Full wwPDB EM Validation Report ⓘ

Oct 10, 2022 – 04:18 PM EDT

PDB ID	:	7UN1
EMDB ID	:	EMD-26611
Title	:	8-nm repeat of the human sperm tip singlet microtubule
Authors	:	Gui, M.; Croft, J.T.; Zabeo, D.; Acharya, V.; Kollman, J.M.; Burgoyne, T.; Hoog, J.L.; Brown, A.
Deposited on	:	2022-04-08
Resolution	:	6.00 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:

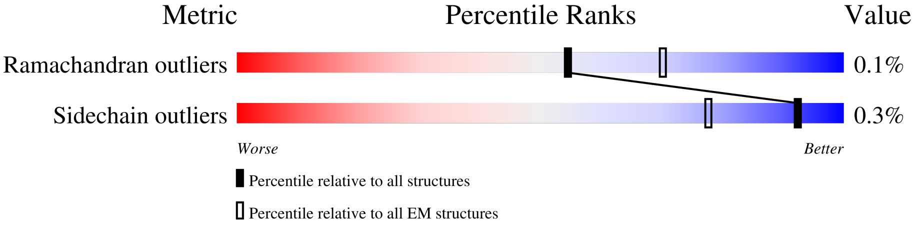
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

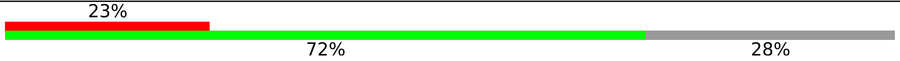
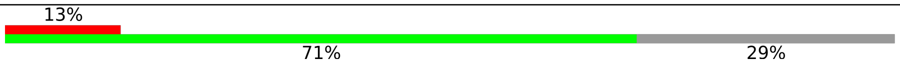
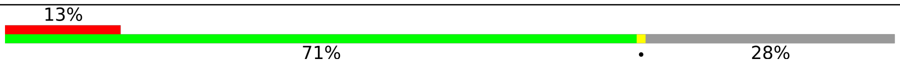
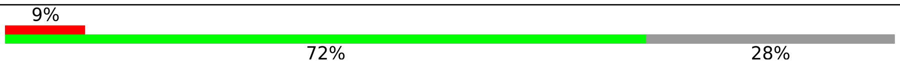
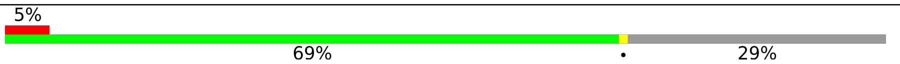
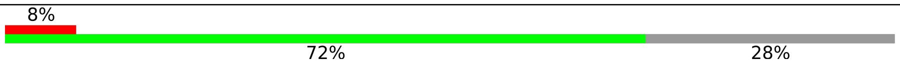
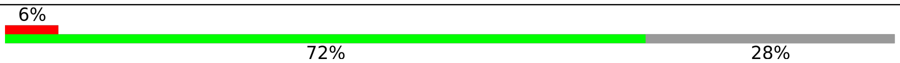
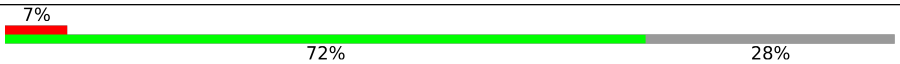
The reported resolution of this entry is 6.00 Å.

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	A	222	 44% 72% 28%
1	B	222	 23% 72% 28%
1	C	222	 13% 71% 29%
1	D	222	 13% 71% • 28%
1	E	222	 9% 72% 28%
1	F	222	 5% 69% • 29%
1	G	222	 8% 72% 28%
1	H	222	 6% 72% 28%
1	I	222	 7% 72% 28%

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Mol	Chain	Length	Quality of chain
1	J	222	7% 72% 28%
1	K	222	18% 72% 28%
1	L	222	41% 72% 28%
1	M	222	38% 72% 28%
1	N	222	13% 70% 30%
1	O	222	13% 72% 28%
1	P	222	11% 72% 28%
1	Q	222	10% 71% 29%
1	R	222	5% 72% 28%
1	S	222	6% 70% 30%
1	T	222	5% 72% 28%
1	U	222	9% 72% 28%
1	V	222	9% 72% 28%
1	W	222	17% 70% 30%
1	X	222	50% 72% 28%
1	d	222	8% 69% • 30%
1	e	222	7% 70% 29%
1	f	222	6% 72% 28%
1	g	222	5% 72% 28%
1	h	222	5% 70% 30%
1	i	222	8% 71% • 28%
1	j	222	7% 72% 28%
1	k	222	14% 70% 30%
1	l	222	36% 68% 32%
2	AB	445	• 96% •

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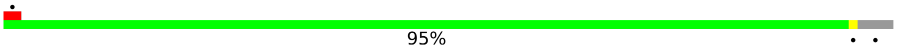
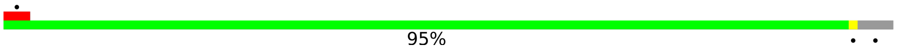
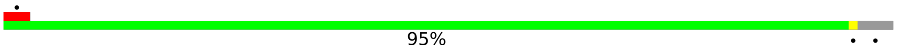
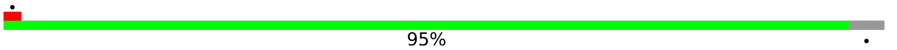
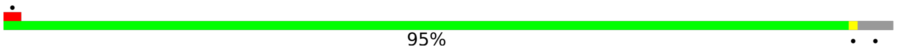
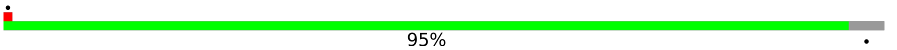
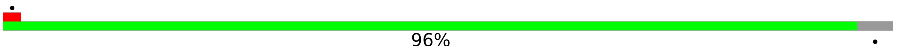
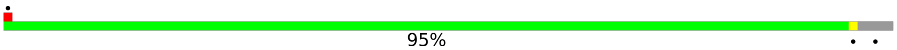
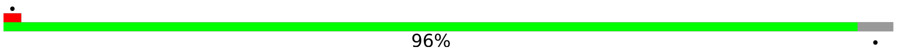
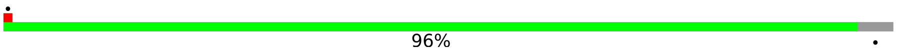
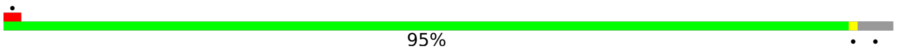
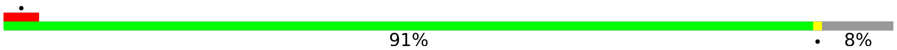
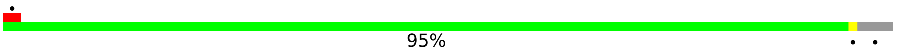
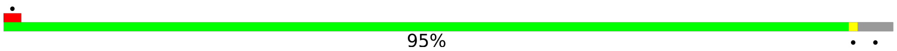
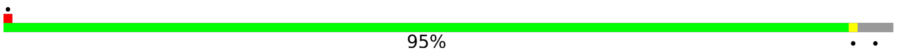
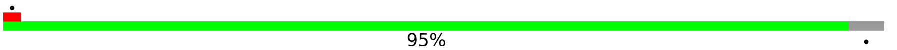
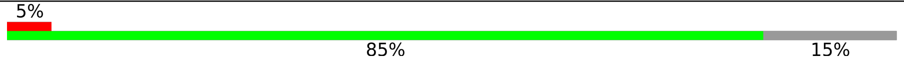
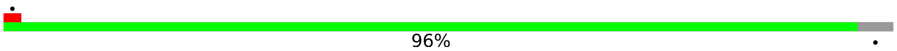
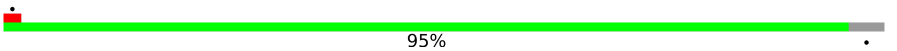
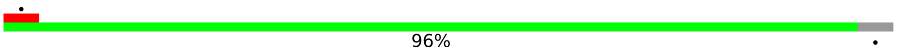
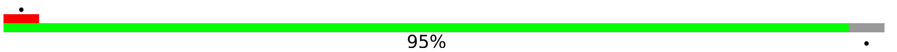
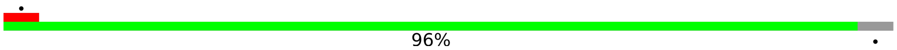
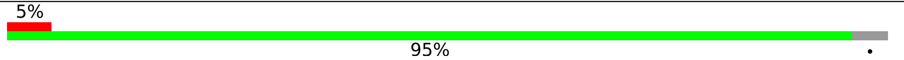
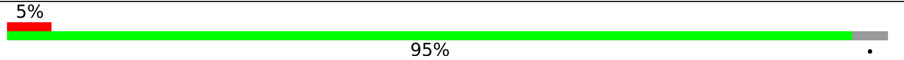
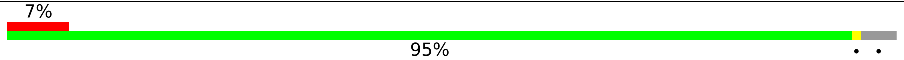
Mol	Chain	Length	Quality of chain
2	AD	445	
2	AF	445	
2	BA	445	
2	BD	445	
2	BF	445	
2	CB	445	
2	CD	445	
2	CF	445	
2	DB	445	
2	DD	445	
2	DF	445	
2	EB	445	
2	ED	445	
2	EF	445	
2	FD	445	
2	FF	445	
2	FH	445	
2	GD	445	
2	GF	445	
2	GH	445	
2	HD	445	
2	HF	445	
2	HH	445	
2	ID	445	
2	IF	445	

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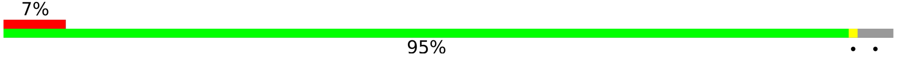
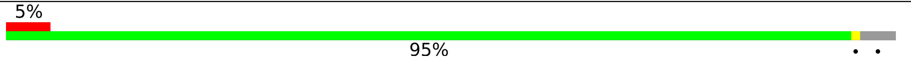
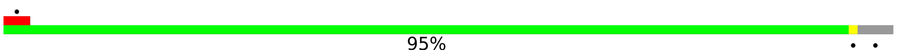
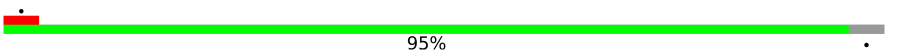
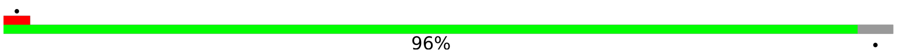
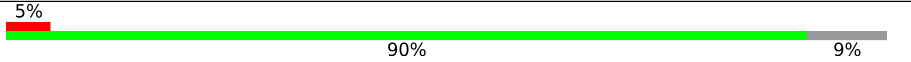
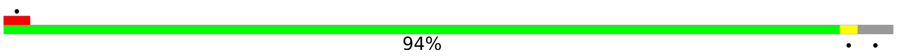
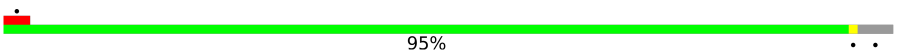
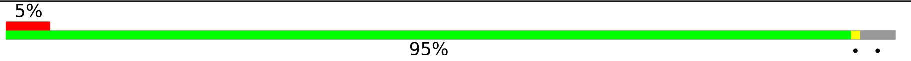
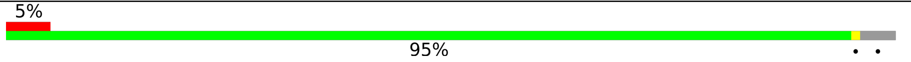
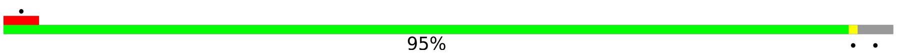
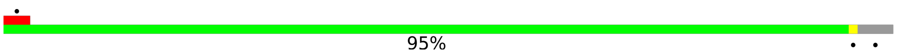
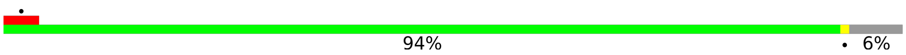
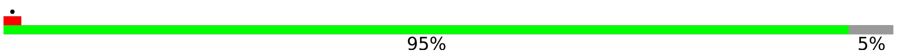
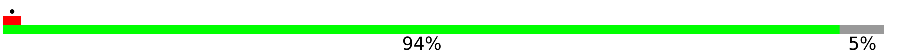
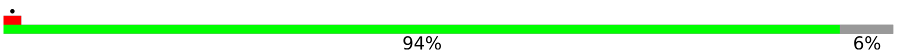
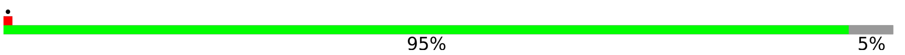
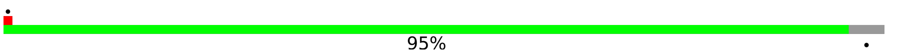
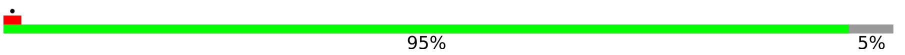
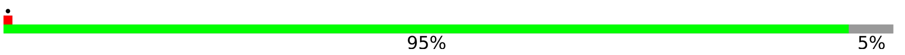
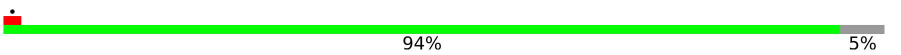
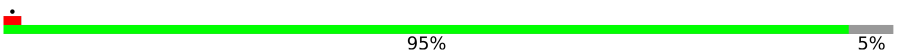
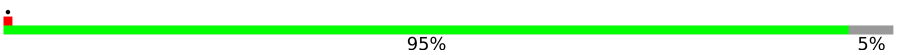
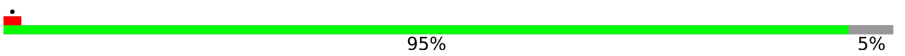
Mol	Chain	Length	Quality of chain
2	IH	445	
2	JD	445	
2	JF	445	
2	KD	445	
2	KF	445	
2	KH	445	
2	LB	445	
2	LD	445	
2	LF	445	
2	MB	445	
2	MD	445	
2	MF	445	
3	AC	451	
3	AE	451	
3	BC	451	
3	BE	451	
3	BG	451	
3	CC	451	
3	CE	451	
3	CG	451	
3	DC	451	
3	DE	451	
3	DG	451	
3	EC	451	
3	EE	451	

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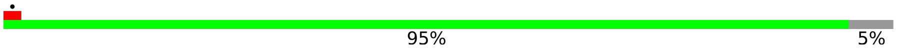
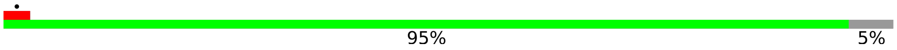
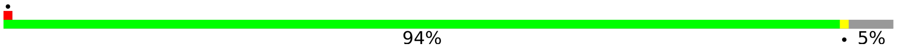
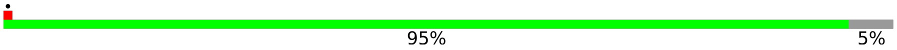
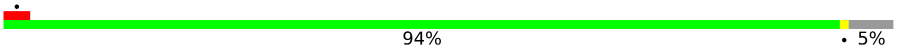
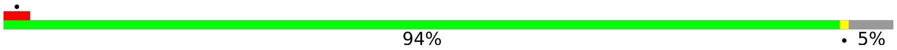
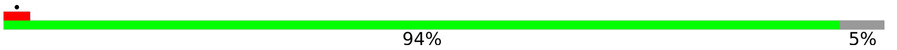
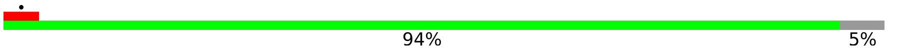
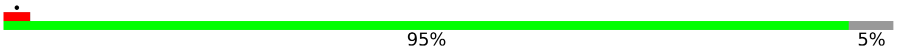
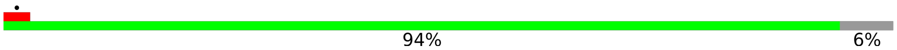
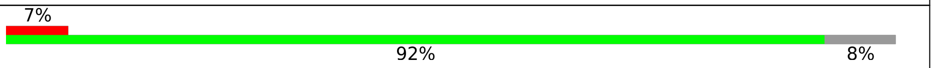
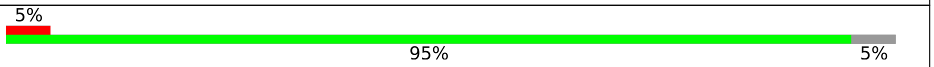
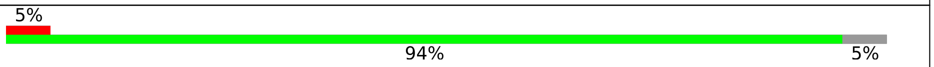
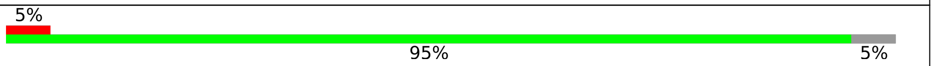
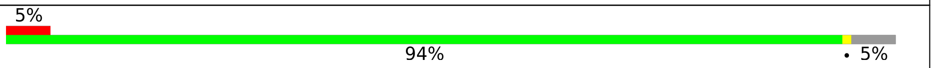
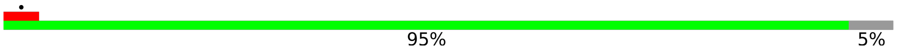
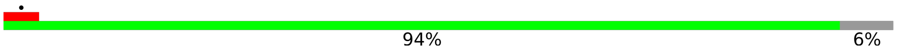
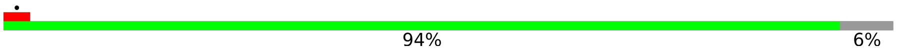
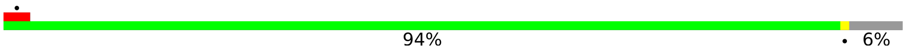
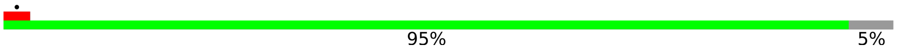
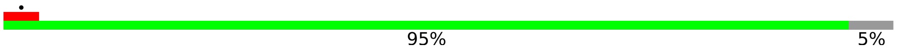
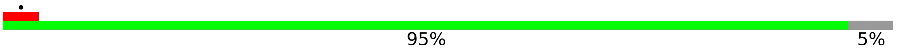
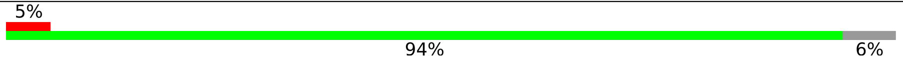
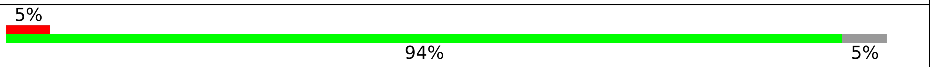
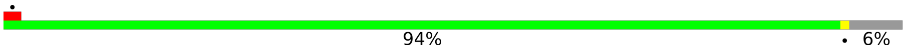
Mol	Chain	Length	Quality of chain
3	EG	451	
3	FC	451	
3	FE	451	
3	FG	451	
3	GC	451	
3	GE	451	
3	GG	451	
3	HC	451	
3	HE	451	
3	HG	451	
3	IC	451	
3	IE	451	
3	IG	451	
3	JC	451	
3	JE	451	
3	JG	451	
3	KC	451	
3	KE	451	
3	KG	451	
3	LA	451	
3	LC	451	
3	LE	451	
3	MA	451	
3	MC	451	
3	ME	451	

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 290845 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 Sperm acrosome-associated protein 9.

Mol	Chain	Residues	Atoms	AltConf	Trace
1	A	160	Total C N O 796 476 160 160	0	0
1	B	160	Total C N O 796 476 160 160	0	0
1	C	158	Total C N O 786 470 158 158	0	0
1	D	160	Total C N O S 1289 805 231 243 10	0	0
1	E	160	Total C N O S 1289 805 231 243 10	0	0
1	F	157	Total C N O S 1263 788 225 240 10	0	0
1	G	159	Total C N O S 1278 799 227 242 10	0	0
1	H	159	Total C N O S 1278 799 227 242 10	0	0
1	I	159	Total C N O S 1278 799 227 242 10	0	0
1	J	159	Total C N O 791 473 159 159	0	0
1	K	159	Total C N O 791 473 159 159	0	0
1	L	159	Total C N O 791 473 159 159	0	0
1	M	160	Total C N O 796 476 160 160	0	0
1	N	156	Total C N O 776 464 156 156	0	0
1	O	160	Total C N O 796 476 160 160	0	0
1	P	160	Total C N O S 1289 805 231 243 10	0	0
1	Q	157	Total C N O S 1263 788 225 240 10	0	0

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Mol	Chain	Residues	Atoms	AltConf	Trace
1	R	160	Total C N O S 1289 805 231 243 10	0	0
1	S	156	Total C N O S 1254 782 223 239 10	0	0
1	T	159	Total C N O S 1278 799 227 242 10	0	0
1	U	159	Total C N O S 1278 799 227 242 10	0	0
1	V	159	Total C N O 791 473 159 159	0	0
1	W	155	Total C N O 771 461 155 155	0	0
1	X	160	Total C N O 796 476 160 160	0	0
1	d	156	Total C N O S 1254 782 223 239 10	0	0
1	e	157	Total C N O S 1263 788 225 240 10	0	0
1	f	160	Total C N O S 1289 805 231 243 10	0	0
1	g	159	Total C N O S 1278 799 227 242 10	0	0
1	h	156	Total C N O S 1254 782 223 239 10	0	0
1	i	159	Total C N O S 1278 799 227 242 10	0	0
1	j	159	Total C N O 791 473 159 159	0	0
1	k	155	Total C N O 771 461 155 155	0	0
1	l	152	Total C N O 756 452 152 152	0	0

- Molecule 2 is a protein called Tubulin beta-4B chain.

Mol	Chain	Residues	Atoms	AltConf	Trace
2	AB	427	Total C N O S 3356 2109 575 646 26	0	0
2	AD	427	Total C N O S 3356 2109 575 646 26	0	0
2	AF	426	Total C N O S 3348 2105 574 643 26	0	0

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Mol	Chain	Residues	Atoms	AltConf	Trace
2	BA	427	Total C N O S 3356 2109 575 646 26	0	0
2	BD	427	Total C N O S 3356 2109 575 646 26	0	0
2	BF	427	Total C N O S 3356 2109 575 646 26	0	0
2	CB	427	Total C N O S 3356 2109 575 646 26	0	0
2	CD	427	Total C N O S 3356 2109 575 646 26	0	0
2	CF	427	Total C N O S 3356 2109 575 646 26	0	0
2	DB	427	Total C N O S 3356 2109 575 646 26	0	0
2	DD	427	Total C N O S 3356 2109 575 646 26	0	0
2	DF	426	Total C N O S 3348 2105 574 643 26	0	0
2	EB	411	Total C N O S 3214 2015 549 626 24	0	0
2	ED	427	Total C N O S 3356 2109 575 646 26	0	0
2	EF	427	Total C N O S 3356 2109 575 646 26	0	0
2	FD	427	Total C N O S 3356 2109 575 646 26	0	0
2	FF	427	Total C N O S 3356 2109 575 646 26	0	0
2	FH	379	Total C N O S 2971 1871 508 570 22	0	0
2	GD	427	Total C N O S 3356 2109 575 646 26	0	0
2	GF	427	Total C N O S 3356 2109 575 646 26	0	0
2	GH	427	Total C N O S 3356 2109 575 646 26	0	0
2	HD	426	Total C N O S 3348 2105 574 643 26	0	0
2	HF	426	Total C N O S 3348 2105 574 643 26	0	0
2	HH	427	Total C N O S 3356 2109 575 646 26	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	ID	426	Total 3348	C 2105	N 574	O 643	S 26	0	0
2	IF	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	IH	426	Total 3348	C 2105	N 574	O 643	S 26	0	0
2	JD	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	JF	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	KD	426	Total 3348	C 2105	N 574	O 643	S 26	0	0
2	KF	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	KH	403	Total 3165	C 1996	N 539	O 607	S 23	0	0
2	LB	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	LD	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	LF	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	MB	427	Total 3356	C 2109	N 575	O 646	S 26	0	0
2	MD	426	Total 3348	C 2105	N 574	O 643	S 26	0	0
2	MF	427	Total 3356	C 2109	N 575	O 646	S 26	0	0

- Molecule 3 is a protein called Tubulin alpha-1A chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	AC	426	Total 3343	C 2123	N 569	O 629	S 22	0	0
3	AE	427	Total 3349	C 2126	N 570	O 631	S 22	0	0
3	BC	427	Total 3350	C 2125	N 570	O 633	S 22	0	0
3	BE	426	Total 3343	C 2123	N 569	O 629	S 22	0	0
3	BG	385	Total 3026	C 1914	N 516	O 575	S 21	0	0

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Mol	Chain	Residues	Atoms	AltConf	Trace
3	CC	430	Total C N O S 3369 2136 573 638 22	0	0
3	CE	431	Total C N O S 3377 2140 574 641 22	0	0
3	CG	429	Total C N O S 3363 2133 572 636 22	0	0
3	DC	428	Total C N O S 3357 2130 571 634 22	0	0
3	DE	428	Total C N O S 3357 2130 571 634 22	0	0
3	DG	429	Total C N O S 3363 2133 572 636 22	0	0
3	EC	429	Total C N O S 3363 2133 572 636 22	0	0
3	EE	428	Total C N O S 3356 2128 571 635 22	0	0
3	EG	428	Total C N O S 3357 2130 571 634 22	0	0
3	FC	429	Total C N O S 3365 2134 572 637 22	0	0
3	FE	430	Total C N O S 3369 2136 573 638 22	0	0
3	FG	429	Total C N O S 3363 2133 572 636 22	0	0
3	GC	430	Total C N O S 3371 2137 573 639 22	0	0
3	GE	429	Total C N O S 3364 2132 572 638 22	0	0
3	GG	428	Total C N O S 3356 2127 571 637 21	0	0
3	HC	427	Total C N O S 3350 2125 570 633 22	0	0
3	HE	427	Total C N O S 3349 2126 570 631 22	0	0
3	HG	426	Total C N O S 3342 2121 569 630 22	0	0
3	IC	414	Total C N O S 3239 2051 550 617 21	0	0
3	IE	428	Total C N O S 3357 2130 571 634 22	0	0
3	IG	427	Total C N O S 3350 2125 570 633 22	0	0

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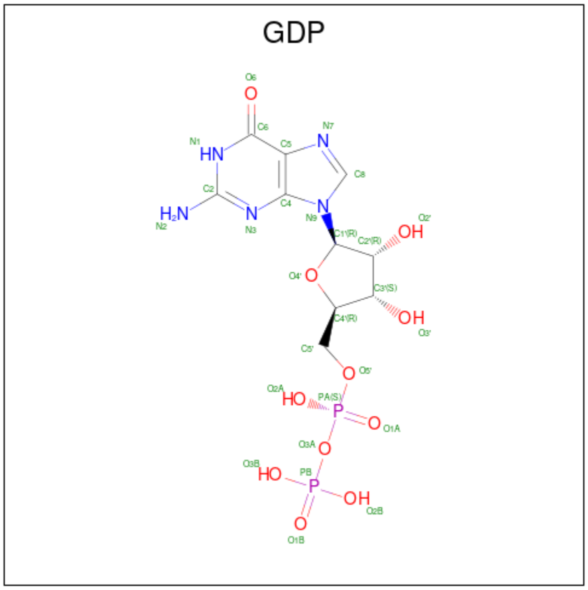
Mol	Chain	Residues	Atoms					AltConf	Trace
3	JC	429	Total 3365	C 2134	N 572	O 637	S 22	0	0
3	JE	428	Total 3358	C 2129	N 571	O 636	S 22	0	0
3	JG	427	Total 3350	C 2125	N 570	O 633	S 22	0	0
3	KC	426	Total 3342	C 2121	N 569	O 630	S 22	0	0
3	KE	425	Total 3335	C 2116	N 568	O 629	S 22	0	0
3	KG	426	Total 3342	C 2121	N 569	O 630	S 22	0	0
3	LA	428	Total 3357	C 2130	N 571	O 634	S 22	0	0
3	LC	427	Total 3349	C 2126	N 570	O 631	S 22	0	0
3	LE	428	Total 3357	C 2130	N 571	O 634	S 22	0	0
3	MA	426	Total 3342	C 2121	N 569	O 630	S 22	0	0
3	MC	428	Total 3357	C 2130	N 571	O 634	S 22	0	0
3	ME	426	Total 3342	C 2121	N 569	O 630	S 22	0	0

- Molecule 4 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



Mol	Chain	Residues	Atoms	AltConf
4	AB	1	Total C N O P 28 10 5 11 2	0
4	AD	1	Total C N O P 28 10 5 11 2	0
4	AF	1	Total C N O P 28 10 5 11 2	0
4	BA	1	Total C N O P 28 10 5 11 2	0
4	BD	1	Total C N O P 28 10 5 11 2	0
4	BF	1	Total C N O P 28 10 5 11 2	0
4	CB	1	Total C N O P 28 10 5 11 2	0
4	CD	1	Total C N O P 28 10 5 11 2	0
4	CF	1	Total C N O P 28 10 5 11 2	0
4	DB	1	Total C N O P 28 10 5 11 2	0
4	DD	1	Total C N O P 28 10 5 11 2	0
4	DF	1	Total C N O P 28 10 5 11 2	0
4	EB	1	Total C N O P 28 10 5 11 2	0
4	ED	1	Total C N O P 28 10 5 11 2	0
4	EF	1	Total C N O P 28 10 5 11 2	0
4	FD	1	Total C N O P 28 10 5 11 2	0
4	FF	1	Total C N O P 28 10 5 11 2	0
4	FH	1	Total C N O P 28 10 5 11 2	0
4	GD	1	Total C N O P 28 10 5 11 2	0
4	GF	1	Total C N O P 28 10 5 11 2	0
4	GH	1	Total C N O P 28 10 5 11 2	0
4	HD	1	Total C N O P 28 10 5 11 2	0

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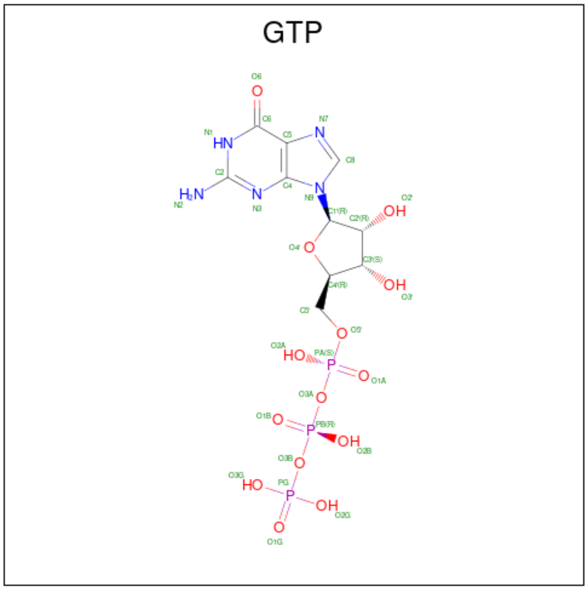
Mol	Chain	Residues	Atoms					AltConf
4	HF	1	Total 28	C 10	N 5	O 11	P 2	0
4	HH	1	Total 28	C 10	N 5	O 11	P 2	0
4	ID	1	Total 28	C 10	N 5	O 11	P 2	0
4	IF	1	Total 28	C 10	N 5	O 11	P 2	0
4	IH	1	Total 28	C 10	N 5	O 11	P 2	0
4	JD	1	Total 28	C 10	N 5	O 11	P 2	0
4	JF	1	Total 28	C 10	N 5	O 11	P 2	0
4	KD	1	Total 28	C 10	N 5	O 11	P 2	0
4	KF	1	Total 28	C 10	N 5	O 11	P 2	0
4	KH	1	Total 28	C 10	N 5	O 11	P 2	0
4	LB	1	Total 28	C 10	N 5	O 11	P 2	0
4	LD	1	Total 28	C 10	N 5	O 11	P 2	0
4	LF	1	Total 28	C 10	N 5	O 11	P 2	0
4	MB	1	Total 28	C 10	N 5	O 11	P 2	0
4	MD	1	Total 28	C 10	N 5	O 11	P 2	0
4	MF	1	Total 28	C 10	N 5	O 11	P 2	0

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



Mol	Chain	Residues	Atoms					AltConf
5	AC	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	AE	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	BC	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	BE	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	BG	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	CC	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	CE	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	CG	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	DC	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	DE	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	DG	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	EC	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	EE	1	Total	C	N	O	P	0
			32	10	5	14	3	
5	EG	1	Total	C	N	O	P	0
			32	10	5	14	3	

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Mol	Chain	Residues	Atoms	AltConf
5	FC	1	Total C N O P 32 10 5 14 3	0
5	FE	1	Total C N O P 32 10 5 14 3	0
5	FG	1	Total C N O P 32 10 5 14 3	0
5	GC	1	Total C N O P 32 10 5 14 3	0
5	GE	1	Total C N O P 32 10 5 14 3	0
5	GG	1	Total C N O P 32 10 5 14 3	0
5	HC	1	Total C N O P 32 10 5 14 3	0
5	HE	1	Total C N O P 32 10 5 14 3	0
5	HG	1	Total C N O P 32 10 5 14 3	0
5	IC	1	Total C N O P 32 10 5 14 3	0
5	IE	1	Total C N O P 32 10 5 14 3	0
5	IG	1	Total C N O P 32 10 5 14 3	0
5	JC	1	Total C N O P 32 10 5 14 3	0
5	JE	1	Total C N O P 32 10 5 14 3	0
5	JG	1	Total C N O P 32 10 5 14 3	0
5	KC	1	Total C N O P 32 10 5 14 3	0
5	KE	1	Total C N O P 32 10 5 14 3	0
5	KG	1	Total C N O P 32 10 5 14 3	0
5	LA	1	Total C N O P 32 10 5 14 3	0
5	LC	1	Total C N O P 32 10 5 14 3	0
5	LE	1	Total C N O P 32 10 5 14 3	0

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Mol	Chain	Residues	Atoms	AltConf
5	MA	1	Total C N O P 32 10 5 14 3	0
5	MC	1	Total C N O P 32 10 5 14 3	0
5	ME	1	Total C N O P 32 10 5 14 3	0

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
6	AC	1	Total Mg 1 1	0
6	AE	1	Total Mg 1 1	0
6	BC	1	Total Mg 1 1	0
6	BE	1	Total Mg 1 1	0
6	BG	1	Total Mg 1 1	0
6	CC	1	Total Mg 1 1	0
6	CE	1	Total Mg 1 1	0
6	CG	1	Total Mg 1 1	0
6	DC	1	Total Mg 1 1	0
6	DE	1	Total Mg 1 1	0
6	DG	1	Total Mg 1 1	0
6	EC	1	Total Mg 1 1	0
6	EE	1	Total Mg 1 1	0
6	EG	1	Total Mg 1 1	0
6	FC	1	Total Mg 1 1	0
6	FE	1	Total Mg 1 1	0

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Mol	Chain	Residues	Atoms	AltConf
6	FG	1	Total Mg 1 1	0
6	GC	1	Total Mg 1 1	0
6	GE	1	Total Mg 1 1	0
6	GG	1	Total Mg 1 1	0
6	HC	1	Total Mg 1 1	0
6	HE	1	Total Mg 1 1	0
6	HG	1	Total Mg 1 1	0
6	IC	1	Total Mg 1 1	0
6	IE	1	Total Mg 1 1	0
6	IG	1	Total Mg 1 1	0
6	JC	1	Total Mg 1 1	0
6	JE	1	Total Mg 1 1	0
6	JG	1	Total Mg 1 1	0
6	KC	1	Total Mg 1 1	0
6	KE	1	Total Mg 1 1	0
6	KG	1	Total Mg 1 1	0
6	LA	1	Total Mg 1 1	0
6	LC	1	Total Mg 1 1	0
6	LE	1	Total Mg 1 1	0
6	MA	1	Total Mg 1 1	0
6	MC	1	Total Mg 1 1	0

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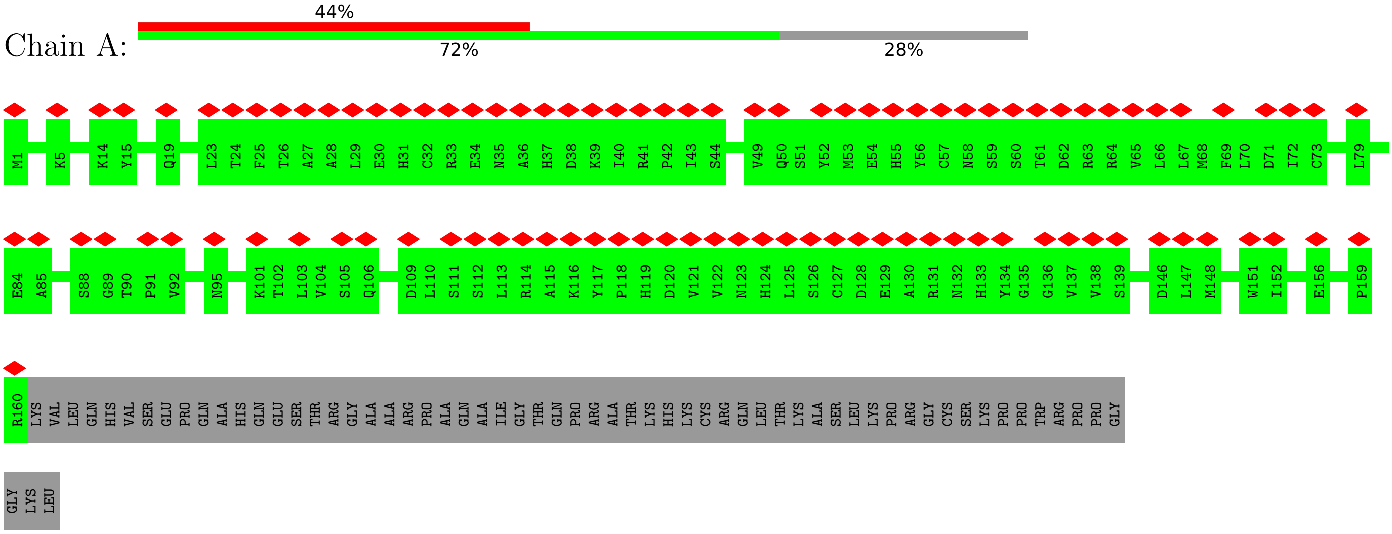
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
6	ME	1	1	1	0

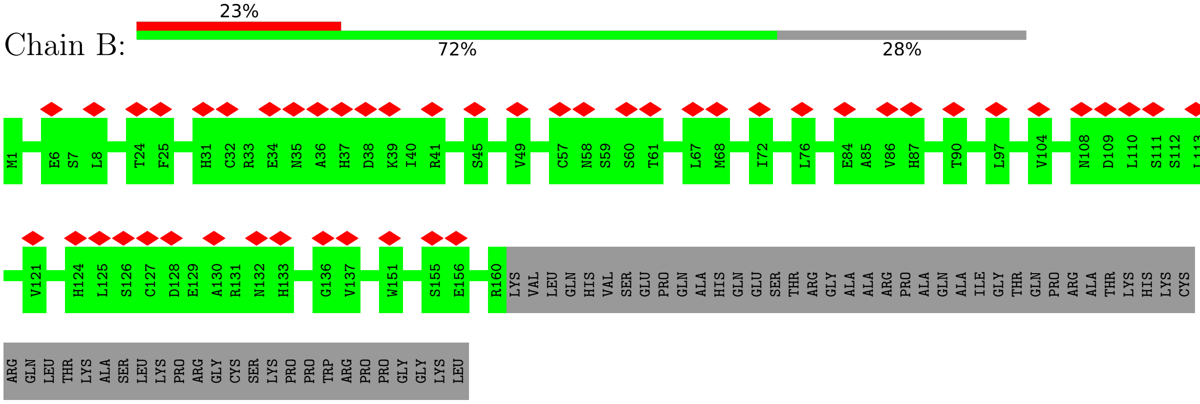
3 Residue-property plots

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.

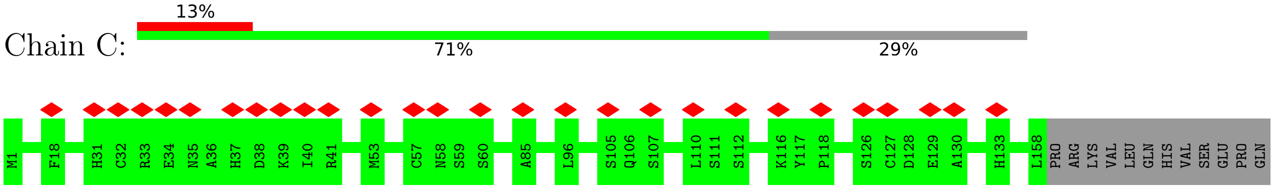
- Molecule 1: Sperm acrosome-associated protein 9



- Molecule 1: Sperm acrosome-associated protein 9

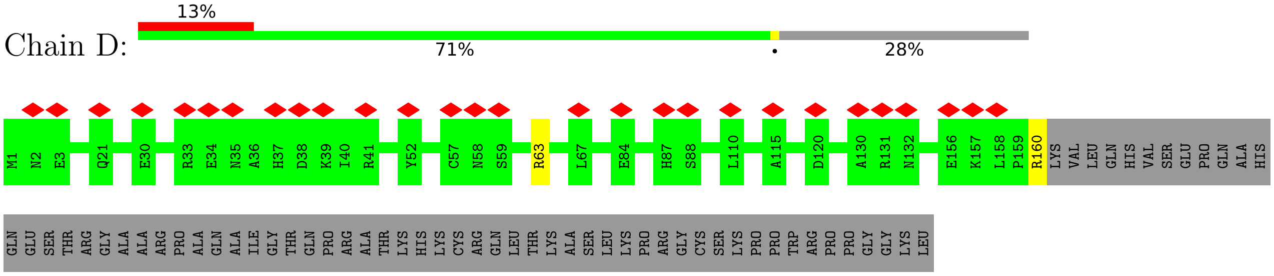


- Molecule 1: Sperm acrosome-associated protein 9



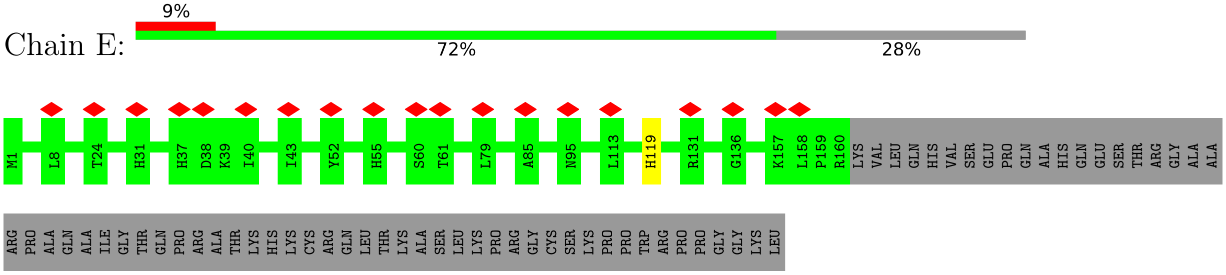
- Molecule 1: Sperm acrosome-associated protein 9

Chain D:



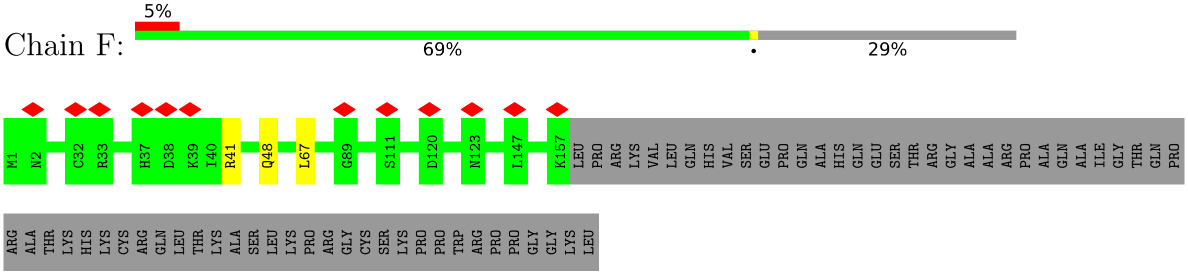
- Molecule 1: Sperm acrosome-associated protein 9

Chain E:



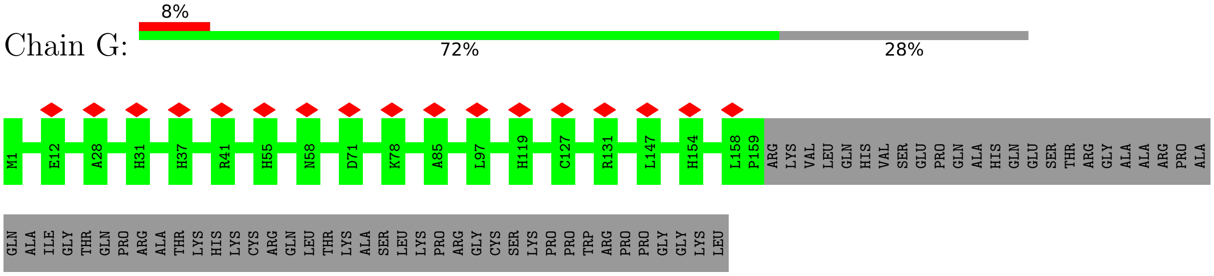
- Molecule 1: Sperm acrosome-associated protein 9

Chain F:



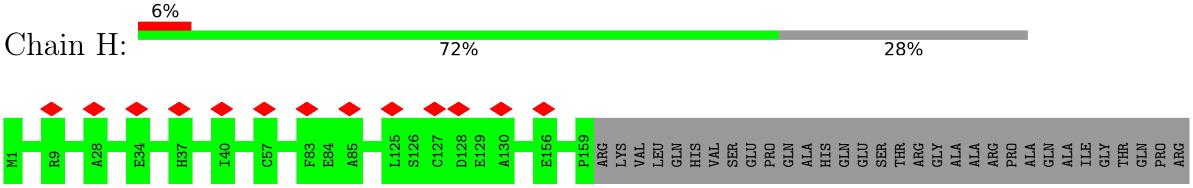
- Molecule 1: Sperm acrosome-associated protein 9

Chain G:

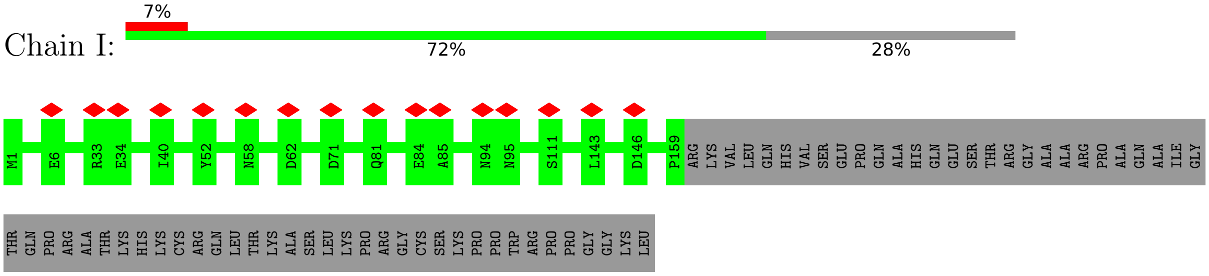


- Molecule 1: Sperm acrosome-associated protein 9

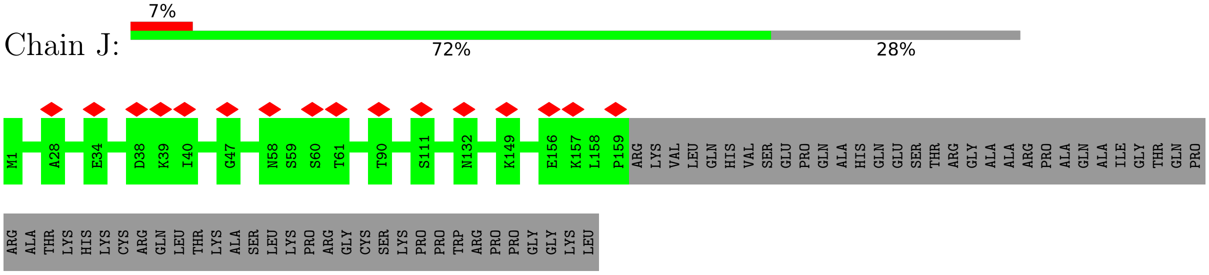
Chain H:



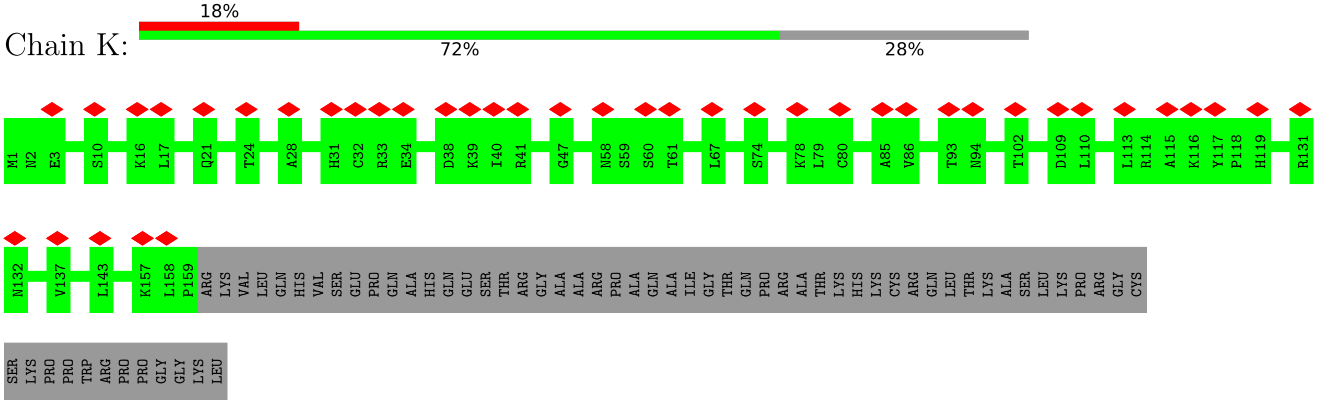
- Molecule 1: Sperm acrosome-associated protein 9



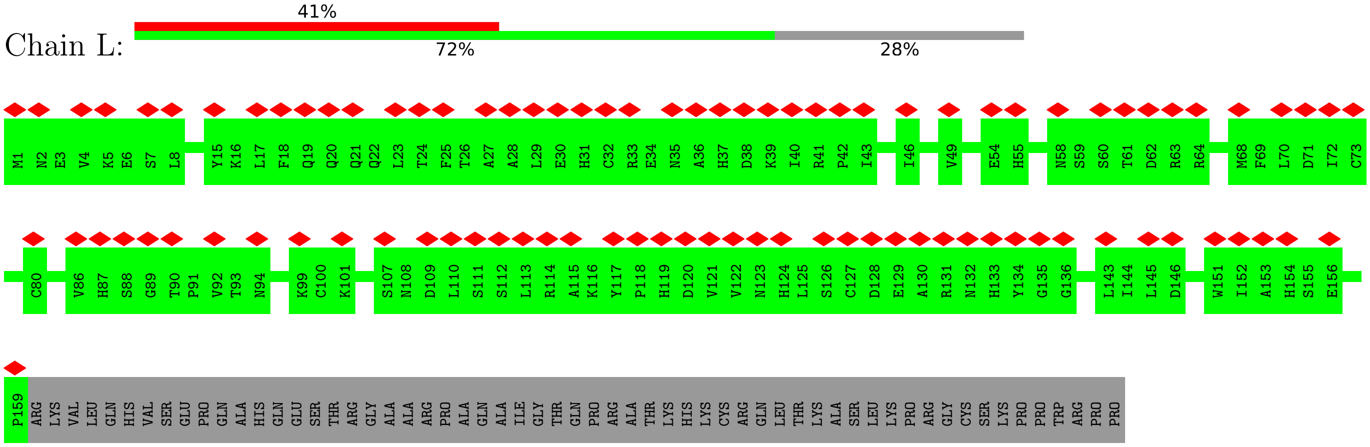
- Molecule 1: Sperm acrosome-associated protein 9

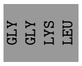


- Molecule 1: Sperm acrosome-associated protein 9

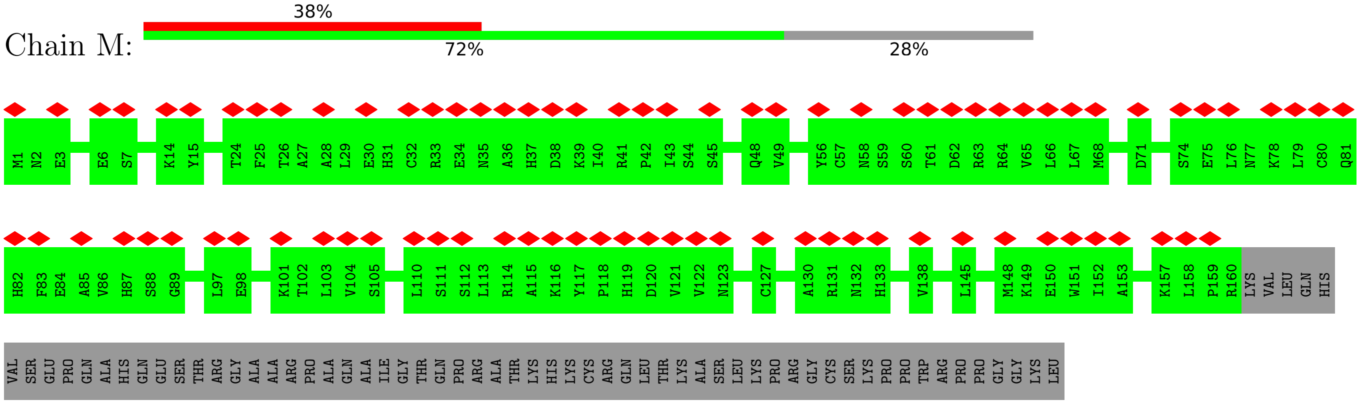


- Molecule 1: Sperm acrosome-associated protein 9





- Molecule 1: Sperm acrosome-associated protein 9



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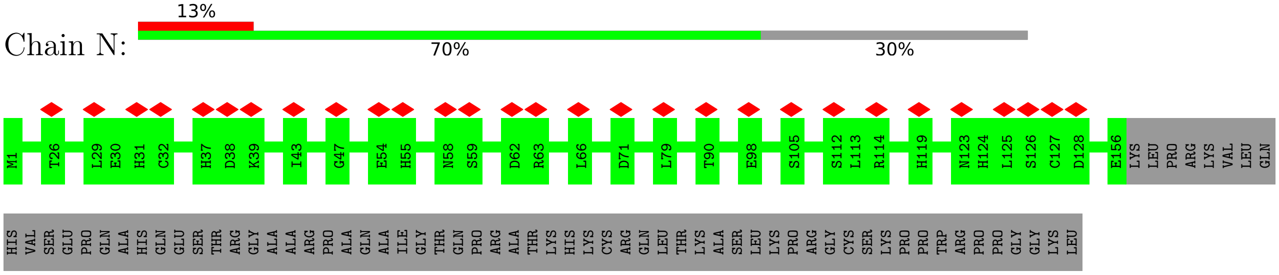
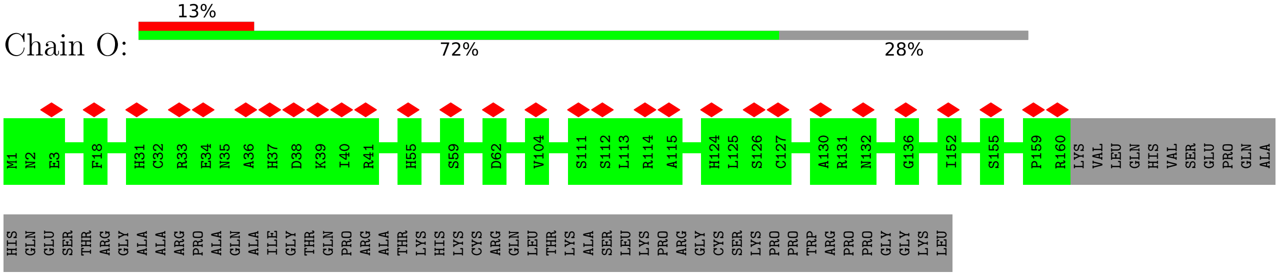
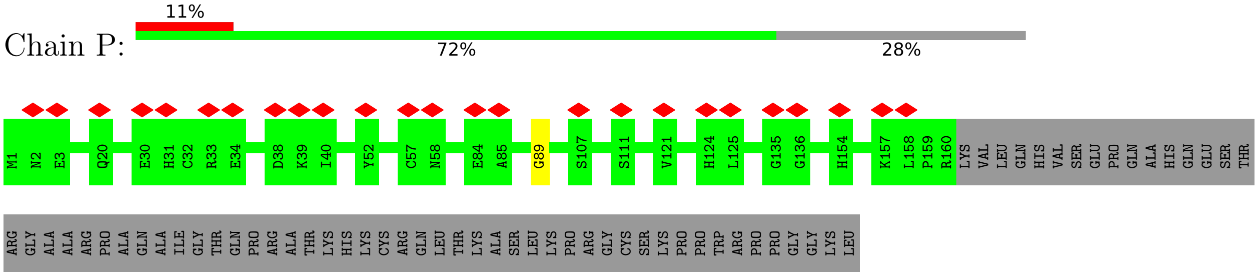


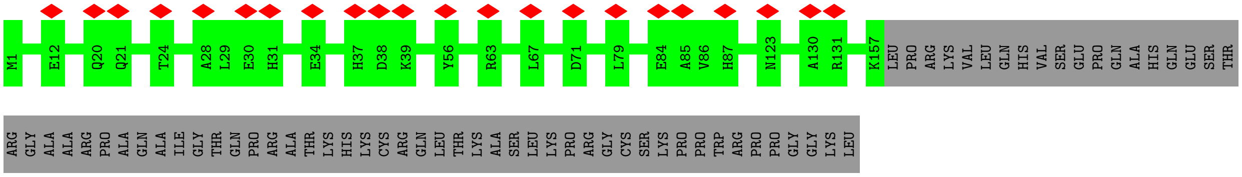
- Molecule 1: Sperm acrosome-associated protein 9



- Molecule 1: Sperm acrosome-associated protein 9

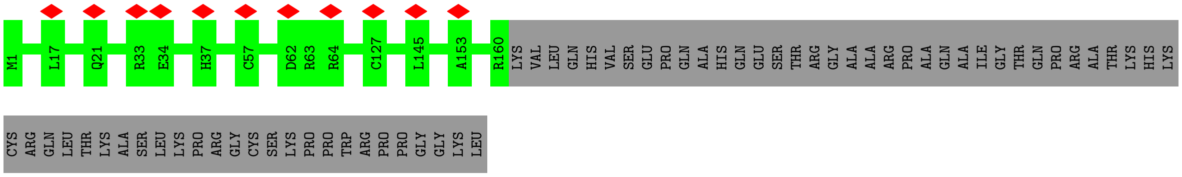


- Molecule 1: Sperm acrosome-associated protein 9



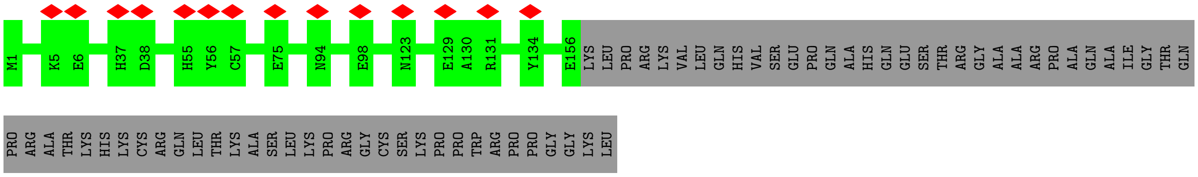
- Molecule 1: Sperm acrosome-associated protein 9

Chain R:



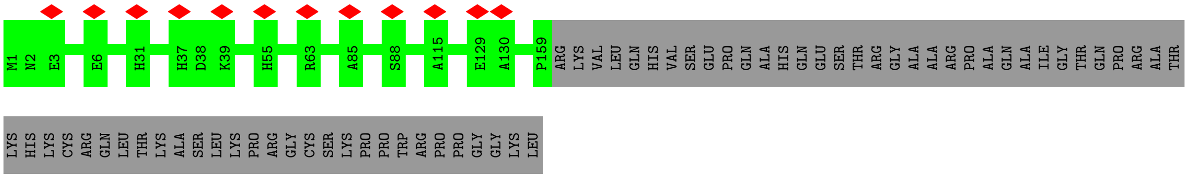
- Molecule 1: Sperm acrosome-associated protein 9

Chain S:



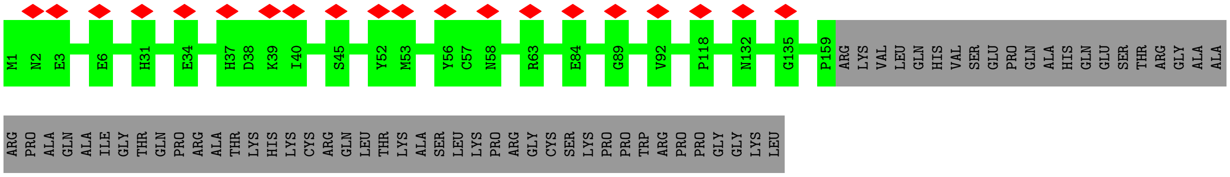
- Molecule 1: Sperm acrosome-associated protein 9

Chain T:



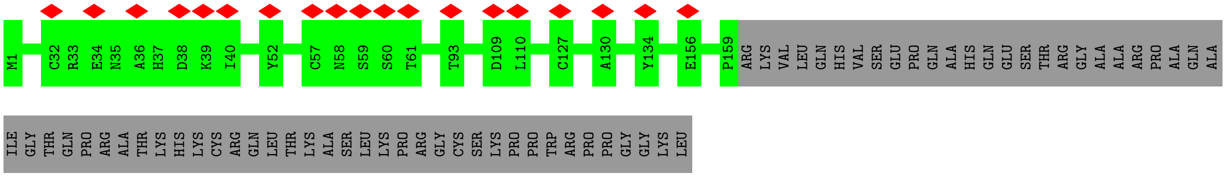
- Molecule 1: Sperm acrosome-associated protein 9

Chain U:



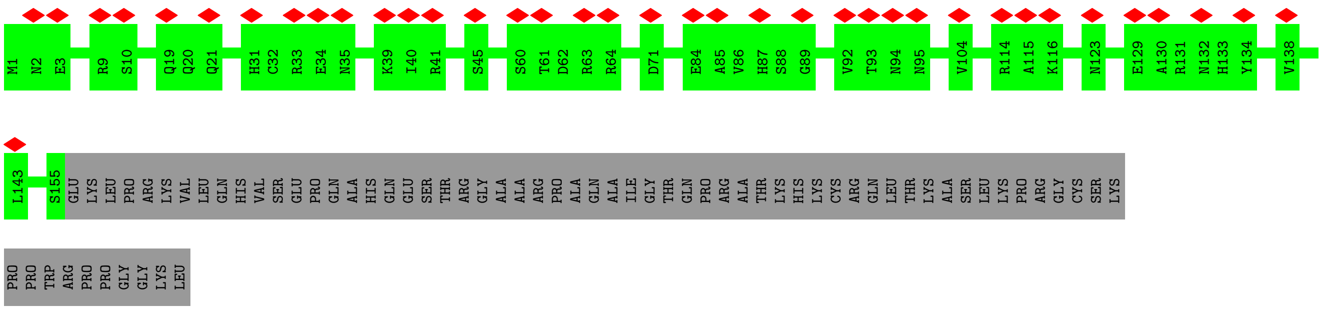
- Molecule 1: Sperm acrosome-associated protein 9

Chain V:



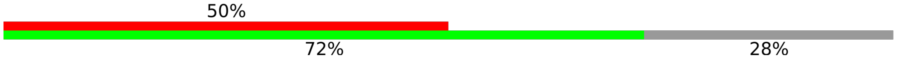
- Molecule 1: Sperm acrosome-associated protein 9

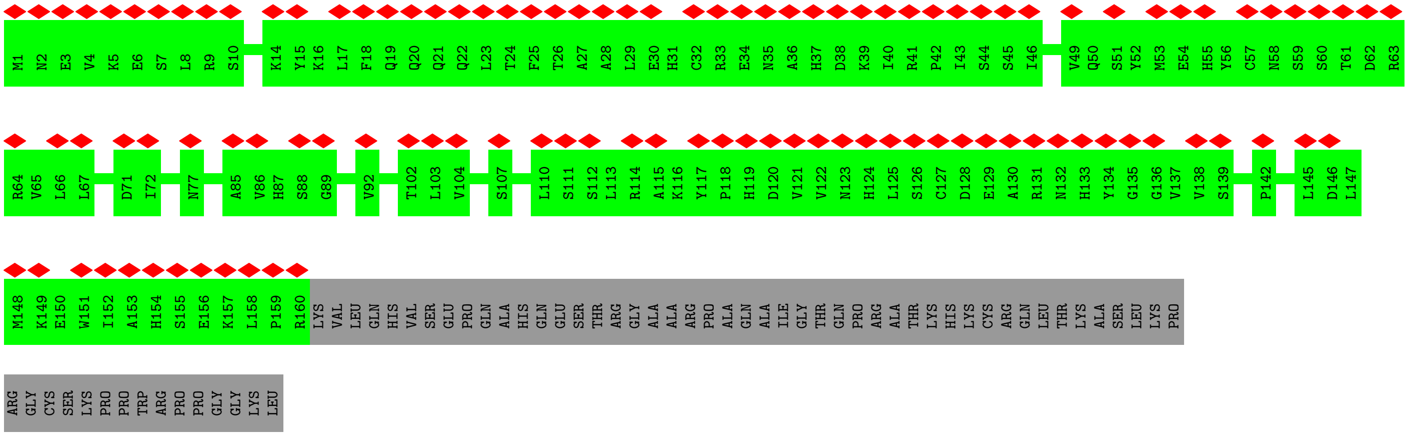
Chain W:



- Molecule 1: Sperm acrosome-associated protein 9

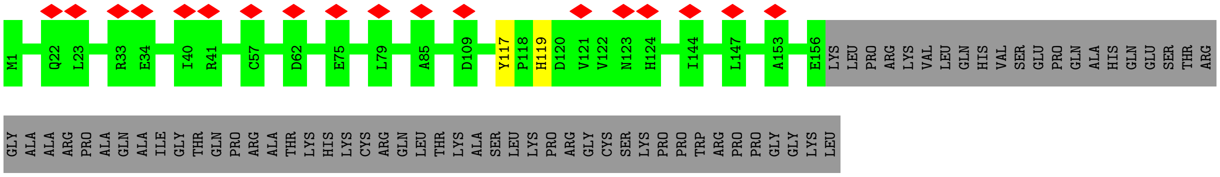
Chain X:





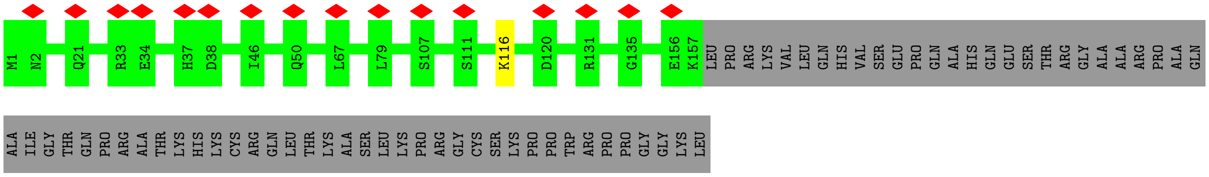
- Molecule 1: Sperm acrosome-associated protein 9

Chain d:



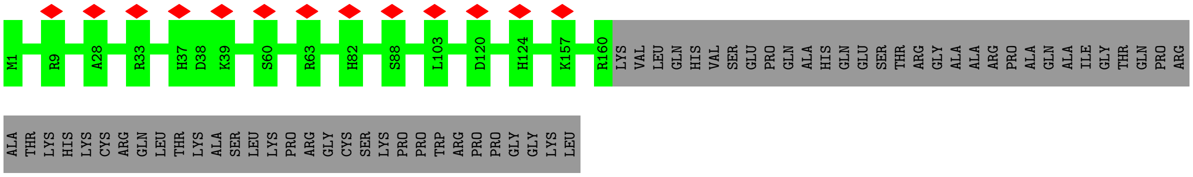
- Molecule 1: Sperm acrosome-associated protein 9

Chain e:



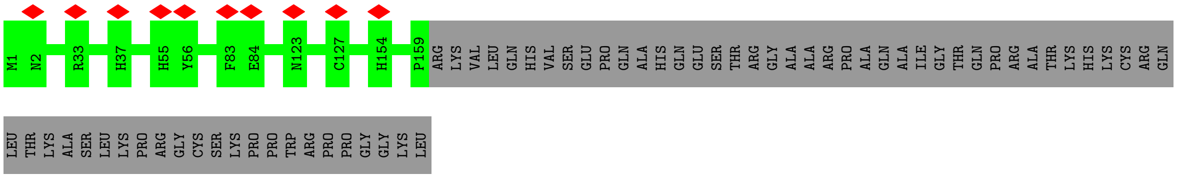
- Molecule 1: Sperm acrosome-associated protein 9

Chain f:



- Molecule 1: Sperm acrosome-associated protein 9

Chain g:

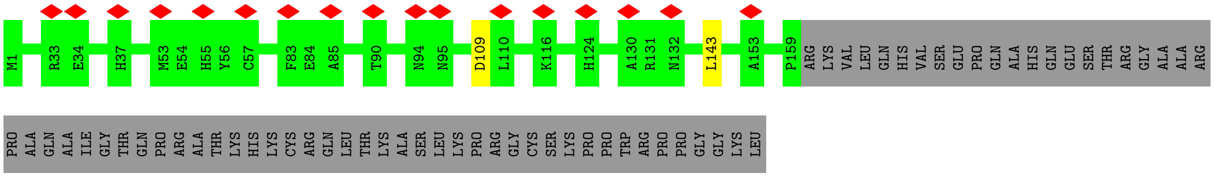


- Molecule 1: Sperm acrosome-associated protein 9

Chain h:

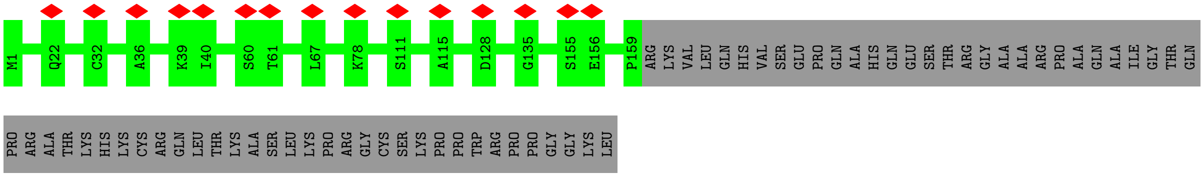
- Molecule 1: Sperm acrosome-associated protein 9

Chain i:



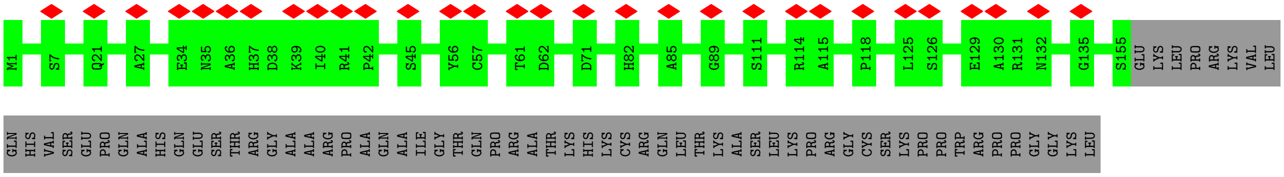
- Molecule 1: Sperm acrosome-associated protein 9

Chain j:



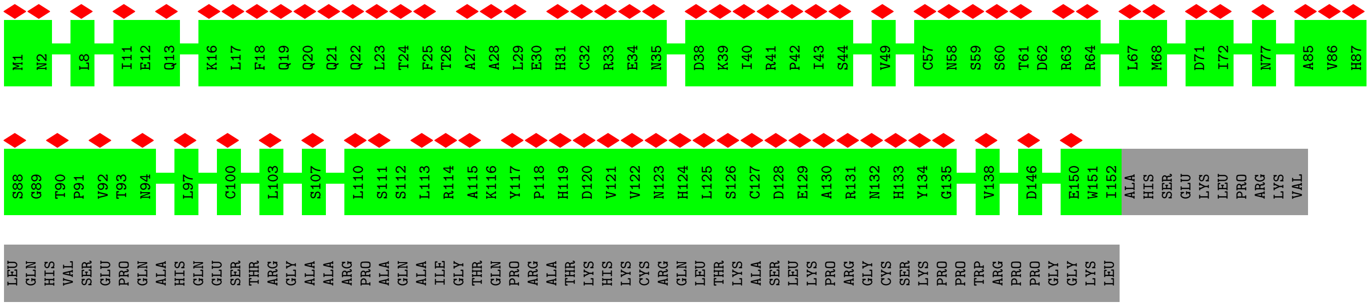
- Molecule 1: Sperm acrosome-associated protein 9

Chain k:



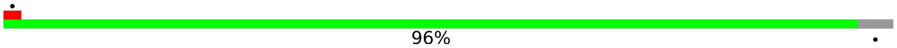
- Molecule 1: Sperm acrosome-associated protein 9

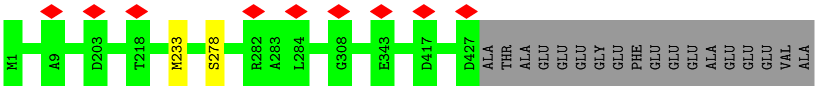
Chain l:



- Molecule 2: Tubulin beta-4B chain

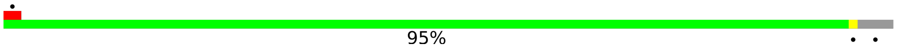
Chain AB:

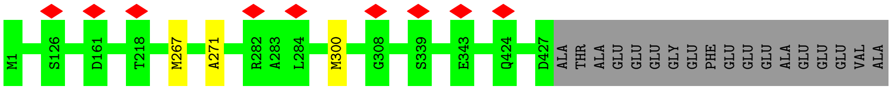




- Molecule 2: Tubulin beta-4B chain

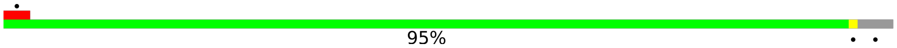
Chain AD:

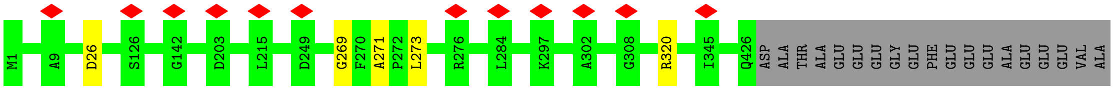




- Molecule 2: Tubulin beta-4B chain

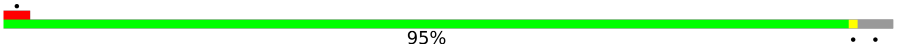
Chain AF:

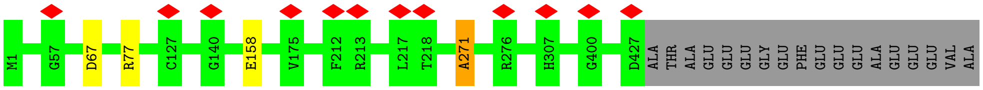




- Molecule 2: Tubulin beta-4B chain

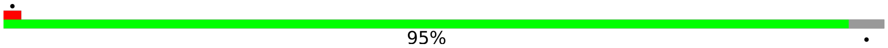
Chain BA:

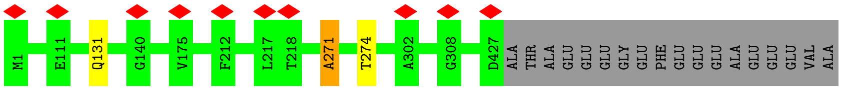




- Molecule 2: Tubulin beta-4B chain

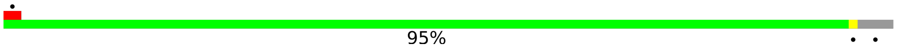
Chain BD:

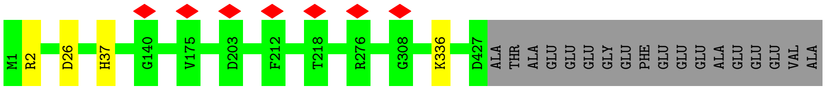




- Molecule 2: Tubulin beta-4B chain

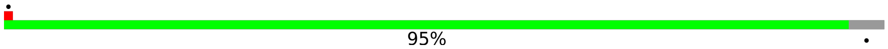
Chain BF:

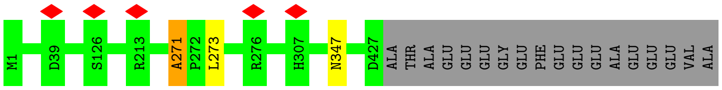




- Molecule 2: Tubulin beta-4B chain

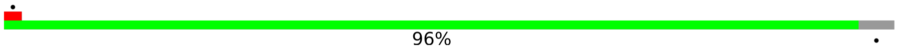
Chain CB:

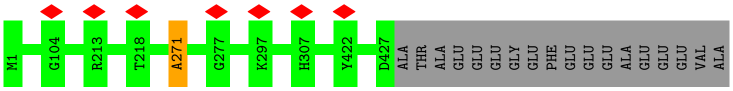




- Molecule 2: Tubulin beta-4B chain

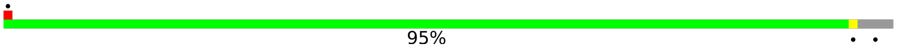
Chain CD:

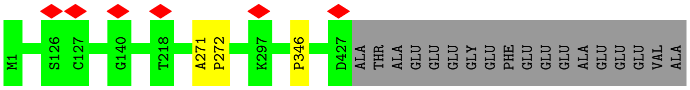




- Molecule 2: Tubulin beta-4B chain

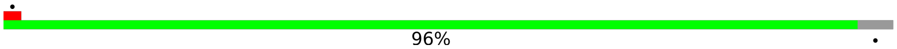
Chain CF:

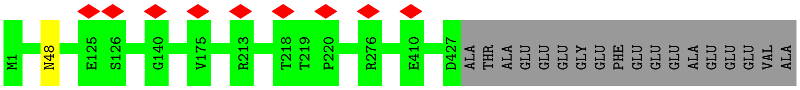




- Molecule 2: Tubulin beta-4B chain

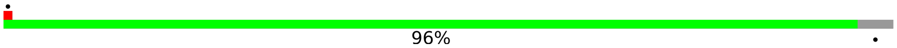
Chain DB:

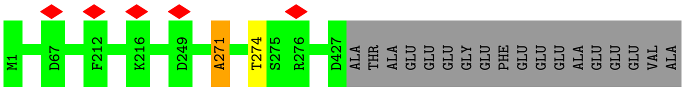




- Molecule 2: Tubulin beta-4B chain

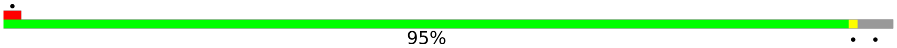
Chain DD:

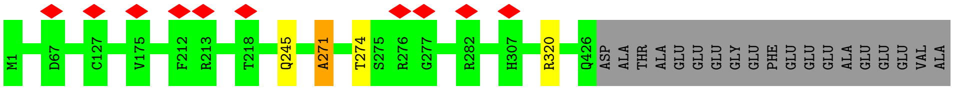




- Molecule 2: Tubulin beta-4B chain

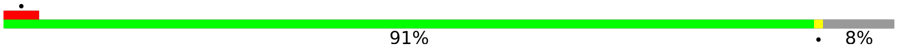
Chain DF:

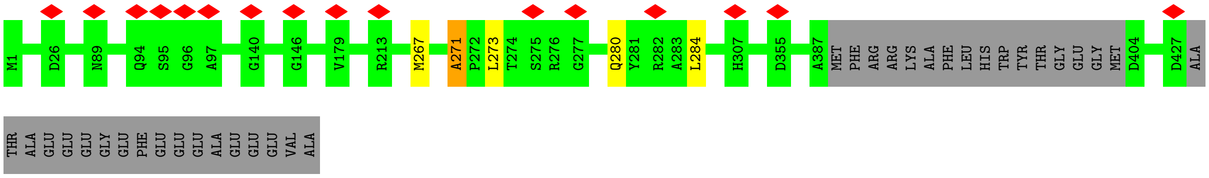




- Molecule 2: Tubulin beta-4B chain

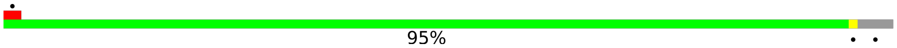
Chain EB:

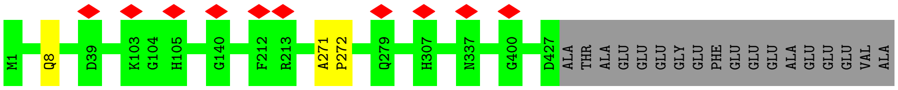




- Molecule 2: Tubulin beta-4B chain

Chain ED:





- Molecule 2: Tubulin beta-4B chain

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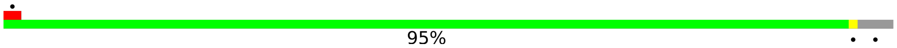
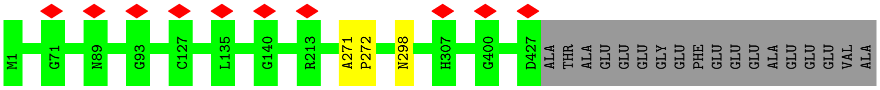
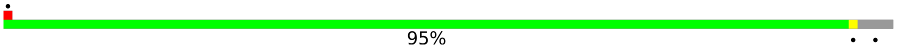
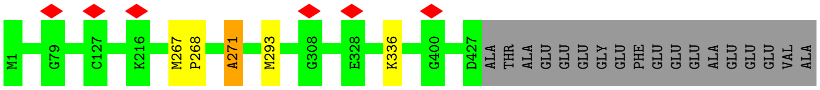




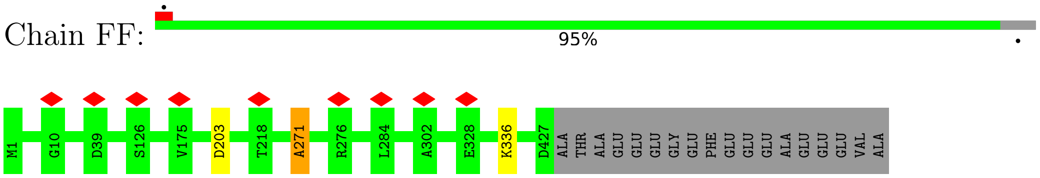
- Molecule 2: Tubulin beta-4B chain

Chain FD:





- Molecule 2: Tubulin beta-4B chain



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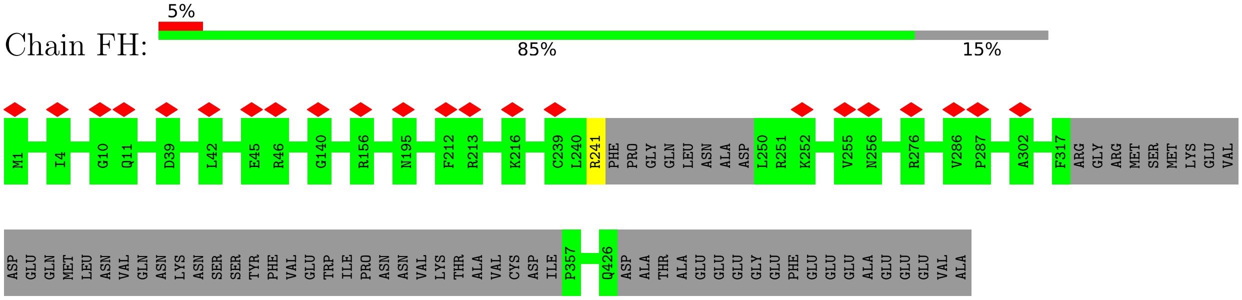

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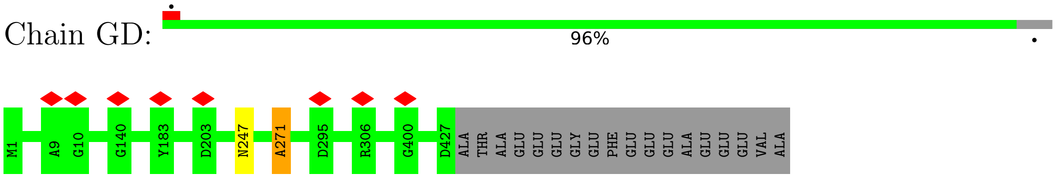

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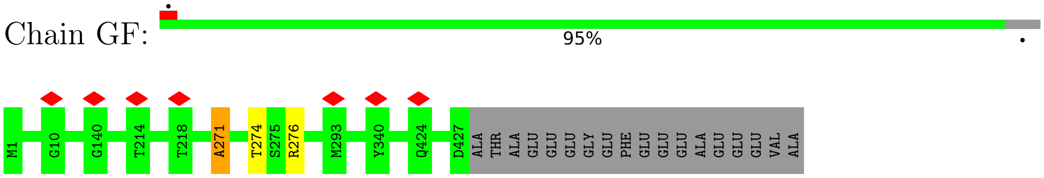

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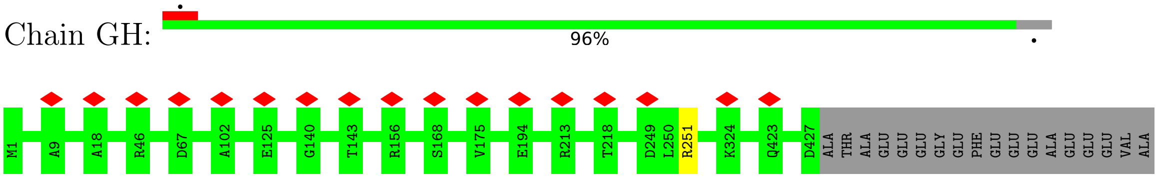

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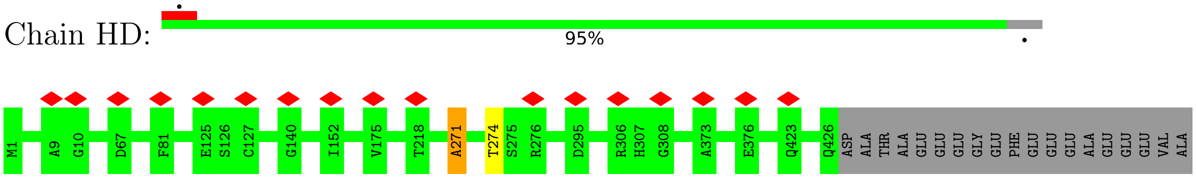

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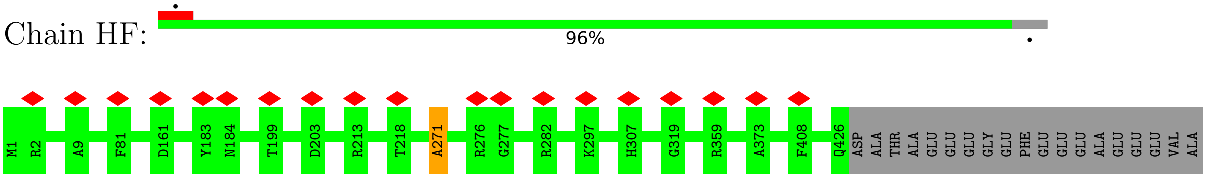

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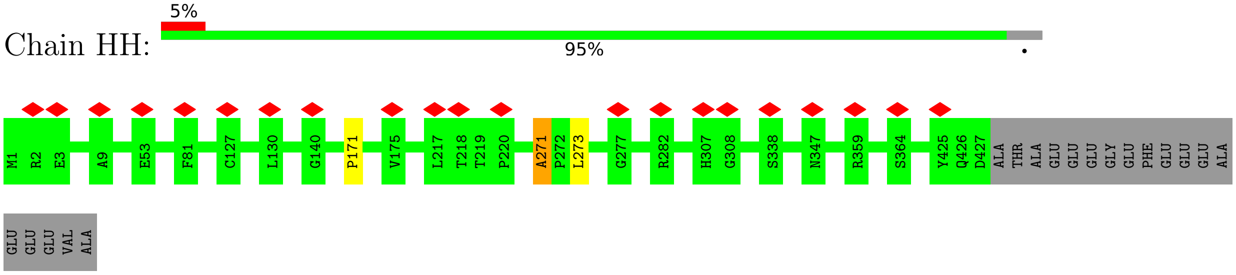

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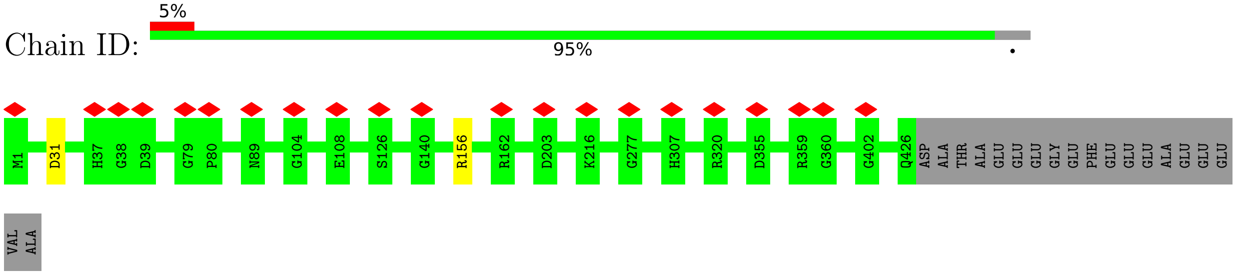

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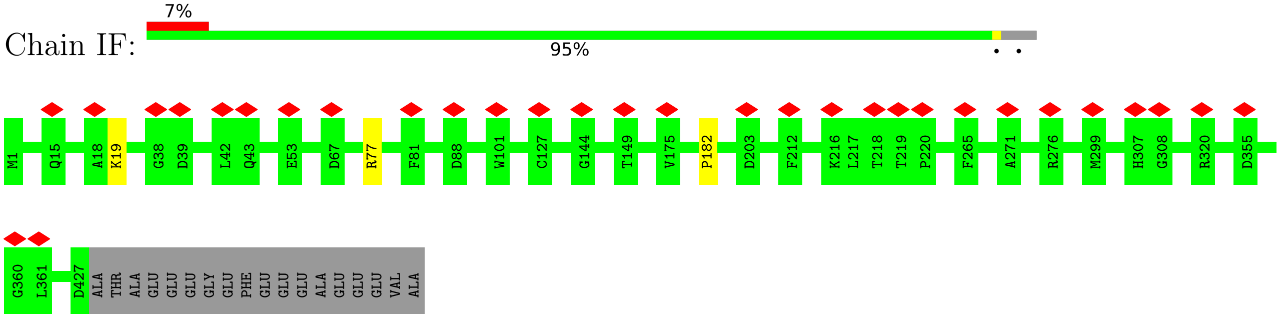

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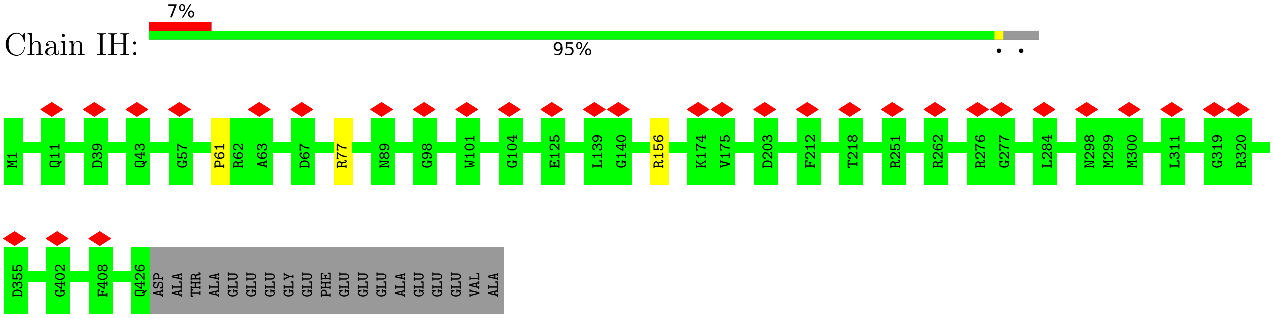

- Molecule 2: Tubulin beta-4B chain

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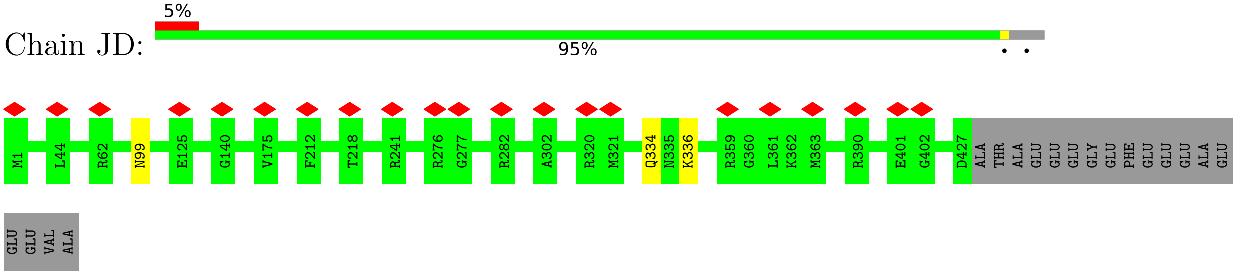

- Molecule 2: Tubulin beta-4B chain

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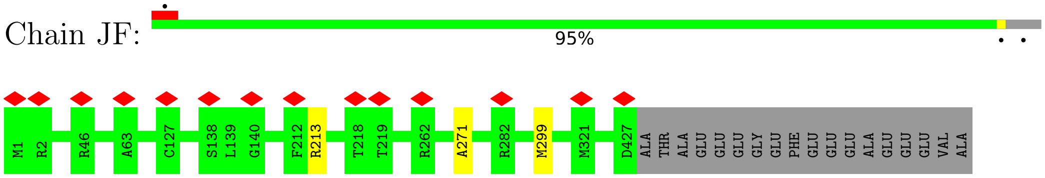

- Molecule 2: Tubulin beta-4B chain

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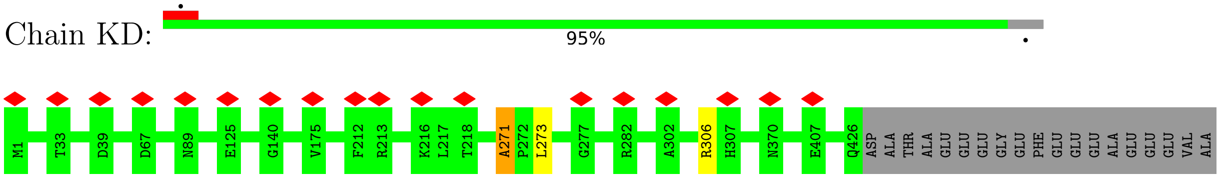

- Molecule 2: Tubulin beta-4B chain

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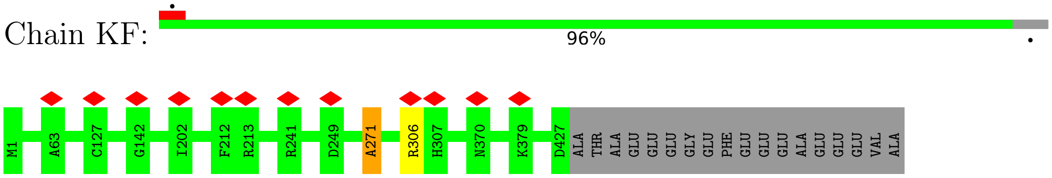
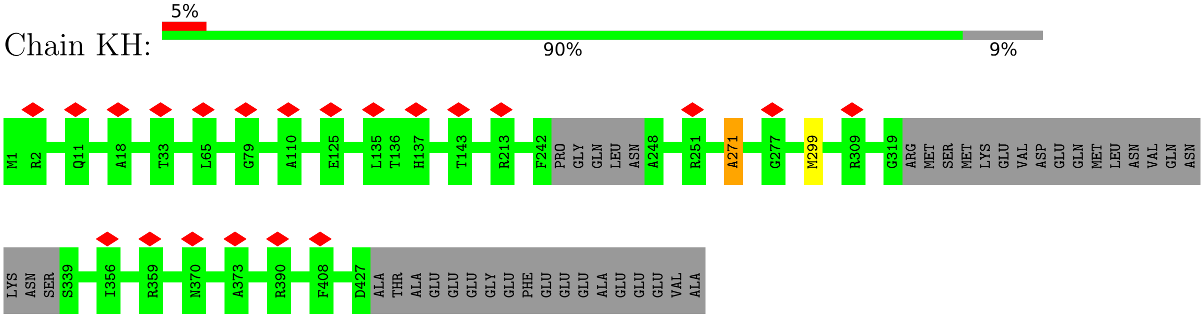


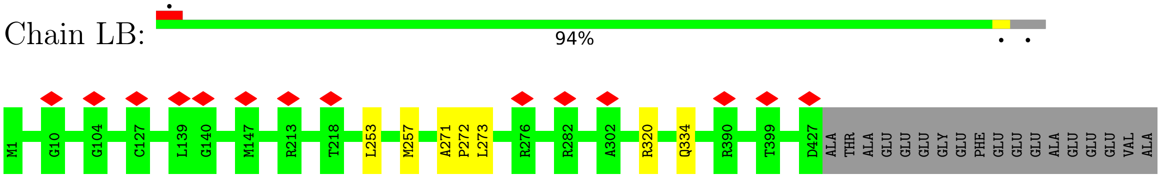
- Molecule 2: Tubulin beta-4B chain

Chain KH:



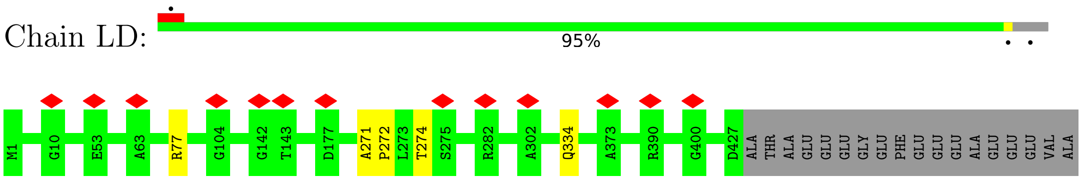
- Molecule 2: Tubulin beta-4B chain

Chain LB:



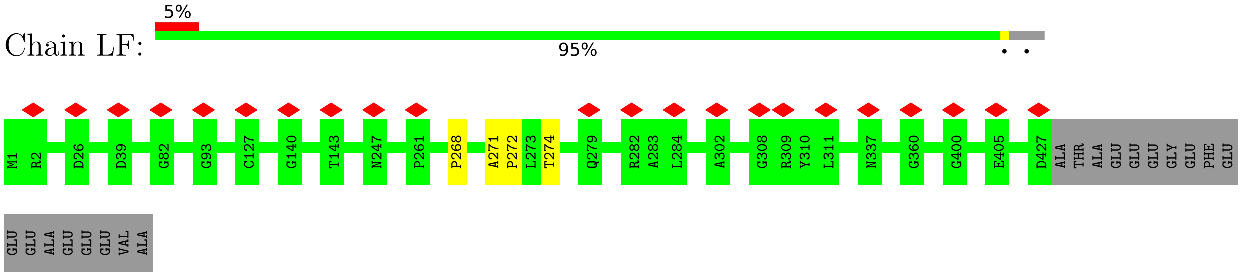
- Molecule 2: Tubulin beta-4B chain

Chain LD:



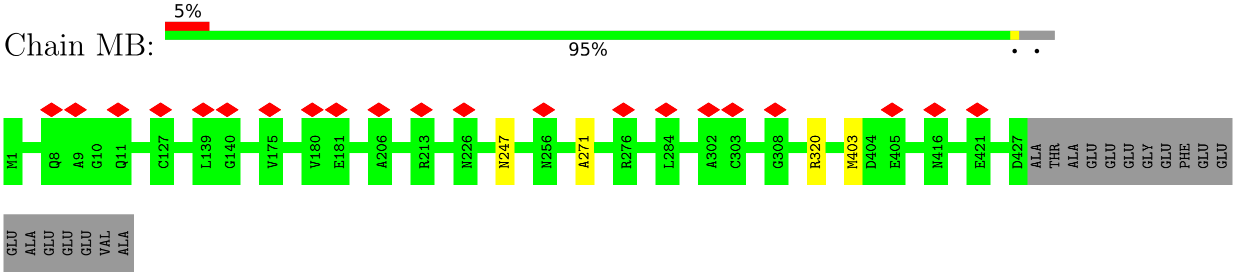
- Molecule 2: Tubulin beta-4B chain

Chain LF:



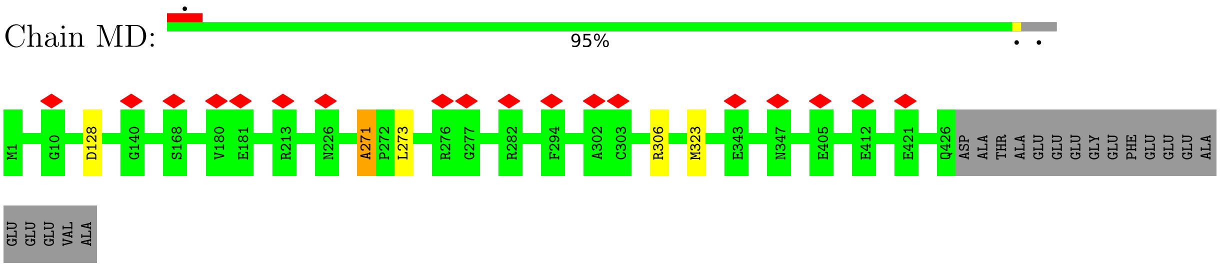
- Molecule 2: Tubulin beta-4B chain

Chain MB:



- Molecule 2: Tubulin beta-4B chain

Chain MD:



- Molecule 2: Tubulin beta-4B chain

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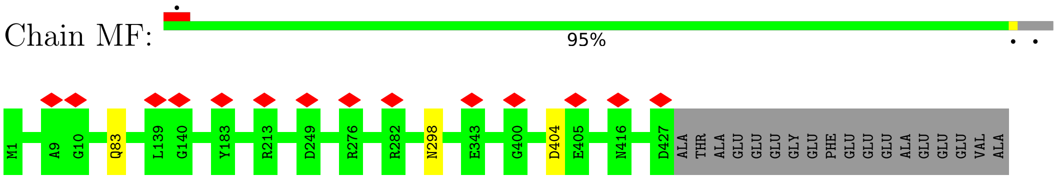

- Molecule 3: Tubulin alpha-1A chain

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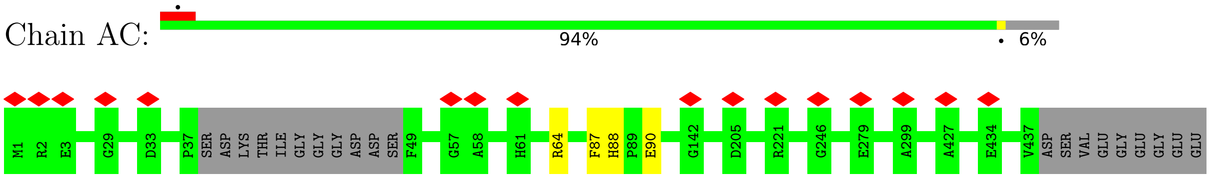
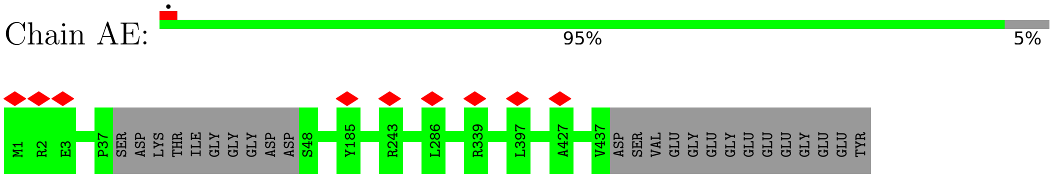


- Molecule 3: Tubulin alpha-1A chain



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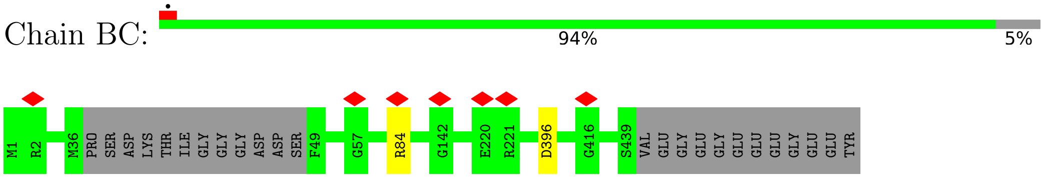

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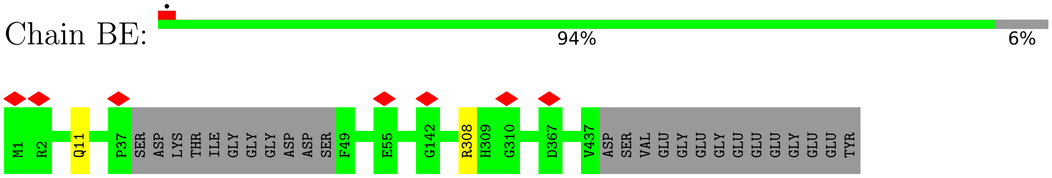

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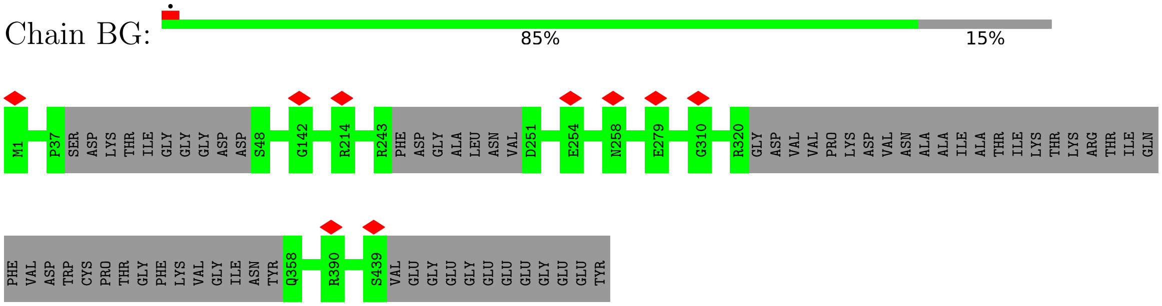

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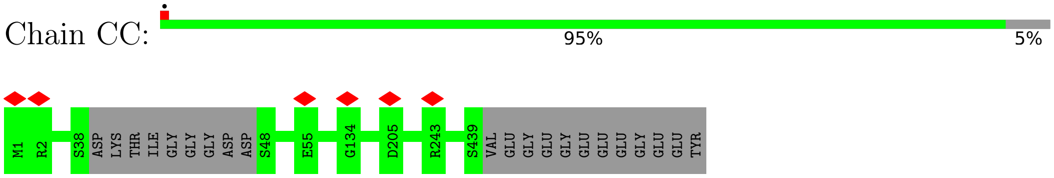

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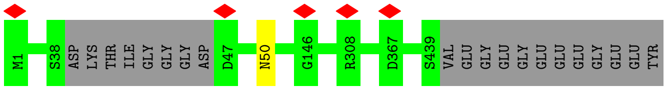
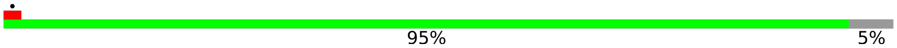
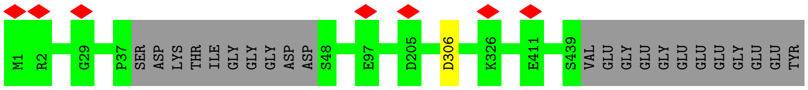


- Molecule 3: Tubulin alpha-1A chain

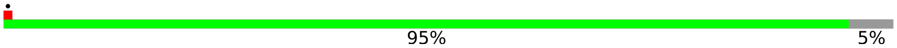
Chain CG:

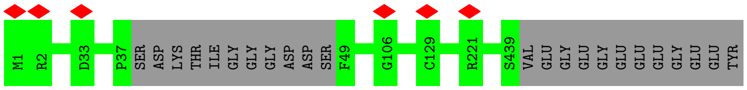




- Molecule 3: Tubulin alpha-1A chain

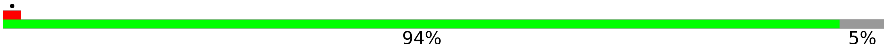
Chain DC:

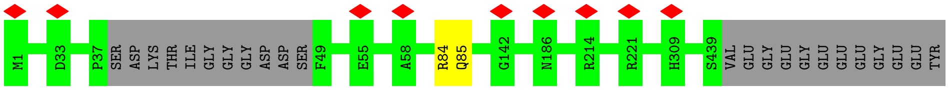




- Molecule 3: Tubulin alpha-1A chain

Chain DE:





- Molecule 3: Tubulin alpha-1A chain

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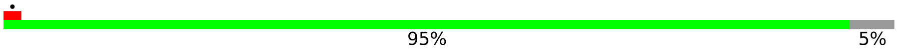

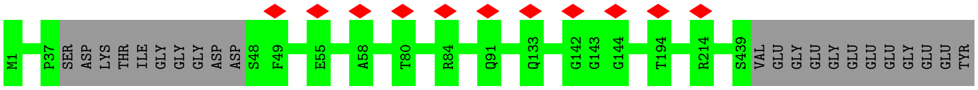

- Molecule 3: Tubulin alpha-1A chain

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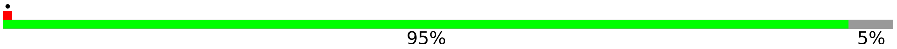
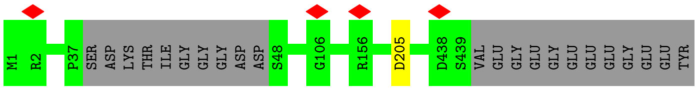
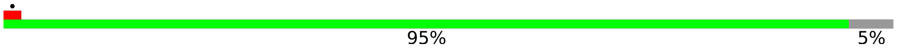
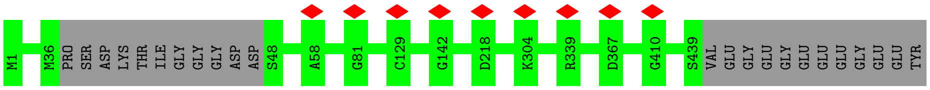




- Molecule 3: Tubulin alpha-1A chain

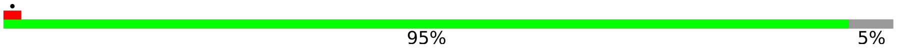
Chain EE:

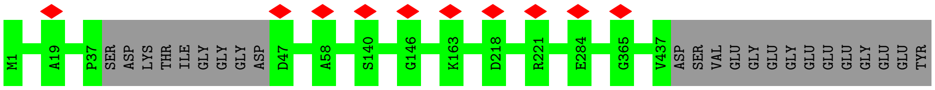




- Molecule 3: Tubulin alpha-1A chain

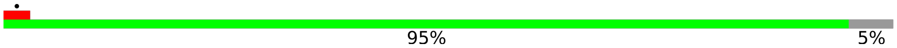
Chain EG:

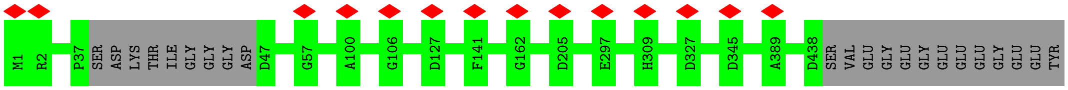




- Molecule 3: Tubulin alpha-1A chain

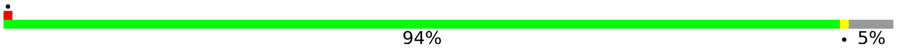
Chain FC:

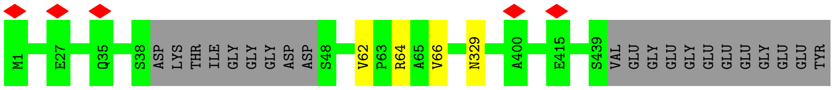




- Molecule 3: Tubulin alpha-1A chain

Chain FE:





- Molecule 3: Tubulin alpha-1A chain

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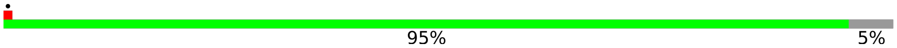
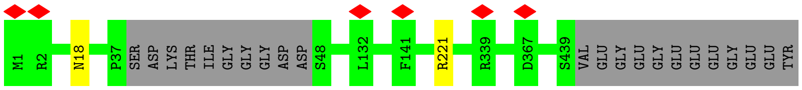
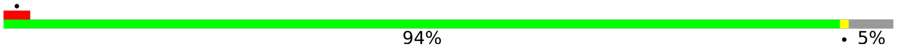
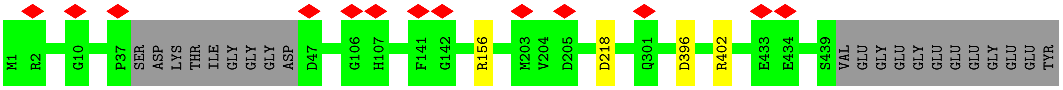




- Molecule 3: Tubulin alpha-1A chain

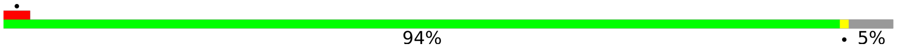
Chain GC:

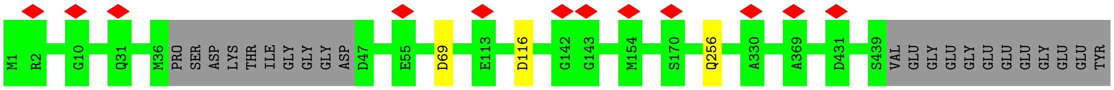




- Molecule 3: Tubulin alpha-1A chain

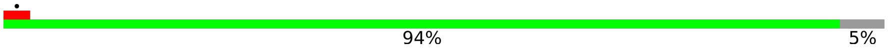
Chain GE:

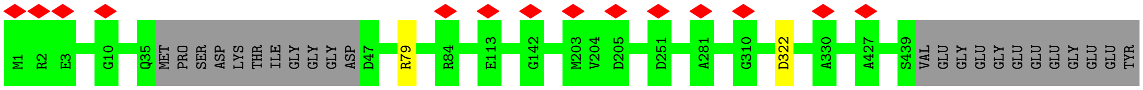




- Molecule 3: Tubulin alpha-1A chain

Chain GG:





- Molecule 3: Tubulin alpha-1A chain

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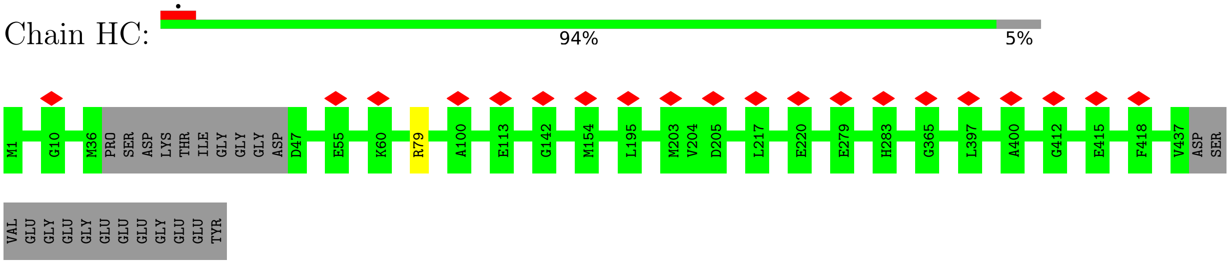
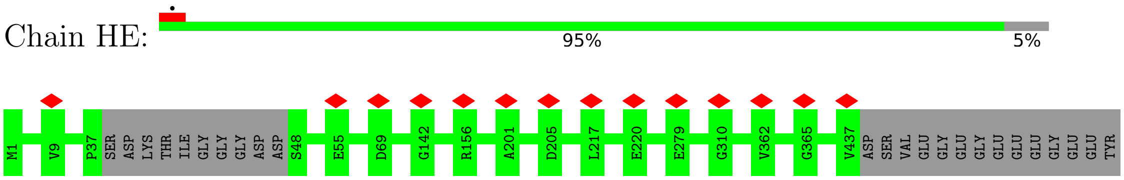


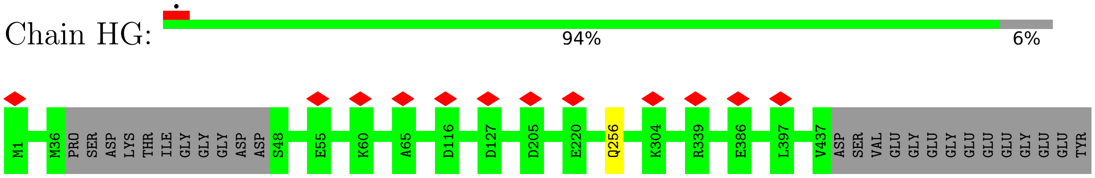
- Molecule 3: Tubulin alpha-1A chain

Chain HE:



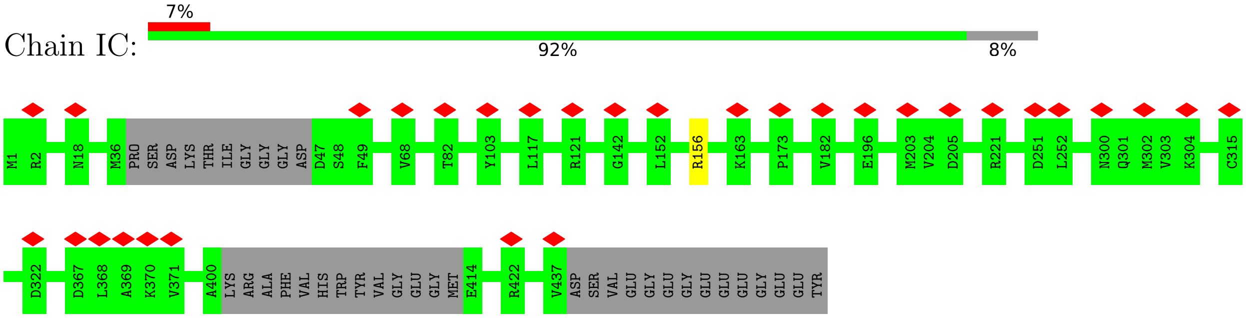
- Molecule 3: Tubulin alpha-1A chain

Chain HG:



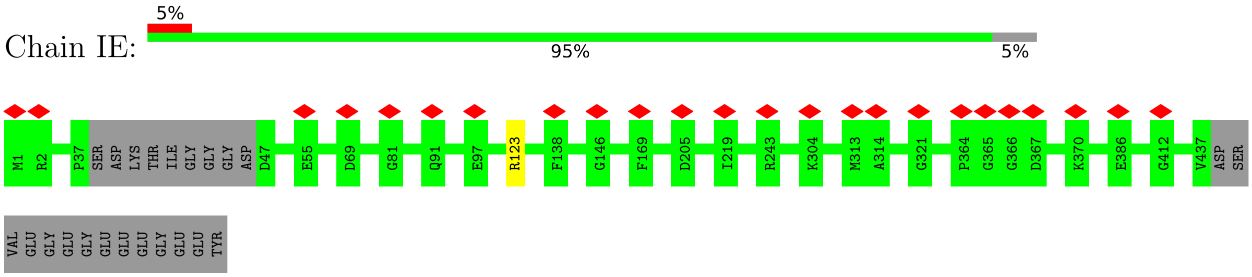
- Molecule 3: Tubulin alpha-1A chain

Chain IC:



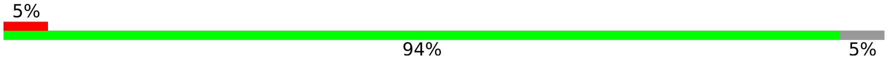
- Molecule 3: Tubulin alpha-1A chain

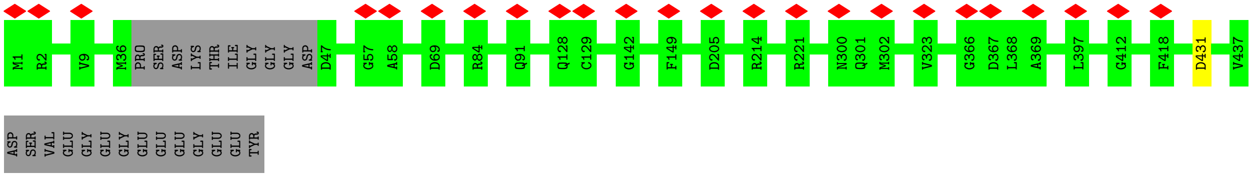
Chain IE:



- Molecule 3: Tubulin alpha-1A chain

Chain IG:





- Molecule 3: Tubulin alpha-1A chain

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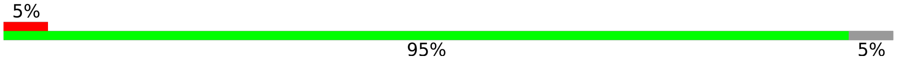
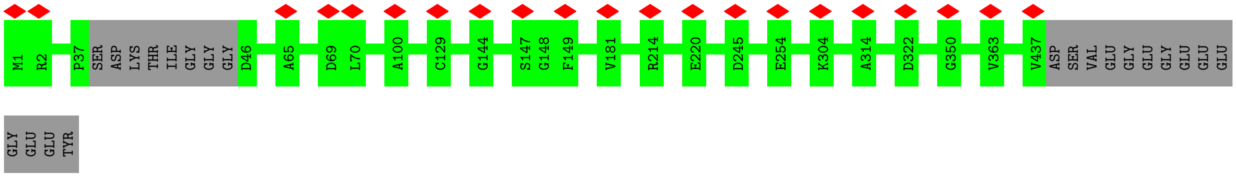
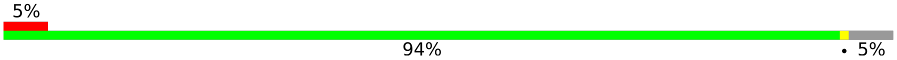
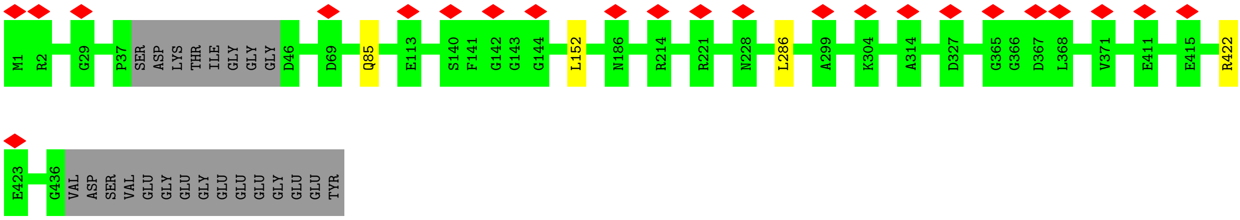




- Molecule 3: Tubulin alpha-1A chain

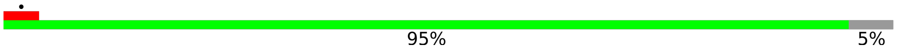
Chain JE:

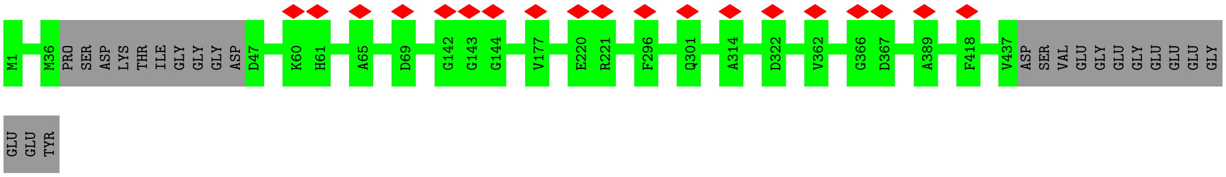




- Molecule 3: Tubulin alpha-1A chain

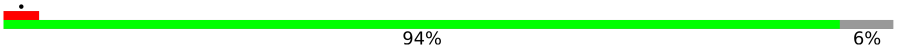
Chain JG:

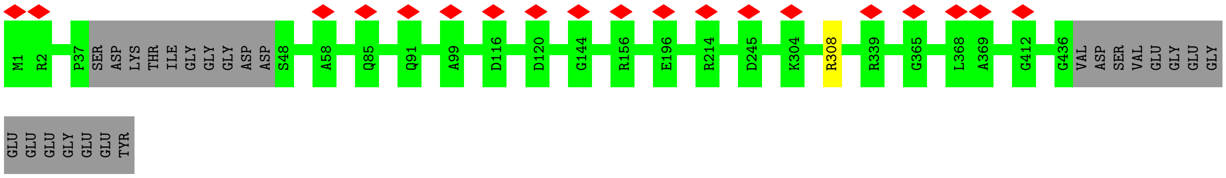




- Molecule 3: Tubulin alpha-1A chain

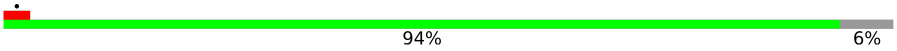
Chain KC:

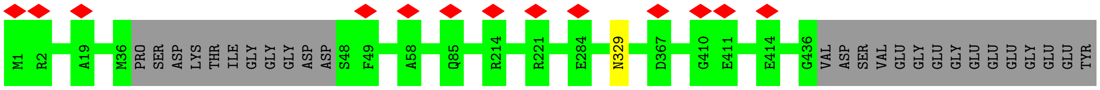




- Molecule 3: Tubulin alpha-1A chain

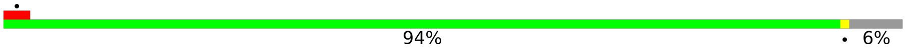
Chain KE:

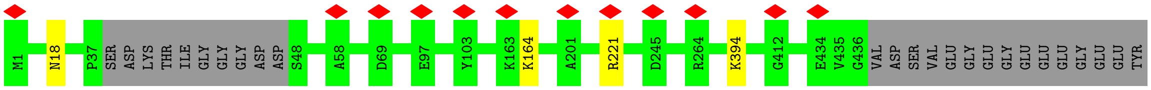




- Molecule 3: Tubulin alpha-1A chain

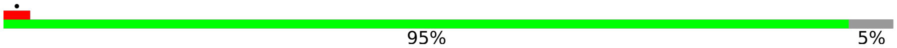
Chain KG:

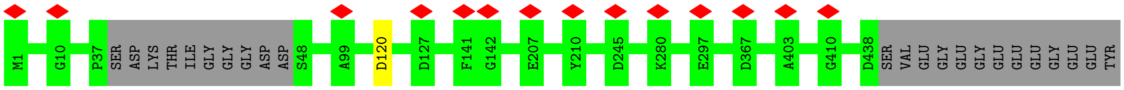




- Molecule 3: Tubulin alpha-1A chain

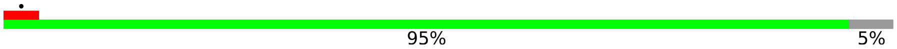
Chain LA:

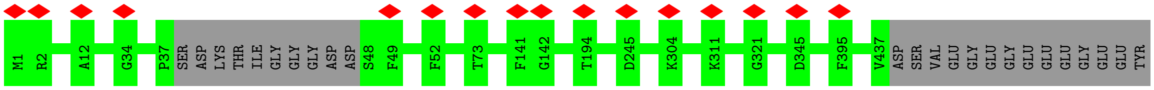




- Molecule 3: Tubulin alpha-1A chain

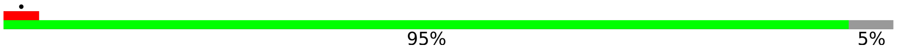
Chain LC:

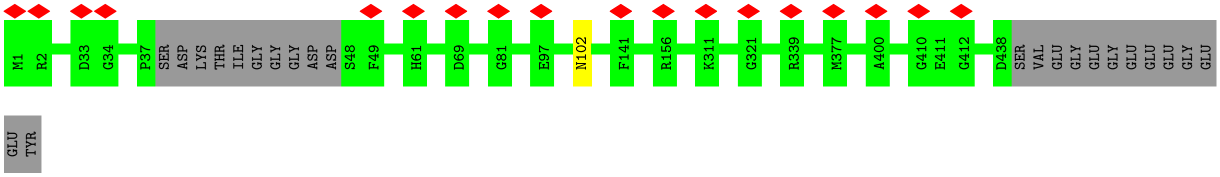




- Molecule 3: Tubulin alpha-1A chain

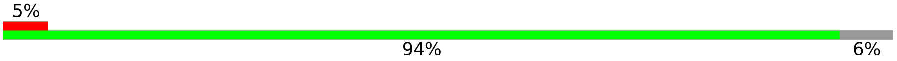
Chain LE:

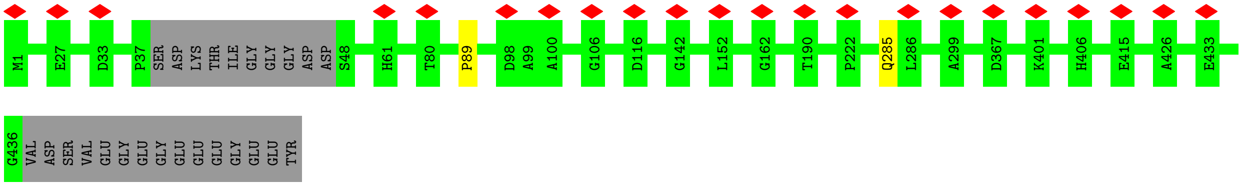




- Molecule 3: Tubulin alpha-1A chain

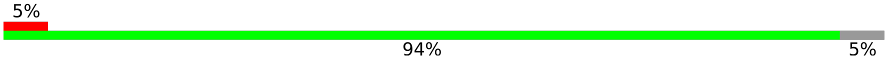
Chain MA:

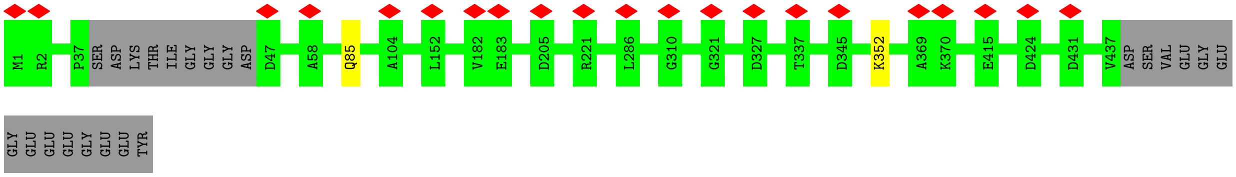




- Molecule 3: Tubulin alpha-1A chain

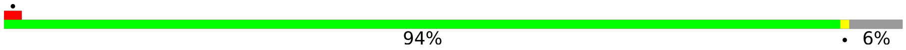
Chain MC:

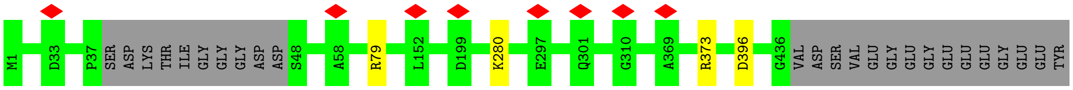




- Molecule 3: Tubulin alpha-1A chain

Chain ME:





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	21990	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 $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.386	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.015	Depositor
Map value standard deviation	0.090	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	404.63998, 404.63998, 404.63998	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.843, 0.843, 0.843	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GDP, GTP, 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	A	0.23	0/795	0.36	0/1109
1	B	0.23	0/795	0.34	0/1109
1	C	0.23	0/785	0.35	0/1095
1	D	0.26	0/1313	0.52	0/1772
1	E	0.26	0/1313	0.52	0/1772
1	F	0.27	0/1286	0.51	1/1735 (0.1%)
1	G	0.27	0/1302	0.58	0/1758
1	H	0.25	0/1302	0.48	0/1758
1	I	0.26	0/1302	0.49	0/1758
1	J	0.24	0/790	0.36	0/1102
1	K	0.24	0/790	0.33	0/1102
1	L	0.23	0/790	0.35	0/1102
1	M	0.23	0/795	0.36	0/1109
1	N	0.24	0/775	0.38	0/1081
1	O	0.24	0/795	0.36	0/1109
1	P	0.28	0/1313	0.55	1/1772 (0.1%)
1	Q	0.27	0/1286	0.53	0/1735
1	R	0.27	0/1313	0.53	0/1772
1	S	0.27	0/1277	0.50	0/1724
1	T	0.27	0/1302	0.54	0/1758
1	U	0.27	0/1302	0.56	0/1758
1	V	0.24	0/790	0.36	0/1102
1	W	0.23	0/770	0.35	0/1074
1	X	0.23	0/795	0.36	0/1109
1	d	0.29	0/1277	0.57	1/1724 (0.1%)
1	e	0.27	0/1286	0.53	0/1735
1	f	0.26	0/1313	0.52	0/1772
1	g	0.28	0/1302	0.53	0/1758
1	h	0.27	0/1277	0.52	0/1724
1	i	0.28	0/1302	0.56	2/1758 (0.1%)
1	j	0.24	0/790	0.35	0/1102
1	k	0.24	0/770	0.37	0/1074

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
1	l	0.23	0/755	0.35	0/1053
2	AB	0.31	0/3431	0.59	1/4649 (0.0%)
2	AD	0.29	0/3431	0.59	3/4649 (0.1%)
2	AF	0.29	0/3423	0.59	3/4638 (0.1%)
2	BA	0.29	0/3431	0.60	2/4649 (0.0%)
2	BD	0.30	0/3431	0.57	1/4649 (0.0%)
2	BF	0.30	0/3431	0.60	1/4649 (0.0%)
2	CB	0.28	0/3431	0.58	1/4649 (0.0%)
2	CD	0.28	0/3431	0.57	1/4649 (0.0%)
2	CF	0.30	0/3431	0.61	2/4649 (0.0%)
2	DB	0.29	0/3431	0.58	0/4649
2	DD	0.30	0/3431	0.60	1/4649 (0.0%)
2	DF	0.29	0/3423	0.59	1/4638 (0.0%)
2	EB	0.28	0/3282	0.58	3/4449 (0.1%)
2	ED	0.31	0/3431	0.62	1/4649 (0.0%)
2	EF	0.31	0/3431	0.61	1/4649 (0.0%)
2	FD	0.30	0/3431	0.61	4/4649 (0.1%)
2	FF	0.29	0/3431	0.60	2/4649 (0.0%)
2	FH	0.28	0/3037	0.56	0/4112
2	GD	0.29	0/3431	0.57	1/4649 (0.0%)
2	GF	0.29	0/3431	0.56	1/4649 (0.0%)
2	GH	0.27	0/3431	0.56	0/4649
2	HD	0.29	0/3423	0.57	1/4638 (0.0%)
2	HF	0.29	0/3423	0.57	1/4638 (0.0%)
2	HH	0.29	0/3431	0.57	2/4649 (0.0%)
2	ID	0.28	0/3423	0.57	1/4638 (0.0%)
2	IF	0.29	0/3431	0.61	1/4649 (0.0%)
2	IH	0.29	0/3423	0.58	1/4638 (0.0%)
2	JD	0.29	0/3431	0.58	0/4649
2	JF	0.29	0/3431	0.59	1/4649 (0.0%)
2	KD	0.29	0/3423	0.58	1/4638 (0.0%)
2	KF	0.30	0/3431	0.59	1/4649 (0.0%)
2	KH	0.27	0/3237	0.59	1/4387 (0.0%)
2	LB	0.30	0/3431	0.58	2/4649 (0.0%)
2	LD	0.29	0/3431	0.58	2/4649 (0.0%)
2	LF	0.29	0/3431	0.60	1/4649 (0.0%)
2	MB	0.30	0/3431	0.58	0/4649
2	MD	0.29	0/3423	0.60	2/4638 (0.0%)
2	MF	0.29	0/3431	0.59	1/4649 (0.0%)
3	AC	0.31	0/3420	0.59	1/4643 (0.0%)
3	AE	0.30	0/3426	0.56	0/4651
3	BC	0.29	0/3426	0.56	1/4650 (0.0%)
3	BE	0.29	0/3420	0.53	0/4643

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
3	BG	0.28	0/3093	0.55	0/4193
3	CC	0.29	0/3446	0.58	0/4678
3	CE	0.29	0/3454	0.57	0/4689
3	CG	0.28	0/3440	0.56	1/4670 (0.0%)
3	DC	0.29	0/3434	0.55	0/4662
3	DE	0.30	0/3434	0.55	0/4662
3	DG	0.28	0/3440	0.55	0/4670
3	EC	0.29	0/3440	0.57	1/4670 (0.0%)
3	EE	0.29	0/3432	0.56	0/4658
3	EG	0.28	0/3434	0.54	0/4662
3	FC	0.28	0/3442	0.54	0/4673
3	FE	0.30	0/3446	0.58	0/4678
3	FG	0.28	0/3440	0.57	0/4670
3	GC	0.28	0/3448	0.57	2/4681 (0.0%)
3	GE	0.28	0/3440	0.58	2/4669 (0.0%)
3	GG	0.28	0/3432	0.56	1/4659 (0.0%)
3	HC	0.28	0/3426	0.56	0/4650
3	HE	0.28	0/3426	0.54	0/4651
3	HG	0.28	0/3418	0.58	0/4639
3	IC	0.27	0/3309	0.54	0/4491
3	IE	0.27	0/3434	0.55	0/4662
3	IG	0.28	0/3426	0.54	1/4650 (0.0%)
3	JC	0.27	0/3442	0.54	0/4673
3	JE	0.29	0/3435	0.58	2/4663 (0.0%)
3	JG	0.28	0/3426	0.54	0/4650
3	KC	0.28	0/3419	0.56	0/4641
3	KE	0.27	0/3411	0.53	0/4629
3	KG	0.28	0/3419	0.53	0/4641
3	LA	0.27	0/3434	0.55	1/4662 (0.0%)
3	LC	0.29	0/3426	0.57	0/4651
3	LE	0.29	0/3434	0.55	0/4662
3	MA	0.28	0/3419	0.56	1/4641 (0.0%)
3	MC	0.29	0/3434	0.56	0/4662
3	ME	0.29	0/3419	0.60	1/4641 (0.0%)
All	All	0.28	0/294669	0.56	69/399940 (0.0%)

There are no bond length outliers.

All (69) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	FF	271	ALA	N-CA-C	8.14	132.99	111.00
3	GG	322	ASP	CB-CG-OD2	7.32	124.89	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	IF	182	PRO	CA-N-CD	-7.30	101.27	111.50
2	KH	271	ALA	N-CA-C	7.28	130.65	111.00
2	LD	271	ALA	N-CA-C	7.18	130.40	111.00
2	BA	271	ALA	N-CA-C	7.05	130.04	111.00
2	JF	271	ALA	N-CA-C	7.04	130.02	111.00
2	ED	271	ALA	N-CA-C	7.03	129.98	111.00
2	KF	271	ALA	N-CA-C	6.97	129.82	111.00
2	EF	271	ALA	N-CA-C	6.97	129.81	111.00
2	DF	271	ALA	N-CA-C	6.96	129.79	111.00
3	GE	116	ASP	CB-CG-OD1	6.92	124.53	118.30
2	KD	271	ALA	N-CA-C	6.84	129.48	111.00
2	EB	271	ALA	N-CA-C	6.76	129.25	111.00
2	CB	271	ALA	N-CA-C	6.54	128.66	111.00
2	DD	271	ALA	N-CA-C	6.48	128.50	111.00
3	ME	396	ASP	CB-CG-OD1	6.43	124.09	118.30
2	AF	271	ALA	N-CA-C	6.40	128.28	111.00
2	LB	271	ALA	N-CA-C	6.37	128.21	111.00
2	MD	271	ALA	N-CA-C	6.33	128.09	111.00
2	BD	271	ALA	N-CA-C	6.31	128.04	111.00
2	HF	271	ALA	N-CA-C	6.29	127.99	111.00
2	BF	26	ASP	CB-CG-OD1	6.28	123.95	118.30
2	CF	271	ALA	N-CA-C	6.24	127.84	111.00
2	ID	31	ASP	CB-CG-OD2	6.21	123.89	118.30
2	MF	404	ASP	CB-CG-OD1	6.20	123.88	118.30
1	F	67	LEU	CA-CB-CG	6.14	129.43	115.30
2	FD	271	ALA	N-CA-C	6.14	127.58	111.00
3	GC	218	ASP	CB-CG-OD2	6.13	123.82	118.30
2	FF	203	ASP	CB-CG-OD1	6.11	123.80	118.30
3	CG	306	ASP	CB-CG-OD1	6.09	123.78	118.30
3	LA	120	ASP	CB-CG-OD1	6.06	123.75	118.30
2	CD	271	ALA	N-CA-C	6.00	127.21	111.00
2	CF	346	PRO	CA-N-CD	-5.95	103.17	111.50
2	AD	300	MET	CA-CB-CG	5.95	123.41	113.30
2	GD	271	ALA	N-CA-C	5.91	126.95	111.00
2	HD	271	ALA	N-CA-C	5.89	126.92	111.00
2	HH	271	ALA	N-CA-C	5.89	126.90	111.00
2	EB	267	MET	CA-CB-CG	5.82	123.19	113.30
3	JE	286	LEU	CA-CB-CG	5.80	128.63	115.30
2	GF	271	ALA	N-CA-C	5.76	126.55	111.00
1	P	89	GLY	C-N-CA	5.73	136.03	121.70
1	d	117	TYR	N-CA-C	5.72	126.44	111.00
3	GE	69	ASP	CB-CG-OD1	5.71	123.44	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	AC	88	HIS	CB-CA-C	-5.68	99.04	110.40
2	LF	271	ALA	N-CA-C	5.61	126.14	111.00
2	AF	26	ASP	CB-CG-OD1	5.60	123.34	118.30
2	MD	128	ASP	CB-CG-OD2	5.58	123.32	118.30
2	FD	267	MET	CA-CB-CG	5.55	122.73	113.30
3	EC	205	ASP	CB-CG-OD1	5.54	123.29	118.30
1	i	109	ASP	CB-CG-OD1	5.50	123.25	118.30
1	i	143	LEU	CA-CB-CG	5.50	127.94	115.30
2	FD	268	PRO	N-CA-C	5.49	126.38	112.10
2	AD	271	ALA	N-CA-C	5.49	125.82	111.00
2	LB	257	MET	N-CA-C	5.43	125.65	111.00
3	MA	89	PRO	CA-N-CD	-5.37	103.98	111.50
2	BA	67	ASP	CB-CG-OD1	5.35	123.11	118.30
3	GC	396	ASP	CB-CG-OD1	5.31	123.08	118.30
2	FD	293	MET	CA-CB-CG	5.30	122.32	113.30
3	BC	396	ASP	CB-CG-OD1	5.30	123.07	118.30
2	IH	61	PRO	CA-N-CD	-5.27	104.12	111.50
2	HH	171	PRO	C-N-CA	5.25	134.81	121.70
2	AF	269	GLY	N-CA-C	-5.24	99.99	113.10
3	IG	431	ASP	CB-CG-OD1	5.24	123.02	118.30
2	AD	267	MET	CA-CB-CG	5.23	122.19	113.30
2	EB	284	LEU	CA-CB-CG	5.14	127.13	115.30
2	AB	233	MET	CB-CG-SD	5.14	127.83	112.40
3	JE	152	LEU	CA-CB-CG	5.03	126.87	115.30
2	LD	272	PRO	N-CA-C	-5.02	99.04	112.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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	A	158/222 (71%)	155 (98%)	3 (2%)	0	100	100
1	B	158/222 (71%)	155 (98%)	3 (2%)	0	100	100
1	C	156/222 (70%)	149 (96%)	7 (4%)	0	100	100
1	D	158/222 (71%)	150 (95%)	8 (5%)	0	100	100
1	E	158/222 (71%)	150 (95%)	8 (5%)	0	100	100
1	F	155/222 (70%)	150 (97%)	5 (3%)	0	100	100
1	G	157/222 (71%)	151 (96%)	6 (4%)	0	100	100
1	H	157/222 (71%)	153 (98%)	4 (2%)	0	100	100
1	I	157/222 (71%)	153 (98%)	4 (2%)	0	100	100
1	J	157/222 (71%)	147 (94%)	10 (6%)	0	100	100
1	K	157/222 (71%)	154 (98%)	3 (2%)	0	100	100
1	L	157/222 (71%)	153 (98%)	4 (2%)	0	100	100
1	M	158/222 (71%)	155 (98%)	3 (2%)	0	100	100
1	N	154/222 (69%)	146 (95%)	8 (5%)	0	100	100
1	O	158/222 (71%)	154 (98%)	4 (2%)	0	100	100
1	P	158/222 (71%)	158 (100%)	0	0	100	100
1	Q	155/222 (70%)	152 (98%)	3 (2%)	0	100	100
1	R	158/222 (71%)	151 (96%)	7 (4%)	0	100	100
1	S	154/222 (69%)	149 (97%)	5 (3%)	0	100	100
1	T	157/222 (71%)	152 (97%)	5 (3%)	0	100	100
1	U	157/222 (71%)	152 (97%)	5 (3%)	0	100	100
1	V	157/222 (71%)	150 (96%)	7 (4%)	0	100	100
1	W	153/222 (69%)	149 (97%)	4 (3%)	0	100	100
1	X	158/222 (71%)	152 (96%)	6 (4%)	0	100	100
1	d	154/222 (69%)	146 (95%)	8 (5%)	0	100	100
1	e	155/222 (70%)	148 (96%)	7 (4%)	0	100	100
1	f	158/222 (71%)	151 (96%)	7 (4%)	0	100	100
1	g	157/222 (71%)	150 (96%)	7 (4%)	0	100	100
1	h	154/222 (69%)	145 (94%)	9 (6%)	0	100	100
1	i	157/222 (71%)	152 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	j	157/222 (71%)	147 (94%)	10 (6%)	0	100	100
1	k	153/222 (69%)	149 (97%)	4 (3%)	0	100	100
1	l	150/222 (68%)	145 (97%)	5 (3%)	0	100	100
2	AB	425/445 (96%)	408 (96%)	17 (4%)	0	100	100
2	AD	425/445 (96%)	405 (95%)	20 (5%)	0	100	100
2	AF	424/445 (95%)	399 (94%)	25 (6%)	0	100	100
2	BA	425/445 (96%)	407 (96%)	16 (4%)	2 (0%)	29	69
2	BD	425/445 (96%)	406 (96%)	18 (4%)	1 (0%)	47	81
2	BF	425/445 (96%)	403 (95%)	22 (5%)	0	100	100
2	CB	425/445 (96%)	405 (95%)	19 (4%)	1 (0%)	47	81
2	CD	425/445 (96%)	398 (94%)	26 (6%)	1 (0%)	47	81
2	CF	425/445 (96%)	407 (96%)	17 (4%)	1 (0%)	47	81
2	DB	425/445 (96%)	412 (97%)	13 (3%)	0	100	100
2	DD	425/445 (96%)	407 (96%)	17 (4%)	1 (0%)	47	81
2	DF	424/445 (95%)	397 (94%)	26 (6%)	1 (0%)	47	81
2	EB	407/445 (92%)	387 (95%)	19 (5%)	1 (0%)	47	81
2	ED	425/445 (96%)	408 (96%)	16 (4%)	1 (0%)	47	81
2	EF	425/445 (96%)	400 (94%)	24 (6%)	1 (0%)	47	81
2	FD	425/445 (96%)	405 (95%)	19 (4%)	1 (0%)	47	81
2	FF	425/445 (96%)	406 (96%)	18 (4%)	1 (0%)	47	81
2	FH	373/445 (84%)	353 (95%)	20 (5%)	0	100	100
2	GD	425/445 (96%)	409 (96%)	15 (4%)	1 (0%)	47	81
2	GF	425/445 (96%)	406 (96%)	18 (4%)	1 (0%)	47	81
2	GH	425/445 (96%)	402 (95%)	23 (5%)	0	100	100
2	HD	424/445 (95%)	400 (94%)	23 (5%)	1 (0%)	47	81
2	HF	424/445 (95%)	399 (94%)	24 (6%)	1 (0%)	47	81
2	HH	425/445 (96%)	407 (96%)	17 (4%)	1 (0%)	47	81
2	ID	424/445 (95%)	403 (95%)	21 (5%)	0	100	100
2	IF	425/445 (96%)	389 (92%)	36 (8%)	0	100	100
2	IH	424/445 (95%)	402 (95%)	22 (5%)	0	100	100
2	JD	425/445 (96%)	399 (94%)	26 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	JF	425/445 (96%)	402 (95%)	23 (5%)	0	100	100
2	KD	424/445 (95%)	403 (95%)	20 (5%)	1 (0%)	47	81
2	KF	425/445 (96%)	403 (95%)	21 (5%)	1 (0%)	47	81
2	KH	397/445 (89%)	374 (94%)	22 (6%)	1 (0%)	41	76
2	LB	425/445 (96%)	402 (95%)	22 (5%)	1 (0%)	47	81
2	LD	425/445 (96%)	406 (96%)	19 (4%)	0	100	100
2	LF	425/445 (96%)	404 (95%)	19 (4%)	2 (0%)	29	69
2	MB	425/445 (96%)	405 (95%)	19 (4%)	1 (0%)	47	81
2	MD	424/445 (95%)	405 (96%)	18 (4%)	1 (0%)	47	81
2	MF	425/445 (96%)	404 (95%)	20 (5%)	1 (0%)	47	81
3	AC	422/451 (94%)	409 (97%)	13 (3%)	0	100	100
3	AE	423/451 (94%)	409 (97%)	14 (3%)	0	100	100
3	BC	423/451 (94%)	411 (97%)	12 (3%)	0	100	100
3	BE	422/451 (94%)	403 (96%)	19 (4%)	0	100	100
3	BG	377/451 (84%)	367 (97%)	10 (3%)	0	100	100
3	CC	426/451 (94%)	415 (97%)	11 (3%)	0	100	100
3	CE	427/451 (95%)	410 (96%)	17 (4%)	0	100	100
3	CG	425/451 (94%)	412 (97%)	13 (3%)	0	100	100
3	DC	424/451 (94%)	411 (97%)	13 (3%)	0	100	100
3	DE	424/451 (94%)	404 (95%)	20 (5%)	0	100	100
3	DG	425/451 (94%)	407 (96%)	18 (4%)	0	100	100
3	EC	425/451 (94%)	418 (98%)	7 (2%)	0	100	100
3	EE	424/451 (94%)	410 (97%)	14 (3%)	0	100	100
3	EG	424/451 (94%)	402 (95%)	22 (5%)	0	100	100
3	FC	425/451 (94%)	412 (97%)	13 (3%)	0	100	100
3	FE	426/451 (94%)	408 (96%)	18 (4%)	0	100	100
3	FG	425/451 (94%)	412 (97%)	13 (3%)	0	100	100
3	GC	426/451 (94%)	416 (98%)	10 (2%)	0	100	100
3	GE	425/451 (94%)	406 (96%)	19 (4%)	0	100	100
3	GG	424/451 (94%)	410 (97%)	14 (3%)	0	100	100
3	HC	423/451 (94%)	410 (97%)	13 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	HE	423/451 (94%)	412 (97%)	11 (3%)	0	100	100
3	HG	422/451 (94%)	406 (96%)	16 (4%)	0	100	100
3	IC	408/451 (90%)	393 (96%)	15 (4%)	0	100	100
3	IE	424/451 (94%)	409 (96%)	15 (4%)	0	100	100
3	IG	423/451 (94%)	408 (96%)	15 (4%)	0	100	100
3	JC	425/451 (94%)	407 (96%)	18 (4%)	0	100	100
3	JE	424/451 (94%)	403 (95%)	21 (5%)	0	100	100
3	JG	423/451 (94%)	404 (96%)	19 (4%)	0	100	100
3	KC	422/451 (94%)	411 (97%)	11 (3%)	0	100	100
3	KE	421/451 (93%)	406 (96%)	15 (4%)	0	100	100
3	KG	422/451 (94%)	411 (97%)	11 (3%)	0	100	100
3	LA	424/451 (94%)	402 (95%)	22 (5%)	0	100	100
3	LC	423/451 (94%)	407 (96%)	16 (4%)	0	100	100
3	LE	424/451 (94%)	409 (96%)	15 (4%)	0	100	100
3	MA	422/451 (94%)	407 (96%)	15 (4%)	0	100	100
3	MC	424/451 (94%)	405 (96%)	19 (4%)	0	100	100
3	ME	422/451 (94%)	408 (97%)	14 (3%)	0	100	100
All	All	37242/41374 (90%)	35680 (96%)	1535 (4%)	27 (0%)	54	85

All (27) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	BA	158	GLU
2	LF	268	PRO
2	ED	272	PRO
2	MF	83	GLN
2	CB	271	ALA
2	CD	271	ALA
2	EF	272	PRO
2	FD	271	ALA
2	KD	271	ALA
2	KF	271	ALA
2	LB	272	PRO
2	GD	271	ALA
2	MB	271	ALA
2	EB	271	ALA

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Mol	Chain	Res	Type
2	LF	272	PRO
2	BA	271	ALA
2	DF	271	ALA
2	FF	271	ALA
2	HD	271	ALA
2	KH	271	ALA
2	CF	272	PRO
2	DD	271	ALA
2	GF	271	ALA
2	HF	271	ALA
2	HH	271	ALA
2	BD	271	ALA
2	MD	271	ALA

5.3.2 Protein sidechains ⓘ

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	D	149/199 (75%)	147 (99%)	2 (1%)	69	82
1	E	149/199 (75%)	148 (99%)	1 (1%)	84	90
1	F	146/199 (73%)	144 (99%)	2 (1%)	67	80
1	G	148/199 (74%)	148 (100%)	0	100	100
1	H	148/199 (74%)	148 (100%)	0	100	100
1	I	148/199 (74%)	148 (100%)	0	100	100
1	P	149/199 (75%)	149 (100%)	0	100	100
1	Q	146/199 (73%)	146 (100%)	0	100	100
1	R	149/199 (75%)	149 (100%)	0	100	100
1	S	145/199 (73%)	145 (100%)	0	100	100
1	T	148/199 (74%)	148 (100%)	0	100	100
1	U	148/199 (74%)	148 (100%)	0	100	100
1	d	145/199 (73%)	144 (99%)	1 (1%)	84	90
1	e	146/199 (73%)	145 (99%)	1 (1%)	84	90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	f	149/199 (75%)	149 (100%)	0	100	100
1	g	148/199 (74%)	148 (100%)	0	100	100
1	h	145/199 (73%)	145 (100%)	0	100	100
1	i	148/199 (74%)	148 (100%)	0	100	100
2	AB	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	AD	367/380 (97%)	367 (100%)	0	100	100
2	AF	366/380 (96%)	364 (100%)	2 (0%)	88	93
2	BA	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	BD	367/380 (97%)	365 (100%)	2 (0%)	88	93
2	BF	367/380 (97%)	364 (99%)	3 (1%)	81	89
2	CB	367/380 (97%)	365 (100%)	2 (0%)	88	93
2	CD	367/380 (97%)	367 (100%)	0	100	100
2	CF	367/380 (97%)	367 (100%)	0	100	100
2	DB	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	DD	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	DF	366/380 (96%)	363 (99%)	3 (1%)	81	89
2	EB	354/380 (93%)	352 (99%)	2 (1%)	86	92
2	ED	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	EF	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	FD	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	FF	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	FH	323/380 (85%)	322 (100%)	1 (0%)	92	94
2	GD	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	GF	367/380 (97%)	365 (100%)	2 (0%)	88	93
2	GH	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	HD	366/380 (96%)	365 (100%)	1 (0%)	92	94
2	HF	366/380 (96%)	366 (100%)	0	100	100
2	HH	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	ID	366/380 (96%)	365 (100%)	1 (0%)	92	94
2	IF	367/380 (97%)	365 (100%)	2 (0%)	88	93
2	IH	366/380 (96%)	364 (100%)	2 (0%)	88	93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	JD	367/380 (97%)	364 (99%)	3 (1%)	81	89
2	JF	367/380 (97%)	365 (100%)	2 (0%)	88	93
2	KD	366/380 (96%)	364 (100%)	2 (0%)	88	93
2	KF	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	KH	344/380 (90%)	343 (100%)	1 (0%)	92	94
2	LB	367/380 (97%)	363 (99%)	4 (1%)	73	84
2	LD	367/380 (97%)	364 (99%)	3 (1%)	81	89
2	LF	367/380 (97%)	366 (100%)	1 (0%)	92	94
2	MB	367/380 (97%)	364 (99%)	3 (1%)	81	89
2	MD	366/380 (96%)	363 (99%)	3 (1%)	81	89
2	MF	367/380 (97%)	366 (100%)	1 (0%)	92	94
3	AC	359/378 (95%)	356 (99%)	3 (1%)	81	89
3	AE	360/378 (95%)	360 (100%)	0	100	100
3	BC	360/378 (95%)	359 (100%)	1 (0%)	92	94
3	BE	359/378 (95%)	357 (99%)	2 (1%)	86	92
3	BG	326/378 (86%)	326 (100%)	0	100	100
3	CC	363/378 (96%)	363 (100%)	0	100	100
3	CE	364/378 (96%)	363 (100%)	1 (0%)	92	94
3	CG	362/378 (96%)	362 (100%)	0	100	100
3	DC	361/378 (96%)	361 (100%)	0	100	100
3	DE	361/378 (96%)	359 (99%)	2 (1%)	86	92
3	DG	362/378 (96%)	362 (100%)	0	100	100
3	EC	362/378 (96%)	362 (100%)	0	100	100
3	EE	361/378 (96%)	361 (100%)	0	100	100
3	EG	361/378 (96%)	361 (100%)	0	100	100
3	FC	362/378 (96%)	362 (100%)	0	100	100
3	FE	363/378 (96%)	359 (99%)	4 (1%)	73	84
3	FG	362/378 (96%)	360 (99%)	2 (1%)	86	92
3	GC	363/378 (96%)	361 (99%)	2 (1%)	86	92
3	GE	362/378 (96%)	361 (100%)	1 (0%)	92	94
3	GG	361/378 (96%)	360 (100%)	1 (0%)	92	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	HC	360/378 (95%)	359 (100%)	1 (0%)	92	94
3	HE	360/378 (95%)	360 (100%)	0	100	100
3	HG	359/378 (95%)	358 (100%)	1 (0%)	92	94
3	IC	350/378 (93%)	349 (100%)	1 (0%)	92	94
3	IE	361/378 (96%)	360 (100%)	1 (0%)	92	94
3	IG	360/378 (95%)	360 (100%)	0	100	100
3	JC	362/378 (96%)	362 (100%)	0	100	100
3	JE	361/378 (96%)	359 (99%)	2 (1%)	86	92
3	JG	360/378 (95%)	360 (100%)	0	100	100
3	KC	359/378 (95%)	358 (100%)	1 (0%)	92	94
3	KE	358/378 (95%)	357 (100%)	1 (0%)	92	94
3	KG	359/378 (95%)	355 (99%)	4 (1%)	73	84
3	LA	361/378 (96%)	361 (100%)	0	100	100
3	LC	360/378 (95%)	360 (100%)	0	100	100
3	LE	361/378 (96%)	360 (100%)	1 (0%)	92	94
3	MA	359/378 (95%)	358 (100%)	1 (0%)	92	94
3	MC	361/378 (96%)	359 (99%)	2 (1%)	86	92
3	ME	359/378 (95%)	356 (99%)	3 (1%)	81	89
All	All	30176/32386 (93%)	30073 (100%)	103 (0%)	92	94

All (103) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	AB	278	SER
3	AC	64	ARG
3	AC	87	PHE
3	AC	90	GLU
2	AF	273	LEU
2	AF	320	ARG
2	BA	77	ARG
3	BC	84	ARG
2	BD	131	GLN
2	BD	274	THR
3	BE	11	GLN
3	BE	308	ARG
2	BF	2	ARG

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Mol	Chain	Res	Type
2	BF	37	HIS
2	BF	336	LYS
2	CB	273	LEU
2	CB	347	ASN
3	CE	50	ASN
1	D	63	ARG
1	D	160	ARG
2	DB	48	ASN
2	DD	274	THR
3	DE	84	ARG
3	DE	85	GLN
2	DF	245	GLN
2	DF	274	THR
2	DF	320	ARG
1	E	119	HIS
2	EB	273	LEU
2	EB	280	GLN
2	ED	8	GLN
2	EF	298	ASN
1	F	41	ARG
1	F	48	GLN
2	FD	336	LYS
3	FE	62	VAL
3	FE	64	ARG
3	FE	66	VAL
3	FE	329	ASN
2	FF	336	LYS
3	FG	18	ASN
3	FG	221	ARG
2	FH	241	ARG
3	GC	156	ARG
3	GC	402	ARG
2	GD	247	ASN
3	GE	256	GLN
2	GF	274	THR
2	GF	276	ARG
3	GG	79	ARG
2	GH	251	ARG
3	HC	79	ARG
2	HD	274	THR
3	HG	256	GLN
2	HH	273	LEU

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Mol	Chain	Res	Type
3	IC	156	ARG
2	ID	156	ARG
3	IE	123	ARG
2	IF	19	LYS
2	IF	77	ARG
2	IH	77	ARG
2	IH	156	ARG
2	JD	99	ASN
2	JD	334	GLN
2	JD	336	LYS
3	JE	85	GLN
3	JE	422	ARG
2	JF	213	ARG
2	JF	299	MET
3	KC	308	ARG
2	KD	273	LEU
2	KD	306	ARG
3	KE	329	ASN
2	KF	306	ARG
3	KG	18	ASN
3	KG	164	LYS
3	KG	221	ARG
3	KG	394	LYS
2	KH	299	MET
2	LB	253	LEU
2	LB	273	LEU
2	LB	320	ARG
2	LB	334	GLN
2	LD	77	ARG
2	LD	274	THR
2	LD	334	GLN
3	LE	102	ASN
2	LF	274	THR
3	MA	285	GLN
2	MB	247	ASN
2	MB	320	ARG
2	MB	403	MET
3	MC	85	GLN
3	MC	352	LYS
2	MD	273	LEU
2	MD	306	ARG
2	MD	323	MET

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Mol	Chain	Res	Type
3	ME	79	ARG
3	ME	280	LYS
3	ME	373	ARG
2	MF	298	ASN
1	d	119	HIS
1	e	116	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (83) such sidechains are listed below:

Mol	Chain	Res	Type
3	AC	101	ASN
2	AD	14	ASN
2	AD	105	HIS
2	AD	190	HIS
2	AD	298	ASN
2	AD	414	ASN
2	BA	131	GLN
3	BC	88	HIS
2	BD	8	GLN
2	BD	94	GLN
2	BD	99	ASN
3	BE	15	GLN
3	BE	61	HIS
3	BE	283	HIS
2	BF	348	ASN
2	BF	370	ASN
3	BG	139	HIS
2	CB	347	ASN
2	CD	348	ASN
2	CD	396	HIS
3	CG	85	GLN
3	CG	91	GLN
2	DB	14	ASN
3	DC	329	ASN
3	DE	85	GLN
3	DE	133	GLN
2	DF	298	ASN
2	EB	6	HIS
2	EB	134	GLN
3	EC	293	ASN
3	FC	329	ASN
2	FD	298	ASN

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Mol	Chain	Res	Type
3	FE	85	GLN
3	FG	11	GLN
3	FG	15	GLN
2	FH	292	GLN
1	G	22	GLN
2	GD	52	ASN
2	GD	131	GLN
2	GD	256	ASN
3	GE	18	ASN
2	GF	256	ASN
2	GF	298	ASN
2	GF	334	GLN
2	GH	292	GLN
3	HC	18	ASN
2	HD	335	ASN
2	HF	6	HIS
2	HF	256	ASN
2	HH	52	ASN
2	HH	329	GLN
3	IC	35	GLN
3	IC	293	ASN
2	ID	99	ASN
3	IE	342	GLN
2	IF	131	GLN
2	IF	256	ASN
2	IH	292	GLN
3	JC	91	GLN
3	JC	342	GLN
2	JD	226	ASN
3	JE	228	ASN
2	JF	14	ASN
2	JF	329	GLN
2	JF	334	GLN
3	JG	228	ASN
2	KD	99	ASN
2	KD	347	ASN
3	KE	258	ASN
2	KF	6	HIS
2	KF	165	ASN
2	KF	329	GLN
2	KH	94	GLN
3	LA	35	GLN

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Mol	Chain	Res	Type
3	LA	293	ASN
2	LD	329	GLN
2	LD	347	ASN
3	LE	102	ASN
3	MA	102	ASN
3	MA	380	ASN
2	MB	6	HIS
3	MC	406	HIS
1	U	108	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 114 ligands modelled in this entry, 38 are monoatomic - leaving 76 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	$\#\|Z\| > 2$
4	GDP	DF	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.35	4 (13%)
4	GDP	AF	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.30	3 (10%)
4	GDP	GF	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.40	5 (16%)
4	GDP	GD	501	-	24,30,30	0.98	1 (4%)	30,47,47	1.32	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	GDP	BD	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.29	4 (13%)
4	GDP	HH	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.41	4 (13%)
5	GTP	DC	501	6	26,34,34	1.24	2 (7%)	32,54,54	1.61	6 (18%)
5	GTP	CE	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.64	7 (21%)
5	GTP	IC	501	6	26,34,34	1.19	2 (7%)	32,54,54	1.57	7 (21%)
5	GTP	JE	501	6	26,34,34	1.14	2 (7%)	32,54,54	1.58	6 (18%)
5	GTP	EE	501	6	26,34,34	1.25	2 (7%)	32,54,54	1.66	5 (15%)
4	GDP	JF	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.32	4 (13%)
5	GTP	FG	501	6	26,34,34	1.25	1 (3%)	32,54,54	1.59	6 (18%)
5	GTP	JG	501	6	26,34,34	1.18	2 (7%)	32,54,54	1.55	6 (18%)
4	GDP	MD	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.34	4 (13%)
5	GTP	LE	501	6	26,34,34	1.23	2 (7%)	32,54,54	1.63	7 (21%)
5	GTP	ME	501	6	26,34,34	1.26	2 (7%)	32,54,54	1.67	8 (25%)
5	GTP	CC	501	6	26,34,34	1.21	2 (7%)	32,54,54	1.45	6 (18%)
5	GTP	EC	501	6	26,34,34	1.23	3 (11%)	32,54,54	1.68	6 (18%)
4	GDP	KD	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.31	4 (13%)
4	GDP	ID	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.22	4 (13%)
5	GTP	BE	501	6	26,34,34	1.23	2 (7%)	32,54,54	1.65	7 (21%)
4	GDP	BA	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.31	4 (13%)
4	GDP	HD	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.36	4 (13%)
5	GTP	FE	501	6	26,34,34	1.21	2 (7%)	32,54,54	1.61	7 (21%)
4	GDP	EB	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.30	4 (13%)
5	GTP	LC	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.58	6 (18%)
5	GTP	AC	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.72	7 (21%)
4	GDP	LF	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.26	6 (20%)
5	GTP	CG	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.63	7 (21%)
5	GTP	EG	501	6	26,34,34	1.29	2 (7%)	32,54,54	1.72	7 (21%)
4	GDP	CD	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.35	4 (13%)
5	GTP	GG	501	6	26,34,34	1.24	2 (7%)	32,54,54	1.74	7 (21%)
5	GTP	KE	501	6	26,34,34	1.25	2 (7%)	32,54,54	1.56	6 (18%)
4	GDP	MF	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.34	4 (13%)
4	GDP	DD	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.35	4 (13%)
4	GDP	BF	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.27	4 (13%)
5	GTP	MA	501	6	26,34,34	1.23	2 (7%)	32,54,54	1.59	7 (21%)
5	GTP	DG	501	6	26,34,34	1.21	2 (7%)	32,54,54	1.59	6 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
5	GTP	IG	501	6	26,34,34	1.19	2 (7%)	32,54,54	1.63	7 (21%)
4	GDP	LB	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.23	4 (13%)
5	GTP	BG	501	6	26,34,34	1.19	1 (3%)	32,54,54	1.60	6 (18%)
4	GDP	KF	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.19	3 (10%)
5	GTP	HC	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.56	7 (21%)
4	GDP	FF	501	-	24,30,30	0.98	1 (4%)	30,47,47	1.32	4 (13%)
5	GTP	IE	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.58	7 (21%)
4	GDP	AD	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.38	3 (10%)
5	GTP	MC	501	6	26,34,34	1.25	2 (7%)	32,54,54	1.54	6 (18%)
4	GDP	LD	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.33	5 (16%)
5	GTP	GC	501	6	26,34,34	1.24	2 (7%)	32,54,54	1.70	7 (21%)
5	GTP	KG	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.60	6 (18%)
4	GDP	IF	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.32	4 (13%)
5	GTP	GE	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.67	6 (18%)
4	GDP	GH	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.40	4 (13%)
4	GDP	HF	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.39	4 (13%)
5	GTP	DE	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.63	7 (21%)
4	GDP	CB	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.25	4 (13%)
5	GTP	FC	501	6	26,34,34	1.19	2 (7%)	32,54,54	1.63	7 (21%)
4	GDP	DB	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.33	4 (13%)
4	GDP	FD	501	-	24,30,30	0.97	1 (4%)	30,47,47	1.27	4 (13%)
5	GTP	BC	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.51	7 (21%)
4	GDP	CF	501	-	24,30,30	0.95	1 (4%)	30,47,47	1.31	4 (13%)
5	GTP	HG	501	6	26,34,34	1.28	2 (7%)	32,54,54	1.66	7 (21%)
4	GDP	MB	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.28	5 (16%)
5	GTP	KC	501	6	26,34,34	1.20	2 (7%)	32,54,54	1.50	7 (21%)
4	GDP	KH	501	-	24,30,30	0.99	1 (4%)	30,47,47	1.36	5 (16%)
4	GDP	IH	501	-	24,30,30	0.92	1 (4%)	30,47,47	1.42	5 (16%)
5	GTP	LA	501	6	26,34,34	1.17	2 (7%)	32,54,54	1.62	7 (21%)
5	GTP	AE	501	6	26,34,34	1.21	2 (7%)	32,54,54	1.55	7 (21%)
5	GTP	JC	501	6	26,34,34	1.17	2 (7%)	32,54,54	1.58	7 (21%)
4	GDP	FH	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.38	4 (13%)
4	GDP	JD	501	-	24,30,30	0.93	1 (4%)	30,47,47	1.34	4 (13%)
4	GDP	EF	501	-	24,30,30	0.96	1 (4%)	30,47,47	1.33	3 (10%)
4	GDP	AB	501	-	24,30,30	0.98	1 (4%)	30,47,47	1.36	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
5	GTP	HE	501	6	26,34,34	1.21	2 (7%)	32,54,54	1.60	7 (21%)
4	GDP	ED	501	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	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
4	GDP	DF	501	-	-	1/12/32/32	0/3/3/3
4	GDP	AF	501	-	-	5/12/32/32	0/3/3/3
4	GDP	GF	501	-	-	3/12/32/32	0/3/3/3
4	GDP	GD	501	-	-	4/12/32/32	0/3/3/3
4	GDP	BD	501	-	-	2/12/32/32	0/3/3/3
4	GDP	HH	501	-	-	2/12/32/32	0/3/3/3
5	GTP	DC	501	6	-	7/18/38/38	0/3/3/3
5	GTP	CE	501	6	-	5/18/38/38	0/3/3/3
5	GTP	IC	501	6	-	9/18/38/38	0/3/3/3
5	GTP	JE	501	6	-	7/18/38/38	0/3/3/3
5	GTP	EE	501	6	-	8/18/38/38	0/3/3/3
4	GDP	JF	501	-	-	4/12/32/32	0/3/3/3
5	GTP	FG	501	6	-	7/18/38/38	0/3/3/3
5	GTP	JG	501	6	-	1/18/38/38	0/3/3/3
4	GDP	MD	501	-	-	2/12/32/32	0/3/3/3
5	GTP	LE	501	6	-	5/18/38/38	0/3/3/3
5	GTP	ME	501	6	-	5/18/38/38	0/3/3/3
5	GTP	CC	501	6	-	4/18/38/38	0/3/3/3
5	GTP	EC	501	6	-	5/18/38/38	0/3/3/3
4	GDP	KD	501	-	-	1/12/32/32	0/3/3/3
4	GDP	ID	501	-	-	5/12/32/32	0/3/3/3
5	GTP	BE	501	6	-	4/18/38/38	0/3/3/3
4	GDP	BA	501	-	-	3/12/32/32	0/3/3/3
4	GDP	HD	501	-	-	2/12/32/32	0/3/3/3
5	GTP	FE	501	6	-	5/18/38/38	0/3/3/3
4	GDP	EB	501	-	-	3/12/32/32	0/3/3/3
5	GTP	LC	501	6	-	2/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GTP	AC	501	6	-	3/18/38/38	0/3/3/3
4	GDP	LF	501	-	-	4/12/32/32	0/3/3/3
5	GTP	CG	501	6	-	5/18/38/38	0/3/3/3
5	GTP	EG	501	6	-	5/18/38/38	0/3/3/3
4	GDP	CD	501	-	-	1/12/32/32	0/3/3/3
5	GTP	GG	501	6	-	4/18/38/38	0/3/3/3
5	GTP	KE	501	6	-	4/18/38/38	0/3/3/3
4	GDP	MF	501	-	-	2/12/32/32	0/3/3/3
4	GDP	DD	501	-	-	2/12/32/32	0/3/3/3
4	GDP	BF	501	-	-	2/12/32/32	0/3/3/3
5	GTP	MA	501	6	-	1/18/38/38	0/3/3/3
5	GTP	DG	501	6	-	6/18/38/38	0/3/3/3
5	GTP	IG	501	6	-	2/18/38/38	0/3/3/3
4	GDP	LB	501	-	-	4/12/32/32	0/3/3/3
5	GTP	BG	501	6	-	6/18/38/38	0/3/3/3
4	GDP	KF	501	-	-	1/12/32/32	0/3/3/3
5	GTP	HC	501	6	-	7/18/38/38	0/3/3/3
4	GDP	FF	501	-	-	2/12/32/32	0/3/3/3
5	GTP	IE	501	6	-	8/18/38/38	0/3/3/3
4	GDP	AD	501	-	-	4/12/32/32	0/3/3/3
5	GTP	MC	501	6	-	5/18/38/38	0/3/3/3
4	GDP	LD	501	-	-	2/12/32/32	0/3/3/3
5	GTP	GC	501	6	-	6/18/38/38	0/3/3/3
5	GTP	KG	501	6	-	5/18/38/38	0/3/3/3
4	GDP	IF	501	-	-	5/12/32/32	0/3/3/3
5	GTP	GE	501	6	-	7/18/38/38	0/3/3/3
4	GDP	GH	501	-	-	3/12/32/32	0/3/3/3
4	GDP	HF	501	-	-	3/12/32/32	0/3/3/3
5	GTP	DE	501	6	-	7/18/38/38	0/3/3/3
4	GDP	CB	501	-	-	2/12/32/32	0/3/3/3
5	GTP	FC	501	6	-	4/18/38/38	0/3/3/3
4	GDP	DB	501	-	-	2/12/32/32	0/3/3/3
4	GDP	FD	501	-	-	1/12/32/32	0/3/3/3
5	GTP	BC	501	6	-	3/18/38/38	0/3/3/3
4	GDP	CF	501	-	-	1/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GTP	HG	501	6	-	5/18/38/38	0/3/3/3
4	GDP	MB	501	-	-	2/12/32/32	0/3/3/3
5	GTP	KC	501	6	-	4/18/38/38	0/3/3/3
4	GDP	KH	501	-	-	3/12/32/32	0/3/3/3
4	GDP	IH	501	-	-	1/12/32/32	0/3/3/3
5	GTP	LA	501	6	-	6/18/38/38	0/3/3/3
5	GTP	AE	501	6	-	2/18/38/38	0/3/3/3
5	GTP	JC	501	6	-	6/18/38/38	0/3/3/3
4	GDP	FH	501	-	-	3/12/32/32	0/3/3/3
4	GDP	JD	501	-	-	2/12/32/32	0/3/3/3
4	GDP	EF	501	-	-	2/12/32/32	0/3/3/3
4	GDP	AB	501	-	-	1/12/32/32	0/3/3/3
5	GTP	HE	501	6	-	7/18/38/38	0/3/3/3
4	GDP	ED	501	-	-	2/12/32/32	0/3/3/3

All (113) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	HG	501	GTP	C5-C6	-4.69	1.37	1.47
5	EG	501	GTP	C5-C6	-4.59	1.38	1.47
5	ME	501	GTP	C5-C6	-4.52	1.38	1.47
5	GC	501	GTP	C5-C6	-4.52	1.38	1.47
5	MC	501	GTP	C5-C6	-4.52	1.38	1.47
5	KE	501	GTP	C5-C6	-4.51	1.38	1.47
5	BE	501	GTP	C5-C6	-4.51	1.38	1.47
5	MA	501	GTP	C5-C6	-4.46	1.38	1.47
5	HC	501	GTP	C5-C6	-4.45	1.38	1.47
5	GG	501	GTP	C5-C6	-4.43	1.38	1.47
5	FG	501	GTP	C5-C6	-4.43	1.38	1.47
5	LE	501	GTP	C5-C6	-4.39	1.38	1.47
5	IE	501	GTP	C5-C6	-4.39	1.38	1.47
5	LC	501	GTP	C5-C6	-4.37	1.38	1.47
5	IC	501	GTP	C5-C6	-4.37	1.38	1.47
5	CG	501	GTP	C5-C6	-4.35	1.38	1.47
5	CE	501	GTP	C5-C6	-4.34	1.38	1.47
5	BC	501	GTP	C5-C6	-4.31	1.38	1.47
5	DC	501	GTP	C5-C6	-4.31	1.38	1.47
5	EE	501	GTP	C5-C6	-4.31	1.38	1.47
5	HE	501	GTP	C5-C6	-4.30	1.38	1.47
5	AE	501	GTP	C5-C6	-4.30	1.38	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	FE	501	GTP	C5-C6	-4.29	1.38	1.47
5	KC	501	GTP	C5-C6	-4.29	1.38	1.47
5	BG	501	GTP	C5-C6	-4.26	1.38	1.47
5	GE	501	GTP	C5-C6	-4.26	1.38	1.47
5	KG	501	GTP	C5-C6	-4.25	1.38	1.47
5	EC	501	GTP	C5-C6	-4.24	1.38	1.47
5	AC	501	GTP	C5-C6	-4.22	1.38	1.47
5	DG	501	GTP	C5-C6	-4.22	1.38	1.47
5	JG	501	GTP	C5-C6	-4.21	1.38	1.47
5	FC	501	GTP	C5-C6	-4.20	1.38	1.47
5	CC	501	GTP	C5-C6	-4.19	1.38	1.47
5	IG	501	GTP	C5-C6	-4.19	1.38	1.47
5	DE	501	GTP	C5-C6	-4.18	1.38	1.47
5	JC	501	GTP	C5-C6	-4.17	1.38	1.47
5	LA	501	GTP	C5-C6	-4.04	1.39	1.47
5	JE	501	GTP	C5-C6	-4.02	1.39	1.47
4	MF	501	GDP	C6-N1	-3.01	1.33	1.37
4	LF	501	GDP	C6-N1	-2.89	1.33	1.37
4	AD	501	GDP	C6-N1	-2.86	1.33	1.37
4	KH	501	GDP	C6-N1	-2.85	1.33	1.37
4	JF	501	GDP	C6-N1	-2.82	1.33	1.37
4	GD	501	GDP	C6-N1	-2.80	1.33	1.37
4	EB	501	GDP	C6-N1	-2.79	1.33	1.37
4	MB	501	GDP	C6-N1	-2.79	1.33	1.37
4	BD	501	GDP	C6-N1	-2.78	1.33	1.37
4	LD	501	GDP	C6-N1	-2.78	1.33	1.37
4	FF	501	GDP	C6-N1	-2.76	1.33	1.37
4	GF	501	GDP	C6-N1	-2.75	1.33	1.37
4	DB	501	GDP	C6-N1	-2.75	1.33	1.37
4	MD	501	GDP	C6-N1	-2.75	1.33	1.37
4	GH	501	GDP	C6-N1	-2.74	1.33	1.37
4	BF	501	GDP	C6-N1	-2.74	1.33	1.37
4	BA	501	GDP	C6-N1	-2.74	1.33	1.37
4	AB	501	GDP	C6-N1	-2.74	1.33	1.37
4	LB	501	GDP	C6-N1	-2.71	1.33	1.37
4	KF	501	GDP	C6-N1	-2.70	1.33	1.37
4	FD	501	GDP	C6-N1	-2.69	1.33	1.37
4	EF	501	GDP	C6-N1	-2.68	1.33	1.37
4	ID	501	GDP	C6-N1	-2.66	1.33	1.37
4	FH	501	GDP	C6-N1	-2.64	1.33	1.37
4	HH	501	GDP	C6-N1	-2.64	1.33	1.37
4	JD	501	GDP	C6-N1	-2.63	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	CD	501	GDP	C6-N1	-2.63	1.34	1.37
4	DD	501	GDP	C6-N1	-2.61	1.34	1.37
4	DF	501	GDP	C6-N1	-2.60	1.34	1.37
4	KD	501	GDP	C6-N1	-2.56	1.34	1.37
4	HF	501	GDP	C6-N1	-2.53	1.34	1.37
4	CF	501	GDP	C6-N1	-2.52	1.34	1.37
4	IF	501	GDP	C6-N1	-2.51	1.34	1.37
4	CB	501	GDP	C6-N1	-2.51	1.34	1.37
4	ED	501	GDP	C6-N1	-2.50	1.34	1.37
4	HD	501	GDP	C6-N1	-2.49	1.34	1.37
4	IH	501	GDP	C6-N1	-2.49	1.34	1.37
4	AF	501	GDP	C6-N1	-2.47	1.34	1.37
5	AC	501	GTP	C2-N3	2.21	1.38	1.33
5	HE	501	GTP	C2-N3	2.21	1.38	1.33
5	DE	501	GTP	C2-N3	2.19	1.38	1.33
5	MC	501	GTP	C2-N3	2.18	1.38	1.33
5	FC	501	GTP	C2-N3	2.17	1.38	1.33
5	AE	501	GTP	C2-N3	2.16	1.38	1.33
5	JC	501	GTP	C2-N3	2.16	1.38	1.33
5	EG	501	GTP	C2-N3	2.16	1.38	1.33
5	KC	501	GTP	C2-N3	2.16	1.38	1.33
5	LE	501	GTP	C2-N3	2.15	1.38	1.33
5	IE	501	GTP	C2-N3	2.15	1.38	1.33
5	IG	501	GTP	C2-N3	2.15	1.38	1.33
5	DG	501	GTP	C2-N3	2.15	1.38	1.33
5	HC	501	GTP	C2-N3	2.14	1.38	1.33
5	CE	501	GTP	C2-N3	2.14	1.38	1.33
5	MA	501	GTP	C2-N3	2.14	1.38	1.33
5	KG	501	GTP	C2-N3	2.14	1.38	1.33
5	JE	501	GTP	C2-N3	2.14	1.38	1.33
5	GE	501	GTP	C2-N3	2.13	1.38	1.33
5	CG	501	GTP	C2-N3	2.13	1.38	1.33
5	FE	501	GTP	C2-N3	2.13	1.38	1.33
5	GG	501	GTP	C2-N3	2.12	1.38	1.33
5	EE	501	GTP	C2-N3	2.12	1.38	1.33
5	ME	501	GTP	C2-N3	2.12	1.38	1.33
5	HG	501	GTP	C2-N3	2.11	1.38	1.33
5	IC	501	GTP	C2-N3	2.10	1.38	1.33
5	BC	501	GTP	C2-N3	2.09	1.38	1.33
5	BE	501	GTP	C2-N3	2.08	1.38	1.33
5	CC	501	GTP	C2-N3	2.08	1.38	1.33
5	EC	501	GTP	C2-N3	2.08	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	GC	501	GTP	C2-N3	2.07	1.38	1.33
5	JG	501	GTP	C2-N3	2.07	1.38	1.33
5	LA	501	GTP	C2-N3	2.06	1.38	1.33
5	KE	501	GTP	C2-N3	2.06	1.38	1.33
5	LC	501	GTP	C2-N3	2.04	1.38	1.33
5	EC	501	GTP	C5-C4	-2.02	1.37	1.43
5	DC	501	GTP	C2-N3	2.01	1.38	1.33

All (407) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	HH	501	GDP	PA-O3A-PB	-4.64	116.91	132.83
4	GF	501	GDP	PA-O3A-PB	-4.61	117.01	132.83
5	IG	501	GTP	PB-O3B-PG	-4.60	117.06	132.83
5	EC	501	GTP	PA-O3A-PB	-4.57	117.14	132.83
5	GG	501	GTP	PB-O3B-PG	-4.55	117.22	132.83
5	CG	501	GTP	PB-O3B-PG	-4.49	117.40	132.83
4	HF	501	GDP	PA-O3A-PB	-4.49	117.41	132.83
5	AC	501	GTP	PB-O3B-PG	-4.48	117.46	132.83
4	CD	501	GDP	PA-O3A-PB	-4.43	117.61	132.83
4	IH	501	GDP	PA-O3A-PB	-4.38	117.78	132.83
5	DE	501	GTP	PB-O3B-PG	-4.38	117.78	132.83
4	MD	501	GDP	PA-O3A-PB	-4.36	117.88	132.83
4	GD	501	GDP	PA-O3A-PB	-4.31	118.03	132.83
5	EE	501	GTP	PA-O3A-PB	-4.28	118.16	132.83
5	GC	501	GTP	PA-O3A-PB	-4.27	118.18	132.83
4	DF	501	GDP	PA-O3A-PB	-4.25	118.24	132.83
5	GG	501	GTP	PA-O3A-PB	-4.25	118.26	132.83
5	BE	501	GTP	PA-O3A-PB	-4.23	118.30	132.83
4	EF	501	GDP	PA-O3A-PB	-4.17	118.51	132.83
4	HD	501	GDP	PA-O3A-PB	-4.13	118.66	132.83
5	EG	501	GTP	PB-O3B-PG	-4.13	118.67	132.83
5	JG	501	GTP	PB-O3B-PG	-4.10	118.76	132.83
5	JE	501	GTP	PB-O3B-PG	-4.09	118.79	132.83
5	BG	501	GTP	PA-O3A-PB	-4.09	118.81	132.83
5	DC	501	GTP	PB-O3B-PG	-4.06	118.90	132.83
4	KD	501	GDP	PA-O3A-PB	-4.06	118.90	132.83
4	FH	501	GDP	PA-O3A-PB	-4.03	118.98	132.83
5	JC	501	GTP	PB-O3B-PG	-4.03	119.01	132.83
5	FG	501	GTP	PA-O3A-PB	-4.02	119.02	132.83
4	AD	501	GDP	PA-O3A-PB	-4.01	119.08	132.83
4	DD	501	GDP	PA-O3A-PB	-3.97	119.20	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	IE	501	GTP	PB-O3B-PG	-3.96	119.22	132.83
5	GC	501	GTP	PB-O3B-PG	-3.94	119.31	132.83
5	DC	501	GTP	PA-O3A-PB	-3.94	119.31	132.83
5	EG	501	GTP	PA-O3A-PB	-3.90	119.43	132.83
4	EB	501	GDP	PA-O3A-PB	-3.90	119.45	132.83
5	DG	501	GTP	PB-O3B-PG	-3.90	119.46	132.83
4	CF	501	GDP	PA-O3A-PB	-3.89	119.47	132.83
4	MF	501	GDP	PA-O3A-PB	-3.88	119.53	132.83
4	LD	501	GDP	PA-O3A-PB	-3.86	119.59	132.83
5	FC	501	GTP	PA-O3A-PB	-3.86	119.59	132.83
5	LA	501	GTP	PB-O3B-PG	-3.85	119.60	132.83
5	GE	501	GTP	PB-O3B-PG	-3.84	119.63	132.83
4	AF	501	GDP	PA-O3A-PB	-3.84	119.66	132.83
4	GH	501	GDP	PA-O3A-PB	-3.83	119.67	132.83
5	LE	501	GTP	PB-O3B-PG	-3.82	119.71	132.83
5	FG	501	GTP	PB-O3B-PG	-3.82	119.72	132.83
5	FC	501	GTP	PB-O3B-PG	-3.82	119.72	132.83
5	HE	501	GTP	PA-O3A-PB	-3.81	119.76	132.83
5	CE	501	GTP	PA-O3A-PB	-3.79	119.81	132.83
5	EE	501	GTP	PB-O3B-PG	-3.79	119.81	132.83
4	ED	501	GDP	PA-O3A-PB	-3.78	119.84	132.83
4	KH	501	GDP	PA-O3A-PB	-3.78	119.85	132.83
5	HG	501	GTP	PB-O3B-PG	-3.77	119.90	132.83
5	HG	501	GTP	PA-O3A-PB	-3.77	119.90	132.83
5	KG	501	GTP	PB-O3B-PG	-3.75	119.96	132.83
5	GE	501	GTP	PA-O3A-PB	-3.74	120.01	132.83
5	CE	501	GTP	PB-O3B-PG	-3.73	120.04	132.83
5	MC	501	GTP	PB-O3B-PG	-3.73	120.04	132.83
4	AB	501	GDP	PA-O3A-PB	-3.72	120.06	132.83
5	HE	501	GTP	PB-O3B-PG	-3.70	120.15	132.83
5	MA	501	GTP	PA-O3A-PB	-3.68	120.21	132.83
5	FE	501	GTP	PB-O3B-PG	-3.67	120.22	132.83
4	FF	501	GDP	PA-O3A-PB	-3.67	120.23	132.83
5	FE	501	GTP	PA-O3A-PB	-3.66	120.26	132.83
5	CG	501	GTP	PA-O3A-PB	-3.65	120.30	132.83
5	LC	501	GTP	PB-O3B-PG	-3.65	120.31	132.83
5	IC	501	GTP	PB-O3B-PG	-3.64	120.34	132.83
5	EC	501	GTP	PB-O3B-PG	-3.63	120.36	132.83
5	BG	501	GTP	PB-O3B-PG	-3.62	120.39	132.83
4	DB	501	GDP	PA-O3A-PB	-3.61	120.45	132.83
5	DG	501	GTP	PA-O3A-PB	-3.60	120.48	132.83
5	AE	501	GTP	PB-O3B-PG	-3.59	120.52	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	ME	501	GTP	PB-O3B-PG	-3.58	120.53	132.83
5	MA	501	GTP	PB-O3B-PG	-3.58	120.54	132.83
4	JD	501	GDP	C3'-C2'-C1'	3.58	106.37	100.98
5	BE	501	GTP	PB-O3B-PG	-3.57	120.59	132.83
5	IC	501	GTP	PA-O3A-PB	-3.54	120.67	132.83
5	KE	501	GTP	PB-O3B-PG	-3.54	120.69	132.83
5	GE	501	GTP	C5-C6-N1	3.53	120.19	113.95
5	HC	501	GTP	PB-O3B-PG	-3.51	120.77	132.83
5	ME	501	GTP	C5-C6-N1	3.50	120.12	113.95
5	AC	501	GTP	PA-O3A-PB	-3.49	120.84	132.83
5	KC	501	GTP	PB-O3B-PG	-3.49	120.85	132.83
5	EG	501	GTP	C5-C6-N1	3.48	120.09	113.95
5	ME	501	GTP	PA-O3A-PB	-3.48	120.90	132.83
5	CE	501	GTP	C5-C6-N1	3.46	120.06	113.95
5	LE	501	GTP	C5-C6-N1	3.44	120.03	113.95
5	KE	501	GTP	C5-C6-N1	3.43	120.02	113.95
4	IF	501	GDP	PA-O3A-PB	-3.43	121.06	132.83
4	BA	501	GDP	PA-O3A-PB	-3.43	121.07	132.83
5	AC	501	GTP	C5-C6-N1	3.42	119.99	113.95
5	EC	501	GTP	C5-C6-N1	3.41	119.97	113.95
5	GC	501	GTP	C5-C6-N1	3.39	119.93	113.95
5	MC	501	GTP	C5-C6-N1	3.39	119.93	113.95
4	AD	501	GDP	C3'-C2'-C1'	3.38	106.07	100.98
5	DE	501	GTP	PA-O3A-PB	-3.37	121.27	132.83
5	LA	501	GTP	C5-C6-N1	3.36	119.89	113.95
5	DG	501	GTP	C5-C6-N1	3.36	119.88	113.95
5	EE	501	GTP	C5-C6-N1	3.35	119.87	113.95
5	KC	501	GTP	C5-C6-N1	3.34	119.84	113.95
5	JG	501	GTP	C5-C6-N1	3.33	119.84	113.95
5	DE	501	GTP	C5-C6-N1	3.33	119.83	113.95
5	BE	501	GTP	C5-C6-N1	3.31	119.81	113.95
5	LC	501	GTP	C5-C6-N1	3.31	119.80	113.95
5	JE	501	GTP	C5-C6-N1	3.31	119.79	113.95
4	AB	501	GDP	C3'-C2'-C1'	3.31	105.96	100.98
5	GG	501	GTP	C5-C6-N1	3.31	119.79	113.95
5	JC	501	GTP	C5-C6-N1	3.31	119.79	113.95
5	LE	501	GTP	PA-O3A-PB	-3.29	121.52	132.83
4	LB	501	GDP	PA-O3A-PB	-3.28	121.57	132.83
4	CB	501	GDP	PA-O3A-PB	-3.28	121.58	132.83
5	FE	501	GTP	C5-C6-N1	3.27	119.73	113.95
5	HG	501	GTP	C5-C6-N1	3.27	119.73	113.95
5	LA	501	GTP	PA-O3A-PB	-3.27	121.61	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	FG	501	GTP	C5-C6-N1	3.27	119.72	113.95
5	MA	501	GTP	C5-C6-N1	3.27	119.72	113.95
5	HC	501	GTP	C5-C6-N1	3.26	119.72	113.95
5	IG	501	GTP	C5-C6-N1	3.25	119.70	113.95
5	FC	501	GTP	C5-C6-N1	3.25	119.69	113.95
5	BC	501	GTP	C5-C6-N1	3.25	119.69	113.95
4	IH	501	GDP	C3'-C2'-C1'	3.24	105.86	100.98
4	GH	501	GDP	C3'-C2'-C1'	3.24	105.86	100.98
5	EC	501	GTP	C8-N7-C5	3.24	109.16	102.99
5	IE	501	GTP	C5-C6-N1	3.23	119.66	113.95
5	KG	501	GTP	C5-C6-N1	3.23	119.66	113.95
5	HE	501	GTP	C5-C6-N1	3.22	119.64	113.95
5	IC	501	GTP	C5-C6-N1	3.22	119.63	113.95
5	CC	501	GTP	C5-C6-N1	3.22	119.63	113.95
5	KE	501	GTP	PA-O3A-PB	-3.21	121.81	132.83
5	DC	501	GTP	C5-C6-N1	3.21	119.61	113.95
5	BC	501	GTP	PA-O3A-PB	-3.21	121.83	132.83
5	CG	501	GTP	C5-C6-N1	3.20	119.60	113.95
5	HC	501	GTP	PA-O3A-PB	-3.20	121.86	132.83
5	JE	501	GTP	C8-N7-C5	3.19	109.08	102.99
5	BG	501	GTP	C5-C6-N1	3.19	119.58	113.95
4	MF	501	GDP	C3'-C2'-C1'	3.18	105.76	100.98
4	BD	501	GDP	PA-O3A-PB	-3.17	121.94	132.83
5	AE	501	GTP	C5-C6-N1	3.17	119.55	113.95
5	IE	501	GTP	PA-O3A-PB	-3.17	121.95	132.83
5	LA	501	GTP	C2-N1-C6	-3.16	119.28	125.10
5	JC	501	GTP	C8-N7-C5	3.14	108.98	102.99
5	MC	501	GTP	C8-N7-C5	3.13	108.96	102.99
4	JF	501	GDP	C3'-C2'-C1'	3.12	105.68	100.98
5	HG	501	GTP	C3'-C2'-C1'	3.12	105.68	100.98
5	EG	501	GTP	C3'-C2'-C1'	3.12	105.67	100.98
5	CG	501	GTP	C8-N7-C5	3.11	108.91	102.99
5	FC	501	GTP	C8-N7-C5	3.10	108.89	102.99
4	JD	501	GDP	PA-O3A-PB	-3.09	122.24	132.83
5	CE	501	GTP	C8-N7-C5	3.07	108.84	102.99
5	CC	501	GTP	PB-O3B-PG	-3.07	122.30	132.83
4	FH	501	GDP	C3'-C2'-C1'	3.06	105.59	100.98
5	KC	501	GTP	C8-N7-C5	3.06	108.82	102.99
5	CE	501	GTP	C2-N1-C6	-3.06	119.46	125.10
5	KG	501	GTP	C8-N7-C5	3.06	108.82	102.99
5	ME	501	GTP	C8-N7-C5	3.06	108.81	102.99
5	AC	501	GTP	C2-N1-C6	-3.05	119.49	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	EE	501	GTP	C8-N7-C5	3.05	108.79	102.99
5	LC	501	GTP	C2-N1-C6	-3.04	119.49	125.10
5	LA	501	GTP	C8-N7-C5	3.04	108.78	102.99
5	EG	501	GTP	C2-N1-C6	-3.04	119.51	125.10
5	IG	501	GTP	C8-N7-C5	3.03	108.76	102.99
5	ME	501	GTP	C2-N1-C6	-3.03	119.52	125.10
4	DB	501	GDP	C3'-C2'-C1'	3.03	105.53	100.98
4	HF	501	GDP	C3'-C2'-C1'	3.02	105.53	100.98
5	BC	501	GTP	C8-N7-C5	3.02	108.73	102.99
5	BE	501	GTP	C2-N1-C6	-3.01	119.55	125.10
5	JG	501	GTP	C8-N7-C5	3.01	108.73	102.99
5	MA	501	GTP	C8-N7-C5	3.01	108.73	102.99
5	GE	501	GTP	C8-N7-C5	3.01	108.73	102.99
5	FE	501	GTP	C8-N7-C5	3.01	108.72	102.99
5	GG	501	GTP	C8-N7-C5	3.01	108.72	102.99
5	AC	501	GTP	C3'-C2'-C1'	3.00	105.50	100.98
5	LE	501	GTP	C2-N1-C6	-3.00	119.57	125.10
5	EE	501	GTP	C2-N1-C6	-3.00	119.58	125.10
5	DE	501	GTP	C8-N7-C5	3.00	108.70	102.99
5	DG	501	GTP	C8-N7-C5	2.99	108.69	102.99
5	JG	501	GTP	C2-N1-C6	-2.98	119.61	125.10
5	DC	501	GTP	C8-N7-C5	2.98	108.66	102.99
5	MC	501	GTP	C2-N1-C6	-2.97	119.62	125.10
5	GG	501	GTP	C2-N1-C6	-2.97	119.62	125.10
5	KE	501	GTP	C8-N7-C5	2.97	108.65	102.99
4	BD	501	GDP	C3'-C2'-C1'	2.97	105.45	100.98
5	BE	501	GTP	C8-N7-C5	2.96	108.64	102.99
5	GC	501	GTP	C2-N1-C6	-2.96	119.64	125.10
5	LE	501	GTP	C8-N7-C5	2.96	108.63	102.99
5	CC	501	GTP	C8-N7-C5	2.95	108.61	102.99
5	AC	501	GTP	C8-N7-C5	2.95	108.61	102.99
5	IC	501	GTP	C8-N7-C5	2.95	108.60	102.99
5	LC	501	GTP	PA-O3A-PB	-2.94	122.72	132.83
5	BC	501	GTP	C2-N1-C6	-2.94	119.68	125.10
5	EC	501	GTP	C2-N1-C6	-2.94	119.68	125.10
4	AF	501	GDP	C3'-C2'-C1'	2.94	105.40	100.98
5	DG	501	GTP	C2-N1-C6	-2.94	119.69	125.10
5	LC	501	GTP	C8-N7-C5	2.94	108.58	102.99
4	FD	501	GDP	PA-O3A-PB	-2.93	122.76	132.83
5	DE	501	GTP	C2-N1-C6	-2.93	119.70	125.10
5	JC	501	GTP	PA-O3A-PB	-2.93	122.78	132.83
4	BF	501	GDP	C3'-C2'-C1'	2.92	105.38	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	FE	501	GTP	C2-N1-C6	-2.92	119.72	125.10
5	HE	501	GTP	C8-N7-C5	2.92	108.55	102.99
5	IG	501	GTP	C2-N1-C6	-2.91	119.73	125.10
5	FC	501	GTP	C2-N1-C6	-2.91	119.74	125.10
5	HC	501	GTP	C2-N1-C6	-2.91	119.74	125.10
5	FG	501	GTP	C8-N7-C5	2.91	108.53	102.99
5	KG	501	GTP	PA-O3A-PB	-2.91	122.86	132.83
5	KG	501	GTP	C2-N1-C6	-2.90	119.76	125.10
5	IC	501	GTP	C3'-C2'-C1'	2.90	105.34	100.98
5	KE	501	GTP	C2-N1-C6	-2.89	119.77	125.10
4	JF	501	GDP	PA-O3A-PB	-2.89	122.91	132.83
4	MB	501	GDP	C3'-C2'-C1'	2.89	105.33	100.98
5	JC	501	GTP	C2-N1-C6	-2.89	119.78	125.10
5	IC	501	GTP	C2-N1-C6	-2.89	119.78	125.10
5	CG	501	GTP	C2-N1-C6	-2.89	119.78	125.10
5	GC	501	GTP	C8-N7-C5	2.88	108.48	102.99
5	BG	501	GTP	C8-N7-C5	2.88	108.48	102.99
5	HE	501	GTP	C2-N1-C6	-2.88	119.79	125.10
5	BG	501	GTP	C2-N1-C6	-2.88	119.80	125.10
4	BF	501	GDP	PA-O3A-PB	-2.87	122.99	132.83
5	EG	501	GTP	C8-N7-C5	2.86	108.44	102.99
5	BC	501	GTP	PB-O3B-PG	-2.86	123.01	132.83
5	KC	501	GTP	C2-N1-C6	-2.86	119.84	125.10
5	JE	501	GTP	PA-O3A-PB	-2.86	123.02	132.83
5	HG	501	GTP	C8-N7-C5	2.85	108.43	102.99
5	AE	501	GTP	C3'-C2'-C1'	2.85	105.27	100.98
5	CC	501	GTP	C2-N1-C6	-2.85	119.86	125.10
4	HH	501	GDP	C3'-C2'-C1'	2.84	105.26	100.98
5	AE	501	GTP	C8-N7-C5	2.84	108.40	102.99
5	FG	501	GTP	C2-N1-C6	-2.84	119.87	125.10
5	MA	501	GTP	C2-N1-C6	-2.83	119.88	125.10
4	IF	501	GDP	C3'-C2'-C1'	2.83	105.24	100.98
5	FE	501	GTP	C3'-C2'-C1'	2.83	105.24	100.98
5	GC	501	GTP	C3'-C2'-C1'	2.83	105.23	100.98
5	GE	501	GTP	C2-N1-C6	-2.82	119.91	125.10
5	GE	501	GTP	C3'-C2'-C1'	2.82	105.22	100.98
5	JE	501	GTP	C2-N1-C6	-2.81	119.92	125.10
5	IE	501	GTP	C2-N1-C6	-2.81	119.92	125.10
5	HG	501	GTP	C2-N1-C6	-2.81	119.92	125.10
4	BA	501	GDP	C3'-C2'-C1'	2.81	105.21	100.98
5	DC	501	GTP	C2-N1-C6	-2.79	119.96	125.10
5	JE	501	GTP	C3'-C2'-C1'	2.78	105.17	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	HC	501	GTP	C3'-C2'-C1'	2.77	105.15	100.98
5	CC	501	GTP	PA-O3A-PB	-2.77	123.33	132.83
4	HD	501	GDP	C3'-C2'-C1'	2.75	105.12	100.98
5	IE	501	GTP	C3'-C2'-C1'	2.75	105.12	100.98
5	AE	501	GTP	C2-N1-C6	-2.74	120.05	125.10
5	KC	501	GTP	C3'-C2'-C1'	2.74	105.10	100.98
5	BG	501	GTP	C3'-C2'-C1'	2.73	105.09	100.98
5	ME	501	GTP	C3'-C2'-C1'	2.73	105.09	100.98
5	AE	501	GTP	PA-O3A-PB	-2.72	123.48	132.83
5	HC	501	GTP	C8-N7-C5	2.72	108.17	102.99
4	DD	501	GDP	C3'-C2'-C1'	2.72	105.07	100.98
4	FD	501	GDP	C3'-C2'-C1'	2.72	105.07	100.98
5	BE	501	GTP	C3'-C2'-C1'	2.71	105.06	100.98
5	JG	501	GTP	C3'-C2'-C1'	2.71	105.06	100.98
4	FF	501	GDP	C3'-C2'-C1'	2.69	105.03	100.98
5	BC	501	GTP	C3'-C2'-C1'	2.69	105.02	100.98
5	IE	501	GTP	C8-N7-C5	2.68	108.09	102.99
4	GF	501	GDP	C3'-C2'-C1'	2.66	104.98	100.98
5	IG	501	GTP	PA-O3A-PB	-2.66	123.70	132.83
4	CB	501	GDP	C3'-C2'-C1'	2.65	104.97	100.98
5	GG	501	GTP	C3'-C2'-C1'	2.64	104.96	100.98
5	KG	501	GTP	C3'-C2'-C1'	2.63	104.94	100.98
5	JC	501	GTP	C3'-C2'-C1'	2.62	104.92	100.98
5	MA	501	GTP	C3'-C2'-C1'	2.61	104.91	100.98
5	EG	501	GTP	O6-C6-C5	-2.61	119.28	124.37
4	ID	501	GDP	O3B-PB-O3A	2.60	113.35	104.64
5	IG	501	GTP	C3'-C2'-C1'	2.60	104.89	100.98
5	LE	501	GTP	C3'-C2'-C1'	2.60	104.89	100.98
5	LA	501	GTP	C3'-C2'-C1'	2.60	104.89	100.98
4	MB	501	GDP	PA-O3A-PB	-2.58	123.97	132.83
4	ED	501	GDP	C5-C6-N1	2.58	118.50	113.95
4	KH	501	GDP	C3'-C2'-C1'	2.58	104.86	100.98
4	LD	501	GDP	C3'-C2'-C1'	2.54	104.80	100.98
5	FC	501	GTP	C3'-C2'-C1'	2.53	104.79	100.98
4	LF	501	GDP	C5-C6-N1	2.51	118.39	113.95
5	CE	501	GTP	C3'-C2'-C1'	2.50	104.74	100.98
4	LD	501	GDP	C5-C6-N1	2.50	118.36	113.95
5	MC	501	GTP	C3'-C2'-C1'	2.49	104.72	100.98
4	ID	501	GDP	C8-N7-C5	2.48	107.72	102.99
4	ED	501	GDP	C8-N7-C5	2.48	107.72	102.99
4	DF	501	GDP	C3'-C2'-C1'	2.48	104.71	100.98
5	HE	501	GTP	C3'-C2'-C1'	2.47	104.70	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	HC	501	GTP	O6-C6-C5	-2.46	119.57	124.37
4	KD	501	GDP	C8-N7-C5	2.45	107.65	102.99
5	IE	501	GTP	O6-C6-C5	-2.44	119.61	124.37
4	GH	501	GDP	C5-C6-N1	2.43	118.25	113.95
5	MC	501	GTP	O6-C6-C5	-2.43	119.62	124.37
4	IH	501	GDP	C5-C6-N1	2.42	118.22	113.95
4	DB	501	GDP	C5-C6-N1	2.40	118.20	113.95
5	BE	501	GTP	O6-C6-C5	-2.40	119.68	124.37
4	AD	501	GDP	C5-C6-N1	2.40	118.20	113.95
4	GD	501	GDP	C3'-C2'-C1'	2.40	104.59	100.98
4	JD	501	GDP	C5-C6-N1	2.40	118.19	113.95
4	KF	501	GDP	C5-C6-N1	2.40	118.19	113.95
4	GF	501	GDP	C5-C6-N1	2.39	118.18	113.95
4	FF	501	GDP	C8-N7-C5	2.39	107.54	102.99
4	EF	501	GDP	C5-C6-N1	2.38	118.16	113.95
4	FF	501	GDP	C5-C6-N1	2.38	118.16	113.95
4	MF	501	GDP	C5-C6-N1	2.38	118.16	113.95
5	CG	501	GTP	C3'-C2'-C1'	2.38	104.56	100.98
4	JF	501	GDP	C5-C6-N1	2.38	118.15	113.95
4	MD	501	GDP	C5-C6-N1	2.38	118.15	113.95
4	JF	501	GDP	C8-N7-C5	2.37	107.50	102.99
4	AB	501	GDP	C5-C6-N1	2.37	118.14	113.95
4	KF	501	GDP	PA-O3A-PB	-2.37	124.70	132.83
4	LF	501	GDP	C3'-C2'-C1'	2.36	104.54	100.98
5	DE	501	GTP	C3'-C2'-C1'	2.36	104.54	100.98
5	ME	501	GTP	O6-C6-C5	-2.36	119.75	124.37
4	EB	501	GDP	C8-N7-C5	2.36	107.49	102.99
4	EB	501	GDP	C3'-C2'-C1'	2.36	104.53	100.98
4	FH	501	GDP	C5-C6-N1	2.35	118.11	113.95
5	GG	501	GTP	O6-C6-C5	-2.35	119.78	124.37
4	CF	501	GDP	C3'-C2'-C1'	2.35	104.52	100.98
5	HG	501	GTP	O6-C6-C5	-2.35	119.79	124.37
4	EB	501	GDP	C5-C6-N1	2.34	118.09	113.95
4	LB	501	GDP	C8-N7-C5	2.34	107.45	102.99
4	CB	501	GDP	C8-N7-C5	2.34	107.45	102.99
4	FD	501	GDP	C5-C6-N1	2.34	118.08	113.95
4	KF	501	GDP	C8-N7-C5	2.33	107.44	102.99
4	MB	501	GDP	C8-N7-C5	2.33	107.44	102.99
4	MB	501	GDP	C5-C6-N1	2.33	118.07	113.95
5	CE	501	GTP	O6-C6-C5	-2.33	119.83	124.37
4	DF	501	GDP	C5-C6-N1	2.33	118.06	113.95
4	LD	501	GDP	C8-N7-C5	2.32	107.42	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	HD	501	GDP	C5-C6-N1	2.32	118.05	113.95
4	LF	501	GDP	O6-C6-C5	-2.32	119.85	124.37
5	IG	501	GTP	O6-C6-C5	-2.32	119.85	124.37
4	FD	501	GDP	C8-N7-C5	2.32	107.40	102.99
4	DD	501	GDP	C5-C6-N1	2.31	118.04	113.95
4	MD	501	GDP	C3'-C2'-C1'	2.31	104.46	100.98
4	KD	501	GDP	C5-C6-N1	2.31	118.03	113.95
4	HF	501	GDP	C8-N7-C5	2.31	107.39	102.99
4	BA	501	GDP	C8-N7-C5	2.31	107.39	102.99
5	GC	501	GTP	O6-C6-C5	-2.31	119.87	124.37
4	BA	501	GDP	C5-C6-N1	2.30	118.02	113.95
4	CD	501	GDP	C5-C6-N1	2.30	118.02	113.95
4	DF	501	GDP	C8-N7-C5	2.30	107.38	102.99
4	HH	501	GDP	C5-C6-N1	2.30	118.01	113.95
4	KH	501	GDP	C5-C6-N1	2.30	118.01	113.95
4	BD	501	GDP	C5-C6-N1	2.30	118.00	113.95
5	LC	501	GTP	O6-C6-C5	-2.29	119.89	124.37
4	IF	501	GDP	C8-N7-C5	2.29	107.36	102.99
4	ID	501	GDP	PA-O3A-PB	-2.29	124.96	132.83
5	KE	501	GTP	O6-C6-C5	-2.29	119.89	124.37
4	CF	501	GDP	C5-C6-N1	2.29	118.00	113.95
4	ID	501	GDP	C5-C6-N1	2.29	117.99	113.95
4	CB	501	GDP	C5-C6-N1	2.28	117.98	113.95
4	GD	501	GDP	C8-N7-C5	2.28	107.33	102.99
4	LB	501	GDP	C5-C6-N1	2.28	117.97	113.95
4	CD	501	GDP	C8-N7-C5	2.27	107.32	102.99
4	MD	501	GDP	C8-N7-C5	2.27	107.31	102.99
4	DD	501	GDP	C8-N7-C5	2.27	107.31	102.99
4	FH	501	GDP	C8-N7-C5	2.26	107.30	102.99
4	AB	501	GDP	C8-N7-C5	2.26	107.30	102.99
4	GF	501	GDP	C8-N7-C5	2.26	107.30	102.99
4	MF	501	GDP	C8-N7-C5	2.26	107.29	102.99
4	DB	501	GDP	C8-N7-C5	2.24	107.27	102.99
4	KD	501	GDP	C3'-C2'-C1'	2.24	104.36	100.98
5	LE	501	GTP	O6-C6-C5	-2.24	119.99	124.37
4	HD	501	GDP	C8-N7-C5	2.24	107.26	102.99
4	EF	501	GDP	C8-N7-C5	2.24	107.26	102.99
4	IF	501	GDP	C5-C6-N1	2.24	117.90	113.95
4	BF	501	GDP	C5-C6-N1	2.24	117.90	113.95
4	GD	501	GDP	C5-C6-N1	2.22	117.87	113.95
4	HF	501	GDP	C5-C6-N1	2.22	117.87	113.95
4	BD	501	GDP	C8-N7-C5	2.21	107.21	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	IH	501	GDP	C8-N7-C5	2.21	107.21	102.99
4	LF	501	GDP	PA-O3A-PB	-2.21	125.23	132.83
5	FG	501	GTP	O6-C6-C5	-2.21	120.05	124.37
5	EC	501	GTP	C3'-C2'-C1'	2.21	104.31	100.98
4	GH	501	GDP	C8-N7-C5	2.21	107.20	102.99
5	BC	501	GTP	O6-C6-C5	-2.20	120.07	124.37
4	BF	501	GDP	C8-N7-C5	2.20	107.18	102.99
4	CD	501	GDP	C3'-C2'-C1'	2.19	104.27	100.98
4	KH	501	GDP	C8-N7-C5	2.18	107.15	102.99
4	CF	501	GDP	C8-N7-C5	2.18	107.14	102.99
5	FE	501	GTP	O6-C6-C5	-2.18	120.12	124.37
5	DC	501	GTP	O6-C6-C5	-2.18	120.12	124.37
4	JD	501	GDP	C8-N7-C5	2.17	107.13	102.99
5	KC	501	GTP	O6-C6-C5	-2.17	120.12	124.37
4	LB	501	GDP	C3'-C2'-C1'	2.17	104.25	100.98
5	DE	501	GTP	O6-C6-C5	-2.16	120.16	124.37
5	AC	501	GTP	O6-C6-C5	-2.16	120.16	124.37
5	MA	501	GTP	O6-C6-C5	-2.15	120.18	124.37
5	ME	501	GTP	C2'-C3'-C4'	2.14	106.80	102.64
4	HH	501	GDP	C8-N7-C5	2.14	107.06	102.99
5	FC	501	GTP	O6-C6-C5	-2.13	120.21	124.37
4	LF	501	GDP	C8-N7-C5	2.13	107.04	102.99
5	CC	501	GTP	O6-C6-C5	-2.12	120.23	124.37
4	AF	501	GDP	C2'-C3'-C4'	2.12	106.76	102.64
5	LA	501	GTP	O6-C6-C5	-2.11	120.25	124.37
5	IC	501	GTP	O6-C6-C5	-2.10	120.27	124.37
5	AE	501	GTP	O6-C6-C5	-2.09	120.28	124.37
5	DG	501	GTP	O6-C6-C5	-2.09	120.29	124.37
5	HE	501	GTP	O6-C6-C5	-2.07	120.33	124.37
4	ED	501	GDP	C3'-C2'-C1'	2.05	104.07	100.98
5	JC	501	GTP	O6-C6-C5	-2.05	120.36	124.37
4	IH	501	GDP	O6-C6-C5	-2.05	120.37	124.37
5	CG	501	GTP	O6-C6-C5	-2.05	120.38	124.37
5	KC	501	GTP	PA-O3A-PB	-2.05	125.81	132.83
5	JG	501	GTP	O6-C6-C5	-2.04	120.38	124.37
4	LF	501	GDP	O3B-PB-O3A	2.04	111.48	104.64
4	GF	501	GDP	O6-C6-C5	-2.04	120.39	124.37
4	MB	501	GDP	O3B-PB-O3A	2.02	111.41	104.64
4	LD	501	GDP	O6-C6-C5	-2.01	120.44	124.37
4	KH	501	GDP	C2'-C3'-C4'	2.00	106.54	102.64

There are no chirality outliers.

All (286) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	AB	501	GDP	C5'-O5'-PA-O1A
4	AD	501	GDP	C5'-O5'-PA-O1A
4	AF	501	GDP	C5'-O5'-PA-O3A
4	AF	501	GDP	C5'-O5'-PA-O2A
4	AF	501	GDP	O4'-C4'-C5'-O5'
4	AF	501	GDP	C3'-C4'-C5'-O5'
4	BA	501	GDP	C5'-O5'-PA-O1A
4	BD	501	GDP	C5'-O5'-PA-O1A
4	BF	501	GDP	C5'-O5'-PA-O1A
4	CB	501	GDP	PA-O3A-PB-O2B
4	CD	501	GDP	C5'-O5'-PA-O1A
4	CF	501	GDP	C5'-O5'-PA-O1A
4	DB	501	GDP	C5'-O5'-PA-O3A
4	DB	501	GDP	C5'-O5'-PA-O1A
4	EB	501	GDP	C5'-O5'-PA-O1A
4	EF	501	GDP	C5'-O5'-PA-O3A
4	EF	501	GDP	C5'-O5'-PA-O1A
4	FF	501	GDP	C5'-O5'-PA-O3A
4	FF	501	GDP	C5'-O5'-PA-O1A
4	FH	501	GDP	C5'-O5'-PA-O3A
4	FH	501	GDP	C5'-O5'-PA-O2A
4	GD	501	GDP	C5'-O5'-PA-O1A
4	GF	501	GDP	C5'-O5'-PA-O3A
4	GF	501	GDP	C5'-O5'-PA-O1A
4	GH	501	GDP	C5'-O5'-PA-O1A
4	GH	501	GDP	C5'-O5'-PA-O2A
4	HD	501	GDP	C5'-O5'-PA-O3A
4	HD	501	GDP	C5'-O5'-PA-O1A
4	HF	501	GDP	C5'-O5'-PA-O1A
4	HH	501	GDP	C5'-O5'-PA-O1A
4	ID	501	GDP	C5'-O5'-PA-O1A
4	IF	501	GDP	C5'-O5'-PA-O3A
4	JD	501	GDP	C5'-O5'-PA-O1A
4	JF	501	GDP	C5'-O5'-PA-O3A
4	JF	501	GDP	C5'-O5'-PA-O1A
4	KH	501	GDP	C5'-O5'-PA-O1A
4	LB	501	GDP	C5'-O5'-PA-O3A
4	LB	501	GDP	C5'-O5'-PA-O1A
4	LD	501	GDP	PA-O3A-PB-O2B
4	LD	501	GDP	PA-O3A-PB-O3B
4	MB	501	GDP	C5'-O5'-PA-O3A
4	MB	501	GDP	C5'-O5'-PA-O1A

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Mol	Chain	Res	Type	Atoms
4	MD	501	GDP	C5'-O5'-PA-O3A
4	MD	501	GDP	C5'-O5'-PA-O1A
4	MF	501	GDP	C5'-O5'-PA-O3A
4	MF	501	GDP	C5'-O5'-PA-O1A
5	AC	501	GTP	C5'-O5'-PA-O1A
5	AE	501	GTP	PB-O3A-PA-O5'
5	BE	501	GTP	C5'-O5'-PA-O1A
5	BG	501	GTP	C5'-O5'-PA-O1A
5	BG	501	GTP	C5'-O5'-PA-O2A
5	CC	501	GTP	C5'-O5'-PA-O3A
5	CC	501	GTP	C5'-O5'-PA-O1A
5	CE	501	GTP	C5'-O5'-PA-O1A
5	CE	501	GTP	C5'-O5'-PA-O2A
5	CG	501	GTP	C5'-O5'-PA-O1A
5	CG	501	GTP	C5'-O5'-PA-O2A
5	DC	501	GTP	C5'-O5'-PA-O1A
5	DE	501	GTP	C5'-O5'-PA-O1A
5	DE	501	GTP	C5'-O5'-PA-O2A
5	DG	501	GTP	C5'-O5'-PA-O1A
5	DG	501	GTP	C5'-O5'-PA-O2A
5	EC	501	GTP	C3'-C4'-C5'-O5'
5	EG	501	GTP	O4'-C4'-C5'-O5'
5	EG	501	GTP	C3'-C4'-C5'-O5'
5	FC	501	GTP	C5'-O5'-PA-O1A
5	FC	501	GTP	C5'-O5'-PA-O2A
5	FE	501	GTP	C5'-O5'-PA-O1A
5	FG	501	GTP	C5'-O5'-PA-O1A
5	GC	501	GTP	C5'-O5'-PA-O1A
5	GE	501	GTP	PB-O3B-PG-O3G
5	HC	501	GTP	C5'-O5'-PA-O1A
5	HC	501	GTP	C5'-O5'-PA-O2A
5	HE	501	GTP	C5'-O5'-PA-O1A
5	HE	501	GTP	C5'-O5'-PA-O2A
5	HG	501	GTP	C5'-O5'-PA-O1A
5	IC	501	GTP	C5'-O5'-PA-O1A
5	IC	501	GTP	C5'-O5'-PA-O2A
5	IE	501	GTP	C5'-O5'-PA-O1A
5	IE	501	GTP	C3'-C4'-C5'-O5'
5	JC	501	GTP	C5'-O5'-PA-O1A
5	JE	501	GTP	C5'-O5'-PA-O1A
5	KG	501	GTP	C5'-O5'-PA-O3A
5	KG	501	GTP	C5'-O5'-PA-O1A

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Mol	Chain	Res	Type	Atoms
5	LA	501	GTP	C5'-O5'-PA-O1A
5	LA	501	GTP	C5'-O5'-PA-O2A
5	LE	501	GTP	C5'-O5'-PA-O1A
5	LE	501	GTP	C5'-O5'-PA-O2A
5	MC	501	GTP	C5'-O5'-PA-O3A
5	ME	501	GTP	C5'-O5'-PA-O1A
5	ME	501	GTP	C5'-O5'-PA-O2A
4	GD	501	GDP	C3'-C4'-C5'-O5'
5	EC	501	GTP	O4'-C4'-C5'-O5'
5	EE	501	GTP	C3'-C4'-C5'-O5'
5	GE	501	GTP	C3'-C4'-C5'-O5'
5	IE	501	GTP	O4'-C4'-C5'-O5'
5	IG	501	GTP	C3'-C4'-C5'-O5'
4	GD	501	GDP	O4'-C4'-C5'-O5'
5	GE	501	GTP	O4'-C4'-C5'-O5'
5	IG	501	GTP	O4'-C4'-C5'-O5'
4	AD	501	GDP	C3'-C4'-C5'-O5'
4	IF	501	GDP	C3'-C4'-C5'-O5'
5	CC	501	GTP	C3'-C4'-C5'-O5'
5	FG	501	GTP	C3'-C4'-C5'-O5'
4	AD	501	GDP	O4'-C4'-C5'-O5'
4	ID	501	GDP	C3'-C4'-C5'-O5'
4	LF	501	GDP	C3'-C4'-C5'-O5'
5	CC	501	GTP	O4'-C4'-C5'-O5'
5	DC	501	GTP	C3'-C4'-C5'-O5'
5	EE	501	GTP	O4'-C4'-C5'-O5'
5	MC	501	GTP	C4'-C5'-O5'-PA
4	DD	501	GDP	PA-O3A-PB-O1B
4	EB	501	GDP	PA-O3A-PB-O1B
4	ID	501	GDP	PA-O3A-PB-O1B
4	LF	501	GDP	PA-O3A-PB-O1B
5	DG	501	GTP	PB-O3A-PA-O1A
5	FE	501	GTP	PB-O3A-PA-O1A
5	ME	501	GTP	PB-O3A-PA-O1A
5	BC	501	GTP	C3'-C4'-C5'-O5'
5	KG	501	GTP	PA-O3A-PB-O3B
5	DE	501	GTP	C4'-C5'-O5'-PA
5	FC	501	GTP	C4'-C5'-O5'-PA
5	HC	501	GTP	C4'-C5'-O5'-PA
5	JC	501	GTP	C4'-C5'-O5'-PA
5	KC	501	GTP	C4'-C5'-O5'-PA
5	LC	501	GTP	C4'-C5'-O5'-PA

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Mol	Chain	Res	Type	Atoms
5	IC	501	GTP	PB-O3A-PA-O5'
4	IF	501	GDP	O4'-C4'-C5'-O5'
5	FG	501	GTP	O4'-C4'-C5'-O5'
5	IC	501	GTP	PB-O3B-PG-O1G
5	GE	501	GTP	PB-O3B-PG-O2G
4	BD	501	GDP	C5'-O5'-PA-O3A
4	GD	501	GDP	C5'-O5'-PA-O3A
4	HF	501	GDP	C5'-O5'-PA-O3A
4	HH	501	GDP	C5'-O5'-PA-O3A
5	AC	501	GTP	C5'-O5'-PA-O3A
5	BE	501	GTP	C5'-O5'-PA-O3A
5	DC	501	GTP	C5'-O5'-PA-O3A
5	EE	501	GTP	C5'-O5'-PA-O3A
5	FC	501	GTP	C5'-O5'-PA-O3A
5	FG	501	GTP	C5'-O5'-PA-O3A
5	GC	501	GTP	C5'-O5'-PA-O3A
5	HE	501	GTP	C5'-O5'-PA-O3A
5	HG	501	GTP	C5'-O5'-PA-O3A
5	IE	501	GTP	C5'-O5'-PA-O3A
5	JC	501	GTP	C5'-O5'-PA-O3A
5	JE	501	GTP	C5'-O5'-PA-O3A
4	ID	501	GDP	O4'-C4'-C5'-O5'
4	LB	501	GDP	C3'-C4'-C5'-O5'
4	LF	501	GDP	O4'-C4'-C5'-O5'
5	DC	501	GTP	O4'-C4'-C5'-O5'
5	GC	501	GTP	C3'-C4'-C5'-O5'
5	GG	501	GTP	C3'-C4'-C5'-O5'
4	JF	501	GDP	PB-O3A-PA-O2A
5	CE	501	GTP	PB-O3A-PA-O2A
5	DC	501	GTP	PB-O3A-PA-O1A
5	EC	501	GTP	PB-O3A-PA-O2A
5	GG	501	GTP	PB-O3A-PA-O2A
5	HE	501	GTP	PA-O3A-PB-O2B
5	HG	501	GTP	PB-O3A-PA-O1A
5	JE	501	GTP	PB-O3A-PA-O2A
5	KE	501	GTP	PB-O3A-PA-O1A
5	MC	501	GTP	PB-O3A-PA-O2A
5	CE	501	GTP	C4'-C5'-O5'-PA
5	CG	501	GTP	C4'-C5'-O5'-PA
5	DG	501	GTP	C4'-C5'-O5'-PA
5	EE	501	GTP	C4'-C5'-O5'-PA
5	HE	501	GTP	C4'-C5'-O5'-PA

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Mol	Chain	Res	Type	Atoms
5	JE	501	GTP	C4’-C5’-O5’-PA
4	AF	501	GDP	C5’-O5’-PA-O1A
4	FH	501	GDP	C5’-O5’-PA-O1A
4	IF	501	GDP	C5’-O5’-PA-O1A
5	AC	501	GTP	C5’-O5’-PA-O2A
5	BE	501	GTP	C5’-O5’-PA-O2A
5	DC	501	GTP	C5’-O5’-PA-O2A
5	EE	501	GTP	C5’-O5’-PA-O2A
5	FE	501	GTP	C5’-O5’-PA-O2A
5	FG	501	GTP	C5’-O5’-PA-O2A
5	GC	501	GTP	C5’-O5’-PA-O2A
5	GE	501	GTP	C5’-O5’-PA-O2A
5	HG	501	GTP	C5’-O5’-PA-O2A
5	IE	501	GTP	C5’-O5’-PA-O2A
5	JC	501	GTP	C5’-O5’-PA-O2A
5	JE	501	GTP	C5’-O5’-PA-O2A
5	MC	501	GTP	C5’-O5’-PA-O2A
5	DE	501	GTP	C3’-C4’-C5’-O5’
5	IE	501	GTP	C4’-C5’-O5’-PA
5	JG	501	GTP	C4’-C5’-O5’-PA
4	ED	501	GDP	C3’-C4’-C5’-O5’
5	BC	501	GTP	O4’-C4’-C5’-O5’
5	HE	501	GTP	C3’-C4’-C5’-O5’
5	EC	501	GTP	C4’-C5’-O5’-PA
5	FG	501	GTP	C4’-C5’-O5’-PA
5	GG	501	GTP	O4’-C4’-C5’-O5’
5	BG	501	GTP	PB-O3A-PA-O2A
5	EG	501	GTP	PB-O3A-PA-O1A
5	HC	501	GTP	PA-O3A-PB-O2B
5	IE	501	GTP	PA-O3A-PB-O2B
5	JC	501	GTP	PA-O3A-PB-O2B
5	KC	501	GTP	PB-O3A-PA-O2A
5	LA	501	GTP	PB-O3A-PA-O2A
5	LE	501	GTP	PB-O3A-PA-O2A
5	MC	501	GTP	PA-O3A-PB-O2B
5	BC	501	GTP	C4’-C5’-O5’-PA
5	BE	501	GTP	C4’-C5’-O5’-PA
5	DC	501	GTP	C4’-C5’-O5’-PA
5	FE	501	GTP	C4’-C5’-O5’-PA
5	GC	501	GTP	C4’-C5’-O5’-PA
4	BA	501	GDP	C3’-C4’-C5’-O5’
5	KE	501	GTP	C3’-C4’-C5’-O5’

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Mol	Chain	Res	Type	Atoms
5	BG	501	GTP	C4'-C5'-O5'-PA
5	LA	501	GTP	C4'-C5'-O5'-PA
4	DF	501	GDP	C3'-C4'-C5'-O5'
4	BF	501	GDP	PA-O3A-PB-O1B
5	EG	501	GTP	C4'-C5'-O5'-PA
5	ME	501	GTP	C4'-C5'-O5'-PA
5	EE	501	GTP	PB-O3A-PA-O1A
5	EE	501	GTP	PB-O3A-PA-O2A
5	EG	501	GTP	PB-O3A-PA-O2A
5	FG	501	GTP	PB-O3A-PA-O1A
5	IC	501	GTP	PB-O3A-PA-O1A
5	KC	501	GTP	PA-O3A-PB-O1B
5	KE	501	GTP	PB-O3A-PA-O2A
4	LB	501	GDP	O4'-C4'-C5'-O5'
5	GC	501	GTP	O4'-C4'-C5'-O5'
4	GF	501	GDP	C3'-C4'-C5'-O5'
4	HF	501	GDP	C3'-C4'-C5'-O5'
4	JF	501	GDP	C3'-C4'-C5'-O5'
5	DE	501	GTP	O4'-C4'-C5'-O5'
5	HC	501	GTP	C3'-C4'-C5'-O5'
5	LC	501	GTP	C3'-C4'-C5'-O5'
4	KH	501	GDP	C3'-C4'-C5'-O5'
4	EB	501	GDP	PA-O3A-PB-O2B
5	IC	501	GTP	PB-O3B-PG-O2G
5	IC	501	GTP	PB-O3B-PG-O3G
4	AD	501	GDP	C5'-O5'-PA-O3A
4	BA	501	GDP	C5'-O5'-PA-O3A
4	GH	501	GDP	C5'-O5'-PA-O3A
4	ID	501	GDP	C5'-O5'-PA-O3A
4	KH	501	GDP	C5'-O5'-PA-O3A
5	AE	501	GTP	C5'-O5'-PA-O3A
5	BG	501	GTP	C5'-O5'-PA-O3A
5	CE	501	GTP	C5'-O5'-PA-O3A
5	CG	501	GTP	C5'-O5'-PA-O3A
5	DE	501	GTP	C5'-O5'-PA-O3A
5	DG	501	GTP	C5'-O5'-PA-O3A
5	FE	501	GTP	C5'-O5'-PA-O3A
5	GE	501	GTP	C5'-O5'-PA-O3A
5	HC	501	GTP	C5'-O5'-PA-O3A
5	IC	501	GTP	C5'-O5'-PA-O3A
5	LA	501	GTP	C5'-O5'-PA-O3A
5	LE	501	GTP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
5	ME	501	GTP	C5'-O5'-PA-O3A
5	HG	501	GTP	C4'-C5'-O5'-PA
5	IC	501	GTP	C4'-C5'-O5'-PA
4	JD	501	GDP	PB-O3A-PA-O2A
5	BG	501	GTP	PB-O3A-PA-O1A
5	CG	501	GTP	PB-O3A-PA-O2A
5	DE	501	GTP	PA-O3A-PB-O2B
5	DG	501	GTP	PB-O3A-PA-O2A
5	EC	501	GTP	PB-O3A-PA-O1A
5	GE	501	GTP	PA-O3A-PB-O2B
5	GG	501	GTP	PB-O3A-PA-O1A
5	HC	501	GTP	PA-O3A-PB-O1B
5	IE	501	GTP	PA-O3A-PB-O1B
5	JC	501	GTP	PA-O3A-PB-O1B
5	JE	501	GTP	PB-O3A-PA-O1A
5	KC	501	GTP	PA-O3A-PB-O2B
5	KG	501	GTP	PG-O3B-PB-O1B
5	KG	501	GTP	PA-O3A-PB-O2B
5	LA	501	GTP	PB-O3A-PA-O1A
4	DD	501	GDP	C5'-O5'-PA-O1A
4	ED	501	GDP	C5'-O5'-PA-O1A
4	FD	501	GDP	C5'-O5'-PA-O1A
4	IF	501	GDP	C5'-O5'-PA-O2A
4	IH	501	GDP	C5'-O5'-PA-O1A
4	KD	501	GDP	C5'-O5'-PA-O1A
4	KF	501	GDP	C5'-O5'-PA-O1A
4	LF	501	GDP	C5'-O5'-PA-O1A
5	EE	501	GTP	C5'-O5'-PA-O1A
5	MA	501	GTP	C5'-O5'-PA-O2A
5	HE	501	GTP	O4'-C4'-C5'-O5'
5	JE	501	GTP	C3'-C4'-C5'-O5'
5	KE	501	GTP	O4'-C4'-C5'-O5'
4	CB	501	GDP	PA-O3A-PB-O1B
5	LE	501	GTP	C4'-C5'-O5'-PA

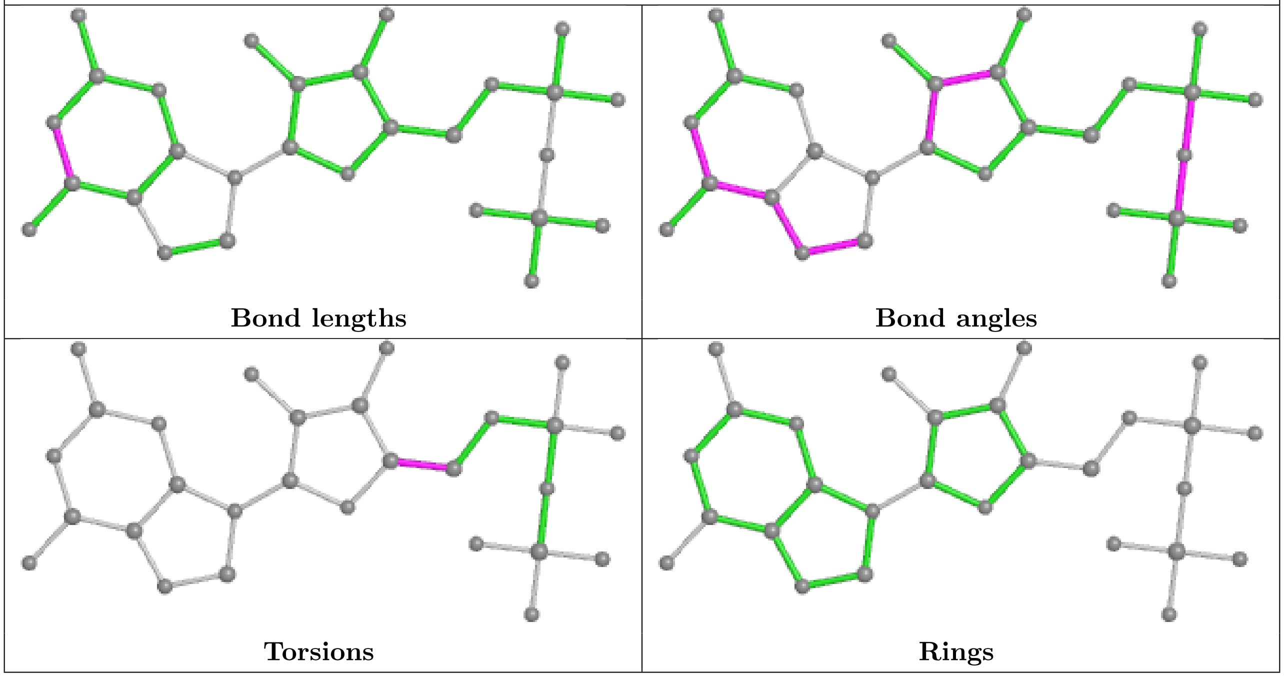
There are no ring outliers.

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.

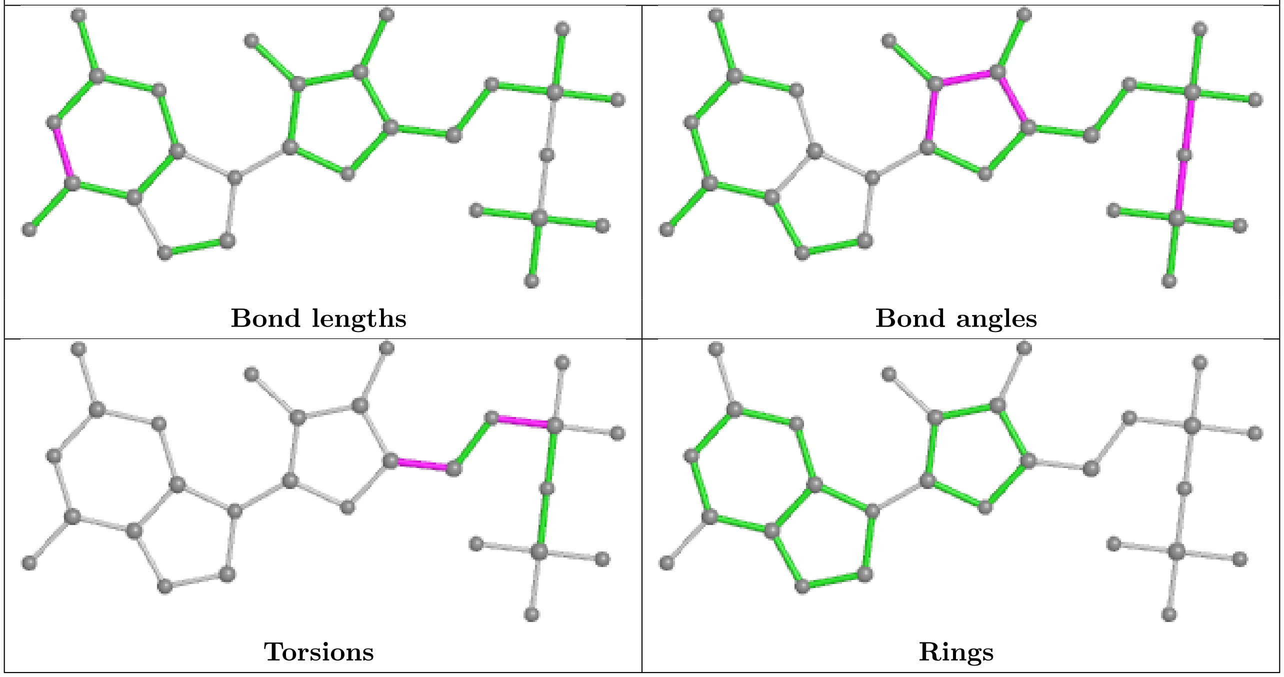
Ligand GDP DF 501



Bond lengths **Bond angles**

Torsions **Rings**

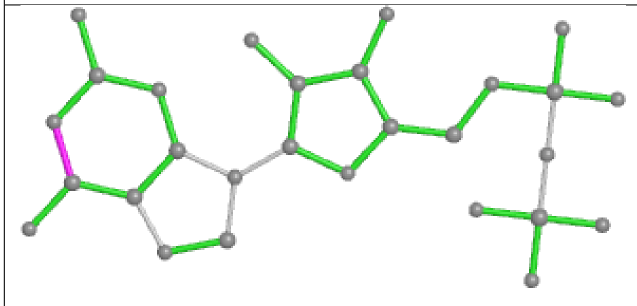
Ligand GDP AF 501



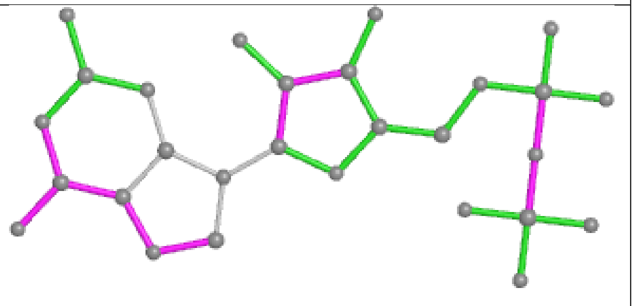
Bond lengths **Bond angles**

Torsions **Rings**

Ligand GDP GF 501



Bond lengths



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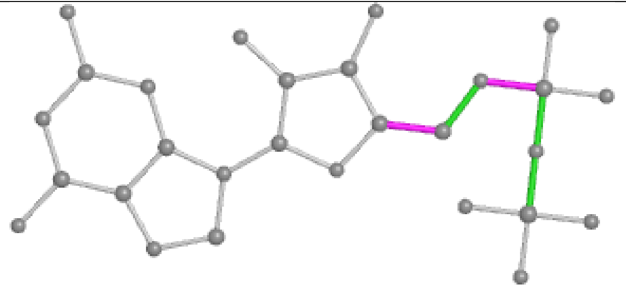
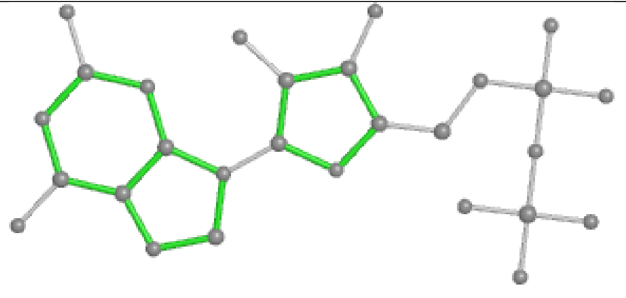
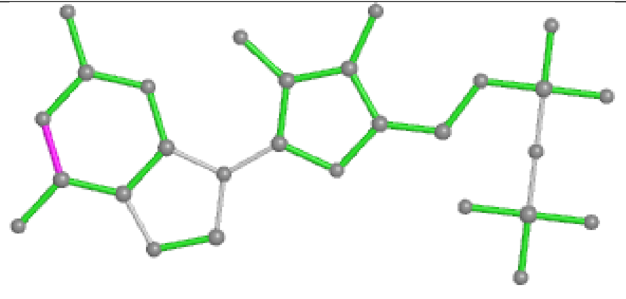


Torsions

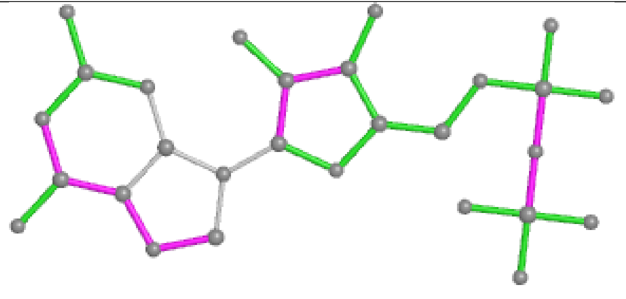


Rings

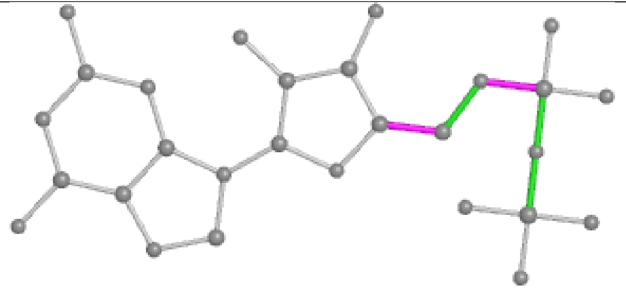
Ligand GDP GD 501



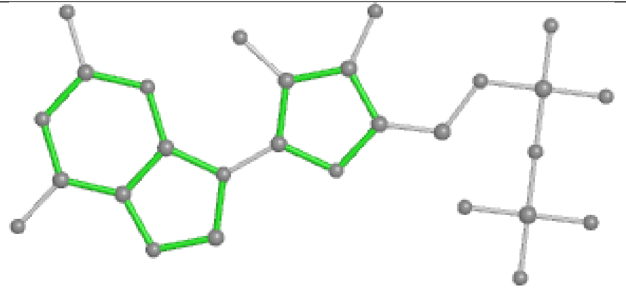
Bond lengths



Bond angles

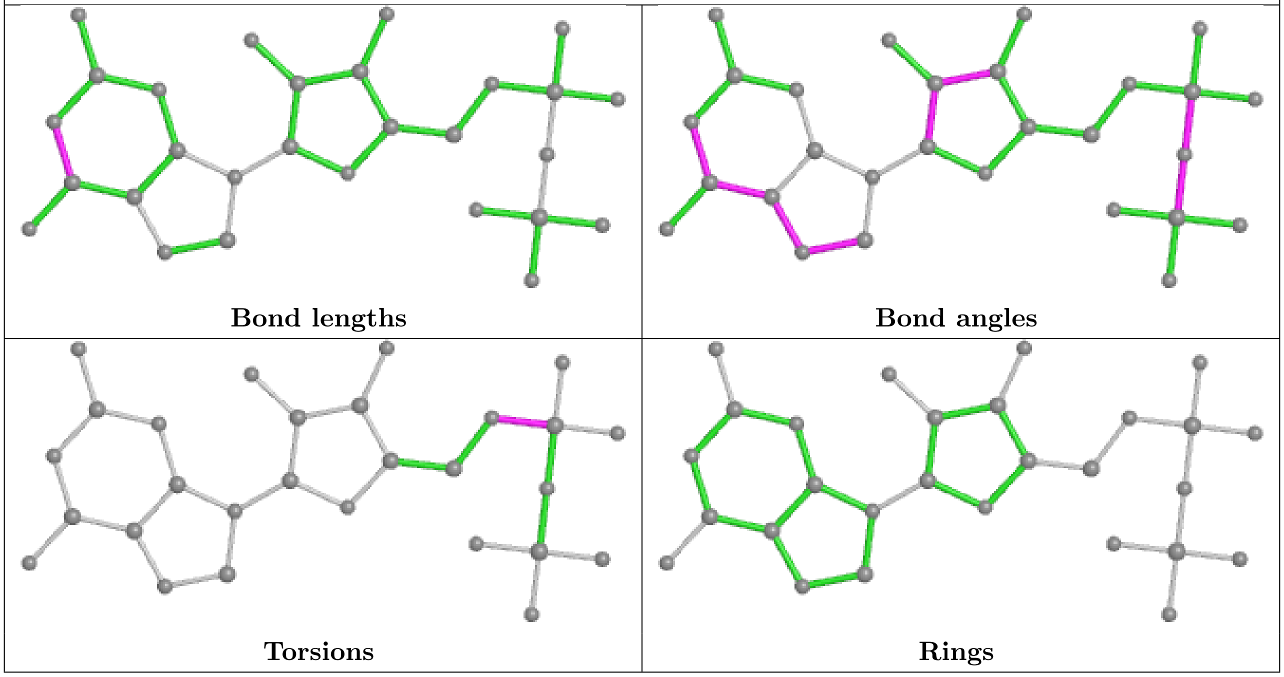


Torsions



Rings

Ligand GDP BD 501



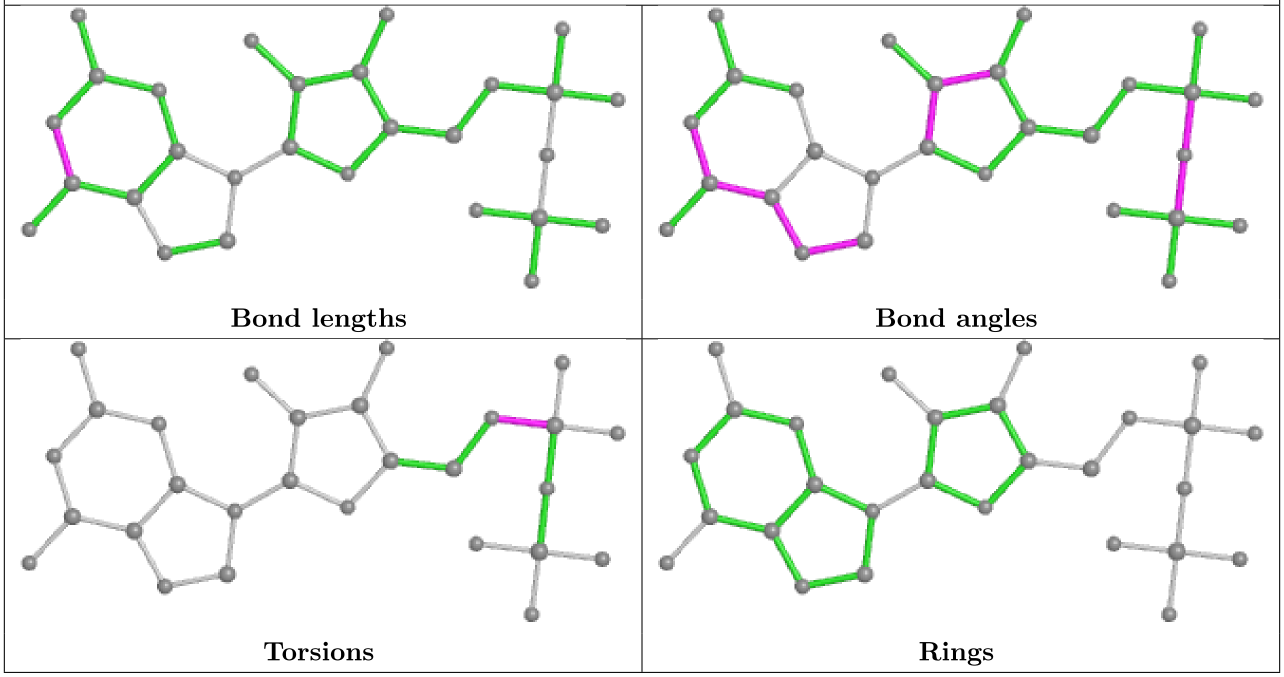
Bond lengths

Bond angles

Torsions

Rings

Ligand GDP HH 501



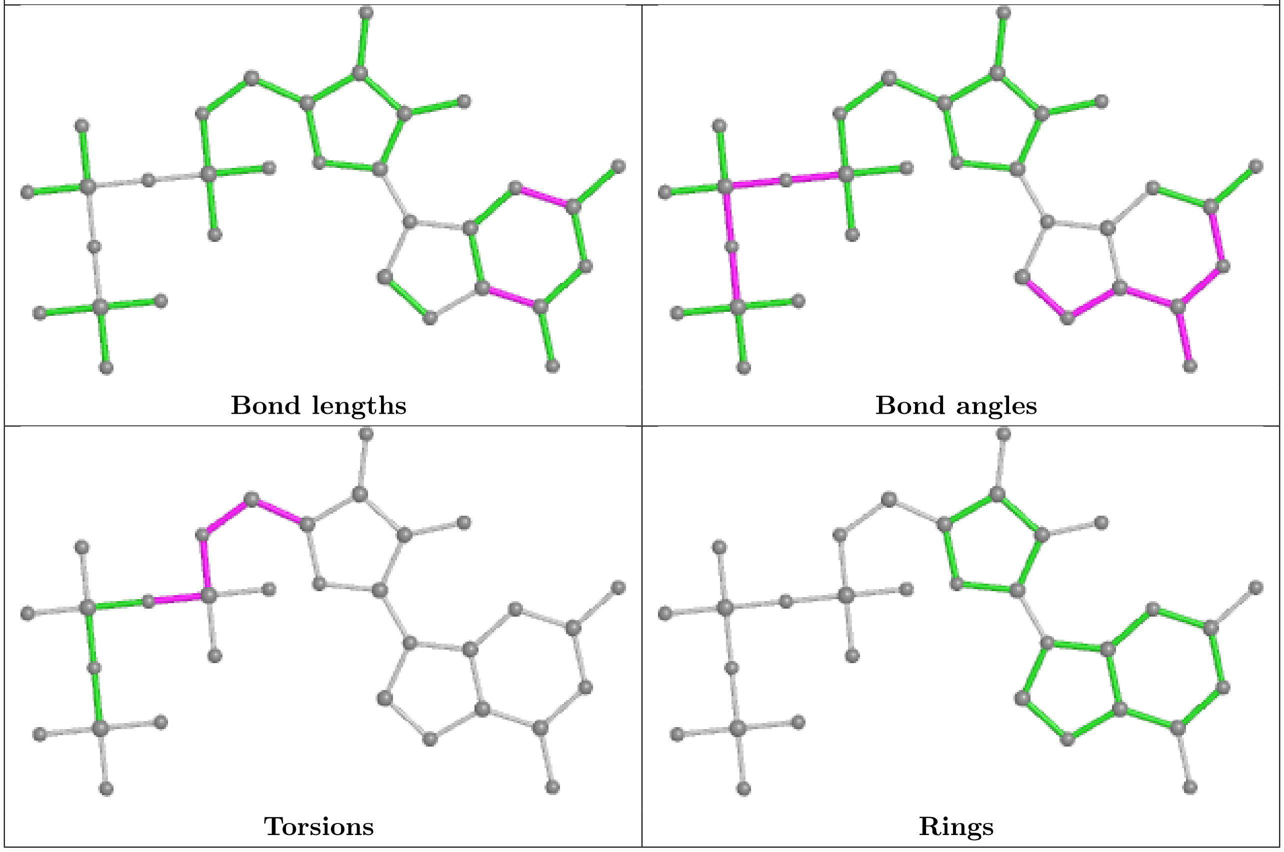
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP DC 501



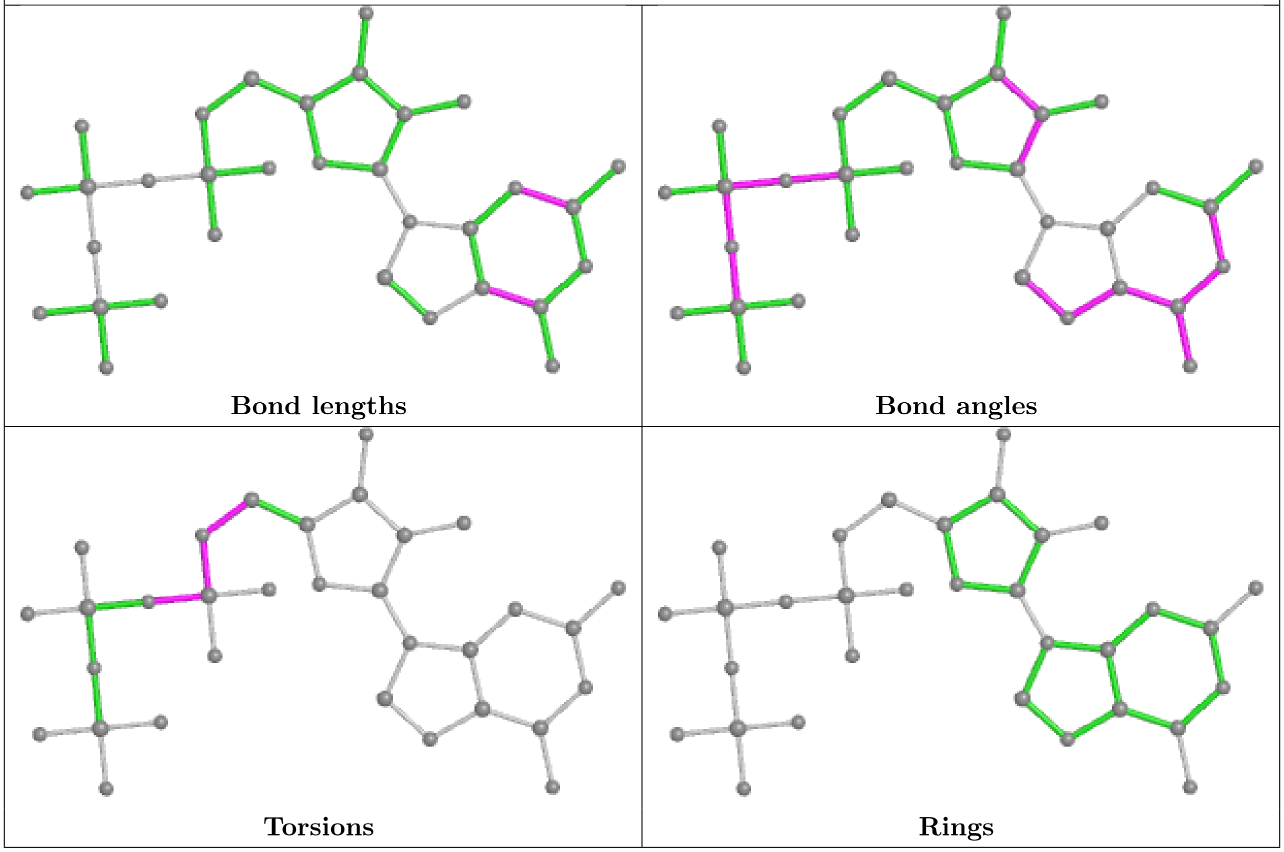
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP CE 501



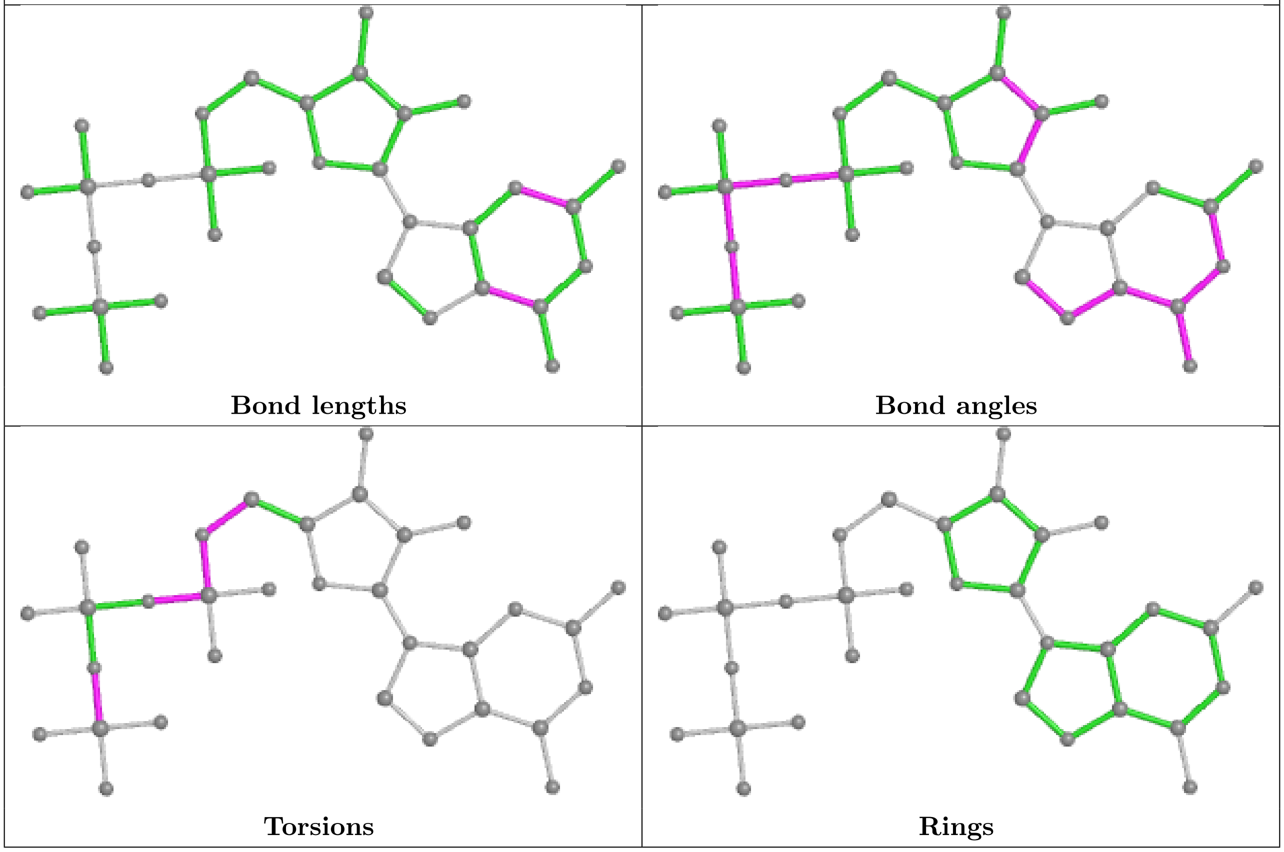
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP IC 501



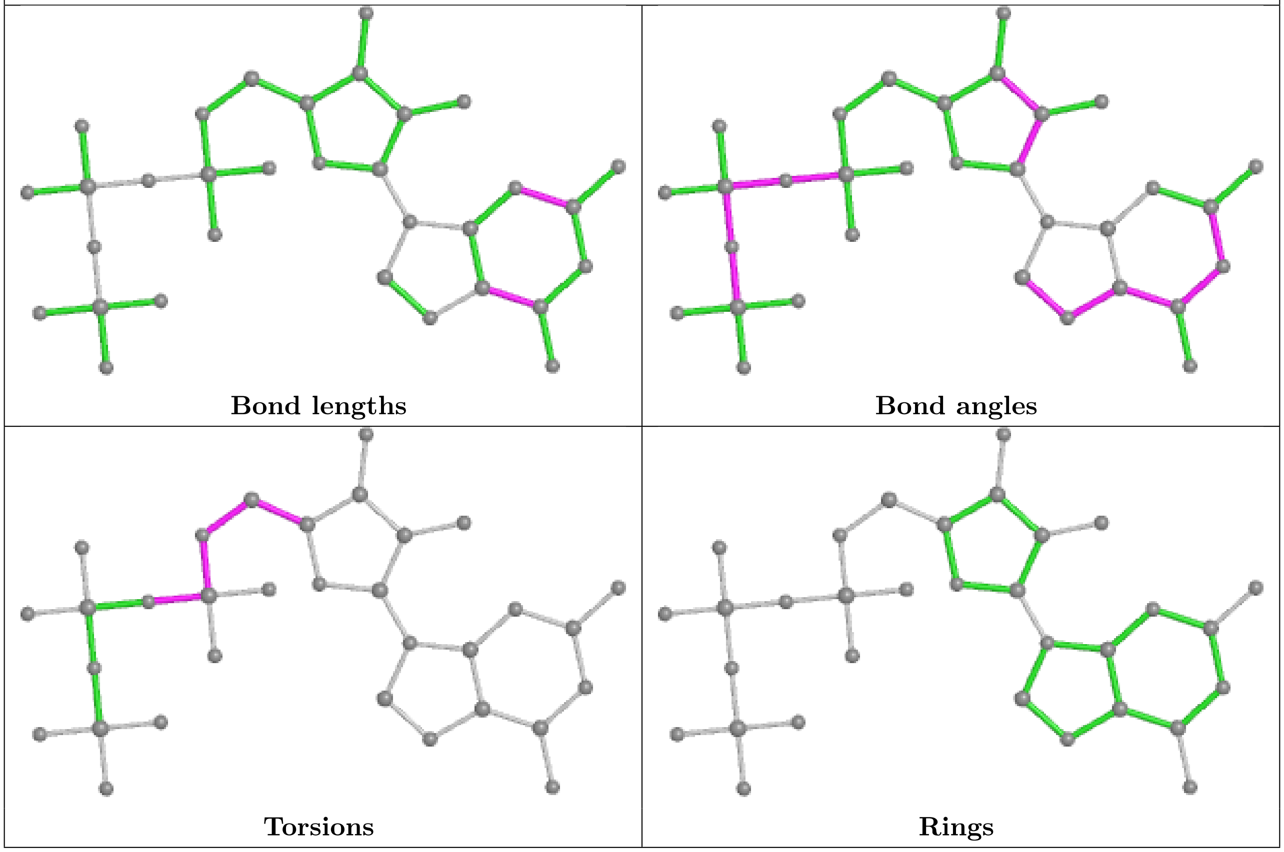
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP JE 501



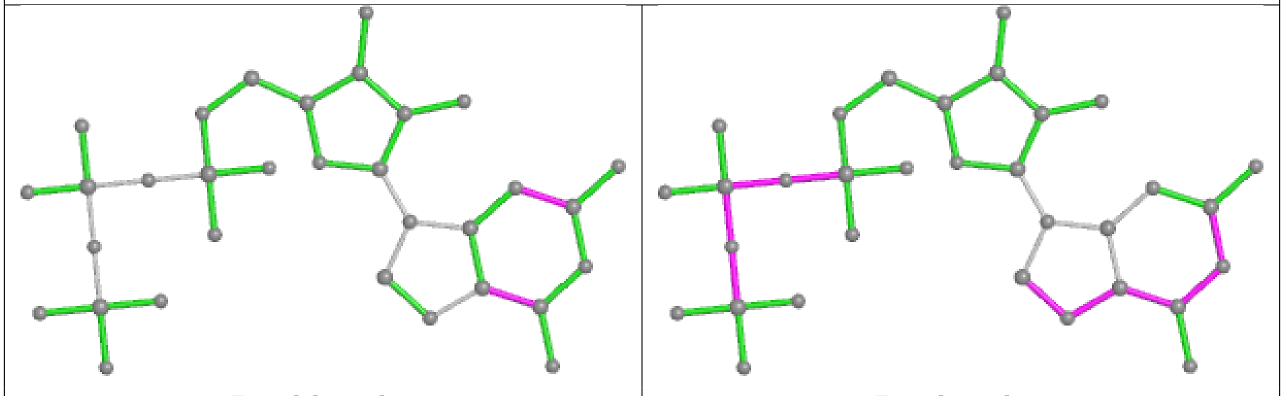
Bond lengths

Bond angles

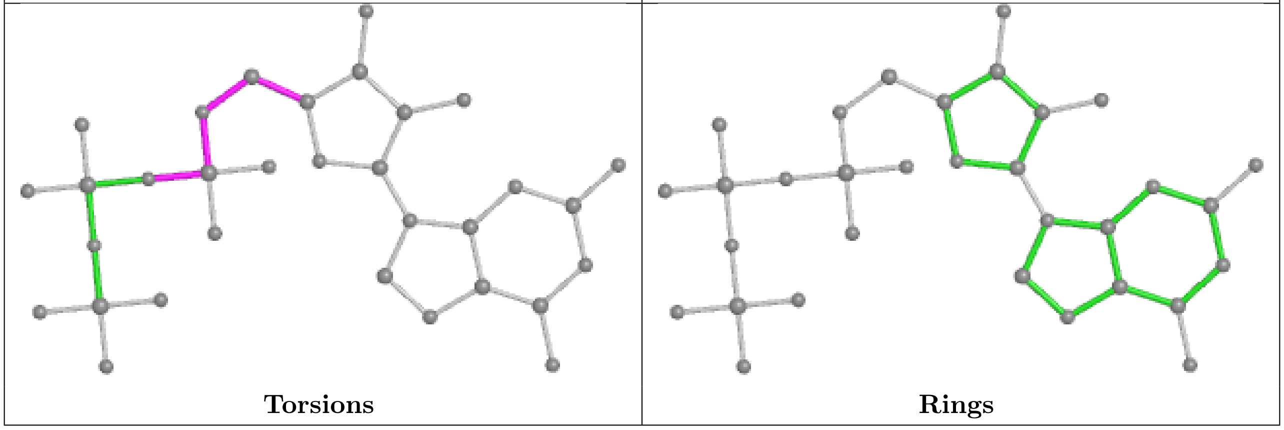
Torsions

Rings

Ligand GTP EE 501

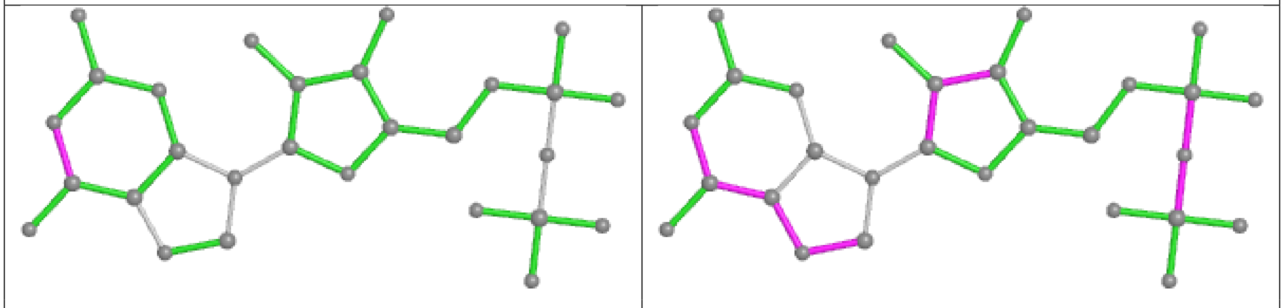


Bond lengths Bond angles

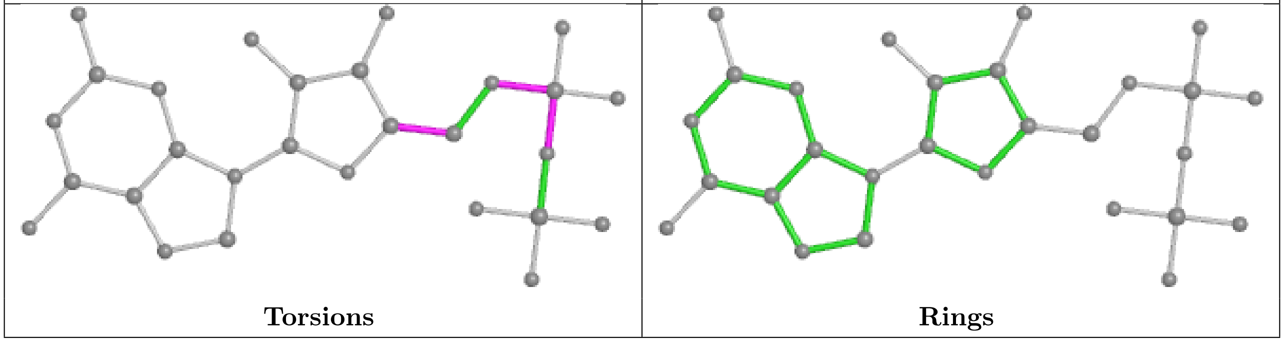


Torsions Rings

Ligand GDP JF 501

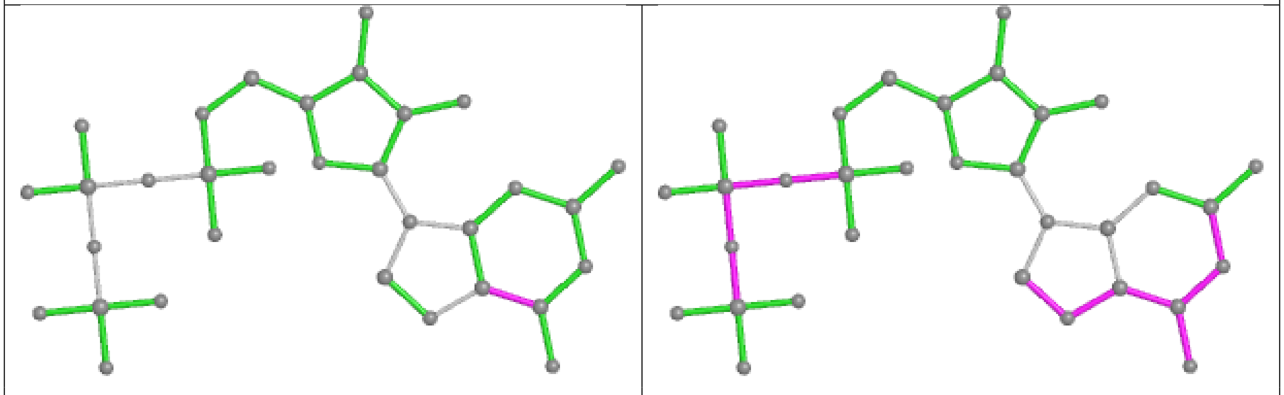


Bond lengths Bond angles



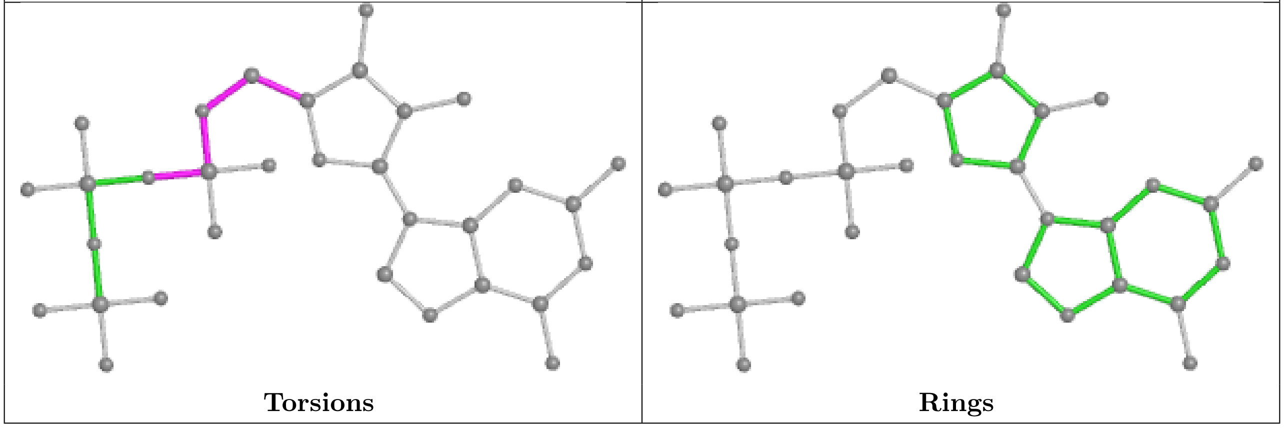
Torsions Rings

Ligand GTP FG 501



Bond lengths

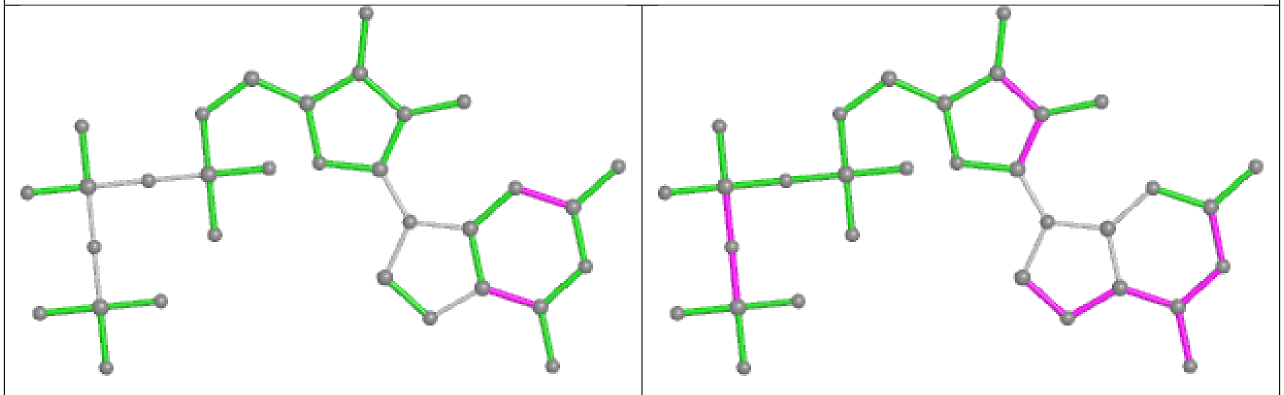
Bond angles



Torsions

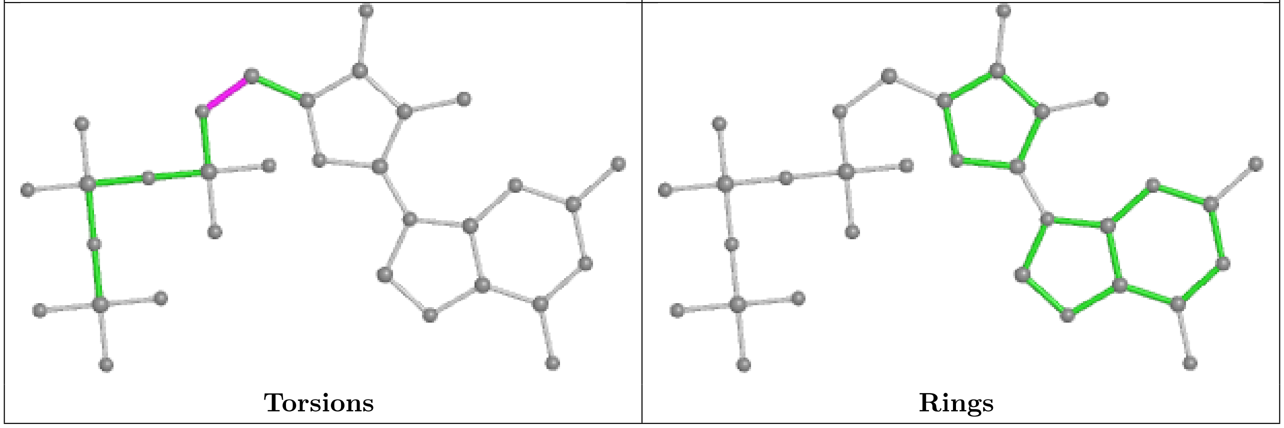
Rings

Ligand GTP JG 501



Bond lengths

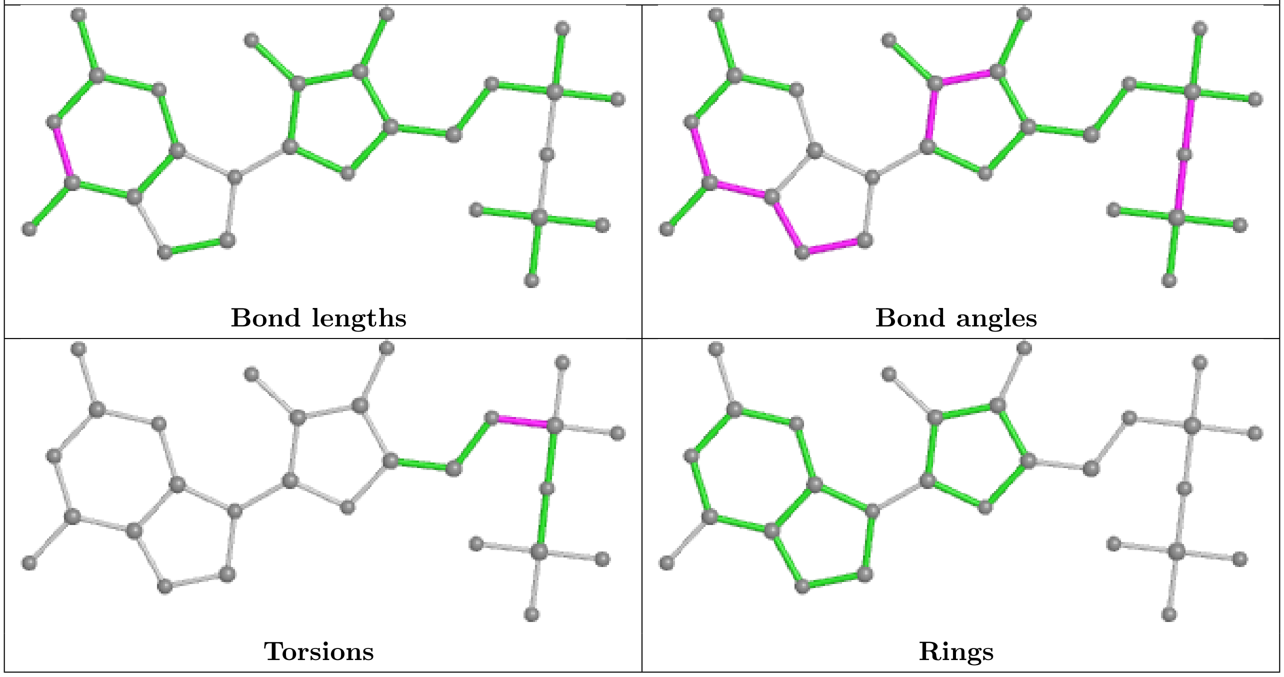
Bond angles



Torsions

Rings

Ligand GDP MD 501



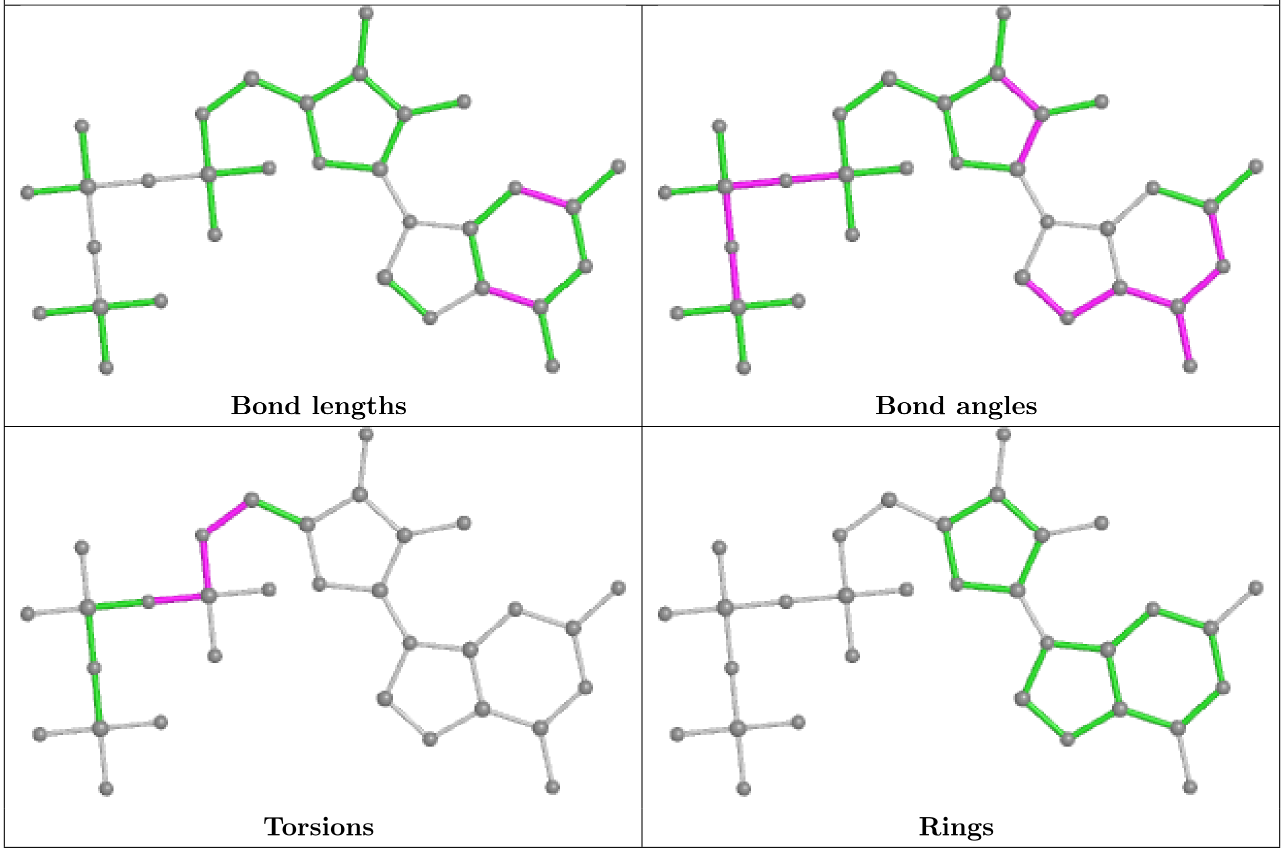
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP LE 501



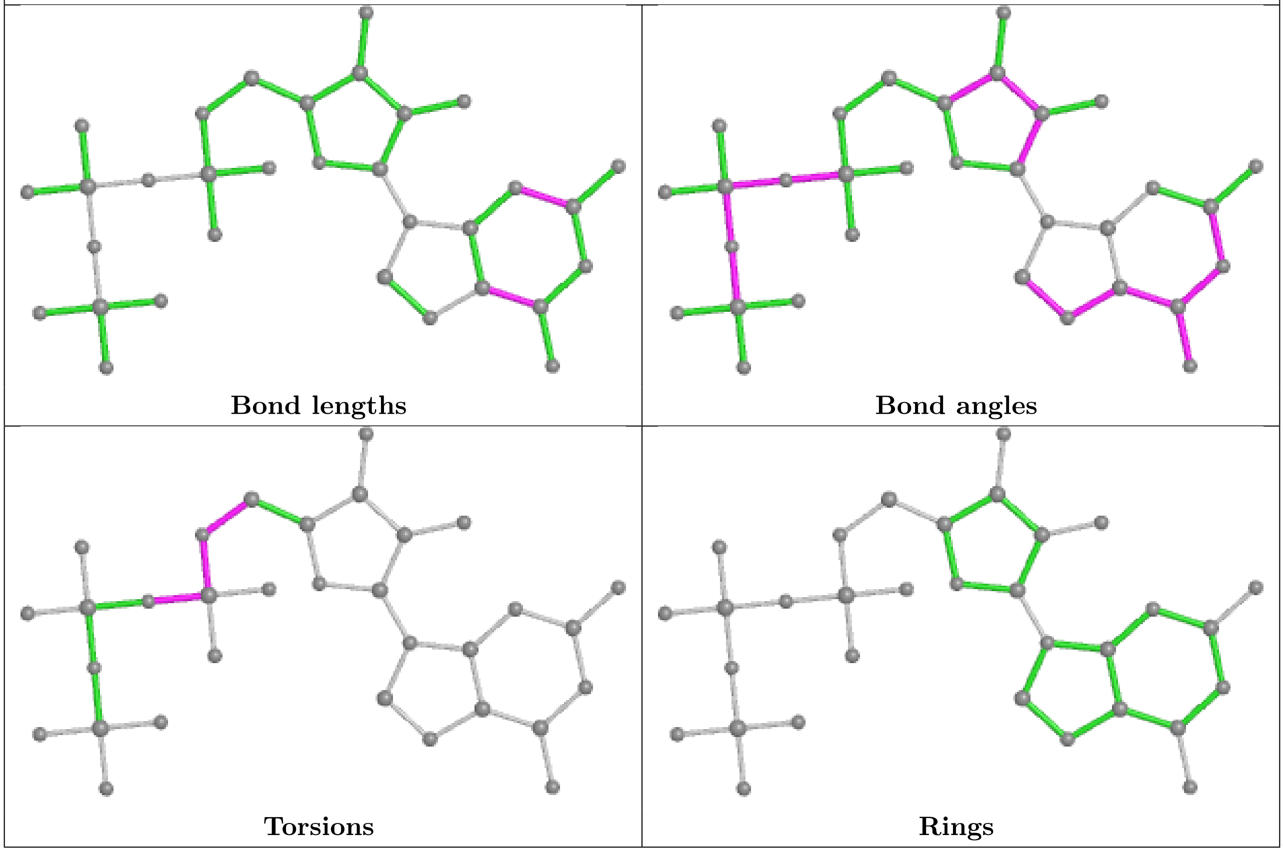
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP ME 501



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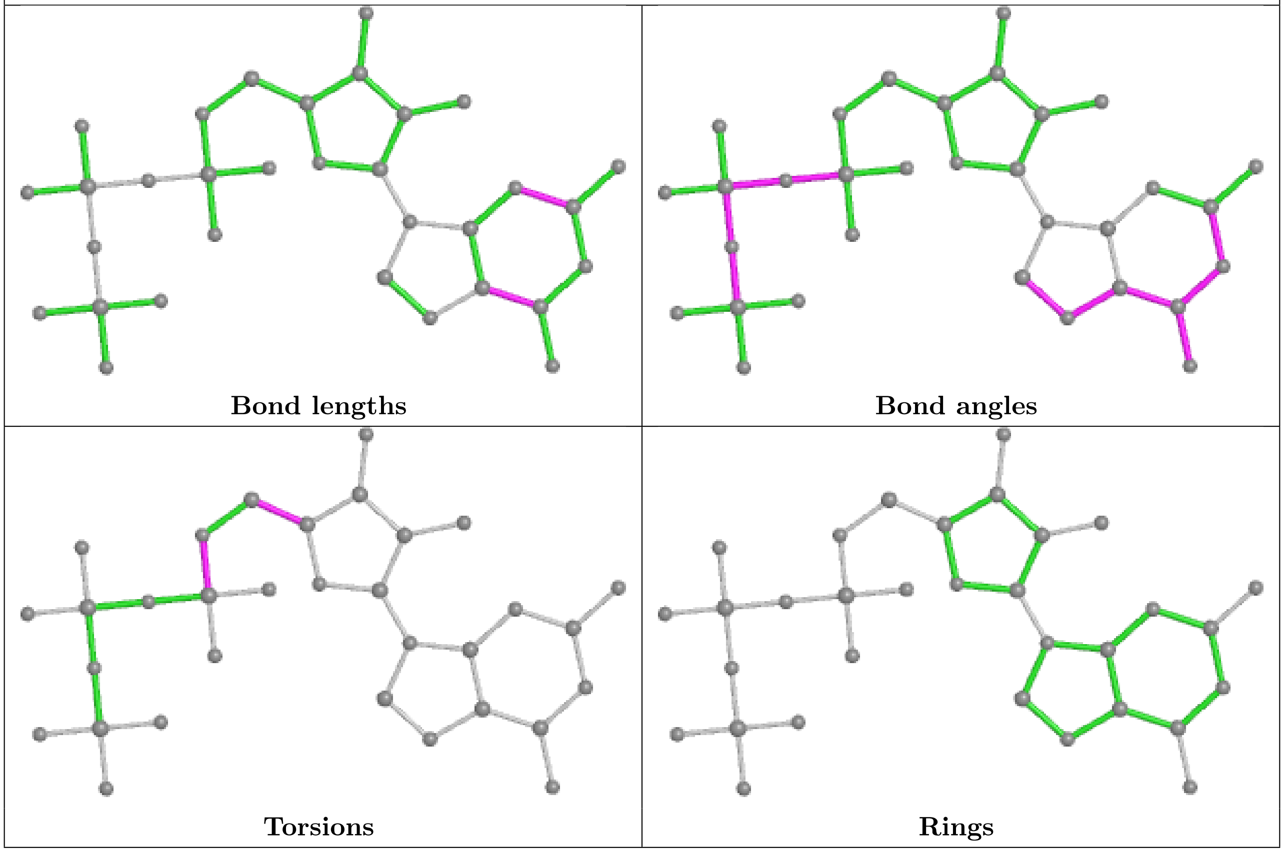

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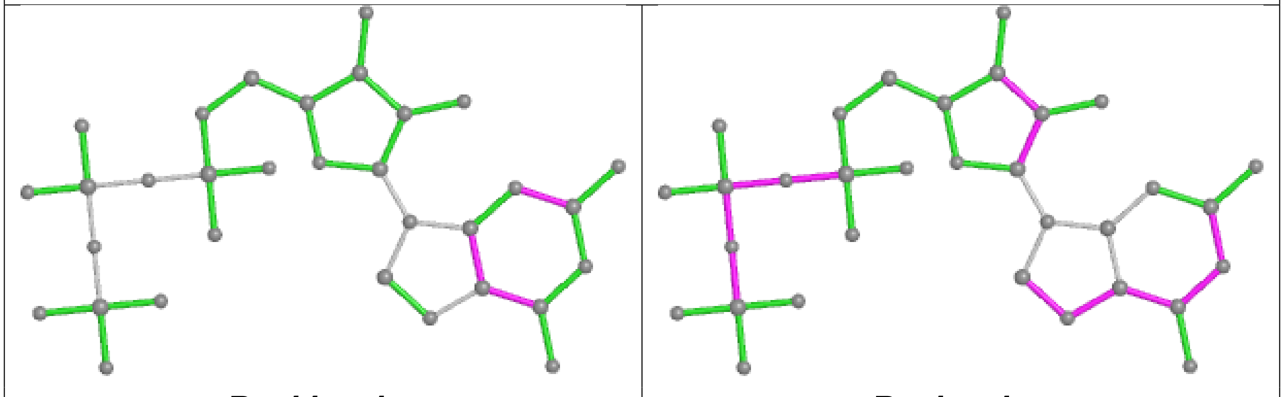
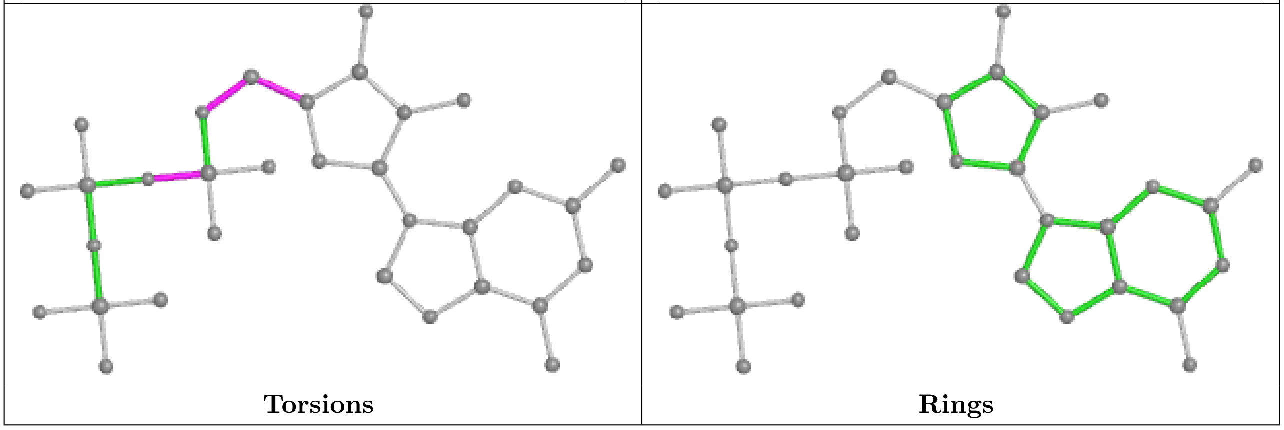


Bond lengths

Bond angles



Torsions

Rings

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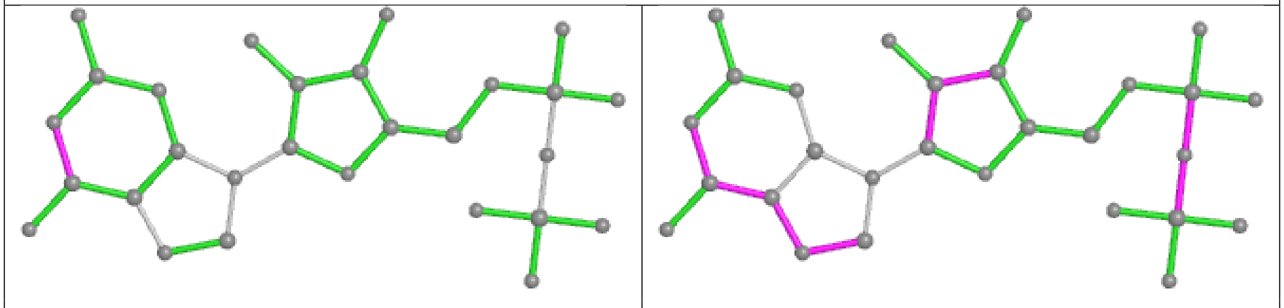
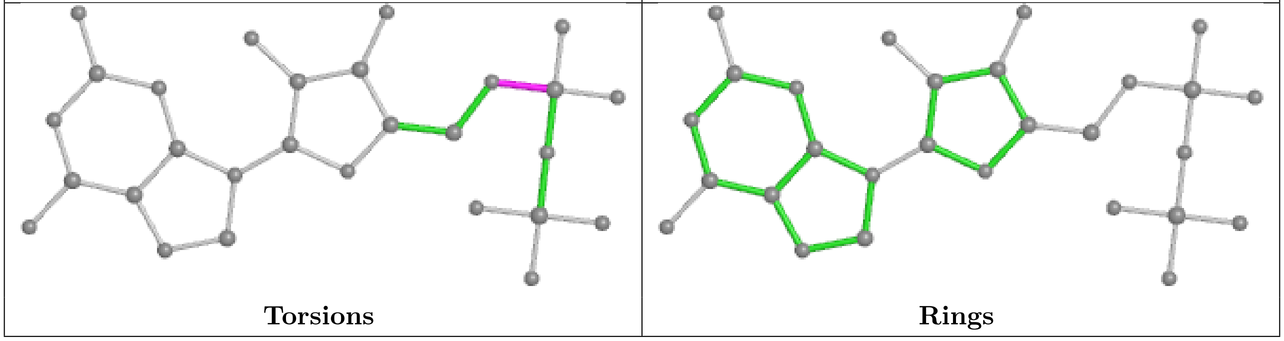


Bond lengths

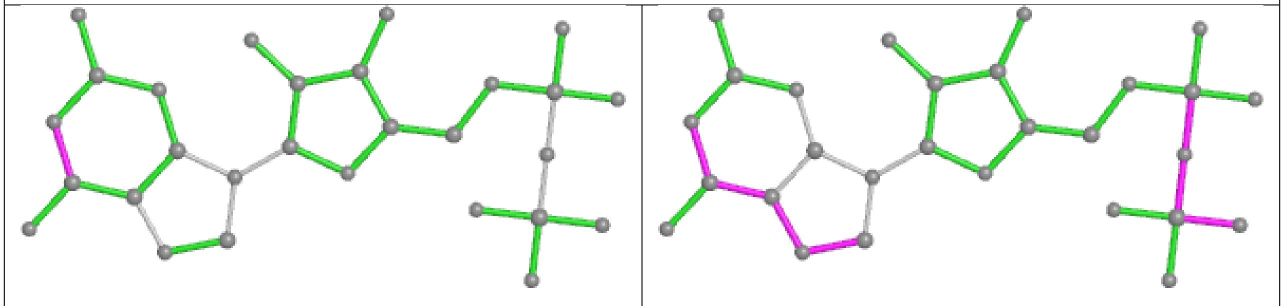
Bond angles



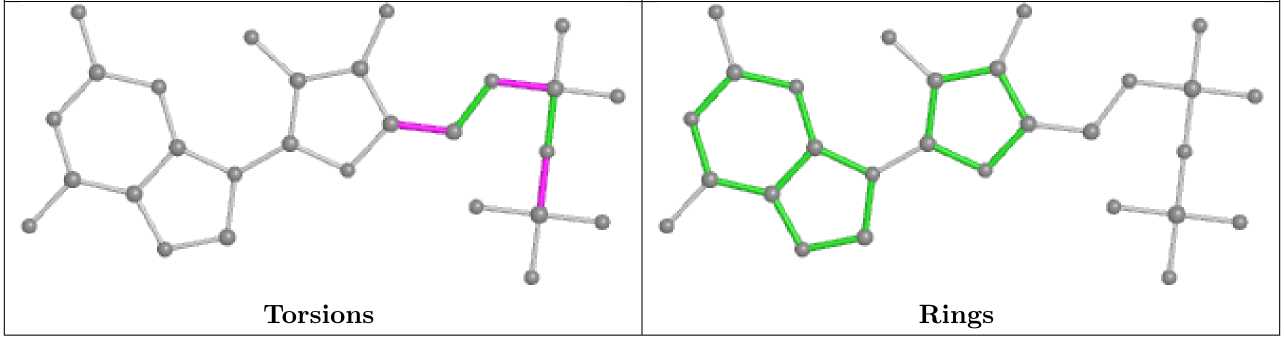
Torsions

Rings

Ligand GDP ID 501

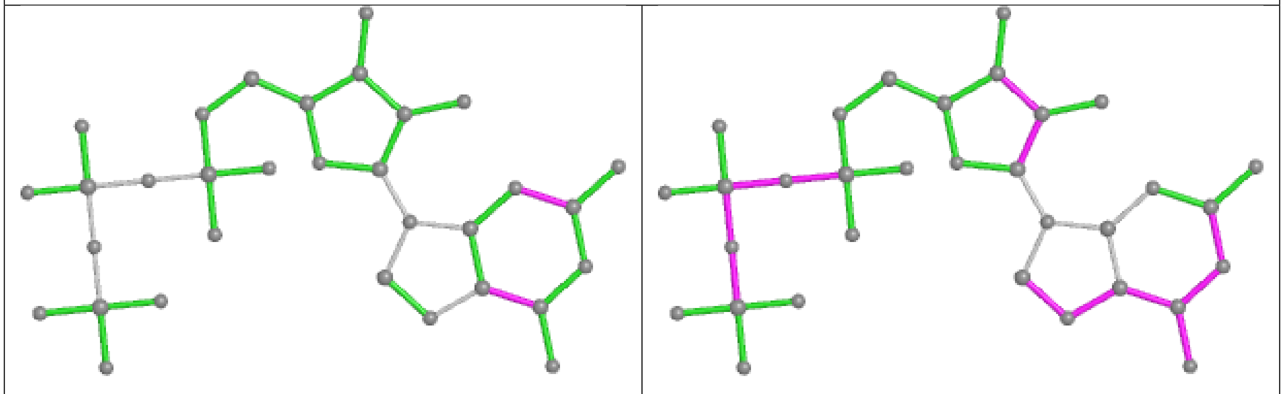


Bond lengths **Bond angles**

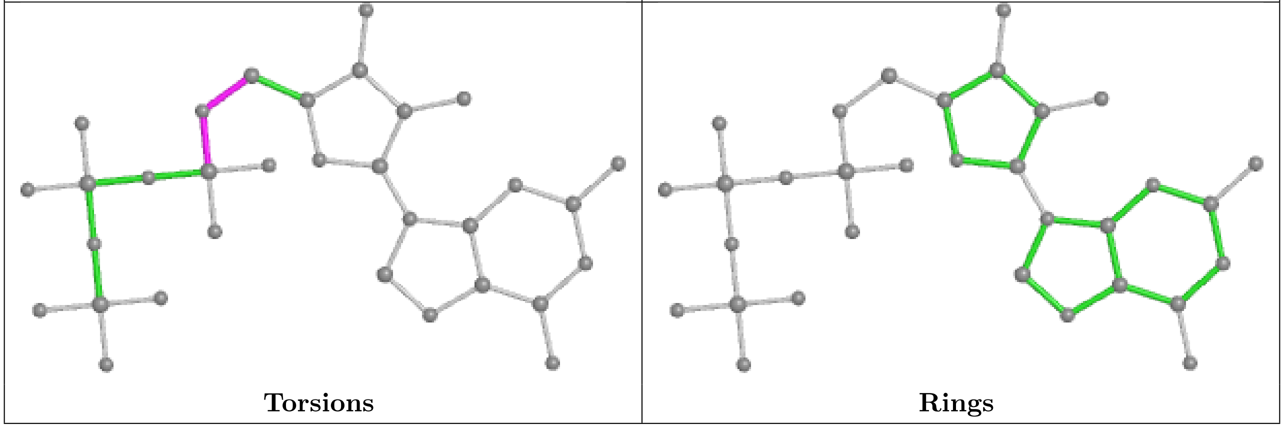


Torsions **Rings**

Ligand GTP BE 501

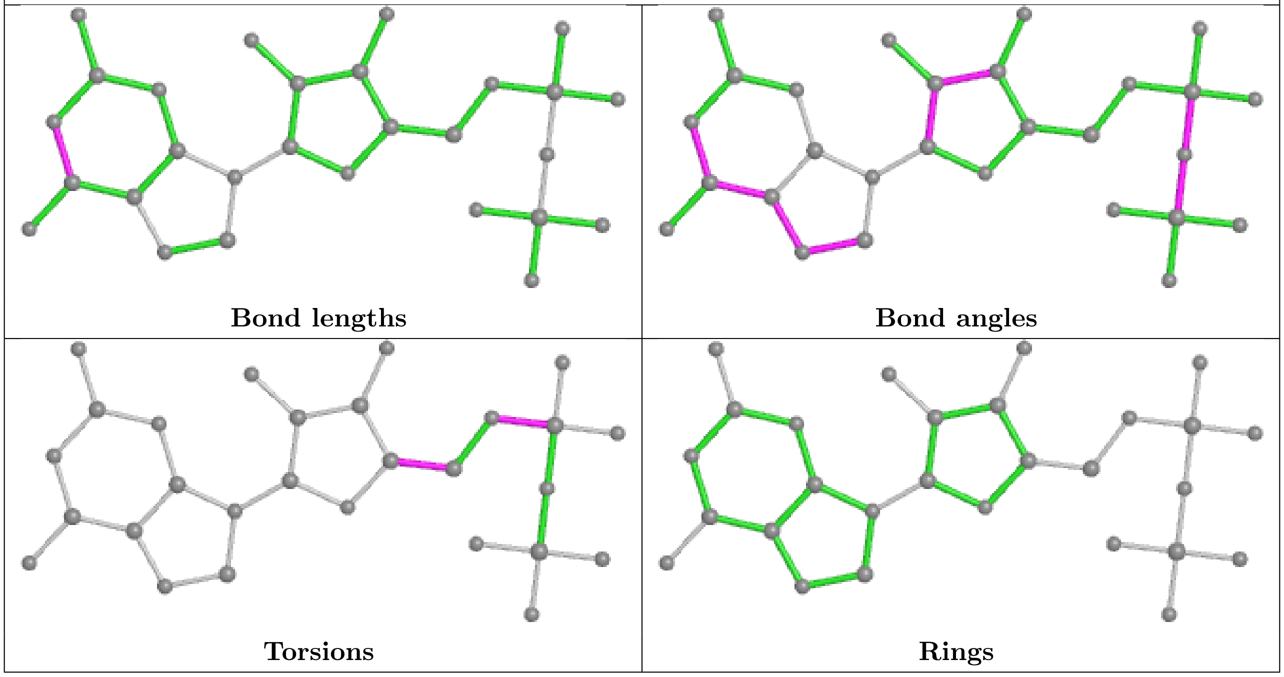


Bond lengths **Bond angles**



Torsions **Rings**

Ligand GDP BA 501



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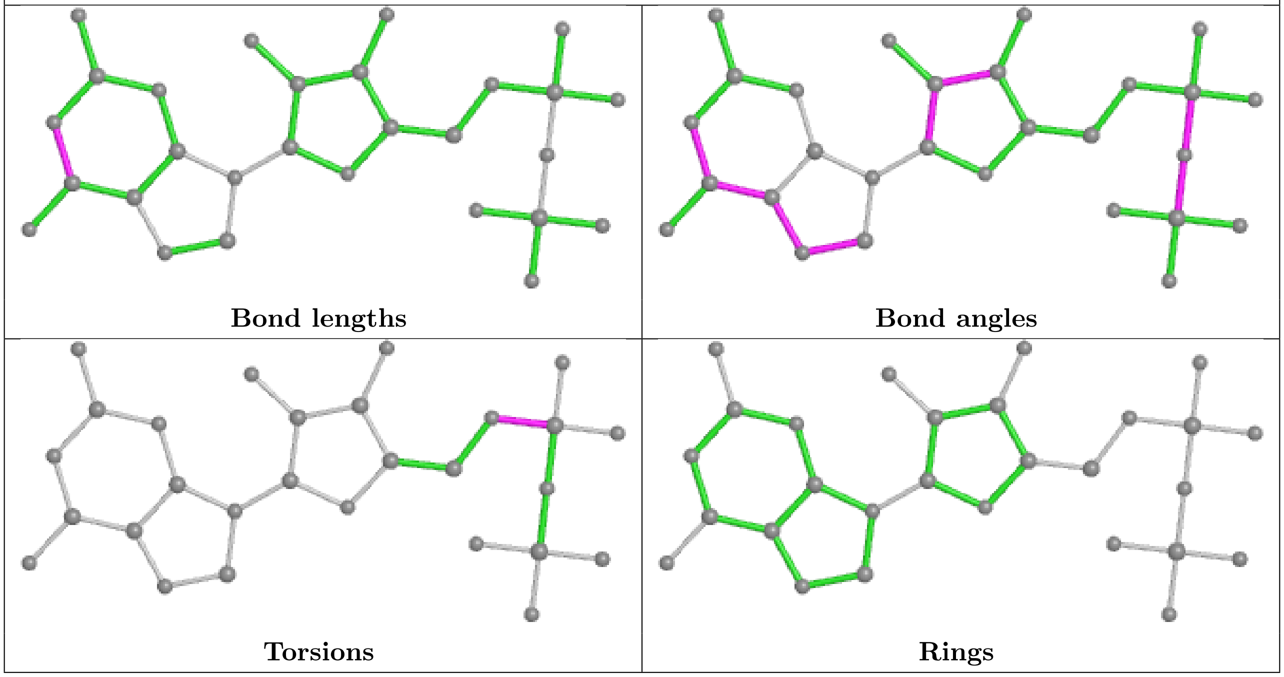

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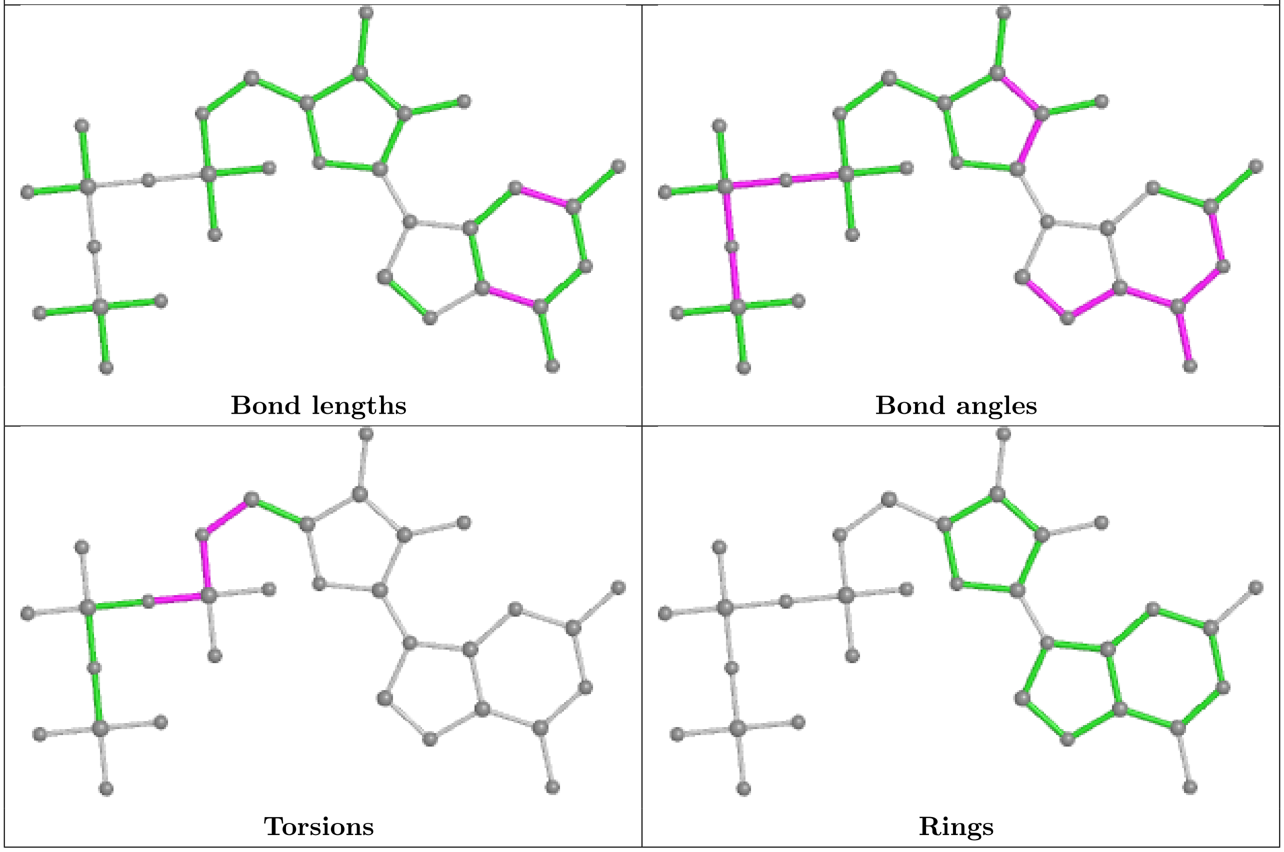


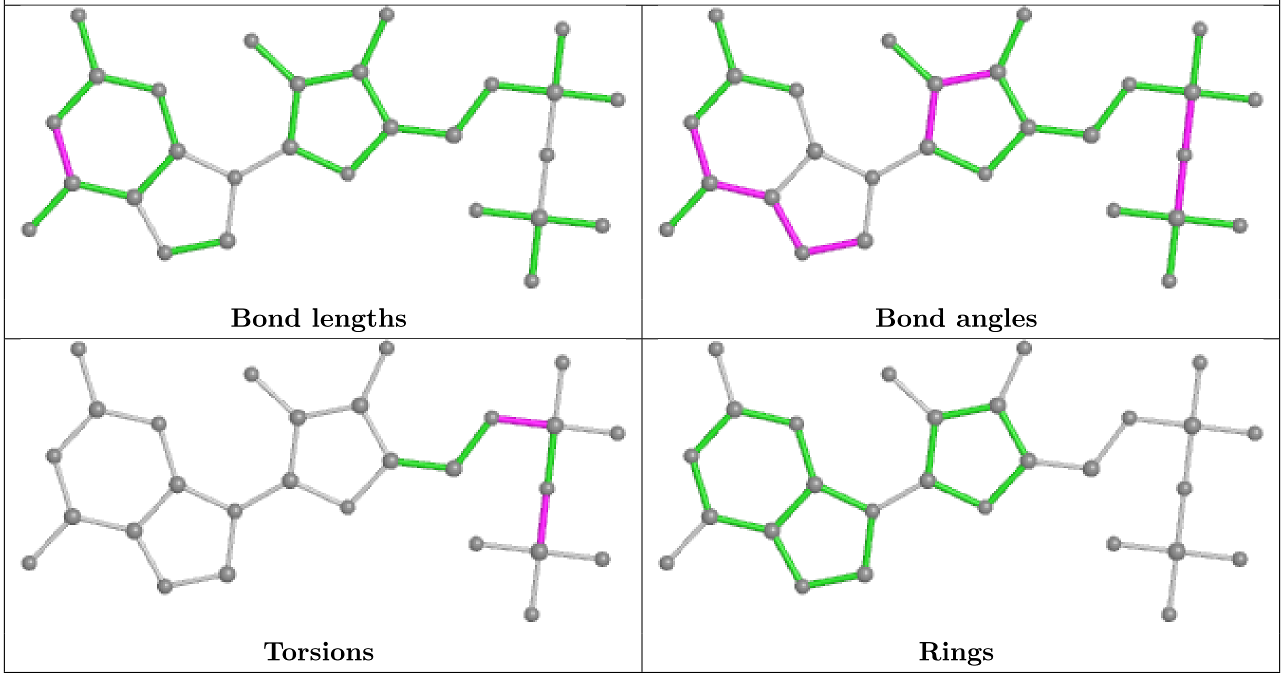
Bond lengths

Bond angles

Torsions

Rings

Ligand GDP EB 501



Bond lengths

Bond angles

Torsions

Rings

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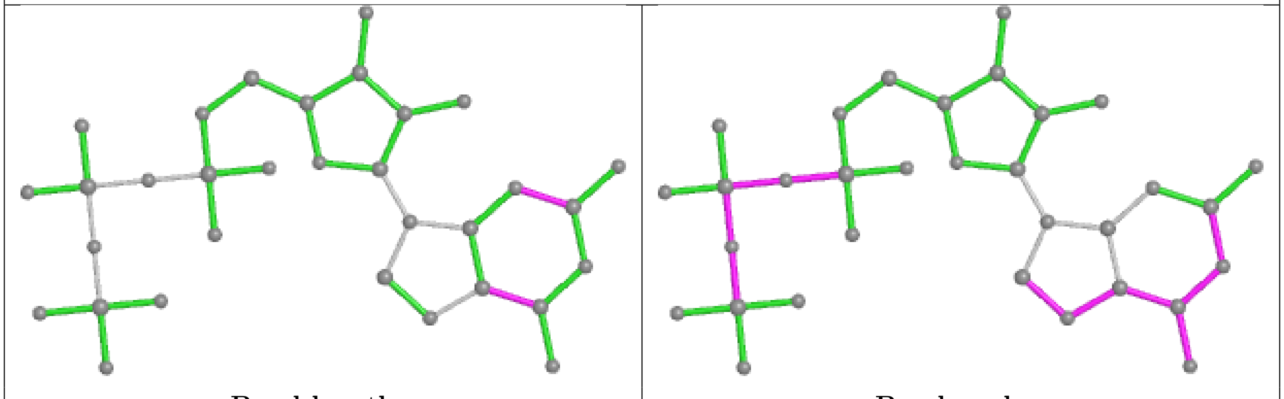
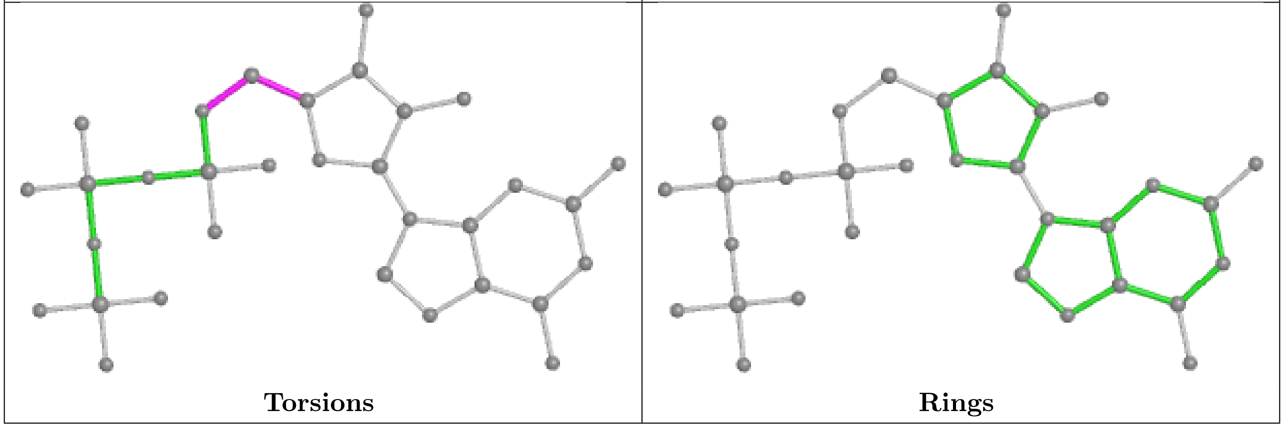
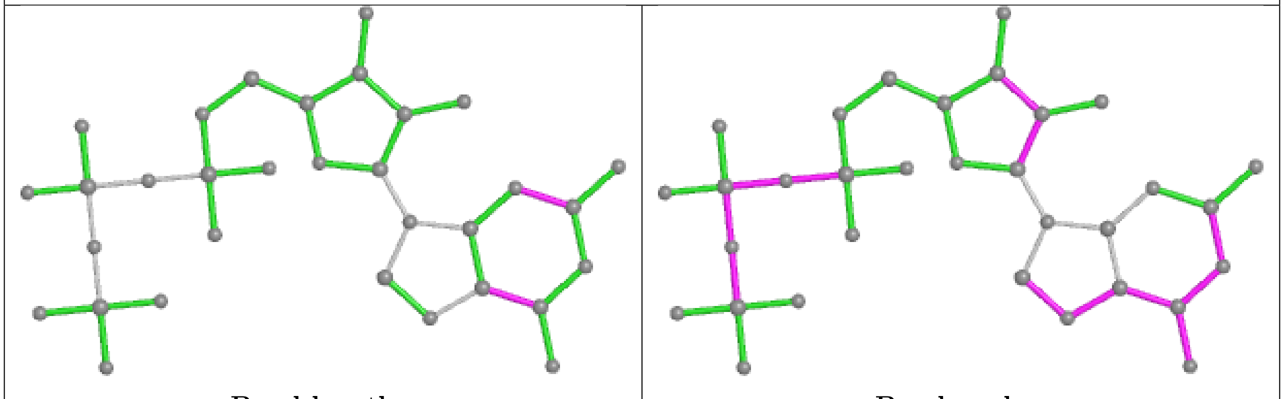


Bond lengths Bond angles

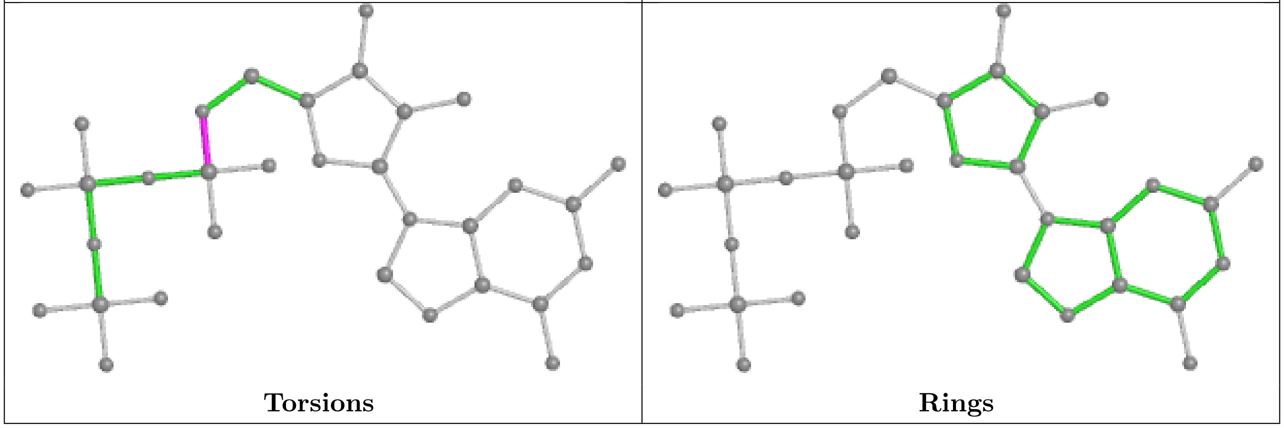


Torsions Rings

Ligand GTP AC 501

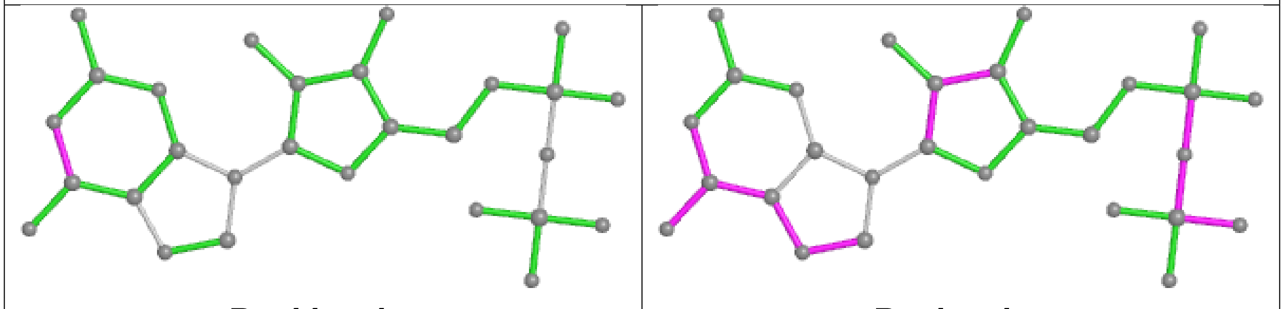


Bond lengths Bond angles



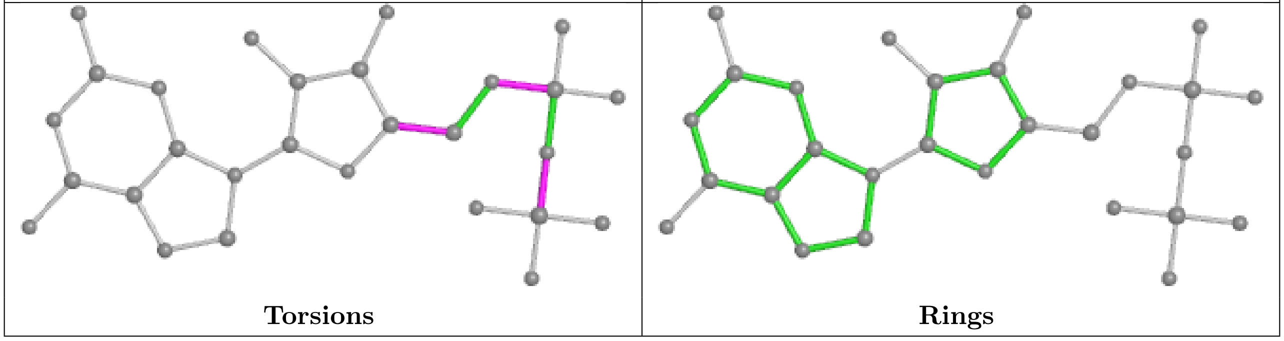
Torsions Rings

Ligand GDP LF 501



Bond lengths

Bond angles



Torsions

Rings

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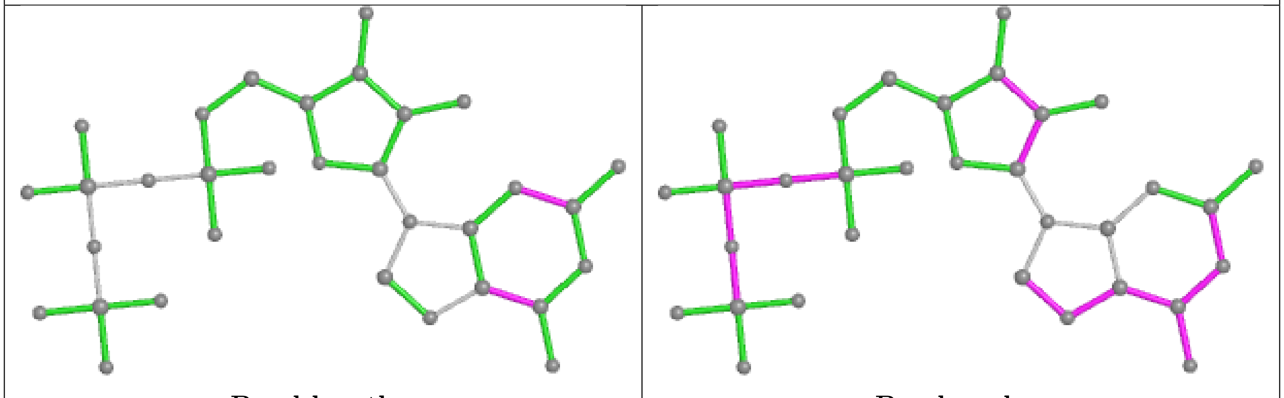
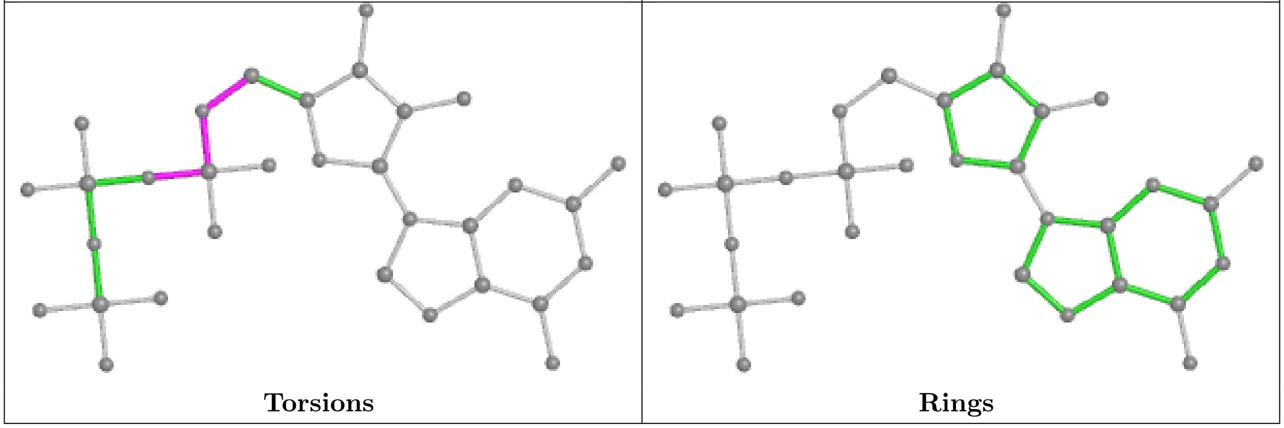


Bond lengths

Bond angles



Torsions

Rings

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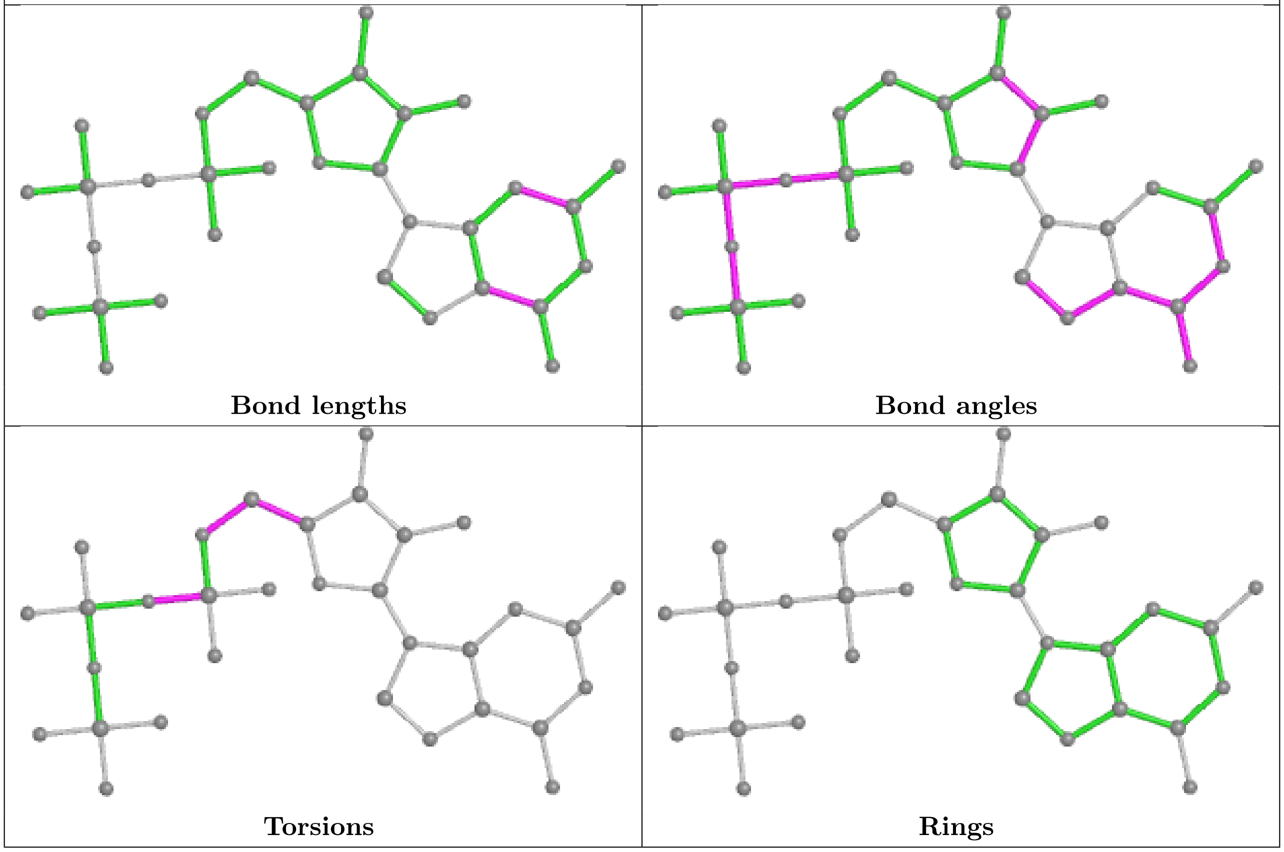

Bond lengths

Bond angles

Torsions

Rings

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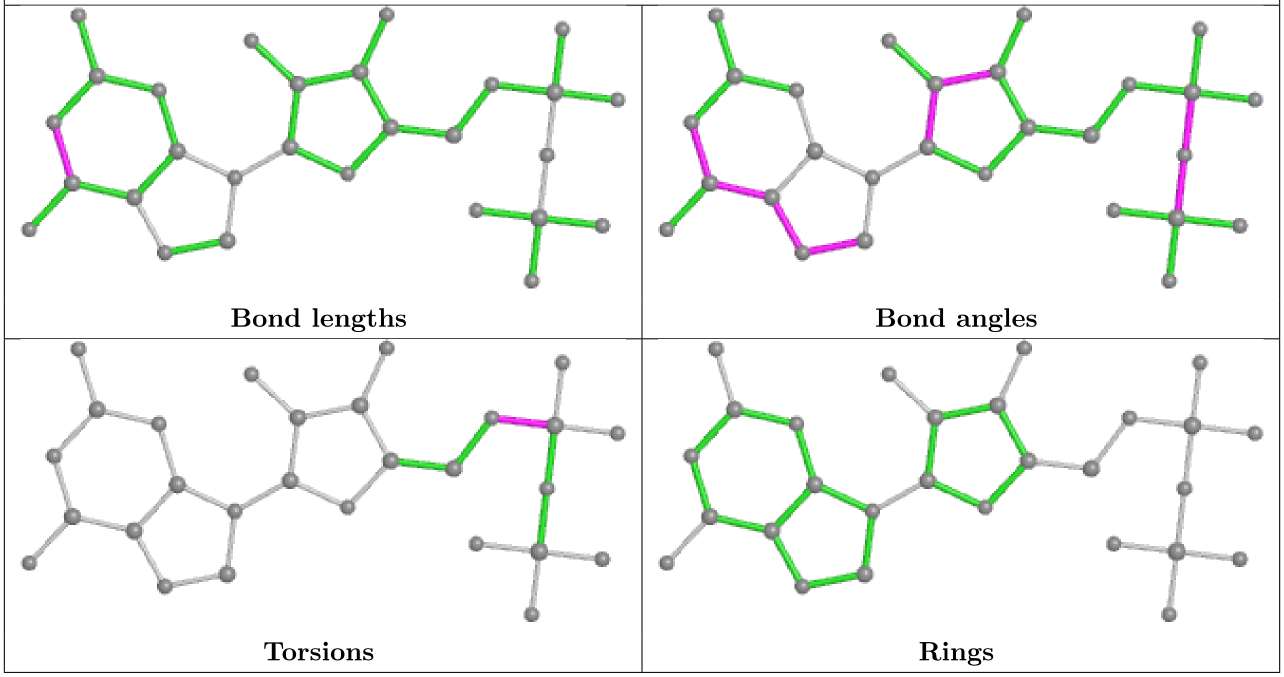

Bond lengths

Bond angles

Torsions

Rings

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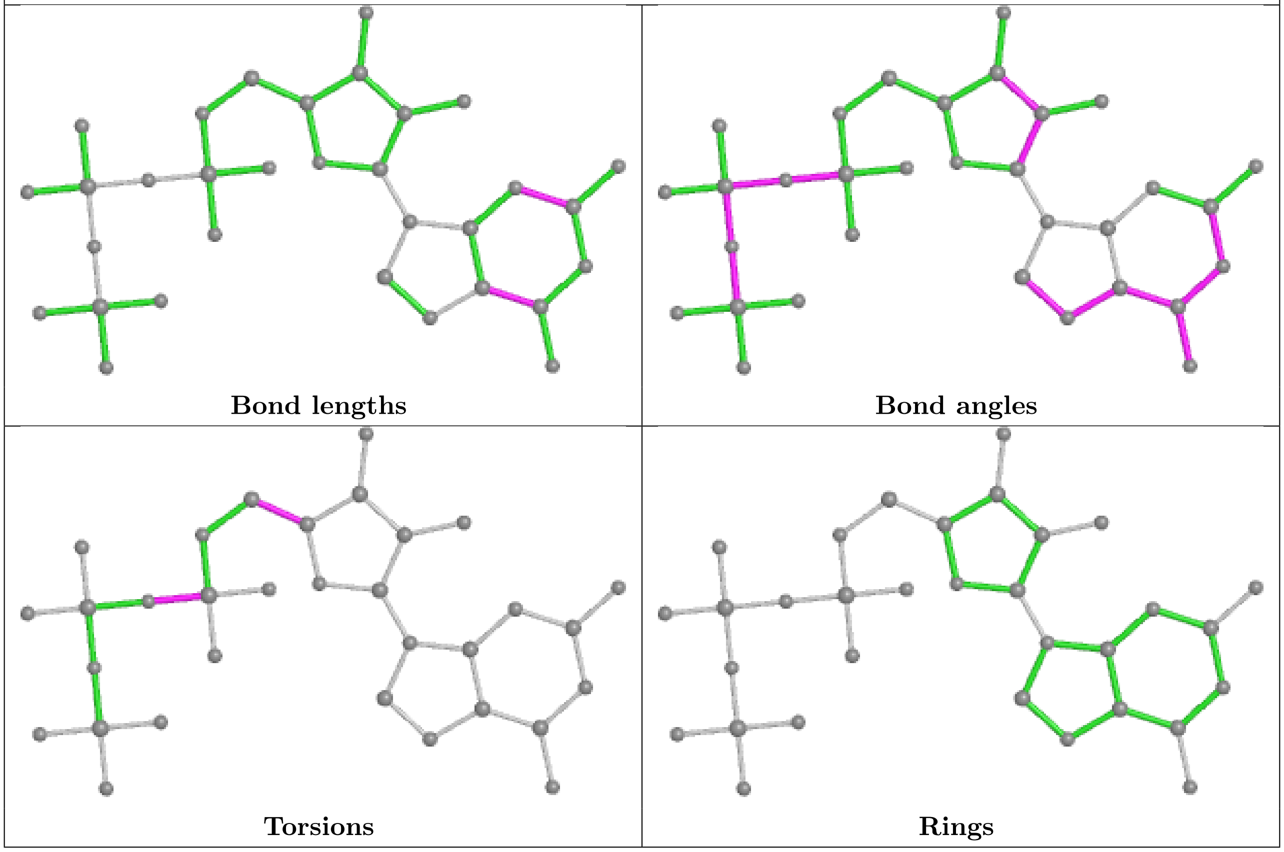

Bond lengths

Bond angles

Torsions

Rings

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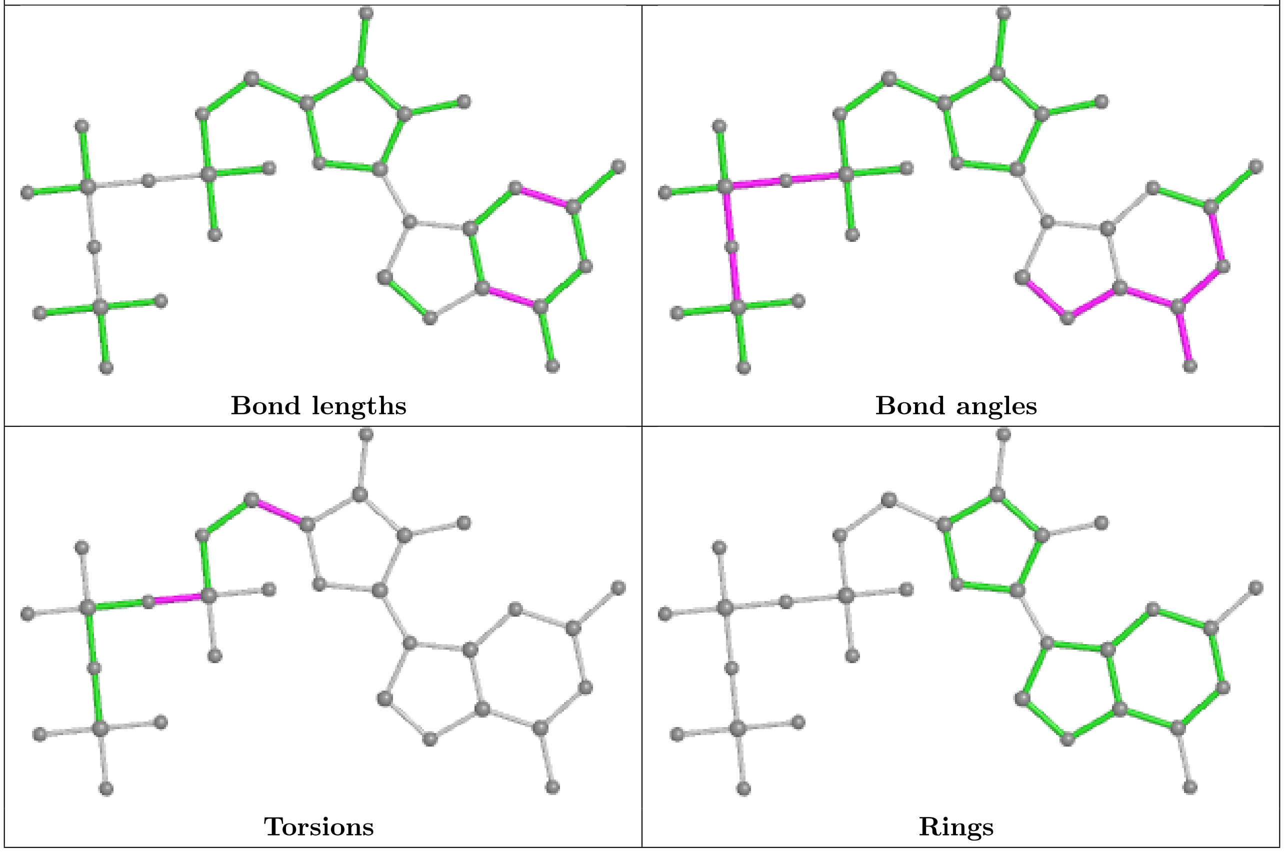

Bond lengths

Bond angles

Torsions

Rings

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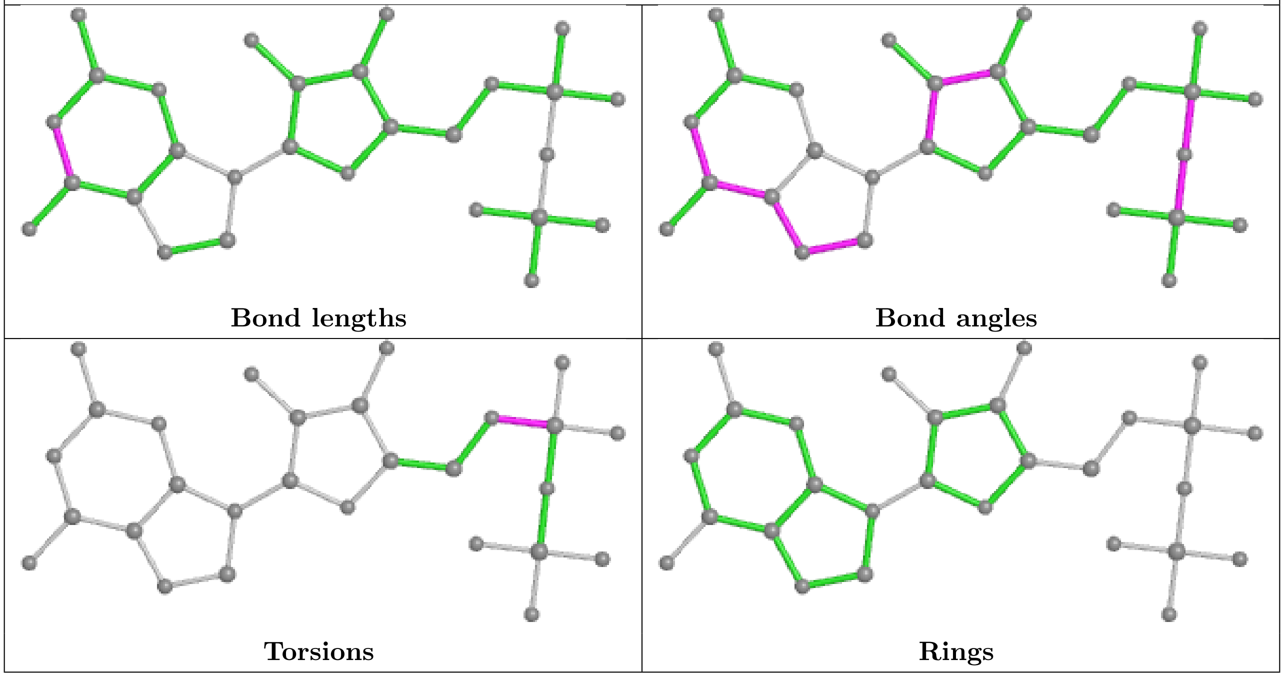

Bond lengths Bond angles

Torsions Rings

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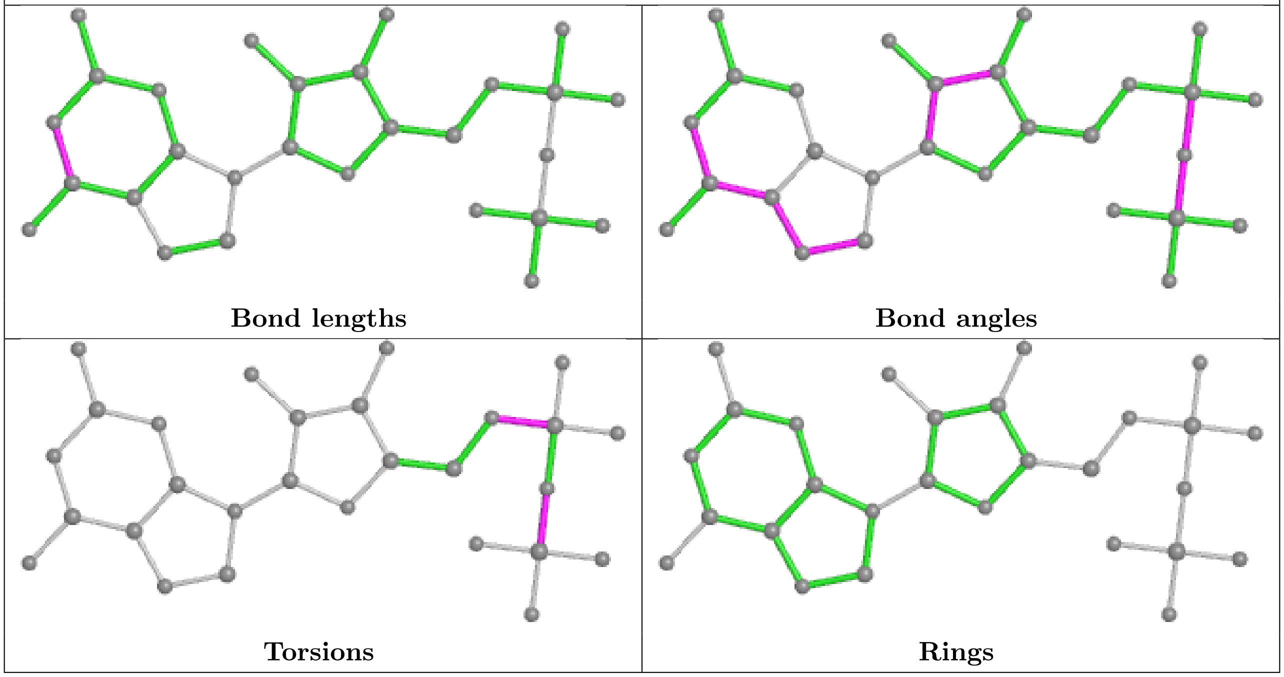

Bond lengths Bond angles

Torsions Rings

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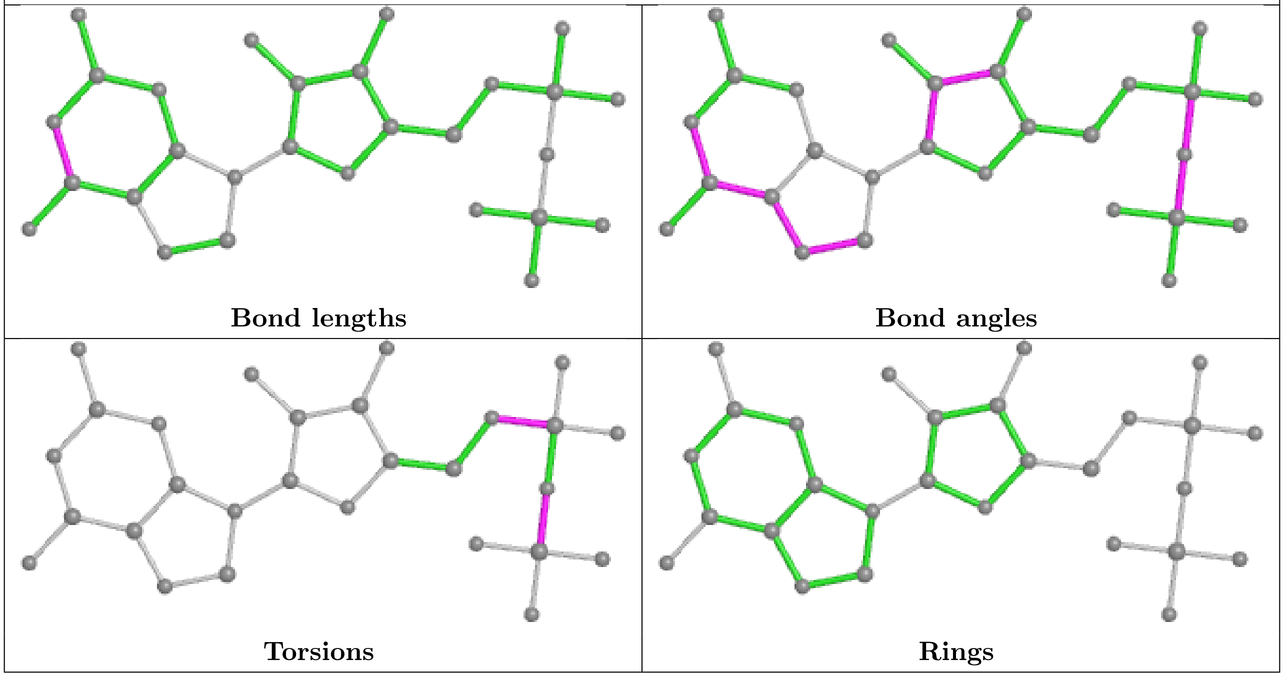

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Bond angles

Torsions

Rings

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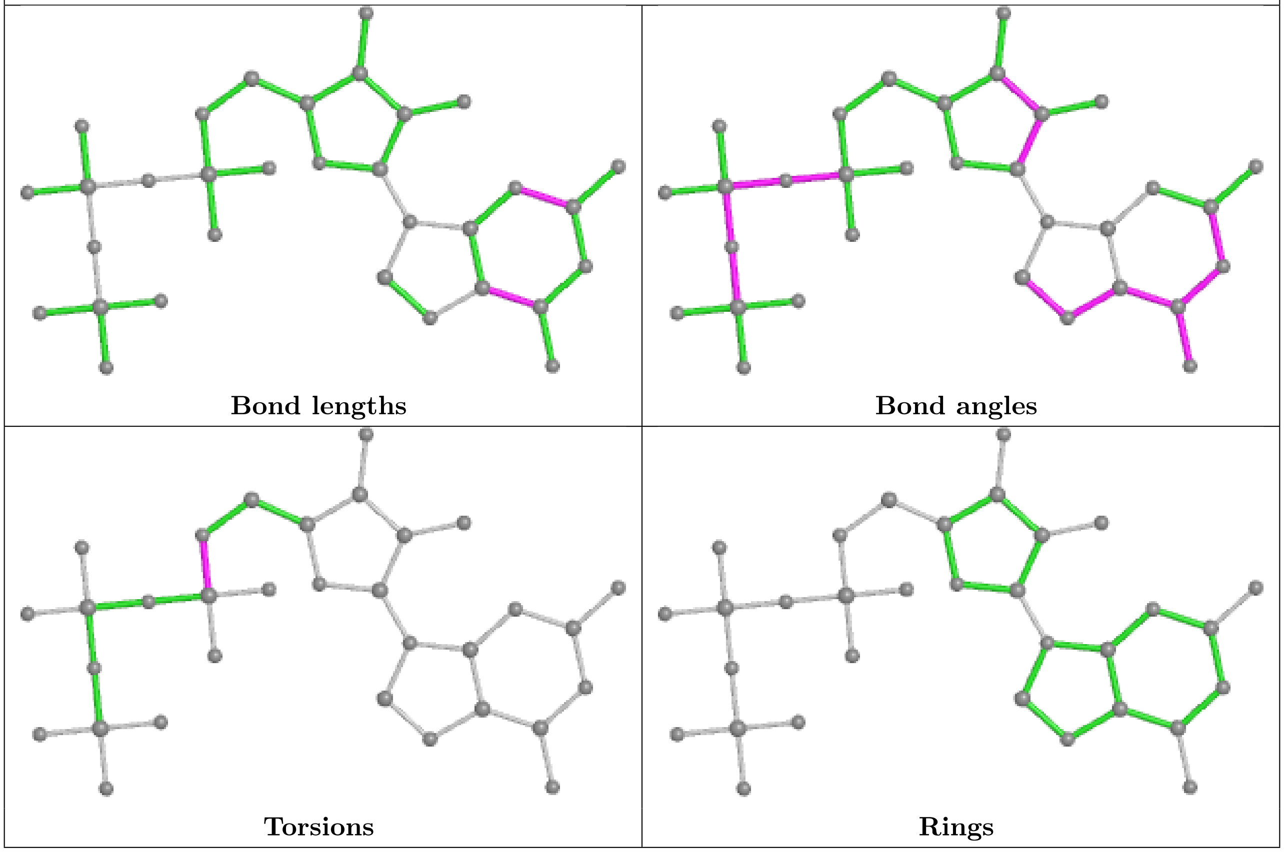

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Bond angles

Torsions

Rings

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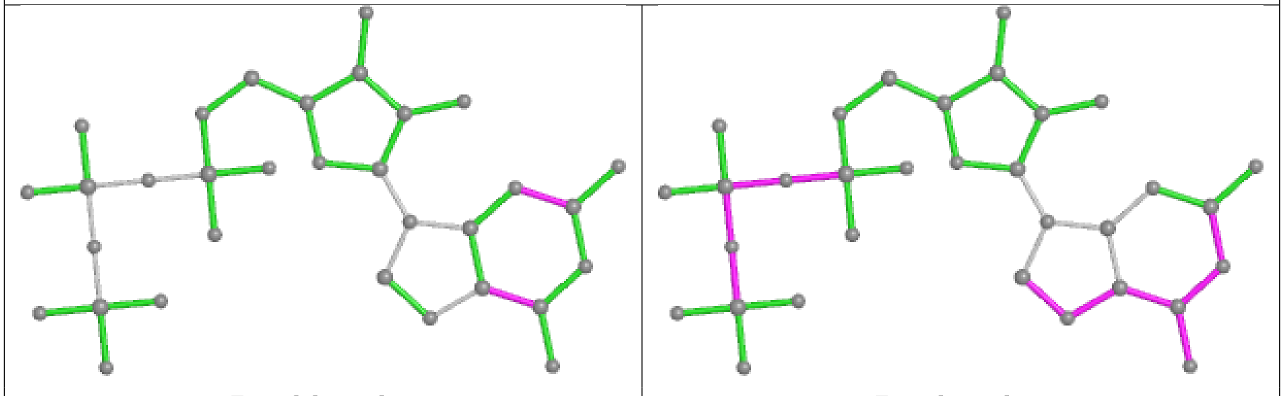
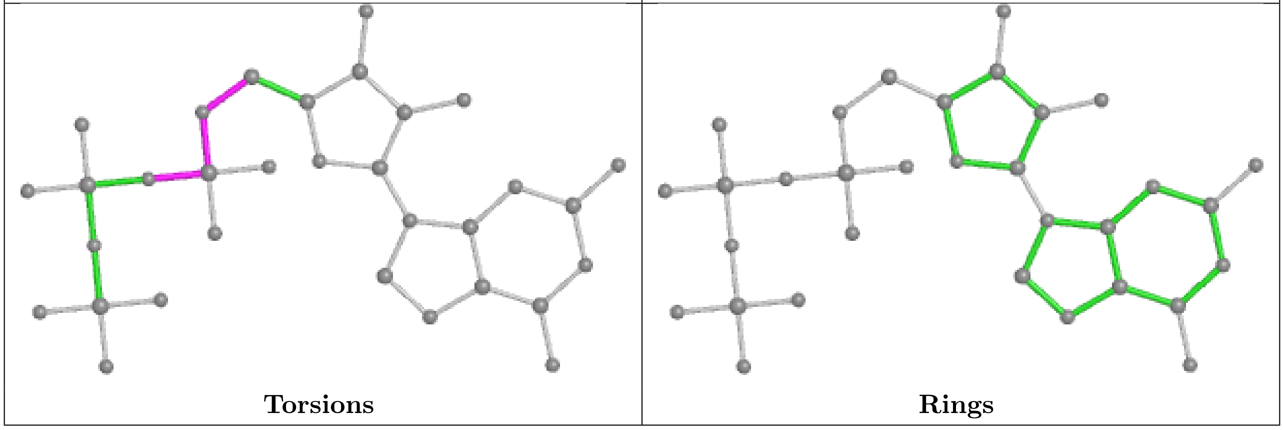


Bond lengths Bond angles



Torsions Rings

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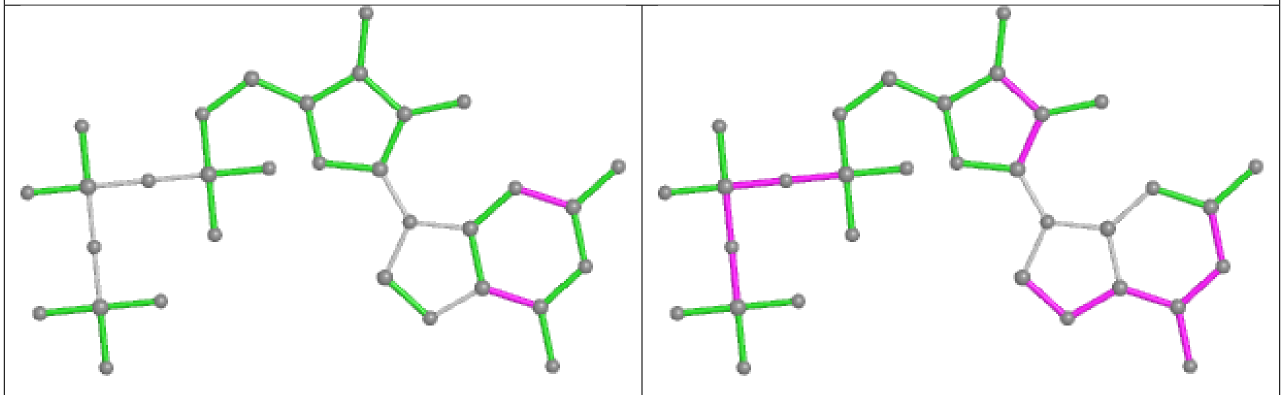

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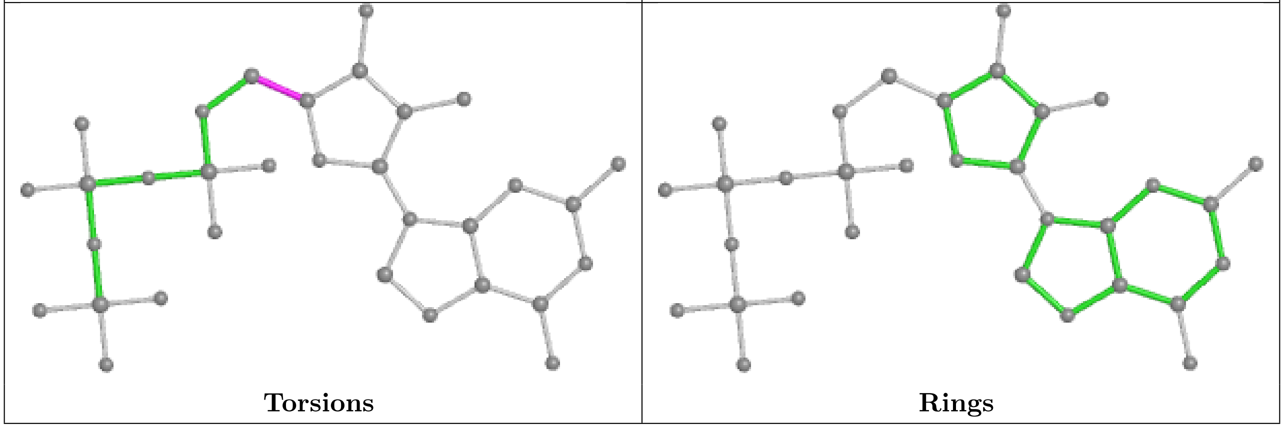

Torsions Rings

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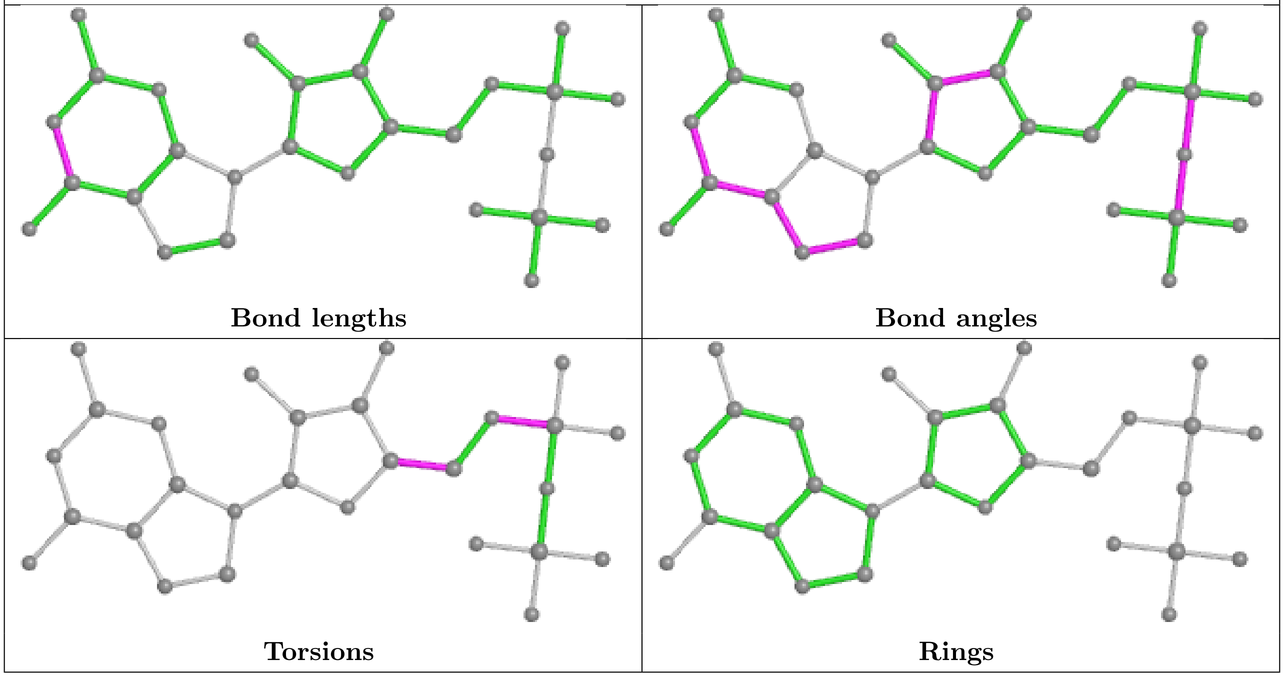


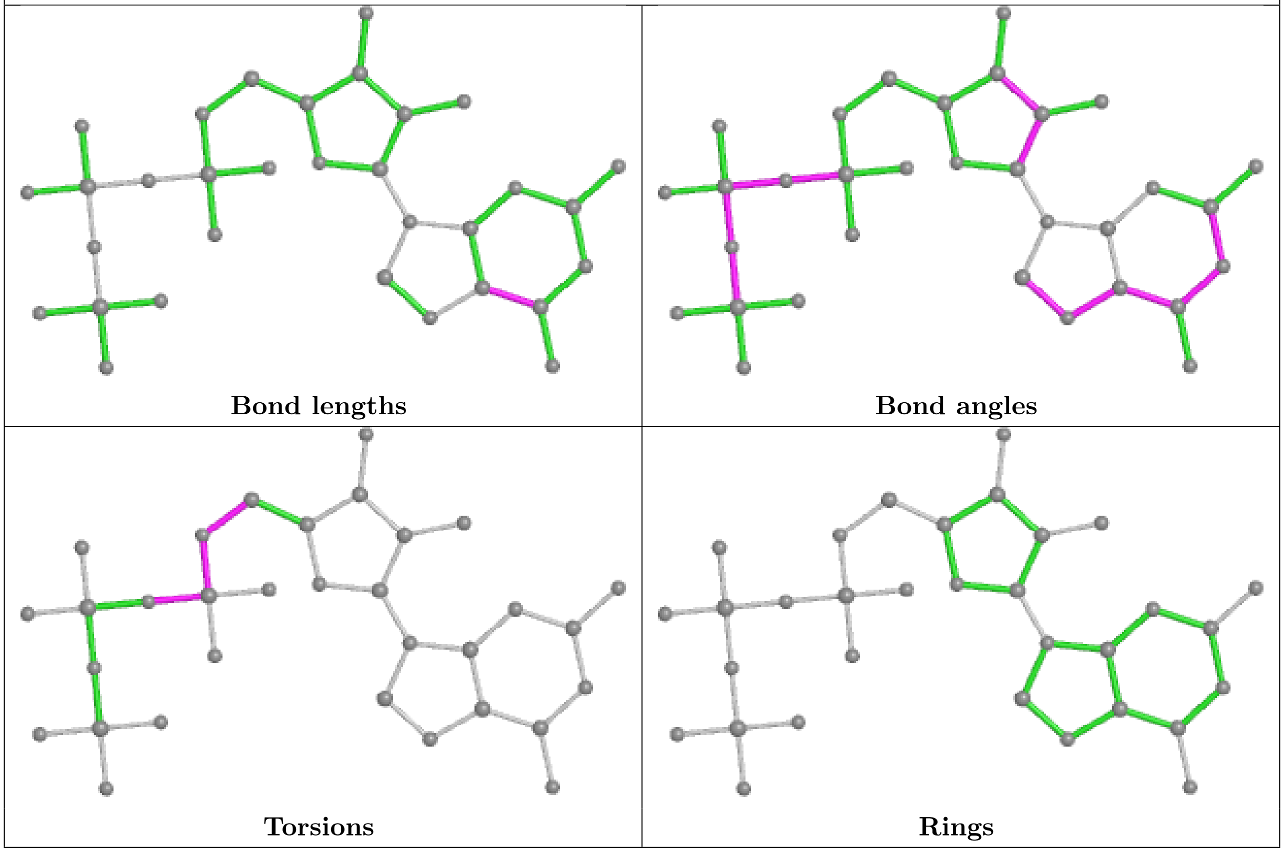
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP BG 501



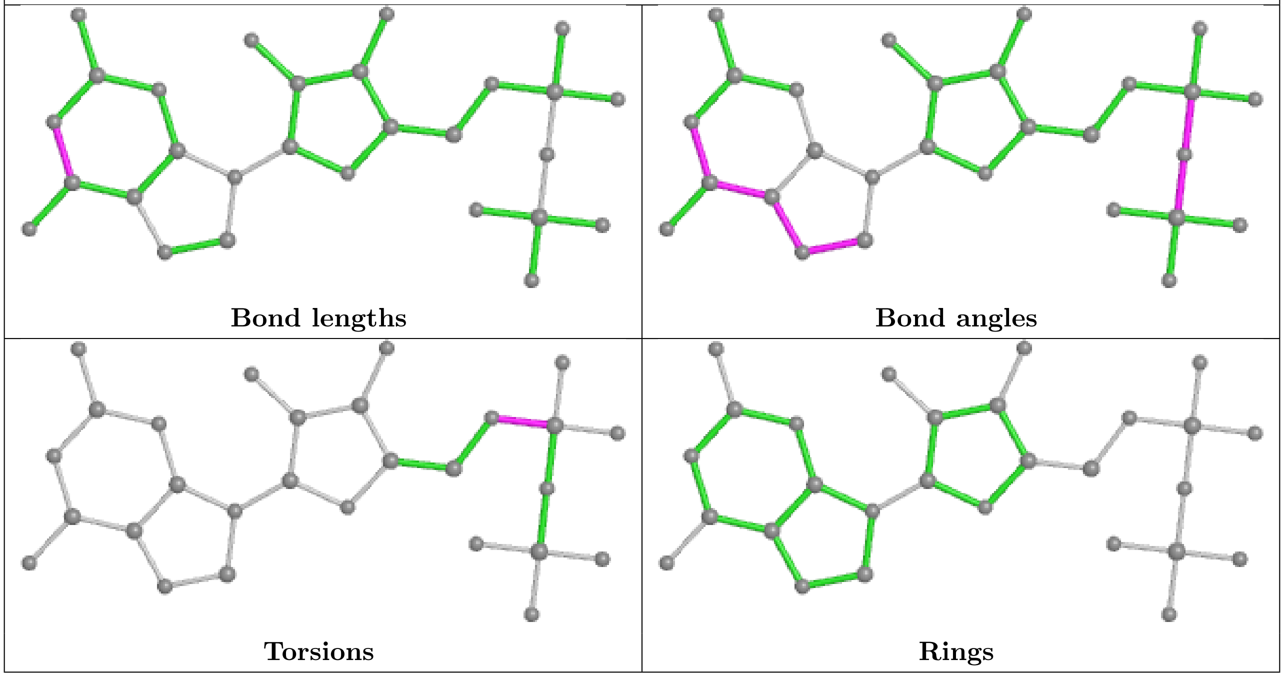
Bond lengths

Bond angles

Torsions

Rings

Ligand GDP KF 501



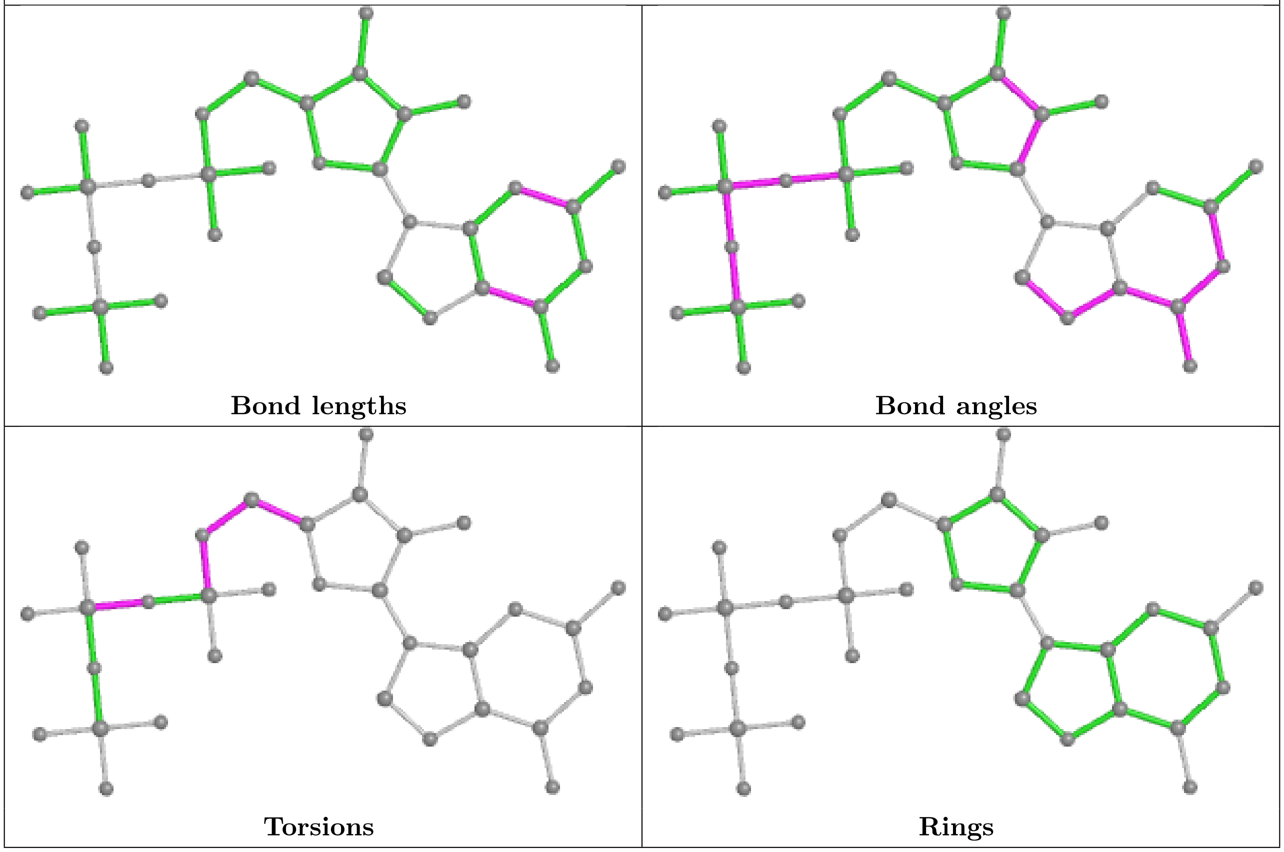
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP HC 501



Bond lengths

Bond angles

Torsions

Rings

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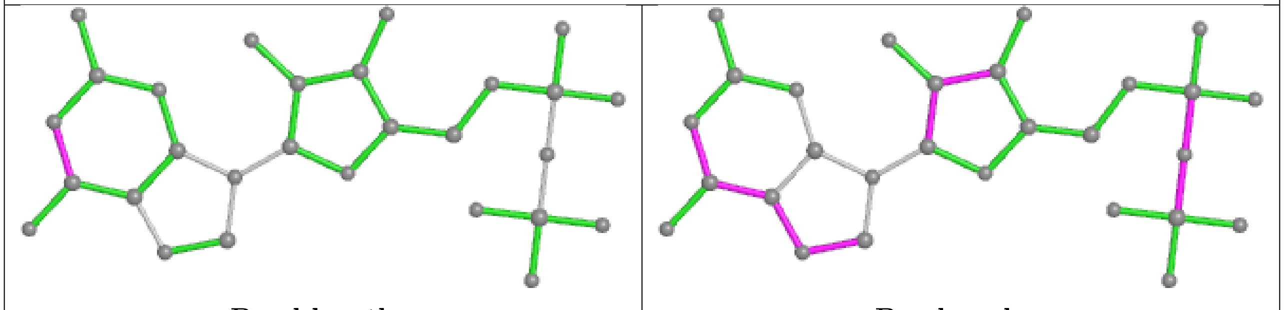

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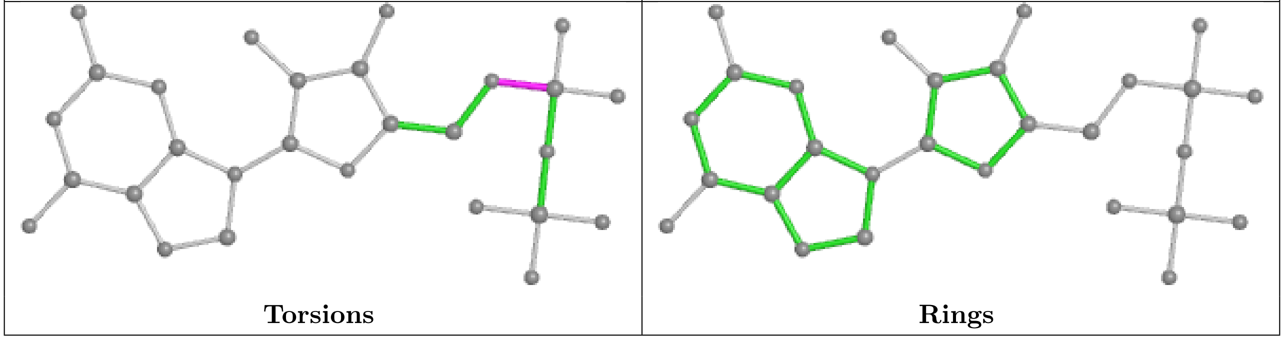
Bond angles



Torsions

Rings

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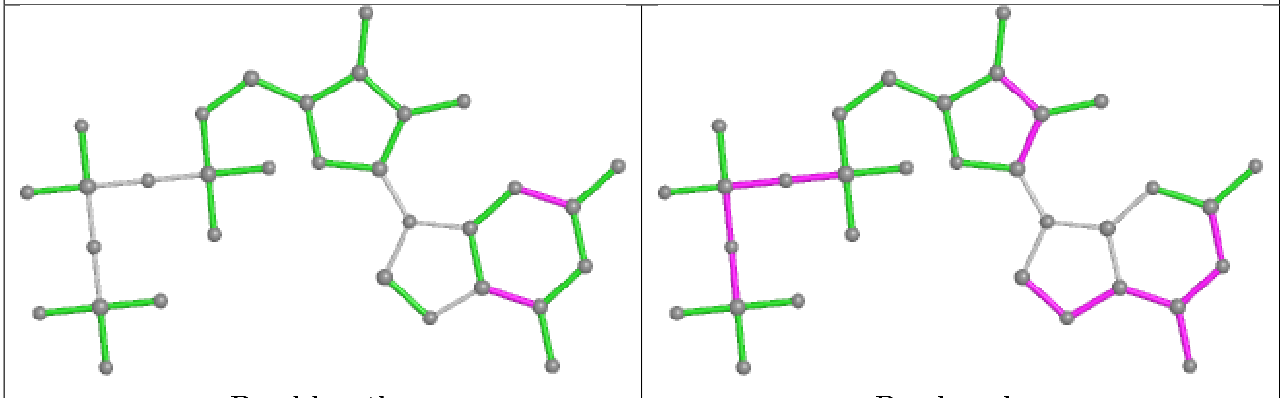
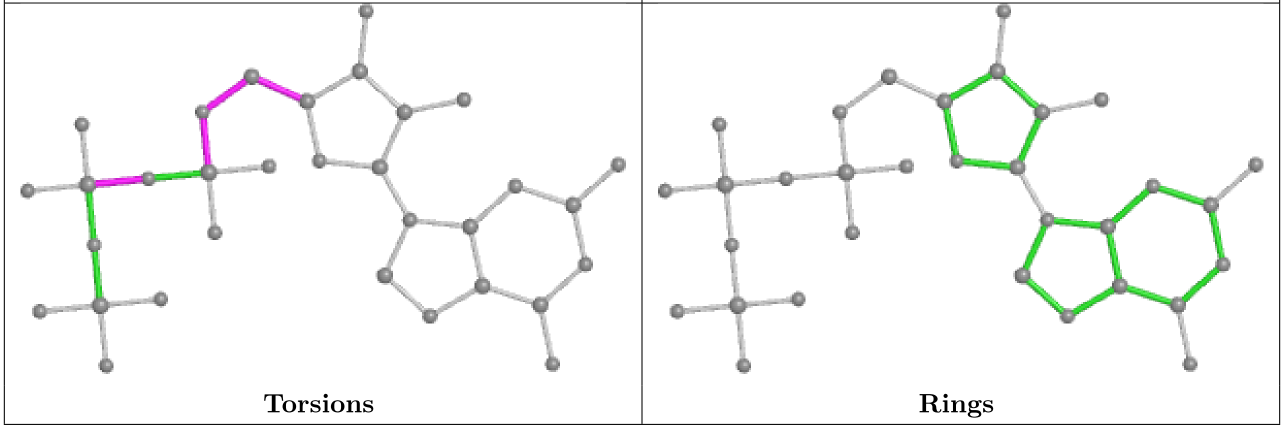


Bond lengths

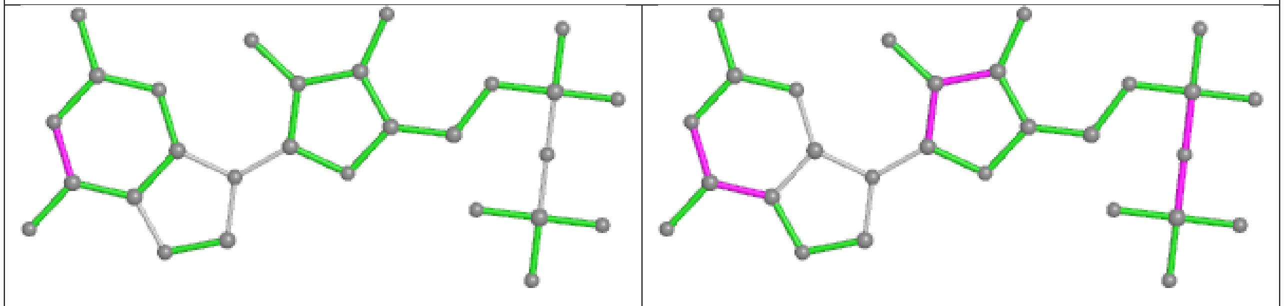
Bond angles



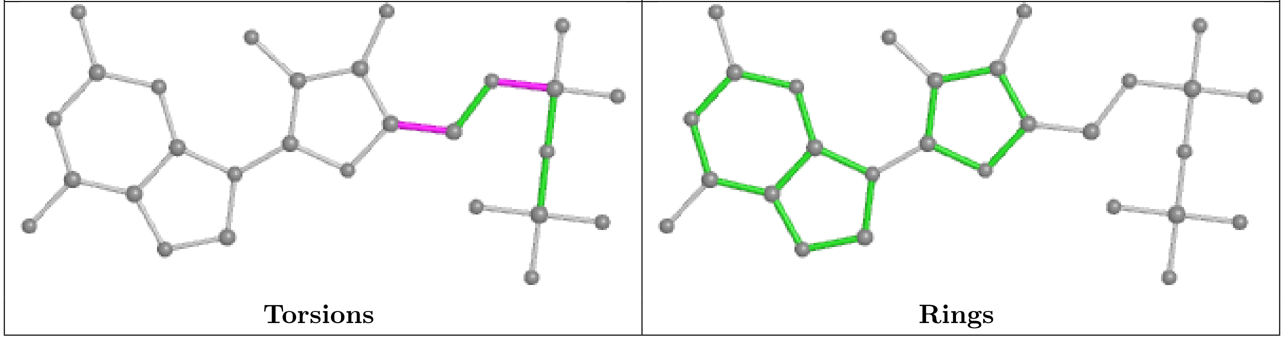
Torsions

Rings

Ligand GDP AD 501



Bond lengths Bond angles



Torsions Rings

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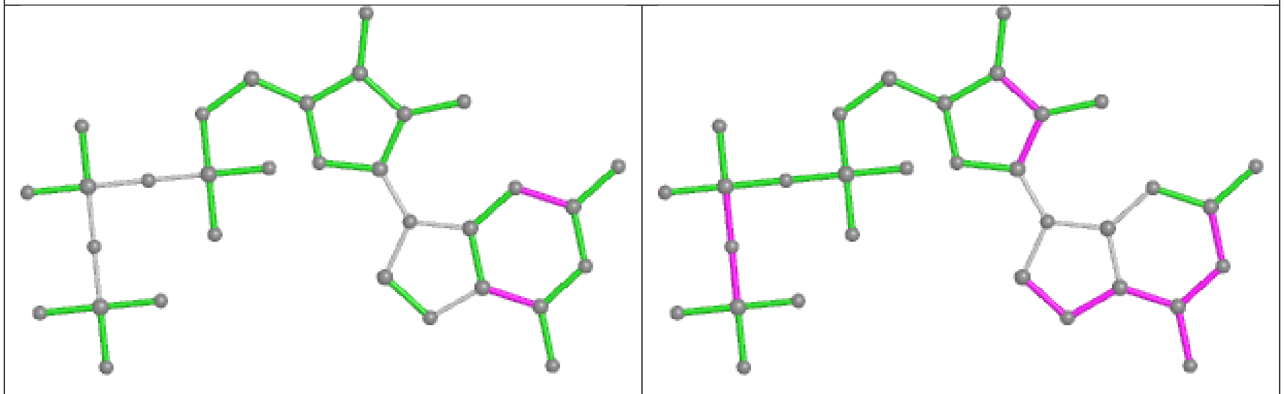
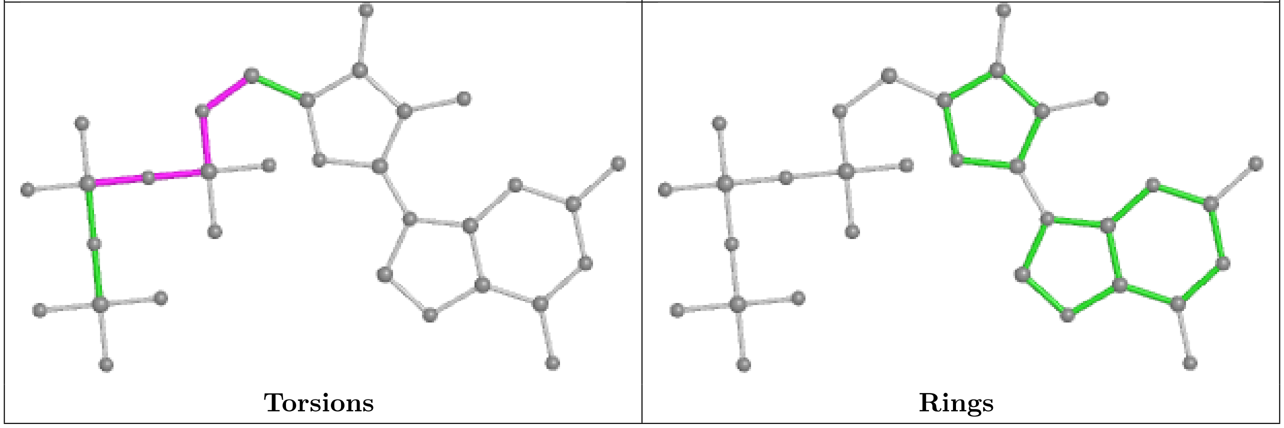


Bond lengths Bond angles



Torsions Rings

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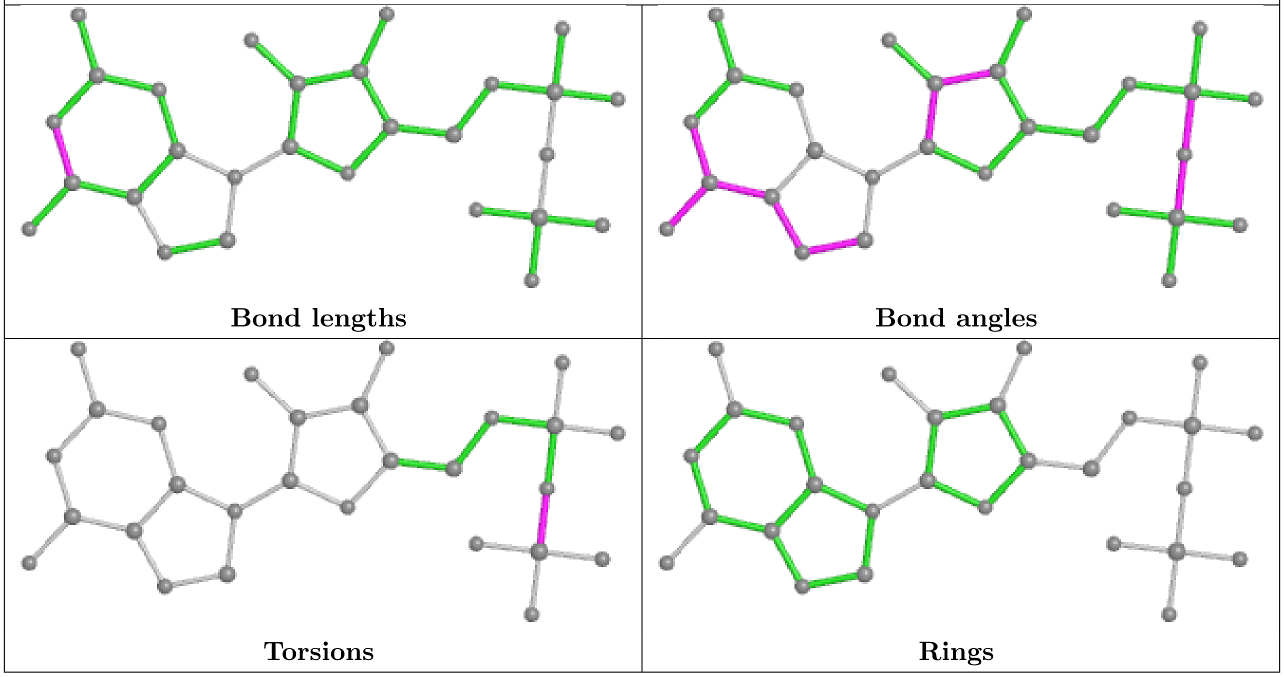

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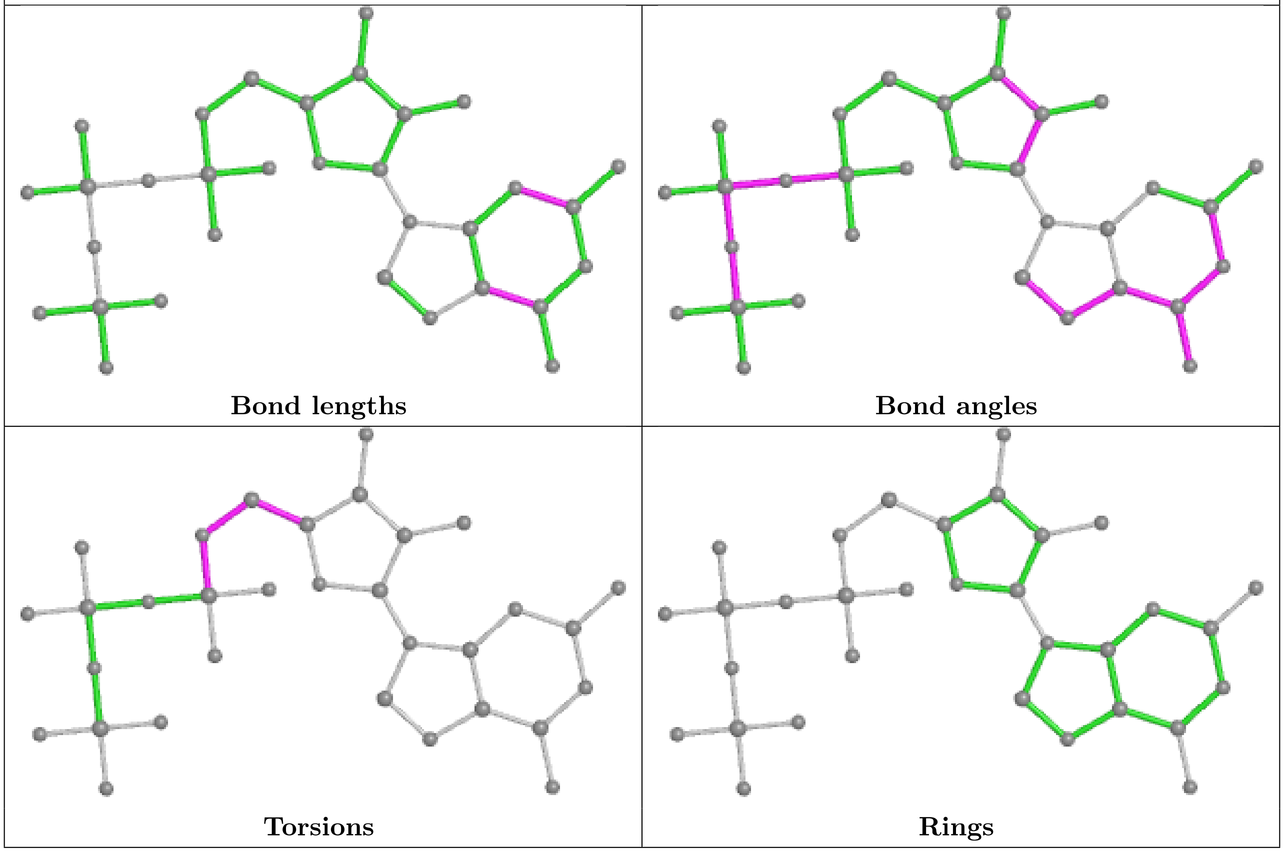

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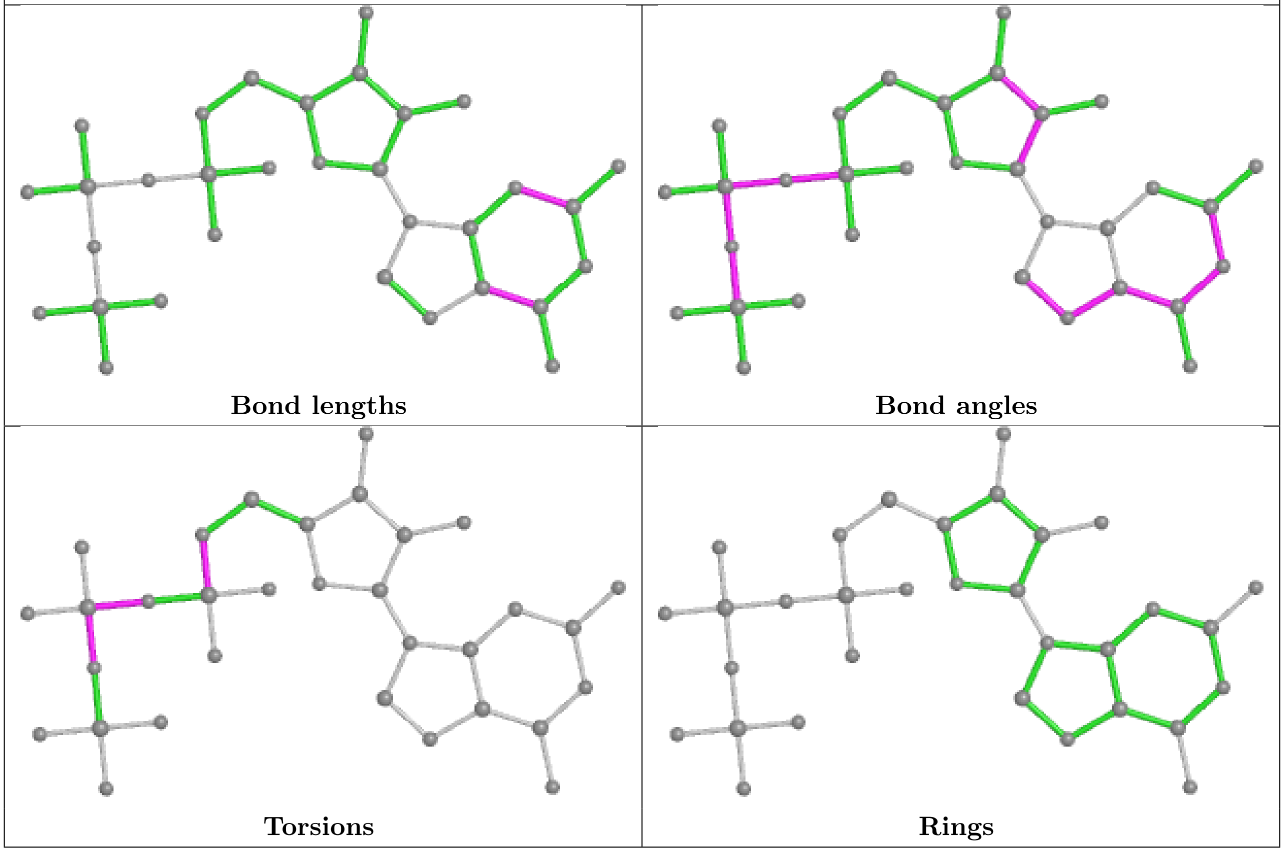

Bond lengths

Bond angles

Torsions

Rings

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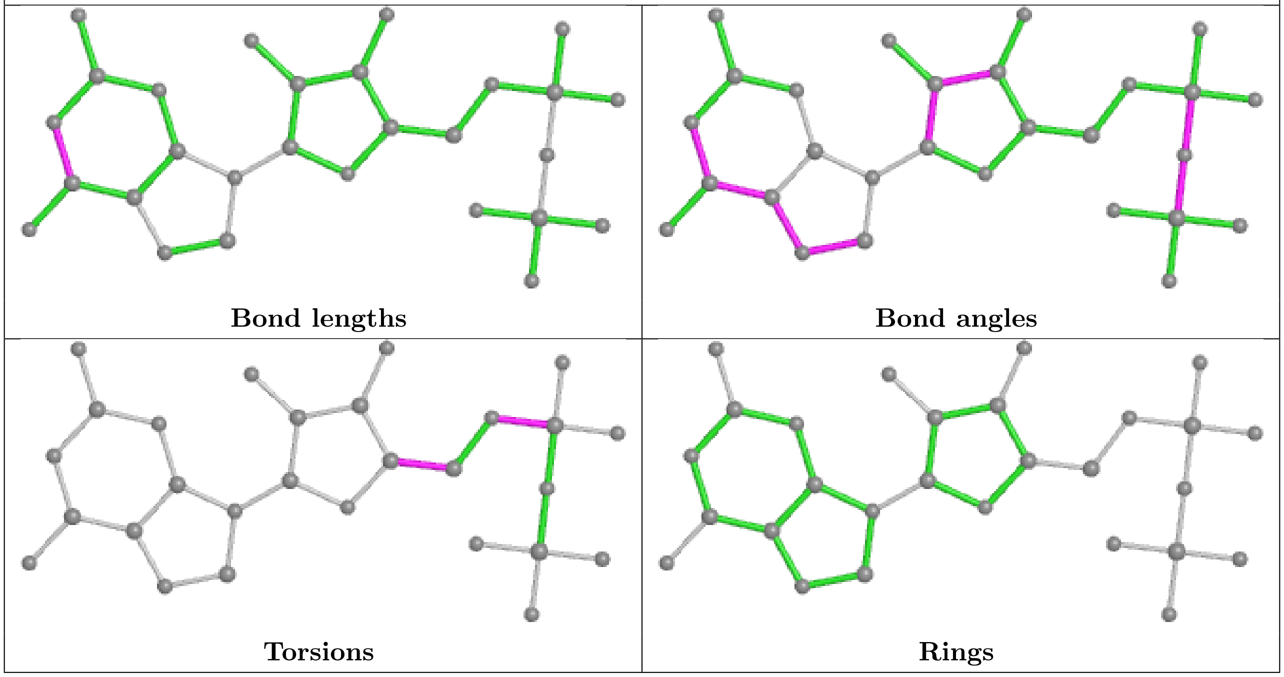

Bond lengths

Bond angles

Torsions

Rings

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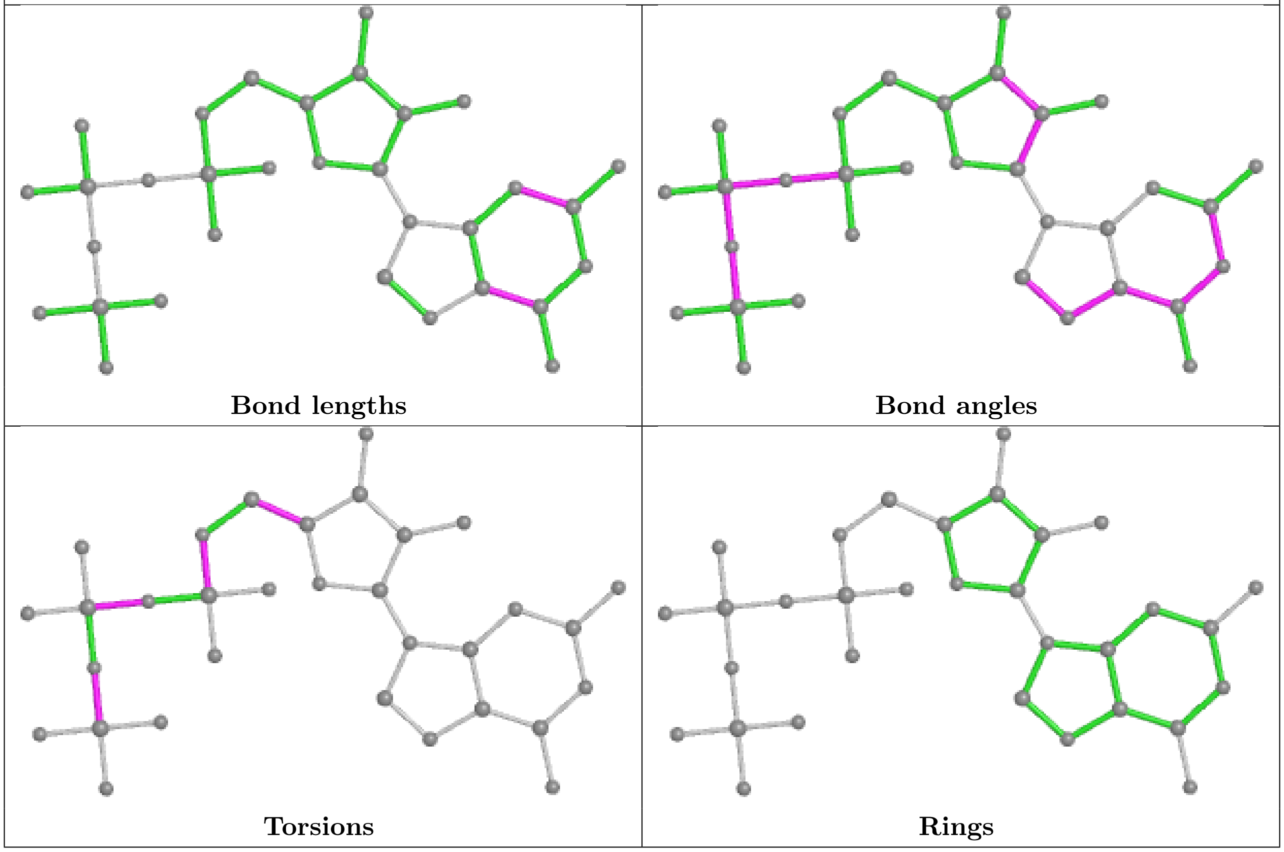

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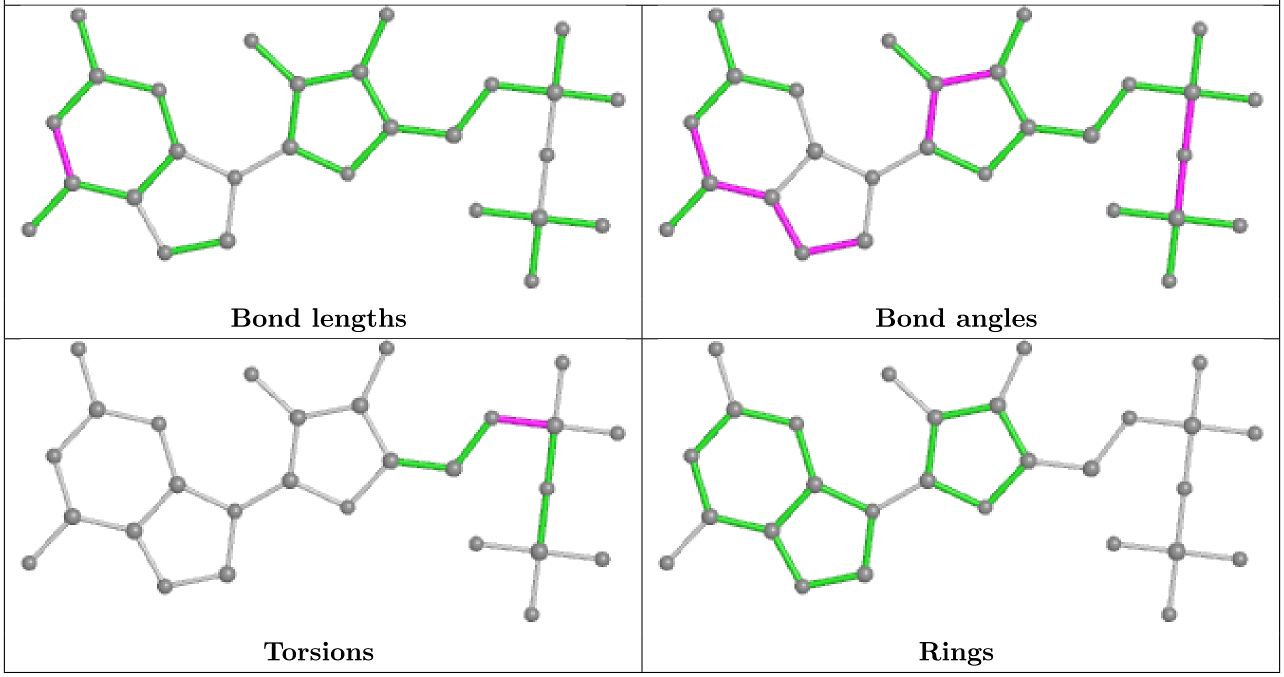

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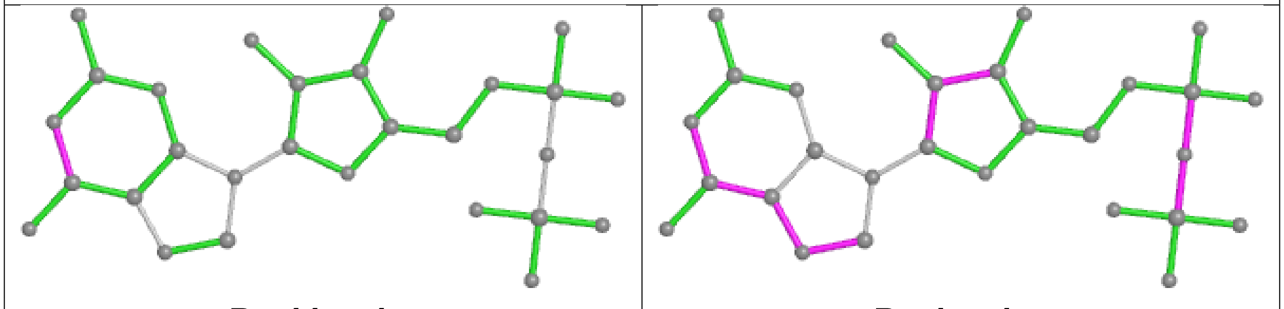
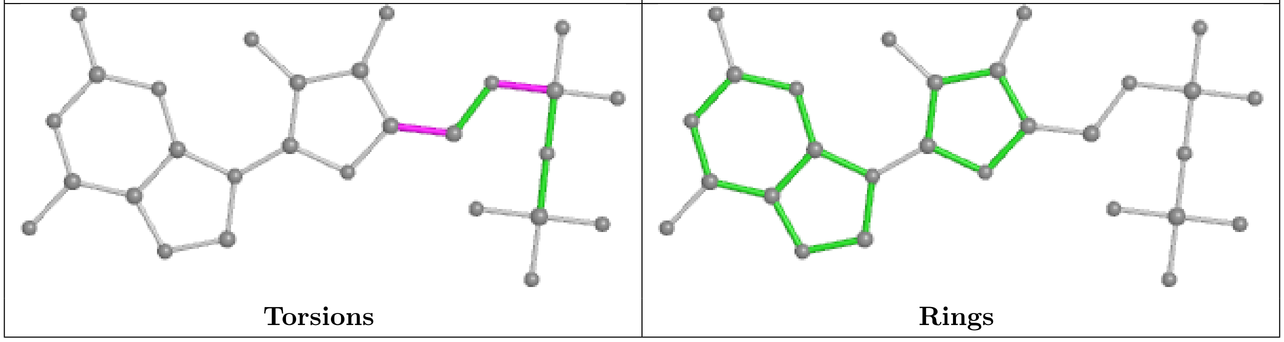
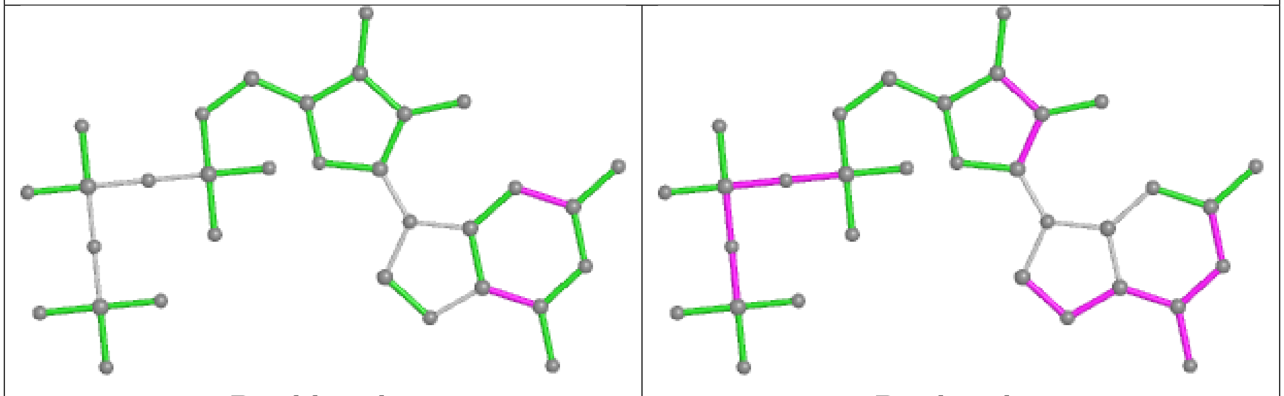


Bond lengths **Bond angles**

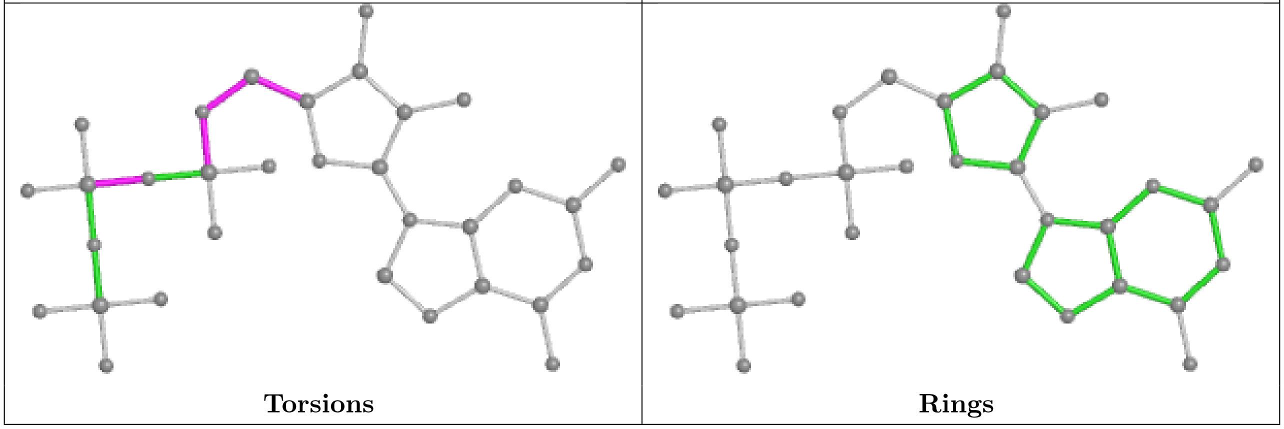


Torsions **Rings**

Ligand GTP DE 501

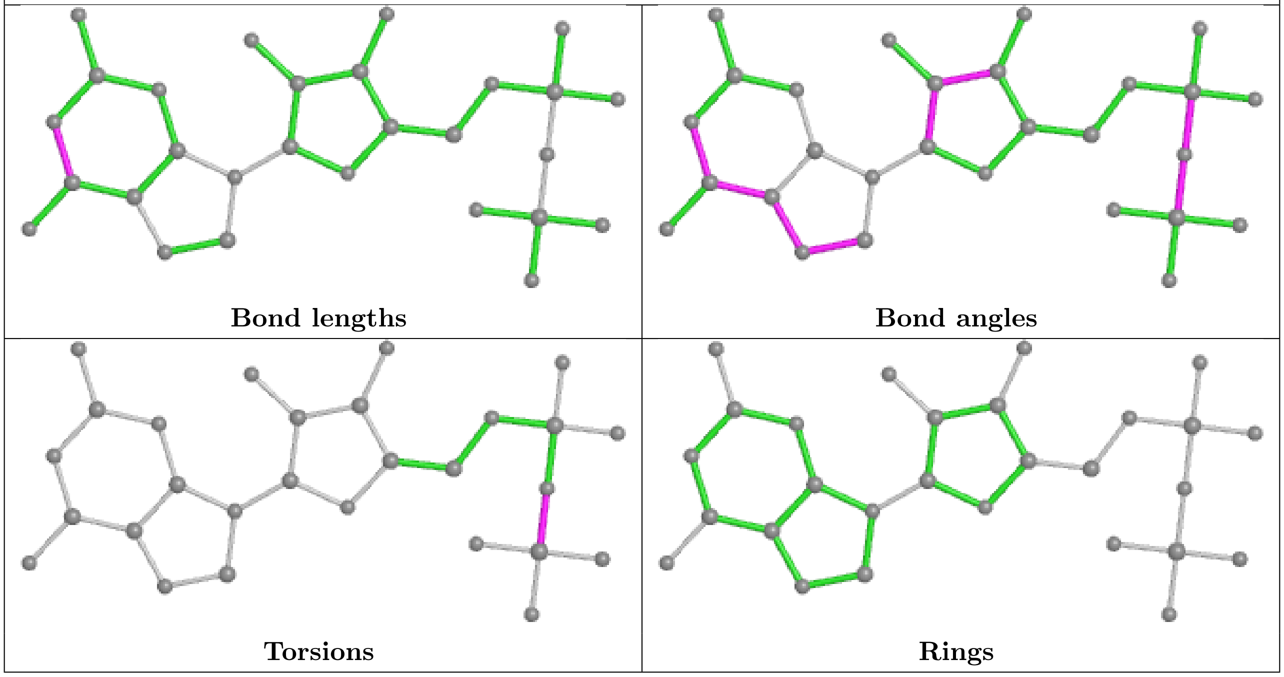


Bond lengths **Bond angles**



Torsions **Rings**

Ligand GDP CB 501



Bond lengths

Bond angles

Torsions

Rings

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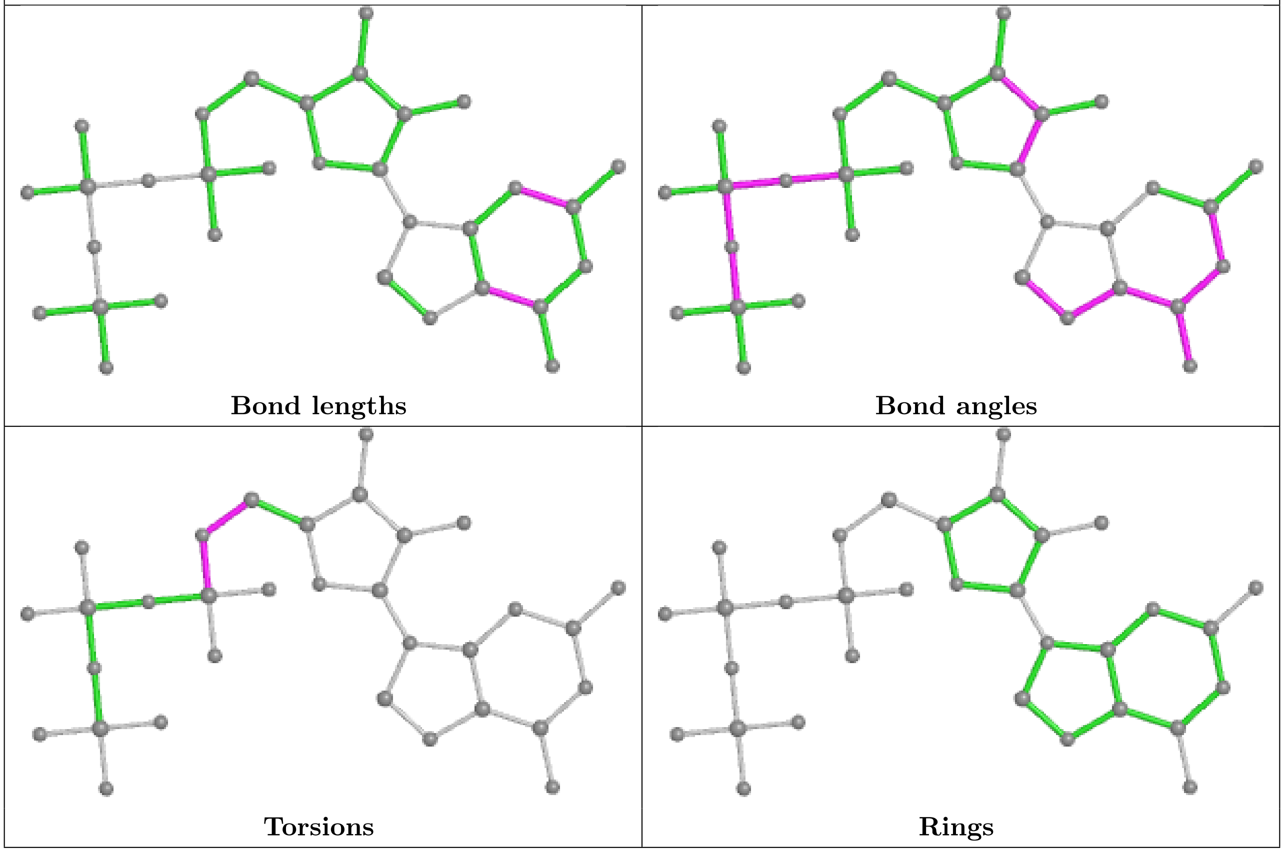

Bond lengths

Bond angles

Torsions

Rings

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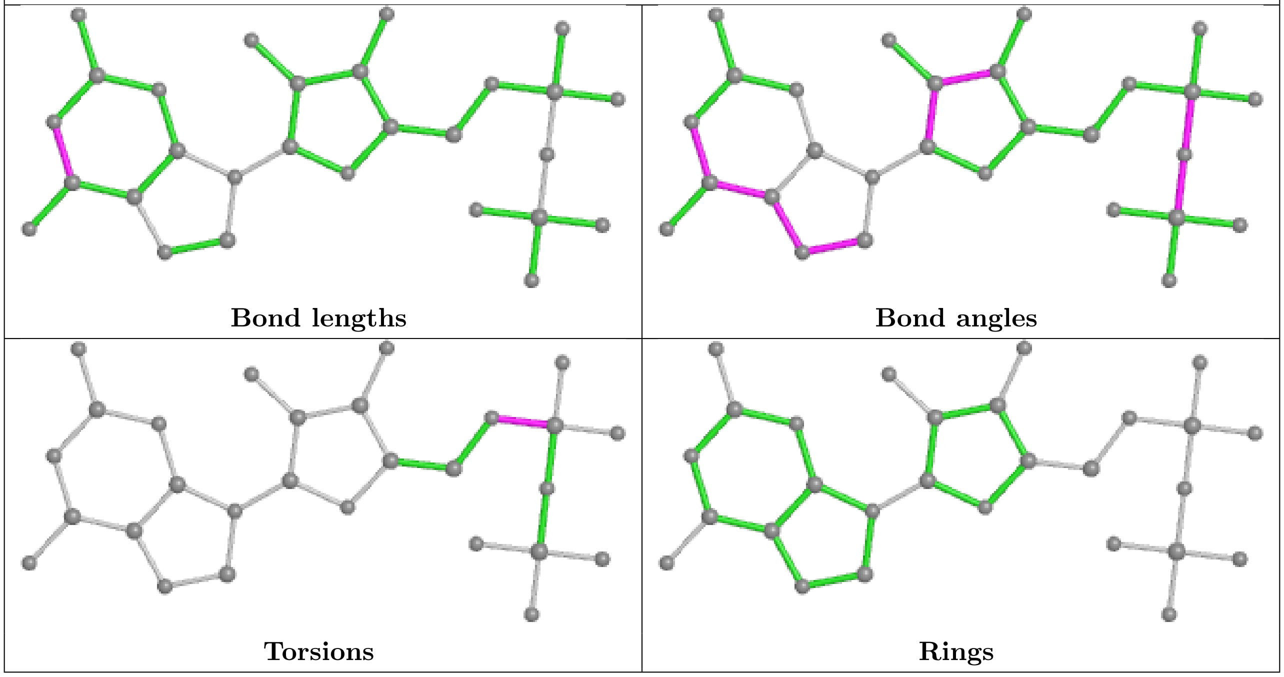

Bond lengths

Bond angles

Torsions

Rings

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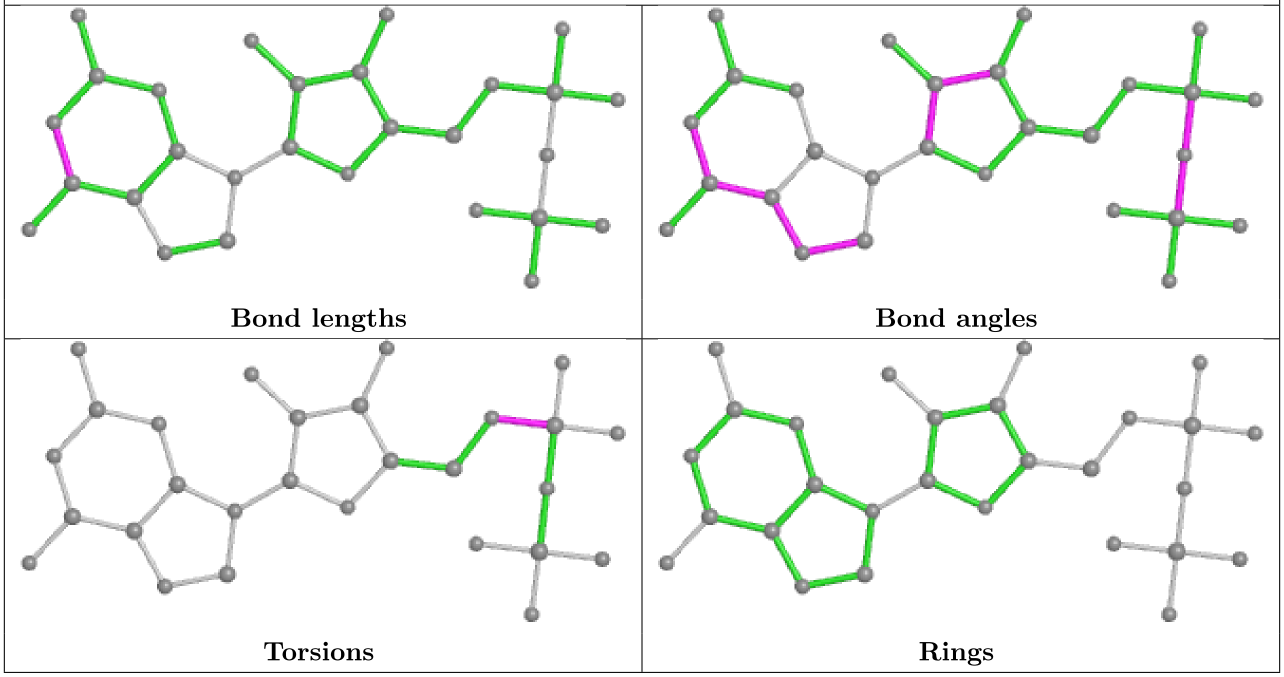


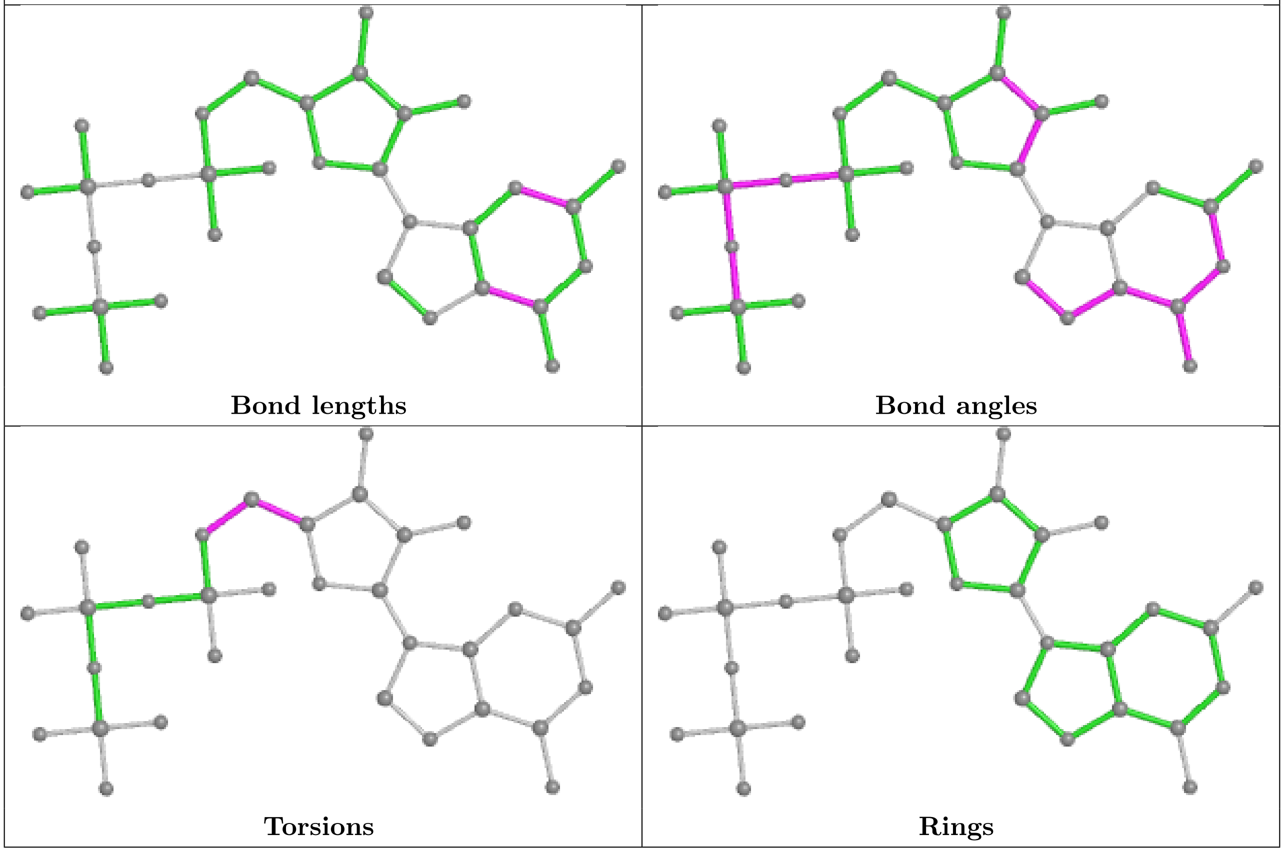
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP BC 501


Bond lengths
Bond angles
Torsions
Rings

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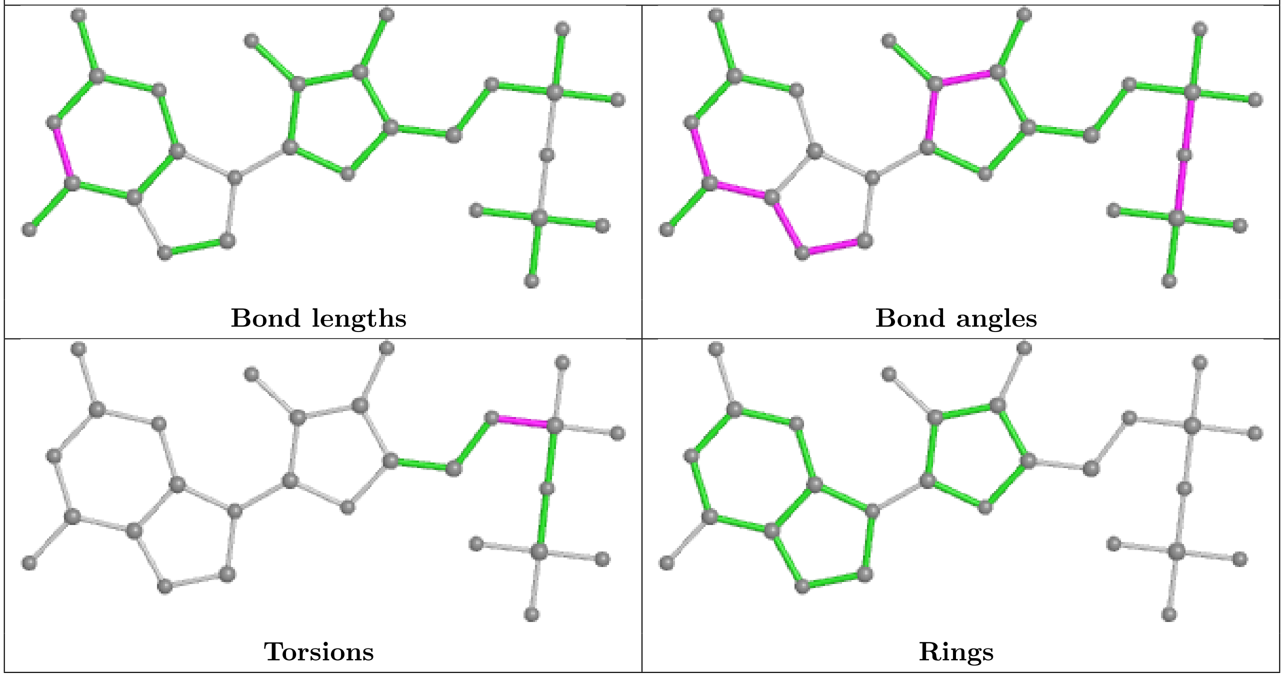
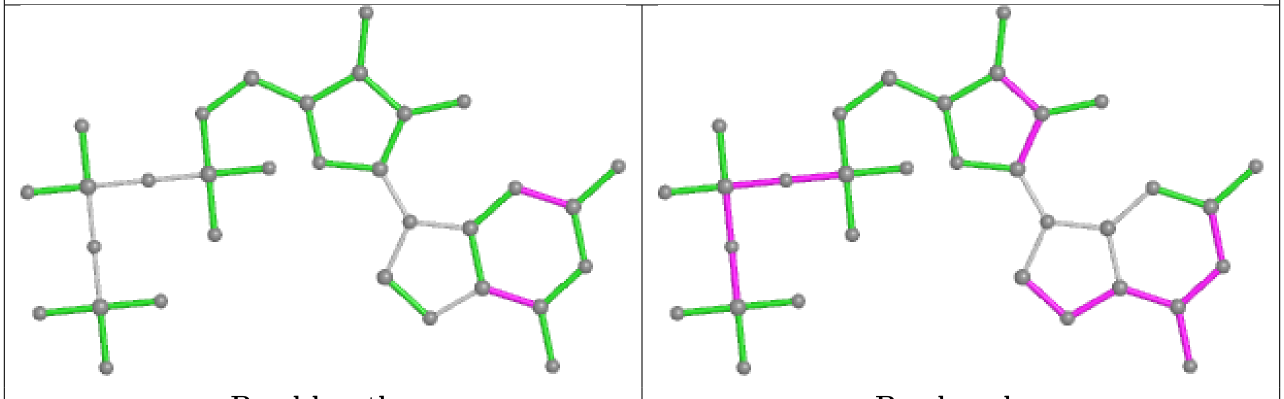
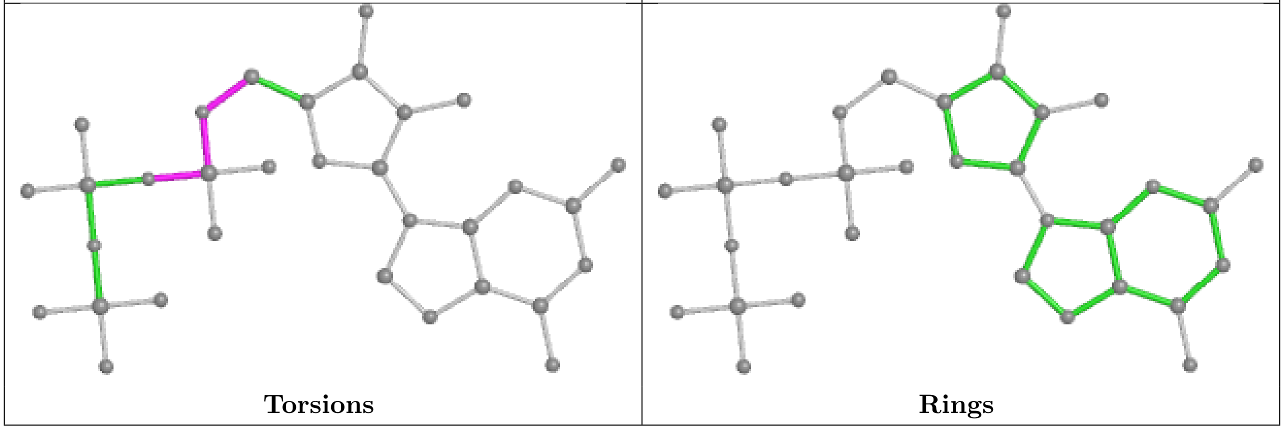

Bond lengths
Bond angles
Torsions
Rings

Ligand GTP HG 501



Bond lengths

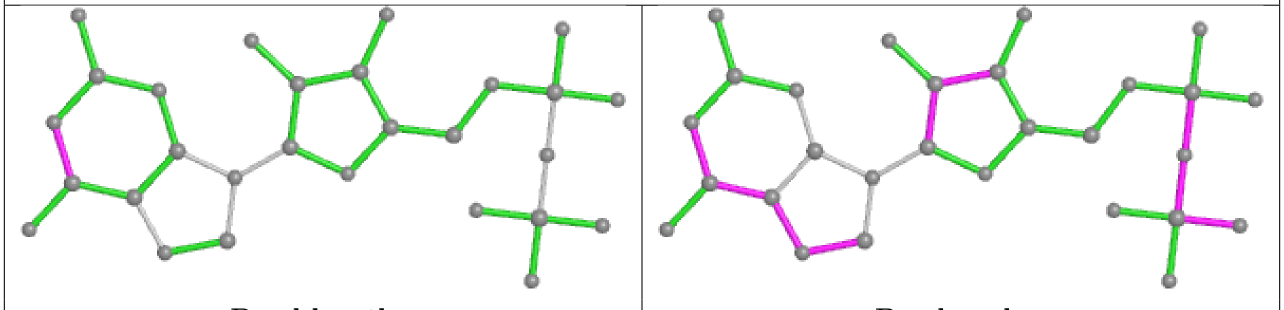
Bond angles



Torsions

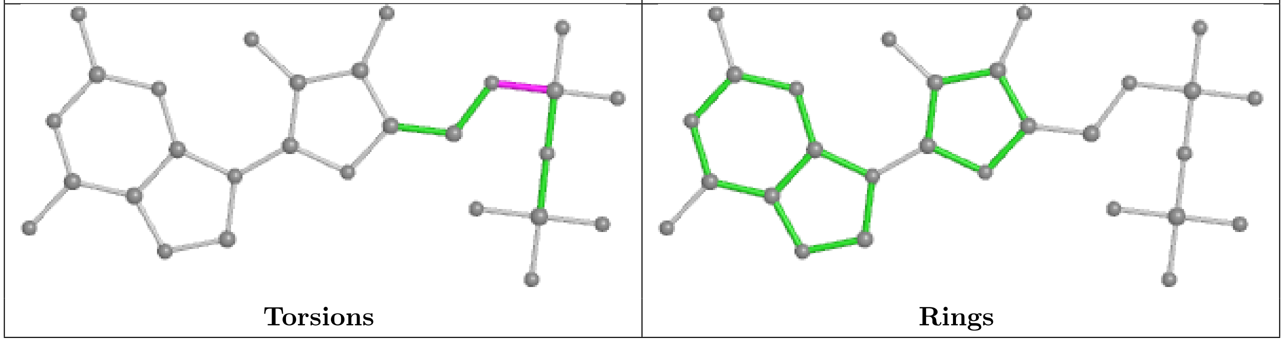
Rings

Ligand GDP MB 501



Bond lengths

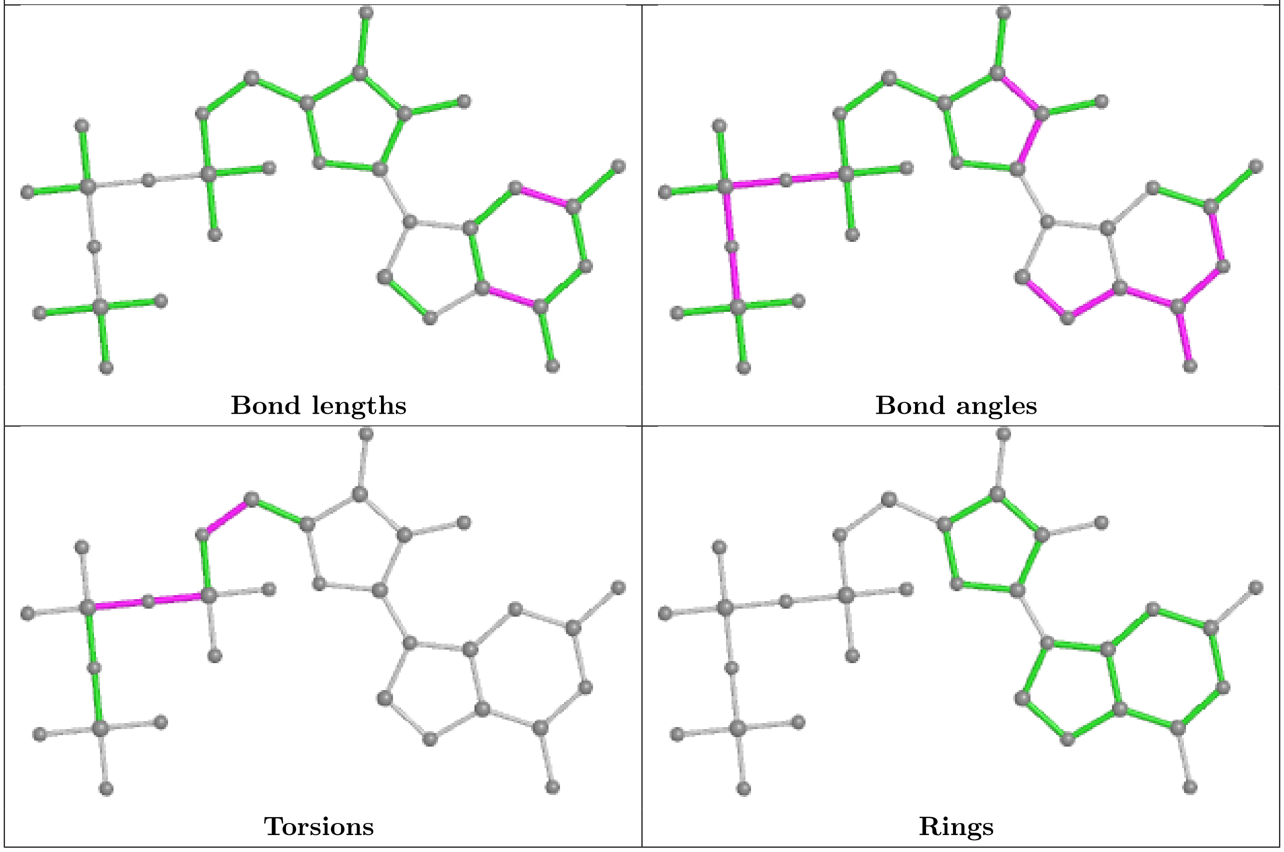
Bond angles



Torsions

Rings

Ligand GTP KC 501



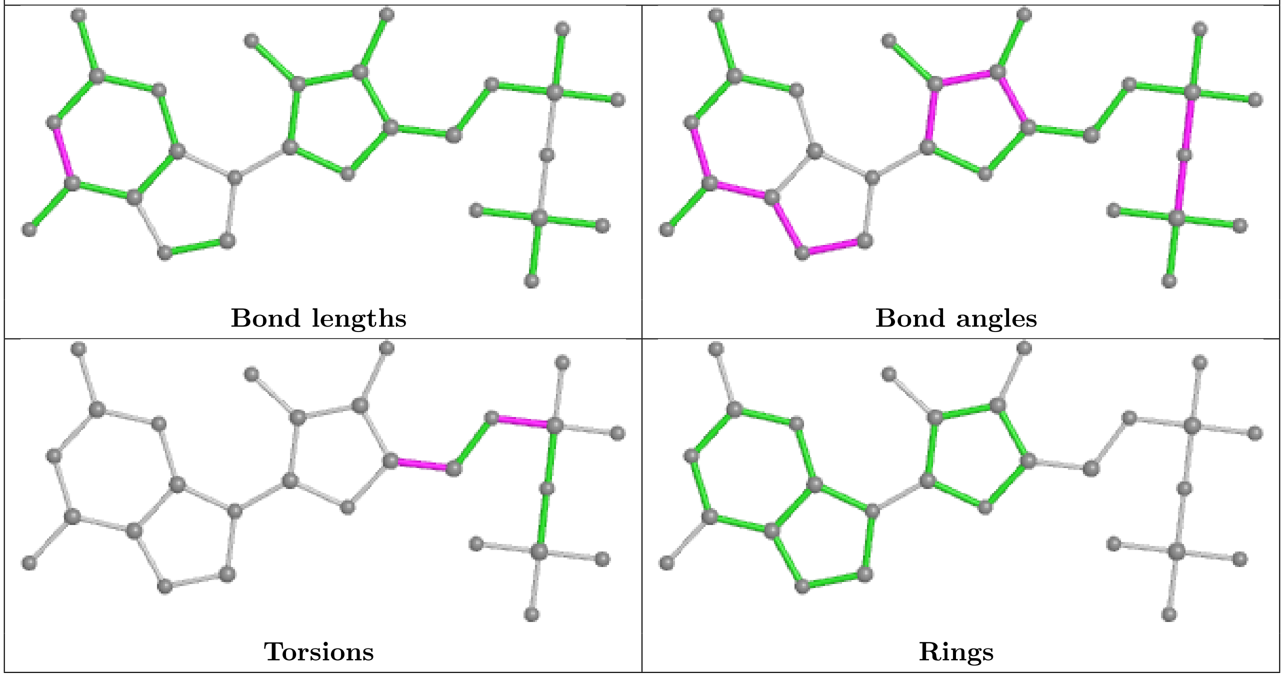
Bond lengths

Bond angles

Torsions

Rings

Ligand GDP KH 501



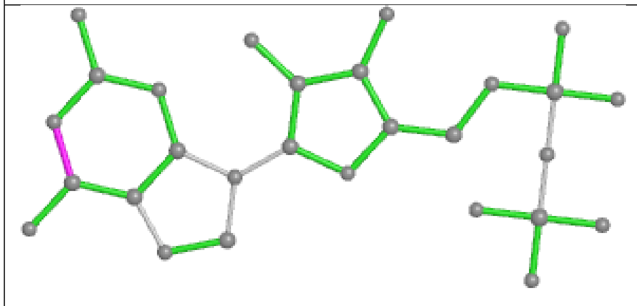
Bond lengths

Bond angles

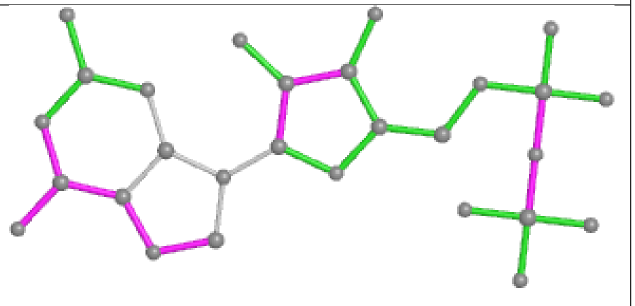
Torsions

Rings

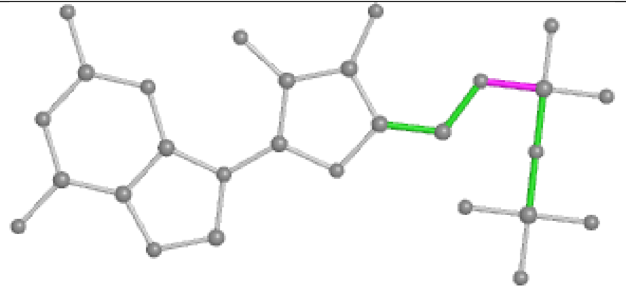
Ligand GDP IH 501



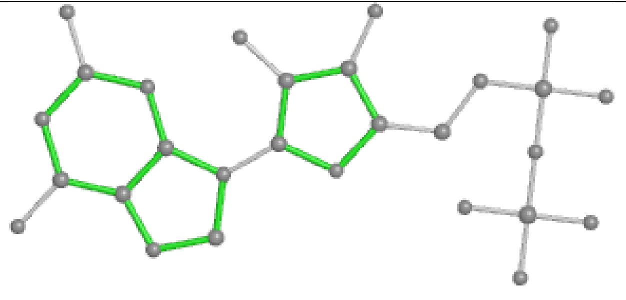
Bond lengths



Bond angles

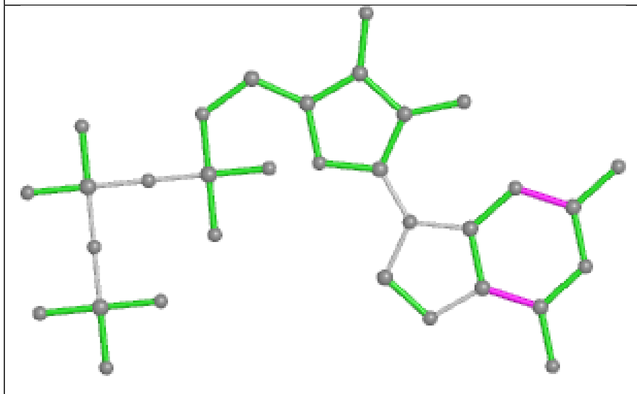


Torsions

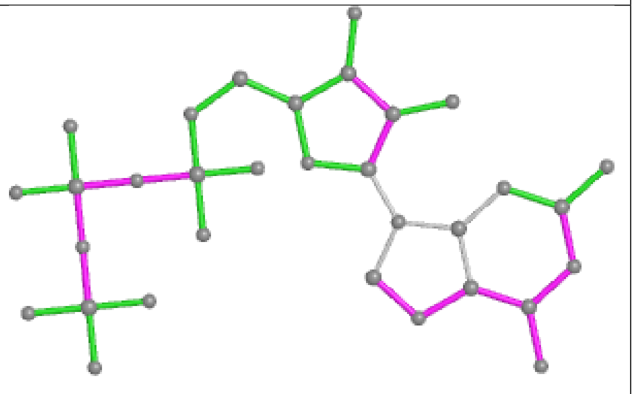


Rings

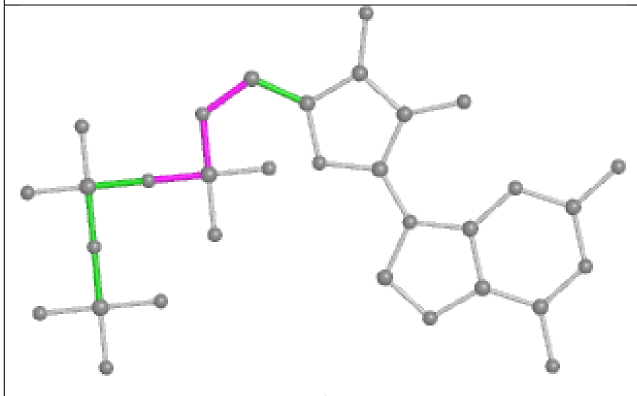
Ligand GTP LA 501



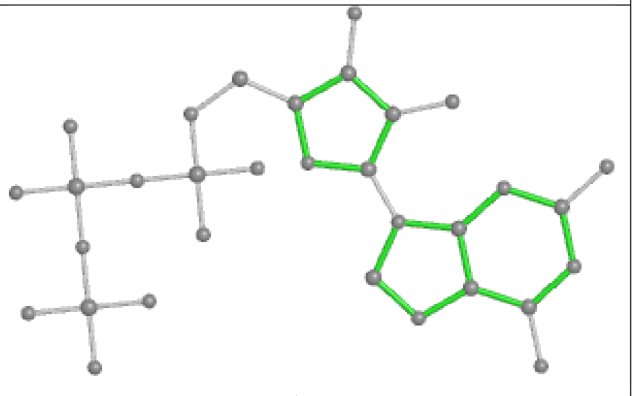
Bond lengths



Bond angles

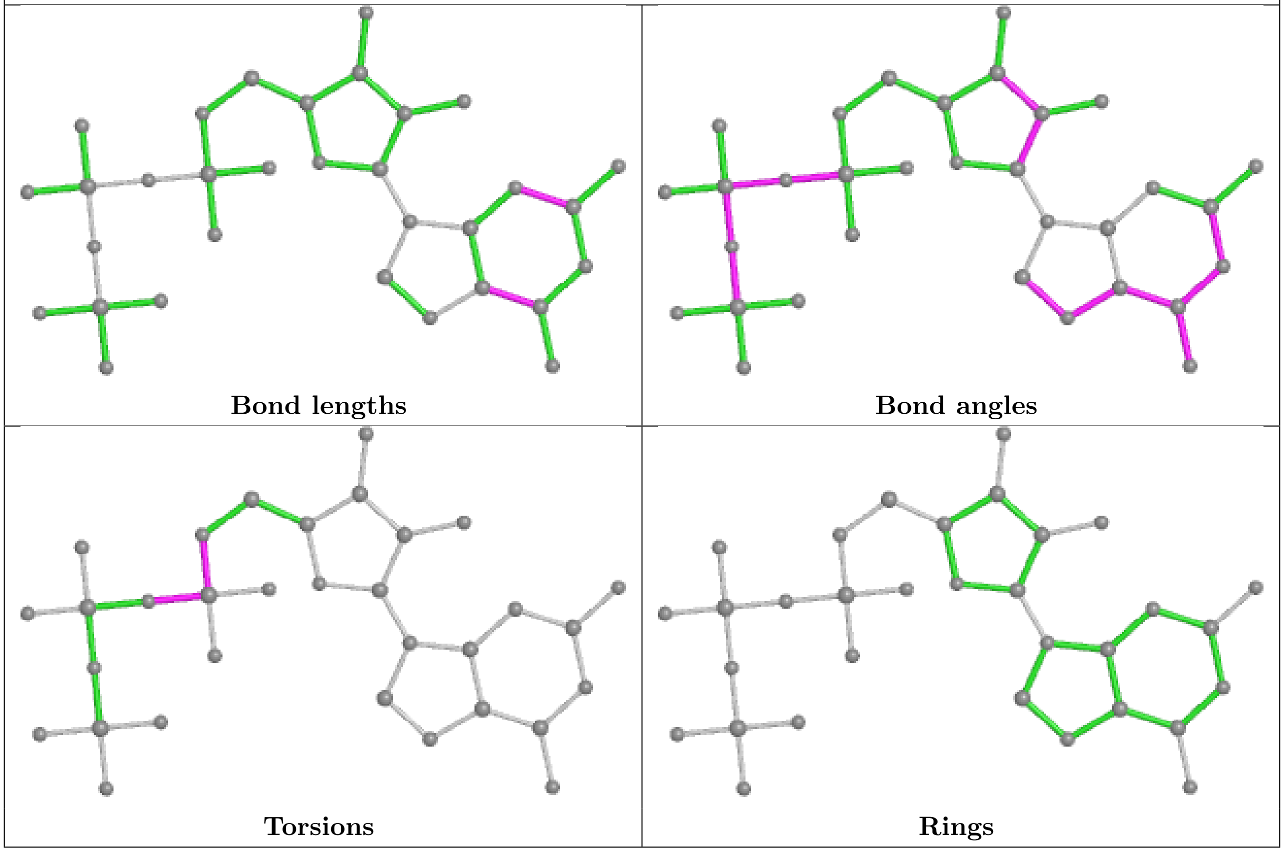


Torsions



Rings

Ligand GTP AE 501



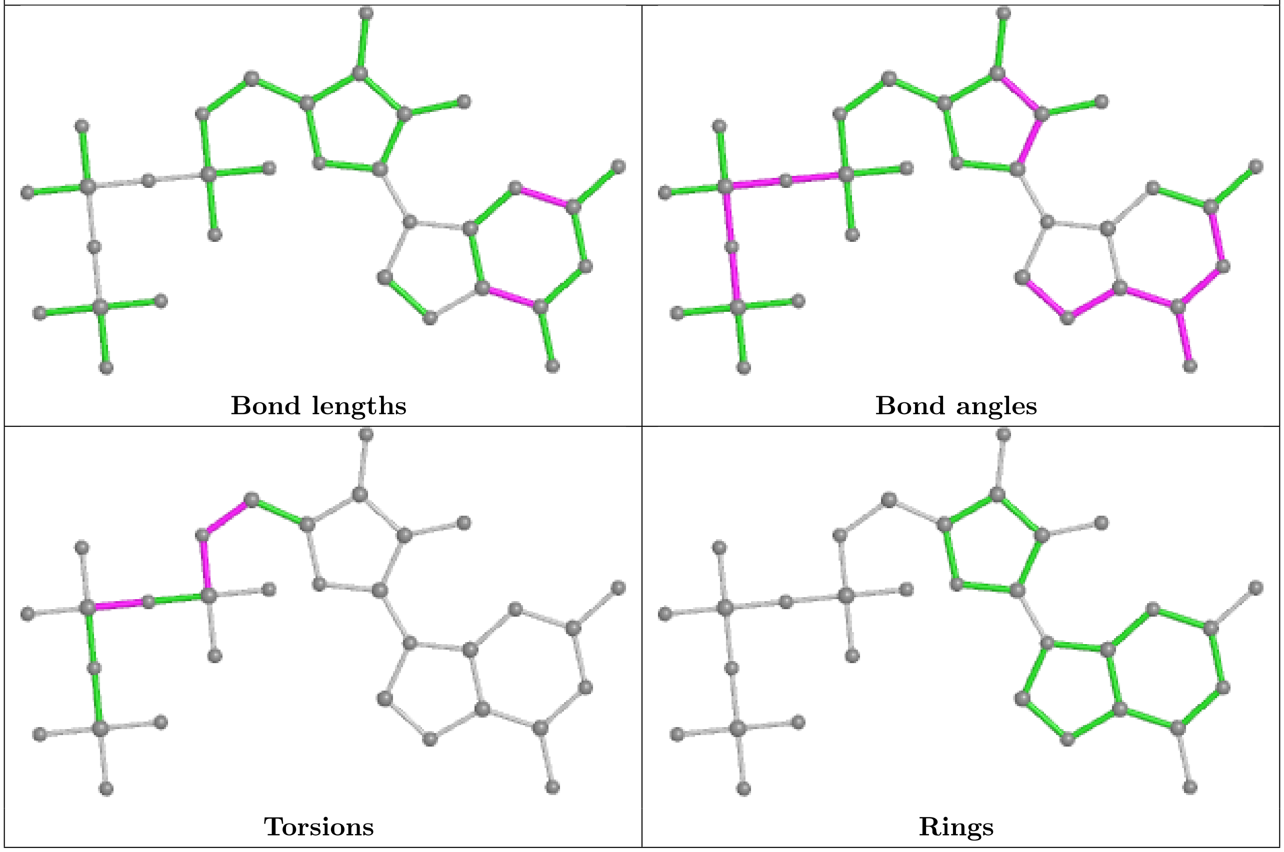
Bond lengths

Bond angles

Torsions

Rings

Ligand GTP JC 501



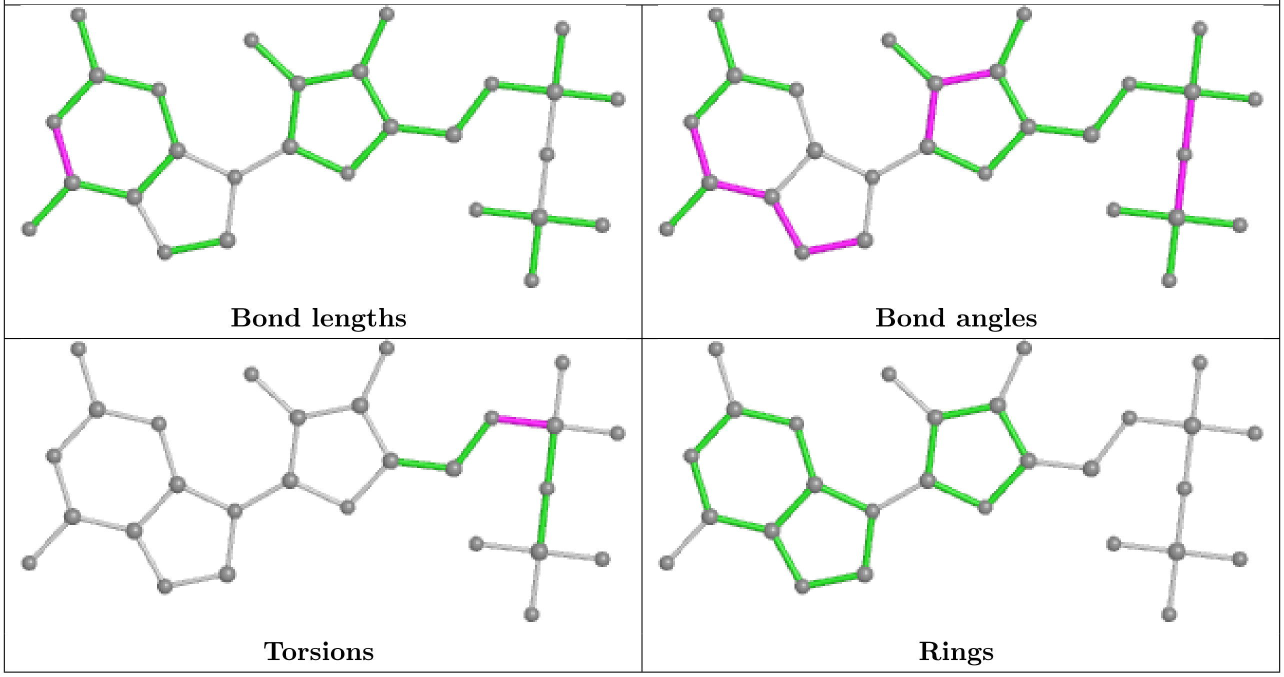
Bond lengths

Bond angles

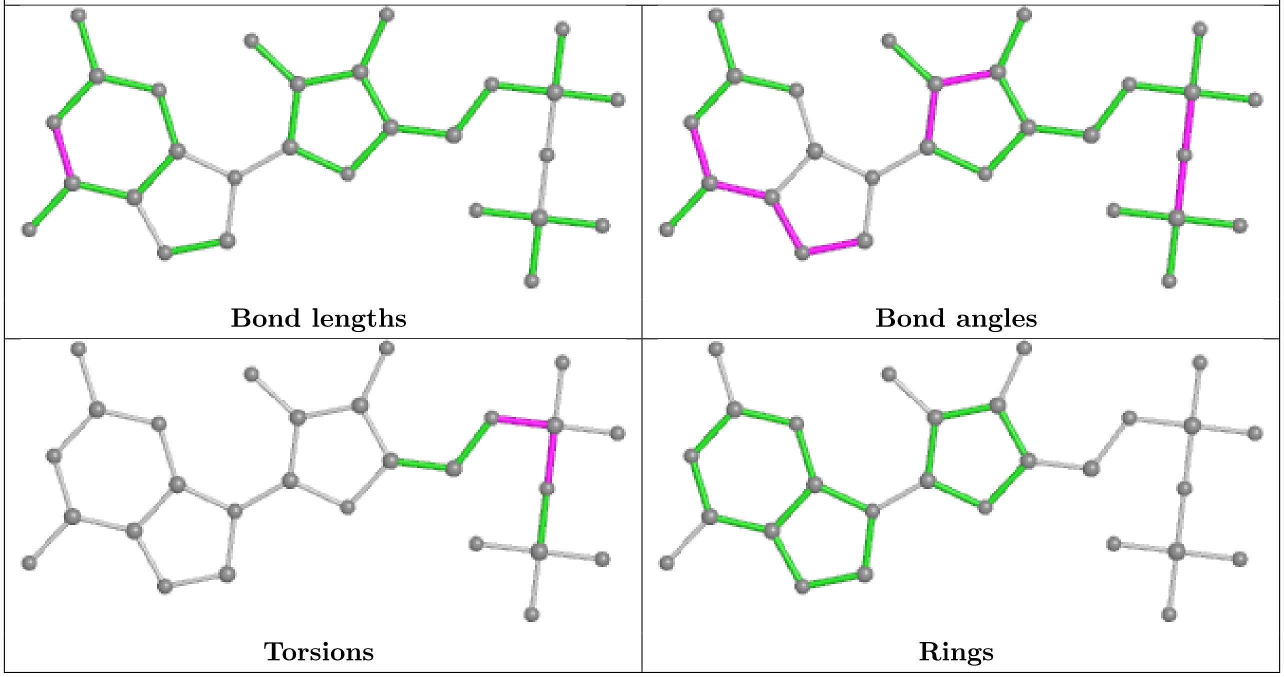
Torsions

Rings

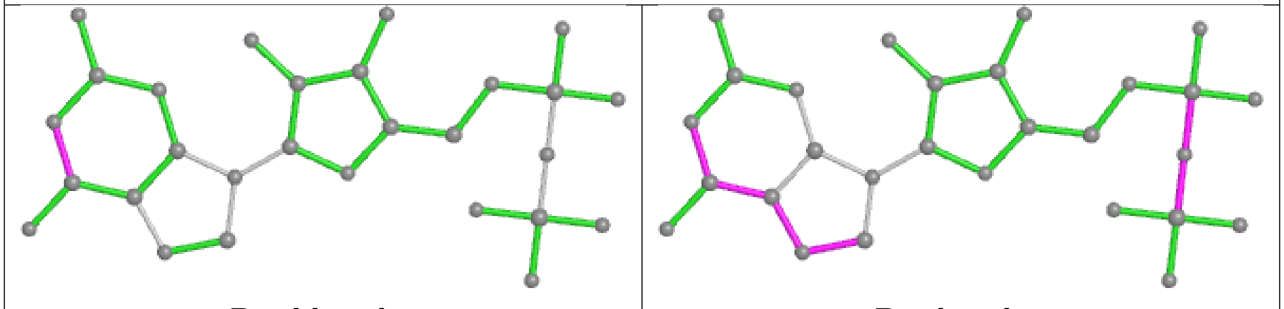
Ligand GDP FH 501



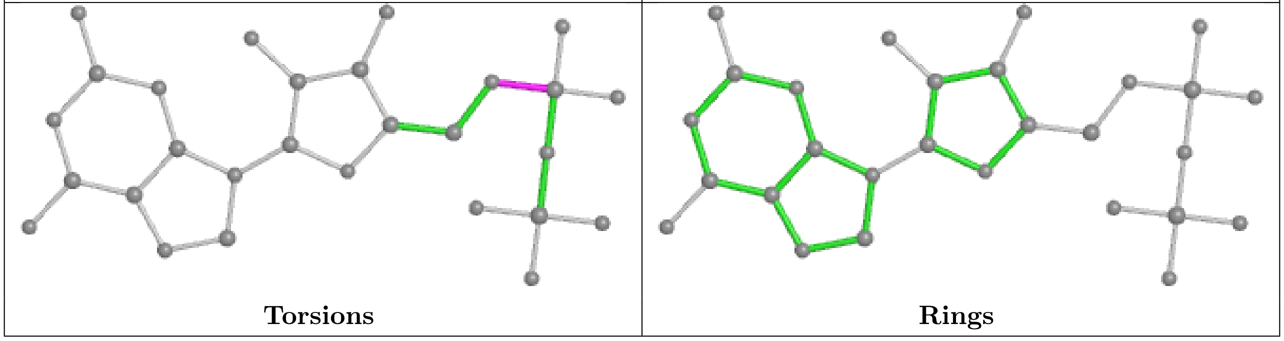
Ligand GDP JD 501



Ligand GDP EF 501

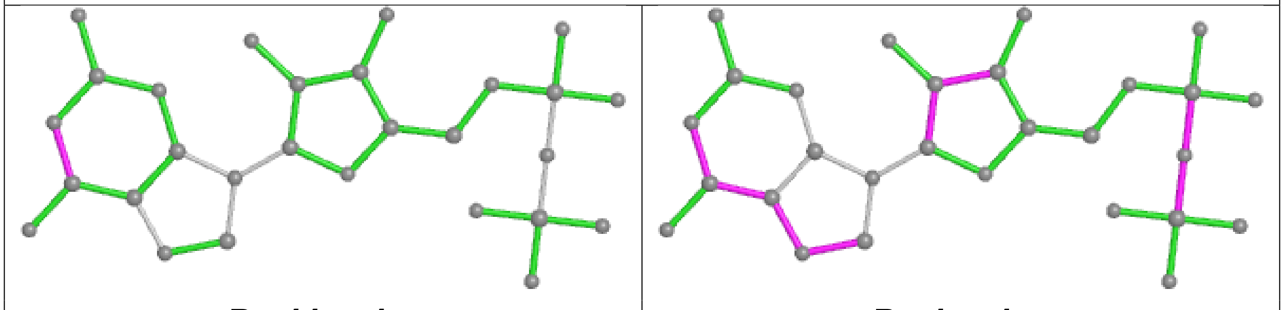


Bond lengths **Bond angles**

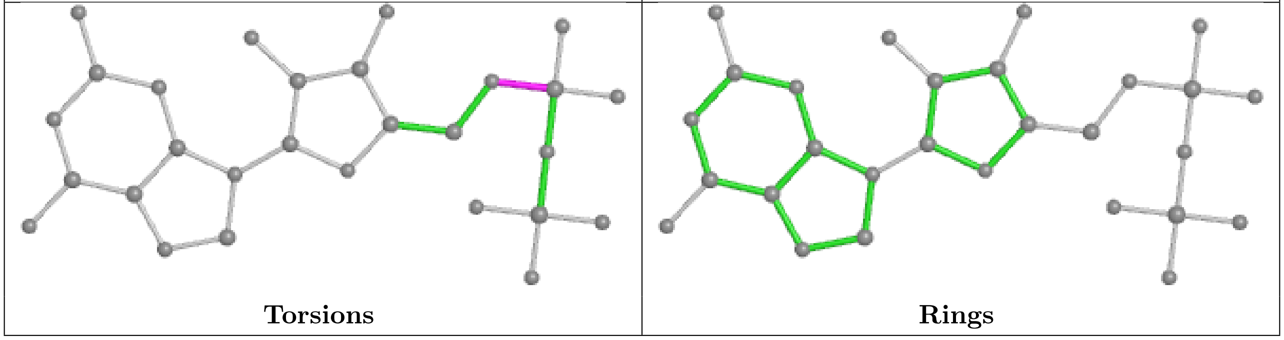


Torsions **Rings**

Ligand GDP AB 501

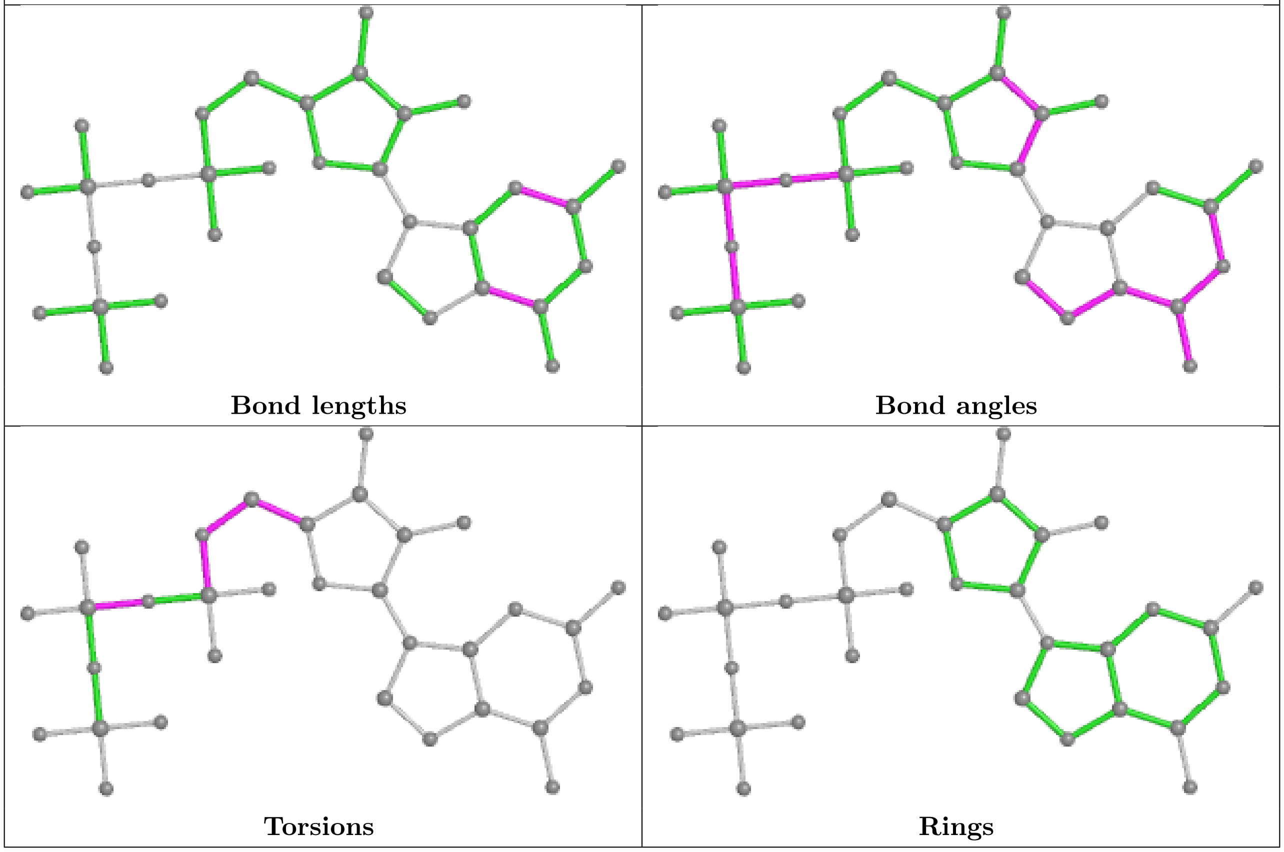


Bond lengths **Bond angles**

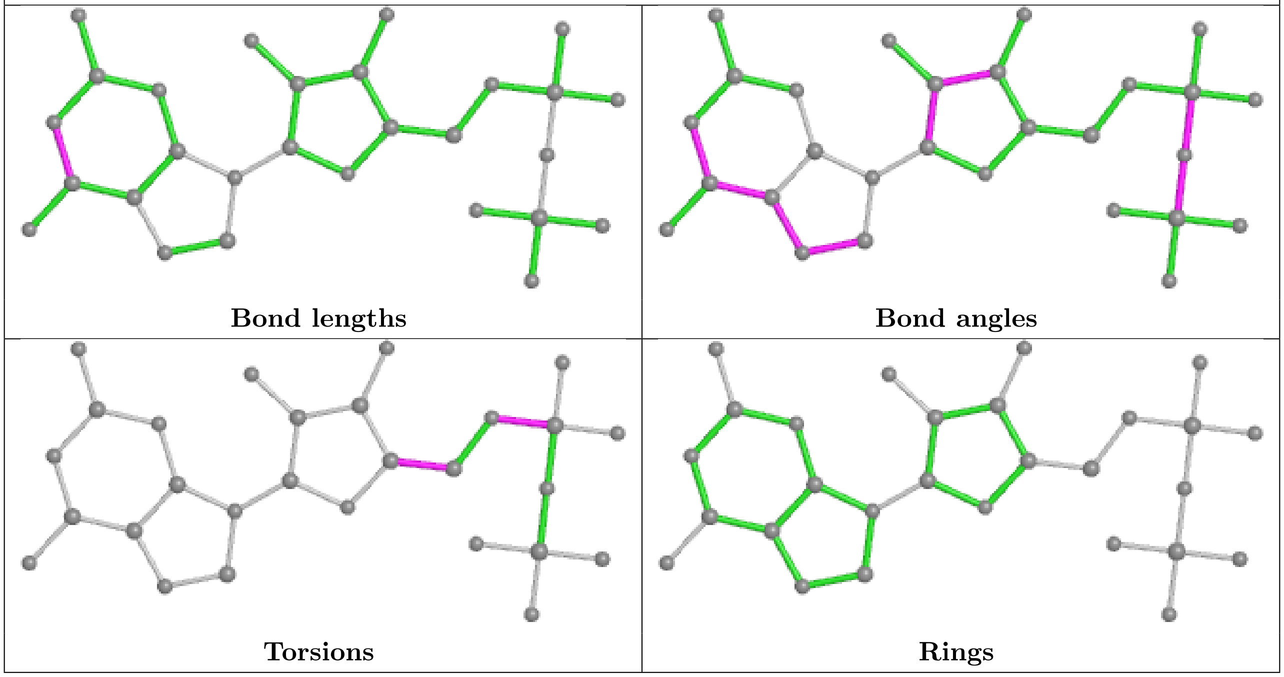


Torsions **Rings**

Ligand GTP HE 501


Bond lengths
Bond angles
Torsions
Rings

Ligand GDP ED 501


Bond lengths
Bond angles
Torsions
Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

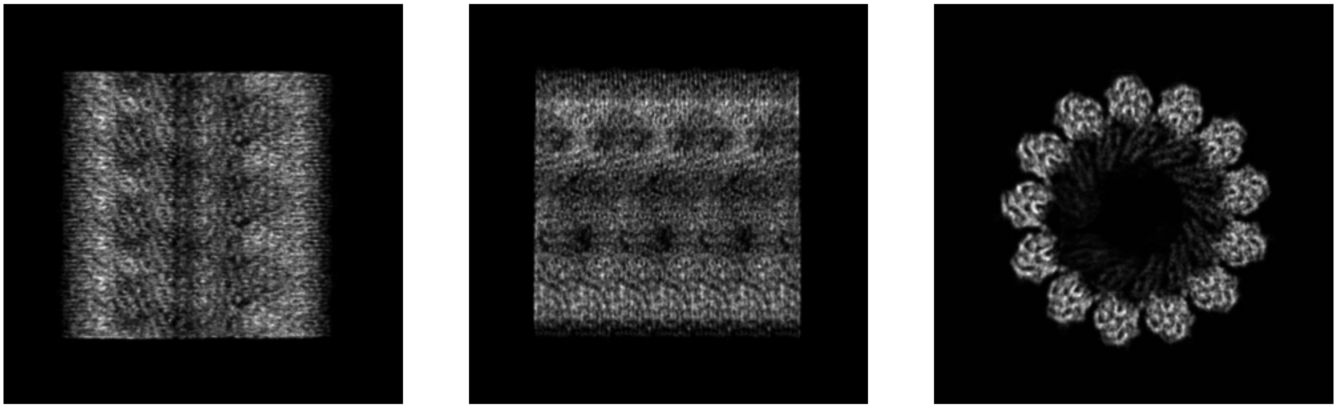
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-26611. These allow visual inspection of the internal detail of the map and identification of artifacts.

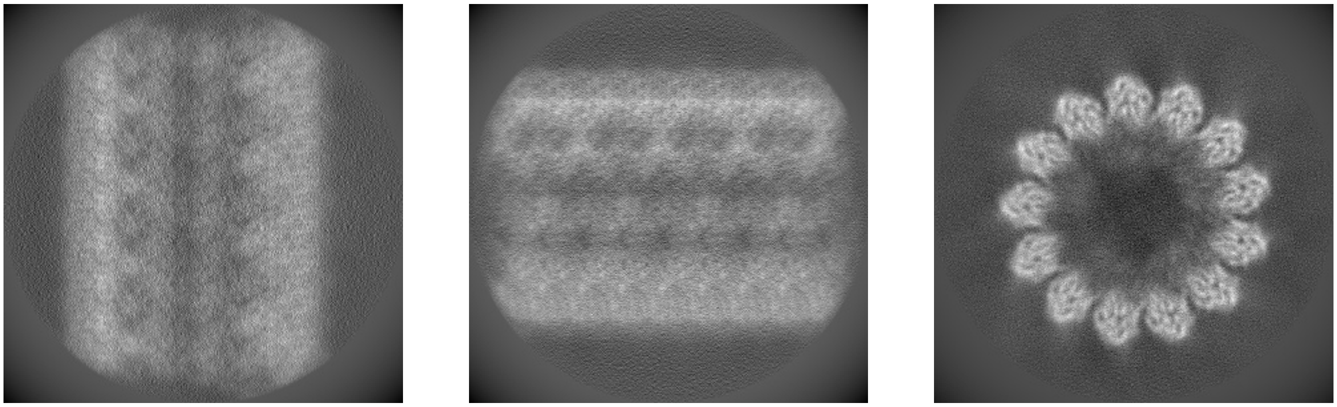
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections ⓘ

6.1.1 Primary map


X Y Z

6.1.2 Raw map


X Y Z

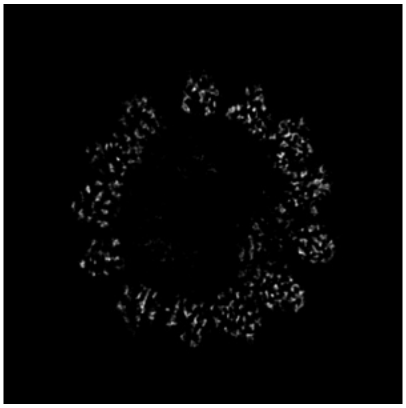
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

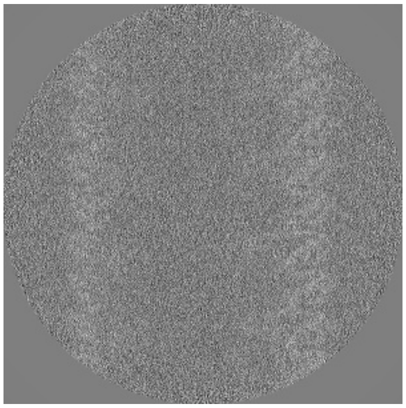
6.2.1 Primary map

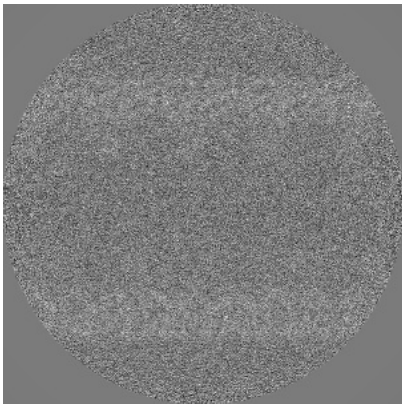

X Index: 240

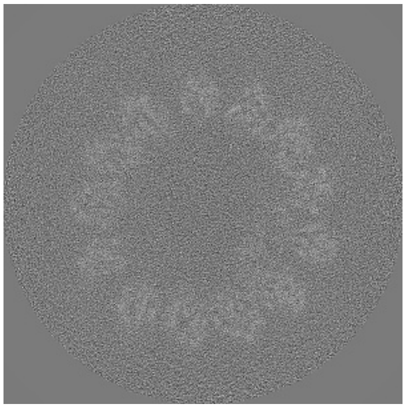

Y Index: 240


Z Index: 240

6.2.2 Raw map


X Index: 240


Y Index: 240

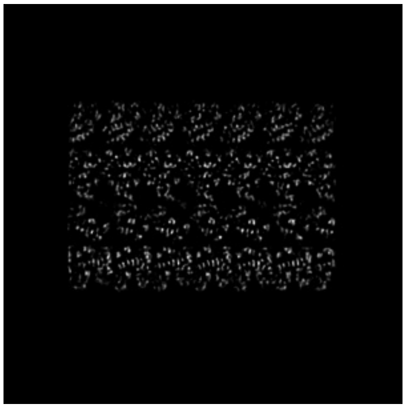

Z Index: 240

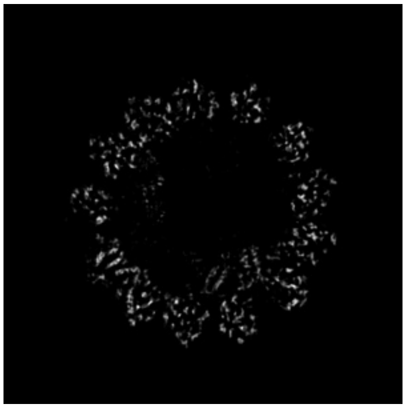
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices

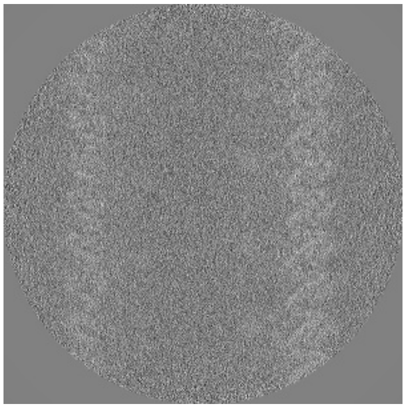
6.3.1 Primary map

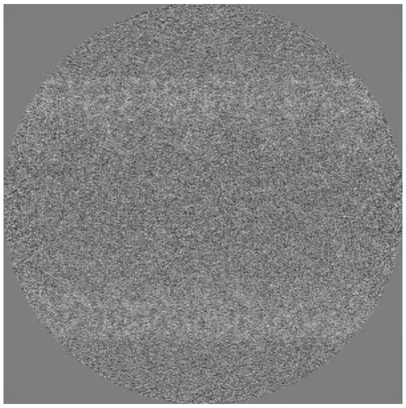

X Index: 359

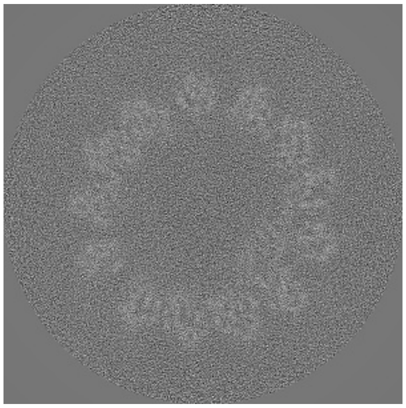

Y Index: 118


Z Index: 160

6.3.2 Raw map


X Index: 238

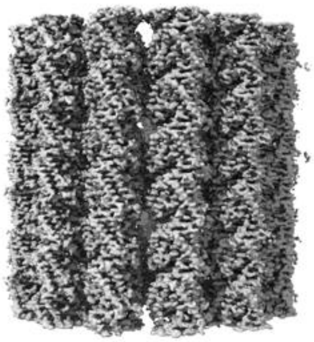

Y Index: 239


Z Index: 244

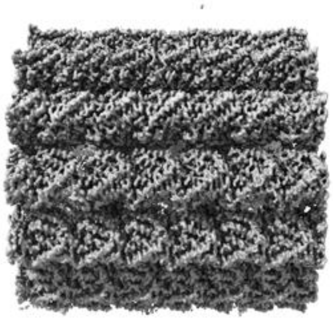
The images above show the largest variance slices of the map in three orthogonal directions.

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 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

X

Y

Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

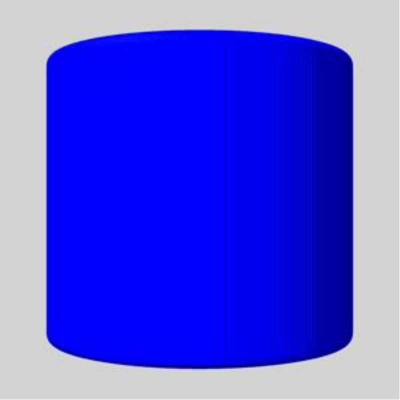
6.5 Mask visualisation

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

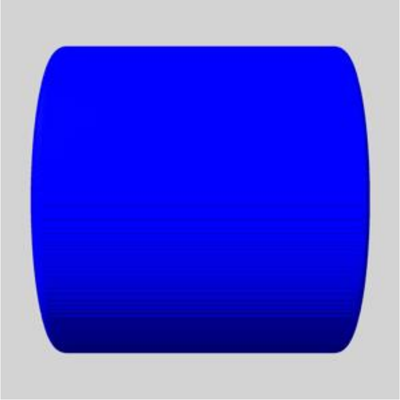
A mask typically either:

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

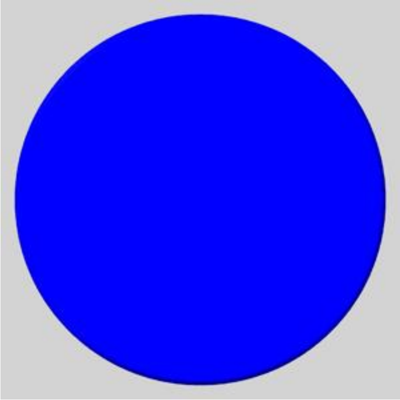
6.5.1 emd_26611_msk_1.map



X



Y

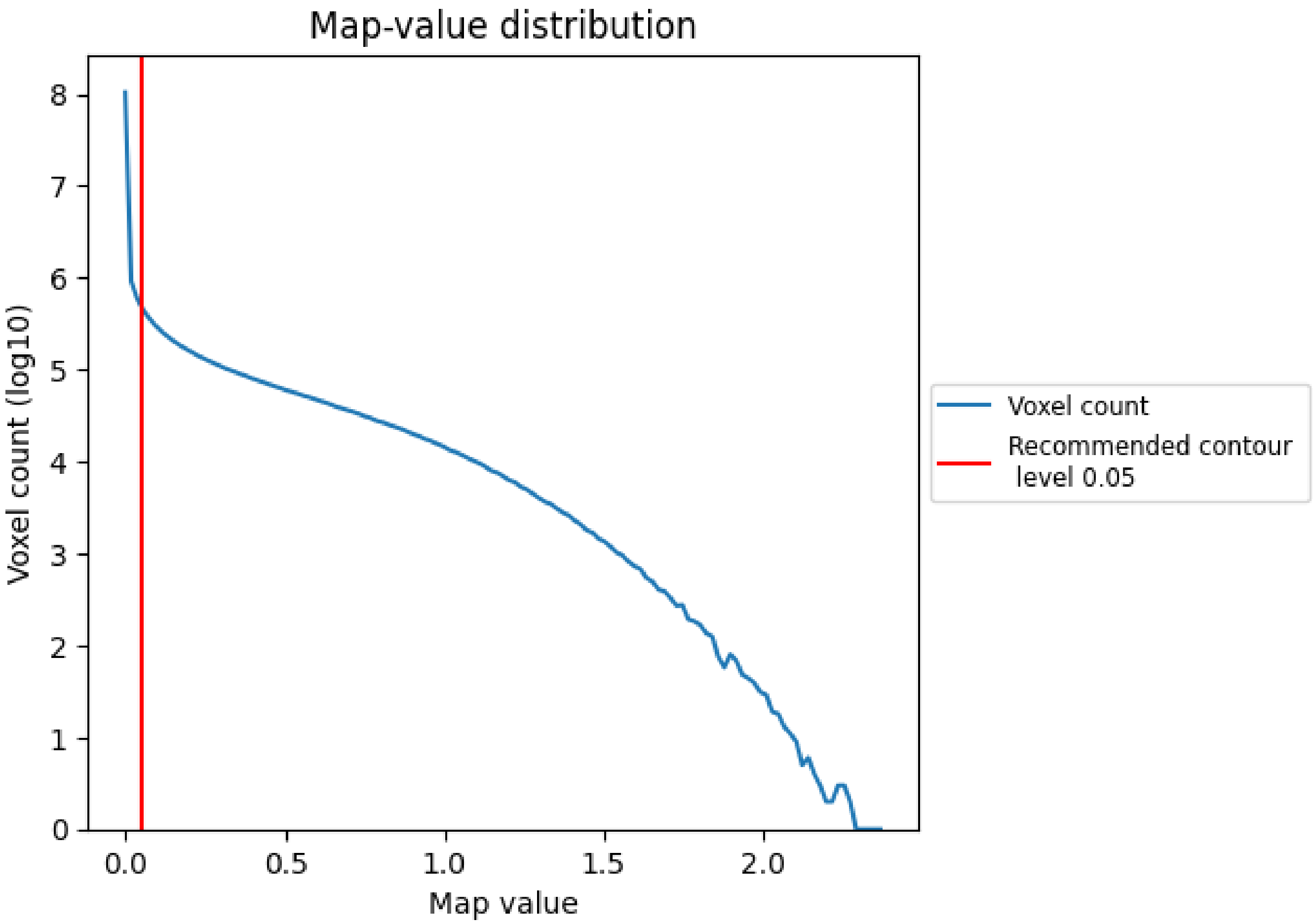


Z

7 Map analysis ⓘ

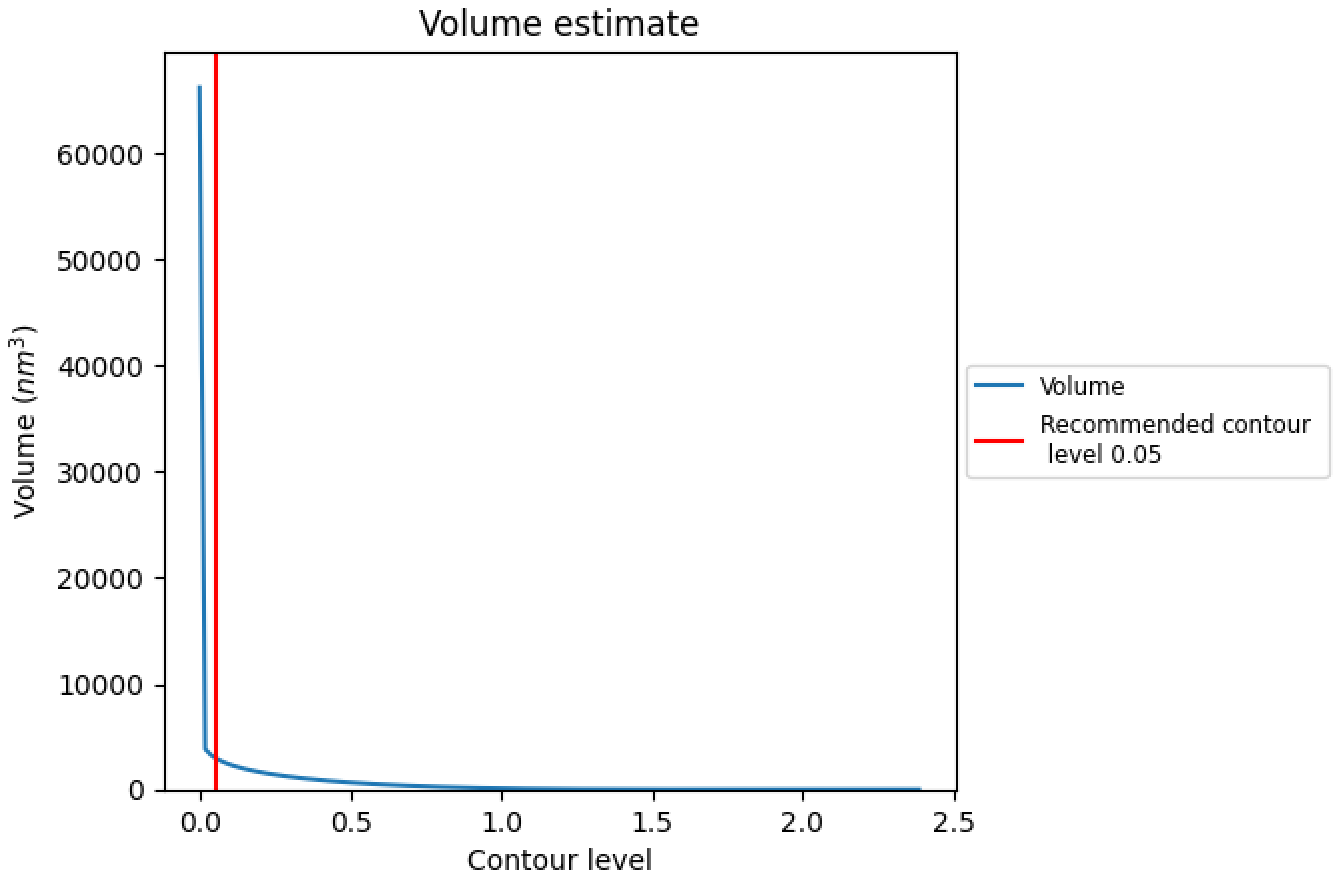
This section contains the results of statistical analysis of the map.

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.

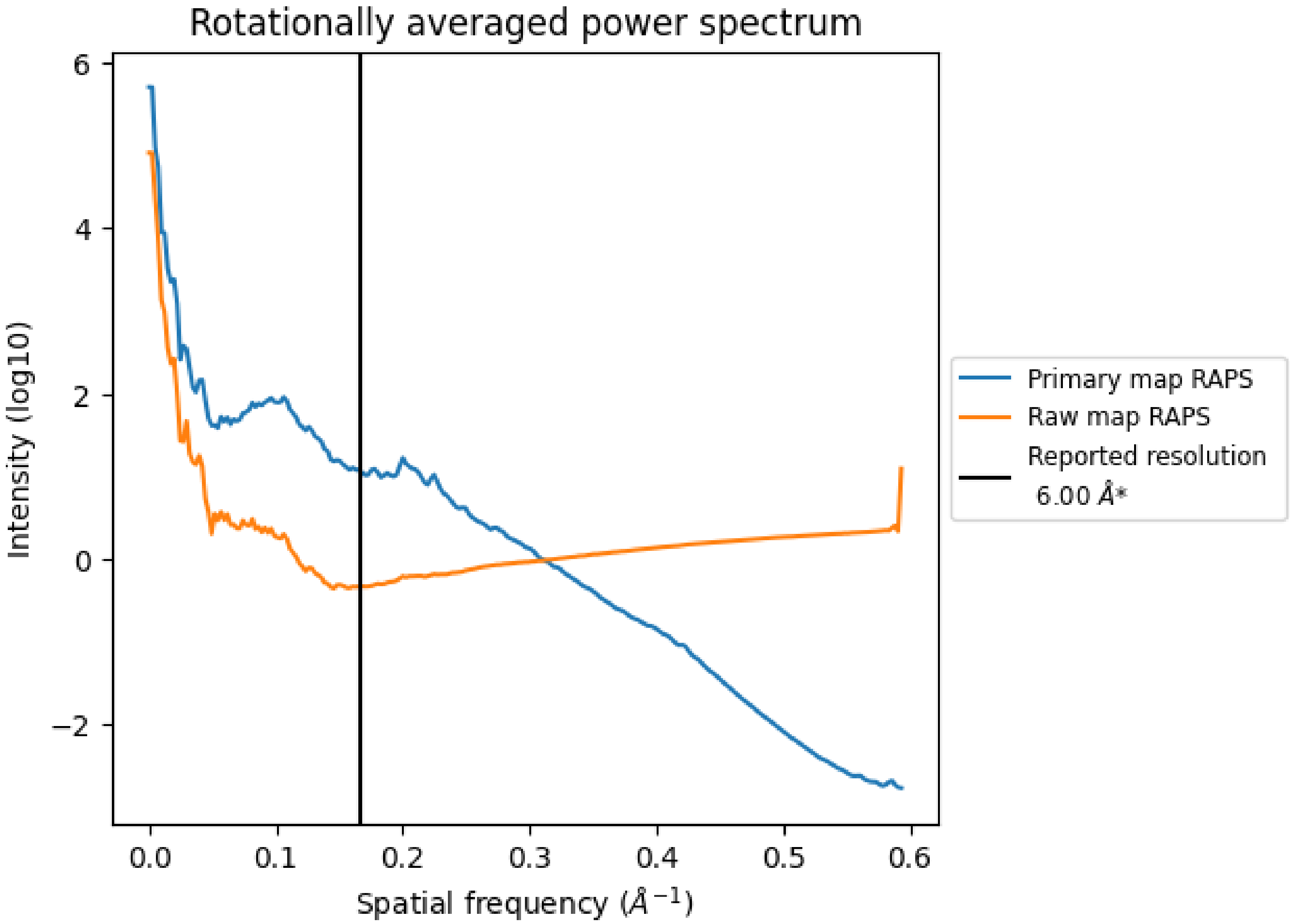
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 2981 nm^3; this corresponds to an approximate mass of 2692 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)

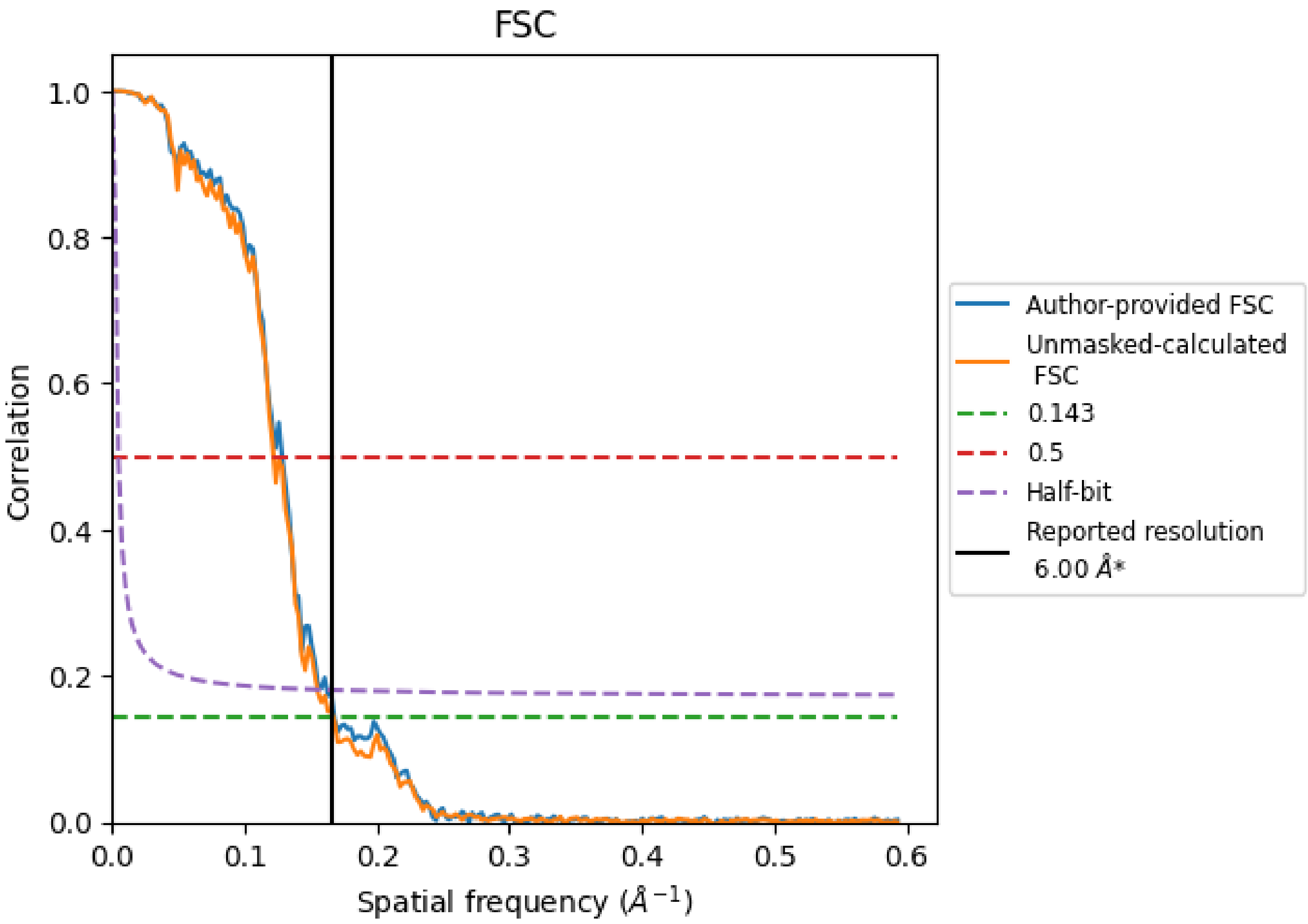


*Reported resolution corresponds to spatial frequency of 0.167 Å^{-1}

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 0.167 Å^{-1}

8.2 Resolution estimates ⓘ

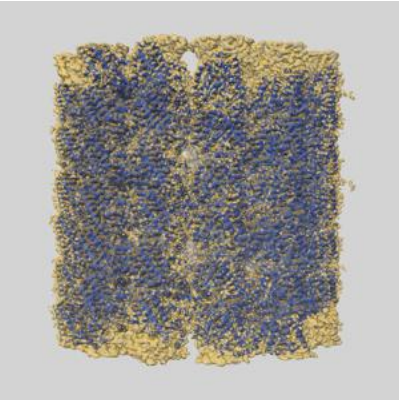
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	6.00	-	-
Author-provided FSC curve	5.96	7.79	6.16
Unmasked-calculated*	5.98	8.20	6.45

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

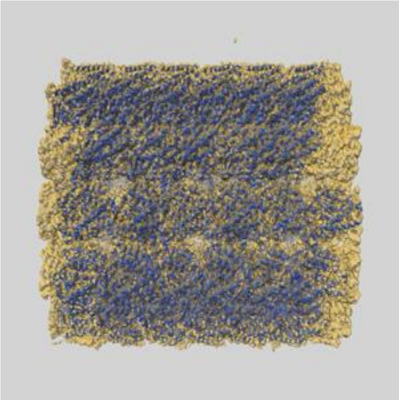
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-26611 and PDB model 7UN1. Per-residue inclusion information can be found in section 3 on page 20.

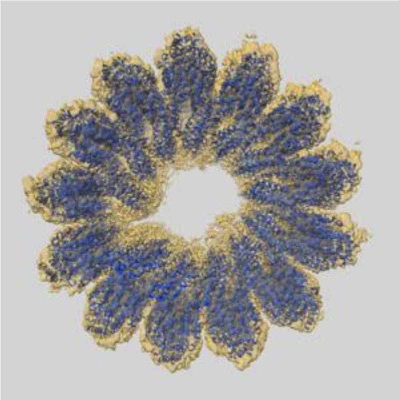
9.1 Map-model overlay



X



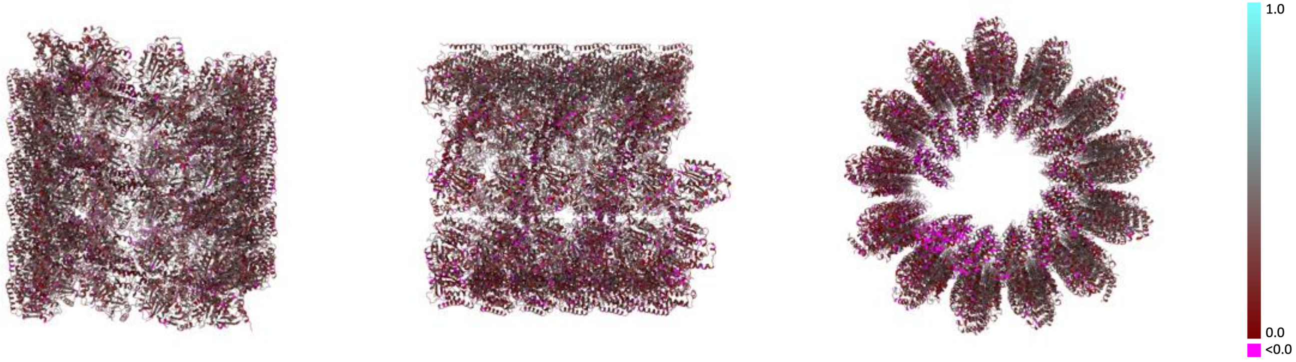
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.05 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.

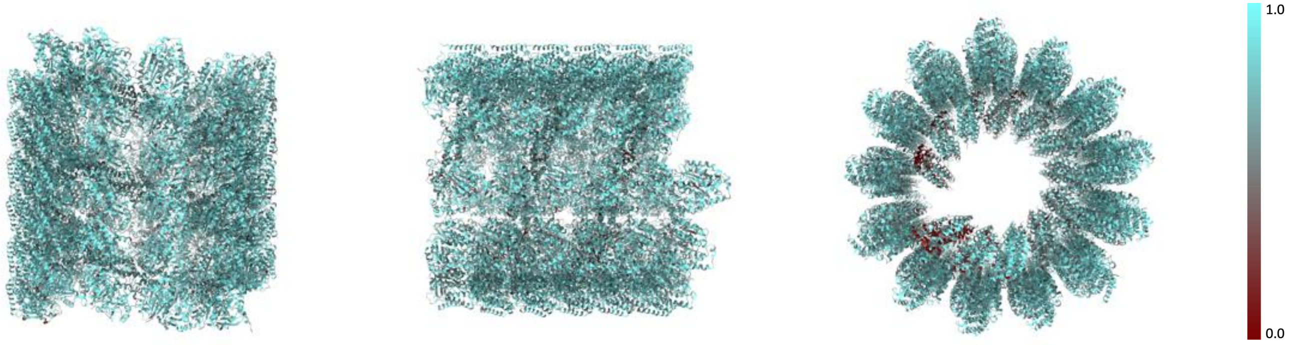
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

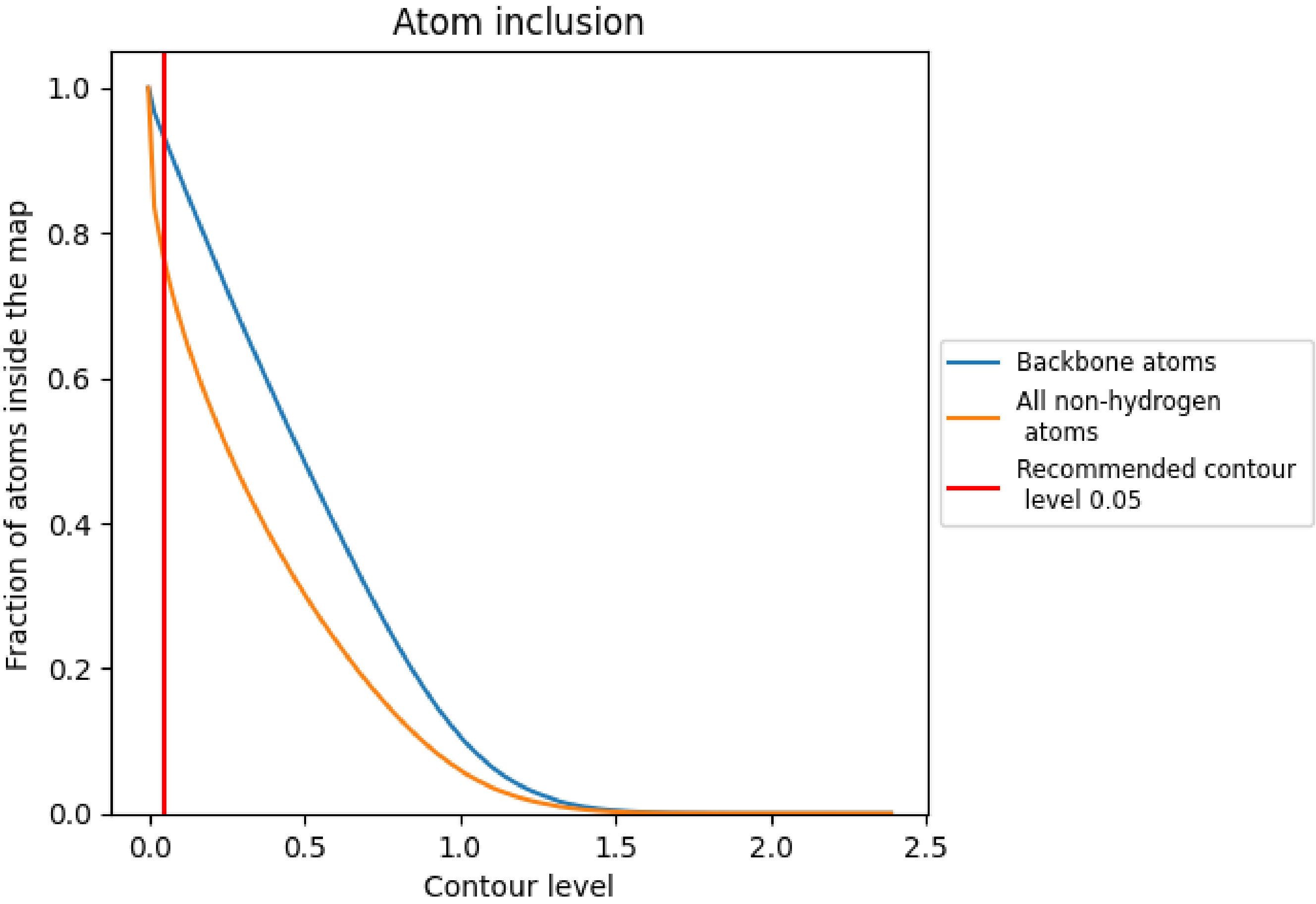
9.3 Atom inclusion mapped to coordinate model



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 (0.05).

9.4 Atom inclusion ⓘ



At the recommended contour level, 93% of all backbone atoms, 76% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7606	0.2540
A	0.4033	0.0620
AB	0.7898	0.2920
AC	0.7980	0.2980
AD	0.8033	0.3010
AE	0.8026	0.2950
AF	0.7814	0.2790
B	0.6181	0.1090
BA	0.7958	0.3010
BC	0.8138	0.3250
BD	0.8057	0.3210
BE	0.8089	0.3180
BF	0.8072	0.3040
BG	0.7873	0.2760
C	0.7697	0.1700
CB	0.7916	0.3000
CC	0.8176	0.3250
CD	0.7991	0.3240
CE	0.8153	0.3330
CF	0.8009	0.3120
CG	0.7968	0.3020
D	0.6085	0.1440
DB	0.7843	0.2810
DC	0.8025	0.3180
DD	0.8081	0.3220
DE	0.7983	0.3180
DF	0.8080	0.3130
DG	0.7935	0.2890
E	0.6835	0.1840
EB	0.7798	0.2850
EC	0.7863	0.3030
ED	0.8069	0.3020
EE	0.8039	0.3100
EF	0.7934	0.2920
EG	0.7871	0.2900

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Chain	Atom inclusion	Q-score
F	0.7160	0.1960
FC	0.7822	0.2870
FD	0.7825	0.2930
FE	0.7999	0.3050
FF	0.7904	0.2960
FG	0.7944	0.2880
FH	0.7497	0.2570
G	0.7003	0.2100
GC	0.7599	0.2560
GD	0.7672	0.2730
GE	0.7762	0.2790
GF	0.7605	0.2650
GG	0.7645	0.2570
GH	0.7440	0.2370
H	0.6757	0.1900
HC	0.7514	0.2230
HD	0.7594	0.2430
HE	0.7670	0.2500
HF	0.7588	0.2420
HG	0.7765	0.2490
HH	0.7473	0.2160
I	0.6542	0.1660
IC	0.7223	0.1860
ID	0.7277	0.1950
IE	0.7354	0.2120
IF	0.7331	0.2030
IG	0.7469	0.2110
IH	0.7271	0.1840
J	0.8230	0.2300
JC	0.7316	0.1860
JD	0.7467	0.2110
JE	0.7415	0.2020
JF	0.7446	0.2140
JG	0.7367	0.1920
K	0.6877	0.1610
KC	0.7554	0.2210
KD	0.7594	0.2250
KE	0.7548	0.2450
KF	0.7590	0.2210
KG	0.7626	0.2290
KH	0.7378	0.2000
L	0.4311	0.0510

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Chain	Atom inclusion	Q-score
LA	0.7565	0.2360
LB	0.7759	0.2510
LC	0.7673	0.2550
LD	0.7732	0.2640
LE	0.7523	0.2410
LF	0.7542	0.2280
M	0.4849	0.0630
MA	0.7590	0.2560
MB	0.7675	0.2620
MC	0.7706	0.2690
MD	0.7699	0.2630
ME	0.7744	0.2700
MF	0.7717	0.2510
N	0.7294	0.1880
O	0.7513	0.2030
P	0.6069	0.1340
Q	0.6895	0.1970
R	0.6953	0.1950
S	0.7123	0.2180
T	0.6900	0.1780
U	0.6645	0.1820
V	0.8104	0.2280
W	0.7030	0.1940
X	0.3392	0.0160
d	0.6442	0.1400
e	0.6862	0.1880
f	0.7088	0.2040
g	0.6940	0.2040
h	0.6945	0.1950
i	0.6701	0.1830
j	0.8243	0.2460
k	0.7017	0.1810
l	0.4418	0.0520