A-PB	-3.42	121.10	132.83
20	EF	501	GTP	C5-C6-N1	3.41	119.97	113.95
19	HE	501	GDP	PA-O3A-PB	-3.41	121.12	132.83
19	EG	501	GDP	PA-O3A-PB	-3.40	121.17	132.83
20	FL	501	GTP	PA-O3A-PB	-3.39	121.19	132.83
20	CD	501	GTP	PA-O3A-PB	-3.39	121.20	132.83
20	AH	501	GTP	PA-O3A-PB	-3.39	121.21	132.83
19	BE	501	GDP	PA-O3A-PB	-3.38	121.21	132.83
20	BB	501	GTP	PA-O3A-PB	-3.38	121.23	132.83
19	CE	501	GDP	PA-O3A-PB	-3.36	121.30	132.83
20	HL	501	GTP	C5-C6-N1	3.36	119.88	113.95
20	CB	501	GTP	C5-C6-N1	3.35	119.87	113.95
20	HI	501	GTP	C5-C6-N1	3.35	119.87	113.95
19	IC	501	GDP	PA-O3A-PB	-3.35	121.33	132.83
19	AA	501	GDP	C3'-C2'-C1'	3.35	106.02	100.98
20	GD	501	GTP	C5-C6-N1	3.35	119.86	113.95
19	EK	501	GDP	PA-O3A-PB	-3.34	121.35	132.83
20	EH	501	GTP	PA-O3A-PB	-3.34	121.36	132.83
19	IK	501	GDP	PA-O3A-PB	-3.34	121.38	132.83
20	GL	501	GTP	PA-O3A-PB	-3.33	121.39	132.83
20	FF	501	GTP	C5-C6-N1	3.33	119.83	113.95
20	JH	501	GTP	C5-C6-N1	3.33	119.83	113.95
20	GH	501	GTP	C5-C6-N1	3.33	119.83	113.95
20	DJ	501	GTP	C5-C6-N1	3.33	119.83	113.95
20	DL	501	GTP	C5-C6-N1	3.32	119.82	113.95
20	IH	501	GTP	C5-C6-N1	3.32	119.81	113.95
20	LD	501	GTP	PA-O3A-PB	-3.32	121.43	132.83
20	MD	501	GTP	C5-C6-N1	3.32	119.81	113.95
20	HL	501	GTP	C3'-C2'-C1'	3.32	105.97	100.98
20	GL	501	GTP	C5-C6-N1	3.32	119.81	113.95
20	MJ	501	GTP	C5-C6-N1	3.32	119.81	113.95
20	EJ	501	GTP	C5-C6-N1	3.32	119.81	113.95
20	BL	501	GTP	PA-O3A-PB	-3.31	121.46	132.83
20	IF	501	GTP	C5-C6-N1	3.31	119.80	113.95
20	CD	501	GTP	C5-C6-N1	3.31	119.79	113.95
20	JD	501	GTP	PB-O3B-PG	-3.30	121.49	132.83
20	CJ	501	GTP	C5-C6-N1	3.30	119.78	113.95
20	LD	501	GTP	C5-C6-N1	3.30	119.78	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	LI	501	GDP	PA-O3A-PB	-3.30	121.51	132.83
20	LL	501	GTP	PA-O3A-PB	-3.30	121.52	132.83
20	JL	501	GTP	C5-C6-N1	3.29	119.77	113.95
20	IH	501	GTP	PA-O3A-PB	-3.29	121.53	132.83
20	BD	501	GTP	C5-C6-N1	3.29	119.76	113.95
20	LF	501	GTP	C5-C6-N1	3.29	119.76	113.95
20	CH	501	GTP	C5-C6-N1	3.29	119.76	113.95
20	MH	501	GTP	C5-C6-N1	3.29	119.76	113.95
20	MF	501	GTP	C5-C6-N1	3.29	119.76	113.95
20	ML	501	GTP	C5-C6-N1	3.29	119.75	113.95
20	KD	501	GTP	C5-C6-N1	3.28	119.75	113.95
20	MB	501	GTP	C5-C6-N1	3.28	119.74	113.95
20	CF	501	GTP	C5-C6-N1	3.28	119.74	113.95
20	DD	501	GTP	C5-C6-N1	3.28	119.74	113.95
19	DG	501	GDP	PA-O3A-PB	-3.27	121.59	132.83
20	FH	501	GTP	C5-C6-N1	3.27	119.73	113.95
20	EB	501	GTP	C5-C6-N1	3.27	119.73	113.95
20	FJ	501	GTP	C5-C6-N1	3.27	119.73	113.95
19	HM	501	GDP	PA-O3A-PB	-3.27	121.61	132.83
20	LB	501	GTP	C5-C6-N1	3.26	119.71	113.95
19	BK	501	GDP	C3'-C2'-C1'	3.26	105.89	100.98
20	AB	501	GTP	C5-C6-N1	3.26	119.71	113.95
20	BB	501	GTP	C5-C6-N1	3.26	119.71	113.95
20	CD	501	GTP	C3'-C2'-C1'	3.26	105.88	100.98
20	LJ	501	GTP	C5-C6-N1	3.25	119.69	113.95
20	KL	501	GTP	C5-C6-N1	3.25	119.69	113.95
19	GI	501	GDP	PA-O3A-PB	-3.25	121.69	132.83
19	AG	501	GDP	PA-O3A-PB	-3.24	121.69	132.83
20	HJ	501	GTP	C5-C6-N1	3.24	119.68	113.95
20	GF	501	GTP	C3'-C2'-C1'	3.24	105.86	100.98
20	BJ	501	GTP	C5-C6-N1	3.24	119.67	113.95
20	GJ	501	GTP	C5-C6-N1	3.24	119.67	113.95
20	HD	501	GTP	C5-C6-N1	3.24	119.67	113.95
20	FD	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	BH	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	DH	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	KH	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	AH	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	AF	501	GTP	C5-C6-N1	3.23	119.66	113.95
20	JJ	501	GTP	C5-C6-N1	3.23	119.65	113.95
20	GF	501	GTP	C5-C6-N1	3.23	119.65	113.95
20	FL	501	GTP	C5-C6-N1	3.22	119.64	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	MD	501	GTP	C3'-C2'-C1'	3.22	105.83	100.98
20	KB	501	GTP	C5-C6-N1	3.22	119.64	113.95
20	AJ	501	GTP	C5-C6-N1	3.22	119.63	113.95
20	JD	501	GTP	C5-C6-N1	3.22	119.63	113.95
20	AD	501	GTP	C5-C6-N1	3.21	119.63	113.95
20	EH	501	GTP	C5-C6-N1	3.21	119.62	113.95
19	IM	501	GDP	C3'-C2'-C1'	3.21	105.81	100.98
20	FB	501	GTP	C5-C6-N1	3.21	119.62	113.95
20	HF	501	GTP	C5-C6-N1	3.21	119.62	113.95
19	EK	501	GDP	C3'-C2'-C1'	3.21	105.81	100.98
20	DF	501	GTP	C5-C6-N1	3.20	119.61	113.95
20	IL	501	GTP	C5-C6-N1	3.20	119.60	113.95
20	JF	501	GTP	C5-C6-N1	3.20	119.60	113.95
20	IJ	501	GTP	C5-C6-N1	3.20	119.59	113.95
20	BF	501	GTP	C5-C6-N1	3.19	119.59	113.95
20	LH	501	GTP	C5-C6-N1	3.19	119.58	113.95
20	DB	501	GTP	C5-C6-N1	3.18	119.57	113.95
19	FA	501	GDP	C3'-C2'-C1'	3.18	105.77	100.98
20	KF	501	GTP	C5-C6-N1	3.18	119.57	113.95
20	LL	501	GTP	C5-C6-N1	3.18	119.57	113.95
20	ED	501	GTP	C5-C6-N1	3.18	119.56	113.95
19	HK	501	GDP	PA-O3A-PB	-3.17	121.94	132.83
20	KF	501	GTP	C8-N7-C5	3.17	109.04	102.99
20	EL	501	GTP	C5-C6-N1	3.17	119.54	113.95
20	KJ	501	GTP	C5-C6-N1	3.16	119.54	113.95
20	JB	501	GTP	C5-C6-N1	3.15	119.52	113.95
20	AL	501	GTP	C5-C6-N1	3.15	119.51	113.95
20	HF	501	GTP	C3'-C2'-C1'	3.15	105.71	100.98
20	CH	501	GTP	C3'-C2'-C1'	3.14	105.71	100.98
20	BL	501	GTP	C5-C6-N1	3.14	119.50	113.95
20	FH	501	GTP	C3'-C2'-C1'	3.13	105.69	100.98
20	MB	501	GTP	C3'-C2'-C1'	3.13	105.69	100.98
19	JM	501	GDP	C3'-C2'-C1'	3.13	105.69	100.98
20	ID	501	GTP	C5-C6-N1	3.12	119.46	113.95
20	LF	501	GTP	C3'-C2'-C1'	3.12	105.67	100.98
19	GC	501	GDP	C3'-C2'-C1'	3.11	105.65	100.98
19	HM	501	GDP	C3'-C2'-C1'	3.11	105.65	100.98
20	BD	501	GTP	C8-N7-C5	3.11	108.91	102.99
20	GJ	501	GTP	C8-N7-C5	3.10	108.90	102.99
20	HJ	501	GTP	C3'-C2'-C1'	3.10	105.64	100.98
20	GD	501	GTP	C8-N7-C5	3.09	108.88	102.99
19	CA	501	GDP	C3'-C2'-C1'	3.09	105.63	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	FL	501	GTP	C3'-C2'-C1'	3.09	105.63	100.98
20	GF	501	GTP	C8-N7-C5	3.08	108.86	102.99
20	GH	501	GTP	C3'-C2'-C1'	3.08	105.61	100.98
20	FD	501	GTP	C3'-C2'-C1'	3.07	105.60	100.98
20	GH	501	GTP	C8-N7-C5	3.07	108.83	102.99
20	GL	501	GTP	C3'-C2'-C1'	3.06	105.59	100.98
19	KI	502	GDP	C3'-C2'-C1'	3.06	105.59	100.98
20	EJ	501	GTP	PA-O3A-PB	-3.06	122.32	132.83
20	JH	501	GTP	C8-N7-C5	3.06	108.82	102.99
20	KB	501	GTP	C8-N7-C5	3.06	108.81	102.99
20	DH	501	GTP	C8-N7-C5	3.06	108.81	102.99
20	BH	501	GTP	C8-N7-C5	3.05	108.80	102.99
20	JJ	501	GTP	C3'-C2'-C1'	3.05	105.57	100.98
19	CK	501	GDP	C3'-C2'-C1'	3.05	105.57	100.98
20	BL	501	GTP	C3'-C2'-C1'	3.05	105.57	100.98
20	BL	501	GTP	C8-N7-C5	3.05	108.80	102.99
20	KL	501	GTP	C3'-C2'-C1'	3.05	105.57	100.98
20	LF	501	GTP	C8-N7-C5	3.04	108.79	102.99
20	DB	501	GTP	C3'-C2'-C1'	3.04	105.56	100.98
20	MH	501	GTP	C8-N7-C5	3.04	108.79	102.99
20	HF	501	GTP	C8-N7-C5	3.04	108.79	102.99
20	CF	501	GTP	C8-N7-C5	3.04	108.78	102.99
20	HL	501	GTP	C2-N1-C6	-3.04	119.50	125.10
20	LB	501	GTP	C8-N7-C5	3.04	108.78	102.99
20	MB	501	GTP	C8-N7-C5	3.04	108.78	102.99
20	ML	501	GTP	C8-N7-C5	3.04	108.78	102.99
19	II	501	GDP	C3'-C2'-C1'	3.04	105.55	100.98
20	LH	501	GTP	C8-N7-C5	3.04	108.77	102.99
20	GD	501	GTP	C3'-C2'-C1'	3.03	105.55	100.98
20	HI	501	GTP	C3'-C2'-C1'	3.03	105.54	100.98
20	HD	501	GTP	C3'-C2'-C1'	3.03	105.54	100.98
20	EH	501	GTP	C8-N7-C5	3.03	108.76	102.99
20	EJ	501	GTP	C8-N7-C5	3.03	108.76	102.99
20	KH	501	GTP	C8-N7-C5	3.03	108.75	102.99
20	LD	501	GTP	C8-N7-C5	3.02	108.75	102.99
20	GL	501	GTP	C8-N7-C5	3.02	108.75	102.99
20	HD	501	GTP	C8-N7-C5	3.02	108.75	102.99
20	HF	501	GTP	C2-N1-C6	-3.02	119.54	125.10
20	EF	501	GTP	C2-N1-C6	-3.02	119.54	125.10
20	MJ	501	GTP	C8-N7-C5	3.02	108.74	102.99
20	CB	501	GTP	C3'-C2'-C1'	3.02	105.52	100.98
20	AD	501	GTP	C8-N7-C5	3.02	108.74	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	KL	501	GTP	C8-N7-C5	3.02	108.74	102.99
20	AL	501	GTP	C8-N7-C5	3.02	108.74	102.99
20	HJ	501	GTP	C8-N7-C5	3.02	108.74	102.99
20	GD	501	GTP	C2-N1-C6	-3.01	119.55	125.10
20	KD	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	IH	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	DD	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	KJ	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	HI	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	CD	501	GTP	C8-N7-C5	3.01	108.73	102.99
20	CJ	501	GTP	C8-N7-C5	3.01	108.72	102.99
20	HL	501	GTP	C8-N7-C5	3.01	108.72	102.99
20	MB	501	GTP	PA-O3A-PB	-3.01	122.51	132.83
20	CB	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	IL	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	JL	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	LJ	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	AF	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	EF	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	MD	501	GTP	C8-N7-C5	3.00	108.71	102.99
20	JD	501	GTP	C8-N7-C5	3.00	108.70	102.99
20	JF	501	GTP	C8-N7-C5	3.00	108.70	102.99
20	BF	501	GTP	C8-N7-C5	2.99	108.69	102.99
20	DB	501	GTP	PB-O3B-PG	-2.99	122.56	132.83
20	ED	501	GTP	C8-N7-C5	2.99	108.69	102.99
19	LC	501	GDP	C3'-C2'-C1'	2.99	105.48	100.98
20	FJ	501	GTP	C3'-C2'-C1'	2.99	105.48	100.98
20	HI	501	GTP	C2-N1-C6	-2.99	119.60	125.10
20	KH	501	GTP	C3'-C2'-C1'	2.99	105.47	100.98
20	GH	501	GTP	C2-N1-C6	-2.99	119.60	125.10
20	MH	501	GTP	C3'-C2'-C1'	2.98	105.47	100.98
20	BB	501	GTP	C8-N7-C5	2.98	108.67	102.99
20	BB	501	GTP	C3'-C2'-C1'	2.98	105.47	100.98
20	AH	501	GTP	C8-N7-C5	2.98	108.67	102.99
20	FB	501	GTP	C8-N7-C5	2.98	108.67	102.99
20	FF	501	GTP	C2-N1-C6	-2.98	119.61	125.10
20	AH	501	GTP	C3'-C2'-C1'	2.98	105.46	100.98
20	CH	501	GTP	C8-N7-C5	2.98	108.66	102.99
20	GJ	501	GTP	C3'-C2'-C1'	2.98	105.46	100.98
20	DJ	501	GTP	C8-N7-C5	2.98	108.66	102.99
20	JB	501	GTP	C8-N7-C5	2.97	108.66	102.99
20	MF	501	GTP	C8-N7-C5	2.97	108.66	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	HJ	501	GTP	C2-N1-C6	-2.97	119.62	125.10
20	FB	501	GTP	C3'-C2'-C1'	2.97	105.45	100.98
20	AJ	501	GTP	C8-N7-C5	2.97	108.65	102.99
20	GL	501	GTP	C2-N1-C6	-2.97	119.63	125.10
20	JH	501	GTP	C2-N1-C6	-2.97	119.63	125.10
20	FF	501	GTP	C8-N7-C5	2.97	108.65	102.99
20	LL	501	GTP	C8-N7-C5	2.97	108.64	102.99
20	CJ	501	GTP	C3'-C2'-C1'	2.97	105.45	100.98
19	FE	501	GDP	C3'-C2'-C1'	2.97	105.45	100.98
19	FG	501	GDP	PA-O3A-PB	-2.97	122.64	132.83
20	IJ	501	GTP	C8-N7-C5	2.96	108.64	102.99
20	JJ	501	GTP	C8-N7-C5	2.96	108.64	102.99
20	AD	501	GTP	C3'-C2'-C1'	2.96	105.44	100.98
20	EH	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	JF	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	EB	501	GTP	PA-O3A-PB	-2.96	122.67	132.83
20	BB	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	CB	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	CD	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	HD	501	GTP	C2-N1-C6	-2.96	119.65	125.10
20	BJ	501	GTP	C3'-C2'-C1'	2.96	105.43	100.98
20	MF	501	GTP	C3'-C2'-C1'	2.96	105.43	100.98
20	DB	501	GTP	C8-N7-C5	2.96	108.62	102.99
20	CH	501	GTP	C2-N1-C6	-2.96	119.66	125.10
20	EL	501	GTP	C8-N7-C5	2.95	108.62	102.99
20	BJ	501	GTP	C8-N7-C5	2.95	108.62	102.99
20	DF	501	GTP	C8-N7-C5	2.95	108.62	102.99
20	ML	501	GTP	C3'-C2'-C1'	2.95	105.42	100.98
20	ID	501	GTP	C8-N7-C5	2.95	108.61	102.99
20	MB	501	GTP	C2-N1-C6	-2.95	119.66	125.10
20	IH	501	GTP	C2-N1-C6	-2.95	119.67	125.10
19	GI	501	GDP	C3'-C2'-C1'	2.95	105.42	100.98
20	GJ	501	GTP	C2-N1-C6	-2.95	119.67	125.10
20	BD	501	GTP	C2-N1-C6	-2.95	119.67	125.10
20	AB	501	GTP	C8-N7-C5	2.95	108.60	102.99
20	LJ	501	GTP	C3'-C2'-C1'	2.95	105.41	100.98
19	BC	501	GDP	C3'-C2'-C1'	2.94	105.41	100.98
20	JD	501	GTP	C3'-C2'-C1'	2.94	105.41	100.98
20	MD	501	GTP	C2-N1-C6	-2.94	119.68	125.10
20	EB	501	GTP	C8-N7-C5	2.94	108.60	102.99
20	FJ	501	GTP	C8-N7-C5	2.94	108.60	102.99
20	BH	501	GTP	C2-N1-C6	-2.94	119.68	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	BH	501	GTP	C3'-C2'-C1'	2.94	105.41	100.98
20	DL	501	GTP	C8-N7-C5	2.94	108.59	102.99
20	LB	501	GTP	C3'-C2'-C1'	2.94	105.41	100.98
20	IF	501	GTP	C2-N1-C6	-2.94	119.68	125.10
20	KB	501	GTP	C2-N1-C6	-2.94	119.69	125.10
20	LL	501	GTP	C3'-C2'-C1'	2.94	105.40	100.98
20	DD	501	GTP	C2-N1-C6	-2.93	119.69	125.10
20	KL	501	GTP	C2-N1-C6	-2.93	119.70	125.10
20	FD	501	GTP	C8-N7-C5	2.93	108.58	102.99
19	JG	501	GDP	PA-O3A-PB	-2.93	122.77	132.83
20	AJ	501	GTP	C3'-C2'-C1'	2.93	105.39	100.98
20	BF	501	GTP	C2-N1-C6	-2.93	119.71	125.10
20	FH	501	GTP	C8-N7-C5	2.92	108.56	102.99
20	EB	501	GTP	C2-N1-C6	-2.92	119.71	125.10
20	FL	501	GTP	C2-N1-C6	-2.92	119.72	125.10
20	BF	501	GTP	C3'-C2'-C1'	2.92	105.38	100.98
20	JJ	501	GTP	C2-N1-C6	-2.92	119.72	125.10
20	IJ	501	GTP	C3'-C2'-C1'	2.92	105.37	100.98
20	MJ	501	GTP	C2-N1-C6	-2.92	119.73	125.10
19	AE	501	GDP	C3'-C2'-C1'	2.92	105.37	100.98
20	CJ	501	GTP	C2-N1-C6	-2.91	119.73	125.10
20	EJ	501	GTP	C3'-C2'-C1'	2.91	105.37	100.98
20	BF	501	GTP	PA-O3A-PB	-2.91	122.83	132.83
20	AB	501	GTP	C2-N1-C6	-2.91	119.73	125.10
20	DJ	501	GTP	C2-N1-C6	-2.91	119.73	125.10
20	FJ	501	GTP	C2-N1-C6	-2.91	119.73	125.10
20	DL	501	GTP	C2-N1-C6	-2.91	119.74	125.10
19	IC	501	GDP	C3'-C2'-C1'	2.91	105.36	100.98
20	JL	501	GTP	C2-N1-C6	-2.91	119.74	125.10
19	LG	501	GDP	C3'-C2'-C1'	2.91	105.36	100.98
20	LJ	501	GTP	C2-N1-C6	-2.91	119.74	125.10
20	IF	501	GTP	C8-N7-C5	2.91	108.53	102.99
20	BJ	501	GTP	C2-N1-C6	-2.91	119.75	125.10
20	FD	501	GTP	C2-N1-C6	-2.91	119.75	125.10
20	KH	501	GTP	C2-N1-C6	-2.91	119.75	125.10
20	ED	501	GTP	C3'-C2'-C1'	2.91	105.35	100.98
20	JD	501	GTP	C2-N1-C6	-2.90	119.75	125.10
20	FH	501	GTP	C2-N1-C6	-2.90	119.75	125.10
20	EB	501	GTP	C3'-C2'-C1'	2.90	105.34	100.98
20	MH	501	GTP	C2-N1-C6	-2.90	119.76	125.10
20	EJ	501	GTP	C2-N1-C6	-2.90	119.76	125.10
20	ID	501	GTP	C3'-C2'-C1'	2.90	105.34	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	FL	501	GTP	C8-N7-C5	2.90	108.51	102.99
20	FB	501	GTP	C2-N1-C6	-2.90	119.76	125.10
20	DL	501	GTP	C3'-C2'-C1'	2.90	105.34	100.98
20	GF	501	GTP	C2-N1-C6	-2.89	119.77	125.10
20	JF	501	GTP	C3'-C2'-C1'	2.89	105.33	100.98
20	IF	501	GTP	C3'-C2'-C1'	2.89	105.33	100.98
20	IH	501	GTP	C3'-C2'-C1'	2.89	105.33	100.98
20	LD	501	GTP	C2-N1-C6	-2.89	119.78	125.10
20	JL	501	GTP	C3'-C2'-C1'	2.89	105.32	100.98
20	LB	501	GTP	C2-N1-C6	-2.89	119.78	125.10
20	EL	501	GTP	C3'-C2'-C1'	2.89	105.32	100.98
20	EH	501	GTP	C3'-C2'-C1'	2.88	105.32	100.98
20	JB	501	GTP	C3'-C2'-C1'	2.88	105.32	100.98
20	KD	501	GTP	C2-N1-C6	-2.88	119.79	125.10
20	AD	501	GTP	C2-N1-C6	-2.88	119.79	125.10
20	DB	501	GTP	C2-N1-C6	-2.88	119.80	125.10
20	LF	501	GTP	C2-N1-C6	-2.88	119.80	125.10
20	KF	501	GTP	C2-N1-C6	-2.88	119.80	125.10
19	CI	501	GDP	C3'-C2'-C1'	2.87	105.30	100.98
20	LD	501	GTP	C3'-C2'-C1'	2.87	105.30	100.98
20	ML	501	GTP	C2-N1-C6	-2.87	119.82	125.10
19	EC	501	GDP	C3'-C2'-C1'	2.87	105.30	100.98
20	CF	501	GTP	C2-N1-C6	-2.87	119.82	125.10
20	EF	501	GTP	C3'-C2'-C1'	2.86	105.29	100.98
20	AF	501	GTP	C2-N1-C6	-2.86	119.83	125.10
20	DF	501	GTP	C2-N1-C6	-2.86	119.84	125.10
20	DH	501	GTP	C2-N1-C6	-2.86	119.84	125.10
19	EG	501	GDP	C3'-C2'-C1'	2.86	105.28	100.98
20	MF	501	GTP	C2-N1-C6	-2.85	119.84	125.10
19	CC	501	GDP	C3'-C2'-C1'	2.85	105.28	100.98
20	IL	501	GTP	C2-N1-C6	-2.85	119.85	125.10
20	AH	501	GTP	C2-N1-C6	-2.85	119.85	125.10
20	IJ	501	GTP	C2-N1-C6	-2.84	119.86	125.10
20	AB	501	GTP	C3'-C2'-C1'	2.84	105.25	100.98
20	IL	501	GTP	C3'-C2'-C1'	2.84	105.25	100.98
20	JB	501	GTP	C2-N1-C6	-2.83	119.88	125.10
20	AL	501	GTP	C3'-C2'-C1'	2.83	105.24	100.98
19	GK	501	GDP	C3'-C2'-C1'	2.83	105.24	100.98
20	AJ	501	GTP	C2-N1-C6	-2.83	119.89	125.10
19	DK	501	GDP	C3'-C2'-C1'	2.82	105.23	100.98
20	LL	501	GTP	C2-N1-C6	-2.82	119.90	125.10
20	MJ	501	GTP	PA-O3A-PB	-2.82	123.16	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	KD	501	GTP	C3'-C2'-C1'	2.82	105.22	100.98
20	LH	501	GTP	C3'-C2'-C1'	2.81	105.22	100.98
19	JG	501	GDP	C3'-C2'-C1'	2.81	105.21	100.98
20	KB	501	GTP	C3'-C2'-C1'	2.81	105.21	100.98
20	AF	501	GTP	C3'-C2'-C1'	2.81	105.21	100.98
20	ED	501	GTP	C2-N1-C6	-2.80	119.93	125.10
20	BL	501	GTP	C2-N1-C6	-2.80	119.94	125.10
20	DJ	501	GTP	C3'-C2'-C1'	2.80	105.19	100.98
20	JH	501	GTP	PA-O3A-PB	-2.80	123.23	132.83
19	EI	501	GDP	C3'-C2'-C1'	2.80	105.19	100.98
20	KJ	501	GTP	C2-N1-C6	-2.79	119.95	125.10
20	DH	501	GTP	C3'-C2'-C1'	2.79	105.18	100.98
20	EL	501	GTP	C2-N1-C6	-2.79	119.95	125.10
19	JE	501	GDP	C3'-C2'-C1'	2.79	105.18	100.98
19	MC	501	GDP	C3'-C2'-C1'	2.79	105.18	100.98
20	FF	501	GTP	C3'-C2'-C1'	2.78	105.17	100.98
20	JH	501	GTP	C3'-C2'-C1'	2.78	105.17	100.98
19	IK	501	GDP	C3'-C2'-C1'	2.78	105.16	100.98
19	GG	501	GDP	C3'-C2'-C1'	2.78	105.16	100.98
20	DF	501	GTP	C3'-C2'-C1'	2.77	105.16	100.98
19	GE	501	GDP	C3'-C2'-C1'	2.77	105.15	100.98
20	ID	501	GTP	C2-N1-C6	-2.77	120.00	125.10
20	AL	501	GTP	C2-N1-C6	-2.76	120.01	125.10
19	FI	501	GDP	C3'-C2'-C1'	2.76	105.14	100.98
19	FK	501	GDP	C3'-C2'-C1'	2.76	105.13	100.98
20	DD	501	GTP	C3'-C2'-C1'	2.75	105.11	100.98
19	GM	501	GDP	C3'-C2'-C1'	2.75	105.11	100.98
20	KJ	501	GTP	C3'-C2'-C1'	2.75	105.11	100.98
20	CF	501	GTP	C3'-C2'-C1'	2.74	105.11	100.98
19	LI	501	GDP	C3'-C2'-C1'	2.74	105.11	100.98
19	HK	501	GDP	C3'-C2'-C1'	2.74	105.10	100.98
19	KK	501	GDP	C3'-C2'-C1'	2.73	105.09	100.98
20	MJ	501	GTP	C3'-C2'-C1'	2.73	105.09	100.98
19	KC	501	GDP	C3'-C2'-C1'	2.72	105.08	100.98
19	EA	501	GDP	C3'-C2'-C1'	2.72	105.07	100.98
20	KF	501	GTP	C3'-C2'-C1'	2.72	105.07	100.98
19	HG	501	GDP	C3'-C2'-C1'	2.71	105.06	100.98
19	FG	501	GDP	C3'-C2'-C1'	2.70	105.05	100.98
20	LH	501	GTP	C2-N1-C6	-2.70	120.12	125.10
20	EF	501	GTP	PA-O3A-PB	-2.70	123.58	132.83
20	BD	501	GTP	C3'-C2'-C1'	2.69	105.03	100.98
19	BI	501	GDP	C3'-C2'-C1'	2.69	105.02	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	CG	501	GDP	PA-O3A-PB	-2.69	123.61	132.83
19	CE	501	GDP	C3'-C2'-C1'	2.66	104.98	100.98
19	KE	501	GDP	C3'-C2'-C1'	2.65	104.96	100.98
19	MK	501	GDP	C3'-C2'-C1'	2.64	104.95	100.98
19	LK	501	GDP	C3'-C2'-C1'	2.61	104.91	100.98
19	BG	501	GDP	C3'-C2'-C1'	2.60	104.89	100.98
19	AI	501	GDP	C3'-C2'-C1'	2.59	104.87	100.98
19	DC	501	GDP	C3'-C2'-C1'	2.59	104.87	100.98
19	JG	501	GDP	O3B-PB-O3A	2.58	113.30	104.64
19	HE	501	GDP	C3'-C2'-C1'	2.57	104.85	100.98
19	LI	501	GDP	C8-N7-C5	2.55	107.84	102.99
19	JK	501	GDP	C3'-C2'-C1'	2.54	104.81	100.98
19	HC	501	GDP	C5-C6-N1	2.52	118.41	113.95
19	IE	501	GDP	C3'-C2'-C1'	2.51	104.76	100.98
19	AC	501	GDP	C3'-C2'-C1'	2.51	104.75	100.98
19	KG	501	GDP	C3'-C2'-C1'	2.49	104.73	100.98
19	JK	501	GDP	C5-C6-N1	2.48	118.33	113.95
19	LC	501	GDP	C8-N7-C5	2.47	107.70	102.99
19	BA	501	GDP	C3'-C2'-C1'	2.46	104.68	100.98
19	DE	501	GDP	C5-C6-N1	2.45	118.28	113.95
19	HI	502	GDP	C3'-C2'-C1'	2.45	104.67	100.98
19	MG	501	GDP	C3'-C2'-C1'	2.44	104.66	100.98
19	DE	501	GDP	C3'-C2'-C1'	2.43	104.64	100.98
19	AG	501	GDP	C8-N7-C5	2.43	107.61	102.99
19	DE	501	GDP	C8-N7-C5	2.42	107.59	102.99
19	GM	501	GDP	C5-C6-N1	2.41	118.22	113.95
19	LK	501	GDP	C8-N7-C5	2.41	107.58	102.99
19	DI	501	GDP	C3'-C2'-C1'	2.41	104.61	100.98
19	CE	501	GDP	C5-C6-N1	2.41	118.21	113.95
19	EA	501	GDP	C5-C6-N1	2.40	118.20	113.95
19	MI	501	GDP	C8-N7-C5	2.40	107.57	102.99
19	FC	501	GDP	C5-C6-N1	2.40	118.19	113.95
19	KE	501	GDP	C8-N7-C5	2.39	107.54	102.99
19	EI	501	GDP	C5-C6-N1	2.39	118.17	113.95
19	HI	502	GDP	C5-C6-N1	2.39	118.17	113.95
19	JI	501	GDP	C8-N7-C5	2.38	107.52	102.99
19	AC	501	GDP	C8-N7-C5	2.37	107.51	102.99
19	MG	501	GDP	C8-N7-C5	2.37	107.51	102.99
19	EI	501	GDP	C8-N7-C5	2.37	107.50	102.99
19	GC	501	GDP	C8-N7-C5	2.37	107.50	102.99
19	ME	501	GDP	C8-N7-C5	2.37	107.50	102.99
19	AI	501	GDP	C8-N7-C5	2.37	107.50	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	HM	501	GDP	C5-C6-N1	2.37	118.13	113.95
19	CI	501	GDP	C5-C6-N1	2.36	118.12	113.95
19	AK	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	JC	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	MK	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	GG	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	JE	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	GE	501	GDP	C8-N7-C5	2.36	107.49	102.99
19	HC	501	GDP	C3'-C2'-C1'	2.36	104.53	100.98
19	DG	501	GDP	C8-N7-C5	2.36	107.48	102.99
19	MI	501	GDP	C5-C6-N1	2.36	118.11	113.95
19	AI	501	GDP	C5-C6-N1	2.36	118.11	113.95
19	IE	501	GDP	C8-N7-C5	2.35	107.47	102.99
19	BC	501	GDP	C8-N7-C5	2.35	107.47	102.99
19	KG	501	GDP	C5-C6-N1	2.35	118.10	113.95
19	HG	501	GDP	C8-N7-C5	2.35	107.46	102.99
19	CG	501	GDP	C5-C6-N1	2.35	118.10	113.95
19	DC	501	GDP	C8-N7-C5	2.35	107.46	102.99
19	MG	501	GDP	C5-C6-N1	2.35	118.09	113.95
19	LI	501	GDP	C5-C6-N1	2.34	118.09	113.95
19	LE	501	GDP	C5-C6-N1	2.34	118.09	113.95
19	CE	501	GDP	C8-N7-C5	2.34	107.45	102.99
19	CC	501	GDP	C8-N7-C5	2.34	107.45	102.99
19	FA	501	GDP	C5-C6-N1	2.34	118.08	113.95
19	HK	501	GDP	C8-N7-C5	2.34	107.44	102.99
19	DI	501	GDP	C8-N7-C5	2.34	107.44	102.99
19	GG	501	GDP	C5-C6-N1	2.33	118.07	113.95
19	MC	501	GDP	C8-N7-C5	2.33	107.43	102.99
20	IF	501	GTP	O6-C6-C5	-2.33	119.82	124.37
19	CA	501	GDP	C8-N7-C5	2.33	107.43	102.99
19	EA	501	GDP	C8-N7-C5	2.33	107.43	102.99
19	AA	501	GDP	C8-N7-C5	2.33	107.42	102.99
19	KC	501	GDP	C8-N7-C5	2.33	107.42	102.99
19	IC	501	GDP	C8-N7-C5	2.33	107.42	102.99
19	HK	501	GDP	C5-C6-N1	2.33	118.06	113.95
19	JK	501	GDP	O6-C6-C5	-2.33	119.83	124.37
19	IK	501	GDP	C5-C6-N1	2.33	118.06	113.95
19	HI	502	GDP	C8-N7-C5	2.32	107.42	102.99
19	AA	501	GDP	C5-C6-N1	2.32	118.06	113.95
19	EE	502	GDP	C8-N7-C5	2.32	107.42	102.99
19	GC	501	GDP	C5-C6-N1	2.32	118.06	113.95
19	HE	501	GDP	C8-N7-C5	2.32	107.41	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	BI	501	GDP	C8-N7-C5	2.32	107.41	102.99
19	IG	501	GDP	C8-N7-C5	2.32	107.41	102.99
20	DH	501	GTP	O6-C6-C5	-2.32	119.85	124.37
19	AE	501	GDP	C8-N7-C5	2.32	107.40	102.99
19	FG	501	GDP	C8-N7-C5	2.32	107.40	102.99
19	FI	501	GDP	C8-N7-C5	2.32	107.40	102.99
19	LC	501	GDP	C5-C6-N1	2.32	118.04	113.95
19	AC	501	GDP	C5-C6-N1	2.32	118.04	113.95
19	CK	501	GDP	C8-N7-C5	2.32	107.40	102.99
19	GE	501	GDP	C5-C6-N1	2.32	118.04	113.95
19	EC	501	GDP	C8-N7-C5	2.31	107.40	102.99
19	FA	501	GDP	C8-N7-C5	2.31	107.40	102.99
19	CA	501	GDP	C5-C6-N1	2.31	118.04	113.95
19	FK	501	GDP	C8-N7-C5	2.31	107.40	102.99
19	GM	501	GDP	C8-N7-C5	2.31	107.40	102.99
19	GI	501	GDP	C8-N7-C5	2.31	107.40	102.99
19	ME	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	CI	501	GDP	C8-N7-C5	2.31	107.39	102.99
19	JM	501	GDP	C8-N7-C5	2.31	107.39	102.99
19	IC	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	IK	501	GDP	C8-N7-C5	2.31	107.39	102.99
19	MK	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	LE	501	GDP	C8-N7-C5	2.31	107.39	102.99
19	AG	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	GI	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	HM	501	GDP	C8-N7-C5	2.31	107.39	102.99
19	FC	501	GDP	C3'-C2'-C1'	2.31	104.45	100.98
19	IG	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	DC	501	GDP	C5-C6-N1	2.31	118.03	113.95
19	HG	501	GDP	C5-C6-N1	2.30	118.02	113.95
19	BE	501	GDP	C5-C6-N1	2.30	118.02	113.95
19	KG	501	GDP	C8-N7-C5	2.30	107.38	102.99
19	HC	501	GDP	C8-N7-C5	2.30	107.37	102.99
20	FF	501	GTP	O6-C6-C5	-2.30	119.88	124.37
19	EE	502	GDP	C5-C6-N1	2.30	118.01	113.95
19	BE	501	GDP	C8-N7-C5	2.30	107.36	102.99
19	KI	502	GDP	C5-C6-N1	2.30	118.00	113.95
19	DK	501	GDP	C8-N7-C5	2.29	107.36	102.99
19	KK	501	GDP	C8-N7-C5	2.29	107.36	102.99
19	BK	501	GDP	C5-C6-N1	2.29	118.00	113.95
19	II	501	GDP	C5-C6-N1	2.29	118.00	113.95
19	BG	501	GDP	C8-N7-C5	2.29	107.36	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	BC	501	GDP	C5-C6-N1	2.29	118.00	113.95
20	EB	501	GTP	O6-C6-C5	-2.29	119.89	124.37
19	BI	501	GDP	C5-C6-N1	2.29	118.00	113.95
19	JI	501	GDP	C5-C6-N1	2.29	118.00	113.95
19	BK	501	GDP	C8-N7-C5	2.29	107.36	102.99
19	CC	501	GDP	C5-C6-N1	2.29	117.99	113.95
19	FK	501	GDP	C5-C6-N1	2.29	117.99	113.95
19	LK	501	GDP	C5-C6-N1	2.29	117.99	113.95
19	KI	502	GDP	C8-N7-C5	2.29	107.34	102.99
19	AK	501	GDP	C5-C6-N1	2.28	117.98	113.95
19	CG	501	GDP	C8-N7-C5	2.28	107.33	102.99
19	EK	501	GDP	C8-N7-C5	2.28	107.33	102.99
19	IM	501	GDP	C8-N7-C5	2.28	107.33	102.99
19	JG	501	GDP	C8-N7-C5	2.28	107.33	102.99
19	MC	501	GDP	C5-C6-N1	2.28	117.97	113.95
19	FC	501	GDP	C8-N7-C5	2.28	107.33	102.99
19	JM	501	GDP	C5-C6-N1	2.28	117.97	113.95
20	EF	501	GTP	O6-C6-C5	-2.27	119.93	124.37
19	JC	501	GDP	C5-C6-N1	2.27	117.96	113.95
19	KC	501	GDP	C5-C6-N1	2.27	117.96	113.95
19	FE	501	GDP	C8-N7-C5	2.27	107.31	102.99
19	GK	501	GDP	C8-N7-C5	2.26	107.29	102.99
19	FI	501	GDP	C5-C6-N1	2.26	117.94	113.95
19	EG	501	GDP	C8-N7-C5	2.26	107.29	102.99
20	FH	501	GTP	O6-C6-C5	-2.25	119.97	124.37
20	DF	501	GTP	O6-C6-C5	-2.25	119.98	124.37
19	JE	501	GDP	C5-C6-N1	2.25	117.92	113.95
20	KB	501	GTP	O6-C6-C5	-2.24	119.99	124.37
20	FJ	501	GTP	O6-C6-C5	-2.24	119.99	124.37
19	AE	501	GDP	C5-C6-N1	2.24	117.91	113.95
19	JC	501	GDP	C3'-C2'-C1'	2.24	104.35	100.98
20	DB	501	GTP	O6-C6-C5	-2.24	120.00	124.37
19	FE	501	GDP	C5-C6-N1	2.24	117.90	113.95
20	ML	501	GTP	O6-C6-C5	-2.24	120.00	124.37
19	IG	501	GDP	C3'-C2'-C1'	2.24	104.34	100.98
19	KK	501	GDP	C5-C6-N1	2.23	117.89	113.95
19	DG	501	GDP	C5-C6-N1	2.23	117.88	113.95
20	AB	501	GTP	O6-C6-C5	-2.22	120.04	124.37
19	IE	501	GDP	C5-C6-N1	2.22	117.87	113.95
19	JG	501	GDP	C5-C6-N1	2.22	117.87	113.95
20	DJ	501	GTP	O6-C6-C5	-2.21	120.05	124.37
20	JF	501	GTP	O6-C6-C5	-2.21	120.05	124.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	CK	501	GDP	C5-C6-N1	2.21	117.86	113.95
20	CH	501	GTP	O6-C6-C5	-2.21	120.06	124.37
19	KE	501	GDP	C5-C6-N1	2.21	117.85	113.95
20	DL	501	GTP	O6-C6-C5	-2.21	120.06	124.37
19	FG	501	GDP	C5-C6-N1	2.20	117.84	113.95
19	LG	501	GDP	C5-C6-N1	2.20	117.84	113.95
20	MD	501	GTP	O6-C6-C5	-2.20	120.08	124.37
19	IM	501	GDP	C5-C6-N1	2.20	117.84	113.95
19	JK	501	GDP	C8-N7-C5	2.20	107.18	102.99
20	FD	501	GTP	O6-C6-C5	-2.20	120.08	124.37
19	EG	501	GDP	C5-C6-N1	2.19	117.83	113.95
20	MF	501	GTP	O6-C6-C5	-2.19	120.09	124.37
20	LJ	501	GTP	O6-C6-C5	-2.19	120.09	124.37
20	MH	501	GTP	O6-C6-C5	-2.19	120.09	124.37
19	LG	501	GDP	C8-N7-C5	2.19	107.17	102.99
19	DK	501	GDP	C5-C6-N1	2.19	117.82	113.95
19	EK	501	GDP	C5-C6-N1	2.19	117.82	113.95
20	FB	501	GTP	O6-C6-C5	-2.19	120.10	124.37
20	JD	501	GTP	O6-C6-C5	-2.19	120.10	124.37
19	II	501	GDP	C8-N7-C5	2.19	107.16	102.99
20	AF	501	GTP	O6-C6-C5	-2.19	120.10	124.37
20	MB	501	GTP	O6-C6-C5	-2.19	120.10	124.37
20	KD	501	GTP	O6-C6-C5	-2.18	120.11	124.37
19	EC	501	GDP	C5-C6-N1	2.18	117.80	113.95
20	LB	501	GTP	O6-C6-C5	-2.18	120.12	124.37
20	DB	501	GTP	O3G-PG-O3B	2.18	111.94	104.64
20	LF	501	GTP	O6-C6-C5	-2.18	120.12	124.37
19	BE	501	GDP	C3'-C2'-C1'	2.18	104.25	100.98
20	HL	501	GTP	O6-C6-C5	-2.17	120.13	124.37
20	CJ	501	GTP	O6-C6-C5	-2.17	120.13	124.37
20	BD	501	GTP	O6-C6-C5	-2.17	120.13	124.37
19	BA	501	GDP	C5-C6-N1	2.17	117.78	113.95
20	FL	501	GTP	O6-C6-C5	-2.16	120.14	124.37
20	AJ	501	GTP	O6-C6-C5	-2.16	120.15	124.37
20	GL	501	GTP	O6-C6-C5	-2.16	120.15	124.37
19	MI	501	GDP	C3'-C2'-C1'	2.16	104.23	100.98
20	IJ	501	GTP	O6-C6-C5	-2.16	120.16	124.37
19	GK	501	GDP	C5-C6-N1	2.15	117.76	113.95
20	JJ	501	GTP	O6-C6-C5	-2.15	120.16	124.37
20	BJ	501	GTP	O6-C6-C5	-2.15	120.17	124.37
20	JB	501	GTP	O6-C6-C5	-2.15	120.17	124.37
19	HE	501	GDP	C5-C6-N1	2.15	117.75	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	JH	501	GTP	O6-C6-C5	-2.15	120.18	124.37
20	BB	501	GTP	O6-C6-C5	-2.15	120.18	124.37
20	GH	501	GTP	O6-C6-C5	-2.15	120.18	124.37
20	LL	501	GTP	O6-C6-C5	-2.14	120.18	124.37
20	JL	501	GTP	O6-C6-C5	-2.14	120.19	124.37
20	IH	501	GTP	O6-C6-C5	-2.14	120.19	124.37
20	GD	501	GTP	O6-C6-C5	-2.14	120.19	124.37
20	LD	501	GTP	O6-C6-C5	-2.14	120.19	124.37
20	ID	501	GTP	O6-C6-C5	-2.14	120.20	124.37
20	MJ	501	GTP	O6-C6-C5	-2.14	120.20	124.37
20	KL	501	GTP	O6-C6-C5	-2.13	120.21	124.37
19	DI	501	GDP	C5-C6-N1	2.13	117.70	113.95
20	CD	501	GTP	O6-C6-C5	-2.12	120.23	124.37
20	BF	501	GTP	O6-C6-C5	-2.12	120.23	124.37
19	BA	501	GDP	C8-N7-C5	2.12	107.03	102.99
20	IL	501	GTP	O6-C6-C5	-2.12	120.24	124.37
20	KJ	501	GTP	O6-C6-C5	-2.11	120.24	124.37
20	AD	501	GTP	O6-C6-C5	-2.11	120.25	124.37
20	CB	501	GTP	O6-C6-C5	-2.10	120.27	124.37
20	EJ	501	GTP	O6-C6-C5	-2.10	120.27	124.37
19	BG	501	GDP	C2'-C3'-C4'	2.10	106.72	102.64
20	ED	501	GTP	O6-C6-C5	-2.10	120.27	124.37
20	EL	501	GTP	O6-C6-C5	-2.10	120.27	124.37
20	CF	501	GTP	O6-C6-C5	-2.10	120.28	124.37
20	EH	501	GTP	O6-C6-C5	-2.09	120.29	124.37
19	LE	501	GDP	C3'-C2'-C1'	2.09	104.12	100.98
20	DD	501	GTP	O6-C6-C5	-2.09	120.30	124.37
20	HF	501	GTP	O6-C6-C5	-2.08	120.30	124.37
19	AG	501	GDP	C3'-C2'-C1'	2.08	104.11	100.98
20	HD	501	GTP	O6-C6-C5	-2.08	120.31	124.37
20	BL	501	GTP	O6-C6-C5	-2.08	120.31	124.37
20	AH	501	GTP	O6-C6-C5	-2.08	120.31	124.37
20	KF	501	GTP	O6-C6-C5	-2.06	120.34	124.37
20	JD	501	GTP	O3G-PG-O3B	2.06	111.55	104.64
19	BG	501	GDP	C5-C6-N1	2.06	117.58	113.95
20	JF	501	GTP	O3G-PG-O3B	2.05	111.52	104.64
20	BH	501	GTP	O6-C6-C5	-2.04	120.38	124.37
20	AL	501	GTP	O6-C6-C5	-2.04	120.39	124.37
20	KH	501	GTP	O6-C6-C5	-2.04	120.39	124.37
20	GJ	501	GTP	O6-C6-C5	-2.03	120.40	124.37
19	DG	501	GDP	C2'-C3'-C4'	2.03	106.58	102.64
20	DH	501	GTP	O2G-PG-O3B	2.03	111.43	104.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	CG	501	GDP	C3'-C2'-C1'	2.02	104.03	100.98
19	II	501	GDP	O6-C6-C5	-2.01	120.45	124.37
19	JI	501	GDP	C3'-C2'-C1'	2.01	104.00	100.98
19	ME	501	GDP	C3'-C2'-C1'	2.00	103.99	100.98

There are no chirality outliers.

All (507) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
19	BA	501	GDP	C5'-O5'-PA-O3A
19	BA	501	GDP	C5'-O5'-PA-O2A
19	BA	501	GDP	O4'-C4'-C5'-O5'
19	BA	501	GDP	C3'-C4'-C5'-O5'
19	BC	501	GDP	PA-O3A-PB-O2B
19	BC	501	GDP	O4'-C4'-C5'-O5'
19	BC	501	GDP	C3'-C4'-C5'-O5'
19	BI	501	GDP	PA-O3A-PB-O2B
19	BK	501	GDP	O4'-C4'-C5'-O5'
19	BK	501	GDP	C3'-C4'-C5'-O5'
19	CC	501	GDP	PA-O3A-PB-O2B
19	CG	501	GDP	C5'-O5'-PA-O3A
19	CG	501	GDP	C5'-O5'-PA-O2A
19	DC	501	GDP	C3'-C4'-C5'-O5'
19	EA	501	GDP	C5'-O5'-PA-O3A
19	EA	501	GDP	O4'-C4'-C5'-O5'
19	EA	501	GDP	C3'-C4'-C5'-O5'
19	EE	502	GDP	C5'-O5'-PA-O3A
19	EE	502	GDP	O4'-C4'-C5'-O5'
19	EE	502	GDP	C3'-C4'-C5'-O5'
19	EG	501	GDP	C5'-O5'-PA-O3A
19	GI	501	GDP	C5'-O5'-PA-O1A
19	HI	502	GDP	PA-O3A-PB-O2B
19	HI	502	GDP	C5'-O5'-PA-O1A
19	HM	501	GDP	C5'-O5'-PA-O1A
19	IC	501	GDP	PA-O3A-PB-O3B
19	II	501	GDP	C5'-O5'-PA-O3A
19	II	501	GDP	C5'-O5'-PA-O2A
19	IM	501	GDP	PA-O3A-PB-O3B
19	IM	501	GDP	C5'-O5'-PA-O3A
19	JC	501	GDP	C5'-O5'-PA-O1A
19	JE	501	GDP	C3'-C4'-C5'-O5'
19	JG	501	GDP	PA-O3A-PB-O2B

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Mol	Chain	Res	Type	Atoms
19	JG	501	GDP	C5'-O5'-PA-O3A
19	JI	501	GDP	C3'-C4'-C5'-O5'
19	KC	501	GDP	C5'-O5'-PA-O1A
19	KE	501	GDP	C5'-O5'-PA-O3A
19	KE	501	GDP	C5'-O5'-PA-O2A
19	KE	501	GDP	O4'-C4'-C5'-O5'
19	KE	501	GDP	C3'-C4'-C5'-O5'
19	KI	502	GDP	C5'-O5'-PA-O3A
19	LE	501	GDP	C5'-O5'-PA-O1A
19	ME	501	GDP	O4'-C4'-C5'-O5'
19	ME	501	GDP	C3'-C4'-C5'-O5'
19	MI	501	GDP	C5'-O5'-PA-O3A
19	MI	501	GDP	O4'-C4'-C5'-O5'
19	MI	501	GDP	C3'-C4'-C5'-O5'
20	AB	501	GTP	C5'-O5'-PA-O1A
20	AB	501	GTP	C5'-O5'-PA-O2A
20	AD	501	GTP	C5'-O5'-PA-O1A
20	AF	501	GTP	C5'-O5'-PA-O3A
20	AH	501	GTP	C5'-O5'-PA-O3A
20	AH	501	GTP	C5'-O5'-PA-O2A
20	AH	501	GTP	C4'-C5'-O5'-PA
20	AJ	501	GTP	C5'-O5'-PA-O1A
20	AJ	501	GTP	C5'-O5'-PA-O2A
20	BB	501	GTP	C5'-O5'-PA-O3A
20	BB	501	GTP	C5'-O5'-PA-O2A
20	BD	501	GTP	C5'-O5'-PA-O1A
20	BD	501	GTP	C5'-O5'-PA-O2A
20	BF	501	GTP	C5'-O5'-PA-O3A
20	BH	501	GTP	C5'-O5'-PA-O1A
20	BH	501	GTP	C5'-O5'-PA-O2A
20	BL	501	GTP	C5'-O5'-PA-O1A
20	BL	501	GTP	C5'-O5'-PA-O2A
20	CB	501	GTP	C5'-O5'-PA-O1A
20	CB	501	GTP	C5'-O5'-PA-O2A
20	CD	501	GTP	C5'-O5'-PA-O1A
20	CF	501	GTP	C5'-O5'-PA-O3A
20	CH	501	GTP	C5'-O5'-PA-O1A
20	CJ	501	GTP	C5'-O5'-PA-O3A
20	CJ	501	GTP	C5'-O5'-PA-O1A
20	CJ	501	GTP	C5'-O5'-PA-O2A
20	DB	501	GTP	C5'-O5'-PA-O3A
20	DB	501	GTP	C5'-O5'-PA-O1A

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Mol	Chain	Res	Type	Atoms
20	DB	501	GTP	C5'-O5'-PA-O2A
20	DD	501	GTP	C5'-O5'-PA-O1A
20	DD	501	GTP	C5'-O5'-PA-O2A
20	DF	501	GTP	C5'-O5'-PA-O3A
20	DH	501	GTP	C5'-O5'-PA-O1A
20	DJ	501	GTP	C5'-O5'-PA-O3A
20	DJ	501	GTP	C5'-O5'-PA-O1A
20	DJ	501	GTP	C5'-O5'-PA-O2A
20	DL	501	GTP	C5'-O5'-PA-O1A
20	EB	501	GTP	C5'-O5'-PA-O3A
20	EB	501	GTP	C5'-O5'-PA-O1A
20	EB	501	GTP	C5'-O5'-PA-O2A
20	EF	501	GTP	C5'-O5'-PA-O1A
20	EF	501	GTP	C5'-O5'-PA-O2A
20	EH	501	GTP	C5'-O5'-PA-O1A
20	EH	501	GTP	C5'-O5'-PA-O2A
20	EJ	501	GTP	C5'-O5'-PA-O1A
20	EL	501	GTP	C5'-O5'-PA-O1A
20	FD	501	GTP	C5'-O5'-PA-O3A
20	FF	501	GTP	C5'-O5'-PA-O1A
20	FF	501	GTP	C5'-O5'-PA-O2A
20	FH	501	GTP	C5'-O5'-PA-O3A
20	FH	501	GTP	C4'-C5'-O5'-PA
20	FJ	501	GTP	C5'-O5'-PA-O3A
20	FJ	501	GTP	C4'-C5'-O5'-PA
20	FL	501	GTP	C5'-O5'-PA-O3A
20	GF	501	GTP	C5'-O5'-PA-O1A
20	GH	501	GTP	C5'-O5'-PA-O1A
20	GL	501	GTP	C5'-O5'-PA-O1A
20	GL	501	GTP	C5'-O5'-PA-O2A
20	HD	501	GTP	C5'-O5'-PA-O3A
20	HF	501	GTP	C5'-O5'-PA-O3A
20	HJ	501	GTP	C5'-O5'-PA-O3A
20	HL	501	GTP	C5'-O5'-PA-O1A
20	HL	501	GTP	C5'-O5'-PA-O2A
20	IF	501	GTP	C5'-O5'-PA-O1A
20	IF	501	GTP	C5'-O5'-PA-O2A
20	IH	501	GTP	C5'-O5'-PA-O1A
20	IH	501	GTP	C5'-O5'-PA-O2A
20	IL	501	GTP	C5'-O5'-PA-O1A
20	JB	501	GTP	C5'-O5'-PA-O1A
20	JB	501	GTP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
20	JD	501	GTP	C5'-O5'-PA-O1A
20	JH	501	GTP	C5'-O5'-PA-O1A
20	JH	501	GTP	C5'-O5'-PA-O2A
20	JJ	501	GTP	C5'-O5'-PA-O1A
20	JL	501	GTP	C5'-O5'-PA-O1A
20	KB	501	GTP	C5'-O5'-PA-O3A
20	KB	501	GTP	C5'-O5'-PA-O1A
20	KD	501	GTP	C5'-O5'-PA-O3A
20	KH	501	GTP	C5'-O5'-PA-O3A
20	KH	501	GTP	C5'-O5'-PA-O1A
20	KH	501	GTP	C5'-O5'-PA-O2A
20	KJ	501	GTP	C5'-O5'-PA-O3A
20	KL	501	GTP	C5'-O5'-PA-O3A
20	LD	501	GTP	C5'-O5'-PA-O3A
20	LD	501	GTP	O4'-C4'-C5'-O5'
20	LD	501	GTP	C3'-C4'-C5'-O5'
20	LJ	501	GTP	C5'-O5'-PA-O1A
20	LJ	501	GTP	C5'-O5'-PA-O2A
20	LL	501	GTP	C5'-O5'-PA-O1A
20	LL	501	GTP	C5'-O5'-PA-O2A
20	MD	501	GTP	C5'-O5'-PA-O1A
20	MD	501	GTP	C5'-O5'-PA-O2A
20	MF	501	GTP	C5'-O5'-PA-O1A
20	MH	501	GTP	C5'-O5'-PA-O1A
20	MJ	501	GTP	C5'-O5'-PA-O1A
20	MJ	501	GTP	C5'-O5'-PA-O2A
19	DC	501	GDP	O4'-C4'-C5'-O5'
19	DG	501	GDP	C3'-C4'-C5'-O5'
19	DI	501	GDP	C3'-C4'-C5'-O5'
19	HC	501	GDP	C3'-C4'-C5'-O5'
19	JE	501	GDP	O4'-C4'-C5'-O5'
19	JI	501	GDP	O4'-C4'-C5'-O5'
19	KI	502	GDP	C3'-C4'-C5'-O5'
20	KL	501	GTP	O4'-C4'-C5'-O5'
20	KL	501	GTP	C3'-C4'-C5'-O5'
20	DF	501	GTP	C4'-C5'-O5'-PA
20	HD	501	GTP	C4'-C5'-O5'-PA
19	BI	501	GDP	O4'-C4'-C5'-O5'
19	BI	501	GDP	C3'-C4'-C5'-O5'
19	DG	501	GDP	O4'-C4'-C5'-O5'
19	DI	501	GDP	O4'-C4'-C5'-O5'
19	HC	501	GDP	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
19	II	501	GDP	O4'-C4'-C5'-O5'
19	II	501	GDP	C3'-C4'-C5'-O5'
19	KI	502	GDP	O4'-C4'-C5'-O5'
20	DJ	501	GTP	C4'-C5'-O5'-PA
20	FL	501	GTP	C4'-C5'-O5'-PA
19	JG	501	GDP	O4'-C4'-C5'-O5'
19	JG	501	GDP	C3'-C4'-C5'-O5'
20	DD	501	GTP	C3'-C4'-C5'-O5'
20	DB	501	GTP	C4'-C5'-O5'-PA
19	AK	501	GDP	C3'-C4'-C5'-O5'
19	CC	501	GDP	C3'-C4'-C5'-O5'
19	CK	501	GDP	C3'-C4'-C5'-O5'
19	DE	501	GDP	C3'-C4'-C5'-O5'
19	JK	501	GDP	C3'-C4'-C5'-O5'
20	AH	501	GTP	C3'-C4'-C5'-O5'
20	JB	501	GTP	C3'-C4'-C5'-O5'
20	LL	501	GTP	C3'-C4'-C5'-O5'
20	FD	501	GTP	C4'-C5'-O5'-PA
19	EG	501	GDP	C3'-C4'-C5'-O5'
20	DD	501	GTP	O4'-C4'-C5'-O5'
20	BB	501	GTP	C4'-C5'-O5'-PA
20	EB	501	GTP	C4'-C5'-O5'-PA
20	HF	501	GTP	C4'-C5'-O5'-PA
19	CC	501	GDP	O4'-C4'-C5'-O5'
19	CK	501	GDP	O4'-C4'-C5'-O5'
19	DE	501	GDP	O4'-C4'-C5'-O5'
19	DK	501	GDP	C3'-C4'-C5'-O5'
19	GE	501	GDP	C3'-C4'-C5'-O5'
19	JK	501	GDP	O4'-C4'-C5'-O5'
20	CD	501	GTP	C3'-C4'-C5'-O5'
20	LD	501	GTP	PB-O3B-PG-O1G
20	MD	501	GTP	C4'-C5'-O5'-PA
20	AL	501	GTP	PA-O3A-PB-O1B
20	DH	501	GTP	PA-O3A-PB-O1B
20	KD	501	GTP	PA-O3A-PB-O1B
19	IE	501	GDP	C3'-C4'-C5'-O5'
20	AH	501	GTP	O4'-C4'-C5'-O5'
20	DJ	501	GTP	C3'-C4'-C5'-O5'
20	JL	501	GTP	C3'-C4'-C5'-O5'
20	AB	501	GTP	C4'-C5'-O5'-PA
20	AJ	501	GTP	C4'-C5'-O5'-PA
20	BJ	501	GTP	C4'-C5'-O5'-PA

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Mol	Chain	Res	Type	Atoms
20	BL	501	GTP	C4'-C5'-O5'-PA
20	CJ	501	GTP	C4'-C5'-O5'-PA
20	HJ	501	GTP	C4'-C5'-O5'-PA
20	HL	501	GTP	C4'-C5'-O5'-PA
19	AK	501	GDP	O4'-C4'-C5'-O5'
20	AD	501	GTP	C4'-C5'-O5'-PA
20	AF	501	GTP	C4'-C5'-O5'-PA
20	BF	501	GTP	C4'-C5'-O5'-PA
20	CB	501	GTP	C4'-C5'-O5'-PA
20	CD	501	GTP	C4'-C5'-O5'-PA
20	CF	501	GTP	C4'-C5'-O5'-PA
20	EH	501	GTP	C4'-C5'-O5'-PA
20	EJ	501	GTP	C4'-C5'-O5'-PA
20	GJ	501	GTP	C4'-C5'-O5'-PA
20	JB	501	GTP	C4'-C5'-O5'-PA
20	JJ	501	GTP	C4'-C5'-O5'-PA
20	JL	501	GTP	C4'-C5'-O5'-PA
20	LL	501	GTP	C4'-C5'-O5'-PA
20	MH	501	GTP	C4'-C5'-O5'-PA
20	MJ	501	GTP	C4'-C5'-O5'-PA
20	JB	501	GTP	O4'-C4'-C5'-O5'
19	BA	501	GDP	PA-O3A-PB-O1B
19	CK	501	GDP	PA-O3A-PB-O1B
19	II	501	GDP	PA-O3A-PB-O1B
19	IK	501	GDP	PA-O3A-PB-O1B
19	KE	501	GDP	PA-O3A-PB-O1B
20	BD	501	GTP	C4'-C5'-O5'-PA
20	FF	501	GTP	C4'-C5'-O5'-PA
20	GH	501	GTP	C4'-C5'-O5'-PA
20	IH	501	GTP	C4'-C5'-O5'-PA
20	LF	501	GTP	C4'-C5'-O5'-PA
19	AK	501	GDP	PA-O3A-PB-O2B
19	BK	501	GDP	PA-O3A-PB-O2B
19	IE	501	GDP	PA-O3A-PB-O2B
19	JE	501	GDP	PA-O3A-PB-O2B
19	KI	502	GDP	PA-O3A-PB-O2B
19	CC	501	GDP	C5'-O5'-PA-O3A
19	IC	501	GDP	C5'-O5'-PA-O3A
20	AB	501	GTP	C5'-O5'-PA-O3A
20	AD	501	GTP	C5'-O5'-PA-O3A
20	CD	501	GTP	C5'-O5'-PA-O3A
20	CH	501	GTP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
20	DH	501	GTP	C5'-O5'-PA-O3A
20	EJ	501	GTP	C5'-O5'-PA-O3A
20	EL	501	GTP	C5'-O5'-PA-O3A
20	GF	501	GTP	C5'-O5'-PA-O3A
20	GH	501	GTP	C5'-O5'-PA-O3A
20	IH	501	GTP	C5'-O5'-PA-O3A
20	IL	501	GTP	C5'-O5'-PA-O3A
20	JD	501	GTP	C5'-O5'-PA-O3A
20	JJ	501	GTP	C5'-O5'-PA-O3A
20	JL	501	GTP	C5'-O5'-PA-O3A
20	MF	501	GTP	C5'-O5'-PA-O3A
20	MH	501	GTP	C5'-O5'-PA-O3A
19	BE	501	GDP	C3'-C4'-C5'-O5'
19	CI	501	GDP	C3'-C4'-C5'-O5'
19	EG	501	GDP	O4'-C4'-C5'-O5'
19	FK	501	GDP	C3'-C4'-C5'-O5'
20	FJ	501	GTP	C3'-C4'-C5'-O5'
20	LL	501	GTP	O4'-C4'-C5'-O5'
20	AD	501	GTP	PA-O3A-PB-O2B
20	CH	501	GTP	PA-O3A-PB-O2B
20	EL	501	GTP	PA-O3A-PB-O2B
20	GD	501	GTP	PA-O3A-PB-O2B
20	GF	501	GTP	PA-O3A-PB-O2B
20	GH	501	GTP	PA-O3A-PB-O2B
20	GJ	501	GTP	PA-O3A-PB-O2B
20	HF	501	GTP	PG-O3B-PB-O1B
20	HI	501	GTP	PA-O3A-PB-O1B
20	JJ	501	GTP	PA-O3A-PB-O2B
20	JL	501	GTP	PA-O3A-PB-O2B
20	KB	501	GTP	PA-O3A-PB-O1B
20	KL	501	GTP	PG-O3B-PB-O1B
20	LB	501	GTP	PA-O3A-PB-O2B
20	LH	501	GTP	PA-O3A-PB-O1B
20	ML	501	GTP	PA-O3A-PB-O2B
20	BH	501	GTP	C4'-C5'-O5'-PA
20	CH	501	GTP	C4'-C5'-O5'-PA
20	DD	501	GTP	C4'-C5'-O5'-PA
20	DH	501	GTP	C4'-C5'-O5'-PA
20	DL	501	GTP	C4'-C5'-O5'-PA
20	EF	501	GTP	C4'-C5'-O5'-PA
20	EL	501	GTP	C4'-C5'-O5'-PA
20	GF	501	GTP	C4'-C5'-O5'-PA

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Mol	Chain	Res	Type	Atoms
20	GL	501	GTP	C4'-C5'-O5'-PA
20	IL	501	GTP	C4'-C5'-O5'-PA
20	JH	501	GTP	C4'-C5'-O5'-PA
20	LJ	501	GTP	C4'-C5'-O5'-PA
19	EA	501	GDP	C5'-O5'-PA-O2A
19	EE	502	GDP	C5'-O5'-PA-O2A
19	EG	501	GDP	C5'-O5'-PA-O2A
19	IC	501	GDP	C5'-O5'-PA-O2A
19	IM	501	GDP	C5'-O5'-PA-O2A
19	JG	501	GDP	C5'-O5'-PA-O2A
19	KI	502	GDP	C5'-O5'-PA-O2A
19	MI	501	GDP	C5'-O5'-PA-O2A
20	AD	501	GTP	C5'-O5'-PA-O2A
20	AF	501	GTP	C5'-O5'-PA-O2A
20	BF	501	GTP	C5'-O5'-PA-O2A
20	CD	501	GTP	C5'-O5'-PA-O2A
20	CF	501	GTP	C5'-O5'-PA-O2A
20	CH	501	GTP	C5'-O5'-PA-O2A
20	DF	501	GTP	C5'-O5'-PA-O2A
20	DH	501	GTP	C5'-O5'-PA-O2A
20	DL	501	GTP	C5'-O5'-PA-O2A
20	EJ	501	GTP	C5'-O5'-PA-O2A
20	EL	501	GTP	C5'-O5'-PA-O2A
20	FH	501	GTP	C5'-O5'-PA-O2A
20	FJ	501	GTP	C5'-O5'-PA-O2A
20	FL	501	GTP	C5'-O5'-PA-O2A
20	GF	501	GTP	C5'-O5'-PA-O2A
20	GH	501	GTP	C5'-O5'-PA-O2A
20	HD	501	GTP	C5'-O5'-PA-O2A
20	HF	501	GTP	C5'-O5'-PA-O2A
20	HJ	501	GTP	C5'-O5'-PA-O2A
20	IL	501	GTP	C5'-O5'-PA-O2A
20	JD	501	GTP	C5'-O5'-PA-O2A
20	JJ	501	GTP	C5'-O5'-PA-O2A
20	JL	501	GTP	C5'-O5'-PA-O2A
20	KD	501	GTP	C5'-O5'-PA-O1A
20	KD	501	GTP	C5'-O5'-PA-O2A
20	KJ	501	GTP	C5'-O5'-PA-O1A
20	KJ	501	GTP	C5'-O5'-PA-O2A
20	KL	501	GTP	C5'-O5'-PA-O1A
20	KL	501	GTP	C5'-O5'-PA-O2A
20	LD	501	GTP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
20	MB	501	GTP	C5'-O5'-PA-O1A
20	MB	501	GTP	C5'-O5'-PA-O2A
20	MH	501	GTP	C5'-O5'-PA-O2A
19	HK	501	GDP	C3'-C4'-C5'-O5'
19	IC	501	GDP	C3'-C4'-C5'-O5'
20	DF	501	GTP	C3'-C4'-C5'-O5'
20	DH	501	GTP	C3'-C4'-C5'-O5'
20	JJ	501	GTP	C3'-C4'-C5'-O5'
20	KF	501	GTP	C3'-C4'-C5'-O5'
20	MH	501	GTP	C3'-C4'-C5'-O5'
20	IF	501	GTP	C4'-C5'-O5'-PA
20	MB	501	GTP	C4'-C5'-O5'-PA
19	BG	501	GDP	C3'-C4'-C5'-O5'
19	DK	501	GDP	O4'-C4'-C5'-O5'
19	GM	501	GDP	C3'-C4'-C5'-O5'
20	ED	501	GTP	C4'-C5'-O5'-PA
20	LB	501	GTP	C4'-C5'-O5'-PA
20	ML	501	GTP	C4'-C5'-O5'-PA
19	GE	501	GDP	O4'-C4'-C5'-O5'
20	IF	501	GTP	C3'-C4'-C5'-O5'
20	AJ	501	GTP	PA-O3A-PB-O2B
20	CD	501	GTP	PA-O3A-PB-O2B
20	ED	501	GTP	PA-O3A-PB-O2B
20	EH	501	GTP	PB-O3A-PA-O2A
20	FB	501	GTP	PA-O3A-PB-O2B
20	ID	501	GTP	PA-O3A-PB-O2B
20	IJ	501	GTP	PA-O3A-PB-O2B
20	IL	501	GTP	PA-O3A-PB-O2B
20	JH	501	GTP	PB-O3A-PA-O1A
20	KF	501	GTP	PA-O3A-PB-O1B
20	LF	501	GTP	PA-O3A-PB-O2B
20	MF	501	GTP	PG-O3B-PB-O1B
20	MF	501	GTP	PA-O3A-PB-O2B
20	FB	501	GTP	C4'-C5'-O5'-PA
20	GD	501	GTP	C4'-C5'-O5'-PA
20	KF	501	GTP	C4'-C5'-O5'-PA
20	LH	501	GTP	C4'-C5'-O5'-PA
20	HI	501	GTP	C4'-C5'-O5'-PA
19	EE	502	GDP	PA-O3A-PB-O1B
19	HE	501	GDP	PA-O3A-PB-O1B
19	HM	501	GDP	PA-O3A-PB-O1B
20	CD	501	GTP	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
19	HG	501	GDP	C4'-C5'-O5'-PA
20	DH	501	GTP	PA-O3A-PB-O2B
20	EF	501	GTP	PA-O3A-PB-O2B
20	EF	501	GTP	PB-O3A-PA-O1A
20	GL	501	GTP	PB-O3A-PA-O2A
20	IH	501	GTP	PA-O3A-PB-O2B
20	IL	501	GTP	PA-O3A-PB-O1B
20	JD	501	GTP	C4'-C5'-O5'-PA
20	KJ	501	GTP	PA-O3A-PB-O1B
20	KL	501	GTP	PA-O3A-PB-O1B
20	LD	501	GTP	PA-O3A-PB-O1B
20	MB	501	GTP	PG-O3B-PB-O1B
20	MF	501	GTP	PA-O3A-PB-O1B
19	BE	501	GDP	O4'-C4'-C5'-O5'
19	FK	501	GDP	O4'-C4'-C5'-O5'
19	IE	501	GDP	O4'-C4'-C5'-O5'
19	CI	501	GDP	O4'-C4'-C5'-O5'
19	HK	501	GDP	O4'-C4'-C5'-O5'
19	IC	501	GDP	O4'-C4'-C5'-O5'
20	BD	501	GTP	C3'-C4'-C5'-O5'
20	KJ	501	GTP	C3'-C4'-C5'-O5'
19	EA	501	GDP	PA-O3A-PB-O1B
20	FF	501	GTP	C3'-C4'-C5'-O5'
20	FH	501	GTP	C3'-C4'-C5'-O5'
20	ML	501	GTP	C3'-C4'-C5'-O5'
19	BA	501	GDP	PA-O3A-PB-O2B
19	BA	501	GDP	PA-O3A-PB-O3B
19	CK	501	GDP	PA-O3A-PB-O2B
19	CK	501	GDP	PA-O3A-PB-O3B
19	EA	501	GDP	PA-O3A-PB-O3B
19	EE	502	GDP	PA-O3A-PB-O2B
19	EE	502	GDP	PA-O3A-PB-O3B
19	HC	501	GDP	PA-O3A-PB-O3B
19	HE	501	GDP	PA-O3A-PB-O2B
19	HE	501	GDP	PA-O3A-PB-O3B
19	HM	501	GDP	PA-O3A-PB-O2B
19	HM	501	GDP	PA-O3A-PB-O3B
19	II	501	GDP	PA-O3A-PB-O2B
19	II	501	GDP	PA-O3A-PB-O3B
19	IK	501	GDP	PA-O3A-PB-O2B
19	IK	501	GDP	PA-O3A-PB-O3B
19	KE	501	GDP	PA-O3A-PB-O2B

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Mol	Chain	Res	Type	Atoms
19	KE	501	GDP	PA-O3A-PB-O3B
19	AK	501	GDP	C5'-O5'-PA-O3A
19	BC	501	GDP	C5'-O5'-PA-O3A
19	BK	501	GDP	C5'-O5'-PA-O3A
19	CK	501	GDP	C5'-O5'-PA-O3A
19	GI	501	GDP	C5'-O5'-PA-O3A
19	HI	502	GDP	C5'-O5'-PA-O3A
19	HM	501	GDP	C5'-O5'-PA-O3A
19	JE	501	GDP	C5'-O5'-PA-O3A
19	KC	501	GDP	C5'-O5'-PA-O3A
19	ME	501	GDP	C5'-O5'-PA-O3A
20	AJ	501	GTP	C5'-O5'-PA-O3A
20	BD	501	GTP	C5'-O5'-PA-O3A
20	BH	501	GTP	C5'-O5'-PA-O3A
20	BJ	501	GTP	C5'-O5'-PA-O3A
20	BL	501	GTP	C5'-O5'-PA-O3A
20	CB	501	GTP	C5'-O5'-PA-O3A
20	DD	501	GTP	C5'-O5'-PA-O3A
20	DL	501	GTP	C5'-O5'-PA-O3A
20	EF	501	GTP	C5'-O5'-PA-O3A
20	EH	501	GTP	C5'-O5'-PA-O3A
20	FF	501	GTP	C5'-O5'-PA-O3A
20	GL	501	GTP	C5'-O5'-PA-O3A
20	HL	501	GTP	C5'-O5'-PA-O3A
20	IF	501	GTP	C5'-O5'-PA-O3A
20	JB	501	GTP	C5'-O5'-PA-O3A
20	JH	501	GTP	C5'-O5'-PA-O3A
20	LJ	501	GTP	C5'-O5'-PA-O3A
20	LL	501	GTP	C5'-O5'-PA-O3A
20	MB	501	GTP	C5'-O5'-PA-O3A
20	MD	501	GTP	C5'-O5'-PA-O3A
20	MJ	501	GTP	C5'-O5'-PA-O3A
19	AI	501	GDP	C3'-C4'-C5'-O5'
19	CG	501	GDP	C3'-C4'-C5'-O5'
19	HE	501	GDP	C3'-C4'-C5'-O5'
19	IM	501	GDP	C3'-C4'-C5'-O5'
20	DB	501	GTP	C3'-C4'-C5'-O5'
20	GF	501	GTP	C3'-C4'-C5'-O5'
20	AH	501	GTP	PA-O3A-PB-O1B
20	AH	501	GTP	PA-O3A-PB-O2B
20	AJ	501	GTP	PA-O3A-PB-O1B
20	AL	501	GTP	PA-O3A-PB-O2B

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Mol	Chain	Res	Type	Atoms
20	BH	501	GTP	PB-O3A-PA-O1A
20	DD	501	GTP	PA-O3A-PB-O1B
20	DD	501	GTP	PA-O3A-PB-O2B
20	DL	501	GTP	PA-O3A-PB-O1B
20	DL	501	GTP	PA-O3A-PB-O2B
20	ED	501	GTP	PA-O3A-PB-O1B
20	EF	501	GTP	PA-O3A-PB-O1B
20	EH	501	GTP	PB-O3A-PA-O1A
20	EJ	501	GTP	PB-O3A-PA-O1A
20	EJ	501	GTP	PB-O3A-PA-O2A
20	FB	501	GTP	PG-O3B-PB-O1B
20	FB	501	GTP	PA-O3A-PB-O1B
20	GD	501	GTP	PG-O3B-PB-O2B
20	GD	501	GTP	PA-O3A-PB-O1B
20	GH	501	GTP	PG-O3B-PB-O2B
20	GJ	501	GTP	PG-O3B-PB-O2B
20	GJ	501	GTP	PA-O3A-PB-O1B
20	GL	501	GTP	PB-O3A-PA-O1A
20	HI	501	GTP	PA-O3A-PB-O2B
20	HL	501	GTP	PA-O3A-PB-O2B
20	ID	501	GTP	PA-O3A-PB-O1B
20	IJ	501	GTP	PA-O3A-PB-O1B
20	JB	501	GTP	PA-O3A-PB-O2B
20	JF	501	GTP	PA-O3A-PB-O2B
20	JH	501	GTP	PA-O3A-PB-O2B
20	JL	501	GTP	PA-O3A-PB-O1B
20	KB	501	GTP	PG-O3B-PB-O1B
20	KD	501	GTP	PA-O3A-PB-O2B
20	KF	501	GTP	PG-O3B-PB-O2B
20	KF	501	GTP	PA-O3A-PB-O2B
20	LB	501	GTP	PA-O3A-PB-O1B
20	LF	501	GTP	PA-O3A-PB-O1B
20	LH	501	GTP	PG-O3B-PB-O2B
20	LH	501	GTP	PA-O3A-PB-O2B
20	MH	501	GTP	PA-O3A-PB-O2B
20	ML	501	GTP	PA-O3A-PB-O1B
20	AL	501	GTP	C4'-C5'-O5'-PA
19	CC	501	GDP	C5'-O5'-PA-O2A
19	EC	501	GDP	C5'-O5'-PA-O1A
19	EK	501	GDP	C5'-O5'-PA-O1A
19	FA	501	GDP	C5'-O5'-PA-O1A
19	FE	501	GDP	C5'-O5'-PA-O1A

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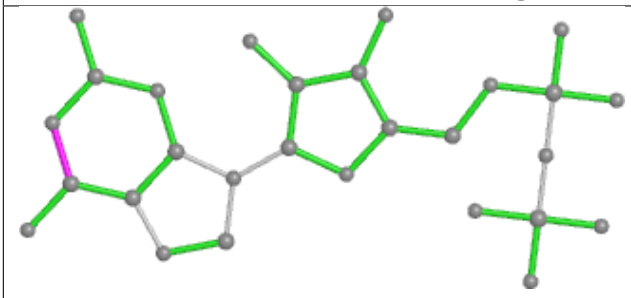
Mol	Chain	Res	Type	Atoms
19	FG	501	GDP	C5'-O5'-PA-O1A
19	HE	501	GDP	C5'-O5'-PA-O1A
19	KG	501	GDP	C5'-O5'-PA-O1A
20	FD	501	GTP	C5'-O5'-PA-O2A
20	GJ	501	GTP	C5'-O5'-PA-O2A
20	ID	501	GTP	C5'-O5'-PA-O1A
20	LD	501	GTP	C5'-O5'-PA-O1A
20	GJ	501	GTP	C3'-C4'-C5'-O5'
20	DB	501	GTP	PB-O3B-PG-O1G
20	CB	501	GTP	C3'-C4'-C5'-O5'
20	FL	501	GTP	C3'-C4'-C5'-O5'
20	HD	501	GTP	C3'-C4'-C5'-O5'

There are no ring outliers.

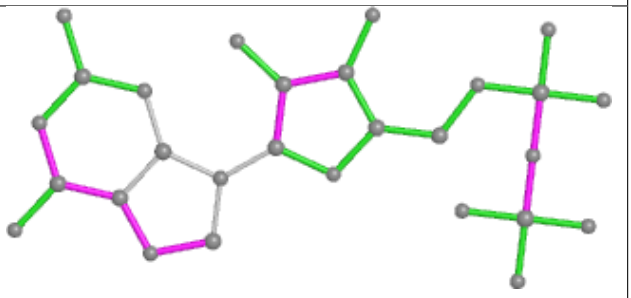
No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

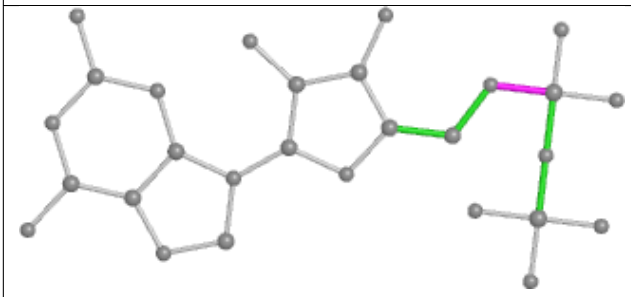
Ligand GDP JC 501



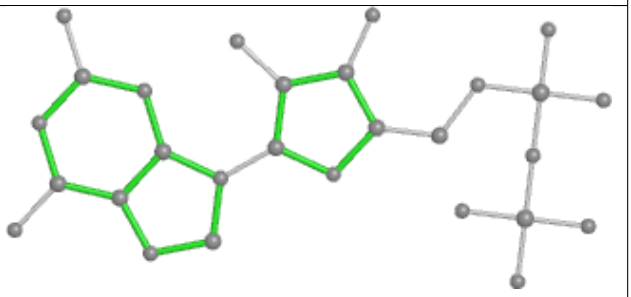
Bond lengths



Bond angles

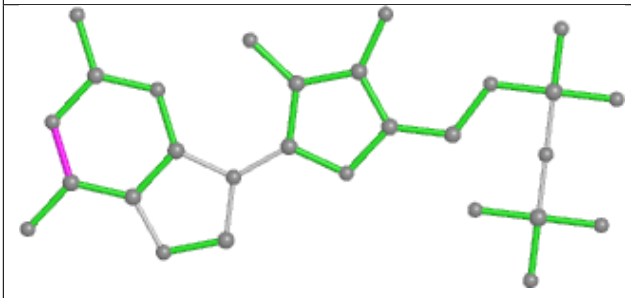


Torsions



Rings

Ligand GDP AK 501



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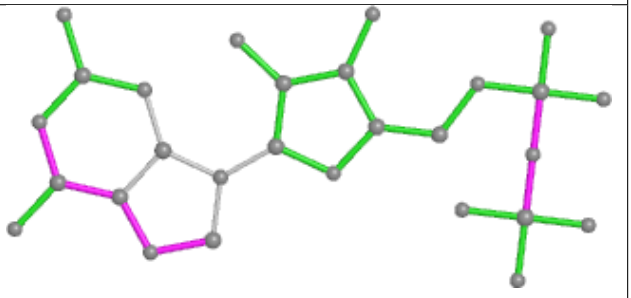

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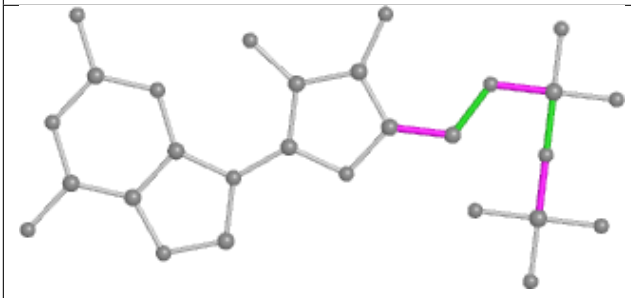

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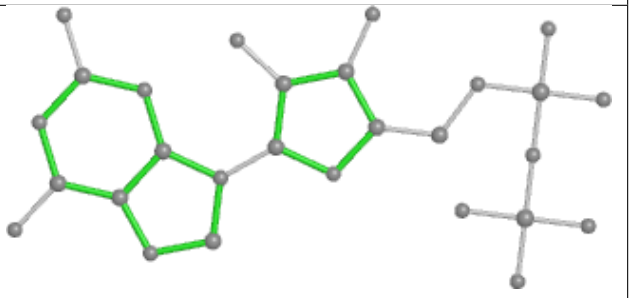
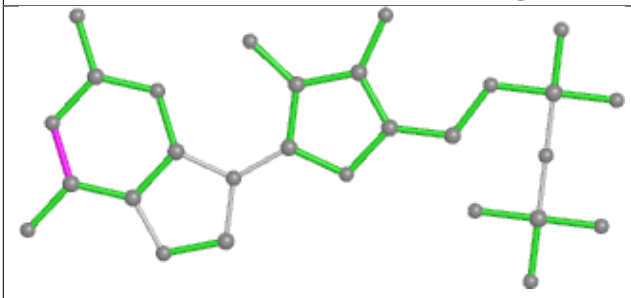
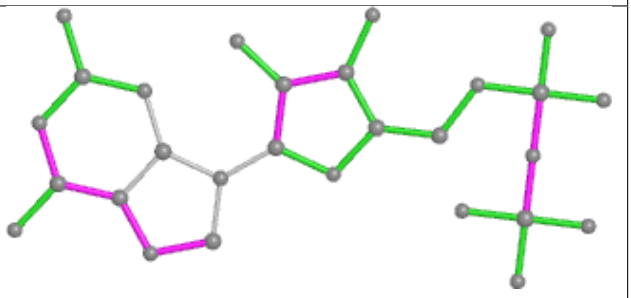


Rings

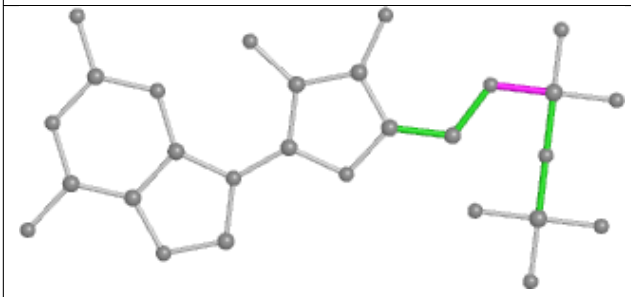
Ligand GDP LE 501



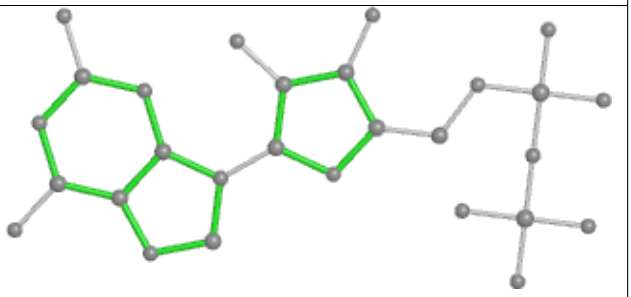
Bond lengths



Bond angles

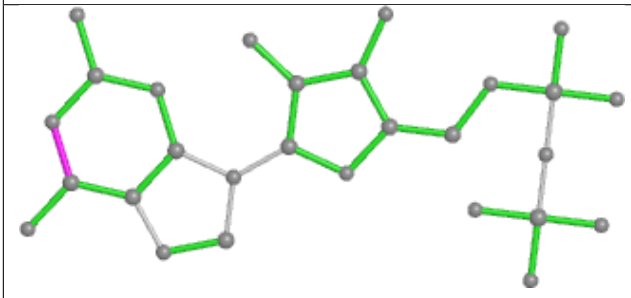


Torsions

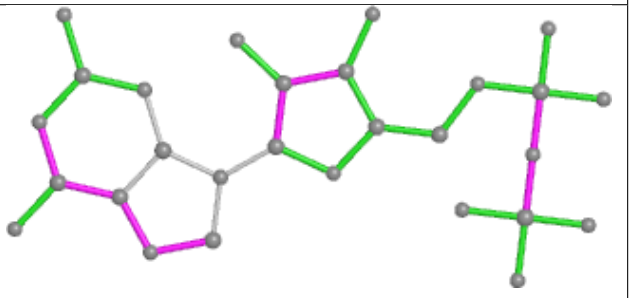


Rings

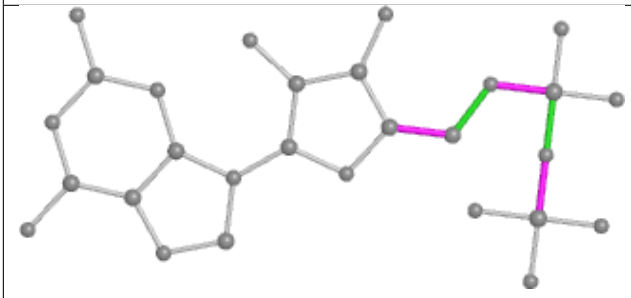
Ligand GDP CC 501



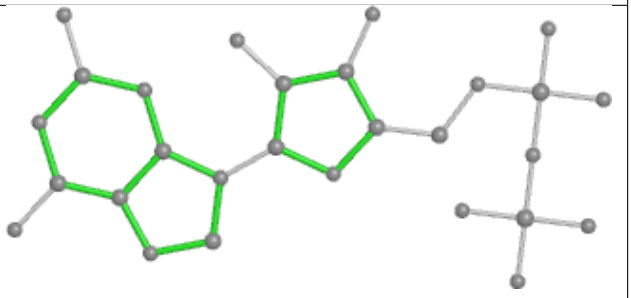
Bond lengths



Bond angles

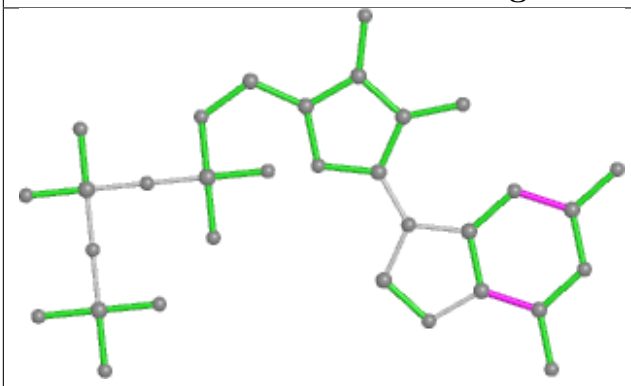


Torsions

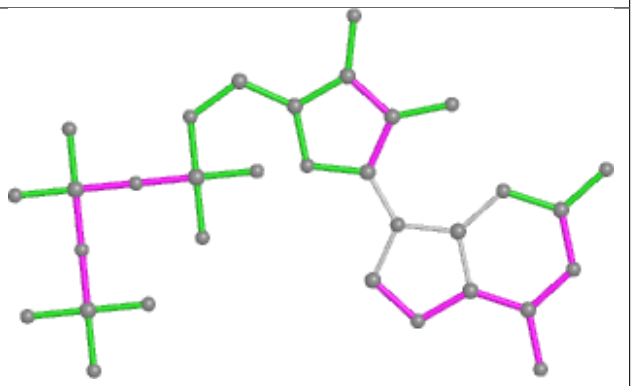


Rings

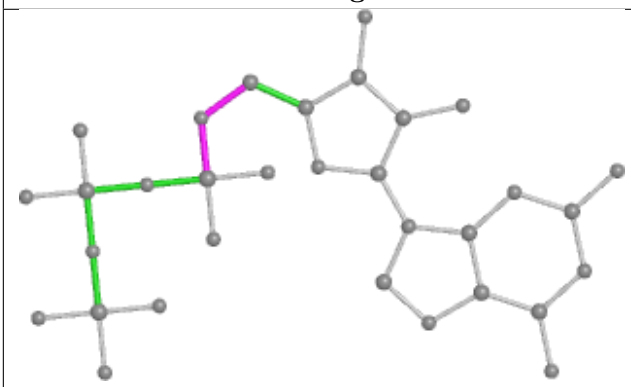
Ligand GTP AB 501



Bond lengths



Bond angles



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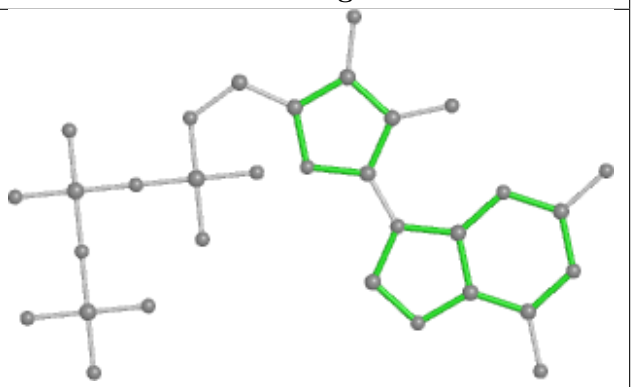
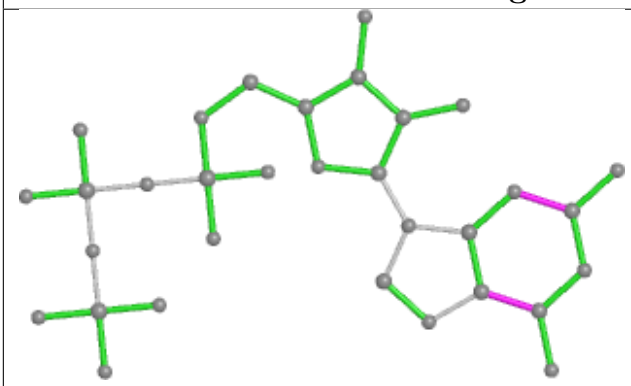


Rings

Ligand GTP MJ 501



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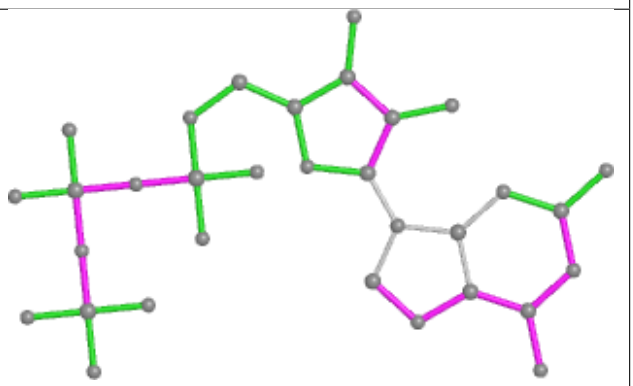

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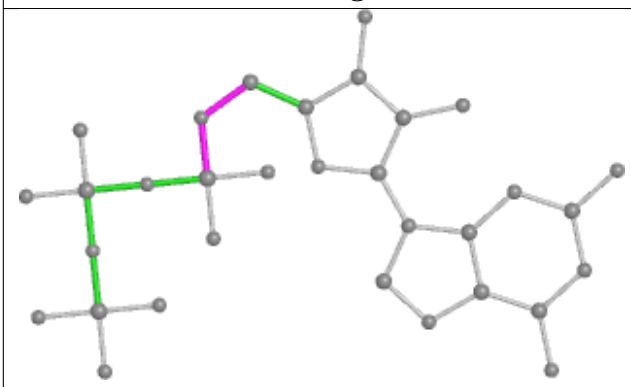

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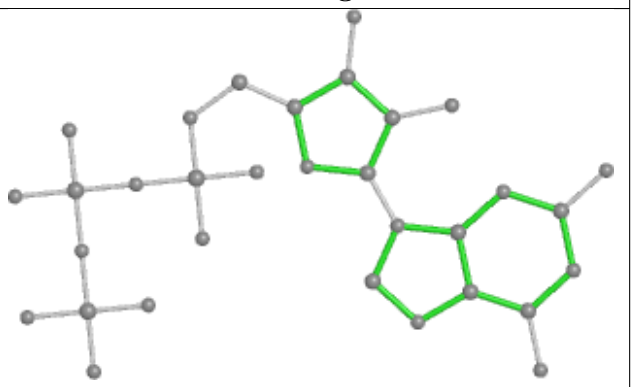
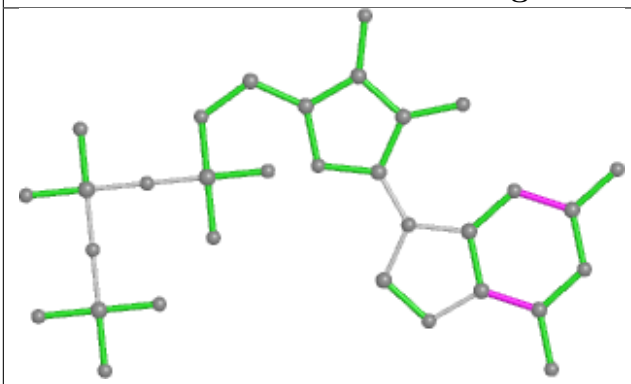


Rings

Ligand GTP DL 501



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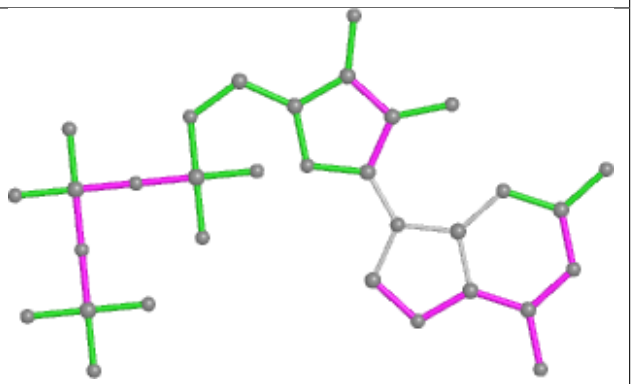
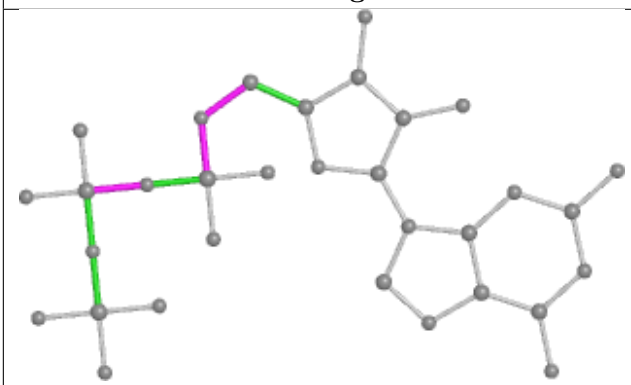


Bond angles



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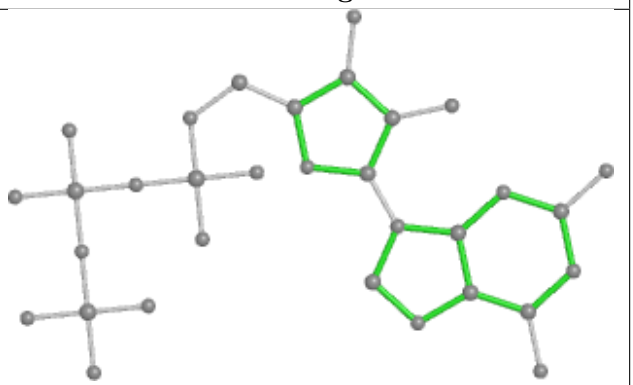
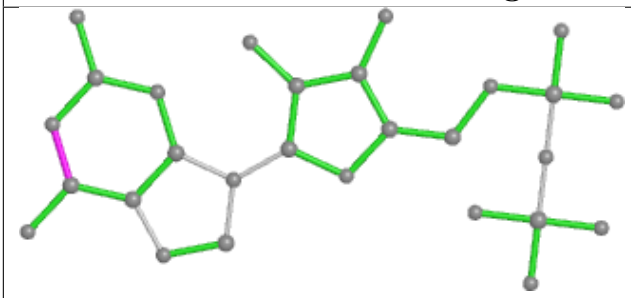


Rings

Ligand GDP HM 501



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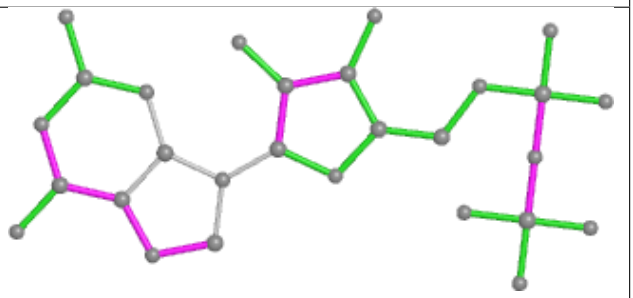
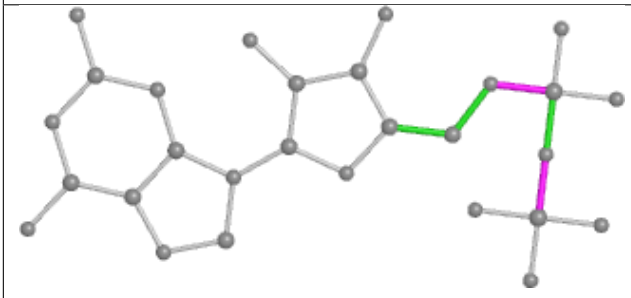


Bond angles



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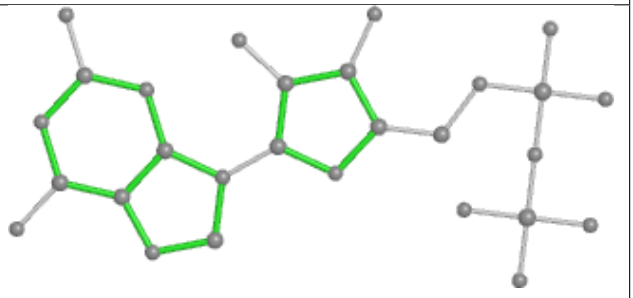
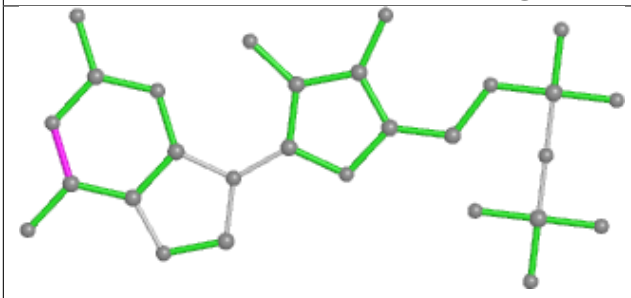
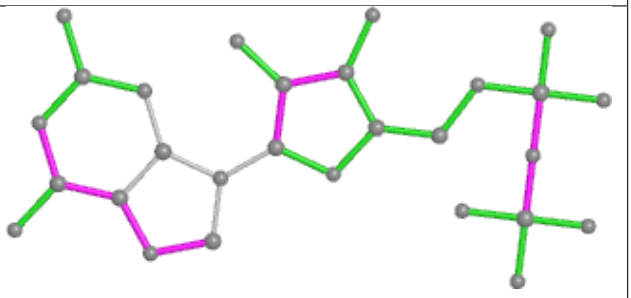


Rings

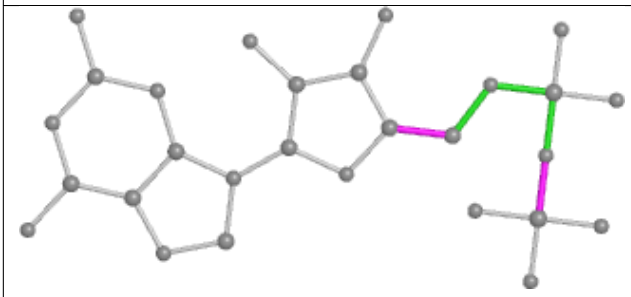
Ligand GDP IE 501



Bond lengths



Bond angles



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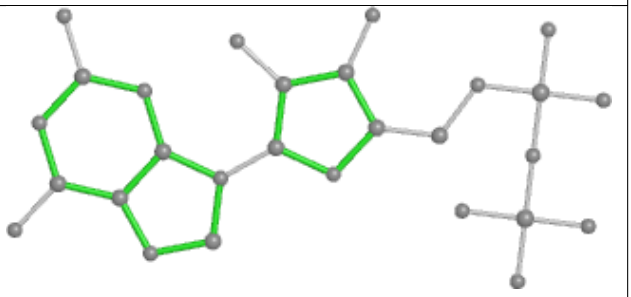
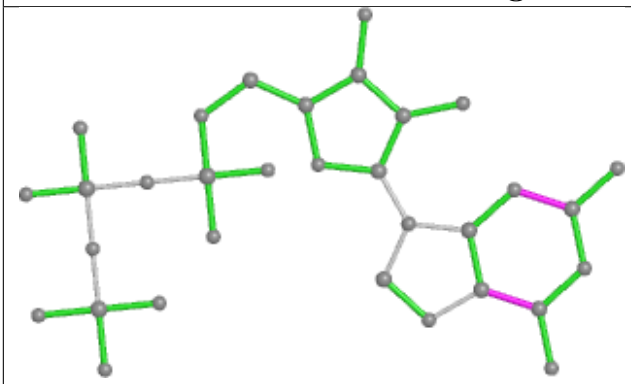


Rings

Ligand GTP MF 501



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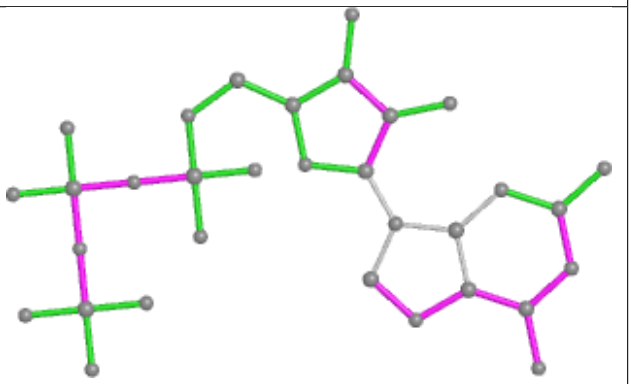
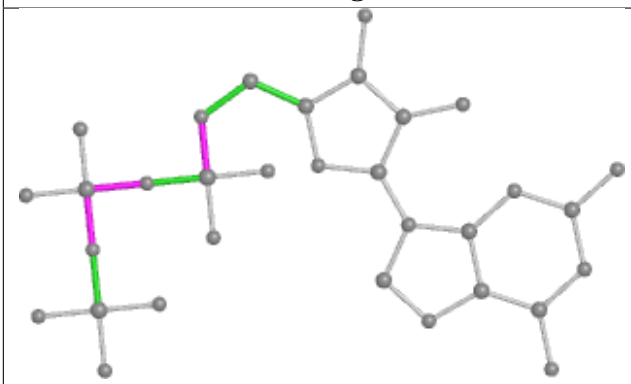


Bond angles



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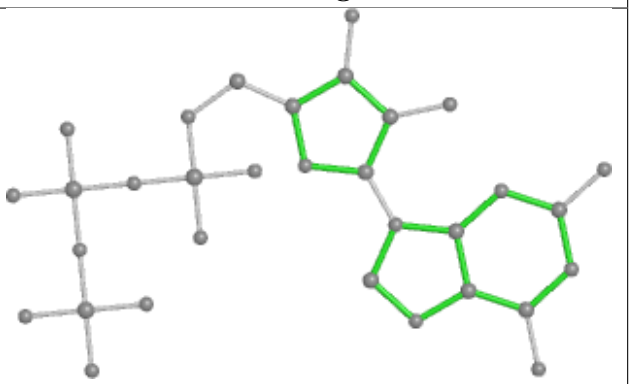

Rings

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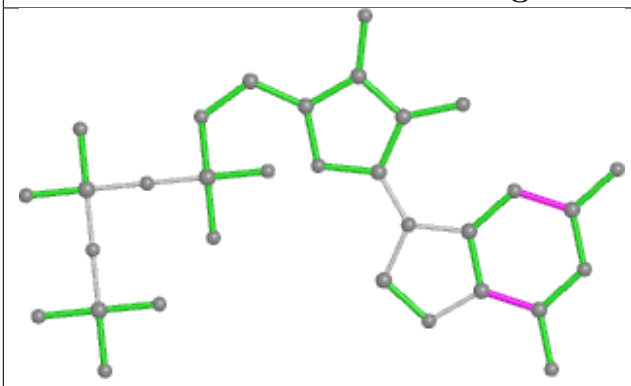
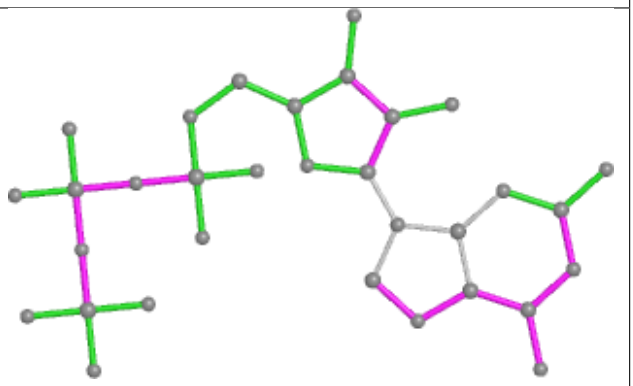
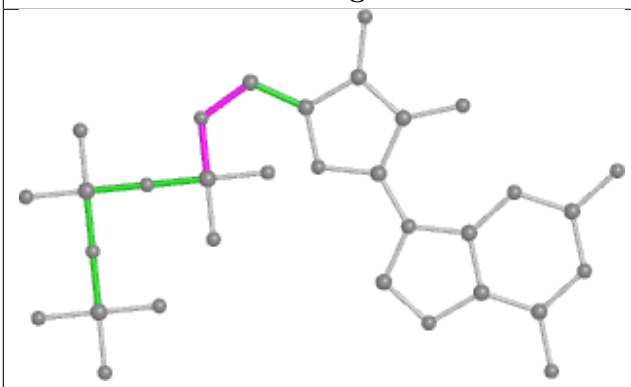


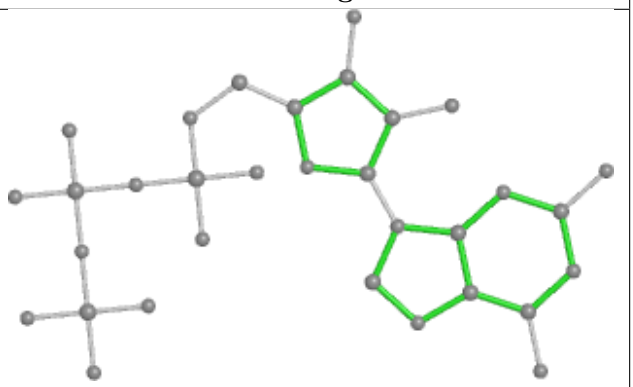
Bond lengths



Bond angles

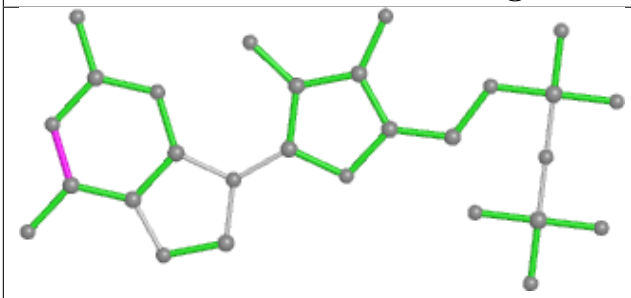


Torsions



Rings

Ligand GDP GG 501



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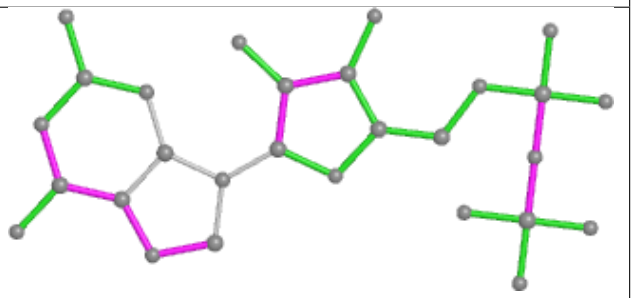

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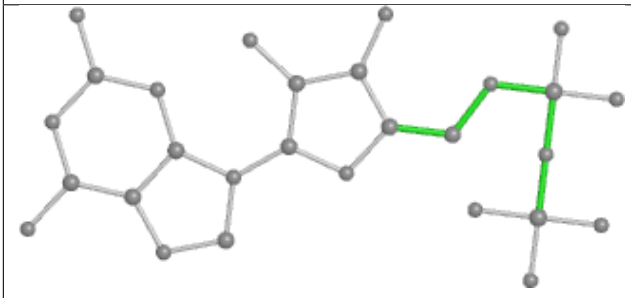

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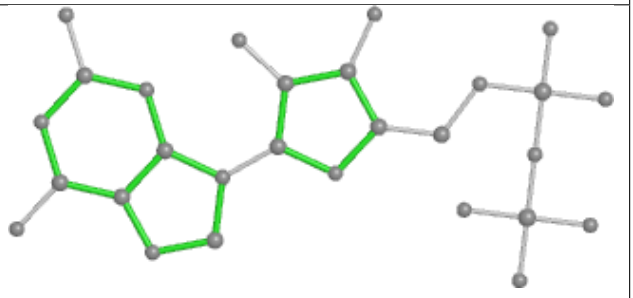
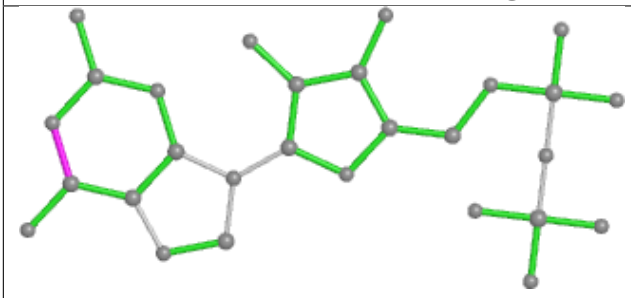


Rings

Ligand GDP MG 501



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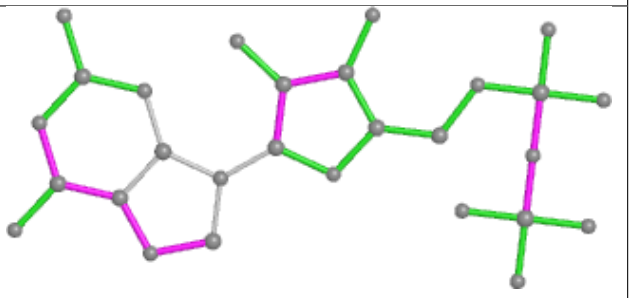
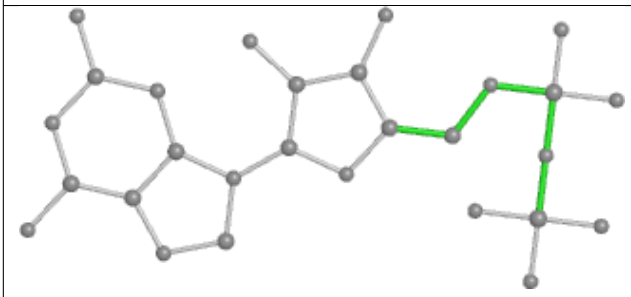


Bond angles



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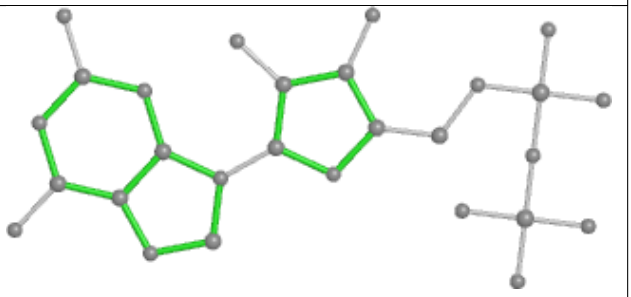
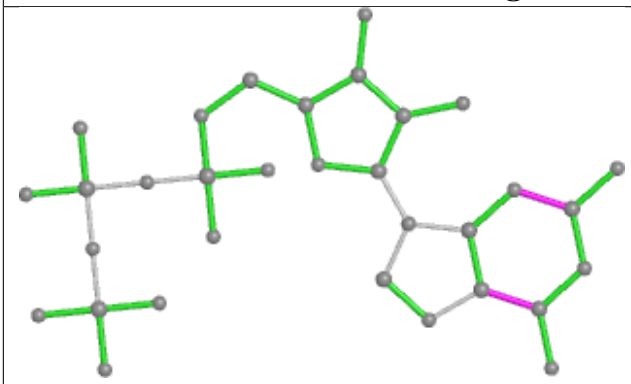


Rings

Ligand GTP MH 501



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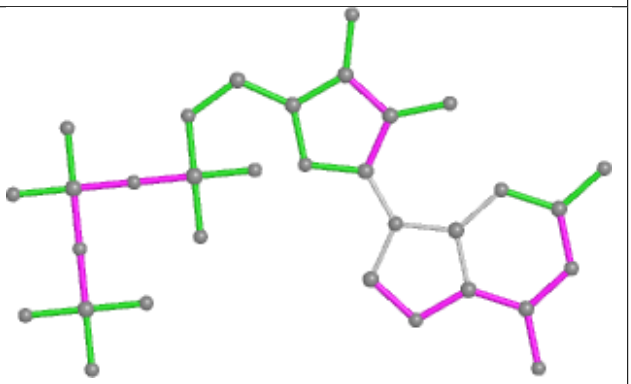
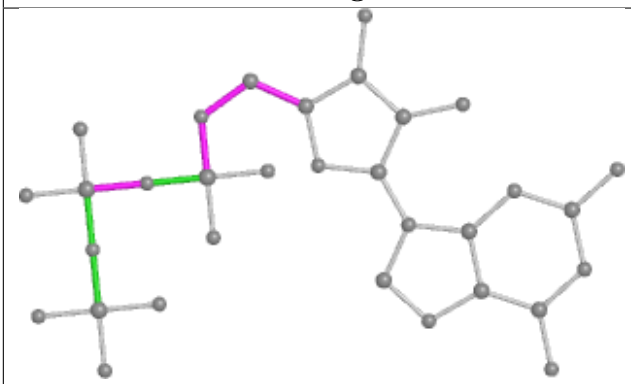
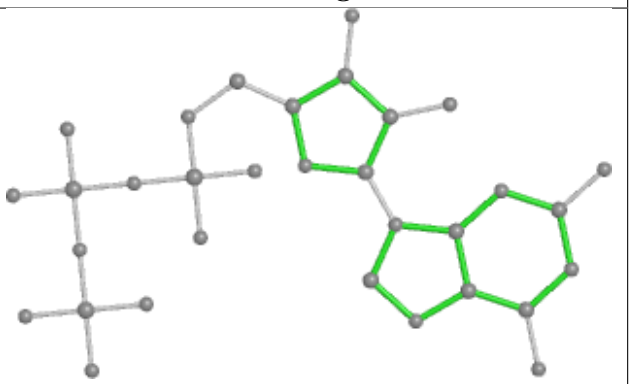


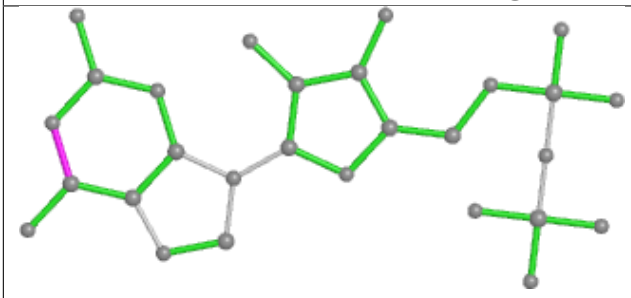
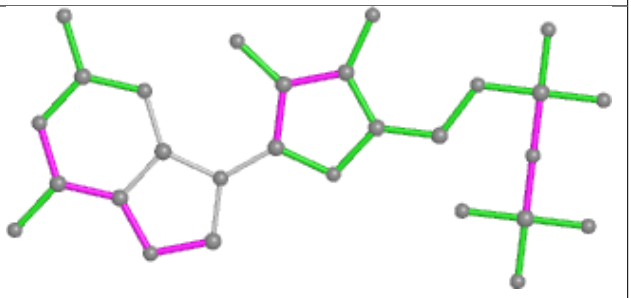
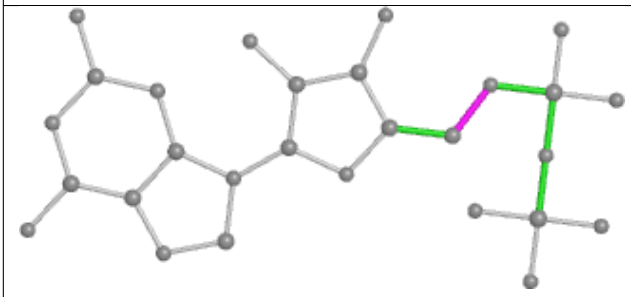
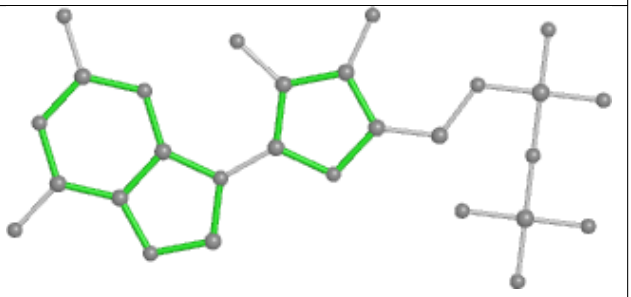
Bond angles

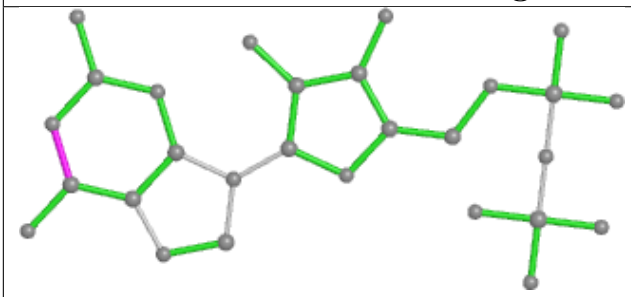
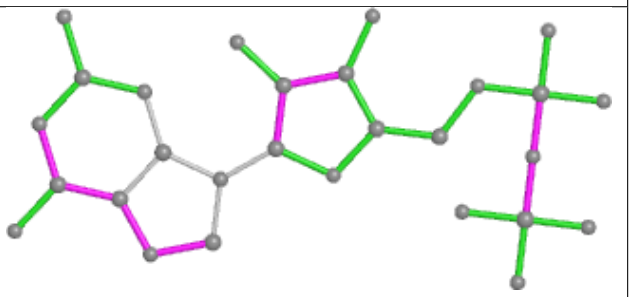
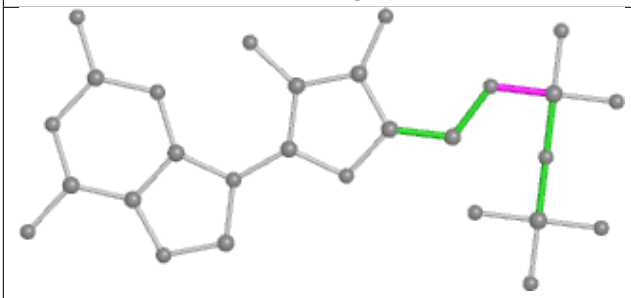
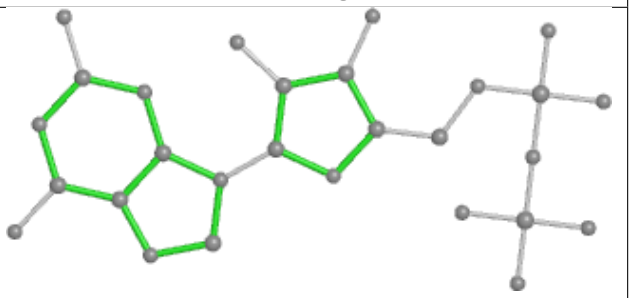


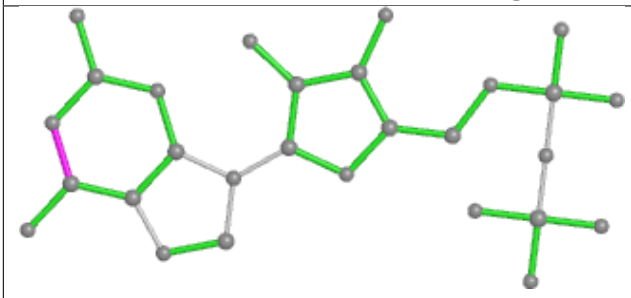
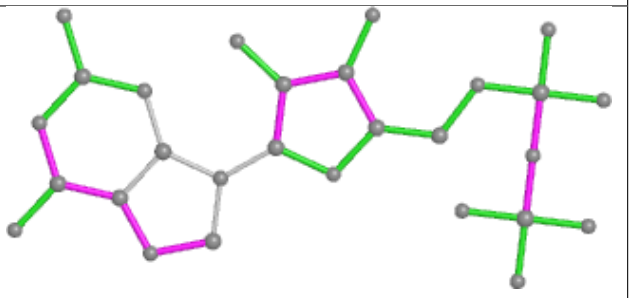
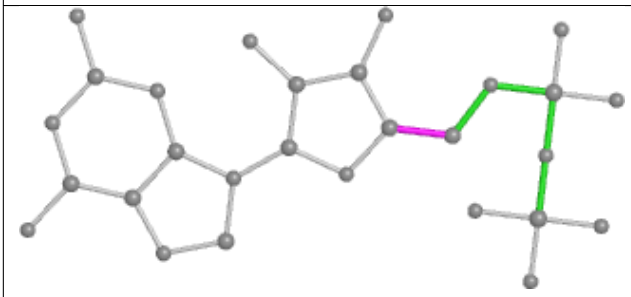
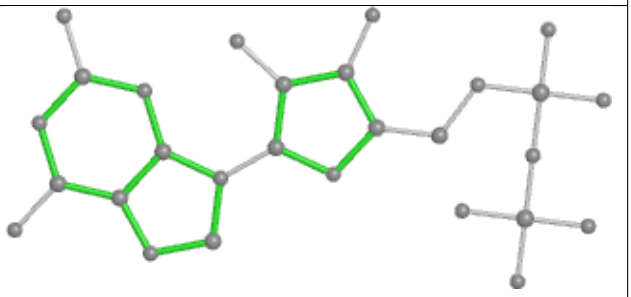
Torsions

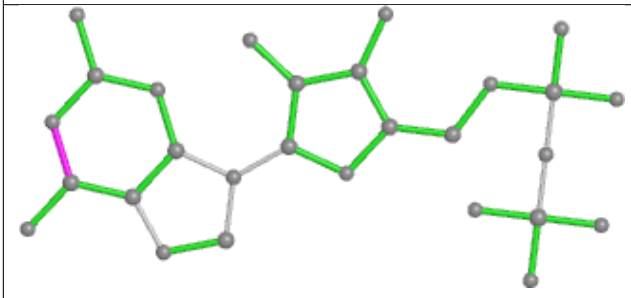
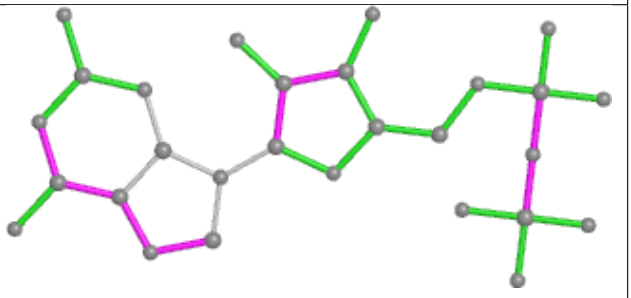
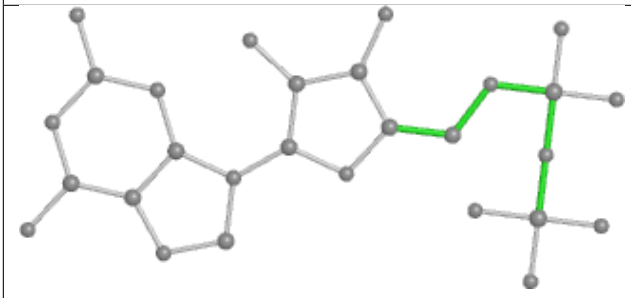
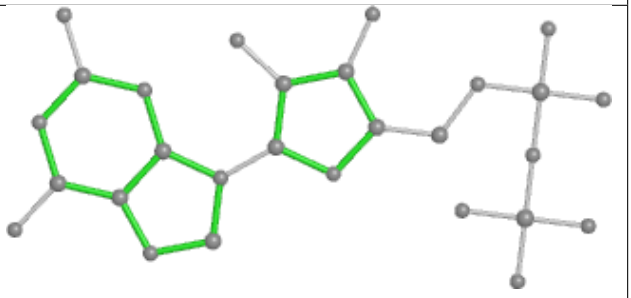


Rings

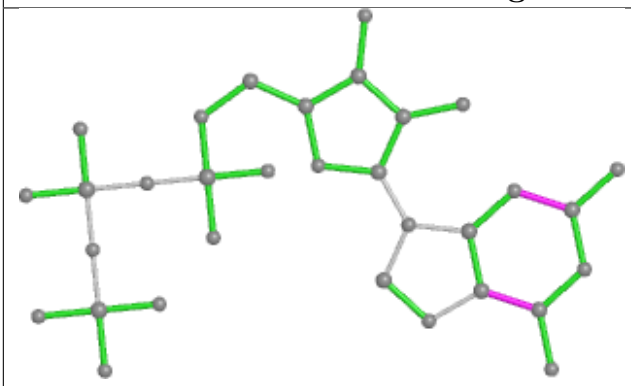
Ligand GDP HG 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand GDP FA 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

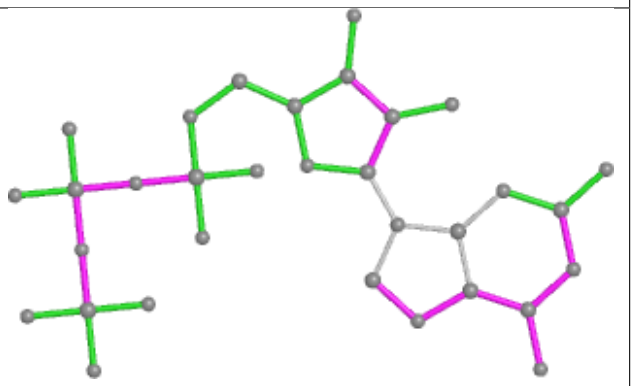
Ligand GDP BG 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP LK 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

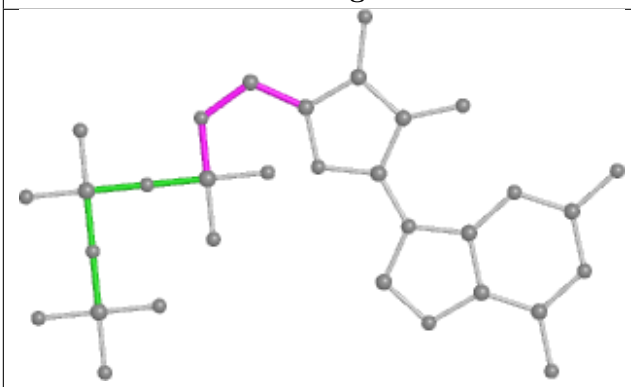
Ligand GTP HD 501



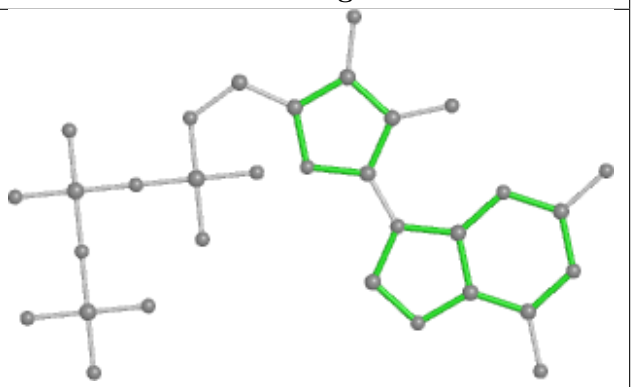
Bond lengths



Bond angles

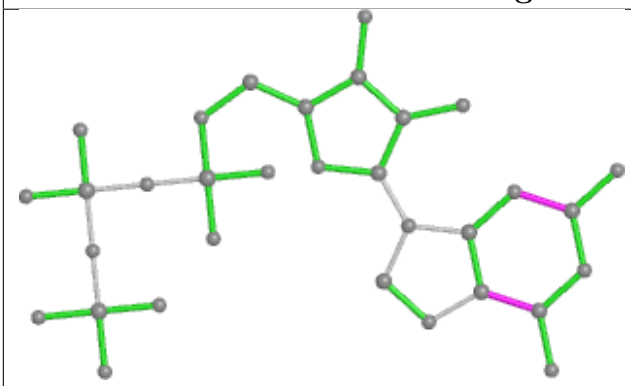


Torsions

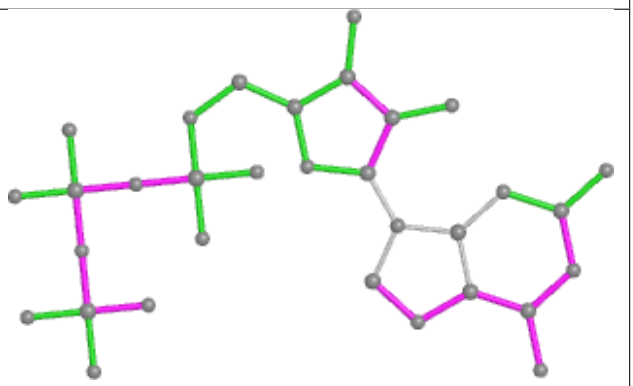


Rings

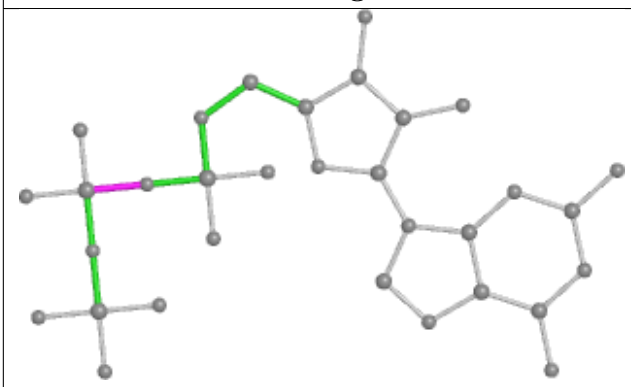
Ligand GTP JF 501



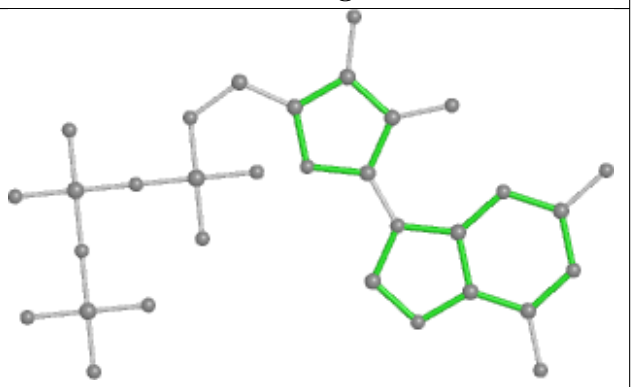
Bond lengths



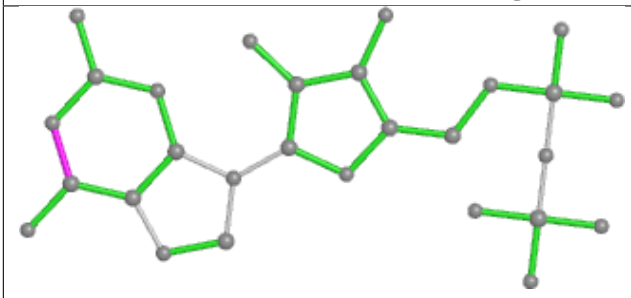
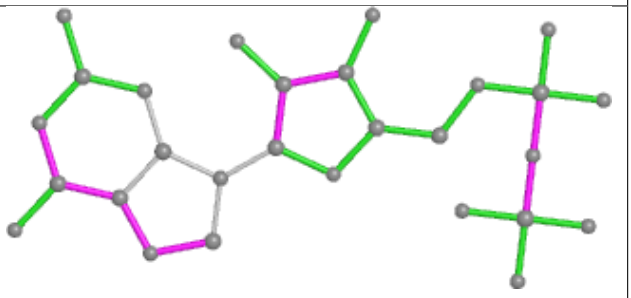
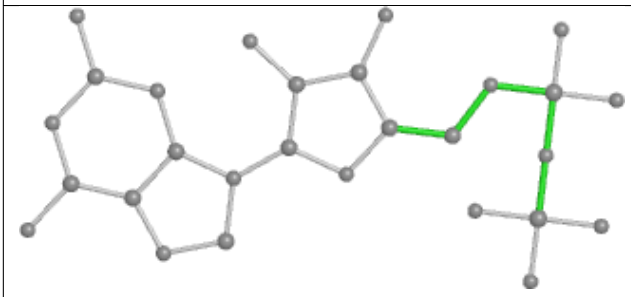
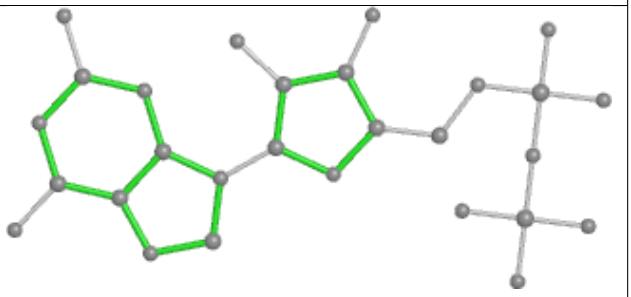
Bond angles

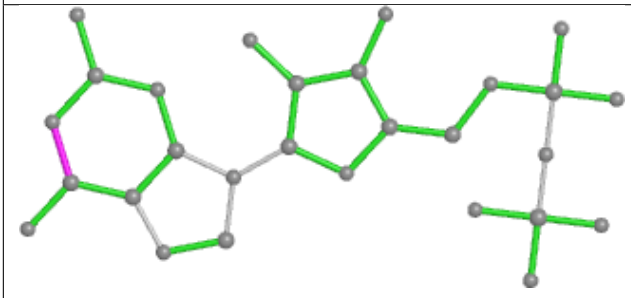
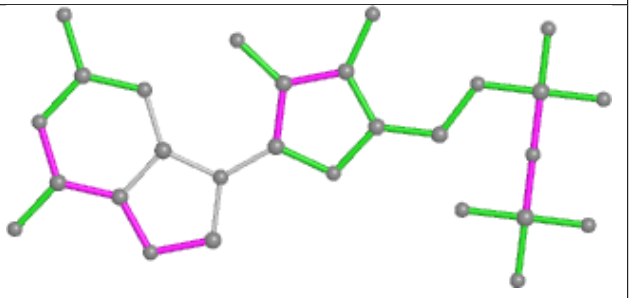
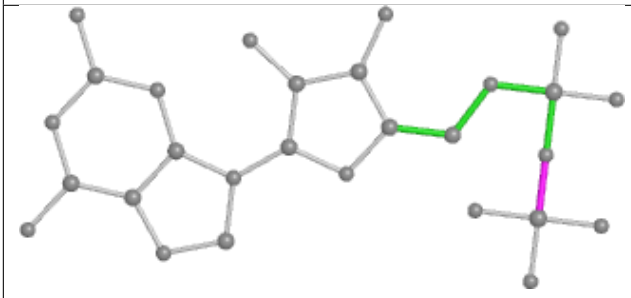
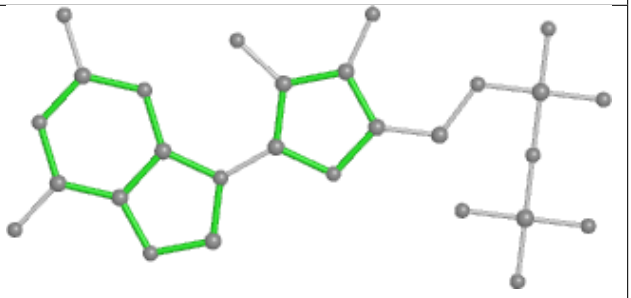


Torsions

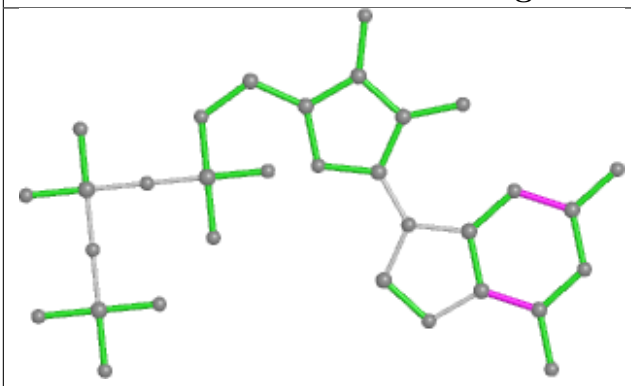


Rings

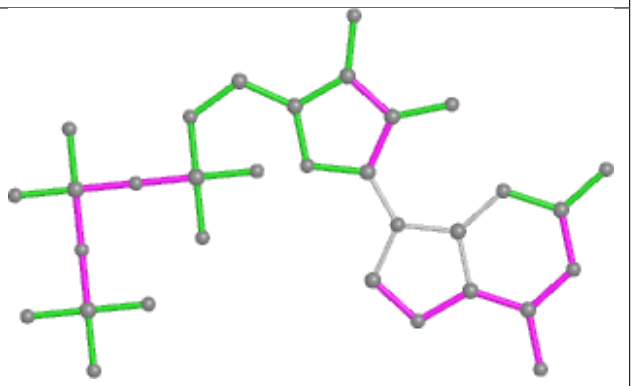
Ligand GDP AC 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand GDP IK 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

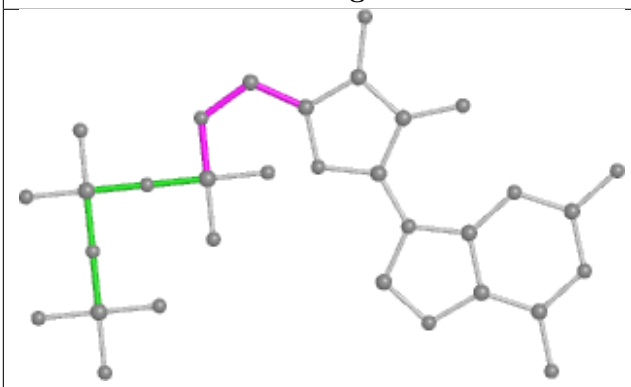
Ligand GTP FJ 501



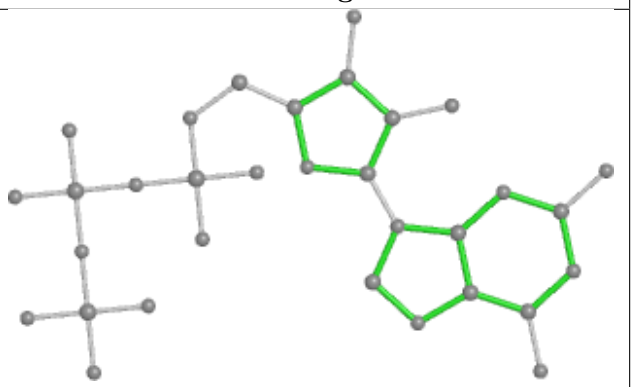
Bond lengths



Bond angles

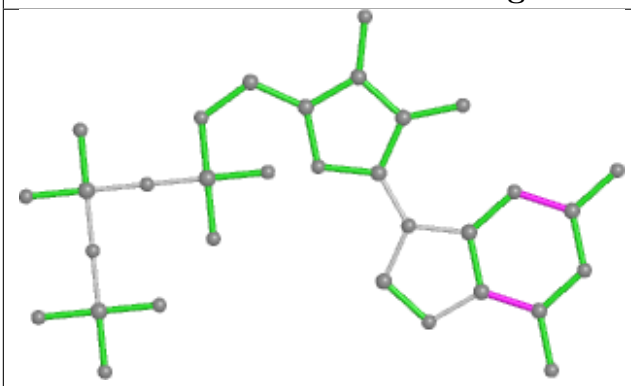


Torsions

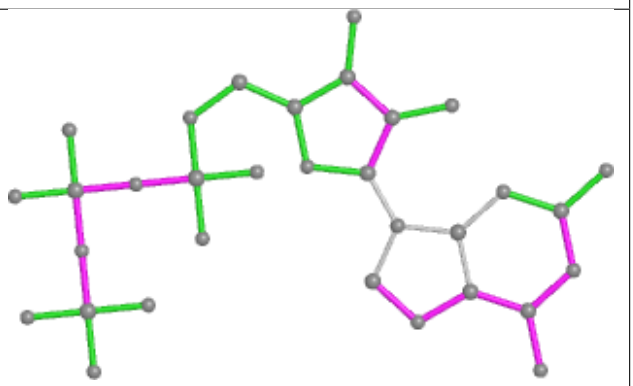


Rings

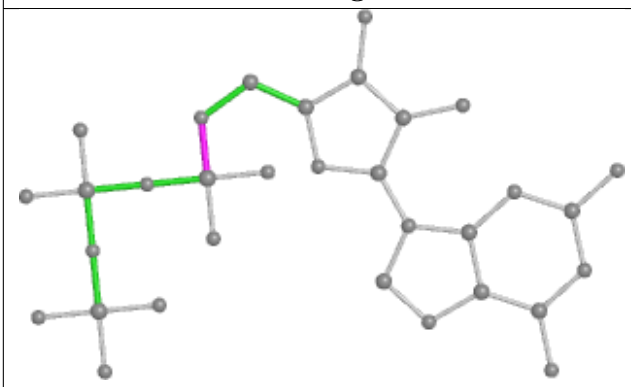
Ligand GTP KH 501



Bond lengths



Bond angles



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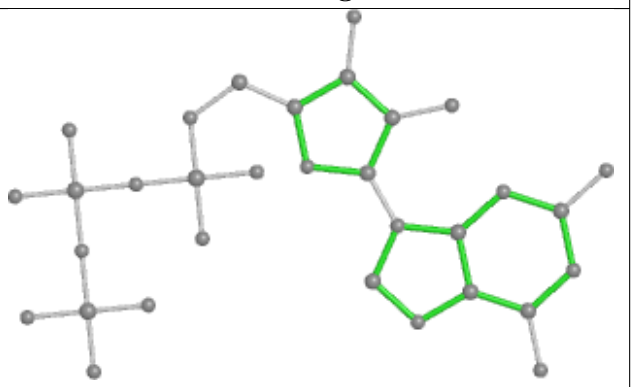
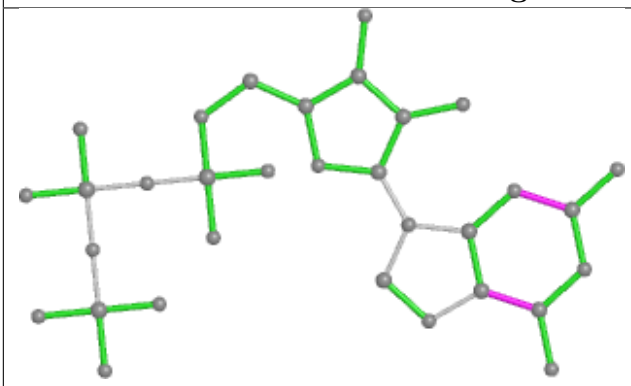
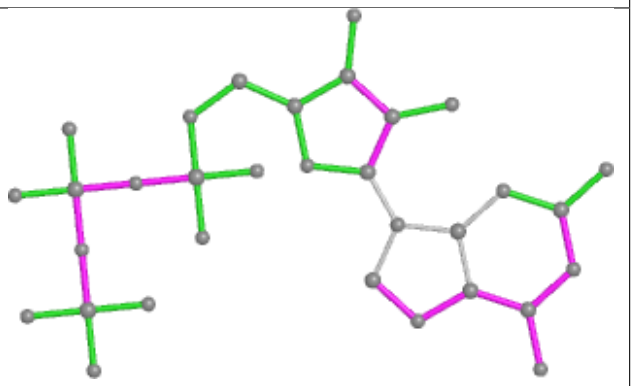


Rings

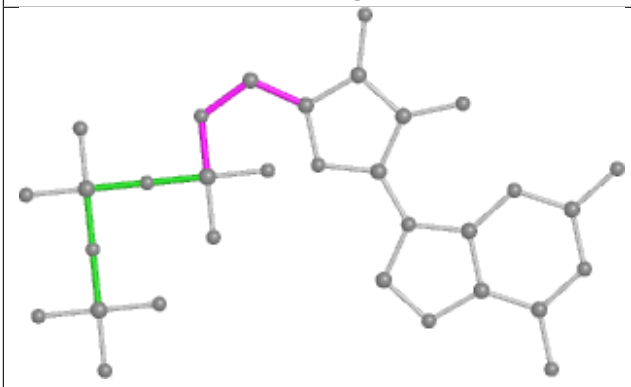
Ligand GTP CB 501



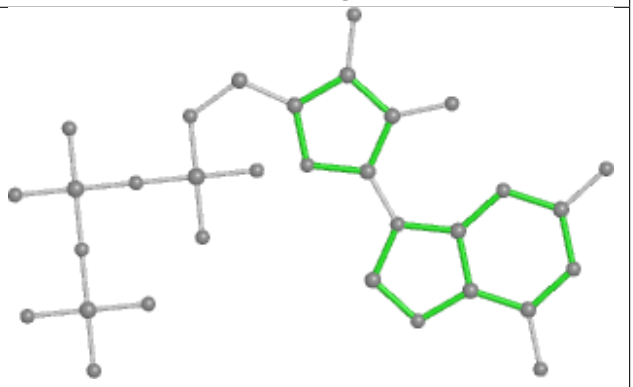
Bond lengths



Bond angles

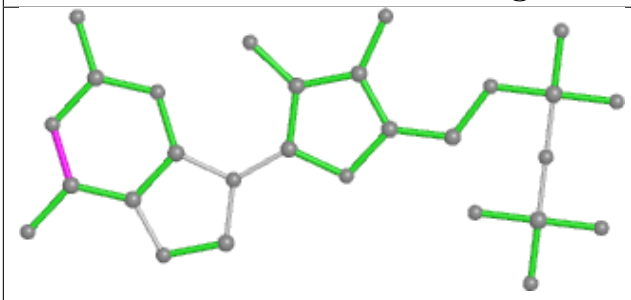


Torsions

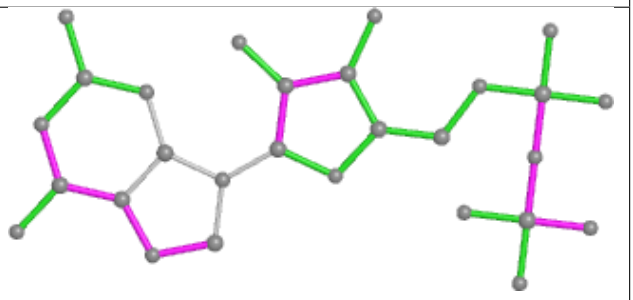


Rings

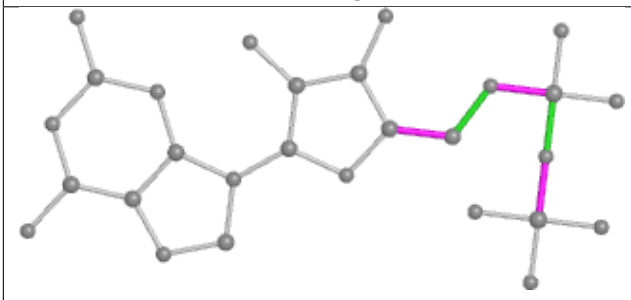
Ligand GDP JG 501



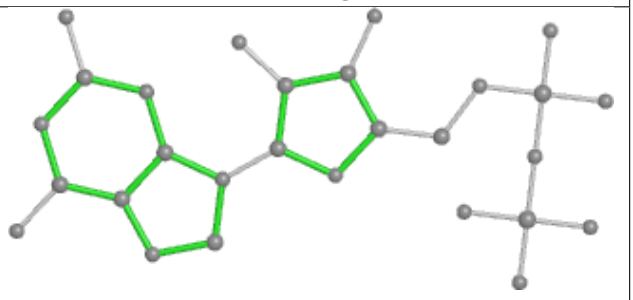
Bond lengths



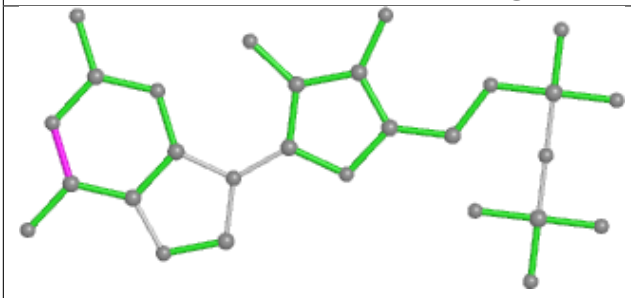
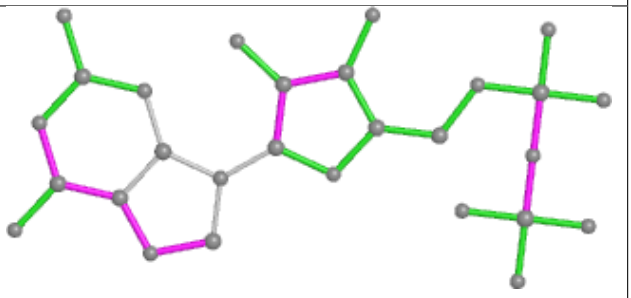
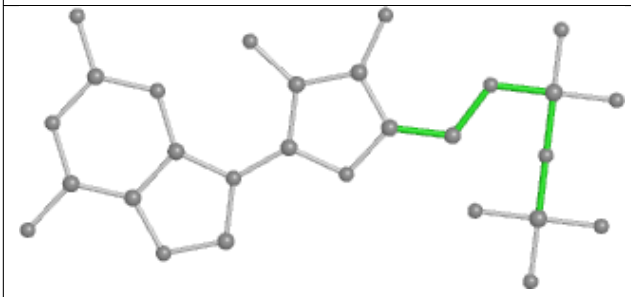
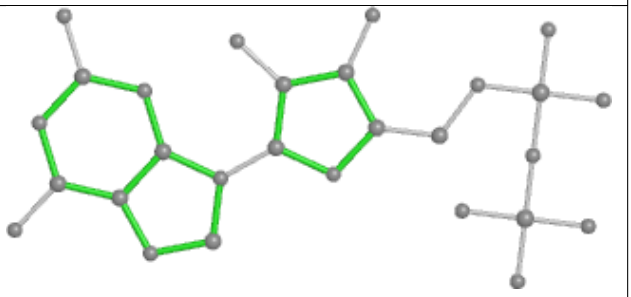
Bond angles



Torsions



Rings

Ligand GDP CA 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

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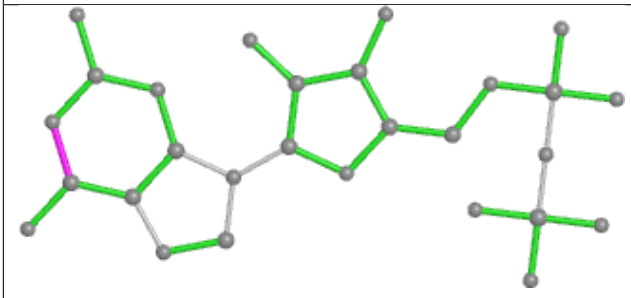
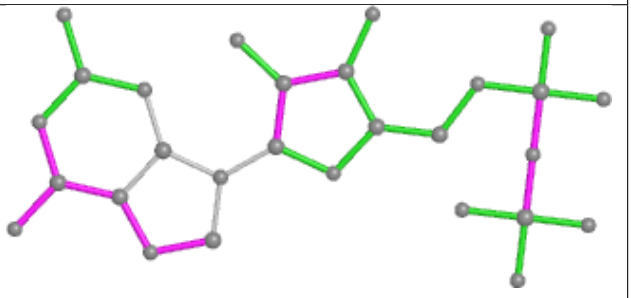
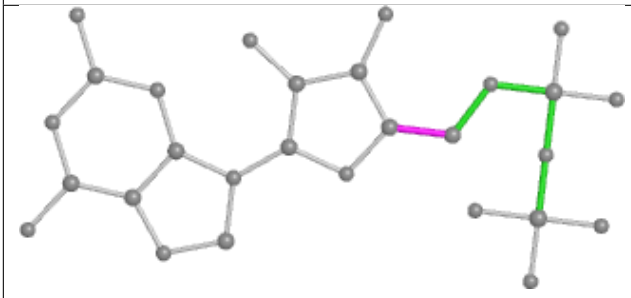
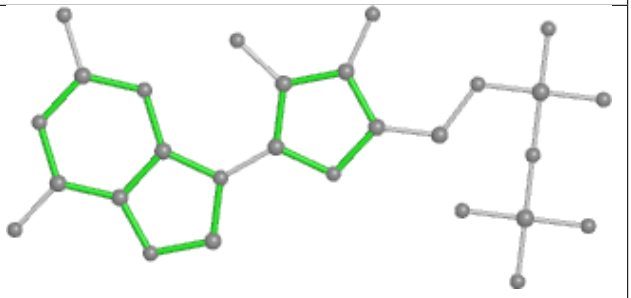
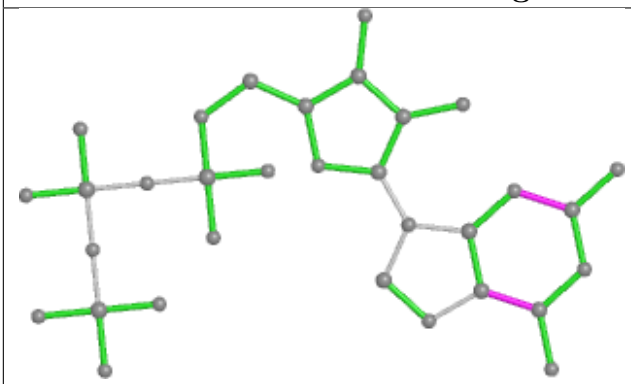
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GTP HJ 501



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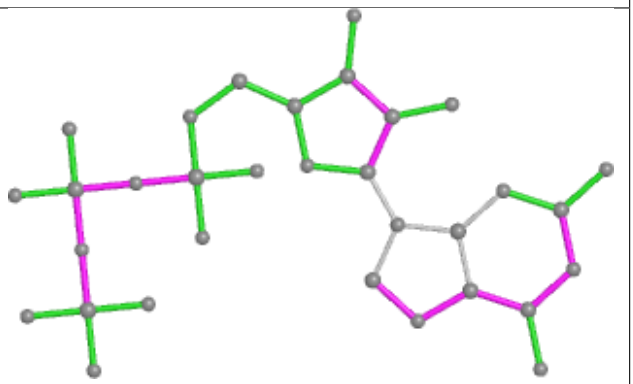

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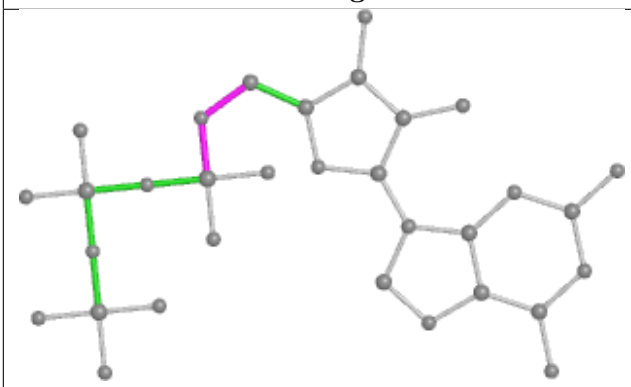

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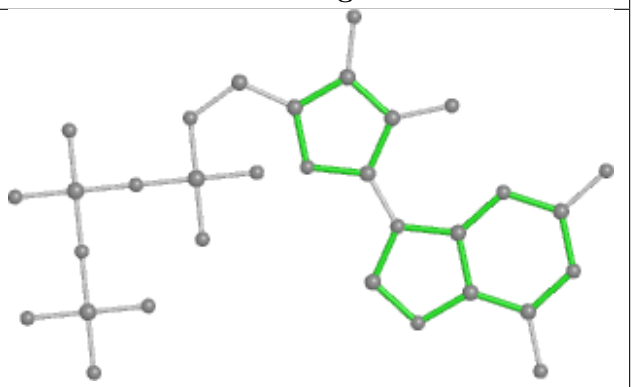
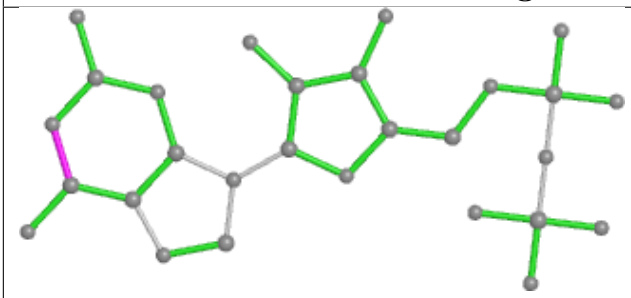


Rings

Ligand GDP FI 501



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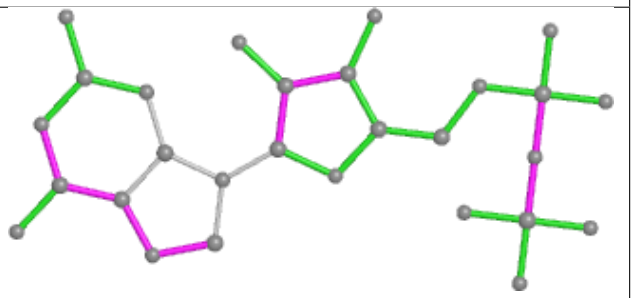

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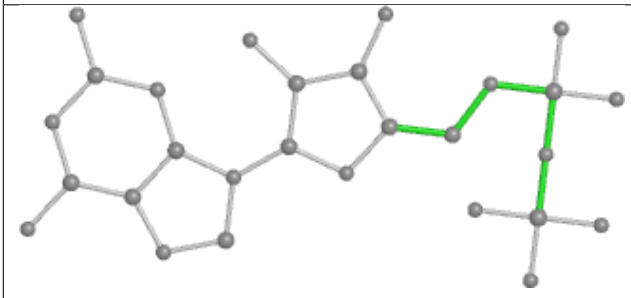

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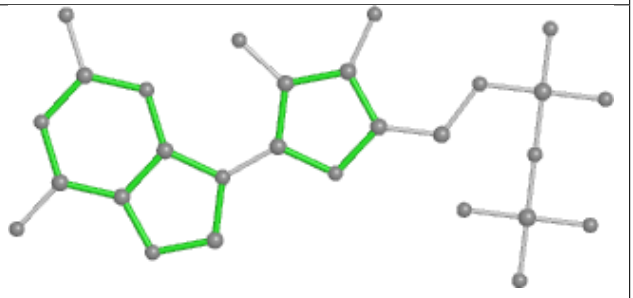
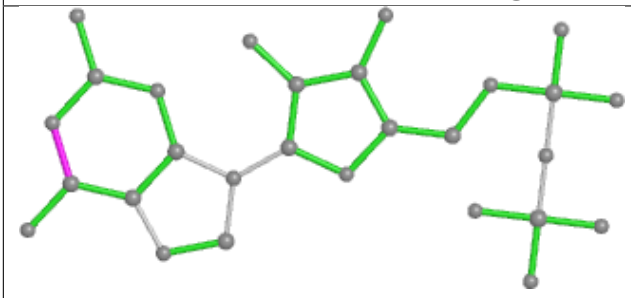


Rings

Ligand GDP BK 501



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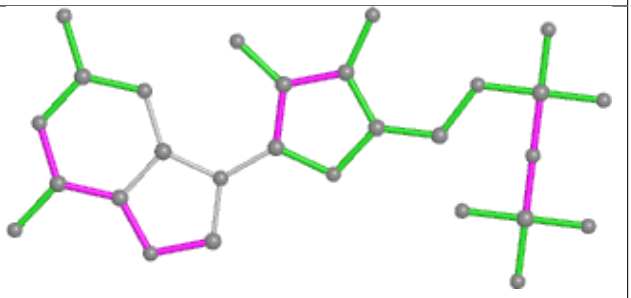

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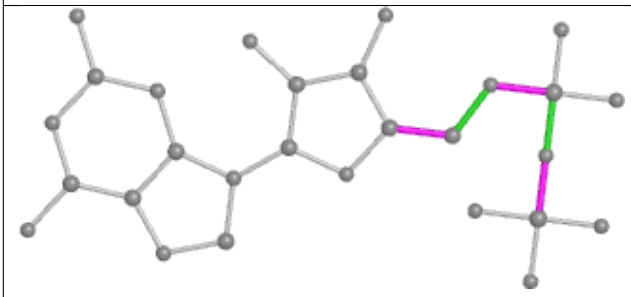

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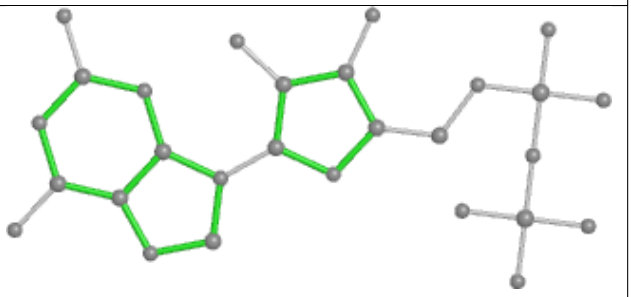
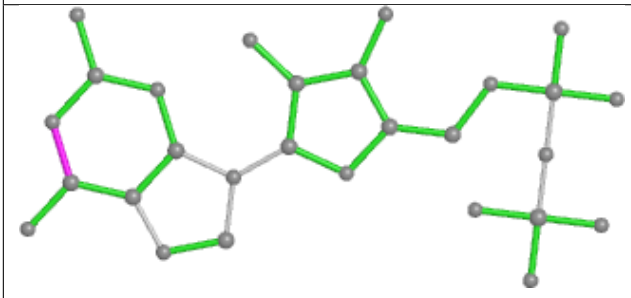


Rings

Ligand GDP KK 501



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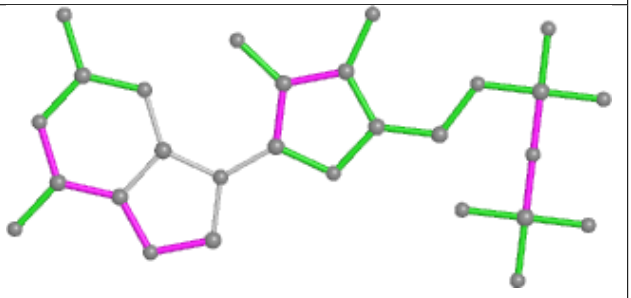

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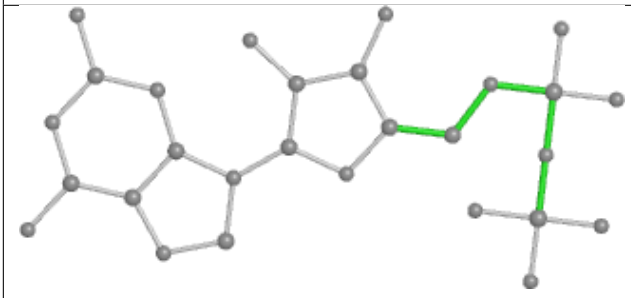

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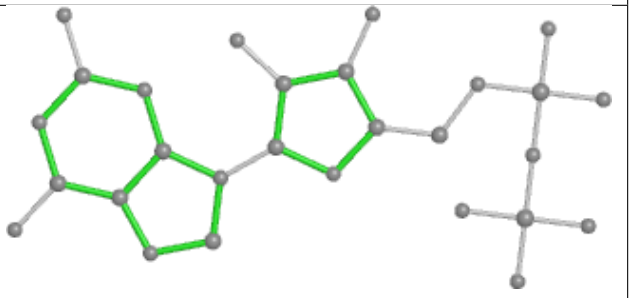
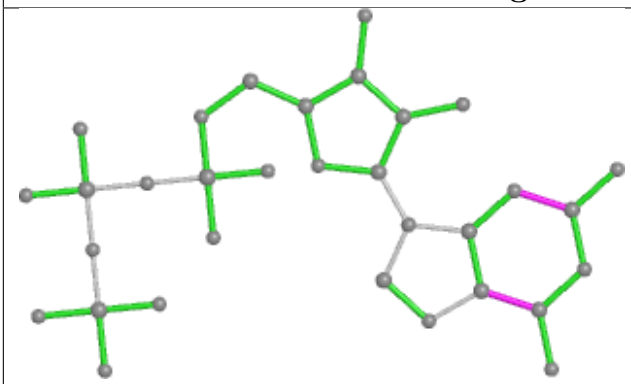


Rings

Ligand GTP EH 501



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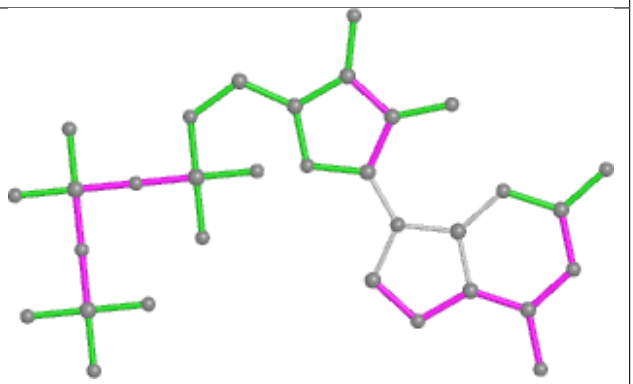

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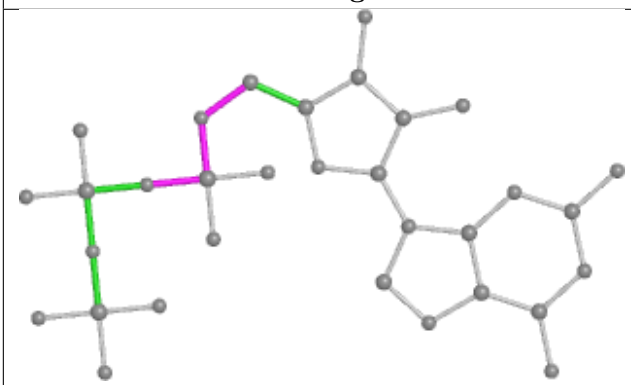

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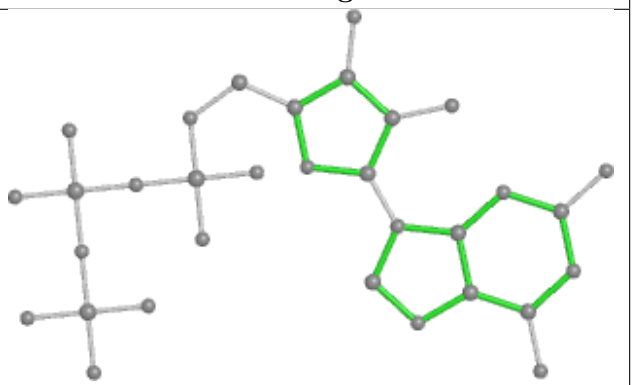
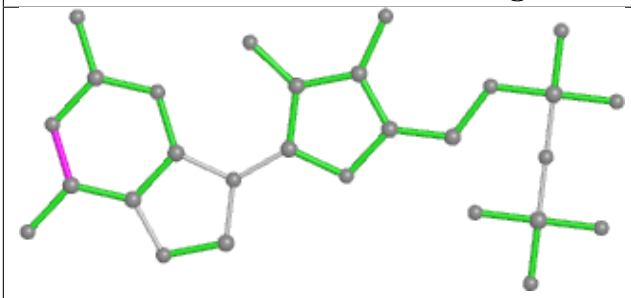


Rings

Ligand GDP KE 501



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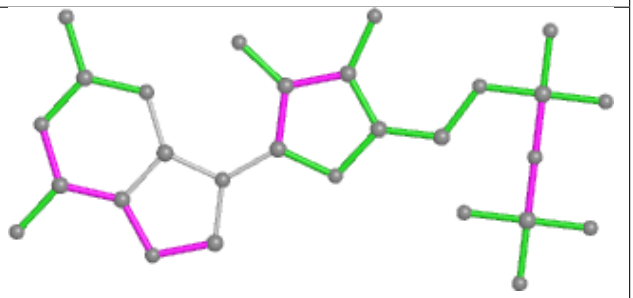

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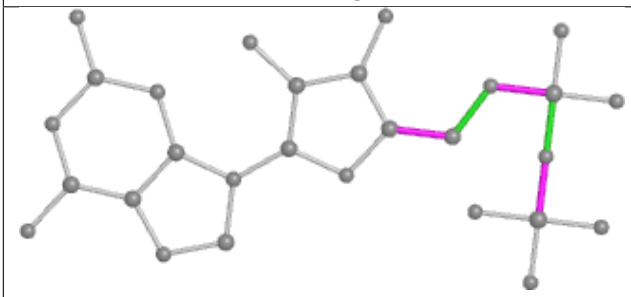

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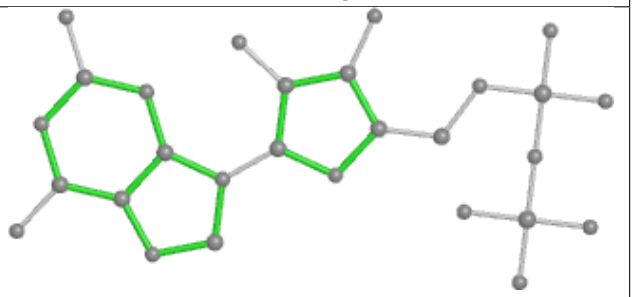
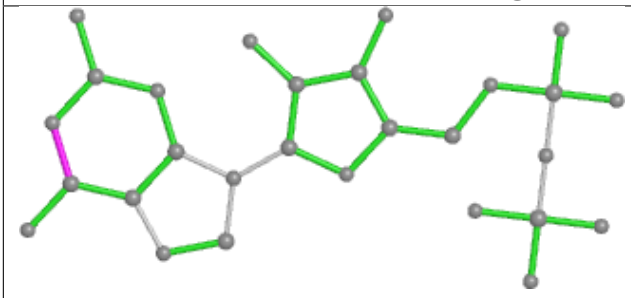
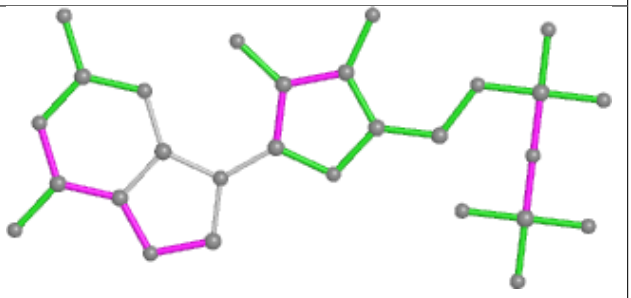
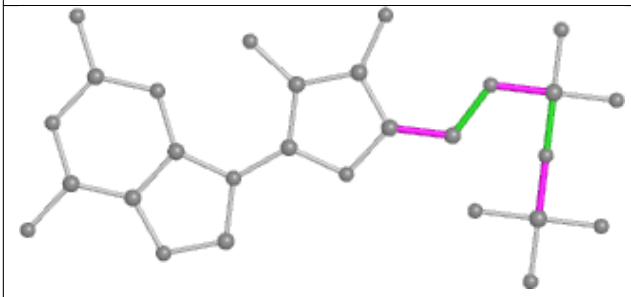
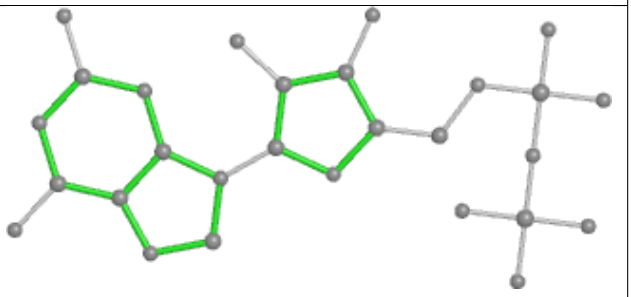


Rings

Ligand GDP HE 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

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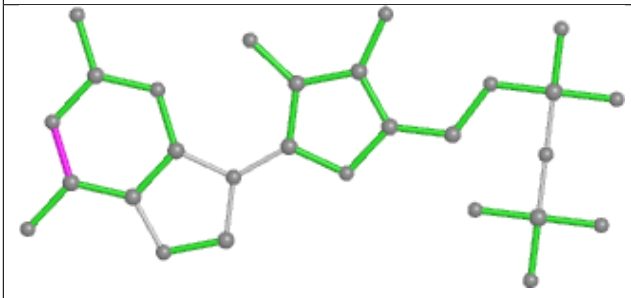
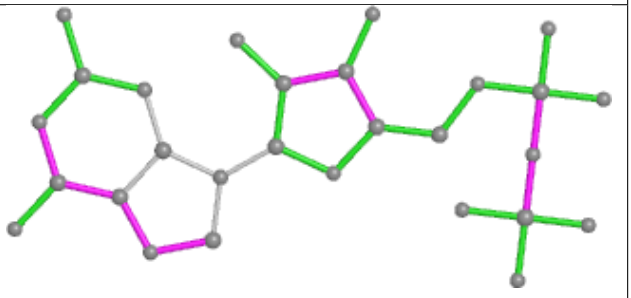
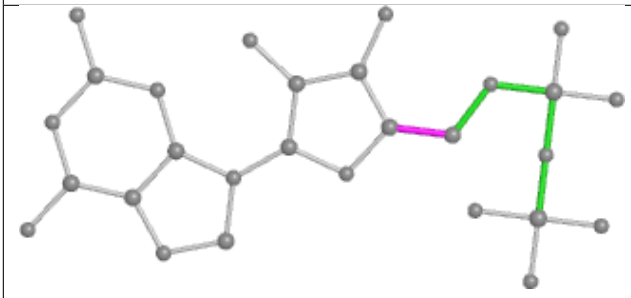
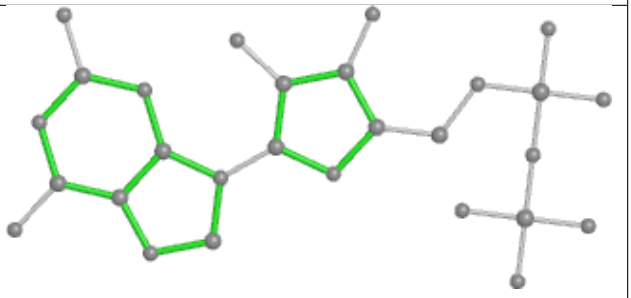
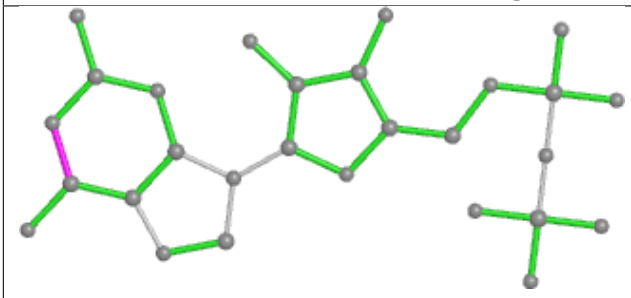
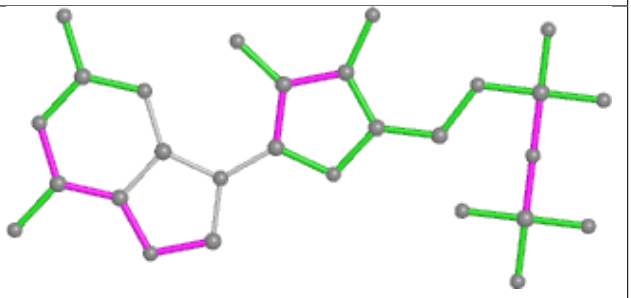
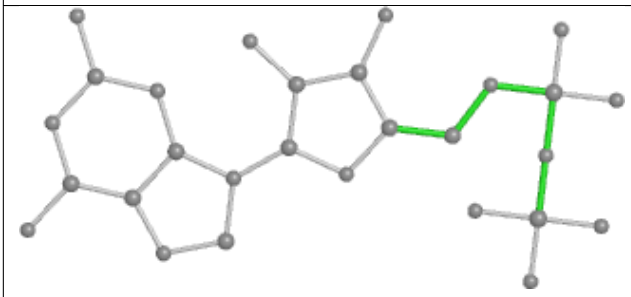
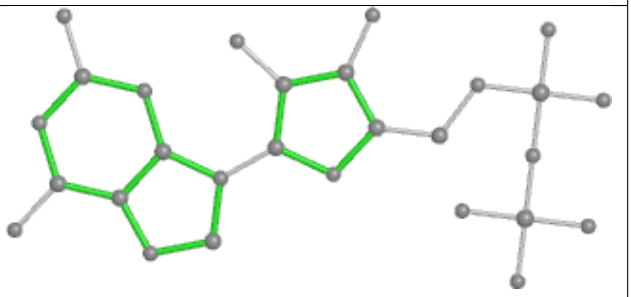
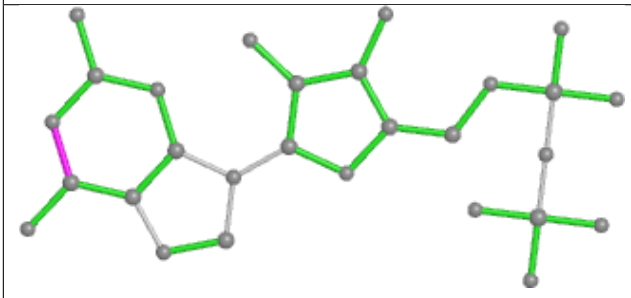
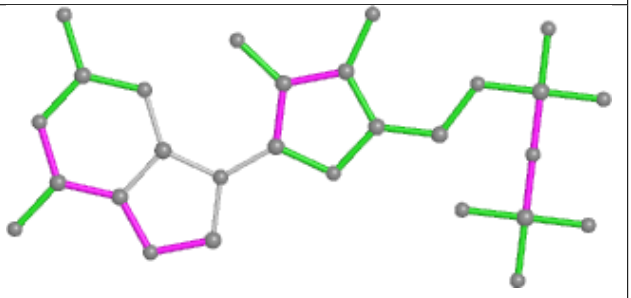
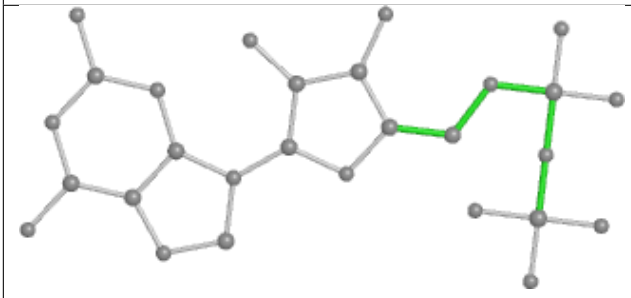
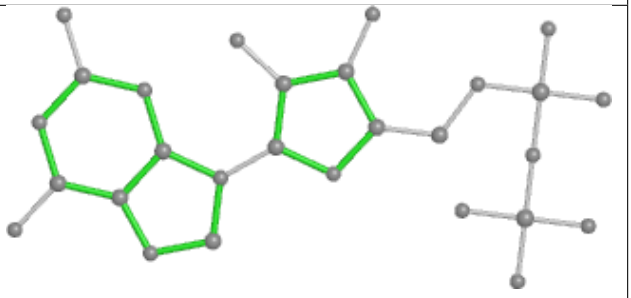
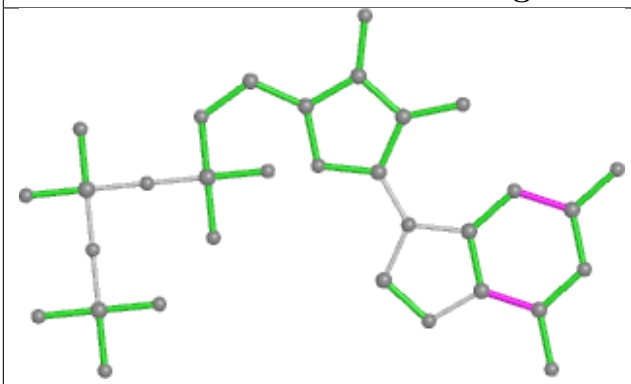
 Bond lengths	 Bond angles
 Torsions	 Rings

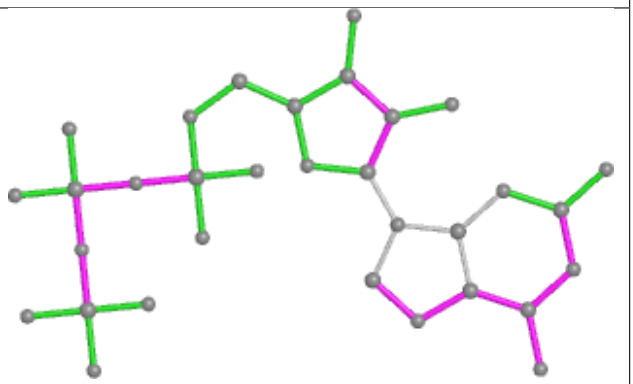
Ligand GDP JM 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand GDP MC 501	
	
Bond lengths	Bond angles
	
Torsions	Rings

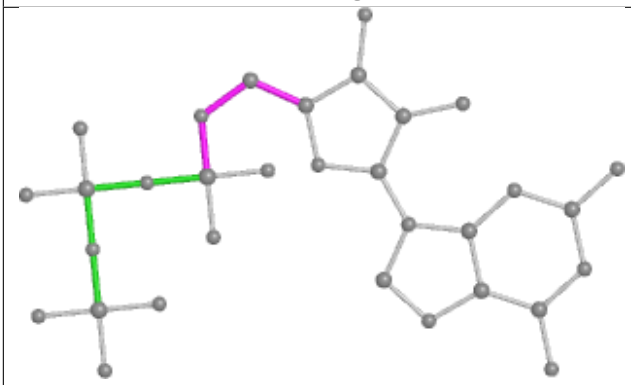
Ligand GTP FF 501



Bond lengths



Bond angles



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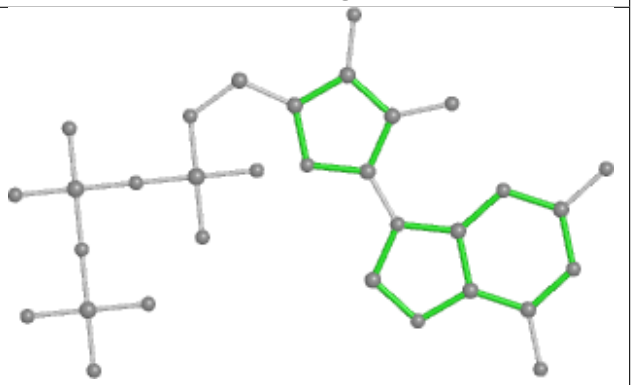
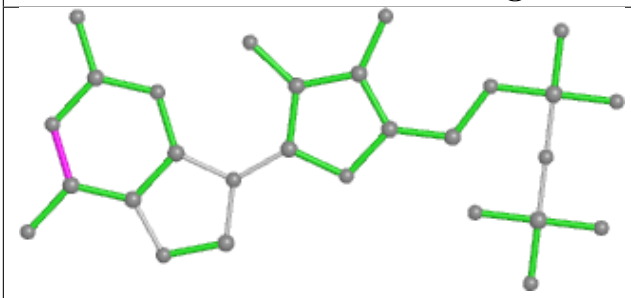


Rings

Ligand GDP GK 501



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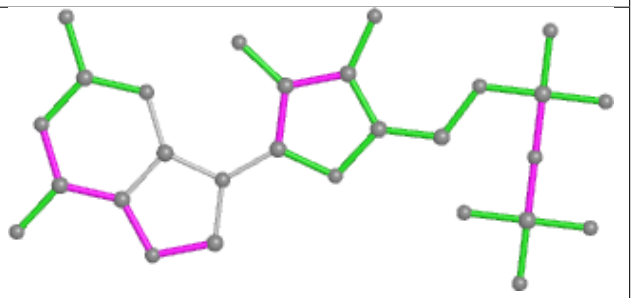
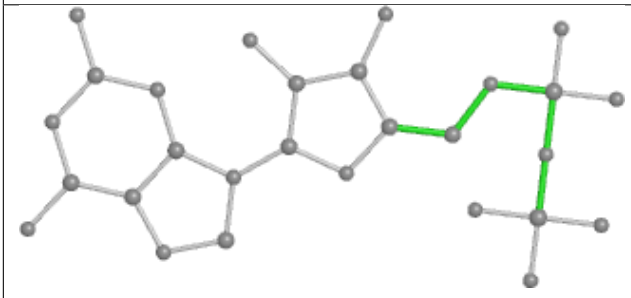


Bond angles



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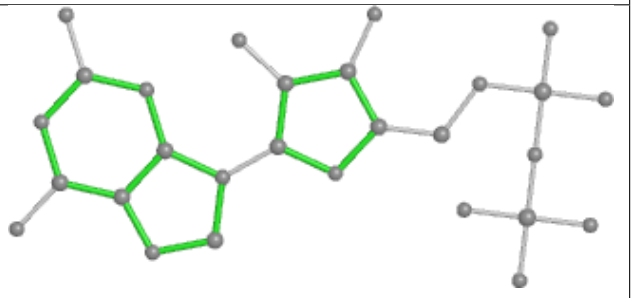
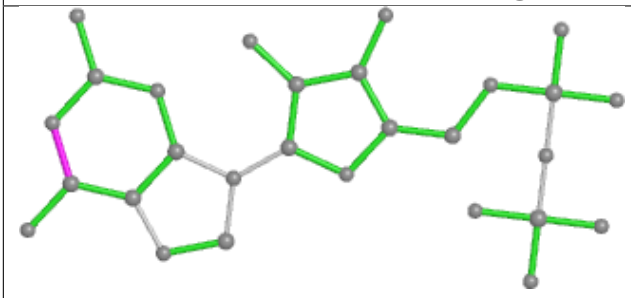
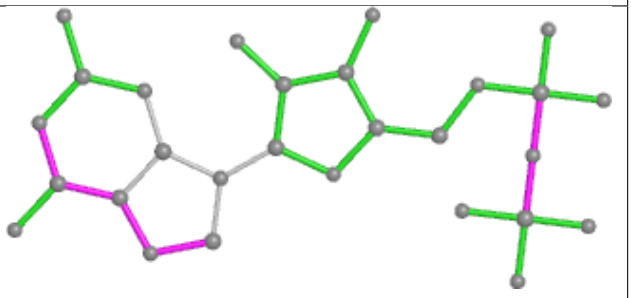


Rings

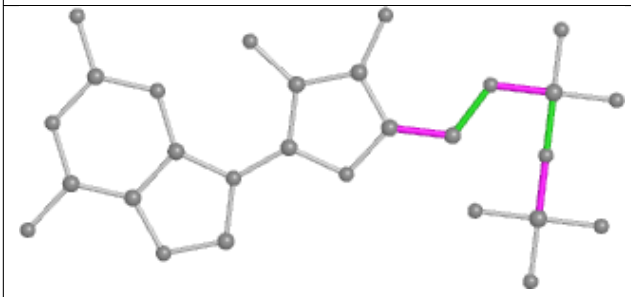
Ligand GDP EE 502



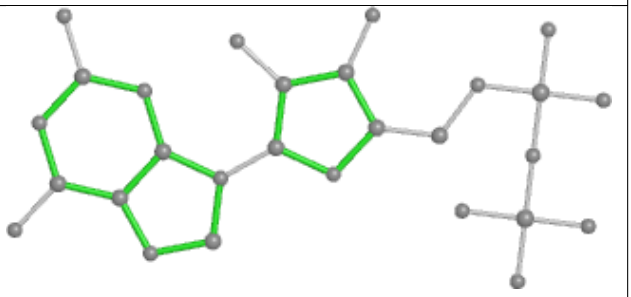
Bond lengths



Bond angles

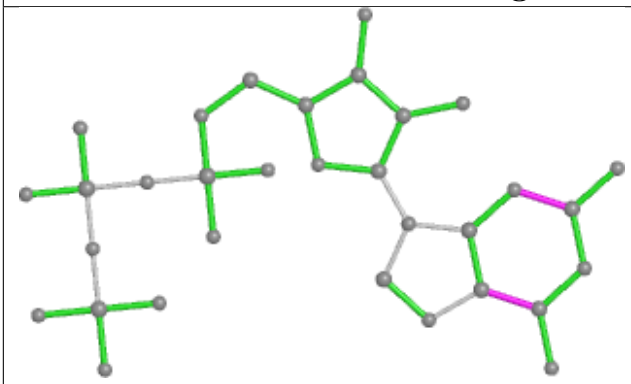


Torsions



Rings

Ligand GTP DF 501



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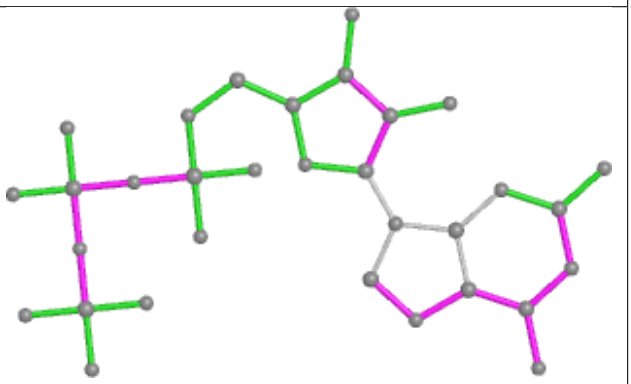

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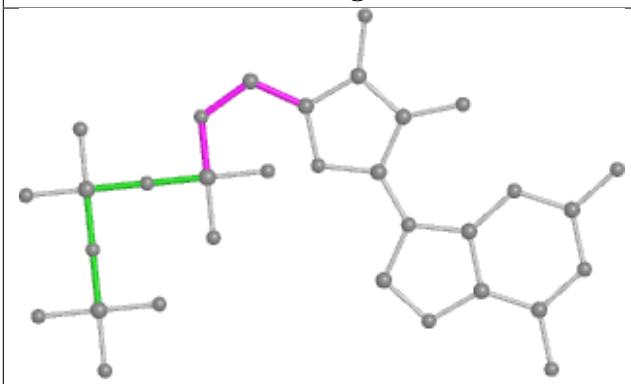

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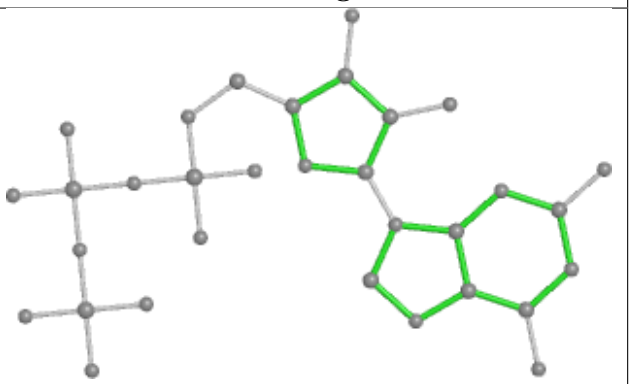
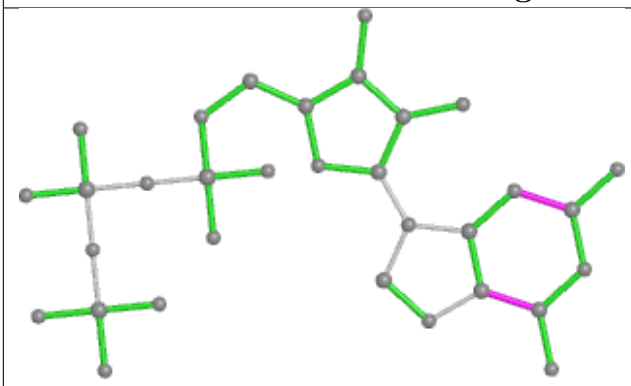


Rings

Ligand GTP EJ 501



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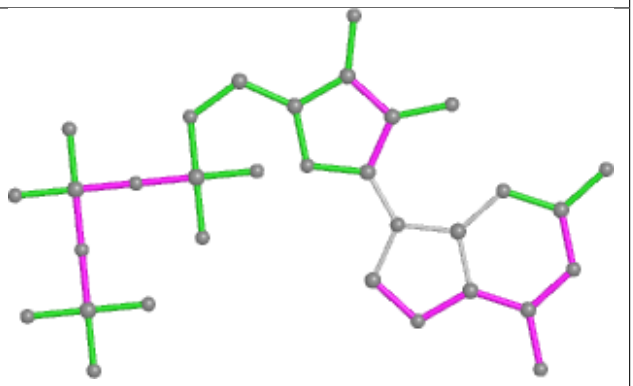
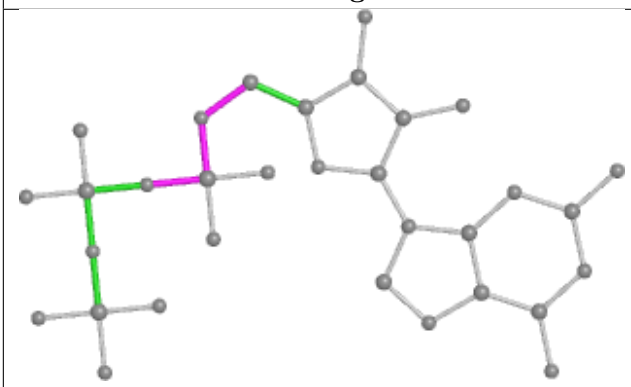


Bond angles



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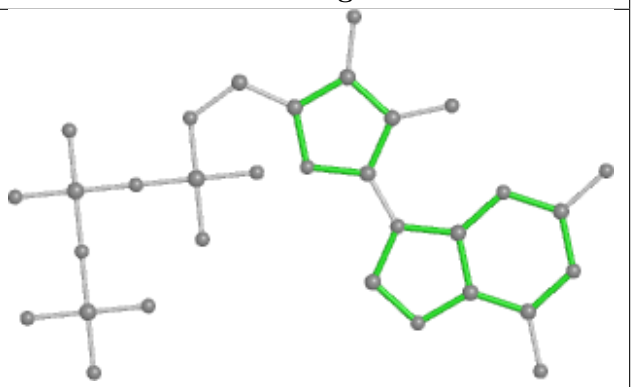
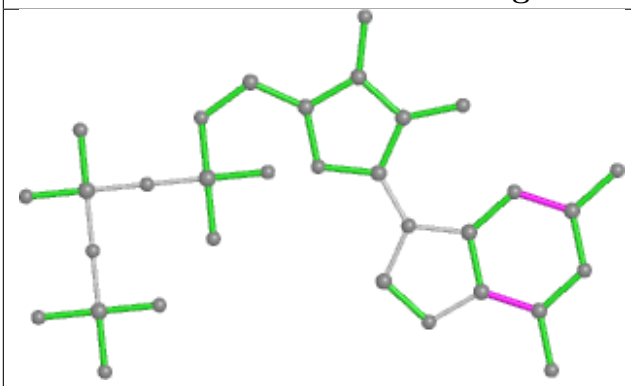


Rings

Ligand GTP GJ 501



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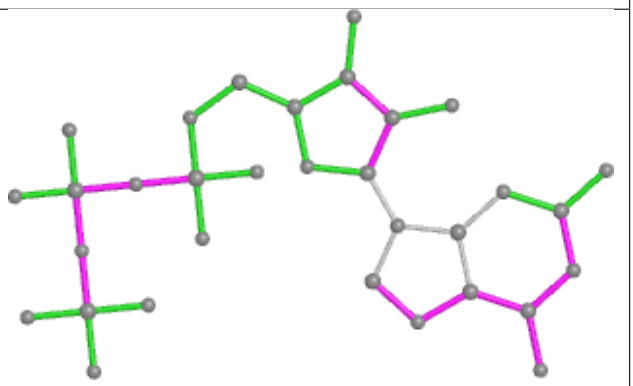

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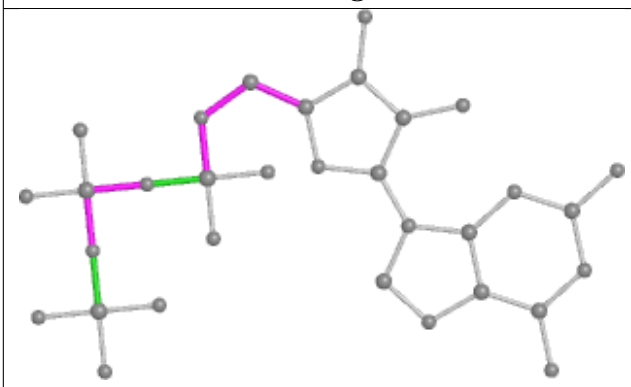

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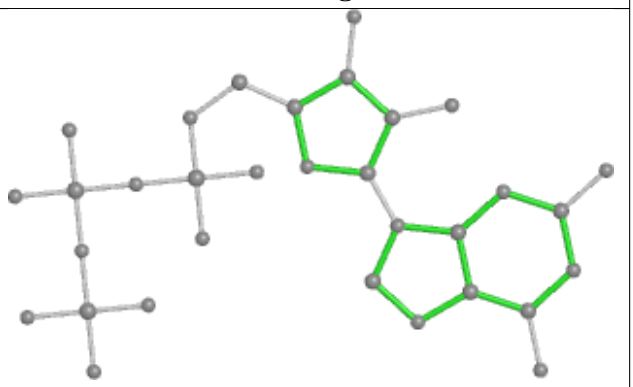
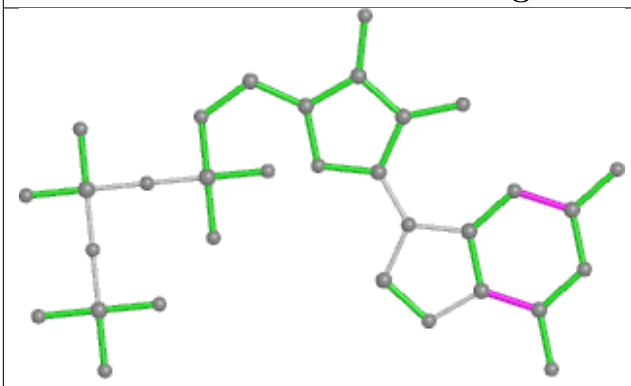


Rings

Ligand GTP KJ 501



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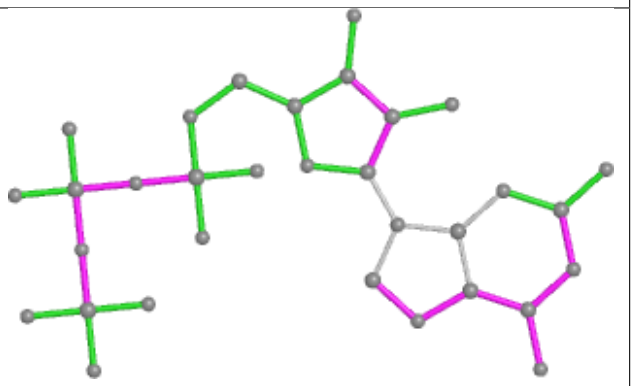
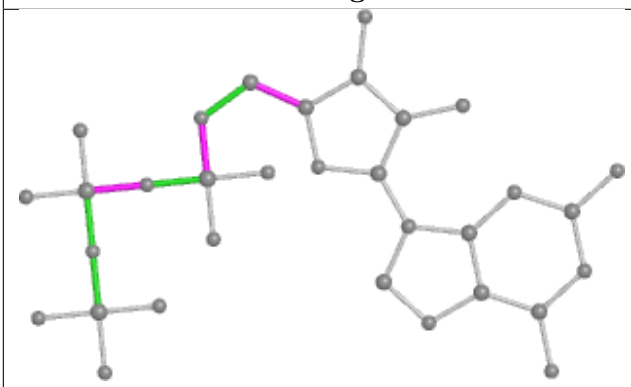


Bond angles



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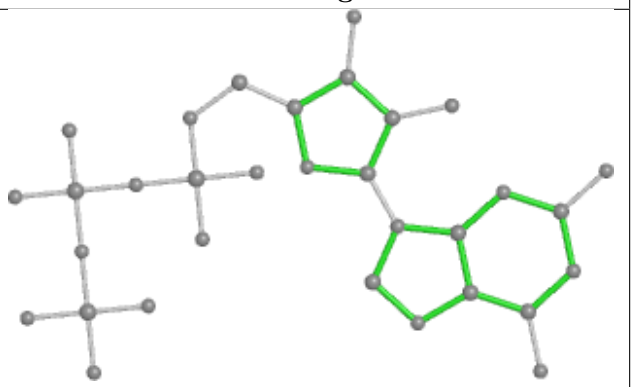
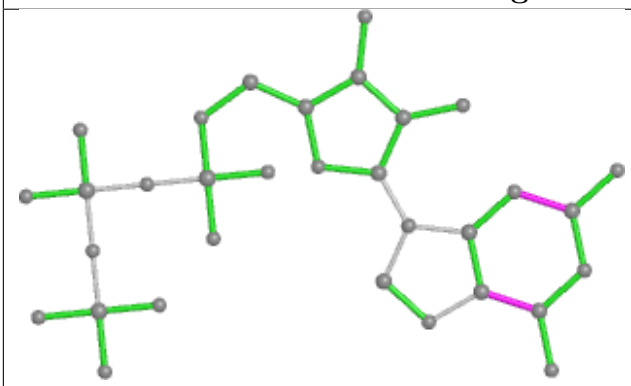


Rings

Ligand GTP HL 501



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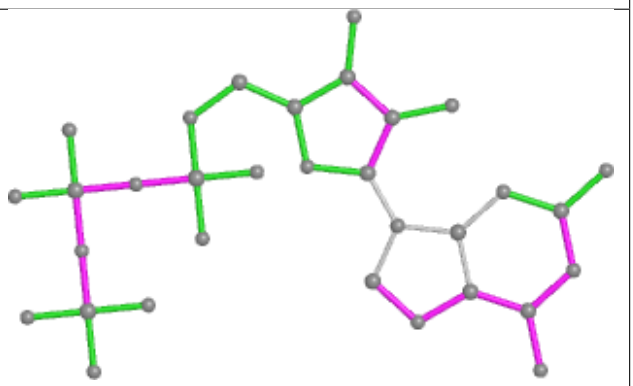

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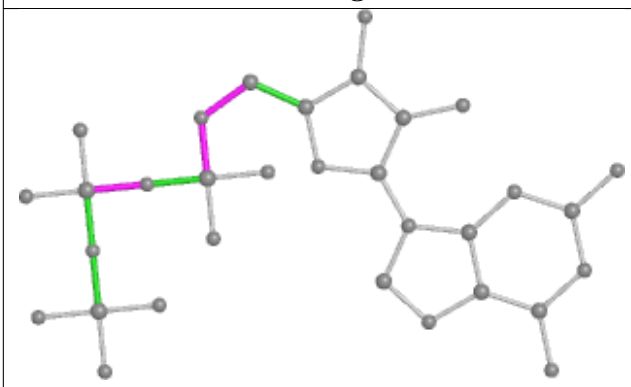

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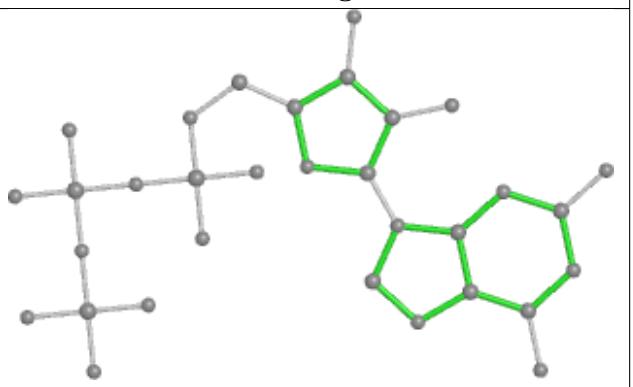
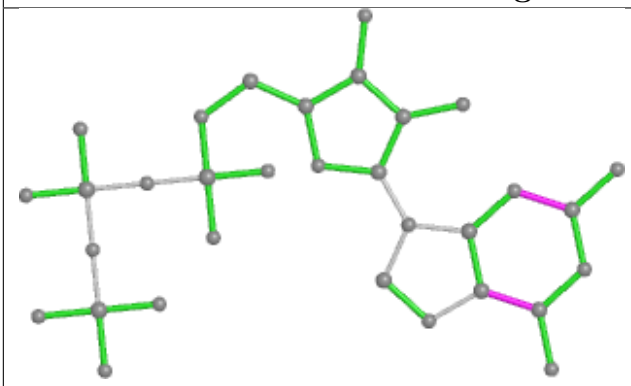


Rings

Ligand GTP LL 501



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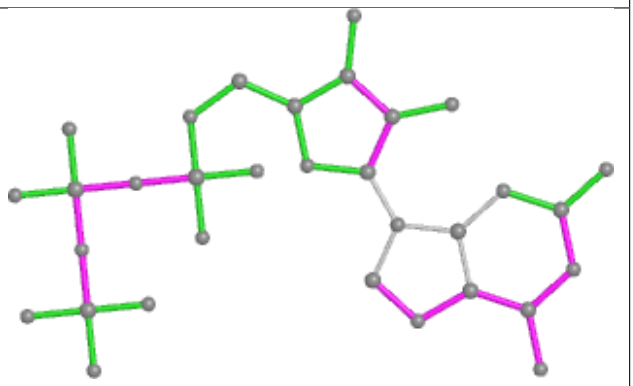
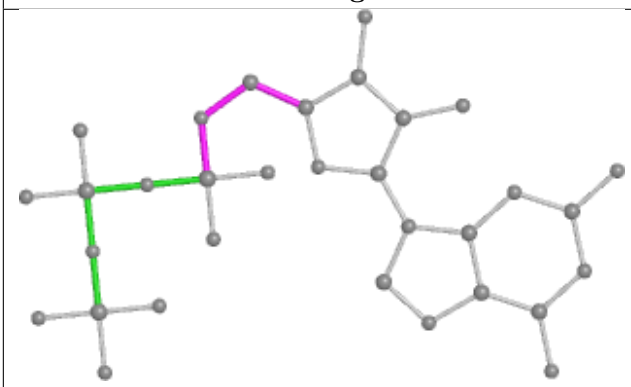


Bond angles



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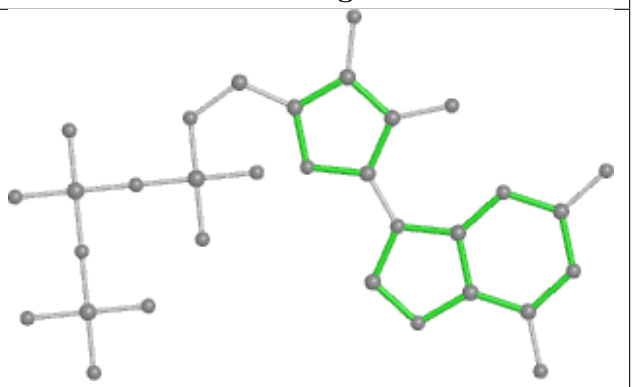
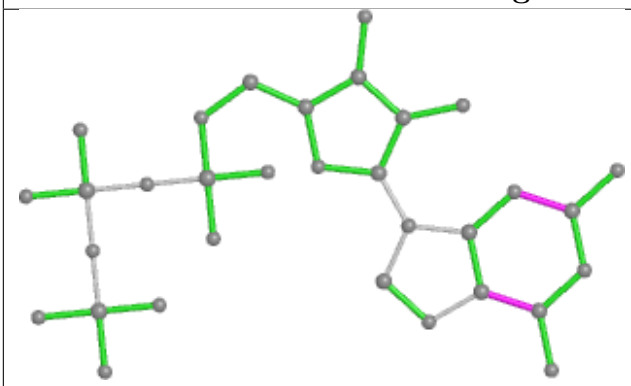


Rings

Ligand GTP DJ 501



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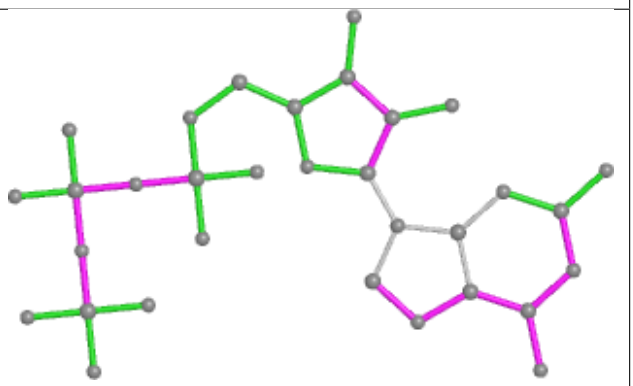
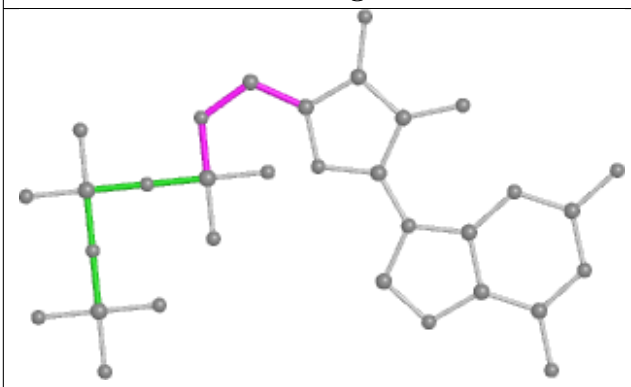


Bond angles



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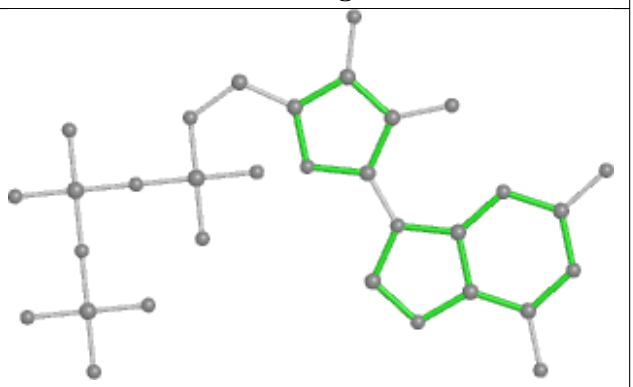
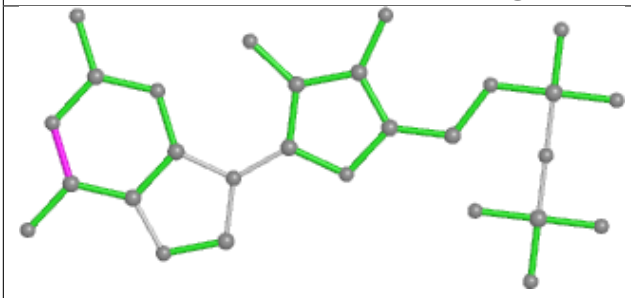
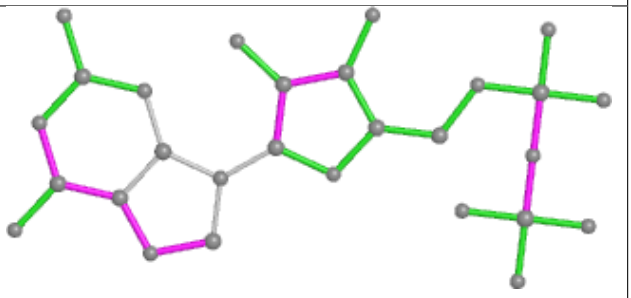
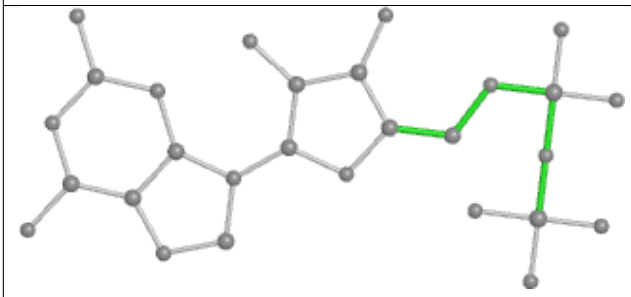
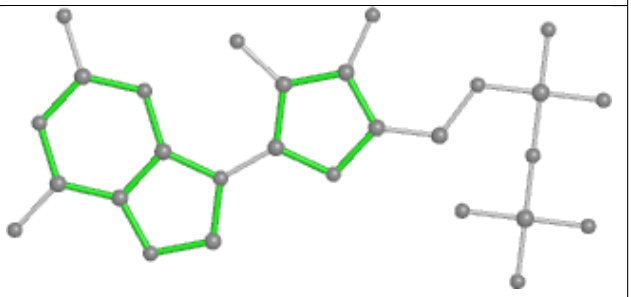
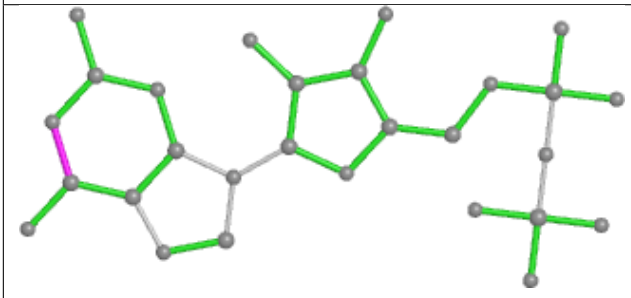
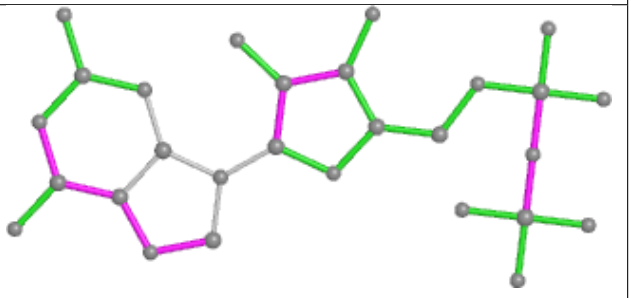
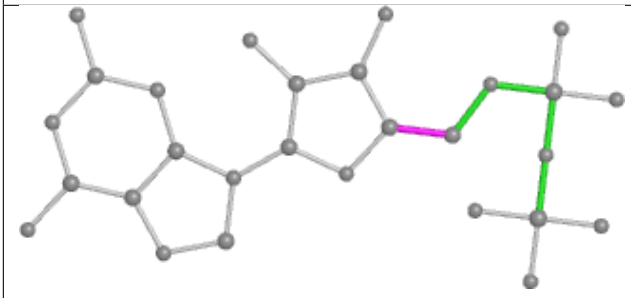
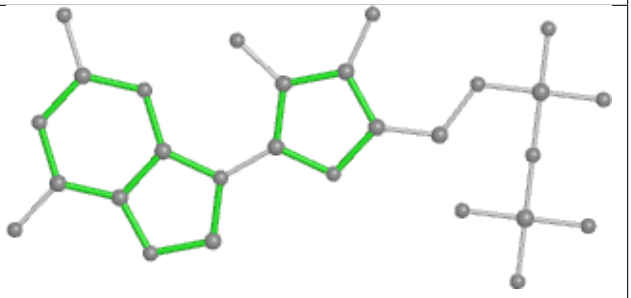
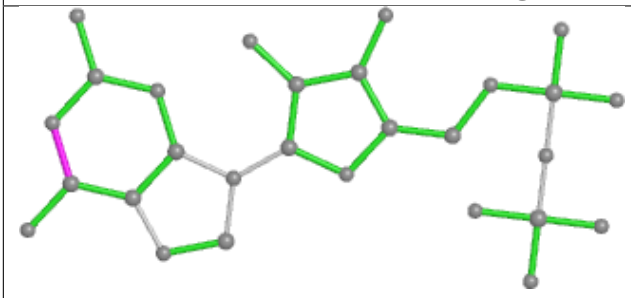


Rings

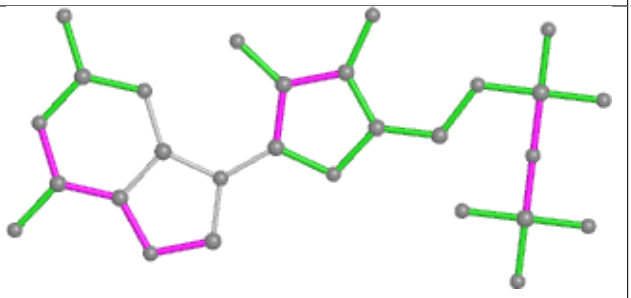
Ligand GDP AE 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP GM 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

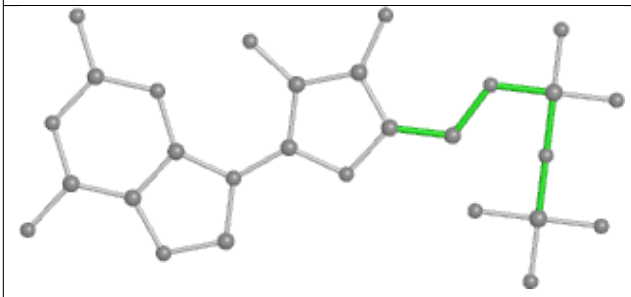
Ligand GDP IG 501



Bond lengths



Bond angles



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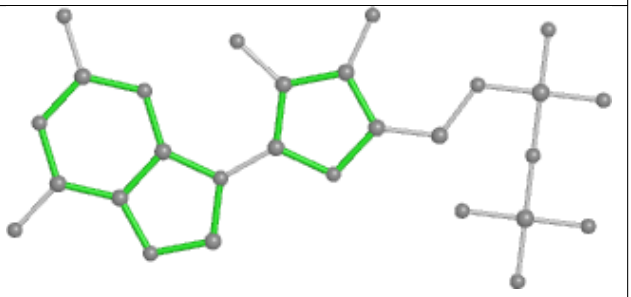
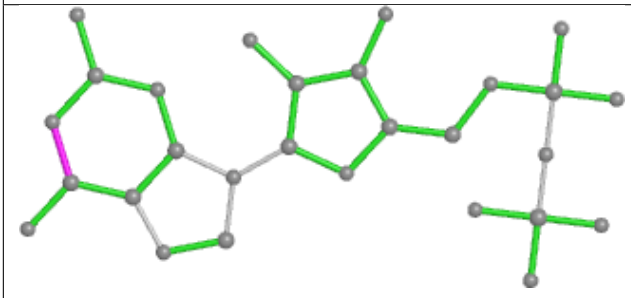


Rings

Ligand GDP LG 501



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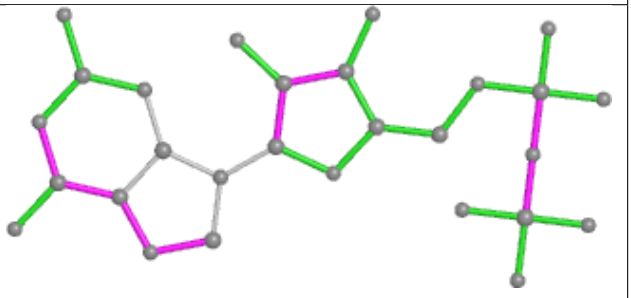
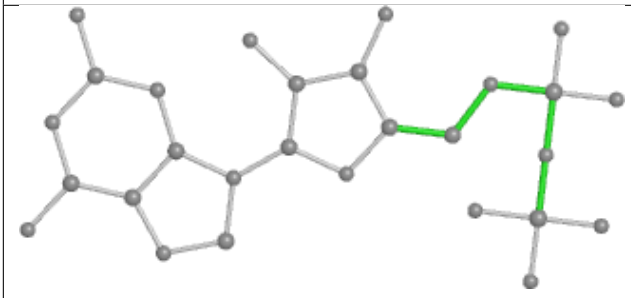


Bond angles



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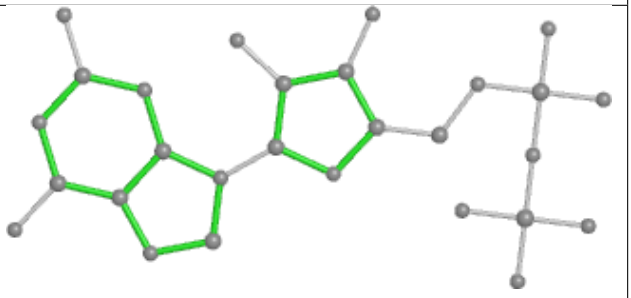
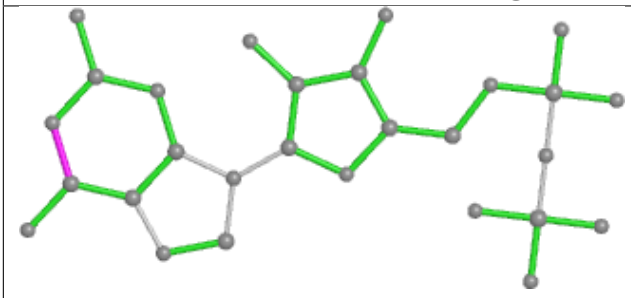
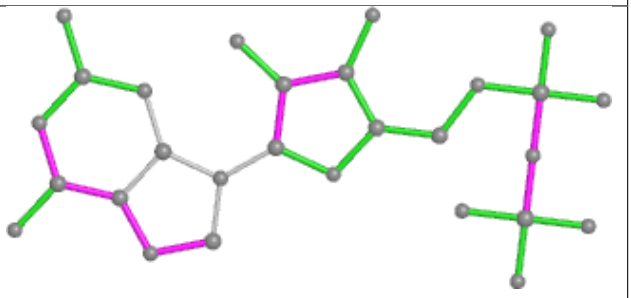
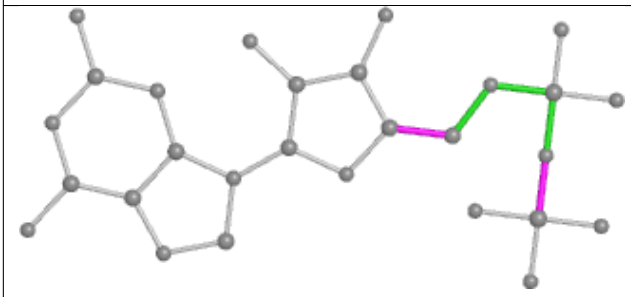
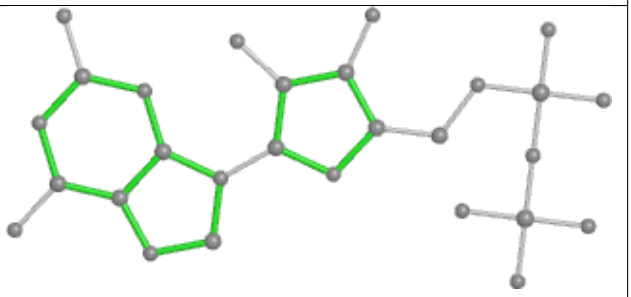
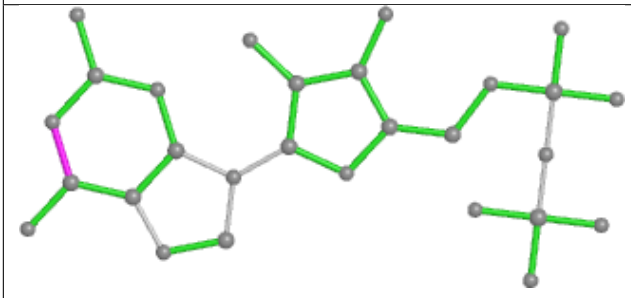
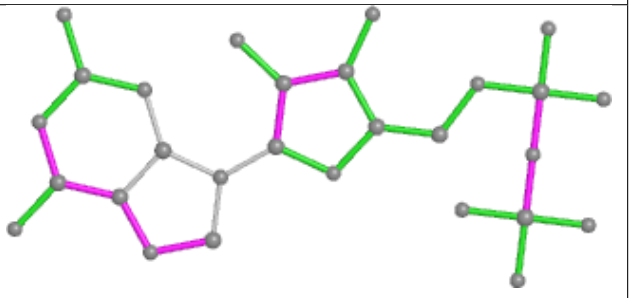
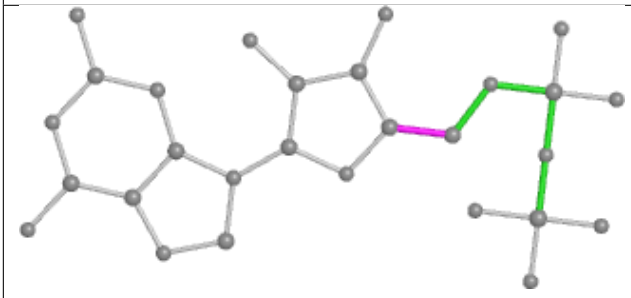
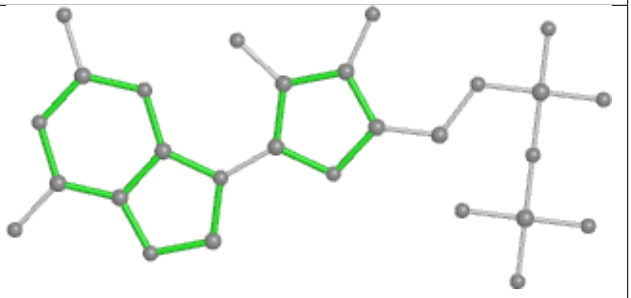
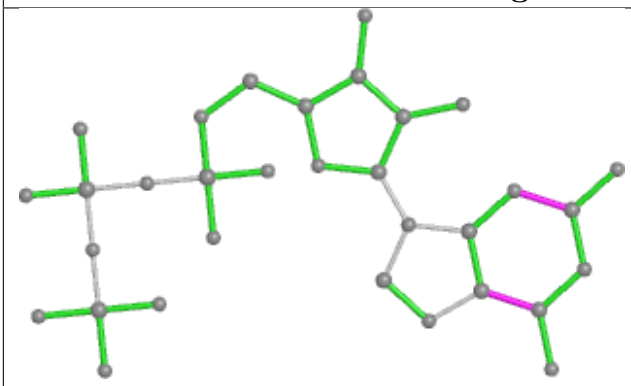


Rings

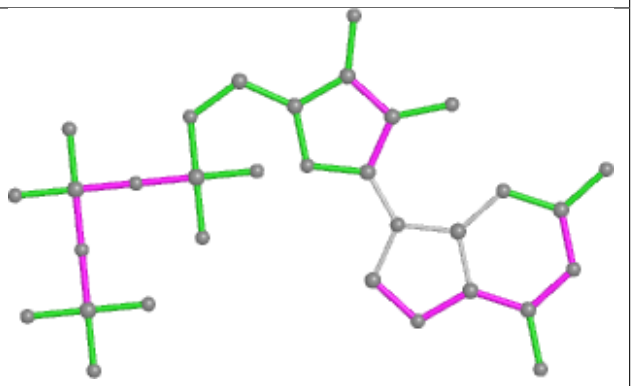
Ligand GDP HC 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP DE 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

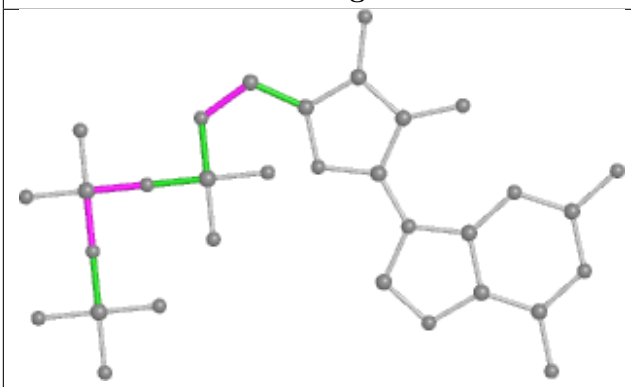
Ligand GTP LH 501



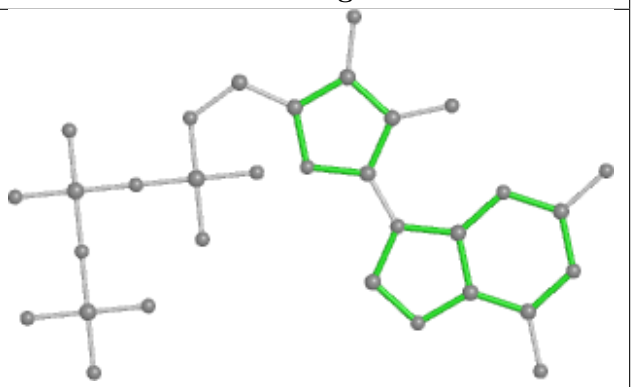
Bond lengths



Bond angles

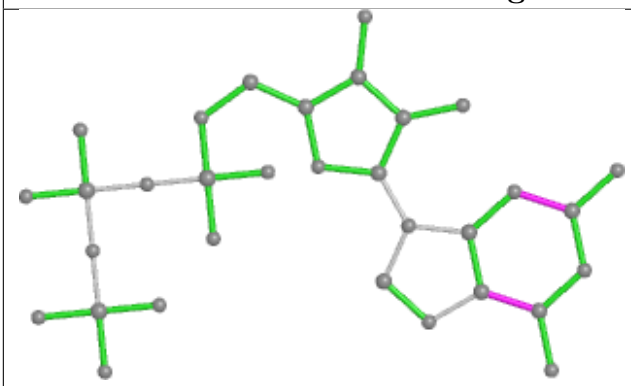


Torsions

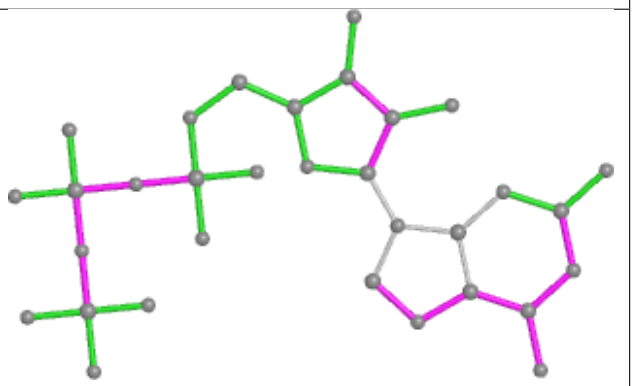


Rings

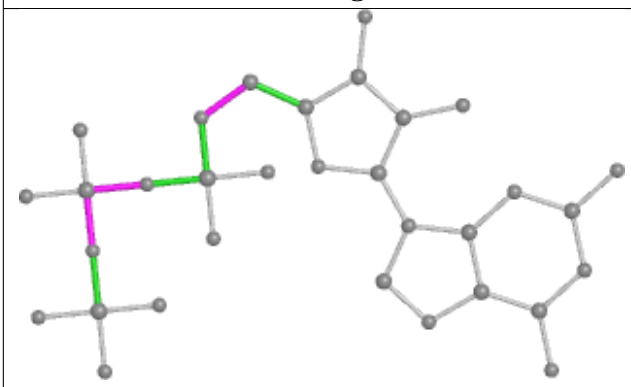
Ligand GTP GD 501



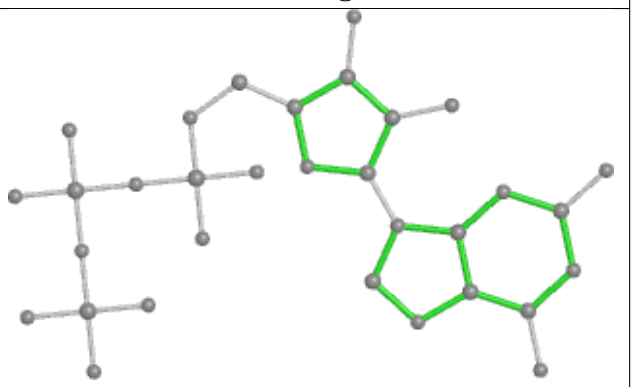
Bond lengths



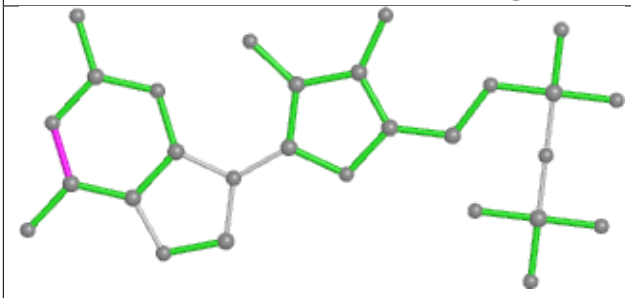
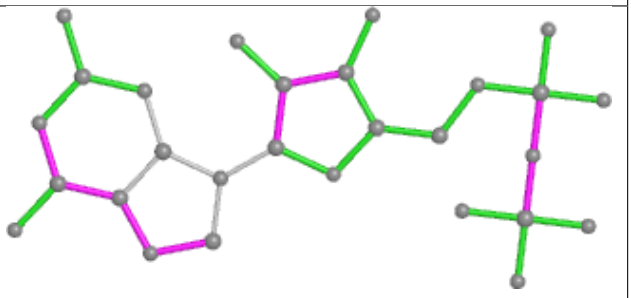
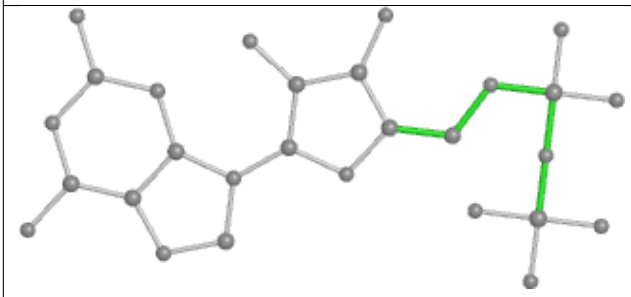
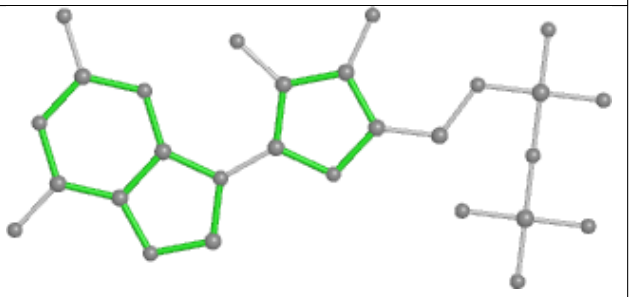
Bond angles

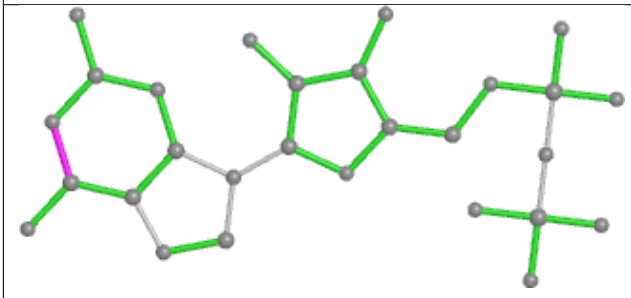
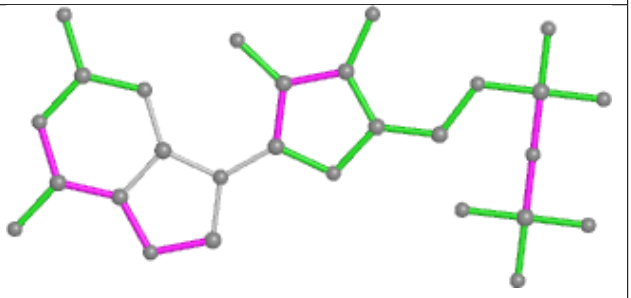
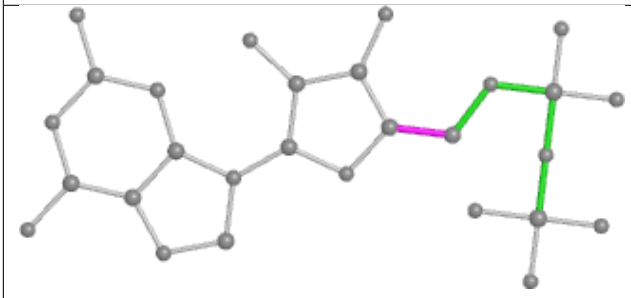
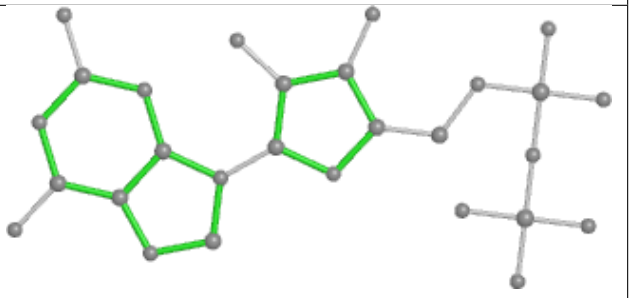


Torsions

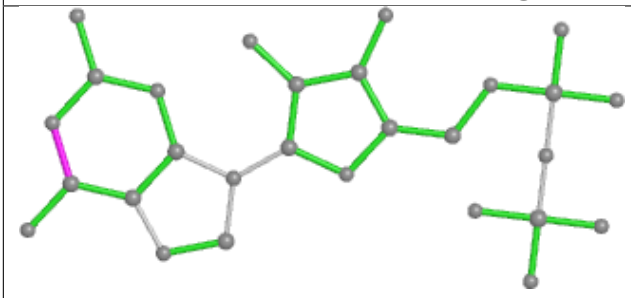


Rings

Ligand GDP AA 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP DC 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP BI 501



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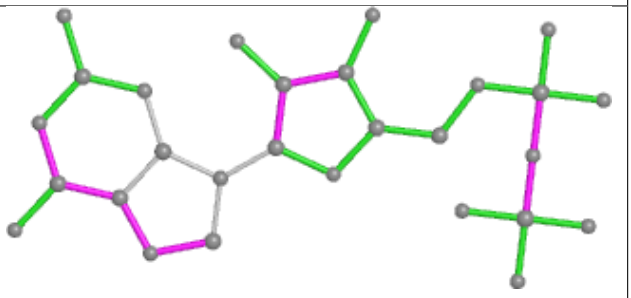

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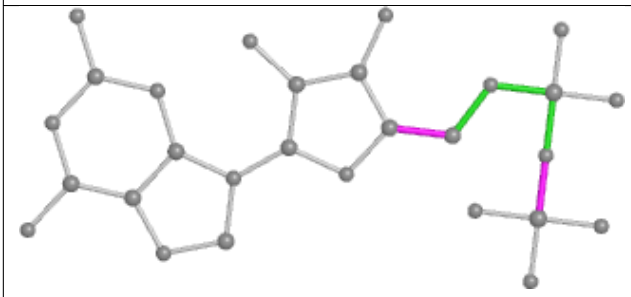

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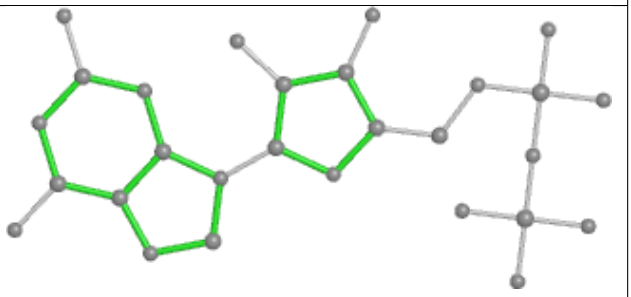
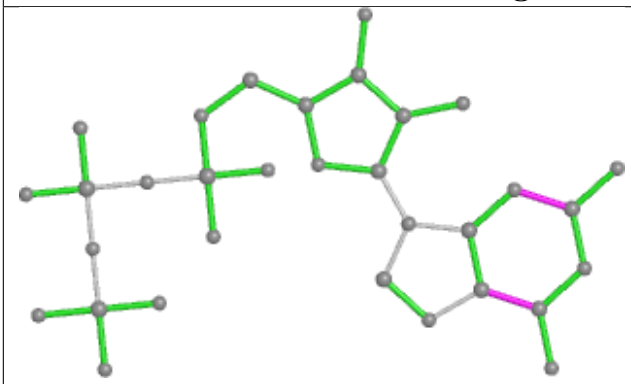


Rings

Ligand GTP JH 501



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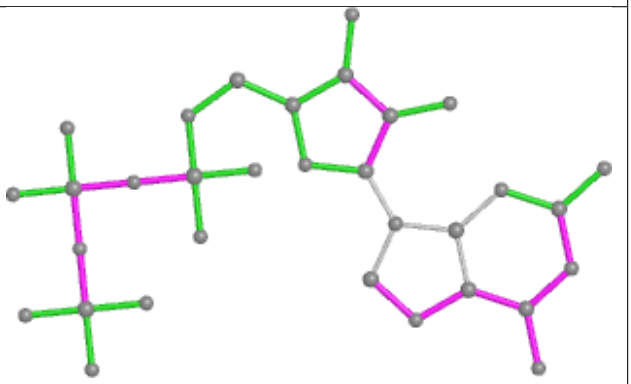
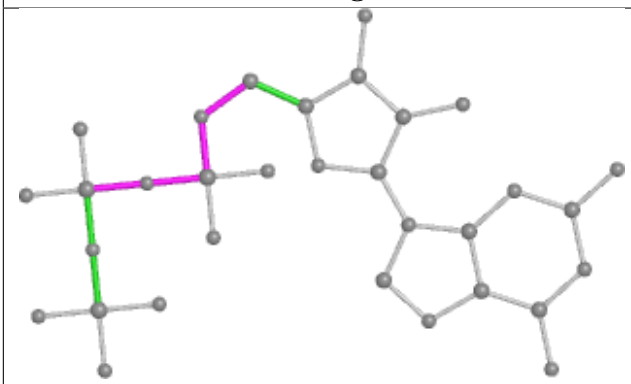


Bond angles



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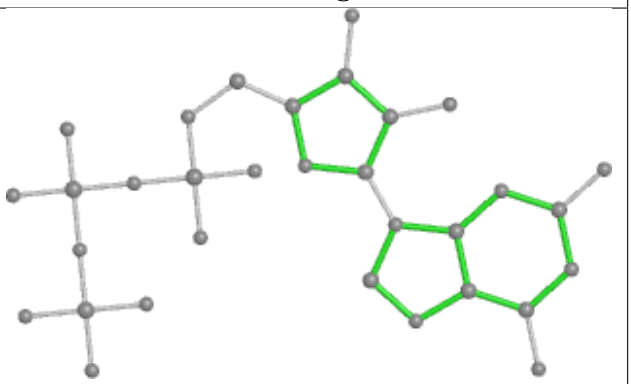

Rings

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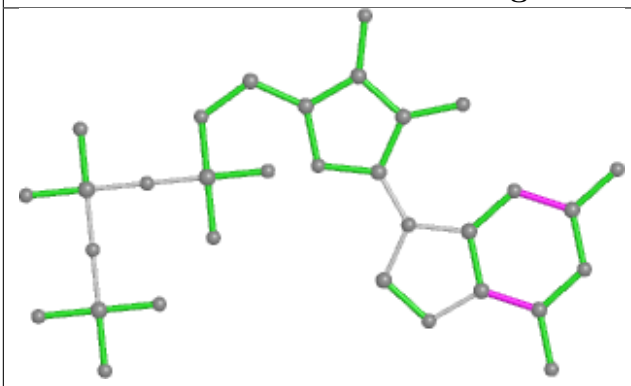

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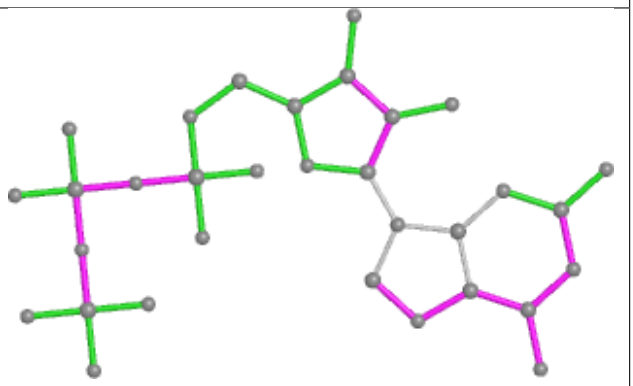

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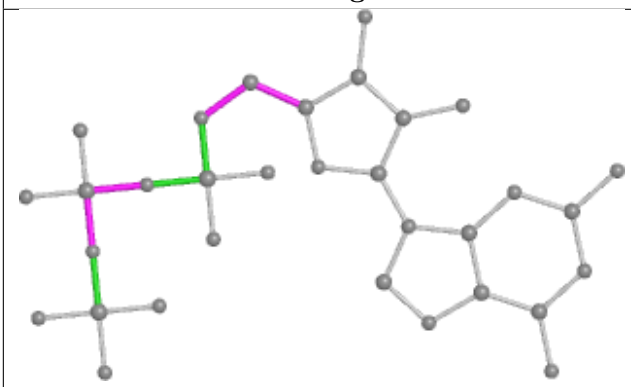

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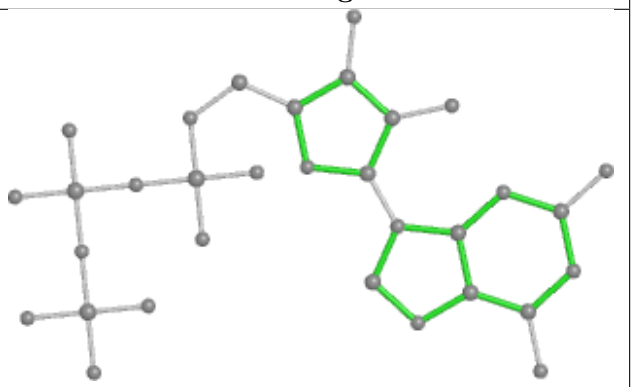
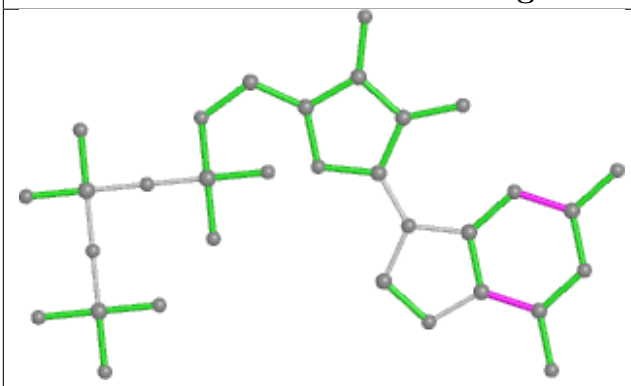


Rings

Ligand GTP JJ 501



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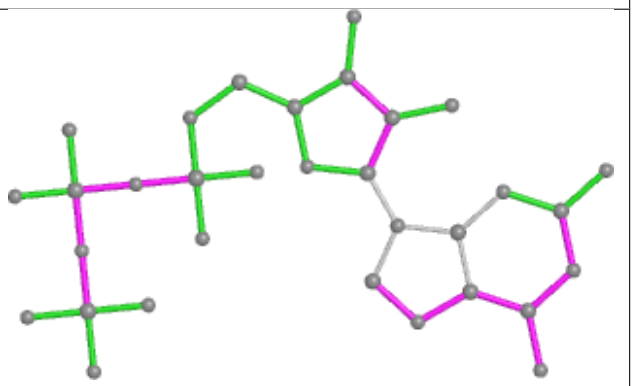

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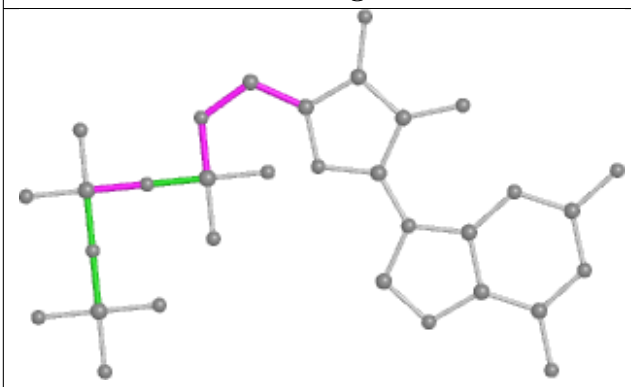

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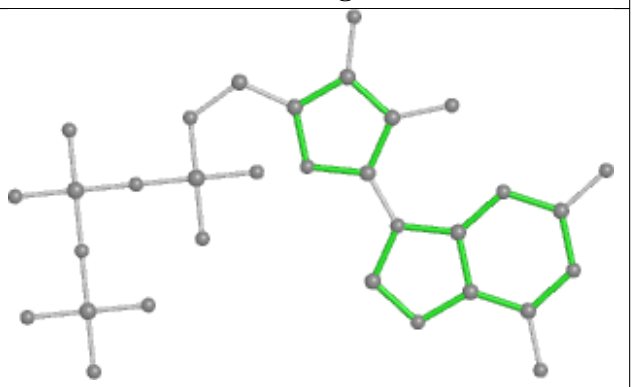
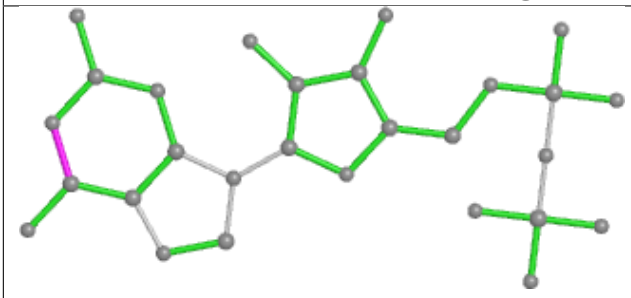


Rings

Ligand GDP LI 501



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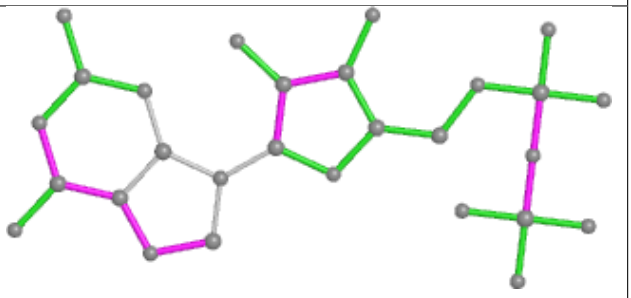

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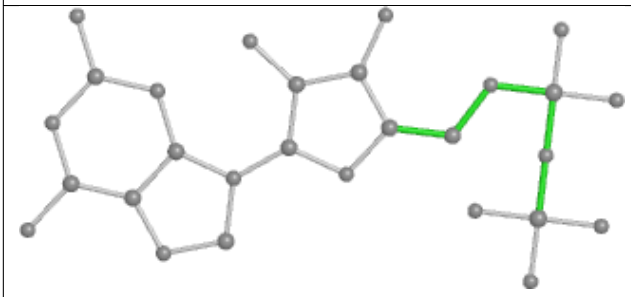

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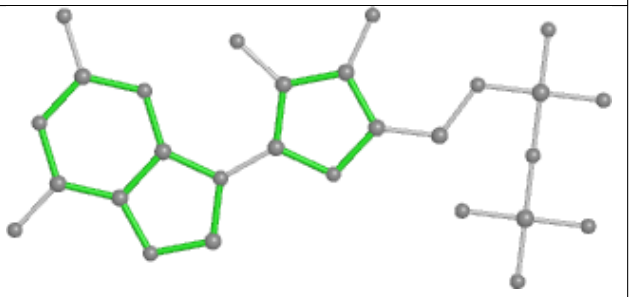
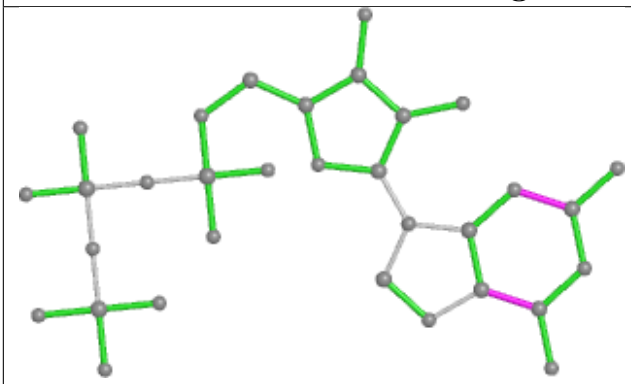


Rings

Ligand GTP FH 501



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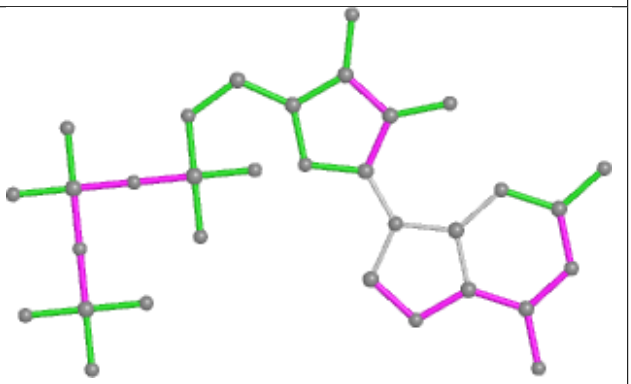

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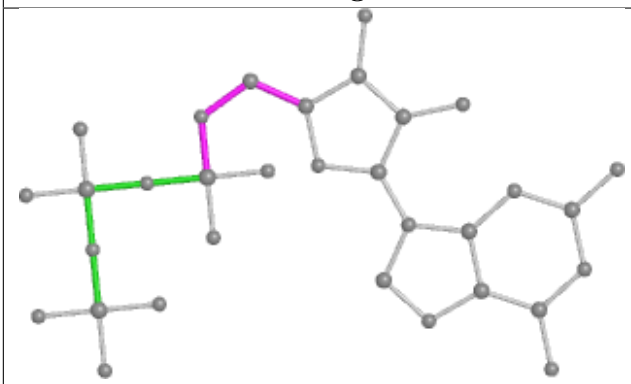

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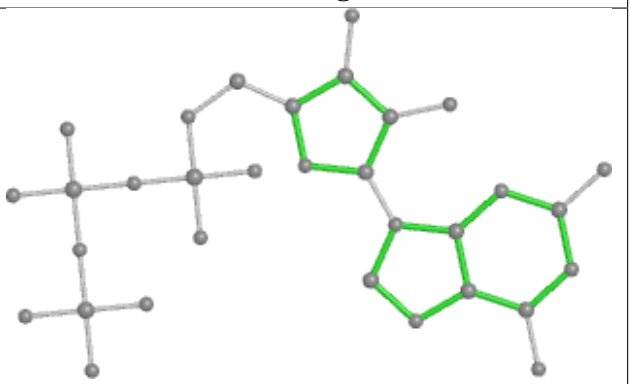
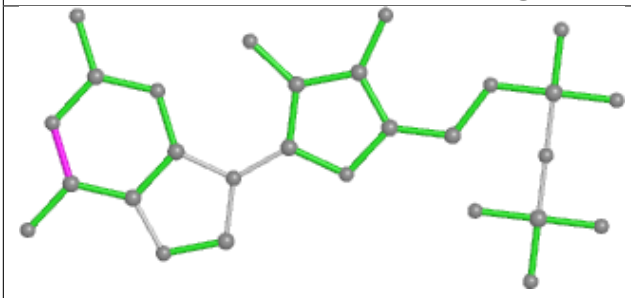


Rings

Ligand GDP IC 501



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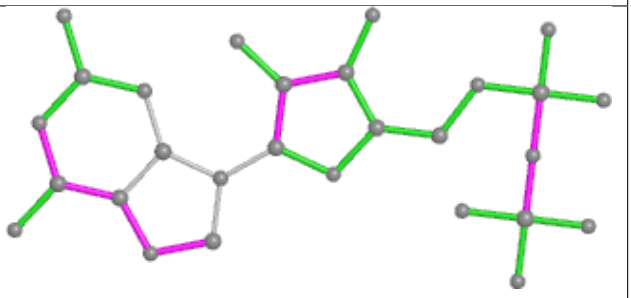
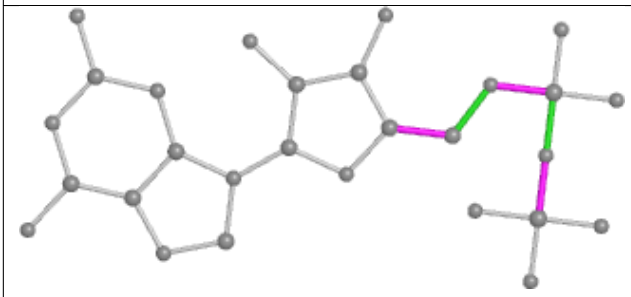


Bond angles



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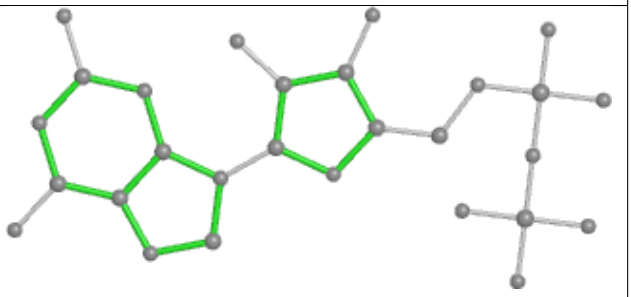
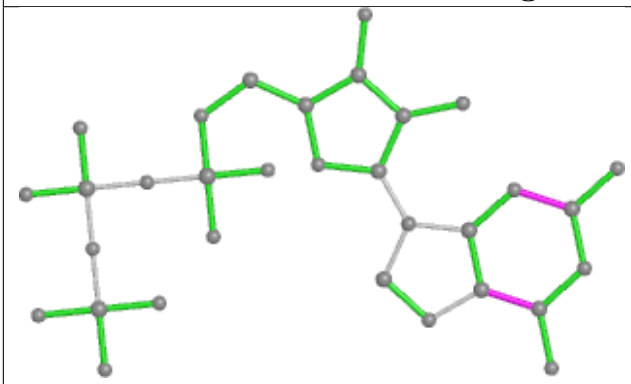


Rings

Ligand GTP IJ 501



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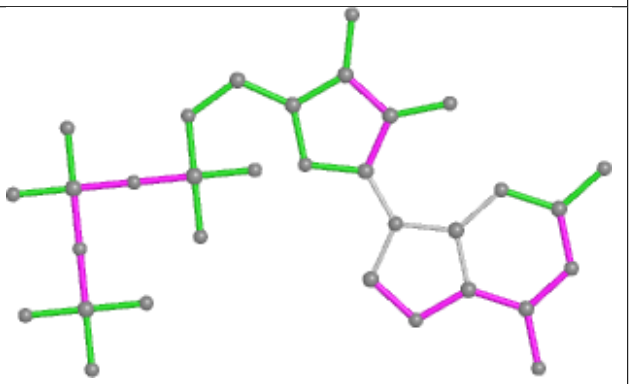

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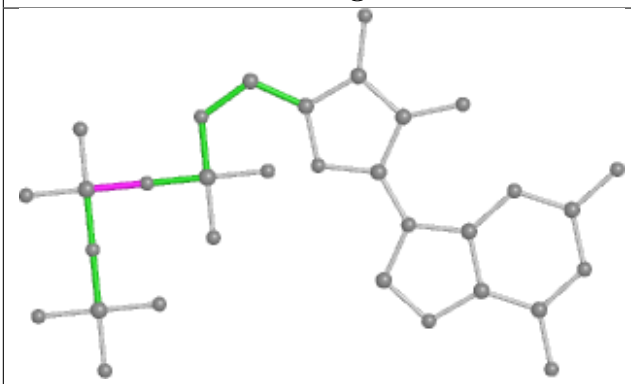

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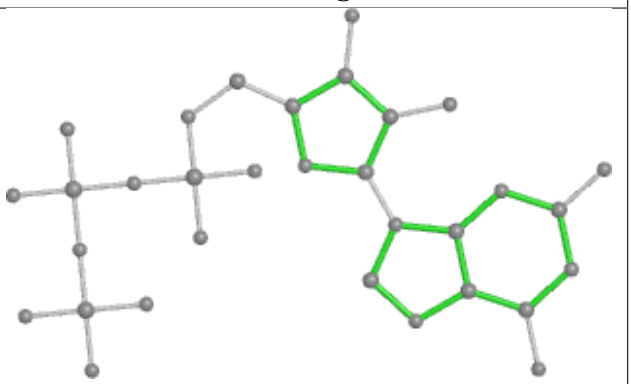
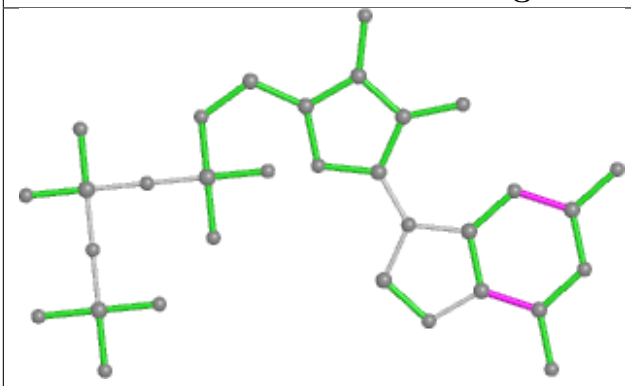


Rings

Ligand GTP CJ 501



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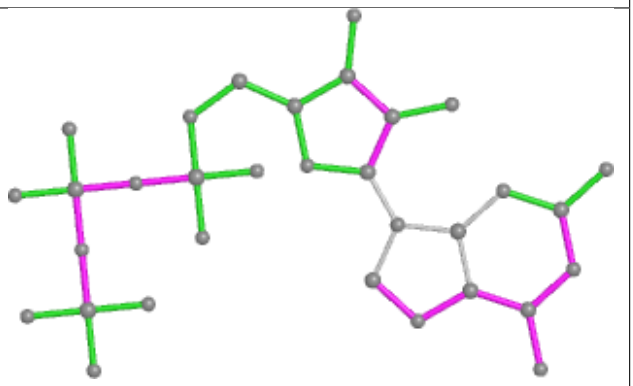
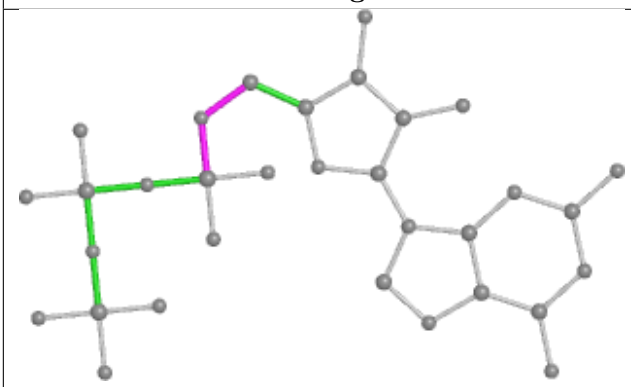


Bond angles



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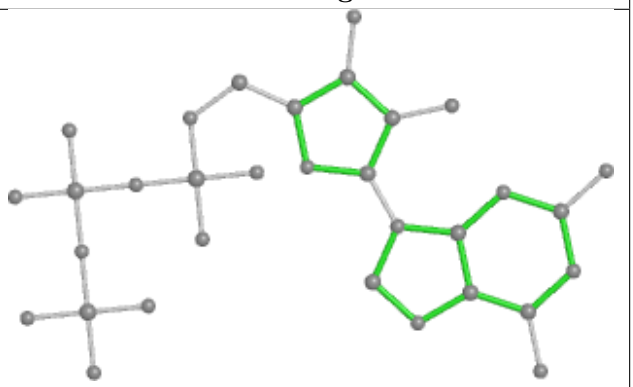

Rings

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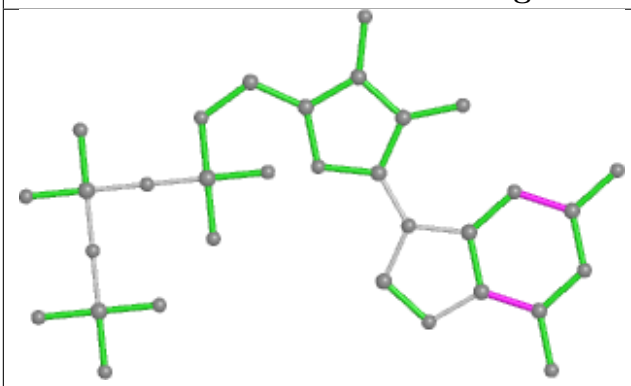

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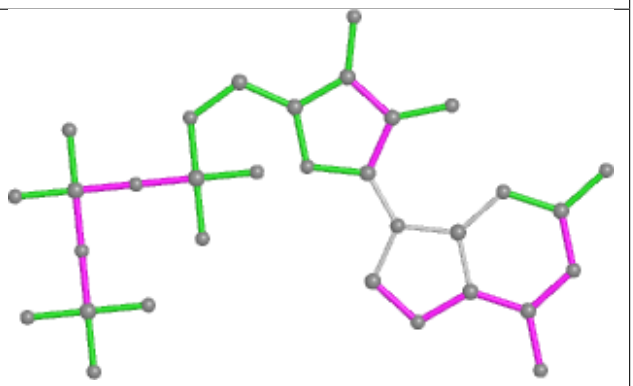

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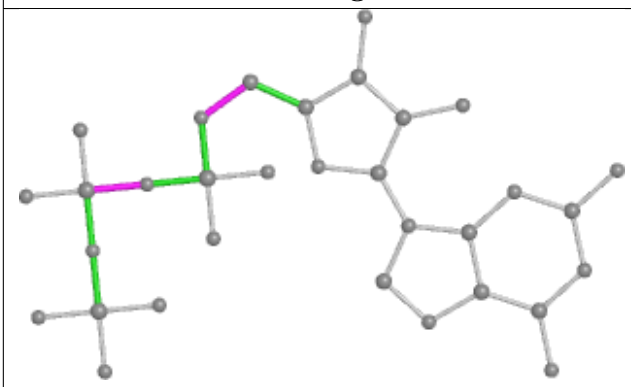

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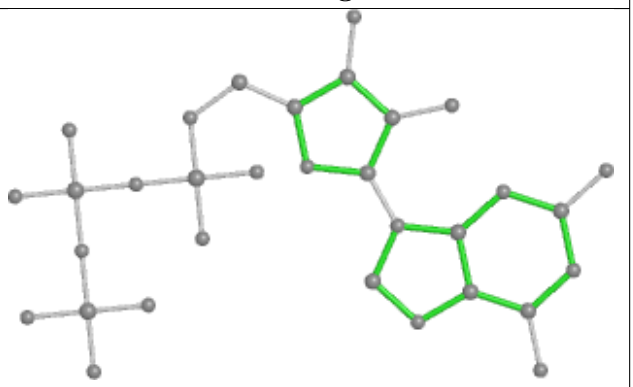
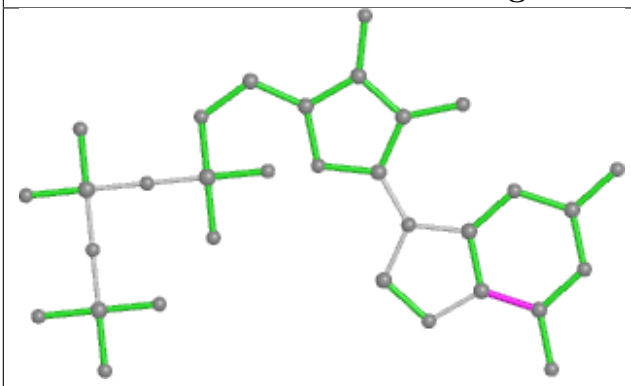


Rings

Ligand GTP DD 501



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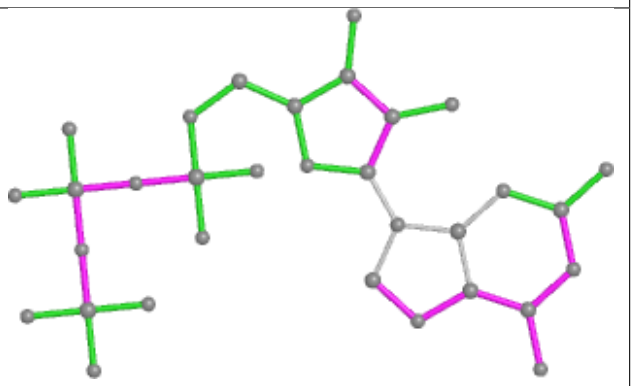
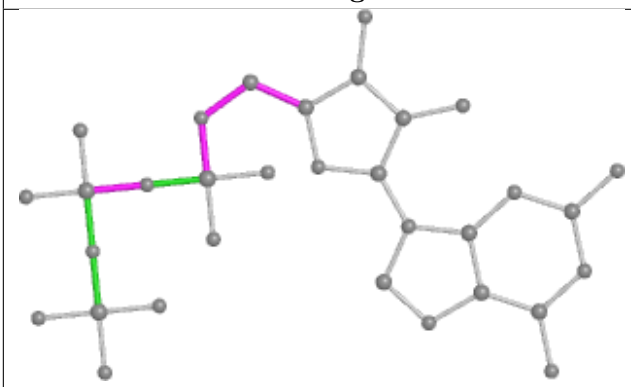


Bond angles



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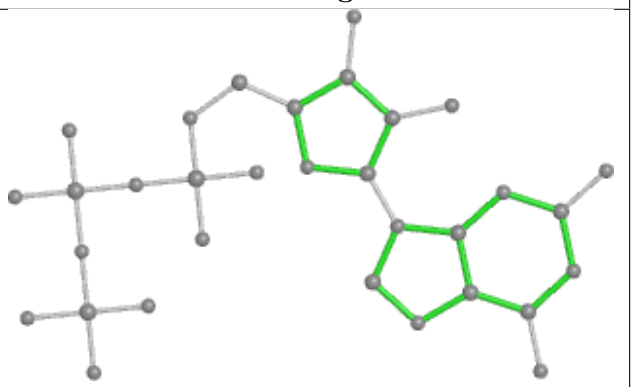
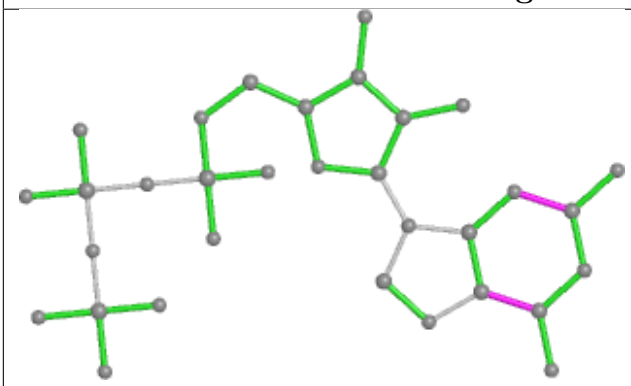


Rings

Ligand GTP JL 501



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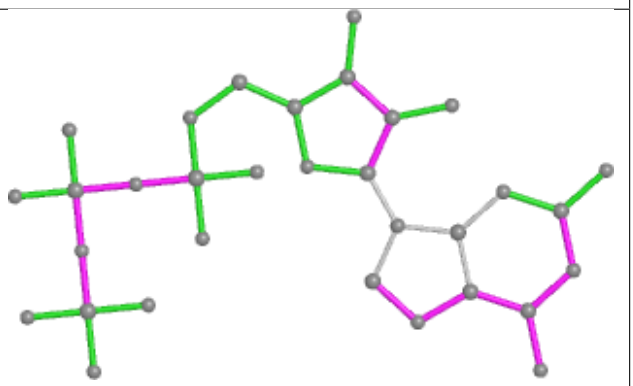
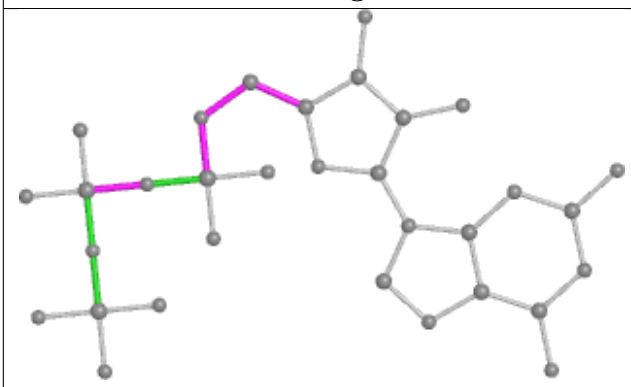


Bond angles



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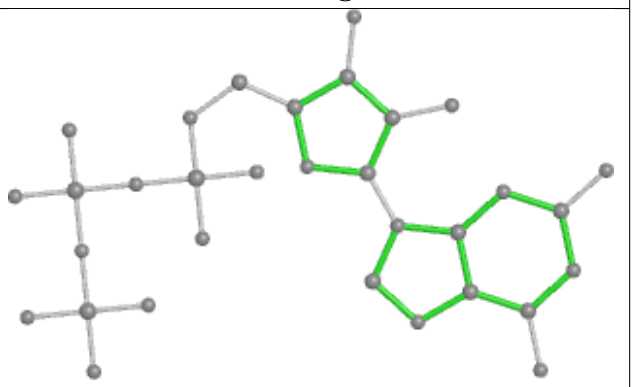
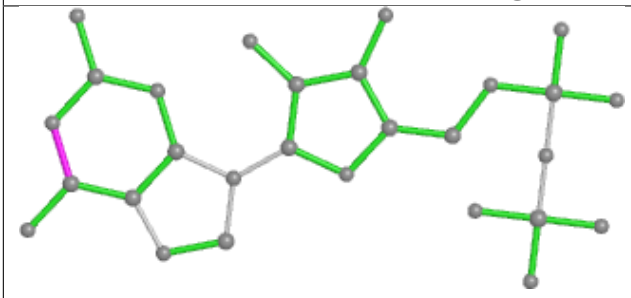
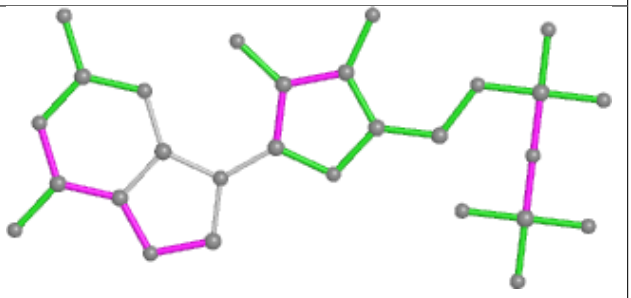


Rings

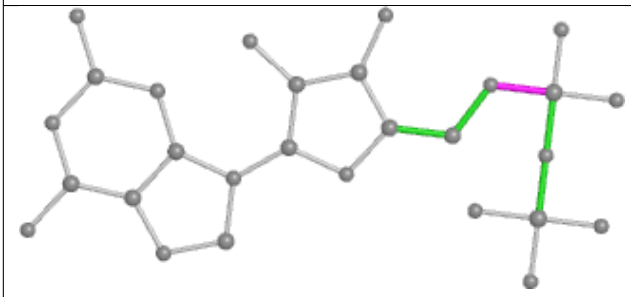
Ligand GDP EK 501



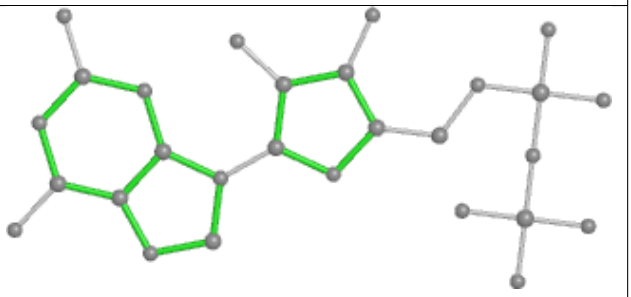
Bond lengths



Bond angles

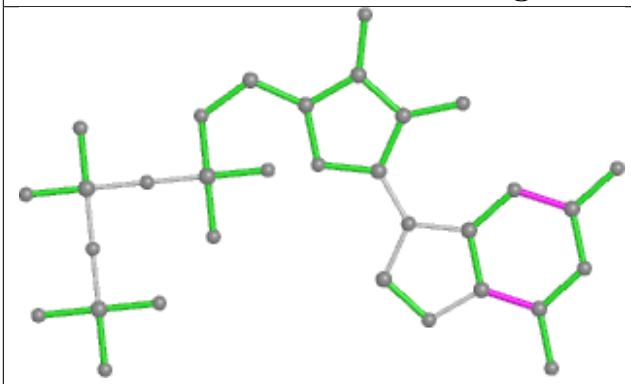


Torsions



Rings

Ligand GTP JD 501



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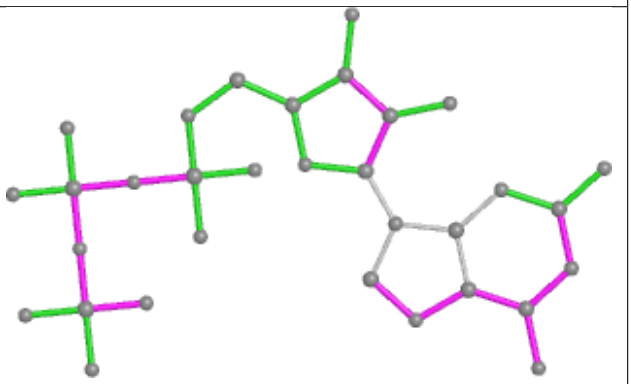

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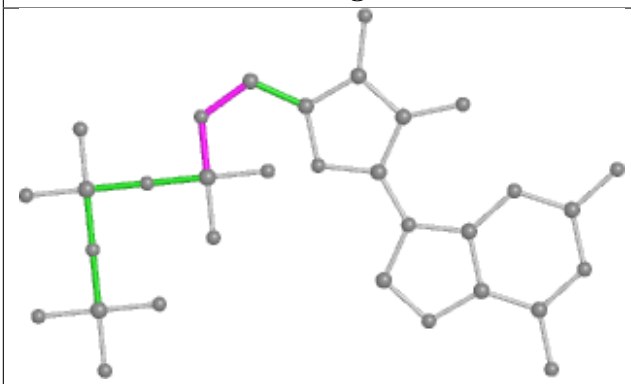

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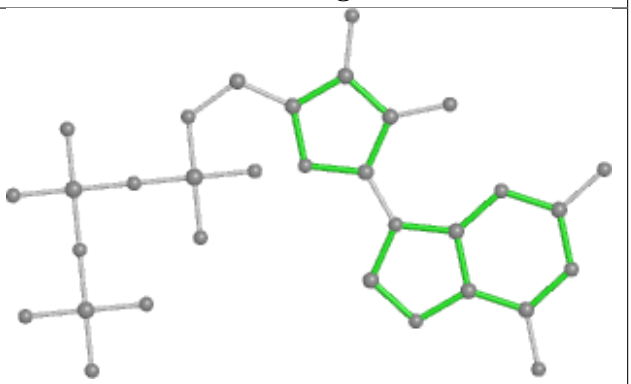
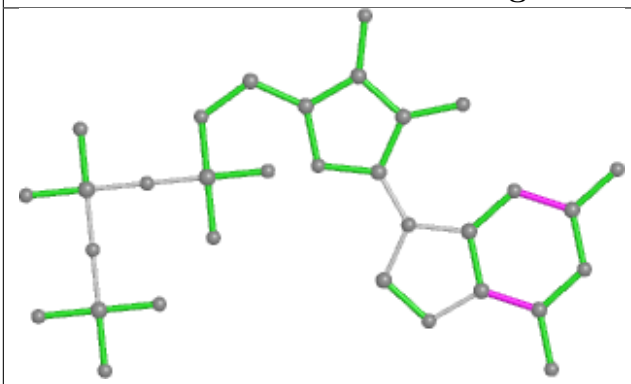


Rings

Ligand GTP KB 501



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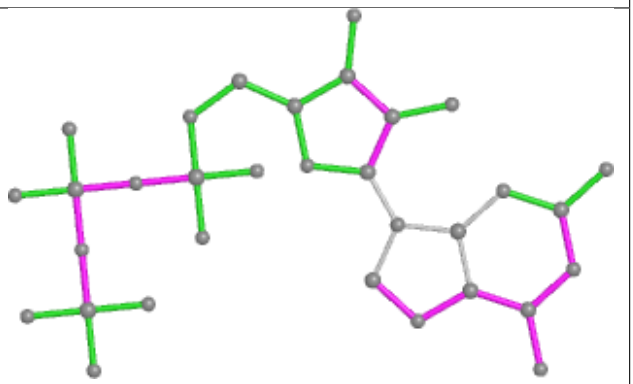
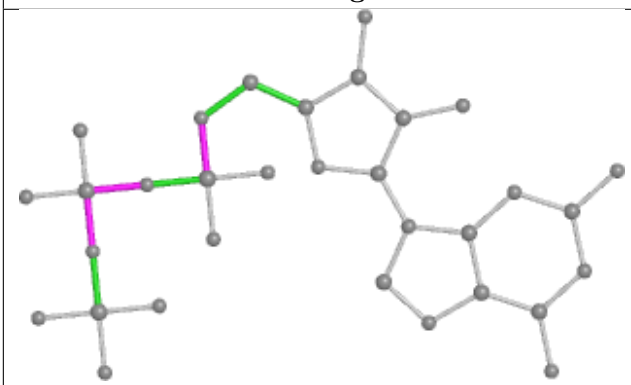


Bond angles



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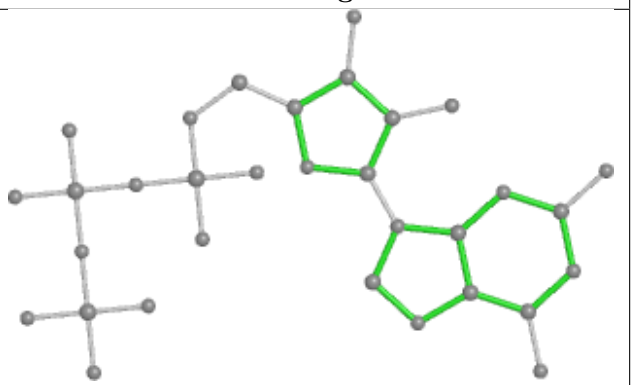
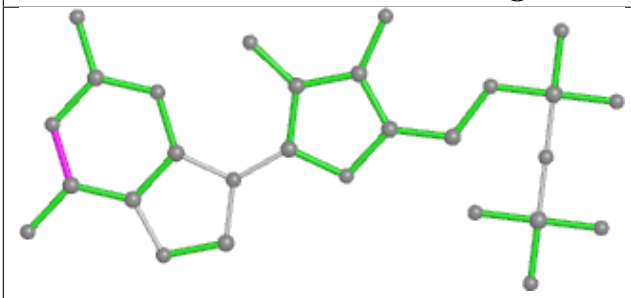


Rings

Ligand GDP EG 501



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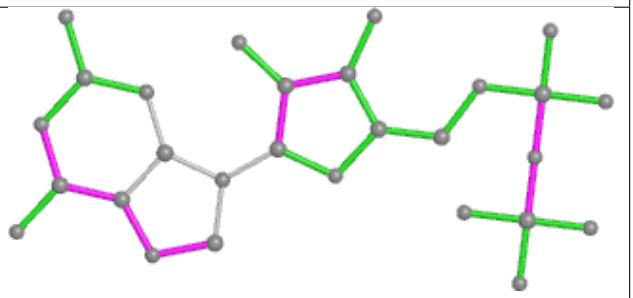

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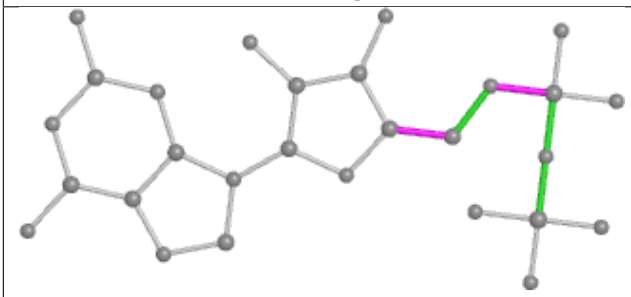

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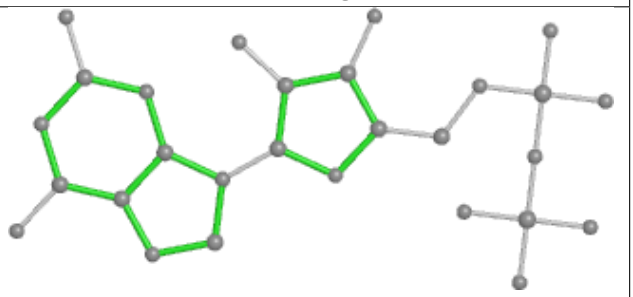
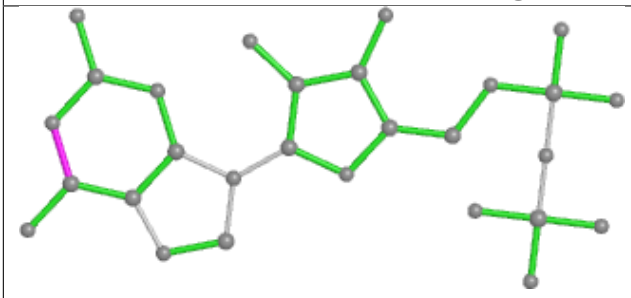


Rings

Ligand GDP EC 501



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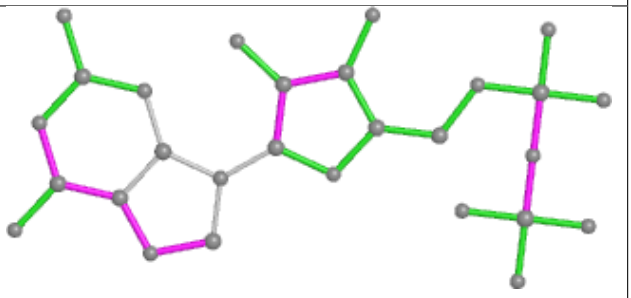
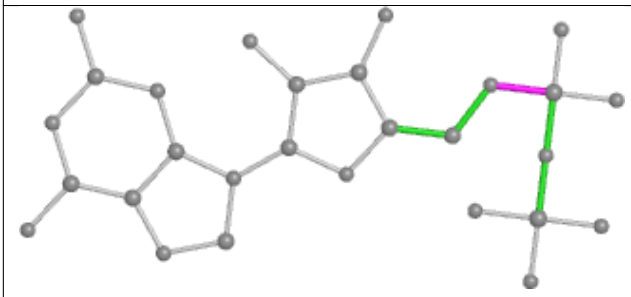


Bond angles



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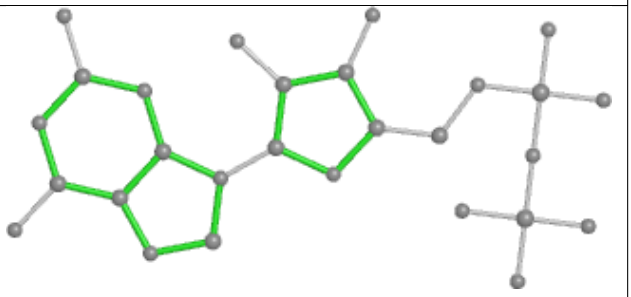
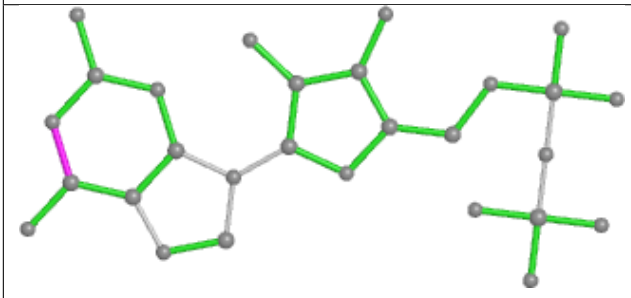


Rings

Ligand GDP DK 501



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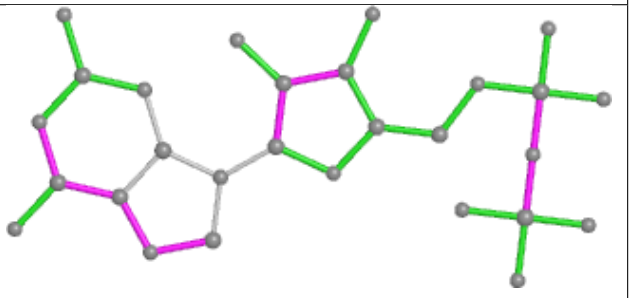

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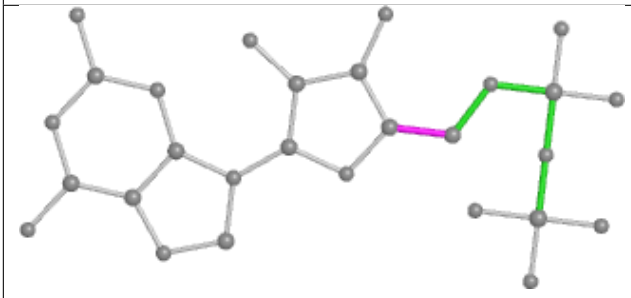

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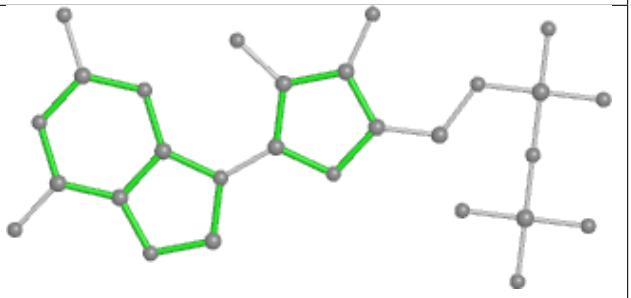
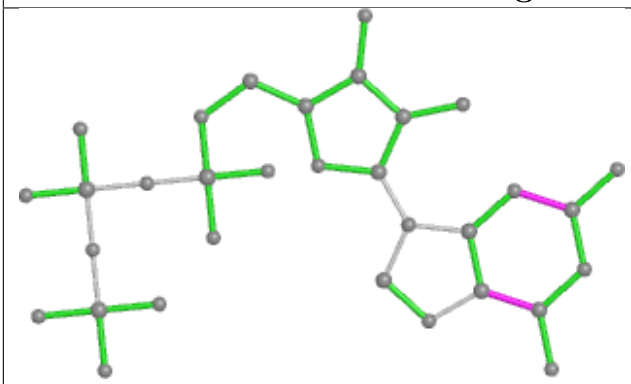


Rings

Ligand GTP ID 501



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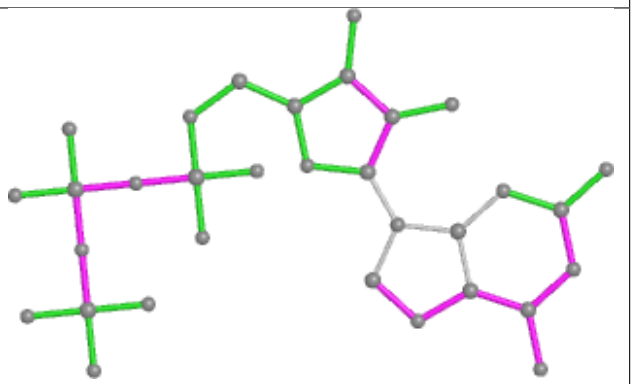
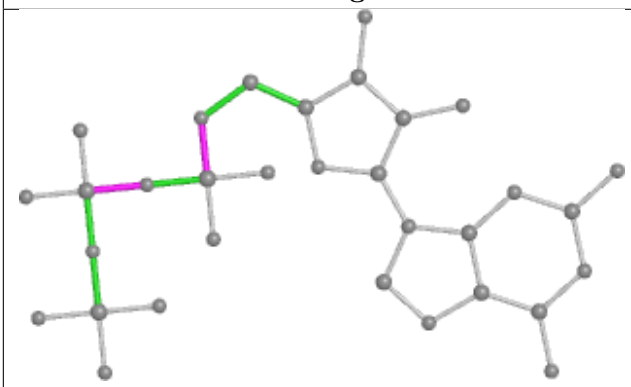


Bond angles



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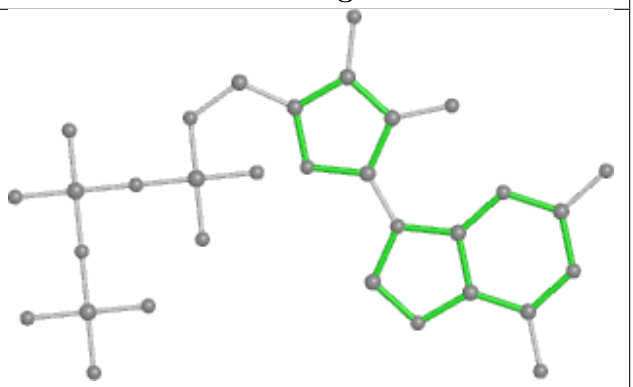
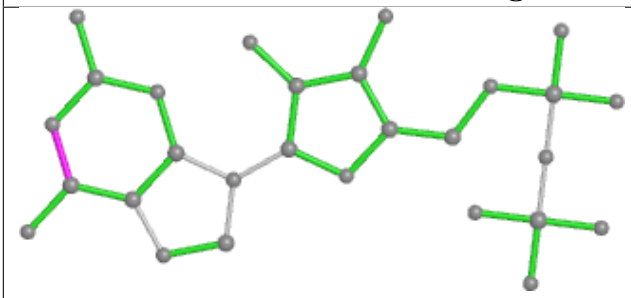


Rings

Ligand GDP AG 501



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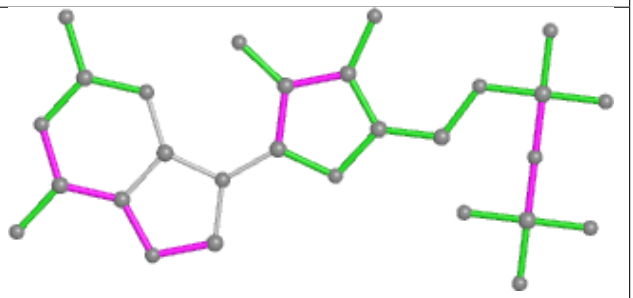
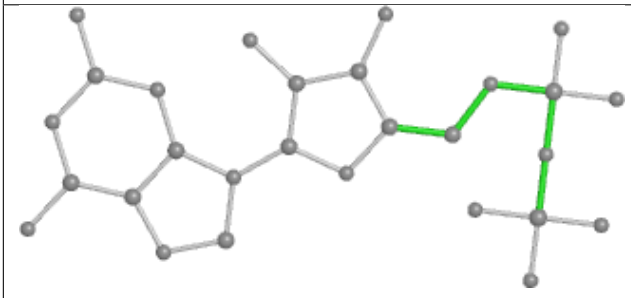


Bond angles



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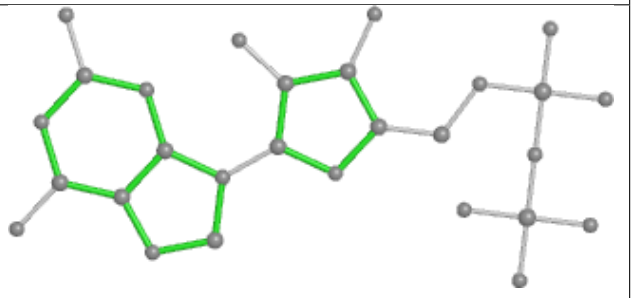
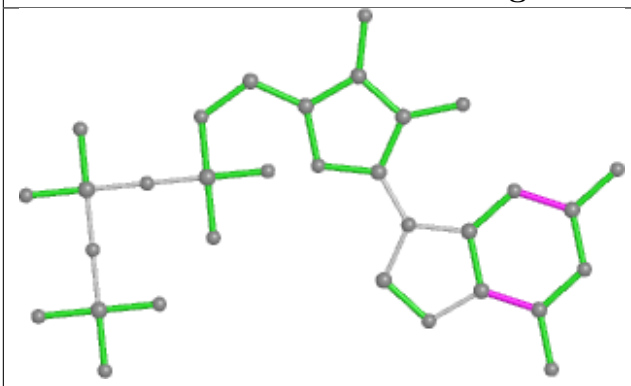


Rings

Ligand GTP BD 501



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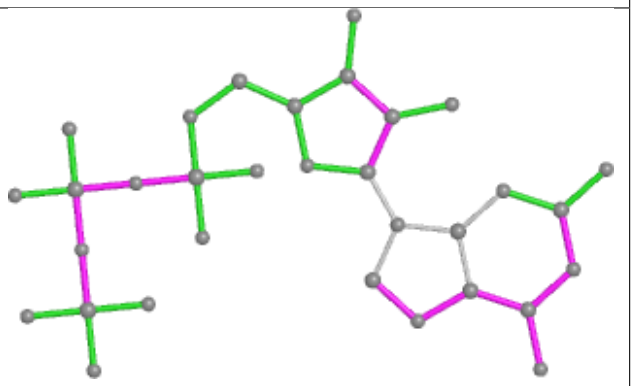
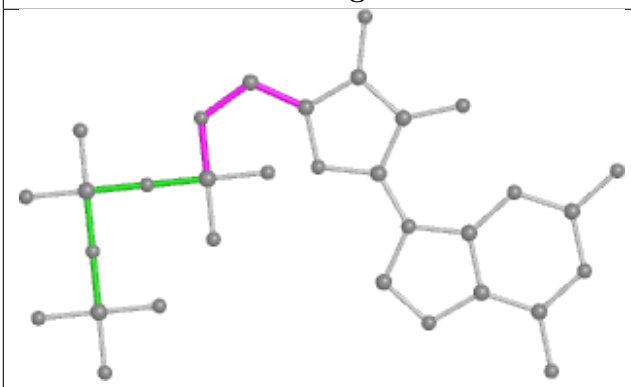
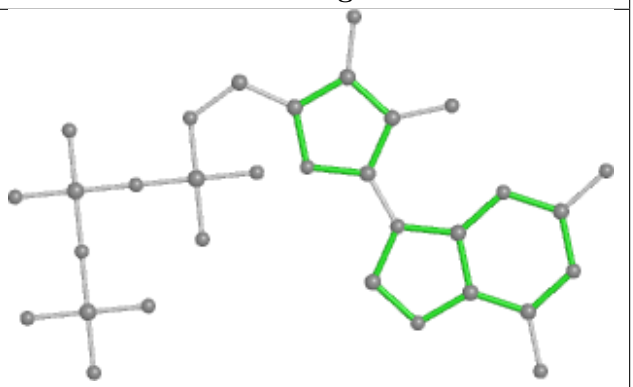


Bond angles

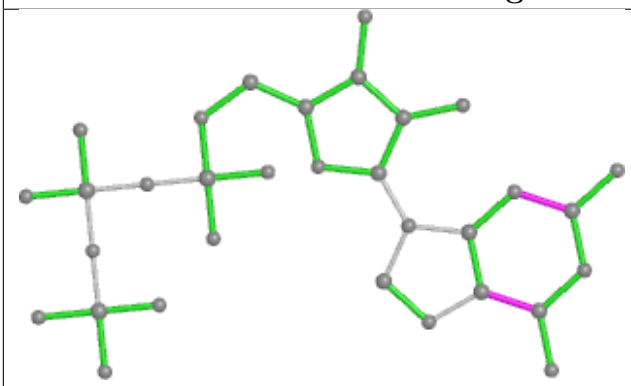


Torsions

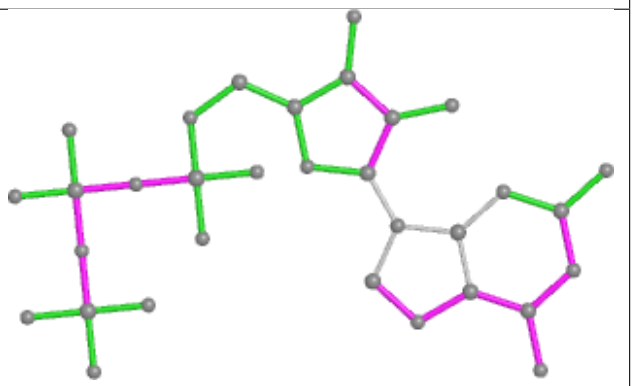


Rings

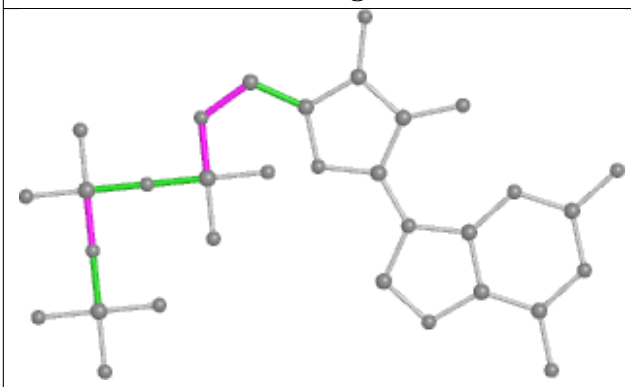
Ligand GTP MB 501



Bond lengths



Bond angles



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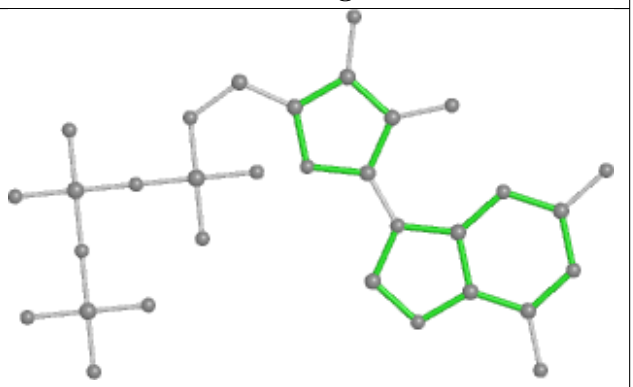
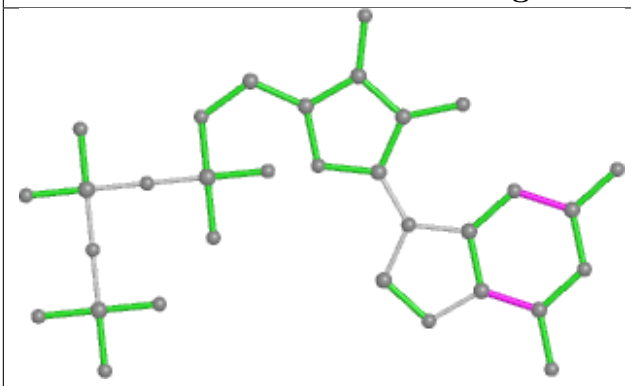
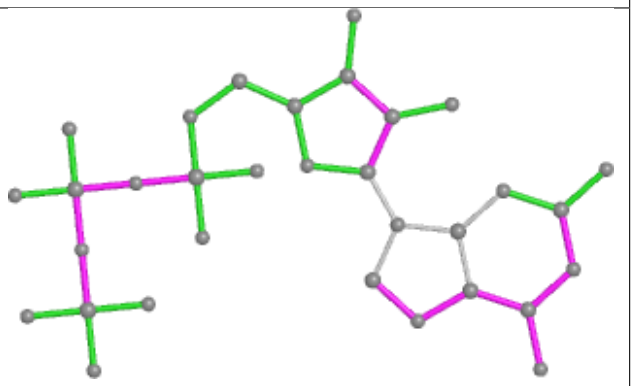


Rings

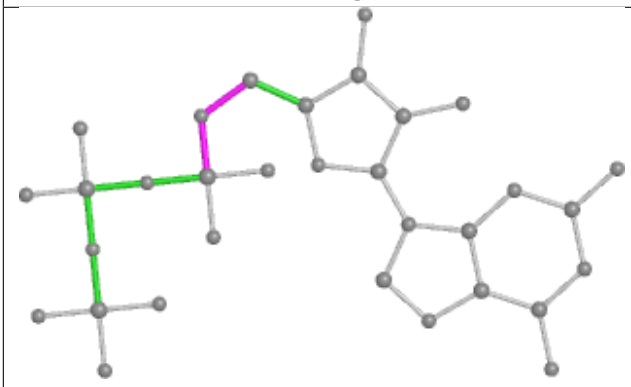
Ligand GTP BL 501



Bond lengths



Bond angles



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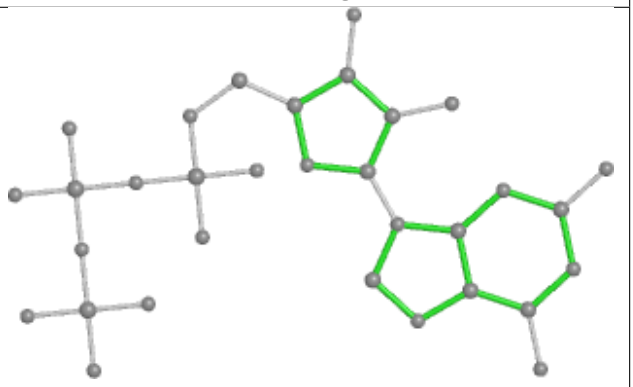
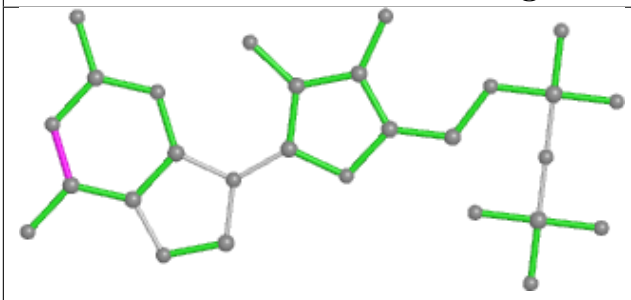
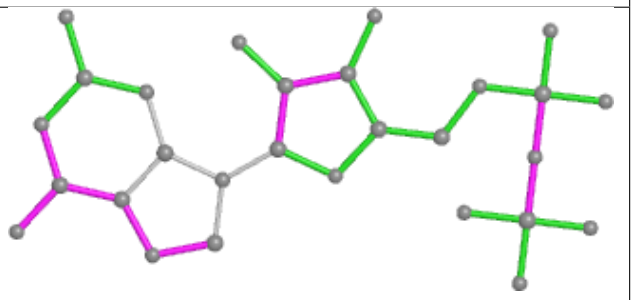


Rings

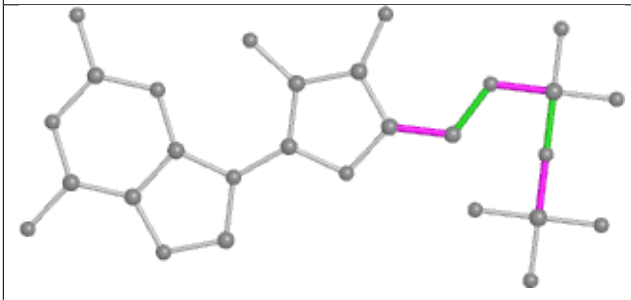
Ligand GDP II 501



Bond lengths



Bond angles



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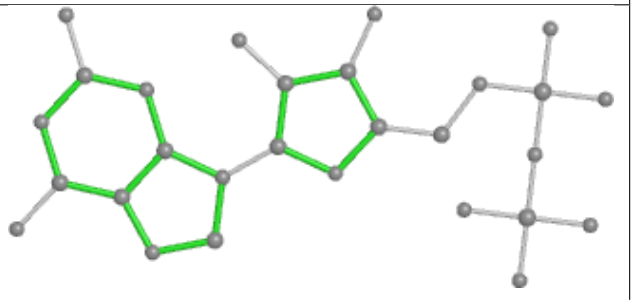
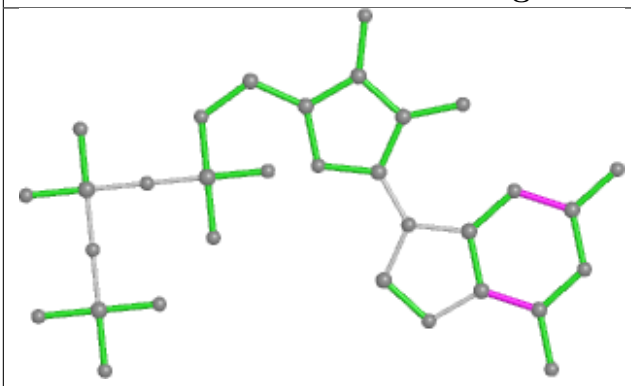


Rings

Ligand GTP EF 501



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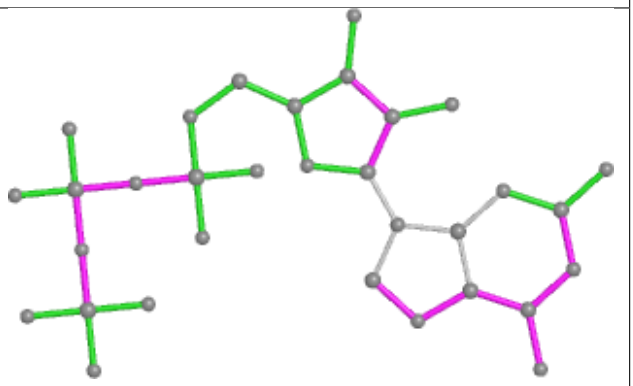
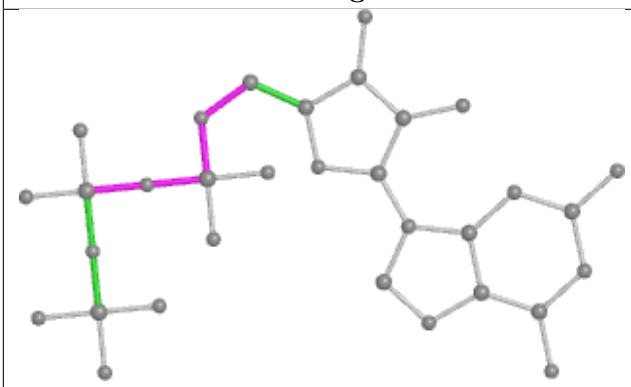


Bond angles



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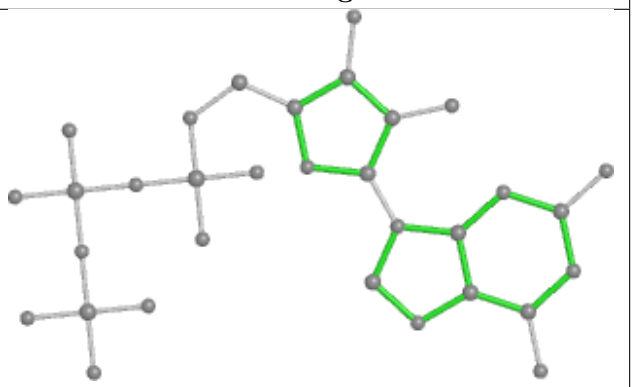
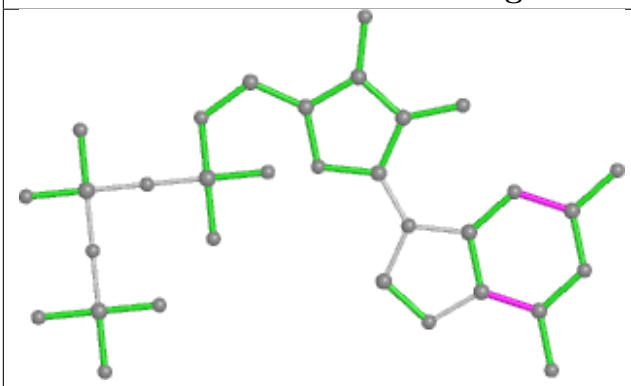
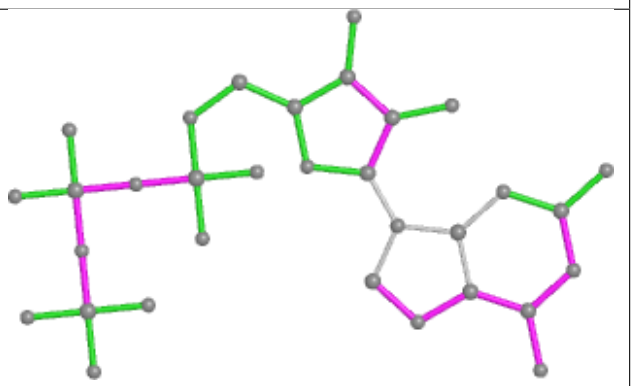


Rings

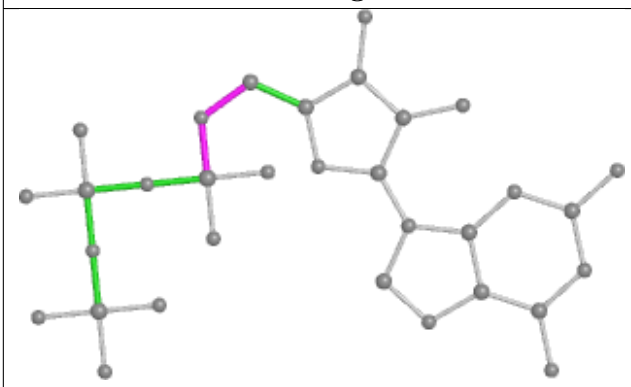
Ligand GTP MD 501



Bond lengths



Bond angles



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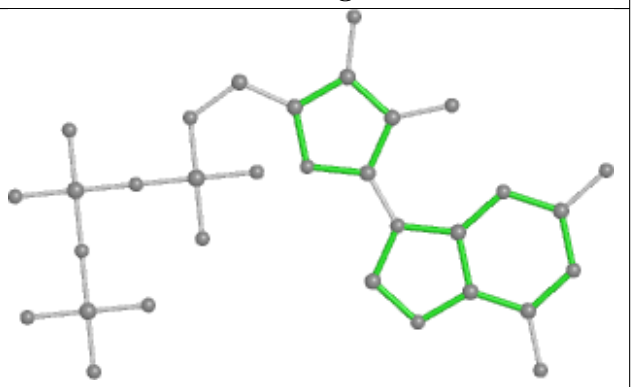
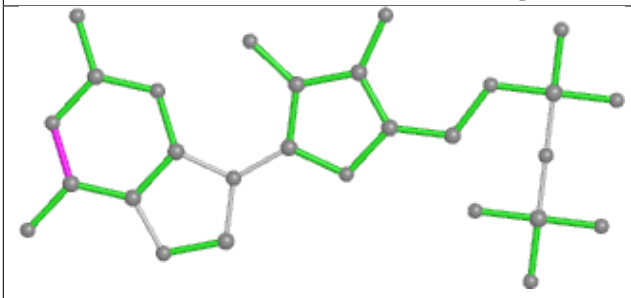


Rings

Ligand GDP HI 502



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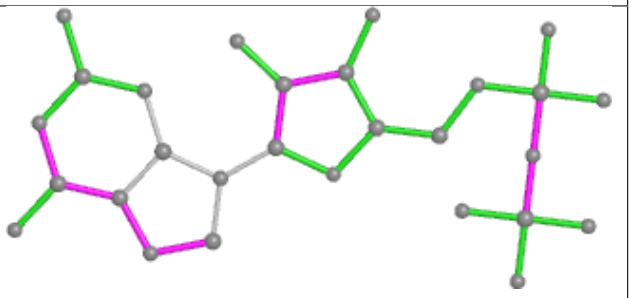
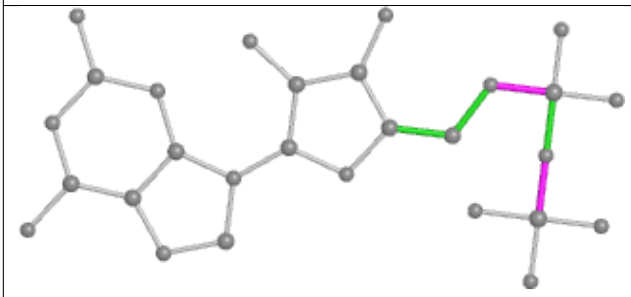


Bond angles



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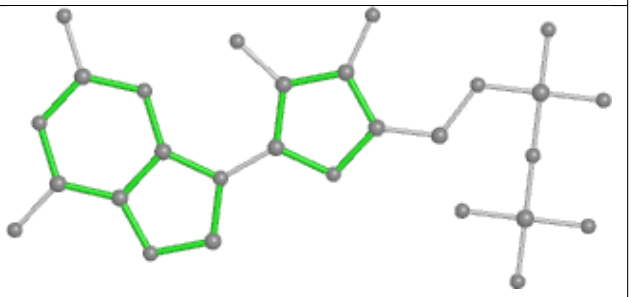
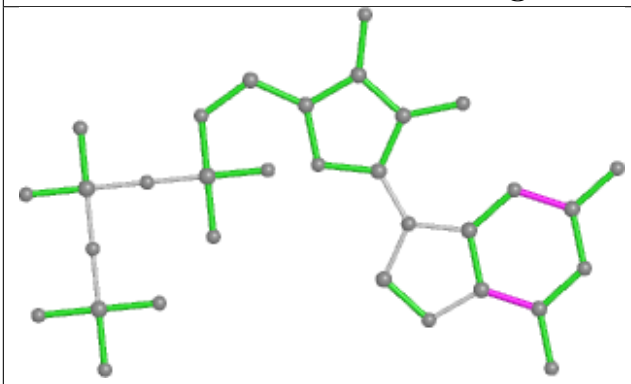
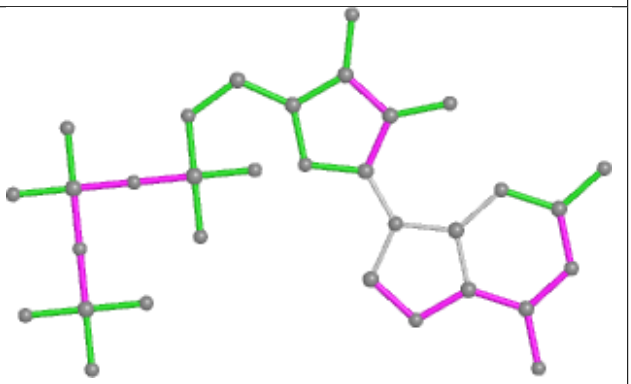


Rings

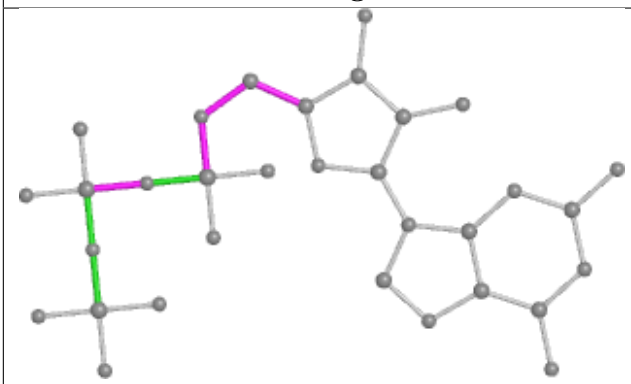
Ligand GTP CD 501



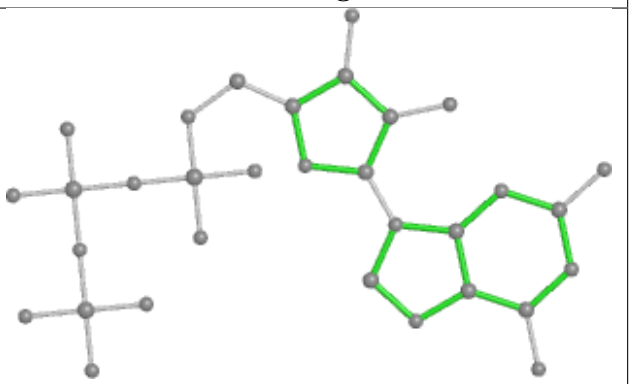
Bond lengths



Bond angles

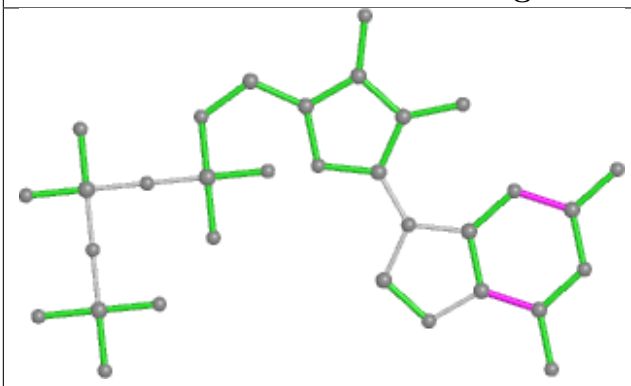


Torsions



Rings

Ligand GTP BJ 501



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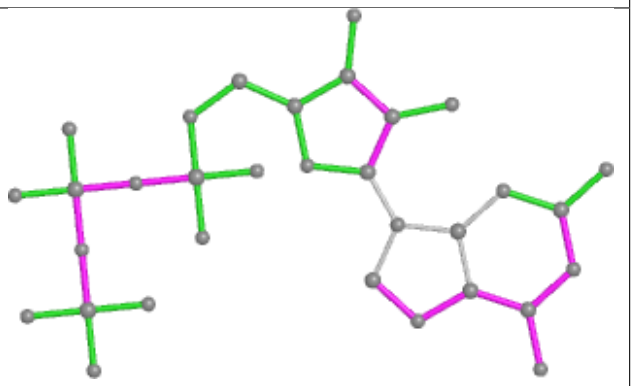
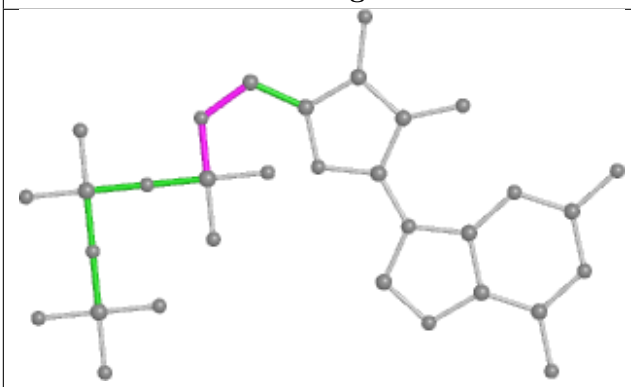


Bond angles



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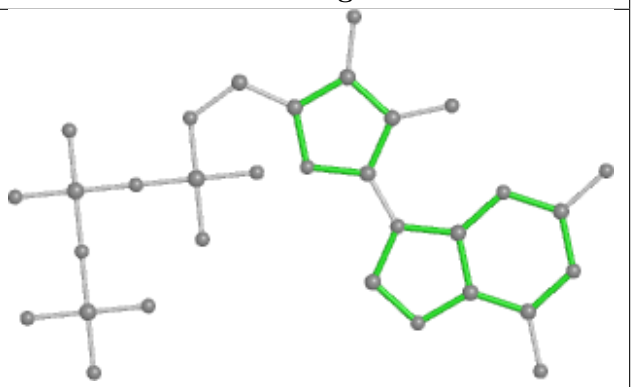
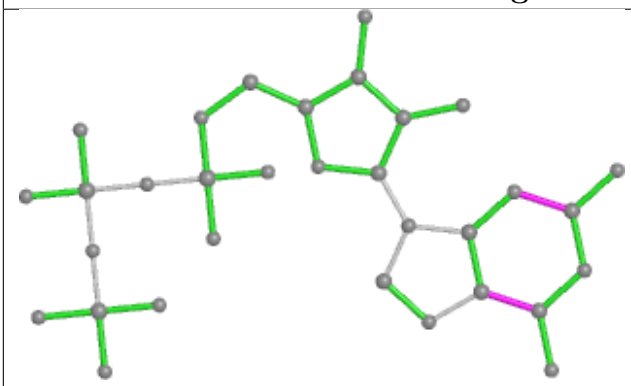


Rings

Ligand GTP KL 501



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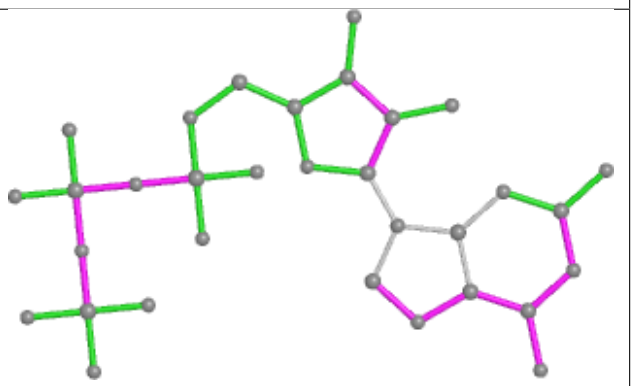

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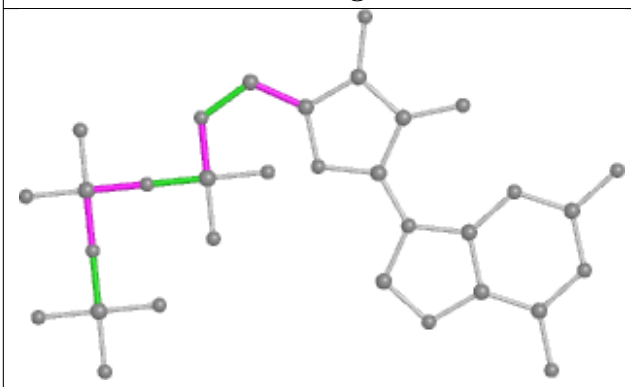

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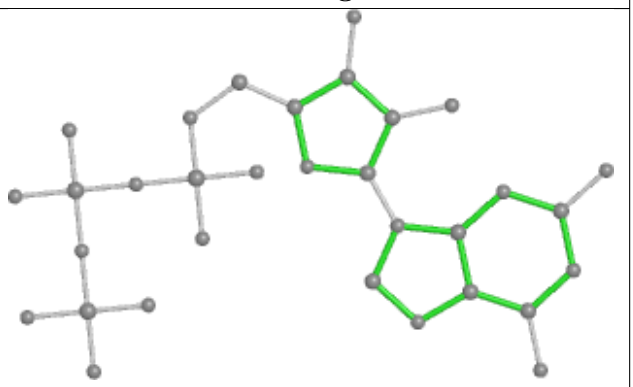
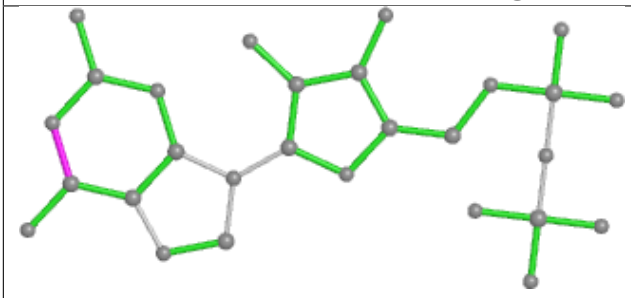


Rings

Ligand GDP GE 501



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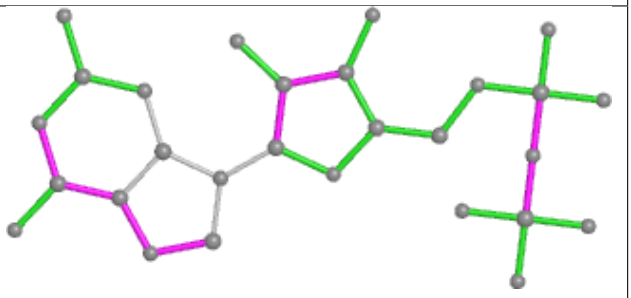

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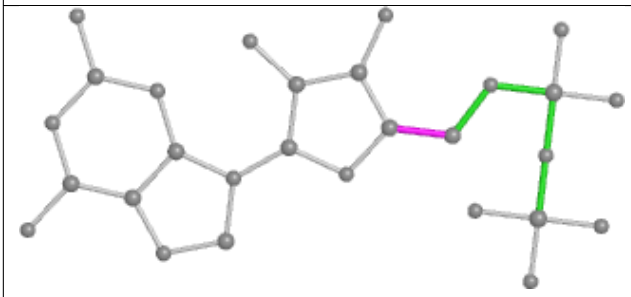

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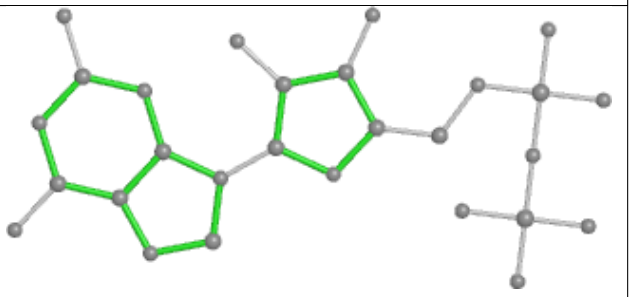
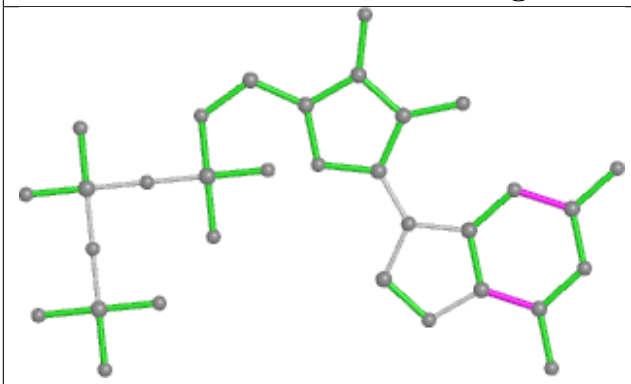


Rings

Ligand GTP ED 501



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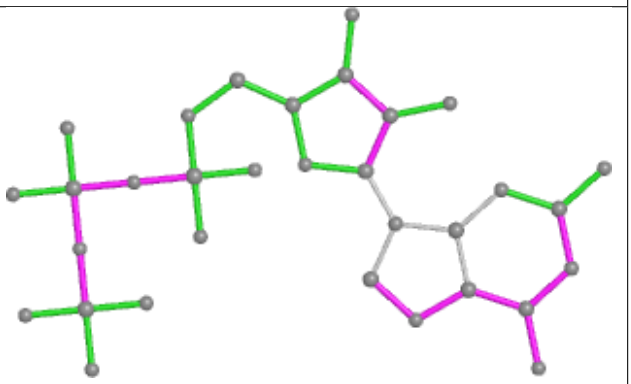
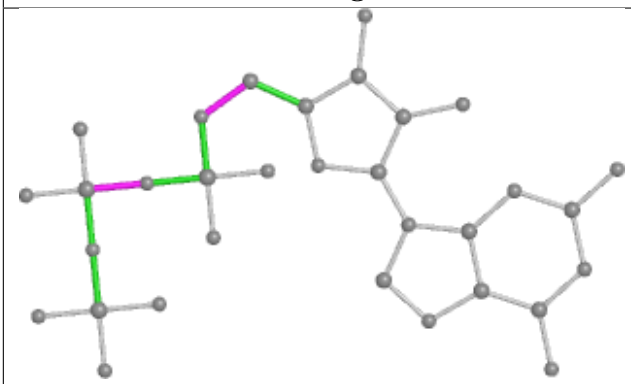


Bond angles



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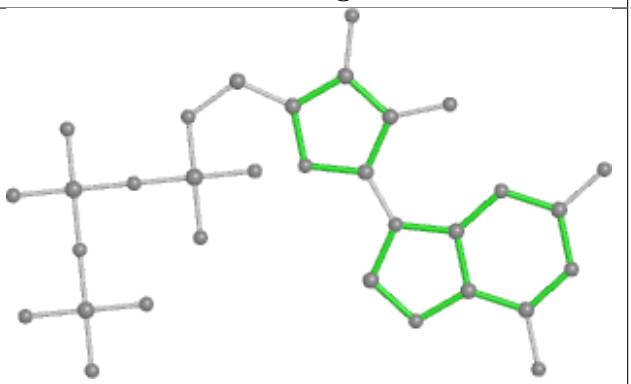
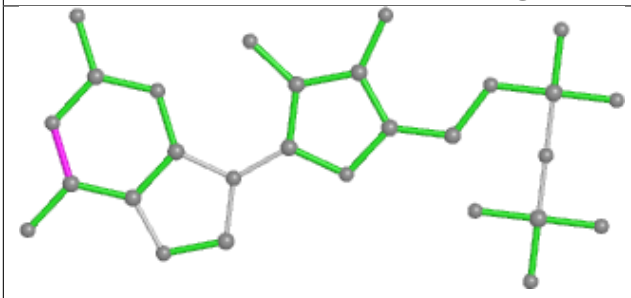


Rings

Ligand GDP AI 501



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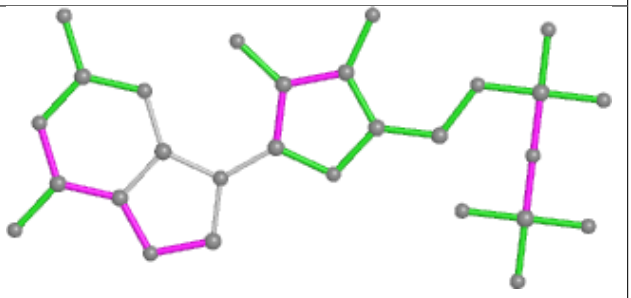

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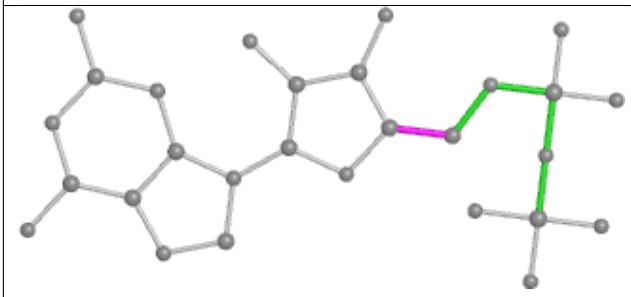

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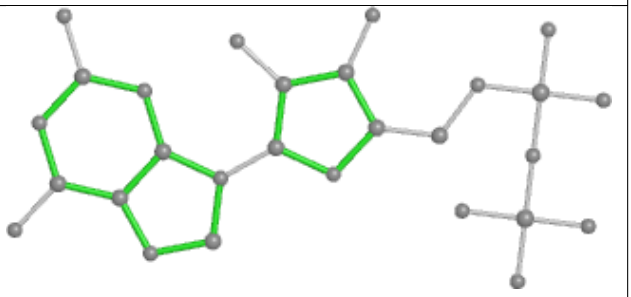
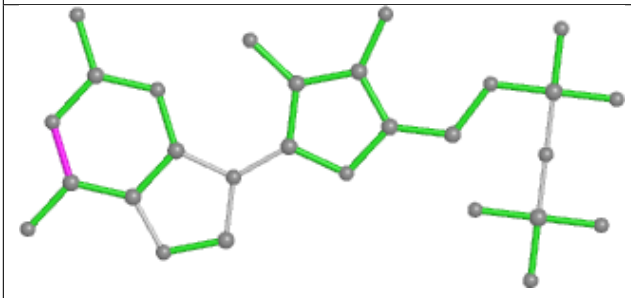


Rings

Ligand GDP JI 501



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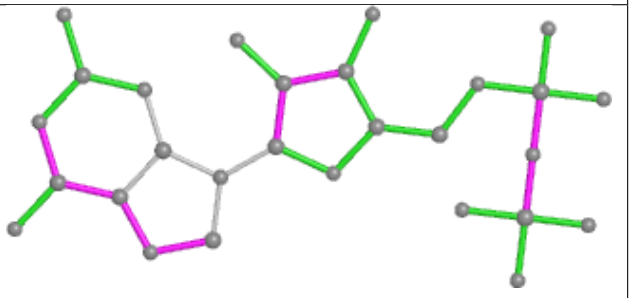

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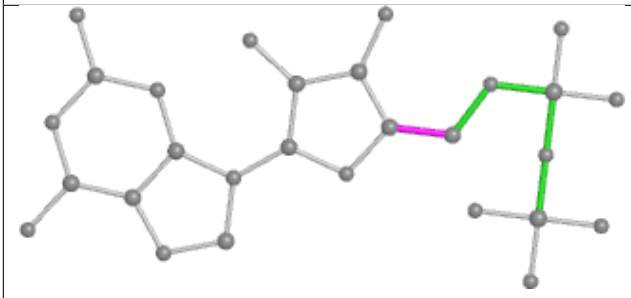

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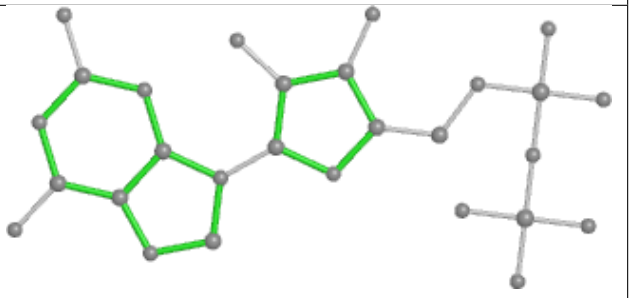
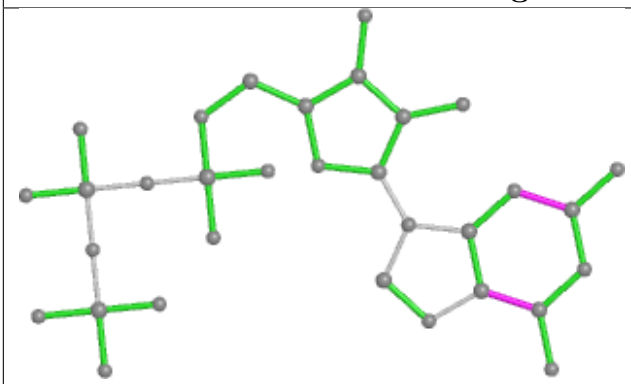


Rings

Ligand GTP EB 501



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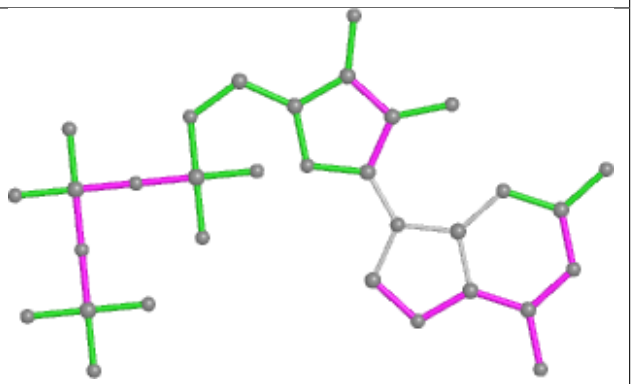

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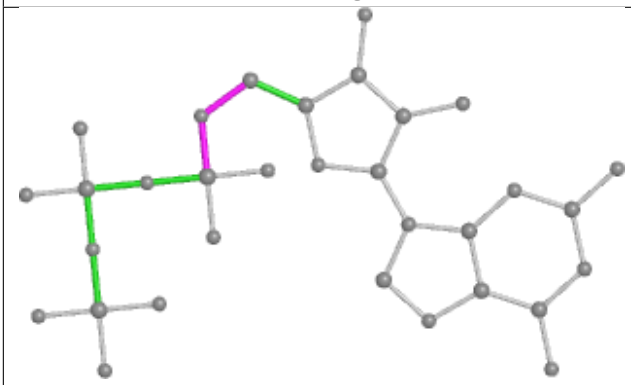

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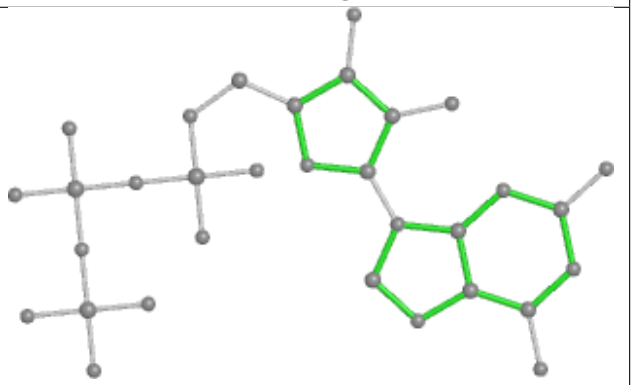
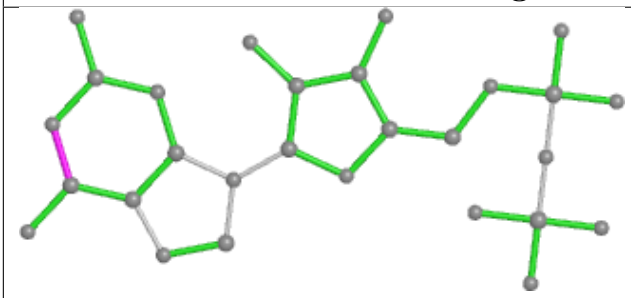


Rings

Ligand GDP LC 501



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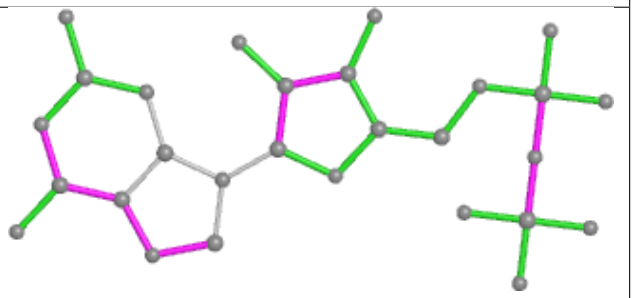

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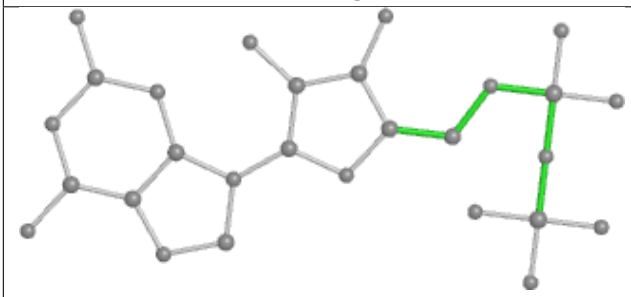

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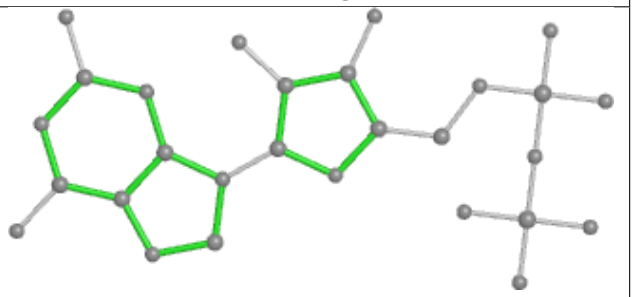
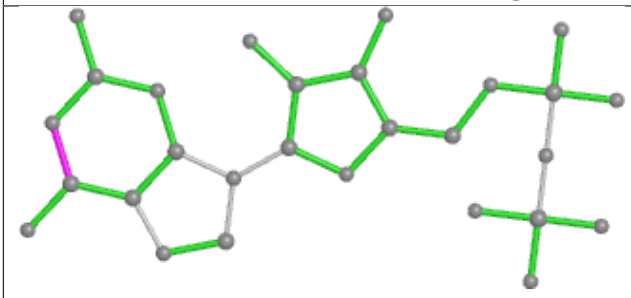
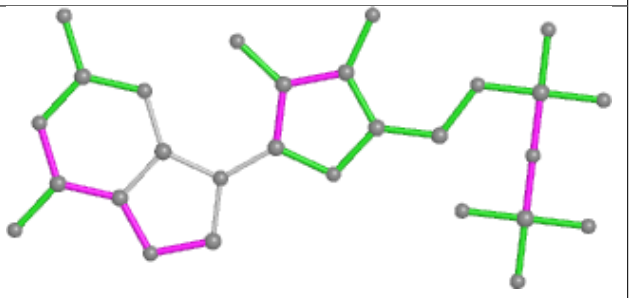
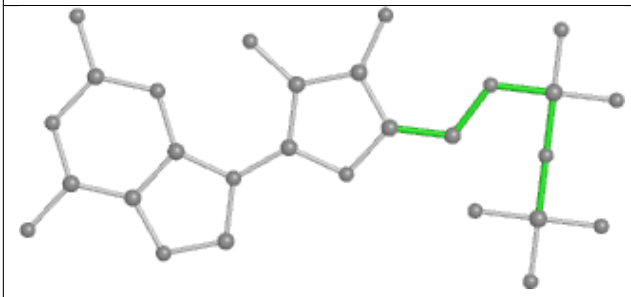
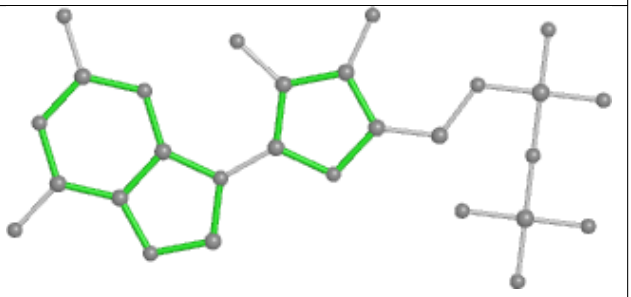
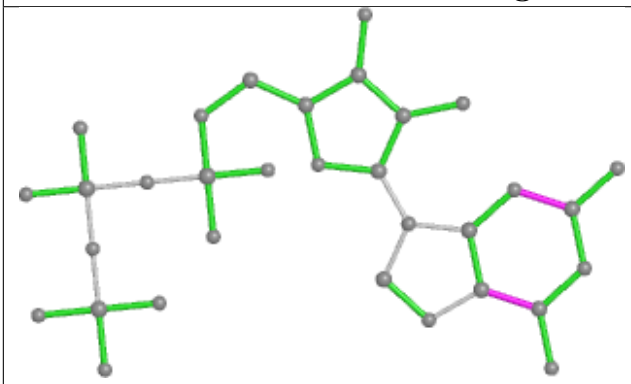
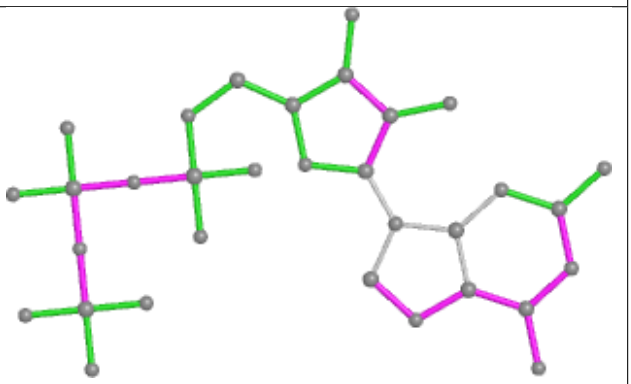
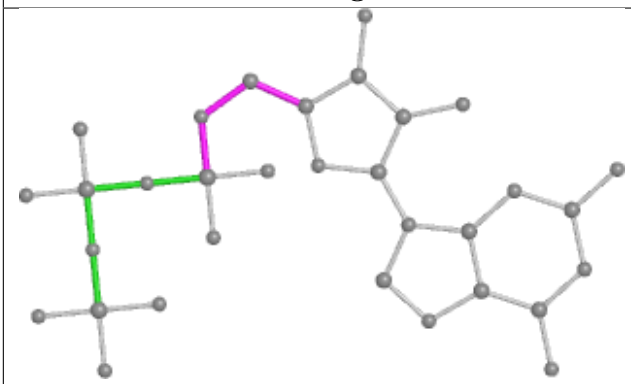
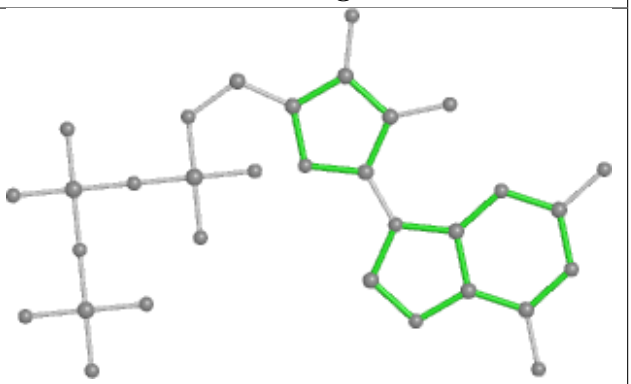
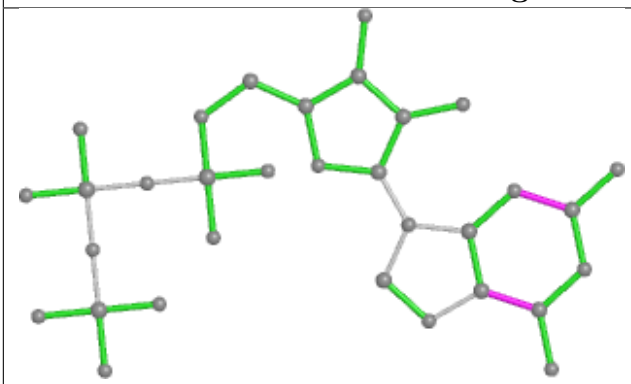


Rings

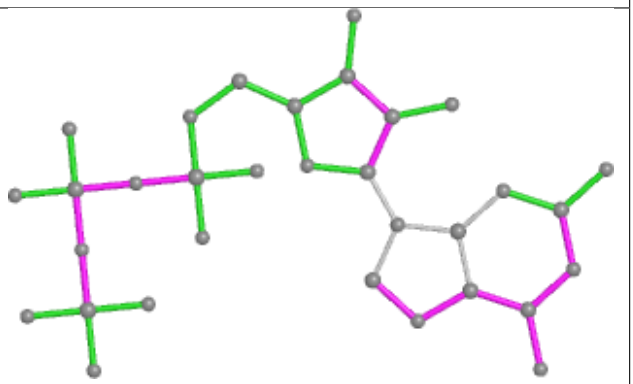
Ligand GDP GC 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GTP FL 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

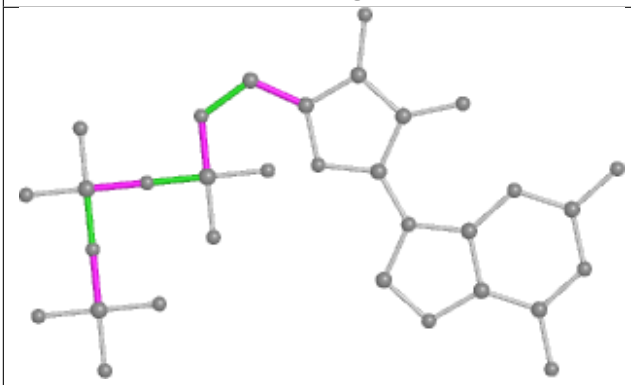
Ligand GTP LD 501



Bond lengths



Bond angles



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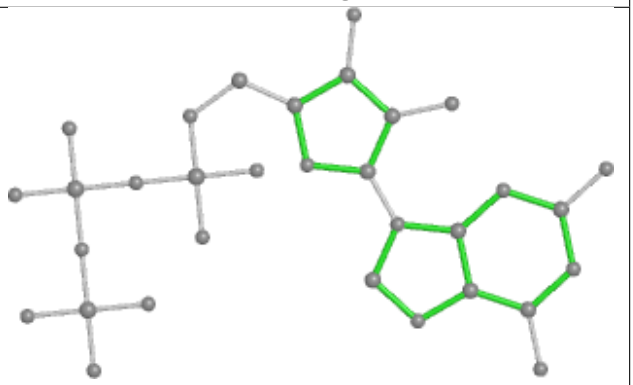
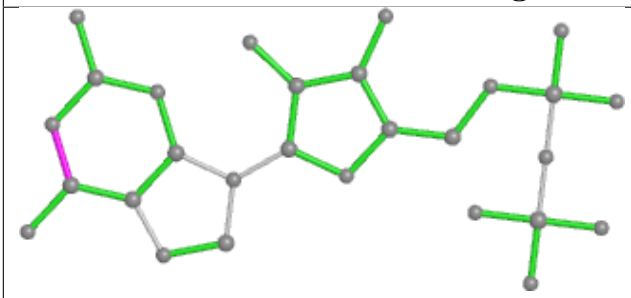


Rings

Ligand GDP MI 501



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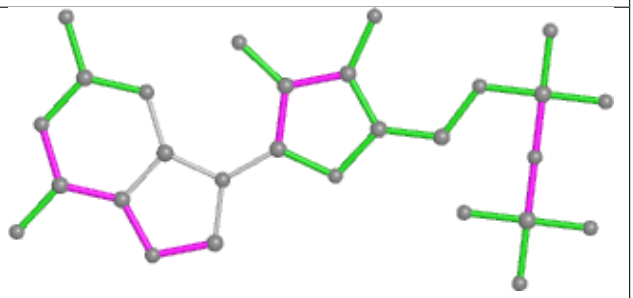
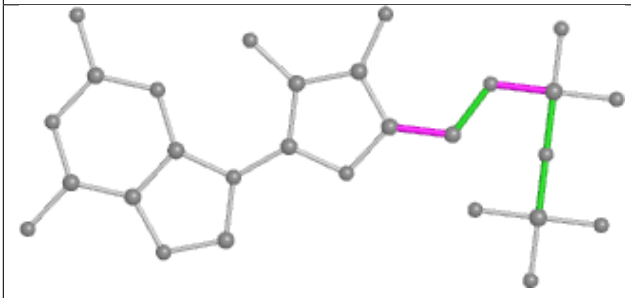


Bond angles



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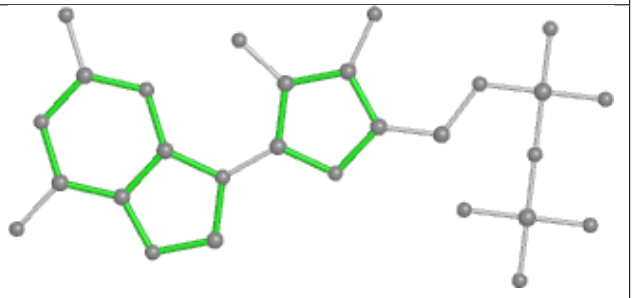
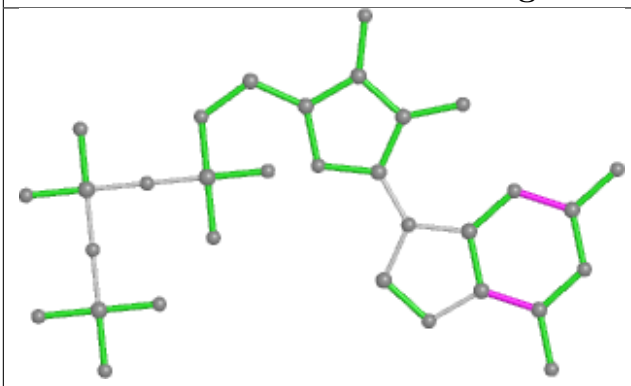


Rings

Ligand GTP IL 501



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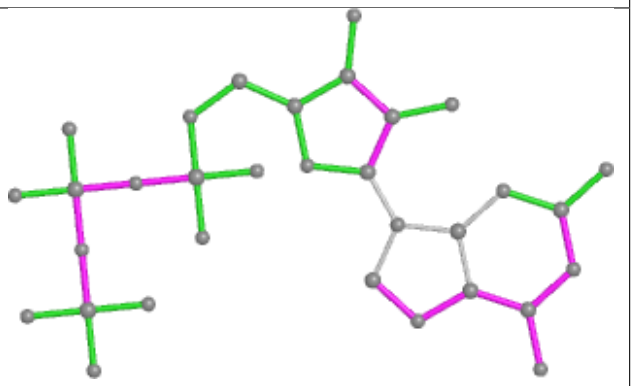
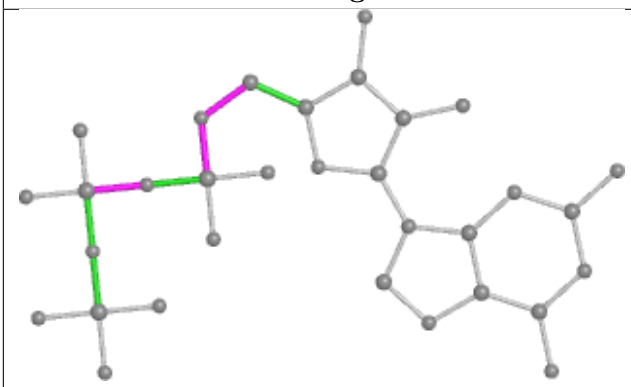


Bond angles



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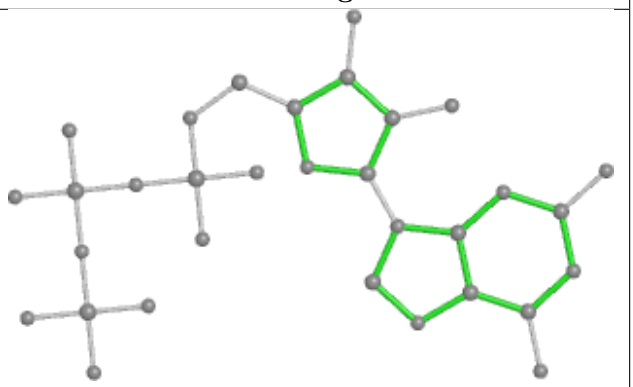
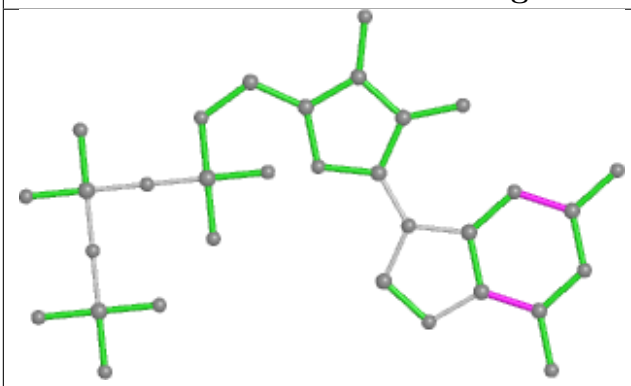


Rings

Ligand GTP AF 501



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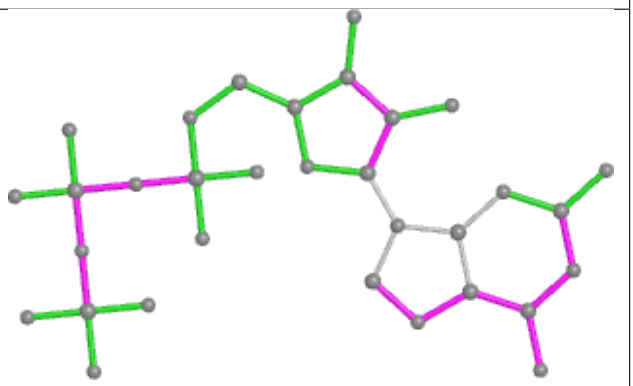
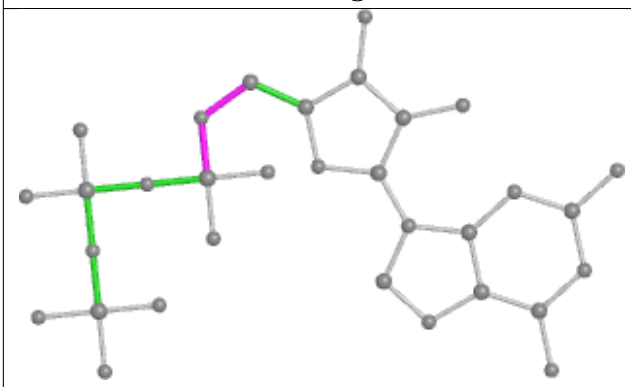
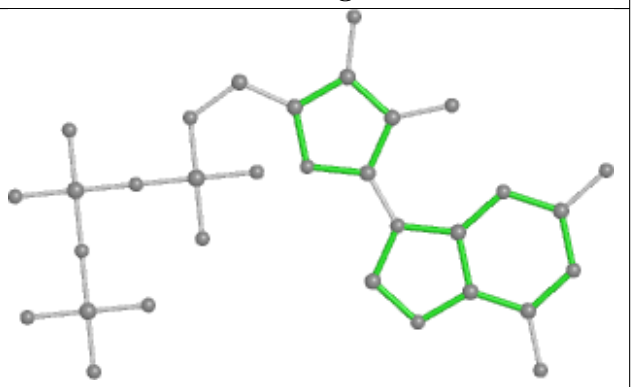


Bond angles

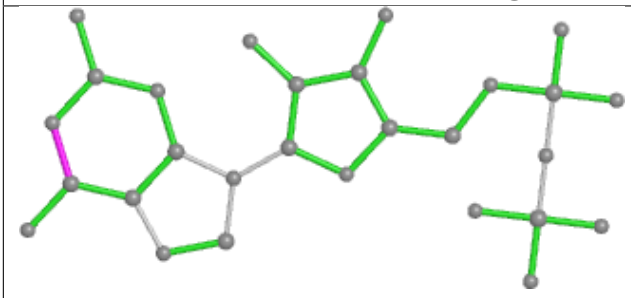


Torsions

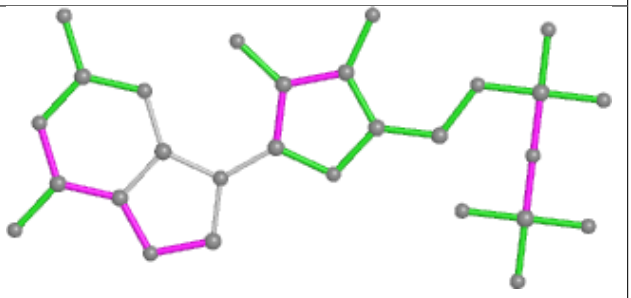


Rings

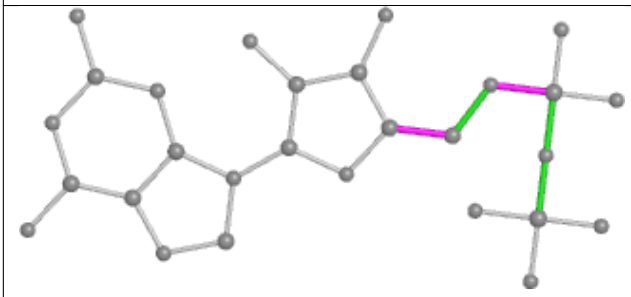
Ligand GDP ME 501



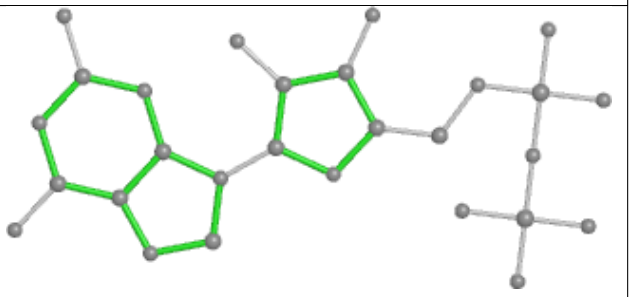
Bond lengths



Bond angles

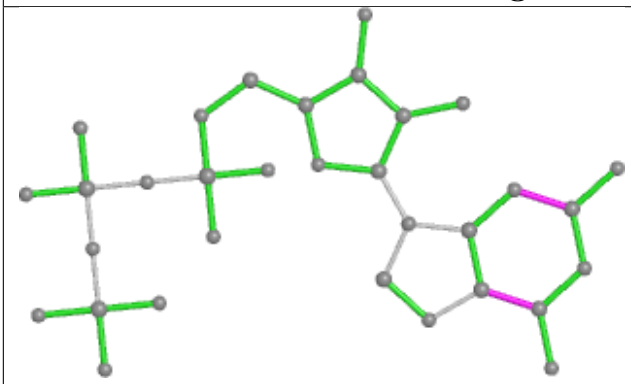


Torsions



Rings

Ligand GTP BH 501



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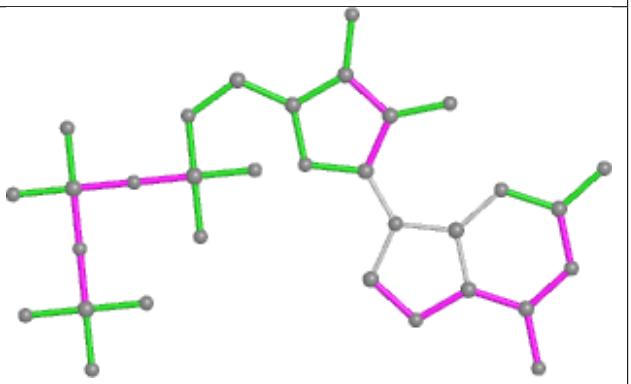

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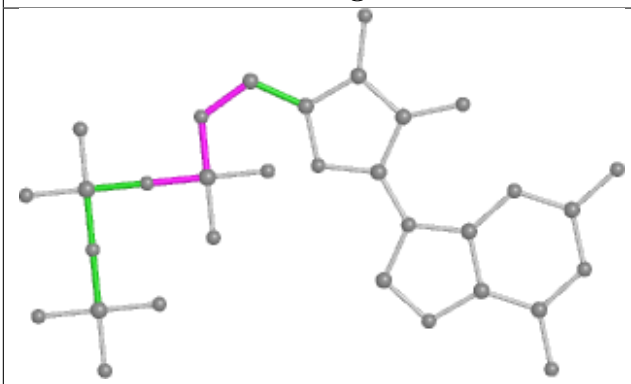

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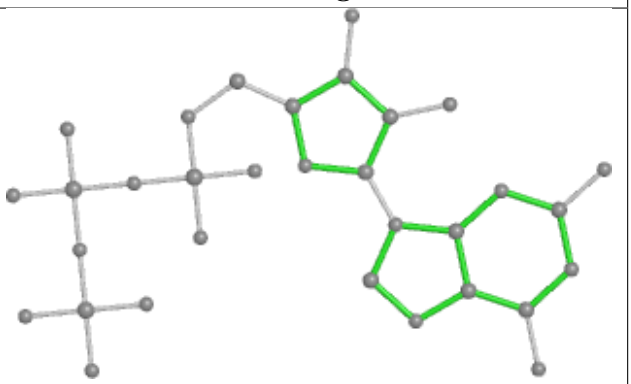
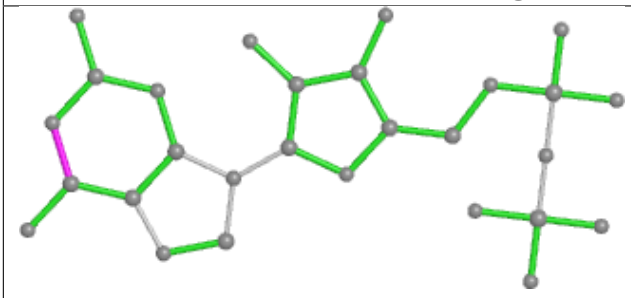


Rings

Ligand GDP CE 501



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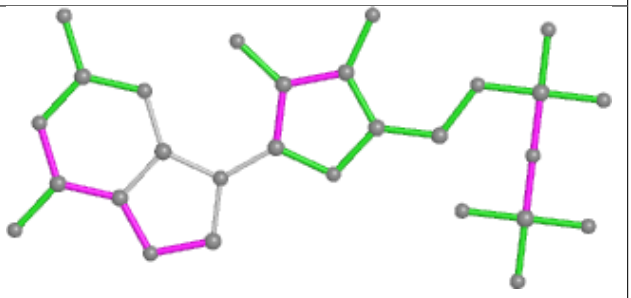

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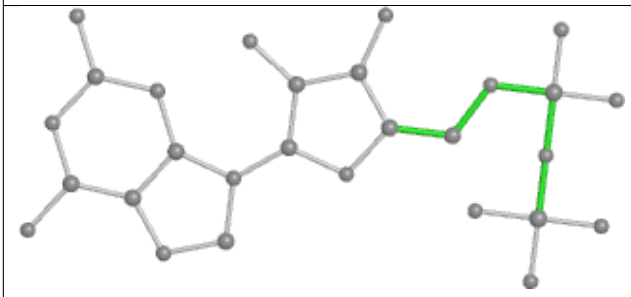

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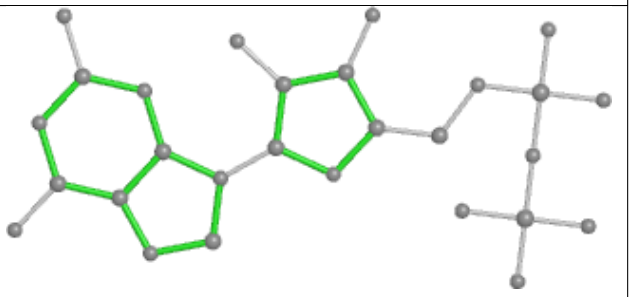
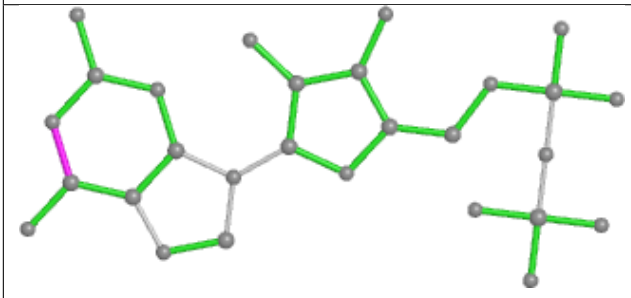


Rings

Ligand GDP FK 501



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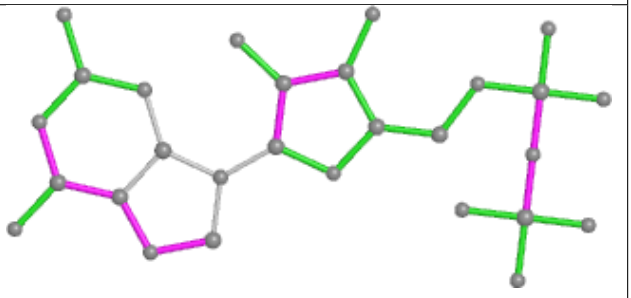

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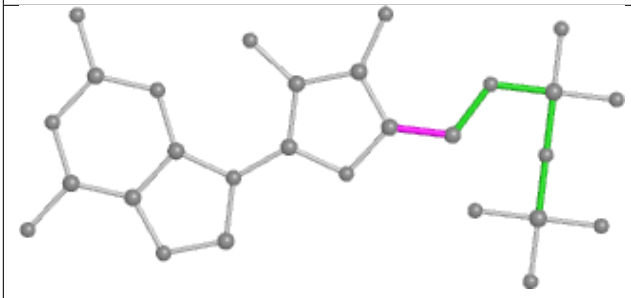

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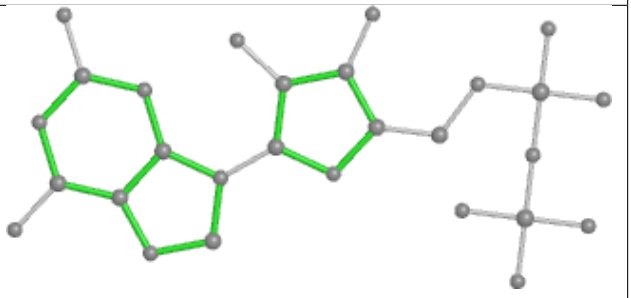
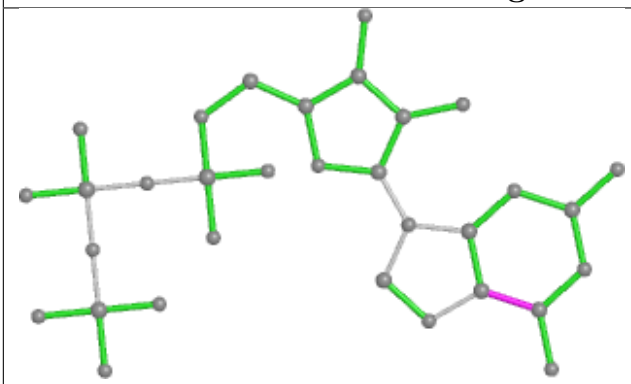


Rings

Ligand GTP DH 501



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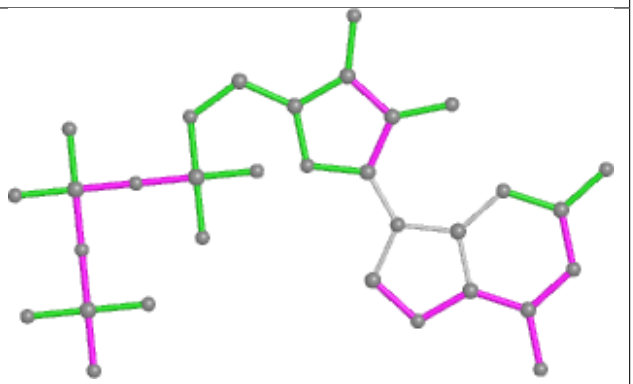
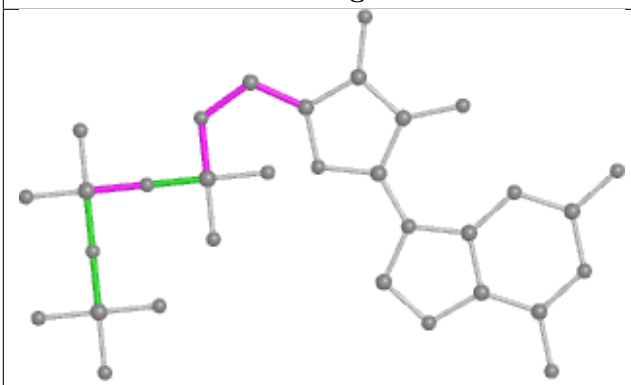


Bond angles



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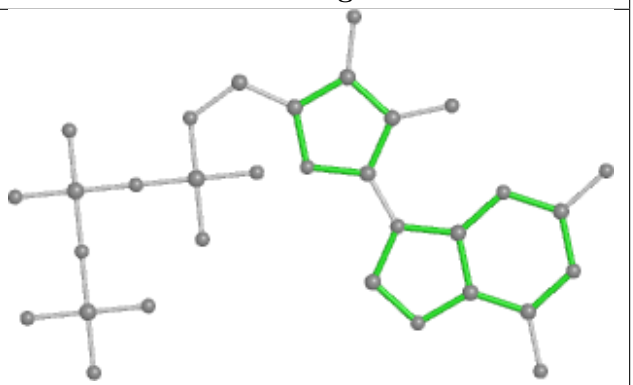
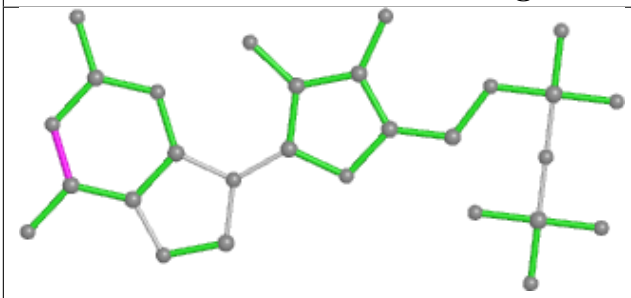


Rings

Ligand GDP CI 501



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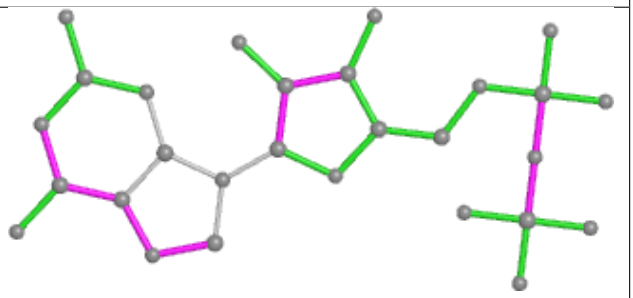

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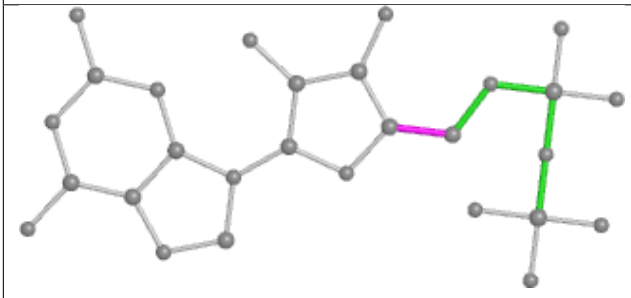

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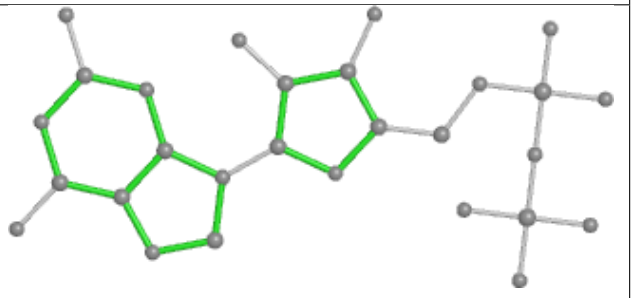
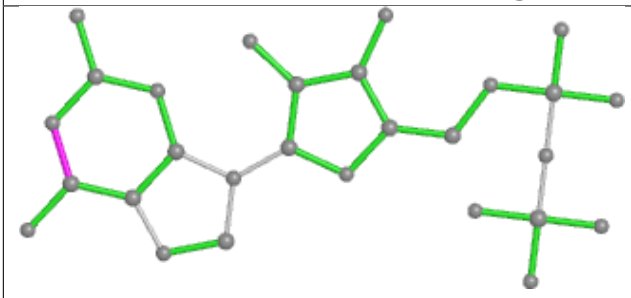


Rings

Ligand GDP FC 501



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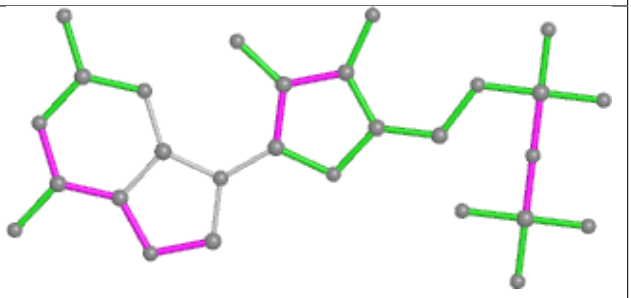
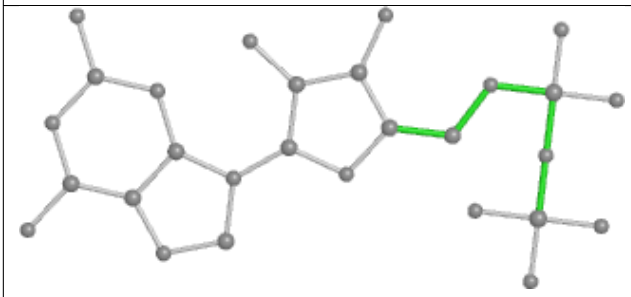


Bond angles



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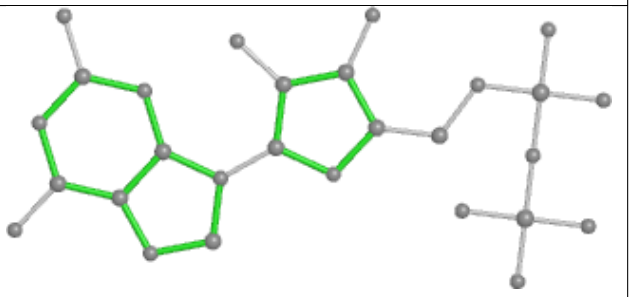
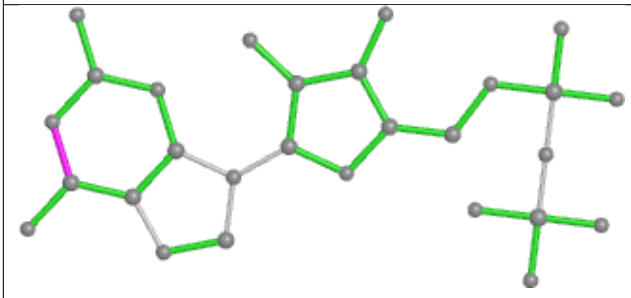


Rings

Ligand GDP EI 501



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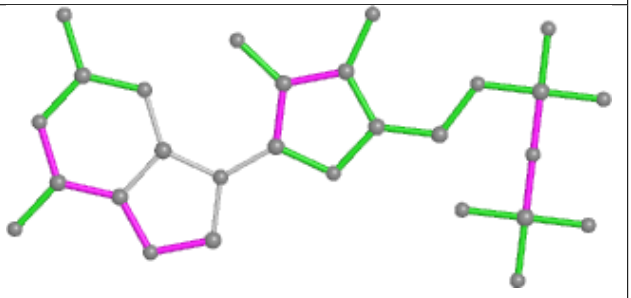

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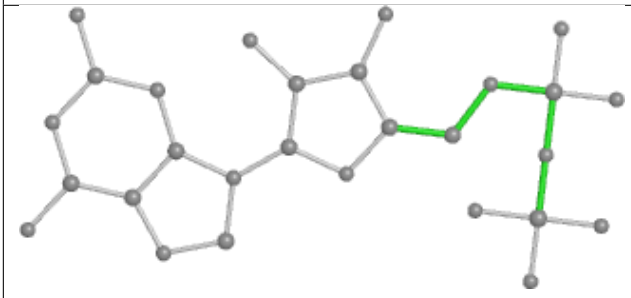

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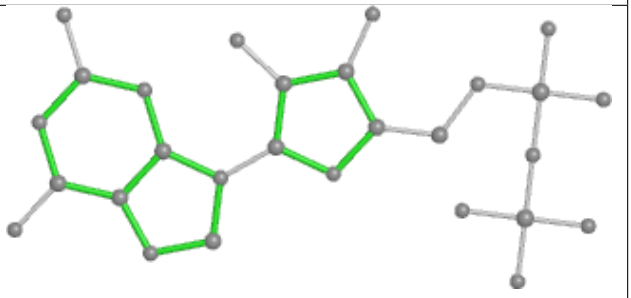
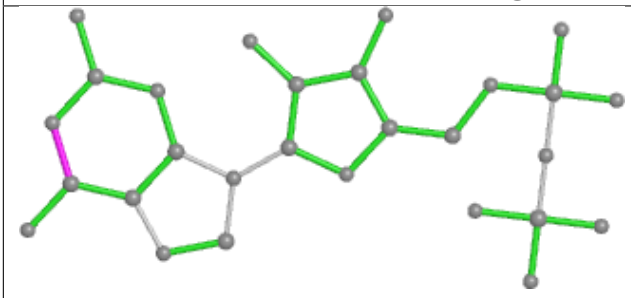


Rings

Ligand GDP BC 501



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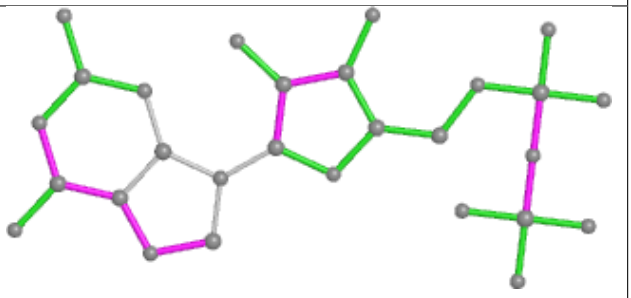
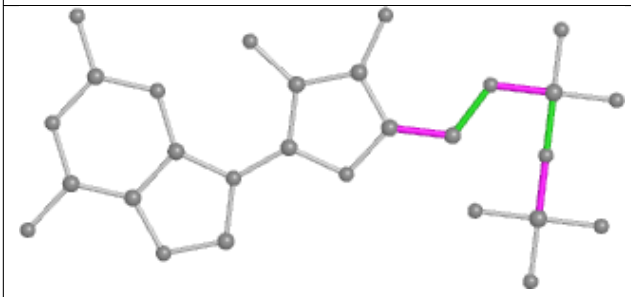


Bond angles



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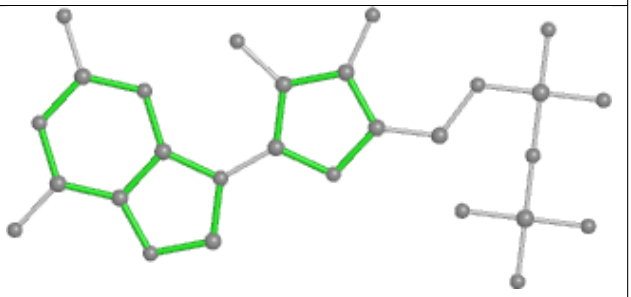
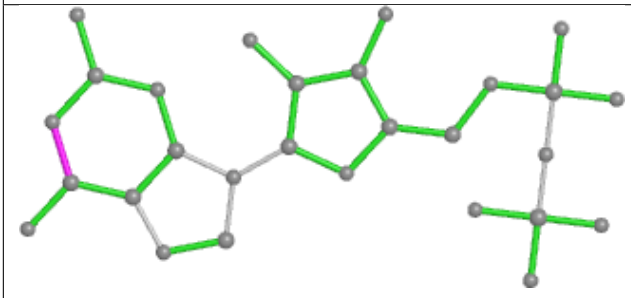


Rings

Ligand GDP IM 501



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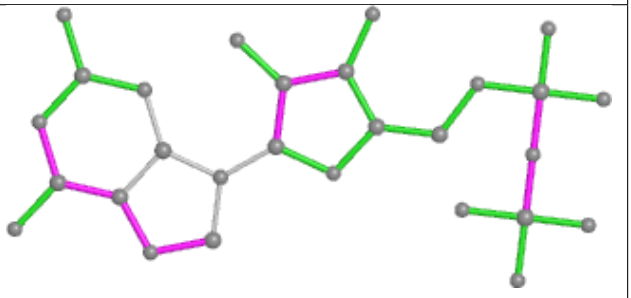
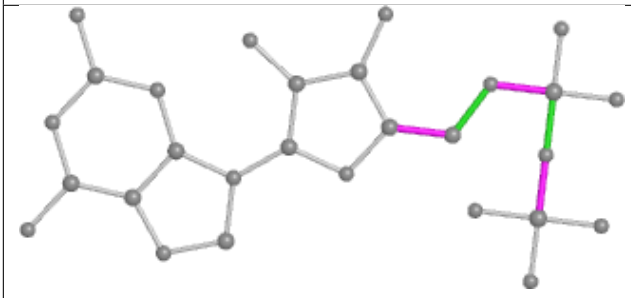


Bond angles



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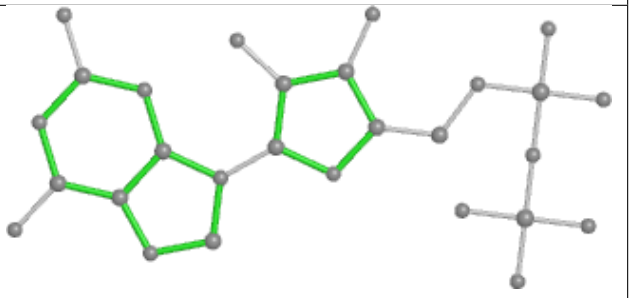
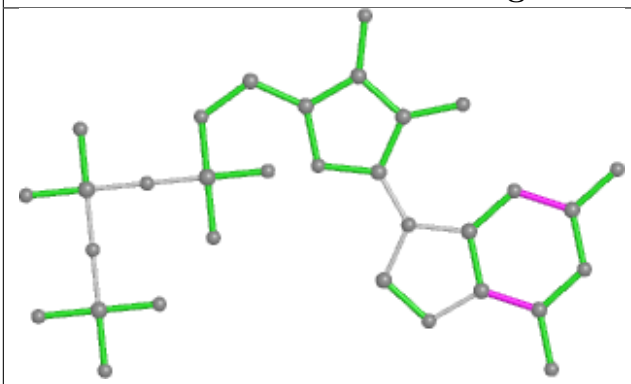


Rings

Ligand GTP GH 501



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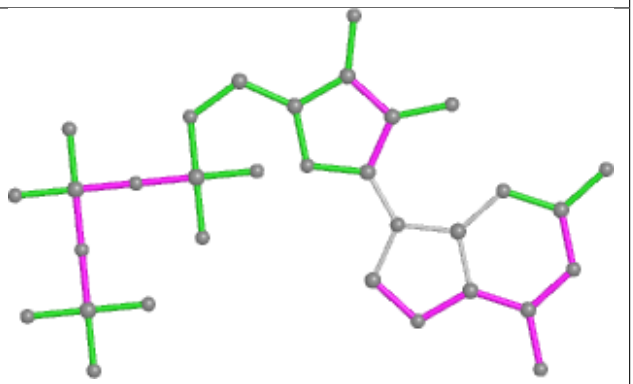
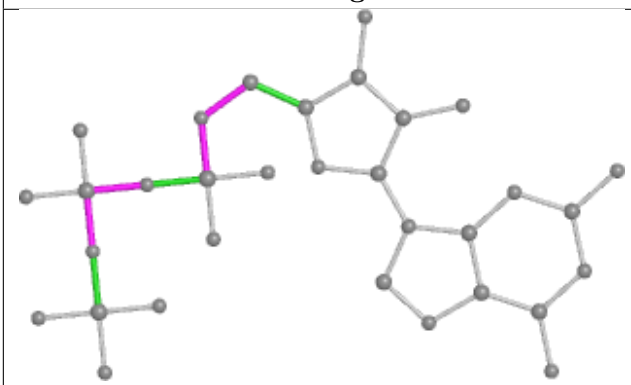


Bond angles



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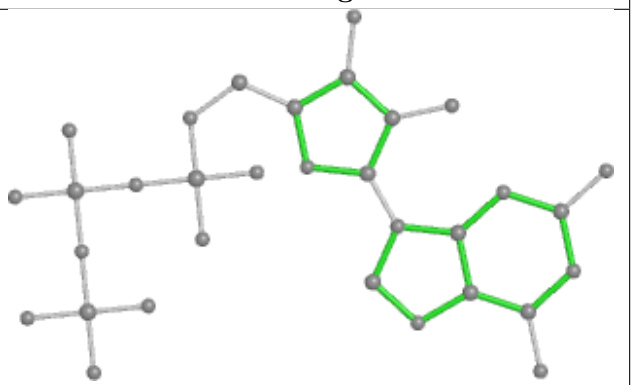
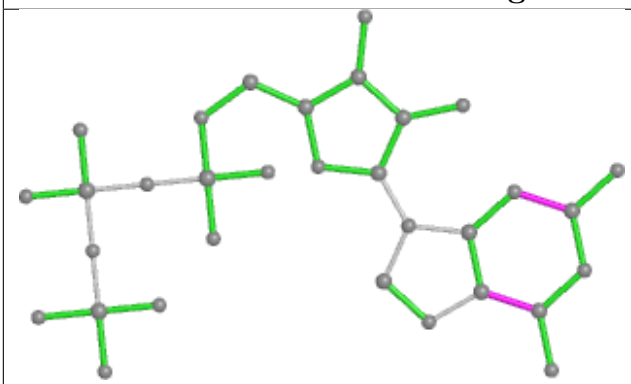


Rings

Ligand GTP ML 501



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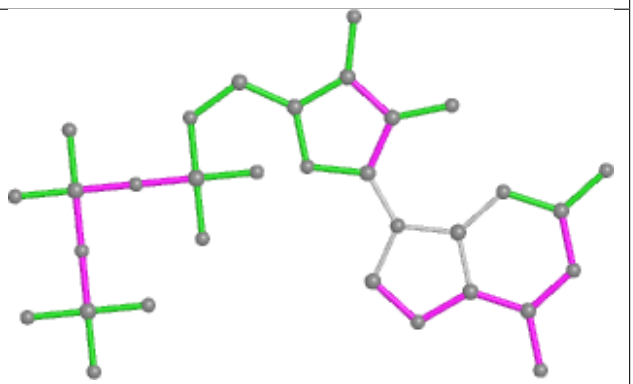
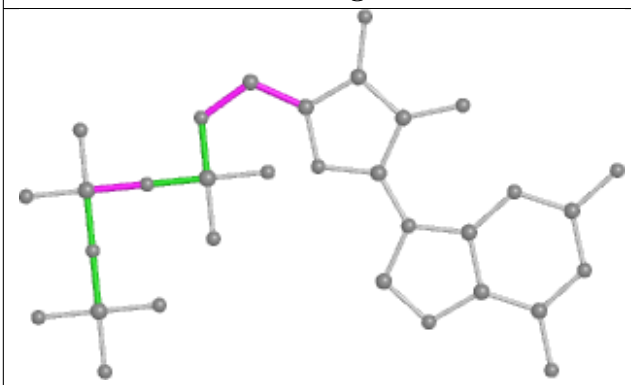


Bond angles



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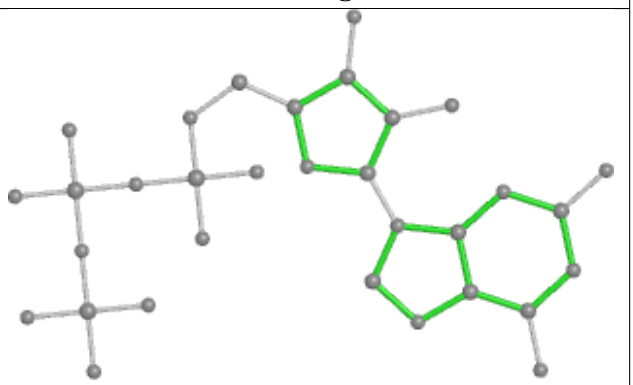
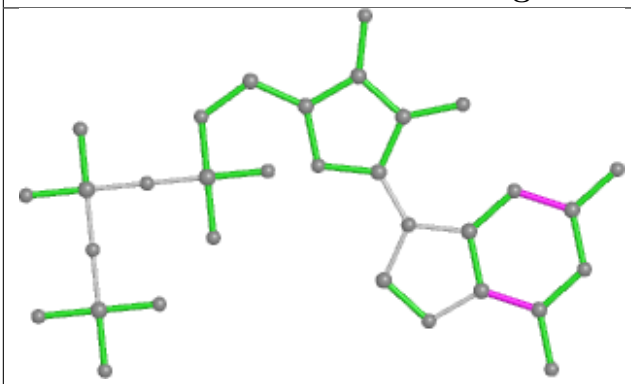


Rings

Ligand GTP AJ 501



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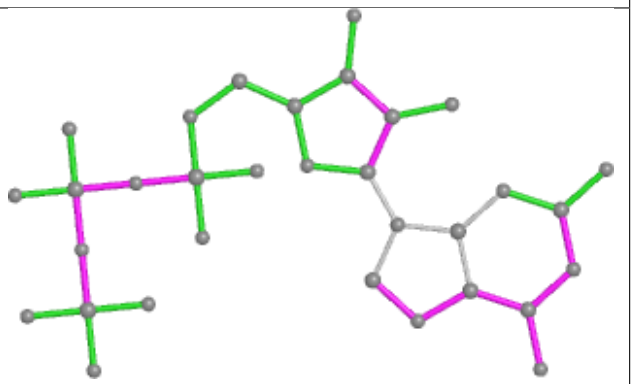
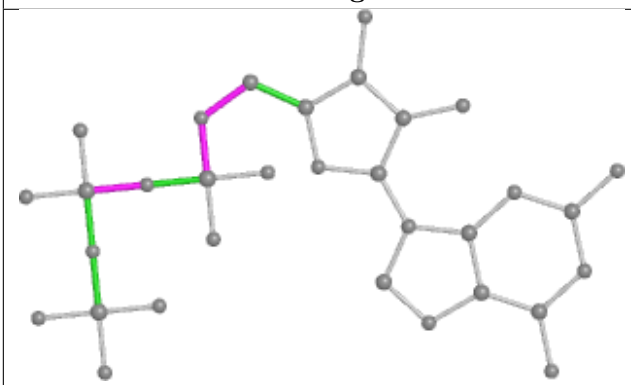


Bond angles



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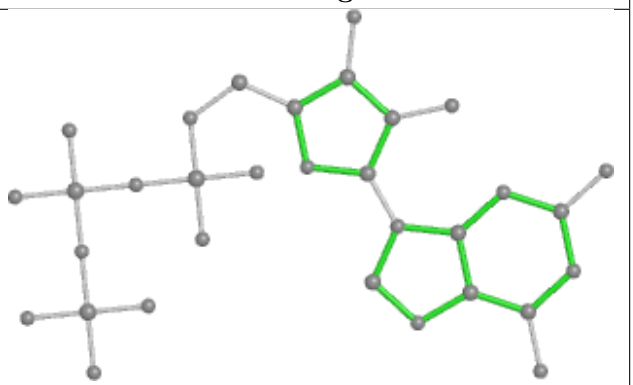
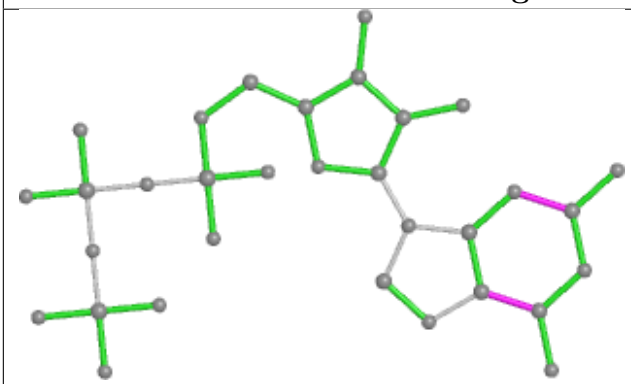


Rings

Ligand GTP FB 501



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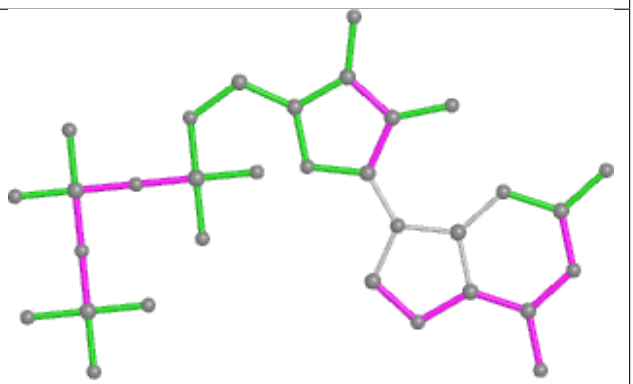
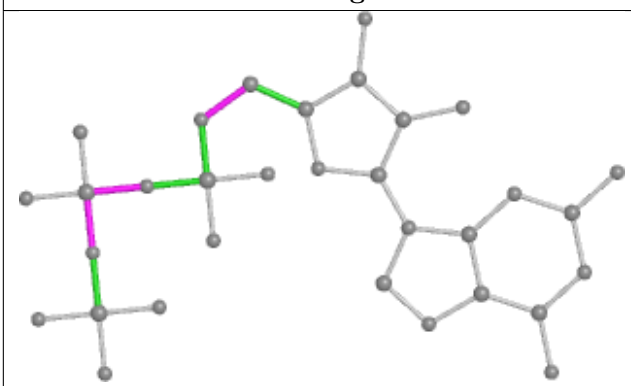


Bond angles



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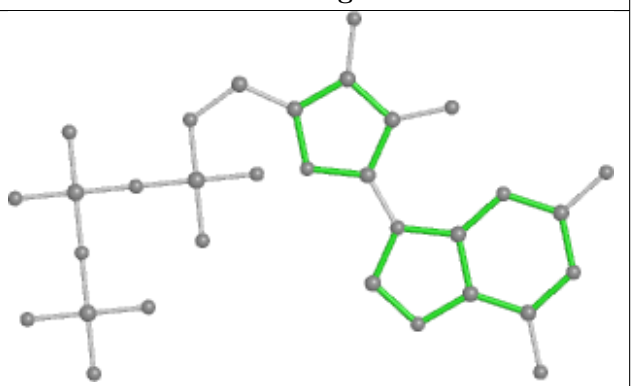
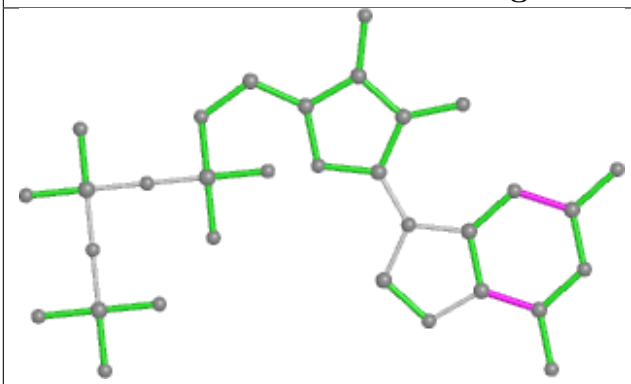


Rings

Ligand GTP HF 501



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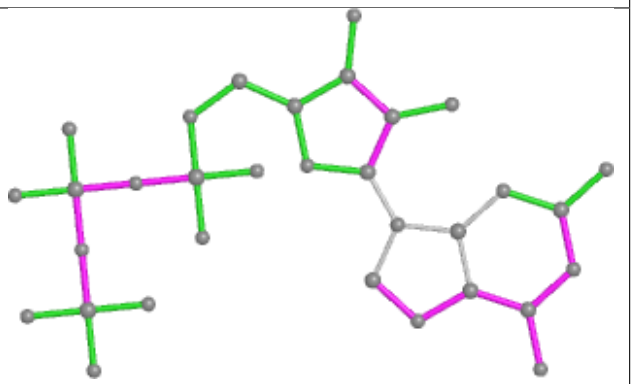
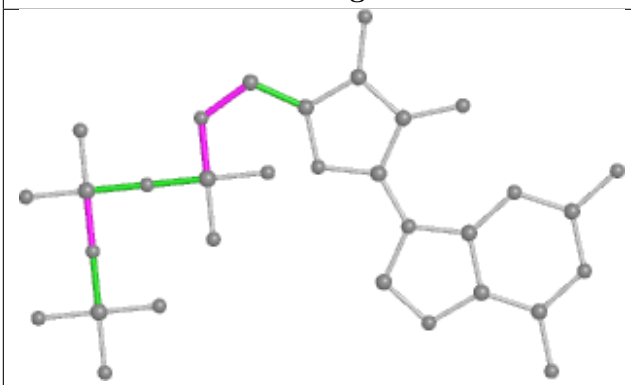


Bond angles



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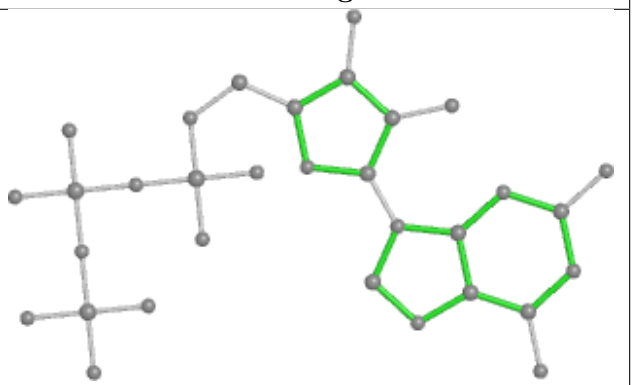
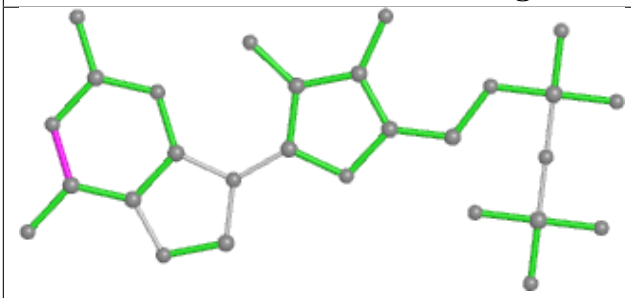
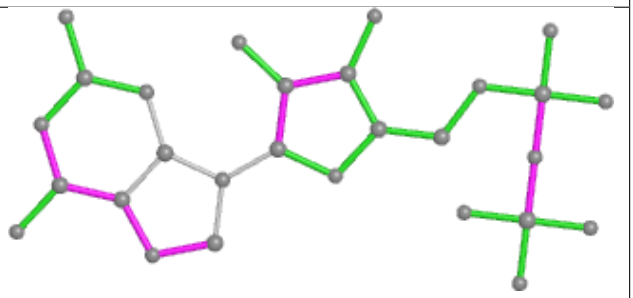


Rings

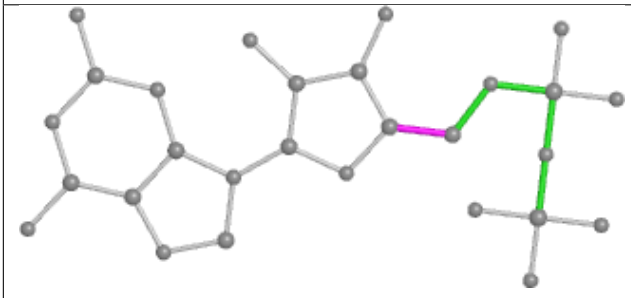
Ligand GDP DI 501



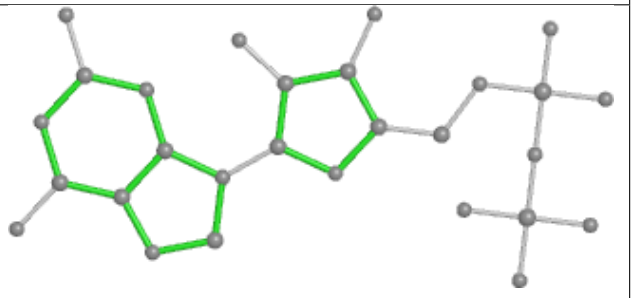
Bond lengths



Bond angles

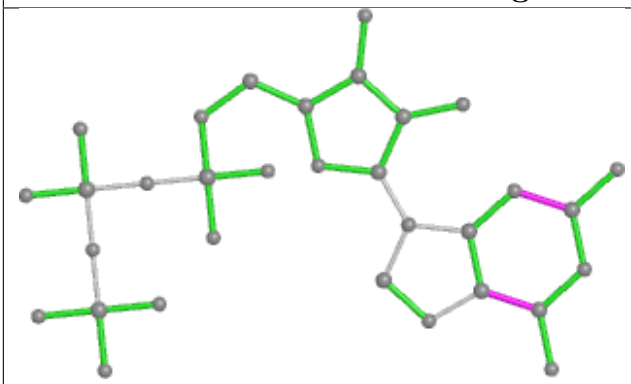


Torsions



Rings

Ligand GTP BF 501



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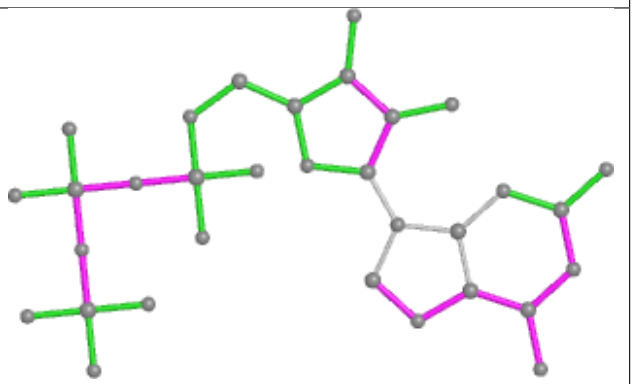
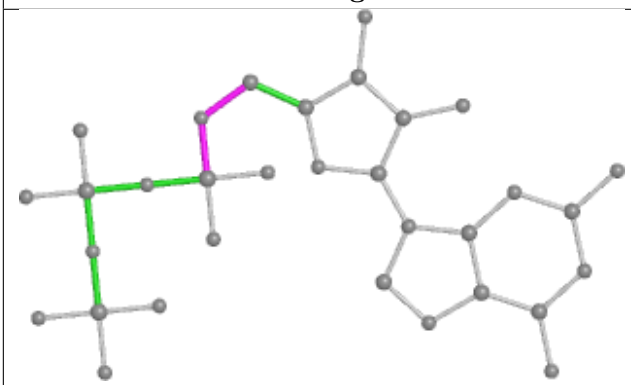


Bond angles



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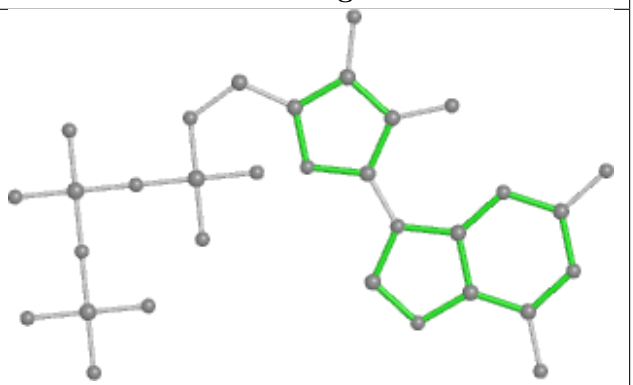
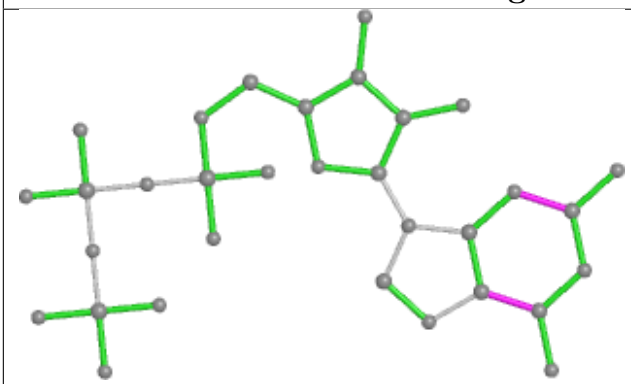


Rings

Ligand GTP AD 501



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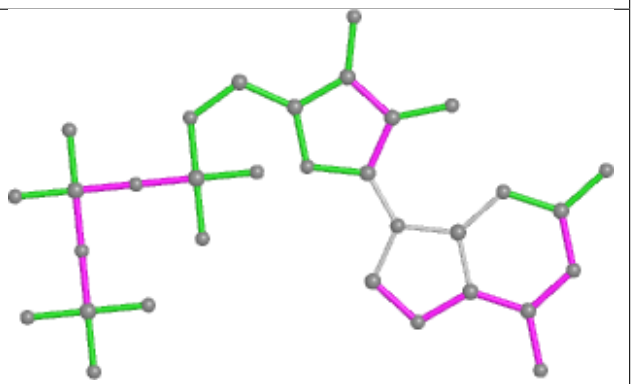
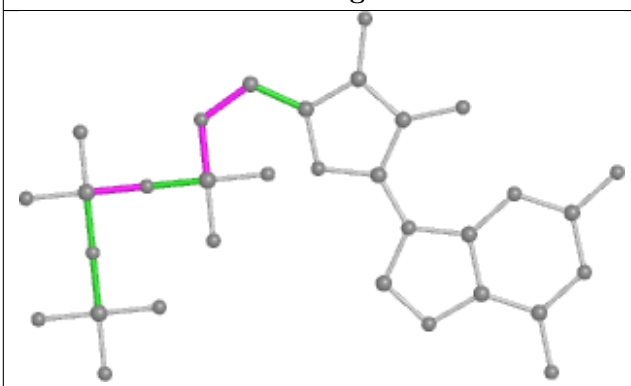


Bond angles



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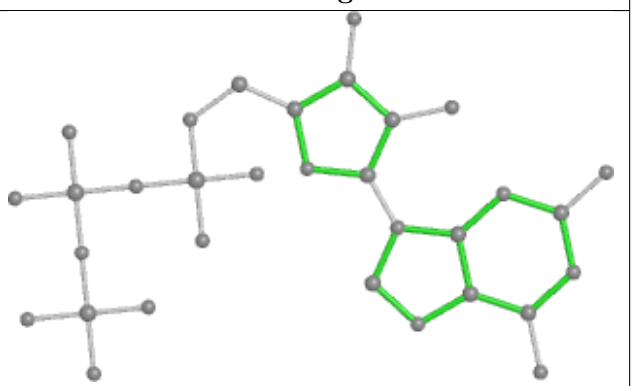
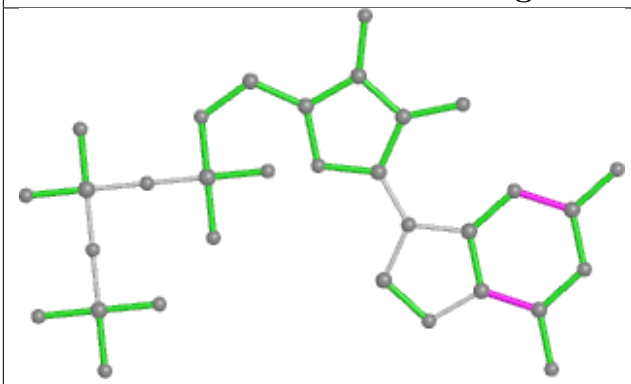


Rings

Ligand GTP HI 501



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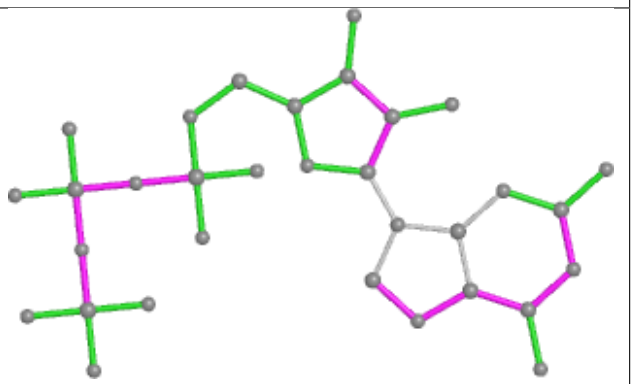
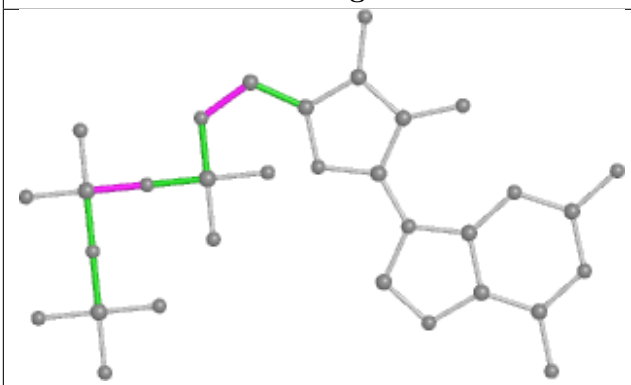
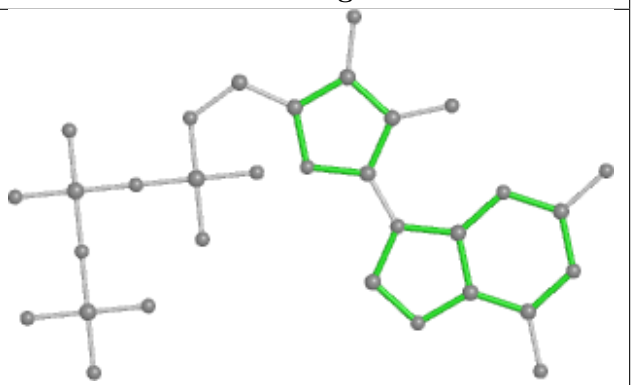


Bond angles

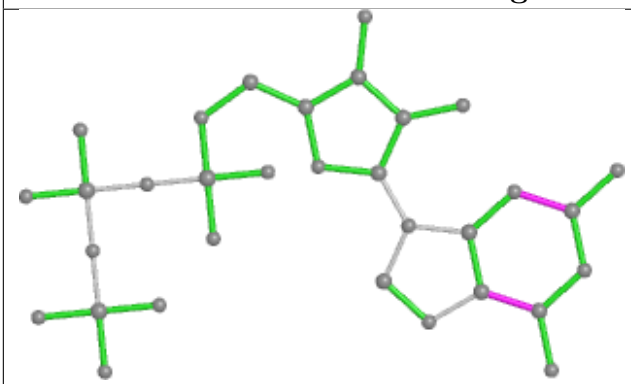


Torsions



Rings

Ligand GTP GF 501



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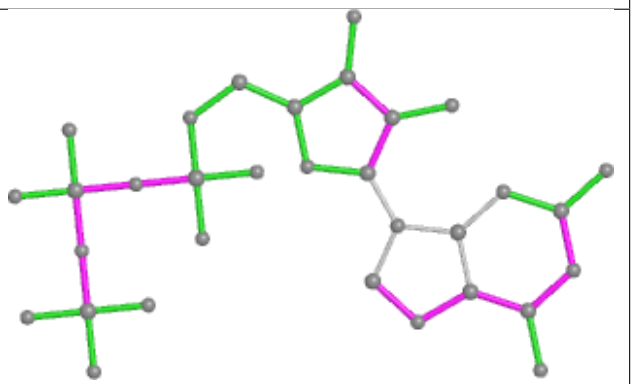
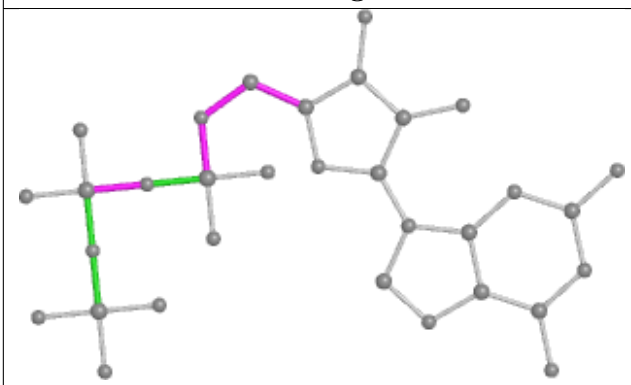


Bond angles



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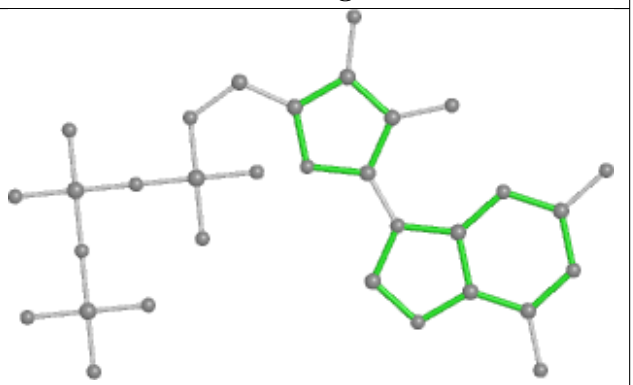
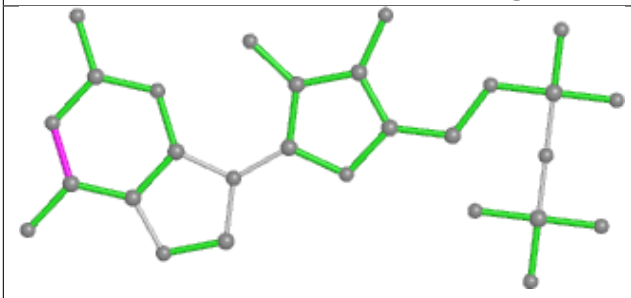
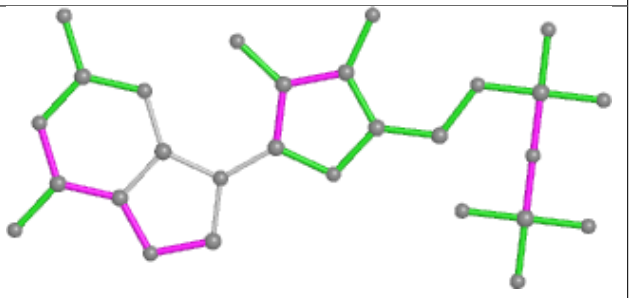
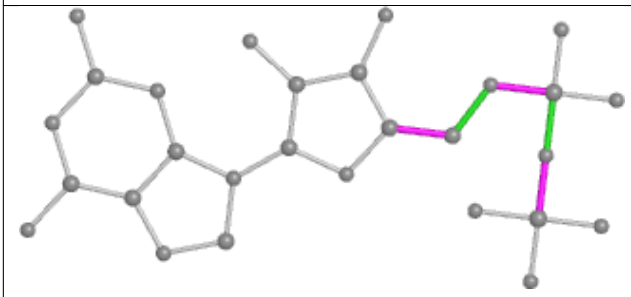
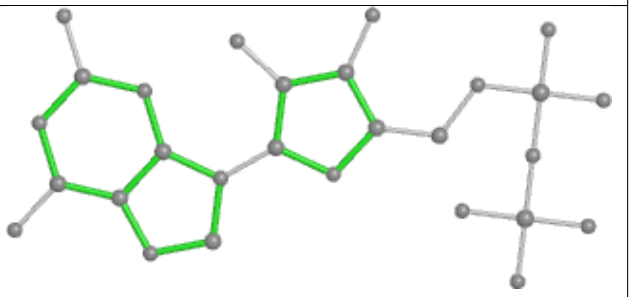
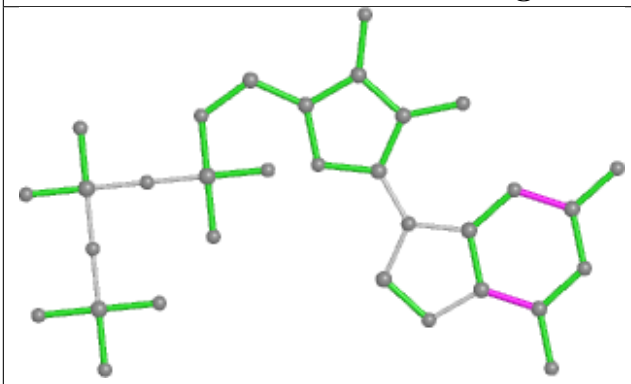
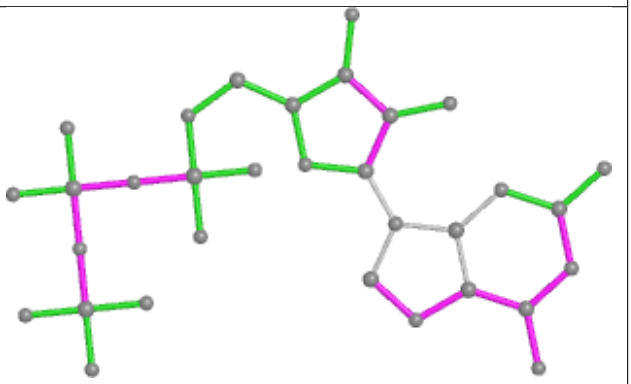
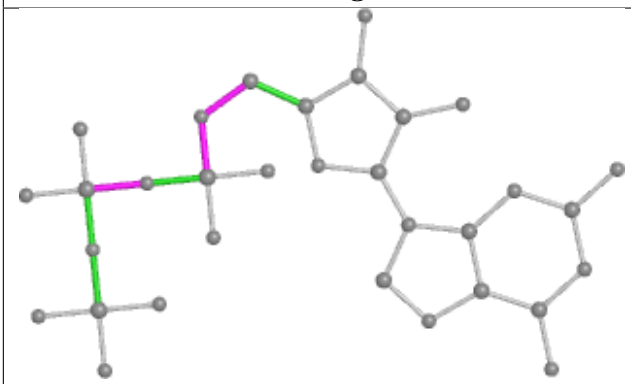
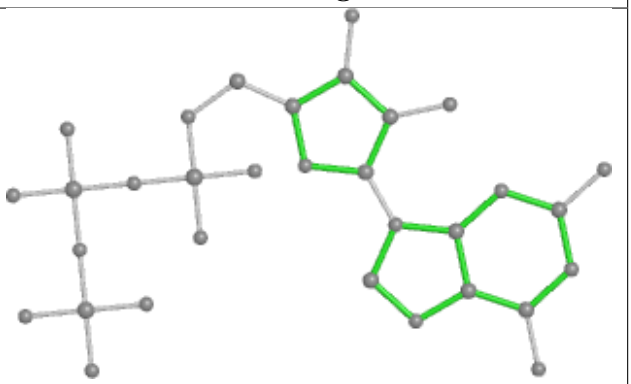
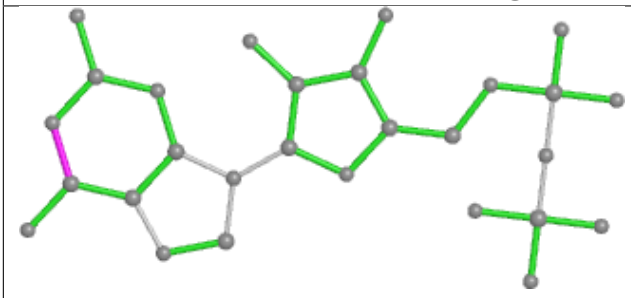


Rings

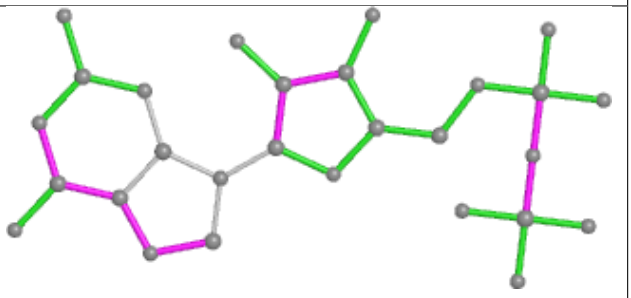
Ligand GDP BA 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GTP IH 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

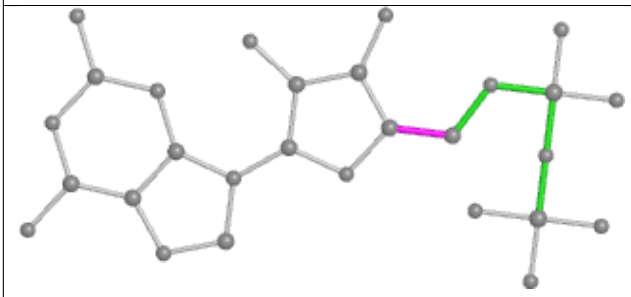
Ligand GDP HK 501



Bond lengths



Bond angles



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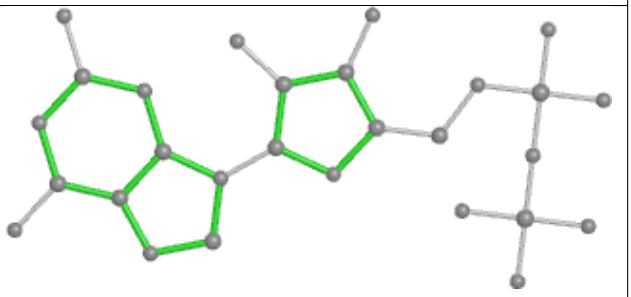
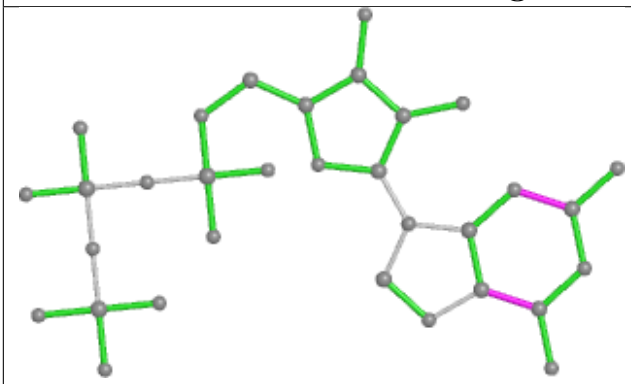


Rings

Ligand GTP CH 501



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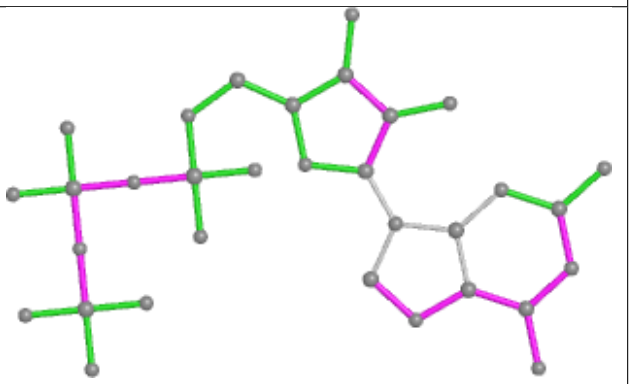
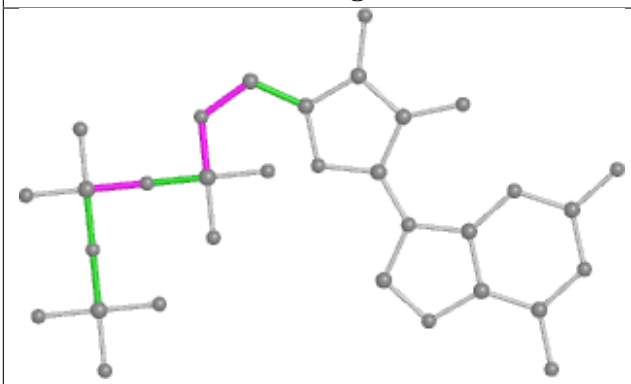
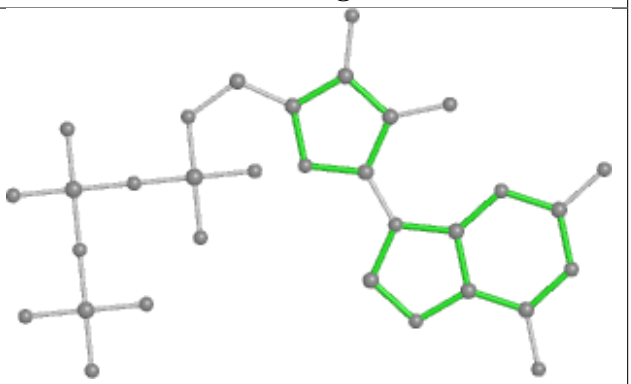


Bond angles

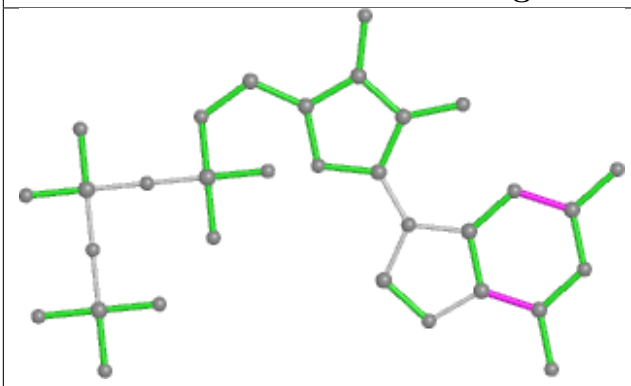


Torsions



Rings

Ligand GTP EL 501



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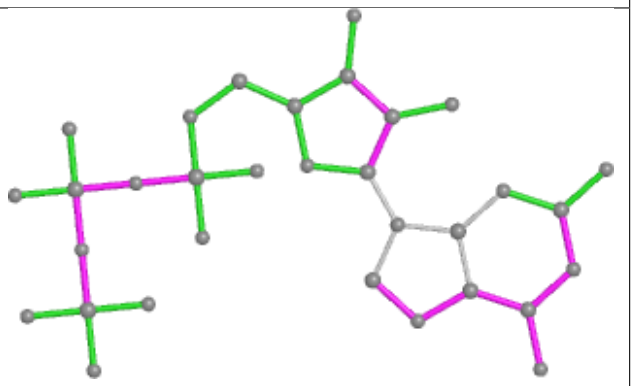
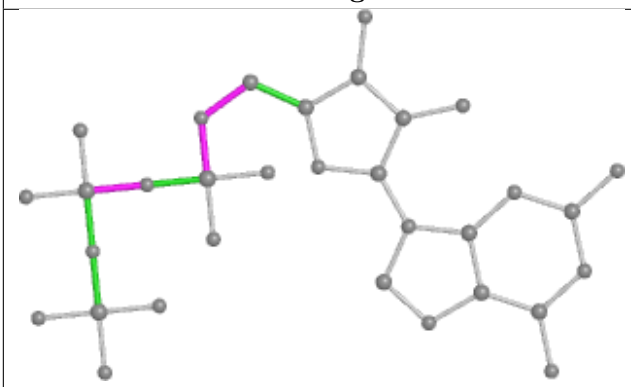


Bond angles



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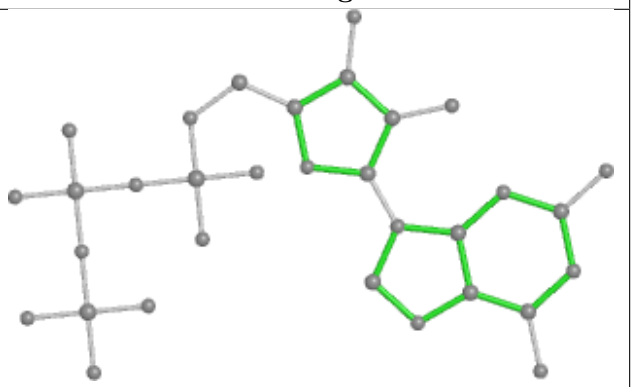
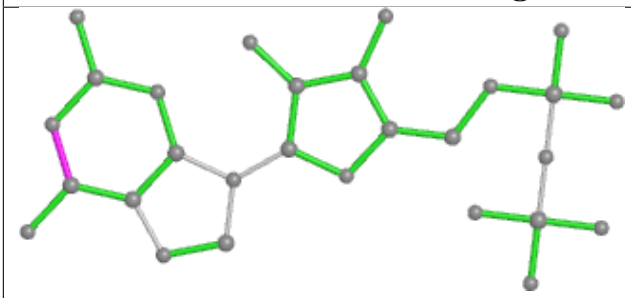


Rings

Ligand GDP FE 501



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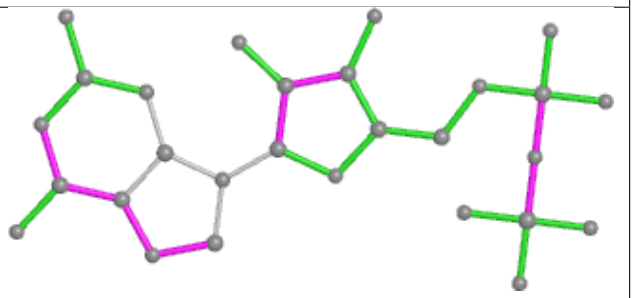
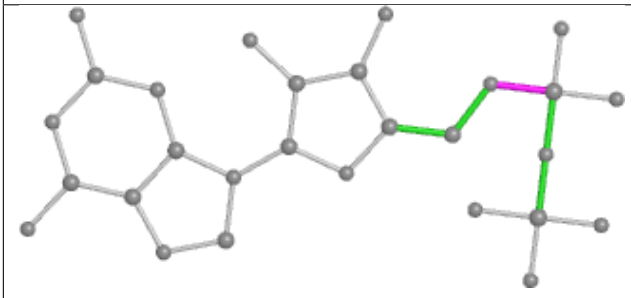
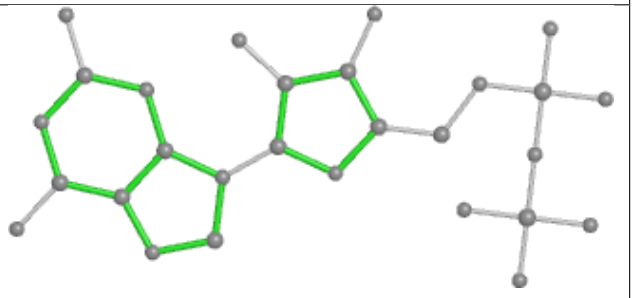


Bond angles

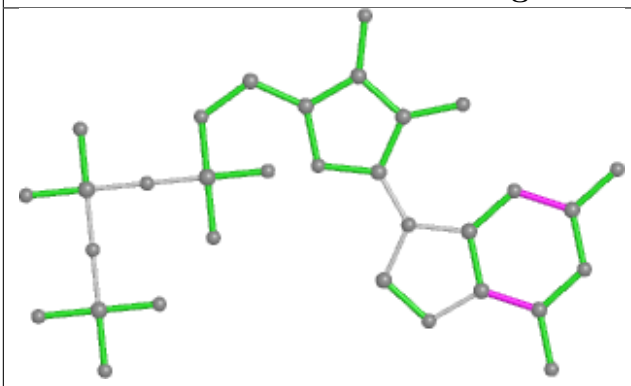


Torsions



Rings

Ligand GTP AL 501



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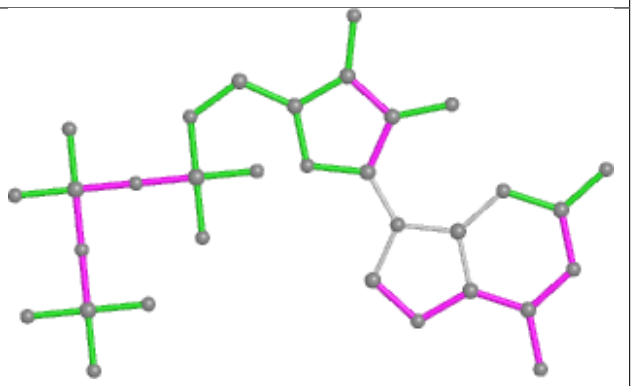
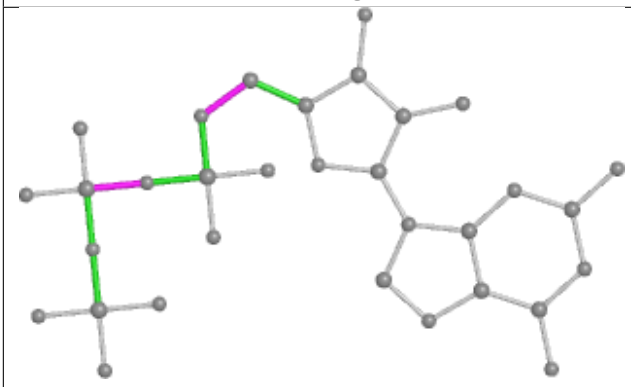


Bond angles



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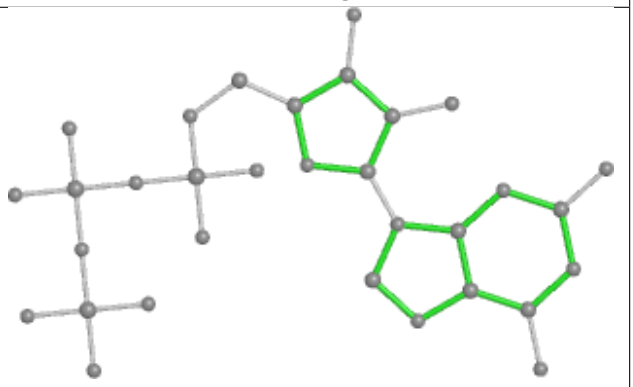
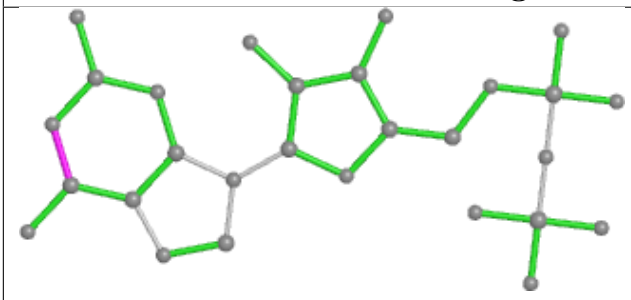


Rings

Ligand GDP BE 501



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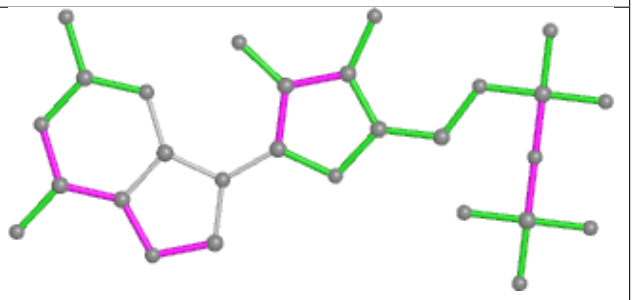
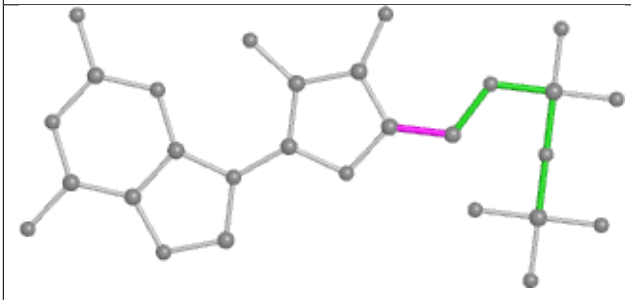


Bond angles



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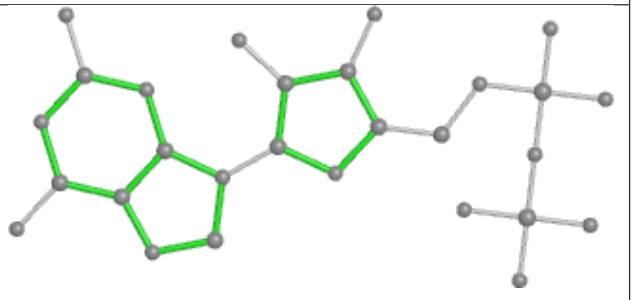
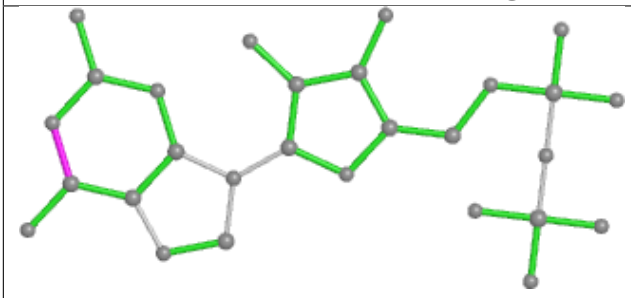


Rings

Ligand GDP MK 501



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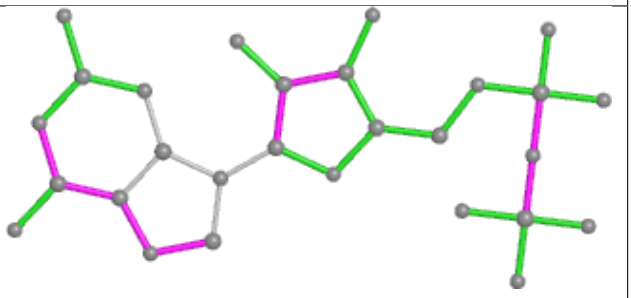
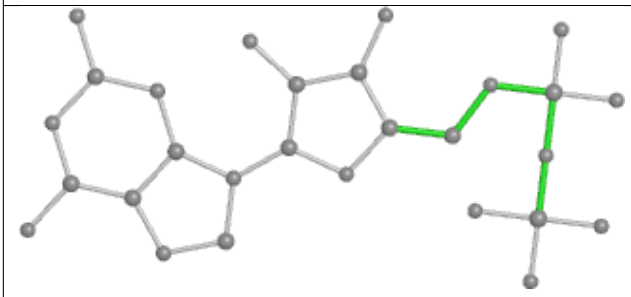
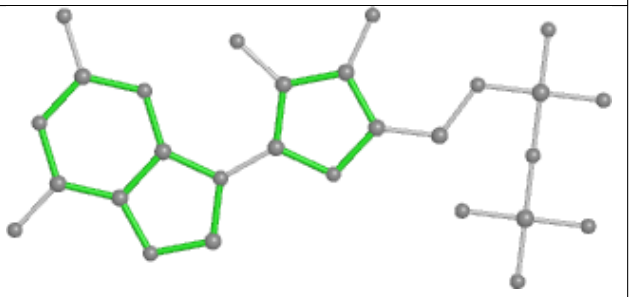


Bond angles

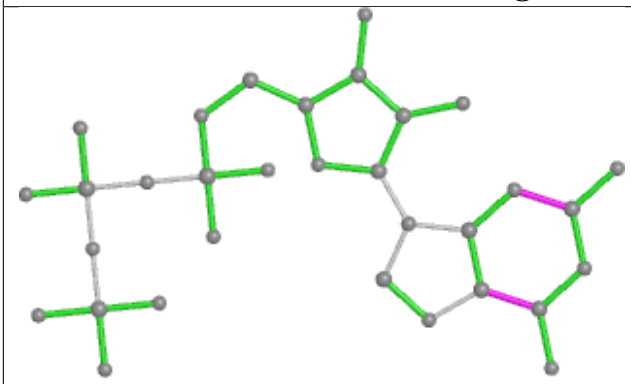


Torsions



Rings

Ligand GTP JB 501



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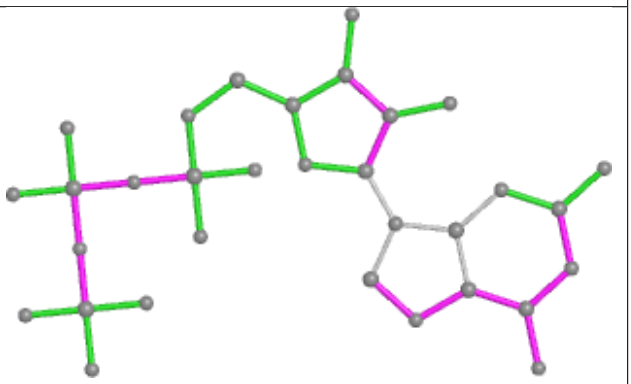
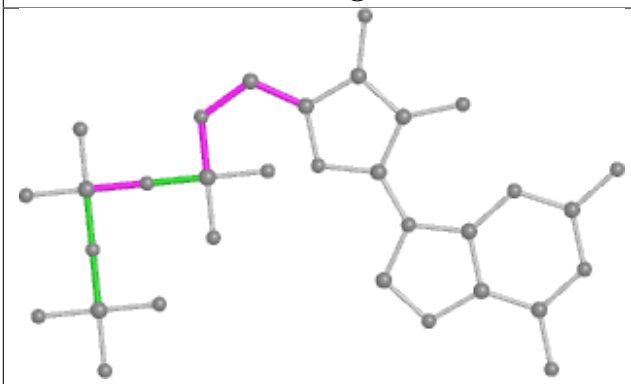
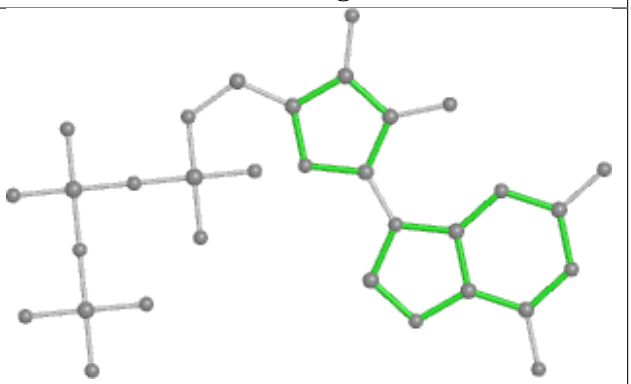


Bond angles

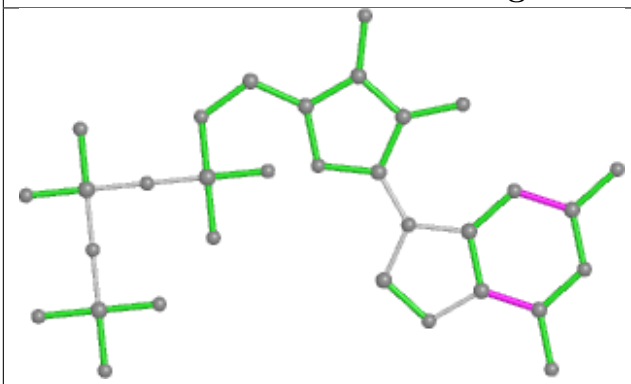


Torsions

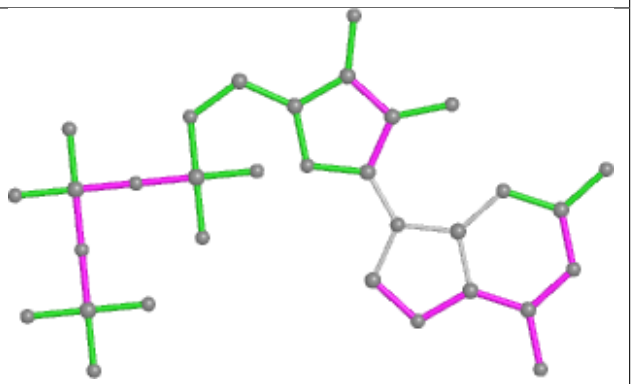


Rings

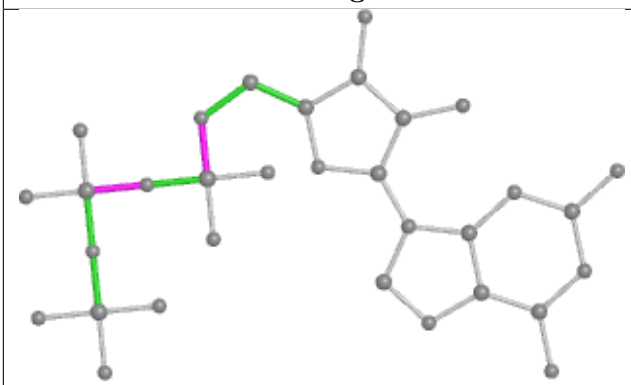
Ligand GTP KD 501



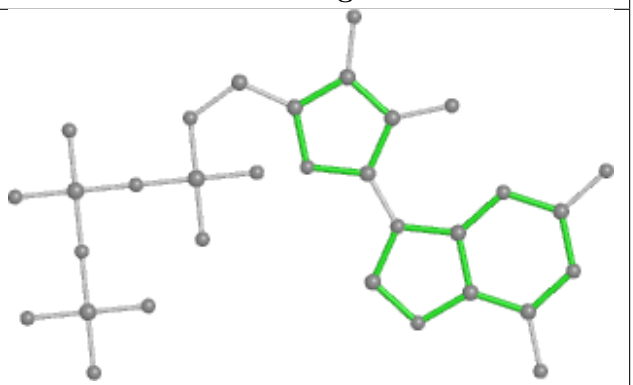
Bond lengths



Bond angles

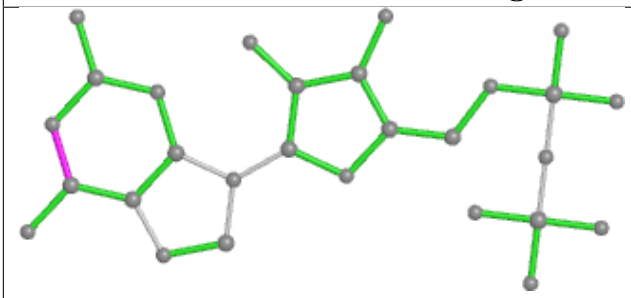


Torsions



Rings

Ligand GDP KC 501



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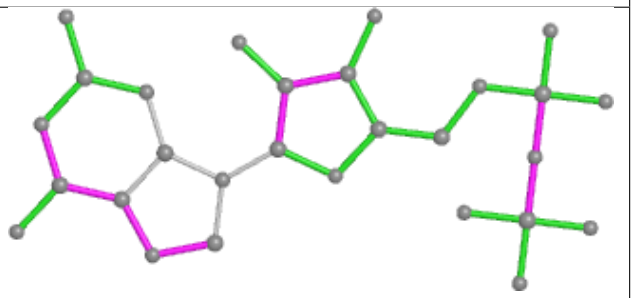

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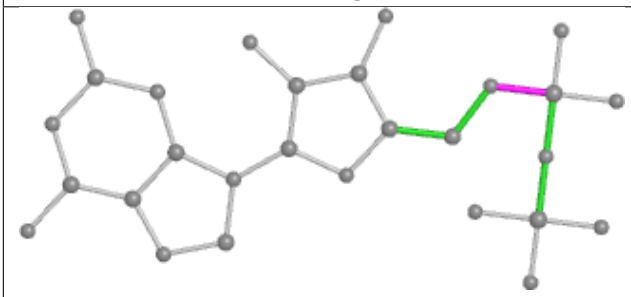

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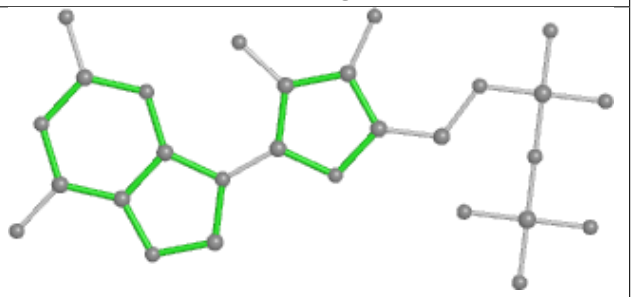
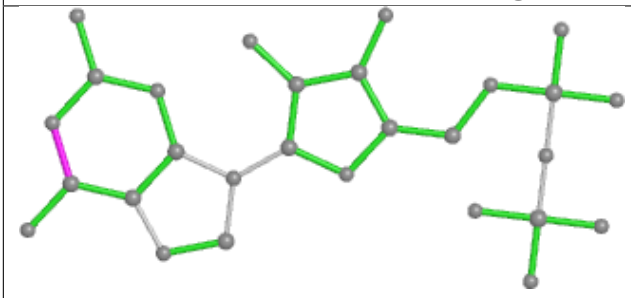


Rings

Ligand GDP FG 501



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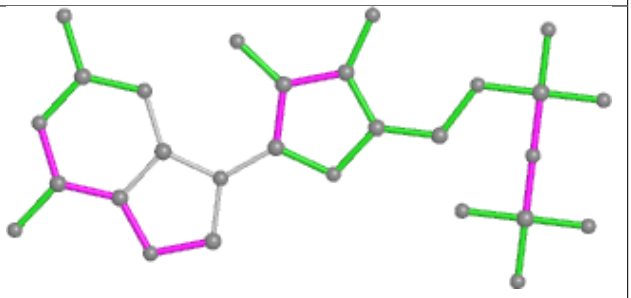
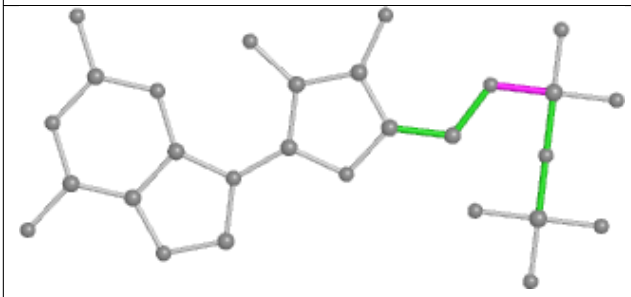


Bond angles



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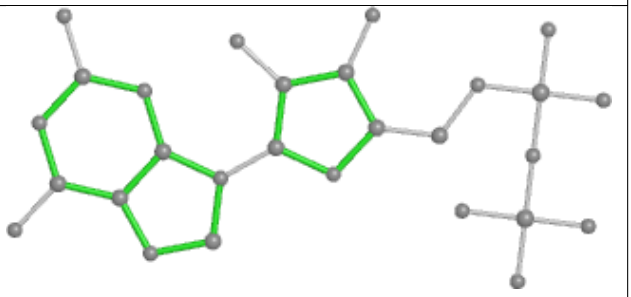
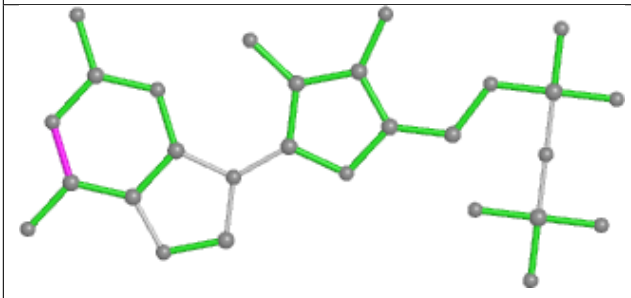


Rings

Ligand GDP GI 501



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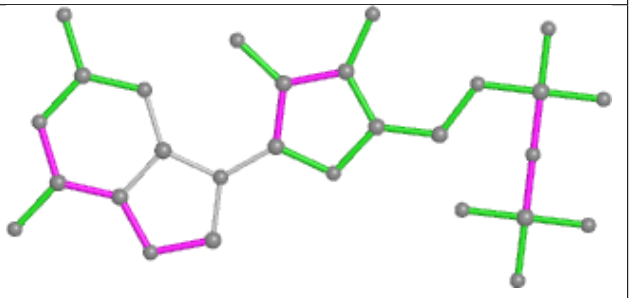

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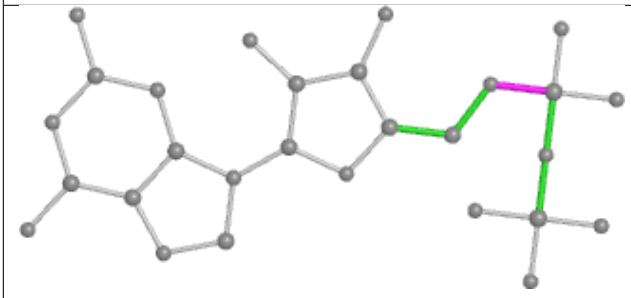

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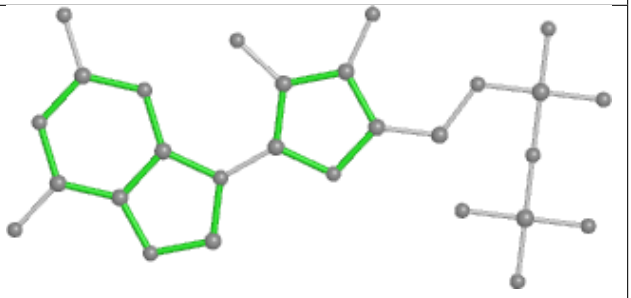
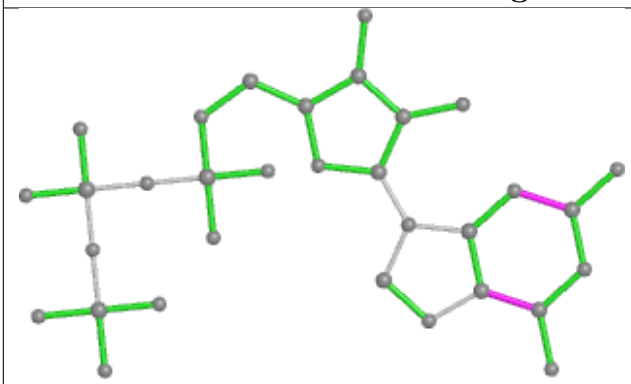


Rings

Ligand GTP GL 501



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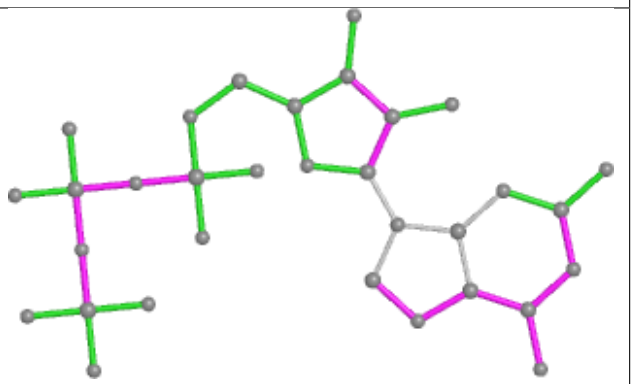

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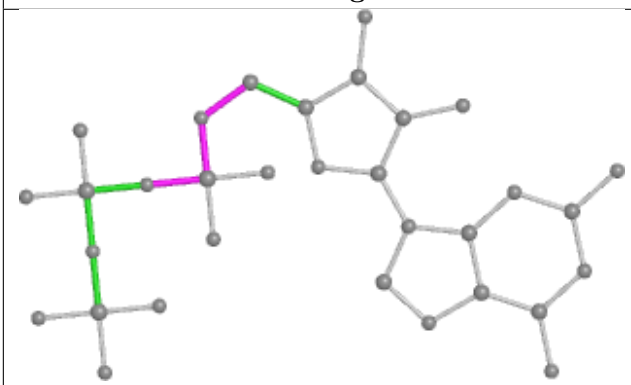

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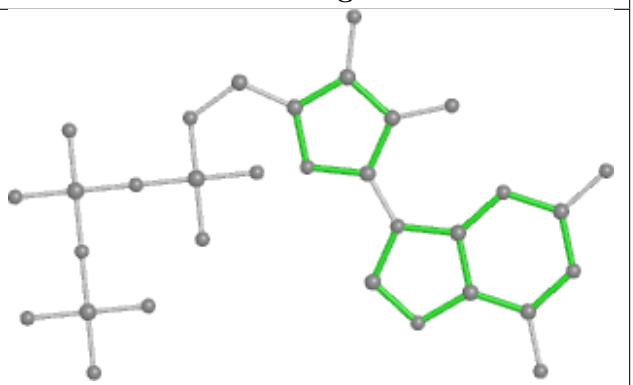
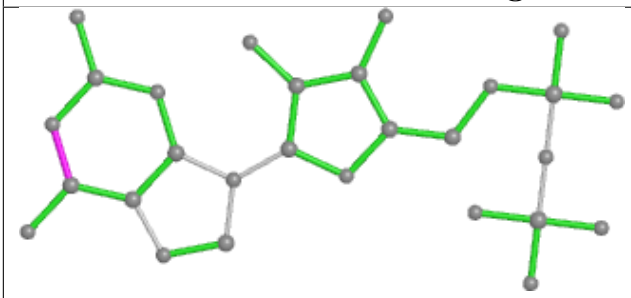


Rings

Ligand GDP KG 501



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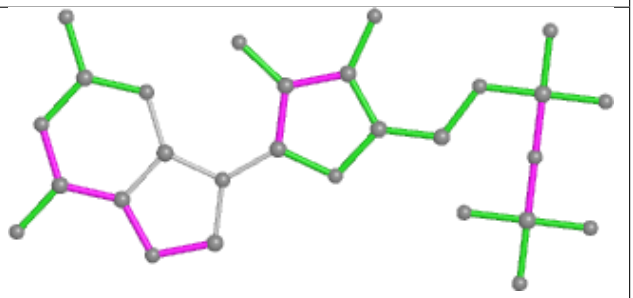

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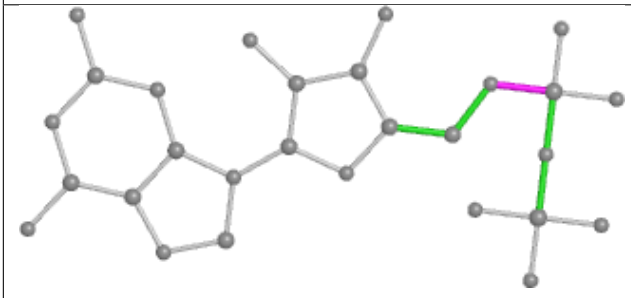

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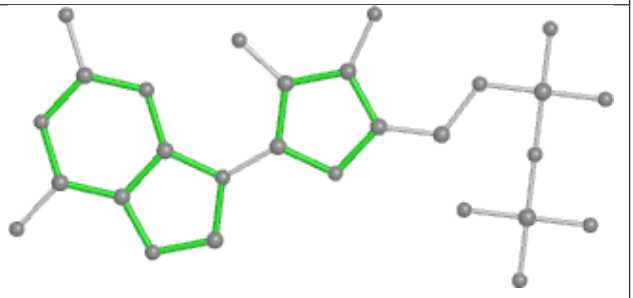
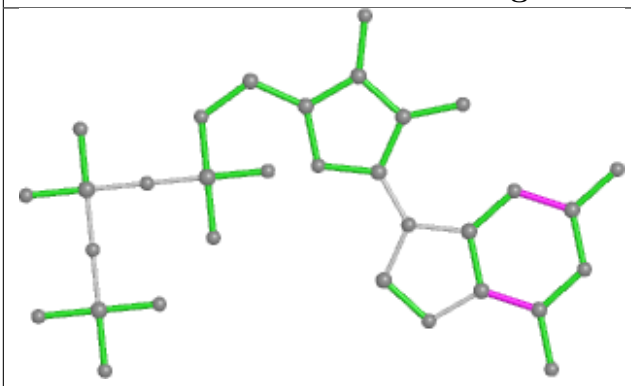


Rings

Ligand GTP FD 501



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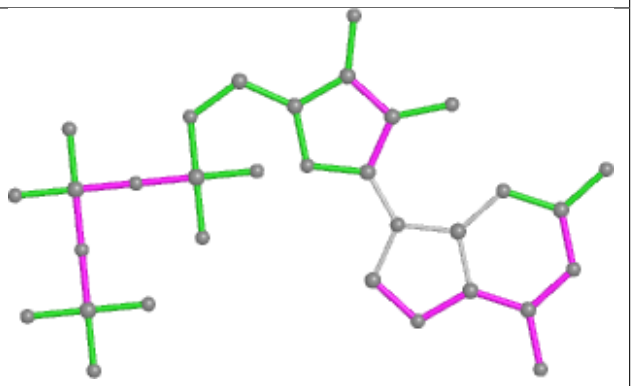

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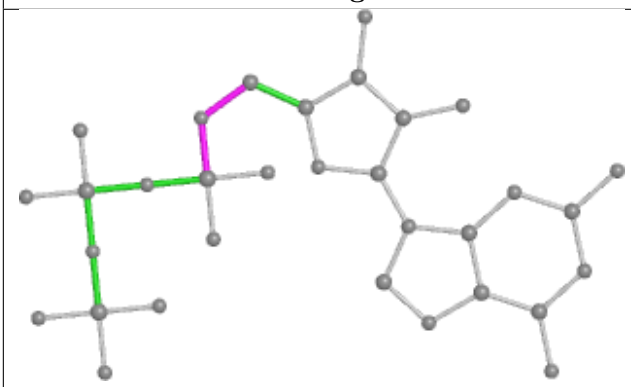

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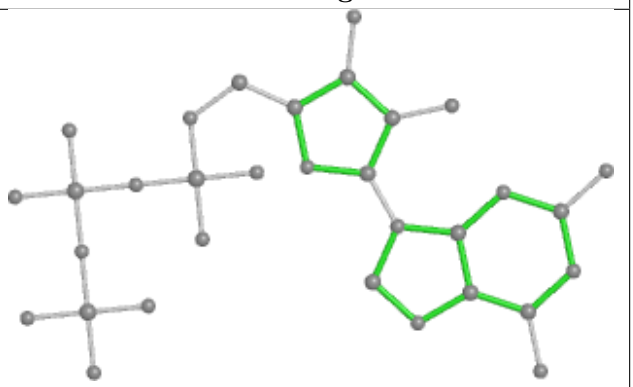
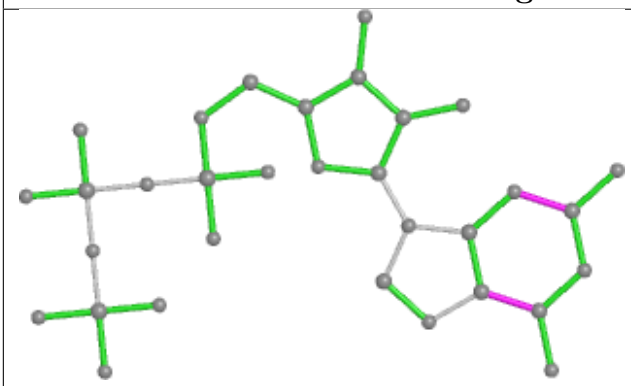


Rings

Ligand GTP LJ 501



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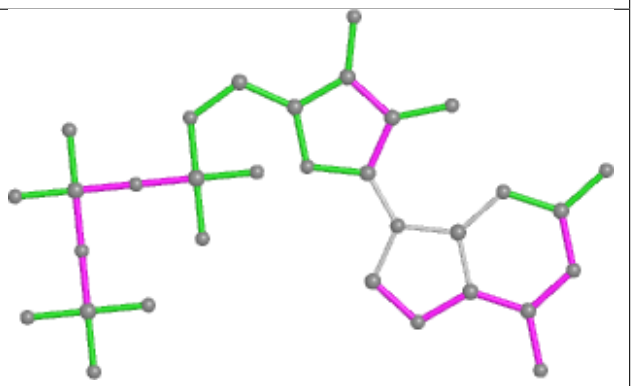

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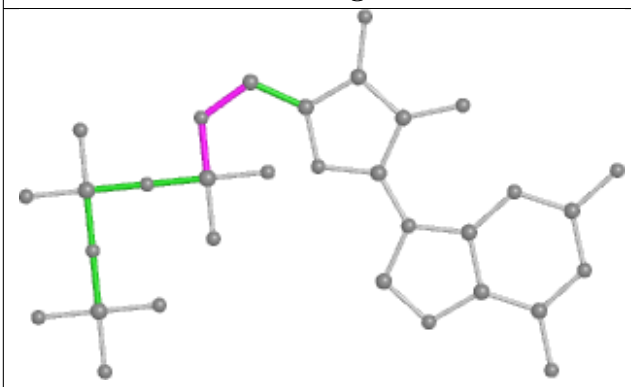

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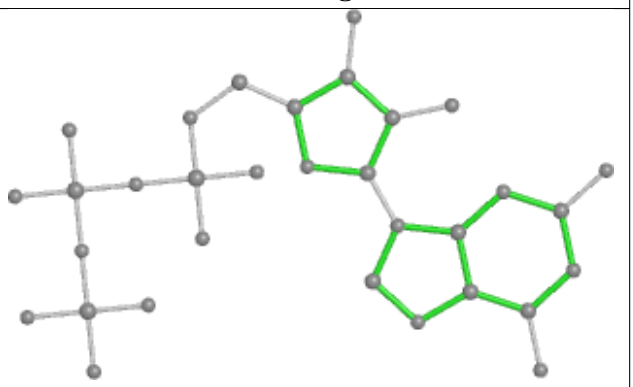
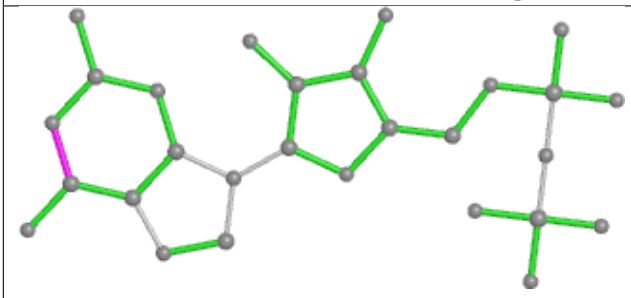


Rings

Ligand GDP EA 501



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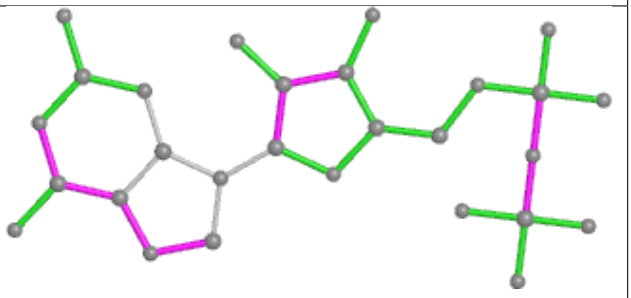
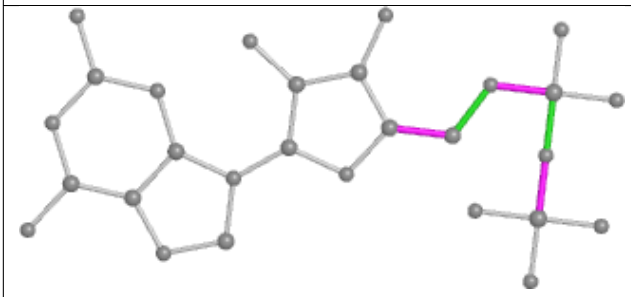


Bond angles



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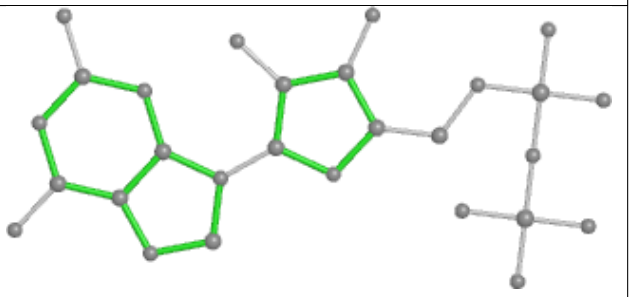
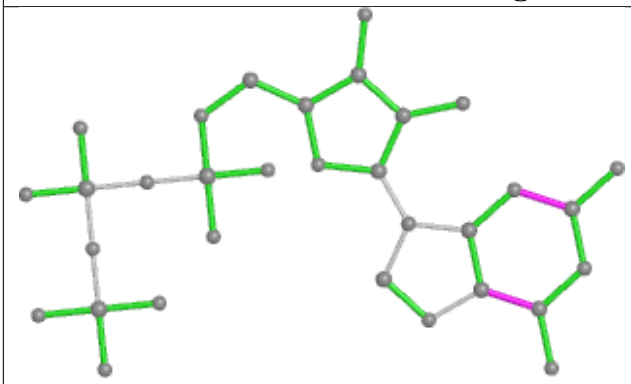


Rings

Ligand GTP LB 501



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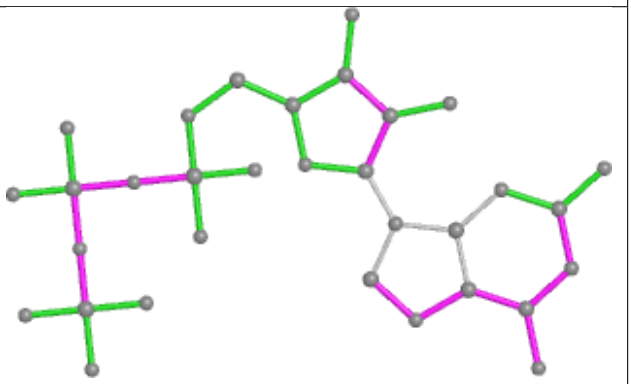
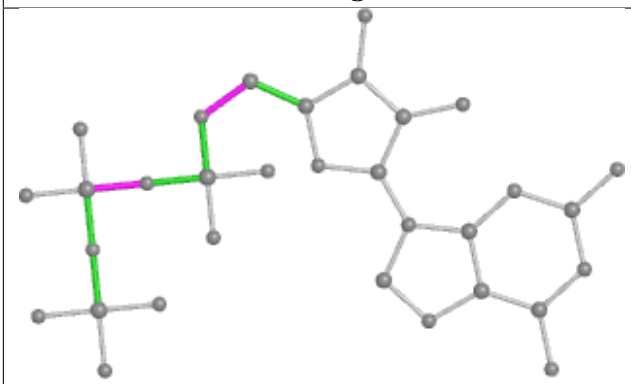


Bond angles



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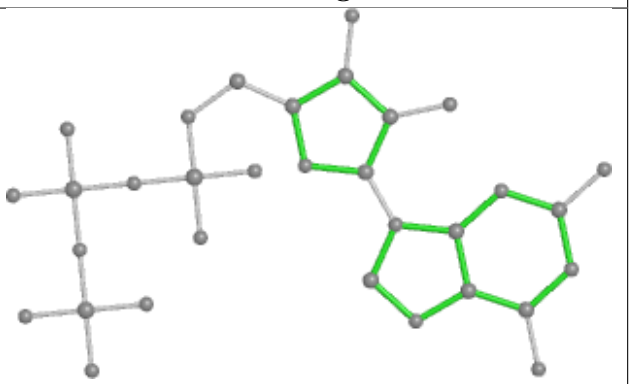
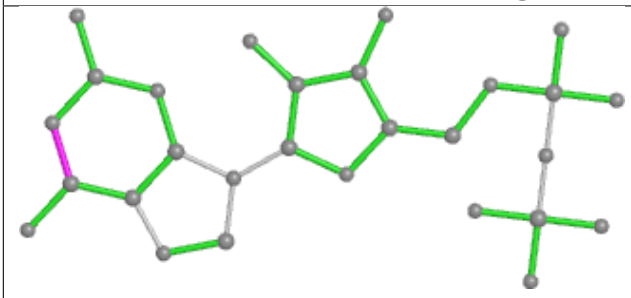
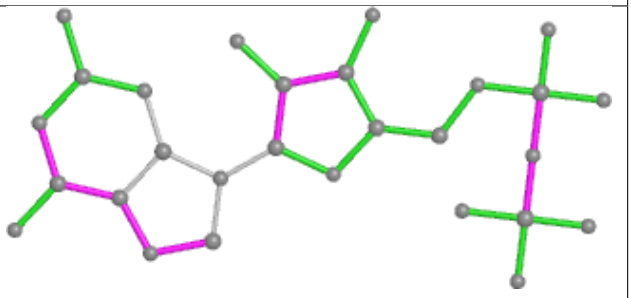
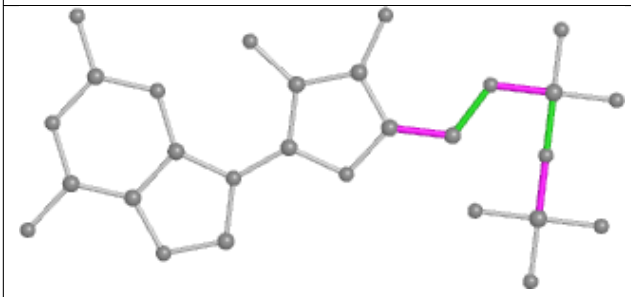
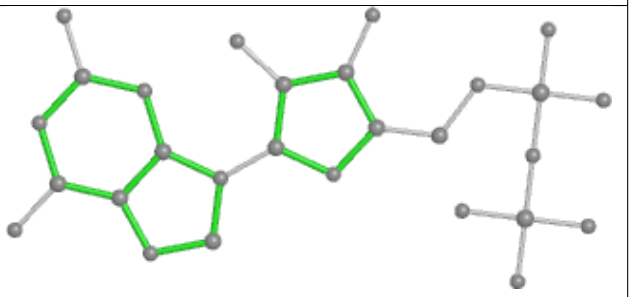
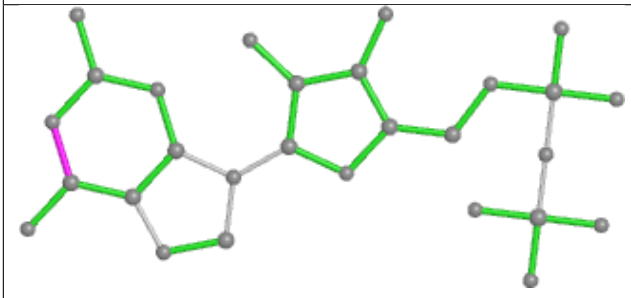
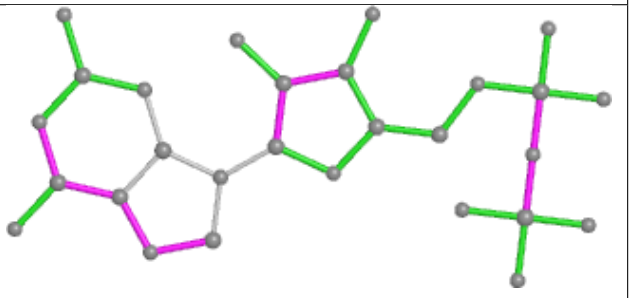
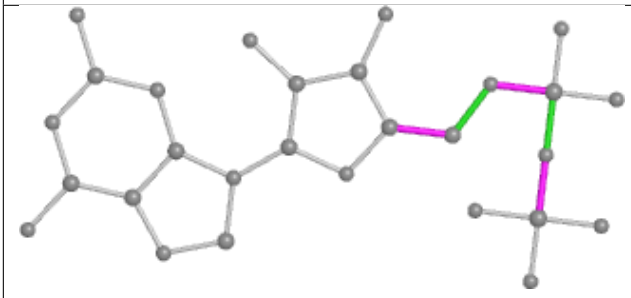
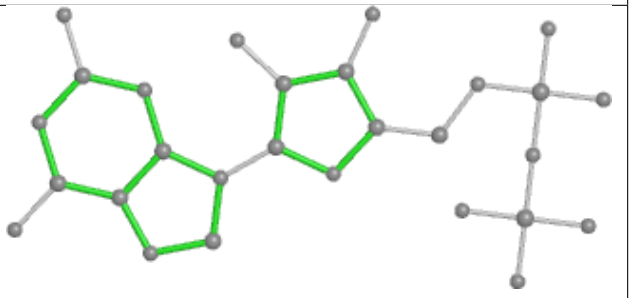
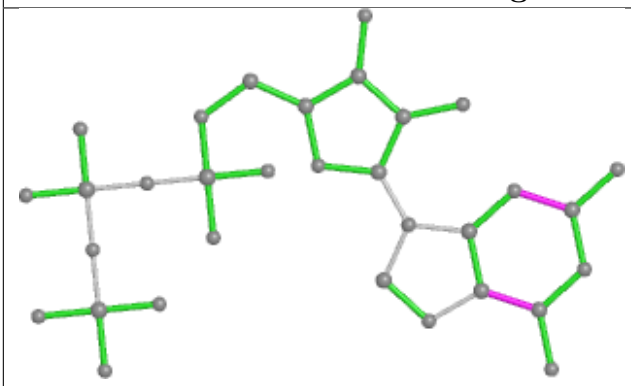


Rings

Ligand GDP KI 502	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GDP CK 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GTP BB 501



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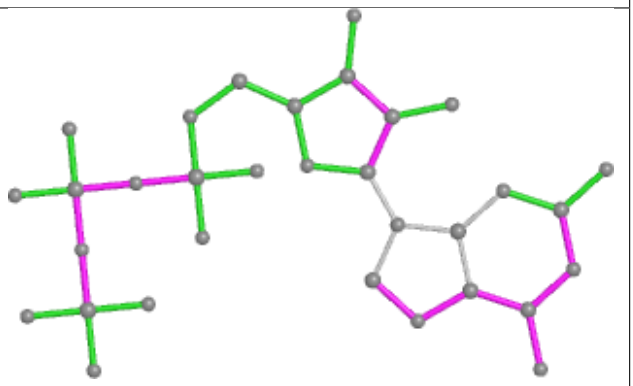
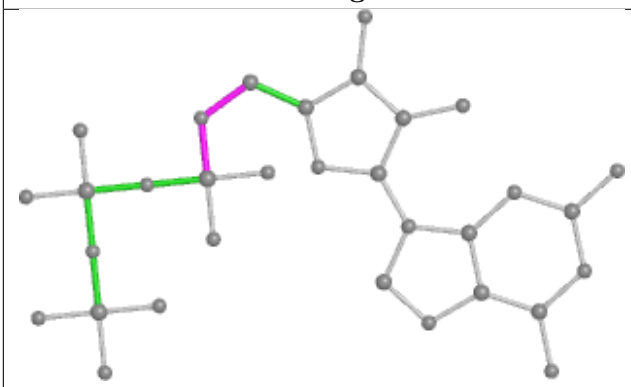
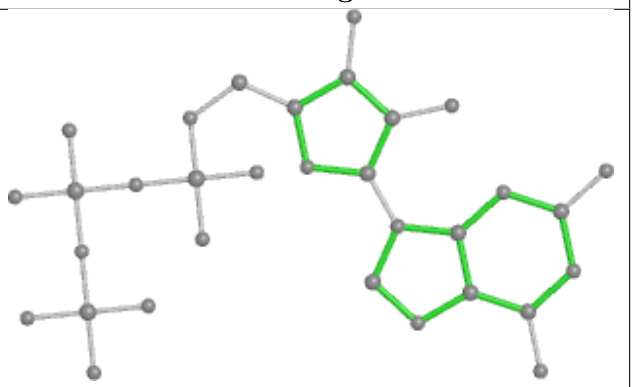


Bond angles

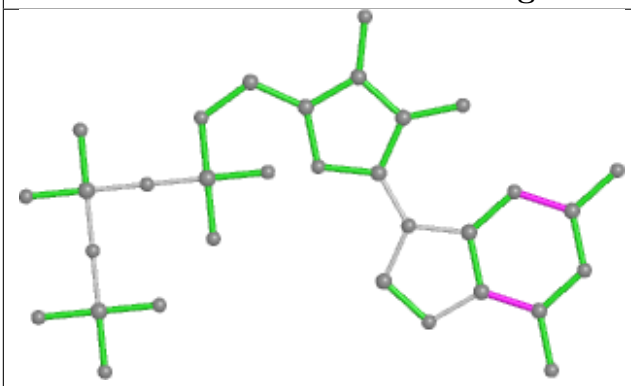


Torsions



Rings

Ligand GTP IF 501



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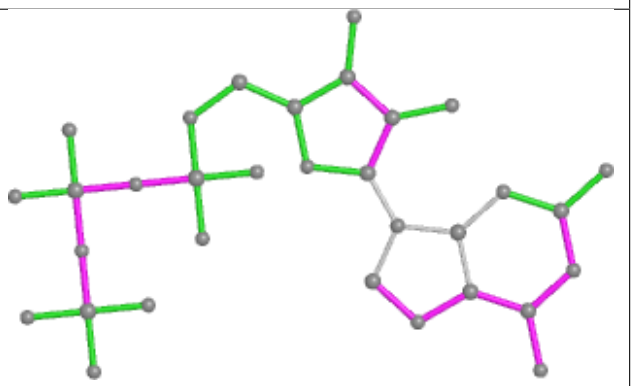
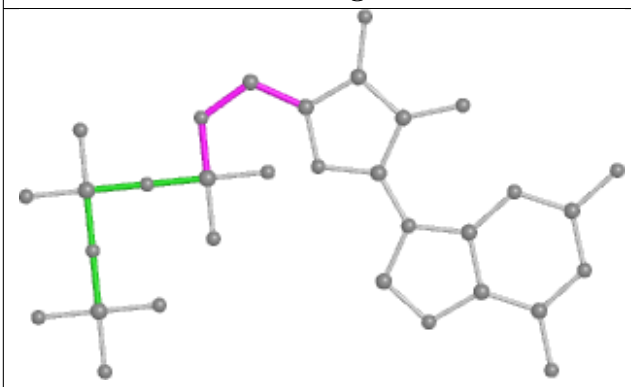


Bond angles



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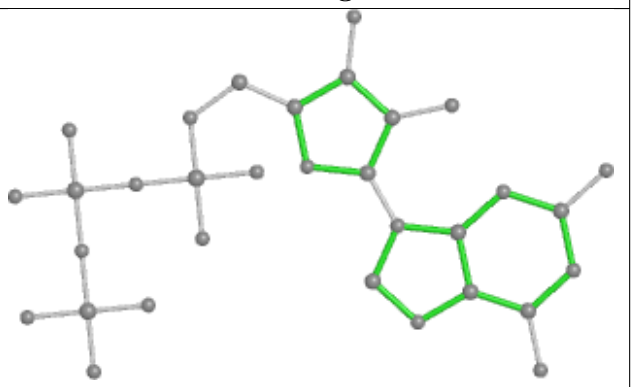
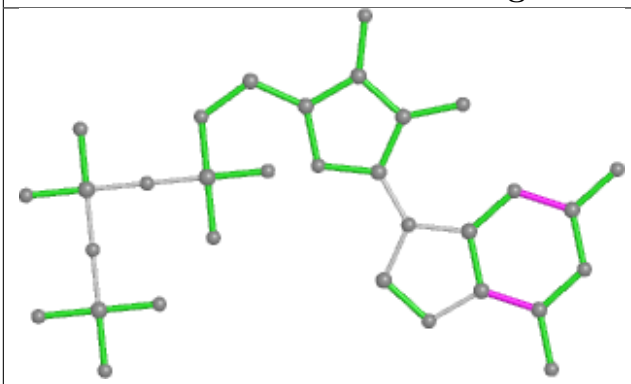
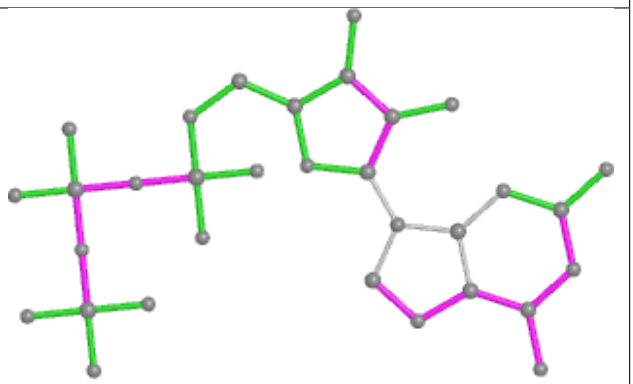


Rings

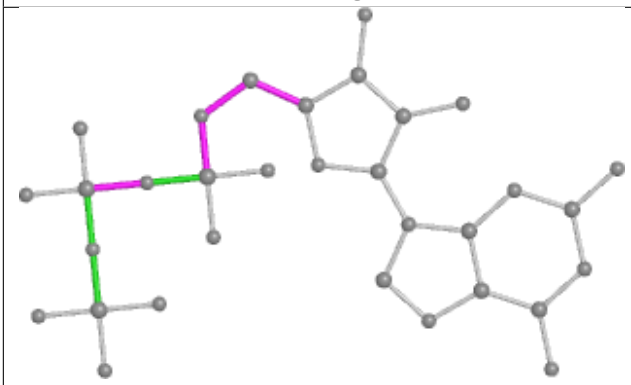
Ligand GTP AH 501



Bond lengths



Bond angles



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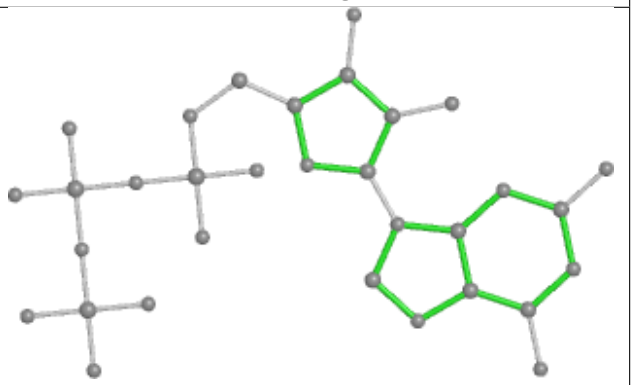
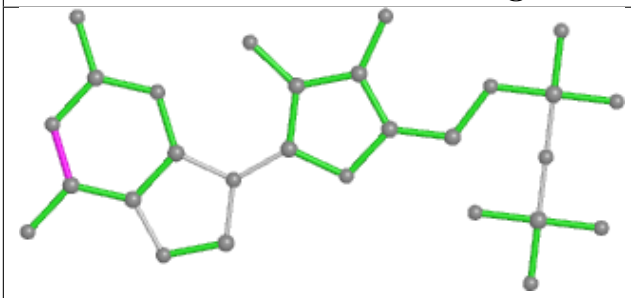
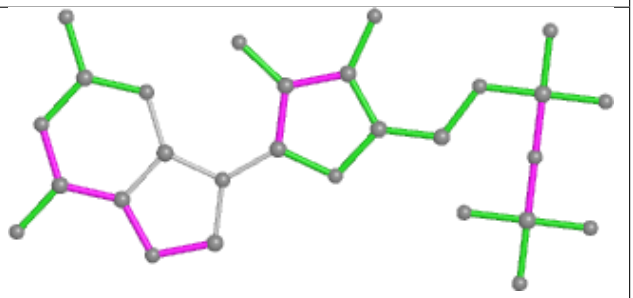


Rings

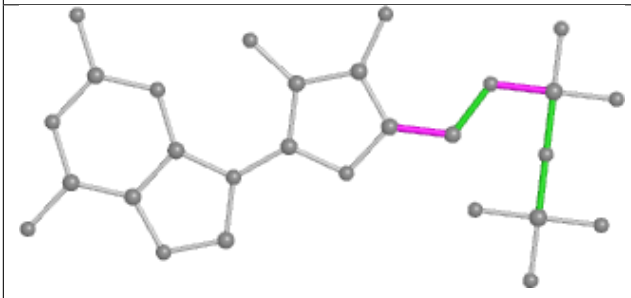
Ligand GDP CG 501



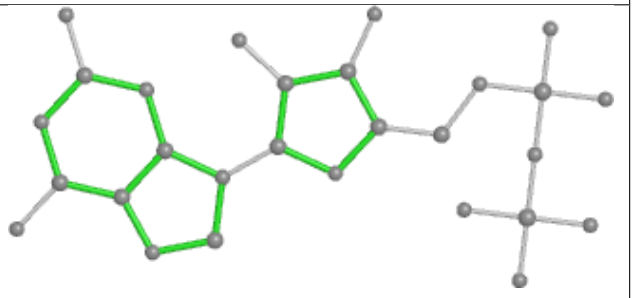
Bond lengths



Bond angles

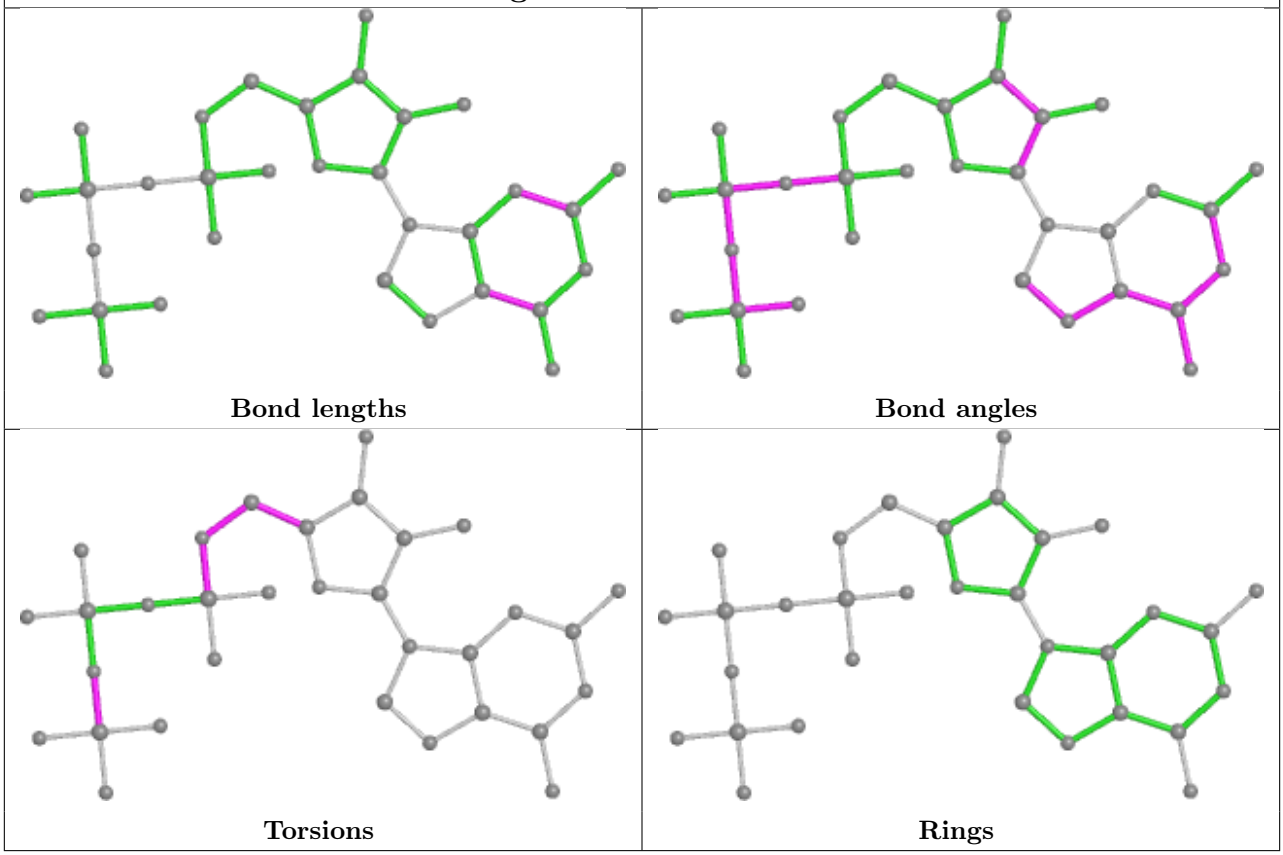


Torsions

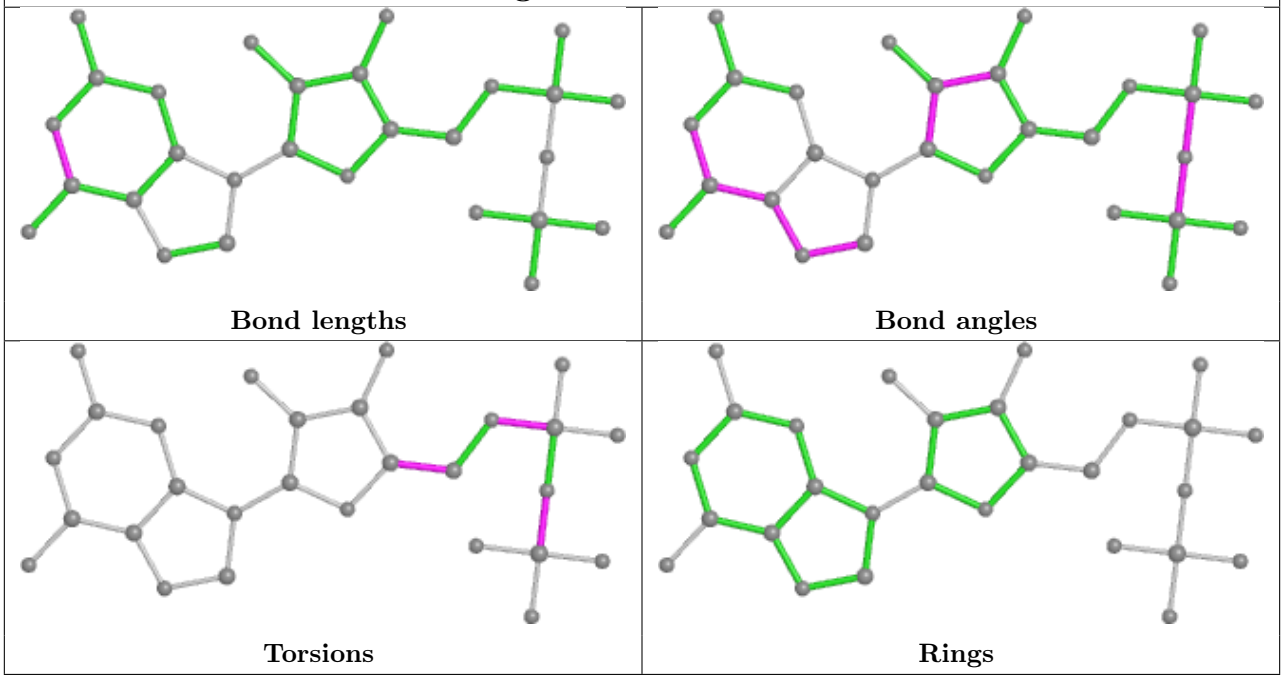


Rings

Ligand GTP DB 501



Ligand GDP JE 501



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

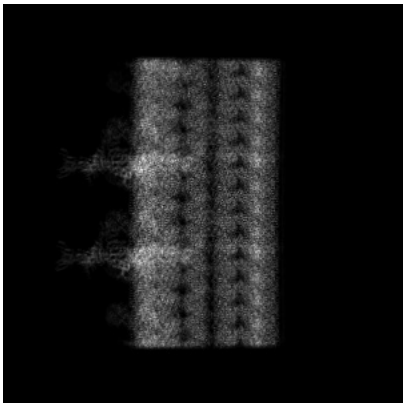
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-25361. These allow visual inspection of the internal detail of the map and identification of artifacts.

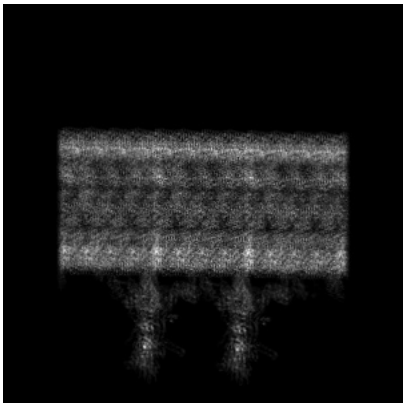
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

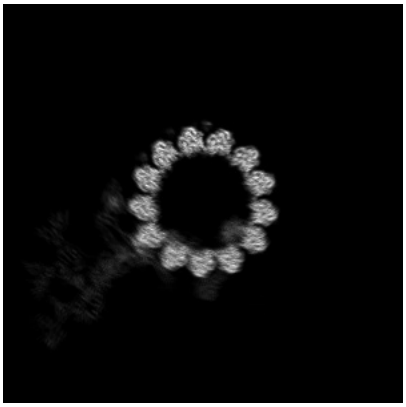
6.1.1 Primary map



X



Y



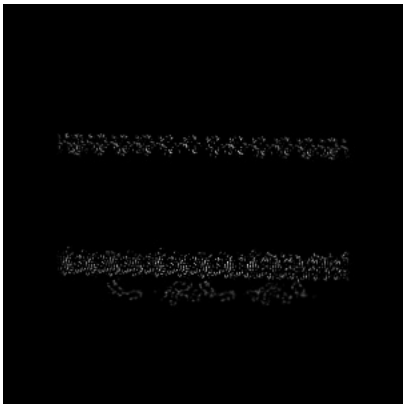
Z

The images above show the map projected in three orthogonal directions.

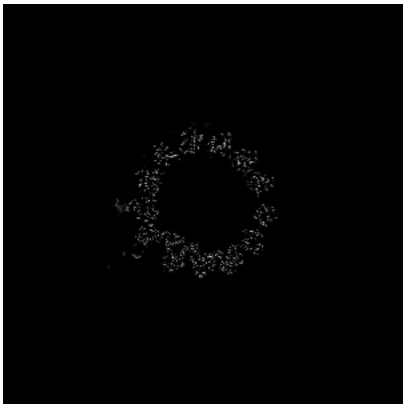
6.2 Central slices

6.2.1 Primary map

X Index: 256



Y Index: 256

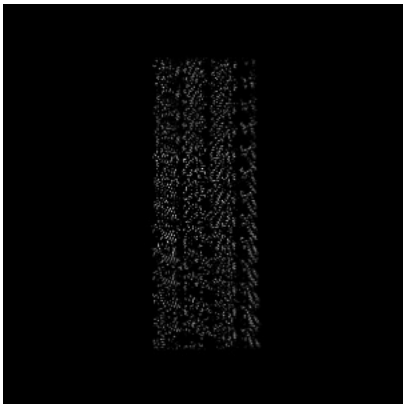


Z Index: 256

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



X Index: 324

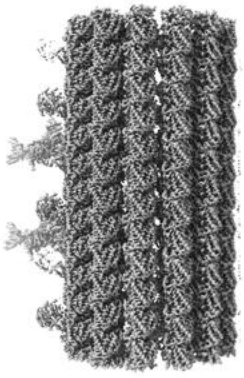
Y Index: 187

Z Index: 195

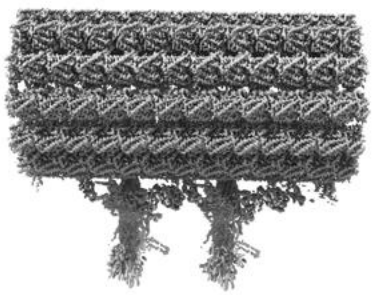
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

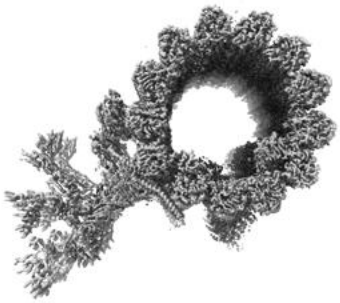
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.2. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

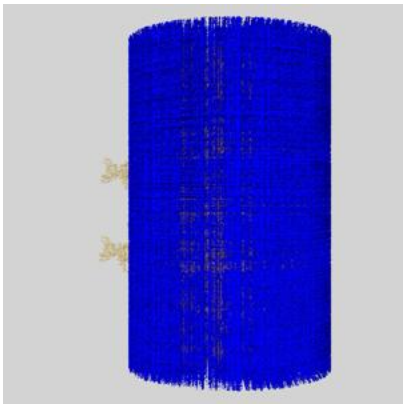
6.5 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

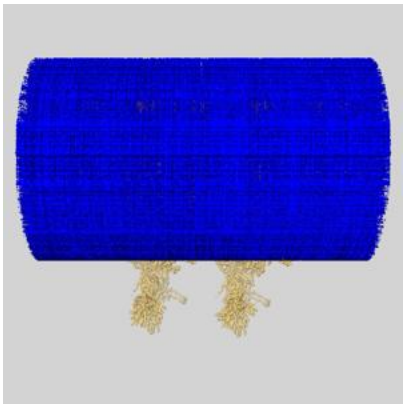
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

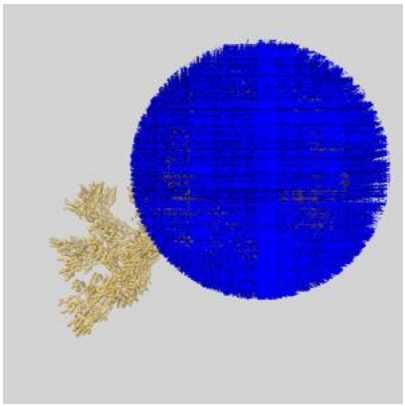
6.5.1 emd_25361_msk_1.map (i)



X



Y

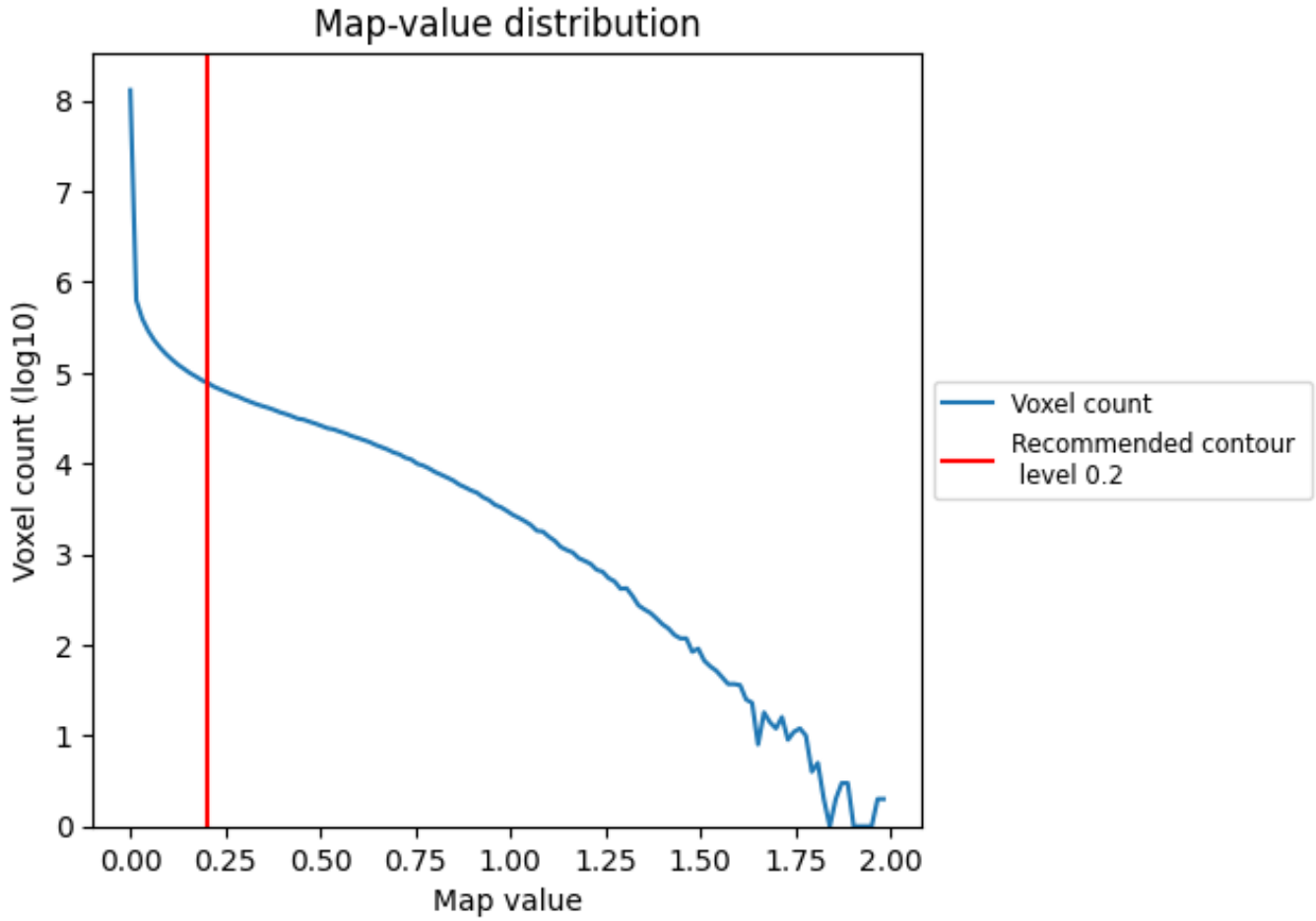


Z

7 Map analysis

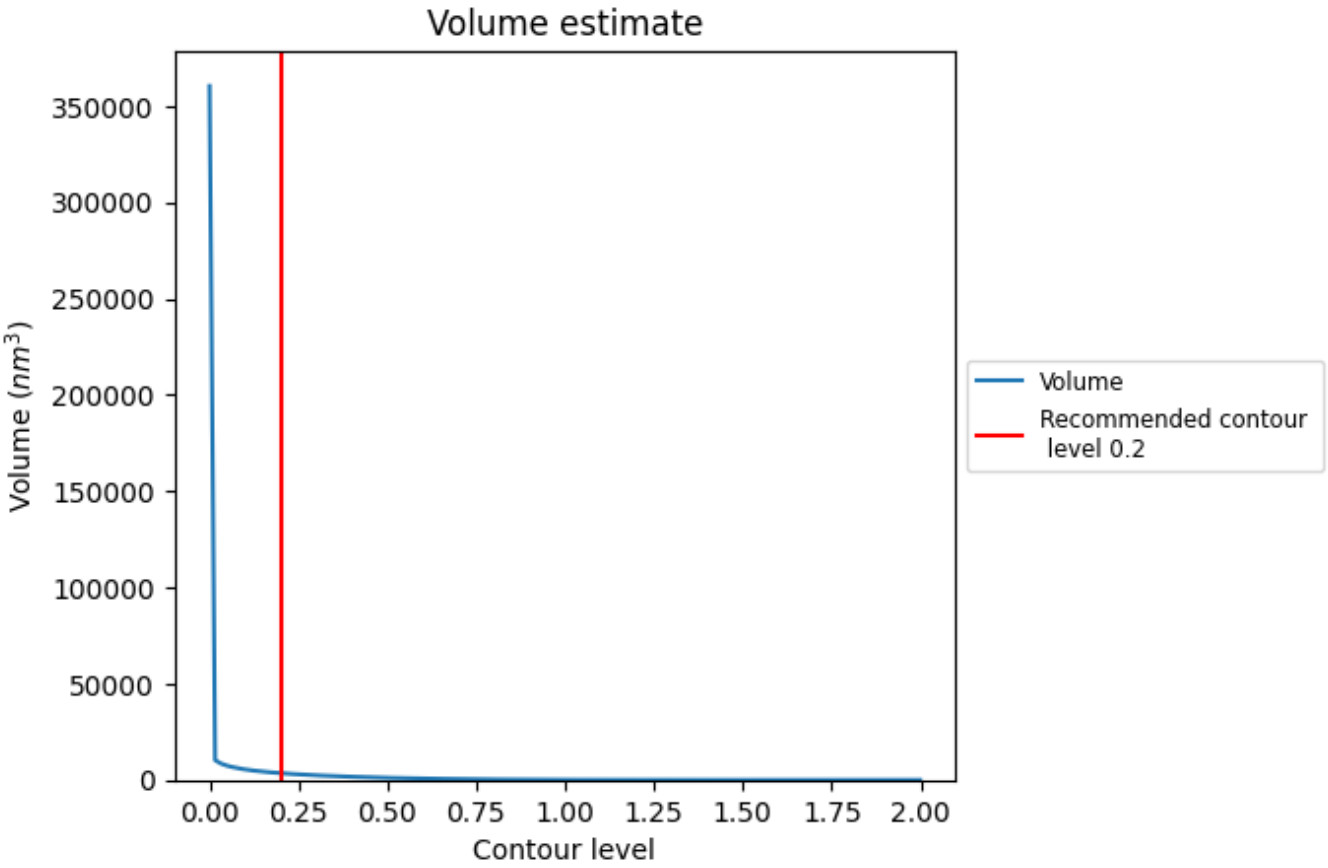
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

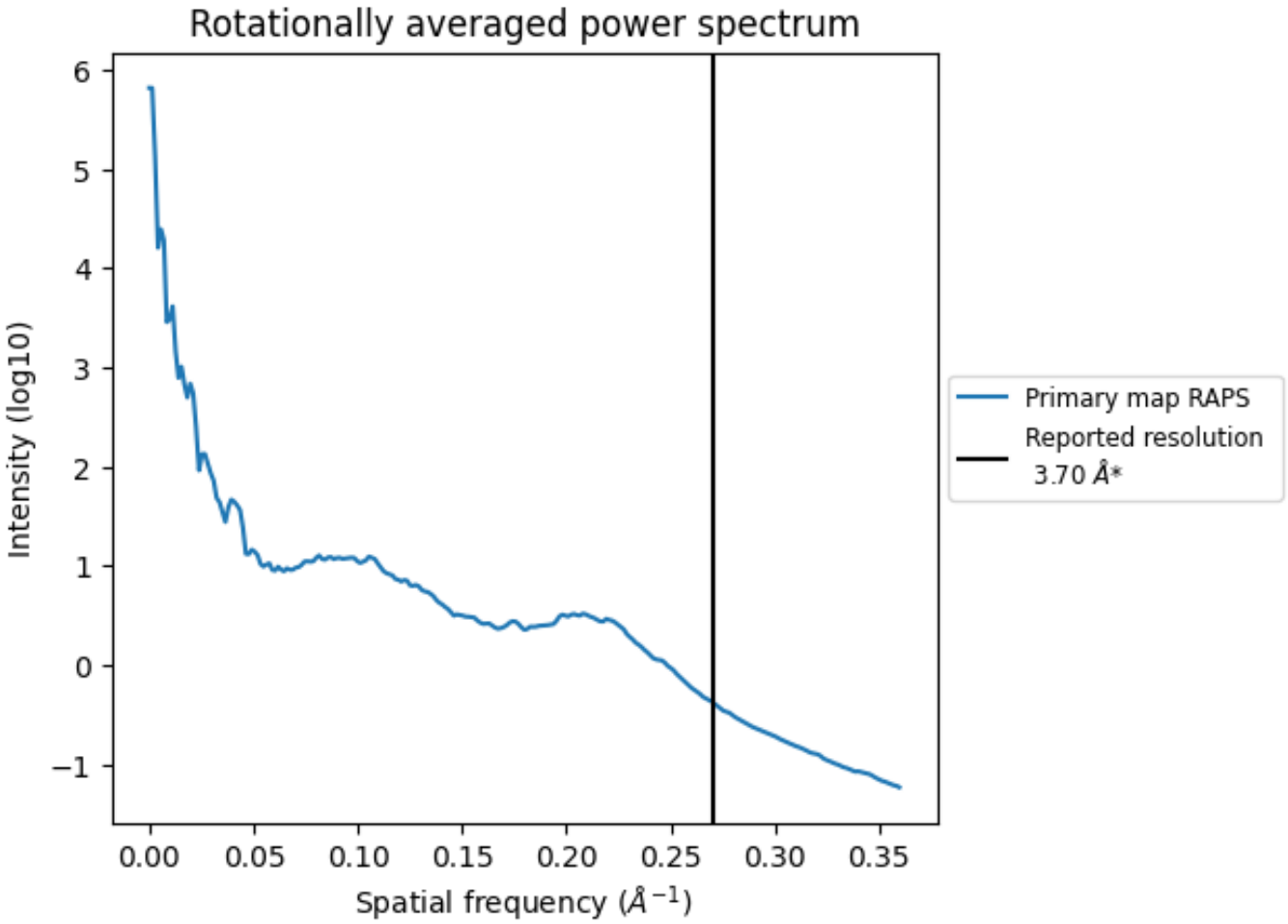
7.2 Volume estimate



The volume at the recommended contour level is 3525 nm^3; this corresponds to an approximate mass of 3184 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

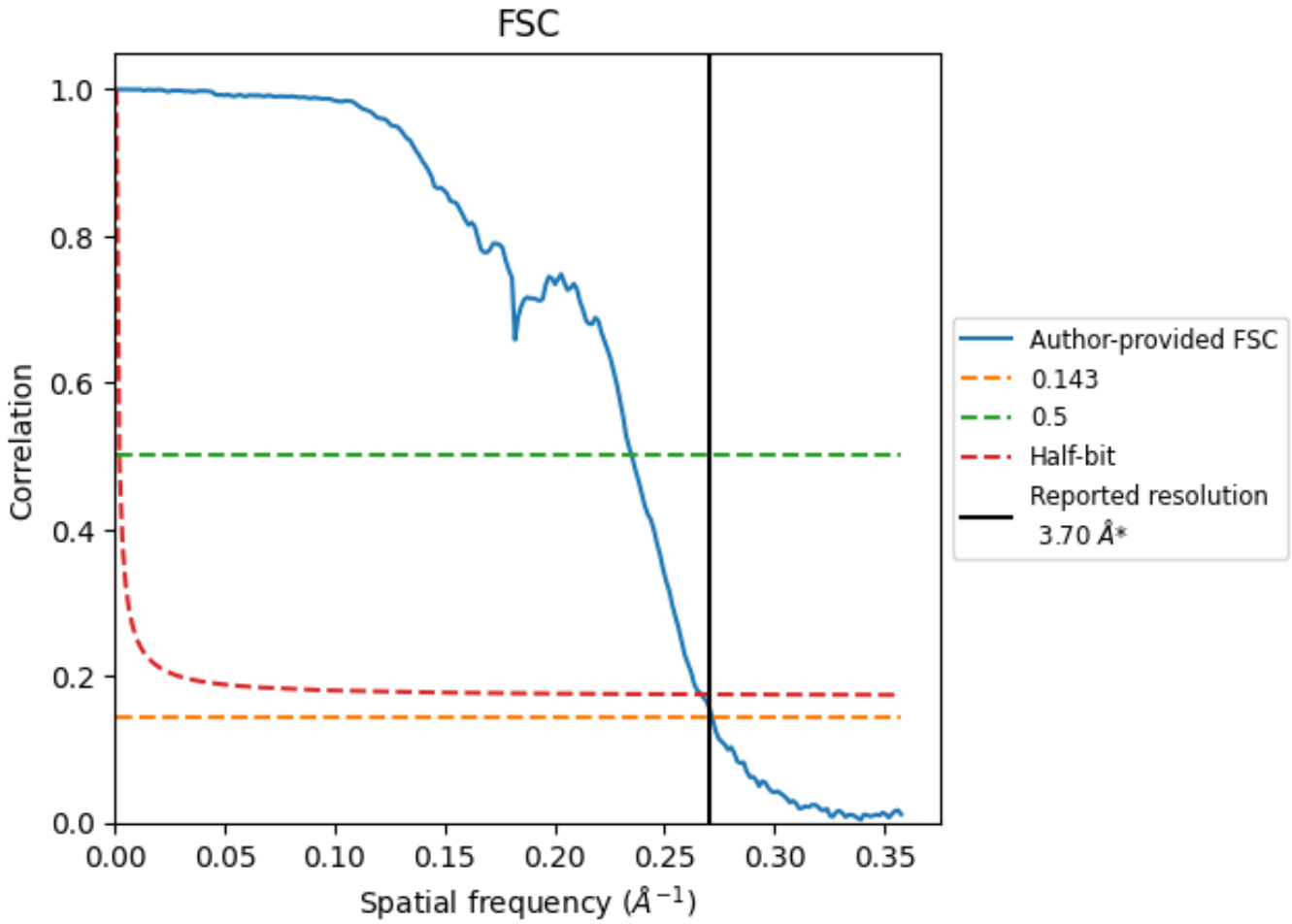


*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8.2 Resolution estimates (i)

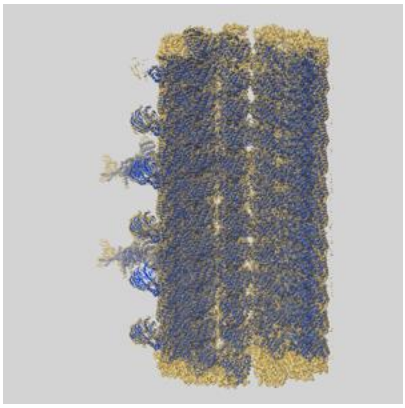
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	3.68	4.26	3.75
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

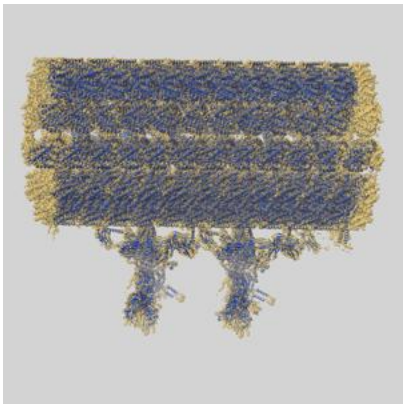
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-25361 and PDB model 7SOM. Per-residue inclusion information can be found in section 3 on page 34.

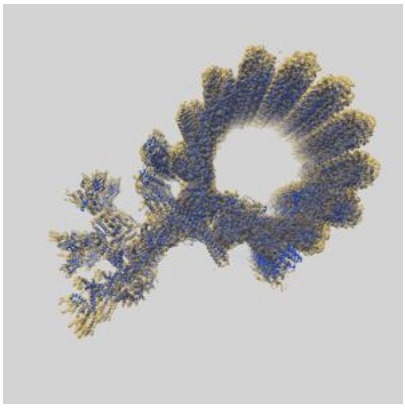
9.1 Map-model overlay



X



Y



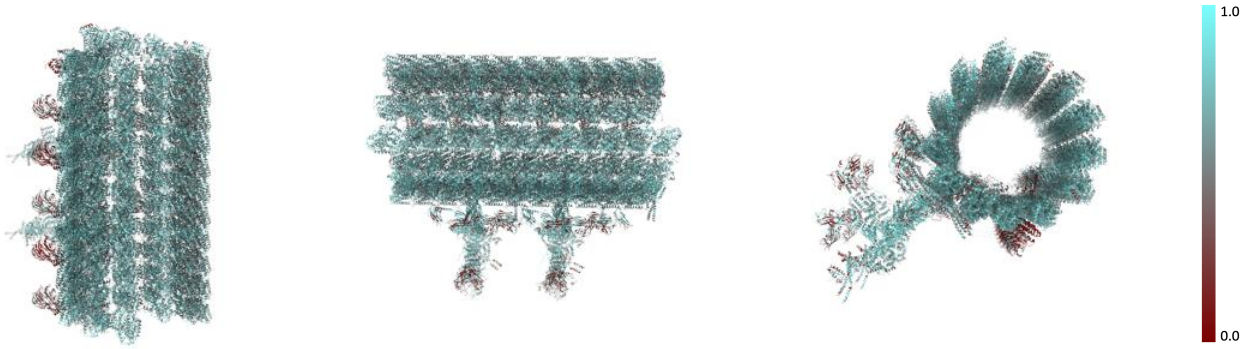
Z

The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model

This section was not generated.

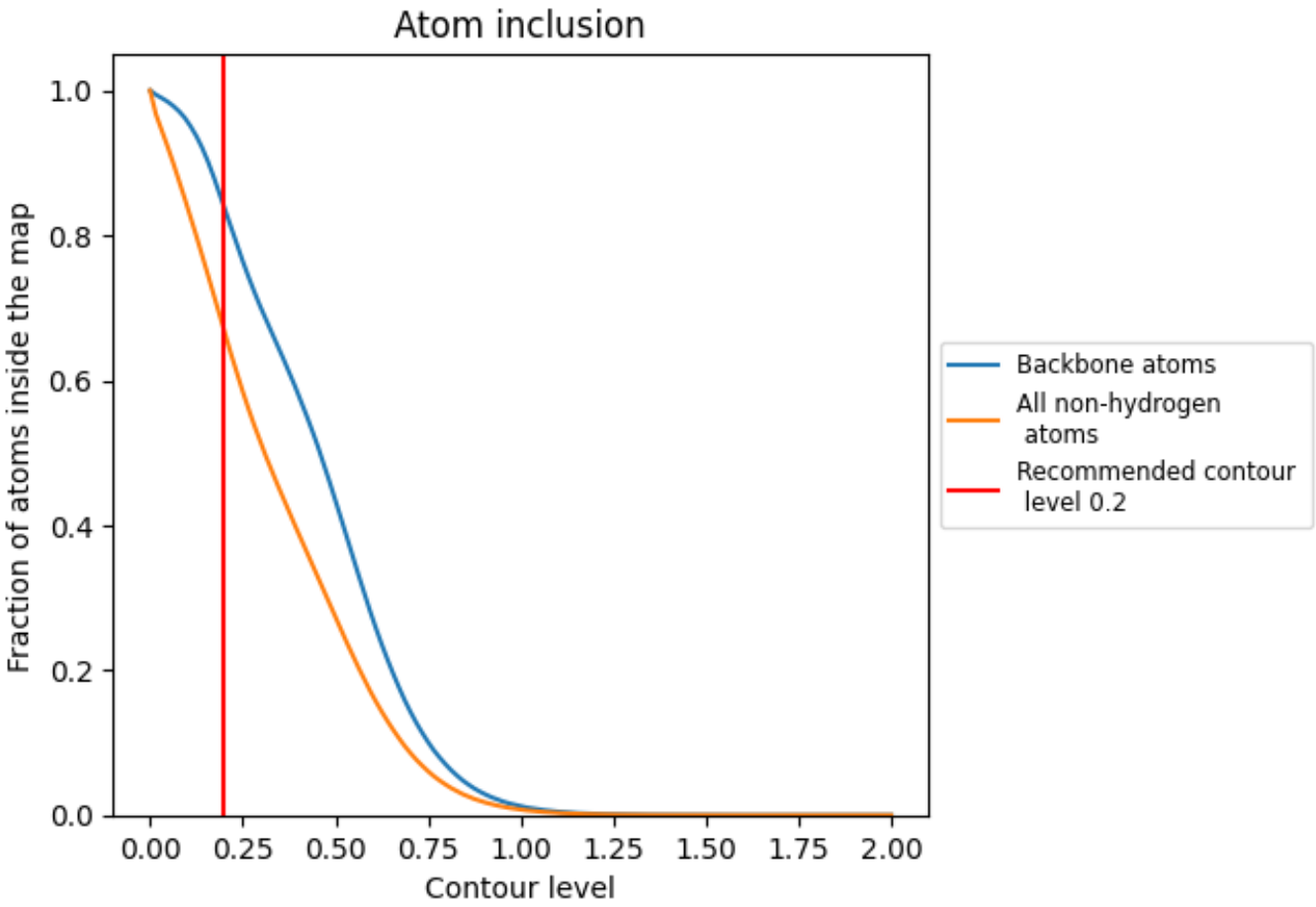
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.2).

9.4 Atom inclusion (i)



At the recommended contour level, 84% of all backbone atoms, 67% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion
All	0.6678
A	0.5375
A1	0.7083
A2	0.7558
A3	0.6894
A4	0.7558
AA	0.7111
AB	0.6973
AC	0.7073
AD	0.6910
AE	0.7458
AF	0.7096
AG	0.7180
AH	0.7166
AI	0.7324
AJ	0.6910
AK	0.7078
AL	0.7045
B	0.5724
BA	0.6860
BB	0.6853
BC	0.7138
BD	0.7178
BE	0.6913
BF	0.6948
BG	0.7156
BH	0.7274
BI	0.6758
BJ	0.6799
BK	0.7035
BL	0.6825
C	0.5094
CA	0.7168
CB	0.7158
CC	0.7267

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Chain	Atom inclusion
CD	0.7451
CE	0.7273
CF	0.7242
CG	0.7352
CH	0.7511
CI	0.7096
CJ	0.7021
CK	0.7171
D	0.6240
DB	0.7136
DC	0.7077
DD	0.7127
DE	0.7306
DF	0.7238
DG	0.7147
DH	0.7163
DI	0.7309
DJ	0.7187
DK	0.6993
DL	0.7060
E	0.6193
EA	0.6710
EB	0.6897
EC	0.6743
ED	0.6821
EE	0.7232
EF	0.6989
EG	0.6857
EH	0.7037
EI	0.7144
EJ	0.6877
EK	0.6809
EL	0.6885
F	0.6240
FA	0.6924
FB	0.6903
FC	0.6791
FD	0.7000
FE	0.7144
FF	0.7054
FG	0.6984
FH	0.7181

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Chain	Atom inclusion
FI	0.7102
FJ	0.7039
FK	0.6927
FL	0.6988
G	0.5952
GC	0.6891
GD	0.6852
GE	0.6803
GF	0.6954
GG	0.6918
GH	0.6915
GI	0.6936
GJ	0.6985
GK	0.6779
GL	0.6900
GM	0.6803
H	0.6258
HC	0.6110
HD	0.6100
HE	0.5893
HF	0.6550
HG	0.6294
HH	0.6333
HI	0.6213
HJ	0.6495
HK	0.6020
HL	0.6067
HM	0.6098
I	0.5913
IC	0.6261
ID	0.6474
IE	0.6297
IF	0.6852
IG	0.6490
IH	0.6610
II	0.6412
IJ	0.6810
IK	0.6324
IL	0.6507
IM	0.6360
J	0.6386
JB	0.6994

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Chain	Atom inclusion
JC	0.6743
JD	0.6794
JE	0.6945
JF	0.7166
JG	0.6933
JH	0.6982
JI	0.7043
JJ	0.7100
JK	0.6848
JL	0.6901
JM	0.6898
K	0.6514
KB	0.6991
KC	0.6927
KD	0.6819
KE	0.6948
KF	0.6988
KG	0.7008
KH	0.6893
KI	0.7078
KJ	0.6894
KK	0.6894
KL	0.6816
L	0.3188
LB	0.7063
LC	0.6921
LD	0.6882
LE	0.7285
LF	0.7111
LG	0.6975
LH	0.6885
LI	0.7174
LJ	0.6936
LK	0.6770
LL	0.6927
M	0.1770
MB	0.6924
MC	0.6899
MD	0.6947
ME	0.7105
MF	0.7027
MG	0.6980

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Chain	Atom inclusion
MH	0.7014
MI	0.7105
MJ	0.6985
MK	0.6902
ML	0.6999
N	0.3600
O	0.2145
P	0.3024
Q	0.4587
R	0.2877
S	0.4957
T	0.5321
U	0.5679
V	0.4639
W	0.5577
X	0.3152
Y	0.1564
Z	0.5674
a	0.5901
aa	0.3150
b	0.6279
bb	0.5450
c	0.6250
cc	0.5792
d	0.6322
e	0.5813
f	0.5939
g	0.6199
h	0.5586
i	0.6135
j	0.5771
k	0.5839
l	0.5839
m	0.5989
n	0.6231
o	0.5962
p	0.5841
q	0.6150
r	0.6018
s	0.5728