



Full wwPDB EM Validation Report ⓘ

Sep 22, 2022 – 06:25 am BST

PDB ID : 7QSO
EMDB ID : EMD-14140
Title : Bovine complex I in lipid nanodisc, State 3 (Slack)
Authors : Chung, I.; Bridges, H.R.; Hirst, J.
Deposited on : 2022-01-13
Resolution : 3.02 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

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

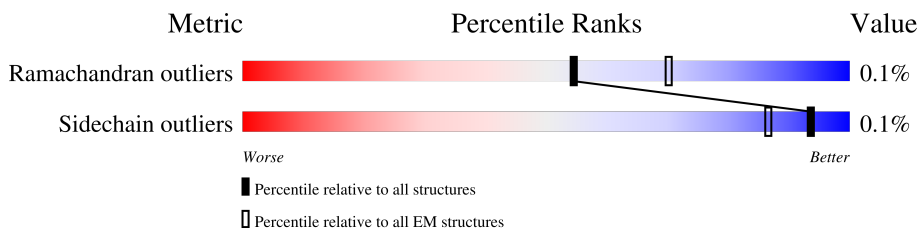
EMDB validation analysis : 0.0.1.dev8
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.30

1 Overall quality at a glance

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

The reported resolution of this entry is 3.02 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	 7% 92% 7%
2	B	216	 73% 27%
3	C	266	 79% 21%
4	D	463	 84% 16%
5	E	249	 86% 14%
6	F	464	 93% 7%
7	G	727	 96%
8	H	318	 99%
9	I	212	 83% 17%

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Mol	Chain	Length	Quality of chain
10	J	175	17% 90% 8%
11	K	98	88% 12%
12	L	606	90% 10%
13	M	459	100%
14	N	347	100%
15	O	343	93% 7%
16	P	380	6% 84% 16%
17	Q	175	71% 29%
18	R	124	77% 23%
19	S	99	88% 12%
20	T	156	7% 53% 46%
20	U	156	56% 44%
21	V	116	97%
22	W	128	90% 10%
23	X	172	99%
24	Y	141	15% 23% 77%
25	Z	144	99%
26	a	70	100%
27	b	84	99%
28	c	76	63% 37%
29	d	120	98%
30	e	106	93% 7%
31	f	57	19% 96%
32	g	154	58% 42%
33	h	189	75% 24%

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Mol	Chain	Length	Quality of chain
34	i	127	 12% 97%
35	j	108	 5% 65% 35%
36	k	98	 7% 83% 17%
37	l	186	 1% 84% 16%
38	m	129	 14% 98%
39	n	179	 6% 96%
40	o	137	 5% 87% 12%
41	p	176	 1% 98%
42	q	145	 1% 100%
43	r	113	 1% 84% 15%
44	s	109	 1% 41% 59%

2 Entry composition i

There are 59 unique types of molecules in this entry. The entry contains 66112 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	107	864	587	125	147	5	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	158	1260	803	227	216	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	210	1743	1123	299	318	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	388	3110	1984	538	564	24	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
			Total	C	N	O	S		
5	E	214	1659	1059	278	312	10	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	432	3324	2094	594	616	20	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	700	5360	3356	934	1030	40	0	0

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	161	1226	827	173	214	12	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	86	647	425	96	111	15	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	547	4334	2880	667	746	41	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	459	3654	2436	570	609	39	0	0

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

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

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

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

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
			Total	C	N	O	S		
16	P	320	2560	1652	452	451	5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	Q	125	1016	641	181	191	3	0	0

- 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
			701	439	133	127	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	84	Total	C	N	O	S	0	0
			681	439	100	137	5		
20	U	88	Total	C	N	O	S	0	0
			707	454	104	144	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	113	Total	C	N	O	S	0	0
			919	595	155	166	3		

- 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
			977	625	181	167	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
			Total	C	N	O	S		
24	Y	33	248	162	39	46	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	Z	142	1157	743	202	203	9	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	b	83	651	425	109	115	2	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
28	c	48	405	268	69	68	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	d	120	999	650	172	172	5	0	0

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	g	90	750	483	124	139	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	h	143	1186	776	203	205	2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	i	127	1097	722	191	183	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	j	70	592	387	98	106	1	0	0

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	m	127	1061	681	187	193		0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	n	171	1487	952	272	256	7	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	o	120	1035	645	199	183	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	p	173	1455	912	268	267	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	q	145	1209	778	216	210	5	0	0

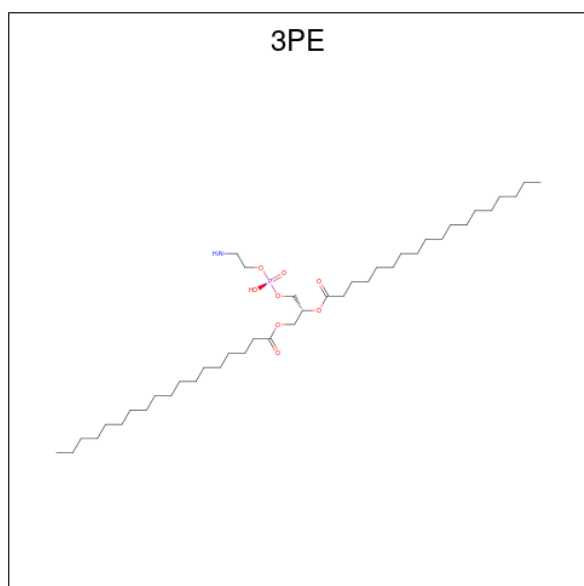
- Molecule 43 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	r	96	785	496	146	140	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	s	45	380	238	67	74	1	0	0

- Molecule 45 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



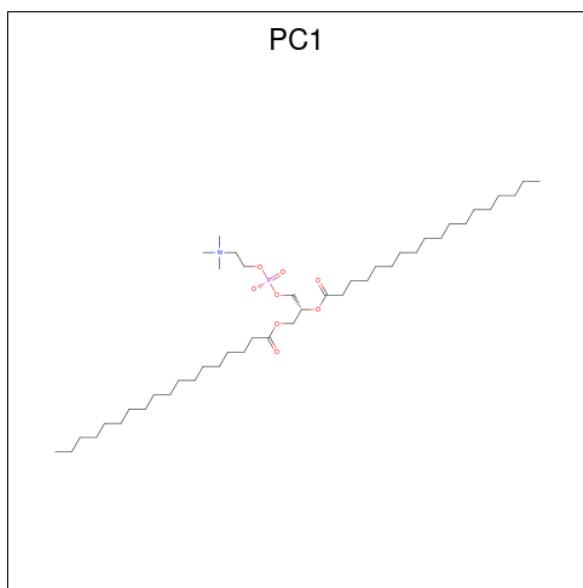
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
45	A	1	124	94	3	24	3	0
45	A	1	124	94	3	24	3	0
45	A	1	124	94	3	24	3	0
45	H	1	33	23	1	8	1	0
45	I	1	84	64	2	16	2	0
45	I	1	84	64	2	16	2	0
45	L	1	77	57	2	16	2	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
45	L	1	Total 77	C 57	N 2	O 16	P 2	0
45	M	1	Total 38	C 28	N 1	O 8	P 1	0
45	N	1	Total 84	C 64	N 2	O 16	P 2	0
45	N	1	Total 84	C 64	N 2	O 16	P 2	0
45	Y	1	Total 39	C 29	N 1	O 8	P 1	0
45	h	1	Total 32	C 22	N 1	O 8	P 1	0
45	r	1	Total 49	C 39	N 1	O 8	P 1	0

- Molecule 46 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



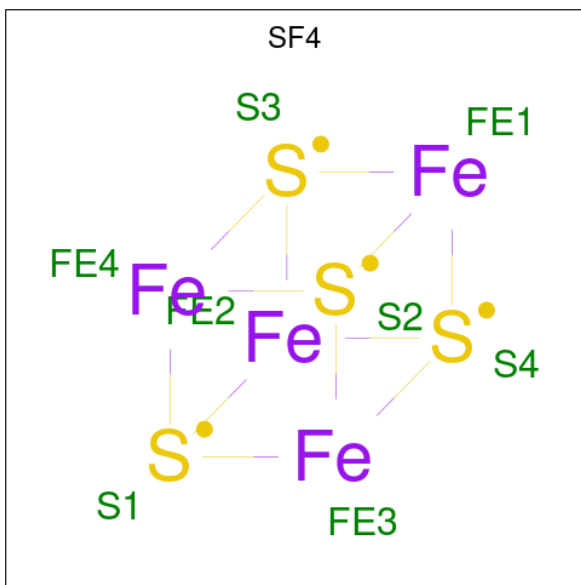
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
46	B	1	Total 101	C 81	N 2	O 16	P 2	0
46	B	1	Total 101	C 81	N 2	O 16	P 2	0
46	J	1	Total 43	C 33	N 1	O 8	P 1	0
46	M	1	Total 46	C 36	N 1	O 8	P 1	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
46	d	1	Total 33	C 23	N 1	O 8	P 1	0
46	q	1	Total 37	C 27	N 1	O 8	P 1	0

- Molecule 47 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



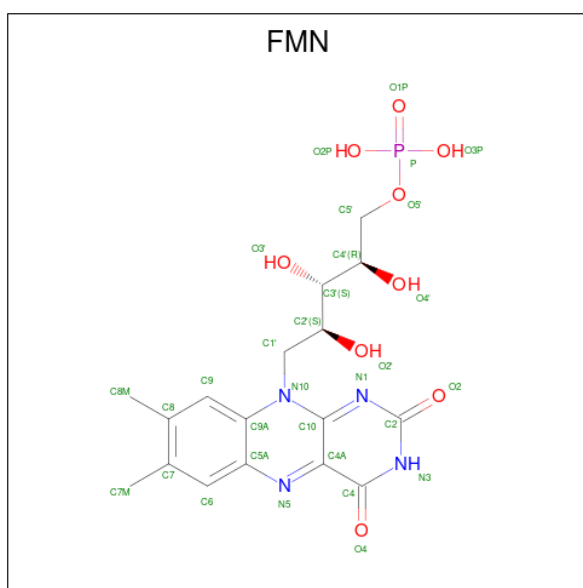
Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
47	B	1	Total 8	Fe 4	S 4	0
47	F	1	Total 8	Fe 4	S 4	0
47	G	1	Total 16	Fe 8	S 8	0
47	G	1	Total 16	Fe 8	S 8	0
47	I	1	Total 16	Fe 8	S 8	0
47	I	1	Total 16	Fe 8	S 8	0

- Molecule 48 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).



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

- Molecule 49 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C₁₇H₂₁N₄O₉P).

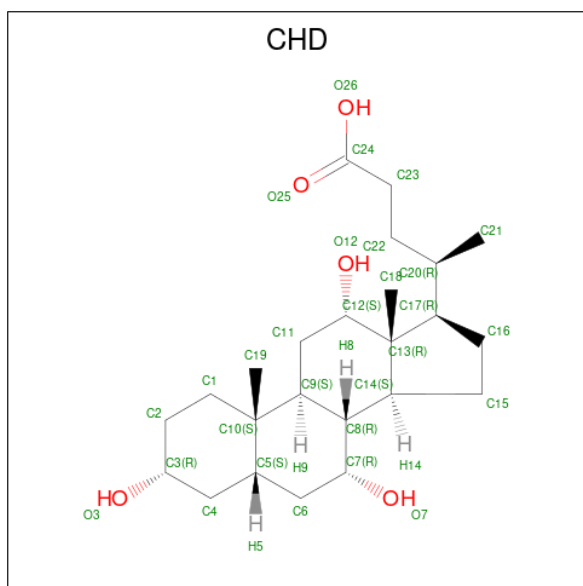


Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
49	F	1	31	17	4	9	1	0

- Molecule 50 is POTASSIUM ION (three-letter code: K) (formula: K).

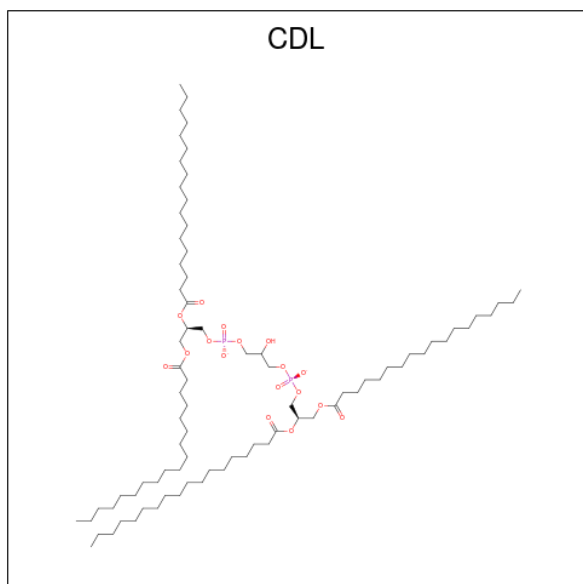
Mol	Chain	Residues	Atoms	AltConf
50	G	1	Total 1 1	0

- Molecule 51 is CHOLIC ACID (three-letter code: CHD) (formula: $C_{24}H_{40}O_5$).



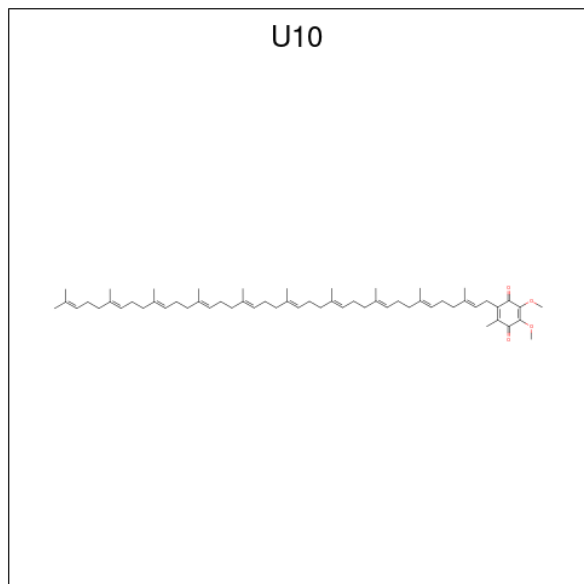
Mol	Chain	Residues	Atoms	AltConf
51	H	1	Total C O 29 24 5	0
51	L	1	Total C O 29 24 5	0

- Molecule 52 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



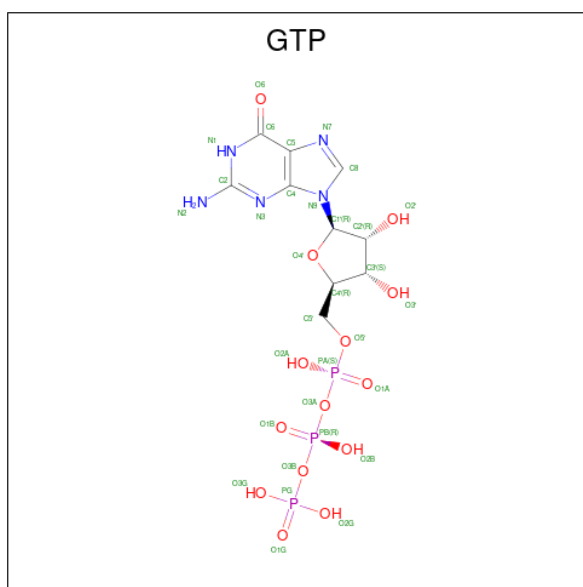
Mol	Chain	Residues	Atoms				AltConf
			Total	C	O	P	
52	L	1	75	56	17	2	0
52	N	1	73	54	17	2	0
52	X	1	79	60	17	2	0
52	d	1	65	46	17	2	0
52	h	1	77	58	17	2	0
52	r	1	60	41	17	2	0

- Molecule 53 is UBIQUINONE-10 (three-letter code: U10) (formula: $C_{59}H_{90}O_4$).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
53	M	1	63	59	4	0

- Molecule 54 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).

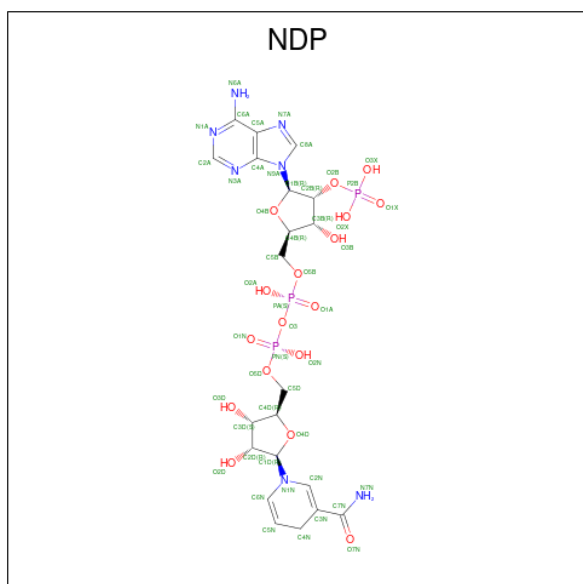


Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
54	O	1	32	10	5	14	3	0

- Molecule 55 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 56 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: C₂₁H₃₀N₇O₁₇P₃).

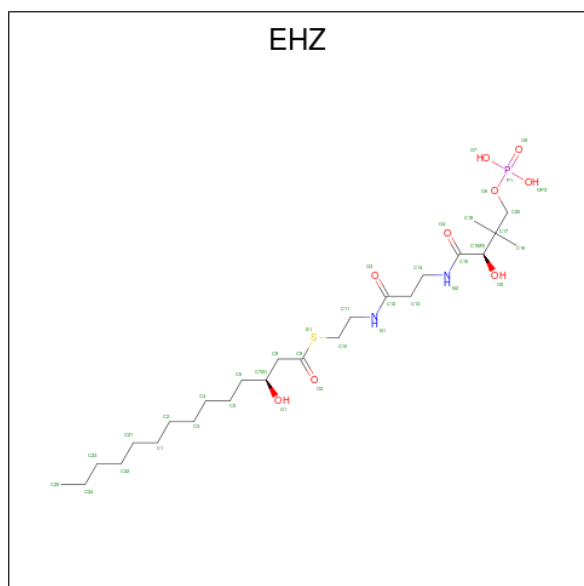


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
56	P	1	48	21	7	17	3	0

- Molecule 57 is ZINC ION (three-letter code: ZN) (formula: Zn).

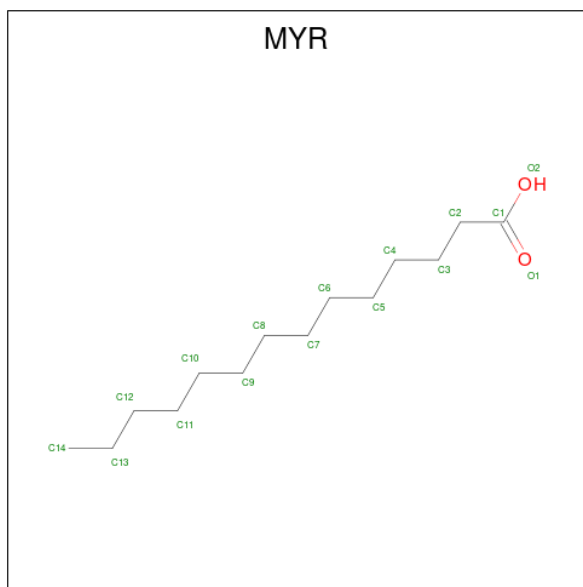
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
57	R	1	1	1	0

- Molecule 58 is {S}-[2-[3-[[2 {R}]-3,3-dimethyl-2-oxidanyl-4-phosphonoxy-butanoyl]amino]propanoylamino]ethyl] (3 {S})-3-oxidanyltetradecanethioate (three-letter code: EHZ) (formula: C₂₅H₄₉N₂O₉PS).



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

- Molecule 59 is MYRISTIC ACID (three-letter code: MYR) (formula: C₁₄H₂₈O₂).

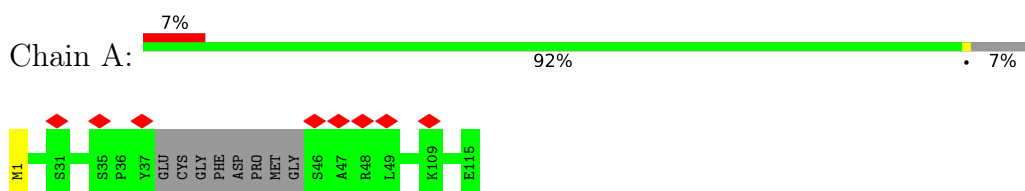


Mol	Chain	Residues	Atoms			AltConf
59	o	1	Total	C	O	0
			15	14	1	

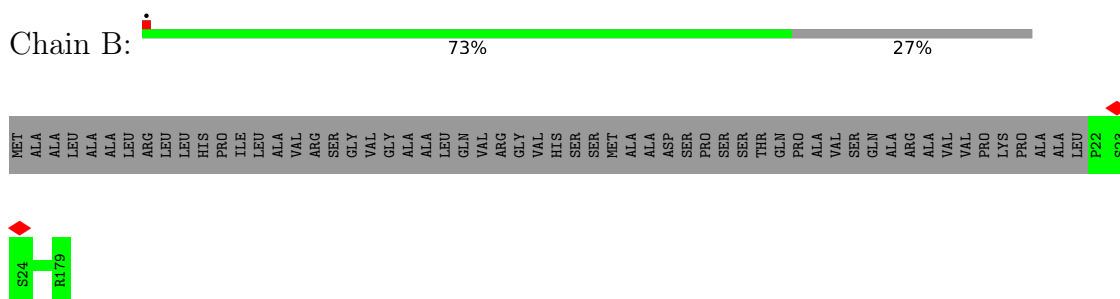
3 Residue-property plots [i](#)

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.

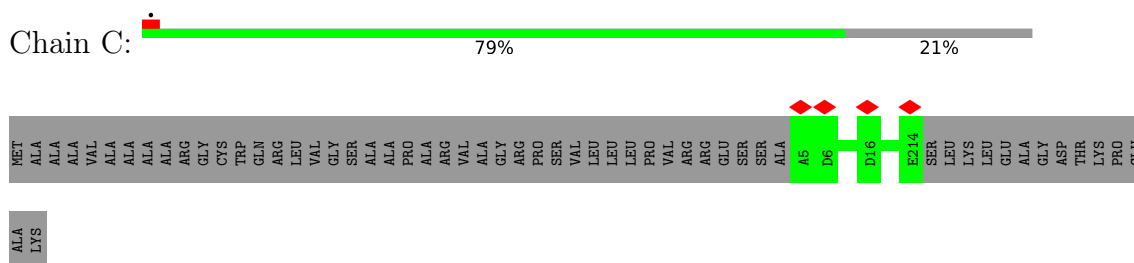
- Molecule 1: NADH-ubiquinone oxidoreductase chain 3



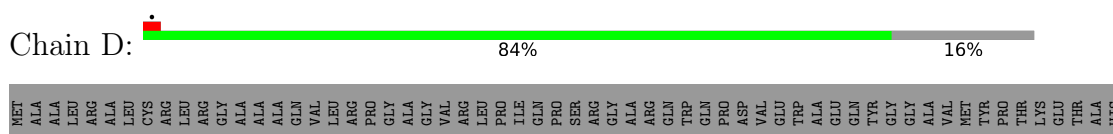
- Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

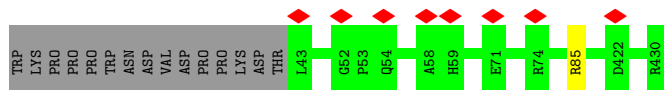


- Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

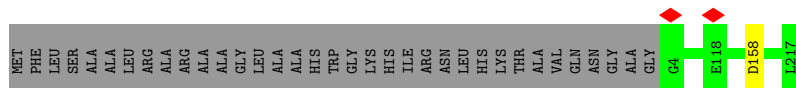
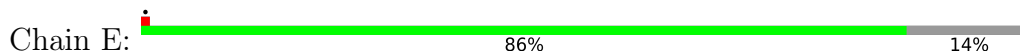


- Molecule 4: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

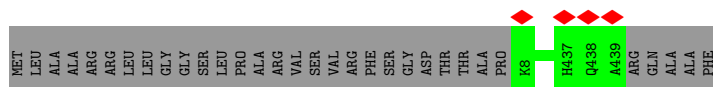




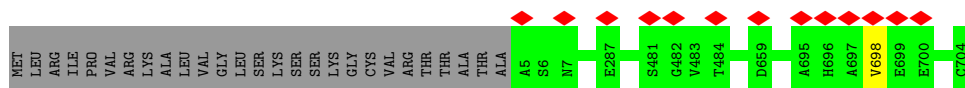
- Molecule 5: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial



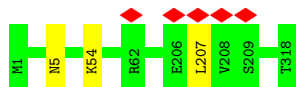
- Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial



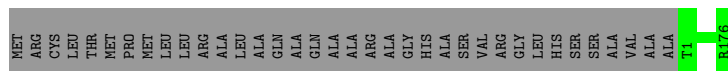
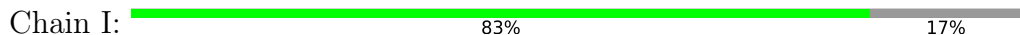
- Molecule 7: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial



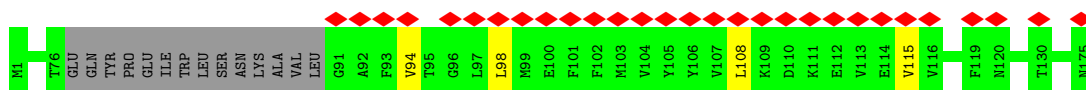
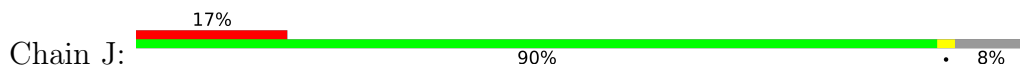
- Molecule 8: NADH-ubiquinone oxidoreductase chain 1



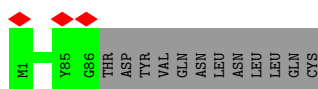
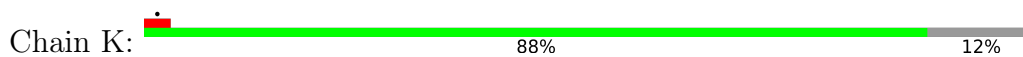
- Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial



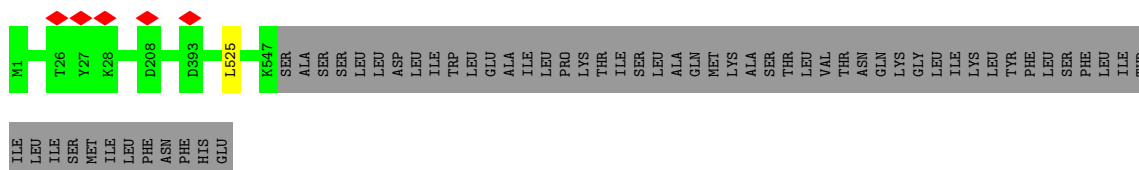
- Molecule 10: NADH-ubiquinone oxidoreductase chain 6



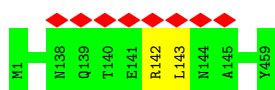
- Molecule 11: NADH-ubiquinone oxidoreductase chain 4L



- Molecule 12: NADH-ubiquinone oxidoreductase chain 5



- Molecule 13: NADH-ubiquinone oxidoreductase chain 4

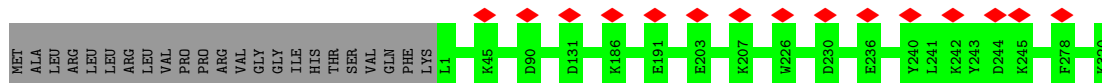


- Molecule 14: NADH-ubiquinone oxidoreductase chain 2

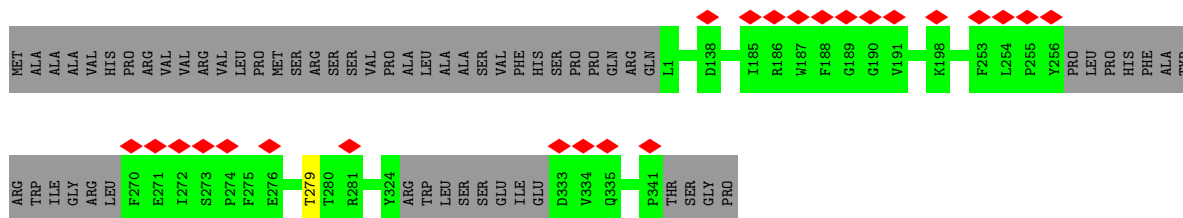
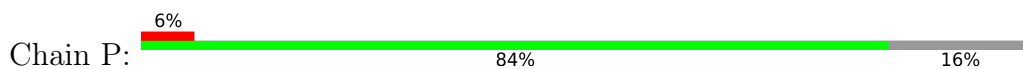


There are no outlier residues recorded for this chain.

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

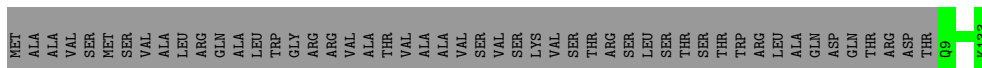


- Molecule 16: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial




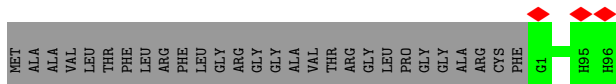
- Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain Q:  71% 29%




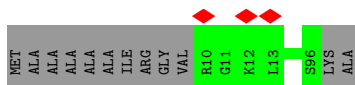
- Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

Chain R:  77% 23%



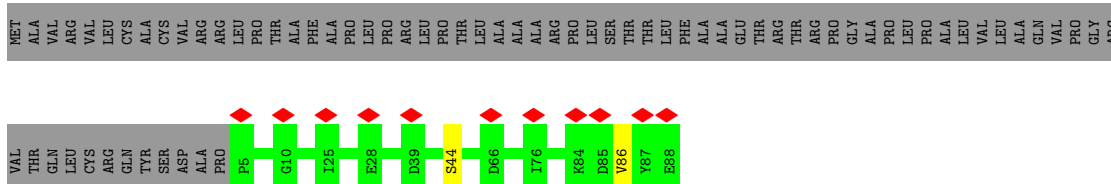
- Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

Chain S:  88% 12%



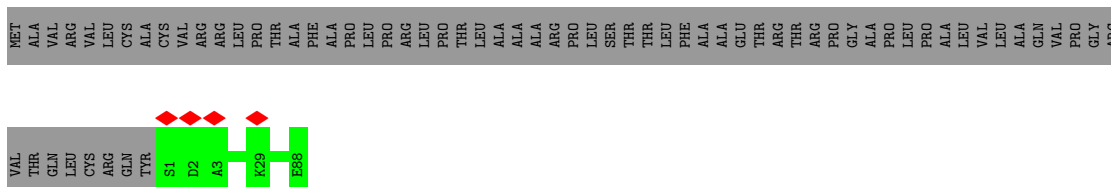
- Molecule 20: Acyl carrier protein, mitochondrial

Chain T:  7% 53% 46%



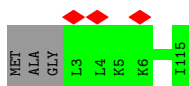
- Molecule 20: Acyl carrier protein, mitochondrial

Chain U:  56% 44%

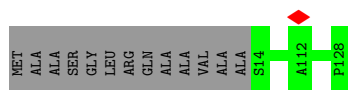
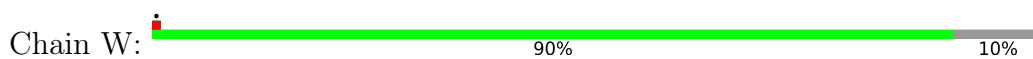


- Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5

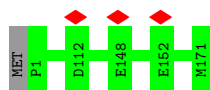
Chain V:  97%



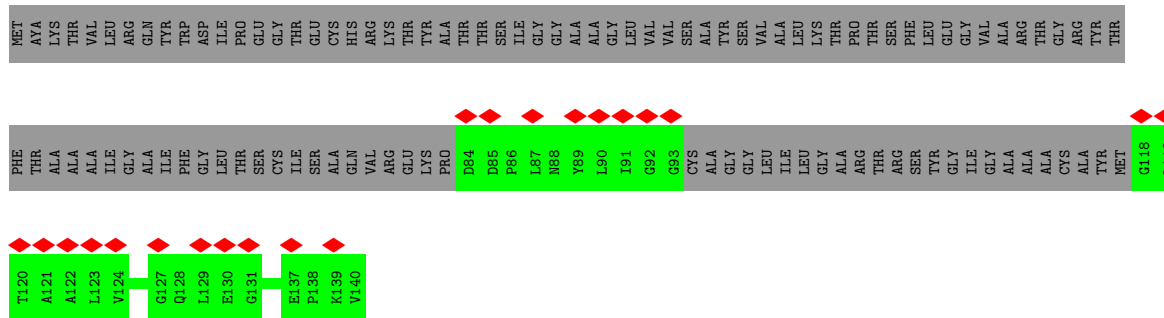
- Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6



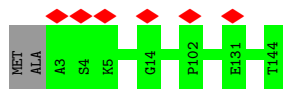
- Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8



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



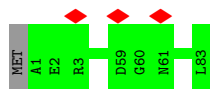
- Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13



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

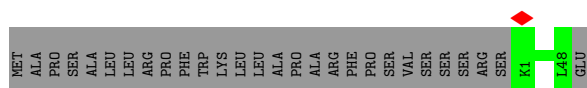


- Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3



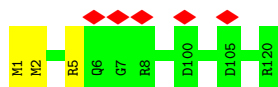
- Molecule 28: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

Chain c:  63% 37%

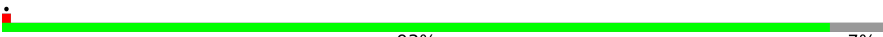


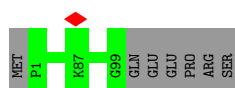
- Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C2

Chain d:  98%




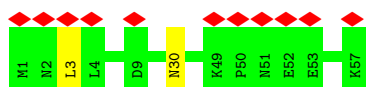
- Molecule 30: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

Chain e:  93% 7%



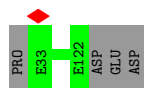
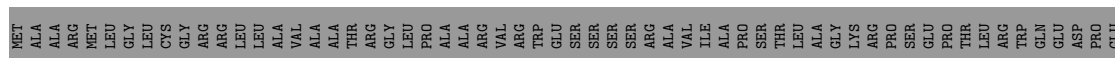
- Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

Chain f:  19% 96%




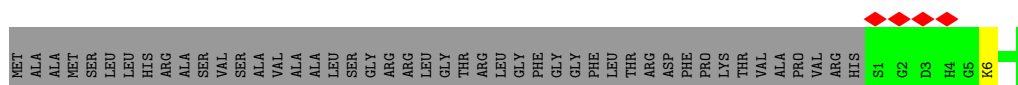
- Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

Chain g:  58% 42%

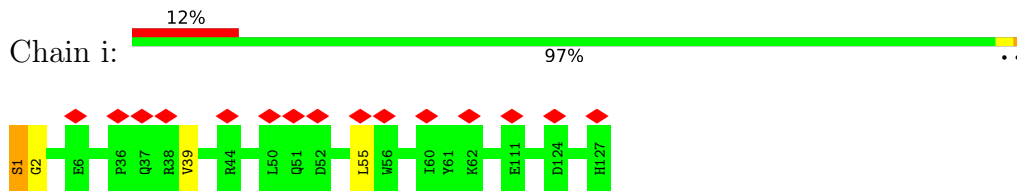


- Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

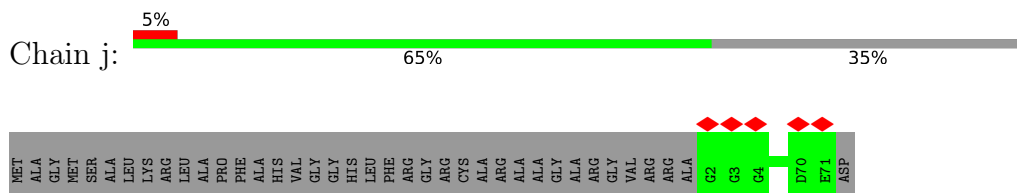
Chain h:  75% 24%



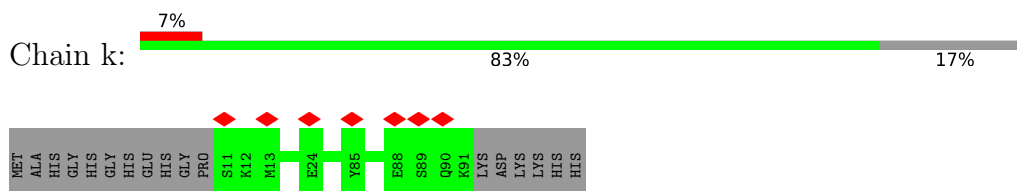
- Molecule 34: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6



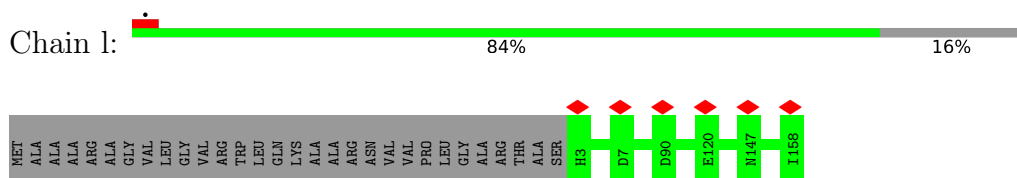
- Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial



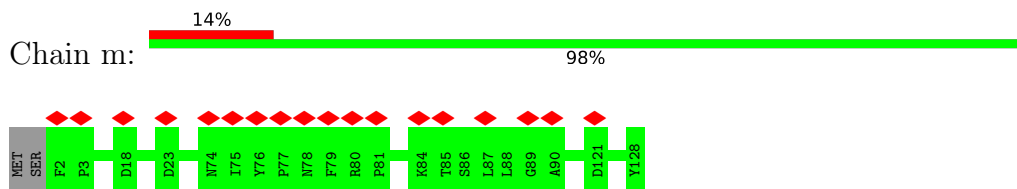
- Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3



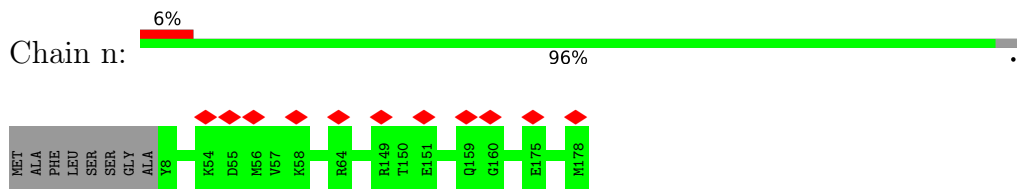
- Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial



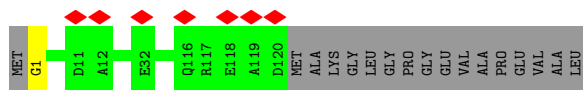
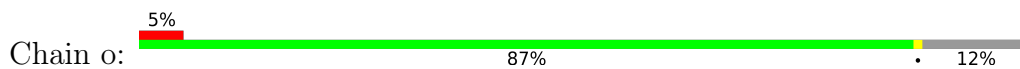
- Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4



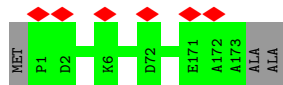
- Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9



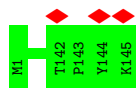
- Molecule 40: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7



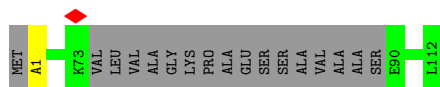
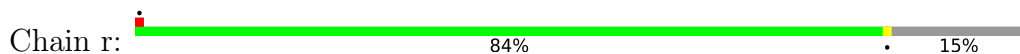
- Molecule 41: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10



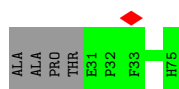
- Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12



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



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



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	22019	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40.5	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	34.528	Depositor
Minimum map value	-14.853	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.958	Depositor
Recommended contour level	5.5	Depositor
Map size (Å)	479.744, 479.744, 479.744	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.7496, 0.7496, 0.7496	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: CDL, ZN, MG, FME, NDP, FMN, FES, 3PE, AME, K, MYR, SAC, SF4, PC1, EHZ, 2MR, U10, CHD, GTP, AYA

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	0.32	0/876	0.42	0/1199
2	B	0.42	0/1292	0.47	0/1747
3	C	0.38	0/1794	0.44	0/2443
4	D	0.38	0/3170	0.46	0/4285
5	E	0.35	0/1699	0.44	0/2312
6	F	0.34	0/3398	0.45	0/4591
7	G	0.34	0/5450	0.46	1/7388 (0.0%)
8	H	0.35	0/2571	0.46	2/3513 (0.1%)
9	I	0.41	0/1445	0.46	0/1956
10	J	0.36	0/1246	0.60	6/1687 (0.4%)
11	K	0.41	0/646	0.48	0/872
12	L	0.32	0/4443	0.42	2/6047 (0.0%)
13	M	0.33	0/3738	0.44	1/5097 (0.0%)
14	N	0.31	0/2792	0.43	0/3800
15	O	0.30	0/2651	0.39	0/3587
16	P	0.33	0/2626	0.44	0/3557
17	Q	0.35	0/1039	0.46	0/1404
18	R	0.37	0/753	0.43	0/1014
19	S	0.30	0/712	0.44	0/957
20	T	0.29	0/692	0.49	1/932 (0.1%)
20	U	0.31	0/719	0.42	0/971
21	V	0.29	0/939	0.36	0/1272
22	W	0.32	0/1001	0.39	0/1345
23	X	0.35	0/1439	0.44	0/1942
24	Y	0.24	0/252	0.37	0/340
25	Z	0.36	0/1186	0.42	0/1599
26	a	0.34	0/584	0.40	0/786
27	b	0.33	0/672	0.39	0/923
28	c	0.32	0/418	0.37	0/567
29	d	0.37	0/1018	0.41	0/1375
30	e	0.33	0/850	0.45	0/1136

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	f	0.33	0/505	0.50	2/681 (0.3%)
32	g	0.35	0/772	0.39	0/1046
33	h	0.33	0/1221	0.40	0/1651
34	i	0.31	0/1127	0.51	3/1534 (0.2%)
35	j	0.30	0/619	0.39	0/848
36	k	0.29	0/672	0.38	0/906
37	l	0.33	0/1369	0.39	0/1873
38	m	0.31	0/1088	0.42	0/1472
39	n	0.31	0/1540	0.38	0/2085
40	o	0.34	1/1060 (0.1%)	0.40	0/1420
41	p	0.34	0/1489	0.40	0/2008
42	q	0.37	0/1250	0.45	0/1698
43	r	0.34	0/798	0.42	0/1079
44	s	0.32	0/392	0.43	0/531
All	All	0.34	1/66013 (0.0%)	0.44	18/89476 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
34	i	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
40	o	1	GLY	CA-C	5.13	1.60	1.51

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	J	94	VAL	CG1-CB-CG2	7.03	122.14	110.90
20	T	86	VAL	CG1-CB-CG2	7.02	122.14	110.90
34	i	39	VAL	CG1-CB-CG2	6.91	121.96	110.90
10	J	115	VAL	CG1-CB-CG2	6.82	121.81	110.90
7	G	698	VAL	CG1-CB-CG2	6.64	121.52	110.90
8	H	207	LEU	CB-CG-CD2	6.20	121.53	111.00
13	M	143	LEU	CB-CG-CD2	6.17	121.49	111.00
34	i	55	LEU	CB-CG-CD2	6.01	121.21	111.00
10	J	108	LEU	CB-CG-CD1	5.95	121.11	111.00
12	L	525	LEU	CB-CG-CD1	5.87	120.98	111.00

Continued on next page...

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
31	f	3	LEU	CB-CG-CD2	5.71	120.71	111.00
10	J	98	LEU	CB-CG-CD2	5.66	120.63	111.00
31	f	3	LEU	CB-CG-CD1	5.55	120.43	111.00
10	J	98	LEU	CB-CG-CD1	5.49	120.33	111.00
34	i	55	LEU	CB-CG-CD1	5.41	120.20	111.00
10	J	108	LEU	CB-CG-CD2	5.38	120.15	111.00
12	L	525	LEU	CB-CG-CD2	5.24	119.90	111.00
8	H	207	LEU	CB-CG-CD1	5.19	119.82	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
34	i	1	SAC	Mainchain

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	103/115 (90%)	97 (94%)	6 (6%)	0	100	100
2	B	156/216 (72%)	149 (96%)	7 (4%)	0	100	100
3	C	208/266 (78%)	202 (97%)	6 (3%)	0	100	100
4	D	385/463 (83%)	368 (96%)	17 (4%)	0	100	100
5	E	212/249 (85%)	204 (96%)	7 (3%)	1 (0%)	29	66
6	F	430/464 (93%)	410 (95%)	20 (5%)	0	100	100
7	G	698/727 (96%)	676 (97%)	22 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	H	316/318 (99%)	301 (95%)	15 (5%)	0	100	100
9	I	174/212 (82%)	170 (98%)	4 (2%)	0	100	100
10	J	157/175 (90%)	144 (92%)	13 (8%)	0	100	100
11	K	84/98 (86%)	82 (98%)	2 (2%)	0	100	100
12	L	545/606 (90%)	515 (94%)	30 (6%)	0	100	100
13	M	457/459 (100%)	449 (98%)	7 (2%)	1 (0%)	47	81
14	N	345/347 (99%)	336 (97%)	9 (3%)	0	100	100
15	O	318/343 (93%)	309 (97%)	9 (3%)	0	100	100
16	P	314/380 (83%)	299 (95%)	14 (4%)	1 (0%)	41	75
17	Q	123/175 (70%)	122 (99%)	1 (1%)	0	100	100
18	R	94/124 (76%)	89 (95%)	5 (5%)	0	100	100
19	S	85/99 (86%)	84 (99%)	1 (1%)	0	100	100
20	T	82/156 (53%)	78 (95%)	4 (5%)	0	100	100
20	U	86/156 (55%)	81 (94%)	5 (6%)	0	100	100
21	V	111/116 (96%)	107 (96%)	4 (4%)	0	100	100
22	W	113/128 (88%)	108 (96%)	5 (4%)	0	100	100
23	X	169/172 (98%)	164 (97%)	5 (3%)	0	100	100
24	Y	29/141 (21%)	26 (90%)	3 (10%)	0	100	100
25	Z	140/144 (97%)	136 (97%)	4 (3%)	0	100	100
26	a	68/70 (97%)	67 (98%)	1 (2%)	0	100	100
27	b	81/84 (96%)	79 (98%)	2 (2%)	0	100	100
28	c	46/76 (60%)	45 (98%)	1 (2%)	0	100	100
29	d	118/120 (98%)	116 (98%)	1 (1%)	1 (1%)	19	55
30	e	97/106 (92%)	93 (96%)	4 (4%)	0	100	100
31	f	55/57 (96%)	53 (96%)	2 (4%)	0	100	100
32	g	88/154 (57%)	84 (96%)	4 (4%)	0	100	100
33	h	141/189 (75%)	137 (97%)	4 (3%)	0	100	100
34	i	125/127 (98%)	119 (95%)	5 (4%)	1 (1%)	19	55
35	j	68/108 (63%)	66 (97%)	2 (3%)	0	100	100
36	k	79/98 (81%)	79 (100%)	0	0	100	100
37	l	154/186 (83%)	144 (94%)	10 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
38	m	125/129 (97%)	115 (92%)	10 (8%)	0	100	100
39	n	169/179 (94%)	161 (95%)	8 (5%)	0	100	100
40	o	118/137 (86%)	114 (97%)	4 (3%)	0	100	100
41	p	171/176 (97%)	166 (97%)	5 (3%)	0	100	100
42	q	143/145 (99%)	141 (99%)	2 (1%)	0	100	100
43	r	92/113 (81%)	87 (95%)	5 (5%)	0	100	100
44	s	43/109 (39%)	41 (95%)	2 (5%)	0	100	100
All	All	7915/9212 (86%)	7613 (96%)	297 (4%)	5 (0%)	54	85

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	158	ASP
34	i	2	GLY
13	M	142	ARG
16	P	279	THR
29	d	2	MET

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	94/100 (94%)	94 (100%)	0	100	100
2	B	134/175 (77%)	134 (100%)	0	100	100
3	C	190/228 (83%)	190 (100%)	0	100	100
4	D	334/392 (85%)	334 (100%)	0	100	100
5	E	183/205 (89%)	183 (100%)	0	100	100
6	F	345/368 (94%)	345 (100%)	0	100	100
7	G	586/608 (96%)	586 (100%)	0	100	100
8	H	274/274 (100%)	272 (99%)	2 (1%)	84	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
9	I	151/175 (86%)	151 (100%)	0	100	100
10	J	128/141 (91%)	128 (100%)	0	100	100
11	K	73/85 (86%)	73 (100%)	0	100	100
12	L	479/533 (90%)	479 (100%)	0	100	100
13	M	412/412 (100%)	412 (100%)	0	100	100
14	N	315/315 (100%)	315 (100%)	0	100	100
15	O	283/303 (93%)	283 (100%)	0	100	100
16	P	276/327 (84%)	276 (100%)	0	100	100
17	Q	112/153 (73%)	112 (100%)	0	100	100
18	R	79/97 (81%)	79 (100%)	0	100	100
19	S	77/82 (94%)	77 (100%)	0	100	100
20	T	78/135 (58%)	77 (99%)	1 (1%)	69	88
20	U	81/135 (60%)	81 (100%)	0	100	100
21	V	101/102 (99%)	101 (100%)	0	100	100
22	W	108/114 (95%)	108 (100%)	0	100	100
23	X	154/155 (99%)	154 (100%)	0	100	100
24	Y	25/102 (24%)	25 (100%)	0	100	100
25	Z	120/121 (99%)	120 (100%)	0	100	100
26	a	59/59 (100%)	59 (100%)	0	100	100
27	b	71/72 (99%)	71 (100%)	0	100	100
28	c	44/68 (65%)	44 (100%)	0	100	100
29	d	105/105 (100%)	104 (99%)	1 (1%)	76	91
30	e	89/96 (93%)	89 (100%)	0	100	100
31	f	54/54 (100%)	53 (98%)	1 (2%)	57	83
32	g	81/131 (62%)	81 (100%)	0	100	100
33	h	124/158 (78%)	123 (99%)	1 (1%)	81	93
34	i	120/120 (100%)	120 (100%)	0	100	100
35	j	61/84 (73%)	61 (100%)	0	100	100
36	k	63/76 (83%)	63 (100%)	0	100	100
37	l	140/159 (88%)	140 (100%)	0	100	100
38	m	113/115 (98%)	113 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	n	156/161 (97%)	156 (100%)	0	100	100
40	o	109/120 (91%)	109 (100%)	0	100	100
41	p	156/157 (99%)	156 (100%)	0	100	100
42	q	131/131 (100%)	131 (100%)	0	100	100
43	r	86/97 (89%)	86 (100%)	0	100	100
44	s	44/92 (48%)	44 (100%)	0	100	100
All	All	6998/7892 (89%)	6992 (100%)	6 (0%)	93	98

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	H	5	ASN
8	H	54	LYS
20	T	44	SER
29	d	5	ARG
31	f	30	ASN
33	h	6	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
9	I	144	HIS
11	K	52	HIS
12	L	248	HIS
12	L	514	HIS
29	d	88	HIS
30	e	96	HIS
33	h	143	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

11 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
12	FME	L	1	12	8,9,10	0.96	0	7,9,11	0.91	0
8	FME	H	1	8	8,9,10	0.98	0	7,9,11	0.88	0
10	FME	J	1	10	8,9,10	0.91	0	7,9,11	0.90	0
43	AYA	r	1	43	6,7,8	1.25	1 (16%)	5,8,10	1.39	1 (20%)
1	FME	A	1	1	8,9,10	0.96	1 (12%)	7,9,11	0.76	0
11	FME	K	1	11	8,9,10	0.92	0	7,9,11	0.97	0
34	SAC	i	1	34	7,8,9	1.84	1 (14%)	8,9,11	1.62	1 (12%)
29	AME	d	1	29	9,10,11	1.42	2 (22%)	9,11,13	2.55	2 (22%)
4	2MR	D	85	4	10,12,13	0.51	0	5,13,15	1.26	1 (20%)
14	FME	N	1	14	8,9,10	0.96	0	7,9,11	0.85	0
13	FME	M	1	13	8,9,10	0.96	0	7,9,11	0.80	0

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
12	FME	L	1	12	-	5/7/9/11	-
8	FME	H	1	8	-	0/7/9/11	-
10	FME	J	1	10	-	5/7/9/11	-
43	AYA	r	1	43	-	0/4/6/8	-
1	FME	A	1	1	-	1/7/9/11	-
11	FME	K	1	11	-	3/7/9/11	-
34	SAC	i	1	34	-	4/7/8/10	-
29	AME	d	1	29	-	4/9/10/12	-
4	2MR	D	85	4	-	3/10/13/15	-
14	FME	N	1	14	-	2/7/9/11	-
13	FME	M	1	13	-	1/7/9/11	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	i	1	SAC	O-C	4.22	1.36	1.19
29	d	1	AME	CT1-N	3.12	1.45	1.34
43	r	1	AYA	CA-N	-2.45	1.44	1.46
29	d	1	AME	OT-CT1	-2.14	1.18	1.23
1	A	1	FME	CA-N	-2.00	1.43	1.46

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
29	d	1	AME	C-CA-N	-6.48	98.04	109.73
34	i	1	SAC	O-C-CA	-3.99	114.33	124.78
29	d	1	AME	CE-SD-CG	2.99	110.66	100.40
43	r	1	AYA	CB-CA-N	2.82	112.75	109.61
4	D	85	2MR	NE-CZ-NH2	-2.64	117.06	119.48

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1	FME	O1-CN-N-CA
4	D	85	2MR	O-C-CA-CB
4	D	85	2MR	NE-CZ-NH2-CQ2
4	D	85	2MR	NH1-CZ-NH2-CQ2
10	J	1	FME	O1-CN-N-CA
10	J	1	FME	CB-CA-N-CN
10	J	1	FME	C-CA-CB-CG
11	K	1	FME	O1-CN-N-CA
11	K	1	FME	C-CA-CB-CG
12	L	1	FME	O1-CN-N-CA
14	N	1	FME	O1-CN-N-CA
29	d	1	AME	N-CA-CB-CG
29	d	1	AME	CB-CA-N-CT1
12	L	1	FME	CA-CB-CG-SD
10	J	1	FME	N-CA-CB-CG
29	d	1	AME	CB-CG-SD-CE
34	i	1	SAC	N-CA-CB-OG
13	M	1	FME	C-CA-CB-CG
29	d	1	AME	C-CA-CB-CG
34	i	1	SAC	C-CA-CB-OG
11	K	1	FME	N-CA-CB-CG
34	i	1	SAC	C-CA-N-C1A
34	i	1	SAC	CB-CA-N-C1A

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Mol	Chain	Res	Type	Atoms
12	L	1	FME	CB-CG-SD-CE
14	N	1	FME	CB-CA-N-CN
12	L	1	FME	N-CA-CB-CG
10	J	1	FME	CB-CG-SD-CE
12	L	1	FME	CB-CA-N-CN

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 46 ligands modelled in this entry, 3 are monoatomic - leaving 43 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	$\# Z > 2$
45	3PE	H	702	-	32,32,50	1.05	4 (12%)	35,37,55	1.24	2 (5%)
54	GTP	O	401	55	26,34,34	2.92	10 (38%)	32,54,54	1.77	9 (28%)
45	3PE	h	202	-	31,31,50	1.08	4 (12%)	34,36,55	1.05	2 (5%)
45	3PE	A	202	-	42,42,50	0.92	4 (9%)	45,47,55	1.13	2 (4%)
52	CDL	L	702	-	74,74,99	1.01	8 (10%)	80,86,111	1.12	4 (5%)
52	CDL	X	201	-	78,78,99	0.98	8 (10%)	84,90,111	1.11	4 (4%)
52	CDL	h	201	-	76,76,99	0.99	8 (10%)	82,88,111	1.19	5 (6%)
45	3PE	I	201	-	50,50,50	0.86	3 (6%)	53,55,55	1.10	2 (3%)
52	CDL	d	202	-	64,64,99	1.06	8 (12%)	70,76,111	1.13	4 (5%)
59	MYR	o	201	40	14,14,15	0.96	0	13,13,15	0.68	0
47	SF4	G	801	7	0,12,12	-	-	-	-	-
53	U10	M	701	-	63,63,63	2.68	17 (26%)	76,79,79	1.97	22 (28%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
48	FES	G	803	7	0,4,4	-	-	-		
56	NDP	P	501	-	45,52,52	2.23	6 (13%)	53,80,80	1.69	10 (18%)
46	PC1	d	201	-	32,32,53	1.22	4 (12%)	38,40,61	1.13	2 (5%)
45	3PE	A	203	-	38,38,50	0.97	4 (10%)	41,43,55	1.13	2 (4%)
51	CHD	H	701	-	32,32,32	3.22	10 (31%)	51,51,51	2.58	21 (41%)
52	CDL	N	403	-	72,72,99	1.03	7 (9%)	78,84,111	1.09	4 (5%)
46	PC1	J	201	-	42,42,53	1.05	4 (9%)	48,50,61	1.03	2 (4%)
45	3PE	N	401	-	34,34,50	1.02	4 (11%)	37,39,55	1.06	2 (5%)
47	SF4	G	802	7	0,12,12	-	-	-		
45	3PE	Y	601	-	38,38,50	0.99	4 (10%)	41,43,55	1.12	2 (4%)
45	3PE	N	402	-	48,48,50	0.87	3 (6%)	51,53,55	1.09	2 (3%)
46	PC1	M	703	-	45,45,53	1.00	3 (6%)	51,53,61	1.04	2 (3%)
49	FMN	F	501	-	33,33,33	1.12	2 (6%)	48,50,50	1.25	6 (12%)
45	3PE	L	701	-	44,44,50	0.91	3 (6%)	47,49,55	1.10	2 (4%)
48	FES	E	301	5	0,4,4	-	-	-		
45	3PE	L	703	-	31,31,50	1.07	3 (9%)	34,36,55	1.17	2 (5%)
47	SF4	I	202	9	0,12,12	-	-	-		
58	EHZ	T	101	20	29,36,37	1.76	5 (17%)	35,44,47	1.52	5 (14%)
58	EHZ	U	101	20	29,36,37	1.69	5 (17%)	35,44,47	1.35	3 (8%)
45	3PE	A	201	-	41,41,50	0.94	4 (9%)	44,46,55	1.14	2 (4%)
45	3PE	r	202	-	48,48,50	0.87	4 (8%)	51,53,55	1.09	2 (3%)
47	SF4	F	502	6	0,12,12	-	-	-		
45	3PE	I	204	-	32,32,50	1.06	4 (12%)	35,37,55	1.11	2 (5%)
45	3PE	M	702	-	37,37,50	0.99	4 (10%)	40,42,55	1.05	2 (5%)
47	SF4	B	302	2	0,12,12	-	-	-		
46	PC1	B	301	-	49,49,53	0.98	4 (8%)	55,57,61	0.94	2 (3%)
47	SF4	I	203	9	0,12,12	-	-	-		
51	CHD	L	704	-	32,32,32	3.19	10 (31%)	51,51,51	2.31	20 (39%)
46	PC1	B	303	-	50,50,53	0.97	4 (8%)	56,58,61	1.03	2 (3%)
52	CDL	r	201	-	59,59,99	1.11	7 (11%)	65,71,111	1.17	4 (6%)
46	PC1	q	701	-	36,36,53	1.13	4 (11%)	42,44,61	1.07	2 (4%)

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
45	3PE	H	702	-	-	17/36/36/54	-
54	GTP	O	401	55	-	6/18/38/38	0/3/3/3
45	3PE	h	202	-	-	23/35/35/54	-
45	3PE	A	202	-	-	20/46/46/54	-
52	CDL	L	702	-	-	43/85/85/110	-
52	CDL	X	201	-	-	47/89/89/110	-
52	CDL	h	201	-	-	36/87/87/110	-
45	3PE	I	201	-	-	26/54/54/54	-
52	CDL	d	202	-	-	34/75/75/110	-
59	MYR	o	201	40	-	8/11/12/13	-
47	SF4	G	801	7	-	-	0/6/5/5
53	U10	M	701	-	-	28/63/87/87	0/1/1/1
48	FES	G	803	7	-	-	0/1/1/1
56	NDP	P	501	-	-	6/30/77/77	0/5/5/5
46	PC1	d	201	-	-	14/36/36/57	-
45	3PE	A	203	-	-	20/42/42/54	-
51	CHD	H	701	-	-	1/9/74/74	0/4/4/4
52	CDL	N	403	-	-	35/83/83/110	-
46	PC1	J	201	-	-	16/46/46/57	-
45	3PE	N	401	-	-	15/38/38/54	-
47	SF4	G	802	7	-	-	0/6/5/5
45	3PE	Y	601	-	-	14/42/42/54	-
45	3PE	N	402	-	-	25/52/52/54	-
46	PC1	M	703	-	-	14/49/49/57	-
49	FMN	F	501	-	-	5/18/18/18	0/3/3/3
45	3PE	L	701	-	-	27/48/48/54	-
48	FES	E	301	5	-	-	0/1/1/1
45	3PE	L	703	-	-	20/35/35/54	-
47	SF4	I	202	9	-	-	0/6/5/5
58	EHZ	T	101	20	-	14/42/44/45	-
58	EHZ	U	101	20	-	15/42/44/45	-
45	3PE	A	201	-	-	17/45/45/54	-
45	3PE	r	202	-	-	32/52/52/54	-
47	SF4	F	502	6	-	-	0/6/5/5
45	3PE	I	204	-	-	13/36/36/54	-
45	3PE	M	702	-	-	24/41/41/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
47	SF4	B	302	2	-	-	0/6/5/5
46	PC1	B	301	-	-	18/53/53/57	-
47	SF4	I	203	9	-	-	0/6/5/5
51	CHD	L	704	-	-	4/9/74/74	0/4/4/4
46	PC1	B	303	-	-	16/54/54/57	-
52	CDL	r	201	-	-	28/70/70/110	-
46	PC1	q	701	-	-	19/40/40/57	-

All (186) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
56	P	501	NDP	P2B-O2B	12.06	1.82	1.59
51	L	704	CHD	C11-C12	8.67	1.67	1.53
51	H	701	CHD	C11-C12	8.67	1.67	1.53
54	O	401	GTP	O6-C6	8.26	1.40	1.23
51	H	701	CHD	C16-C15	7.02	1.73	1.54
51	L	704	CHD	C16-C15	7.00	1.73	1.54
53	M	701	U10	C18-C19	6.26	1.48	1.33
53	M	701	U10	C28-C29	6.07	1.47	1.33
53	M	701	U10	C13-C14	6.06	1.47	1.33
51	H	701	CHD	C13-C17	5.96	1.65	1.55
53	M	701	U10	C8-C9	5.93	1.47	1.33
58	T	101	EHZ	C15-N2	5.91	1.46	1.33
53	M	701	U10	C23-C24	5.90	1.47	1.33
53	M	701	U10	C43-C44	5.84	1.47	1.33
53	M	701	U10	C38-C39	5.82	1.47	1.33
53	M	701	U10	C33-C34	5.73	1.46	1.33
53	M	701	U10	C48-C49	5.69	1.46	1.33
51	H	701	CHD	C8-C9	5.65	1.64	1.53
53	M	701	U10	O3-C3	-5.59	1.23	1.36
51	L	704	CHD	C13-C17	5.57	1.65	1.55
51	H	701	CHD	O12-C12	-5.55	1.34	1.43
51	L	704	CHD	C20-C17	-5.54	1.44	1.54
53	M	701	U10	O4-C4	-5.52	1.23	1.36
54	O	401	GTP	O4'-C1'	5.49	1.48	1.41
51	L	704	CHD	C8-C9	5.41	1.64	1.53
51	L	704	CHD	O12-C12	-5.35	1.34	1.43
58	T	101	EHZ	C12-N1	5.34	1.45	1.33
58	U	101	EHZ	C12-N1	5.32	1.45	1.33
58	U	101	EHZ	C15-N2	5.23	1.45	1.33
53	M	701	U10	C53-C54	5.19	1.47	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
51	H	701	CHD	C20-C17	-5.08	1.45	1.54
54	O	401	GTP	C2-N1	4.87	1.49	1.37
54	O	401	GTP	C2-N3	4.69	1.44	1.33
54	O	401	GTP	C2-N2	4.68	1.45	1.34
51	H	701	CHD	C6-C5	4.64	1.61	1.53
51	L	704	CHD	C6-C5	4.57	1.61	1.53
51	L	704	CHD	C15-C14	4.03	1.62	1.54
51	H	701	CHD	C15-C14	3.94	1.62	1.54
51	L	704	CHD	C6-C7	3.83	1.59	1.52
51	H	701	CHD	C6-C7	3.72	1.59	1.52
56	P	501	NDP	PN-O5D	3.71	1.74	1.59
49	F	501	FMN	C4A-N5	3.65	1.37	1.30
53	M	701	U10	C3-C2	-3.33	1.39	1.48
56	P	501	NDP	O2B-C2B	-3.26	1.32	1.44
53	M	701	U10	C4-C5	-3.22	1.39	1.48
54	O	401	GTP	C5-C6	-3.09	1.41	1.47
52	N	403	CDL	OB6-CB4	-2.82	1.39	1.46
54	O	401	GTP	C2'-C1'	-2.82	1.49	1.53
45	Y	601	3PE	O21-C2	-2.77	1.39	1.46
45	L	701	3PE	O21-C2	-2.76	1.39	1.46
52	r	201	CDL	OA6-CA4	-2.74	1.39	1.46
52	L	702	CDL	OB6-CB4	-2.73	1.39	1.46
52	d	202	CDL	OA6-CA4	-2.72	1.39	1.46
46	B	303	PC1	O21-C2	-2.70	1.39	1.46
45	I	201	3PE	O21-C2	-2.70	1.39	1.46
46	d	201	PC1	O21-C2	-2.68	1.39	1.46
52	h	201	CDL	OB6-CB4	-2.68	1.39	1.46
52	X	201	CDL	OB6-CB4	-2.68	1.39	1.46
46	B	301	PC1	O21-C2	-2.67	1.39	1.46
52	h	201	CDL	OA6-CA4	-2.66	1.39	1.46
46	M	703	PC1	O21-C2	-2.65	1.40	1.46
52	r	201	CDL	OB6-CB4	-2.64	1.40	1.46
52	L	702	CDL	OA8-CA7	2.63	1.41	1.33
45	L	703	3PE	O21-C2	-2.62	1.40	1.46
45	N	402	3PE	O21-C2	-2.62	1.40	1.46
52	X	201	CDL	OA6-CA4	-2.61	1.40	1.46
52	L	702	CDL	OA6-CA4	-2.61	1.40	1.46
53	M	701	U10	C6-C5	-2.60	1.39	1.46
45	A	202	3PE	O21-C2	-2.60	1.40	1.46
51	L	704	CHD	C13-C12	-2.57	1.50	1.54
46	q	701	PC1	O21-C2	-2.56	1.40	1.46
45	M	702	3PE	O21-C2	-2.55	1.40	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	I	204	3PE	O21-C2	-2.54	1.40	1.46
46	J	201	PC1	O21-C2	-2.51	1.40	1.46
52	N	403	CDL	OA6-CA4	-2.51	1.40	1.46
52	X	201	CDL	OA8-CA7	2.50	1.40	1.33
45	A	201	3PE	O21-C2	-2.49	1.40	1.46
52	d	202	CDL	OB8-CB7	2.48	1.40	1.33
46	d	201	PC1	O31-C31	2.48	1.40	1.33
52	X	201	CDL	OB8-CB7	2.47	1.40	1.33
45	N	402	3PE	O31-C31	2.47	1.40	1.33
45	A	203	3PE	O31-C31	2.47	1.40	1.33
52	N	403	CDL	OB8-CB7	2.47	1.40	1.33
45	H	702	3PE	O31-C31	2.45	1.40	1.33
52	d	202	CDL	OA8-CA7	2.44	1.40	1.33
52	L	702	CDL	OB8-CB7	2.44	1.40	1.33
46	J	201	PC1	O31-C3	-2.44	1.39	1.45
52	r	201	CDL	OB8-CB7	2.42	1.40	1.33
52	h	201	CDL	OA8-CA7	2.42	1.40	1.33
58	U	101	EHZ	O4-C15	-2.42	1.18	1.23
45	h	202	3PE	O21-C2	-2.41	1.40	1.46
45	h	202	3PE	O31-C31	2.41	1.40	1.33
45	H	702	3PE	O21-C2	-2.41	1.40	1.46
58	T	101	EHZ	O4-C15	-2.40	1.18	1.23
45	Y	601	3PE	O31-C31	2.40	1.40	1.33
52	h	201	CDL	OB8-CB7	2.40	1.40	1.33
52	d	202	CDL	OB6-CB4	-2.38	1.40	1.46
46	B	303	PC1	O31-C3	-2.38	1.39	1.45
52	N	403	CDL	OA8-CA7	2.37	1.40	1.33
46	B	301	PC1	O31-C3	-2.35	1.39	1.45
45	I	201	3PE	O31-C3	-2.35	1.39	1.45
45	A	203	3PE	O21-C21	2.34	1.40	1.34
45	r	202	3PE	O31-C31	2.34	1.40	1.33
45	A	201	3PE	O31-C31	2.33	1.40	1.33
58	T	101	EHZ	C9-S1	2.32	1.81	1.76
58	U	101	EHZ	C9-S1	2.32	1.81	1.76
46	q	701	PC1	O31-C31	2.32	1.40	1.33
45	L	703	3PE	O31-C31	2.31	1.40	1.33
45	N	401	3PE	O31-C31	2.31	1.40	1.33
56	P	501	NDP	O4B-C4B	-2.31	1.39	1.45
45	I	204	3PE	O31-C3	-2.31	1.39	1.45
45	N	401	3PE	O21-C2	-2.30	1.40	1.46
45	N	401	3PE	O21-C21	2.30	1.40	1.34
45	A	203	3PE	O21-C2	-2.30	1.40	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	M	702	3PE	O31-C31	2.30	1.40	1.33
45	A	202	3PE	O31-C31	2.29	1.40	1.33
45	I	204	3PE	O31-C31	2.29	1.40	1.33
52	r	201	CDL	OA8-CA6	-2.28	1.39	1.45
46	M	703	PC1	O31-C3	-2.28	1.39	1.45
52	N	403	CDL	OA6-CA5	2.28	1.40	1.34
45	L	701	3PE	O31-C3	-2.27	1.40	1.45
45	h	202	3PE	O21-C21	2.26	1.40	1.34
46	J	201	PC1	O31-C31	2.26	1.39	1.33
54	O	401	GTP	C2'-C3'	-2.25	1.47	1.53
52	d	202	CDL	OB6-CB5	2.25	1.40	1.34
53	M	701	U10	C6-C1	2.24	1.39	1.35
52	r	201	CDL	OA8-CA7	2.23	1.39	1.33
45	L	703	3PE	O31-C3	-2.22	1.40	1.45
45	I	201	3PE	O31-C31	2.22	1.39	1.33
52	N	403	CDL	OA8-CA6	-2.22	1.40	1.45
58	T	101	EHZ	O3-C12	-2.21	1.18	1.23
49	F	501	FMN	C10-N1	2.21	1.37	1.33
46	q	701	PC1	O31-C3	-2.20	1.40	1.45
58	U	101	EHZ	O3-C12	-2.20	1.18	1.23
46	q	701	PC1	O21-C21	2.20	1.40	1.34
45	r	202	3PE	O21-C2	-2.20	1.41	1.46
46	B	303	PC1	O31-C31	2.20	1.39	1.33
45	A	202	3PE	O31-C3	-2.20	1.40	1.45
54	O	401	GTP	PG-O3G	-2.20	1.46	1.54
45	L	701	3PE	O31-C31	2.19	1.39	1.33
45	Y	601	3PE	O31-C3	-2.19	1.40	1.45
56	P	501	NDP	O3D-C3D	-2.19	1.37	1.43
46	B	301	PC1	O21-C21	2.19	1.40	1.34
45	r	202	3PE	O31-C3	-2.18	1.40	1.45
45	N	401	3PE	O31-C3	-2.18	1.40	1.45
54	O	401	GTP	PG-O2G	-2.18	1.46	1.54
52	X	201	CDL	OB8-CB6	-2.17	1.40	1.45
45	I	204	3PE	O21-C21	2.16	1.40	1.34
46	B	301	PC1	O31-C31	2.16	1.39	1.33
52	r	201	CDL	OB8-CB6	-2.16	1.40	1.45
46	M	703	PC1	O31-C31	2.15	1.39	1.33
52	L	702	CDL	OA6-CA5	2.15	1.40	1.34
46	J	201	PC1	O21-C21	2.14	1.40	1.34
52	h	201	CDL	OA6-CA5	2.14	1.40	1.34
52	N	403	CDL	OB8-CB6	-2.14	1.40	1.45
53	M	701	U10	C1-C2	-2.13	1.39	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	d	202	CDL	OA8-CA6	-2.12	1.40	1.45
52	L	702	CDL	OB8-CB6	-2.12	1.40	1.45
52	h	201	CDL	OB8-CB6	-2.12	1.40	1.45
45	A	201	3PE	O21-C21	2.12	1.40	1.34
45	r	202	3PE	O21-C21	2.11	1.40	1.34
46	d	201	PC1	O31-C3	-2.11	1.40	1.45
52	X	201	CDL	OB6-CB5	2.10	1.40	1.34
52	X	201	CDL	OA8-CA6	-2.10	1.40	1.45
52	h	201	CDL	OA8-CA6	-2.10	1.40	1.45
45	H	702	3PE	O21-C21	2.09	1.40	1.34
45	M	702	3PE	O21-C21	2.09	1.40	1.34
45	h	202	3PE	O31-C3	-2.09	1.40	1.45
45	A	201	3PE	O31-C3	-2.09	1.40	1.45
45	M	702	3PE	O31-C3	-2.09	1.40	1.45
52	r	201	CDL	OA6-CA5	2.07	1.40	1.34
56	P	501	NDP	O5D-C5D	-2.07	1.36	1.44
52	d	202	CDL	OB8-CB6	-2.06	1.40	1.45
45	N	402	3PE	O31-C3	-2.05	1.40	1.45
45	A	202	3PE	O21-C21	2.05	1.40	1.34
46	d	201	PC1	O21-C21	2.05	1.40	1.34
45	H	702	3PE	O31-C3	-2.03	1.40	1.45
51	H	701	CHD	C13-C12	-2.03	1.51	1.54
52	X	201	CDL	OA6-CA5	2.03	1.40	1.34
52	d	202	CDL	OA6-CA5	2.02	1.40	1.34
52	L	702	CDL	OA8-CA6	-2.02	1.40	1.45
45	Y	601	3PE	O21-C21	2.02	1.40	1.34
52	h	201	CDL	OB6-CB5	2.02	1.40	1.34
46	B	303	PC1	O21-C21	2.01	1.40	1.34
45	A	203	3PE	O31-C3	-2.00	1.40	1.45
52	L	702	CDL	OB6-CB5	2.00	1.40	1.34

All (161) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
56	P	501	NDP	PN-O3-PA	-7.08	108.53	132.83
51	H	701	CHD	C17-C13-C12	6.37	123.48	117.67
51	L	704	CHD	C17-C13-C12	5.81	122.97	117.67
53	M	701	U10	C40-C39-C41	5.63	124.75	115.27
51	H	701	CHD	C17-C13-C14	5.57	105.71	100.09
58	T	101	EHZ	C8-C9-S1	5.55	120.50	113.63
51	L	704	CHD	C14-C8-C9	5.24	116.91	109.71
51	H	701	CHD	C1-C10-C5	5.05	115.24	107.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
58	U	101	EHZ	C8-C9-S1	5.05	119.88	113.63
51	H	701	CHD	C4-C5-C10	4.97	117.93	112.66
45	A	201	3PE	O21-C21-C22	4.59	121.40	111.50
51	H	701	CHD	C18-C13-C12	-4.55	104.44	109.07
51	L	704	CHD	C17-C13-C14	4.52	104.65	100.09
51	H	701	CHD	C18-C13-C17	-4.46	104.23	111.21
52	L	702	CDL	OA6-CA5-C11	4.38	120.95	111.50
45	r	202	3PE	O21-C21-C22	4.37	120.91	111.50
45	A	202	3PE	O21-C21-C22	4.33	120.83	111.50
53	M	701	U10	C15-C14-C16	4.30	122.51	115.27
51	H	701	CHD	C14-C13-C12	4.28	111.38	107.40
52	h	201	CDL	OB6-CB5-C51	4.27	120.71	111.50
52	X	201	CDL	OA6-CA5-C11	4.26	120.68	111.50
58	T	101	EHZ	C16-C15-N2	4.24	125.01	116.58
45	H	702	3PE	O21-C21-C22	4.19	120.53	111.50
52	X	201	CDL	OB6-CB5-C51	4.18	120.51	111.50
53	M	701	U10	C25-C24-C26	4.12	122.21	115.27
46	q	701	PC1	O21-C21-C22	4.11	120.37	111.50
45	N	402	3PE	O21-C21-C22	4.10	120.33	111.50
45	M	702	3PE	O21-C21-C22	4.09	120.32	111.50
51	H	701	CHD	C13-C17-C20	-4.08	114.62	119.50
51	L	704	CHD	C9-C8-C7	-4.08	107.00	111.88
46	d	201	PC1	O21-C21-C22	4.07	120.28	111.50
51	L	704	CHD	C1-C10-C5	4.07	113.78	107.77
45	I	201	3PE	O21-C21-C22	4.04	120.20	111.50
46	M	703	PC1	O21-C21-C22	4.04	120.20	111.50
54	O	401	GTP	C3'-C2'-C1'	4.03	107.04	100.98
45	A	203	3PE	O21-C21-C22	4.02	120.16	111.50
46	B	303	PC1	O21-C21-C22	4.00	120.12	111.50
52	r	201	CDL	OB6-CB5-C51	3.99	120.09	111.50
52	d	202	CDL	OA6-CA5-C11	3.98	120.08	111.50
52	h	201	CDL	OA6-CA5-C11	3.95	120.02	111.50
52	N	403	CDL	OA6-CA5-C11	3.92	119.95	111.50
46	J	201	PC1	O21-C21-C22	3.87	119.85	111.50
45	L	703	3PE	O21-C21-C22	3.87	119.84	111.50
53	M	701	U10	C22-C23-C24	-3.86	118.36	127.66
45	I	204	3PE	O21-C21-C22	3.86	119.81	111.50
52	r	201	CDL	OA6-CA5-C11	3.85	119.81	111.50
45	Y	601	3PE	O21-C21-C22	3.80	119.69	111.50
51	H	701	CHD	C5-C4-C3	3.79	118.33	112.76
51	L	704	CHD	C13-C17-C20	-3.75	115.02	119.50
45	L	701	3PE	O21-C21-C22	3.72	119.52	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
45	H	702	3PE	O31-C31-C32	3.69	121.07	111.38
52	N	403	CDL	OB6-CB5-C51	3.63	119.31	111.50
45	N	401	3PE	O21-C21-C22	3.62	119.29	111.50
53	M	701	U10	C47-C48-C49	-3.59	119.02	127.66
45	h	202	3PE	O21-C21-C22	3.57	119.19	111.50
51	L	704	CHD	C18-C13-C17	-3.49	105.75	111.21
51	H	701	CHD	C5-C6-C7	-3.49	110.61	114.46
52	L	702	CDL	OB6-CB5-C51	3.48	119.00	111.50
53	M	701	U10	C27-C28-C29	-3.46	119.32	127.66
56	P	501	NDP	O2B-P2B-O1X	-3.40	96.26	109.39
49	F	501	FMN	C4-N3-C2	-3.37	119.42	125.64
51	H	701	CHD	C19-C10-C5	-3.36	104.66	110.36
53	M	701	U10	C50-C49-C51	3.36	120.93	115.27
52	d	202	CDL	OB6-CB5-C51	3.35	120.13	110.80
51	L	704	CHD	C10-C9-C8	-3.34	108.23	111.82
51	L	704	CHD	C11-C9-C8	3.33	115.75	110.88
53	M	701	U10	C7-C8-C9	-3.19	121.47	126.79
51	H	701	CHD	C18-C13-C14	-3.18	106.23	111.21
54	O	401	GTP	PB-O3B-PG	-3.16	121.97	132.83
53	M	701	U10	C37-C38-C39	-3.16	120.06	127.66
53	M	701	U10	C12-C13-C14	-3.15	120.08	127.66
53	M	701	U10	C32-C33-C34	-3.11	120.16	127.66
53	M	701	U10	C42-C43-C44	-3.09	120.22	127.66
53	M	701	U10	C45-C44-C46	3.08	120.45	115.27
54	O	401	GTP	C2-N1-C6	-3.07	119.44	125.10
54	O	401	GTP	C5-C6-N1	3.07	119.38	113.95
51	L	704	CHD	C5-C6-C7	-3.07	111.07	114.46
53	M	701	U10	C10-C9-C11	3.05	120.40	115.27
46	B	301	PC1	O21-C21-C22	3.03	118.02	111.50
51	H	701	CHD	C9-C10-C5	3.00	112.80	108.58
54	O	401	GTP	O2G-PG-O3B	3.00	114.70	104.64
51	L	704	CHD	C18-C13-C12	-2.99	106.02	109.07
51	H	701	CHD	C1-C10-C9	-2.93	106.74	111.35
52	h	201	CDL	OB8-CB7-C71	2.91	121.03	111.91
46	d	201	PC1	O31-C31-C32	2.88	120.94	111.91
54	O	401	GTP	PA-O3A-PB	-2.88	122.95	132.83
53	M	701	U10	C35-C34-C36	2.87	120.10	115.27
53	M	701	U10	C52-C53-C54	-2.85	118.02	127.75
51	L	704	CHD	C19-C10-C5	-2.82	105.58	110.36
51	H	701	CHD	C4-C3-C2	2.82	113.92	110.55
56	P	501	NDP	PA-O5B-C5B	-2.81	105.20	121.68
49	F	501	FMN	C4A-C4-N3	2.80	120.30	113.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
49	F	501	FMN	O4-C4-C4A	-2.78	119.22	126.60
54	O	401	GTP	O3G-PG-O3B	2.77	113.92	104.64
45	Y	601	3PE	O31-C31-C32	2.76	120.56	111.91
51	L	704	CHD	C4-C5-C10	2.74	115.56	112.66
52	h	201	CDL	OA8-CA7-C31	2.73	120.48	111.91
45	N	402	3PE	O31-C31-C32	2.72	120.46	111.91
46	J	201	PC1	O31-C31-C32	2.71	120.42	111.91
53	M	701	U10	C1M-C1-C6	-2.70	120.00	124.40
51	L	704	CHD	C1-C10-C9	-2.69	107.12	111.35
49	F	501	FMN	C4A-C10-N10	2.69	120.41	116.48
52	L	702	CDL	OA8-CA7-C31	2.69	120.33	111.91
53	M	701	U10	C56-C54-C55	2.68	120.52	114.60
52	N	403	CDL	OB8-CB7-C71	2.67	120.29	111.91
45	I	201	3PE	O31-C31-C32	2.67	120.27	111.91
56	P	501	NDP	PN-O5D-C5D	-2.66	106.09	121.68
45	A	203	3PE	O31-C31-C32	2.64	120.19	111.91
51	H	701	CHD	C6-C5-C4	-2.64	108.16	111.19
56	P	501	NDP	O4B-C4B-C3B	2.63	110.33	105.11
45	A	201	3PE	O31-C31-C32	2.63	120.16	111.91
45	L	701	3PE	O31-C31-C32	2.63	120.16	111.91
52	d	202	CDL	OB8-CB7-C71	2.62	120.12	111.91
45	N	401	3PE	O31-C31-C32	2.61	120.11	111.91
45	L	703	3PE	O31-C31-C32	2.60	120.08	111.91
51	L	704	CHD	C23-C22-C20	-2.60	109.77	114.52
45	I	204	3PE	O31-C31-C32	2.60	120.06	111.91
52	r	201	CDL	OB8-CB7-C71	2.59	120.03	111.91
51	L	704	CHD	C18-C13-C14	-2.59	107.16	111.21
45	r	202	3PE	O31-C31-C32	2.58	120.00	111.91
58	T	101	EHZ	O4-C15-N2	-2.58	117.45	122.99
56	P	501	NDP	O3X-P2B-O2X	2.57	117.44	107.64
46	B	301	PC1	O31-C31-C32	2.56	119.95	111.91
52	X	201	CDL	OB8-CB7-C71	2.56	119.95	111.91
45	h	202	3PE	O31-C31-C32	2.56	119.94	111.91
46	M	703	PC1	O31-C31-C32	2.55	119.92	111.91
51	H	701	CHD	C11-C12-C13	2.55	113.86	111.24
51	H	701	CHD	C23-C22-C20	-2.55	109.87	114.52
46	B	303	PC1	O31-C31-C32	2.54	119.88	111.91
52	d	202	CDL	OA8-CA7-C31	2.53	119.83	111.91
52	L	702	CDL	OB8-CB7-C71	2.52	119.82	111.91
52	N	403	CDL	OA8-CA7-C31	2.51	119.78	111.91
46	q	701	PC1	O31-C31-C32	2.50	119.75	111.91
51	L	704	CHD	C4-C3-C2	2.46	113.49	110.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
58	U	101	EHZ	C10-S1-C9	2.46	109.53	101.87
51	L	704	CHD	C16-C17-C20	-2.45	108.36	112.15
52	h	201	CDL	CA4-OA6-CA5	-2.43	111.81	117.79
52	r	201	CDL	OA8-CA7-C31	2.40	119.45	111.91
45	A	202	3PE	O31-C31-C32	2.40	119.43	111.91
51	H	701	CHD	C14-C8-C9	2.35	112.94	109.71
45	M	702	3PE	O31-C31-C32	2.34	119.25	111.91
52	X	201	CDL	OA8-CA7-C31	2.30	119.13	111.91
49	F	501	FMN	C4A-C10-N1	-2.27	119.46	124.73
51	H	701	CHD	C6-C5-C10	-2.27	110.25	112.66
56	P	501	NDP	C2A-N1A-C6A	-2.26	114.89	118.75
54	O	401	GTP	O2A-PA-O1A	-2.22	101.25	112.24
51	H	701	CHD	C16-C17-C20	-2.19	108.75	112.15
58	T	101	EHZ	C10-S1-C9	2.18	108.65	101.87
58	U	101	EHZ	C14-N2-C15	-2.17	118.71	122.59
53	M	701	U10	C25-C24-C23	-2.17	118.12	123.68
49	F	501	FMN	C10-C4A-N5	-2.16	120.27	124.86
56	P	501	NDP	O5D-PN-O1N	-2.15	100.65	109.07
51	L	704	CHD	C14-C13-C12	2.14	109.40	107.40
56	P	501	NDP	O2N-PN-O1N	2.13	122.79	112.24
58	T	101	EHZ	O2-C9-S1	-2.12	119.86	122.61
54	O	401	GTP	O2B-PB-O1B	-2.11	101.79	112.24
53	M	701	U10	C40-C39-C38	-2.10	118.30	123.68
53	M	701	U10	C41-C39-C38	-2.07	116.92	121.12
53	M	701	U10	C30-C29-C31	2.06	118.73	115.27
56	P	501	NDP	C5B-C4B-C3B	-2.03	107.59	115.18
51	L	704	CHD	C5-C4-C3	2.02	115.72	112.76

There are no chirality outliers.

All (700) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	A	201	3PE	O13-C11-C12-N
45	A	201	3PE	O11-C1-C2-O21
45	A	201	3PE	O22-C21-O21-C2
45	A	202	3PE	C1-O11-P-O12
45	A	202	3PE	C1-O11-P-O14
45	A	202	3PE	O13-C11-C12-N
45	A	203	3PE	C1-O11-P-O12
45	A	203	3PE	C1-O11-P-O13
45	A	203	3PE	C11-O13-P-O14
45	A	203	3PE	O13-C11-C12-N

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Mol	Chain	Res	Type	Atoms
45	A	203	3PE	C22-C21-O21-C2
45	H	702	3PE	C1-O11-P-O12
45	H	702	3PE	C1-O11-P-O14
45	H	702	3PE	C11-O13-P-O12
45	H	702	3PE	C11-O13-P-O14
45	H	702	3PE	O13-C11-C12-N
45	I	201	3PE	C11-O13-P-O12
45	I	201	3PE	C11-O13-P-O14
45	I	204	3PE	O13-C11-C12-N
45	L	701	3PE	C1-O11-P-O12
45	L	701	3PE	C1-O11-P-O14
45	L	701	3PE	C11-O13-P-O14
45	L	703	3PE	C1-O11-P-O12
45	L	703	3PE	C11-O13-P-O12
45	L	703	3PE	O13-C11-C12-N
45	M	702	3PE	C1-O11-P-O12
45	M	702	3PE	C1-O11-P-O13
45	M	702	3PE	C1-O11-P-O14
45	M	702	3PE	C11-O13-P-O12
45	M	702	3PE	O13-C11-C12-N
45	M	702	3PE	C22-C21-O21-C2
45	N	401	3PE	O22-C21-O21-C2
45	N	401	3PE	C22-C21-O21-C2
45	N	402	3PE	C1-O11-P-O12
45	N	402	3PE	O13-C11-C12-N
45	Y	601	3PE	O13-C11-C12-N
45	Y	601	3PE	O21-C2-C3-O31
45	h	202	3PE	C11-O13-P-O12
45	h	202	3PE	O13-C11-C12-N
45	r	202	3PE	C1-O11-P-O12
45	r	202	3PE	C1-O11-P-O13
45	r	202	3PE	C1-O11-P-O14
45	r	202	3PE	C11-O13-P-O11
45	r	202	3PE	C11-O13-P-O14
45	r	202	3PE	C2-C1-O11-P
45	r	202	3PE	O13-C11-C12-N
45	r	202	3PE	O22-C21-O21-C2
45	r	202	3PE	C22-C21-O21-C2
46	B	303	PC1	C22-C21-O21-C2
46	J	201	PC1	C11-O13-P-O14
46	d	201	PC1	C11-O13-P-O12
46	d	201	PC1	C11-O13-P-O14

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Mol	Chain	Res	Type	Atoms
46	d	201	PC1	C11-O13-P-O11
46	q	701	PC1	C22-C21-O21-C2
49	F	501	FMN	C5'-O5'-P-O1P
49	F	501	FMN	C5'-O5'-P-O2P
49	F	501	FMN	C5'-O5'-P-O3P
52	L	702	CDL	CA4-CA3-OA5-PA1
52	L	702	CDL	CB2-OB2-PB2-OB3
52	L	702	CDL	CB2-OB2-PB2-OB4
52	L	702	CDL	CB3-OB5-PB2-OB2
52	L	702	CDL	CB3-OB5-PB2-OB3
52	N	403	CDL	CA3-OA5-PA1-OA2
52	N	403	CDL	CA3-OA5-PA1-OA3
52	N	403	CDL	CA3-OA5-PA1-OA4
52	N	403	CDL	OA6-CA4-CA6-OA8
52	N	403	CDL	CB2-OB2-PB2-OB3
52	N	403	CDL	CB2-OB2-PB2-OB5
52	N	403	CDL	CB3-OB5-PB2-OB3
52	N	403	CDL	CB3-OB5-PB2-OB4
52	X	201	CDL	CB2-OB2-PB2-OB3
52	X	201	CDL	CB3-OB5-PB2-OB4
52	X	201	CDL	OB7-CB5-OB6-CB4
52	d	202	CDL	CA3-OA5-PA1-OA3
52	d	202	CDL	C11-CA5-OA6-CA4
52	d	202	CDL	C51-CB5-OB6-CB4
52	h	201	CDL	CA3-OA5-PA1-OA3
52	h	201	CDL	CA3-OA5-PA1-OA4
52	h	201	CDL	OA5-CA3-CA4-OA6
52	h	201	CDL	C11-CA5-OA6-CA4
52	h	201	CDL	C51-CB5-OB6-CB4
52	r	201	CDL	C11-CA5-OA6-CA4
52	r	201	CDL	CB2-OB2-PB2-OB4
52	r	201	CDL	CB2-OB2-PB2-OB5
53	M	701	U10	C12-C13-C14-C15
53	M	701	U10	C12-C13-C14-C16
53	M	701	U10	C19-C21-C22-C23
53	M	701	U10	C22-C23-C24-C25
53	M	701	U10	C22-C23-C24-C26
53	M	701	U10	C23-C24-C26-C27
53	M	701	U10	C25-C24-C26-C27
53	M	701	U10	C27-C28-C29-C30
53	M	701	U10	C27-C28-C29-C31
53	M	701	U10	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
53	M	701	U10	C32-C33-C34-C36
53	M	701	U10	C37-C38-C39-C40
53	M	701	U10	C37-C38-C39-C41
53	M	701	U10	C47-C48-C49-C50
53	M	701	U10	C47-C48-C49-C51
53	M	701	U10	C52-C53-C54-C55
54	O	401	GTP	C5'-O5'-PA-O3A
54	O	401	GTP	C5'-O5'-PA-O1A
54	O	401	GTP	C5'-O5'-PA-O2A
56	P	501	NDP	O4D-C4D-C5D-O5D
58	T	101	EHZ	O1-C7-C8-C9
58	T	101	EHZ	C12-C13-C14-N2
58	T	101	EHZ	C16-C15-N2-C14
58	T	101	EHZ	C16-C17-C20-O6
58	U	101	EHZ	C6-C7-C8-C9
58	U	101	EHZ	C12-C13-C14-N2
58	U	101	EHZ	O2-C9-S1-C10
58	U	101	EHZ	C8-C9-S1-C10
52	L	702	CDL	OA9-CA7-OA8-CA6
45	N	401	3PE	C32-C31-O31-C3
52	L	702	CDL	C31-CA7-OA8-CA6
53	M	701	U10	C52-C53-C54-C56
45	A	201	3PE	O32-C31-O31-C3
45	A	203	3PE	O32-C31-O31-C3
45	H	702	3PE	O32-C31-O31-C3
45	N	401	3PE	O32-C31-O31-C3
45	N	402	3PE	O32-C31-O31-C3
46	J	201	PC1	O32-C31-O31-C3
46	d	201	PC1	O32-C31-O31-C3
46	q	701	PC1	O32-C31-O31-C3
52	N	403	CDL	OA9-CA7-OA8-CA6
45	A	203	3PE	O22-C21-O21-C2
45	M	702	3PE	O22-C21-O21-C2
46	B	303	PC1	O22-C21-O21-C2
46	q	701	PC1	O22-C21-O21-C2
52	d	202	CDL	OA7-CA5-OA6-CA4
52	d	202	CDL	OB7-CB5-OB6-CB4
52	h	201	CDL	OB7-CB5-OB6-CB4
52	r	201	CDL	OA7-CA5-OA6-CA4
45	A	201	3PE	C32-C31-O31-C3
45	A	203	3PE	C32-C31-O31-C3
45	H	702	3PE	C32-C31-O31-C3

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Mol	Chain	Res	Type	Atoms
45	h	202	3PE	C32-C31-O31-C3
45	r	202	3PE	C32-C31-O31-C3
46	d	201	PC1	C32-C31-O31-C3
46	q	701	PC1	C32-C31-O31-C3
52	N	403	CDL	C31-CA7-OA8-CA6
45	A	201	3PE	C22-C21-O21-C2
52	X	201	CDL	C51-CB5-OB6-CB4
45	L	701	3PE	O32-C31-O31-C3
45	L	703	3PE	O32-C31-O31-C3
51	H	701	CHD	C20-C22-C23-C24
45	N	402	3PE	C32-C31-O31-C3
46	J	201	PC1	C32-C31-O31-C3
52	h	201	CDL	OA7-CA5-OA6-CA4
45	h	202	3PE	O32-C31-O31-C3
45	r	202	3PE	O32-C31-O31-C3
45	L	701	3PE	C32-C31-O31-C3
45	L	703	3PE	C32-C31-O31-C3
52	X	201	CDL	C31-CA7-OA8-CA6
46	B	301	PC1	O32-C31-O31-C3
58	T	101	EHZ	O4-C15-N2-C14
52	N	403	CDL	C51-CB5-OB6-CB4
56	P	501	NDP	C3D-C4D-C5D-O5D
51	L	704	CHD	C17-C20-C22-C23
46	B	301	PC1	C32-C31-O31-C3
52	L	702	CDL	C1-CB2-OB2-PB2
53	M	701	U10	C40-C39-C41-C42
53	M	701	U10	C38-C39-C41-C42
51	L	704	CHD	C21-C20-C22-C23
52	X	201	CDL	OA9-CA7-OA8-CA6
52	L	702	CDL	CB2-C1-CA2-OA2
52	N	403	CDL	OB7-CB5-OB6-CB4
45	I	204	3PE	C32-C31-O31-C3
46	B	303	PC1	C32-C31-O31-C3
46	M	703	PC1	C32-C31-O31-C3
52	d	202	CDL	C71-CB7-OB8-CB6
56	P	501	NDP	O4D-C1D-N1N-C6N
52	h	201	CDL	OB5-CB3-CB4-OB6
52	L	702	CDL	O1-C1-CA2-OA2
46	M	703	PC1	O21-C2-C3-O31
45	I	204	3PE	O32-C31-O31-C3
46	B	303	PC1	O32-C31-O31-C3
45	I	201	3PE	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
45	r	202	3PE	C31-C32-C33-C34
46	M	703	PC1	O32-C31-O31-C3
52	X	201	CDL	C71-CB7-OB8-CB6
45	h	202	3PE	C31-C32-C33-C34
52	N	403	CDL	CA7-C31-C32-C33
52	X	201	CDL	CA7-C31-C32-C33
45	N	402	3PE	C21-C22-C23-C24
52	N	403	CDL	CA5-C11-C12-C13
52	X	201	CDL	CA5-C11-C12-C13
52	r	201	CDL	CA5-C11-C12-C13
46	d	201	PC1	C21-C22-C23-C24
52	L	702	CDL	CB5-C51-C52-C53
52	r	201	CDL	CB5-C51-C52-C53
52	d	202	CDL	OB9-CB7-OB8-CB6
53	M	701	U10	C9-C11-C12-C13
45	N	401	3PE	C22-C23-C24-C25
45	M	702	3PE	C31-C32-C33-C34
52	L	702	CDL	CA7-C31-C32-C33
45	A	202	3PE	C1-O11-P-O13
45	A	203	3PE	C11-O13-P-O11
45	H	702	3PE	C1-O11-P-O13
45	H	702	3PE	C11-O13-P-O11
45	I	201	3PE	C1-O11-P-O13
45	I	201	3PE	C11-O13-P-O11
45	L	701	3PE	C1-O11-P-O13
45	L	703	3PE	C1-O11-P-O13
45	L	703	3PE	C11-O13-P-O11
45	M	702	3PE	C11-O13-P-O11
45	N	402	3PE	C1-O11-P-O13
45	h	202	3PE	C11-O13-P-O11
46	B	301	PC1	C11-O13-P-O11
46	B	303	PC1	C11-O13-P-O11
52	L	702	CDL	CB2-OB2-PB2-OB5
52	N	403	CDL	CB3-OB5-PB2-OB2
52	X	201	CDL	CB3-OB5-PB2-OB2
52	d	202	CDL	CA3-OA5-PA1-OA2
52	d	202	CDL	CB2-OB2-PB2-OB5
52	h	201	CDL	CA3-OA5-PA1-OA2
52	r	201	CDL	CB3-OB5-PB2-OB2
45	I	201	3PE	O22-C21-O21-C2
52	L	702	CDL	C71-CB7-OB8-CB6
45	L	701	3PE	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
45	A	203	3PE	C24-C25-C26-C27
45	M	702	3PE	C23-C24-C25-C26
45	r	202	3PE	C3B-C3C-C3D-C3E
46	M	703	PC1	C2A-C2B-C2C-C2D
46	M	703	PC1	C34-C35-C36-C37
52	N	403	CDL	C12-C13-C14-C15
52	X	201	CDL	C62-C63-C64-C65
52	X	201	CDL	OB9-CB7-OB8-CB6
58	T	101	EHZ	C18-C17-C20-O6
58	T	101	EHZ	C19-C17-C20-O6
45	L	701	3PE	O22-C21-O21-C2
45	I	201	3PE	C3E-C3F-C3G-C3H
45	h	202	3PE	C28-C29-C2A-C2B
52	L	702	CDL	C32-C33-C34-C35
52	L	702	CDL	CB4-CB3-OB5-PB2
45	N	402	3PE	C37-C38-C39-C3A
46	M	703	PC1	C36-C37-C38-C39
52	X	201	CDL	O1-C1-CA2-OA2
52	X	201	CDL	O1-C1-CB2-OB2
45	N	402	3PE	C27-C28-C29-C2A
45	r	202	3PE	C2E-C2F-C2G-C2H
52	h	201	CDL	C31-CA7-OA8-CA6
45	H	702	3PE	C22-C23-C24-C25
46	M	703	PC1	C23-C24-C25-C26
52	L	702	CDL	C57-C58-C59-C60
52	h	201	CDL	C11-C12-C13-C14
52	r	201	CDL	C31-C32-C33-C34
52	N	403	CDL	CB7-C71-C72-C73
45	Y	601	3PE	C26-C27-C28-C29
46	B	303	PC1	C37-C38-C39-C3A
52	L	702	CDL	C42-C43-C44-C45
45	I	201	3PE	C33-C34-C35-C36
45	I	204	3PE	C22-C21-O21-C2
45	I	201	3PE	C29-C2A-C2B-C2C
45	r	202	3PE	C23-C24-C25-C26
58	U	101	EHZ	C2-C3-C4-C5
53	M	701	U10	C29-C31-C32-C33
45	L	701	3PE	C27-C28-C29-C2A
45	N	401	3PE	C28-C29-C2A-C2B
45	M	702	3PE	C34-C35-C36-C37
52	L	702	CDL	C41-C42-C43-C44
52	N	403	CDL	C55-C56-C57-C58

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Mol	Chain	Res	Type	Atoms
45	N	402	3PE	C2E-C2F-C2G-C2H
46	M	703	PC1	C28-C29-C2A-C2B
45	M	702	3PE	C26-C27-C28-C29
52	L	702	CDL	C37-C38-C39-C40
45	r	202	3PE	C29-C2A-C2B-C2C
52	d	202	CDL	C33-C34-C35-C36
59	o	201	MYR	C3-C4-C5-C6
45	I	204	3PE	O22-C21-O21-C2
52	N	403	CDL	C34-C35-C36-C37
52	h	201	CDL	C12-C13-C14-C15
45	M	702	3PE	C29-C2A-C2B-C2C
45	r	202	3PE	C38-C39-C3A-C3B
52	L	702	CDL	OB9-CB7-OB8-CB6
52	X	201	CDL	CB2-C1-CA2-OA2
45	A	201	3PE	C32-C33-C34-C35
52	d	202	CDL	C1-CB2-OB2-PB2
45	L	701	3PE	C35-C36-C37-C38
45	r	202	3PE	C36-C37-C38-C39
46	B	303	PC1	C31-C32-C33-C34
45	N	402	3PE	C22-C21-O21-C2
45	h	202	3PE	C23-C24-C25-C26
46	q	701	PC1	C34-C35-C36-C37
52	h	201	CDL	OA9-CA7-OA8-CA6
45	r	202	3PE	C27-C28-C29-C2A
46	q	701	PC1	C22-C23-C24-C25
52	h	201	CDL	C56-C57-C58-C59
52	L	702	CDL	OB7-CB5-OB6-CB4
45	I	201	3PE	C32-C31-O31-C3
45	N	402	3PE	C3B-C3C-C3D-C3E
45	I	204	3PE	C23-C24-C25-C26
45	I	204	3PE	C25-C26-C27-C28
45	L	703	3PE	C22-C23-C24-C25
46	J	201	PC1	C23-C24-C25-C26
45	Y	601	3PE	C22-C21-O21-C2
46	J	201	PC1	C22-C21-O21-C2
52	L	702	CDL	C11-CA5-OA6-CA4
52	L	702	CDL	C51-CB5-OB6-CB4
52	L	702	CDL	OA5-CA3-CA4-OA6
45	Y	601	3PE	O22-C21-O21-C2
46	J	201	PC1	O22-C21-O21-C2
52	L	702	CDL	OA7-CA5-OA6-CA4
45	L	701	3PE	C2A-C2B-C2C-C2D

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Mol	Chain	Res	Type	Atoms
45	A	202	3PE	O21-C2-C3-O31
45	L	701	3PE	C25-C26-C27-C28
58	U	101	EHZ	C1-C2-C3-C4
53	M	701	U10	C28-C29-C31-C32
45	A	202	3PE	C28-C29-C2A-C2B
45	I	204	3PE	C33-C34-C35-C36
45	N	402	3PE	O22-C21-O21-C2
45	A	202	3PE	C35-C36-C37-C38
46	q	701	PC1	C11-O13-P-O11
46	q	701	PC1	C1-O11-P-O13
52	X	201	CDL	CB2-OB2-PB2-OB5
52	d	202	CDL	CA2-OA2-PA1-OA5
45	I	201	3PE	C39-C3A-C3B-C3C
59	o	201	MYR	C2-C3-C4-C5
45	I	201	3PE	O32-C31-O31-C3
52	h	201	CDL	OB5-CB3-CB4-CB6
45	r	202	3PE	C32-C33-C34-C35
46	J	201	PC1	C29-C2A-C2B-C2C
45	N	402	3PE	C32-C33-C34-C35
46	B	303	PC1	C26-C27-C28-C29
52	X	201	CDL	C54-C55-C56-C57
52	X	201	CDL	C59-C60-C61-C62
45	I	201	3PE	C38-C39-C3A-C3B
46	d	201	PC1	C1-C2-C3-O31
52	L	702	CDL	CB3-CB4-CB6-OB8
52	N	403	CDL	CA3-CA4-CA6-OA8
52	N	403	CDL	C19-C20-C21-C22
52	N	403	CDL	CB3-CB4-CB6-OB8
52	r	201	CDL	CA3-CA4-CA6-OA8
45	I	201	3PE	C31-C32-C33-C34
52	X	201	CDL	C19-C20-C21-C22
52	X	201	CDL	C31-C32-C33-C34
45	N	402	3PE	C3D-C3E-C3F-C3G
52	N	403	CDL	C14-C15-C16-C17
45	L	703	3PE	C22-C21-O21-C2
53	M	701	U10	C30-C29-C31-C32
52	h	201	CDL	CB5-C51-C52-C53
45	h	202	3PE	C25-C26-C27-C28
45	r	202	3PE	C1-C2-O21-C21
52	N	403	CDL	C33-C34-C35-C36
45	M	702	3PE	C32-C31-O31-C3
52	X	201	CDL	C17-C18-C19-C20

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Mol	Chain	Res	Type	Atoms
59	o	201	MYR	C11-C12-C13-C14
45	I	201	3PE	C35-C36-C37-C38
45	A	201	3PE	C2C-C2D-C2E-C2F
52	X	201	CDL	C74-C75-C76-C77
46	J	201	PC1	C2E-C2F-C2G-C2H
53	M	701	U10	C35-C34-C36-C37
46	J	201	PC1	C2B-C2C-C2D-C2E
53	M	701	U10	C33-C34-C36-C37
45	L	701	3PE	C28-C29-C2A-C2B
58	T	101	EHZ	C5-C6-C7-C8
52	X	201	CDL	C12-C13-C14-C15
45	A	203	3PE	C35-C36-C37-C38
45	L	701	3PE	O11-C1-C2-C3
45	L	703	3PE	O11-C1-C2-C3
45	M	702	3PE	O11-C1-C2-C3
45	Y	601	3PE	O11-C1-C2-C3
46	B	301	PC1	O11-C1-C2-C3
52	L	702	CDL	OA5-CA3-CA4-CA6
45	N	401	3PE	O13-C11-C12-N
52	N	403	CDL	C18-C19-C20-C21
53	M	701	U10	C15-C14-C16-C17
52	r	201	CDL	O1-C1-CA2-OA2
52	X	201	CDL	C11-CA5-OA6-CA4
52	r	201	CDL	C32-C31-CA7-OA8
45	L	701	3PE	C2-C1-O11-P
46	B	301	PC1	C29-C2A-C2B-C2C
52	N	403	CDL	C31-C32-C33-C34
52	d	202	CDL	C41-C42-C43-C44
52	d	202	CDL	C76-C77-C78-C79
45	L	703	3PE	C25-C26-C27-C28
52	X	201	CDL	C21-C22-C23-C24
52	d	202	CDL	C72-C73-C74-C75
45	A	202	3PE	C1-C2-C3-O31
45	H	702	3PE	C1-C2-C3-O31
45	M	702	3PE	C1-C2-C3-O31
46	J	201	PC1	C1-C2-C3-O31
46	M	703	PC1	C1-C2-C3-O31
46	B	303	PC1	C3B-C3C-C3D-C3E
45	I	204	3PE	C11-O13-P-O11
45	L	701	3PE	C11-O13-P-O11
45	N	402	3PE	C26-C27-C28-C29
52	X	201	CDL	C58-C59-C60-C61

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Mol	Chain	Res	Type	Atoms
45	A	203	3PE	O11-C1-C2-O21
52	L	702	CDL	OB5-CB3-CB4-OB6
52	r	201	CDL	OB5-CB3-CB4-OB6
45	M	702	3PE	O32-C31-O31-C3
45	h	202	3PE	C24-C25-C26-C27
52	d	202	CDL	C42-C43-C44-C45
52	h	201	CDL	C55-C56-C57-C58
45	L	701	3PE	C3D-C3E-C3F-C3G
58	U	101	EHZ	C5-C6-C7-O1
46	B	301	PC1	O21-C2-C3-O31
52	N	403	CDL	OB6-CB4-CB6-OB8
46	B	301	PC1	C26-C27-C28-C29
46	J	201	PC1	C22-C23-C24-C25
52	h	201	CDL	C22-C23-C24-C25
45	L	703	3PE	O22-C21-O21-C2
46	B	301	PC1	C34-C35-C36-C37
45	h	202	3PE	C2-C1-O11-P
46	M	703	PC1	C2-C1-O11-P
52	X	201	CDL	CA4-CA3-OA5-PA1
58	T	101	EHZ	C21-C22-C23-C24
58	T	101	EHZ	O2-C9-S1-C10
52	h	201	CDL	C53-C54-C55-C56
45	A	201	3PE	O11-C1-C2-C3
45	A	202	3PE	O11-C1-C2-C3
52	L	702	CDL	OB5-CB3-CB4-CB6
52	h	201	CDL	OA5-CA3-CA4-CA6
52	d	202	CDL	O1-C1-CA2-OA2
46	B	301	PC1	C3C-C3D-C3E-C3F
46	B	303	PC1	C39-C3A-C3B-C3C
46	M	703	PC1	C2C-C2D-C2E-C2F
45	r	202	3PE	C3C-C3D-C3E-C3F
45	I	201	3PE	C25-C26-C27-C28
52	L	702	CDL	C36-C37-C38-C39
58	U	101	EHZ	C21-C22-C23-C24
59	o	201	MYR	C10-C11-C12-C13
45	A	203	3PE	C23-C24-C25-C26
59	o	201	MYR	C7-C8-C9-C10
49	F	501	FMN	O2'-C2'-C3'-C4'
53	M	701	U10	C5-C4-O4-C4M
45	L	701	3PE	C1-C2-C3-O31
46	q	701	PC1	C1-C2-C3-O31
45	L	703	3PE	C29-C2A-C2B-C2C

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Mol	Chain	Res	Type	Atoms
45	A	202	3PE	O11-C1-C2-O21
45	L	701	3PE	O11-C1-C2-O21
45	Y	601	3PE	O11-C1-C2-O21
52	d	202	CDL	OB5-CB3-CB4-OB6
46	B	301	PC1	C33-C34-C35-C36
52	X	201	CDL	OA7-CA5-OA6-CA4
58	U	101	EHZ	O1-C7-C8-C9
52	X	201	CDL	C51-C52-C53-C54
45	H	702	3PE	O21-C2-C3-O31
46	J	201	PC1	O21-C2-C3-O31
46	d	201	PC1	O21-C2-C3-O31
46	q	701	PC1	O21-C2-C3-O31
52	L	702	CDL	OB6-CB4-CB6-OB8
52	r	201	CDL	OA6-CA4-CA6-OA8
52	N	403	CDL	C71-CB7-OB8-CB6
46	J	201	PC1	C28-C29-C2A-C2B
52	X	201	CDL	C71-C72-C73-C74
52	X	201	CDL	C72-C73-C74-C75
45	L	701	3PE	C37-C38-C39-C3A
59	o	201	MYR	C9-C10-C11-C12
52	h	201	CDL	C71-CB7-OB8-CB6
45	A	202	3PE	C11-O13-P-O11
52	L	702	CDL	CA2-OA2-PA1-OA5
45	H	702	3PE	C29-C2A-C2B-C2C
52	X	201	CDL	C20-C21-C22-C23
52	d	202	CDL	CB4-CB3-OB5-PB2
45	r	202	3PE	C35-C36-C37-C38
45	A	201	3PE	C1-O11-P-O14
45	A	203	3PE	C1-O11-P-O14
45	I	201	3PE	C1-O11-P-O14
45	L	703	3PE	C1-O11-P-O14
45	L	703	3PE	C11-O13-P-O14
45	M	702	3PE	C11-O13-P-O14
45	N	402	3PE	C1-O11-P-O14
45	N	402	3PE	C11-O13-P-O12
45	h	202	3PE	C11-O13-P-O14
46	B	301	PC1	C11-O13-P-O12
46	B	303	PC1	C11-O13-P-O14
46	q	701	PC1	C11-O13-P-O12
46	q	701	PC1	C11-O13-P-O14
52	L	702	CDL	CA2-OA2-PA1-OA3
52	L	702	CDL	CA2-OA2-PA1-OA4

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Mol	Chain	Res	Type	Atoms
52	X	201	CDL	CA3-OA5-PA1-OA4
52	X	201	CDL	CB2-OB2-PB2-OB4
52	X	201	CDL	CB3-OB5-PB2-OB3
52	d	202	CDL	CA2-OA2-PA1-OA4
52	d	202	CDL	CB2-OB2-PB2-OB4
52	d	202	CDL	CB3-OB5-PB2-OB3
52	r	201	CDL	CB2-OB2-PB2-OB3
52	r	201	CDL	CB3-OB5-PB2-OB3
52	r	201	CDL	CB3-OB5-PB2-OB4
58	T	101	EHZ	C6-C7-C8-C9
45	I	201	3PE	C24-C25-C26-C27
45	A	203	3PE	O11-C1-C2-C3
45	A	203	3PE	C31-C32-C33-C34
45	A	202	3PE	C12-C11-O13-P
45	M	702	3PE	C12-C11-O13-P
46	B	301	PC1	C12-C11-O13-P
52	N	403	CDL	OB9-CB7-OB8-CB6
45	I	204	3PE	O11-C1-C2-O21
45	L	703	3PE	O11-C1-C2-O21
45	M	702	3PE	O11-C1-C2-O21
45	h	202	3PE	O11-C1-C2-O21
46	B	301	PC1	O11-C1-C2-O21
45	H	702	3PE	O31-C31-C32-C33
45	r	202	3PE	C39-C3A-C3B-C3C
45	I	201	3PE	C36-C37-C38-C39
45	A	201	3PE	C35-C36-C37-C38
45	Y	601	3PE	C1-C2-C3-O31
46	B	301	PC1	O13-C11-C12-N
46	M	703	PC1	C2B-C2C-C2D-C2E
46	d	201	PC1	C33-C34-C35-C36
46	q	701	PC1	O13-C11-C12-N
58	U	101	EHZ	C16-C17-C20-O6
52	h	201	CDL	OB9-CB7-OB8-CB6
46	q	701	PC1	C25-C26-C27-C28
53	M	701	U10	C13-C14-C16-C17
54	O	401	GTP	PG-O3B-PB-O3A
52	r	201	CDL	C14-C15-C16-C17
46	B	303	PC1	C35-C36-C37-C38
46	q	701	PC1	C23-C24-C25-C26
52	d	202	CDL	C38-C39-C40-C41
46	J	201	PC1	C33-C34-C35-C36
56	P	501	NDP	O4B-C4B-C5B-O5B

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Mol	Chain	Res	Type	Atoms
46	M	703	PC1	C32-C33-C34-C35
58	T	101	EHZ	C5-C6-C7-O1
46	M	703	PC1	C24-C25-C26-C27
58	U	101	EHZ	C18-C17-C20-O6
45	A	202	3PE	C31-C32-C33-C34
46	B	303	PC1	C33-C34-C35-C36
45	Y	601	3PE	O21-C21-C22-C23
45	h	202	3PE	O11-C1-C2-C3
52	d	202	CDL	CA2-C1-CB2-OB2
45	I	201	3PE	C32-C33-C34-C35
52	X	201	CDL	C53-C54-C55-C56
52	h	201	CDL	C31-C32-C33-C34
45	L	703	3PE	O21-C21-C22-C23
45	N	402	3PE	C11-O13-P-O11
45	Y	601	3PE	C1-O11-P-O13
45	h	202	3PE	C1-O11-P-O13
52	r	201	CDL	CA3-OA5-PA1-OA2
52	h	201	CDL	C20-C21-C22-C23
45	A	203	3PE	C26-C27-C28-C29
46	B	301	PC1	C38-C39-C3A-C3B
45	N	401	3PE	C1-C2-C3-O31
46	B	303	PC1	C3E-C3F-C3G-C3H
56	P	501	NDP	PN-O3-PA-O1A
45	L	701	3PE	C29-C2A-C2B-C2C
45	A	201	3PE	C27-C28-C29-C2A
45	h	202	3PE	C26-C27-C28-C29
46	B	303	PC1	C25-C26-C27-C28
52	X	201	CDL	C60-C61-C62-C63
46	q	701	PC1	C32-C33-C34-C35
59	o	201	MYR	C6-C7-C8-C9
52	h	201	CDL	C18-C19-C20-C21
45	A	203	3PE	C28-C29-C2A-C2B
45	A	202	3PE	C25-C26-C27-C28
45	I	201	3PE	C2C-C2D-C2E-C2F
52	r	201	CDL	C13-C14-C15-C16
45	A	202	3PE	C33-C34-C35-C36
52	d	202	CDL	C74-C75-C76-C77
45	H	702	3PE	O32-C31-C32-C33
45	M	702	3PE	C28-C29-C2A-C2B
52	L	702	CDL	C1-CA2-OA2-PA1
52	N	403	CDL	C1-CA2-OA2-PA1
52	N	403	CDL	C39-C40-C41-C42

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Mol	Chain	Res	Type	Atoms
58	U	101	EHZ	S1-C10-C11-N1
49	F	501	FMN	O2'-C2'-C3'-O3'
45	L	703	3PE	C28-C29-C2A-C2B
45	r	202	3PE	C33-C34-C35-C36
45	h	202	3PE	C32-C33-C34-C35
52	L	702	CDL	C14-C15-C16-C17
45	h	202	3PE	C1-C2-C3-O31
58	U	101	EHZ	C19-C17-C20-O6
45	L	701	3PE	C34-C35-C36-C37
46	q	701	PC1	C24-C25-C26-C27
52	N	403	CDL	O1-C1-CA2-OA2
45	I	201	3PE	C3C-C3D-C3E-C3F
52	N	403	CDL	C38-C39-C40-C41
58	U	101	EHZ	C7-C8-C9-O2
45	N	401	3PE	C32-C33-C34-C35
45	L	701	3PE	C3-C2-O21-C21
45	N	402	3PE	C1-C2-O21-C21
52	d	202	CDL	CB6-CB4-OB6-CB5
52	h	201	CDL	CB6-CB4-OB6-CB5
52	h	201	CDL	C51-C52-C53-C54
45	Y	601	3PE	C24-C25-C26-C27
52	X	201	CDL	OB5-CB3-CB4-OB6
45	M	702	3PE	C27-C28-C29-C2A
52	L	702	CDL	C40-C41-C42-C43
52	L	702	CDL	C55-C56-C57-C58
45	L	701	3PE	C3A-C3B-C3C-C3D
58	U	101	EHZ	C11-C10-S1-C9
45	M	702	3PE	O21-C2-C3-O31
52	r	201	CDL	OB6-CB4-CB6-OB8
45	N	402	3PE	C2D-C2E-C2F-C2G
46	B	301	PC1	C28-C29-C2A-C2B
52	N	403	CDL	CB2-C1-CA2-OA2
52	h	201	CDL	C57-C58-C59-C60
52	r	201	CDL	OB9-CB7-OB8-CB6
54	O	401	GTP	PB-O3A-PA-O1A
52	N	403	CDL	C52-C51-CB5-OB6
45	A	202	3PE	C23-C24-C25-C26
52	X	201	CDL	C61-C62-C63-C64
46	q	701	PC1	C36-C37-C38-C39
51	L	704	CHD	C22-C23-C24-O26
52	X	201	CDL	C13-C14-C15-C16
45	I	201	3PE	O11-C1-C2-O21

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Mol	Chain	Res	Type	Atoms
52	d	202	CDL	OB5-CB3-CB4-CB6
52	r	201	CDL	OB5-CB3-CB4-CB6
45	I	201	3PE	O13-C11-C12-N
45	A	201	3PE	O21-C21-C22-C23
52	X	201	CDL	CA2-C1-CB2-OB2
45	L	701	3PE	O21-C2-C3-O31
52	d	202	CDL	OA6-CA4-CA6-OA8
52	r	201	CDL	C15-C16-C17-C18
52	h	201	CDL	CA5-C11-C12-C13
52	r	201	CDL	C71-CB7-OB8-CB6
52	X	201	CDL	CA3-OA5-PA1-OA2
52	X	201	CDL	C64-C65-C66-C67
51	L	704	CHD	C22-C23-C24-O25
45	N	402	3PE	C29-C2A-C2B-C2C
45	L	703	3PE	C32-C33-C34-C35
45	N	401	3PE	C33-C34-C35-C36
45	A	201	3PE	C34-C35-C36-C37
45	A	202	3PE	C21-C22-C23-C24
52	X	201	CDL	C32-C31-CA7-OA8
52	r	201	CDL	C52-C51-CB5-OB6
45	A	201	3PE	C24-C25-C26-C27
45	A	203	3PE	O31-C31-C32-C33
52	d	202	CDL	CA3-CA4-CA6-OA8
46	J	201	PC1	O11-C1-C2-O21
52	d	202	CDL	C31-C32-C33-C34
59	o	201	MYR	C5-C6-C7-C8
45	h	202	3PE	O21-C21-C22-C23
52	h	201	CDL	C52-C51-CB5-OB6
52	r	201	CDL	C32-C31-CA7-OA9
52	L	702	CDL	CA2-C1-CB2-OB2
46	B	301	PC1	C24-C25-C26-C27
52	L	702	CDL	C35-C36-C37-C38
45	I	204	3PE	C28-C29-C2A-C2B
45	A	202	3PE	C36-C37-C38-C39
45	I	201	3PE	O11-C1-C2-C3
45	N	402	3PE	O21-C21-C22-C23
45	A	201	3PE	O21-C2-C3-O31
45	L	703	3PE	O21-C2-C3-O31
45	H	702	3PE	O21-C21-C22-C23
45	h	202	3PE	O31-C31-C32-C33
45	r	202	3PE	O21-C21-C22-C23
52	h	201	CDL	C32-C31-CA7-OA8

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Mol	Chain	Res	Type	Atoms
46	d	201	PC1	C36-C37-C38-C39
45	r	202	3PE	C2C-C2D-C2E-C2F
52	h	201	CDL	CB4-CB3-OB5-PB2
45	r	202	3PE	C37-C38-C39-C3A
54	O	401	GTP	PG-O3B-PB-O1B
56	P	501	NDP	PN-O3-PA-O2A
45	N	401	3PE	C2A-C2B-C2C-C2D
52	d	202	CDL	C71-C72-C73-C74
45	r	202	3PE	C2F-C2G-C2H-C2I
52	X	201	CDL	C32-C31-CA7-OA9
46	B	301	PC1	C1-C2-C3-O31
52	h	201	CDL	C14-C15-C16-C17
46	d	201	PC1	O22-C21-O21-C2
45	N	401	3PE	C2-C1-O11-P
45	h	202	3PE	O32-C31-C32-C33
45	r	202	3PE	O22-C21-C22-C23
45	A	201	3PE	C28-C29-C2A-C2B
45	A	202	3PE	C11-O13-P-O14
45	I	204	3PE	C11-O13-P-O12
45	N	401	3PE	C1-O11-P-O14
45	N	401	3PE	C11-O13-P-O14
45	Y	601	3PE	C1-O11-P-O14
45	h	202	3PE	C1-O11-P-O14
46	B	303	PC1	C1-O11-P-O14
46	d	201	PC1	C1-O11-P-O12
52	d	202	CDL	CA2-OA2-PA1-OA3
52	d	202	CDL	CB2-OB2-PB2-OB3
52	h	201	CDL	CB3-OB5-PB2-OB3
45	I	204	3PE	O11-C1-C2-C3
52	r	201	CDL	OA5-CA3-CA4-CA6
45	h	202	3PE	O22-C21-C22-C23
52	h	201	CDL	C52-C51-CB5-OB7
52	r	201	CDL	C52-C51-CB5-OB7
52	X	201	CDL	C52-C51-CB5-OB6
45	A	203	3PE	O32-C31-C32-C33
45	N	402	3PE	O22-C21-C22-C23
45	L	701	3PE	C2B-C2C-C2D-C2E
45	A	202	3PE	C2C-C2D-C2E-C2F
45	N	401	3PE	C29-C2A-C2B-C2C
46	J	201	PC1	C24-C25-C26-C27
45	I	201	3PE	C12-C11-O13-P
45	N	402	3PE	C12-C11-O13-P

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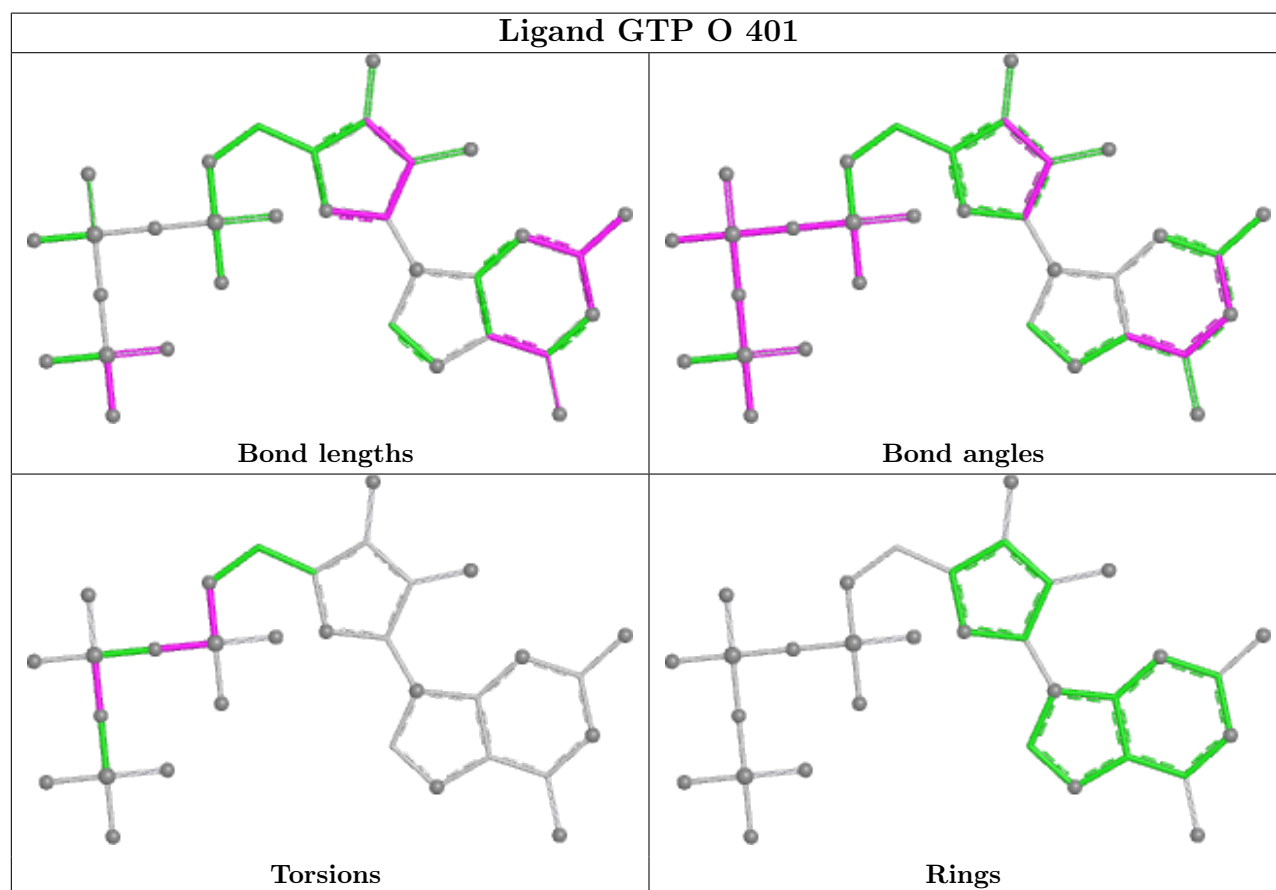
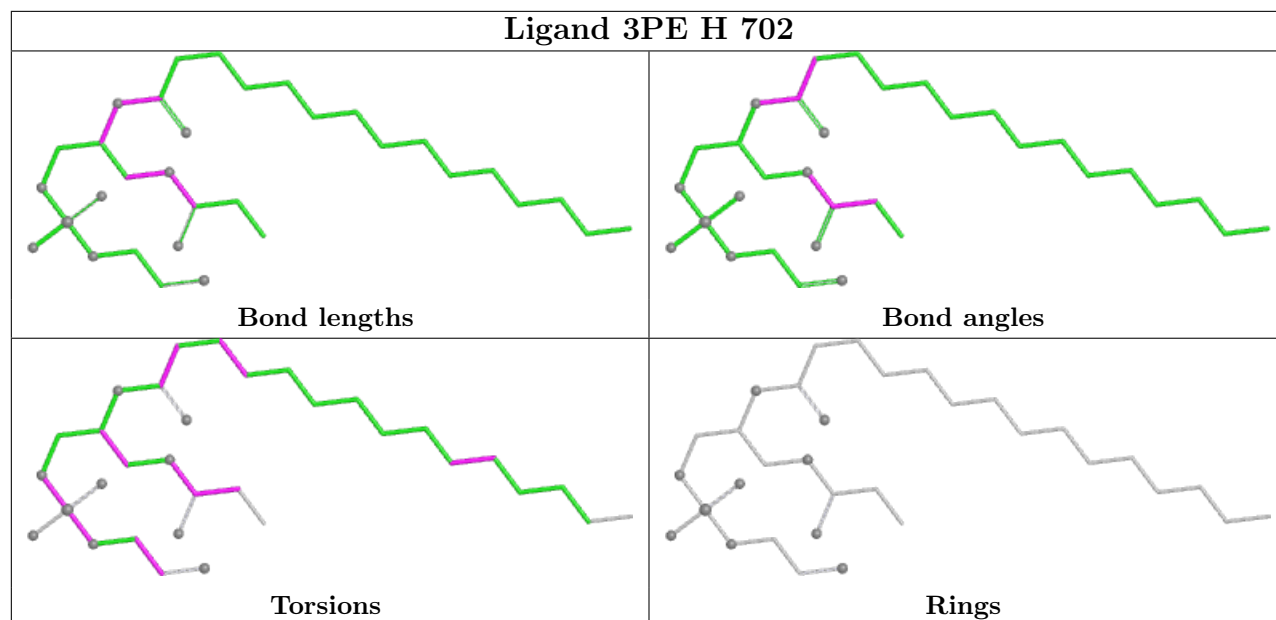
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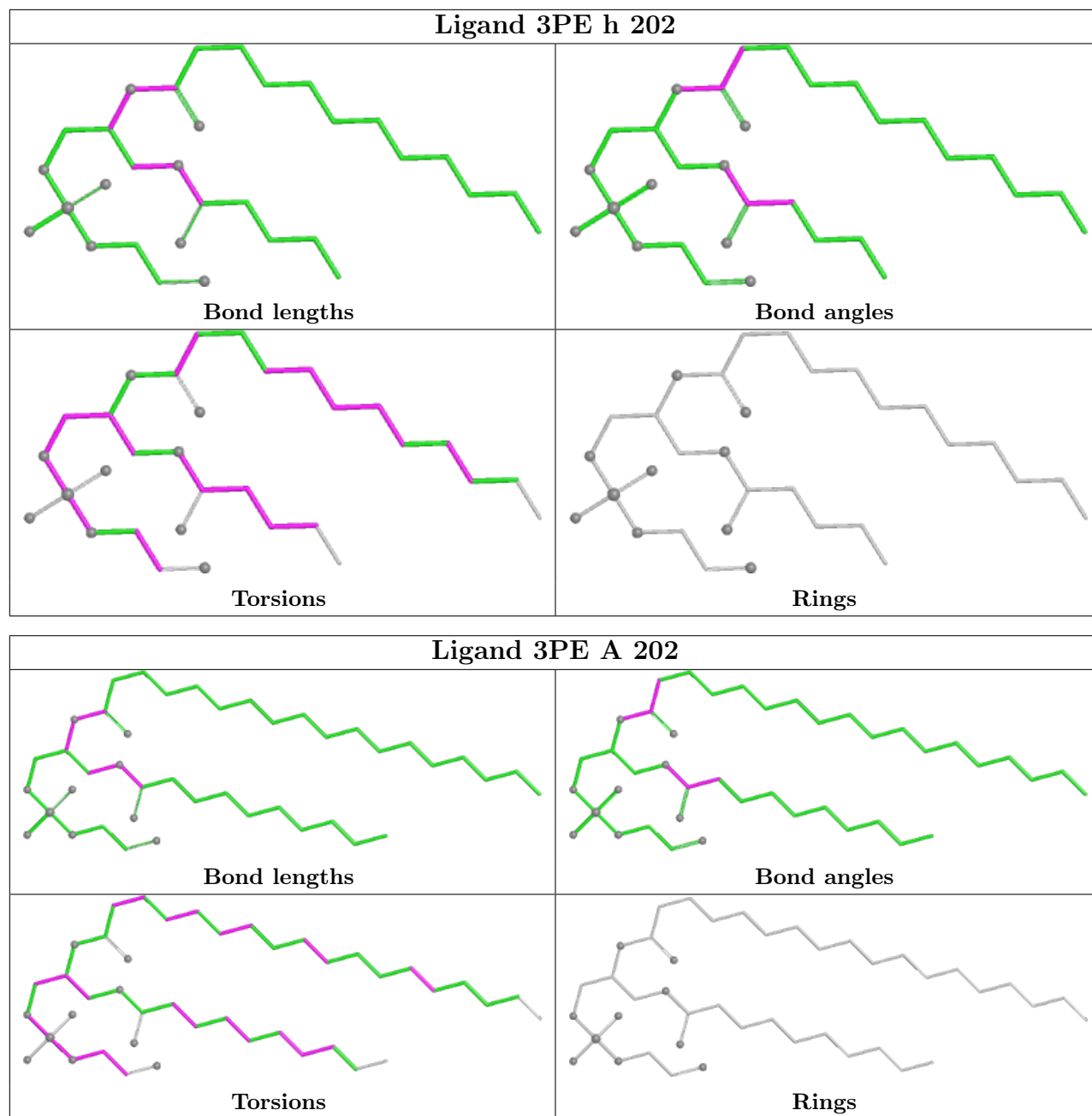
Mol	Chain	Res	Type	Atoms
45	N	402	3PE	C3-C2-O21-C21
45	r	202	3PE	C12-C11-O13-P
52	L	702	CDL	CB6-CB4-OB6-CB5
52	L	702	CDL	C61-C62-C63-C64
45	r	202	3PE	O31-C31-C32-C33
45	Y	601	3PE	C29-C2A-C2B-C2C
45	H	702	3PE	O22-C21-C22-C23
45	L	701	3PE	C24-C25-C26-C27
46	d	201	PC1	O31-C31-C32-C33
52	h	201	CDL	C32-C31-CA7-OA9
52	d	202	CDL	OA5-CA3-CA4-OA6
58	T	101	EHZ	S1-C10-C11-N1
46	q	701	PC1	O21-C21-C22-C23
45	M	702	3PE	C36-C37-C38-C39
45	Y	601	3PE	C32-C33-C34-C35
46	d	201	PC1	O21-C21-C22-C23
58	T	101	EHZ	C10-C11-N1-C12
52	X	201	CDL	C52-C51-CB5-OB7

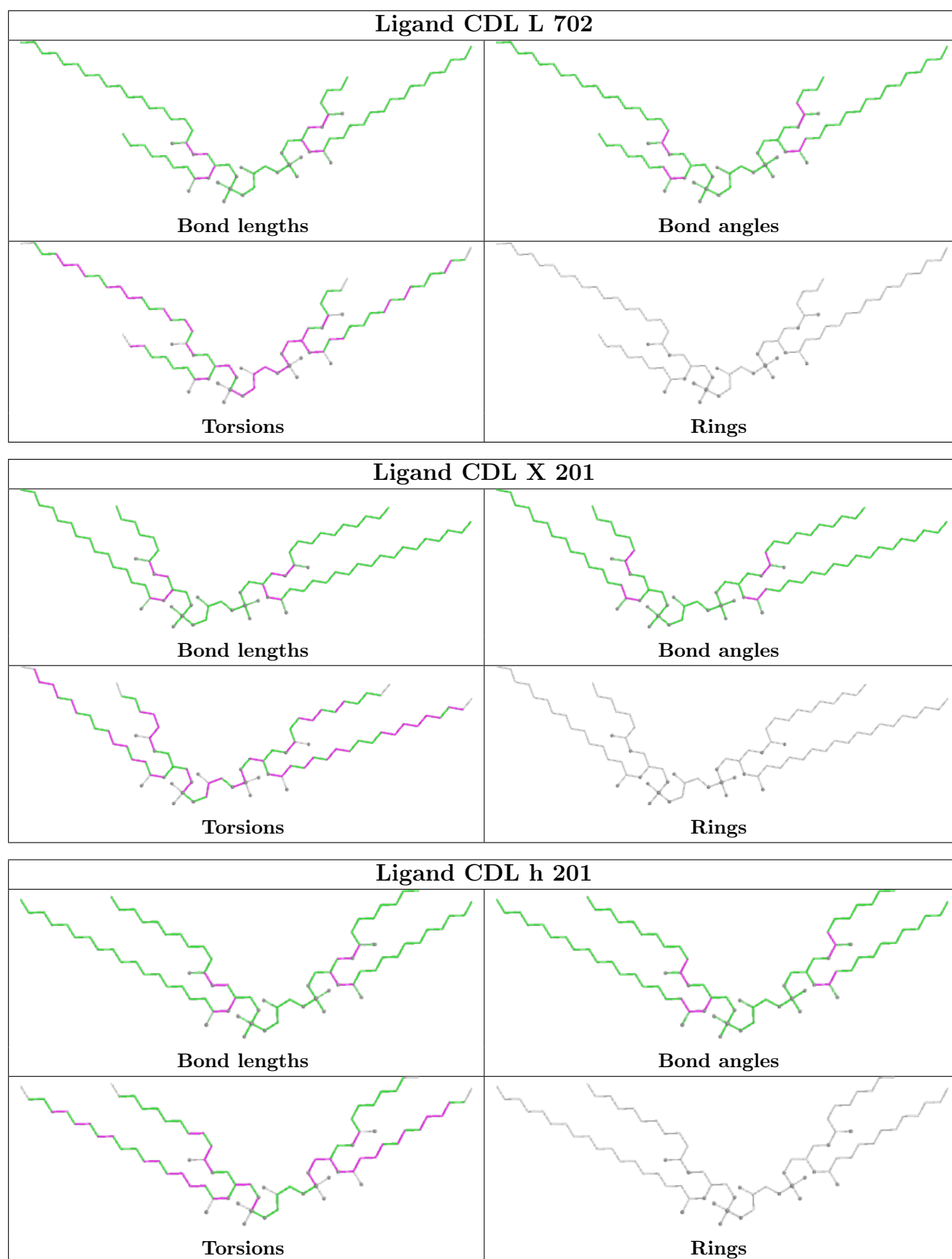
There are no ring outliers.

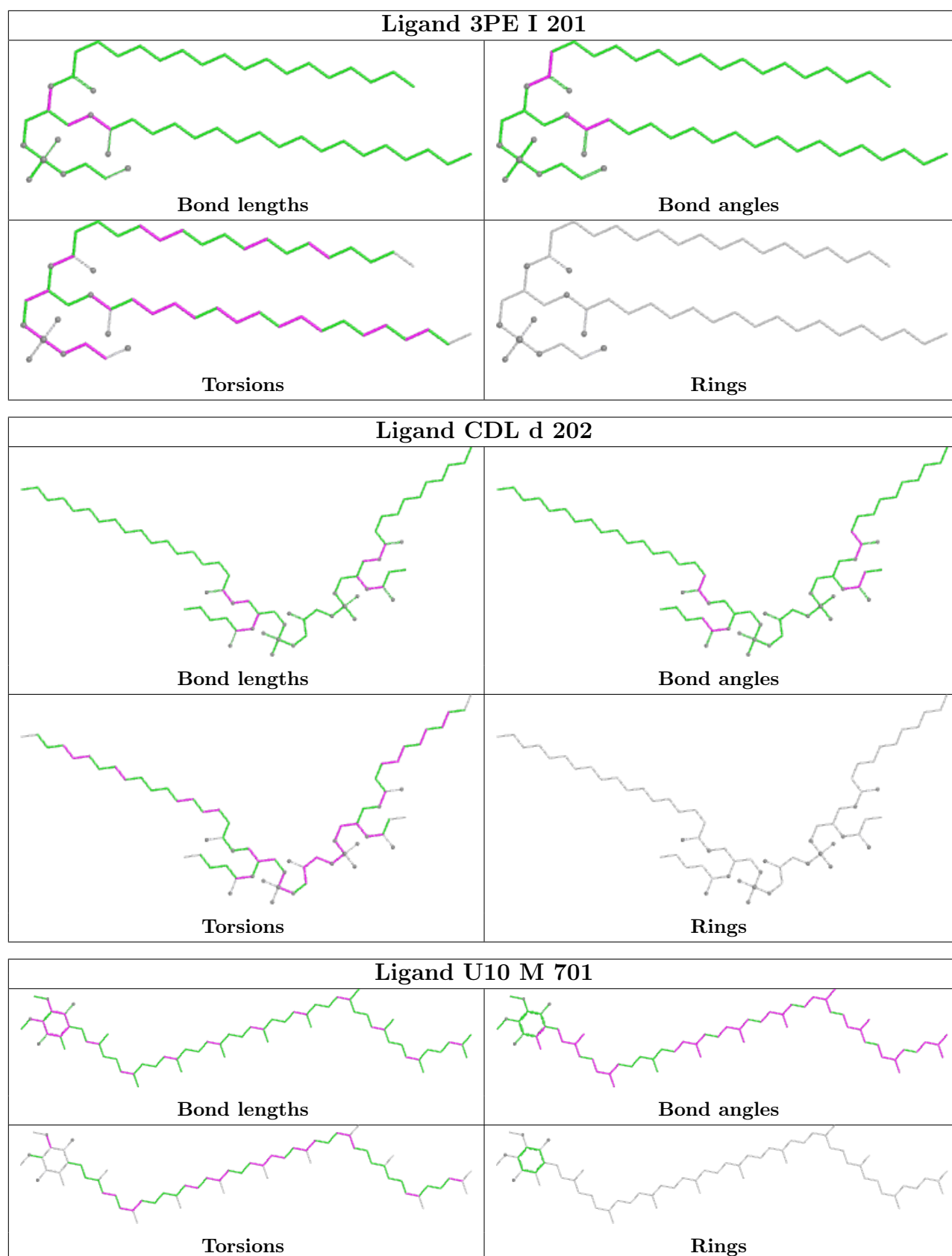
No monomer is involved in short contacts.

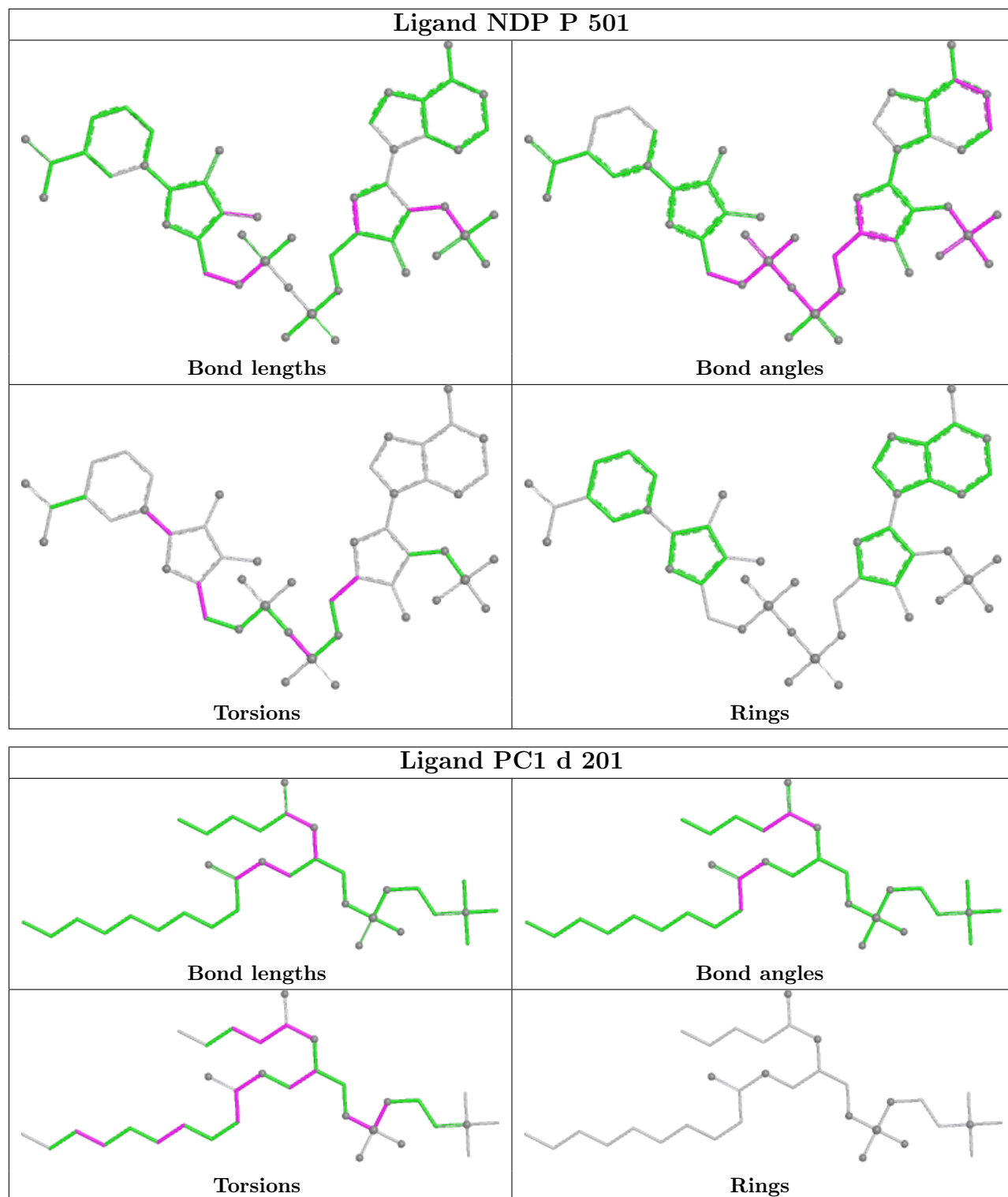
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 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.

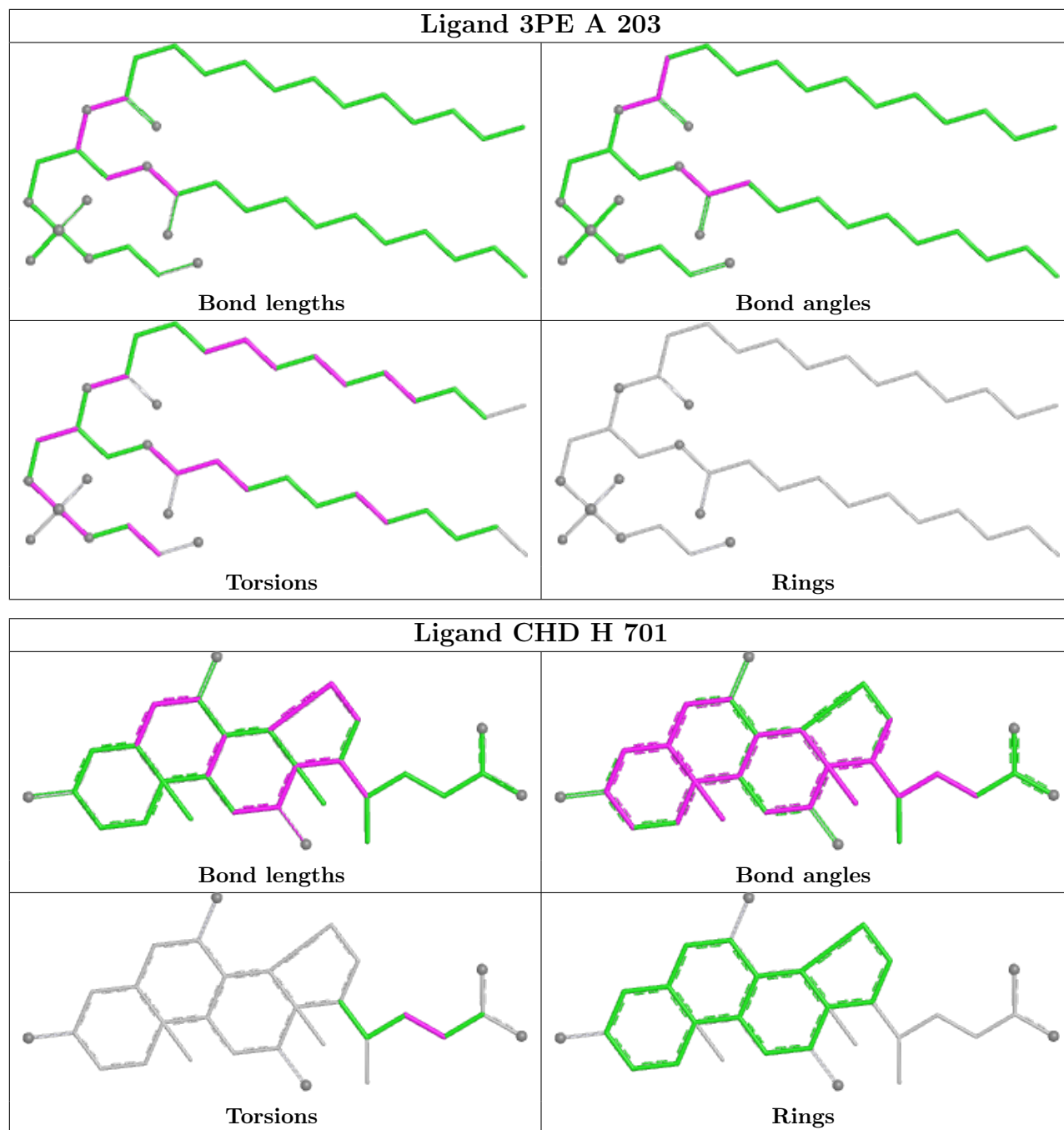


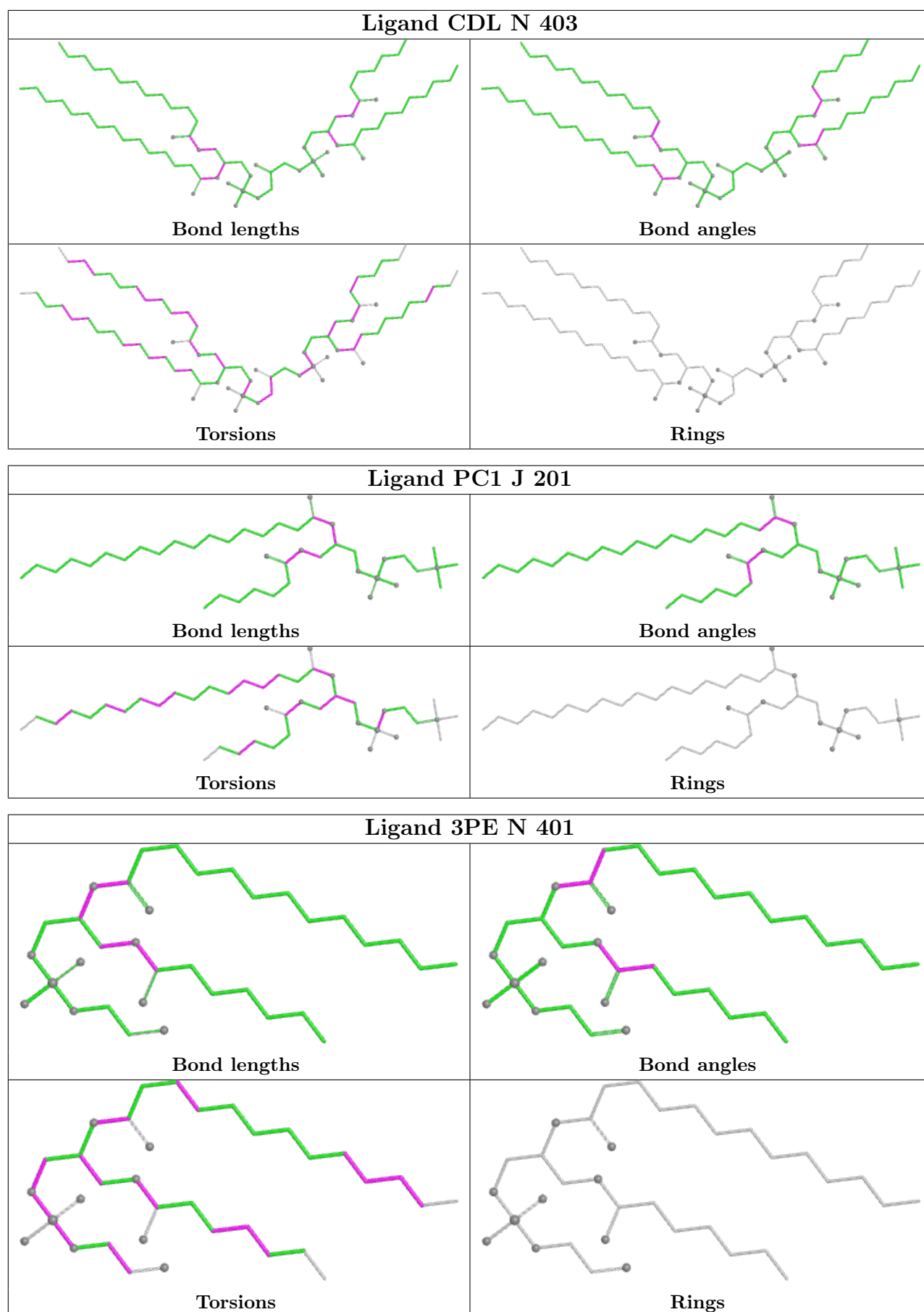


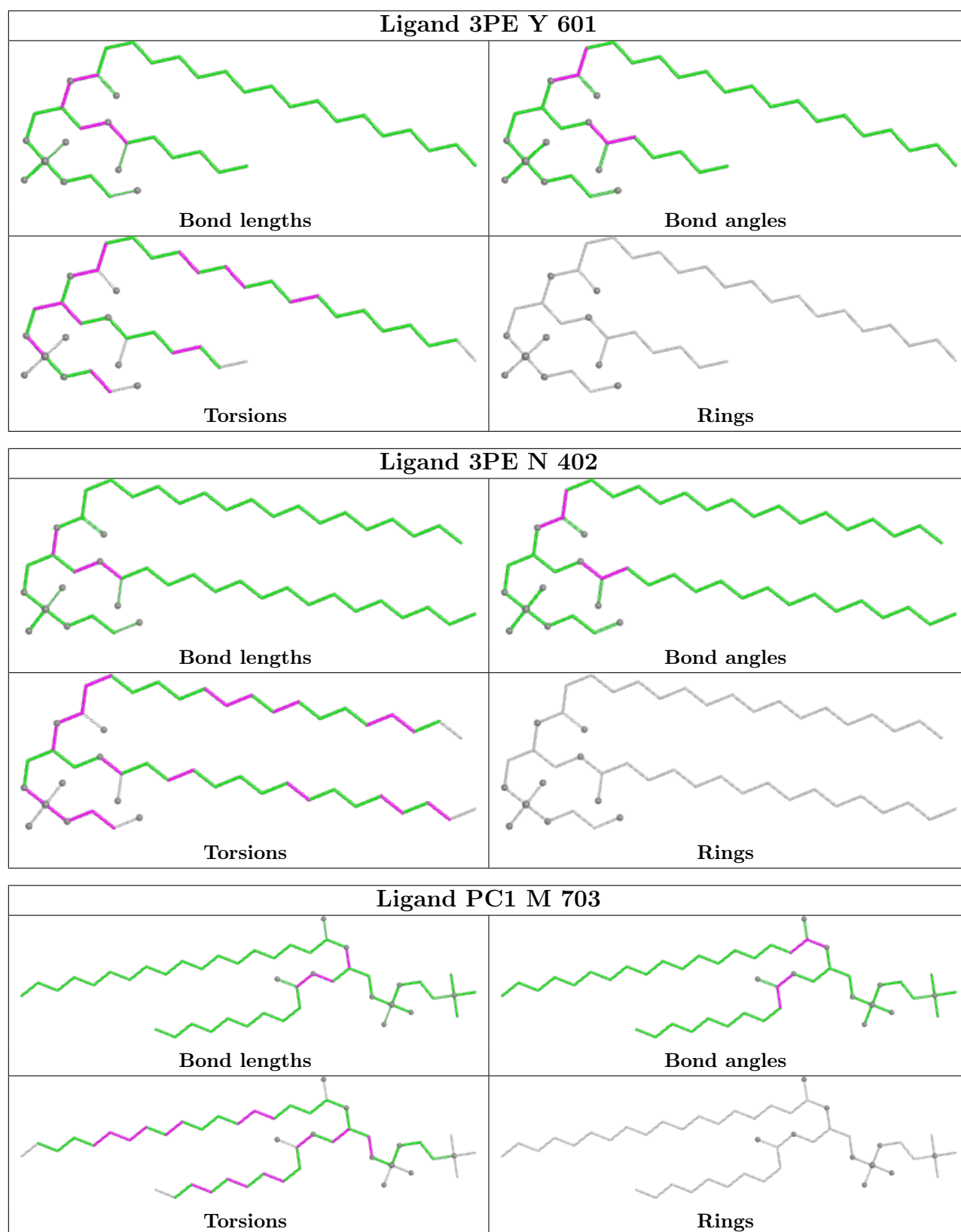


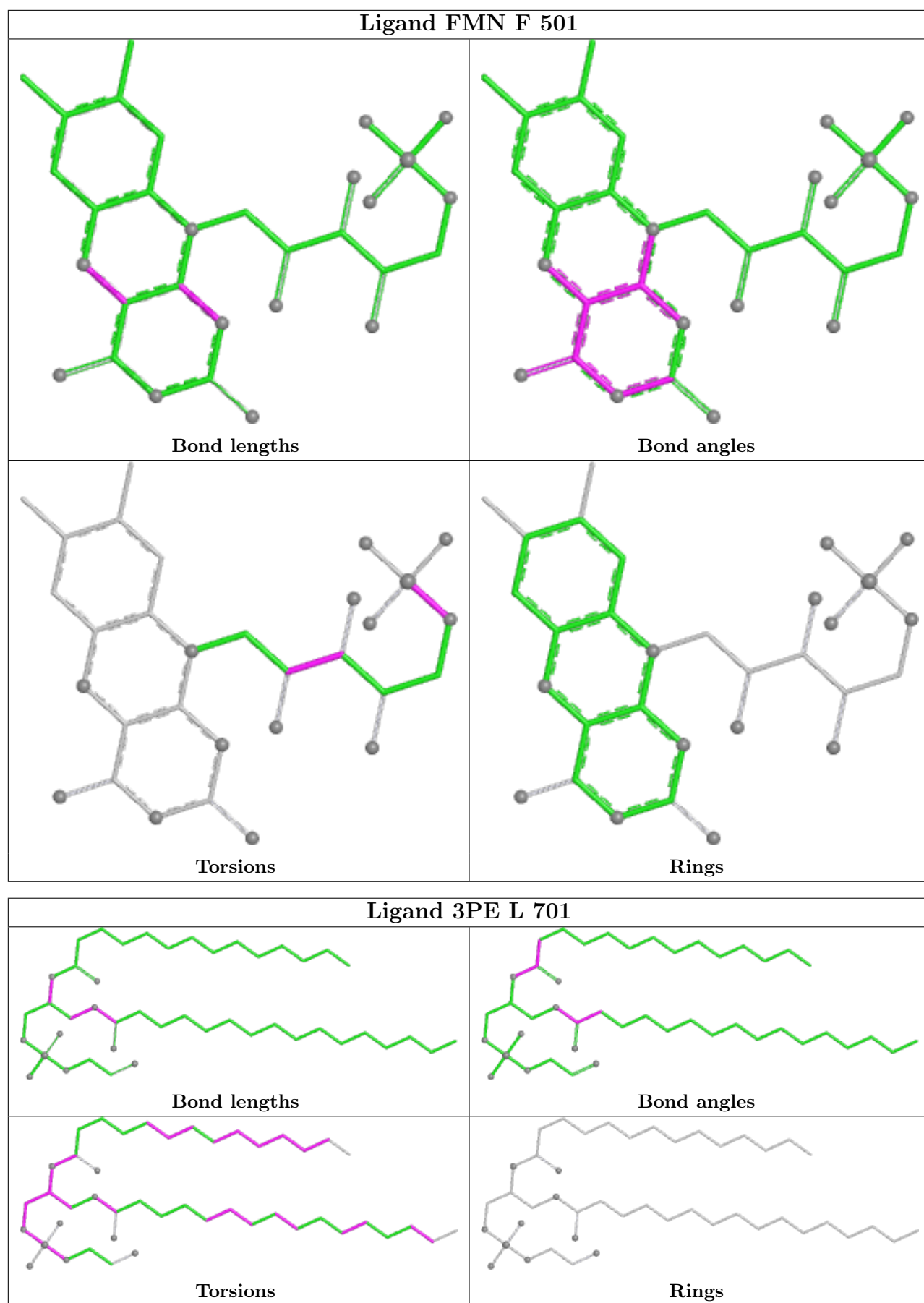


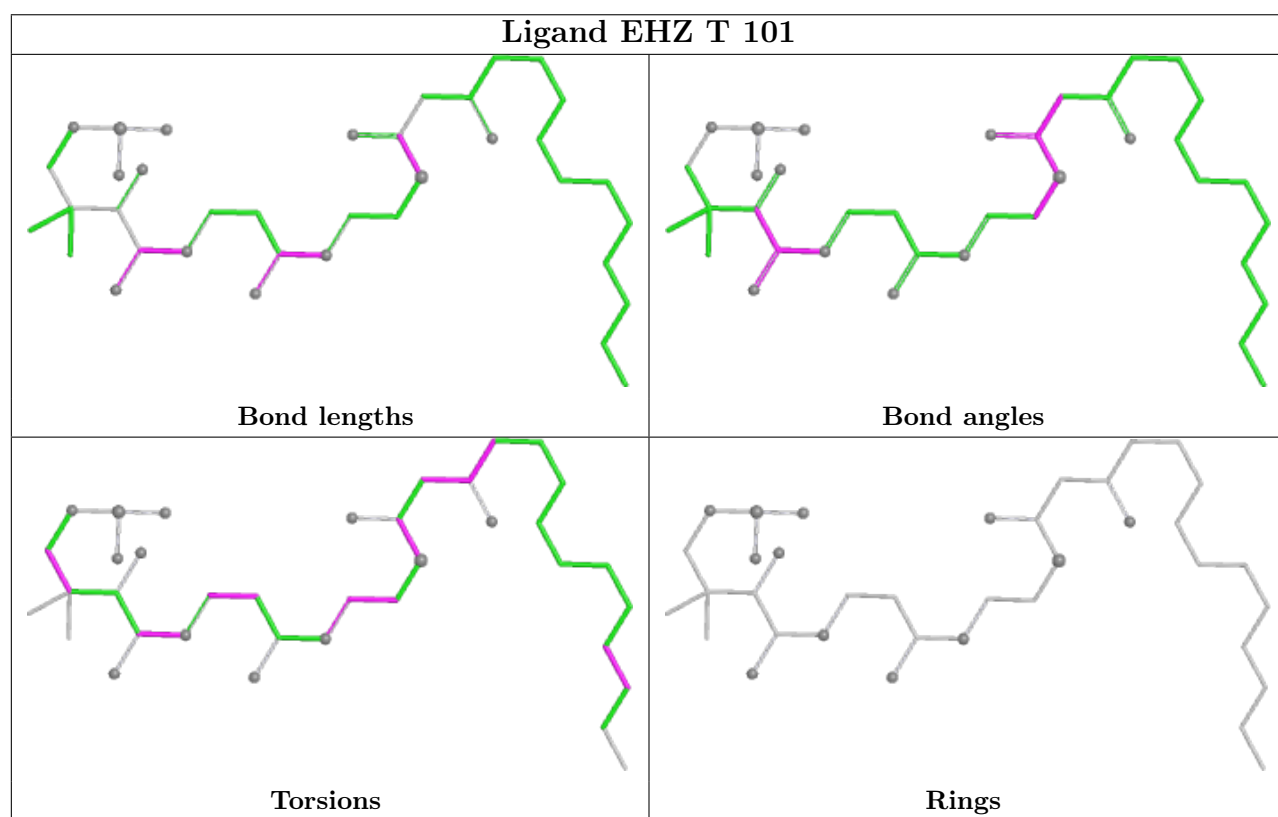
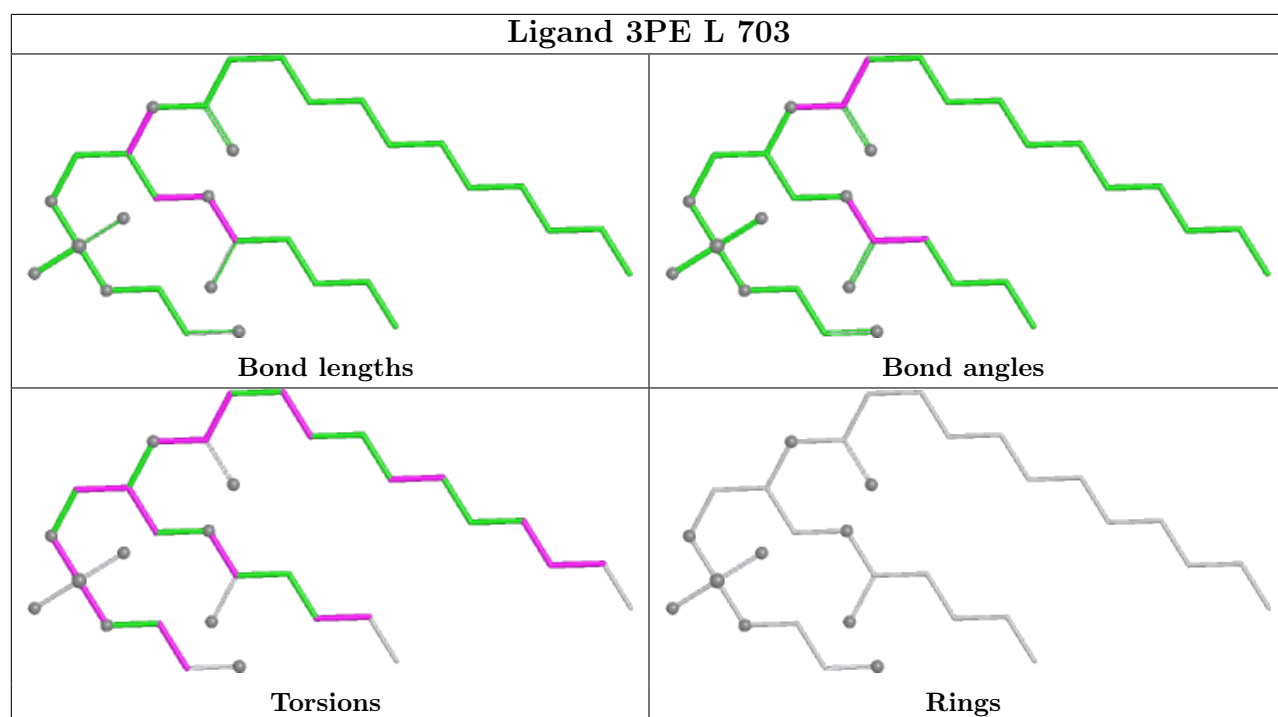


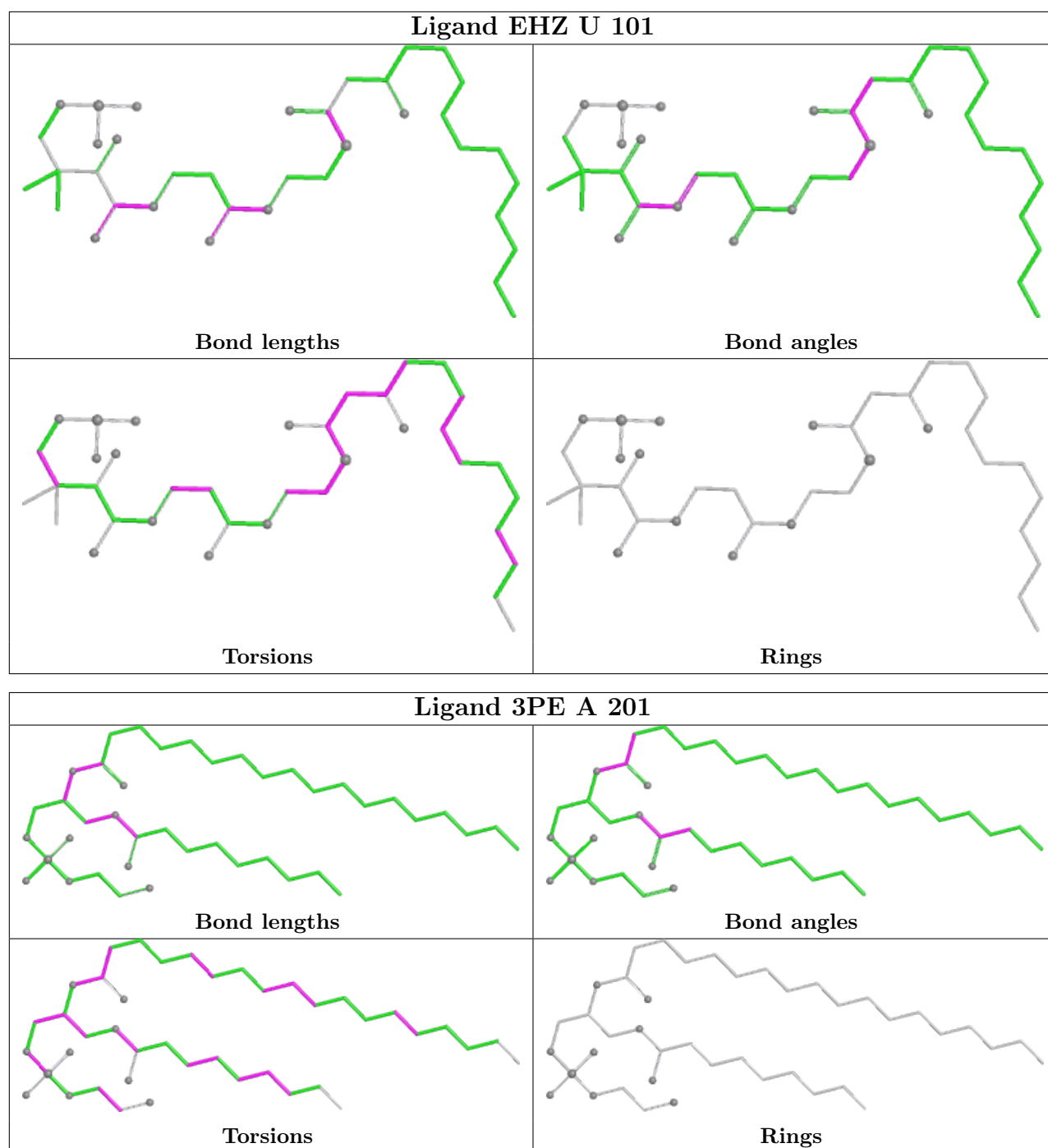


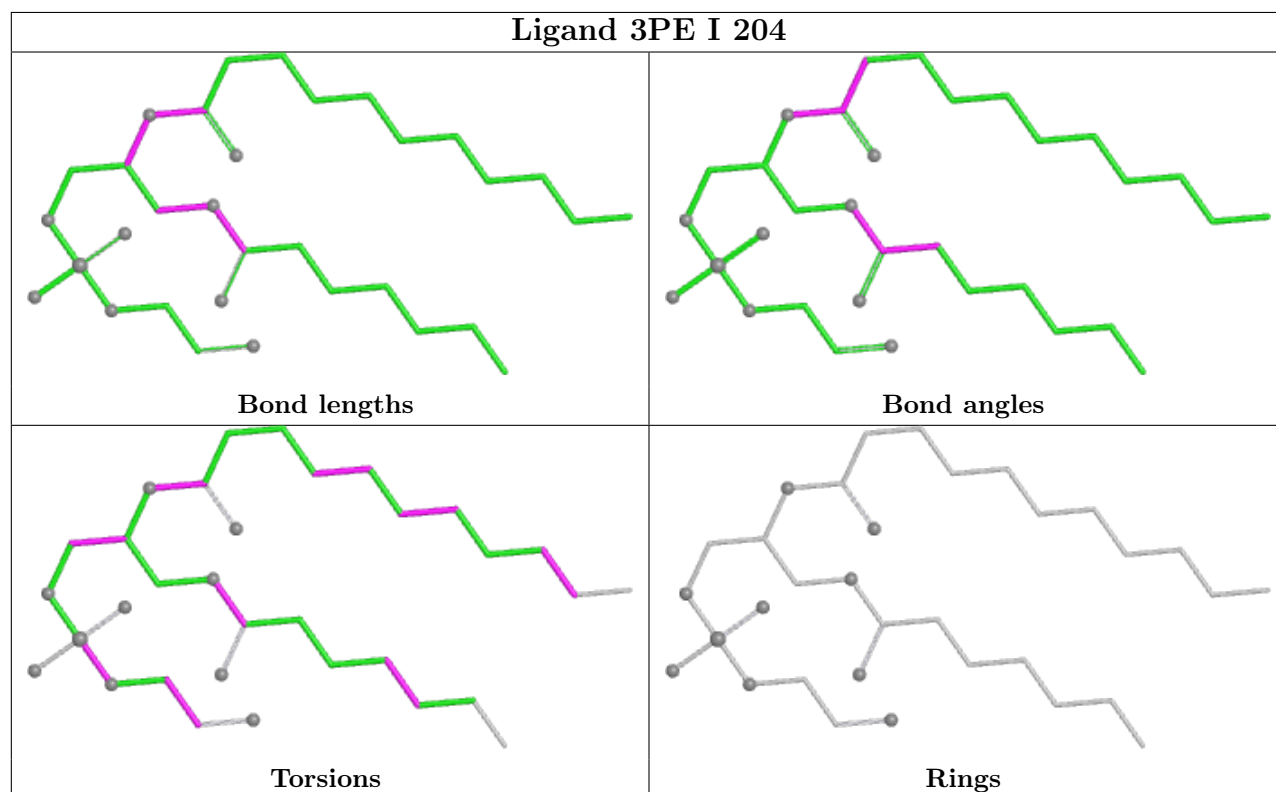
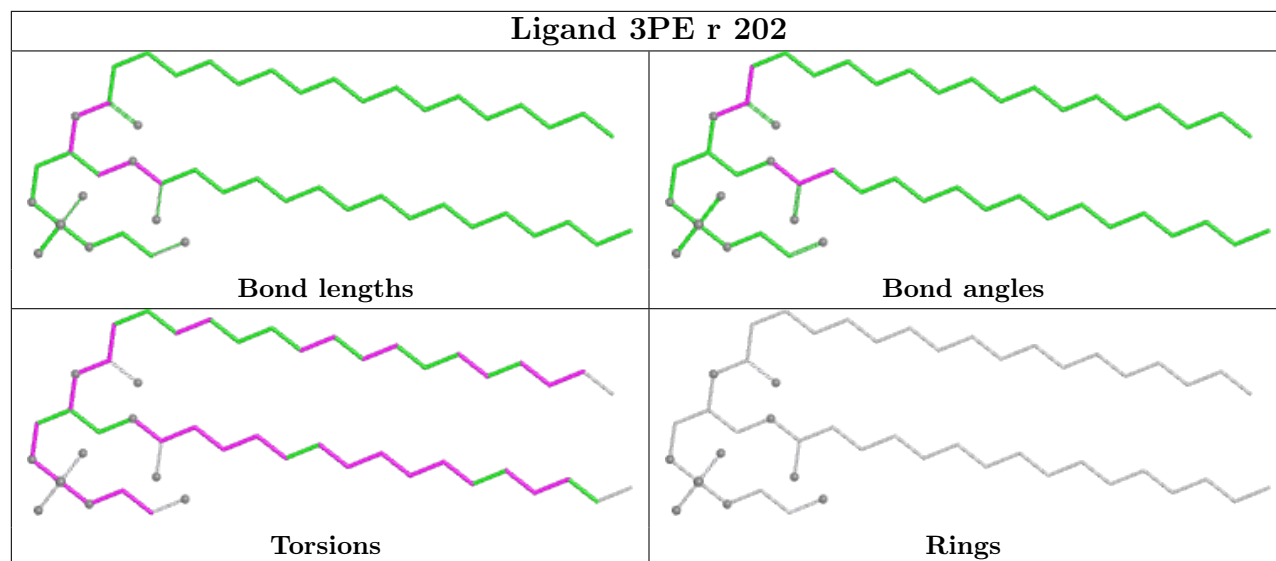


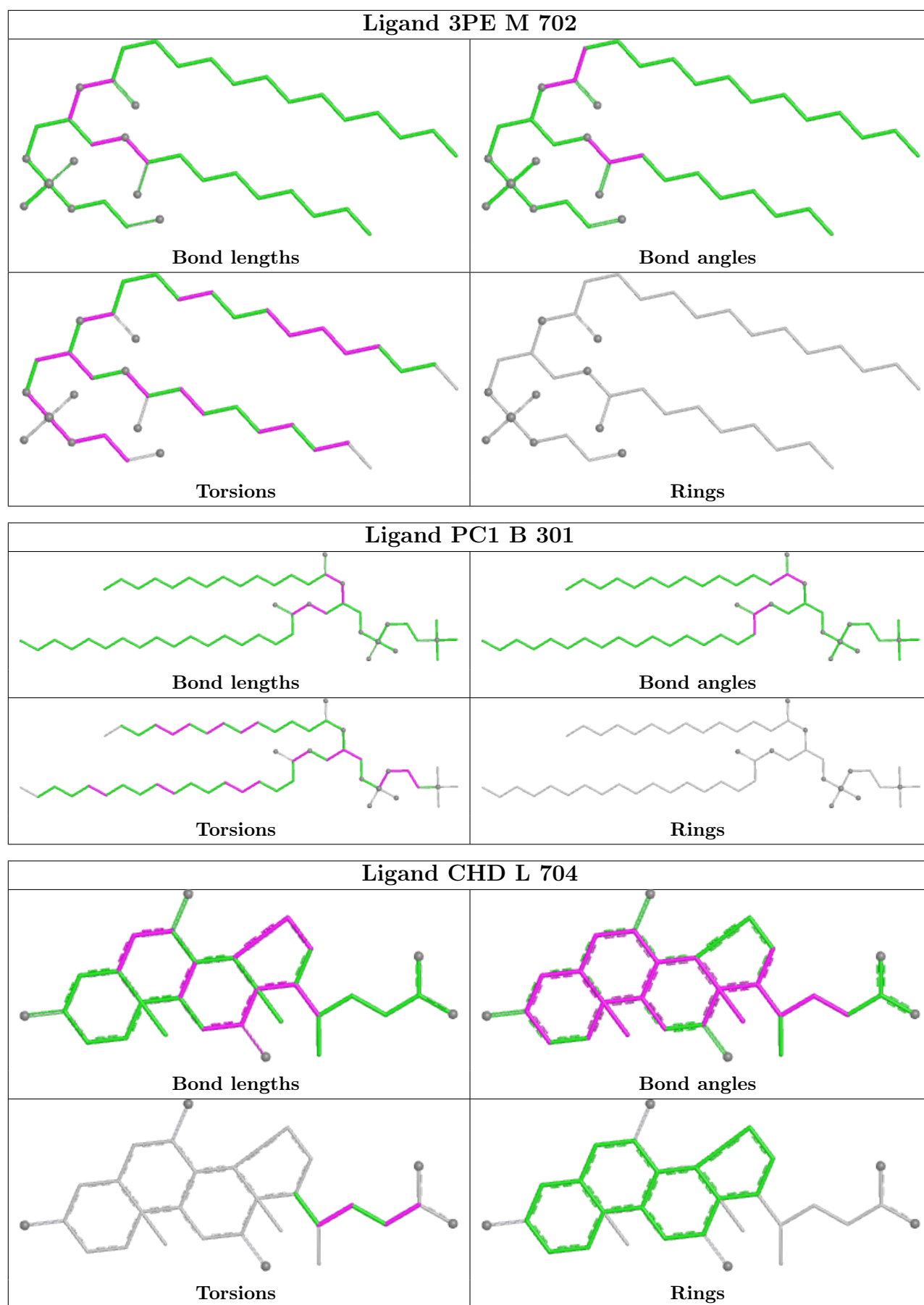


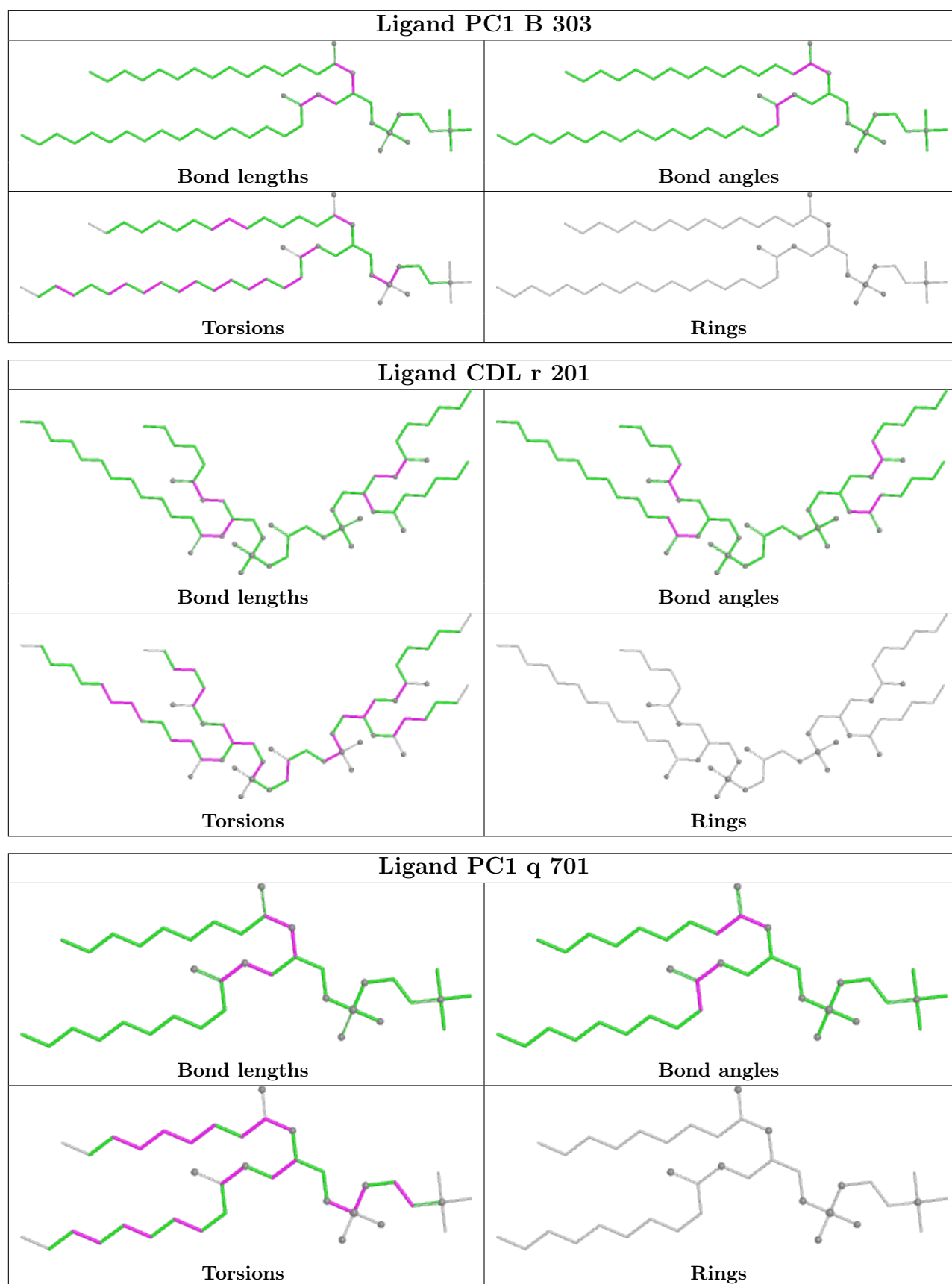












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

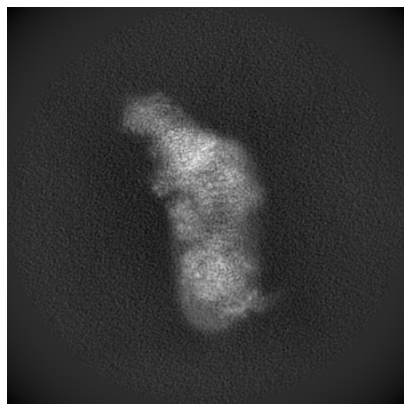
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14140. These allow visual inspection of the internal detail of the map and identification of artifacts.

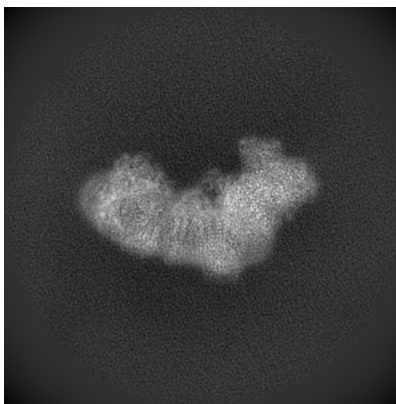
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

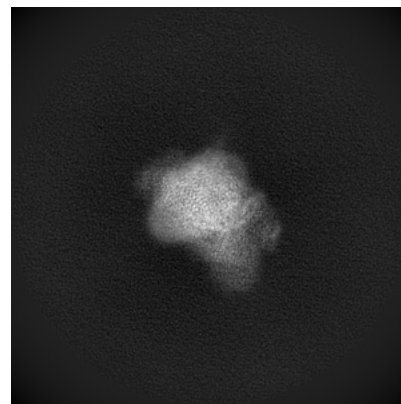
6.1.1 Primary map



X

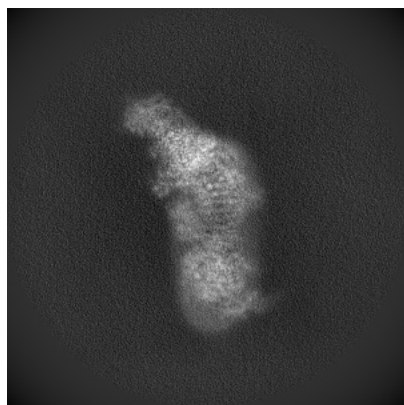


Y

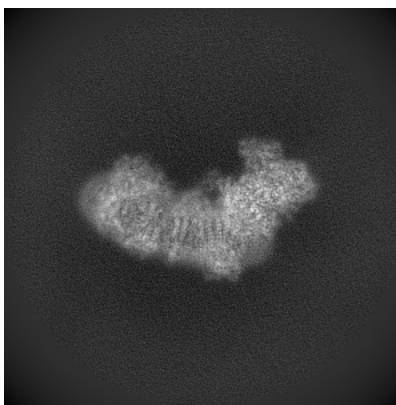


Z

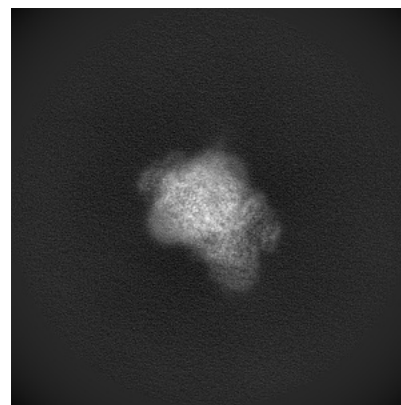
6.1.2 Raw map



X



Y

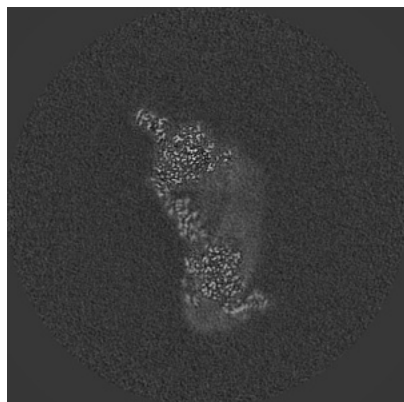


Z

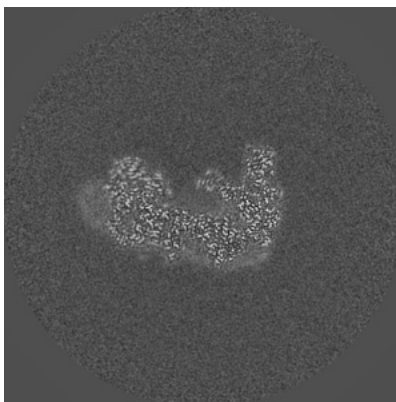
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

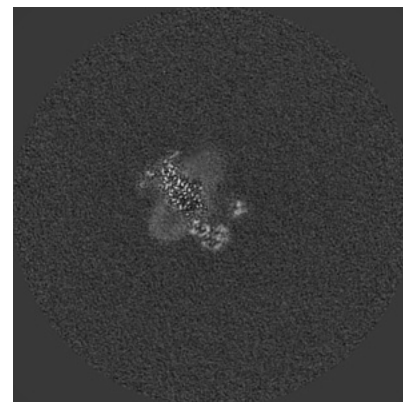
6.2.1 Primary map



X Index: 320

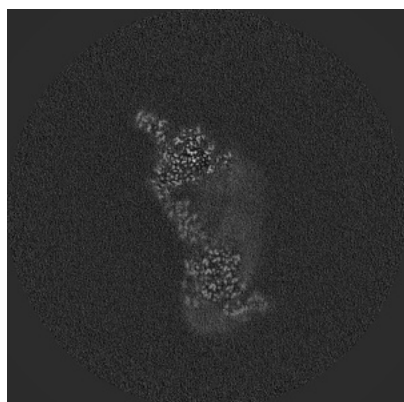


Y Index: 320

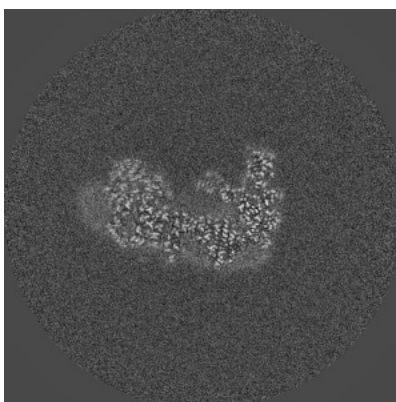


Z Index: 320

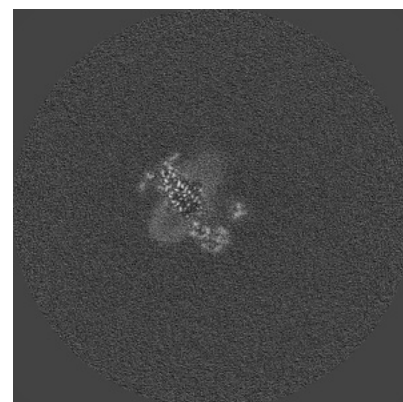
6.2.2 Raw map



X Index: 320



Y Index: 320

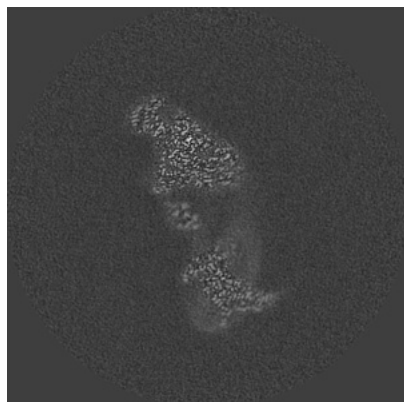


Z Index: 320

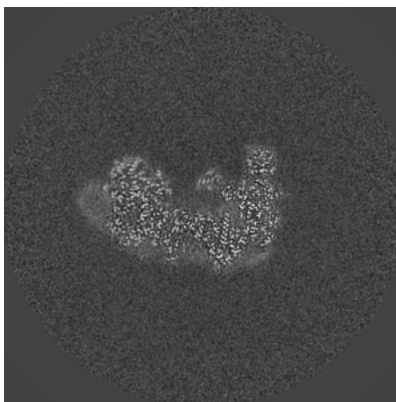
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

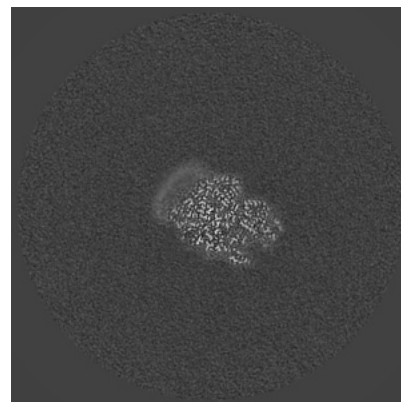
6.3.1 Primary map



X Index: 334



Y Index: 322

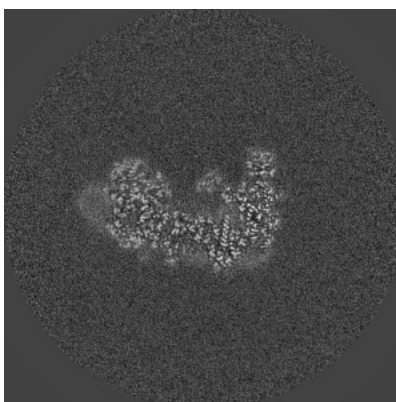


Z Index: 405

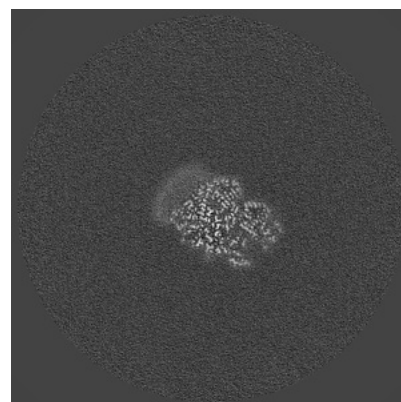
6.3.2 Raw map



X Index: 334



Y Index: 322



Z Index: 405

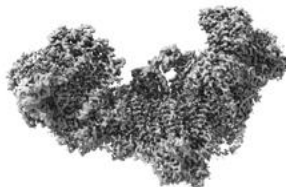
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 5.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map



X



Y



Z

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

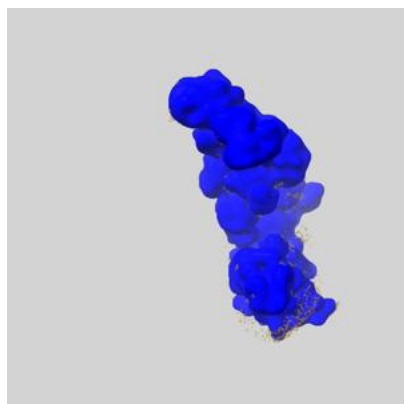
6.5 Mask visualisation [i](#)

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

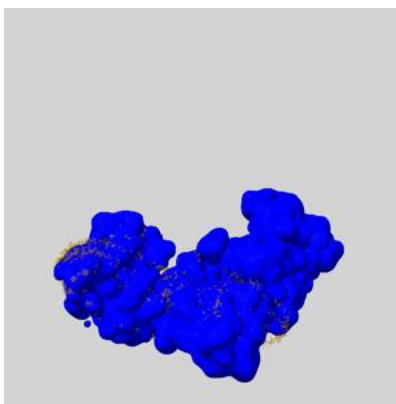
A mask typically either:

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

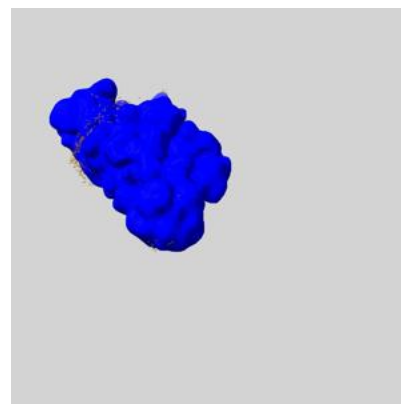
6.5.1 emd_14140_msk_1.map [i](#)



X



Y

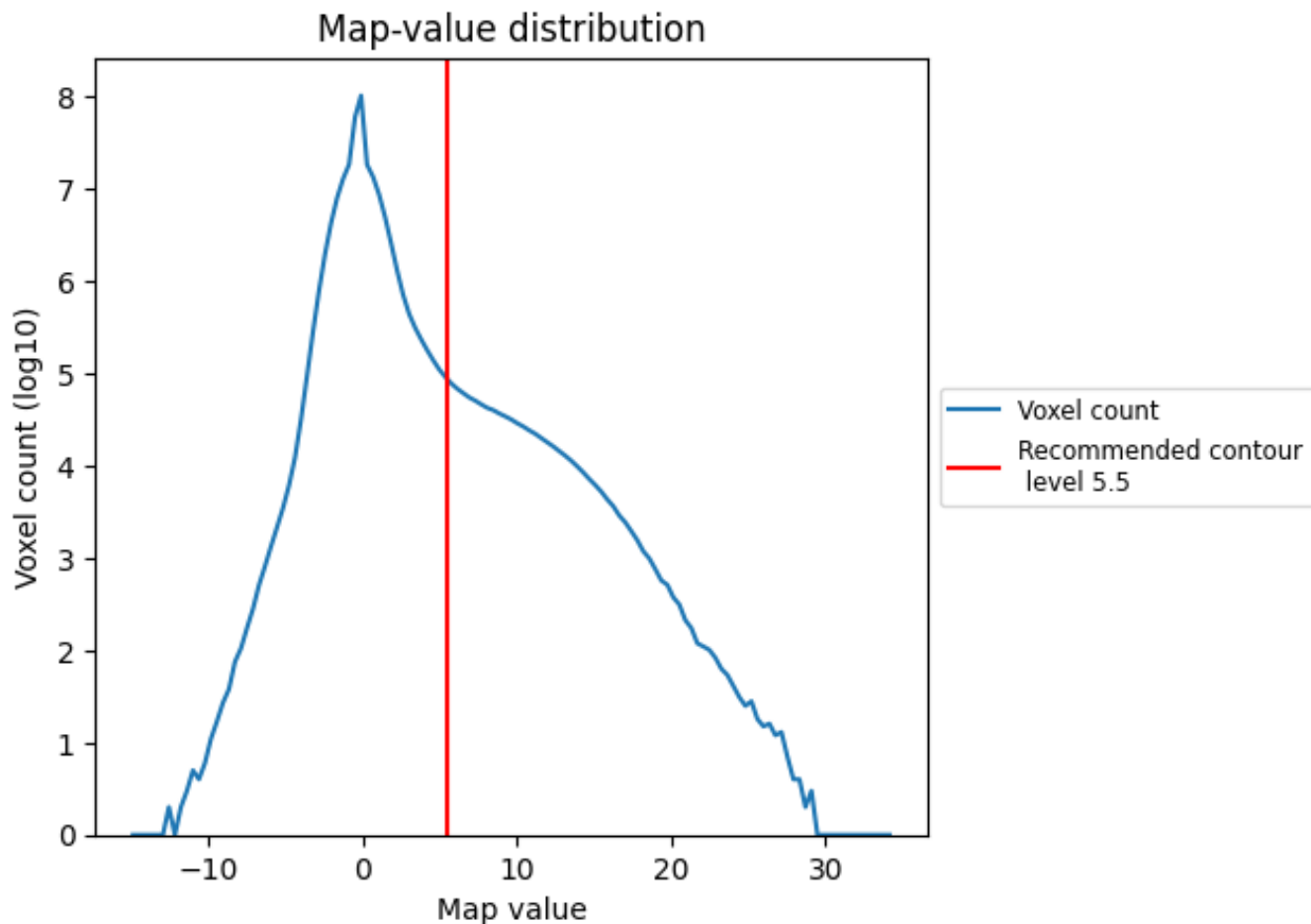


Z

7 Map analysis [i](#)

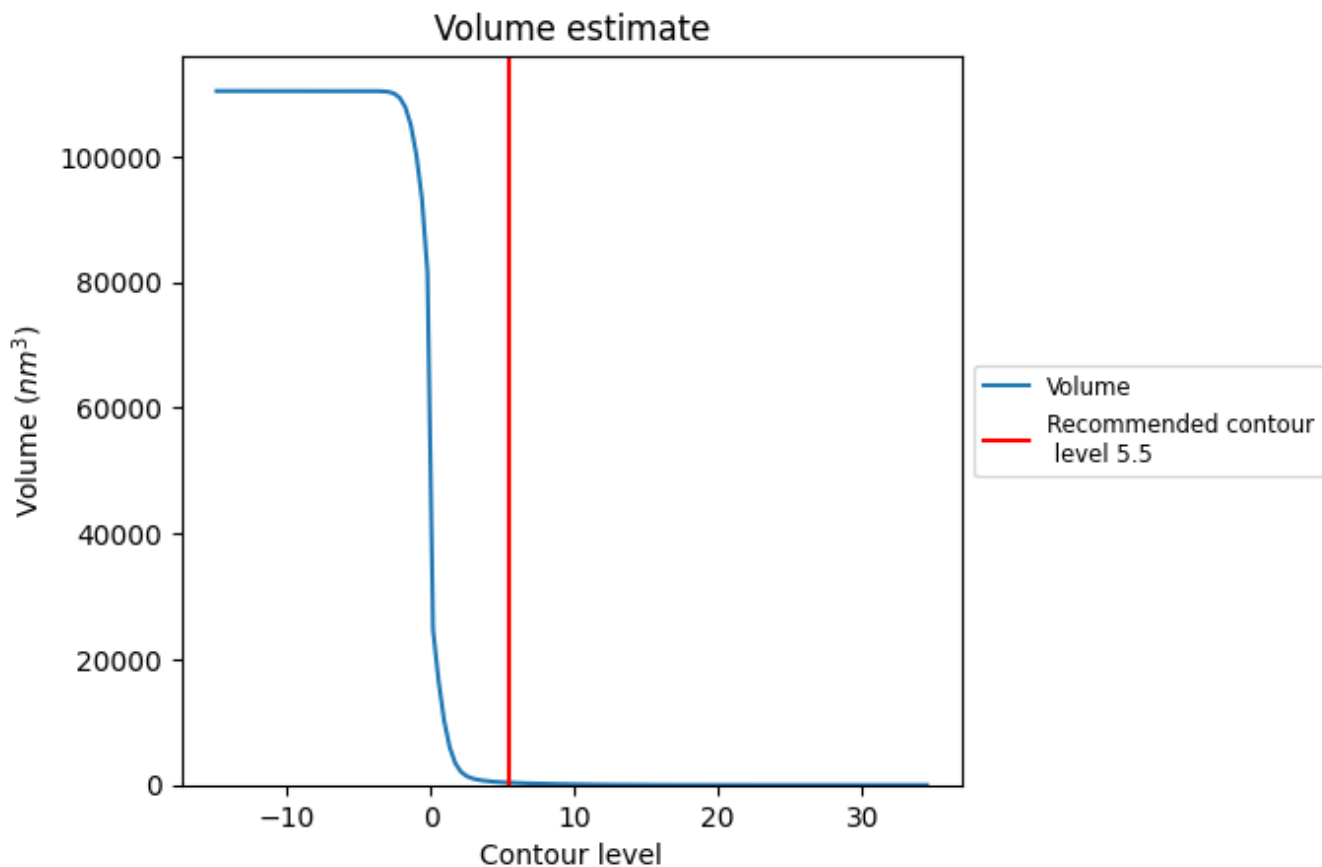
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

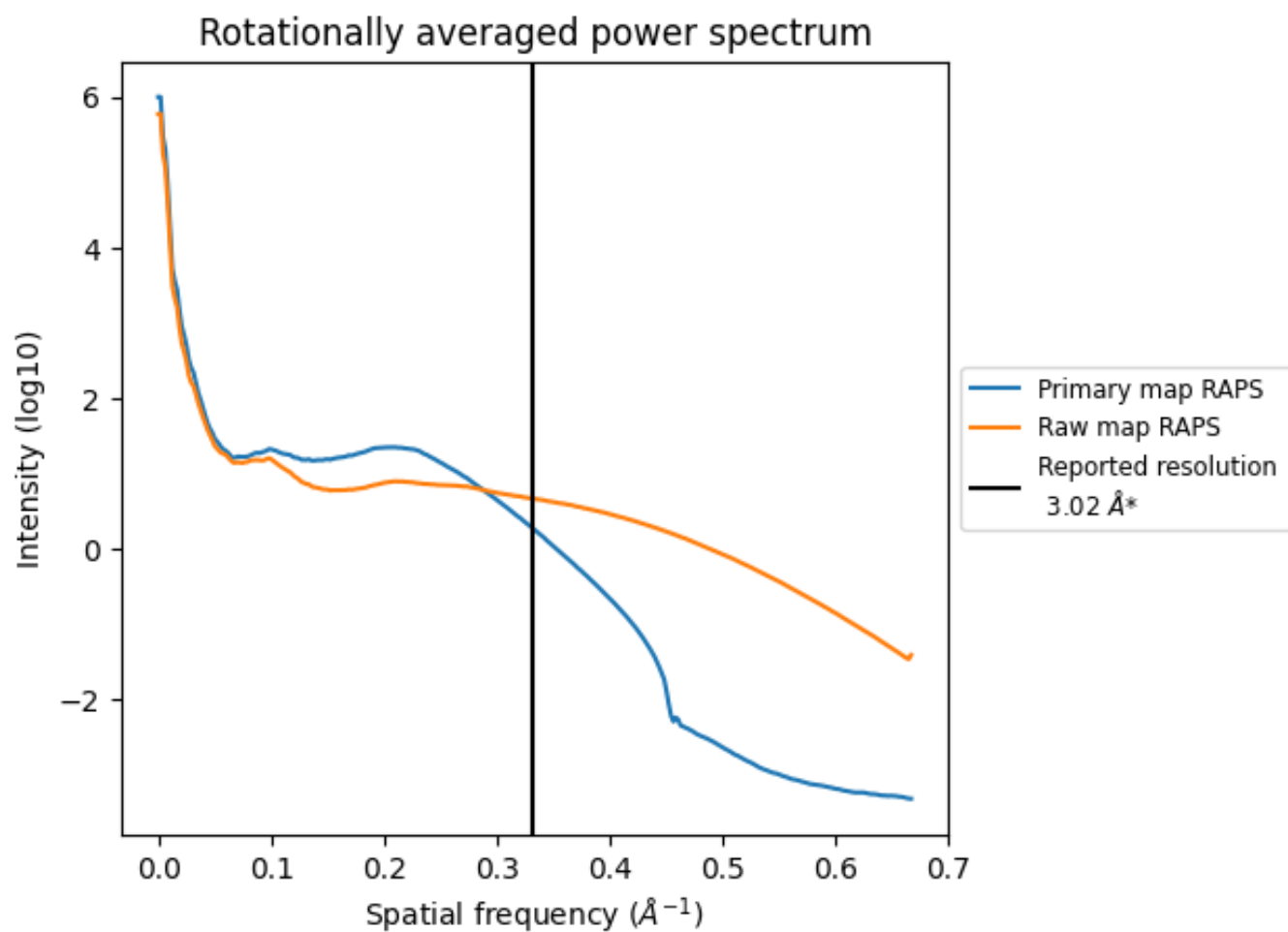
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 362 nm^3 ; this corresponds to an approximate mass of 327 kDa.

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

7.3 Rotationally averaged power spectrum i

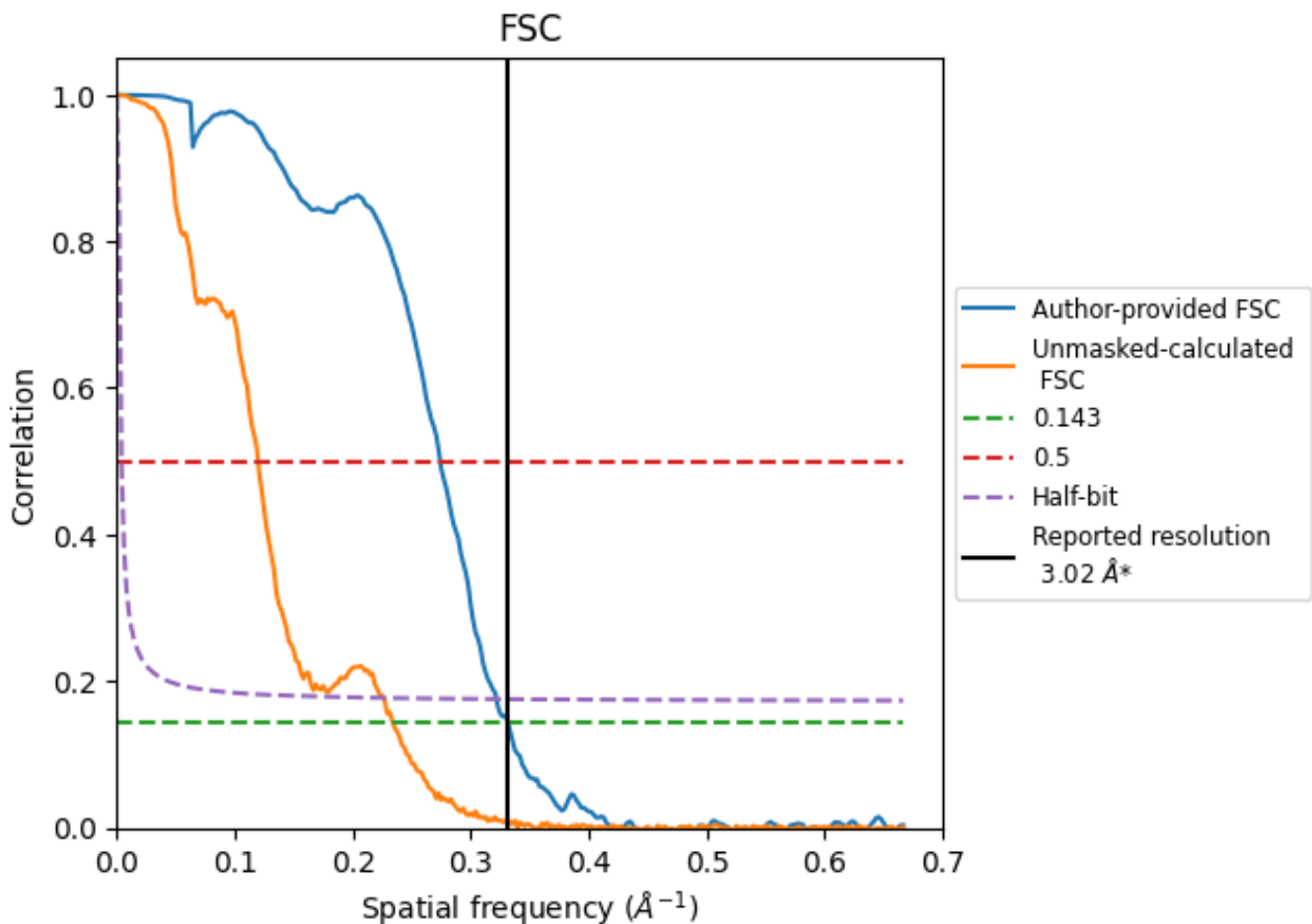


*Reported resolution corresponds to spatial frequency of 0.331 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.331 Å⁻¹

8.2 Resolution estimates [i](#)

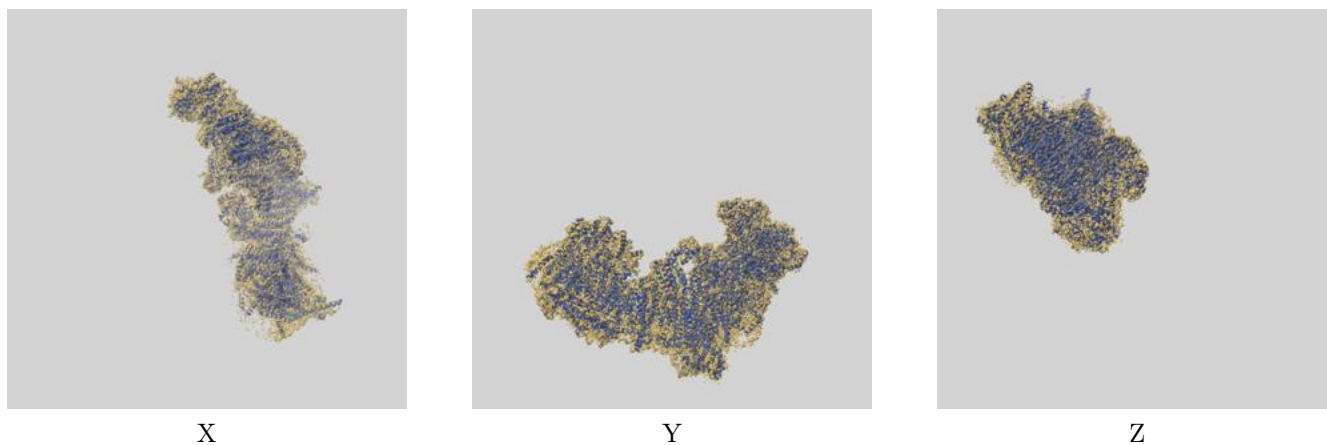
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.02	-	-
Author-provided FSC curve	3.01	3.65	3.11
Unmasked-calculated*	4.27	8.34	4.42

*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 4.27 differs from the reported value 3.02 by more than 10 %

9 Map-model fit [i](#)

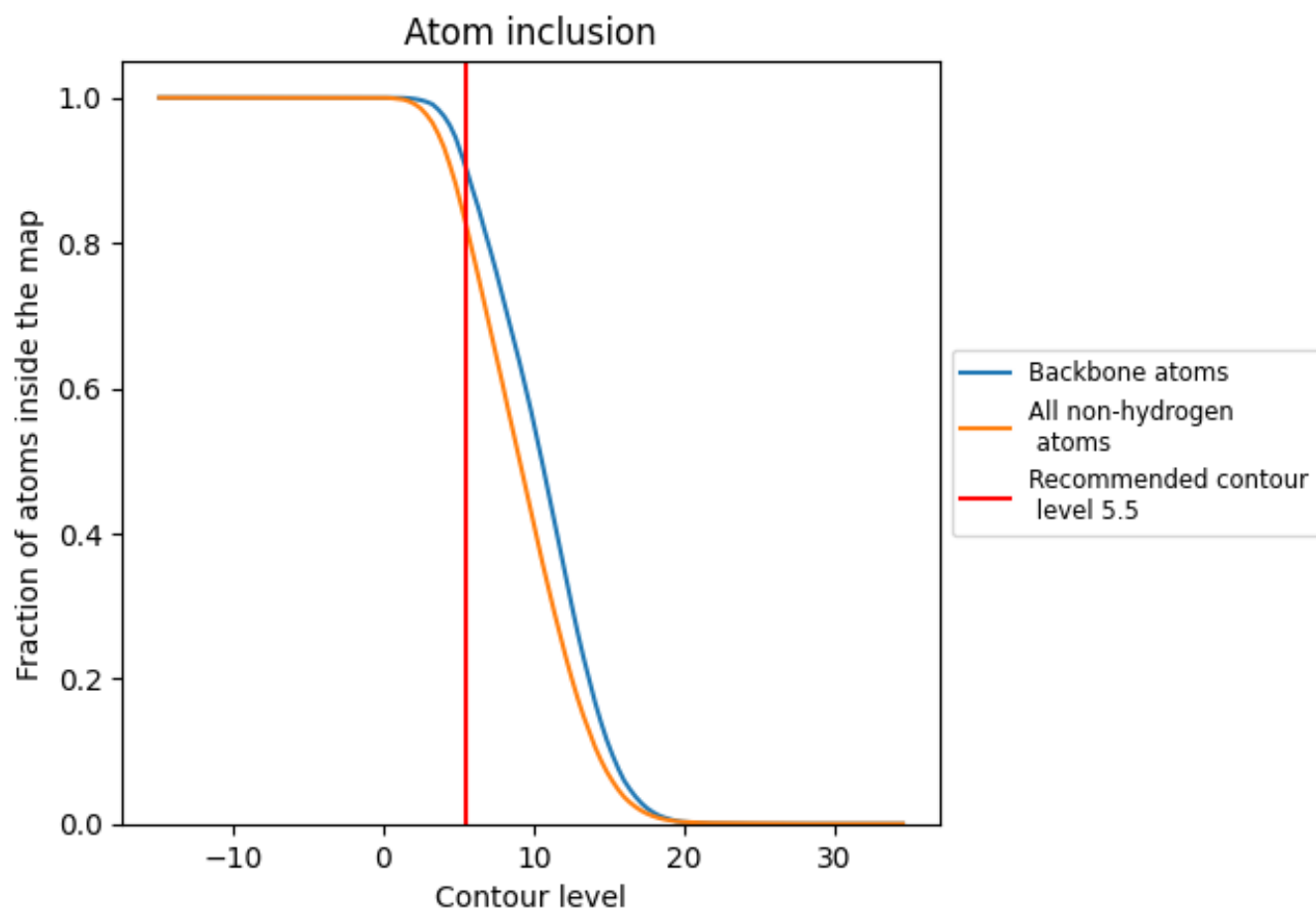
This section contains information regarding the fit between EMDB map EMD-14140 and PDB model 7QSO. Per-residue inclusion information can be found in section 3 on page 21.

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 5.5 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 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 83% of all non-hydrogen atoms, are inside the map.