Full wwPDB EM Validation Report ⓘ

Oct 26, 2026 – 01:08 pm GMT

PDB ID	:	9R14 / pdb_00009r14
EMDB ID	:	EMD-53497
Title	:	Bovine complex I at pH 9.2 in the active state
Authors	:	Fisher, W.; Grba, D.N.; Hirst, J.
Deposited on	:	2025-04-25
Resolution	:	2.24 Å(reported)
Based on initial model	:	7QSL

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:

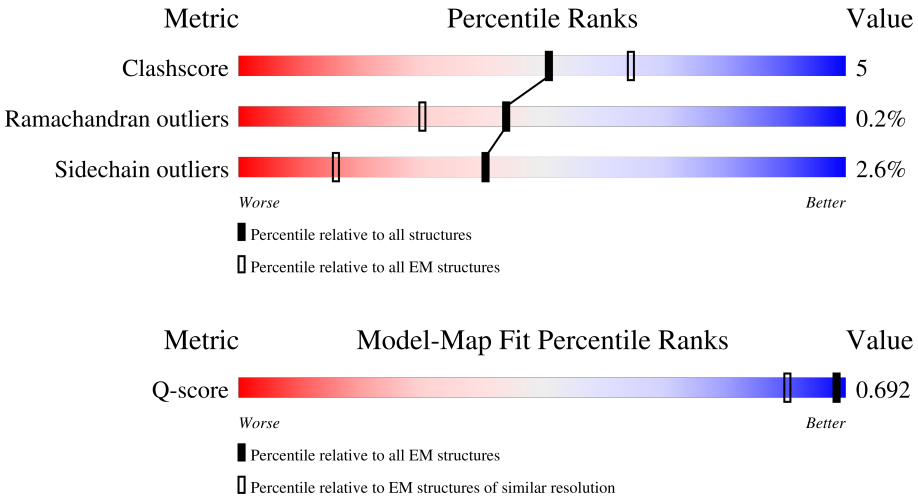
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.2
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

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 2.24 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	3381 (1.75 - 2.74)

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	115	9% 83% 17%
2	B	216	59% 12% 28%
3	C	266	72% 7% 21%
4	D	463	83% 10% 7%

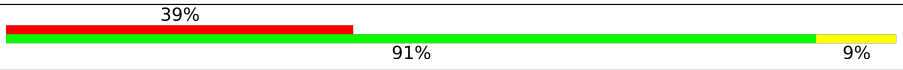
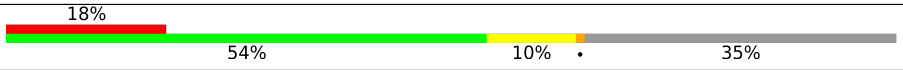
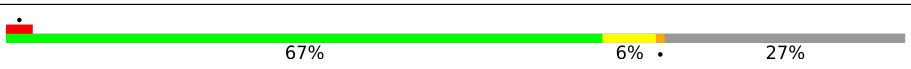
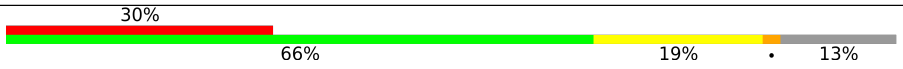
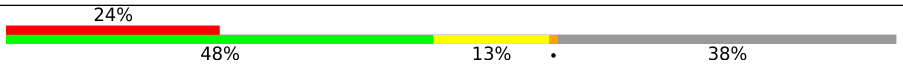
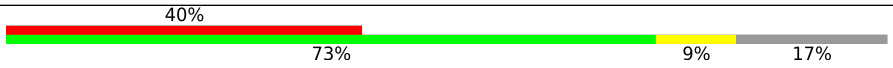
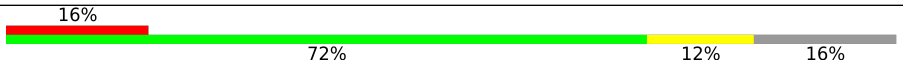
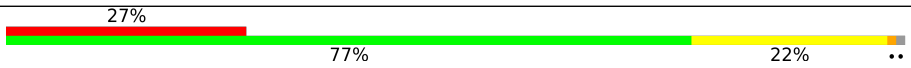
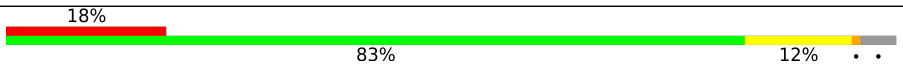
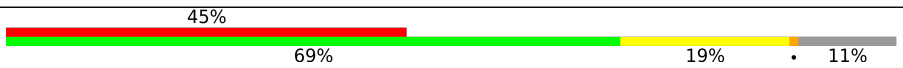
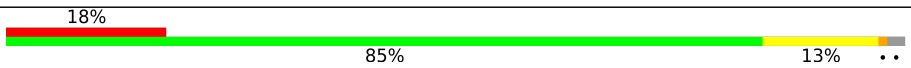
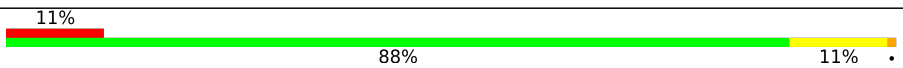
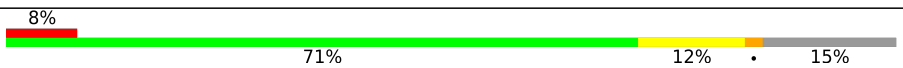
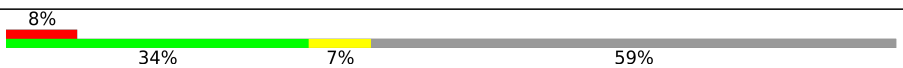
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Mol	Chain	Length	Quality of chain
5	E	249	10% 71% 14% 14%
6	F	464	6% 80% 12% 7%
7	G	727	9% 83% 13%
8	H	318	88% 11%
9	I	212	75% 8% 17%
10	J	175	11% 85% 14%
11	K	98	86% 14%
12	L	606	9% 80% 19%
13	M	459	85% 14%
14	N	347	87% 13%
15	O	343	11% 80% 13% 7%
16	P	380	9% 81% 9% 10%
17	Q	175	9% 67% 6% 26%
18	R	124	12% 72% 6% 23%
19	S	99	15% 78% 10% 12%
20	T	156	40% 40% 13% 46%
20	U	156	16% 45% 9% 45%
21	V	116	13% 88% 12%
22	W	128	12% 74% 16% 10%
23	X	172	12% 87% 12%
24	Y	141	18% 89% 11%
25	Z	144	12% 78% 19%
26	a	70	86% 14%
27	b	84	21% 79% 21%
28	c	76	14% 57% 8% 36%

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Mol	Chain	Length	Quality of chain
29	d	121	
30	e	106	
31	f	57	
32	g	154	
33	h	189	
34	i	128	
35	j	108	
36	k	98	
37	l	186	
38	m	129	
39	n	179	
40	o	137	
41	p	176	
42	q	146	
43	r	113	
44	s	109	

2 Entry composition

There are 59 unique types of molecules in this entry. The entry contains 70435 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 NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	115	921	622	133	159	7	0	0

- Molecule 2 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	155	1242	792	224	212	14	0	0

- Molecule 3 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	209	1738	1120	298	317	3	0	0

- Molecule 4 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	430	3459	2209	596	629	25	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	129	ARG	GLN	variant	UNP P17694

- Molecule 5 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	214	Total	C	N	O	S	0	0
			1659	1059	278	312	10		

- Molecule 6 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	432	Total	C	N	O	S	1	0
			3336	2102	597	617	20		

- Molecule 7 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	699	Total	C	N	O	S	1	0
			5366	3362	934	1030	40		

- Molecule 8 is a protein called NADH-ubiquinone oxidoreductase chain 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	318	Total	C	N	O	S	0	0
			2509	1681	385	420	23		

- Molecule 9 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	176	Total	C	N	O	S	0	0
			1414	889	243	270	12		

- Molecule 10 is a protein called NADH-ubiquinone oxidoreductase chain 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	175	Total	C	N	O	S	0	0
			1345	906	191	236	12		

- Molecule 11 is a protein called NADH-ubiquinone oxidoreductase chain 4L.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	98	Total	C	N	O	S	0	0
			745	486	112	131	16		

- Molecule 12 is a protein called NADH-ubiquinone oxidoreductase chain 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	606	Total	C	N	O	S	0	0
			4802	3195	737	827	43		

- Molecule 13 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	459	Total	C	N	O	S	5	0
			3694	2461	578	616	39		

- Molecule 14 is a protein called NADH-ubiquinone oxidoreductase chain 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	347	Total	C	N	O	S	0	0
			2733	1817	416	457	43		

- Molecule 15 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	320	Total	C	N	O	S	0	0
			2589	1662	429	488	10		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	255	LYS	ASN	variant	UNP P34942

- Molecule 16 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	342	Total	C	N	O	S	0	0
			2754	1781	487	481	5		

- Molecule 17 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	129	Total	C	N	O	S	0	0
			1049	659	188	199	3		

- Molecule 18 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	96	Total	C	N	O	S	0	0
			740	454	140	143	3		

- Molecule 19 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	87	Total	C	N	O	S	0	0
			700	440	131	127	2		

- Molecule 20 is a protein called Acyl carrier protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	85	Total	C	N	O	S	0	0
			688	444	101	138	5		
20	U	86	Total	C	N	O	S	0	0
			693	447	102	139	5		

- Molecule 21 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	116	Total	C	N	O	S	0	0
			931	602	157	169	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	0	ACE	-	acetylation	UNP P23935

- Molecule 22 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	115	Total	C	N	O	S	0	0
			976	625	181	166	4		

- Molecule 23 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	171	Total	C	N	O	S	0	0
			1402	887	253	252	10		

- Molecule 24 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	141	Total	C	N	O	S	0	0
			1030	657	176	191	6		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	0	ACE	-	acetylation	UNP Q8HXG6

- Molecule 25 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Z	141	Total	C	N	O	S	0	0
			1152	740	201	202	9		

- Molecule 26 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	a	70	Total	C	N	O	S	0	0
			569	365	104	95	5		

- Molecule 27 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	b	84	Total	C	N	O	S	0	0
			654	427	109	116	2		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	0	ACE	-	acetylation	UNP Q02371

- Molecule 28 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	c	49	Total	C	N	O	0	0
			414	273	70	71		

- Molecule 29 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	d	121	Total	C	N	O	S	0	0
			999	650	172	172	5		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
d	0	ACE	-	acetylation	UNP Q02827

- Molecule 30 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	e	99	Total	C	N	O	S	0	0
			829	523	158	142	6		

- Molecule 31 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	57	Total	C	N	O	S	0	0
			492	322	86	82	2		

- Molecule 32 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	g	100	Total	C	N	O	S	0	0
			839	539	139	157	4		

- Molecule 33 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	h	138	Total	C	N	O	S	0	0
			1154	759	196	197	2		

- Molecule 34 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	i	111	Total	C	N	O	S	0	0
			945	619	165	160	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
i	0	ACE	-	acetylation	UNP Q02367

- Molecule 35 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	j	67	Total	C	N	O	S	0	0
			580	381	95	103	1		

- Molecule 36 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	k	81	Total	C	N	O	S	0	0
			653	427	110	114	2		

- Molecule 37 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	l	156	Total	C	N	O	S	0	0
			1314	850	216	240	8		

- Molecule 38 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	m	128	Total	C	N	O	0	0
			1067	684	188	195		

- Molecule 39 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	n	172	Total	C	N	O	S	0	0
			1492	955	273	257	7		

- Molecule 40 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	o	122	Total	C	N	O	S	0	0
			1048	653	201	185	9		

- Molecule 41 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	p	173	Total	C	N	O	S	0	0
			1453	910	268	267	8		

- Molecule 42 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	q	146	Total	C	N	O	S	0	0
			1212	780	216	211	5		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
q	0	ACE	-	acetylation	UNP O97725

- Molecule 43 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	r	96	Total	C	N	O	S	0	0
			776	490	144	139	3		

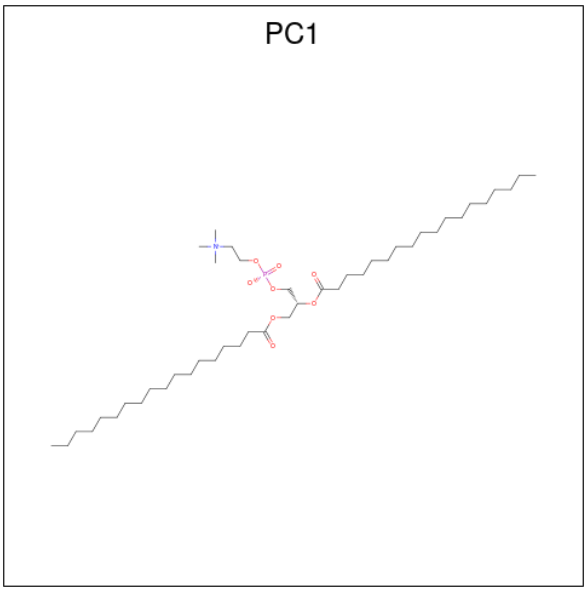
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
r	0	ACE	-	acetylation	UNP Q05752

- Molecule 44 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial.

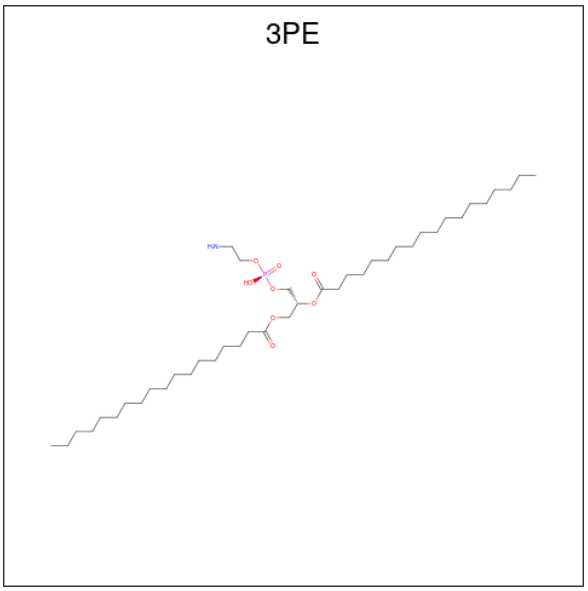
Mol	Chain	Residues	Atoms					AltConf	Trace
44	s	45	Total	C	N	O	S	1	0
			391	244	71	75	1		

- Molecule 45 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PC1) (formula: $C_{44}H_{88}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
45	A	1	Total	C	N	O	P	0
			35	25	1	8	1	
45	A	1	Total	C	N	O	P	0
			33	23	1	8	1	
45	B	1	Total	C	N	O	P	0
			41	31	1	8	1	
45	M	1	Total	C	N	O	P	0
			39	29	1	8	1	
45	P	1	Total	C	N	O	P	0
			54	44	1	8	1	
45	Y	1	Total	C	N	O	P	0
			42	32	1	8	1	
45	Z	1	Total	C	N	O	P	0
			48	38	1	8	1	
45	d	1	Total	C	N	O	P	0
			33	23	1	8	1	
45	m	1	Total	C	N	O	P	0
			40	30	1	8	1	

- Molecule 46 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (CCD ID: 3PE) (formula: $C_{41}H_{82}NO_8P$).



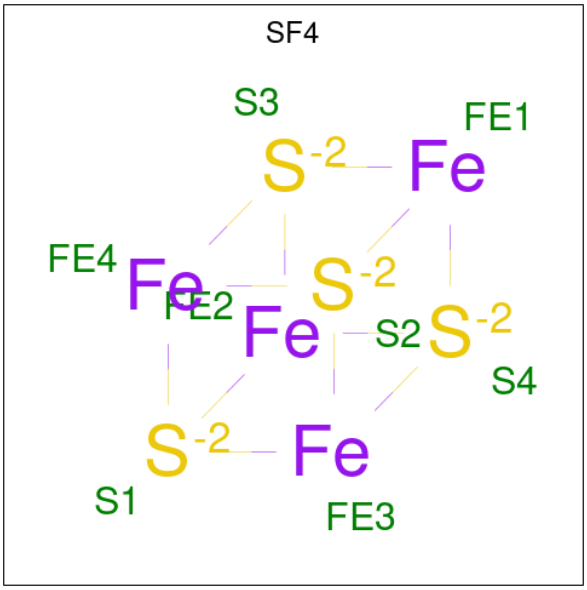
Mol	Chain	Residues	Atoms					AltConf
46	A	1	Total	C	N	O	P	0
			37	27	1	8	1	
46	A	1	Total	C	N	O	P	0
			47	37	1	8	1	
46	H	1	Total	C	N	O	P	0
			29	19	1	8	1	
46	I	1	Total	C	N	O	P	0
			38	28	1	8	1	
46	I	1	Total	C	N	O	P	0
			35	25	1	8	1	
46	L	1	Total	C	N	O	P	0
			39	29	1	8	1	
46	L	1	Total	C	N	O	P	0
			45	35	1	8	1	
46	L	1	Total	C	N	O	P	0
			51	41	1	8	1	
46	M	1	Total	C	N	O	P	0
			45	35	1	8	1	
46	M	1	Total	C	N	O	P	0
			51	41	1	8	1	
46	Y	1	Total	C	N	O	P	0
			35	25	1	8	1	
46	Y	1	Total	C	N	O	P	0
			40	30	1	8	1	
46	d	1	Total	C	N	O	P	0
			48	38	1	8	1	
46	d	1	Total	C	N	O	P	0
			37	27	1	8	1	

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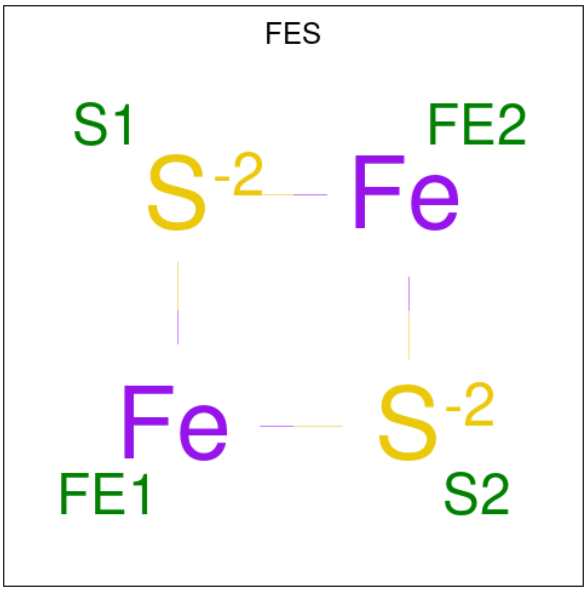
Mol	Chain	Residues	Atoms					AltConf
46	m	1	Total	C	N	O	P	0
			40	30	1	8	1	

- Molecule 47 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4).



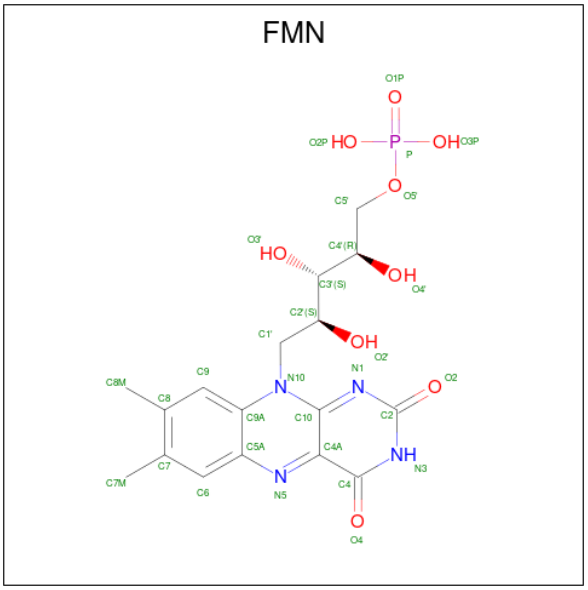
Mol	Chain	Residues	Atoms			AltConf
47	B	1	Total	Fe	S	0
			8	4	4	
47	F	1	Total	Fe	S	0
			8	4	4	
47	G	1	Total	Fe	S	0
			8	4	4	
47	G	1	Total	Fe	S	0
			8	4	4	
47	I	1	Total	Fe	S	0
			8	4	4	
47	I	1	Total	Fe	S	0
			8	4	4	

- Molecule 48 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2).



Mol	Chain	Residues	Atoms			AltConf
48	E	1	Total	Fe	S	0
			4	2	2	
48	G	1	Total	Fe	S	0
			4	2	2	

- Molecule 49 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: $C_{17}H_{21}N_4O_9P$).

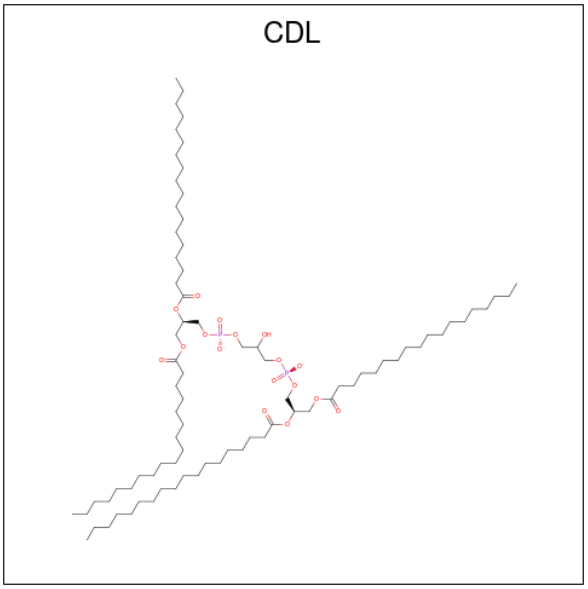


Mol	Chain	Residues	Atoms					AltConf
49	F	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 50 is POTASSIUM ION (CCD ID: K) (formula: K).

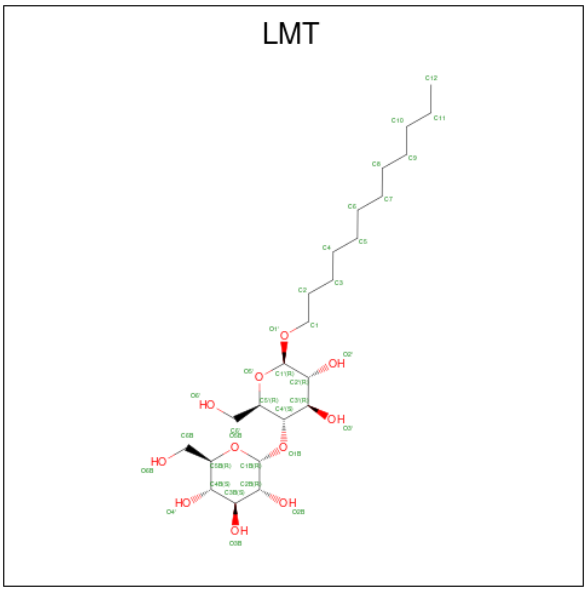
Mol	Chain	Residues	Atoms	AltConf
50	G	1	Total K 1 1	0

- Molecule 51 is CARDIOLIPIN (CCD ID: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



Mol	Chain	Residues	Atoms	AltConf
51	H	1	Total C O P 50 31 17 2	0
51	K	1	Total C O P 69 50 17 2	0
51	L	1	Total C O P 60 41 17 2	0
51	N	1	Total C O P 60 41 17 2	0
51	X	1	Total C O P 73 54 17 2	0
51	d	1	Total C O P 65 46 17 2	0
51	h	1	Total C O P 78 59 17 2	0
51	r	1	Total C O P 62 43 17 2	0

- Molecule 52 is DODECYL-BETA-D-MALTOSIDE (CCD ID: LMT) (formula: $C_{24}H_{46}O_{11}$).

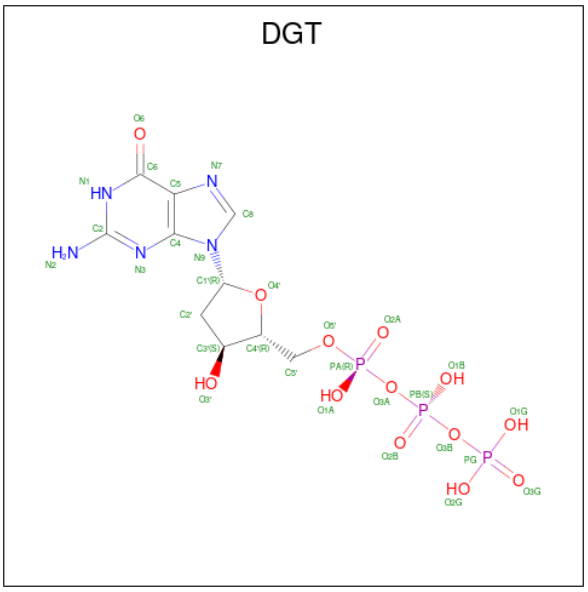


Mol	Chain	Residues	Atoms	AltConf
52	L	1	Total C O 35 24 11	0
52	L	1	Total C O 35 24 11	0
52	L	1	Total C O 35 24 11	0
52	M	1	Total C O 35 24 11	0
52	M	1	Total C O 35 24 11	0
52	Y	1	Total C O 35 24 11	0
52	b	1	Total C O 35 24 11	0
52	p	1	Total C O 35 24 11	0

- Molecule 53 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

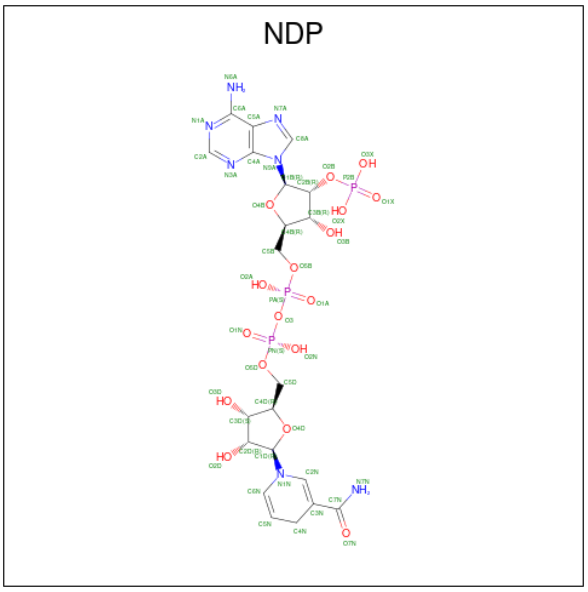
Mol	Chain	Residues	Atoms	AltConf
53	O	1	Total Mg 1 1	0

- Molecule 54 is 2'-DEOXYGUANOSINE-5'-TRIPHOSPHATE (CCD ID: DGT) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
54	O	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 55 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).

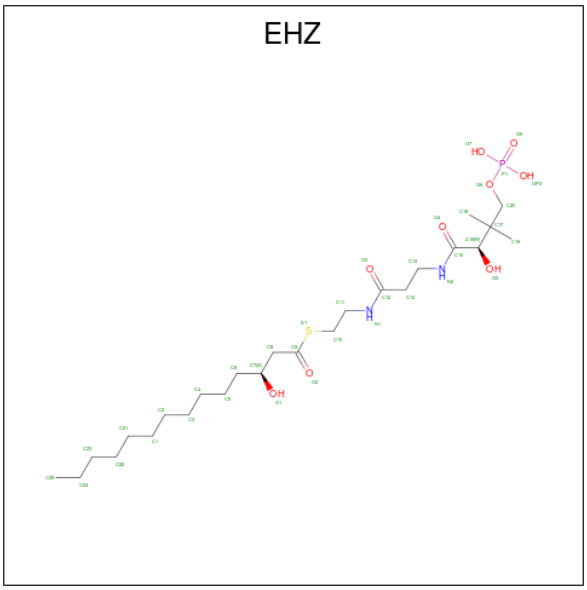


Mol	Chain	Residues	Atoms					AltConf
55	P	1	Total	C	N	O	P	0
			48	21	7	17	3	

- Molecule 56 is ZINC ION (CCD ID: ZN) (formula: Zn).

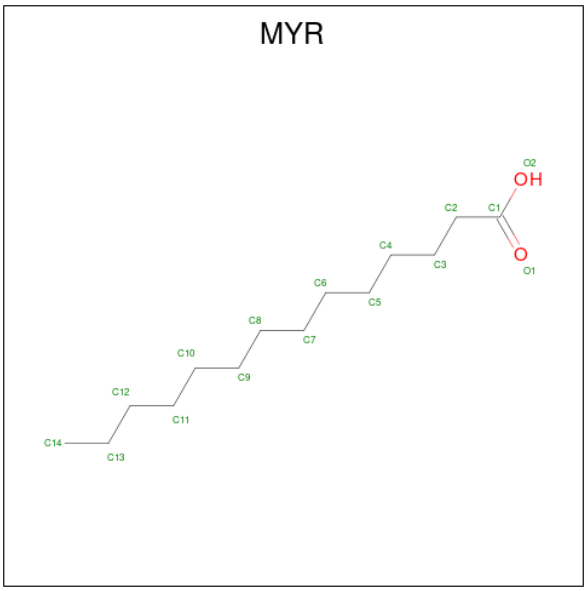
Mol	Chain	Residues	Atoms	AltConf
56	R	1	Total Zn 1 1	0

- Molecule 57 is {S}-[2-[3-[[(2 {R})-3,3-dimethyl-2-oxidanyl-4-phosphonooxy-butanoyl]amino]propanoylamino]ethyl] (3 {S})-3-oxidanyltetradecanethioate (CCD ID: EHZ) (formula: $C_{25}H_{49}N_2O_9PS$).



Mol	Chain	Residues	Atoms	AltConf
57	T	1	Total C N O P S 37 25 2 8 1 1	0
57	U	1	Total C N O P S 37 25 2 8 1 1	0

- Molecule 58 is MYRISTIC ACID (CCD ID: MYR) (formula: $C_{14}H_{28}O_2$).



Mol	Chain	Residues	Atoms	AltConf
58	o	1	Total C O 15 14 1	0

- Molecule 59 is water.

Mol	Chain	Residues	Atoms	AltConf
59	A	73	Total O 73 73	0
59	B	81	Total O 81 81	0
59	C	98	Total O 98 98	0
59	D	205	Total O 205 205	0
59	E	15	Total O 15 15	0
59	F	35	Total O 35 35	0
59	G	149	Total O 149 149	0
59	H	169	Total O 169 169	0
59	I	94	Total O 94 94	0
59	J	53	Total O 53 53	0
59	K	48	Total O 48 48	0

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Mol	Chain	Residues	Atoms	AltConf
59	L	101	Total O 101 101	0
59	M	122	Total O 122 122	0
59	N	97	Total O 97 97	0
59	O	16	Total O 16 16	0
59	P	80	Total O 80 80	0
59	Q	61	Total O 61 61	0
59	R	20	Total O 20 20	0
59	S	1	Total O 1 1	0
59	T	2	Total O 2 2	0
59	U	2	Total O 2 2	0
59	V	3	Total O 3 3	0
59	W	17	Total O 17 17	0
59	X	32	Total O 32 32	0
59	Y	2	Total O 2 2	0
59	Z	34	Total O 34 34	0
59	a	33	Total O 33 33	0
59	b	10	Total O 10 10	0
59	d	15	Total O 15 15	0
59	e	20	Total O 20 20	0
59	f	4	Total O 4 4	0
59	g	9	Total O 9 9	0

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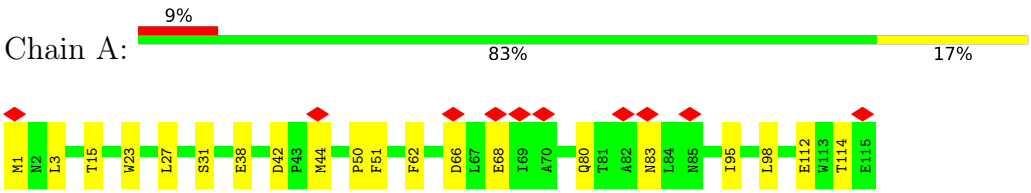
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Mol	Chain	Residues	Atoms	AltConf
59	h	21	Total O 21 21	0
59	i	1	Total O 1 1	0
59	j	1	Total O 1 1	0
59	k	1	Total O 1 1	0
59	l	12	Total O 12 12	0
59	m	11	Total O 11 11	0
59	n	18	Total O 18 18	0
59	p	23	Total O 23 23	0
59	q	33	Total O 33 33	0
59	r	24	Total O 24 24	0
59	s	4	Total O 4 4	0

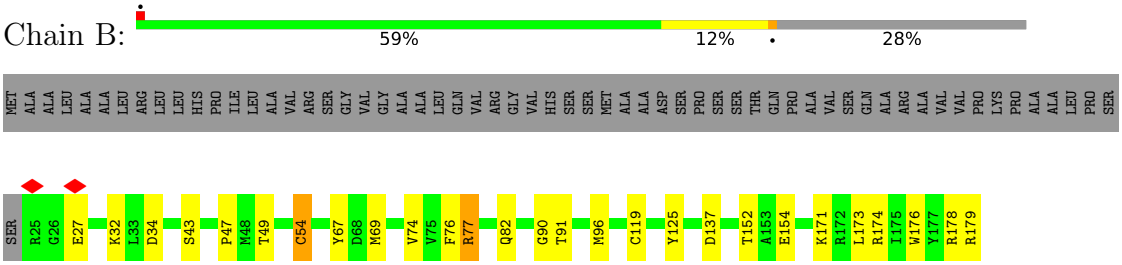
3 Residue-property plots (i)

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

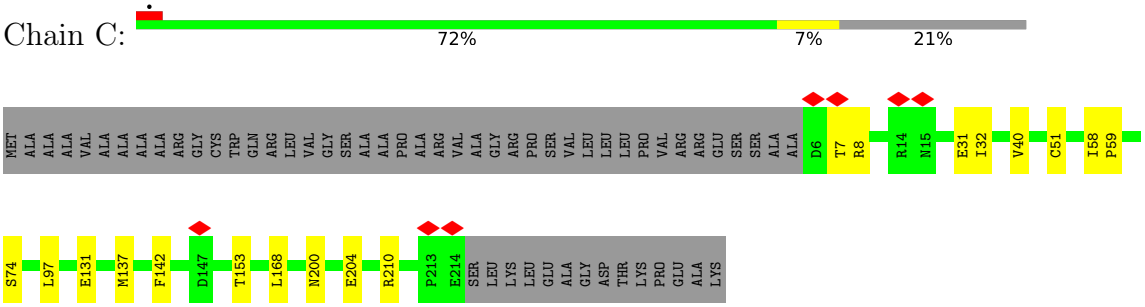
• Molecule 1: NADH-ubiquinone oxidoreductase chain 3



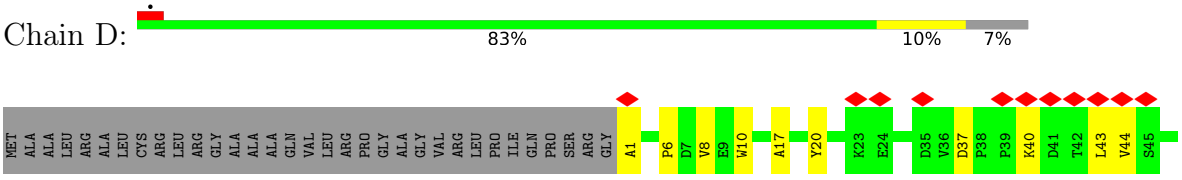
• Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

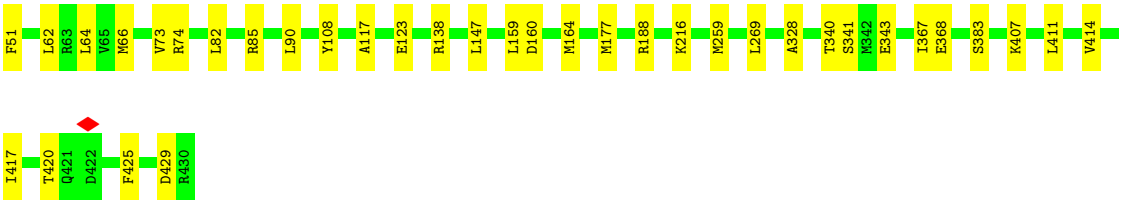


• Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial



• Molecule 4: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

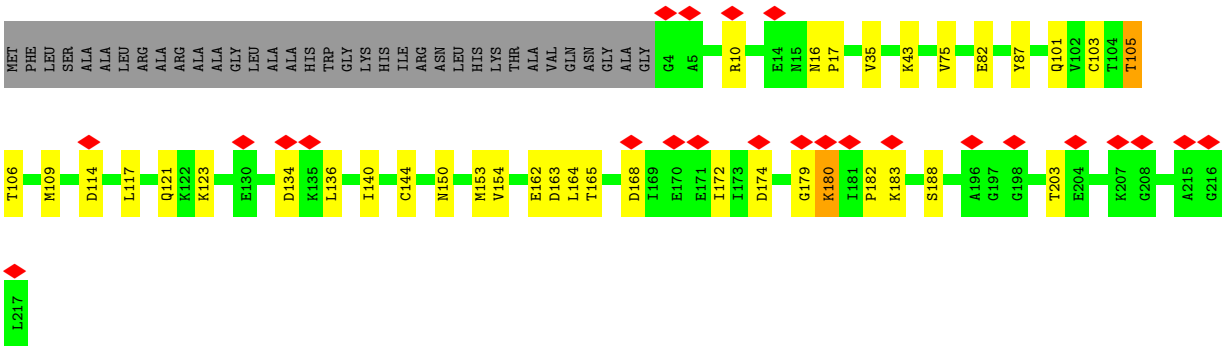




• Molecule 5: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

Chain E:

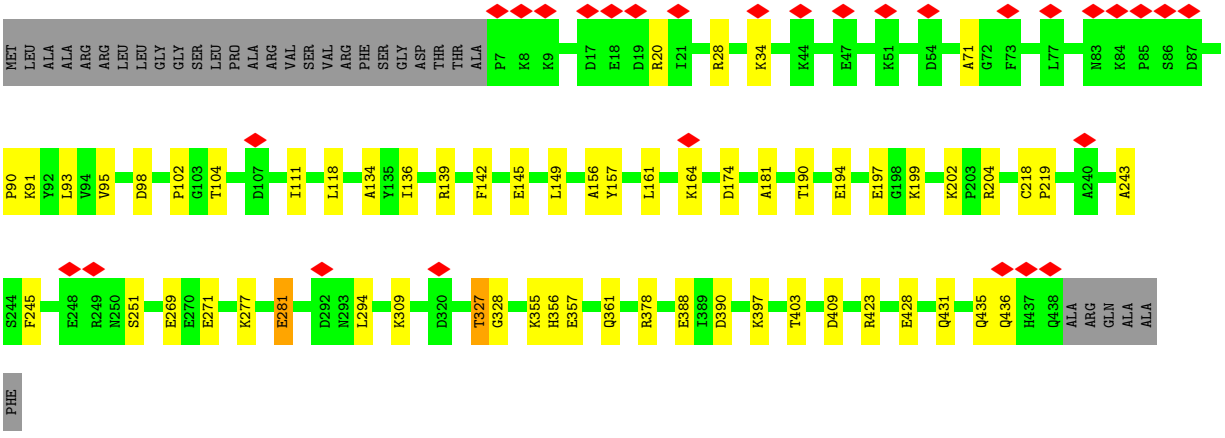




• Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial

Chain F:

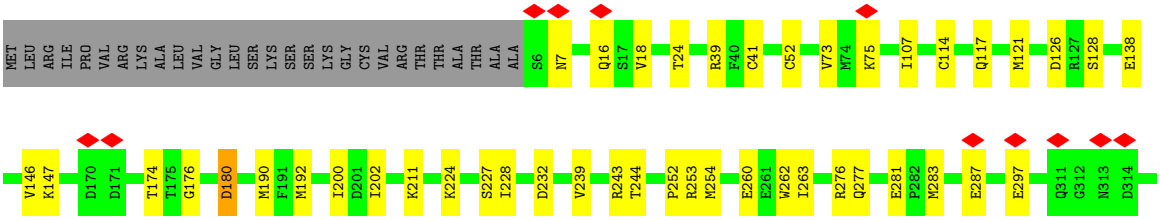


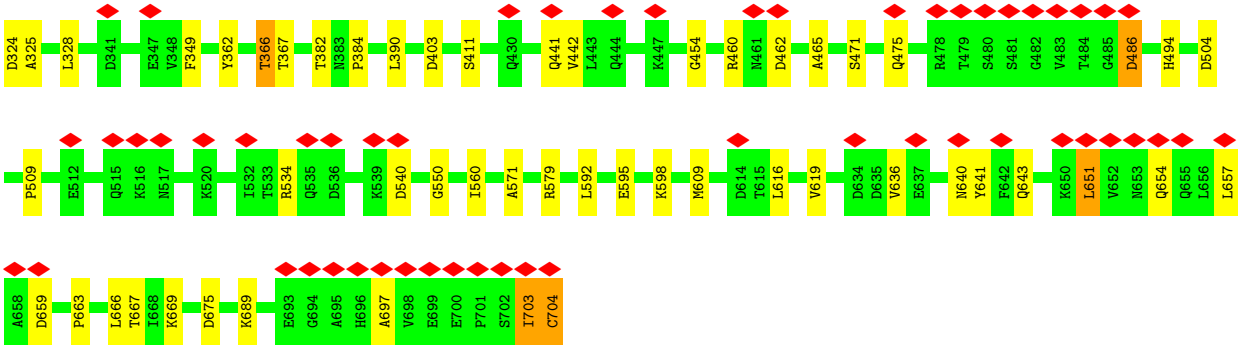


• Molecule 7: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

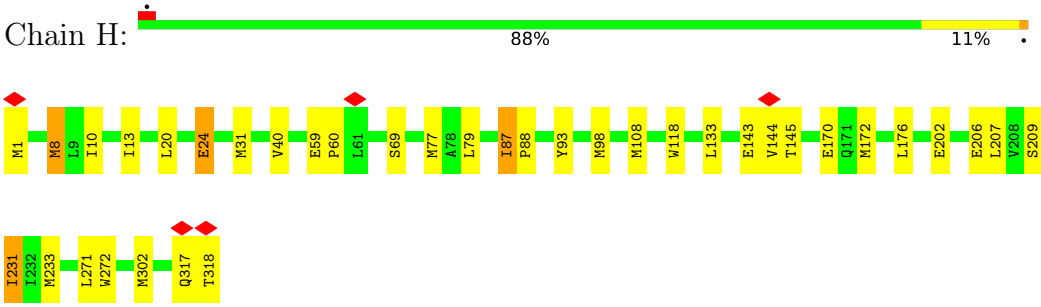
Chain G:



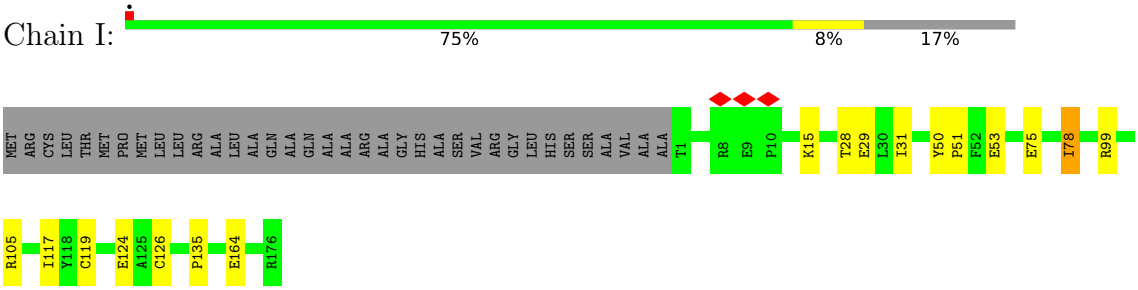




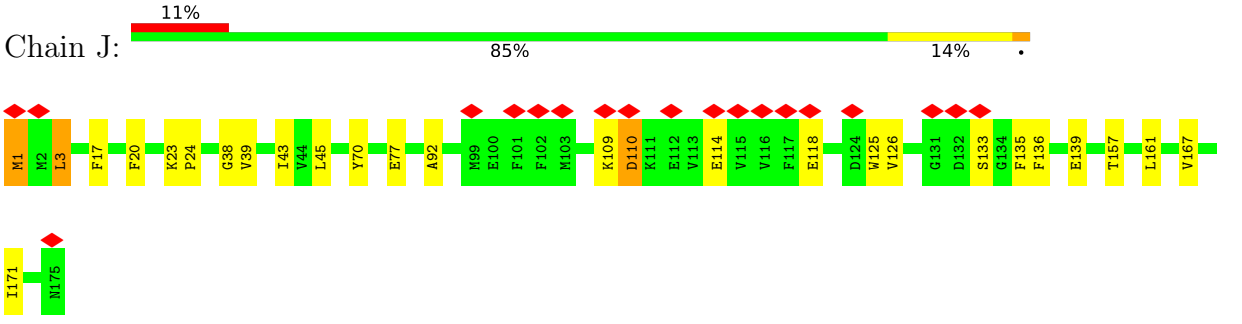
• Molecule 8: NADH-ubiquinone oxidoreductase chain 1



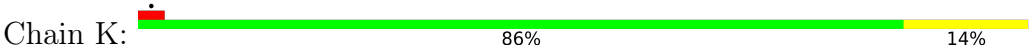
• Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

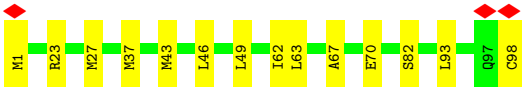


• Molecule 10: NADH-ubiquinone oxidoreductase chain 6



• Molecule 11: NADH-ubiquinone oxidoreductase chain 4L

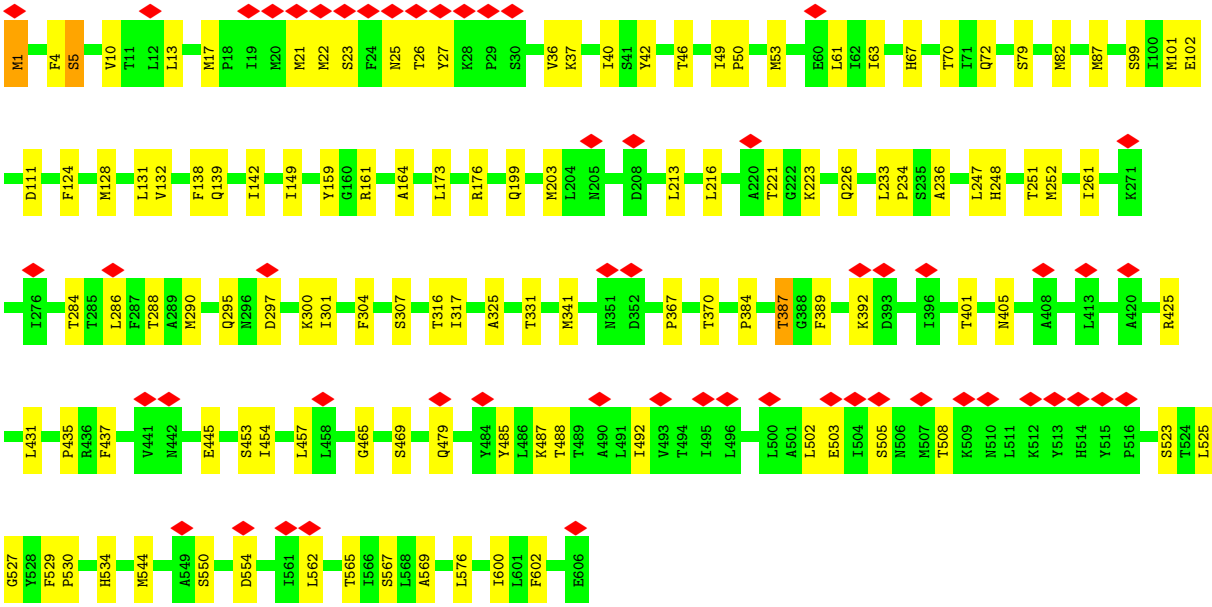




• Molecule 12: NADH-ubiquinone oxidoreductase chain 5

Chain L:

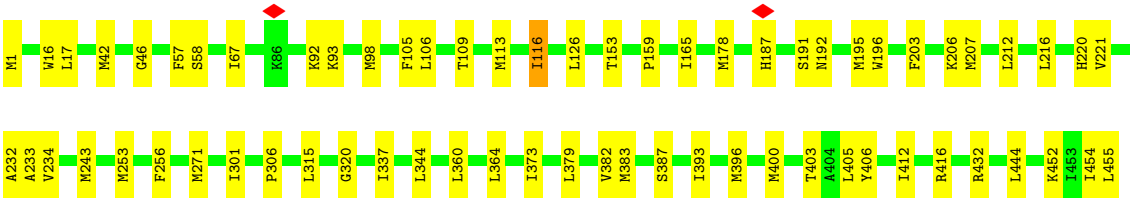




• Molecule 13: NADH-ubiquinone oxidoreductase chain 4

Chain M:

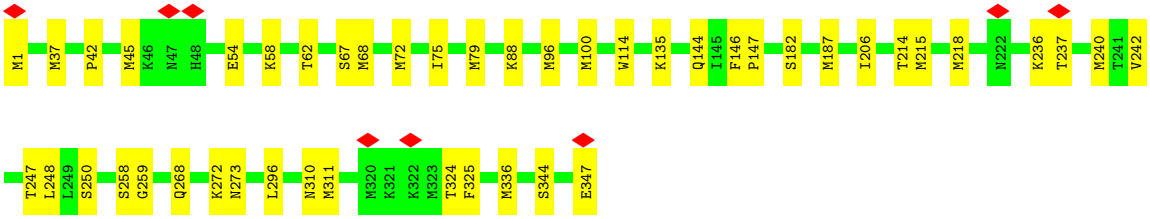




• Molecule 14: NADH-ubiquinone oxidoreductase chain 2

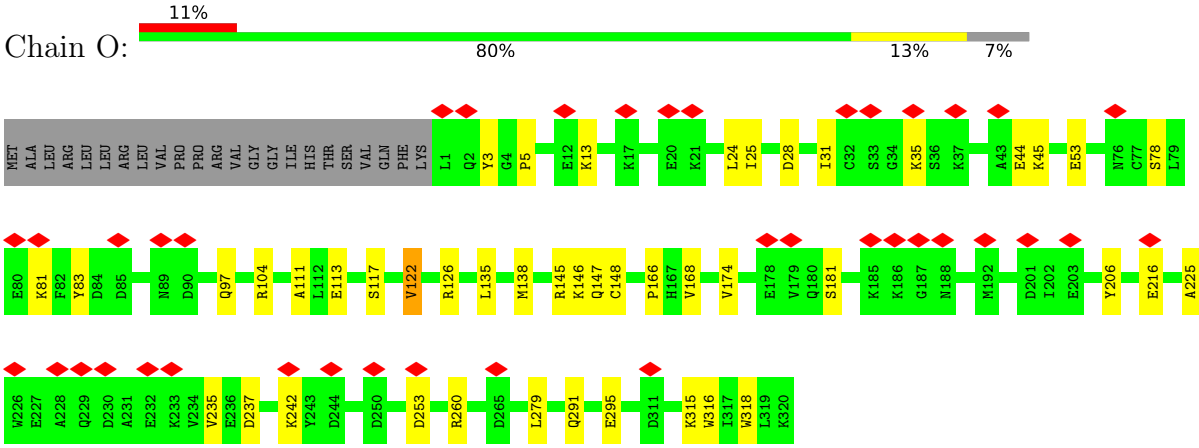
Chain N:





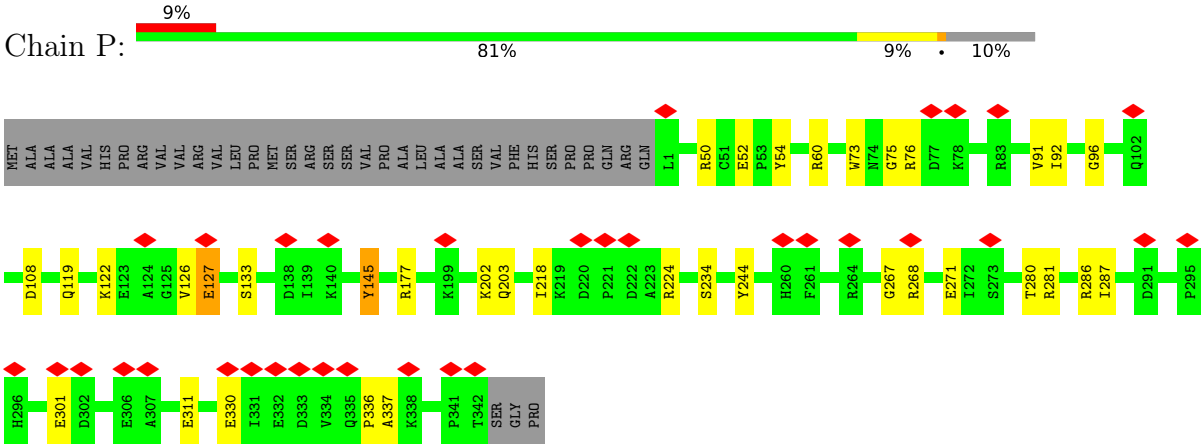
• Molecule 15: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

Chain O:



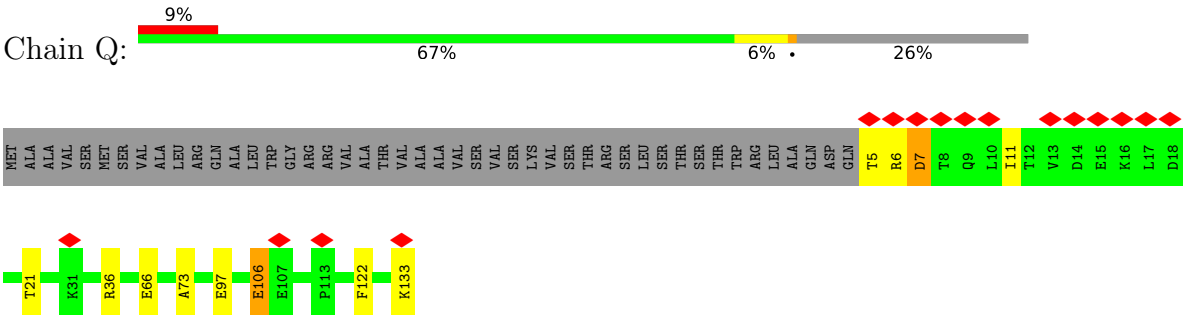
• Molecule 16: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

Chain P:



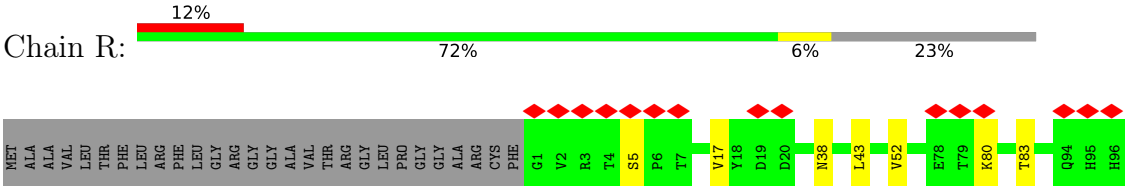
• Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain Q:



• Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

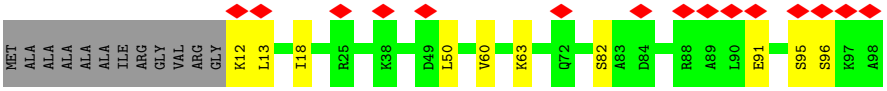
Chain R:



• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

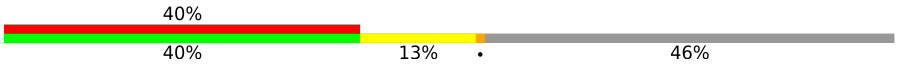
Chain S:



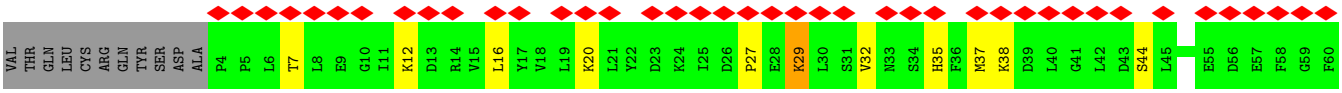


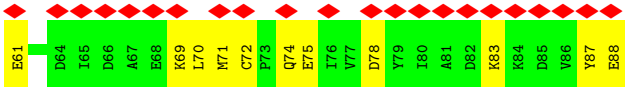
• Molecule 20: Acyl carrier protein, mitochondrial

Chain T:



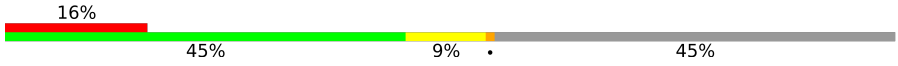




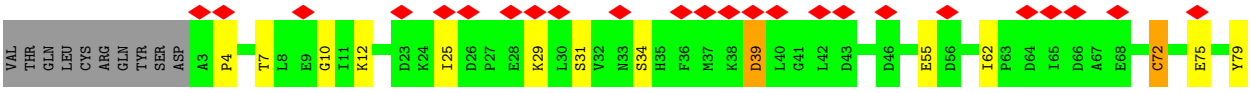


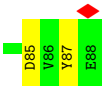
• Molecule 20: Acyl carrier protein, mitochondrial

Chain U:





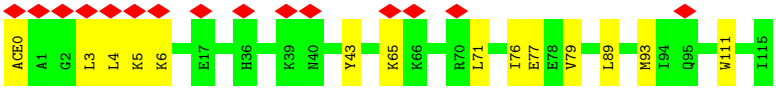




• Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5

Chain V:



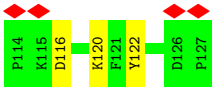


• Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

Chain W:



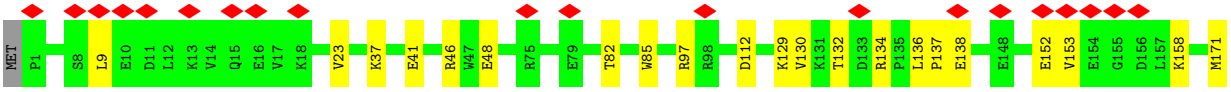




• Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8

Chain X:

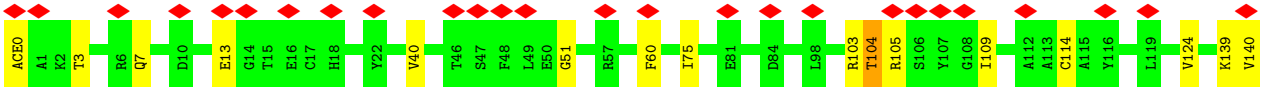




• Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11

Chain Y:

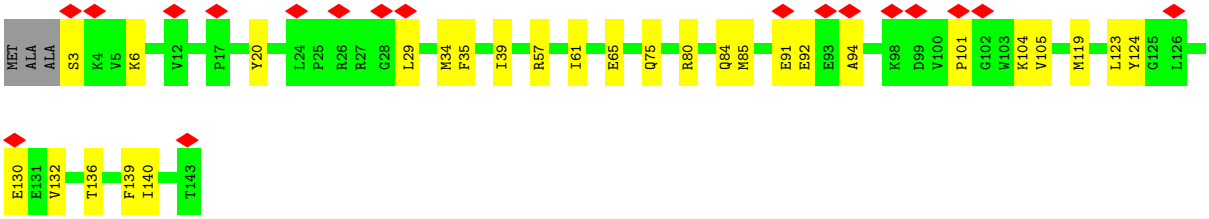




• Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13

Chain Z:





• Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

Chain a:

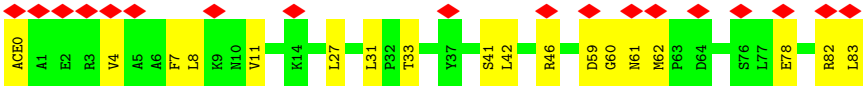




• Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

Chain b:

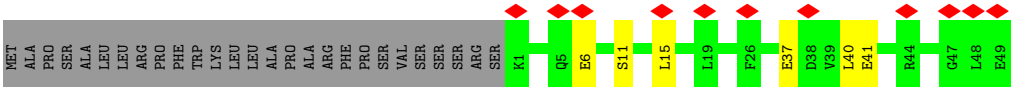




• Molecule 28: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

Chain c:

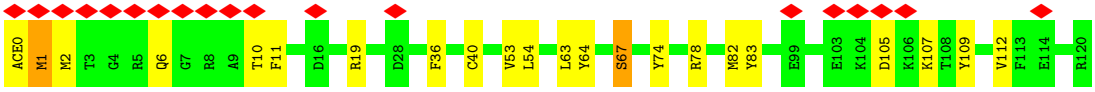




• Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C2

Chain d:

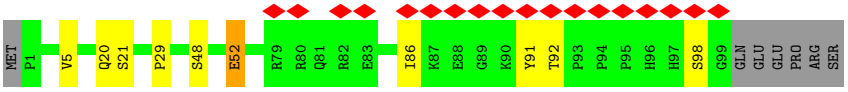




• Molecule 30: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

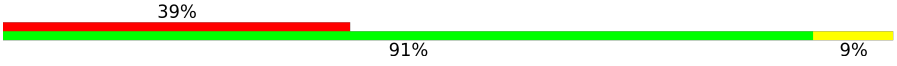
Chain e:

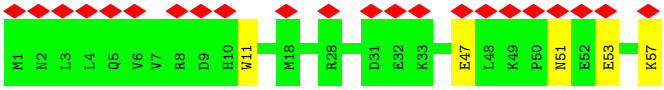




• Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

Chain f:

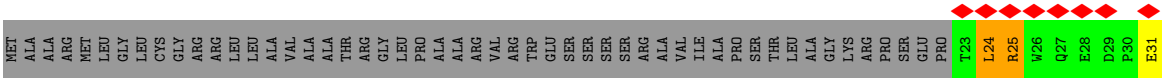


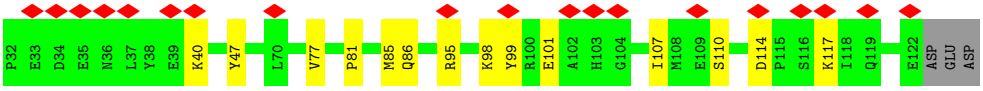


• Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

Chain g:



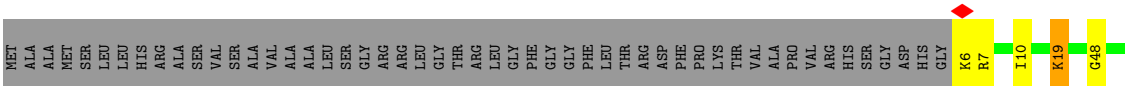


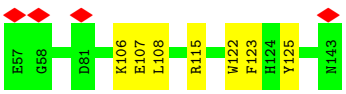


• Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

Chain h:

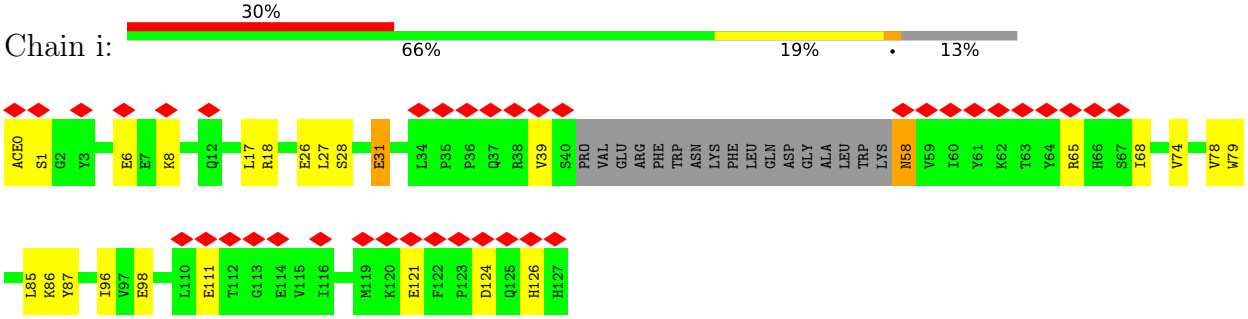






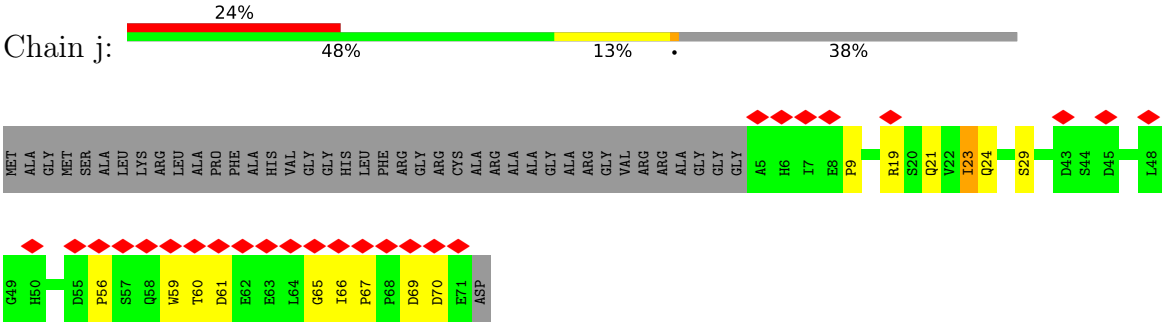
• Molecule 34: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain i:



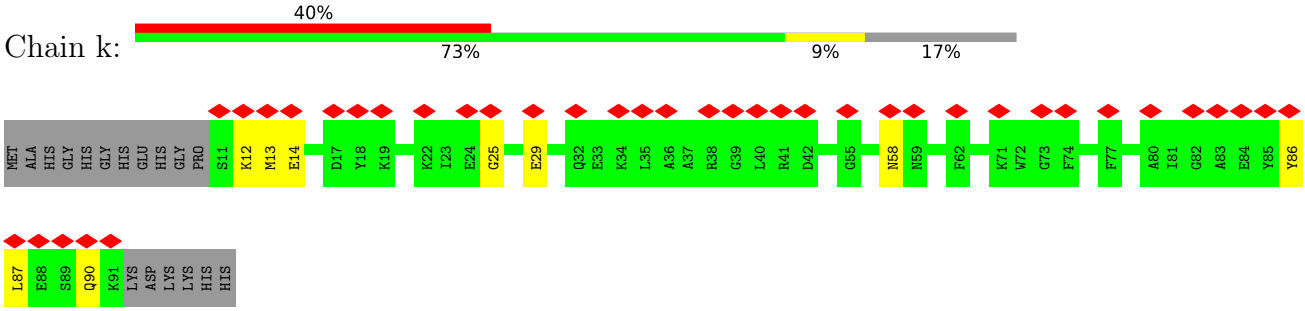
• Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain j:



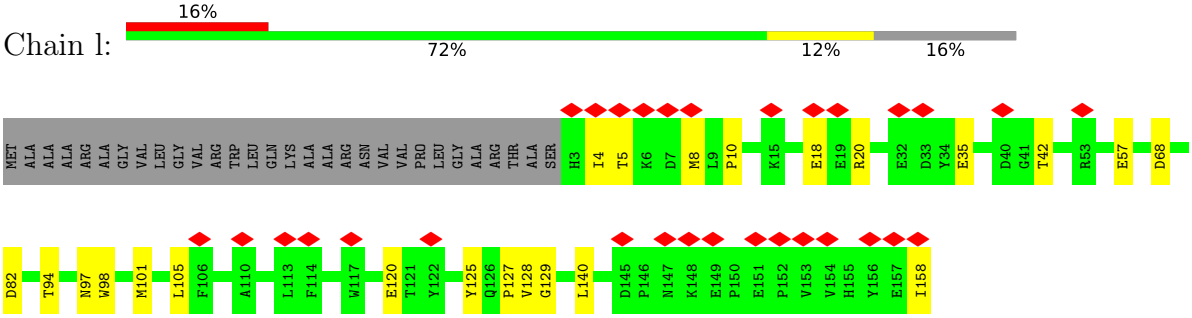
• Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

Chain k:



• Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial

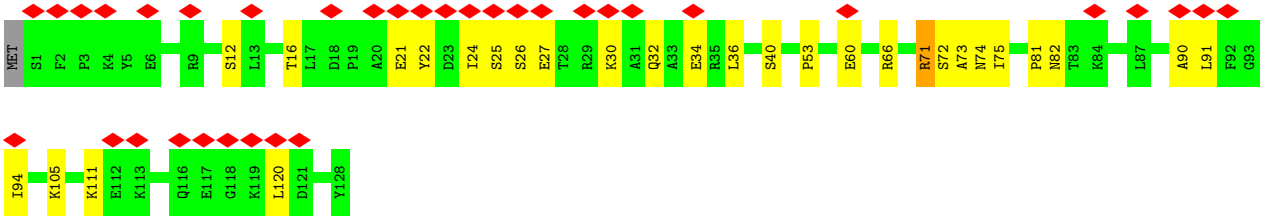
Chain l:



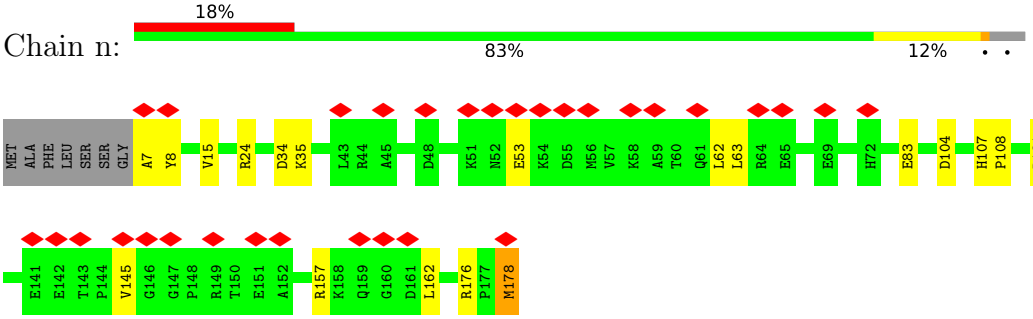
• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

Chain m:

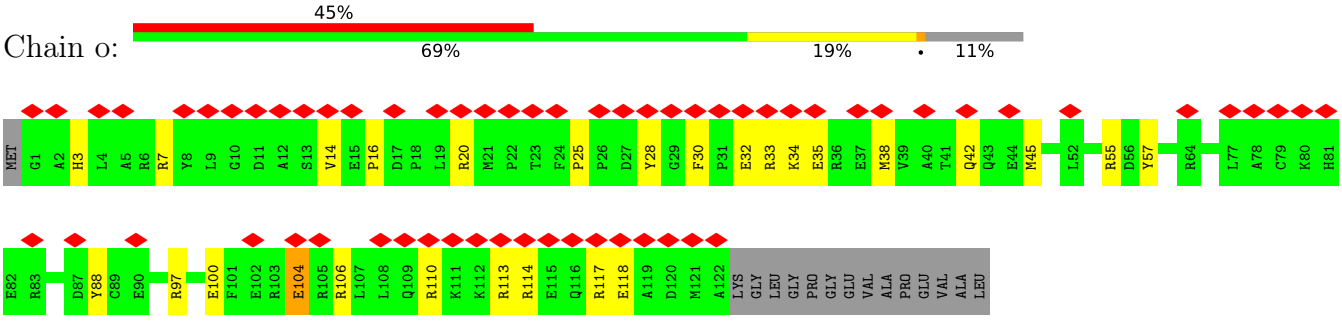




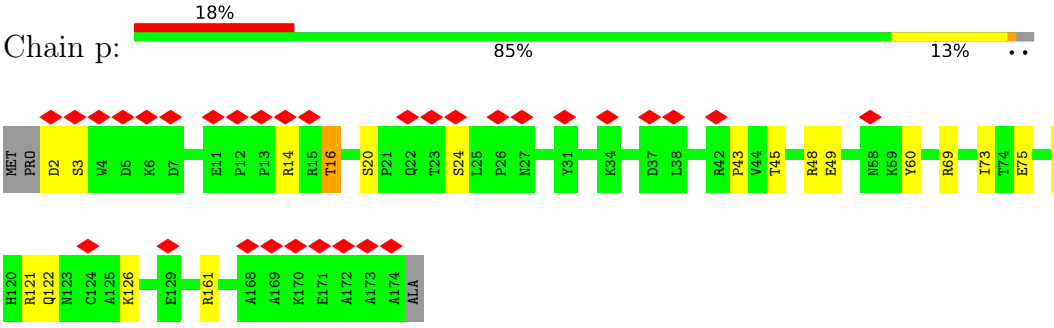
• Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9



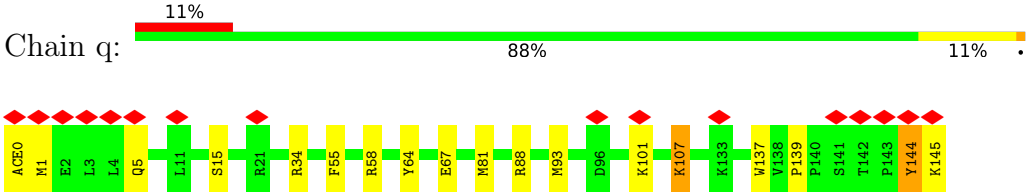
• Molecule 40: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7



• Molecule 41: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

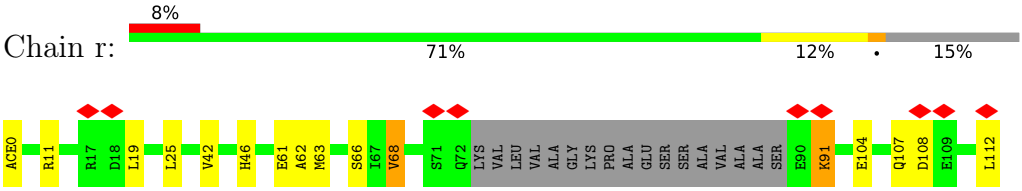


• Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12



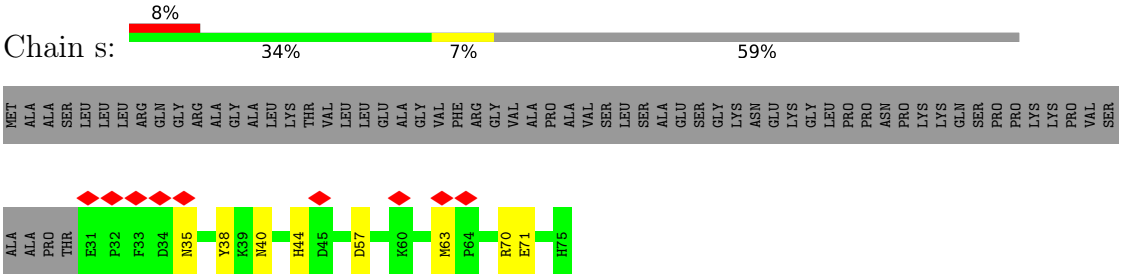
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain r:



• Molecule 44: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

Chain s:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	249146	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; Global and local CTF parameters were refined both in cycles in RELION then during refinement cycles in the final homogeneous refinement in cryoSPARC.	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40.50	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	2300	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	41.294	Depositor
Minimum map value	-17.273	Depositor
Average map value	0.237	Depositor
Map value standard deviation	1.902	Depositor
Recommended contour level	9.7	Depositor
Map size (Å)	195.2, 243.2, 353.6	wwPDB
Map dimensions	442, 304, 244	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8, 0.8, 0.8	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LMT, FMN, SF4, MG, DGT, WYK, 3PE, PC1, CDL, K, EHZ, FME, ZN, NDP, FES, MYR, ACE, 2MR

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	0.30	0/936	0.35	0/1281
2	B	0.36	0/1260	0.42	0/1703
3	C	0.33	0/1789	0.39	0/2436
4	D	0.33	0/3537	0.37	0/4794
5	E	0.35	0/1699	0.35	0/2312
6	F	0.34	0/3412	0.34	0/4610
7	G	0.34	0/5457	0.38	0/7397
8	H	0.31	0/2571	0.41	0/3513
9	I	0.34	0/1445	0.40	0/1956
10	J	0.29	0/1370	0.38	0/1859
11	K	0.30	0/745	0.37	0/1008
12	L	0.33	0/4920	0.35	0/6694
13	M	0.32	0/3779	0.37	0/5152
14	N	0.32	0/2792	0.38	0/3800
15	O	0.33	0/2651	0.33	0/3587
16	P	0.32	0/2831	0.35	0/3841
17	Q	0.34	0/1072	0.36	0/1449
18	R	0.32	0/753	0.35	0/1014
19	S	0.34	0/711	0.32	0/956
20	T	0.28	0/700	0.43	0/944
20	U	0.34	0/705	0.30	0/952
21	V	0.36	1/949 (0.1%)	0.32	0/1286
22	W	0.31	0/1000	0.31	0/1344
23	X	0.34	0/1439	0.35	0/1942
24	Y	0.35	1/1048 (0.1%)	0.29	0/1423
25	Z	0.33	0/1181	0.33	0/1592
26	a	0.33	0/584	0.35	0/786
27	b	0.39	1/673 (0.1%)	0.37	0/925
28	c	0.29	0/427	0.28	0/579
29	d	0.39	1/1027 (0.1%)	0.36	0/1387
30	e	0.30	0/850	0.37	0/1136

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
31	f	0.29	0/505	0.35	0/681
32	g	0.31	0/865	0.38	0/1175
33	h	0.35	0/1188	0.33	0/1607
34	i	0.39	1/974 (0.1%)	0.35	0/1325
35	j	0.33	0/607	0.30	0/833
36	k	0.28	0/672	0.34	0/906
37	l	0.33	0/1369	0.30	0/1873
38	m	0.32	0/1094	0.31	0/1480
39	n	0.36	0/1545	0.27	0/2092
40	o	0.30	0/1073	0.33	0/1437
41	p	0.33	0/1486	0.32	0/2004
42	q	0.36	1/1251 (0.1%)	0.38	0/1700
43	r	0.39	1/795 (0.1%)	0.38	0/1077
44	s	0.33	0/403	0.33	0/545
All	All	0.33	7/68140 (0.0%)	0.36	0/92393

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
29	d	0	ACE	C-N	6.39	1.46	1.33
21	V	0	ACE	C-N	6.14	1.45	1.33
27	b	0	ACE	C-N	6.06	1.45	1.33
34	i	0	ACE	C-N	6.00	1.45	1.33
42	q	0	ACE	C-N	5.95	1.45	1.33
43	r	0	ACE	C-N	5.88	1.45	1.33
24	Y	0	ACE	C-N	5.75	1.44	1.33

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	921	0	952	18	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1242	0	1238	20	0
3	C	1738	0	1685	13	0
4	D	3459	0	3404	34	0
5	E	1659	0	1664	23	0
6	F	3336	0	3288	40	0
7	G	5366	0	5378	64	0
8	H	2509	0	2621	32	0
9	I	1414	0	1370	12	0
10	J	1345	0	1352	22	0
11	K	745	0	785	14	0
12	L	4802	0	4960	72	0
13	M	3694	0	3891	50	0
14	N	2733	0	2912	36	0
15	O	2589	0	2565	26	0
16	P	2754	0	2773	20	0
17	Q	1049	0	1045	8	0
18	R	740	0	714	6	0
19	S	700	0	719	5	0
20	T	688	0	684	13	0
20	U	693	0	688	10	0
21	V	931	0	973	9	0
22	W	976	0	991	12	0
23	X	1402	0	1377	16	0
24	Y	1030	0	1039	7	0
25	Z	1152	0	1151	20	0
26	a	569	0	568	8	0
27	b	654	0	663	7	0
28	c	414	0	415	1	0
29	d	999	0	988	19	0
30	e	829	0	829	6	0
31	f	492	0	501	3	0
32	g	839	0	790	13	0
33	h	1154	0	1168	13	0
34	i	945	0	960	21	0
35	j	580	0	519	9	0
36	k	653	0	639	5	0
37	l	1314	0	1210	19	0
38	m	1067	0	1067	18	0
39	n	1492	0	1438	14	0
40	o	1048	0	1014	21	0
41	p	1453	0	1425	19	0
42	q	1212	0	1183	13	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
43	r	776	0	782	9	0
44	s	391	0	361	7	0
45	A	68	0	84	7	0
45	B	41	0	56	1	0
45	M	39	0	55	3	0
45	P	54	0	88	3	0
45	Y	42	0	58	3	0
45	Z	48	0	73	12	0
45	d	33	0	40	1	0
45	m	40	0	54	1	0
46	A	84	0	119	2	0
46	H	29	0	32	0	0
46	I	73	0	94	3	0
46	L	135	0	201	6	0
46	M	96	0	146	10	0
46	Y	75	0	101	0	0
46	d	85	0	121	14	0
46	m	40	0	57	3	0
47	B	8	0	0	1	0
47	F	8	0	0	1	0
47	G	16	0	0	0	0
47	I	16	0	0	1	0
48	E	4	0	0	0	0
48	G	4	0	0	1	0
49	F	31	0	19	0	0
50	G	1	0	0	0	0
51	H	50	0	44	3	0
51	K	69	0	82	4	0
51	L	60	0	64	2	0
51	N	60	0	64	2	0
51	X	73	0	93	3	0
51	d	65	0	77	9	0
51	h	78	0	100	6	0
51	r	62	0	68	2	0
52	L	105	0	138	7	0
52	M	70	0	92	5	0
52	Y	35	0	46	1	0
52	b	35	0	46	1	0
52	p	35	0	46	2	0
53	O	1	0	0	0	0
54	O	31	0	12	3	0
55	P	48	0	26	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
56	R	1	0	0	0	0
57	T	37	0	0	0	0
57	U	37	0	0	0	0
58	o	15	0	27	0	0
59	A	73	0	0	10	0
59	B	81	0	0	3	0
59	C	98	0	0	1	0
59	D	205	0	0	11	0
59	E	15	0	0	3	0
59	F	35	0	0	3	0
59	G	149	0	0	4	0
59	H	169	0	0	7	0
59	I	94	0	0	2	0
59	J	53	0	0	1	0
59	K	48	0	0	2	0
59	L	101	0	0	9	0
59	M	122	0	0	6	0
59	N	97	0	0	5	0
59	O	16	0	0	1	0
59	P	80	0	0	1	0
59	Q	61	0	0	0	0
59	R	20	0	0	0	0
59	S	1	0	0	0	0
59	T	2	0	0	0	0
59	U	2	0	0	0	0
59	V	3	0	0	0	0
59	W	17	0	0	0	0
59	X	32	0	0	1	0
59	Y	2	0	0	0	0
59	Z	34	0	0	1	0
59	a	33	0	0	1	0
59	b	10	0	0	0	0
59	d	15	0	0	0	0
59	e	20	0	0	2	0
59	f	4	0	0	0	0
59	g	9	0	0	1	0
59	h	21	0	0	1	0
59	i	1	0	0	0	0
59	j	1	0	0	0	0
59	k	1	0	0	0	0
59	l	12	0	0	1	0
59	m	11	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
59	n	18	0	0	0	0
59	p	23	0	0	2	0
59	q	33	0	0	0	0
59	r	24	0	0	0	0
59	s	4	0	0	0	0
All	All	70435	0	69162	754	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (754) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:176:ARG:NH1	59:L:801:HOH:O	2.11	0.84
11:K:37:MET:HE1	11:K:63:LEU:HG	1.61	0.81
12:L:10:VAL:HG21	34:i:78:VAL:HG22	1.62	0.80
46:A:202:3PE:H32	46:A:202:3PE:H111	1.65	0.79
6:F:431:GLN:OE1	6:F:435:GLN:NE2	2.18	0.77
5:E:150:ASN:HB3	5:E:162:GLU:HB3	1.67	0.75
2:B:69:MET:HE3	2:B:74:VAL:HG12	1.68	0.75
7:G:703:ILE:HG21	18:R:83:THR:HB	1.67	0.75
4:D:269:LEU:HB2	4:D:368:GLU:HB2	1.67	0.74
1:A:68:GLU:OE2	59:A:301:HOH:O	2.05	0.74
6:F:98:ASP:OD1	59:F:601:HOH:O	2.05	0.74
5:E:114:ASP:OD2	59:E:401:HOH:O	2.04	0.74
42:q:144:TYR:HD1	42:q:144:TYR:H	1.32	0.74
22:W:60:ASP:OD1	22:W:63:ARG:NH2	2.21	0.73
1:A:42:ASP:OD2	59:A:302:HOH:O	2.07	0.73
37:l:57:GLU:OE2	38:m:12:SER:OG	2.06	0.73
23:X:138:GLU:OE2	23:X:138:GLU:N	2.14	0.72
7:G:283:MET:HE1	42:q:139:PRO:HG3	1.69	0.72
7:G:703:ILE:O	59:G:901:HOH:O	2.08	0.72
32:g:101:GLU:HG3	32:g:107:ILE:HD11	1.72	0.72
1:A:66:ASP:OD1	59:A:303:HOH:O	2.08	0.72
46:M:602:3PE:H332	14:N:242:VAL:HG11	1.72	0.72
7:G:403:ASP:OD1	44:s:70:ARG:NH2	2.23	0.71
14:N:236:LYS:HD3	14:N:237:THR:HG23	1.71	0.71
36:k:14:GLU:OE2	36:k:14:GLU:N	2.17	0.71
20:T:72:CYS:HB2	20:T:75:GLU:HG3	1.72	0.71
16:P:330:GLU:OE2	22:W:47:HIS:ND1	2.21	0.70
2:B:77:WYK:NH2	59:B:304:HOH:O	2.25	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:13:LEU:HD21	52:L:704:LMT:H121	1.74	0.69
46:M:602:3PE:H331	46:d:201:3PE:H2A2	1.73	0.69
5:E:109:MET:O	59:E:401:HOH:O	2.10	0.69
7:G:595:GLU:HB3	7:G:598:LYS:HG3	1.72	0.69
33:h:107:GLU:OE2	59:h:301:HOH:O	2.11	0.69
6:F:194:GLU:OE1	6:F:204:ARG:NH1	2.24	0.69
46:A:204:3PE:N	59:A:311:HOH:O	2.25	0.68
10:J:167:VAL:HG22	14:N:42:PRO:HG3	1.75	0.68
8:H:202:GLU:OE1	59:H:701:HOH:O	2.11	0.68
40:o:28:TYR:OH	40:o:110:ARG:NH1	2.27	0.68
35:j:69:ASP:OD2	40:o:113:ARG:NH1	2.27	0.68
4:D:328:ALA:HB3	7:G:126:ASP:HB2	1.76	0.67
51:H:602:CDL:OB3	59:H:702:HOH:O	2.11	0.67
6:F:71:ALA:O	59:F:602:HOH:O	2.12	0.67
4:D:160:ASP:OD1	59:D:501:HOH:O	2.12	0.67
31:f:53:GLU:OE2	31:f:53:GLU:N	2.18	0.67
51:K:101:CDL:H712	24:Y:51:GLY:HA3	1.75	0.67
34:i:6:GLU:OE2	39:n:157:ARG:NH1	2.26	0.67
6:F:436:GLN:N	6:F:436:GLN:OE1	2.28	0.67
12:L:341:MET:HE3	12:L:454:ILE:HG12	1.77	0.66
13:M:220[A]:HIS:HE1	13:M:232:ALA:HB2	1.59	0.66
12:L:25:ASN:O	12:L:27:TYR:N	2.29	0.66
8:H:318:THR:OG1	59:H:703:HOH:O	2.15	0.65
32:g:25:ARG:O	32:g:25:ARG:NE	2.28	0.65
1:A:68:GLU:HG3	1:A:98:LEU:HD13	1.78	0.65
14:N:215:MET:HE2	14:N:247:THR:HB	1.79	0.65
5:E:10:ARG:NH1	7:G:138:GLU:OE2	2.27	0.65
9:I:124:GLU:OE2	59:I:301:HOH:O	2.15	0.65
17:Q:36:ARG:NH1	17:Q:106:GLU:OE1	2.29	0.65
30:e:20:GLN:NE2	59:e:202:HOH:O	2.28	0.65
21:V:71:LEU:HD13	21:V:79:VAL:HG11	1.78	0.65
7:G:640:ASN:OD1	7:G:641:TYR:N	2.28	0.65
11:K:37:MET:HE2	11:K:67:ALA:HB2	1.77	0.65
4:D:188:ARG:NH1	59:D:509:HOH:O	2.29	0.64
9:I:28:THR:HG22	46:I:204:3PE:H221	1.80	0.64
8:H:144:VAL:HG13	8:H:145:THR:HG23	1.78	0.64
13:M:57:PHE:HB3	13:M:113:MET:HE3	1.78	0.64
11:K:93:LEU:HB3	14:N:54:GLU:HG3	1.79	0.64
12:L:370:THR:HG23	12:L:431:LEU:HD13	1.78	0.64
6:F:355:LYS:HD3	6:F:356[A]:HIS:HD2	1.62	0.64
14:N:310:ASN:ND2	59:N:506:HOH:O	2.31	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:137:ASP:OD1	59:B:301:HOH:O	2.15	0.64
2:B:67:TYR:CE1	2:B:154:GLU:HG3	2.33	0.64
8:H:87:ILE:HG12	8:H:88:PRO:HD3	1.80	0.64
12:L:290:MET:HE3	12:L:523:SER:HA	1.80	0.64
40:o:25:PRO:HG2	40:o:28:TYR:HB2	1.80	0.64
40:o:55:ARG:HH22	41:p:119:SER:HB3	1.63	0.63
15:O:13:LYS:HB3	15:O:253:ASP:OD1	1.98	0.63
25:Z:75:GLN:NE2	59:Z:302:HOH:O	2.31	0.63
37:l:129:GLY:O	40:o:97:ARG:NH1	2.32	0.63
15:O:53:GLU:OE2	15:O:126:ARG:NH1	2.29	0.63
5:E:179:GLY:O	5:E:180:LYS:HG2	1.98	0.63
9:I:75:GLU:OE2	59:I:302:HOH:O	2.15	0.63
12:L:295:GLN:O	12:L:425:ARG:NH2	2.29	0.63
16:P:271:GLU:HG2	16:P:280:THR:HG22	1.80	0.63
15:O:291:GLN:NE2	15:O:295:GLU:OE2	2.31	0.63
52:L:705:LMT:H6D	52:L:705:LMT:H2B	1.80	0.63
14:N:272:LYS:HG2	33:h:108:LEU:HD21	1.81	0.63
3:C:31:GLU:OE2	43:r:91:LYS:NZ	2.32	0.62
8:H:24:GLU:HA	8:H:271:LEU:HD13	1.81	0.62
12:L:40:ILE:HG13	12:L:101:MET:SD	2.39	0.62
34:i:85:LEU:HD22	34:i:96:ILE:HD11	1.81	0.62
10:J:70:TYR:HB3	11:K:27:MET:HE1	1.80	0.62
6:F:157:TYR:OH	6:F:174:ASP:OD1	2.16	0.62
6:F:164:LYS:HE2	44:s:63:MET:HE1	1.82	0.62
13:M:46:GLY:HA3	32:g:85:MET:HG2	1.82	0.62
52:L:704:LMT:H6'1	34:i:65:ARG:HG3	1.82	0.61
13:M:416:ARG:NH2	59:M:707:HOH:O	2.31	0.61
15:O:111:ALA:HB1	15:O:122:VAL:HG21	1.82	0.61
13:M:452:LYS:NZ	59:M:709:HOH:O	2.32	0.61
14:N:54:GLU:OE2	14:N:58:LYS:NZ	2.30	0.61
6:F:327:THR:OG1	6:F:328:GLY:N	2.34	0.61
11:K:37:MET:SD	14:N:68:MET:HE1	2.41	0.61
12:L:576:LEU:HD23	46:L:707:3PE:H2H2	1.82	0.61
9:I:53:GLU:OE2	42:q:34:ARG:NH2	2.34	0.61
12:L:199:GLN:HB2	41:p:110:LYS:HG2	1.83	0.60
19:S:18:ILE:HD12	19:S:50:LEU:HD21	1.82	0.60
4:D:160:ASP:OD2	59:D:502:HOH:O	2.16	0.60
25:Z:140:ILE:HA	45:Z:200:PC1:H153	1.83	0.60
13:M:256:PHE:HB3	52:M:604:LMT:H5'	1.83	0.60
38:m:21:GLU:OE2	39:n:7:ALA:N	2.34	0.60
40:o:16:PRO:HB3	40:o:104:GLU:HG2	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:159:TYR:HB2	13:M:416:ARG:HG2	1.82	0.60
17:Q:5:THR:OG1	17:Q:6:ARG:N	2.20	0.60
24:Y:140:VAL:O	33:h:115:ARG:NH1	2.35	0.60
45:A:201:PC1:O14	59:A:305:HOH:O	2.17	0.59
25:Z:92:GLU:OE1	30:e:91:TYR:OH	2.20	0.59
34:i:74:VAL:O	34:i:78:VAL:HG23	2.01	0.59
2:B:178:ARG:HG3	2:B:178:ARG:HH11	1.67	0.59
2:B:173:LEU:HD22	45:P:401:PC1:H232	1.84	0.59
24:Y:124:VAL:HA	52:Y:204:LMT:H81	1.83	0.59
32:g:95:ARG:HG2	32:g:95:ARG:HH11	1.67	0.59
43:r:11:ARG:HG3	43:r:19:LEU:HD12	1.82	0.59
17:Q:11:ILE:HD13	22:W:18:PRO:HB3	1.84	0.59
20:U:87:TYR:OH	34:i:26:GLU:OE2	2.17	0.59
13:M:337:ILE:HD12	13:M:344:LEU:HD23	1.84	0.59
13:M:416:ARG:NH2	59:M:713:HOH:O	2.35	0.58
41:p:45:THR:O	41:p:49:GLU:HG2	2.03	0.58
5:E:134:ASP:OD1	5:E:136:LEU:HB2	2.03	0.58
7:G:486:ASP:OD1	7:G:486:ASP:N	2.25	0.58
12:L:236:ALA:O	59:L:802:HOH:O	2.17	0.58
14:N:144:GLN:O	59:N:501:HOH:O	2.17	0.58
8:H:60:PRO:O	59:H:704:HOH:O	2.17	0.58
13:M:216:LEU:HG	13:M:220[A]:HIS:HD2	1.68	0.58
29:d:63:LEU:O	29:d:67:SER:OG	2.21	0.58
26:a:7:PRO:HD3	51:r:201:CDL:H191	1.85	0.58
52:M:605:LMT:H71	45:Y:201:PC1:H261	1.85	0.58
13:M:306:PRO:HA	13:M:458:LEU:HD22	1.86	0.58
14:N:250:SER:O	14:N:259:GLY:HA3	2.04	0.58
3:C:200:ASN:ND2	59:C:305:HOH:O	2.37	0.58
26:a:25:ARG:HE	26:a:28:ARG:HH22	1.52	0.58
8:H:77:MET:HE1	8:H:118:TRP:CE3	2.39	0.57
16:P:91:VAL:HG23	16:P:126:VAL:HG11	1.85	0.57
8:H:143:GLU:O	59:H:705:HOH:O	2.18	0.57
13:M:220[A]:HIS:CE1	13:M:232:ALA:HB2	2.39	0.57
46:M:602:3PE:H321	46:d:201:3PE:H341	1.86	0.57
15:O:145:ARG:NH1	15:O:147:GLN:OE1	2.37	0.57
45:A:201:PC1:H362	51:H:602:CDL:H352	1.86	0.57
46:L:703:3PE:N	59:L:813:HOH:O	2.33	0.57
32:g:81:PRO:O	59:g:201:HOH:O	2.17	0.57
1:A:50:PRO:O	59:A:304:HOH:O	2.16	0.57
5:E:172:ILE:HG23	5:E:182:PRO:HG3	1.85	0.57
12:L:82:MET:HB3	12:L:87:MET:HE3	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:311:GLU:HG2	16:P:336:PRO:HB3	1.86	0.57
5:E:82:GLU:OE2	59:E:402:HOH:O	2.17	0.57
14:N:218:MET:HG2	14:N:240:MET:SD	2.45	0.57
7:G:297:GLU:HG3	22:W:122:TYR:CZ	2.40	0.56
14:N:324:THR:HB	51:N:401:CDL:H331	1.88	0.56
27:b:59:ASP:OD1	27:b:60:GLY:N	2.37	0.56
11:K:82:SER:OG	59:K:201:HOH:O	2.06	0.56
13:M:126:LEU:HD21	13:M:153:THR:HG21	1.88	0.56
15:O:24:LEU:HD22	15:O:166:PRO:HB3	1.87	0.56
7:G:640:ASN:CG	7:G:641:TYR:H	2.13	0.56
8:H:145:THR:OG1	59:H:706:HOH:O	2.18	0.56
29:d:54:LEU:H	46:d:201:3PE:HN1	1.54	0.56
6:F:378:ARG:NH2	6:F:388:GLU:OE1	2.33	0.55
7:G:283:MET:HB2	7:G:560:ILE:HB	1.88	0.55
12:L:465:GLY:O	12:L:469:SER:OG	2.18	0.55
4:D:117:ALA:HB2	4:D:367:ILE:HG12	1.88	0.55
33:h:48:GLY:O	41:p:60:TYR:OH	2.22	0.55
2:B:91:THR:HA	2:B:119:CYS:HB3	1.89	0.55
4:D:159:LEU:HD12	4:D:164:MET:HA	1.88	0.55
21:V:5:LYS:NZ	21:V:77:GLU:OE1	2.40	0.55
12:L:203:MET:HG2	41:p:109:LEU:HD11	1.89	0.55
13:M:406:TYR:OH	59:M:701:HOH:O	2.16	0.55
25:Z:124:TYR:HB3	25:Z:132:VAL:HG22	1.89	0.55
4:D:73:VAL:HG21	4:D:414:VAL:HG21	1.88	0.55
15:O:216:GLU:N	15:O:216:GLU:OE1	2.40	0.55
15:O:28:ASP:OD1	15:O:206:TYR:OH	2.24	0.55
4:D:411:LEU:HG	59:D:680:HOH:O	2.06	0.55
39:n:131:SER:OG	39:n:135:GLU:OE2	2.24	0.55
4:D:74:ARG:NH1	59:D:508:HOH:O	2.27	0.54
10:J:114:GLU:OE2	10:J:114:GLU:HA	2.06	0.54
40:o:114:ARG:NH1	40:o:114:ARG:O	2.41	0.54
10:J:171:ILE:HG23	14:N:45:MET:HE2	1.89	0.54
1:A:68:GLU:HG2	10:J:161:LEU:HD13	1.89	0.54
7:G:147:LYS:HB2	7:G:211:LYS:HG2	1.90	0.54
7:G:667:THR:HG22	7:G:669:LYS:H	1.72	0.54
13:M:187:HIS:O	13:M:192:ASN:ND2	2.32	0.54
15:O:318:TRP:H	15:O:318:TRP:CD1	2.24	0.54
29:d:67:SER:HB3	51:d:204:CDL:H772	1.89	0.54
32:g:114:ASP:HB3	32:g:117:LYS:HE2	1.90	0.54
39:n:83:GLU:OE2	39:n:176:ARG:NH1	2.39	0.53
10:J:43:ILE:HG22	11:K:46:LEU:HD21	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:R:5:SER:HB3	18:R:17:VAL:HG21	1.91	0.53
41:p:80:ASP:O	41:p:84:MET:HG3	2.08	0.53
7:G:349:PHE:H	7:G:509:PRO:HB2	1.71	0.53
12:L:567:SER:OG	52:L:705:LMT:O6'	2.25	0.53
14:N:325:PHE:HE1	51:d:204:CDL:HB61	1.73	0.53
39:n:15:VAL:HG22	39:n:63:LEU:HD13	1.90	0.53
40:o:30:PHE:HB3	40:o:33:ARG:HG3	1.91	0.53
13:M:159:PRO:HB3	46:M:601:3PE:H2B1	1.90	0.53
29:d:1:MET:HA	33:h:123:PHE:H	1.73	0.53
32:g:95:ARG:HG2	32:g:95:ARG:NH1	2.24	0.53
4:D:37:ASP:OD1	59:D:503:HOH:O	2.19	0.53
14:N:206:ILE:HD11	45:d:203:PC1:H362	1.90	0.53
8:H:170:GLU:CD	23:X:97:ARG:HH22	2.15	0.53
12:L:37:LYS:HD2	12:L:102:GLU:HG3	1.91	0.53
20:U:85:ASP:OD1	34:i:18:ARG:NH2	2.40	0.53
1:A:112:GLU:OE1	59:A:306:HOH:O	2.19	0.53
38:m:81:PRO:HB2	46:m:202:3PE:H232	1.91	0.53
12:L:213:LEU:HD23	12:L:216:LEU:HD12	1.90	0.53
12:L:223:LYS:NZ	59:L:815:HOH:O	2.35	0.53
16:P:60:ARG:NE	59:P:503:HOH:O	2.39	0.53
11:K:23:ARG:HG2	51:K:101:CDL:HA62	1.91	0.52
39:n:34:ASP:OD1	39:n:35:LYS:N	2.41	0.52
6:F:204:ARG:HG2	17:Q:122:PHE:CZ	2.45	0.52
7:G:239:VAL:HG23	7:G:253:ARG:HB2	1.91	0.52
23:X:129:LYS:NZ	27:b:62:MET:O	2.42	0.52
5:E:123:LYS:NZ	5:E:174:ASP:OD1	2.33	0.52
7:G:366:THR:O	7:G:367:THR:OG1	2.26	0.52
10:J:139:GLU:HG3	11:K:49:LEU:HD21	1.91	0.52
15:O:35:LYS:NZ	54:O:402:DGT:O1A	2.40	0.52
18:R:80:LYS:NZ	18:R:80:LYS:HB3	2.24	0.52
4:D:1:ALA:HA	32:g:31:GLU:OE1	2.10	0.52
26:a:4:GLU:OE2	59:a:101:HOH:O	2.18	0.52
52:p:201:LMT:O3'	52:p:201:LMT:O2B	2.19	0.52
6:F:142:PHE:HB3	6:F:145:GLU:HB2	1.92	0.52
1:A:3:LEU:HD21	45:Z:200:PC1:H321	1.93	0.51
6:F:91:LYS:HG2	6:F:219:PRO:HB2	1.92	0.51
12:L:505:SER:O	12:L:508:THR:OG1	2.24	0.51
13:M:256:PHE:CB	52:M:604:LMT:H5'	2.40	0.51
35:j:65:GLY:HA3	40:o:30:PHE:CE1	2.45	0.51
41:p:75:GLU:OE2	59:p:301:HOH:O	2.19	0.51
4:D:66:MET:HE1	4:D:411:LEU:HD11	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:m:36:LEU:O	38:m:40:SER:OG	2.22	0.51
10:J:110:ASP:OD1	10:J:110:ASP:N	2.44	0.51
15:O:315:LYS:CD	15:O:316:TRP:H	2.24	0.51
33:h:10:ILE:HG21	39:n:178:MET:HE3	1.92	0.51
20:U:7:THR:HG22	20:U:10:GLY:H	1.76	0.51
38:m:82:ASN:HA	46:m:202:3PE:H11	1.93	0.51
4:D:62:LEU:HB2	4:D:425:PHE:CZ	2.46	0.51
4:D:40:LYS:NZ	59:D:521:HOH:O	2.41	0.51
5:E:163:ASP:HB3	5:E:188:SER:HB3	1.93	0.51
7:G:232:ASP:OD1	59:G:903:HOH:O	2.19	0.51
7:G:324:ASP:CB	7:G:571:ALA:HB1	2.40	0.51
13:M:16:TRP:CZ2	46:d:201:3PE:H271	2.46	0.51
16:P:301:GLU:CD	16:P:301:GLU:H	2.19	0.51
18:R:43:LEU:HD22	42:q:107:LYS:HE2	1.93	0.51
19:S:95:SER:OG	19:S:96:SER:N	2.44	0.51
12:L:331:THR:HB	12:L:387:THR:HG23	1.93	0.50
12:L:367:PRO:HD2	35:j:21:GLN:HE21	1.76	0.50
24:Y:104:THR:HG21	24:Y:109:ILE:HD13	1.93	0.50
38:m:32:GLN:HB3	39:n:8:TYR:CE1	2.46	0.50
14:N:214:THR:HG22	14:N:218:MET:HE2	1.92	0.50
12:L:124:PHE:CE1	12:L:252:MET:HB2	2.46	0.50
51:h:201:CDL:H591	41:p:43:PRO:HB2	1.92	0.50
12:L:341:MET:HE2	12:L:457:LEU:HD12	1.94	0.50
52:L:706:LMT:H2O1	52:L:706:LMT:H3O2	1.54	0.50
19:S:91:GLU:OE2	19:S:91:GLU:HA	2.11	0.50
45:Z:200:PC1:O14	45:Z:200:PC1:H121	2.09	0.50
34:i:58:ASN:N	34:i:58:ASN:OD1	2.45	0.50
2:B:171:LYS:HG2	2:B:174:ARG:CZ	2.40	0.50
15:O:3:TYR:CE2	15:O:260:ARG:HG2	2.47	0.50
25:Z:20:TYR:OH	43:r:108:ASP:OD2	2.25	0.50
38:m:30:LYS:O	38:m:34:GLU:HG2	2.11	0.50
7:G:287:GLU:CD	7:G:287:GLU:H	2.20	0.50
20:T:35:HIS:ND1	20:T:38:LYS:HD2	2.26	0.50
7:G:180:ASP:OD1	7:G:180:ASP:N	2.44	0.50
27:b:42:LEU:O	27:b:46:ARG:HG3	2.12	0.50
7:G:107:ILE:HD12	7:G:704:CYS:HA	1.93	0.50
16:P:244:TYR:HB2	16:P:337:ALA:HB2	1.94	0.50
1:A:38:GLU:OE1	59:A:307:HOH:O	2.20	0.50
4:D:429:ASP:OD2	59:D:504:HOH:O	2.20	0.49
13:M:165:ILE:HG21	14:N:268:GLN:HA	1.93	0.49
38:m:53:PRO:HB3	39:n:128:ARG:HD3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:164:GLU:HG3	42:q:88:ARG:HD3	1.94	0.49
52:L:706:LMT:H111	13:M:212:LEU:HD22	1.94	0.49
20:T:88:GLU:CD	20:T:88:GLU:H	2.20	0.49
6:F:20:ARG:NH1	6:F:269:GLU:O	2.46	0.49
36:k:12:LYS:HE2	36:k:12:LYS:HA	1.93	0.49
41:p:14:ARG:HG2	41:p:14:ARG:HH11	1.77	0.49
6:F:156:ALA:HA	6:F:161:LEU:HD12	1.95	0.49
10:J:23:LYS:HE2	11:K:23:ARG:HG3	1.94	0.49
13:M:203:PHE:O	13:M:207:MET:HG2	2.13	0.49
41:p:69:ARG:NH2	41:p:94:ASP:OD2	2.40	0.49
10:J:133:SER:O	10:J:133:SER:OG	2.22	0.49
29:d:11:PHE:CE2	30:e:5:VAL:HG12	2.47	0.49
29:d:53:VAL:HB	46:d:201:3PE:H121	1.94	0.49
10:J:38:GLY:HA3	45:Z:200:PC1:H2F2	1.93	0.49
37:l:97:ASN:O	37:l:101:MET:HG3	2.13	0.49
7:G:190:MET:HE3	7:G:192:MET:HG3	1.95	0.49
2:B:77:WYK:NH2	2:B:82:GLN:OE1	2.46	0.49
52:M:605:LMT:H6D	45:Y:201:PC1:O12	2.13	0.49
23:X:37:LYS:NZ	23:X:41:GLU:OE2	2.40	0.49
46:d:201:3PE:H11	46:d:201:3PE:H122	1.95	0.49
12:L:284:THR:O	12:L:288:THR:OG1	2.25	0.48
13:M:382:VAL:HG22	13:M:396:MET:HE3	1.95	0.48
14:N:96:MET:O	14:N:100:MET:HG3	2.12	0.48
4:D:259:MET:HE2	59:D:691:HOH:O	2.12	0.48
13:M:233:ALA:HA	13:M:320:GLY:HA2	1.94	0.48
15:O:78:SER:HB3	15:O:81:LYS:HB3	1.94	0.48
15:O:104:ARG:NH1	59:O:502:HOH:O	2.40	0.48
38:m:25:SER:OG	38:m:27:GLU:OE1	2.22	0.48
41:p:60:TYR:HB2	52:p:201:LMT:H5B	1.95	0.48
4:D:20:TYR:O	59:D:505:HOH:O	2.20	0.48
21:V:65:LYS:HE3	21:V:65:LYS:HB3	1.58	0.48
6:F:95:VAL:HG11	6:F:118:LEU:HD11	1.94	0.48
10:J:77:GLU:OE2	59:J:201:HOH:O	2.19	0.48
20:T:74:GLN:NE2	20:T:78:ASP:OD1	2.39	0.48
1:A:80:GLN:HG3	8:H:317:GLN:HG3	1.96	0.48
2:B:90:GLY:HA2	47:B:201:SF4:S2	2.52	0.48
8:H:20:LEU:HD13	26:a:12:MET:HE1	1.94	0.48
23:X:136:LEU:HD12	23:X:137:PRO:HD2	1.95	0.48
38:m:25:SER:OG	38:m:26:SER:N	2.45	0.48
4:D:17:ALA:HB1	11:K:98:CYS:SG	2.54	0.48
8:H:170:GLU:OE2	23:X:97:ARG:NH2	2.30	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
20:U:12:LYS:HE3	20:U:12:LYS:HB3	1.70	0.48
40:o:38:MET:SD	40:o:57:TYR:HA	2.53	0.48
42:q:55:PHE:CD2	43:r:25:LEU:HD13	2.49	0.48
1:A:51:PHE:CD2	8:H:133:LEU:HD13	2.49	0.48
7:G:24:THR:O	7:G:73:VAL:HG22	2.14	0.48
12:L:138:PHE:HD2	46:L:703:3PE:H3I3	1.79	0.48
12:L:221:THR:HG23	12:L:226:GLN:HB2	1.96	0.48
14:N:146:PHE:CD2	14:N:147:PRO:HD3	2.49	0.48
13:M:412:ILE:HA	13:M:416:ARG:HD2	1.95	0.48
14:N:135:LYS:NZ	59:N:508:HOH:O	2.47	0.48
51:X:201:CDL:H371	51:X:201:CDL:H401	1.57	0.48
28:c:41:GLU:HG2	29:d:19:ARG:CZ	2.44	0.48
37:l:68:ASP:OD1	37:l:68:ASP:N	2.46	0.48
38:m:74:ASN:OD1	59:m:301:HOH:O	2.20	0.48
1:A:15:THR:HG23	45:A:201:PC1:H361	1.95	0.47
51:N:401:CDL:OB5	15:O:5:PRO:HG3	2.14	0.47
20:T:69:LYS:O	20:T:71:MET:N	2.47	0.47
34:i:17:LEU:HD11	39:n:162:LEU:HD22	1.96	0.47
17:Q:21:THR:HG21	22:W:72:ILE:HD11	1.96	0.47
42:q:55:PHE:CZ	42:q:58:ARG:HG3	2.49	0.47
13:M:195:MET:HA	46:M:601:3PE:H241	1.95	0.47
14:N:258:SER:OG	14:N:336:MET:HB2	2.15	0.47
25:Z:139:PHE:CZ	45:Z:200:PC1:H151	2.49	0.47
37:l:158:ILE:HG21	40:o:100:GLU:HG2	1.96	0.47
43:r:62:ALA:O	43:r:63:MET:HE2	2.15	0.47
2:B:47:PRO:HB2	2:B:76:PHE:CE1	2.48	0.47
17:Q:7:ASP:OD1	17:Q:7:ASP:N	2.48	0.47
7:G:475:GLN:NE2	7:G:643:GLN:OE1	2.47	0.47
12:L:534:HIS:CD2	46:L:701:3PE:H331	2.50	0.47
14:N:68:MET:HE3	59:N:580:HOH:O	2.14	0.47
15:O:148:CYS:HA	15:O:279:LEU:HD21	1.96	0.47
20:T:20:LYS:NZ	20:T:27:PRO:O	2.43	0.47
20:U:39:ASP:OD1	20:U:39:ASP:N	2.47	0.47
35:j:66:ILE:HD13	40:o:106:ARG:HB2	1.94	0.47
6:F:34:LYS:HB2	6:F:34:LYS:HE2	1.60	0.47
7:G:7:ASN:OD1	7:G:7:ASN:N	2.48	0.47
7:G:382:THR:HG23	7:G:384:PRO:HD3	1.96	0.47
7:G:703:ILE:HG13	7:G:704:CYS:SG	2.54	0.47
12:L:304:PHE:CZ	12:L:526:LEU:HD22	2.49	0.47
13:M:196:TRP:CD1	13:M:253:MET:HG2	2.50	0.47
14:N:347:GLU:HB2	29:d:82:MET:HE2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:k:13:MET:HE2	36:k:13:MET:HB3	1.75	0.47
42:q:144:TYR:CG	42:q:145:LYS:N	2.82	0.47
7:G:176:GLY:O	59:G:904:HOH:O	2.21	0.47
7:G:403:ASP:CG	44:s:70:ARG:HH22	2.23	0.47
46:L:703:3PE:H261	51:h:201:CDL:HB31	1.96	0.47
13:M:67:ILE:HG22	45:M:603:PC1:H2F2	1.96	0.47
14:N:273:ASN:O	24:Y:139:LYS:NZ	2.48	0.47
33:h:6:LYS:HE3	33:h:7:ARG:N	2.30	0.47
34:i:126:HIS:HB2	40:o:88:TYR:HE2	1.80	0.47
38:m:16:THR:O	38:m:22:TYR:OH	2.31	0.47
10:J:157:THR:HG21	11:K:62:ILE:HD12	1.97	0.47
15:O:97:GLN:HB2	15:O:138:MET:HE1	1.96	0.47
1:A:23:TRP:CZ3	45:A:201:PC1:H153	2.50	0.46
6:F:202:LYS:O	17:Q:133:LYS:NZ	2.48	0.46
16:P:267:GLY:O	16:P:271:GLU:HG3	2.16	0.46
5:E:165:THR:H	5:E:168:ASP:HB2	1.80	0.46
6:F:355:LYS:HD3	6:F:356[A]:HIS:CD2	2.47	0.46
13:M:191:SER:HB3	46:M:601:3PE:H2	1.98	0.46
16:P:92:ILE:HD11	16:P:218:ILE:HD11	1.96	0.46
25:Z:61:ILE:O	25:Z:65:GLU:HG3	2.16	0.46
39:n:104:ASP:OD1	39:n:121:ARG:NH2	2.39	0.46
12:L:1:FME:O	12:L:5:SER:OG	2.33	0.46
13:M:432:ARG:HG3	32:g:47:TYR:CE1	2.51	0.46
14:N:62:THR:HG21	14:N:114:TRP:CD1	2.50	0.46
7:G:465:ALA:HB2	7:G:654:GLN:HB2	1.98	0.46
46:d:201:3PE:H332	46:d:201:3PE:H362	1.34	0.46
36:k:86:TYR:CD2	36:k:87:LEU:HD23	2.51	0.46
3:C:204:GLU:OE2	3:C:210:ARG:HD3	2.16	0.46
6:F:98:ASP:OD2	59:F:603:HOH:O	2.21	0.46
12:L:49:ILE:O	12:L:53:MET:HG3	2.15	0.46
22:W:23:ASP:OD1	22:W:26:GLU:HG3	2.16	0.46
25:Z:80:ARG:O	25:Z:84:GLN:HB2	2.15	0.46
29:d:2:MET:HG2	33:h:122:TRP:CD1	2.51	0.46
7:G:382:THR:HB	7:G:454:GLY:HA3	1.98	0.46
13:M:98:MET:HE2	13:M:98:MET:HA	1.98	0.46
13:M:216:LEU:HG	13:M:220[A]:HIS:CD2	2.48	0.46
37:l:18:GLU:OE1	37:l:18:GLU:N	2.45	0.46
4:D:123:GLU:OE2	4:D:138:ARG:NH2	2.43	0.46
5:E:183:LYS:HE2	44:s:44:HIS:CD2	2.51	0.46
6:F:197:GLU:OE1	6:F:199:LYS:NZ	2.48	0.46
12:L:128:MET:HG2	12:L:251:THR:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:261:ILE:HG13	12:L:317:ILE:HD11	1.98	0.46
23:X:112:ASP:C	23:X:112:ASP:OD1	2.59	0.46
30:e:29:PRO:O	59:e:201:HOH:O	2.21	0.46
8:H:8:MET:HE2	8:H:8:MET:HA	1.97	0.46
46:d:201:3PE:H382	46:d:201:3PE:H351	1.57	0.46
46:M:601:3PE:H2A1	46:M:601:3PE:H271	1.66	0.45
1:A:38:GLU:OE2	59:A:308:HOH:O	2.20	0.45
35:j:23:ILE:HG13	35:j:24:GLN:N	2.31	0.45
45:P:401:PC1:H153	45:P:401:PC1:H112	1.69	0.45
3:C:51:CYS:HB3	21:V:111:TRP:CE2	2.52	0.45
7:G:114:CYS:HB3	7:G:117:GLN:HB2	1.99	0.45
7:G:362:TYR:O	7:G:494:HIS:NE2	2.40	0.45
20:T:29:LYS:HE3	20:T:29:LYS:HB3	1.87	0.45
37:l:10:PRO:HD3	38:m:66:ARG:HG2	1.97	0.45
43:r:112:LEU:HD23	43:r:112:LEU:HA	1.75	0.45
3:C:137:MET:HE1	3:C:153:THR:HG23	1.98	0.45
15:O:242:LYS:HD2	15:O:242:LYS:HA	1.69	0.45
20:T:12:LYS:O	20:T:16:LEU:HB2	2.17	0.45
25:Z:139:PHE:O	45:Z:200:PC1:H142	2.17	0.45
29:d:105:ASP:OD1	29:d:105:ASP:N	2.49	0.45
6:F:202:LYS:HD3	6:F:361:GLN:HB2	1.98	0.45
16:P:52:GLU:HG3	16:P:54:TYR:H	1.82	0.45
35:j:56:PRO:HA	35:j:59:TRP:CE3	2.52	0.45
4:D:417:ILE:O	4:D:420:THR:HG22	2.16	0.45
7:G:252:PRO:HG3	7:G:263:ILE:HG12	1.99	0.45
10:J:109:LYS:HE2	10:J:109:LYS:HB3	1.75	0.45
12:L:72:GLN:O	59:L:803:HOH:O	2.21	0.45
46:d:201:3PE:H3E1	46:d:201:3PE:H2C1	1.98	0.45
34:i:28:SER:OG	34:i:31:GLU:HG3	2.17	0.45
13:M:42:MET:HE3	32:g:77:VAL:HG22	1.99	0.45
13:M:92:LYS:NZ	59:M:728:HOH:O	2.50	0.45
23:X:138:GLU:H	23:X:138:GLU:CD	2.14	0.45
5:E:117:LEU:O	5:E:121:GLN:HG2	2.17	0.45
8:H:98:MET:HB3	45:Z:200:PC1:H12	1.98	0.45
12:L:405:ASN:HD22	37:l:120:GLU:HG2	1.82	0.45
13:M:195:MET:HE3	13:M:195:MET:HB3	1.82	0.45
15:O:237:ASP:N	15:O:237:ASP:OD1	2.49	0.45
27:b:78:GLU:OE1	27:b:82:ARG:NH2	2.50	0.45
41:p:2:ASP:O	41:p:3:SER:OG	2.31	0.45
4:D:147:LEU:HB3	4:D:177:MET:HE1	1.99	0.45
51:X:201:CDL:H201	51:X:201:CDL:H171	1.68	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:g:107:ILE:HD13	32:g:107:ILE:HA	1.79	0.45
43:r:42:VAL:HB	43:r:46:HIS:CG	2.52	0.45
4:D:51:PHE:HB2	4:D:66:MET:HE2	1.99	0.44
6:F:98:ASP:O	6:F:139:ARG:HB3	2.17	0.44
7:G:540:ASP:OD1	7:G:540:ASP:N	2.49	0.44
12:L:42:TYR:O	12:L:46:THR:HG23	2.18	0.44
12:L:53:MET:HE2	12:L:53:MET:HB3	1.80	0.44
46:M:601:3PE:H32	46:M:601:3PE:H231	1.99	0.44
39:n:62:LEU:HD23	39:n:62:LEU:HA	1.87	0.44
2:B:32:LYS:HA	2:B:32:LYS:HD3	1.65	0.44
4:D:8:VAL:HG21	32:g:25:ARG:NH2	2.32	0.44
5:E:154:VAL:HG22	5:E:164:LEU:HD11	2.00	0.44
6:F:356[B]:HIS:ND1	6:F:357:GLU:OE2	2.40	0.44
25:Z:104:LYS:HB2	25:Z:104:LYS:NZ	2.32	0.44
27:b:7:PHE:O	27:b:11:VAL:HG22	2.17	0.44
33:h:6:LYS:HE3	33:h:7:ARG:H	1.82	0.44
6:F:409:ASP:OD1	6:F:409:ASP:N	2.50	0.44
7:G:616:LEU:HA	7:G:619:VAL:HG12	2.00	0.44
21:V:76:ILE:HD12	21:V:76:ILE:HA	1.84	0.44
7:G:254:MET:HA	7:G:260:GLU:O	2.18	0.44
7:G:325:ALA:HA	7:G:328:LEU:HD12	1.99	0.44
9:I:99:ARG:HD3	9:I:105:ARG:HG3	2.00	0.44
52:L:706:LMT:O3'	52:L:706:LMT:O2B	2.20	0.44
16:P:73:TRP:CZ3	16:P:75:GLY:HA2	2.52	0.44
37:l:127:PRO:HD3	40:o:3:HIS:CE1	2.52	0.44
39:n:107:HIS:CD2	39:n:108:PRO:HD2	2.53	0.44
40:o:34:LYS:HE3	40:o:35:GLU:H	1.82	0.44
6:F:403:THR:HB	47:F:502:SF4:S4	2.58	0.44
12:L:49:ILE:HB	12:L:50:PRO:HD3	2.00	0.44
12:L:529:PHE:HB3	12:L:530:PRO:HD3	1.98	0.44
21:V:89:LEU:O	21:V:93:MET:HG2	2.18	0.44
34:i:86:LYS:HD3	34:i:87:TYR:CZ	2.53	0.44
36:k:25:GLY:N	36:k:29:GLU:OE2	2.39	0.44
3:C:32:ILE:HG23	21:V:43:TYR:HB2	1.98	0.44
59:D:680:HOH:O	8:H:206:GLU:HB3	2.16	0.44
7:G:534:ARG:HD3	42:q:145:LYS:HB3	1.99	0.44
46:d:201:3PE:H3B1	46:d:201:3PE:H381	1.82	0.44
51:d:204:CDL:H711	51:d:204:CDL:H742	1.62	0.44
37:l:82:ASP:CG	38:m:71:ARG:HH12	2.26	0.44
5:E:87:TYR:HB3	6:F:181:ALA:O	2.17	0.44
6:F:390:ASP:OD1	6:F:423:ARG:NH2	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:139:GLN:HA	12:L:142:ILE:HD12	2.00	0.44
59:L:848:HOH:O	13:M:400:MET:HE2	2.18	0.44
18:R:38:ASN:HB3	18:R:43:LEU:HD11	1.99	0.44
23:X:48:GLU:OE1	23:X:134:ARG:NH2	2.46	0.44
45:Z:200:PC1:O12	45:Z:200:PC1:H133	2.18	0.44
2:B:43:SER:HB3	8:H:40:VAL:HG21	2.00	0.44
12:L:488:THR:HB	12:L:492:ILE:HD13	2.00	0.44
51:d:204:CDL:H401	51:d:204:CDL:H371	1.70	0.44
51:r:201:CDL:H582	51:r:201:CDL:H612	1.76	0.44
5:E:103:CYS:SG	5:E:144:CYS:HA	2.58	0.44
5:E:144:CYS:SG	6:F:102:PRO:HA	2.57	0.44
8:H:10:ILE:HA	8:H:13:ILE:HD12	2.00	0.44
12:L:435:PRO:HB3	12:L:437:PHE:CZ	2.53	0.44
19:S:63:LYS:HE3	19:S:63:LYS:HB2	1.55	0.44
51:d:204:CDL:H352	51:d:204:CDL:H321	1.82	0.44
44:s:38:TYR:CZ	44:s:40:ASN:HB3	2.52	0.44
1:A:27:LEU:HD22	8:H:59:GLU:HG3	2.00	0.43
4:D:6:PRO:HB3	4:D:10:TRP:CD1	2.53	0.43
12:L:392:LYS:NZ	59:L:824:HOH:O	2.49	0.43
13:M:106:LEU:HD13	13:M:234:VAL:HG11	2.00	0.43
20:U:72:CYS:SG	20:U:75:GLU:HG2	2.58	0.43
25:Z:130:GLU:CD	25:Z:130:GLU:H	2.26	0.43
45:Z:200:PC1:H352	45:Z:200:PC1:H382	1.74	0.43
30:e:48:SER:HB2	33:h:125:TYR:HB2	1.99	0.43
44:s:57:ASP:OD1	44:s:57:ASP:N	2.51	0.43
4:D:216:LYS:HE3	4:D:216:LYS:HB3	1.79	0.43
12:L:111:ASP:OD2	59:L:804:HOH:O	2.21	0.43
46:M:602:3PE:H342	46:d:201:3PE:H351	1.99	0.43
2:B:27:GLU:HG2	2:B:178:ARG:NH2	2.33	0.43
3:C:8:ARG:NH2	43:r:61:GLU:OE1	2.43	0.43
3:C:168:LEU:HD11	4:D:90:LEU:HD23	1.99	0.43
6:F:90:PRO:O	6:F:218:CYS:HB3	2.19	0.43
11:K:70:GLU:OE1	59:K:202:HOH:O	2.21	0.43
12:L:544:MET:HE3	12:L:544:MET:HB3	1.92	0.43
51:L:702:CDL:H181	51:L:702:CDL:H152	1.59	0.43
22:W:116:ASP:O	22:W:120:LYS:HG3	2.18	0.43
27:b:27:LEU:HD22	27:b:31:LEU:HG	2.00	0.43
37:l:8:MET:HE2	37:l:8:MET:HA	2.01	0.43
3:C:74:SER:HB3	3:C:97:LEU:HB3	2.00	0.43
5:E:101:GLN:HG2	5:E:140:ILE:HD11	2.01	0.43
7:G:460:ARG:NH2	7:G:659:ASP:O	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:69:SER:HA	51:H:602:CDL:H322	2.01	0.43
13:M:379:LEU:O	13:M:383:MET:HG2	2.17	0.43
14:N:88:LYS:NZ	30:e:52:GLU:OE2	2.42	0.43
45:Z:200:PC1:H2E2	45:Z:200:PC1:H2H2	1.61	0.43
41:p:14:ARG:HG2	41:p:14:ARG:NH1	2.33	0.43
6:F:194:GLU:CD	6:F:204:ARG:HD2	2.43	0.43
7:G:121:MET:HE3	7:G:121:MET:HB3	1.73	0.43
23:X:23:VAL:HG22	23:X:85:TRP:CD2	2.54	0.43
46:m:202:3PE:H282	46:m:202:3PE:H2B1	1.66	0.43
41:p:121:ARG:O	41:p:121:ARG:HG3	2.17	0.43
9:I:126:CYS:HA	47:I:203:SF4:S2	2.59	0.43
12:L:67:HIS:NE2	12:L:70:THR:OG1	2.45	0.43
13:M:206:LYS:NZ	59:M:731:HOH:O	2.51	0.43
16:P:287:ILE:HD13	16:P:287:ILE:HA	1.87	0.43
20:U:4:PRO:HG3	35:j:9:PRO:HG3	2.00	0.43
29:d:64:TYR:CD1	51:d:204:CDL:H341	2.53	0.43
51:h:201:CDL:H111	51:h:201:CDL:H751	2.01	0.43
34:i:87:TYR:CZ	41:p:48:ARG:HG2	2.54	0.43
7:G:227:SER:OG	7:G:228:ILE:N	2.50	0.43
7:G:689:LYS:HE2	7:G:697:ALA:HB1	2.01	0.43
8:H:93:TYR:OH	26:a:35:GLU:OE2	2.36	0.43
10:J:3:LEU:HG	10:J:125:TRP:CD1	2.54	0.43
12:L:36:VAL:O	12:L:40:ILE:HG12	2.18	0.43
14:N:325:PHE:CE1	51:d:204:CDL:HB61	2.52	0.43
51:d:204:CDL:H372	51:d:204:CDL:H342	1.73	0.43
33:h:6:LYS:HE2	34:i:26:GLU:HB3	2.01	0.43
37:l:125:TYR:OH	40:o:7:ARG:NH1	2.44	0.43
6:F:277:LYS:NZ	6:F:281:GLU:OE2	2.52	0.43
12:L:485:TYR:C	12:L:487:LYS:H	2.26	0.43
12:L:569:ALA:HB2	45:m:201:PC1:H342	2.01	0.43
16:P:203:GLN:HG3	16:P:234:SER:O	2.19	0.43
20:T:16:LEU:HD23	20:T:16:LEU:HA	1.84	0.43
25:Z:94:ALA:HA	25:Z:105:VAL:HG21	2.01	0.43
45:Z:200:PC1:H132	45:Z:200:PC1:H112	1.58	0.43
29:d:78:ARG:O	29:d:82:MET:HG2	2.19	0.43
34:i:111:GLU:OE2	41:p:16:THR:HG22	2.18	0.43
15:O:315:LYS:HD3	15:O:316:TRP:H	1.83	0.43
45:P:401:PC1:H2D2	45:P:401:PC1:H2A2	1.71	0.43
20:U:55:GLU:OE1	39:n:24:ARG:NH2	2.43	0.43
40:o:42:GLN:HA	40:o:45:MET:HE2	2.01	0.43
42:q:64:TYR:CD1	42:q:81:MET:HE2	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:152:THR:HG22	4:D:188:ARG:HD3	2.01	0.43
6:F:243:ALA:HA	6:F:251:SER:HB3	1.99	0.43
12:L:602:PHE:HE1	46:L:707:3PE:H322	1.84	0.43
45:Y:201:PC1:H251	45:Y:201:PC1:H281	1.70	0.43
37:l:140:LEU:O	41:p:122:GLN:HG3	2.19	0.43
7:G:39:ARG:HB2	48:G:803:FES:S2	2.59	0.42
7:G:281:GLU:HG2	7:G:592:LEU:HD12	2.00	0.42
7:G:675:ASP:OD2	59:G:905:HOH:O	2.21	0.42
12:L:248:HIS:O	59:L:805:HOH:O	2.21	0.42
12:L:297:ASP:HB3	12:L:300:LYS:HB2	2.01	0.42
13:M:360:LEU:O	13:M:364:LEU:HG	2.19	0.42
26:a:34:LYS:NZ	26:a:61:TYR:O	2.41	0.42
37:l:82:ASP:OD1	38:m:71:ARG:NH1	2.51	0.42
1:A:62:PHE:O	1:A:66:ASP:HB2	2.19	0.42
45:A:203:PC1:H241	45:A:203:PC1:H272	1.73	0.42
13:M:16:TRP:HA	13:M:93:LYS:HD3	2.01	0.42
13:M:17:LEU:HD13	31:f:11:TRP:HH2	1.84	0.42
29:d:40:CYS:SG	46:d:201:3PE:H3C1	2.60	0.42
45:A:201:PC1:H361	45:A:201:PC1:H332	1.88	0.42
7:G:244:THR:HB	17:Q:73:ALA:HB2	2.01	0.42
7:G:362:TYR:OH	7:G:504:ASP:OD1	2.27	0.42
9:I:135:PRO:HB3	42:q:93:MET:HE1	2.01	0.42
12:L:99:SER:O	12:L:453:SER:HB2	2.19	0.42
13:M:243:MET:HB3	13:M:301:ILE:HG21	2.01	0.42
16:P:202:LYS:HD2	16:P:202:LYS:HA	1.75	0.42
21:V:6:LYS:HE2	21:V:6:LYS:HB2	1.90	0.42
38:m:90:ALA:HA	38:m:94:ILE:HD12	2.01	0.42
42:q:144:TYR:CE2	42:q:145:LYS:HG2	2.54	0.42
2:B:54:CYS:HB3	4:D:108:TYR:HB2	2.02	0.42
5:E:105:THR:HG22	5:E:106:THR:H	1.84	0.42
8:H:172:MET:HE2	8:H:172:MET:HB3	1.78	0.42
10:J:3:LEU:HD12	10:J:3:LEU:HA	1.89	0.42
46:M:601:3PE:H2B1	46:M:601:3PE:H2E2	1.69	0.42
15:O:45:LYS:HB2	15:O:235:VAL:HG21	2.00	0.42
25:Z:57:ARG:HA	25:Z:57:ARG:HD2	1.88	0.42
37:l:20:ARG:HE	37:l:20:ARG:HB2	1.67	0.42
7:G:75:LYS:HB2	7:G:75:LYS:HE2	1.76	0.42
9:I:78:ILE:HD12	9:I:78:ILE:HA	1.76	0.42
10:J:17:PHE:HA	10:J:20:PHE:CE2	2.55	0.42
12:L:4:PHE:HD1	12:L:61:LEU:HD12	1.83	0.42
14:N:37:MET:HE2	14:N:37:MET:HB3	1.92	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:N:311:MET:O	14:N:311:MET:HE3	2.19	0.42
45:A:201:PC1:H112	45:A:201:PC1:H143	1.68	0.42
7:G:643:GLN:OE1	7:G:643:GLN:HA	2.20	0.42
14:N:215:MET:CE	14:N:248:LEU:HG	2.49	0.42
16:P:76:ARG:NH2	16:P:108:ASP:OD2	2.52	0.42
35:j:67:PRO:HG2	40:o:110:ARG:CZ	2.49	0.42
1:A:114:THR:O	59:A:309:HOH:O	2.22	0.42
7:G:262:TRP:HB2	7:G:390:LEU:HD11	2.02	0.42
7:G:324:ASP:HB2	7:G:571:ALA:HB1	2.02	0.42
12:L:247:LEU:O	12:L:252:MET:HB3	2.19	0.42
12:L:384:PRO:HA	12:L:389:PHE:CD1	2.55	0.42
33:h:6:LYS:NZ	34:i:27:LEU:O	2.43	0.42
7:G:462:ASP:HB3	7:G:657:LEU:HG	2.01	0.42
8:H:209:SER:HB3	8:H:213:VAL:HA	2.01	0.42
46:I:204:3PE:N	25:Z:34:MET:HE1	2.35	0.42
20:U:62:ILE:HG12	20:U:79:TYR:CE2	2.55	0.42
22:W:51:LEU:HD22	22:W:103:MET:SD	2.60	0.42
29:d:64:TYR:CE1	51:d:204:CDL:H341	2.55	0.42
29:d:74:TYR:CG	46:d:202:3PE:H322	2.55	0.42
51:h:201:CDL:H182	51:h:201:CDL:H151	1.80	0.42
34:i:86:LYS:HD3	34:i:87:TYR:CE2	2.55	0.42
1:A:95:ILE:HG21	8:H:302:MET:HG3	2.02	0.42
2:B:49:THR:OG1	59:B:302:HOH:O	2.21	0.42
5:E:153:MET:HE2	5:E:153:MET:HB2	1.94	0.42
13:M:178:MET:HE3	13:M:178:MET:HB3	1.92	0.42
29:d:109:TYR:HB2	41:p:73:ILE:O	2.20	0.42
4:D:64:LEU:HG	4:D:66:MET:HG3	2.01	0.42
6:F:28:ARG:NH1	44:s:35:ASN:O	2.45	0.42
8:H:233:MET:HE3	8:H:233:MET:HB3	1.81	0.42
9:I:117:ILE:HG13	9:I:119:CYS:HB3	2.02	0.42
11:K:43:MET:HE1	14:N:72:MET:HE1	2.01	0.42
14:N:187:MET:HE3	59:N:546:HOH:O	2.19	0.42
16:P:96:GLY:O	55:P:402:NDP:H51A	2.20	0.42
16:P:133:SER:O	55:P:402:NDP:H6N	2.20	0.42
25:Z:6:LYS:HA	25:Z:6:LYS:HD2	1.82	0.42
34:i:126:HIS:HB2	40:o:88:TYR:CE2	2.55	0.42
37:l:98:TRP:HA	37:l:101:MET:HE2	2.01	0.42
3:C:58:ILE:HB	3:C:59:PRO:HD3	2.02	0.41
12:L:21:MET:H	12:L:21:MET:HG2	1.70	0.41
12:L:233:LEU:HB3	12:L:234:PRO:HD3	2.01	0.41
19:S:12:LYS:HB3	19:S:13:LEU:H	1.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:224:LYS:HD3	7:G:224:LYS:N	2.36	0.41
9:I:50:TYR:CD1	9:I:51:PRO:HA	2.55	0.41
12:L:401:THR:OG1	12:L:479:GLN:HG2	2.20	0.41
23:X:152:GLU:OE1	23:X:153:VAL:N	2.53	0.41
23:X:171:MET:HB2	59:X:330:HOH:O	2.20	0.41
5:E:35:VAL:HG13	5:E:43:LYS:HG3	2.02	0.41
12:L:22:MET:HA	12:L:27:TYR:CE2	2.55	0.41
12:L:316:THR:HB	12:L:325:ALA:HB2	2.02	0.41
20:T:37:MET:HE1	20:T:44:SER:HA	2.03	0.41
20:T:61:GLU:C	20:T:61:GLU:OE2	2.63	0.41
21:V:3:LEU:HD22	21:V:4:LEU:H	1.84	0.41
41:p:161:ARG:NH2	59:p:303:HOH:O	2.53	0.41
7:G:550:GLY:HA3	42:q:137:TRP:CG	2.55	0.41
51:X:201:CDL:H422	29:d:36:PHE:CD2	2.55	0.41
38:m:72:SER:OG	38:m:73:ALA:N	2.54	0.41
2:B:34:ASP:OD2	2:B:174:ARG:HG3	2.20	0.41
6:F:397:LYS:HD3	6:F:397:LYS:HA	1.90	0.41
14:N:344:SER:HB3	29:d:83:TYR:CZ	2.56	0.41
20:T:83:LYS:HD3	20:T:83:LYS:HA	1.76	0.41
4:D:51:PHE:HB3	4:D:64:LEU:HB3	2.01	0.41
4:D:343:GLU:OE1	7:G:128:SER:HB2	2.20	0.41
7:G:146:VAL:HG22	7:G:200:ILE:HD11	2.03	0.41
12:L:63:ILE:O	12:L:79:SER:HA	2.21	0.41
12:L:502:LEU:HD12	12:L:502:LEU:HA	1.86	0.41
13:M:403:THR:HA	13:M:406:TYR:CE2	2.55	0.41
52:M:604:LMT:H6D	38:m:105:LYS:NZ	2.35	0.41
18:R:80:LYS:HB3	18:R:80:LYS:HZ1	1.84	0.41
22:W:91:GLU:HB3	22:W:97:LYS:HG3	2.02	0.41
46:d:201:3PE:H222	46:d:201:3PE:H251	1.81	0.41
7:G:41:CYS:HB3	7:G:52:CYS:HB3	2.02	0.41
8:H:77:MET:HE1	8:H:118:TRP:HE3	1.86	0.41
8:H:79:LEU:HD22	8:H:222:LEU:HG	2.02	0.41
8:H:231:ILE:HD13	59:H:719:HOH:O	2.20	0.41
10:J:125:TRP:HB2	25:Z:136:THR:HG21	2.03	0.41
34:i:68:ILE:HD12	34:i:68:ILE:HA	1.94	0.41
37:l:128:VAL:HG22	40:o:97:ARG:HB2	2.03	0.41
8:H:31:MET:HE1	8:H:272:TRP:CD1	2.55	0.41
13:M:116:ILE:HA	13:M:116:ILE:HD13	1.83	0.41
14:N:75:ILE:O	14:N:79:MET:HG3	2.20	0.41
22:W:38:TRP:CD2	22:W:89:LEU:HD13	2.55	0.41
31:f:51:ASN:OD1	31:f:51:ASN:N	2.46	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:g:99:TYR:CD1	32:g:99:TYR:C	2.98	0.41
40:o:45:MET:HE3	40:o:55:ARG:HD3	2.02	0.41
45:B:202:PC1:H352	45:B:202:PC1:H321	1.77	0.41
6:F:136:ILE:HG21	6:F:149:LEU:HD21	2.03	0.41
7:G:276:ARG:NH2	7:G:277:GLN:HE21	2.18	0.41
7:G:654:GLN:OE1	7:G:654:GLN:N	2.50	0.41
10:J:126:VAL:O	25:Z:119:MET:HE3	2.21	0.41
13:M:271:MET:HE2	13:M:271:MET:HA	2.02	0.41
13:M:452:LYS:HA	13:M:455:LEU:HD12	2.03	0.41
45:M:603:PC1:H143	45:M:603:PC1:H112	1.68	0.41
15:O:25:ILE:HG12	15:O:168:VAL:HB	2.03	0.41
15:O:31:ILE:HA	54:O:402:DGT:O2A	2.21	0.41
15:O:113:GLU:O	15:O:117:SER:OG	2.19	0.41
15:O:174:VAL:HG22	15:O:225:ALA:HB2	2.02	0.41
16:P:50:ARG:NH2	55:P:402:NDP:O2X	2.45	0.41
24:Y:60:PHE:HD2	24:Y:103:ARG:NH1	2.19	0.41
33:h:19:LYS:HE2	33:h:19:LYS:HB3	1.95	0.41
5:E:82:GLU:HG2	7:G:174:THR:O	2.21	0.41
10:J:39:VAL:HG13	45:Z:200:PC1:H2F1	2.03	0.41
16:P:127:GLU:O	16:P:224:ARG:NH1	2.54	0.41
24:Y:3:THR:O	24:Y:7:GLN:HG3	2.21	0.41
35:j:70:ASP:OD1	35:j:70:ASP:N	2.44	0.41
2:B:176:TRP:HA	2:B:179:ARG:HD2	2.03	0.40
3:C:131:GLU:HG2	3:C:142:PHE:CE2	2.56	0.40
6:F:190:THR:HB	6:F:204:ARG:HB2	2.03	0.40
6:F:294:LEU:HD23	6:F:309:LYS:HG3	2.03	0.40
7:G:663:PRO:HD2	7:G:666:LEU:HD21	2.03	0.40
13:M:373:ILE:HD11	13:M:444:LEU:HD12	2.03	0.40
45:M:603:PC1:H142	51:h:201:CDL:OA3	2.22	0.40
15:O:83:TYR:OH	54:O:402:DGT:O3'	2.11	0.40
23:X:82:THR:HA	23:X:85:TRP:CD1	2.56	0.40
8:H:108:MET:HE2	8:H:108:MET:HA	2.04	0.40
10:J:92:ALA:HB1	51:K:101:CDL:H331	2.03	0.40
12:L:17:MET:O	12:L:21:MET:HG2	2.21	0.40
12:L:61:LEU:HD23	12:L:61:LEU:HA	1.81	0.40
12:L:161:ARG:HG2	12:L:164:ALA:H	1.86	0.40
12:L:295:GLN:HB2	12:L:301:ILE:HG13	2.03	0.40
16:P:145:TYR:CD1	16:P:286:ARG:HD3	2.56	0.40
20:U:31:SER:H	20:U:34:SER:HG	1.63	0.40
23:X:9:LEU:HD22	25:Z:84:GLN:HE21	1.85	0.40
23:X:158:LYS:HA	23:X:158:LYS:HD3	1.90	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:a:25:ARG:NE	26:a:28:ARG:HH22	2.18	0.40
2:B:96:MET:SD	4:D:82:LEU:HD23	2.61	0.40
3:C:200:ASN:HD21	4:D:383:SER:HB2	1.87	0.40
5:E:16:ASN:HB2	5:E:17:PRO:HD2	2.04	0.40
9:I:31:ILE:HD13	46:I:204:3PE:H241	2.03	0.40
51:K:101:CDL:H402	51:K:101:CDL:H432	1.87	0.40
12:L:1:FME:HG2	34:i:98:GLU:OE1	2.21	0.40
12:L:527:GLY:O	37:l:105:LEU:HD13	2.22	0.40
14:N:296:LEU:HD23	14:N:296:LEU:HA	1.88	0.40
20:T:20:LYS:HE3	20:T:20:LYS:HA	2.02	0.40
23:X:46:ARG:HD2	23:X:46:ARG:HA	1.84	0.40
25:Z:35:PHE:O	25:Z:39:ILE:HG12	2.21	0.40
26:a:25:ARG:HD3	26:a:25:ARG:HA	1.76	0.40
27:b:42:LEU:HB2	52:b:101:LMT:H6'1	2.03	0.40
37:l:94:THR:HB	59:l:211:HOH:O	2.21	0.40
7:G:579:ARG:HB2	7:G:636:VAL:HG22	2.03	0.40
8:H:207:LEU:O	8:H:209:SER:N	2.55	0.40
10:J:1:FME:HE3	10:J:1:FME:HB3	1.91	0.40
12:L:23:SER:HA	51:L:702:CDL:HA62	2.03	0.40
12:L:173:LEU:HD12	13:M:405:LEU:HD21	2.04	0.40
22:W:38:TRP:O	22:W:42:VAL:HG23	2.20	0.40
25:Z:85:MET:HE2	25:Z:123:LEU:HG	2.04	0.40
29:d:107:LYS:HB2	29:d:112:VAL:HG23	2.04	0.40
3:C:40:VAL:HB	43:r:68:VAL:HG22	2.03	0.40
6:F:93:LEU:O	6:F:134:ALA:HA	2.22	0.40
6:F:245:PHE:HB3	6:F:271:GLU:HG3	2.03	0.40
13:M:105:PHE:O	13:M:109:THR:OG1	2.29	0.40
22:W:34:LEU:HD13	22:W:86:LYS:HG3	2.02	0.40
51:h:201:CDL:H592	34:i:79:TRP:CE3	2.56	0.40

There are no symmetry-related clashes.

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	113/115 (98%)	110 (97%)	3 (3%)	0	100	100
2	B	152/216 (70%)	145 (95%)	7 (5%)	0	100	100
3	C	207/266 (78%)	202 (98%)	5 (2%)	0	100	100
4	D	427/463 (92%)	411 (96%)	16 (4%)	0	100	100
5	E	212/249 (85%)	203 (96%)	8 (4%)	1 (0%)	24	23
6	F	431/464 (93%)	420 (97%)	11 (3%)	0	100	100
7	G	698/727 (96%)	669 (96%)	27 (4%)	2 (0%)	36	38
8	H	316/318 (99%)	305 (96%)	11 (4%)	0	100	100
9	I	174/212 (82%)	170 (98%)	4 (2%)	0	100	100
10	J	173/175 (99%)	164 (95%)	8 (5%)	1 (1%)	21	20
11	K	96/98 (98%)	94 (98%)	2 (2%)	0	100	100
12	L	604/606 (100%)	575 (95%)	27 (4%)	2 (0%)	36	38
13	M	462/459 (101%)	457 (99%)	5 (1%)	0	100	100
14	N	345/347 (99%)	337 (98%)	8 (2%)	0	100	100
15	O	318/343 (93%)	310 (98%)	8 (2%)	0	100	100
16	P	340/380 (90%)	330 (97%)	10 (3%)	0	100	100
17	Q	127/175 (73%)	126 (99%)	1 (1%)	0	100	100
18	R	94/124 (76%)	91 (97%)	3 (3%)	0	100	100
19	S	85/99 (86%)	79 (93%)	6 (7%)	0	100	100
20	T	83/156 (53%)	79 (95%)	3 (4%)	1 (1%)	10	6
20	U	84/156 (54%)	80 (95%)	4 (5%)	0	100	100
21	V	114/116 (98%)	114 (100%)	0	0	100	100
22	W	113/128 (88%)	109 (96%)	4 (4%)	0	100	100
23	X	169/172 (98%)	164 (97%)	5 (3%)	0	100	100
24	Y	139/141 (99%)	135 (97%)	4 (3%)	0	100	100
25	Z	139/144 (96%)	136 (98%)	2 (1%)	1 (1%)	18	16
26	a	68/70 (97%)	68 (100%)	0	0	100	100
27	b	82/84 (98%)	78 (95%)	4 (5%)	0	100	100
28	c	47/76 (62%)	46 (98%)	1 (2%)	0	100	100
29	d	119/121 (98%)	116 (98%)	2 (2%)	1 (1%)	16	13
30	e	97/106 (92%)	97 (100%)	0	0	100	100
31	f	55/57 (96%)	53 (96%)	2 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
32	g	98/154 (64%)	93 (95%)	4 (4%)	1 (1%)	12 9
33	h	136/189 (72%)	136 (100%)	0	0	100 100
34	i	107/128 (84%)	102 (95%)	3 (3%)	2 (2%)	6 2
35	j	65/108 (60%)	65 (100%)	0	0	100 100
36	k	79/98 (81%)	75 (95%)	3 (4%)	1 (1%)	9 5
37	l	154/186 (83%)	149 (97%)	5 (3%)	0	100 100
38	m	126/129 (98%)	117 (93%)	8 (6%)	1 (1%)	16 13
39	n	170/179 (95%)	164 (96%)	6 (4%)	0	100 100
40	o	120/137 (88%)	115 (96%)	4 (3%)	1 (1%)	16 13
41	p	171/176 (97%)	168 (98%)	3 (2%)	0	100 100
42	q	144/146 (99%)	143 (99%)	1 (1%)	0	100 100
43	r	92/113 (81%)	87 (95%)	5 (5%)	0	100 100
44	s	44/109 (40%)	42 (96%)	2 (4%)	0	100 100
All	All	8189/9215 (89%)	7929 (97%)	245 (3%)	15 (0%)	44 48

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	L	562	LEU
40	o	32	GLU
5	E	180	LYS
7	G	651	LEU
20	T	70	LEU
29	d	1	MET
12	L	26	THR
25	Z	101	PRO
34	i	124	ASP
36	k	58	ASN
32	g	24	LEU
34	i	31	GLU
7	G	703	ILE
38	m	24	ILE
10	J	24	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	100/100 (100%)	97 (97%)	3 (3%)	36	43
2	B	130/174 (75%)	128 (98%)	2 (2%)	57	66
3	C	190/228 (83%)	189 (100%)	1 (0%)	81	86
4	D	370/392 (94%)	365 (99%)	5 (1%)	59	69
5	E	183/205 (89%)	180 (98%)	3 (2%)	55	65
6	F	347/368 (94%)	342 (99%)	5 (1%)	59	69
7	G	587/608 (96%)	573 (98%)	14 (2%)	43	51
8	H	274/274 (100%)	269 (98%)	5 (2%)	51	61
9	I	151/175 (86%)	148 (98%)	3 (2%)	48	58
10	J	141/141 (100%)	135 (96%)	6 (4%)	26	28
11	K	85/85 (100%)	85 (100%)	0	100	100
12	L	533/533 (100%)	519 (97%)	14 (3%)	40	48
13	M	416/412 (101%)	407 (98%)	9 (2%)	45	54
14	N	315/315 (100%)	313 (99%)	2 (1%)	78	83
15	O	283/303 (93%)	278 (98%)	5 (2%)	51	61
16	P	296/327 (90%)	289 (98%)	7 (2%)	43	51
17	Q	116/153 (76%)	112 (97%)	4 (3%)	32	38
18	R	79/97 (81%)	78 (99%)	1 (1%)	61	71
19	S	77/82 (94%)	75 (97%)	2 (3%)	40	48
20	T	79/135 (58%)	75 (95%)	4 (5%)	21	21
20	U	79/135 (58%)	75 (95%)	4 (5%)	21	21
21	V	101/101 (100%)	101 (100%)	0	100	100
22	W	107/114 (94%)	106 (99%)	1 (1%)	70	78
23	X	154/155 (99%)	152 (99%)	2 (1%)	61	71
24	Y	101/101 (100%)	95 (94%)	6 (6%)	18	16
25	Z	120/121 (99%)	117 (98%)	3 (2%)	42	50

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
26	a	59/59 (100%)	57 (97%)	2 (3%)	32 38
27	b	71/71 (100%)	65 (92%)	6 (8%)	10 6
28	c	45/68 (66%)	40 (89%)	5 (11%)	6 3
29	d	106/106 (100%)	103 (97%)	3 (3%)	38 45
30	e	89/96 (93%)	84 (94%)	5 (6%)	19 18
31	f	54/54 (100%)	52 (96%)	2 (4%)	30 35
32	g	91/131 (70%)	85 (93%)	6 (7%)	15 13
33	h	121/158 (77%)	119 (98%)	2 (2%)	53 63
34	i	106/121 (88%)	101 (95%)	5 (5%)	23 24
35	j	61/84 (73%)	56 (92%)	5 (8%)	10 7
36	k	63/76 (83%)	62 (98%)	1 (2%)	55 65
37	l	140/159 (88%)	136 (97%)	4 (3%)	37 44
38	m	114/115 (99%)	108 (95%)	6 (5%)	20 20
39	n	156/161 (97%)	152 (97%)	4 (3%)	40 48
40	o	110/120 (92%)	105 (96%)	5 (4%)	24 26
41	p	155/157 (99%)	151 (97%)	4 (3%)	40 48
42	q	131/131 (100%)	124 (95%)	7 (5%)	20 20
43	r	85/96 (88%)	80 (94%)	5 (6%)	18 16
44	s	45/92 (49%)	44 (98%)	1 (2%)	45 54
All	All	7216/7889 (92%)	7027 (97%)	189 (3%)	41 48

All (189) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	SER
1	A	44	MET
1	A	83	ASN
2	B	54	CYS
2	B	125	TYR
3	C	7	THR
4	D	43	LEU
4	D	44	VAL
4	D	340	THR
4	D	341	SER
4	D	407	LYS

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Mol	Chain	Res	Type
5	E	75	VAL
5	E	105	THR
5	E	203	THR
6	F	104	THR
6	F	111	ILE
6	F	281	GLU
6	F	327	THR
6	F	428	GLU
7	G	16	GLN
7	G	18	VAL
7	G	180	ASP
7	G	202	ILE
7	G	243	ARG
7	G	366	THR
7	G	411	SER
7	G	441	GLN
7	G	442	VAL
7	G	471	SER
7	G	486	ASP
7	G	609	MET
7	G	651	LEU
7	G	704	CYS
8	H	8	MET
8	H	24	GLU
8	H	87	ILE
8	H	176	LEU
8	H	231	ILE
9	I	15	LYS
9	I	29	GLU
9	I	78	ILE
10	J	3	LEU
10	J	45	LEU
10	J	110	ASP
10	J	118	GLU
10	J	135	PHE
10	J	136	PHE
12	L	5	SER
12	L	131	LEU
12	L	132	VAL
12	L	149	ILE
12	L	286	LEU
12	L	307	SER

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Mol	Chain	Res	Type
12	L	387	THR
12	L	445	GLU
12	L	503	GLU
12	L	525	LEU
12	L	550	SER
12	L	554	ASP
12	L	565	THR
12	L	600	ILE
13	M	58	SER
13	M	116	ILE
13	M	221[A]	VAL
13	M	221[B]	VAL
13	M	315	LEU
13	M	387	SER
13	M	393	ILE
13	M	454	ILE
13	M	458	LEU
14	N	67	SER
14	N	182	SER
15	O	44	GLU
15	O	122	VAL
15	O	135	LEU
15	O	146	LYS
15	O	181	SER
16	P	119	GLN
16	P	122	LYS
16	P	127	GLU
16	P	145	TYR
16	P	177	ARG
16	P	268	ARG
16	P	281	ARG
17	Q	7	ASP
17	Q	66	GLU
17	Q	97	GLU
17	Q	106	GLU
18	R	52	VAL
19	S	60	VAL
19	S	82	SER
20	T	7	THR
20	T	29	LYS
20	T	32	VAL
20	T	87	TYR

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Mol	Chain	Res	Type
20	U	25	ILE
20	U	29	LYS
20	U	39	ASP
20	U	72	CYS
22	W	67	LYS
23	X	130	VAL
23	X	132	THR
24	Y	13	GLU
24	Y	40	VAL
24	Y	75	ILE
24	Y	104	THR
24	Y	105	ARG
24	Y	114	CYS
25	Z	3	SER
25	Z	29	LEU
25	Z	91	GLU
26	a	5	VAL
26	a	70	ASP
27	b	4	VAL
27	b	8	LEU
27	b	33	THR
27	b	41	SER
27	b	61	ASN
27	b	83	LEU
28	c	6	GLU
28	c	11	SER
28	c	15	LEU
28	c	37	GLU
28	c	40	LEU
29	d	6	GLN
29	d	10	THR
29	d	67	SER
30	e	21	SER
30	e	52	GLU
30	e	86	ILE
30	e	92	THR
30	e	98	SER
31	f	47	GLU
31	f	57	LYS
32	g	24	LEU
32	g	25	ARG
32	g	40	LYS

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Mol	Chain	Res	Type
32	g	86	GLN
32	g	98	LYS
32	g	110	SER
33	h	19	LYS
33	h	106	LYS
34	i	1	SER
34	i	8	LYS
34	i	39	VAL
34	i	58	ASN
34	i	121	GLU
35	j	19	ARG
35	j	23	ILE
35	j	29	SER
35	j	60	THR
35	j	61	ASP
36	k	90	GLN
37	l	4	ILE
37	l	5	THR
37	l	35	GLU
37	l	42	THR
38	m	60	GLU
38	m	71	ARG
38	m	75	ILE
38	m	91	LEU
38	m	111	LYS
38	m	120	LEU
39	n	53	GLU
39	n	137	LYS
39	n	145	VAL
39	n	178	MET
40	o	14	VAL
40	o	20	ARG
40	o	104	GLU
40	o	117	ARG
40	o	118	GLU
41	p	16	THR
41	p	20	SER
41	p	24	SER
41	p	126	LYS
42	q	1	MET
42	q	5	GLN
42	q	15	SER

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Mol	Chain	Res	Type
42	q	67	GLU
42	q	101	LYS
42	q	107	LYS
42	q	144	TYR
43	r	66	SER
43	r	68	VAL
43	r	91	LYS
43	r	104	GLU
43	r	107	GLN
44	s	71	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (66) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	83	ASN
1	A	108	GLN
2	B	162	GLN
3	C	200	ASN
6	F	200	GLN
6	F	264	ASN
6	F	361	GLN
6	F	402	HIS
7	G	16	GLN
7	G	237	ASN
7	G	313	ASN
7	G	444	GLN
7	G	475	GLN
7	G	644	GLN
7	G	665	GLN
8	H	47	GLN
8	H	230	ASN
11	K	50	ASN
11	K	97	GLN
12	L	25	ASN
12	L	72	GLN
12	L	205	ASN
12	L	354	GLN
12	L	446	ASN
12	L	603	ASN
13	M	82	HIS
13	M	293	HIS
13	M	338	HIS

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Mol	Chain	Res	Type
13	M	390	ASN
13	M	399	ASN
14	N	186	HIS
15	O	229	GLN
15	O	287	HIS
16	P	87	HIS
16	P	93	ASN
16	P	103	ASN
16	P	250	HIS
16	P	260	HIS
17	Q	29	HIS
18	R	94	GLN
21	V	36	HIS
21	V	75	GLN
23	X	15	GLN
23	X	72	GLN
23	X	162	HIS
27	b	70	GLN
28	c	5	GLN
29	d	79	GLN
29	d	117	HIS
32	g	119	GLN
33	h	124	HIS
34	i	58	ASN
34	i	82	HIS
37	l	155	HIS
38	m	49	GLN
38	m	116	GLN
39	n	61	GLN
39	n	140	GLN
40	o	42	GLN
40	o	49	GLN
40	o	53	GLN
41	p	58	ASN
41	p	77	GLN
42	q	72	ASN
42	q	135	GLN
44	s	44	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

9 non-standard protein/DNA/RNA residues are modelled in this entry.

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	$\#\|Z\| > 2$
10	FME	J	1	10	8,9,10	1.53	1 (12%)	7,9,11	1.34	1 (14%)
13	FME	M	1	13	8,9,10	1.45	1 (12%)	7,9,11	2.22	4 (57%)
14	FME	N	1	14	8,9,10	1.51	1 (12%)	7,9,11	1.78	1 (14%)
1	FME	A	1	1	8,9,10	1.46	1 (12%)	7,9,11	1.68	2 (28%)
2	WYK	B	77	2	9,11,12	2.36	2 (22%)	7,13,15	0.95	1 (14%)
12	FME	L	1	12	8,9,10	1.46	1 (12%)	7,9,11	1.71	2 (28%)
8	FME	H	1	8	8,9,10	1.50	1 (12%)	7,9,11	1.60	2 (28%)
11	FME	K	1	11	8,9,10	1.47	1 (12%)	7,9,11	1.68	2 (28%)
4	2MR	D	85	4	10,12,13	2.34	2 (20%)	5,13,15	1.25	1 (20%)

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
10	FME	J	1	10	-	3/7/9/11	-
13	FME	M	1	13	-	4/7/9/11	-
14	FME	N	1	14	-	2/7/9/11	-
1	FME	A	1	1	-	2/7/9/11	-
2	WYK	B	77	2	-	4/10/11/13	-
12	FME	L	1	12	-	2/7/9/11	-
8	FME	H	1	8	-	2/7/9/11	-
11	FME	K	1	11	-	1/7/9/11	-
4	2MR	D	85	4	-	4/10/13/15	-

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	77	WYK	CZ-NE	6.01	1.45	1.33
4	D	85	2MR	CZ-NE	5.03	1.45	1.34
4	D	85	2MR	CZ-NH2	5.00	1.44	1.33
14	N	1	FME	CN-N	3.74	1.45	1.33
10	J	1	FME	CN-N	3.71	1.45	1.33
8	H	1	FME	CN-N	3.61	1.45	1.33
11	K	1	FME	CN-N	3.48	1.45	1.33
1	A	1	FME	CN-N	3.47	1.44	1.33
12	L	1	FME	CN-N	3.41	1.44	1.33
13	M	1	FME	CN-N	3.36	1.44	1.33
2	B	77	WYK	CZ-NH2	-2.44	1.24	1.34

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
13	M	1	FME	CA-N-CN	-3.97	116.71	122.82
14	N	1	FME	CE-SD-CG	3.05	110.88	100.40
8	H	1	FME	CE-SD-CG	2.62	109.40	100.40
1	A	1	FME	CE-SD-CG	2.59	109.28	100.40
13	M	1	FME	CE-SD-CG	2.53	109.08	100.40
11	K	1	FME	CE-SD-CG	2.47	108.88	100.40
12	L	1	FME	CE-SD-CG	2.40	108.64	100.40
11	K	1	FME	O1-CN-N	-2.36	119.06	125.27
13	M	1	FME	O1-CN-N	-2.35	119.08	125.27
12	L	1	FME	O1-CN-N	-2.25	119.34	125.27
10	J	1	FME	CE-SD-CG	2.23	108.08	100.40
1	A	1	FME	O1-CN-N	-2.10	119.73	125.27
4	D	85	2MR	NE-CZ-NH2	2.06	121.37	119.48
8	H	1	FME	O1-CN-N	-2.05	119.88	125.27
13	M	1	FME	O-C-CA	-2.00	119.53	124.78
2	B	77	WYK	CG-CD-NE	-2.00	105.49	111.37

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1	FME	C-CA-CB-CG
2	B	77	WYK	O-C-CA-CB
2	B	77	WYK	NE-CD-CG-CB
2	B	77	WYK	NE-CD-CG-OH
4	D	85	2MR	C-CA-CB-CG
10	J	1	FME	CB-CA-N-CN

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Mol	Chain	Res	Type	Atoms
10	J	1	FME	O-C-CA-CB
11	K	1	FME	O1-CN-N-CA
12	L	1	FME	CA-CB-CG-SD
13	M	1	FME	O1-CN-N-CA
13	M	1	FME	CB-CA-N-CN
14	N	1	FME	CB-CA-N-CN
10	J	1	FME	CB-CG-SD-CE
2	B	77	WYK	CA-CB-CG-OH
14	N	1	FME	N-CA-CB-CG
4	D	85	2MR	CA-CB-CG-CD
12	L	1	FME	CB-CG-SD-CE
8	H	1	FME	CA-CB-CG-SD
13	M	1	FME	CA-CB-CG-SD
4	D	85	2MR	NE-CD-CG-CB
8	H	1	FME	C-CA-CB-CG
1	A	1	FME	N-CA-CB-CG
13	M	1	FME	C-CA-CB-CG
4	D	85	2MR	N-CA-CB-CG

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	J	1	FME	1	0
2	B	77	WYK	2	0
12	L	1	FME	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 57 ligands modelled in this entry, 3 are monoatomic - leaving 54 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	$\#\|Z\| > 2$
46	3PE	M	601	-	44,44,50	0.93	3 (6%)	47,49,55	1.20	4 (8%)
58	MYR	o	201	40	14,14,15	0.41	0	13,13,15	0.99	0
45	PC1	M	603	-	38,38,53	1.41	6 (15%)	44,46,61	1.08	3 (6%)
45	PC1	Y	201	-	41,41,53	1.40	6 (14%)	47,49,61	1.10	2 (4%)
47	SF4	I	203	9	0,12,12	-	-	-		
46	3PE	H	601	-	28,28,50	1.06	2 (7%)	31,33,55	1.23	2 (6%)
52	LMT	L	704	-	36,36,36	1.16	2 (5%)	47,47,47	0.92	1 (2%)
46	3PE	A	202	-	36,36,50	1.00	4 (11%)	39,41,55	1.10	2 (5%)
52	LMT	L	706	-	36,36,36	1.18	3 (8%)	47,47,47	1.00	1 (2%)
57	EHZ	T	101	20	29,36,37	1.64	5 (17%)	35,44,47	2.53	10 (28%)
46	3PE	I	201	-	37,37,50	1.01	3 (8%)	40,42,55	1.10	2 (5%)
46	3PE	d	202	-	36,36,50	0.99	2 (5%)	39,41,55	1.17	2 (5%)
47	SF4	B	201	2	0,12,12	-	-	-		
48	FES	E	301	5	0,4,4	-	-	-		
46	3PE	Y	203	-	39,39,50	0.96	4 (10%)	42,44,55	1.18	2 (4%)
47	SF4	G	801	7	0,12,12	-	-	-		
49	FMN	F	501	-	33,33,33	2.64	10 (30%)	48,50,50	1.87	16 (33%)
52	LMT	M	604	-	36,36,36	1.12	2 (5%)	47,47,47	1.07	2 (4%)
51	CDL	N	401	-	59,59,99	1.12	7 (11%)	65,71,111	1.21	4 (6%)
45	PC1	P	401	-	53,53,53	1.24	5 (9%)	59,61,61	1.12	3 (5%)
51	CDL	H	602	-	49,49,99	1.23	8 (16%)	55,61,111	1.36	6 (10%)
47	SF4	F	502	6	0,12,12	-	-	-		
46	3PE	L	707	-	50,50,50	0.87	4 (8%)	53,55,55	1.04	2 (3%)
46	3PE	A	204	-	46,46,50	0.88	3 (6%)	49,51,55	1.12	2 (4%)
46	3PE	I	204	-	34,34,50	1.02	4 (11%)	37,39,55	1.23	2 (5%)
48	FES	G	803	7	0,4,4	-	-	-		
51	CDL	r	201	-	61,61,99	1.14	6 (9%)	67,73,111	1.29	5 (7%)
52	LMT	p	201	-	36,36,36	1.20	2 (5%)	47,47,47	1.04	1 (2%)
46	3PE	L	701	-	38,38,50	1.01	3 (7%)	41,43,55	1.18	3 (7%)
45	PC1	B	202	-	40,40,53	1.39	4 (10%)	46,48,61	1.19	3 (6%)
51	CDL	X	201	-	72,72,99	1.04	6 (8%)	78,84,111	1.07	4 (5%)
51	CDL	L	702	-	59,59,99	1.14	6 (10%)	65,71,111	1.24	5 (7%)
46	3PE	d	201	-	47,47,50	0.90	4 (8%)	50,52,55	1.14	2 (4%)
46	3PE	Y	202	-	34,34,50	1.04	3 (8%)	37,39,55	1.19	3 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
45	PC1	A	203	-	32,32,53	1.53	6 (18%)	38,40,61	1.07	2 (5%)
51	CDL	K	101	-	68,68,99	1.07	6 (8%)	74,80,111	1.15	4 (5%)
51	CDL	h	201	-	77,77,99	1.00	8 (10%)	83,89,111	1.30	7 (8%)
52	LMT	L	705	-	36,36,36	1.16	2 (5%)	47,47,47	0.99	1 (2%)
57	EHZ	U	101	20	29,36,37	1.70	6 (20%)	35,44,47	1.69	8 (22%)
45	PC1	A	201	-	34,34,53	1.48	5 (14%)	40,42,61	1.21	2 (5%)
46	3PE	L	703	-	44,44,50	0.89	3 (6%)	47,49,55	1.16	3 (6%)
46	3PE	M	602	-	50,50,50	0.86	3 (6%)	53,55,55	1.16	2 (3%)
52	LMT	M	605	-	36,36,36	1.18	2 (5%)	47,47,47	1.05	3 (6%)
47	SF4	I	202	9	0,12,12	-	-	-		
52	LMT	b	101	-	36,36,36	1.15	2 (5%)	47,47,47	1.25	5 (10%)
45	PC1	m	201	-	39,39,53	1.40	6 (15%)	45,47,61	1.00	2 (4%)
51	CDL	d	204	-	64,64,99	1.08	6 (9%)	70,76,111	1.21	5 (7%)
45	PC1	Z	200	-	47,47,53	1.39	6 (12%)	53,55,61	1.15	2 (3%)
45	PC1	d	203	-	32,32,53	1.55	6 (18%)	38,40,61	1.13	2 (5%)
52	LMT	Y	204	-	36,36,36	1.10	2 (5%)	47,47,47	1.03	1 (2%)
46	3PE	m	202	-	39,39,50	0.97	4 (10%)	42,44,55	1.17	3 (7%)
55	NDP	P	402	-	49,52,52	3.91	24 (48%)	66,80,80	2.05	15 (22%)
54	DGT	O	402	53	29,33,33	3.17	14 (48%)	44,52,52	2.05	12 (27%)
47	SF4	G	802	7	0,12,12	-	-	-		

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
46	3PE	M	601	-	-	30/48/48/54	-
58	MYR	o	201	40	-	4/11/12/13	-
45	PC1	M	603	-	-	14/42/42/57	-
45	PC1	Y	201	-	-	29/45/45/57	-
47	SF4	I	203	9	-	-	0/6/5/5
46	3PE	H	601	-	-	18/31/31/54	-
52	LMT	L	704	-	-	10/21/61/61	0/2/2/2
46	3PE	A	202	-	-	19/40/40/54	-
52	LMT	L	706	-	-	11/21/61/61	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
57	EHZ	T	101	20	-	24/42/44/45	-
46	3PE	I	201	-	-	20/41/41/54	-
46	3PE	d	202	-	-	22/40/40/54	-
52	LMT	M	604	-	-	10/21/61/61	0/2/2/2
47	SF4	B	201	2	-	-	0/6/5/5
46	3PE	Y	203	-	-	25/43/43/54	-
49	FMN	F	501	-	-	4/18/18/18	0/3/3/3
47	SF4	G	801	7	-	-	0/6/5/5
48	FES	E	301	5	-	-	0/1/1/1
51	CDL	N	401	-	-	33/69/69/110	-
45	PC1	P	401	-	-	20/57/57/57	-
51	CDL	H	602	-	-	23/60/60/110	-
47	SF4	F	502	6	-	-	0/6/5/5
46	3PE	L	707	-	-	30/54/54/54	-
46	3PE	A	204	-	-	20/50/50/54	-
46	3PE	I	204	-	-	26/38/38/54	-
51	CDL	r	201	-	-	40/72/72/110	-
48	FES	G	803	7	-	-	0/1/1/1
52	LMT	p	201	-	-	8/21/61/61	0/2/2/2
46	3PE	L	701	-	-	21/42/42/54	-
45	PC1	B	202	-	-	12/44/44/57	-
51	CDL	X	201	-	-	45/83/83/110	-
51	CDL	L	702	-	-	36/70/70/110	-
46	3PE	d	201	-	-	30/51/51/54	-
46	3PE	Y	202	-	-	19/38/38/54	-
45	PC1	A	203	-	-	17/36/36/57	-
51	CDL	K	101	-	-	42/79/79/110	-
51	CDL	h	201	-	-	43/88/88/110	-
52	LMT	L	705	-	-	10/21/61/61	0/2/2/2
57	EHZ	U	101	20	-	11/42/44/45	-
45	PC1	A	201	-	-	15/38/38/57	-
46	3PE	L	703	-	-	25/48/48/54	-
46	3PE	M	602	-	-	32/54/54/54	-
52	LMT	M	605	-	-	16/21/61/61	0/2/2/2
52	LMT	b	101	-	-	12/21/61/61	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
47	SF4	I	202	9	-	-	0/6/5/5
45	PC1	m	201	-	-	16/43/43/57	-
51	CDL	d	204	-	-	47/75/75/110	-
45	PC1	Z	200	-	-	30/51/51/57	-
45	PC1	d	203	-	-	15/36/36/57	-
52	LMT	Y	204	-	-	6/21/61/61	0/2/2/2
46	3PE	m	202	-	-	22/43/43/54	-
55	NDP	P	402	-	-	6/34/77/77	0/5/5/5
54	DGT	O	402	53	-	7/22/34/34	0/3/3/3
47	SF4	G	802	7	-	-	0/6/5/5

All (228) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
55	P	402	NDP	C6N-C5N	11.70	1.54	1.33
55	P	402	NDP	C2B-C1B	-8.70	1.30	1.53
55	P	402	NDP	C7N-N7N	8.03	1.54	1.33
55	P	402	NDP	O4D-C1D	7.98	1.60	1.42
55	P	402	NDP	O4B-C1B	7.81	1.60	1.42
54	O	402	DGT	C2'-C3'	-7.72	1.32	1.52
55	P	402	NDP	C2D-C1D	-7.42	1.29	1.53
49	F	501	FMN	C4A-N5	6.87	1.44	1.30
55	P	402	NDP	O4D-C4D	-6.75	1.29	1.45
54	O	402	DGT	C4-N3	6.32	1.49	1.34
49	F	501	FMN	C10-N1	6.23	1.46	1.33
54	O	402	DGT	O4'-C4'	5.55	1.57	1.45
57	U	101	EHZ	C15-N2	5.52	1.45	1.33
54	O	402	DGT	C2-N3	5.46	1.46	1.33
55	P	402	NDP	O4B-C4B	-5.41	1.32	1.45
55	P	402	NDP	C6A-N6A	5.19	1.47	1.34
54	O	402	DGT	O4'-C1'	-5.11	1.30	1.42
57	T	101	EHZ	C15-N2	5.02	1.44	1.33
57	U	101	EHZ	C12-N1	4.96	1.44	1.33
55	P	402	NDP	P2B-O2B	4.91	1.68	1.59
57	T	101	EHZ	C12-N1	4.88	1.44	1.33
49	F	501	FMN	C5A-N5	4.80	1.48	1.39
54	O	402	DGT	C2-N2	4.61	1.45	1.34
49	F	501	FMN	C9A-N10	4.59	1.49	1.41
55	P	402	NDP	C2N-C3N	4.57	1.47	1.34
55	P	402	NDP	C5A-C4A	-4.45	1.30	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
49	F	501	FMN	C2-N1	4.44	1.47	1.36
55	P	402	NDP	O7N-C7N	-4.07	1.14	1.24
55	P	402	NDP	C8A-N9A	-4.07	1.30	1.37
54	O	402	DGT	C2'-C1'	3.80	1.63	1.52
52	M	605	LMT	O5'-C1'	3.80	1.51	1.41
49	F	501	FMN	C2-N3	3.75	1.47	1.39
45	d	203	PC1	O31-C31	3.73	1.44	1.33
49	F	501	FMN	O2-C2	-3.71	1.17	1.24
45	m	201	PC1	O31-C31	3.69	1.44	1.33
45	B	202	PC1	O21-C21	3.68	1.44	1.34
45	Z	200	PC1	O31-C31	3.67	1.44	1.33
54	O	402	DGT	C5'-C4'	-3.64	1.40	1.51
45	M	603	PC1	O31-C31	3.64	1.44	1.33
52	b	101	LMT	O5'-C1'	3.63	1.51	1.41
55	P	402	NDP	O2D-C2D	3.61	1.51	1.43
52	p	201	LMT	O5'-C1'	3.60	1.51	1.41
45	A	203	PC1	O31-C31	3.58	1.43	1.33
45	Y	201	PC1	O31-C31	3.57	1.43	1.33
52	L	704	LMT	O5'-C1'	3.51	1.50	1.41
52	L	706	LMT	O5'-C1'	3.50	1.50	1.41
45	Y	201	PC1	O21-C21	3.49	1.44	1.34
45	A	201	PC1	O21-C21	3.45	1.44	1.34
45	P	401	PC1	O31-C31	3.43	1.43	1.33
45	B	202	PC1	O31-C31	3.38	1.43	1.33
52	p	201	LMT	O5B-C1B	3.35	1.50	1.41
52	L	704	LMT	O5B-C1B	3.34	1.50	1.41
49	F	501	FMN	C10-N10	3.33	1.44	1.37
45	d	203	PC1	O21-C21	3.32	1.43	1.34
55	P	402	NDP	C4N-C3N	3.30	1.56	1.49
54	O	402	DGT	C5-N7	-3.27	1.32	1.39
45	m	201	PC1	O21-C21	3.27	1.43	1.34
45	Z	200	PC1	O21-C21	3.23	1.43	1.34
49	F	501	FMN	O4-C4	-3.22	1.17	1.23
45	M	603	PC1	O21-C21	3.20	1.43	1.34
45	A	201	PC1	O31-C31	3.20	1.42	1.33
52	Y	204	LMT	O5'-C1'	3.19	1.50	1.41
52	M	604	LMT	O5B-C1B	3.19	1.50	1.41
45	P	401	PC1	O21-C21	3.18	1.43	1.34
52	M	605	LMT	O5B-C1B	3.18	1.49	1.41
45	A	203	PC1	O21-C21	3.17	1.43	1.34
52	b	101	LMT	O5B-C1B	3.12	1.49	1.41
52	L	705	LMT	O5'-C1'	3.11	1.49	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	L	705	LMT	O5B-C1B	3.11	1.49	1.41
52	M	604	LMT	O5'-C1'	3.10	1.49	1.41
52	Y	204	LMT	O5B-C1B	3.06	1.49	1.41
52	L	706	LMT	O5B-C1B	3.04	1.49	1.41
49	F	501	FMN	C4-N3	3.02	1.44	1.38
51	K	101	CDL	OA6-CA4	-3.00	1.39	1.46
46	M	602	3PE	O21-C2	-2.98	1.39	1.46
45	A	203	PC1	O21-C2	-2.97	1.39	1.46
45	Z	200	PC1	O21-C2	-2.95	1.39	1.46
51	r	201	CDL	OA6-CA4	-2.90	1.39	1.46
46	M	601	3PE	O21-C2	-2.89	1.39	1.46
55	P	402	NDP	C5A-N7A	-2.89	1.33	1.39
46	L	701	3PE	O21-C2	-2.89	1.39	1.46
46	I	201	3PE	O21-C2	-2.84	1.39	1.46
45	M	603	PC1	O21-C2	-2.82	1.39	1.46
51	L	702	CDL	OA6-CA4	-2.79	1.39	1.46
51	L	702	CDL	OB8-CB7	2.79	1.41	1.33
45	m	201	PC1	O21-C2	-2.79	1.39	1.46
51	d	204	CDL	OA8-CA6	-2.79	1.38	1.45
51	h	201	CDL	OB6-CB4	-2.78	1.39	1.46
51	X	201	CDL	OA6-CA4	-2.78	1.39	1.46
51	r	201	CDL	OB6-CB4	-2.75	1.39	1.46
46	H	601	3PE	O21-C2	-2.75	1.39	1.46
51	H	602	CDL	OB6-CB4	-2.74	1.39	1.46
46	A	204	3PE	O21-C2	-2.74	1.39	1.46
46	L	703	3PE	O21-C2	-2.74	1.39	1.46
45	P	401	PC1	O21-C2	-2.74	1.39	1.46
46	Y	202	3PE	O21-C2	-2.72	1.39	1.46
51	X	201	CDL	OB8-CB7	2.72	1.41	1.33
51	r	201	CDL	OA8-CA6	-2.71	1.39	1.45
46	M	601	3PE	O31-C3	-2.70	1.39	1.45
51	d	204	CDL	OA6-CA4	-2.69	1.39	1.46
46	I	204	3PE	O21-C2	-2.69	1.39	1.46
51	K	101	CDL	OA8-CA6	-2.68	1.39	1.45
46	L	701	3PE	O31-C3	-2.67	1.39	1.45
51	L	702	CDL	OB6-CB4	-2.67	1.39	1.46
45	d	203	PC1	O21-C2	-2.66	1.39	1.46
54	O	402	DGT	O6-C6	-2.63	1.18	1.23
46	d	202	3PE	O21-C2	-2.62	1.40	1.46
51	N	401	CDL	OB6-CB5	2.62	1.41	1.35
51	X	201	CDL	OB6-CB5	2.62	1.41	1.34
57	T	101	EHZ	O4-C15	-2.61	1.18	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
51	H	602	CDL	OA6-CA4	-2.60	1.40	1.46
45	A	201	PC1	O21-C2	-2.60	1.40	1.46
57	T	101	EHZ	O3-C12	-2.59	1.18	1.23
55	P	402	NDP	O3B-C3B	-2.58	1.36	1.43
45	Y	201	PC1	O21-C2	-2.57	1.40	1.46
55	P	402	NDP	O3D-C3D	-2.57	1.36	1.43
51	r	201	CDL	OB8-CB7	2.57	1.40	1.33
46	d	201	3PE	O21-C2	-2.57	1.40	1.46
51	d	204	CDL	OB8-CB7	2.57	1.40	1.33
46	I	201	3PE	O31-C3	-2.56	1.39	1.45
51	d	204	CDL	OB6-CB5	2.56	1.41	1.34
46	A	202	3PE	O21-C2	-2.53	1.40	1.46
55	P	402	NDP	C4N-C5N	2.53	1.55	1.48
45	B	202	PC1	O21-C2	-2.51	1.40	1.46
46	m	202	3PE	O21-C2	-2.50	1.40	1.46
46	Y	203	3PE	O21-C2	-2.50	1.40	1.46
51	h	201	CDL	OA6-CA4	-2.50	1.40	1.46
51	N	401	CDL	OA6-CA4	-2.50	1.40	1.46
51	N	401	CDL	OB8-CB7	2.47	1.40	1.33
54	O	402	DGT	O3'-C3'	2.46	1.48	1.43
54	O	402	DGT	C5-C6	2.45	1.53	1.44
46	d	201	3PE	O31-C3	-2.45	1.39	1.45
51	H	602	CDL	OA8-CA6	-2.45	1.39	1.45
57	U	101	EHZ	O3-C12	-2.45	1.18	1.23
46	d	202	3PE	O31-C31	2.44	1.40	1.33
46	A	202	3PE	O31-C31	2.43	1.40	1.33
51	K	101	CDL	OB6-CB5	2.43	1.41	1.34
51	L	702	CDL	OA8-CA6	-2.42	1.39	1.45
57	U	101	EHZ	O4-C15	-2.41	1.18	1.23
51	K	101	CDL	OB6-CB4	-2.40	1.40	1.46
51	X	201	CDL	OA8-CA6	-2.40	1.39	1.45
46	Y	202	3PE	O31-C31	2.39	1.40	1.33
54	O	402	DGT	C2-N1	2.38	1.43	1.37
51	K	101	CDL	OB8-CB7	2.38	1.40	1.33
46	m	202	3PE	O31-C31	2.37	1.40	1.33
46	L	703	3PE	O31-C3	-2.36	1.39	1.45
55	P	402	NDP	C6N-N1N	2.36	1.43	1.37
51	d	204	CDL	OB6-CB4	-2.35	1.40	1.46
51	N	401	CDL	OA8-CA7	2.35	1.40	1.33
46	H	601	3PE	O31-C3	-2.34	1.39	1.45
51	N	401	CDL	OA6-CA5	2.34	1.40	1.34
46	I	204	3PE	O31-C3	-2.34	1.39	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
46	M	602	3PE	O31-C3	-2.33	1.39	1.45
51	X	201	CDL	OB6-CB4	-2.33	1.40	1.46
51	L	702	CDL	OA8-CA7	2.31	1.40	1.33
45	Z	200	PC1	C14-N	-2.31	1.43	1.50
45	Z	200	PC1	P-O11	2.31	1.68	1.59
46	L	707	3PE	O21-C21	2.29	1.40	1.34
51	H	602	CDL	OA8-CA7	2.29	1.40	1.33
46	L	707	3PE	O31-C3	-2.28	1.39	1.45
51	h	201	CDL	OB8-CB7	2.28	1.40	1.33
45	Y	201	PC1	P-O11	2.28	1.68	1.59
46	Y	202	3PE	O31-C3	-2.28	1.40	1.45
51	h	201	CDL	OB6-CB5	2.28	1.40	1.34
46	A	204	3PE	O31-C31	2.28	1.40	1.33
46	m	202	3PE	O21-C21	2.27	1.40	1.34
51	h	201	CDL	OA6-CA5	2.27	1.40	1.34
51	r	201	CDL	OB6-CB5	2.27	1.40	1.34
45	m	201	PC1	P-O11	2.26	1.68	1.59
46	M	602	3PE	O31-C31	2.26	1.39	1.33
46	d	201	3PE	O31-C31	2.26	1.39	1.33
51	N	401	CDL	OA8-CA6	-2.25	1.40	1.45
51	H	602	CDL	OB8-CB7	2.25	1.39	1.33
51	h	201	CDL	OA8-CA7	2.24	1.39	1.33
46	L	707	3PE	O31-C31	2.24	1.39	1.33
46	Y	203	3PE	O31-C3	-2.24	1.40	1.45
45	B	202	PC1	C22-C21	2.24	1.57	1.50
46	Y	203	3PE	O31-C31	2.23	1.39	1.33
51	N	401	CDL	OB6-CB4	-2.21	1.41	1.46
51	X	201	CDL	OA8-CA7	2.20	1.39	1.33
57	T	101	EHZ	O6-C20	-2.20	1.39	1.44
45	m	201	PC1	P-O13	2.19	1.68	1.59
45	Z	200	PC1	C22-C21	2.19	1.57	1.50
51	h	201	CDL	OA8-CA6	-2.17	1.40	1.45
45	Y	201	PC1	C22-C21	2.17	1.57	1.50
46	I	204	3PE	O31-C31	2.17	1.39	1.33
55	P	402	NDP	P2B-O3X	-2.17	1.46	1.54
45	M	603	PC1	C22-C21	2.16	1.57	1.50
46	I	201	3PE	O31-C31	2.16	1.39	1.33
46	A	202	3PE	O31-C3	-2.15	1.40	1.45
46	L	707	3PE	O21-C2	-2.15	1.41	1.46
45	Y	201	PC1	P-O13	2.14	1.68	1.59
51	H	602	CDL	OB6-CB5	2.13	1.40	1.34
46	m	202	3PE	O31-C3	-2.13	1.40	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	m	201	PC1	C22-C21	2.13	1.56	1.50
51	d	204	CDL	OA6-CA5	2.12	1.40	1.34
51	L	702	CDL	OB6-CB5	2.12	1.40	1.34
51	h	201	CDL	OB8-CB6	-2.11	1.40	1.45
46	A	204	3PE	O31-C3	-2.10	1.40	1.45
46	A	202	3PE	O21-C21	2.10	1.40	1.34
57	U	101	EHZ	O6-C20	-2.10	1.39	1.44
55	P	402	NDP	C7N-C3N	2.09	1.53	1.48
45	d	203	PC1	P-O11	2.09	1.67	1.59
45	A	203	PC1	C22-C21	2.09	1.56	1.50
45	A	201	PC1	C22-C21	2.08	1.56	1.50
57	U	101	EHZ	C9-S1	2.08	1.81	1.76
45	M	603	PC1	P-O11	2.08	1.67	1.59
46	Y	203	3PE	O21-C21	2.08	1.40	1.34
45	A	203	PC1	C14-N	-2.08	1.43	1.50
45	P	401	PC1	C14-N	-2.07	1.44	1.50
45	A	201	PC1	P-O11	2.07	1.67	1.59
51	K	101	CDL	OB8-CB6	-2.07	1.40	1.45
45	A	203	PC1	P-O11	2.07	1.67	1.59
46	M	601	3PE	O31-C31	2.05	1.39	1.33
54	O	402	DGT	C6-N1	2.05	1.42	1.38
51	H	602	CDL	OA6-CA5	2.05	1.40	1.34
46	L	701	3PE	O21-C21	2.04	1.40	1.34
45	M	603	PC1	C14-N	-2.04	1.44	1.50
46	L	703	3PE	O31-C31	2.03	1.39	1.33
45	d	203	PC1	C22-C21	2.03	1.56	1.50
46	d	201	3PE	O21-C21	2.03	1.40	1.34
45	d	203	PC1	C14-N	-2.02	1.44	1.50
55	P	402	NDP	PA-O5B	2.02	1.67	1.59
46	I	204	3PE	O21-C21	2.01	1.40	1.34
51	H	602	CDL	OB8-CB6	-2.01	1.40	1.45
51	r	201	CDL	OA6-CA5	2.00	1.40	1.34
52	L	706	LMT	O1B-C1B	-2.00	1.36	1.41
45	P	401	PC1	P-O11	2.00	1.67	1.59

All (173) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
57	T	101	EHZ	C8-C9-S1	8.76	124.47	113.63
57	U	101	EHZ	C8-C9-S1	5.65	120.62	113.63
55	P	402	NDP	N6A-C6A-N1A	-5.57	106.14	118.35
54	O	402	DGT	C5-C4-N3	-5.49	119.56	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	P	402	NDP	N3A-C2A-N1A	-5.48	120.04	128.60
55	P	402	NDP	C5A-C4A-N3A	-5.45	119.64	126.75
49	F	501	FMN	C9-C8-C7	5.19	127.11	119.67
51	h	201	CDL	OA6-CA5-C11	5.16	122.63	111.50
54	O	402	DGT	C1'-N9-C8	5.08	139.23	127.85
57	T	101	EHZ	C11-N1-C12	-4.81	113.91	122.84
55	P	402	NDP	C4A-N9A-C1B	-4.79	115.18	126.59
57	T	101	EHZ	C10-S1-C9	4.76	116.68	101.87
54	O	402	DGT	C1'-N9-C4	-4.72	112.39	125.48
49	F	501	FMN	C7M-C7-C6	4.71	128.20	119.49
55	P	402	NDP	N9A-C8A-N7A	-4.65	107.56	113.91
51	H	602	CDL	OB6-CB5-C51	4.64	121.50	111.50
45	P	401	PC1	O21-C21-C22	4.61	121.45	111.50
55	P	402	NDP	C5A-C6A-N6A	4.57	133.38	123.43
51	N	401	CDL	OA6-CA5-C11	4.48	121.16	111.50
51	H	602	CDL	OA6-CA5-C11	4.46	121.11	111.50
46	Y	203	3PE	O21-C21-C22	4.41	121.00	111.50
46	I	204	3PE	O21-C21-C22	4.39	120.95	111.50
46	H	601	3PE	O21-C21-C22	4.38	120.94	111.50
54	O	402	DGT	C2-N3-C4	4.38	120.09	112.30
55	P	402	NDP	C2B-C1B-N9A	-4.32	106.26	113.53
51	X	201	CDL	OB6-CB5-C51	4.28	120.72	111.50
45	d	203	PC1	O21-C21-C22	4.28	120.72	111.50
45	A	201	PC1	O21-C21-C22	4.26	120.68	111.50
46	m	202	3PE	O21-C21-C22	4.26	120.67	111.50
57	T	101	EHZ	O2-C9-S1	-4.22	117.13	122.61
49	F	501	FMN	C8M-C8-C7	-4.21	112.10	120.74
45	B	202	PC1	O21-C21-C22	4.21	120.58	111.50
51	N	401	CDL	OB6-CB5-C51	4.14	118.70	111.09
46	d	202	3PE	O21-C21-C22	4.13	120.40	111.50
51	r	201	CDL	OB6-CB5-C51	4.12	120.38	111.50
51	d	204	CDL	OA6-CA5-C11	4.12	120.38	111.50
51	K	101	CDL	OB6-CB5-C51	4.10	120.33	111.50
46	L	707	3PE	O21-C21-C22	4.09	120.32	111.50
51	r	201	CDL	OA6-CA5-C11	4.07	120.28	111.50
45	Z	200	PC1	O21-C21-C22	4.06	120.26	111.50
51	h	201	CDL	OB6-CB5-C51	4.05	120.23	111.50
51	L	702	CDL	OA6-CA5-C11	4.04	120.21	111.50
51	L	702	CDL	OB6-CB5-C51	4.04	120.21	111.50
46	d	201	3PE	O21-C21-C22	4.03	120.19	111.50
46	Y	202	3PE	O21-C21-C22	4.00	120.13	111.50
46	L	703	3PE	O21-C21-C22	3.97	120.06	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	P	402	NDP	C1B-N9A-C8A	3.94	136.04	127.14
46	L	701	3PE	O21-C21-C22	3.93	119.97	111.50
51	r	201	CDL	OB8-CB7-C71	3.88	121.55	111.38
51	K	101	CDL	OA6-CA5-C11	3.82	119.72	111.50
57	T	101	EHZ	C13-C14-N2	-3.76	104.31	111.90
52	b	101	LMT	O5'-C1'-C2'	3.72	118.23	110.35
52	L	705	LMT	O1B-C4'-C5'	3.70	119.59	109.45
45	Y	201	PC1	O21-C21-C22	3.70	119.48	111.50
55	P	402	NDP	C2A-N3A-C4A	3.70	120.49	111.75
55	P	402	NDP	N3A-C4A-N9A	3.68	133.14	127.08
46	A	204	3PE	O21-C21-C22	3.66	119.40	111.50
46	M	602	3PE	O21-C21-C22	3.62	119.31	111.50
46	A	202	3PE	O21-C21-C22	3.62	119.29	111.50
54	O	402	DGT	N9-C4-N3	3.57	133.12	125.94
46	M	601	3PE	O21-C21-C22	3.56	119.18	111.50
45	M	603	PC1	O21-C21-C22	3.55	119.15	111.50
57	T	101	EHZ	C7-C8-C9	-3.55	105.80	113.89
45	B	202	PC1	O31-C31-C32	3.50	122.89	111.91
45	A	203	PC1	O21-C21-C22	3.49	119.03	111.50
46	I	201	3PE	O21-C21-C22	3.49	119.01	111.50
46	M	601	3PE	O31-C31-C32	3.48	122.83	111.91
49	F	501	FMN	C4-N3-C2	-3.42	119.32	125.64
51	d	204	CDL	OB6-CB5-C51	3.41	120.31	110.80
55	P	402	NDP	C5A-N7A-C8A	3.39	108.33	103.51
52	b	101	LMT	C1'-C2'-C3'	3.39	117.06	110.00
57	T	101	EHZ	C13-C12-N1	3.38	122.11	116.42
57	T	101	EHZ	C19-C17-C16	3.28	114.51	108.82
52	L	706	LMT	C1B-O1B-C4'	-3.27	109.88	117.96
57	T	101	EHZ	C14-C13-C12	-3.20	107.02	112.36
46	M	602	3PE	O31-C31-C32	3.15	121.79	111.91
51	h	201	CDL	OB8-CB7-C71	3.06	121.51	111.91
46	m	202	3PE	O31-C31-C32	3.05	121.47	111.91
54	O	402	DGT	N9-C8-N7	-2.99	107.75	113.39
54	O	402	DGT	C2-N1-C6	-2.96	119.70	125.10
45	M	603	PC1	O31-C31-C32	2.95	119.11	111.38
52	p	201	LMT	C1B-O1B-C4'	-2.94	110.68	117.96
46	Y	202	3PE	O31-C31-C32	2.92	121.08	111.91
57	U	101	EHZ	C11-N1-C12	-2.90	117.45	122.84
45	d	203	PC1	O31-C31-C32	2.88	120.95	111.91
51	X	201	CDL	OA6-CA5-C11	2.87	117.68	111.50
45	Z	200	PC1	O31-C31-C32	2.85	120.85	111.91
51	h	201	CDL	OA8-CA7-C31	2.81	120.73	111.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	P	402	NDP	C4A-N9A-C8A	2.79	108.76	105.73
52	M	604	LMT	C1B-O1B-C4'	-2.78	111.09	117.96
51	L	702	CDL	OA8-CA7-C31	2.76	120.56	111.91
51	K	101	CDL	OB8-CB7-C71	2.75	120.55	111.91
49	F	501	FMN	C6-C5A-C9A	2.74	122.81	118.94
52	Y	204	LMT	C1B-O1B-C4'	-2.72	111.24	117.96
46	A	204	3PE	O31-C31-C32	2.71	120.42	111.91
52	M	605	LMT	O1B-C4'-C5'	2.71	116.88	109.45
45	m	201	PC1	O21-C21-C22	2.70	117.32	111.50
45	Y	201	PC1	O31-C31-C32	2.68	120.33	111.91
46	A	202	3PE	O31-C31-C32	2.68	120.33	111.91
51	N	401	CDL	OA8-CA7-C31	2.65	120.22	111.91
57	U	101	EHZ	C13-C12-N1	2.64	120.86	116.42
46	L	707	3PE	O31-C31-C32	2.62	120.14	111.91
51	r	201	CDL	OA8-CA7-C31	2.62	120.13	111.91
51	d	204	CDL	OA8-CA7-C31	2.62	120.12	111.91
45	A	201	PC1	O31-C31-C32	2.61	120.10	111.91
51	L	702	CDL	OB8-CB7-C71	2.61	120.09	111.91
45	P	401	PC1	O31-C31-C32	2.60	120.07	111.91
49	F	501	FMN	C7M-C7-C8	-2.60	115.41	120.74
49	F	501	FMN	C4A-C4-N3	2.59	119.78	113.19
51	N	401	CDL	OB8-CB7-C71	2.59	120.03	111.91
46	d	201	3PE	O31-C31-C32	2.58	120.01	111.91
54	O	402	DGT	C5-C6-N1	2.58	119.74	113.19
46	I	201	3PE	O31-C31-C32	2.57	119.96	111.91
57	U	101	EHZ	O2-C9-S1	-2.56	119.29	122.61
52	b	101	LMT	C1'-O5'-C5'	2.55	118.70	113.69
51	X	201	CDL	OA8-CA7-C31	2.55	119.90	111.91
51	r	201	CDL	CA6-CA4-CA3	-2.54	105.78	111.79
49	F	501	FMN	C5'-C4'-C3'	-2.54	107.30	112.20
57	T	101	EHZ	O3-C12-N1	-2.53	118.24	123.01
49	F	501	FMN	O4-C4-C4A	-2.53	119.90	126.60
46	d	202	3PE	O31-C31-C32	2.52	119.81	111.91
46	L	701	3PE	O31-C31-C32	2.48	119.70	111.91
52	M	605	LMT	C1'-C2'-C3'	2.47	115.14	110.00
46	I	204	3PE	O31-C31-C32	2.46	119.64	111.91
54	O	402	DGT	PB-O3B-PG	-2.46	124.38	132.83
46	L	703	3PE	C2-O21-C21	-2.46	111.73	117.79
46	Y	203	3PE	O31-C31-C32	2.46	119.62	111.91
45	P	401	PC1	C2-O21-C21	-2.45	111.77	117.79
54	O	402	DGT	O6-C6-C5	-2.42	120.18	126.60
51	d	204	CDL	OB8-CB7-C71	2.42	119.50	111.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
51	K	101	CDL	OA8-CA7-C31	2.42	119.49	111.91
46	L	703	3PE	O31-C31-C32	2.41	119.48	111.91
45	m	201	PC1	O31-C31-C32	2.39	119.42	111.91
49	F	501	FMN	C4A-C10-N10	2.39	119.98	116.48
54	O	402	DGT	PA-O3A-PB	-2.38	124.64	132.83
54	O	402	DGT	C8-N7-C5	2.38	108.55	104.24
57	U	101	EHZ	C5-C6-C7	-2.36	108.05	114.85
45	A	203	PC1	O31-C31-C32	2.36	119.31	111.91
51	H	602	CDL	OA8-CA7-C31	2.35	119.30	111.91
46	M	601	3PE	C33-C32-C31	-2.34	105.11	113.62
52	b	101	LMT	O1B-C4'-C5'	2.34	115.85	109.45
49	F	501	FMN	C9A-C5A-N5	-2.30	119.93	122.43
52	M	604	LMT	O1'-C1'-C2'	2.30	111.89	108.30
51	h	201	CDL	CB4-OB6-CB5	-2.30	112.14	117.79
51	X	201	CDL	OB8-CB7-C71	2.29	119.10	111.91
49	F	501	FMN	C6-C7-C8	-2.29	116.39	119.67
45	B	202	PC1	O31-C31-O32	-2.28	117.84	123.59
57	U	101	EHZ	C10-C11-N1	-2.27	107.65	112.42
46	Y	202	3PE	C2-O21-C21	-2.27	112.21	117.79
49	F	501	FMN	C4-C4A-C10	2.26	120.59	116.79
51	H	602	CDL	OB6-CB5-OB7	-2.26	118.25	123.70
52	b	101	LMT	O2'-C2'-C3'	-2.24	105.18	110.35
46	H	601	3PE	C2-O21-C21	-2.22	112.33	117.79
51	H	602	CDL	OB8-CB7-C71	2.18	118.76	111.91
52	L	704	LMT	O1B-C4'-C3'	2.17	113.06	107.28
51	L	702	CDL	CB4-OB6-CB5	-2.17	112.45	117.79
46	L	701	3PE	C3-C2-C1	-2.17	106.67	111.79
51	H	602	CDL	CB2-C1-CA2	-2.15	106.46	112.79
49	F	501	FMN	C4A-C10-N1	-2.15	119.75	124.73
52	M	605	LMT	C2'-C3'-C4'	2.13	114.55	109.68
46	M	601	3PE	O31-C31-O32	-2.13	118.21	123.59
51	h	201	CDL	CA6-CA4-CA3	-2.12	106.78	111.79
49	F	501	FMN	C9A-C9-C8	-2.11	115.06	119.30
57	U	101	EHZ	C7-C8-C9	-2.11	109.08	113.89
49	F	501	FMN	C5A-C9A-N10	2.09	120.11	117.95
55	P	402	NDP	PN-O3-PA	-2.08	125.69	132.83
51	d	204	CDL	CA6-CA4-CA3	-2.07	106.89	111.79
57	U	101	EHZ	C18-C17-C16	2.07	112.40	108.82
55	P	402	NDP	C4A-C5A-N7A	-2.04	108.14	110.62
55	P	402	NDP	C6A-C5A-C4A	2.03	119.92	117.18
45	M	603	PC1	C3-C2-C1	-2.03	106.98	111.79
46	m	202	3PE	C3-C2-C1	-2.01	107.02	111.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
51	h	201	CDL	CB2-C1-CA2	-2.01	106.87	112.79

There are no chirality outliers.

All (975) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	A	201	PC1	C1-O11-P-O14
45	A	201	PC1	O22-C21-O21-C2
45	A	201	PC1	C22-C21-O21-C2
45	A	203	PC1	O22-C21-O21-C2
45	B	202	PC1	C11-O13-P-O14
45	B	202	PC1	C22-C21-O21-C2
45	Y	201	PC1	C11-O13-P-O12
45	Y	201	PC1	C11-O13-P-O14
45	Y	201	PC1	C11-O13-P-O11
45	Y	201	PC1	O13-C11-C12-N
45	Z	200	PC1	C1-O11-P-O14
45	Z	200	PC1	C12-C11-O13-P
45	Z	200	PC1	O13-C11-C12-N
45	Z	200	PC1	C2-C1-O11-P
45	d	203	PC1	C1-O11-P-O12
45	d	203	PC1	C1-O11-P-O14
45	d	203	PC1	C1-O11-P-O13
45	m	201	PC1	C2-C1-O11-P
46	A	202	3PE	C1-O11-P-O12
46	A	202	3PE	C1-O11-P-O13
46	A	202	3PE	C1-O11-P-O14
46	A	202	3PE	C22-C21-O21-C2
46	A	204	3PE	C1-O11-P-O12
46	A	204	3PE	C1-O11-P-O14
46	A	204	3PE	O13-C11-C12-N
46	H	601	3PE	C1-O11-P-O14
46	I	201	3PE	C1-O11-P-O12
46	I	201	3PE	C1-O11-P-O13
46	I	201	3PE	O13-C11-C12-N
46	I	204	3PE	C1-O11-P-O12
46	I	204	3PE	C1-O11-P-O14
46	I	204	3PE	C11-O13-P-O14
46	I	204	3PE	O13-C11-C12-N
46	L	701	3PE	C1-O11-P-O14
46	L	701	3PE	O13-C11-C12-N
46	L	701	3PE	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
46	L	703	3PE	C1-O11-P-O12
46	L	703	3PE	C1-O11-P-O13
46	L	703	3PE	C1-O11-P-O14
46	L	703	3PE	C11-O13-P-O14
46	L	703	3PE	O13-C11-C12-N
46	L	707	3PE	C1-O11-P-O12
46	L	707	3PE	C1-O11-P-O13
46	L	707	3PE	C1-O11-P-O14
46	L	707	3PE	C22-C21-O21-C2
46	M	601	3PE	C1-O11-P-O12
46	M	601	3PE	C1-O11-P-O13
46	M	601	3PE	C1-O11-P-O14
46	M	601	3PE	O32-C31-O31-C3
46	M	601	3PE	C32-C31-O31-C3
46	M	602	3PE	C1-O11-P-O12
46	M	602	3PE	C1-O11-P-O14
46	Y	202	3PE	C1-O11-P-O12
46	Y	202	3PE	C1-O11-P-O14
46	Y	202	3PE	C22-C21-O21-C2
46	Y	203	3PE	C1-O11-P-O12
46	Y	203	3PE	C1-O11-P-O14
46	Y	203	3PE	C11-O13-P-O14
46	d	201	3PE	O13-C11-C12-N
46	d	202	3PE	O22-C21-O21-C2
46	d	202	3PE	C22-C21-O21-C2
46	m	202	3PE	C1-O11-P-O12
46	m	202	3PE	C11-O13-P-O14
46	m	202	3PE	C12-C11-O13-P
46	m	202	3PE	C22-C21-O21-C2
51	H	602	CDL	CA2-OA2-PA1-OA3
51	H	602	CDL	C11-CA5-OA6-CA4
51	H	602	CDL	CB2-OB2-PB2-OB3
51	H	602	CDL	CB2-OB2-PB2-OB4
51	H	602	CDL	CB2-OB2-PB2-OB5
51	H	602	CDL	OB5-CB3-CB4-OB6
51	H	602	CDL	OB7-CB5-OB6-CB4
51	H	602	CDL	C51-CB5-OB6-CB4
51	K	101	CDL	O1-C1-CB2-OB2
51	K	101	CDL	CB2-OB2-PB2-OB3
51	K	101	CDL	CB2-OB2-PB2-OB4
51	L	702	CDL	CA2-OA2-PA1-OA3
51	L	702	CDL	CA2-OA2-PA1-OA4

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Mol	Chain	Res	Type	Atoms
51	L	702	CDL	OA9-CA7-OA8-CA6
51	L	702	CDL	C31-CA7-OA8-CA6
51	L	702	CDL	CB2-OB2-PB2-OB5
51	N	401	CDL	CA2-OA2-PA1-OA3
51	N	401	CDL	CA2-OA2-PA1-OA4
51	N	401	CDL	CA2-OA2-PA1-OA5
51	N	401	CDL	OA7-CA5-OA6-CA4
51	N	401	CDL	C11-CA5-OA6-CA4
51	N	401	CDL	CB4-CB3-OB5-PB2
51	N	401	CDL	C51-CB5-OB6-CB4
51	X	201	CDL	CA3-OA5-PA1-OA3
51	X	201	CDL	OB7-CB5-OB6-CB4
51	X	201	CDL	C51-CB5-OB6-CB4
51	d	204	CDL	CA2-OA2-PA1-OA3
51	d	204	CDL	CA2-OA2-PA1-OA4
51	d	204	CDL	CB2-OB2-PB2-OB3
51	d	204	CDL	CB2-OB2-PB2-OB4
51	d	204	CDL	CB2-OB2-PB2-OB5
51	d	204	CDL	OB5-CB3-CB4-OB6
51	h	201	CDL	CA2-C1-CB2-OB2
51	h	201	CDL	CA2-OA2-PA1-OA3
51	h	201	CDL	CA2-OA2-PA1-OA4
51	h	201	CDL	OA7-CA5-OA6-CA4
51	h	201	CDL	C11-CA5-OA6-CA4
51	h	201	CDL	CB2-OB2-PB2-OB3
51	h	201	CDL	CB2-OB2-PB2-OB4
51	h	201	CDL	OB5-CB3-CB4-OB6
51	h	201	CDL	C51-CB5-OB6-CB4
51	r	201	CDL	CA2-OA2-PA1-OA3
51	r	201	CDL	CA2-OA2-PA1-OA4
51	r	201	CDL	CA3-OA5-PA1-OA3
51	r	201	CDL	CB2-OB2-PB2-OB5
51	r	201	CDL	CB3-OB5-PB2-OB3
52	L	704	LMT	C2'-C1'-O1'-C1
52	L	704	LMT	O5'-C1'-O1'-C1
52	L	706	LMT	C2-C1-O1'-C1'
52	M	604	LMT	C2'-C1'-O1'-C1
52	M	604	LMT	O5'-C1'-O1'-C1
52	M	605	LMT	C2-C1-O1'-C1'
52	b	101	LMT	O5'-C1'-O1'-C1
54	O	402	DGT	PB-O3B-PG-O1G
54	O	402	DGT	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
55	P	402	NDP	C2B-O2B-P2B-O3X
57	T	101	EHZ	O1-C7-C8-C9
57	T	101	EHZ	C11-C10-S1-C9
57	T	101	EHZ	N2-C15-C16-O5
57	T	101	EHZ	C15-C16-C17-C18
57	T	101	EHZ	C15-C16-C17-C19
57	T	101	EHZ	C15-C16-C17-C20
57	T	101	EHZ	O5-C16-C17-C18
57	T	101	EHZ	O5-C16-C17-C19
57	T	101	EHZ	O5-C16-C17-C20
57	T	101	EHZ	C16-C17-C20-O6
57	T	101	EHZ	O2-C9-S1-C10
57	T	101	EHZ	C8-C9-S1-C10
57	U	101	EHZ	N2-C15-C16-O5
57	U	101	EHZ	O2-C9-S1-C10
57	U	101	EHZ	C8-C9-S1-C10
52	L	705	LMT	C5'-C4'-O1B-C1B
45	M	603	PC1	O32-C31-O31-C3
46	d	201	3PE	O32-C31-O31-C3
46	d	202	3PE	O32-C31-O31-C3
51	d	204	CDL	OB9-CB7-OB8-CB6
45	M	603	PC1	C32-C31-O31-C3
46	d	201	3PE	C32-C31-O31-C3
46	d	202	3PE	C32-C31-O31-C3
51	N	401	CDL	C71-CB7-OB8-CB6
51	d	204	CDL	C71-CB7-OB8-CB6
52	M	605	LMT	C5'-C4'-O1B-C1B
45	d	203	PC1	O32-C31-O31-C3
46	L	707	3PE	O32-C31-O31-C3
46	m	202	3PE	O32-C31-O31-C3
51	N	401	CDL	OB9-CB7-OB8-CB6
51	d	204	CDL	OA9-CA7-OA8-CA6
46	H	601	3PE	O32-C31-O31-C3
45	B	202	PC1	O22-C21-O21-C2
46	A	202	3PE	O22-C21-O21-C2
46	L	701	3PE	O22-C21-O21-C2
46	L	707	3PE	O22-C21-O21-C2
46	Y	202	3PE	O22-C21-O21-C2
46	m	202	3PE	O22-C21-O21-C2
51	H	602	CDL	OA7-CA5-OA6-CA4
51	d	204	CDL	OB7-CB5-OB6-CB4
51	h	201	CDL	OB7-CB5-OB6-CB4

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Mol	Chain	Res	Type	Atoms
45	d	203	PC1	C32-C31-O31-C3
51	h	201	CDL	C71-CB7-OB8-CB6
45	A	203	PC1	C22-C21-O21-C2
51	d	204	CDL	C51-CB5-OB6-CB4
51	N	401	CDL	OB7-CB5-OB6-CB4
52	L	704	LMT	C3'-C4'-O1B-C1B
46	A	202	3PE	C32-C31-O31-C3
46	L	701	3PE	C32-C31-O31-C3
46	L	707	3PE	C32-C31-O31-C3
46	m	202	3PE	C32-C31-O31-C3
51	K	101	CDL	C71-CB7-OB8-CB6
51	d	204	CDL	C31-CA7-OA8-CA6
46	H	601	3PE	C32-C31-O31-C3
52	L	704	LMT	O5'-C5'-C6'-O6'
52	L	704	LMT	C4B-C5B-C6B-O6B
45	m	201	PC1	O32-C31-O31-C3
46	Y	202	3PE	O32-C31-O31-C3
51	h	201	CDL	OB9-CB7-OB8-CB6
52	L	705	LMT	O5B-C5B-C6B-O6B
52	Y	204	LMT	O5B-C5B-C6B-O6B
51	L	702	CDL	O1-C1-CB2-OB2
51	h	201	CDL	O1-C1-CB2-OB2
45	m	201	PC1	C32-C31-O31-C3
46	L	701	3PE	O32-C31-O31-C3
52	L	704	LMT	C4'-C5'-C6'-O6'
51	K	101	CDL	C51-CB5-OB6-CB4
52	L	705	LMT	C4B-C5B-C6B-O6B
52	M	604	LMT	C4'-C5'-C6'-O6'
46	Y	202	3PE	C32-C31-O31-C3
52	b	101	LMT	O5'-C5'-C6'-O6'
52	p	201	LMT	O5B-C5B-C6B-O6B
51	K	101	CDL	OB7-CB5-OB6-CB4
52	Y	204	LMT	C4B-C5B-C6B-O6B
45	M	603	PC1	C2-C1-O11-P
51	K	101	CDL	OB9-CB7-OB8-CB6
52	L	704	LMT	O5B-C5B-C6B-O6B
46	A	202	3PE	O32-C31-O31-C3
45	d	203	PC1	C37-C38-C39-C3A
52	L	706	LMT	C4'-C5'-C6'-O6'
51	L	702	CDL	CB2-C1-CA2-OA2
51	X	201	CDL	CB2-C1-CA2-OA2
46	Y	203	3PE	C32-C31-O31-C3

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Mol	Chain	Res	Type	Atoms
51	N	401	CDL	C31-CA7-OA8-CA6
46	L	707	3PE	C21-C22-C23-C24
52	b	101	LMT	C5'-C4'-O1B-C1B
52	b	101	LMT	C4'-C5'-C6'-O6'
51	X	201	CDL	C34-C35-C36-C37
51	L	702	CDL	OA5-CA3-CA4-OA6
52	p	201	LMT	C4B-C5B-C6B-O6B
51	L	702	CDL	O1-C1-CA2-OA2
51	X	201	CDL	O1-C1-CA2-OA2
46	Y	203	3PE	O32-C31-O31-C3
52	M	604	LMT	O5'-C5'-C6'-O6'
46	A	202	3PE	C31-C32-C33-C34
51	d	204	CDL	CB7-C71-C72-C73
51	d	204	CDL	C41-C42-C43-C44
51	L	702	CDL	CA5-C11-C12-C13
52	Y	204	LMT	O5'-C5'-C6'-O6'
45	Y	201	PC1	C31-C32-C33-C34
45	Z	200	PC1	C21-C22-C23-C24
46	I	201	3PE	C31-C32-C33-C34
46	I	201	3PE	C21-C22-C23-C24
46	M	602	3PE	C21-C22-C23-C24
46	Y	203	3PE	C21-C22-C23-C24
46	d	202	3PE	C21-C22-C23-C24
46	m	202	3PE	C31-C32-C33-C34
51	K	101	CDL	CA5-C11-C12-C13
51	K	101	CDL	CB5-C51-C52-C53
51	L	702	CDL	CB5-C51-C52-C53
51	h	201	CDL	CB5-C51-C52-C53
46	d	201	3PE	C33-C34-C35-C36
57	U	101	EHZ	C5-C6-C7-O1
46	d	201	3PE	C3B-C3C-C3D-C3E
46	L	701	3PE	C21-C22-C23-C24
46	d	201	3PE	C21-C22-C23-C24
51	X	201	CDL	CA7-C31-C32-C33
51	X	201	CDL	C11-CA5-OA6-CA4
51	r	201	CDL	C11-CA5-OA6-CA4
52	L	706	LMT	O1'-C1-C2-C3
51	N	401	CDL	OA9-CA7-OA8-CA6
46	H	601	3PE	C21-C22-C23-C24
46	Y	203	3PE	C31-C32-C33-C34
51	d	204	CDL	CA5-C11-C12-C13
52	M	605	LMT	C4B-C5B-C6B-O6B

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Mol	Chain	Res	Type	Atoms
45	Y	201	PC1	C22-C21-O21-C2
46	Y	203	3PE	C22-C21-O21-C2
51	L	702	CDL	C11-CA5-OA6-CA4
45	B	202	PC1	C11-O13-P-O11
45	Z	200	PC1	C1-O11-P-O13
45	d	203	PC1	C11-O13-P-O11
46	A	204	3PE	C1-O11-P-O13
46	H	601	3PE	C1-O11-P-O13
46	I	204	3PE	C1-O11-P-O13
46	L	701	3PE	C1-O11-P-O13
46	M	602	3PE	C1-O11-P-O13
46	Y	202	3PE	C1-O11-P-O13
46	Y	203	3PE	C1-O11-P-O13
46	d	201	3PE	C1-O11-P-O13
46	d	202	3PE	C1-O11-P-O13
46	m	202	3PE	C11-O13-P-O11
51	H	602	CDL	CA3-OA5-PA1-OA2
51	K	101	CDL	CB2-OB2-PB2-OB5
51	K	101	CDL	CB3-OB5-PB2-OB2
51	L	702	CDL	CA2-OA2-PA1-OA5
51	N	401	CDL	CB3-OB5-PB2-OB2
51	d	204	CDL	CA2-OA2-PA1-OA5
51	d	204	CDL	CB3-OB5-PB2-OB2
51	h	201	CDL	CA2-OA2-PA1-OA5
51	h	201	CDL	CB2-OB2-PB2-OB5
51	r	201	CDL	CA3-OA5-PA1-OA2
52	L	706	LMT	O5'-C5'-C6'-O6'
51	X	201	CDL	CB7-C71-C72-C73
51	K	101	CDL	CA2-C1-CB2-OB2
51	L	702	CDL	CA2-C1-CB2-OB2
45	Y	201	PC1	O22-C21-O21-C2
46	Y	203	3PE	O22-C21-O21-C2
51	X	201	CDL	OA7-CA5-OA6-CA4
51	r	201	CDL	OA7-CA5-OA6-CA4
51	d	204	CDL	C43-C44-C45-C46
45	d	203	PC1	C32-C33-C34-C35
46	L	707	3PE	C2C-C2D-C2E-C2F
51	d	204	CDL	C39-C40-C41-C42
46	I	204	3PE	C22-C21-O21-C2
46	M	601	3PE	C22-C21-O21-C2
45	Y	201	PC1	C24-C25-C26-C27
45	Z	200	PC1	C36-C37-C38-C39

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Mol	Chain	Res	Type	Atoms
46	H	601	3PE	C22-C23-C24-C25
46	I	201	3PE	C34-C35-C36-C37
46	L	707	3PE	C2A-C2B-C2C-C2D
46	M	602	3PE	C3C-C3D-C3E-C3F
46	M	602	3PE	C3E-C3F-C3G-C3H
46	M	602	3PE	C2D-C2E-C2F-C2G
51	K	101	CDL	C12-C13-C14-C15
51	r	201	CDL	C51-C52-C53-C54
52	L	704	LMT	C3-C4-C5-C6
57	T	101	EHZ	C18-C17-C20-O6
57	T	101	EHZ	C19-C17-C20-O6
51	h	201	CDL	C31-CA7-OA8-CA6
45	P	401	PC1	C33-C34-C35-C36
46	A	202	3PE	C32-C33-C34-C35
46	L	703	3PE	C36-C37-C38-C39
51	K	101	CDL	C17-C18-C19-C20
58	o	201	MYR	C4-C5-C6-C7
46	I	204	3PE	O22-C21-O21-C2
46	M	601	3PE	O22-C21-O21-C2
51	L	702	CDL	OA7-CA5-OA6-CA4
45	P	401	PC1	C25-C26-C27-C28
46	M	601	3PE	C36-C37-C38-C39
46	M	601	3PE	C24-C25-C26-C27
46	M	601	3PE	C26-C27-C28-C29
46	M	602	3PE	C23-C24-C25-C26
51	X	201	CDL	C37-C38-C39-C40
51	d	204	CDL	C37-C38-C39-C40
51	N	401	CDL	C1-CA2-OA2-PA1
45	Z	200	PC1	O11-C1-C2-O21
52	M	605	LMT	O5B-C5B-C6B-O6B
45	A	203	PC1	C22-C23-C24-C25
46	L	701	3PE	C39-C3A-C3B-C3C
46	d	201	3PE	C26-C27-C28-C29
57	T	101	EHZ	C2-C1-C21-C22
51	H	602	CDL	O1-C1-CA2-OA2
51	d	204	CDL	O1-C1-CA2-OA2
45	P	401	PC1	C29-C2A-C2B-C2C
46	M	602	3PE	C36-C37-C38-C39
45	m	201	PC1	C21-C22-C23-C24
46	M	601	3PE	C31-C32-C33-C34
52	M	605	LMT	C2'-C1'-O1'-C1
45	Z	200	PC1	C26-C27-C28-C29

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Mol	Chain	Res	Type	Atoms
46	L	701	3PE	C34-C35-C36-C37
46	L	703	3PE	C27-C28-C29-C2A
46	d	202	3PE	C3B-C3C-C3D-C3E
51	L	702	CDL	C14-C15-C16-C17
51	N	401	CDL	C35-C36-C37-C38
51	d	204	CDL	C35-C36-C37-C38
52	L	705	LMT	C7-C8-C9-C10
45	Y	201	PC1	C32-C33-C34-C35
46	A	204	3PE	C29-C2A-C2B-C2C
46	L	701	3PE	C27-C28-C29-C2A
46	Y	203	3PE	C25-C26-C27-C28
51	N	401	CDL	C13-C14-C15-C16
51	N	401	CDL	C33-C34-C35-C36
45	Z	200	PC1	C29-C2A-C2B-C2C
46	I	201	3PE	C32-C33-C34-C35
46	I	201	3PE	C25-C26-C27-C28
46	L	707	3PE	C38-C39-C3A-C3B
46	L	707	3PE	C2B-C2C-C2D-C2E
46	M	602	3PE	C35-C36-C37-C38
46	M	602	3PE	C2C-C2D-C2E-C2F
46	d	202	3PE	C3C-C3D-C3E-C3F
45	A	203	PC1	C25-C26-C27-C28
45	Z	200	PC1	C33-C34-C35-C36
46	L	703	3PE	C33-C34-C35-C36
51	K	101	CDL	C71-C72-C73-C74
51	X	201	CDL	C32-C33-C34-C35
51	h	201	CDL	C32-C33-C34-C35
45	Z	200	PC1	C28-C29-C2A-C2B
46	M	601	3PE	C2A-C2B-C2C-C2D
46	M	602	3PE	C3B-C3C-C3D-C3E
45	P	401	PC1	C2C-C2D-C2E-C2F
46	A	202	3PE	C34-C35-C36-C37
46	L	701	3PE	C32-C33-C34-C35
46	d	202	3PE	C38-C39-C3A-C3B
51	h	201	CDL	C75-C76-C77-C78
52	b	101	LMT	C5-C6-C7-C8
57	T	101	EHZ	C21-C22-C23-C24
52	M	605	LMT	O5'-C1'-O1'-C1
46	L	703	3PE	C3E-C3F-C3G-C3H
46	m	202	3PE	C2B-C2C-C2D-C2E
51	d	204	CDL	C71-C72-C73-C74
46	M	602	3PE	O13-C11-C12-N

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Mol	Chain	Res	Type	Atoms
46	Y	202	3PE	O13-C11-C12-N
46	d	202	3PE	O13-C11-C12-N
46	Y	203	3PE	C33-C34-C35-C36
52	p	201	LMT	C7-C8-C9-C10
45	A	203	PC1	C21-C22-C23-C24
45	m	201	PC1	C34-C35-C36-C37
51	L	702	CDL	C54-C55-C56-C57
45	P	401	PC1	C35-C36-C37-C38
51	d	204	CDL	C73-C74-C75-C76
52	b	101	LMT	C11-C10-C9-C8
45	Z	200	PC1	C32-C33-C34-C35
51	K	101	CDL	C36-C37-C38-C39
52	M	605	LMT	C11-C10-C9-C8
46	L	703	3PE	C22-C23-C24-C25
46	L	707	3PE	C25-C26-C27-C28
52	L	706	LMT	C11-C10-C9-C8
52	M	605	LMT	C3-C4-C5-C6
52	L	706	LMT	C1-C2-C3-C4
52	M	605	LMT	O5B-C1B-O1B-C4'
45	A	201	PC1	C31-C32-C33-C34
51	r	201	CDL	CA5-C11-C12-C13
46	d	201	3PE	C25-C26-C27-C28
51	K	101	CDL	C38-C39-C40-C41
51	h	201	CDL	C13-C14-C15-C16
46	I	204	3PE	C25-C26-C27-C28
51	X	201	CDL	C15-C16-C17-C18
51	h	201	CDL	C14-C15-C16-C17
51	r	201	CDL	CA7-C31-C32-C33
46	d	201	3PE	C29-C2A-C2B-C2C
52	L	704	LMT	O1'-C1-C2-C3
46	A	204	3PE	C2D-C2E-C2F-C2G
57	T	101	EHZ	C5-C6-C7-O1
51	h	201	CDL	OA9-CA7-OA8-CA6
51	H	602	CDL	CB2-C1-CA2-OA2
46	I	201	3PE	C36-C37-C38-C39
52	p	201	LMT	C1-C2-C3-C4
45	B	202	PC1	C2A-C2B-C2C-C2D
46	M	602	3PE	C25-C26-C27-C28
51	h	201	CDL	C74-C75-C76-C77
52	p	201	LMT	C5-C6-C7-C8
45	Z	200	PC1	C11-C12-N-C13
46	L	701	3PE	C37-C38-C39-C3A

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Mol	Chain	Res	Type	Atoms
46	M	601	3PE	C2C-C2D-C2E-C2F
46	M	602	3PE	C33-C34-C35-C36
51	r	201	CDL	C12-C13-C14-C15
46	L	703	3PE	C22-C21-O21-C2
46	A	204	3PE	C2E-C2F-C2G-C2H
46	I	201	3PE	C35-C36-C37-C38
51	r	201	CDL	C58-C59-C60-C61
46	L	703	3PE	C31-C32-C33-C34
46	L	701	3PE	C24-C25-C26-C27
46	d	201	3PE	C31-C32-C33-C34
51	X	201	CDL	CA5-C11-C12-C13
45	Z	200	PC1	C2A-C2B-C2C-C2D
46	A	202	3PE	C33-C34-C35-C36
51	r	201	CDL	C13-C14-C15-C16
45	A	201	PC1	C32-C33-C34-C35
51	L	702	CDL	CA7-C31-C32-C33
45	M	603	PC1	C23-C24-C25-C26
52	M	604	LMT	C4-C5-C6-C7
52	M	604	LMT	C1-C2-C3-C4
52	Y	204	LMT	C1-C2-C3-C4
57	T	101	EHZ	C12-C13-C14-N2
45	A	201	PC1	C23-C24-C25-C26
46	d	201	3PE	C32-C33-C34-C35
51	K	101	CDL	C39-C40-C41-C42
51	N	401	CDL	C11-C12-C13-C14
51	X	201	CDL	C23-C24-C25-C26
45	P	401	PC1	C31-C32-C33-C34
46	I	204	3PE	O11-C1-C2-O21
46	L	707	3PE	O11-C1-C2-O21
46	M	601	3PE	C2B-C2C-C2D-C2E
45	Y	201	PC1	C23-C24-C25-C26
52	b	101	LMT	C2'-C1'-O1'-C1
46	H	601	3PE	C23-C24-C25-C26
46	I	201	3PE	C33-C34-C35-C36
52	M	605	LMT	C4-C5-C6-C7
45	Z	200	PC1	C11-C12-N-C15
51	d	204	CDL	C38-C39-C40-C41
45	A	201	PC1	C26-C27-C28-C29
45	M	603	PC1	C2C-C2D-C2E-C2F
46	H	601	3PE	C25-C26-C27-C28
51	K	101	CDL	C35-C36-C37-C38
51	N	401	CDL	C31-C32-C33-C34

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Mol	Chain	Res	Type	Atoms
46	M	602	3PE	C38-C39-C3A-C3B
46	Y	203	3PE	C2C-C2D-C2E-C2F
46	L	703	3PE	O22-C21-O21-C2
51	d	204	CDL	C11-CA5-OA6-CA4
46	I	204	3PE	C26-C27-C28-C29
46	L	703	3PE	C32-C33-C34-C35
46	M	601	3PE	C35-C36-C37-C38
51	L	702	CDL	C53-C54-C55-C56
51	h	201	CDL	C31-C32-C33-C34
51	r	201	CDL	C57-C58-C59-C60
45	A	201	PC1	C1-O11-P-O13
46	I	201	3PE	C11-O13-P-O11
46	L	703	3PE	C11-O13-P-O11
46	M	602	3PE	C11-O13-P-O11
51	r	201	CDL	CA2-OA2-PA1-OA5
51	K	101	CDL	C15-C16-C17-C18
45	Y	201	PC1	C21-C22-C23-C24
51	h	201	CDL	CB7-C71-C72-C73
46	M	601	3PE	C23-C24-C25-C26
46	m	202	3PE	C34-C35-C36-C37
45	m	201	PC1	O11-C1-C2-C3
46	m	202	3PE	O11-C1-C2-C3
51	H	602	CDL	OB5-CB3-CB4-CB6
51	d	204	CDL	OB5-CB3-CB4-CB6
51	h	201	CDL	OB5-CB3-CB4-CB6
51	H	602	CDL	CA7-C31-C32-C33
51	K	101	CDL	CB7-C71-C72-C73
46	H	601	3PE	C24-C25-C26-C27
46	M	602	3PE	C24-C25-C26-C27
51	K	101	CDL	C52-C53-C54-C55
51	h	201	CDL	C12-C13-C14-C15
52	Y	204	LMT	C2-C3-C4-C5
45	P	401	PC1	C36-C37-C38-C39
45	m	201	PC1	C24-C25-C26-C27
46	I	204	3PE	C32-C31-O31-C3
46	M	601	3PE	C22-C23-C24-C25
58	o	201	MYR	C6-C7-C8-C9
46	L	701	3PE	C23-C24-C25-C26
45	Z	200	PC1	C27-C28-C29-C2A
46	I	204	3PE	C1-C2-C3-O31
46	L	703	3PE	C1-C2-C3-O31
46	Y	203	3PE	C1-C2-C3-O31

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Mol	Chain	Res	Type	Atoms
51	K	101	CDL	CB3-CB4-CB6-OB8
51	d	204	CDL	CB3-CB4-CB6-OB8
51	r	201	CDL	CA3-CA4-CA6-OA8
51	r	201	CDL	CB3-CB4-CB6-OB8
51	X	201	CDL	C31-C32-C33-C34
51	h	201	CDL	C76-C77-C78-C79
45	Y	201	PC1	C36-C37-C38-C39
46	I	204	3PE	C32-C33-C34-C35
51	H	602	CDL	C71-C72-C73-C74
51	X	201	CDL	C38-C39-C40-C41
52	M	605	LMT	C1-C2-C3-C4
51	N	401	CDL	C14-C15-C16-C17
45	Z	200	PC1	C2E-C2F-C2G-C2H
52	L	706	LMT	C6-C7-C8-C9
57	T	101	EHZ	O4-C15-C16-O5
57	U	101	EHZ	O4-C15-C16-O5
52	L	705	LMT	C4-C5-C6-C7
45	P	401	PC1	C22-C23-C24-C25
51	r	201	CDL	C14-C15-C16-C17
46	m	202	3PE	C27-C28-C29-C2A
51	L	702	CDL	C13-C14-C15-C16
57	T	101	EHZ	C22-C23-C24-C25
46	A	204	3PE	C27-C28-C29-C2A
46	L	707	3PE	C2F-C2G-C2H-C2I
51	K	101	CDL	C72-C73-C74-C75
58	o	201	MYR	C7-C8-C9-C10
46	L	707	3PE	C3-C2-O21-C21
46	I	204	3PE	C33-C34-C35-C36
51	h	201	CDL	C17-C18-C19-C20
52	b	101	LMT	C3'-C4'-O1B-C1B
46	I	204	3PE	C31-C32-C33-C34
46	d	201	3PE	C2F-C2G-C2H-C2I
45	M	603	PC1	C2F-C2G-C2H-C2I
46	d	202	3PE	C23-C24-C25-C26
46	d	201	3PE	O11-C1-C2-O21
46	A	204	3PE	C37-C38-C39-C3A
51	N	401	CDL	C38-C39-C40-C41
46	M	602	3PE	C31-C32-C33-C34
45	Y	201	PC1	O21-C2-C3-O31
46	I	204	3PE	O21-C2-C3-O31
51	r	201	CDL	OB6-CB4-CB6-OB8
45	B	202	PC1	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
52	b	101	LMT	C6-C7-C8-C9
57	T	101	EHZ	C5-C6-C7-C8
51	r	201	CDL	C15-C16-C17-C18
51	H	602	CDL	CA2-C1-CB2-OB2
51	d	204	CDL	OA7-CA5-OA6-CA4
45	Y	201	PC1	C35-C36-C37-C38
46	I	204	3PE	O32-C31-O31-C3
45	A	203	PC1	C32-C31-O31-C3
46	Y	202	3PE	C37-C38-C39-C3A
46	A	202	3PE	C23-C24-C25-C26
46	A	204	3PE	C23-C24-C25-C26
46	L	701	3PE	C33-C34-C35-C36
55	P	402	NDP	O4B-C4B-C5B-O5B
45	Z	200	PC1	O11-C1-C2-C3
46	L	703	3PE	O11-C1-C2-C3
46	M	602	3PE	O11-C1-C2-C3
46	Y	202	3PE	O11-C1-C2-C3
51	K	101	CDL	OB5-CB3-CB4-CB6
51	L	702	CDL	OA5-CA3-CA4-CA6
51	L	702	CDL	OB5-CB3-CB4-CB6
51	X	201	CDL	OA5-CA3-CA4-CA6
45	Y	201	PC1	C33-C34-C35-C36
46	H	601	3PE	O13-C11-C12-N
46	L	707	3PE	C3B-C3C-C3D-C3E
57	U	101	EHZ	O4-C15-C16-C17
51	L	702	CDL	C71-C72-C73-C74
52	L	706	LMT	C5-C6-C7-C8
52	p	201	LMT	C11-C10-C9-C8
45	A	201	PC1	C32-C31-O31-C3
51	N	401	CDL	C17-C18-C19-C20
45	A	203	PC1	C2-C1-O11-P
46	L	707	3PE	C27-C28-C29-C2A
51	h	201	CDL	C39-C40-C41-C42
52	M	604	LMT	C2-C1-O1'-C1'
52	b	101	LMT	C2-C1-O1'-C1'
45	m	201	PC1	C36-C37-C38-C39
46	M	602	3PE	C1-C2-C3-O31
46	Y	202	3PE	C1-C2-C3-O31
51	K	101	CDL	CA3-CA4-CA6-OA8
51	N	401	CDL	CA3-CA4-CA6-OA8
45	Z	200	PC1	C2C-C2D-C2E-C2F
51	r	201	CDL	C11-C12-C13-C14

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Mol	Chain	Res	Type	Atoms
51	h	201	CDL	CA5-C11-C12-C13
46	d	202	3PE	C39-C3A-C3B-C3C
45	B	202	PC1	C36-C37-C38-C39
45	Y	201	PC1	C25-C26-C27-C28
46	M	602	3PE	C37-C38-C39-C3A
46	M	602	3PE	C39-C3A-C3B-C3C
45	M	603	PC1	C2B-C2C-C2D-C2E
45	Z	200	PC1	C39-C3A-C3B-C3C
46	d	202	3PE	C37-C38-C39-C3A
51	h	201	CDL	C52-C53-C54-C55
52	L	705	LMT	C9-C10-C11-C12
46	m	202	3PE	C1-O11-P-O13
51	H	602	CDL	CA2-OA2-PA1-OA5
51	X	201	CDL	CA3-OA5-PA1-OA2
51	X	201	CDL	C17-C18-C19-C20
51	d	204	CDL	C75-C76-C77-C78
46	M	601	3PE	O11-C1-C2-O21
46	m	202	3PE	O11-C1-C2-O21
51	K	101	CDL	OB5-CB3-CB4-OB6
51	L	702	CDL	OB5-CB3-CB4-OB6
51	X	201	CDL	OB5-CB3-CB4-OB6
51	r	201	CDL	OB5-CB3-CB4-OB6
46	L	701	3PE	C31-C32-C33-C34
51	d	204	CDL	CA7-C31-C32-C33
52	L	706	LMT	C9-C10-C11-C12
51	X	201	CDL	C19-C20-C21-C22
51	d	204	CDL	C74-C75-C76-C77
46	H	601	3PE	O21-C2-C3-O31
46	Y	202	3PE	O21-C2-C3-O31
46	Y	203	3PE	O21-C2-C3-O31
51	N	401	CDL	OA6-CA4-CA6-OA8
51	d	204	CDL	C77-C78-C79-C80
46	Y	202	3PE	C3B-C3C-C3D-C3E
51	X	201	CDL	C51-C52-C53-C54
46	I	204	3PE	C28-C29-C2A-C2B
46	d	201	3PE	C22-C23-C24-C25
46	M	601	3PE	C2-C1-O11-P
49	F	501	FMN	C4'-C5'-O5'-P
51	L	702	CDL	CA4-CA3-OA5-PA1
45	Y	201	PC1	C34-C35-C36-C37
51	N	401	CDL	C15-C16-C17-C18
51	X	201	CDL	C71-C72-C73-C74

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Mol	Chain	Res	Type	Atoms
45	A	203	PC1	O32-C31-O31-C3
46	d	202	3PE	C32-C33-C34-C35
45	Y	201	PC1	O11-C1-C2-C3
46	I	204	3PE	O11-C1-C2-C3
46	L	707	3PE	O11-C1-C2-C3
51	X	201	CDL	OB5-CB3-CB4-CB6
51	d	204	CDL	OA5-CA3-CA4-CA6
46	d	201	3PE	C28-C29-C2A-C2B
51	r	201	CDL	C56-C57-C58-C59
45	Y	201	PC1	O21-C21-C22-C23
51	L	702	CDL	C31-C32-C33-C34
52	M	604	LMT	O1'-C1-C2-C3
57	U	101	EHZ	C5-C6-C7-C8
46	A	204	3PE	C36-C37-C38-C39
46	L	703	3PE	C38-C39-C3A-C3B
51	K	101	CDL	C31-CA7-OA8-CA6
52	Y	204	LMT	C4'-C5'-C6'-O6'
51	X	201	CDL	CA6-CA4-OA6-CA5
52	p	201	LMT	C2B-C1B-O1B-C4'
52	L	706	LMT	C4B-C5B-C6B-O6B
46	L	707	3PE	C28-C29-C2A-C2B
46	Y	202	3PE	C33-C34-C35-C36
45	B	202	PC1	C1-C2-C3-O31
46	M	601	3PE	C1-C2-C3-O31
51	H	602	CDL	C1-CB2-OB2-PB2
51	d	204	CDL	CB4-CB3-OB5-PB2
51	K	101	CDL	OA9-CA7-OA8-CA6
45	A	201	PC1	O11-C1-C2-O21
46	A	202	3PE	O11-C1-C2-O21
46	M	602	3PE	O11-C1-C2-O21
51	X	201	CDL	OA5-CA3-CA4-OA6
51	d	204	CDL	OA5-CA3-CA4-OA6
45	Z	200	PC1	C2F-C2G-C2H-C2I
46	d	202	3PE	C22-C23-C24-C25
52	L	704	LMT	C5'-C4'-O1B-C1B
46	Y	203	3PE	C34-C35-C36-C37
57	U	101	EHZ	O1-C7-C8-C9
46	L	703	3PE	O21-C2-C3-O31
46	M	602	3PE	O21-C2-C3-O31
51	K	101	CDL	OA6-CA4-CA6-OA8
51	d	204	CDL	OB6-CB4-CB6-OB8
51	r	201	CDL	OA6-CA4-CA6-OA8

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Mol	Chain	Res	Type	Atoms
45	A	201	PC1	O32-C31-O31-C3
45	m	201	PC1	C25-C26-C27-C28
46	L	707	3PE	C22-C23-C24-C25
46	d	201	3PE	C3C-C3D-C3E-C3F
45	A	203	PC1	C24-C25-C26-C27
46	L	707	3PE	C34-C35-C36-C37
51	H	602	CDL	CA5-C11-C12-C13
46	Y	203	3PE	C32-C33-C34-C35
51	h	201	CDL	C36-C37-C38-C39
46	d	202	3PE	C34-C35-C36-C37
51	h	201	CDL	C51-C52-C53-C54
52	M	605	LMT	C6-C7-C8-C9
54	O	402	DGT	PB-O3A-PA-O2A
51	L	702	CDL	C15-C16-C17-C18
51	L	702	CDL	C52-C53-C54-C55
52	L	705	LMT	C1-C2-C3-C4
45	Z	200	PC1	C11-O13-P-O11
52	b	101	LMT	C4-C5-C6-C7
46	Y	203	3PE	O31-C31-C32-C33
51	X	201	CDL	CA4-CA3-OA5-PA1
45	A	203	PC1	C11-O13-P-O12
45	M	603	PC1	C11-O13-P-O12
45	Y	201	PC1	C1-O11-P-O14
45	d	203	PC1	C11-O13-P-O12
45	d	203	PC1	C11-O13-P-O14
46	H	601	3PE	C1-O11-P-O12
46	I	201	3PE	C1-O11-P-O14
46	I	201	3PE	C11-O13-P-O12
46	L	701	3PE	C1-O11-P-O12
46	L	703	3PE	C11-O13-P-O12
46	d	201	3PE	C1-O11-P-O12
46	d	201	3PE	C1-O11-P-O14
46	d	202	3PE	C1-O11-P-O12
46	m	202	3PE	C1-O11-P-O14
51	H	602	CDL	CA3-OA5-PA1-OA3
51	K	101	CDL	CB3-OB5-PB2-OB3
51	K	101	CDL	CB3-OB5-PB2-OB4
51	L	702	CDL	CB2-OB2-PB2-OB3
51	L	702	CDL	CB2-OB2-PB2-OB4
51	N	401	CDL	CB3-OB5-PB2-OB3
51	N	401	CDL	CB3-OB5-PB2-OB4
51	X	201	CDL	CA2-OA2-PA1-OA4

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Mol	Chain	Res	Type	Atoms
51	X	201	CDL	CA3-OA5-PA1-OA4
51	d	204	CDL	CB3-OB5-PB2-OB4
51	h	201	CDL	CB3-OB5-PB2-OB3
51	r	201	CDL	CB2-OB2-PB2-OB4
54	O	402	DGT	C5'-O5'-PA-O1A
54	O	402	DGT	C5'-O5'-PA-O2A
57	T	101	EHZ	C6-C7-C8-C9
57	U	101	EHZ	C6-C7-C8-C9
46	A	202	3PE	O11-C1-C2-C3
46	L	701	3PE	O11-C1-C2-C3
46	M	601	3PE	O11-C1-C2-C3
46	Y	203	3PE	O11-C1-C2-C3
46	d	201	3PE	O11-C1-C2-C3
46	I	204	3PE	C23-C24-C25-C26
46	Y	203	3PE	O13-C11-C12-N
46	L	707	3PE	C33-C34-C35-C36
46	d	201	3PE	C24-C25-C26-C27
46	Y	203	3PE	C22-C23-C24-C25
51	L	702	CDL	C57-C58-C59-C60
46	M	602	3PE	C12-C11-O13-P
46	Y	203	3PE	C12-C11-O13-P
45	M	603	PC1	C24-C25-C26-C27
51	L	702	CDL	C51-C52-C53-C54
45	Y	201	PC1	O11-C1-C2-O21
46	L	701	3PE	O11-C1-C2-O21
46	Y	202	3PE	O11-C1-C2-O21
45	Y	201	PC1	C26-C27-C28-C29
45	m	201	PC1	C32-C33-C34-C35
46	d	202	3PE	C3D-C3E-C3F-C3G
51	d	204	CDL	C40-C41-C42-C43
51	K	101	CDL	C18-C19-C20-C21
45	Z	200	PC1	C23-C24-C25-C26
57	T	101	EHZ	C21-C1-C2-C3
45	d	203	PC1	C11-C12-N-C13
46	m	202	3PE	C21-C22-C23-C24
45	Y	201	PC1	C1-C2-C3-O31
46	A	202	3PE	C1-C2-C3-O31
46	M	601	3PE	C37-C38-C39-C3A
46	A	202	3PE	O21-C2-C3-O31
46	M	601	3PE	O21-C2-C3-O31
46	d	201	3PE	O21-C2-C3-O31
51	r	201	CDL	C18-C19-C20-C21

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Mol	Chain	Res	Type	Atoms
52	b	101	LMT	C2-C3-C4-C5
45	P	401	PC1	C2F-C2G-C2H-C2I
46	M	602	3PE	C3F-C3G-C3H-C3I
51	d	204	CDL	C76-C77-C78-C79
45	P	401	PC1	C2A-C2B-C2C-C2D
52	M	605	LMT	C5-C6-C7-C8
45	Z	200	PC1	C11-C12-N-C14
51	h	201	CDL	C38-C39-C40-C41
46	d	201	3PE	C35-C36-C37-C38
45	d	203	PC1	C36-C37-C38-C39
45	P	401	PC1	C38-C39-C3A-C3B
45	Z	200	PC1	C35-C36-C37-C38
46	L	707	3PE	C32-C33-C34-C35
51	X	201	CDL	C14-C15-C16-C17
45	A	203	PC1	C23-C24-C25-C26
45	m	201	PC1	C3A-C3B-C3C-C3D
45	P	401	PC1	C3A-C3B-C3C-C3D
46	Y	203	3PE	C3-C2-O21-C21
51	N	401	CDL	CB3-CB4-OB6-CB5
51	d	204	CDL	CB2-C1-CA2-OA2
46	H	601	3PE	O21-C21-C22-C23
46	d	201	3PE	C2-C1-O11-P
51	N	401	CDL	CA4-CA3-OA5-PA1
46	M	602	3PE	C34-C35-C36-C37
45	m	201	PC1	O11-C1-C2-O21
46	L	703	3PE	O11-C1-C2-O21
51	h	201	CDL	OA5-CA3-CA4-OA6
46	d	201	3PE	C34-C35-C36-C37
45	d	203	PC1	C11-C12-N-C15
46	I	201	3PE	C32-C31-O31-C3
46	I	204	3PE	C35-C36-C37-C38
46	A	204	3PE	O21-C21-C22-C23
51	K	101	CDL	OB6-CB4-CB6-OB8
46	I	201	3PE	C26-C27-C28-C29
46	Y	202	3PE	C23-C24-C25-C26
45	Y	201	PC1	C1-O11-P-O13
46	I	204	3PE	C11-O13-P-O11
46	M	601	3PE	C11-O13-P-O11
46	Y	203	3PE	C11-O13-P-O11
51	X	201	CDL	CA2-OA2-PA1-OA5
46	M	601	3PE	C38-C39-C3A-C3B
51	X	201	CDL	C16-C17-C18-C19

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Mol	Chain	Res	Type	Atoms
52	L	705	LMT	C11-C10-C9-C8
52	p	201	LMT	O5B-C1B-O1B-C4'
46	L	701	3PE	C36-C37-C38-C39
46	L	707	3PE	C2D-C2E-C2F-C2G
57	T	101	EHZ	C1-C21-C22-C23
51	K	101	CDL	C11-C12-C13-C14
52	M	604	LMT	C5-C6-C7-C8
51	r	201	CDL	C1-CB2-OB2-PB2
46	I	204	3PE	C24-C25-C26-C27
46	A	204	3PE	C32-C33-C34-C35
46	m	202	3PE	C2A-C2B-C2C-C2D
45	A	201	PC1	O11-C1-C2-C3
46	I	201	3PE	O32-C31-O31-C3
51	X	201	CDL	C52-C53-C54-C55
45	m	201	PC1	C23-C24-C25-C26
46	Y	202	3PE	C39-C3A-C3B-C3C
51	H	602	CDL	C51-C52-C53-C54
46	I	201	3PE	C37-C38-C39-C3A
52	M	605	LMT	C7-C8-C9-C10
46	M	601	3PE	C27-C28-C29-C2A
51	X	201	CDL	CB4-CB3-OB5-PB2
57	U	101	EHZ	S1-C10-C11-N1
51	N	401	CDL	C12-C13-C14-C15
46	M	602	3PE	C27-C28-C29-C2A
55	P	402	NDP	O4D-C1D-N1N-C6N
52	L	705	LMT	O5'-C5'-C6'-O6'
45	A	203	PC1	C32-C33-C34-C35
46	A	204	3PE	C1-C2-C3-O31
46	A	204	3PE	C2A-C2B-C2C-C2D
46	I	204	3PE	C22-C23-C24-C25
57	U	101	EHZ	N2-C15-C16-C17
45	P	401	PC1	C3D-C3E-C3F-C3G
46	H	601	3PE	C28-C29-C2A-C2B
51	h	201	CDL	C35-C36-C37-C38
46	d	202	3PE	C1-C2-O21-C21
51	d	204	CDL	CA6-CA4-OA6-CA5
45	M	603	PC1	C2D-C2E-C2F-C2G
45	d	203	PC1	C11-C12-N-C14
45	m	201	PC1	O21-C21-C22-C23
51	r	201	CDL	C72-C71-CB7-OB8
46	H	601	3PE	C29-C2A-C2B-C2C
46	M	602	3PE	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
51	X	201	CDL	C24-C25-C26-C27
51	h	201	CDL	C58-C59-C60-C61
51	X	201	CDL	C41-C42-C43-C44
51	H	602	CDL	CB5-C51-C52-C53
51	K	101	CDL	OA5-CA3-CA4-OA6
46	L	703	3PE	C28-C29-C2A-C2B
46	d	201	3PE	C23-C24-C25-C26
51	K	101	CDL	C16-C17-C18-C19
55	P	402	NDP	O4D-C4D-C5D-O5D
45	P	401	PC1	C3C-C3D-C3E-C3F
45	A	203	PC1	C33-C34-C35-C36
46	A	204	3PE	O21-C2-C3-O31
51	X	201	CDL	OA6-CA4-CA6-OA8
51	L	702	CDL	CB4-CB6-OB8-CB7
52	M	605	LMT	C4'-C5'-C6'-O6'
51	h	201	CDL	C73-C74-C75-C76
55	P	402	NDP	C2D-C1D-N1N-C6N
45	M	603	PC1	C27-C28-C29-C2A
45	A	201	PC1	C25-C26-C27-C28
45	B	202	PC1	C2-C1-O11-P
45	P	401	PC1	O21-C21-C22-C23
46	L	707	3PE	C37-C38-C39-C3A
46	H	601	3PE	O22-C21-O21-C2
51	X	201	CDL	C12-C13-C14-C15
46	L	707	3PE	C24-C25-C26-C27
46	m	202	3PE	O31-C31-C32-C33
45	P	401	PC1	C1-C2-C3-O31
45	d	203	PC1	C35-C36-C37-C38
51	X	201	CDL	CA3-CA4-CA6-OA8
52	L	706	LMT	C2-C3-C4-C5
46	I	201	3PE	C23-C24-C25-C26
45	Y	201	PC1	C38-C39-C3A-C3B
51	h	201	CDL	C37-C38-C39-C40
46	A	204	3PE	C2B-C2C-C2D-C2E
46	Y	203	3PE	O11-C1-C2-O21
51	N	401	CDL	OB5-CB3-CB4-OB6
45	Y	201	PC1	C3B-C3C-C3D-C3E
46	Y	202	3PE	C35-C36-C37-C38
52	L	705	LMT	C4'-C5'-C6'-O6'
51	r	201	CDL	OB5-CB3-CB4-CB6
45	B	202	PC1	O31-C31-C32-C33
49	F	501	FMN	O2'-C2'-C3'-C4'

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Mol	Chain	Res	Type	Atoms
45	Y	201	PC1	C3A-C3B-C3C-C3D
51	X	201	CDL	C35-C36-C37-C38
45	M	603	PC1	O31-C31-C32-C33
45	M	603	PC1	O21-C2-C3-O31
46	L	707	3PE	O31-C31-C32-C33
46	m	202	3PE	C2E-C2F-C2G-C2H
51	r	201	CDL	C71-CB7-OB8-CB6
51	K	101	CDL	C53-C54-C55-C56
55	P	402	NDP	C2B-O2B-P2B-O1X
46	M	601	3PE	O21-C21-C22-C23
52	M	604	LMT	C7-C8-C9-C10
54	O	402	DGT	PB-O3B-PG-O3G
52	M	605	LMT	C2B-C1B-O1B-C4'
46	L	707	3PE	C36-C37-C38-C39
51	K	101	CDL	OA7-CA5-OA6-CA4
45	Z	200	PC1	O21-C21-C22-C23
51	X	201	CDL	C12-C11-CA5-OA6
51	r	201	CDL	C32-C31-CA7-OA8
51	r	201	CDL	C52-C51-CB5-OB6
46	Y	202	3PE	C36-C37-C38-C39
45	A	203	PC1	O21-C21-C22-C23
49	F	501	FMN	O2'-C2'-C3'-O3'
46	H	601	3PE	C1-C2-C3-O31
46	d	201	3PE	C1-C2-C3-O31
45	Z	200	PC1	C37-C38-C39-C3A
46	d	202	3PE	C36-C37-C38-C39
46	A	202	3PE	C37-C38-C39-C3A
51	h	201	CDL	C57-C58-C59-C60
58	o	201	MYR	C11-C10-C9-C8
54	O	402	DGT	PB-O3B-PG-O2G
45	P	401	PC1	O31-C31-C32-C33
51	d	204	CDL	C34-C35-C36-C37
46	I	204	3PE	O31-C31-C32-C33
46	L	703	3PE	O21-C21-C22-C23
45	M	603	PC1	O32-C31-C32-C33
46	L	703	3PE	C3C-C3D-C3E-C3F
45	B	202	PC1	O21-C21-C22-C23
51	r	201	CDL	OB9-CB7-OB8-CB6
51	K	101	CDL	C54-C55-C56-C57
45	A	203	PC1	O22-C21-C22-C23
51	r	201	CDL	C59-C60-C61-C62
46	H	601	3PE	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
46	m	202	3PE	C28-C29-C2A-C2B
51	L	702	CDL	C12-C13-C14-C15
45	P	401	PC1	C23-C24-C25-C26
46	M	602	3PE	C3A-C3B-C3C-C3D
45	P	401	PC1	O32-C31-C32-C33
51	r	201	CDL	C52-C51-CB5-OB7
45	A	201	PC1	C1-C2-C3-O31
46	I	204	3PE	O32-C31-C32-C33
46	M	601	3PE	O22-C21-C22-C23
46	A	204	3PE	O31-C31-C32-C33
45	P	401	PC1	O22-C21-O21-C2
45	Z	200	PC1	O22-C21-C22-C23
51	X	201	CDL	C12-C11-CA5-OA7
45	Z	200	PC1	C11-O13-P-O14
45	m	201	PC1	C11-O13-P-O14
45	m	201	PC1	C1-O11-P-O14
46	M	602	3PE	C11-O13-P-O12
46	d	202	3PE	C1-O11-P-O14
51	N	401	CDL	CB2-OB2-PB2-OB3
46	M	601	3PE	C29-C2A-C2B-C2C
46	L	707	3PE	O32-C31-C32-C33
46	L	703	3PE	O22-C21-C22-C23
51	r	201	CDL	C32-C31-CA7-OA9
51	h	201	CDL	C60-C61-C62-C63
51	d	204	CDL	C11-C12-C13-C14
45	Y	201	PC1	O22-C21-C22-C23
45	A	203	PC1	C1-C2-O21-C21
45	Y	201	PC1	C12-C11-O13-P
46	M	601	3PE	C12-C11-O13-P
46	d	201	3PE	C12-C11-O13-P
46	d	202	3PE	C3-C2-O21-C21
51	d	204	CDL	CA3-CA4-OA6-CA5
51	d	204	CDL	C31-C32-C33-C34
45	A	201	PC1	O21-C21-C22-C23
51	X	201	CDL	C52-C51-CB5-OB6
51	r	201	CDL	C12-C11-CA5-OA6
46	d	201	3PE	O21-C21-C22-C23
46	A	204	3PE	O22-C21-O21-C2
49	F	501	FMN	N10-C1'-C2'-O2'
51	r	201	CDL	OA5-CA3-CA4-OA6
46	A	202	3PE	O31-C31-C32-C33
51	K	101	CDL	C12-C11-CA5-OA6

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Mol	Chain	Res	Type	Atoms
51	L	702	CDL	C52-C51-CB5-OB6
46	I	201	3PE	C38-C39-C3A-C3B
46	A	204	3PE	O32-C31-C32-C33
51	K	101	CDL	C12-C11-CA5-OA7
51	d	204	CDL	C72-C71-CB7-OB8
51	N	401	CDL	CA7-C31-C32-C33
45	B	202	PC1	O22-C21-C22-C23
46	d	201	3PE	O22-C21-C22-C23
51	X	201	CDL	C52-C51-CB5-OB7
51	r	201	CDL	C12-C11-CA5-OA7
46	m	202	3PE	C2C-C2D-C2E-C2F
51	H	602	CDL	O1-C1-CB2-OB2
45	A	203	PC1	O31-C31-C32-C33
46	A	202	3PE	O32-C31-C32-C33
51	L	702	CDL	C52-C51-CB5-OB7

There are no ring outliers.

42 monomers are involved in 118 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
46	M	601	3PE	6	0
45	M	603	PC1	3	0
45	Y	201	PC1	3	0
47	I	203	SF4	1	0
52	L	704	LMT	2	0
46	A	202	3PE	1	0
52	L	706	LMT	3	0
46	d	202	3PE	1	0
47	B	201	SF4	1	0
52	M	604	LMT	3	0
51	N	401	CDL	2	0
45	P	401	PC1	3	0
51	H	602	CDL	3	0
47	F	502	SF4	1	0
46	L	707	3PE	2	0
46	A	204	3PE	1	0
46	I	204	3PE	3	0
48	G	803	FES	1	0
51	r	201	CDL	2	0
52	p	201	LMT	2	0
46	L	701	3PE	1	0
45	B	202	PC1	1	0

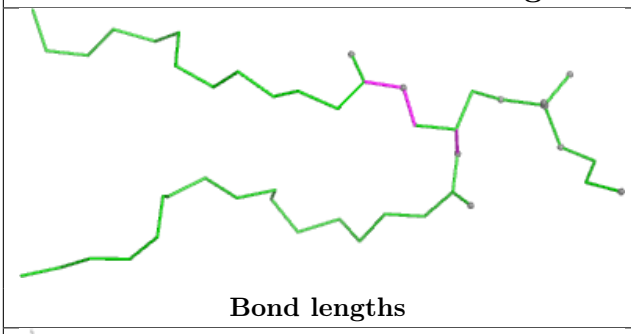
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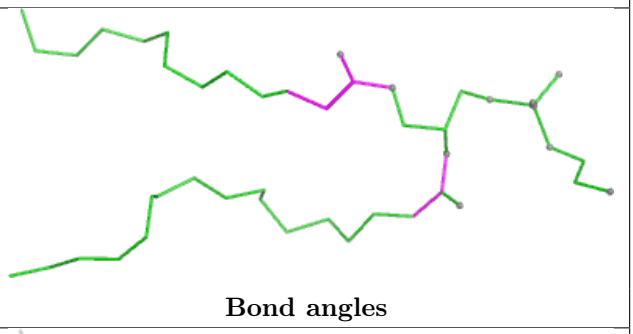
Mol	Chain	Res	Type	Clashes	Symm-Clashes
51	X	201	CDL	3	0
51	L	702	CDL	2	0
46	d	201	3PE	13	0
45	A	203	PC1	1	0
51	K	101	CDL	4	0
51	h	201	CDL	6	0
52	L	705	LMT	2	0
45	A	201	PC1	6	0
46	L	703	3PE	3	0
46	M	602	3PE	4	0
52	M	605	LMT	2	0
52	b	101	LMT	1	0
45	m	201	PC1	1	0
51	d	204	CDL	9	0
45	Z	200	PC1	12	0
45	d	203	PC1	1	0
52	Y	204	LMT	1	0
46	m	202	3PE	3	0
55	P	402	NDP	3	0
54	O	402	DGT	3	0

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.

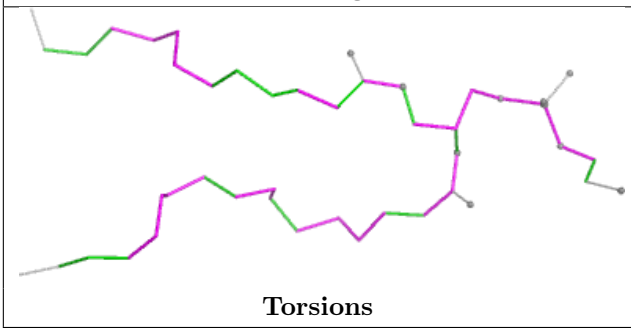
Ligand 3PE M 601



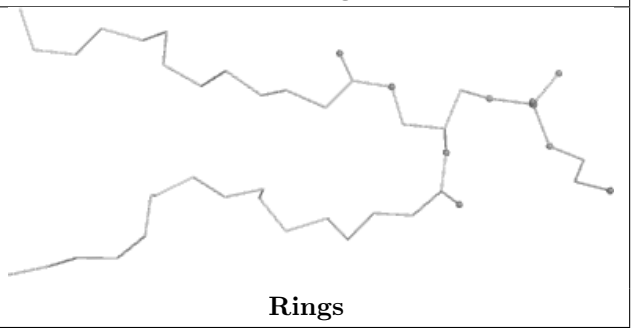
Bond lengths



Bond angles

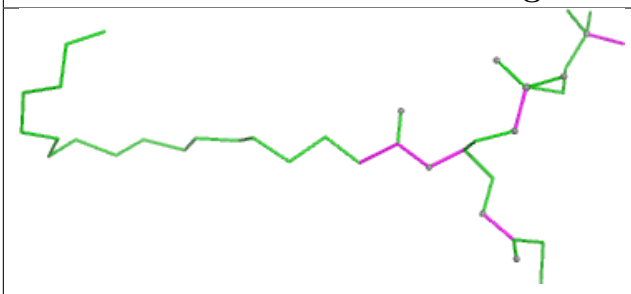


Torsions

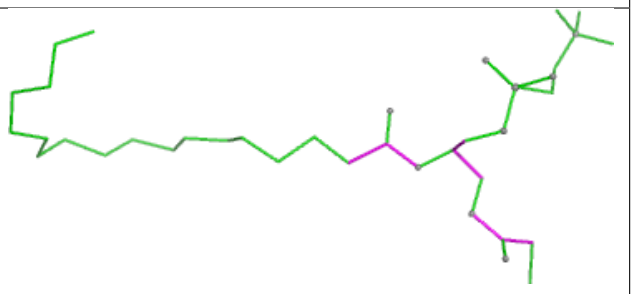


Rings

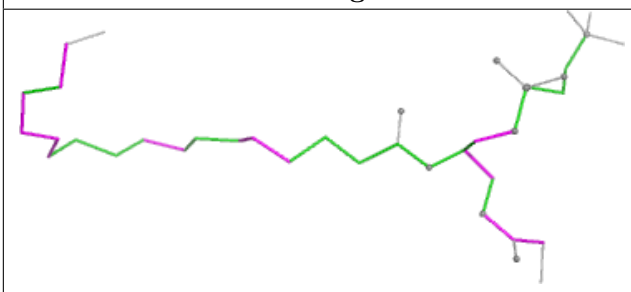
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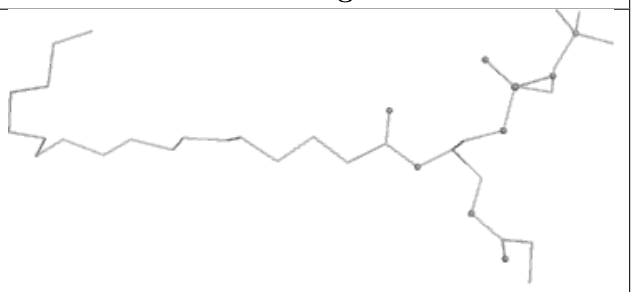
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Bond angles

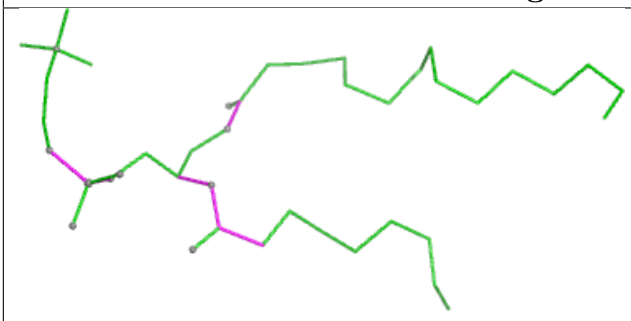


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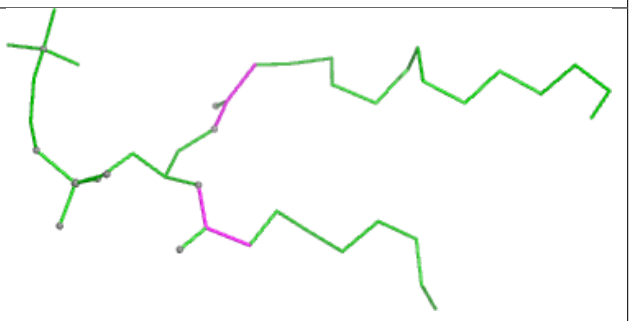


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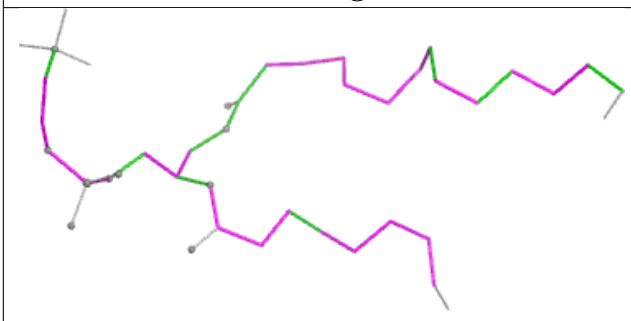
Ligand PC1 Y 201



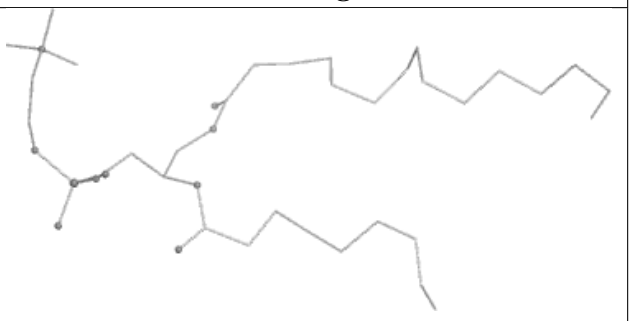
Bond lengths



Bond angles

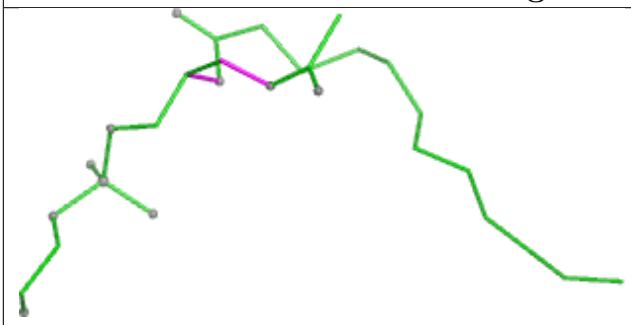


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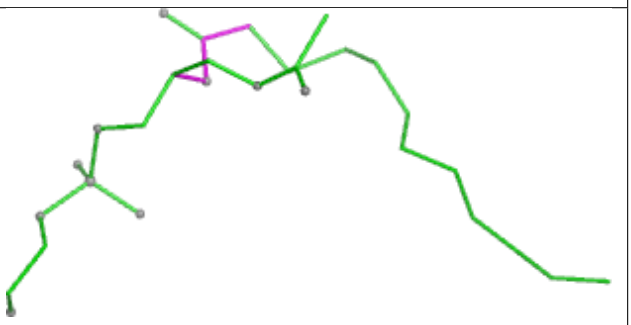


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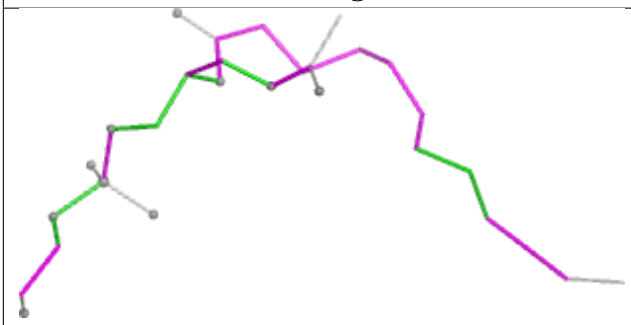
Ligand 3PE H 601



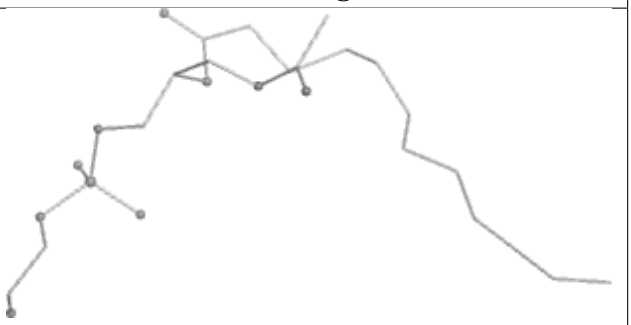
Bond lengths



Bond angles

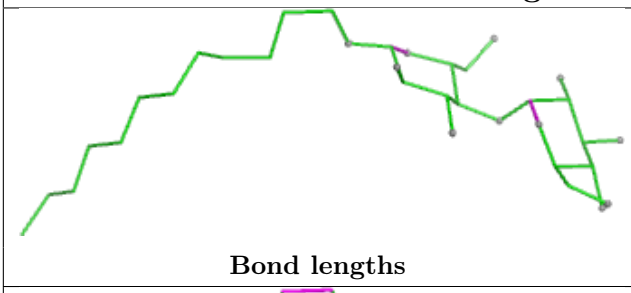


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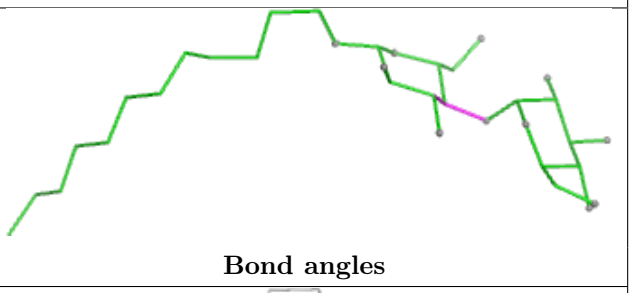


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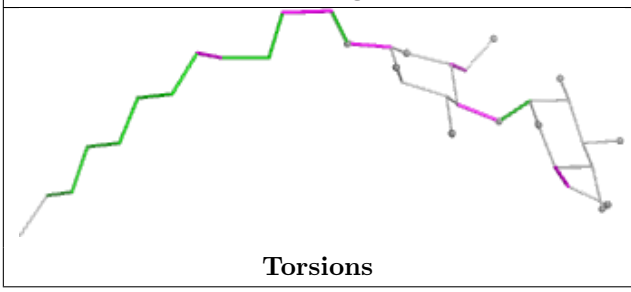
Ligand LMT L 704



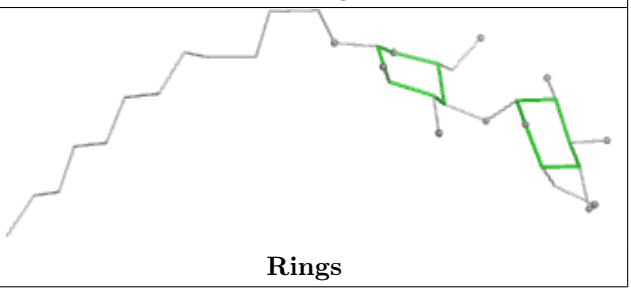
Bond lengths



Bond angles

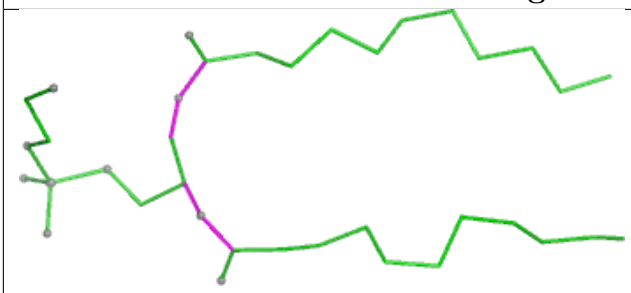


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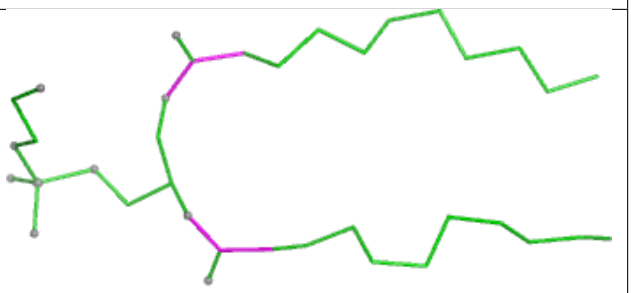


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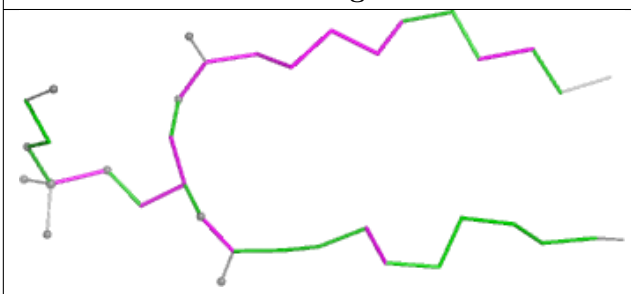
Ligand 3PE A 202



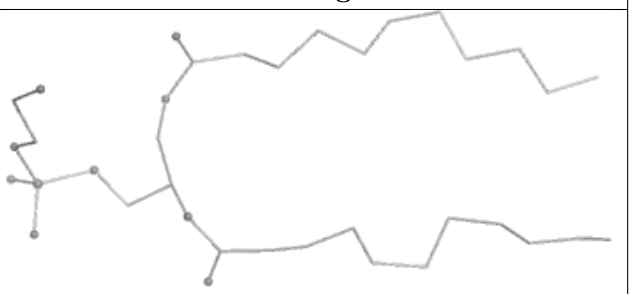
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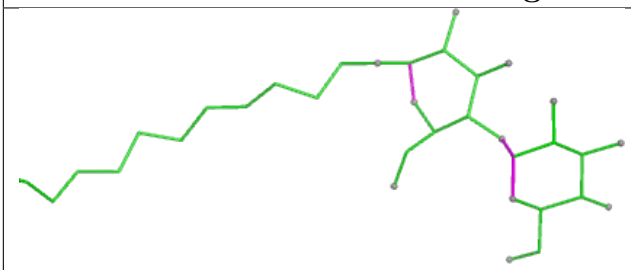


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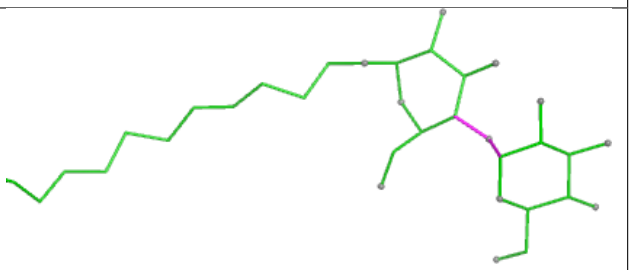


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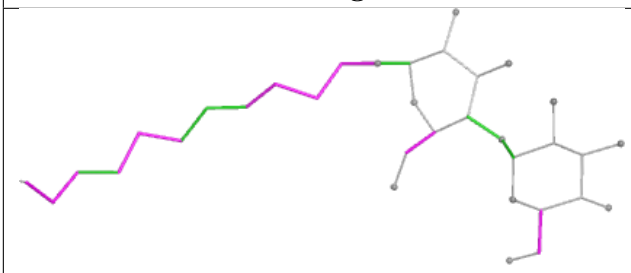
Ligand LMT L 706



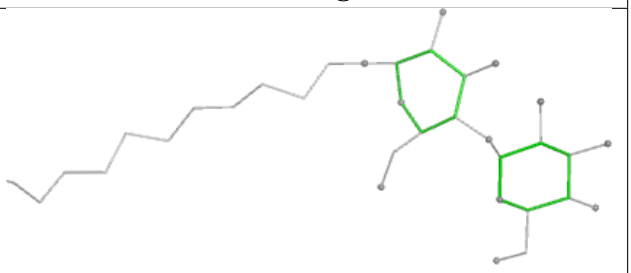
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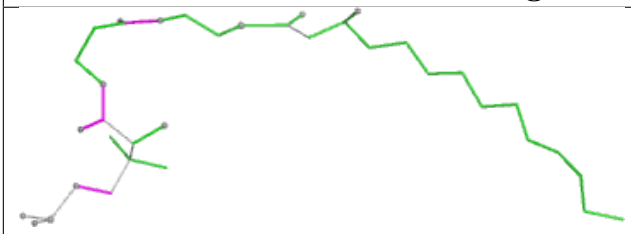


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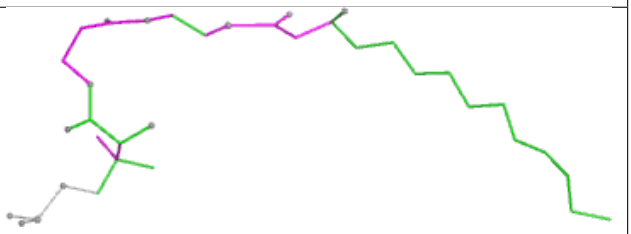


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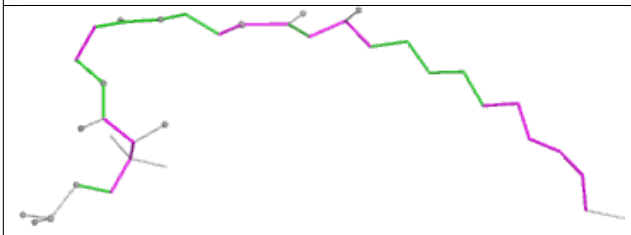
Ligand EHZ T 101



Bond lengths



Bond angles

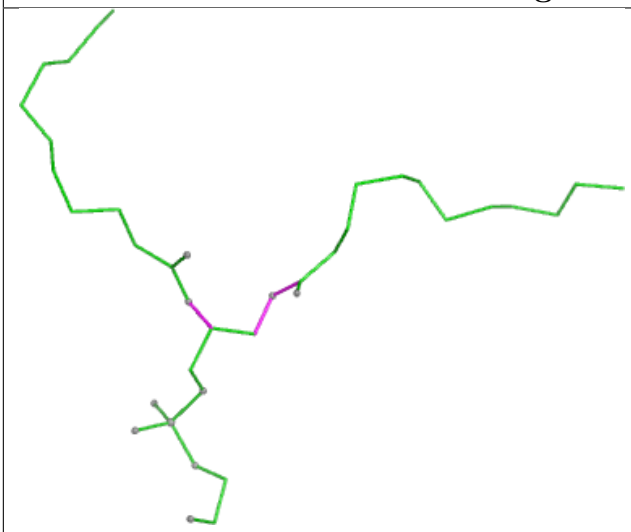


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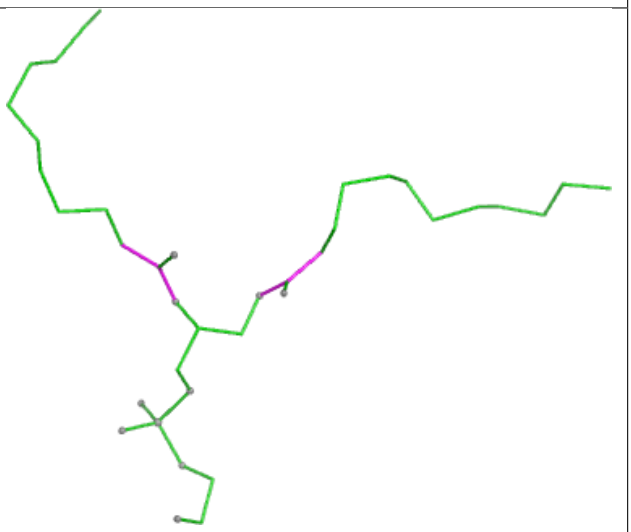


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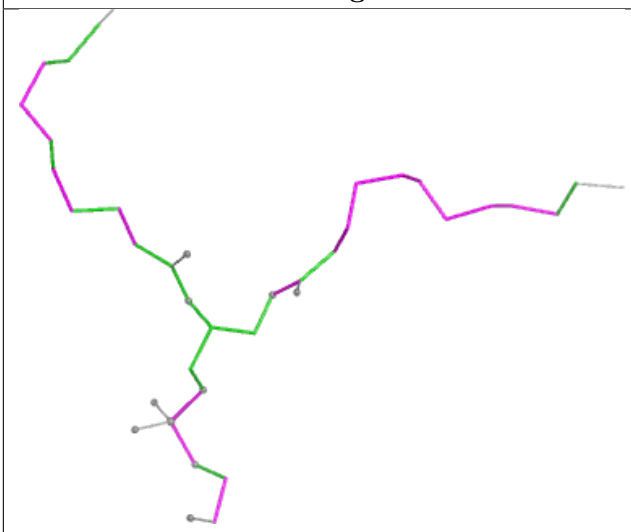
Ligand 3PE I 201



Bond lengths



Bond angles

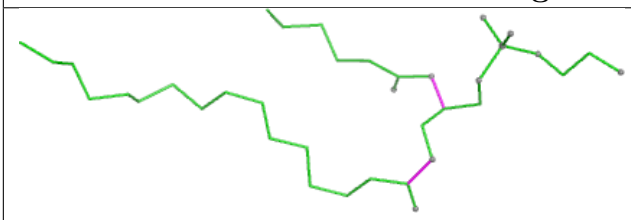


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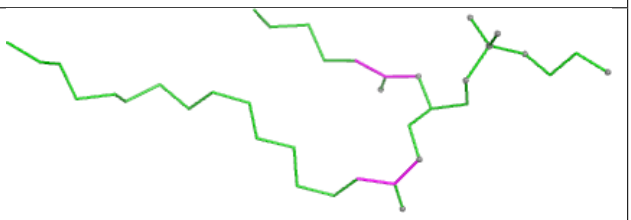


Rings

Ligand 3PE d 202



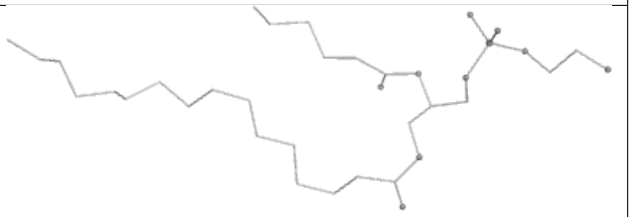
Bond lengths



Bond angles

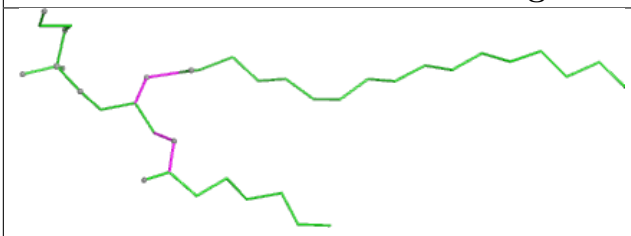


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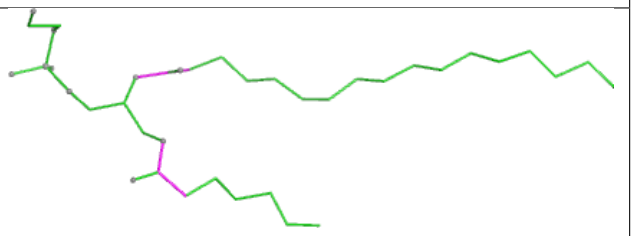


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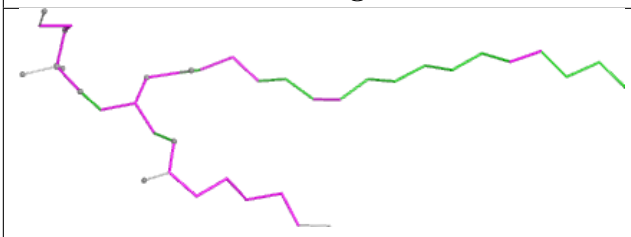
Ligand 3PE Y 203



Bond lengths



Bond angles

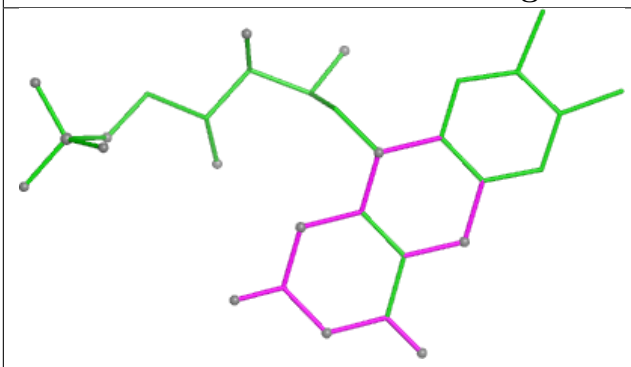


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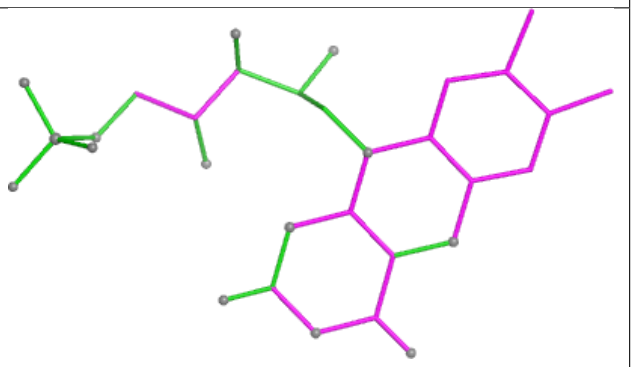


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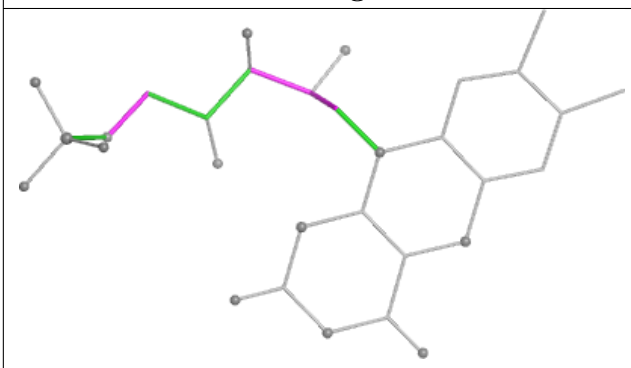
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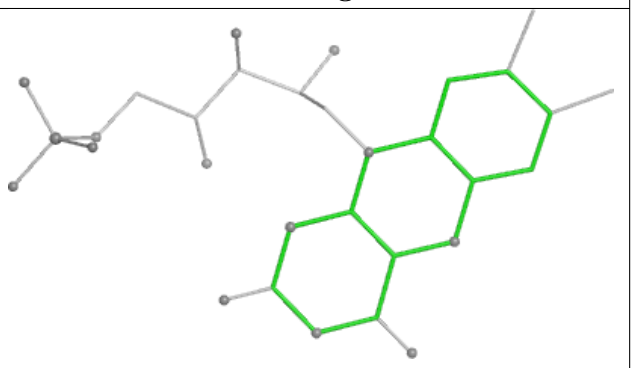
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Bond angles

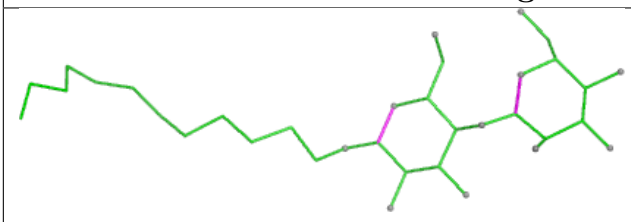


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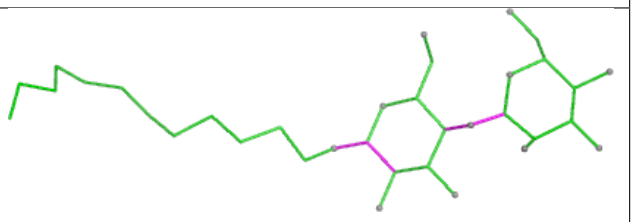


Rings

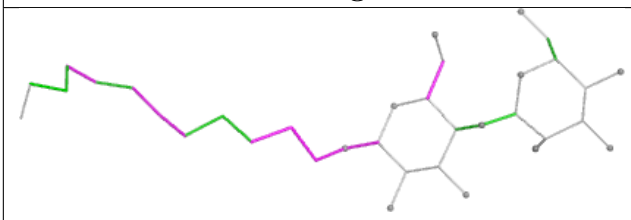
Ligand LMT M 604



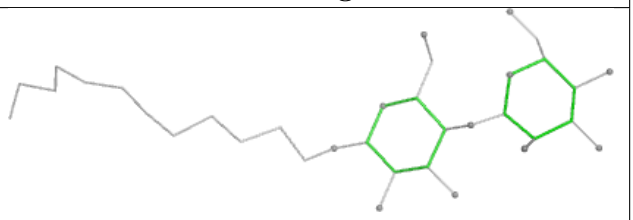
Bond lengths



Bond angles

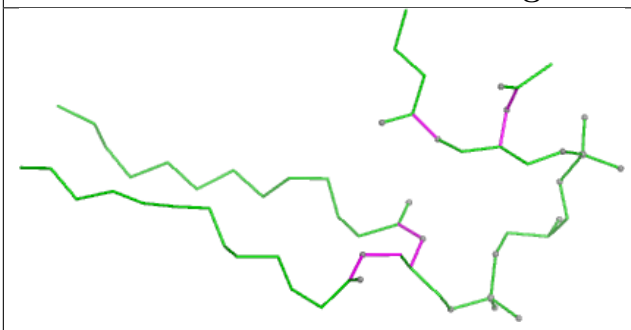


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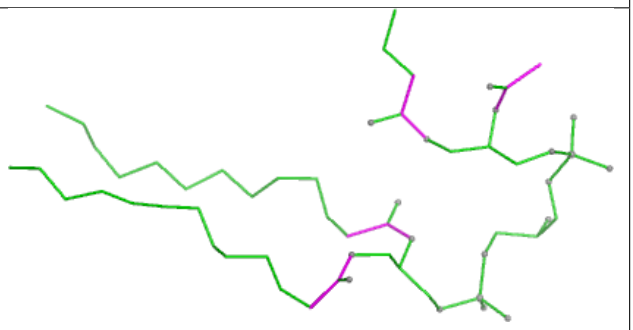


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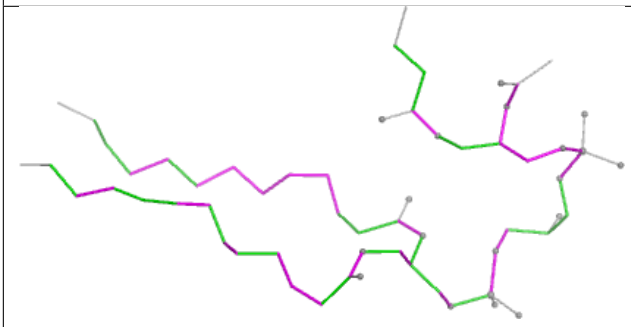
Ligand CDL N 401



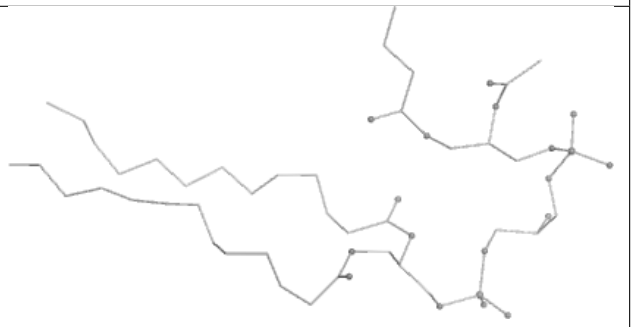
Bond lengths



Bond angles

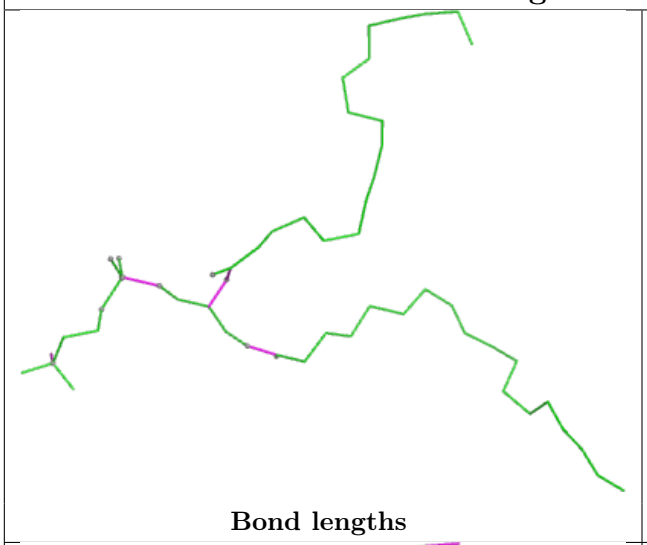


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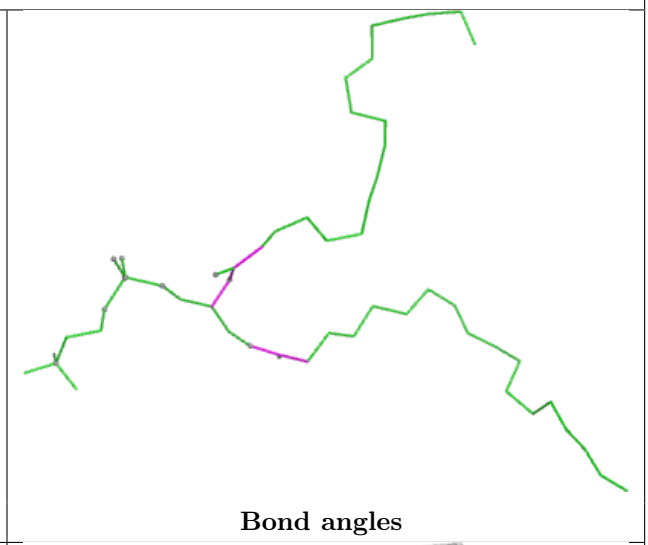


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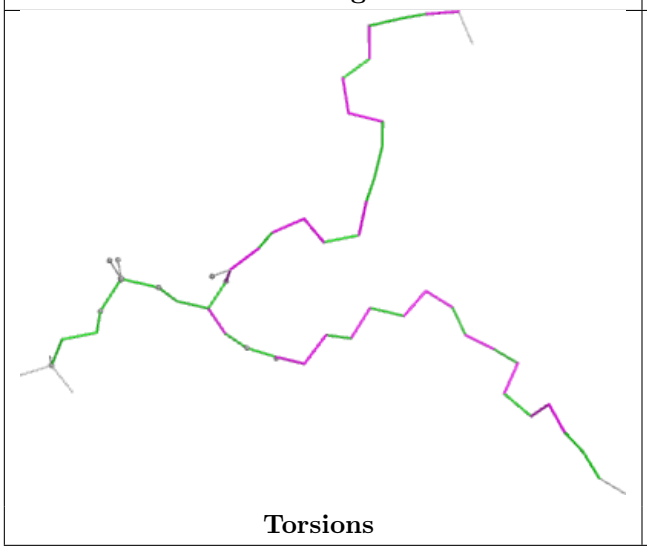
Ligand PC1 P 401



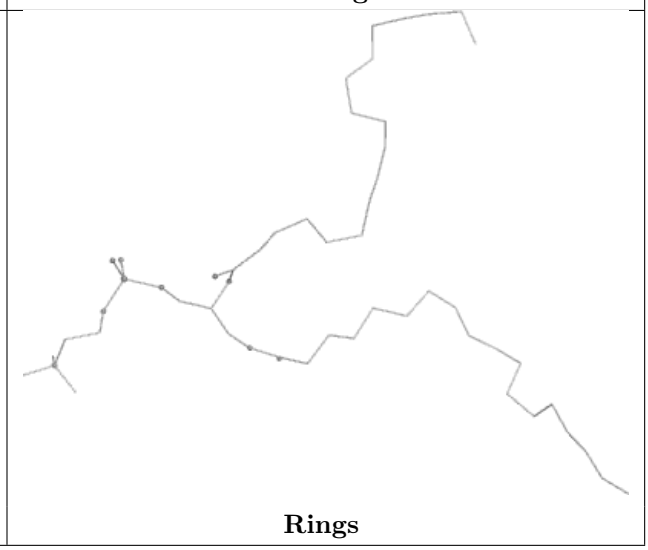
Bond lengths



Bond angles

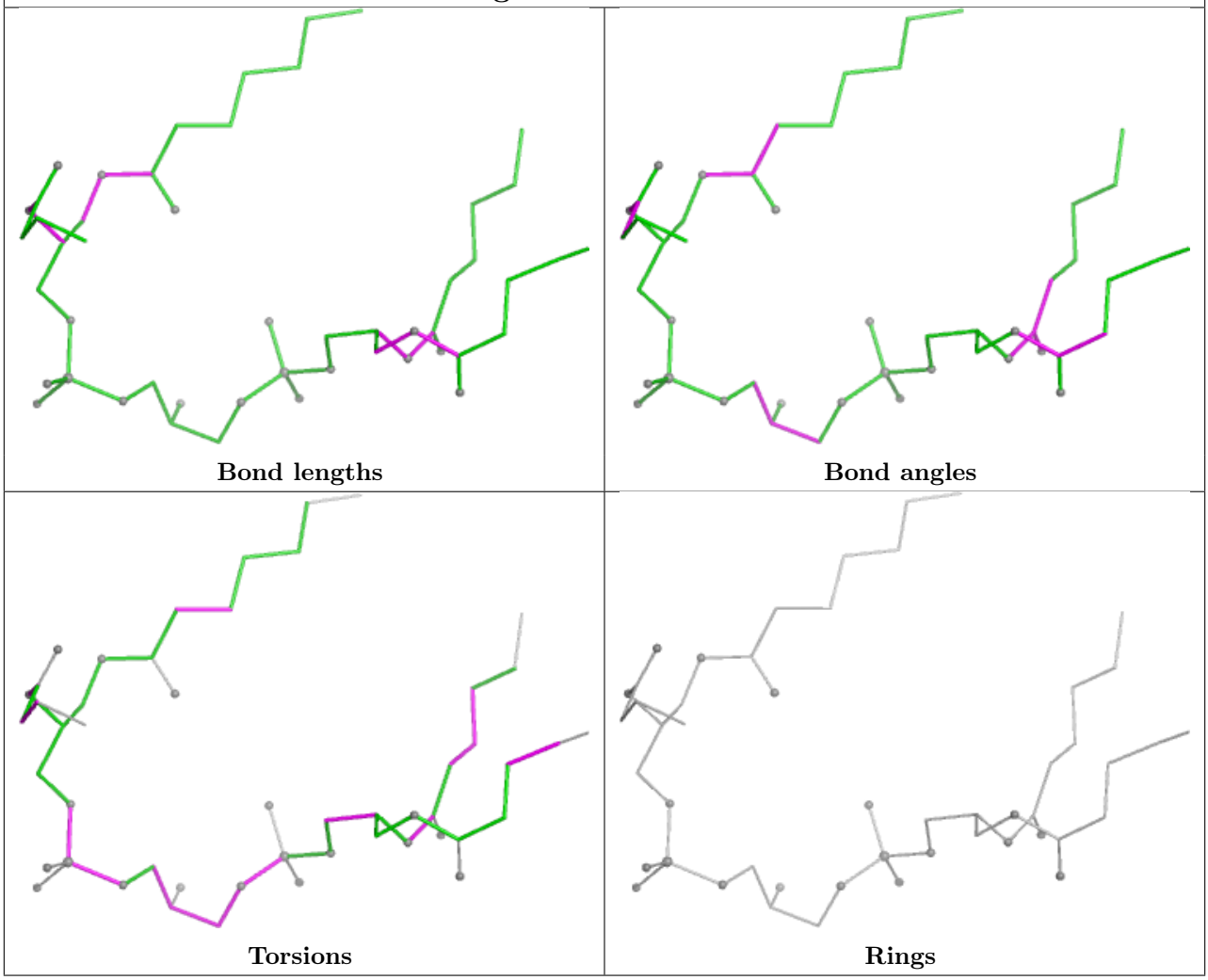


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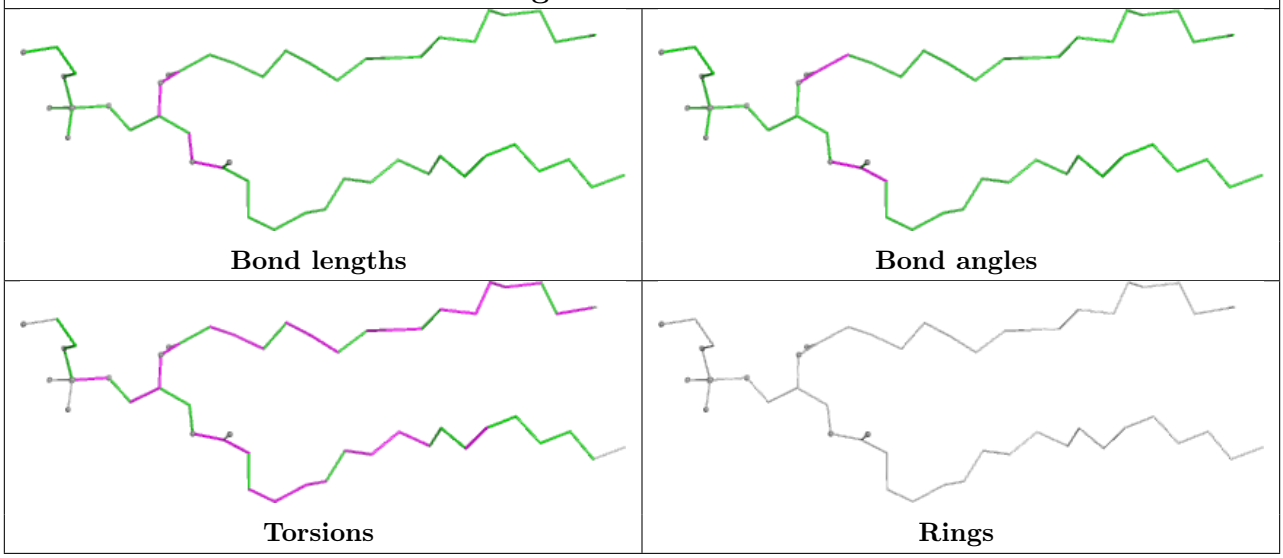


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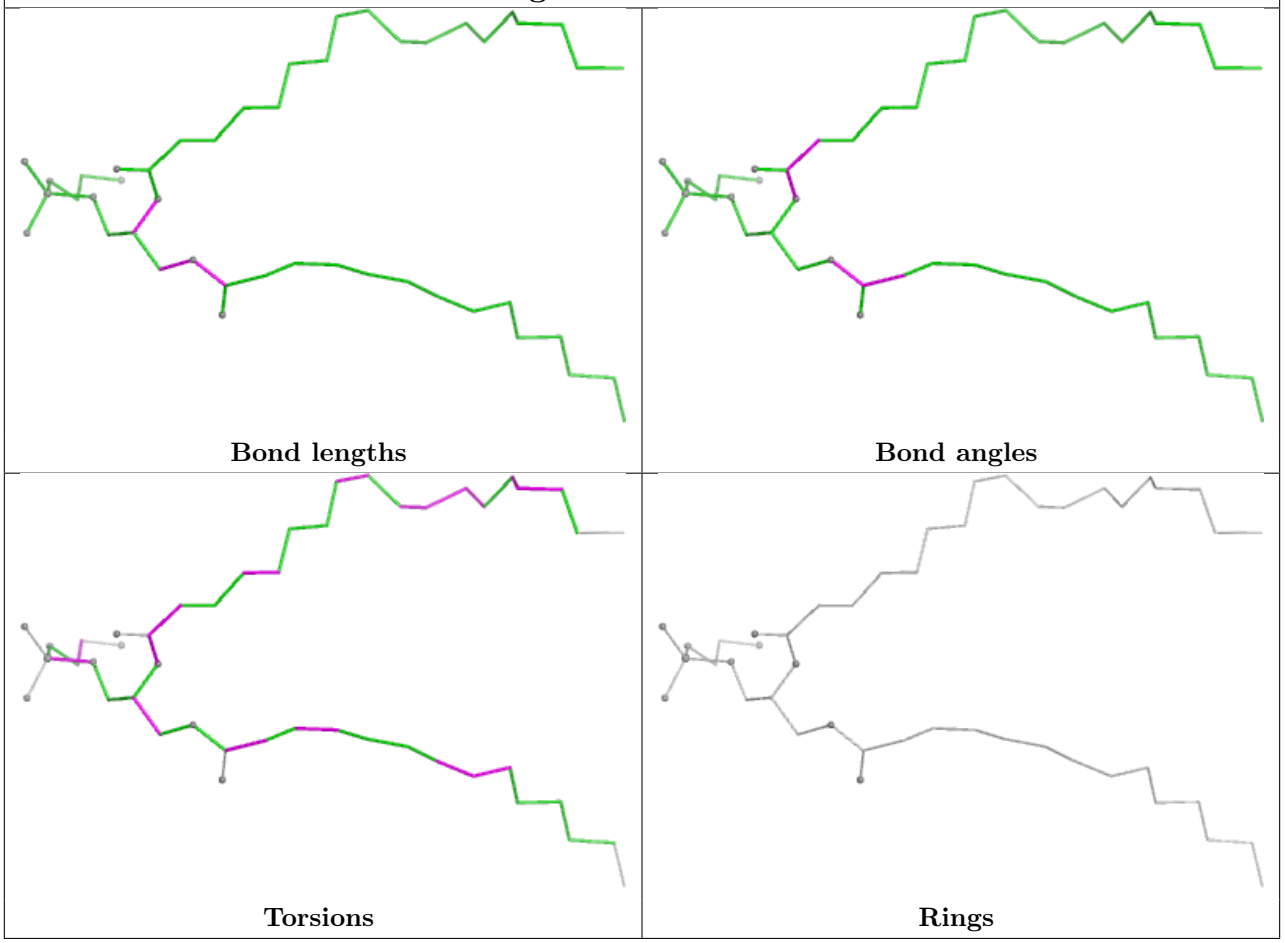
Ligand CDL H 602



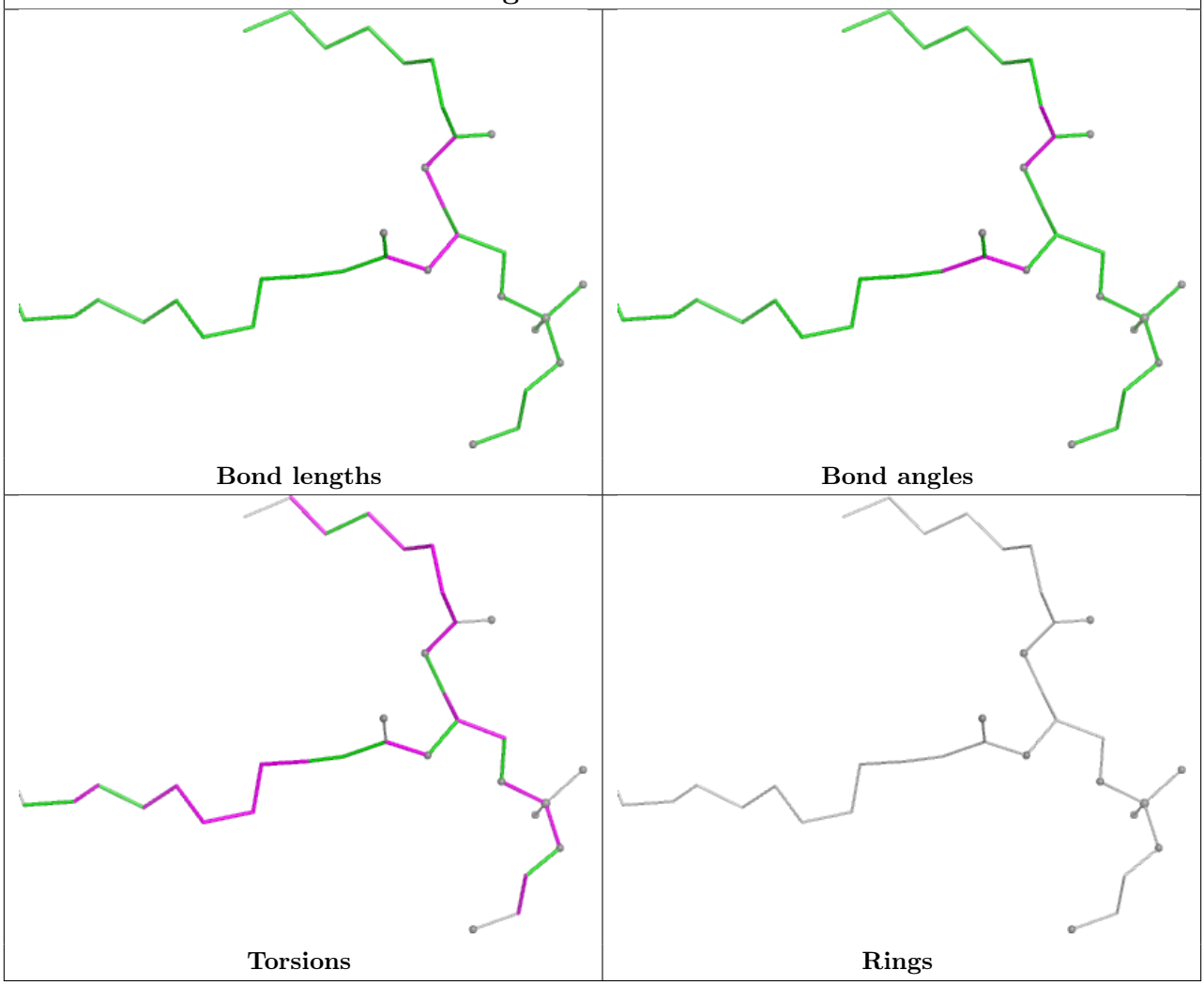
Ligand 3PE L 707



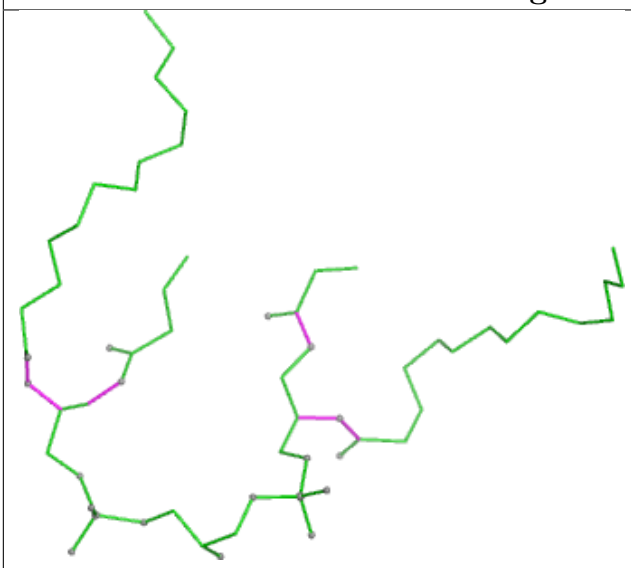
Ligand 3PE A 204



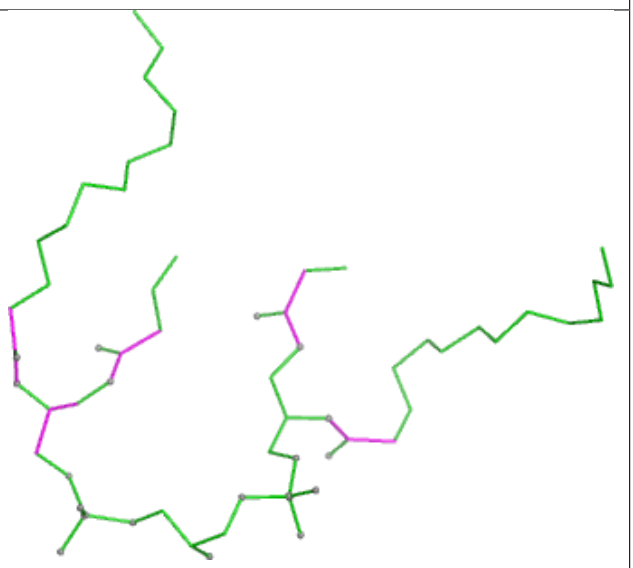
Ligand 3PE I 204



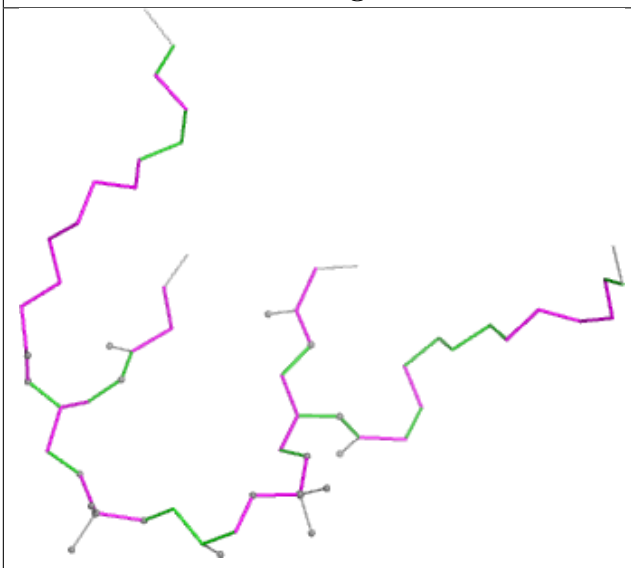
Ligand CDL r 201



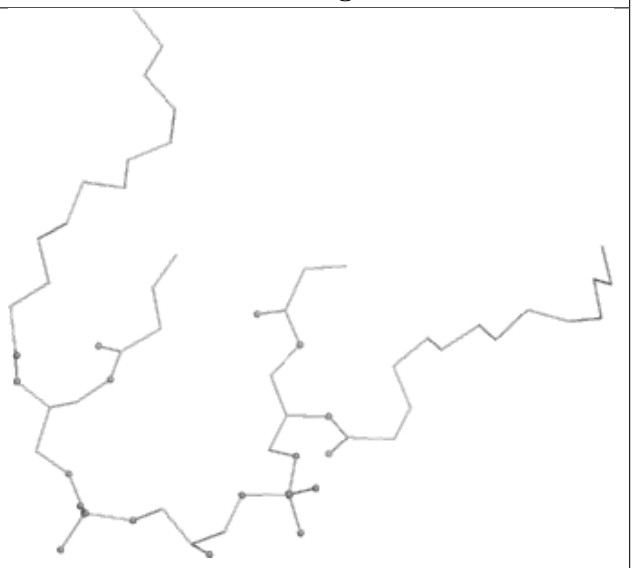
Bond lengths



Bond angles

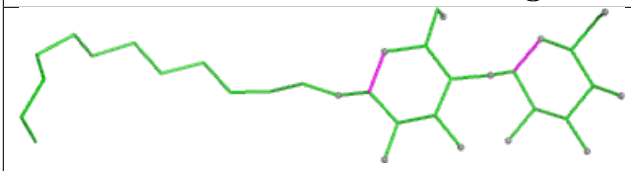


Torsions

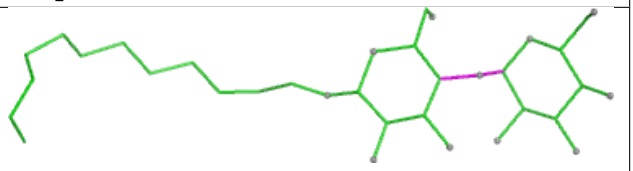


Rings

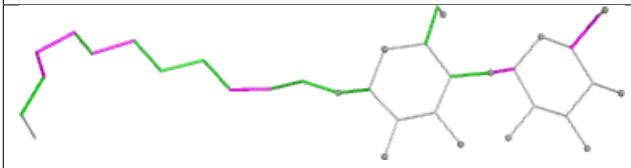
Ligand LMT p 201



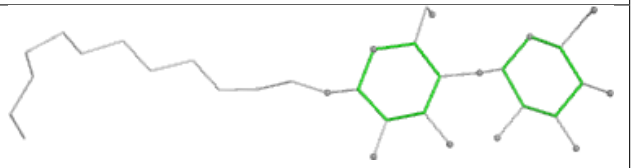
Bond lengths



Bond angles

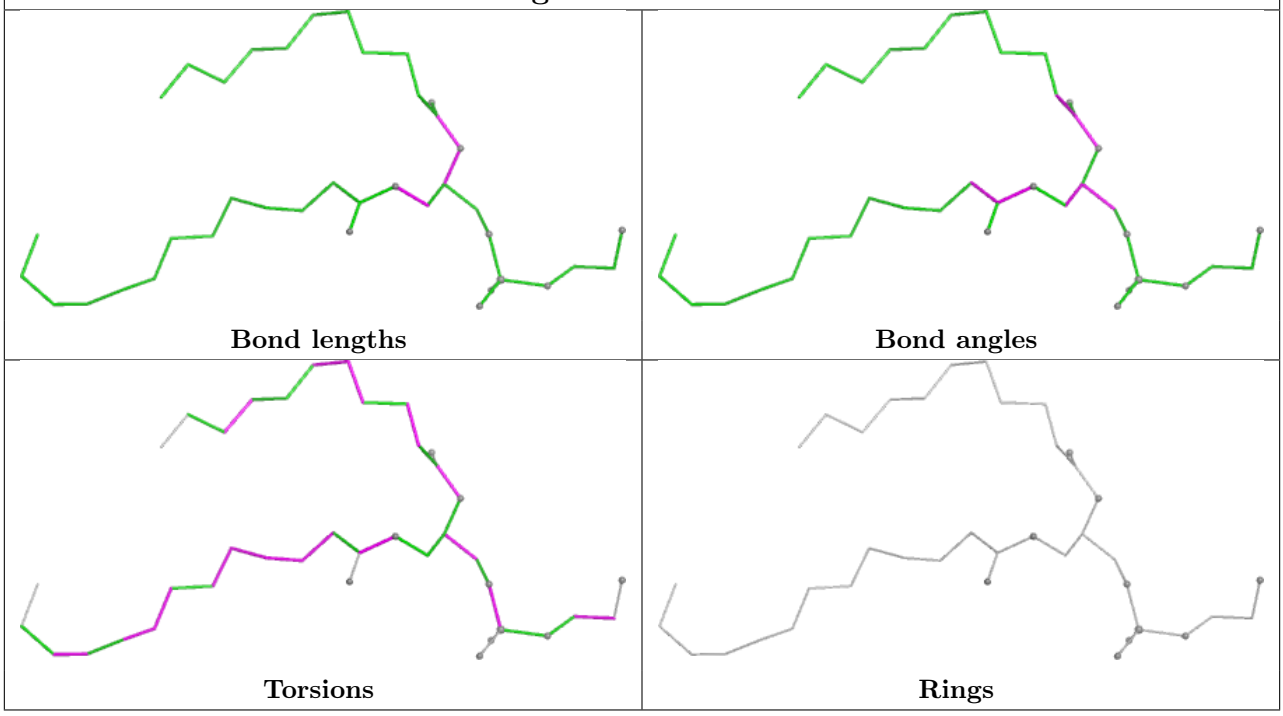


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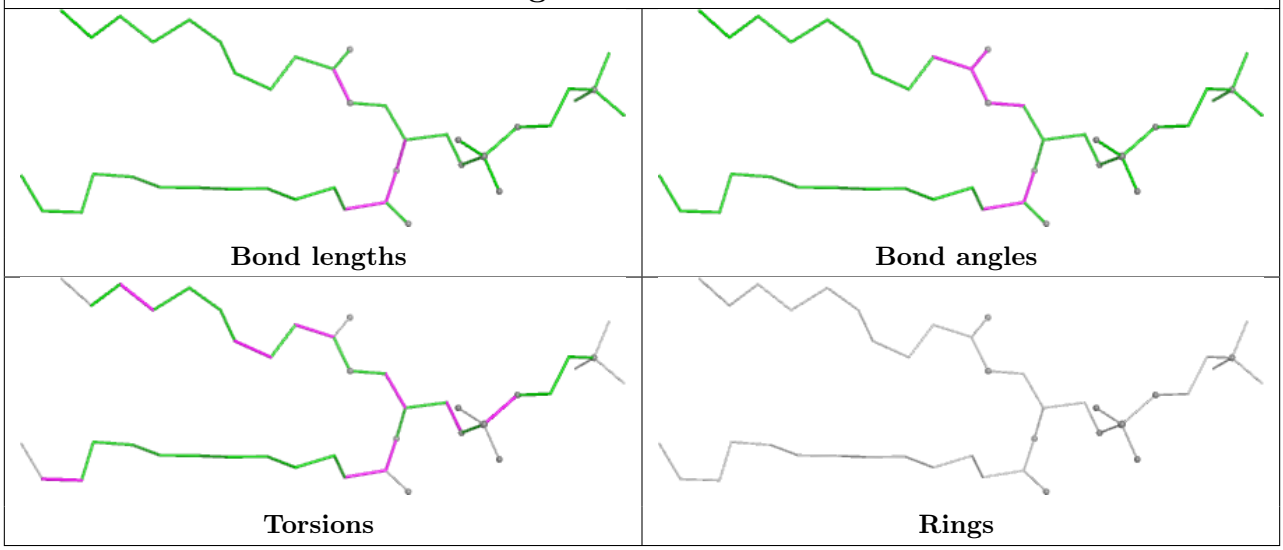


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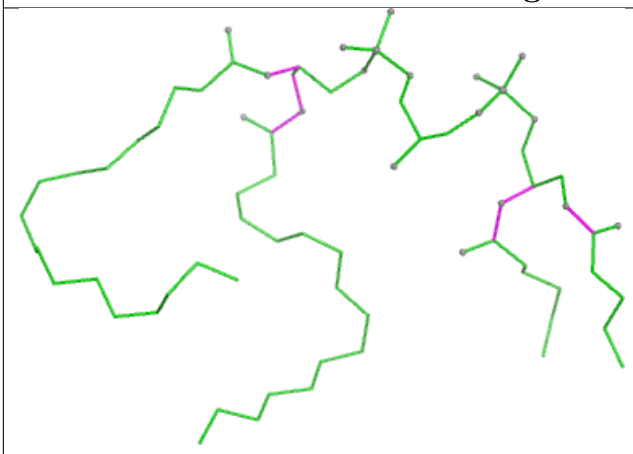
Ligand 3PE L 701



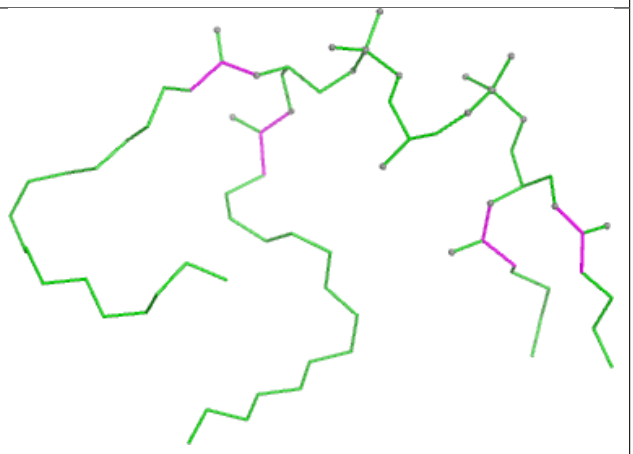
Ligand PC1 B 202



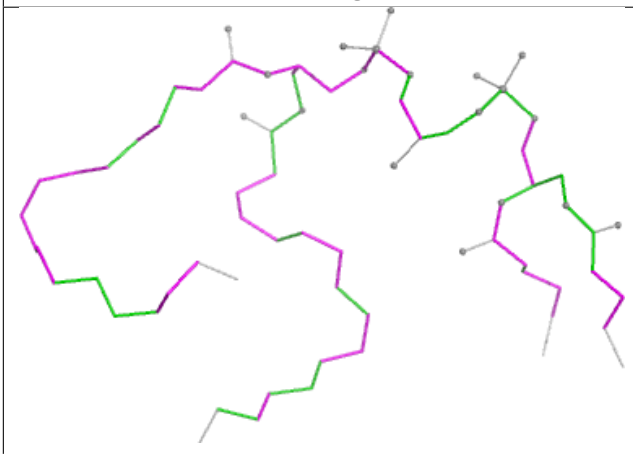
Ligand CDL X 201



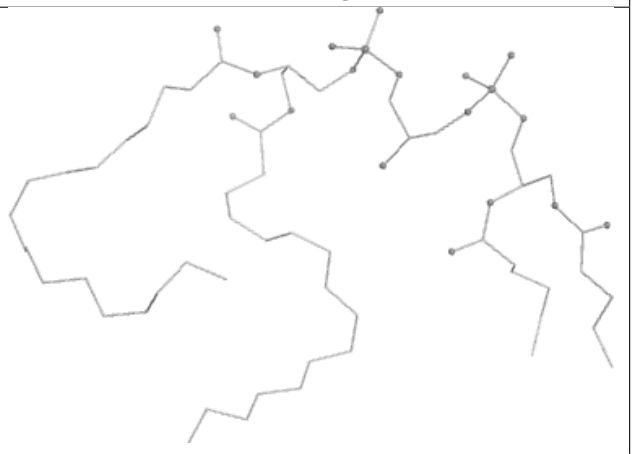
Bond lengths



Bond angles

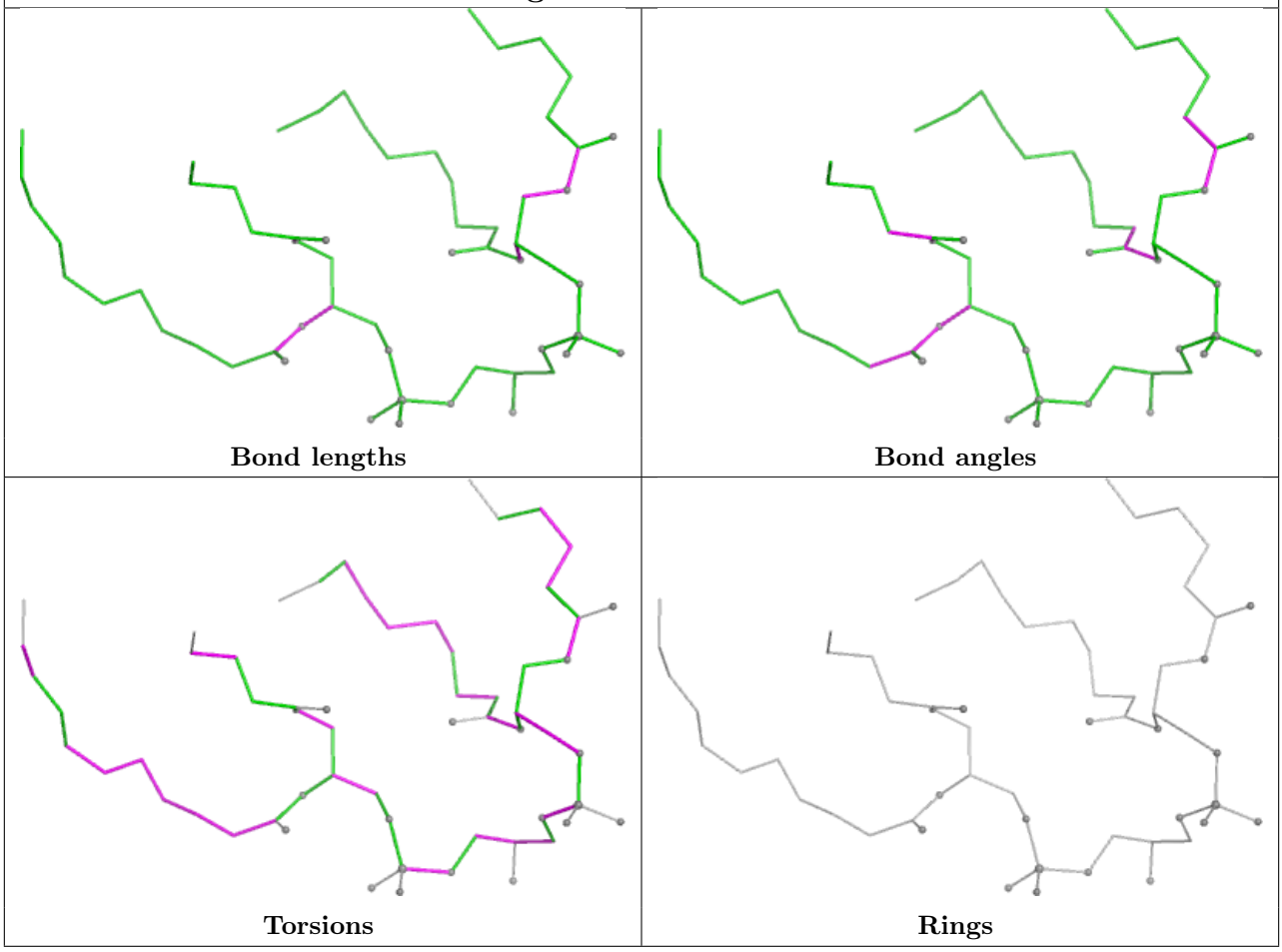


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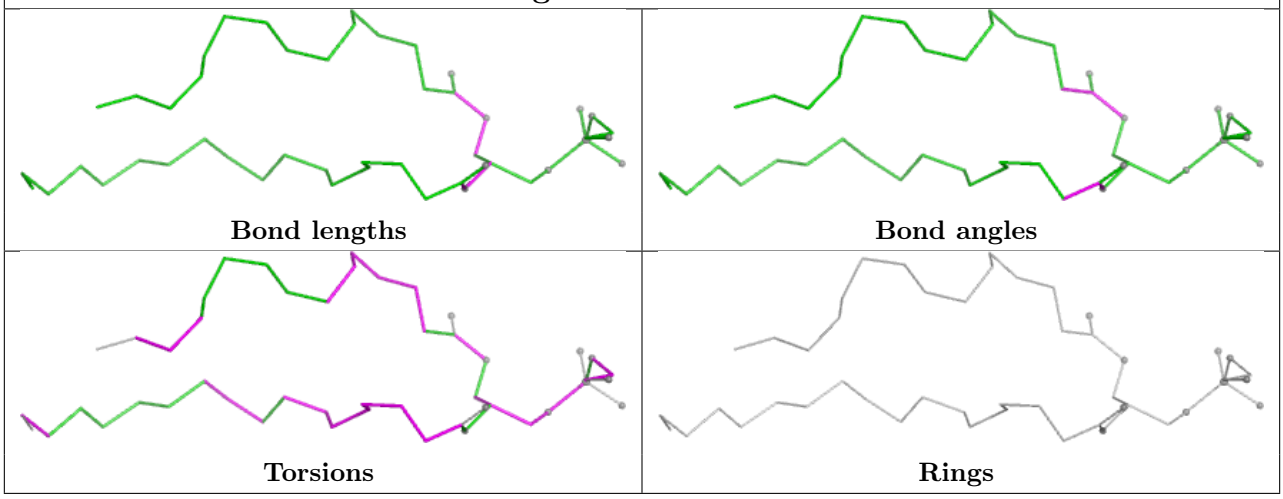


Rings

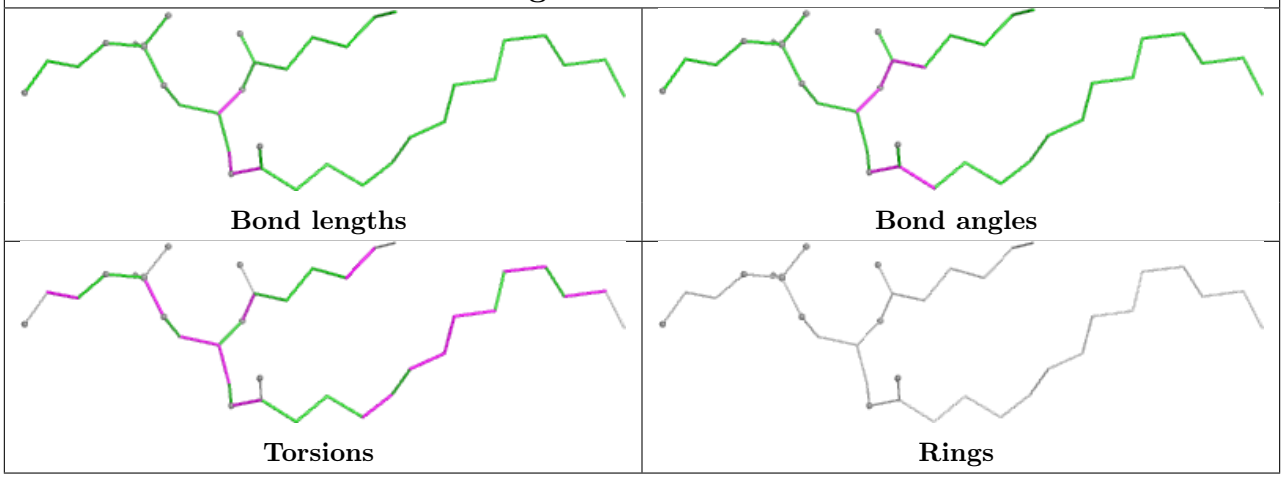
Ligand CDL L 702



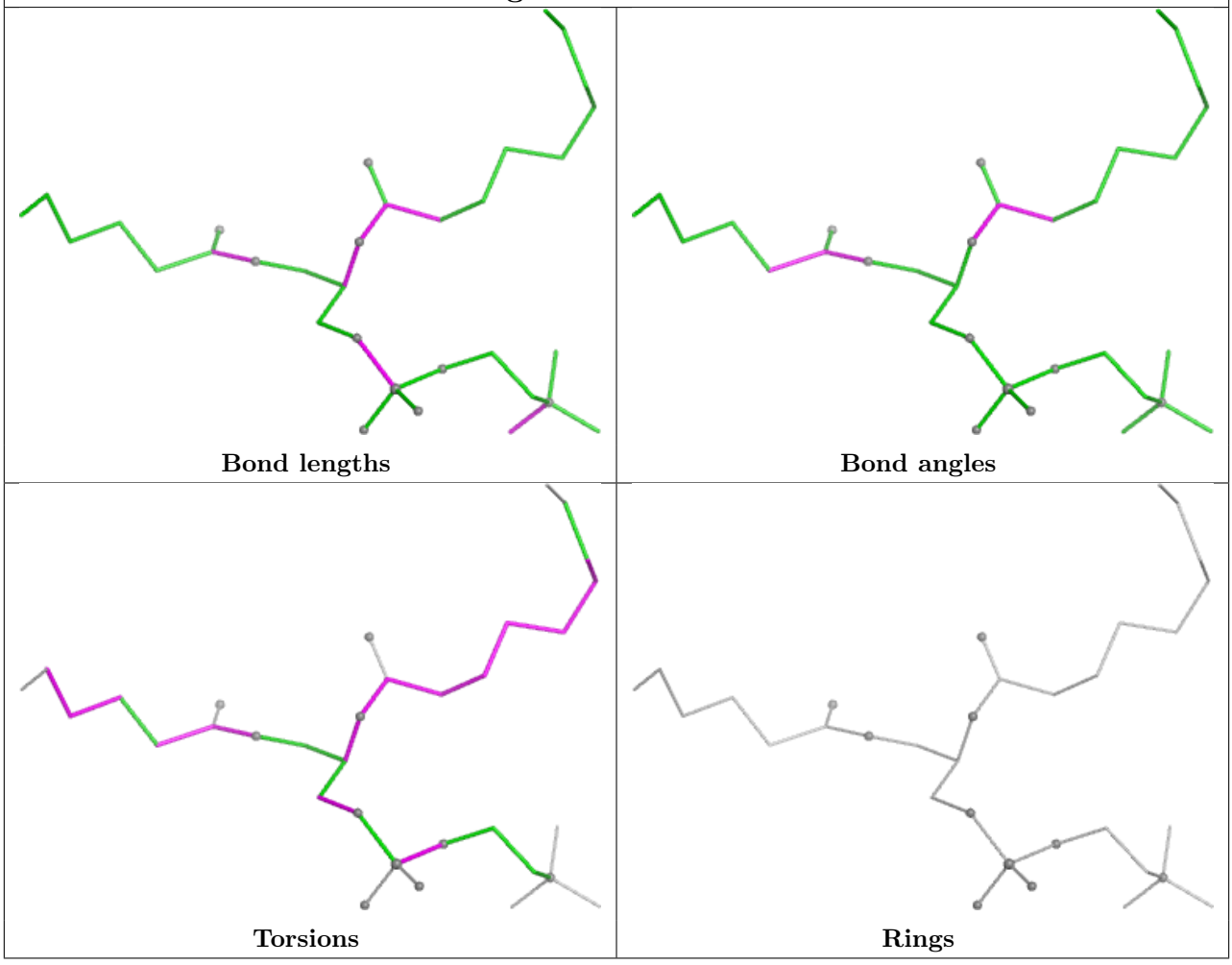
Ligand 3PE d 201



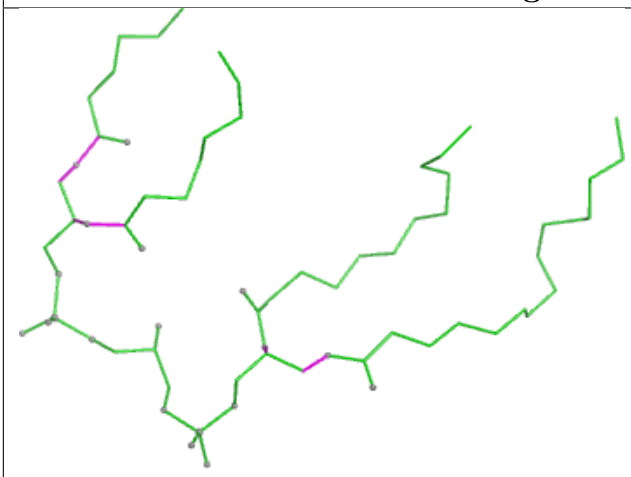
Ligand 3PE Y 202



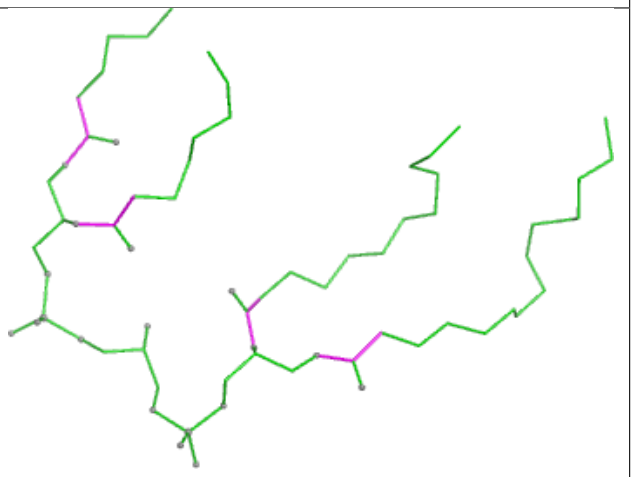
Ligand PC1 A 203



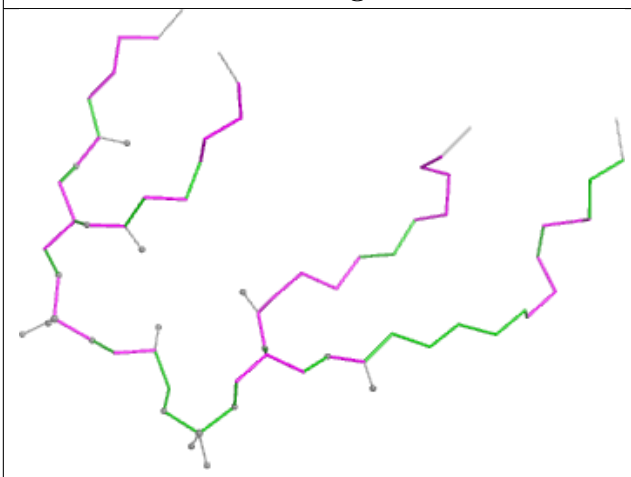
Ligand CDL K 101



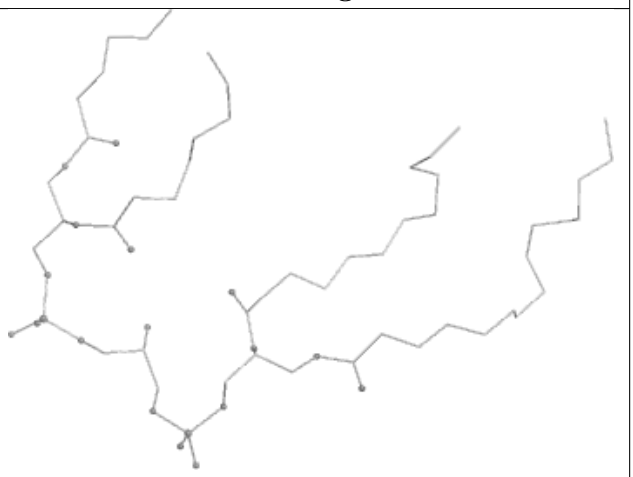
Bond lengths



Bond angles

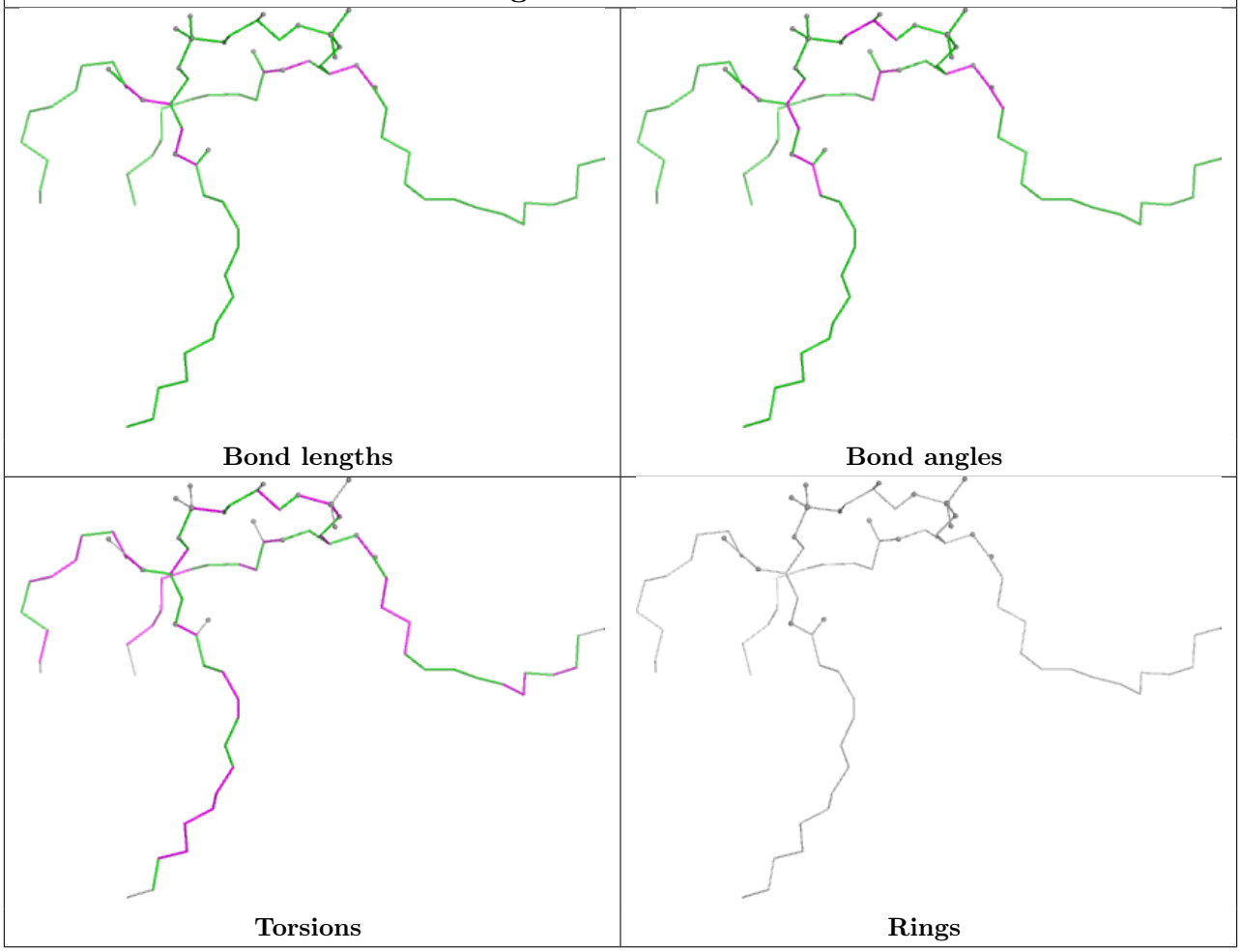


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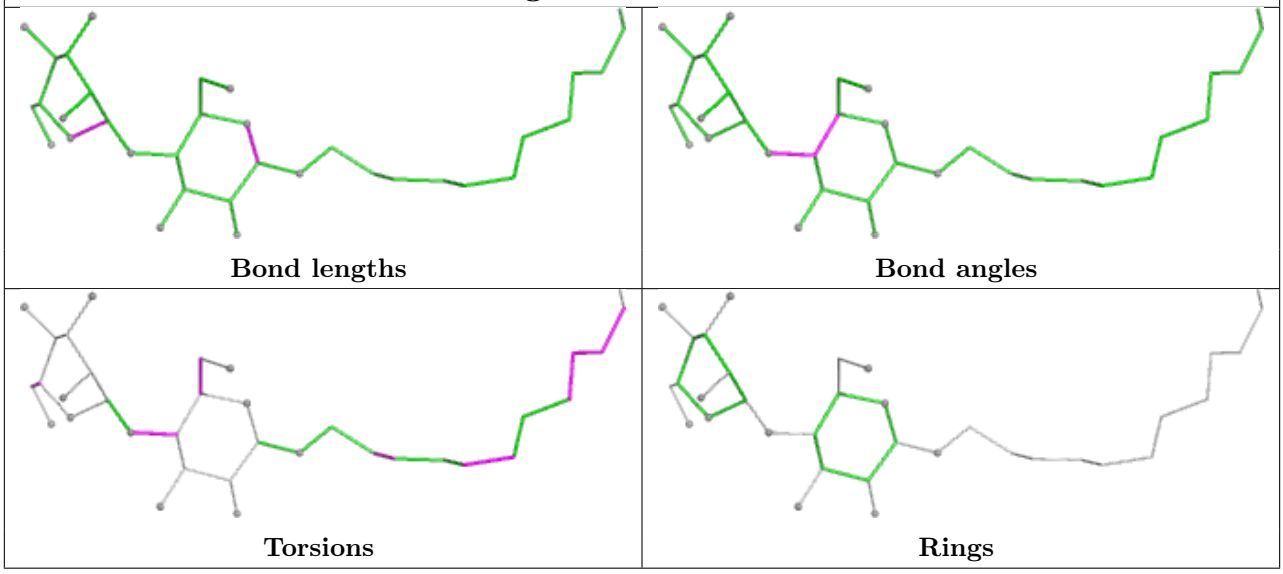


Rings

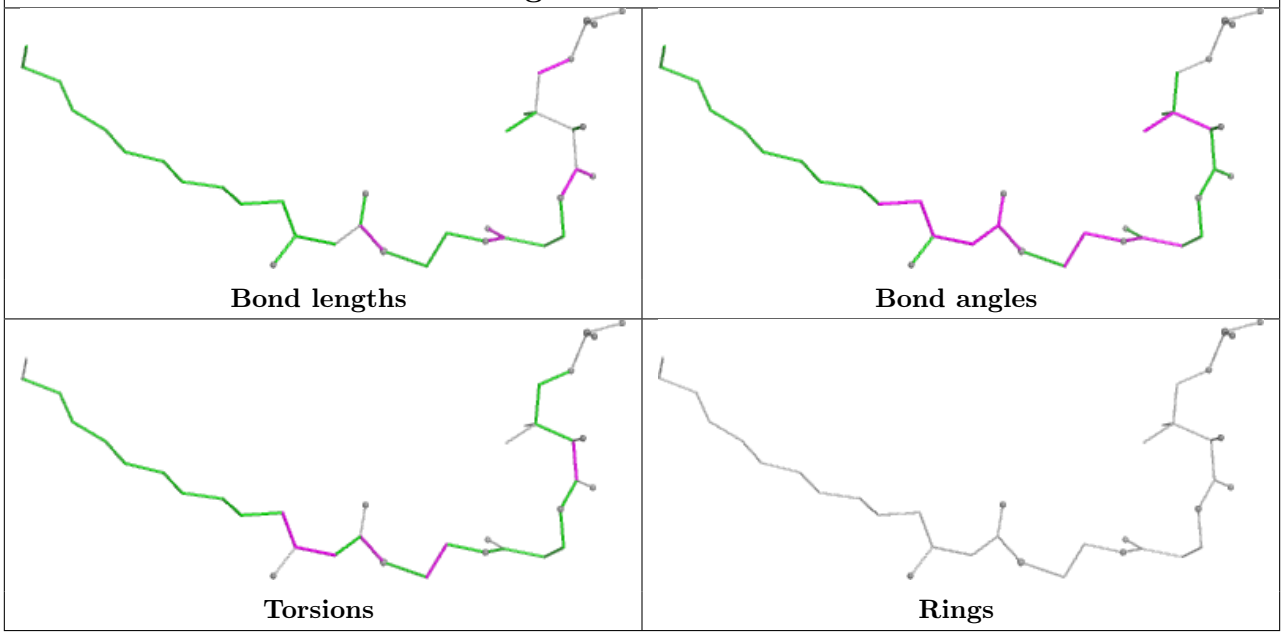
Ligand CDL h 201



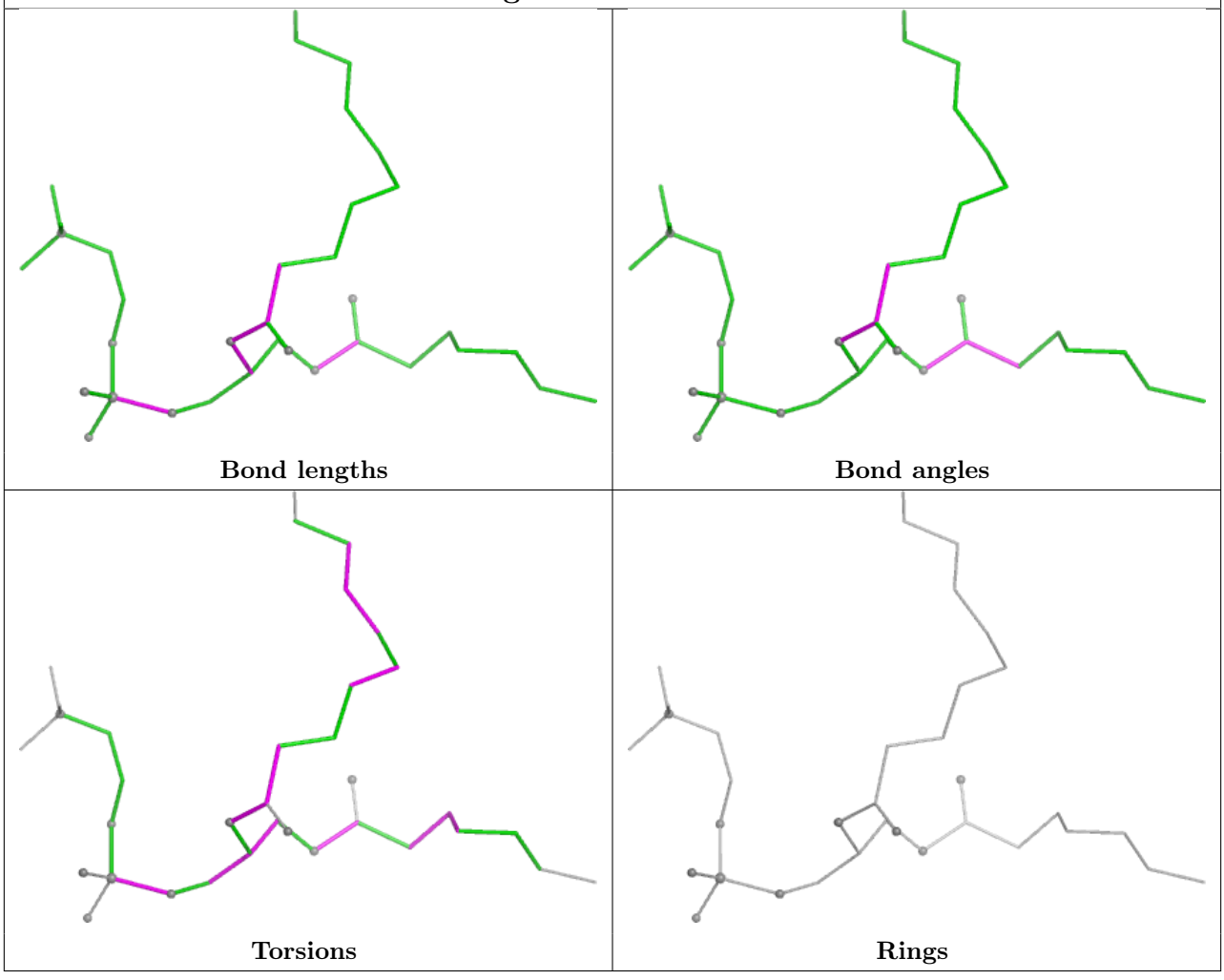
Ligand LMT L 705



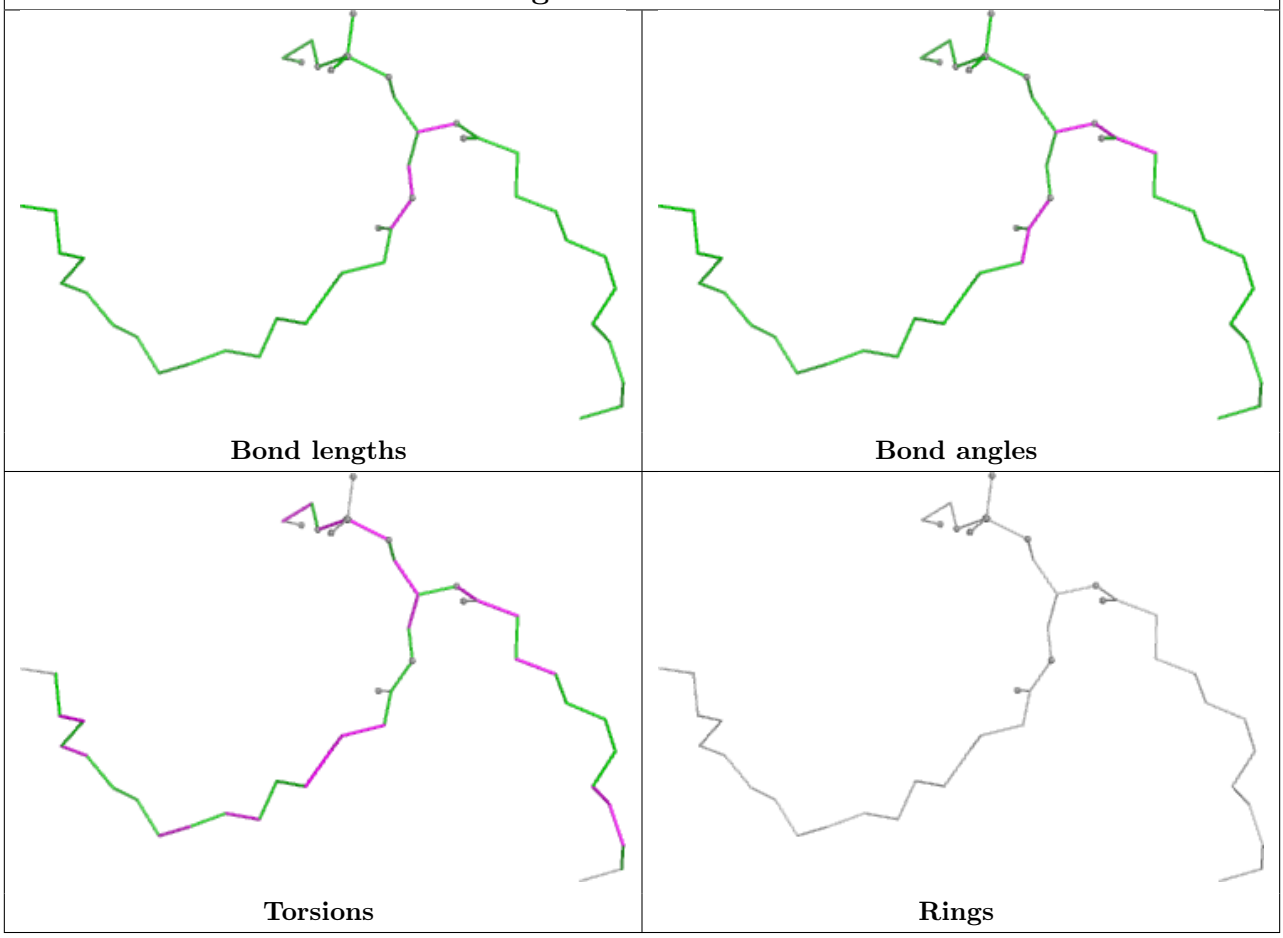
Ligand EHZ U 101



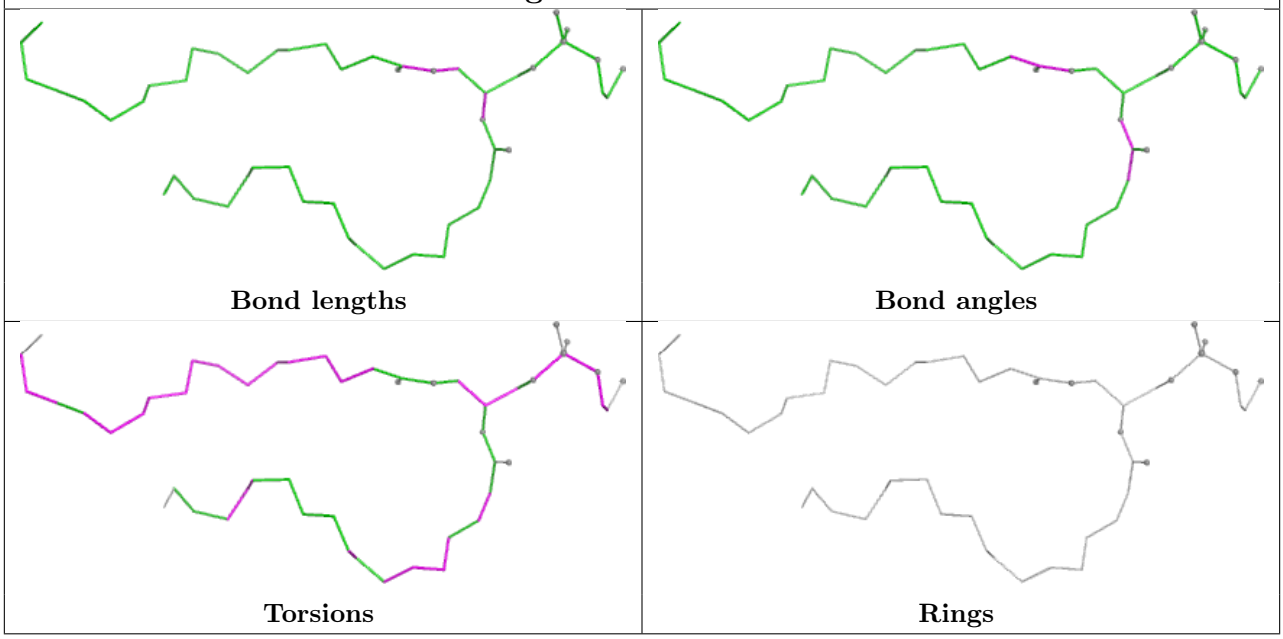
Ligand PC1 A 201



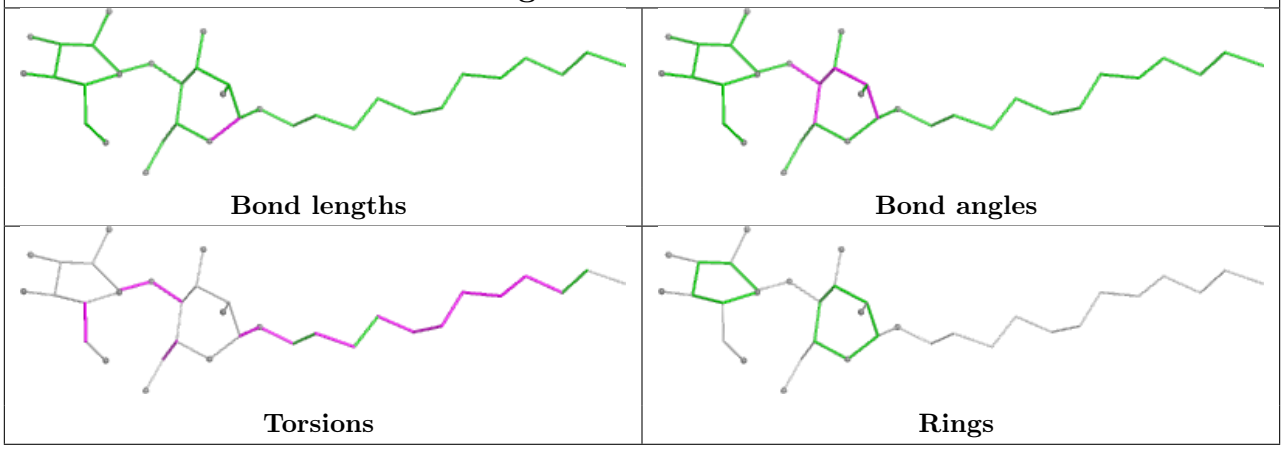
Ligand 3PE L 703



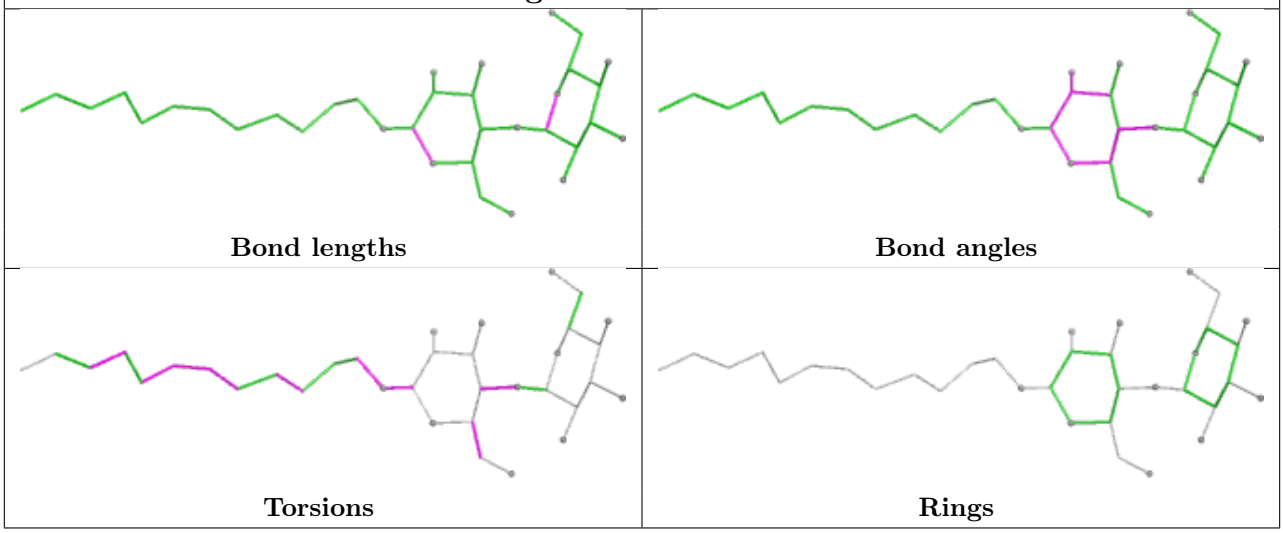
Ligand 3PE M 602



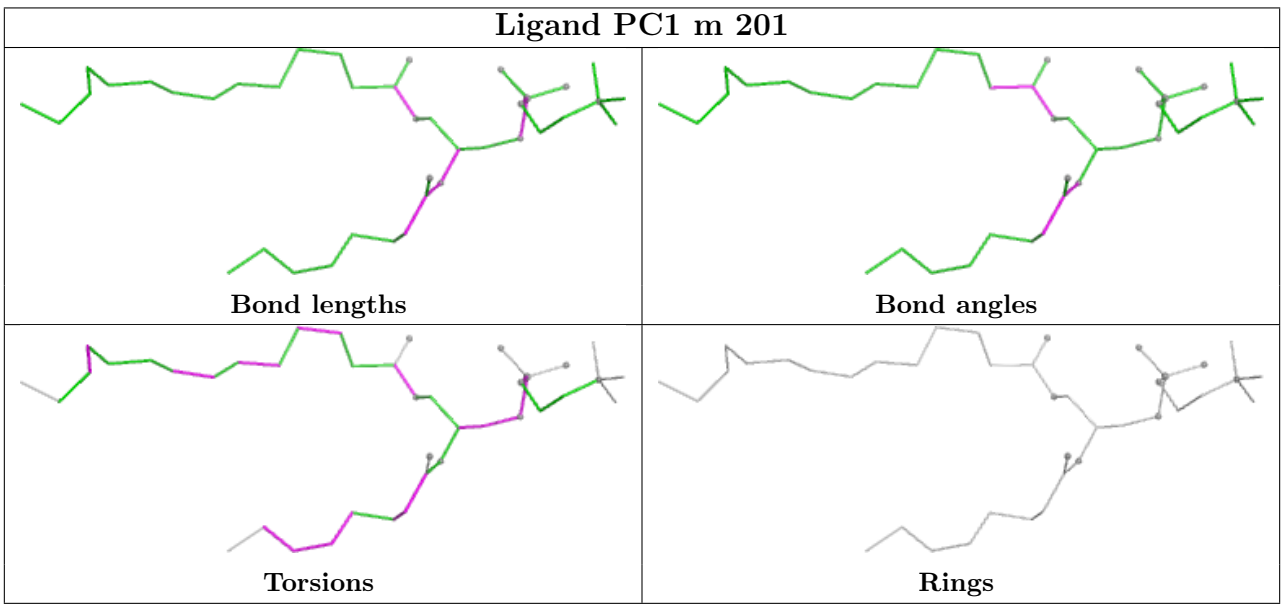
Ligand LMT M 605



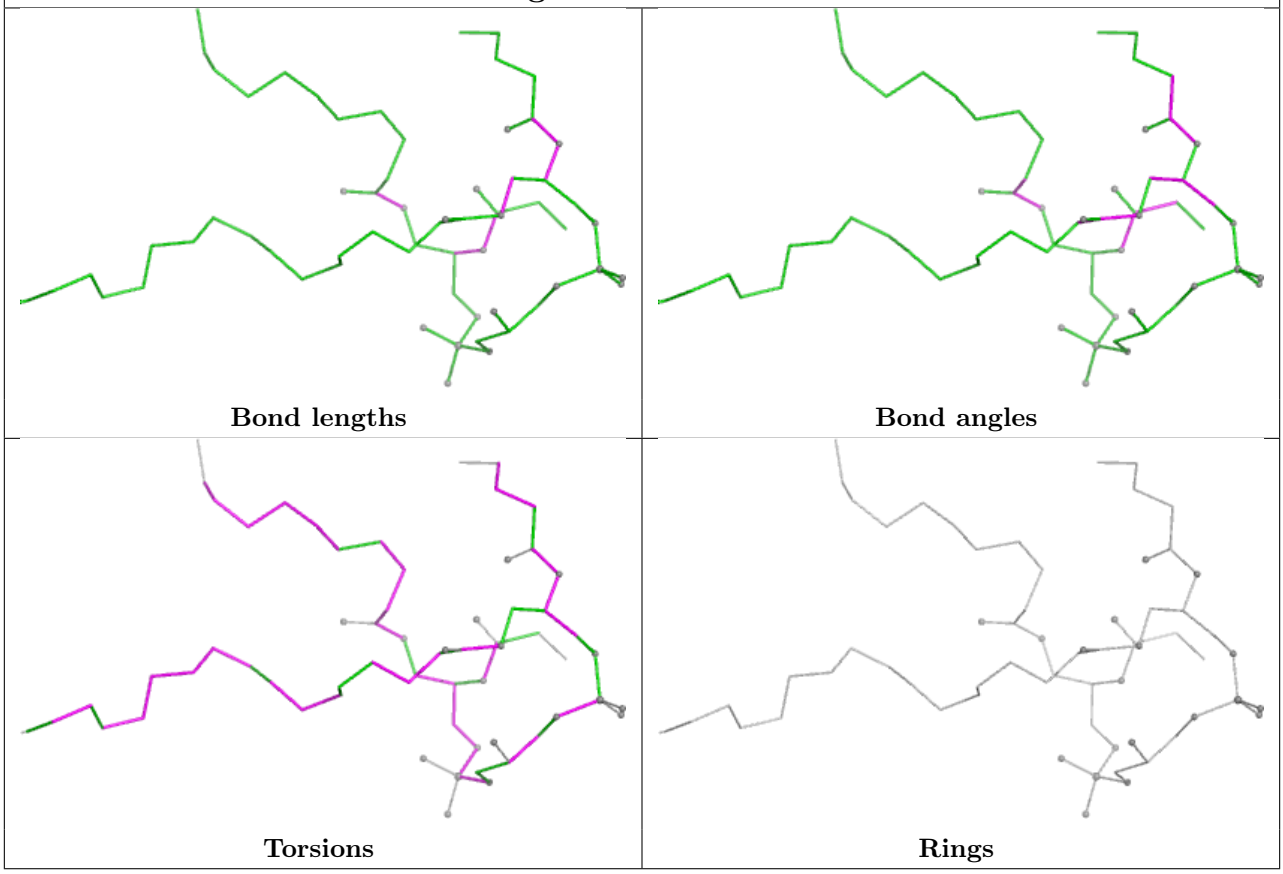
Ligand LMT b 101



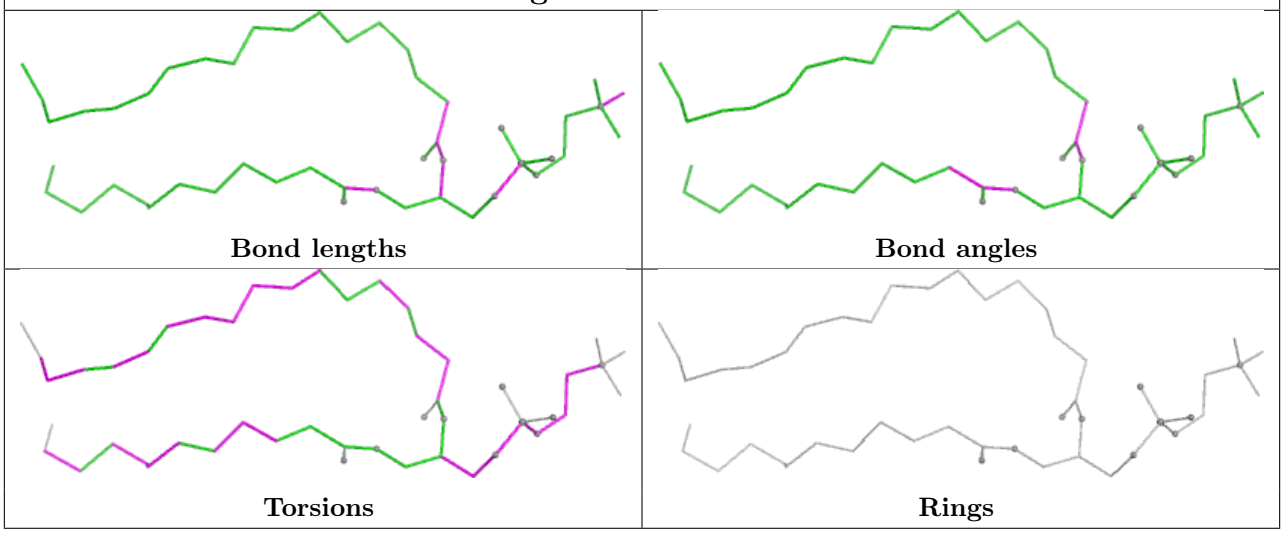
Ligand PC1 m 201



Ligand CDL d 204



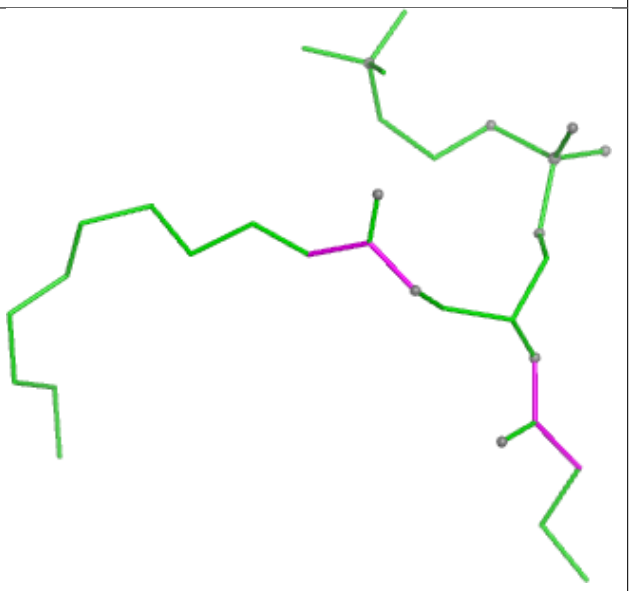
Ligand PC1 Z 200



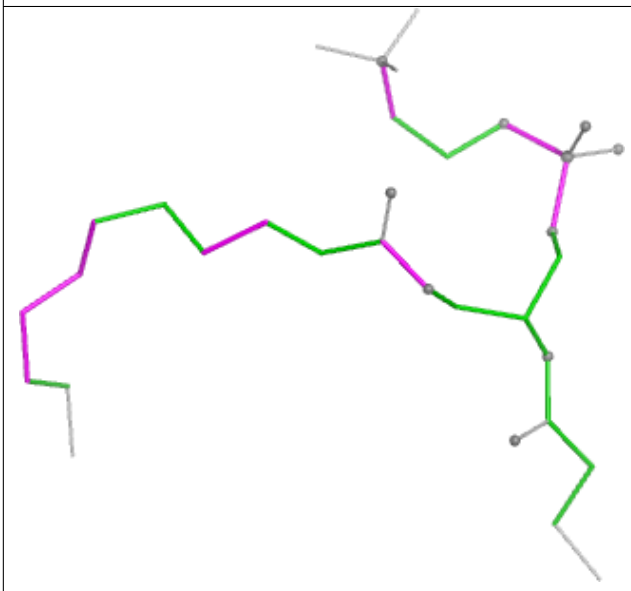
Ligand PC1 d 203



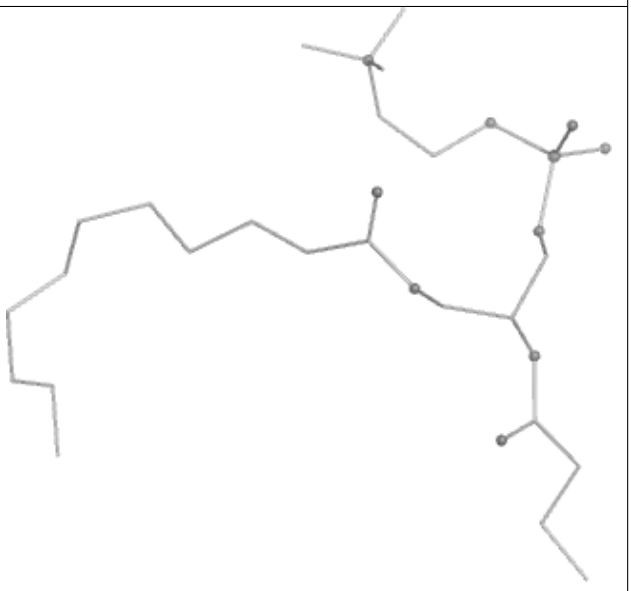
Bond lengths



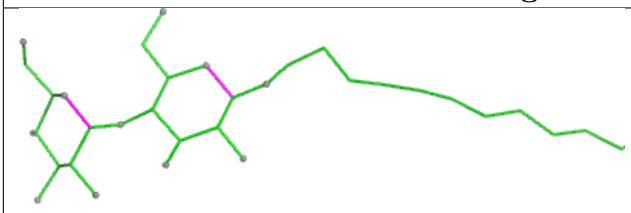
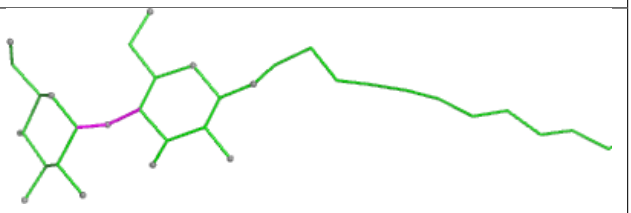
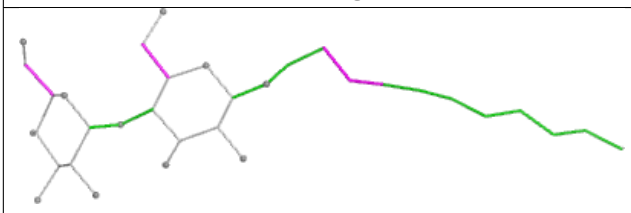
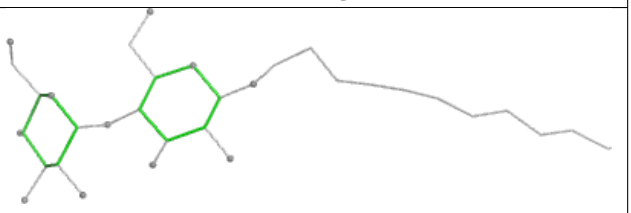
Bond angles

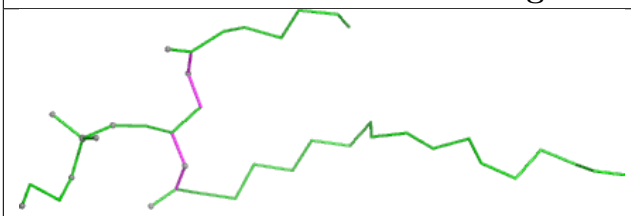
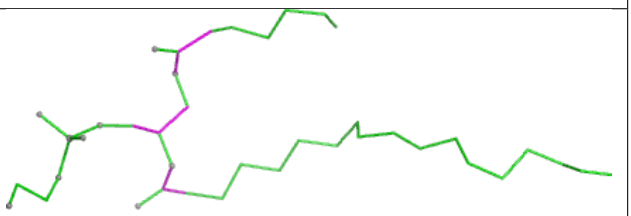
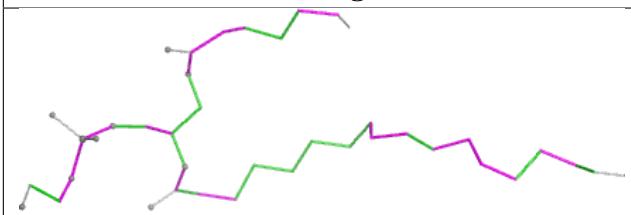
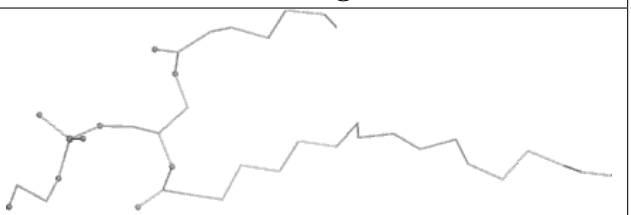


Torsions

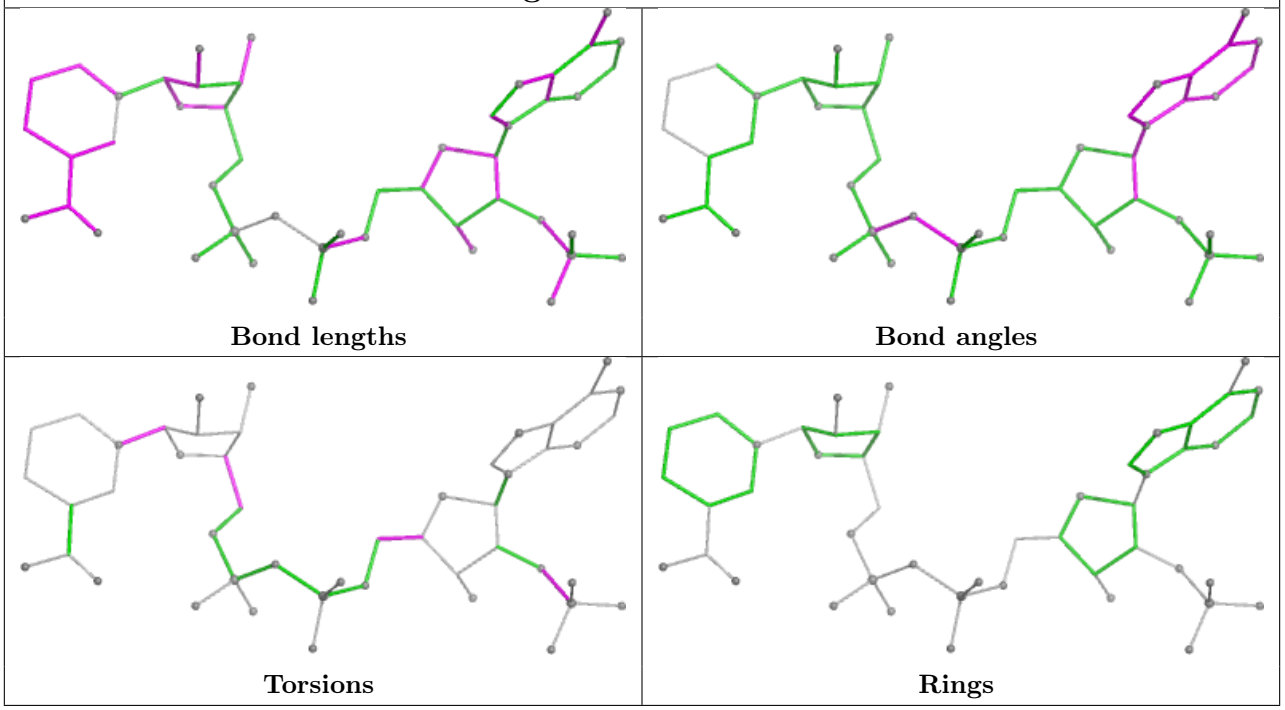


Rings

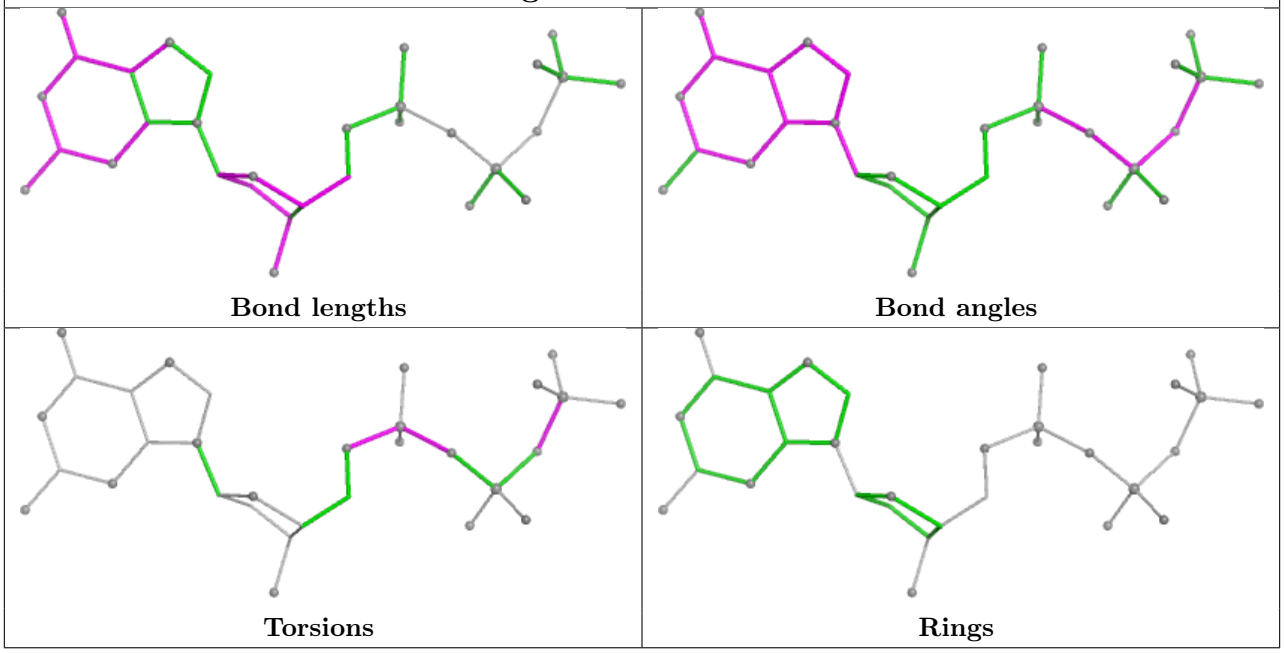
Ligand LMT Y 204	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE m 202	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NDP P 402



Ligand DGT O 402



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

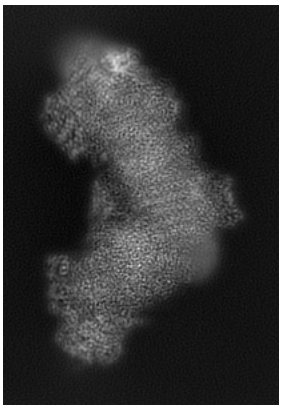
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-53497. These allow visual inspection of the internal detail of the map and identification of artifacts.

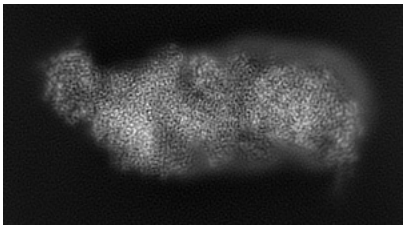
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

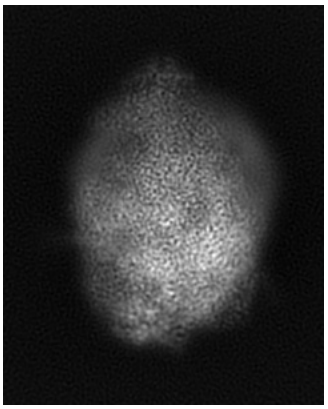
6.1.1 Primary map



X

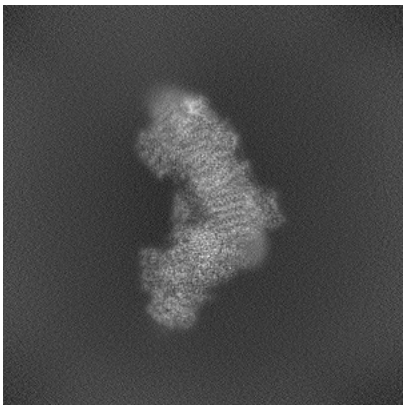


Y

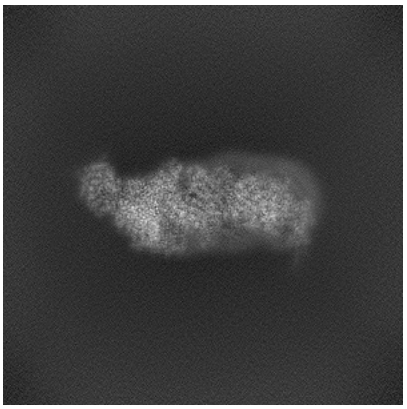


Z

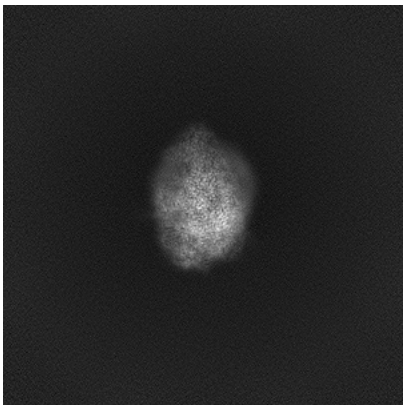
6.1.2 Raw map



X



Y

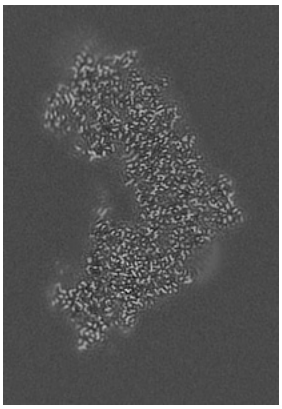


Z

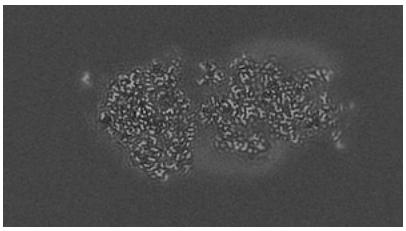
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

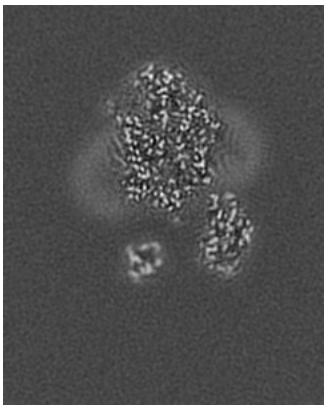
6.2.1 Primary map



X Index: 122

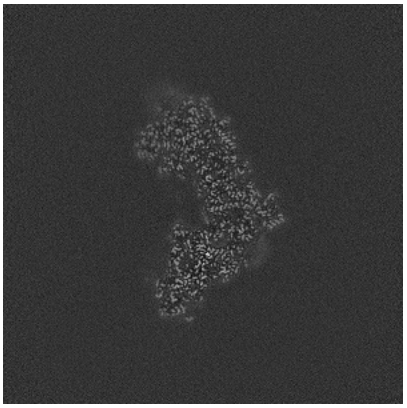


Y Index: 152

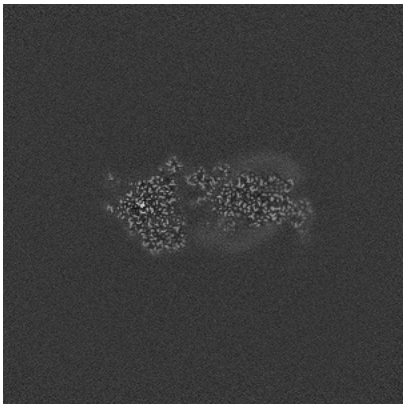


Z Index: 221

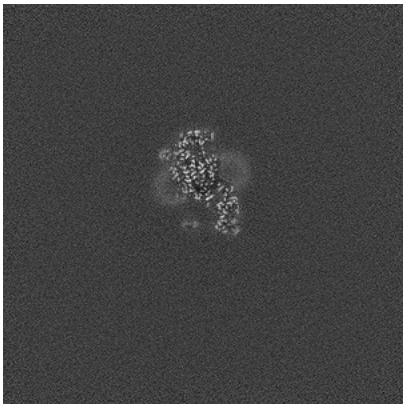
6.2.2 Raw map



X Index: 300



Y Index: 300

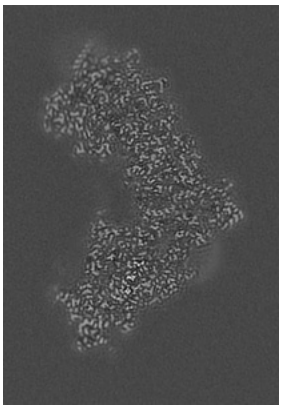


Z Index: 300

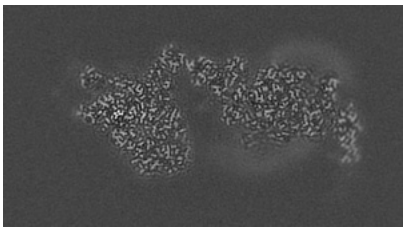
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

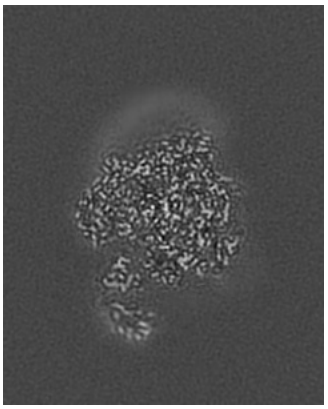
6.3.1 Primary map



X Index: 125

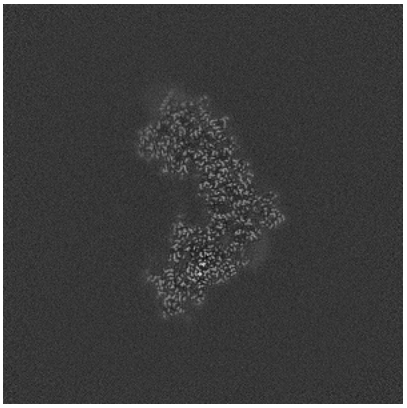


Y Index: 137

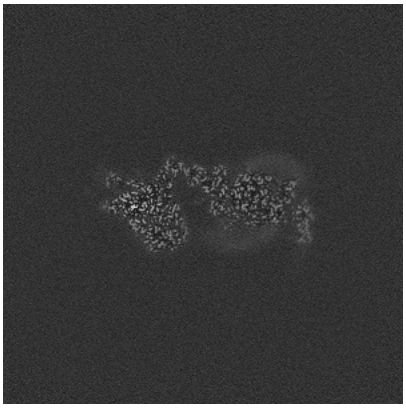


Z Index: 161

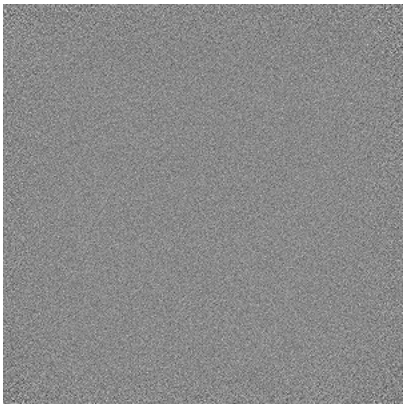
6.3.2 Raw map



X Index: 296



Y Index: 295

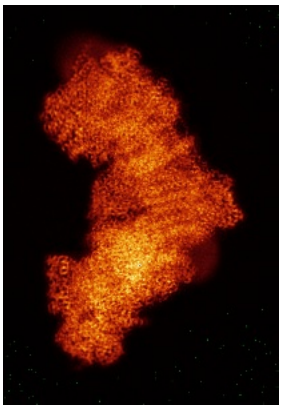


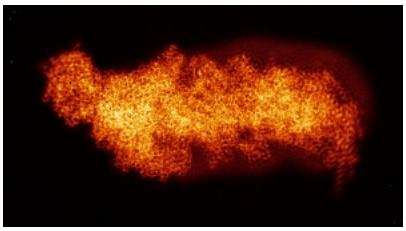
Z Index: 0

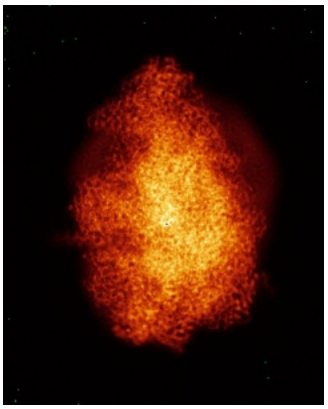
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

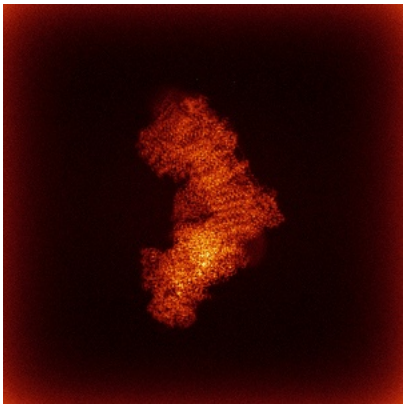
6.4.1 Primary map

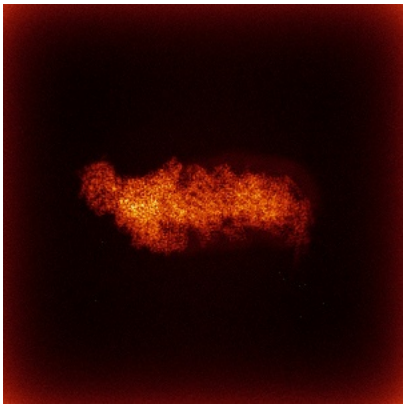

X

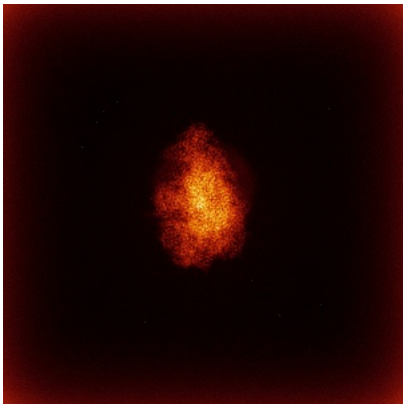

Y


Z

6.4.2 Raw map


X

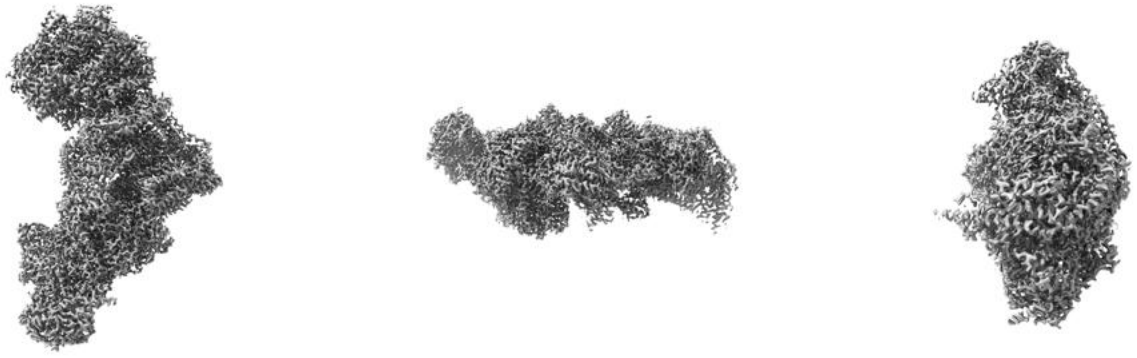

Y


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 9.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 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.

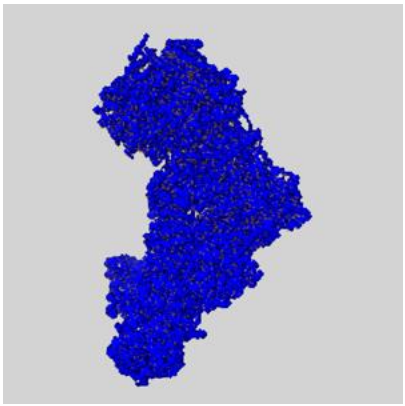
6.6 Mask visualisation (i)

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

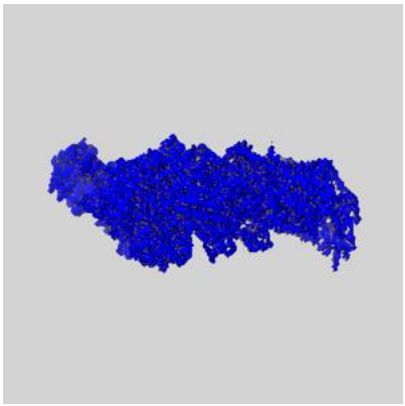
A mask typically either:

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

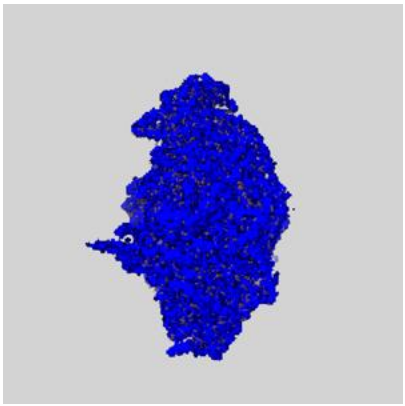
6.6.1 emd_53497_msk_1.map (i)



X



Y

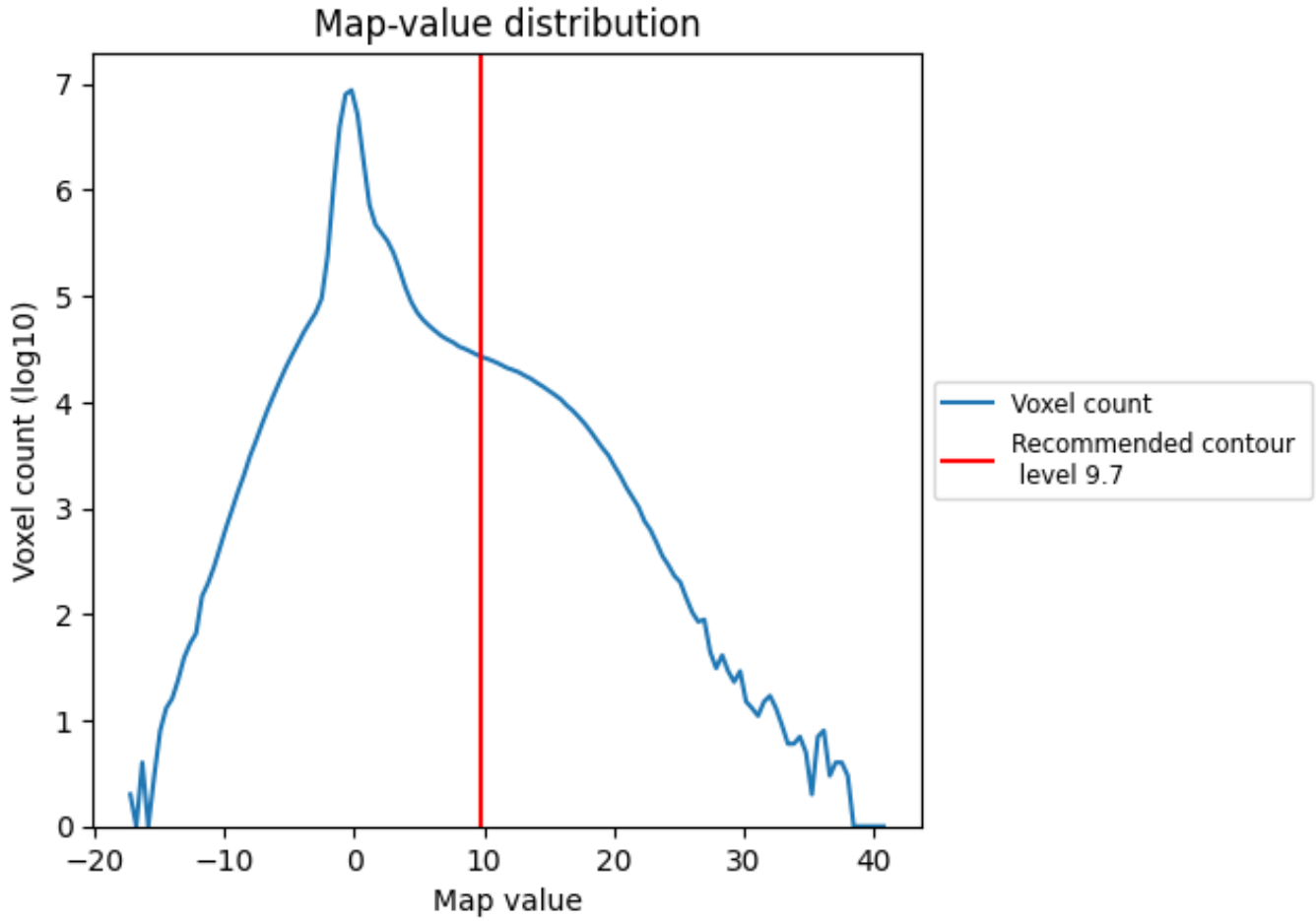


Z

7 Map analysis

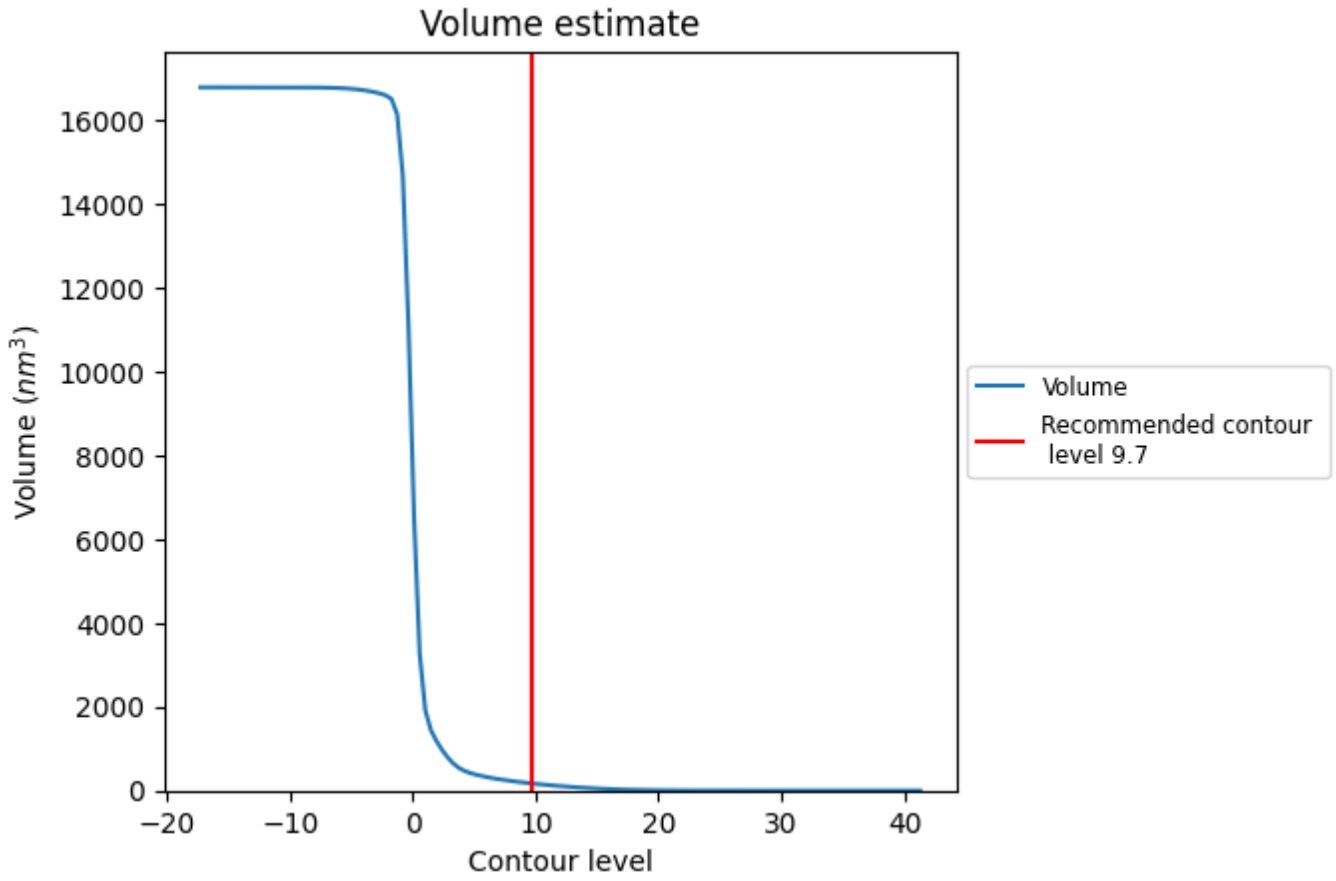
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

7.2 Volume estimate



The volume at the recommended contour level is 169 nm^3; this corresponds to an approximate mass of 153 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.

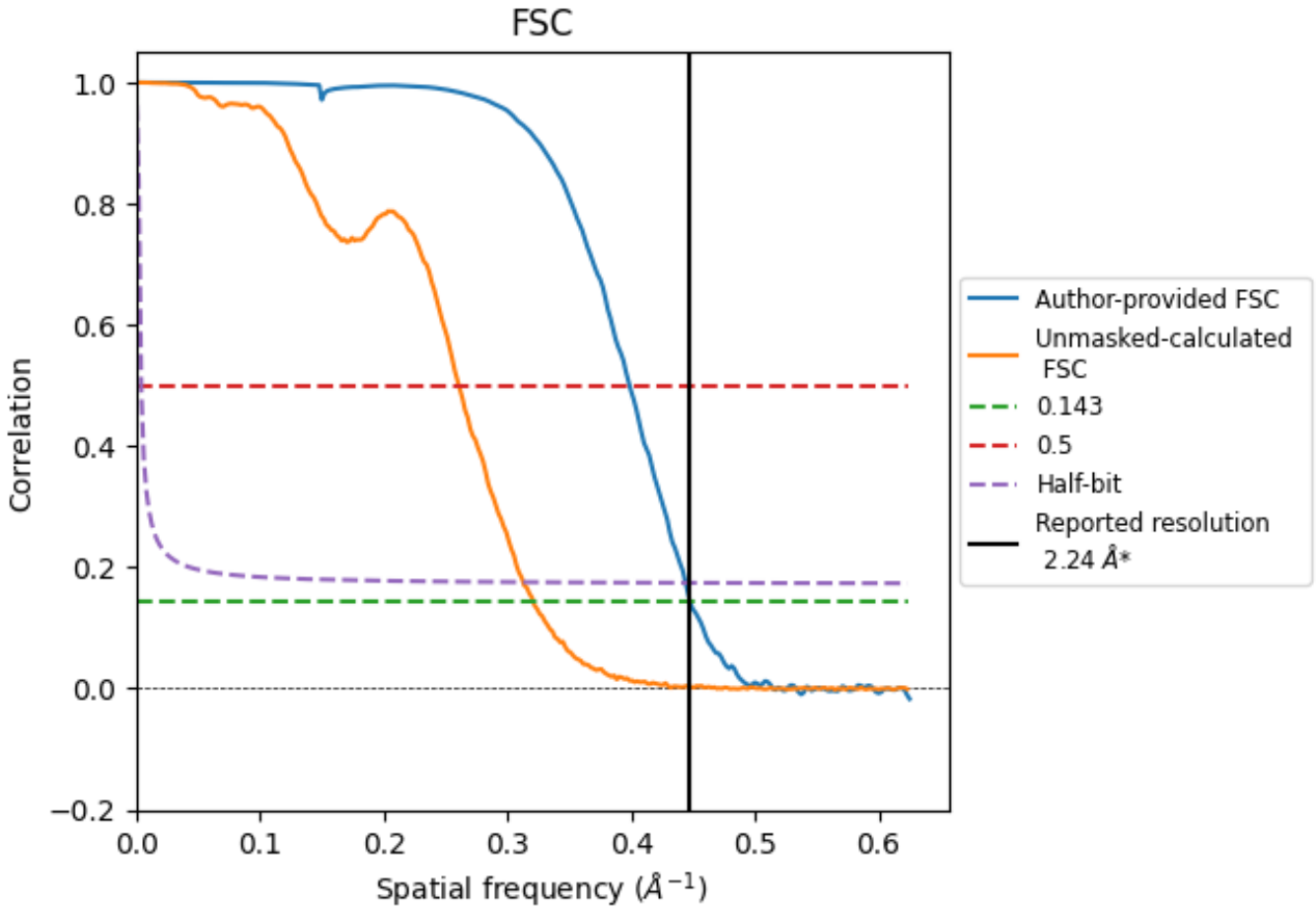
7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

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 0.446 Å^{-1}

8.2 Resolution estimates (i)

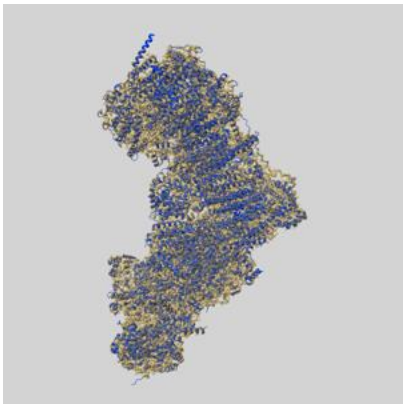
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.24	-	-
Author-provided FSC curve	2.23	2.51	2.25
Unmasked-calculated*	3.12	3.83	3.20

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.12 differs from the reported value 2.24 by more than 10 %

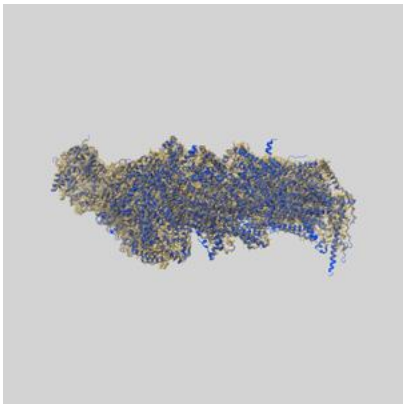
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-53497 and PDB model 9R14. Per-residue inclusion information can be found in section 3 on page 24.

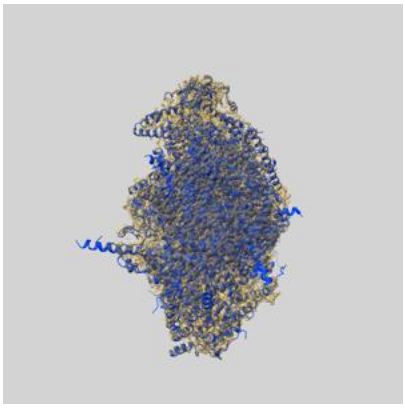
9.1 Map-model overlay



X



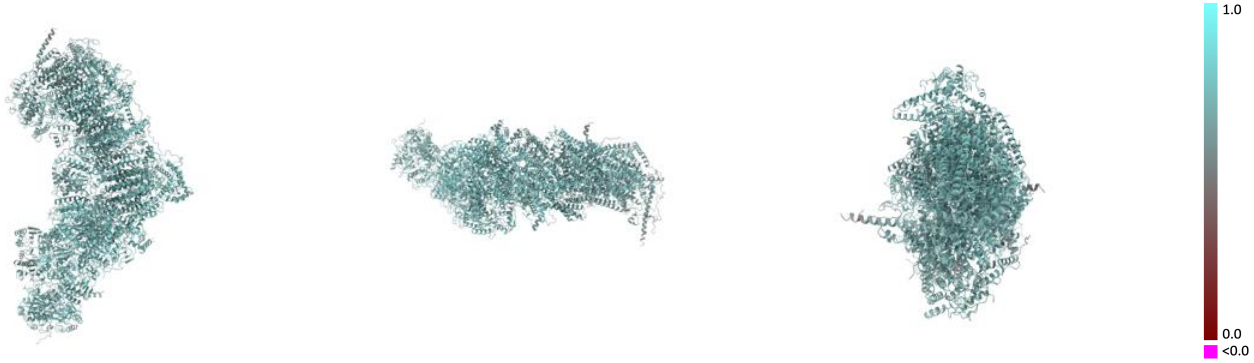
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 9.7 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.

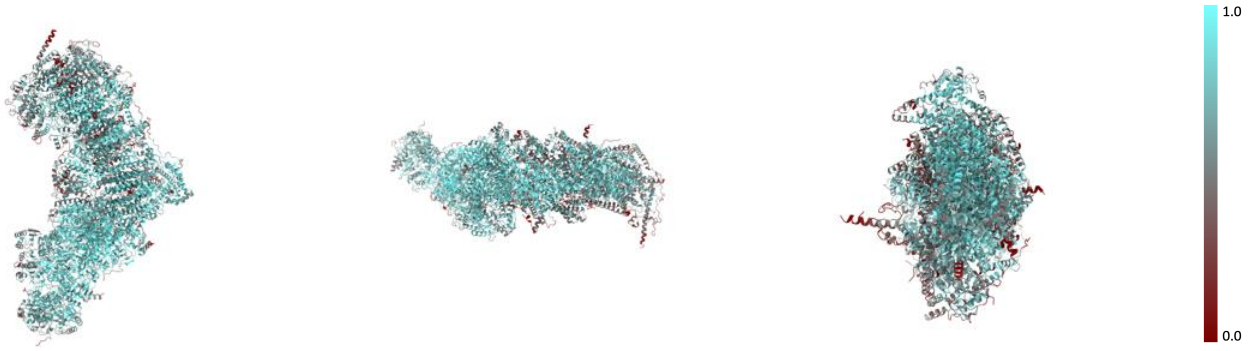
9.2 Q-score mapped to coordinate model (i)



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.

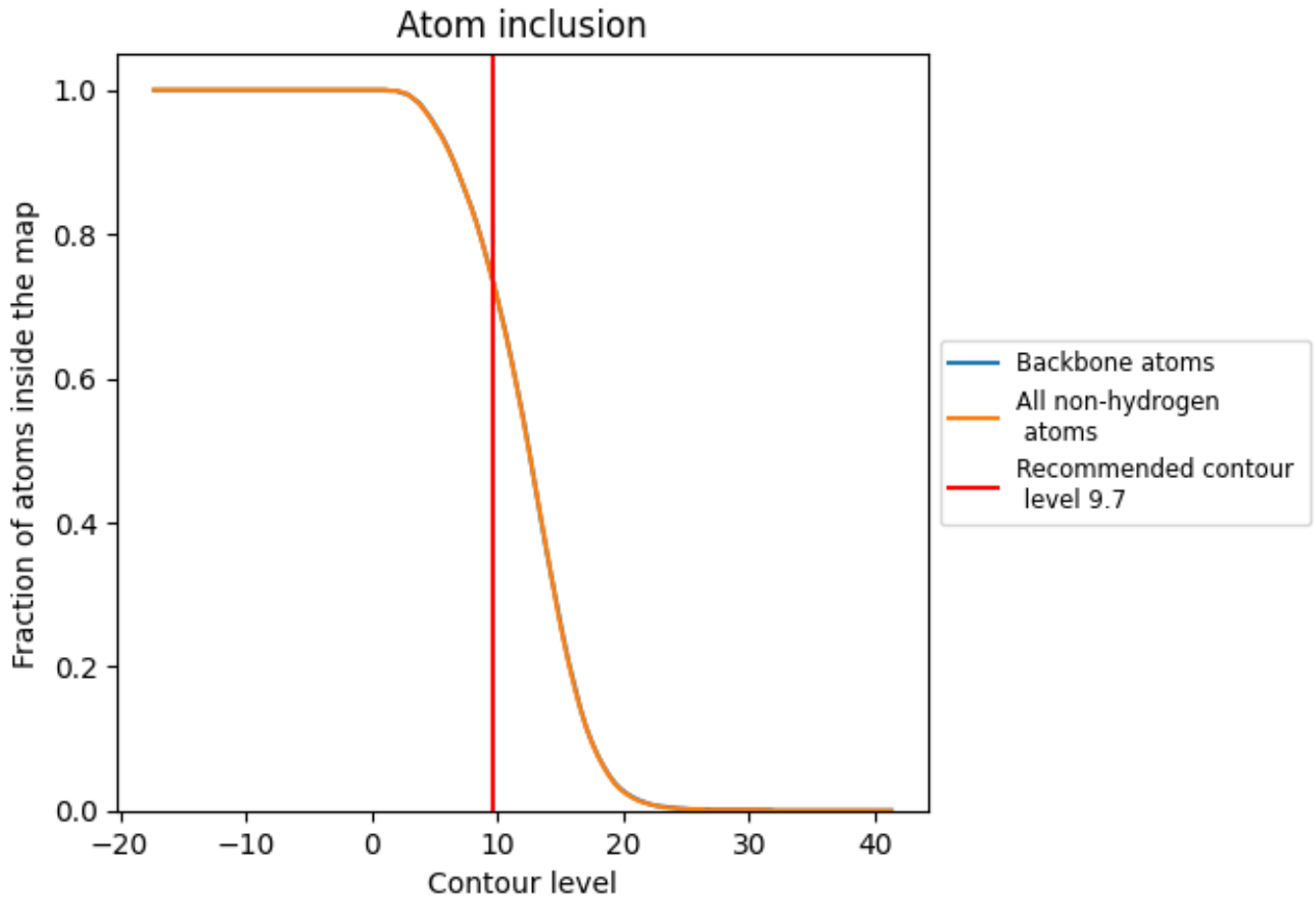
9.3 Atom inclusion mapped to coordinate model (i)



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 (9.7).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 73% 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 (9.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7300	0.6920
A	0.7230	0.7160
B	0.9100	0.7380
C	0.8980	0.7330
D	0.9000	0.7380
E	0.6970	0.6590
F	0.7380	0.6770
G	0.7730	0.6960
H	0.8780	0.7330
I	0.8970	0.7390
J	0.7620	0.7160
K	0.8120	0.7280
L	0.6810	0.6770
M	0.8650	0.7230
N	0.8940	0.7340
O	0.6880	0.6770
P	0.7720	0.7040
Q	0.7770	0.7120
R	0.7650	0.6980
S	0.5840	0.6380
T	0.3110	0.5810
U	0.5230	0.6200
V	0.7290	0.7060
W	0.7340	0.7070
X	0.6910	0.6800
Y	0.5470	0.6610
Z	0.7270	0.6990
a	0.8070	0.7120
b	0.6200	0.6760
c	0.5380	0.6730
d	0.6450	0.6890
e	0.7080	0.6990
f	0.5030	0.6430
g	0.6570	0.6820
h	0.7580	0.6910



Continued on next page...

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Chain	Atom inclusion	Q-score
i	0.5090	0.6170
j	0.4940	0.6080
k	0.4080	0.5950
l	0.6460	0.6550
m	0.5810	0.6640
n	0.6320	0.6440
o	0.4400	0.5970
p	0.6510	0.6660
q	0.7800	0.7150
r	0.7430	0.7060
s	0.5850	0.6420