wwPDB EM Validation Summary Report

Dec 7, 2022 – 10:39 AM JST

PDB ID	:	5XTH
EMDB ID	:	EMD-6775
Title	:	Cryo-EM structure of human respiratory supercomplex I1III2IV1
Authors	:	Gu, J.; Wu, M.; Yang, M.
Deposited on	:	2017-06-19
Resolution	:	3.90 Å(reported)

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

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

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

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

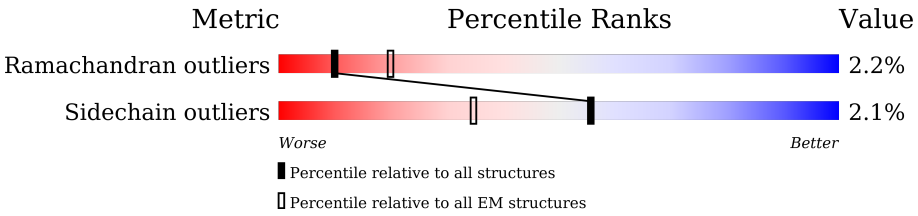
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 3.90 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	431	6%, 98%, .
2	B	176	99%, .
3	C	156	97%, .
4	E	113	12%, 97%, .
5	F	83	5%, 100%
6	G	85	46%, 98%, .
6	X	85	95%, 5%
7	H	112	10%, 96%, .
8	I	110	5%, 81%, 5%, 14%

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Mol	Chain	Length	Quality of chain
9	J	337	97%
10	K	33	12% 91% 9%
11	L	118	9% 97%
12	M	687	96%
13	N	143	95% 5%
14	O	212	97%
15	P	208	95% 5%
16	Q	430	6% 98%
17	S	70	97%
18	T	95	96%
19	U	83	99%
20	V	140	98%
21	W	138	96%
22	Y	59	75% 24%
23	Z	80	100%
24	a	138	96%
25	b	124	90% 10%
26	c	153	95% 5%
27	d	171	95% 5%
28	e	97	6% 97%
29	f	47	9% 98%
30	g	119	95% 5%
31	h	104	94% 6%
32	i	347	98%
33	j	115	5% 97%

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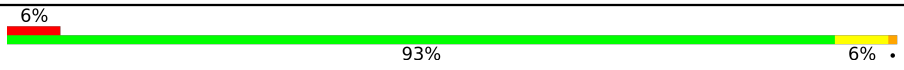
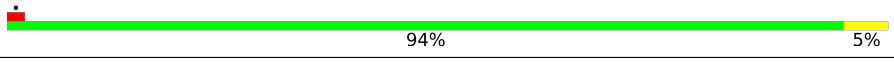
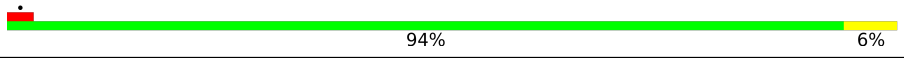
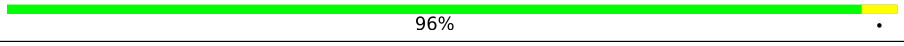
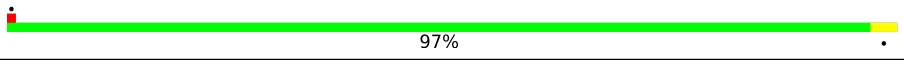
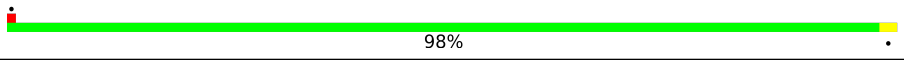
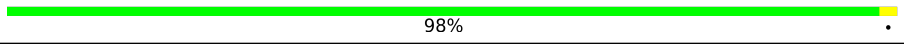
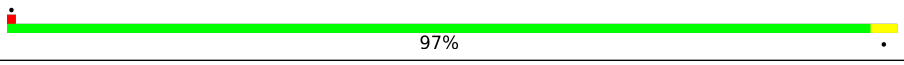
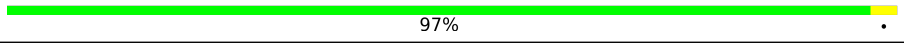
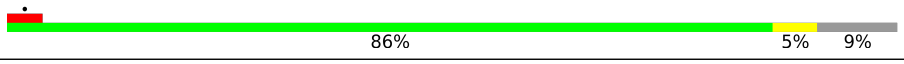
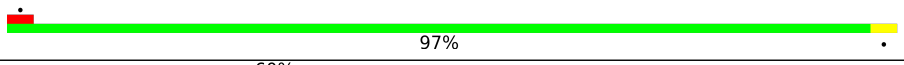
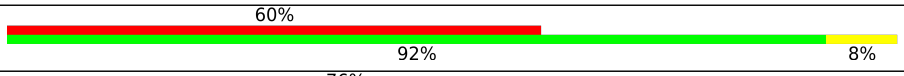
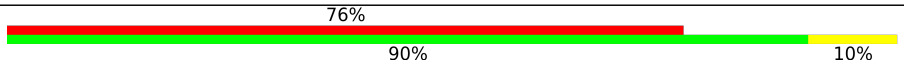
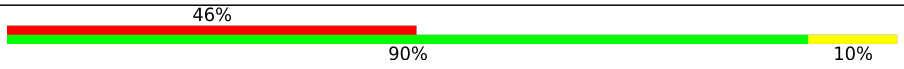
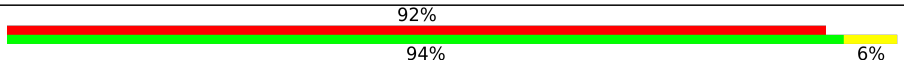
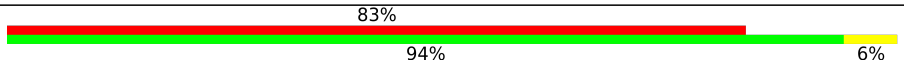
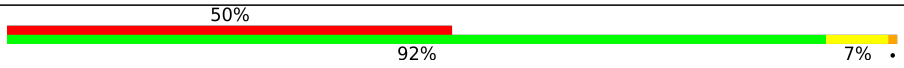
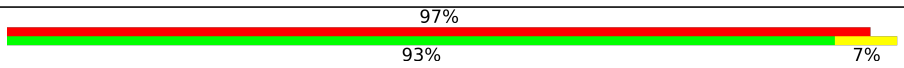
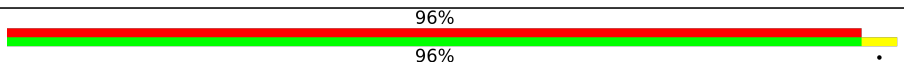
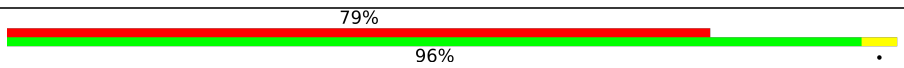
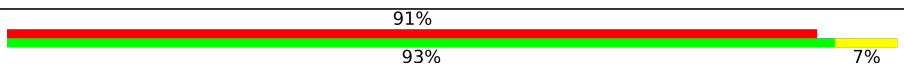
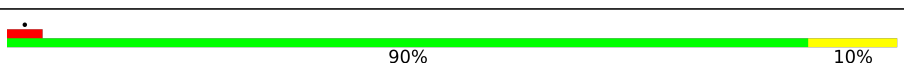
Mol	Chain	Length	Quality of chain
34	k	97	
35	l	603	
36	m	174	
37	n	56	
38	o	128	
39	p	172	
40	r	459	
41	s	318	
42	u	169	
43	v	122	
44	w	320	
45	x	514	
46	y	227	
47	z	261	
48	0	144	
49	1	109	
50	2	98	
51	3	84	
52	4	75	
53	5	73	
54	6	56	
55	7	49	
56	8	47	
57	9	43	
58	AA	81	

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Mol	Chain	Length	Quality of chain
58	AN	81	20% 99%
59	AB	57	75% 93% 7%
59	AO	57	86% 88% 12%
60	AC	196	20% 97%
60	AP	196	15% 98%
61	AD	62	16% 100%
61	AQ	62	19% 100%
62	AE	74	14% 96%
62	AR	74	18% 96%
63	AF	106	10% 87% 13%
63	AS	106	7% 100%
64	AG	51	16% 100%
64	AT	51	14% 96%
65	AH	241	99%
65	AU	241	99%
66	AJ	378	98%
66	AV	378	96%
67	AK	419	98%
67	AW	419	16% 98%
68	AL	446	99%
68	AY	446	12% 97%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
79	HEA	x	603	X	-	-	-
79	HEA	x	604	X	-	-	-

2 Entry composition (i)

There are 82 unique types of molecules in this entry. The entry contains 115642 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 dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	431	3322	2096	594	612	20	0	0

- Molecule 2 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	176	1420	893	243	271	13	0	0

- Molecule 3 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	156	1249	794	227	214	14	0	0

- Molecule 4 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	113	968	623	178	162	5	0	0

- Molecule 5 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	83	670	422	124	122	2	0	0

- Molecule 6 is a protein called Acyl carrier protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	85	Total	C	N	O	S	0	0
			672	434	99	134	5		
6	X	85	Total	C	N	O	S	0	0
			686	442	101	138	5		

- Molecule 7 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	112	Total	C	N	O	S	0	0
			922	593	157	169	3		

- Molecule 8 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	95	Total	C	N	O	S	0	0
			769	483	146	138	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	337	Total	C	N	O	S	0	0
			2712	1759	482	463	8		

- Molecule 10 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	33	Total	C	N	O	S	0	0
			274	173	47	53	1		

- Molecule 11 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	118	Total	C	N	O	S	0	0
			964	608	173	179	4		

- Molecule 12 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	687	Total	C	N	O	S	0	0
			5274	3310	917	1009	38		

- Molecule 13 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	143	Total	C	N	O	S	0	0
			1195	770	210	212	3		

- Molecule 14 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	212	Total	C	N	O	S	0	0
			1643	1047	276	310	10		

- Molecule 15 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	208	Total	C	N	O	S	0	0
			1730	1117	297	313	3		

- Molecule 16 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	430	Total	C	N	O	S	0	0
			3460	2214	599	624	23		

- Molecule 17 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	S	70	Total	C	N	O	S	0	0
			568	367	101	96	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	95	Total	C	N	O	S	0	0
			742	459	138	142	3		

- Molecule 19 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	83	Total	C	N	O	S	0	0
			647	427	105	113	2		

- Molecule 20 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	V	140	Total	C	N	O	S	0	0
			1038	668	178	187	5		

- Molecule 21 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	W	138	Total	C	N	O	S	0	0
			1135	727	202	200	6		

- Molecule 22 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Y	59	Total	C	N	O	S	0	0
			533	354	87	91	1		

- Molecule 23 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Z	80	Total	C	N	O	S	0	0
			648	426	110	110	2		

- Molecule 24 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	a	138	Total	C	N	O	S	0	0
			1174	771	199	202	2		

- Molecule 25 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	b	124	Total	C	N	O	S	0	0
			1059	697	181	176	5		

- Molecule 26 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	c	153	Total	C	N	O	S	0	0
			1236	795	208	222	11		

- Molecule 27 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	d	171	Total	C	N	O	S	0	0
			1418	885	262	259	12		

- Molecule 28 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	e	97	Total	C	N	O	S	0	0
			810	522	132	152	4		

- Molecule 29 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	f	47	Total	C	N	O	0	0
			405	269	69	67		

- Molecule 30 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	g	119	Total	C	N	O	S	0	0
			1004	658	173	169	4		

- Molecule 31 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	h	104	Total	C	N	O	S	0	0
			863	546	161	150	6		

- Molecule 32 is a protein called NADH-ubiquinone oxidoreductase chain 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	i	347	Total	C	N	O	S	0	0
			2735	1819	421	470	25		

- Molecule 33 is a protein called NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	j	115	Total	C	N	O	S	0	0
			919	626	132	152	9		

- Molecule 34 is a protein called NADH-ubiquinone oxidoreductase chain 4L.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	k	97	Total	C	N	O	S	0	0
			740	487	113	127	13		

- Molecule 35 is a protein called NADH-ubiquinone oxidoreductase chain 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	l	603	Total	C	N	O	S	0	0
			4717	3119	742	823	33		

- Molecule 36 is a protein called NADH-ubiquinone oxidoreductase chain 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	m	174	Total	C	N	O	S	0	0
			1313	879	194	229	11		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
37	n	56	Total	C	N	O	S	0	0
			473	305	85	80	3		

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

4.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	o	128	Total	C	N	O	S	0	0
			1066	685	192	187	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
39	p	172	Total	C	N	O	S	0	0
			1495	961	265	261	8		

- Molecule 40 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	r	459	Total	C	N	O	S	0	0
			3629	2411	569	619	30		

- Molecule 41 is a protein called NADH-ubiquinone oxidoreductase chain 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	s	318	Total	C	N	O	S	0	0
			2509	1678	380	435	16		

- Molecule 42 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	u	169	Total	C	N	O	S	0	0
			1394	886	247	252	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
43	v	111	Total	C	N	O	S	0	0
			921	569	187	156	9		

- Molecule 44 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	w	320	Total	C	N	O	S	0	0
			2474	1573	429	464	8		

- Molecule 45 is a protein called Cytochrome c oxidase subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	x	514	Total	C	N	O	S	0	0
			4025	2690	623	677	35		

- Molecule 46 is a protein called Cytochrome c oxidase subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	y	227	Total	C	N	O	S	0	0
			1822	1184	281	339	18		

- Molecule 47 is a protein called Cytochrome c oxidase subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	z	261	Total	C	N	O	S	0	0
			2124	1420	338	353	13		

- Molecule 48 is a protein called Cytochrome c oxidase subunit 4 isoform 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	0	144	Total	C	N	O	S	0	0
			1195	777	196	218	4		

- Molecule 49 is a protein called Cytochrome c oxidase subunit 5A, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	1	109	Total	C	N	O	S	0	0
			878	558	150	168	2		

- Molecule 50 is a protein called Cytochrome c oxidase subunit 5B, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	2	98	Total	C	N	O	S	0	0
			748	464	134	145	5		

- Molecule 51 is a protein called Cytochrome c oxidase subunit 6A2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	3	84	Total	C	N	O	S	0	0
			672	431	129	111	1		

- Molecule 52 is a protein called Cytochrome c oxidase subunit 6B1.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	4	75	Total	C	N	O	S	0	0
			628	395	114	114	5		

- Molecule 53 is a protein called Cytochrome c oxidase subunit 6C.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	5	73	Total	C	N	O	S	0	0
			598	388	107	99	4		

- Molecule 54 is a protein called Cytochrome c oxidase subunit 7A1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	6	56	Total	C	N	O	S	0	0
			441	285	73	80	3		

- Molecule 55 is a protein called Cytochrome c oxidase subunit 7B, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	7	49	Total	C	N	O	S	0	0
			384	250	65	67	2		

- Molecule 56 is a protein called Cytochrome c oxidase subunit 7C, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	8	47	Total	C	N	O	S	0	0
			386	257	65	62	2		

- Molecule 57 is a protein called Cytochrome c oxidase subunit 8B, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
57	9	43	Total	C	N	O	0	0
			335	223	53	59		

- Molecule 58 is a protein called Cytochrome b-c1 complex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	AA	81	Total	C	N	O	S	0	0
			694	450	126	117	1		
58	AN	81	Total	C	N	O	S	0	0
			687	444	126	116	1		

- Molecule 59 is a protein called Cytochrome b-c1 complex subunit Rieske, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	AB	57	Total	C	N	O	S	0	0
			413	261	75	76	1		
59	AO	57	Total	C	N	O	S	0	0
			409	259	74	75	1		

- Molecule 60 is a protein called Cytochrome b-c1 complex subunit Rieske, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	AC	196	Total	C	N	O	S	0	0
			1521	960	264	290	7		
60	AP	196	Total	C	N	O	S	0	0
			1521	960	264	290	7		

- Molecule 61 is a protein called Cytochrome b-c1 complex subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	AD	62	Total	C	N	O	S	0	0
			509	332	87	89	1		
61	AQ	62	Total	C	N	O	S	0	0
			509	332	87	89	1		

- Molecule 62 is a protein called Cytochrome b-c1 complex subunit 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	AE	74	Total	C	N	O	S	0	0
			580	351	108	116	5		
62	AR	74	Total	C	N	O	S	0	0
			580	351	108	116	5		

- Molecule 63 is a protein called Cytochrome b-c1 complex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	AF	106	Total	C	N	O	S	0	0
			921	589	162	168	2		

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Mol	Chain	Residues	Atoms					AltConf	Trace
63	AS	106	Total	C	N	O	S	0	0
			921	589	162	168	2		

- Molecule 64 is a protein called Cytochrome b-c1 complex subunit 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
64	AG	51	Total	C	N	O	0	0
			425	287	72	66		
64	AT	51	Total	C	N	O	0	0
			425	287	72	66		

- Molecule 65 is a protein called Cytochrome c1, heme protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	AH	241	Total	C	N	O	S	0	0
			1924	1231	329	349	15		
65	AU	241	Total	C	N	O	S	0	0
			1924	1231	329	349	15		

- Molecule 66 is a protein called Cytochrome b.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	AJ	378	Total	C	N	O	S	0	0
			3009	2017	467	509	16		
66	AV	378	Total	C	N	O	S	0	0
			3009	2017	467	509	16		

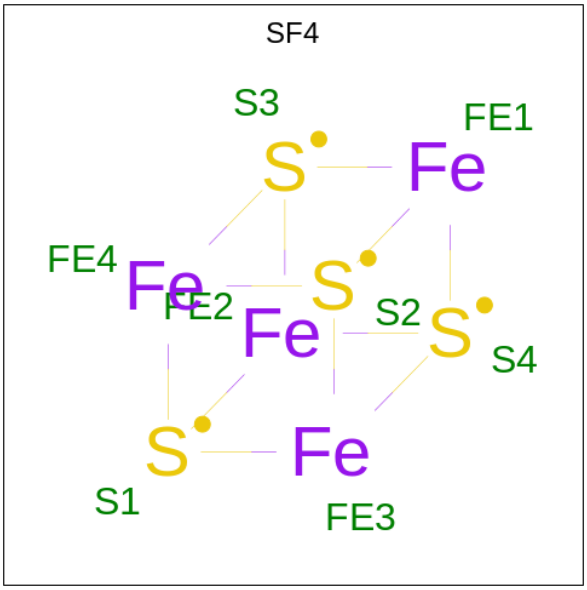
- Molecule 67 is a protein called Cytochrome b-c1 complex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	AK	419	Total	C	N	O	S	0	0
			3159	1986	553	610	10		
67	AW	419	Total	C	N	O	S	0	0
			3162	1989	553	610	10		

- Molecule 68 is a protein called Cytochrome b-c1 complex subunit 1, mitochondrial.

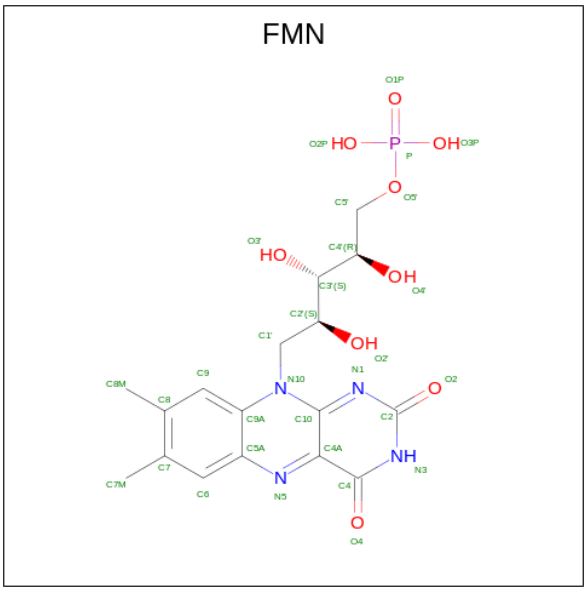
Mol	Chain	Residues	Atoms					AltConf	Trace
68	AL	446	Total	C	N	O	S	0	0
			3453	2169	603	661	20		
68	AY	446	Total	C	N	O	S	0	0
			3453	2169	603	661	20		

- Molecule 69 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



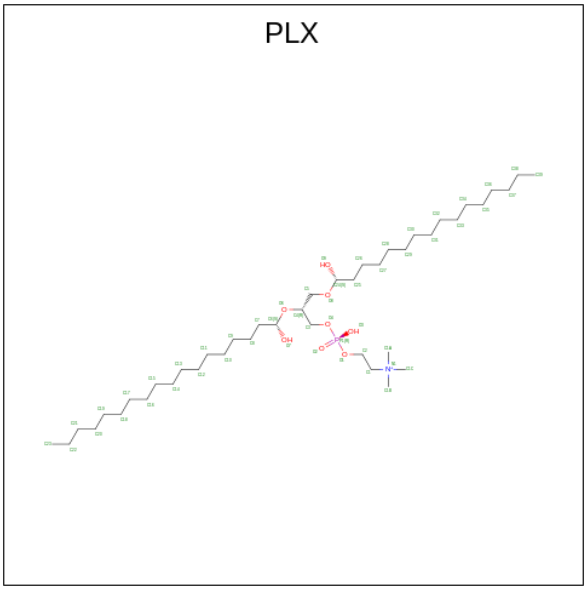
Mol	Chain	Residues	Atoms	AltConf
69	A	1	Total Fe S 8 4 4	0
69	B	1	Total Fe S 16 8 8	0
69	B	1	Total Fe S 16 8 8	0
69	C	1	Total Fe S 8 4 4	0
69	M	1	Total Fe S 16 8 8	0
69	M	1	Total Fe S 16 8 8	0

- Molecule 70 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$).



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

- Molecule 71 is (9R,11S)-9-({[(1S)-1-HYDROXYHEXADECYL]OXY}METHYL)-2,2-DIMETHYL-5,7,10-TRIOXA-2LAMBDA 5 -AZA-6LAMBDA 5 -PHOSPHAOCTACOSANE-6,6,11-TRIOL (three-letter code: PLX) (formula: $C_{42}H_{89}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
71	B	1	Total	C	N	O	P	0
			52	42	1	8	1	
71	U	1	Total	C	N	O	P	0
			52	42	1	8	1	

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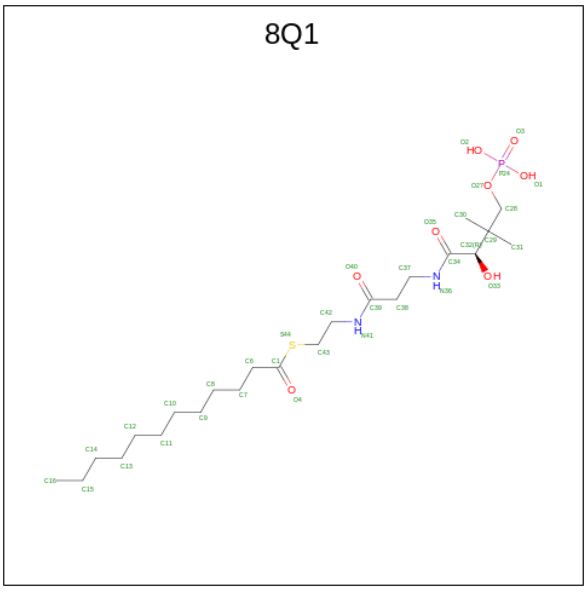
Mol	Chain	Residues	Atoms					AltConf
71	V	1	Total	C	N	O	P	0
			52	42	1	8	1	
71	b	1	Total	C	N	O	P	0
			52	42	1	8	1	
71	g	1	Total	C	N	O	P	0
			156	126	3	24	3	
71	g	1	Total	C	N	O	P	0
			156	126	3	24	3	
71	g	1	Total	C	N	O	P	0
			156	126	3	24	3	
71	r	1	Total	C	N	O	P	0
			104	84	2	16	2	
71	r	1	Total	C	N	O	P	0
			104	84	2	16	2	
71	AL	1	Total	C	N	O	P	0
			52	42	1	8	1	
71	AQ	1	Total	C	N	O	P	0
			52	42	1	8	1	
71	AT	1	Total	C	N	O	P	0
			52	42	1	8	1	

- Molecule 72 is S-[2-({N-[(2R)-2-hydroxy-3,3-dimethyl-4-(phosphonooxy)butanoyl]-beta-alanyl}amino)ethyl] dodecanethioate (three-letter code: 8Q1) (formula: $C_{23}H_{45}N_2O_8PS$).



Mol	Chain	Residues	Atoms						AltConf
72	E	1	Total	C	N	O	P	S	0
			35	23	2	8	1	1	

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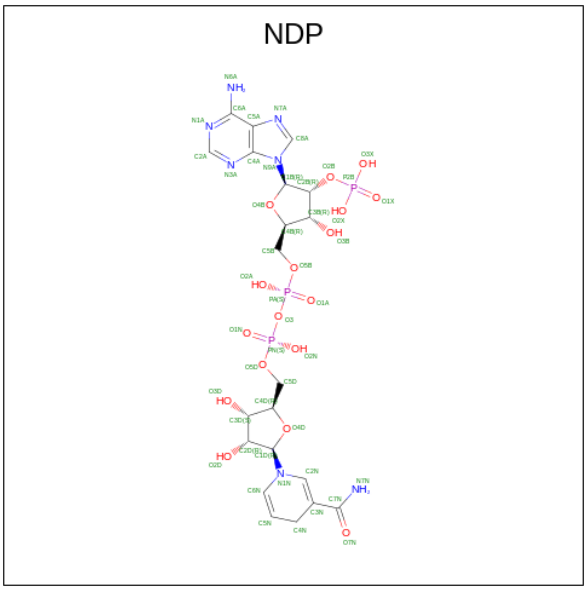
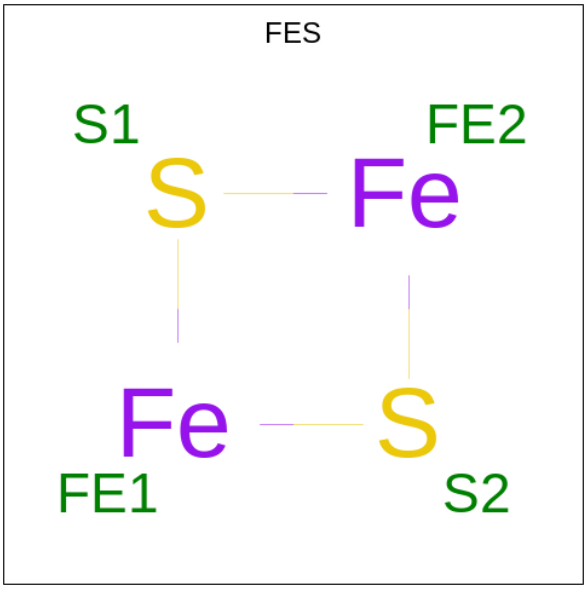
Mol	Chain	Residues	Atoms						AltConf
72	p	1	Total	C	N	O	P	S	0
			35	23	2	8	1	1	

- Molecule 73 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).



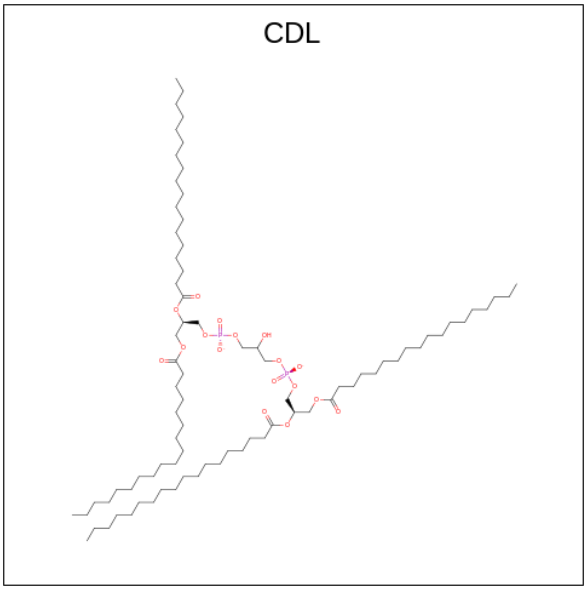
Mol	Chain	Residues	Atoms					AltConf
73	J	1	Total	C	N	O	P	0
			48	21	7	17	3	

- Molecule 74 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).



Mol	Chain	Residues	Atoms	AltConf
74	M	1	Total Fe S 4 2 2	0
74	O	1	Total Fe S 4 2 2	0
74	AC	1	Total Fe S 4 2 2	0
74	AP	1	Total Fe S 4 2 2	0

- Molecule 75 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



Mol	Chain	Residues	Atoms	AltConf
75	V	1	Total C O P 63 44 17 2	0
75	i	1	Total C O P 64 45 17 2	0
75	l	1	Total C O P 128 90 34 4	0
75	l	1	Total C O P 128 90 34 4	0
75	n	1	Total C O P 64 45 17 2	0
75	AA	1	Total C O P 64 45 17 2	0
75	AG	1	Total C O P 64 45 17 2	0
75	AH	1	Total C O P 64 45 17 2	0

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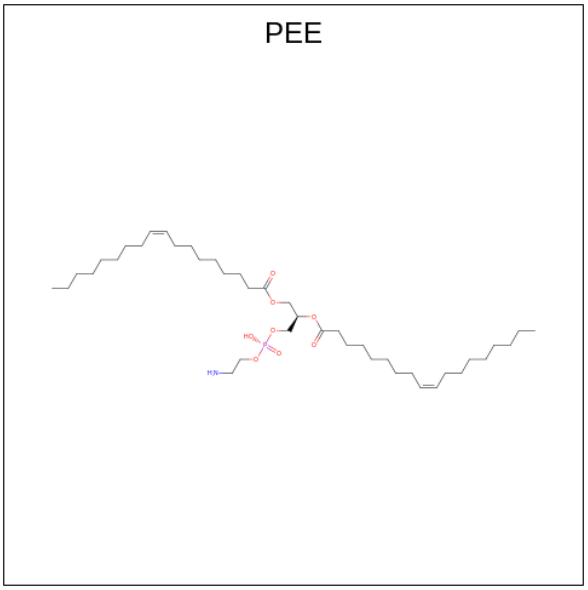
Mol	Chain	Residues	Atoms				AltConf
75	AJ	1	Total	C	O	P	0
			128	90	34	4	
75	AJ	1	Total	C	O	P	0
			128	90	34	4	
75	AL	1	Total	C	O	P	0
			64	45	17	2	
75	AN	1	Total	C	O	P	0
			64	45	17	2	
75	AU	1	Total	C	O	P	0
			64	45	17	2	
75	AY	1	Total	C	O	P	0
			64	45	17	2	

- Molecule 76 is 1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine (three-letter code: PEE) (formula: $C_{41}H_{78}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
76	V	1	Total	C	N	O	P	0
			51	41	1	8	1	
76	W	1	Total	C	N	O	P	0
			51	41	1	8	1	
76	l	1	Total	C	N	O	P	0
			100	80	2	16	2	
76	l	1	Total	C	N	O	P	0
			100	80	2	16	2	
76	AH	1	Total	C	N	O	P	0
			49	39	1	8	1	

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Mol	Chain	Residues	Atoms					AltConf
76	AJ	1	Total	C	N	O	P	0
			49	39	1	8	1	
76	AL	1	Total	C	N	O	P	0
			49	39	1	8	1	
76	AU	1	Total	C	N	O	P	0
			41	31	1	8	1	
76	AV	1	Total	C	N	O	P	0
			49	39	1	8	1	
76	AY	1	Total	C	N	O	P	0
			49	39	1	8	1	

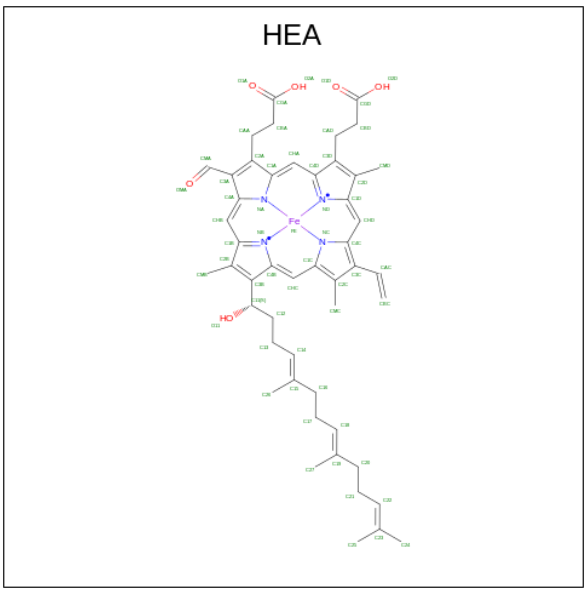
- Molecule 77 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		AltConf
77	x	1	Total	Cu	0
			1	1	
77	y	2	Total	Cu	0
			2	2	

- Molecule 78 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
78	x	1	Total	Mg	0
			1	1	

- Molecule 79 is HEME-A (three-letter code: HEA) (formula: $C_{49}H_{56}FeN_4O_6$).

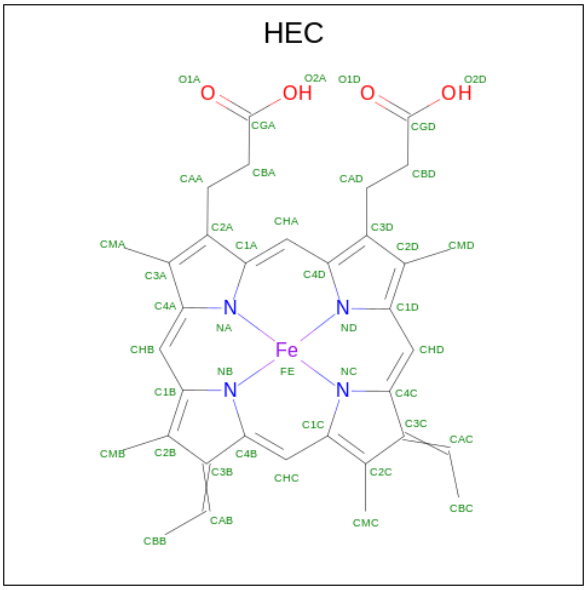


Mol	Chain	Residues	Atoms					AltConf
79	x	1	Total	C	Fe	N	O	0
			120	98	2	8	12	
79	x	1	Total	C	Fe	N	O	0
			120	98	2	8	12	

- Molecule 80 is ZINC ION (three-letter code: ZN) (formula: Zn).

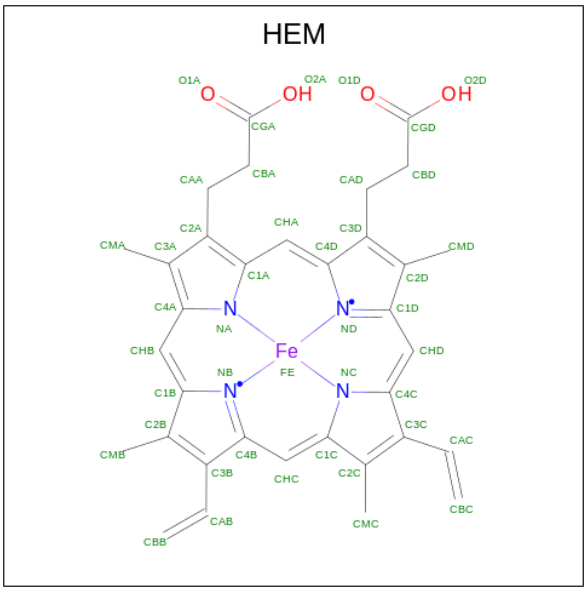
Mol	Chain	Residues	Atoms		AltConf
80	2	1	Total	Zn	0
			1	1	

- Molecule 81 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



Mol	Chain	Residues	Atoms					AltConf
81	AH	1	Total	C	Fe	N	O	0
			43	34	1	4	4	
81	AU	1	Total	C	Fe	N	O	0
			43	34	1	4	4	

- Molecule 82 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).

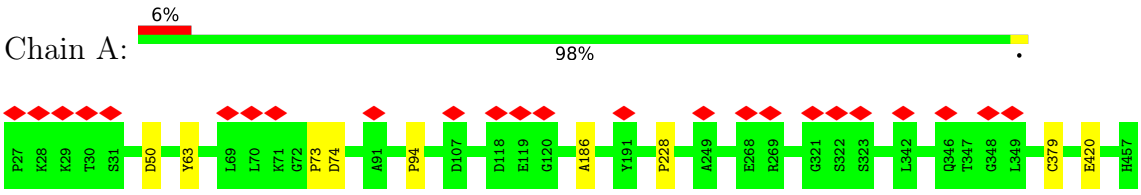


Mol	Chain	Residues	Atoms					AltConf
82	AJ	1	Total	C	Fe	N	O	0
			86	68	2	8	8	
82	AJ	1	Total	C	Fe	N	O	0
			86	68	2	8	8	
82	AV	1	Total	C	Fe	N	O	0
			86	68	2	8	8	
82	AV	1	Total	C	Fe	N	O	0
			86	68	2	8	8	

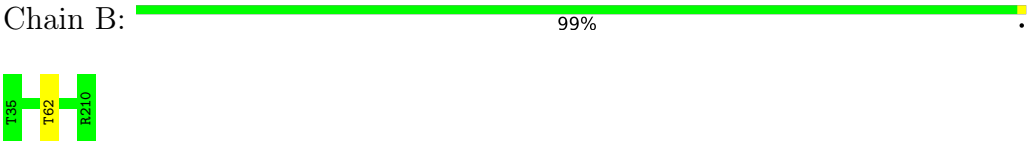
3 Residue-property plots (i)

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.

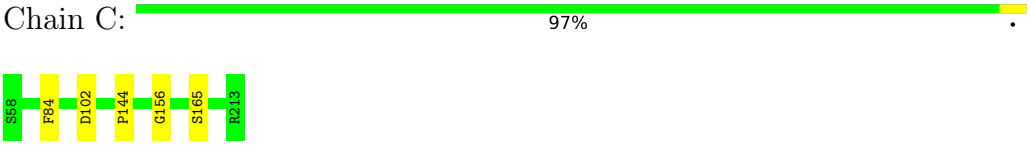
• Molecule 1: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial



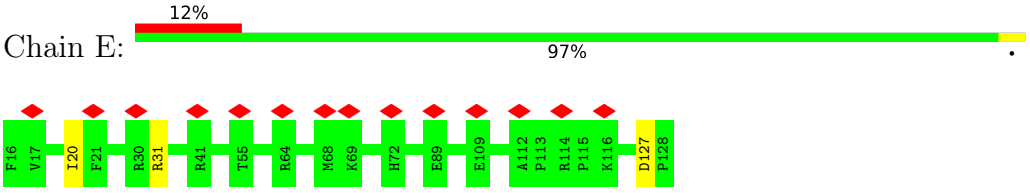
• Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial



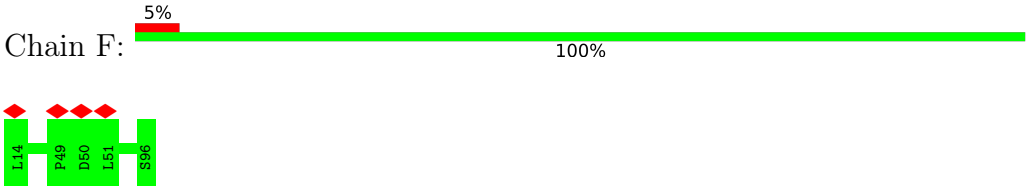
• Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial



• Molecule 4: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

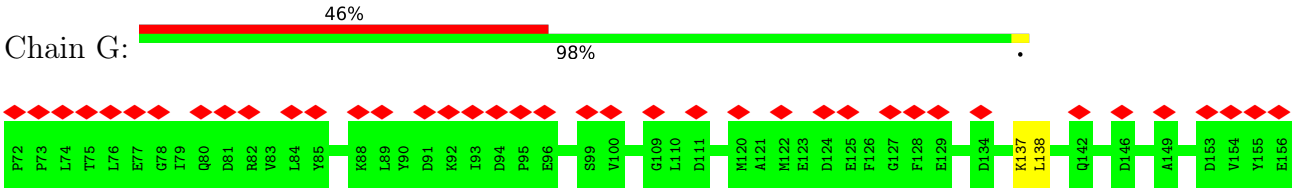


• Molecule 5: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2



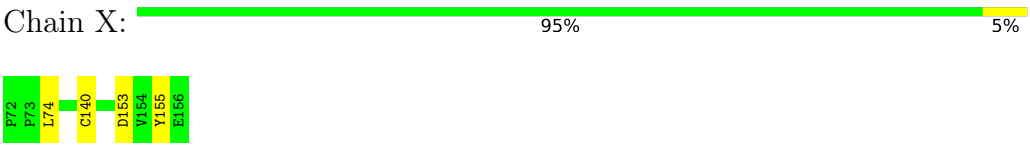
• Molecule 6: Acyl carrier protein, mitochondrial

Chain G:



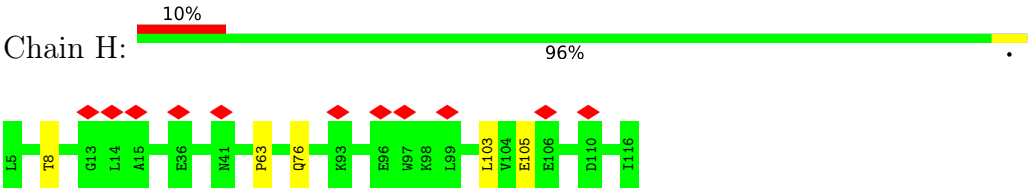
• Molecule 6: Acyl carrier protein, mitochondrial

Chain X:



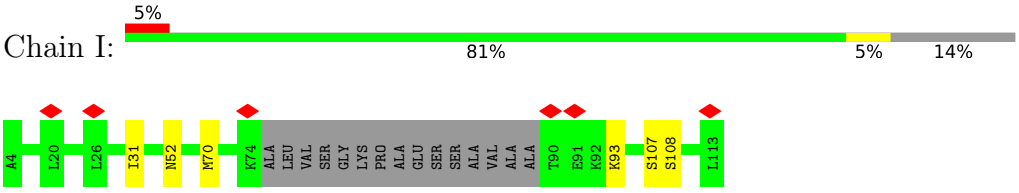
• Molecule 7: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5

Chain H:



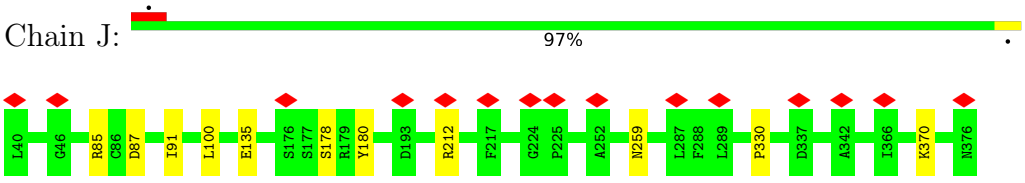
• Molecule 8: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain I:



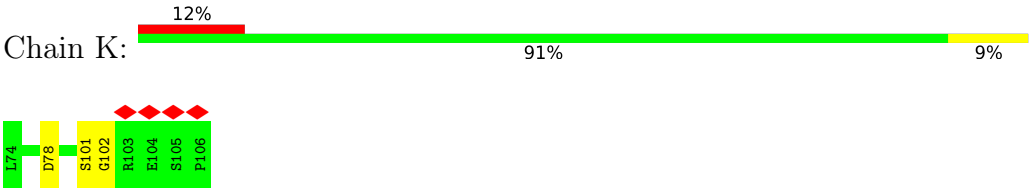
• Molecule 9: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

Chain J:



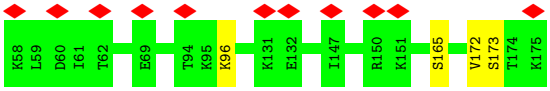
• Molecule 10: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

Chain K:



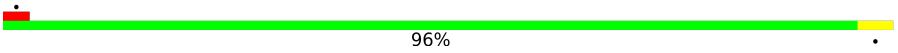
• Molecule 11: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

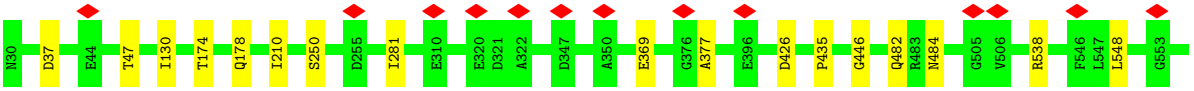
Chain L:

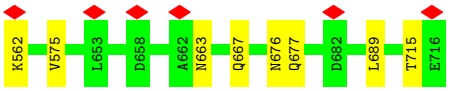


• Molecule 12: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

Chain M:

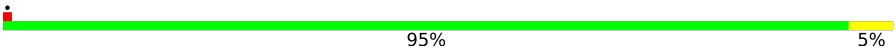






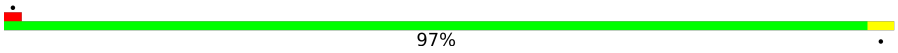
• Molecule 13: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12

Chain N:



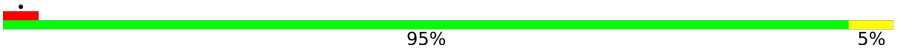
• Molecule 14: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

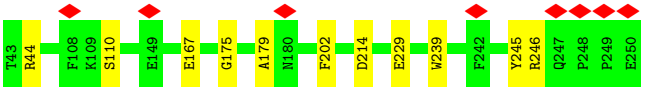
Chain O:



• Molecule 15: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

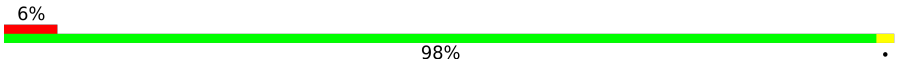
Chain P:

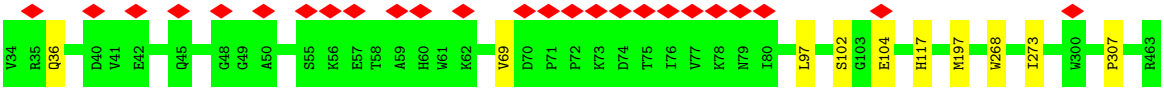




• Molecule 16: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

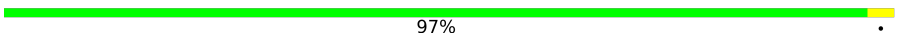
Chain Q:

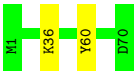




• Molecule 17: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

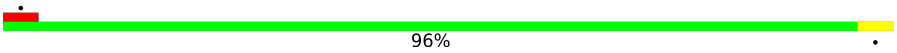
Chain S:

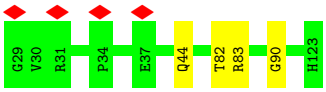




• Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

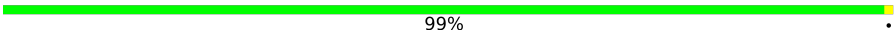
Chain T:





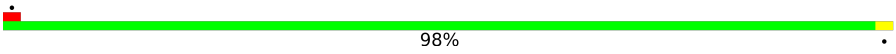
• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

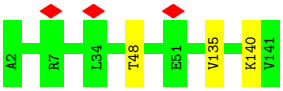
Chain U:



• Molecule 20: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11

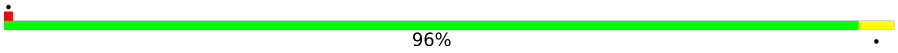
Chain V:

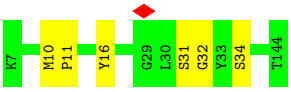




• Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13

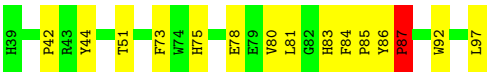
Chain W:





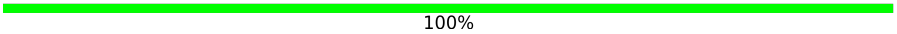
• Molecule 22: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain Y:



• Molecule 23: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

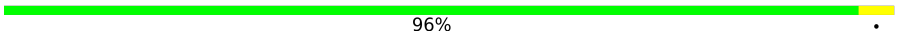
Chain Z:

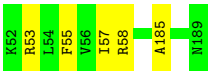


There are no outlier residues recorded for this chain.

• Molecule 24: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

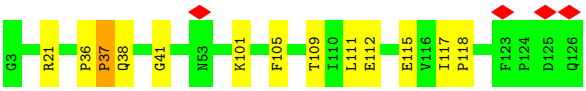
Chain a:





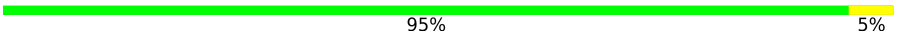
• Molecule 25: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain b:



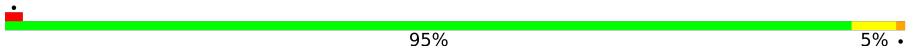
• Molecule 26: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial

Chain c:



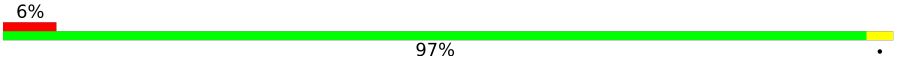
• Molecule 27: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

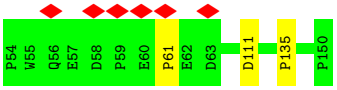
Chain d:



• Molecule 28: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

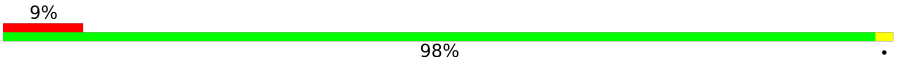
Chain e:

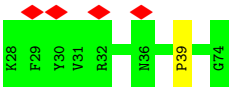




• Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

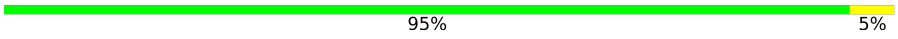
Chain f:

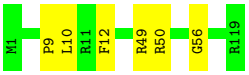




• Molecule 30: NADH dehydrogenase [ubiquinone] 1 subunit C2

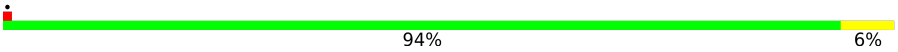
Chain g:

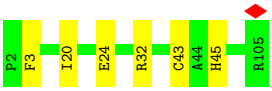




• Molecule 31: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

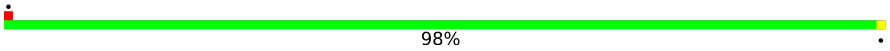
Chain h:

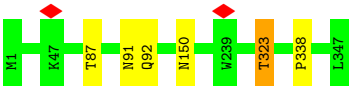




• Molecule 32: NADH-ubiquinone oxidoreductase chain 2

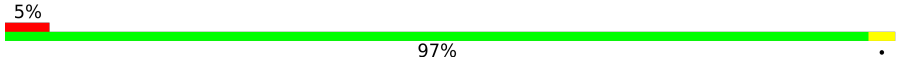
Chain i:

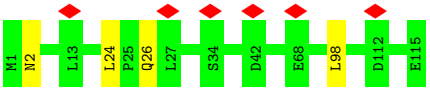




• Molecule 33: NADH-ubiquinone oxidoreductase chain 3

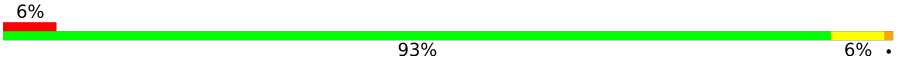
Chain j:

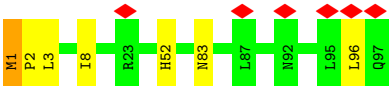




• Molecule 34: NADH-ubiquinone oxidoreductase chain 4L

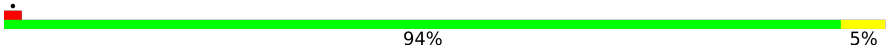
Chain k:

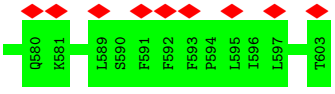




• Molecule 35: NADH-ubiquinone oxidoreductase chain 5

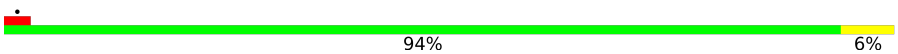
Chain l:

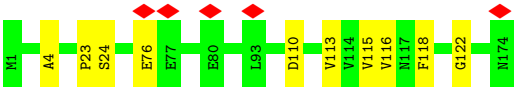




• Molecule 36: NADH-ubiquinone oxidoreductase chain 6

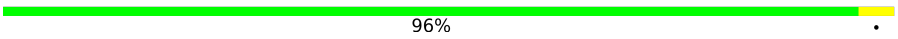
Chain m:





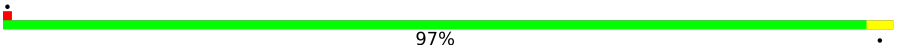
• Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

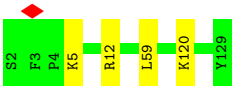
Chain n:



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

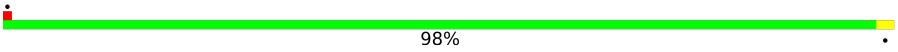
Chain o:

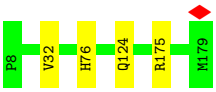




• Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9

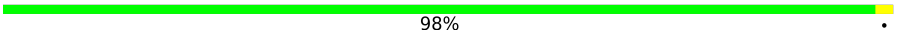
Chain p:





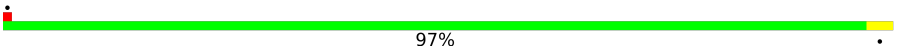
• Molecule 40: NADH-ubiquinone oxidoreductase chain 4

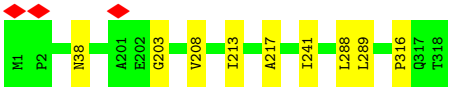
Chain r:



• Molecule 41: NADH-ubiquinone oxidoreductase chain 1

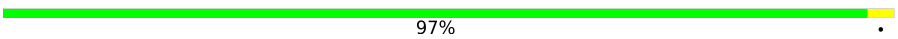
Chain s:





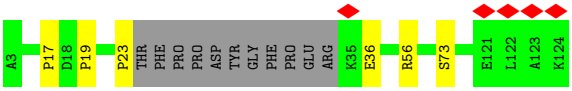
• Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8

Chain u:



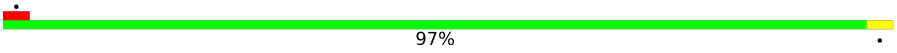
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7

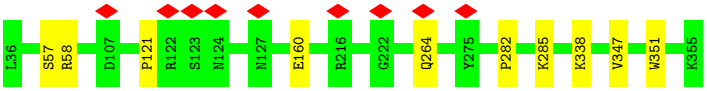
Chain v:



• Molecule 44: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

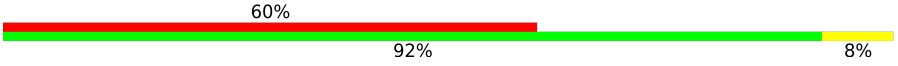
Chain w:

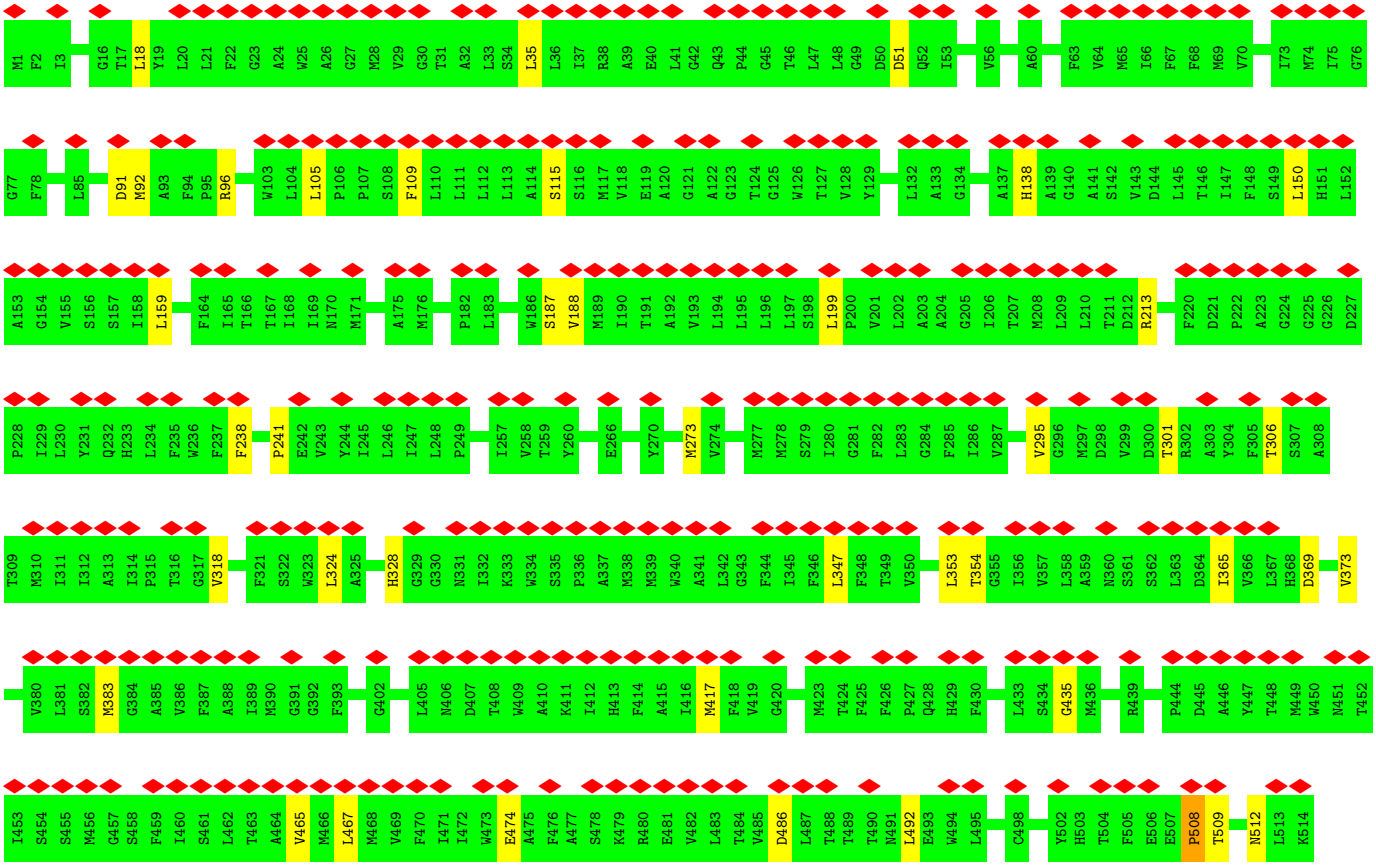




• Molecule 45: Cytochrome c oxidase subunit 1

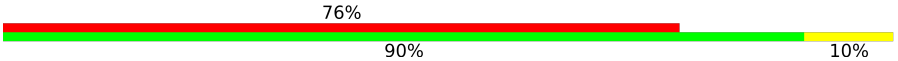
Chain x:

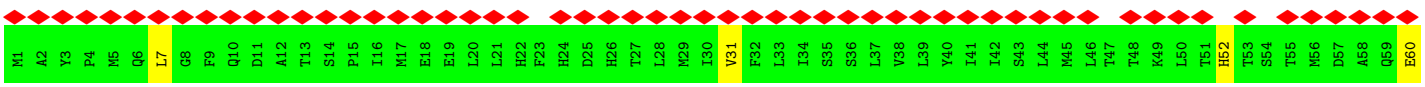




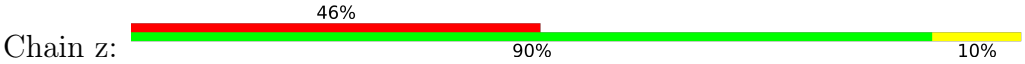
• Molecule 46: Cytochrome c oxidase subunit 2

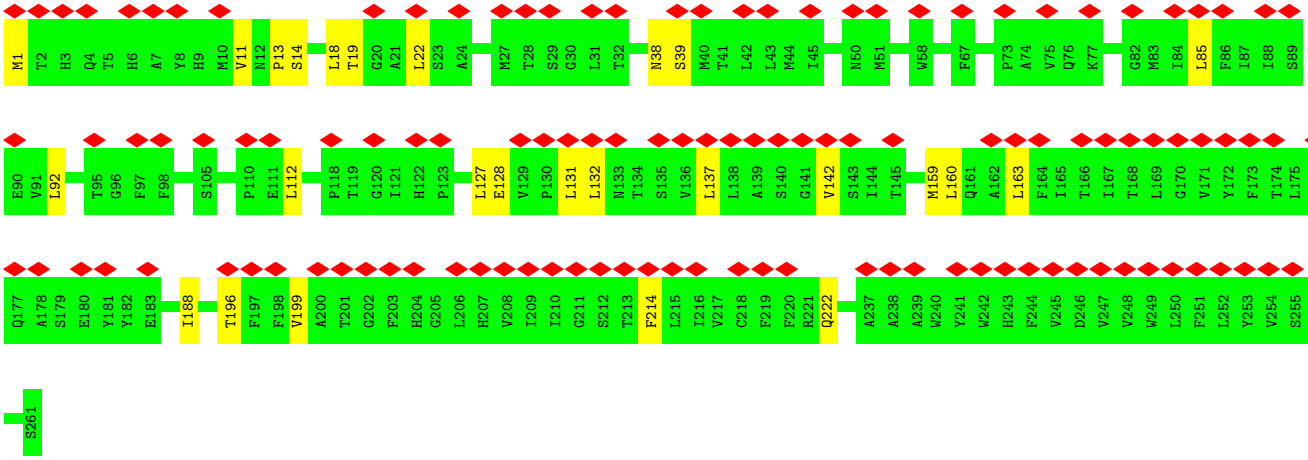
Chain y:



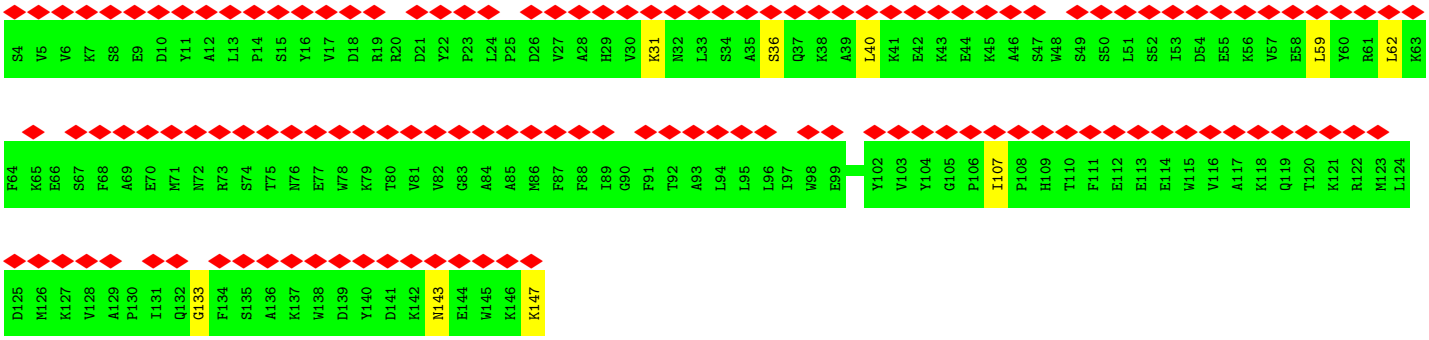


• Molecule 47: Cytochrome c oxidase subunit 3

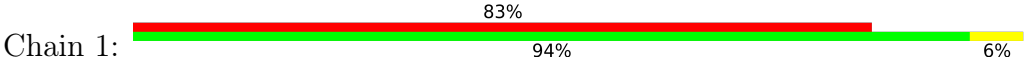


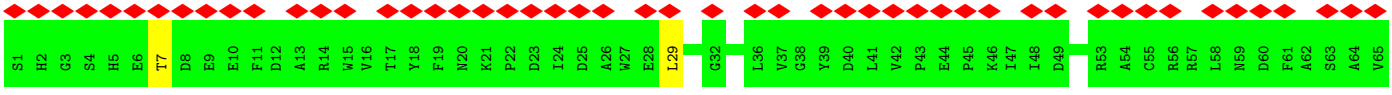


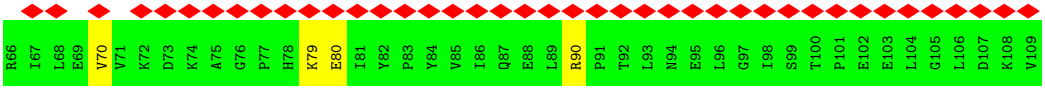
• Molecule 48: Cytochrome c oxidase subunit 4 isoform 1, mitochondrial



• Molecule 49: Cytochrome c oxidase subunit 5A, mitochondrial

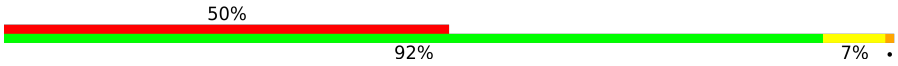


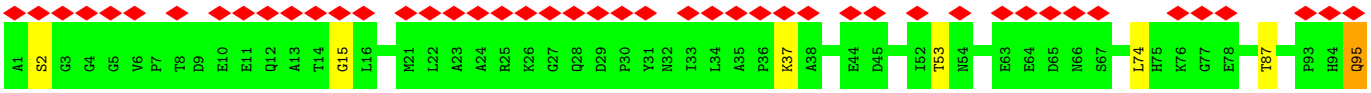




• Molecule 50: Cytochrome c oxidase subunit 5B, mitochondrial

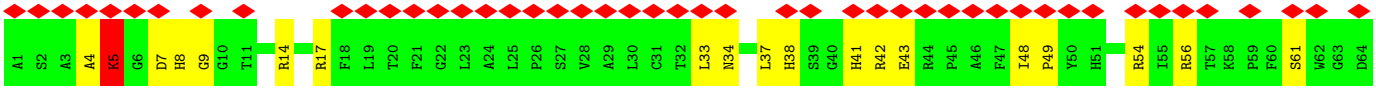
Chain 2:

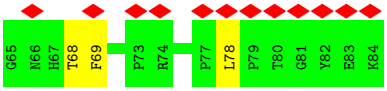




• Molecule 51: Cytochrome c oxidase subunit 6A2, mitochondrial

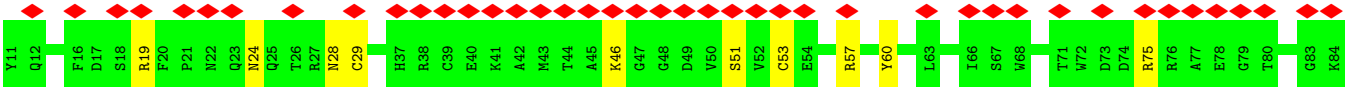
Chain 3:





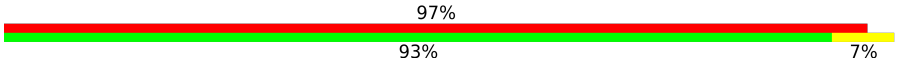
• Molecule 52: Cytochrome c oxidase subunit 6B1

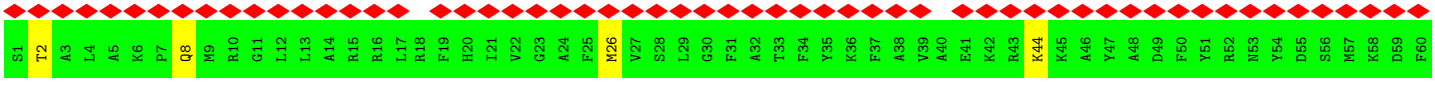
Chain 4:

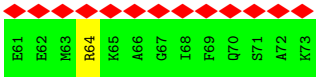


• Molecule 53: Cytochrome c oxidase subunit 6C

Chain 5:

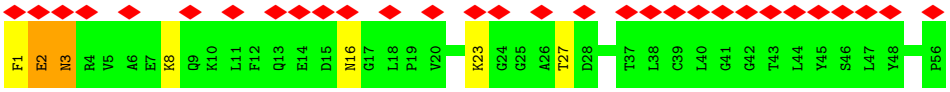






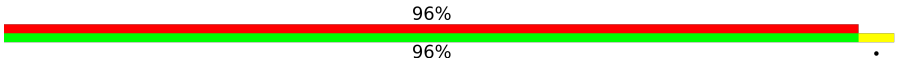
• Molecule 54: Cytochrome c oxidase subunit 7A1, mitochondrial

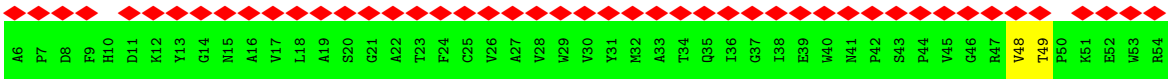
Chain 6:



• Molecule 55: Cytochrome c oxidase subunit 7B, mitochondrial

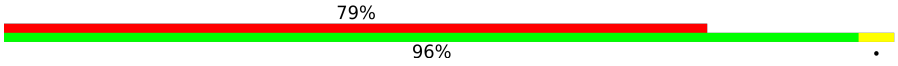
Chain 7:

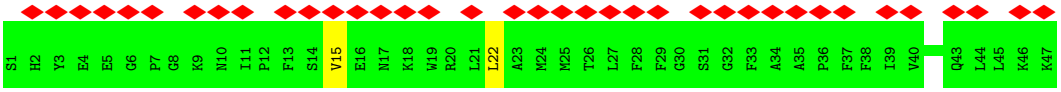




• Molecule 56: Cytochrome c oxidase subunit 7C, mitochondrial

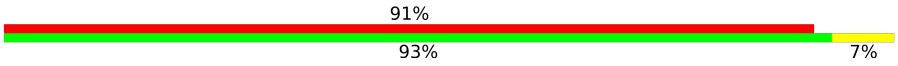
Chain 8:

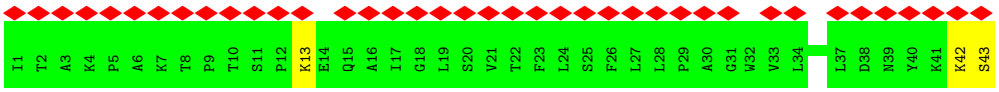




• Molecule 57: Cytochrome c oxidase subunit 8B, mitochondrial

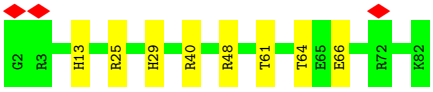
Chain 9:





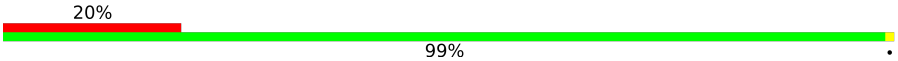
• Molecule 58: Cytochrome b-c1 complex subunit 8

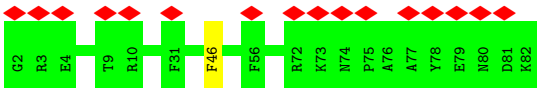
Chain AA:



• Molecule 58: Cytochrome b-c1 complex subunit 8

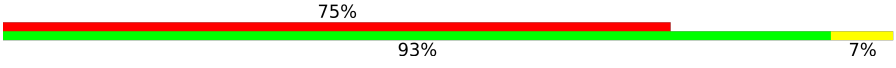
Chain AN:

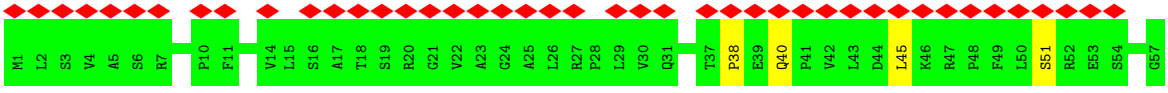




• Molecule 59: Cytochrome b-c1 complex subunit Rieske, mitochondrial

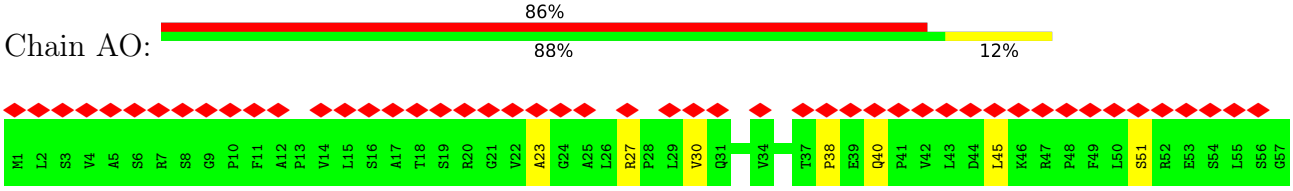
Chain AB:





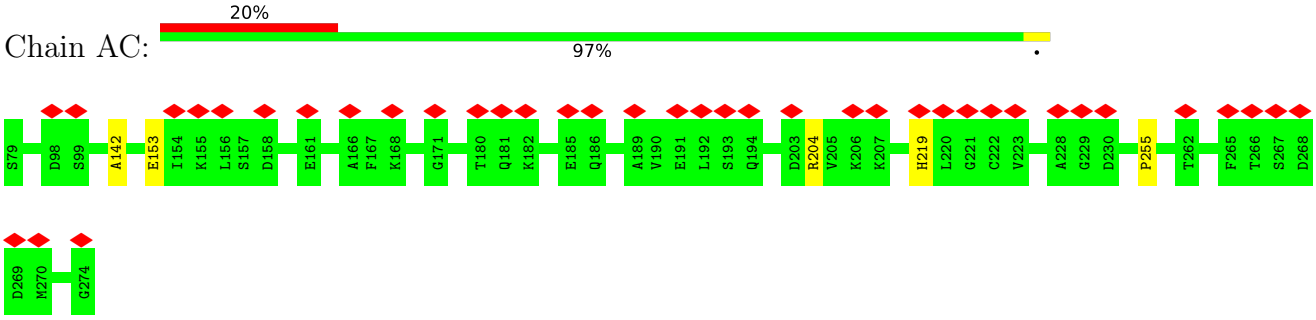
• Molecule 59: Cytochrome b-c1 complex subunit Rieske, mitochondrial

Chain AO:



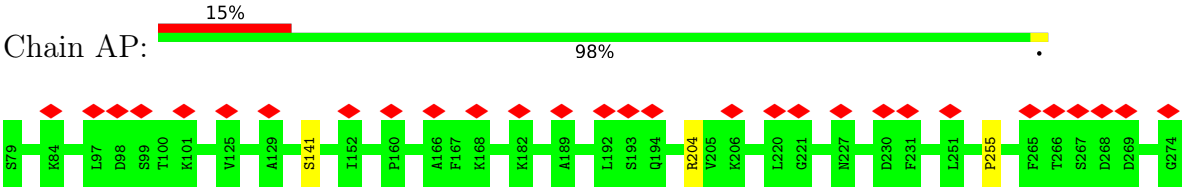
• Molecule 60: Cytochrome b-c1 complex subunit Rieske, mitochondrial

Chain AC:



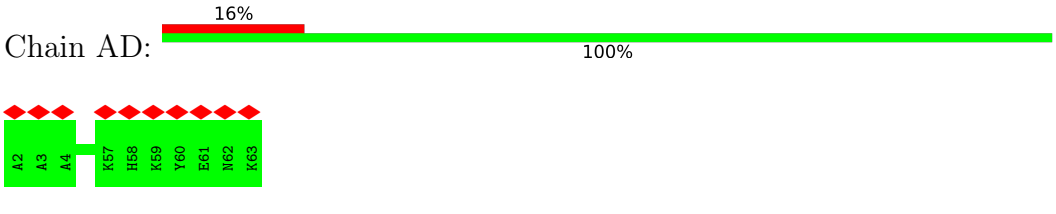
• Molecule 60: Cytochrome b-c1 complex subunit Rieske, mitochondrial

Chain AP:



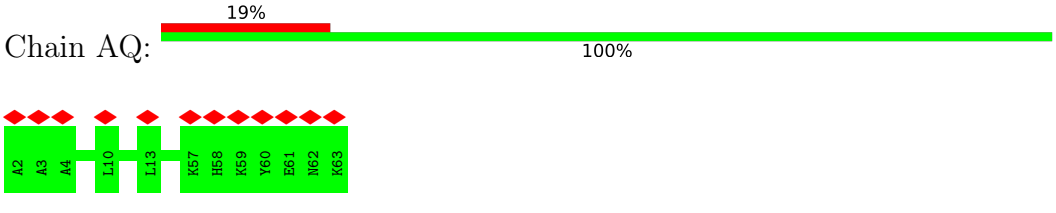
• Molecule 61: Cytochrome b-c1 complex subunit 9

Chain AD:



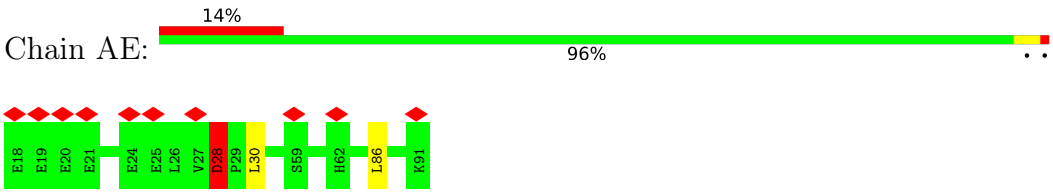
• Molecule 61: Cytochrome b-c1 complex subunit 9

Chain AQ:



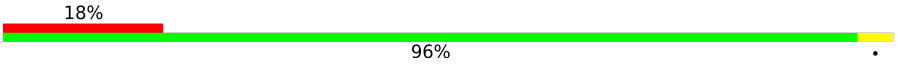
• Molecule 62: Cytochrome b-c1 complex subunit 6, mitochondrial

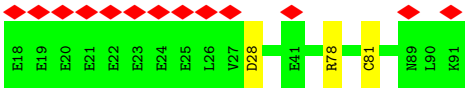
Chain AE:



• Molecule 62: Cytochrome b-c1 complex subunit 6, mitochondrial

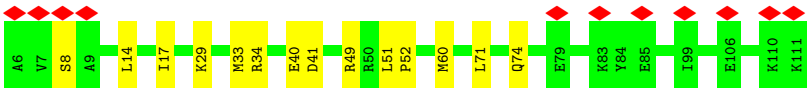
Chain AR:





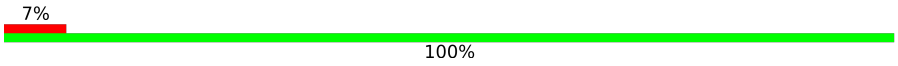
• Molecule 63: Cytochrome b-c1 complex subunit 7

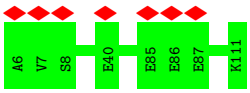
Chain AF:



• Molecule 63: Cytochrome b-c1 complex subunit 7

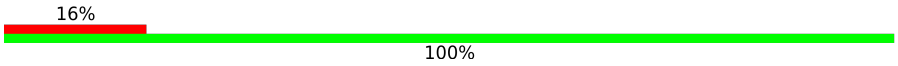
Chain AS:

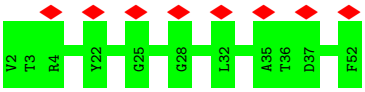




• Molecule 64: Cytochrome b-c1 complex subunit 10

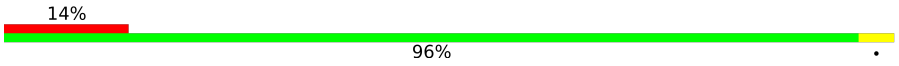
Chain AG:

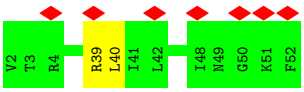




• Molecule 64: Cytochrome b-c1 complex subunit 10

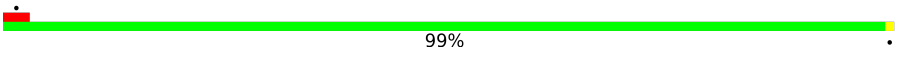
Chain AT:

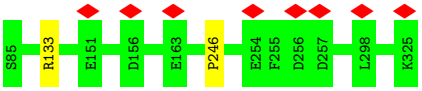




• Molecule 65: Cytochrome c1, heme protein, mitochondrial

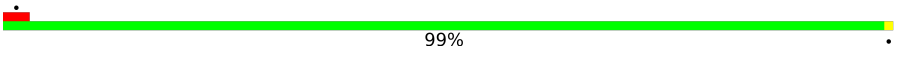
Chain AH:

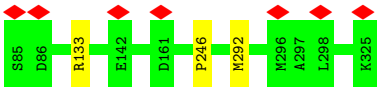




• Molecule 65: Cytochrome c1, heme protein, mitochondrial

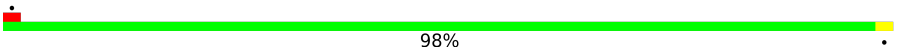
Chain AU:

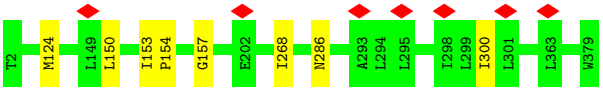




• Molecule 66: Cytochrome b

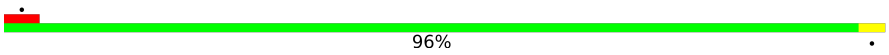
Chain AJ:

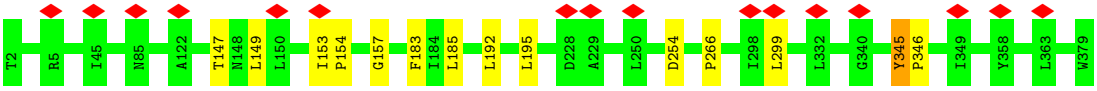




• Molecule 66: Cytochrome b

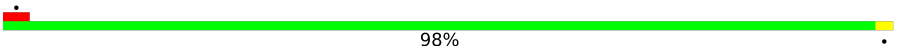
Chain AV:

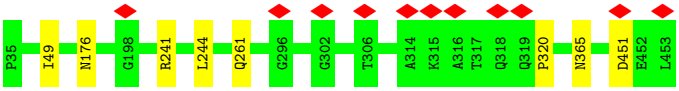




• Molecule 67: Cytochrome b-c1 complex subunit 2, mitochondrial

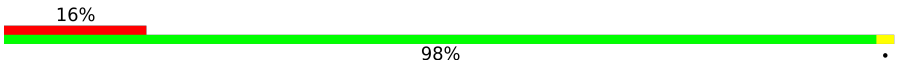
Chain AK:

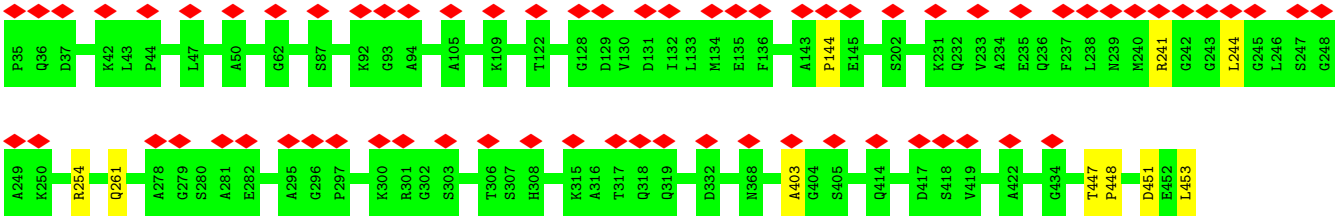




• Molecule 67: Cytochrome b-c1 complex subunit 2, mitochondrial

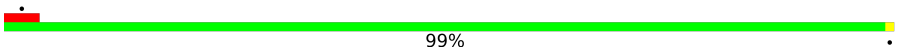
Chain AW:

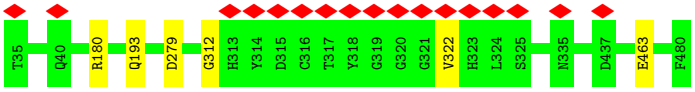




• Molecule 68: Cytochrome b-c1 complex subunit 1, mitochondrial

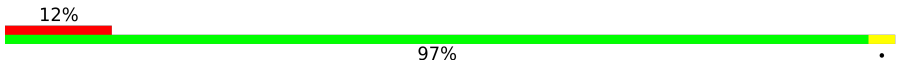
Chain AL:

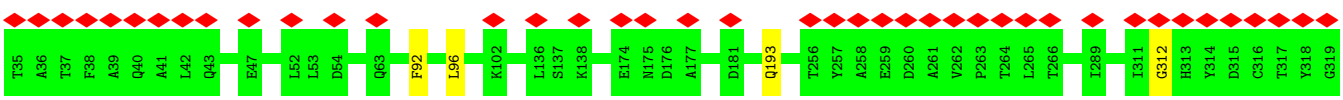


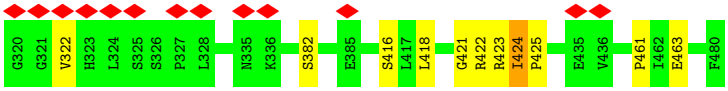


• Molecule 68: Cytochrome b-c1 complex subunit 1, mitochondrial

Chain AY:






G320
G321
V322
H323
L324
S325
S326
P327
L328
N335
K336
S382
E385
S416
L417
L418
G421
R422
R423
I424
P425
E435
V436
P461
I462
E463
F480

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	167761	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	1.25	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.385	Depositor
Minimum map value	-0.091	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.0354	Depositor
Map size (Å)	519.83997, 519.83997, 519.83997	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.083, 1.083, 1.083	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: HEA, SF4, ZN, CDL, PEE, MG, NDP, 8Q1, FMN, CU, PLX, HEM, HEC, FES

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.30	0/3398	0.49	0/4590
2	B	0.50	0/1452	0.57	0/1964
3	C	0.58	0/1280	0.57	0/1732
4	E	0.34	0/993	0.53	0/1335
5	F	0.28	0/682	0.53	0/922
6	G	0.33	0/684	0.53	0/926
6	X	0.57	0/698	0.61	0/942
7	H	0.34	0/941	0.59	0/1275
8	I	0.29	0/788	0.54	0/1066
9	J	0.35	0/2785	0.52	0/3771
10	K	0.27	0/282	0.47	0/381
11	L	0.33	0/987	0.53	0/1331
12	M	0.32	0/5362	0.53	0/7266
13	N	0.37	0/1236	0.55	0/1681
14	O	0.29	0/1682	0.51	0/2289
15	P	0.38	0/1780	0.59	0/2424
16	Q	0.43	0/3552	0.59	1/4815 (0.0%)
17	S	0.60	0/583	0.64	0/785
18	T	0.32	0/755	0.47	0/1017
19	U	0.52	0/670	0.63	0/920
20	V	0.51	0/1065	0.61	0/1450
21	W	0.57	0/1166	0.68	1/1579 (0.1%)
22	Y	0.52	0/559	0.73	3/763 (0.4%)
23	Z	0.45	0/669	0.53	0/899
24	a	0.68	0/1209	0.65	0/1639
25	b	0.59	1/1095 (0.1%)	0.69	4/1480 (0.3%)
26	c	0.59	0/1287	0.58	0/1761
27	d	0.63	0/1445	0.65	1/1945 (0.1%)
28	e	0.61	0/835	0.62	0/1134
29	f	0.48	0/418	0.58	0/566
30	g	0.64	0/1035	0.63	0/1398
31	h	0.62	0/884	0.65	0/1182

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	i	0.67	0/2808	0.77	2/3843 (0.1%)
33	j	0.55	0/945	0.69	1/1292 (0.1%)
34	k	0.68	1/751 (0.1%)	0.79	1/1019 (0.1%)
35	l	0.61	2/4840 (0.0%)	0.70	3/6611 (0.0%)
36	m	0.68	0/1346	0.67	0/1832
37	n	0.49	0/484	0.62	0/652
38	o	0.54	0/1093	0.61	0/1479
39	p	0.59	0/1549	0.59	0/2098
40	r	0.70	0/3723	0.76	2/5089 (0.0%)
41	s	0.62	0/2580	0.73	0/3539
42	u	0.57	0/1433	0.61	0/1937
43	v	0.49	0/934	0.67	3/1241 (0.2%)
44	w	0.44	0/2533	0.56	0/3440
45	x	0.60	0/4164	0.76	1/5688 (0.0%)
46	y	0.58	0/1868	0.80	0/2544
47	z	0.56	0/2211	0.69	0/3023
48	0	0.57	0/1229	0.65	1/1658 (0.1%)
49	1	0.50	0/898	0.66	0/1218
50	2	0.56	0/765	0.81	0/1038
51	3	0.55	0/699	0.73	1/950 (0.1%)
52	4	0.55	0/648	0.73	0/877
53	5	0.60	0/611	0.65	0/810
54	6	0.60	0/451	0.71	0/610
55	7	0.58	0/398	0.66	0/546
56	8	0.63	0/399	0.62	0/534
57	9	0.51	0/345	0.65	0/470
58	AA	0.31	0/715	0.48	0/964
58	AN	0.27	0/707	0.49	0/953
59	AB	0.23	0/421	0.60	1/574 (0.2%)
59	AO	0.25	0/417	0.61	1/569 (0.2%)
60	AC	0.24	0/1554	0.43	0/2104
60	AP	0.23	0/1554	0.42	0/2104
61	AD	0.26	0/521	0.42	0/699
61	AQ	0.27	0/521	0.43	0/699
62	AE	0.35	0/587	0.54	1/789 (0.1%)
62	AR	0.27	0/587	0.46	0/789
63	AF	0.42	1/942 (0.1%)	0.52	1/1263 (0.1%)
63	AS	0.27	0/942	0.44	0/1263
64	AG	0.27	0/442	0.48	0/608
64	AT	0.28	0/442	0.49	0/608
65	AH	0.26	0/1983	0.46	0/2691
65	AU	0.27	0/1983	0.45	0/2691
66	AJ	0.31	1/3108 (0.0%)	0.52	1/4254 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
66	AV	0.34	2/3108 (0.1%)	0.54	2/4254 (0.0%)
67	AK	0.27	0/3217	0.49	0/4361
67	AW	0.29	1/3220 (0.0%)	0.48	1/4365 (0.0%)
68	AL	0.27	0/3527	0.47	0/4788
68	AY	0.29	1/3527 (0.0%)	0.50	2/4788 (0.0%)
All	All	0.47	10/115987 (0.0%)	0.60	35/157444 (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
44	w	0	1

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
67	AW	448	PRO	N-CD	5.34	1.55	1.47
66	AJ	154	PRO	N-CD	5.22	1.55	1.47
66	AV	154	PRO	N-CD	5.22	1.55	1.47
34	k	2	PRO	N-CD	5.17	1.55	1.47
25	b	118	PRO	N-CD	5.17	1.55	1.47

The worst 5 of 35 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
32	i	323	THR	C-N-CD	-7.38	104.37	120.60
21	W	31	SER	N-CA-C	-7.00	92.09	111.00
22	Y	92	TRP	N-CA-C	-6.99	92.12	111.00
27	d	2	PRO	N-CA-CB	6.77	111.43	103.30
22	Y	87	PRO	CA-N-CD	-6.56	102.31	111.50

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
44	w	338	LYS	Peptide

5.2 Too-close contacts

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	429/431 (100%)	396 (92%)	24 (6%)	9 (2%)	7 39
2	B	174/176 (99%)	163 (94%)	10 (6%)	1 (1%)	25 63
3	C	154/156 (99%)	136 (88%)	13 (8%)	5 (3%)	4 32
4	E	111/113 (98%)	101 (91%)	8 (7%)	2 (2%)	8 42
5	F	81/83 (98%)	74 (91%)	7 (9%)	0	100 100
6	G	83/85 (98%)	78 (94%)	3 (4%)	2 (2%)	6 37
6	X	83/85 (98%)	73 (88%)	6 (7%)	4 (5%)	2 24
7	H	110/112 (98%)	100 (91%)	5 (4%)	5 (4%)	2 25
8	I	91/110 (83%)	79 (87%)	6 (7%)	6 (7%)	1 19
9	J	335/337 (99%)	314 (94%)	14 (4%)	7 (2%)	7 39
10	K	31/33 (94%)	27 (87%)	1 (3%)	3 (10%)	0 11
11	L	116/118 (98%)	104 (90%)	8 (7%)	4 (3%)	3 31
12	M	685/687 (100%)	608 (89%)	54 (8%)	23 (3%)	3 31
13	N	141/143 (99%)	119 (84%)	15 (11%)	7 (5%)	2 23
14	O	210/212 (99%)	188 (90%)	15 (7%)	7 (3%)	4 31
15	P	206/208 (99%)	173 (84%)	22 (11%)	11 (5%)	2 22
16	Q	428/430 (100%)	398 (93%)	23 (5%)	7 (2%)	9 44
17	S	68/70 (97%)	61 (90%)	5 (7%)	2 (3%)	4 33
18	T	93/95 (98%)	87 (94%)	2 (2%)	4 (4%)	2 26
19	U	81/83 (98%)	76 (94%)	4 (5%)	1 (1%)	13 49
20	V	138/140 (99%)	129 (94%)	6 (4%)	3 (2%)	6 38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
21	W	136/138 (99%)	127 (93%)	4 (3%)	5 (4%)	3 29
22	Y	57/59 (97%)	50 (88%)	1 (2%)	6 (10%)	0 9
23	Z	78/80 (98%)	73 (94%)	5 (6%)	0	100 100
24	a	136/138 (99%)	121 (89%)	12 (9%)	3 (2%)	6 38
25	b	122/124 (98%)	107 (88%)	10 (8%)	5 (4%)	3 27
26	c	151/153 (99%)	129 (85%)	15 (10%)	7 (5%)	2 25
27	d	169/171 (99%)	165 (98%)	3 (2%)	1 (1%)	25 63
28	e	95/97 (98%)	83 (87%)	9 (10%)	3 (3%)	4 32
29	f	45/47 (96%)	43 (96%)	1 (2%)	1 (2%)	6 38
30	g	117/119 (98%)	105 (90%)	6 (5%)	6 (5%)	2 23
31	h	102/104 (98%)	86 (84%)	10 (10%)	6 (6%)	1 20
32	i	345/347 (99%)	324 (94%)	15 (4%)	6 (2%)	9 43
33	j	113/115 (98%)	103 (91%)	7 (6%)	3 (3%)	5 35
34	k	95/97 (98%)	88 (93%)	4 (4%)	3 (3%)	4 32
35	l	601/603 (100%)	553 (92%)	38 (6%)	10 (2%)	9 43
36	m	172/174 (99%)	150 (87%)	12 (7%)	10 (6%)	1 21
37	n	54/56 (96%)	50 (93%)	2 (4%)	2 (4%)	3 29
38	o	126/128 (98%)	113 (90%)	9 (7%)	4 (3%)	4 32
39	p	170/172 (99%)	158 (93%)	9 (5%)	3 (2%)	8 42
40	r	457/459 (100%)	420 (92%)	28 (6%)	9 (2%)	7 40
41	s	316/318 (99%)	285 (90%)	22 (7%)	9 (3%)	5 34
42	u	167/169 (99%)	152 (91%)	10 (6%)	5 (3%)	4 33
43	v	107/122 (88%)	90 (84%)	14 (13%)	3 (3%)	5 34
44	w	318/320 (99%)	281 (88%)	28 (9%)	9 (3%)	5 34
45	x	512/514 (100%)	479 (94%)	29 (6%)	4 (1%)	19 57
46	y	225/227 (99%)	203 (90%)	19 (8%)	3 (1%)	12 48
47	z	259/261 (99%)	249 (96%)	10 (4%)	0	100 100
48	0	142/144 (99%)	135 (95%)	7 (5%)	0	100 100
49	1	107/109 (98%)	104 (97%)	3 (3%)	0	100 100
50	2	96/98 (98%)	86 (90%)	6 (6%)	4 (4%)	3 26
51	3	82/84 (98%)	67 (82%)	10 (12%)	5 (6%)	1 20

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
52	4	73/75 (97%)	64 (88%)	8 (11%)	1 (1%)	11 46
53	5	71/73 (97%)	65 (92%)	6 (8%)	0	100 100
54	6	54/56 (96%)	47 (87%)	5 (9%)	2 (4%)	3 29
55	7	47/49 (96%)	41 (87%)	6 (13%)	0	100 100
56	8	45/47 (96%)	42 (93%)	3 (7%)	0	100 100
57	9	41/43 (95%)	39 (95%)	2 (5%)	0	100 100
58	AA	79/81 (98%)	71 (90%)	6 (8%)	2 (2%)	5 36
58	AN	79/81 (98%)	74 (94%)	4 (5%)	1 (1%)	12 48
59	AB	55/57 (96%)	41 (74%)	11 (20%)	3 (6%)	2 22
59	AO	55/57 (96%)	43 (78%)	6 (11%)	6 (11%)	0 8
60	AC	194/196 (99%)	179 (92%)	10 (5%)	5 (3%)	5 35
60	AP	194/196 (99%)	178 (92%)	13 (7%)	3 (2%)	10 45
61	AD	60/62 (97%)	57 (95%)	3 (5%)	0	100 100
61	AQ	60/62 (97%)	55 (92%)	5 (8%)	0	100 100
62	AE	72/74 (97%)	65 (90%)	5 (7%)	2 (3%)	5 34
62	AR	72/74 (97%)	69 (96%)	2 (3%)	1 (1%)	11 46
63	AF	104/106 (98%)	100 (96%)	3 (3%)	1 (1%)	15 52
63	AS	104/106 (98%)	102 (98%)	2 (2%)	0	100 100
64	AG	49/51 (96%)	48 (98%)	1 (2%)	0	100 100
64	AT	49/51 (96%)	47 (96%)	2 (4%)	0	100 100
65	AH	239/241 (99%)	225 (94%)	12 (5%)	2 (1%)	19 57
65	AU	239/241 (99%)	230 (96%)	7 (3%)	2 (1%)	19 57
66	AJ	376/378 (100%)	363 (96%)	10 (3%)	3 (1%)	19 57
66	AV	376/378 (100%)	359 (96%)	14 (4%)	3 (1%)	19 57
67	AK	417/419 (100%)	390 (94%)	22 (5%)	5 (1%)	13 49
67	AW	417/419 (100%)	397 (95%)	15 (4%)	5 (1%)	13 49
68	AL	444/446 (100%)	405 (91%)	33 (7%)	6 (1%)	11 46
68	AY	444/446 (100%)	413 (93%)	24 (5%)	7 (2%)	9 44
All	All	14029/14219 (99%)	12872 (92%)	849 (6%)	308 (2%)	10 38

5 of 308 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	63	TYR
1	A	73	PRO
1	A	379	CYS
2	B	62	THR
12	M	37	ASP

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	346/346 (100%)	346 (100%)	0	100 100
2	B	151/151 (100%)	151 (100%)	0	100 100
3	C	132/132 (100%)	132 (100%)	0	100 100
4	E	106/106 (100%)	105 (99%)	1 (1%)	78 87
5	F	74/74 (100%)	74 (100%)	0	100 100
6	G	74/79 (94%)	74 (100%)	0	100 100
6	X	78/79 (99%)	78 (100%)	0	100 100
7	H	100/100 (100%)	100 (100%)	0	100 100
8	I	87/96 (91%)	87 (100%)	0	100 100
9	J	292/292 (100%)	288 (99%)	4 (1%)	67 81
10	K	32/32 (100%)	32 (100%)	0	100 100
11	L	107/107 (100%)	107 (100%)	0	100 100
12	M	576/577 (100%)	574 (100%)	2 (0%)	92 95
13	N	129/129 (100%)	129 (100%)	0	100 100
14	O	181/181 (100%)	181 (100%)	0	100 100
15	P	190/190 (100%)	190 (100%)	0	100 100
16	Q	371/371 (100%)	369 (100%)	2 (0%)	88 93
17	S	59/59 (100%)	59 (100%)	0	100 100
18	T	79/79 (100%)	79 (100%)	0	100 100
19	U	72/72 (100%)	72 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
20	V	102/102 (100%)	102 (100%)	0	100 100
21	W	119/119 (100%)	119 (100%)	0	100 100
22	Y	57/57 (100%)	49 (86%)	8 (14%)	3 21
23	Z	62/63 (98%)	62 (100%)	0	100 100
24	a	124/124 (100%)	122 (98%)	2 (2%)	62 79
25	b	118/118 (100%)	114 (97%)	4 (3%)	37 62
26	c	124/137 (90%)	124 (100%)	0	100 100
27	d	145/154 (94%)	137 (94%)	8 (6%)	21 51
28	e	90/90 (100%)	90 (100%)	0	100 100
29	f	43/43 (100%)	43 (100%)	0	100 100
30	g	105/105 (100%)	105 (100%)	0	100 100
31	h	90/90 (100%)	90 (100%)	0	100 100
32	i	314/314 (100%)	314 (100%)	0	100 100
33	j	102/103 (99%)	102 (100%)	0	100 100
34	k	85/85 (100%)	82 (96%)	3 (4%)	36 62
35	l	531/532 (100%)	510 (96%)	21 (4%)	31 58
36	m	137/137 (100%)	137 (100%)	0	100 100
37	n	53/53 (100%)	53 (100%)	0	100 100
38	o	114/114 (100%)	114 (100%)	0	100 100
39	p	157/157 (100%)	156 (99%)	1 (1%)	86 91
40	r	416/416 (100%)	416 (100%)	0	100 100
41	s	278/278 (100%)	278 (100%)	0	100 100
42	u	153/153 (100%)	153 (100%)	0	100 100
43	v	89/111 (80%)	89 (100%)	0	100 100
44	w	249/288 (86%)	249 (100%)	0	100 100
45	x	427/427 (100%)	389 (91%)	38 (9%)	9 36
46	y	211/211 (100%)	191 (90%)	20 (10%)	8 33
47	z	226/226 (100%)	199 (88%)	27 (12%)	5 25
48	0	128/128 (100%)	120 (94%)	8 (6%)	18 47
49	1	95/95 (100%)	89 (94%)	6 (6%)	18 47
50	2	81/81 (100%)	76 (94%)	5 (6%)	18 48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
51	3	68/68 (100%)	50 (74%)	18 (26%)	0 4
52	4	67/67 (100%)	58 (87%)	9 (13%)	4 22
53	5	58/58 (100%)	53 (91%)	5 (9%)	10 38
54	6	47/47 (100%)	40 (85%)	7 (15%)	3 18
55	7	39/39 (100%)	37 (95%)	2 (5%)	24 53
56	8	40/40 (100%)	38 (95%)	2 (5%)	24 53
57	9	37/37 (100%)	34 (92%)	3 (8%)	11 40
58	AA	74/74 (100%)	68 (92%)	6 (8%)	11 40
58	AN	73/74 (99%)	73 (100%)	0	100 100
59	AB	46/46 (100%)	46 (100%)	0	100 100
59	AO	45/46 (98%)	45 (100%)	0	100 100
60	AC	166/166 (100%)	166 (100%)	0	100 100
60	AP	166/166 (100%)	166 (100%)	0	100 100
61	AD	52/52 (100%)	52 (100%)	0	100 100
61	AQ	52/52 (100%)	52 (100%)	0	100 100
62	AE	61/71 (86%)	59 (97%)	2 (3%)	38 63
62	AR	61/71 (86%)	59 (97%)	2 (3%)	38 63
63	AF	95/95 (100%)	84 (88%)	11 (12%)	5 26
63	AS	95/95 (100%)	95 (100%)	0	100 100
64	AG	42/42 (100%)	42 (100%)	0	100 100
64	AT	42/42 (100%)	40 (95%)	2 (5%)	25 54
65	AH	207/207 (100%)	207 (100%)	0	100 100
65	AU	207/207 (100%)	206 (100%)	1 (0%)	88 93
66	AJ	330/330 (100%)	327 (99%)	3 (1%)	78 87
66	AV	330/330 (100%)	322 (98%)	8 (2%)	49 69
67	AK	334/335 (100%)	331 (99%)	3 (1%)	78 87
67	AW	335/335 (100%)	332 (99%)	3 (1%)	78 87
68	AL	367/367 (100%)	367 (100%)	0	100 100
68	AY	367/367 (100%)	361 (98%)	6 (2%)	62 79
All	All	12164/12289 (99%)	11911 (98%)	253 (2%)	56 73

5 of 253 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
47	z	11	VAL
63	AF	49	ARG
48	0	40	LEU
63	AF	40	GLU
66	AV	147	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 234 such sidechains are listed below:

Mol	Chain	Res	Type
37	n	40	ASN
67	AW	212	HIS
45	x	11	ASN
67	AW	155	GLN
68	AL	87	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)

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 63 ligands modelled in this entry, 5 are monoatomic - leaving 58 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	$\#\|Z\|>2$
74	FES	M	803	-	0,4,4	-	-	-		
75	CDL	n	101	-	63,63,99	1.24	5 (7%)	69,75,111	1.07	4 (5%)
75	CDL	AJ	404	-	63,63,99	1.24	5 (7%)	69,75,111	1.03	4 (5%)
75	CDL	AY	501	-	63,63,99	1.24	5 (7%)	69,75,111	1.01	4 (5%)
69	SF4	M	802	12	0,12,12	-	-	-		
71	PLX	g	203	-	51,51,51	0.78	1 (1%)	55,59,59	0.58	1 (1%)
74	FES	AC	301	60	0,4,4	-	-	-		
82	HEM	AV	401	66	41,50,50	1.97	5 (12%)	45,82,82	1.55	5 (11%)
69	SF4	A	501	1	0,12,12	-	-	-		
76	PEE	AU	401	-	40,40,50	1.46	4 (10%)	43,45,55	0.95	3 (6%)
75	CDL	AG	101	-	63,63,99	1.15	4 (6%)	69,75,111	1.16	6 (8%)
69	SF4	C	301	3	0,12,12	-	-	-		
76	PEE	AV	403	-	48,48,50	1.34	4 (8%)	51,53,55	1.04	2 (3%)
75	CDL	AN	101	-	63,63,99	1.24	5 (7%)	69,75,111	1.02	4 (5%)
71	PLX	U	101	-	51,51,51	0.74	1 (1%)	55,59,59	0.72	2 (3%)
76	PEE	V	202	-	50,50,50	1.16	6 (12%)	53,55,55	0.91	2 (3%)
69	SF4	B	301	2	0,12,12	-	-	-		
76	PEE	AH	401	-	48,48,50	1.35	4 (8%)	51,53,55	0.95	2 (3%)
76	PEE	l	702	-	50,50,50	1.16	6 (12%)	53,55,55	0.99	2 (3%)
74	FES	O	301	14	0,4,4	-	-	-		
74	FES	AP	301	60	0,4,4	-	-	-		
79	HEA	x	604	45	57,67,67	1.47	6 (10%)	61,103,103	1.47	12 (19%)
71	PLX	g	201	-	51,51,51	0.82	1 (1%)	55,59,59	0.69	1 (1%)
76	PEE	AY	502	-	48,48,50	1.39	4 (8%)	51,53,55	0.96	2 (3%)
71	PLX	r	502	-	51,51,51	0.64	0	55,59,59	0.67	1 (1%)
75	CDL	AJ	405	-	63,63,99	1.13	4 (6%)	69,75,111	1.22	5 (7%)
75	CDL	l	704	-	63,63,99	1.26	5 (7%)	69,75,111	1.01	4 (5%)
71	PLX	V	203	-	51,51,51	0.78	1 (1%)	55,59,59	0.60	1 (1%)
72	8Q1	E	201	-	31,34,34	1.64	6 (19%)	40,43,43	1.39	7 (17%)
75	CDL	AU	403	-	63,63,99	1.24	6 (9%)	69,75,111	1.04	4 (5%)
75	CDL	l	703	-	63,63,99	1.21	5 (7%)	69,75,111	1.07	4 (5%)
71	PLX	AT	101	-	51,51,51	0.75	1 (1%)	55,59,59	0.60	1 (1%)
76	PEE	AJ	403	-	48,48,50	1.33	4 (8%)	51,53,55	0.99	2 (3%)
76	PEE	l	701	-	48,48,50	1.34	4 (8%)	51,53,55	0.96	2 (3%)
75	CDL	AL	502	-	63,63,99	1.24	5 (7%)	69,75,111	1.05	4 (5%)
79	HEA	x	603	45	57,67,67	1.23	6 (10%)	61,103,103	1.47	10 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
82	HEM	AJ	401	66	41,50,50	1.92	6 (14%)	45,82,82	1.60	5 (11%)
82	HEM	AJ	402	66	41,50,50	1.89	6 (14%)	45,82,82	1.57	9 (20%)
81	HEC	AU	402	65	32,50,50	2.28	3 (9%)	24,82,82	1.40	2 (8%)
76	PEE	W	201	-	50,50,50	1.14	6 (12%)	53,55,55	0.97	2 (3%)
75	CDL	AH	403	-	63,63,99	1.25	5 (7%)	69,75,111	1.03	4 (5%)
81	HEC	AH	402	65	32,50,50	2.22	3 (9%)	24,82,82	1.35	1 (4%)
71	PLX	B	303	-	51,51,51	0.77	1 (1%)	55,59,59	0.68	1 (1%)
69	SF4	B	302	2	0,12,12	-	-	-		
72	8Q1	p	201	-	31,34,34	1.67	5 (16%)	40,43,43	1.57	5 (12%)
82	HEM	AV	402	66	41,50,50	1.90	6 (14%)	45,82,82	1.60	8 (17%)
71	PLX	g	202	-	51,51,51	0.74	1 (1%)	55,59,59	0.61	1 (1%)
75	CDL	i	401	-	63,63,99	1.21	5 (7%)	69,75,111	1.04	5 (7%)
70	FMN	A	502	-	33,33,33	1.39	6 (18%)	48,50,50	1.34	8 (16%)
71	PLX	r	501	-	51,51,51	0.74	1 (1%)	55,59,59	0.65	1 (1%)
75	CDL	AA	101	-	63,63,99	1.24	5 (7%)	69,75,111	1.07	4 (5%)
71	PLX	b	201	-	51,51,51	0.57	0	55,59,59	0.64	0
75	CDL	V	201	-	61,61,99	1.21	5 (8%)	64,71,111	0.94	3 (4%)
71	PLX	AL	501	-	51,51,51	0.77	1 (1%)	55,59,59	0.63	1 (1%)
73	NDP	J	401	-	45,52,52	0.96	2 (4%)	53,80,80	1.32	4 (7%)
69	SF4	M	801	12	0,12,12	-	-	-		
71	PLX	AQ	101	-	51,51,51	0.77	1 (1%)	55,59,59	0.61	2 (3%)
76	PEE	AL	503	-	48,48,50	1.38	4 (8%)	51,53,55	0.92	2 (3%)

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
74	FES	M	803	-	-	-	0/1/1/1
75	CDL	n	101	-	-	33/74/74/110	-
75	CDL	AJ	404	-	-	33/74/74/110	-
75	CDL	AY	501	-	-	36/74/74/110	-
69	SF4	M	802	12	-	-	0/6/5/5
71	PLX	g	203	-	-	24/55/55/55	-
74	FES	AC	301	60	-	-	0/1/1/1
82	HEM	AV	401	66	-	3/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
69	SF4	A	501	1	-	-	0/6/5/5
76	PEE	AU	401	-	-	17/44/44/54	-
75	CDL	AG	101	-	-	38/74/74/110	-
69	SF4	C	301	3	-	-	0/6/5/5
76	PEE	AV	403	-	-	30/52/52/54	-
75	CDL	AN	101	-	-	40/74/74/110	-
71	PLX	U	101	-	-	22/55/55/55	-
76	PEE	V	202	-	-	27/54/54/54	-
76	PEE	AH	401	-	-	27/52/52/54	-
69	SF4	B	301	2	-	-	0/6/5/5
76	PEE	l	702	-	-	27/54/54/54	-
74	FES	O	301	14	-	-	0/1/1/1
74	FES	AP	301	60	-	-	0/1/1/1
79	HEA	x	604	45	3/3/7/16	5/32/76/76	-
71	PLX	g	201	-	-	25/55/55/55	-
76	PEE	AY	502	-	-	20/52/52/54	-
71	PLX	r	502	-	-	36/55/55/55	-
75	CDL	AJ	405	-	-	28/74/74/110	-
75	CDL	l	704	-	-	44/74/74/110	-
71	PLX	V	203	-	-	26/55/55/55	-
72	8Q1	E	201	-	-	18/41/41/41	-
75	CDL	AU	403	-	-	48/74/74/110	-
75	CDL	l	703	-	-	38/74/74/110	-
71	PLX	AT	101	-	-	23/55/55/55	-
76	PEE	AJ	403	-	-	20/52/52/54	-
76	PEE	l	701	-	-	32/52/52/54	-
79	HEA	x	603	45	3/3/7/16	7/32/76/76	-
75	CDL	AL	502	-	-	43/74/74/110	-
82	HEM	AJ	401	66	-	1/12/54/54	-
82	HEM	AJ	402	66	-	2/12/54/54	-
81	HEC	AU	402	65	-	0/10/54/54	-
76	PEE	W	201	-	-	32/54/54/54	-
75	CDL	AH	403	-	-	42/74/74/110	-
81	HEC	AH	402	65	-	2/10/54/54	-
71	PLX	B	303	-	-	21/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
72	8Q1	p	201	-	-	19/41/41/41	-
82	HEM	AV	402	66	-	4/12/54/54	-
69	SF4	B	302	2	-	-	0/6/5/5
71	PLX	g	202	-	-	25/55/55/55	-
75	CDL	i	401	-	-	39/74/74/110	-
70	FMN	A	502	-	-	7/18/18/18	0/3/3/3
71	PLX	r	501	-	-	28/55/55/55	-
75	CDL	AA	101	-	-	35/74/74/110	-
71	PLX	b	201	-	-	27/55/55/55	-
75	CDL	V	201	-	-	41/69/69/110	-
71	PLX	AL	501	-	-	23/55/55/55	-
73	NDP	J	401	-	-	15/30/77/77	0/5/5/5
69	SF4	M	801	12	-	-	0/6/5/5
71	PLX	AQ	101	-	-	25/55/55/55	-
76	PEE	AL	503	-	-	22/52/52/54	-

The worst 5 of 185 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	AJ	401	HEM	C3D-C2D	7.85	1.53	1.36
82	AV	402	HEM	C3D-C2D	7.85	1.53	1.36
82	AJ	402	HEM	C3D-C2D	7.80	1.53	1.36
82	AV	401	HEM	C3D-C2D	7.75	1.53	1.36
81	AU	402	HEC	C3C-C2C	-6.96	1.33	1.40

The worst 5 of 169 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
82	AV	402	HEM	C4D-ND-C1D	6.20	111.47	105.07
82	AJ	401	HEM	C4D-ND-C1D	6.12	111.39	105.07
82	AJ	402	HEM	C4D-ND-C1D	6.02	111.30	105.07
72	p	201	8Q1	C6-C1-S44	6.02	120.47	113.46
82	AV	401	HEM	C4D-ND-C1D	5.32	110.57	105.07

5 of 6 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
79	x	603	HEA	NB
79	x	603	HEA	NA

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Mol	Chain	Res	Type	Atom
79	x	603	HEA	ND
79	x	604	HEA	NB
79	x	604	HEA	NA

5 of 1180 torsion outliers are listed below:

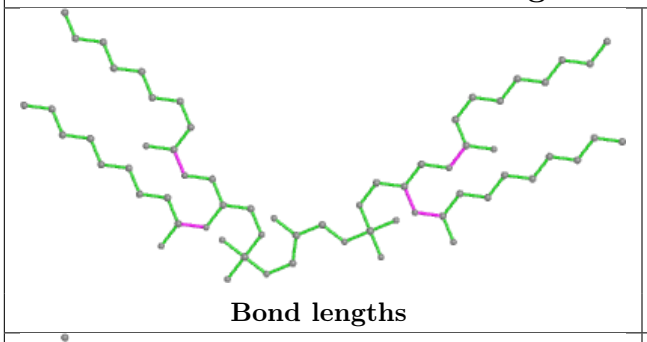
Mol	Chain	Res	Type	Atoms
70	A	502	FMN	C1'-C2'-C3'-O3'
70	A	502	FMN	C1'-C2'-C3'-C4'
70	A	502	FMN	C3'-C4'-C5'-O5'
70	A	502	FMN	O4'-C4'-C5'-O5'
71	B	303	PLX	C2-O1-P1-O2

There are no ring outliers.

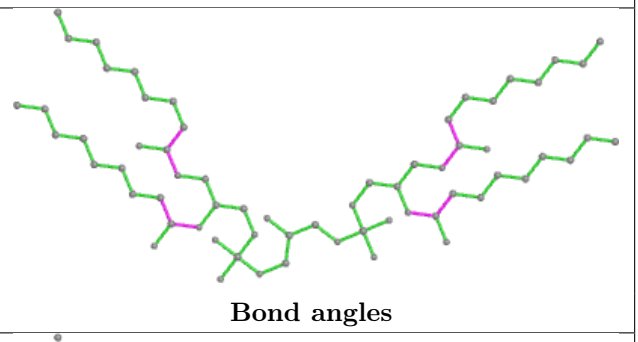
No monomer is involved in short contacts.

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

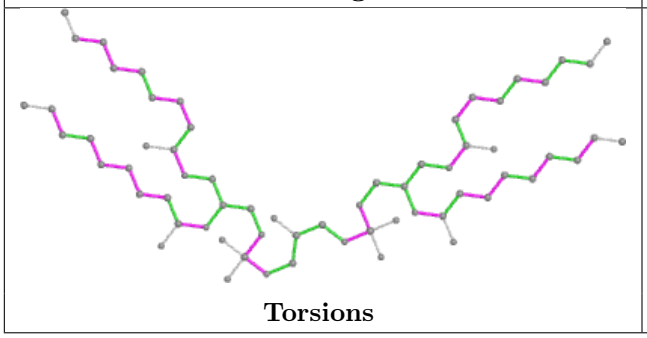
Ligand CDL n 101



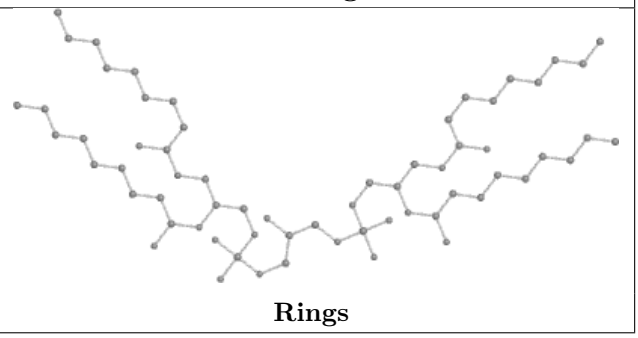
Bond lengths



Bond angles

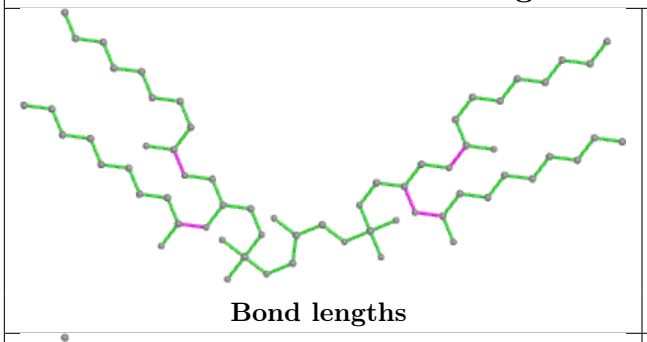


Torsions

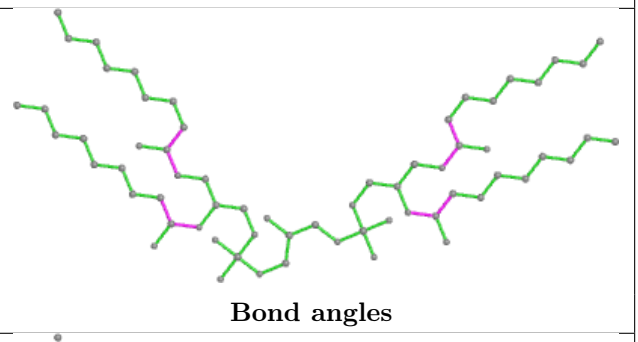


Rings

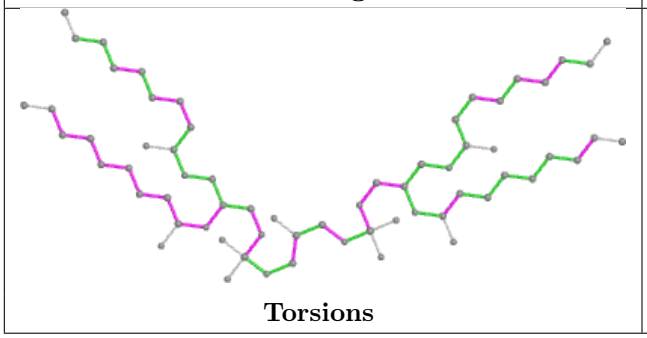
Ligand CDL AJ 404



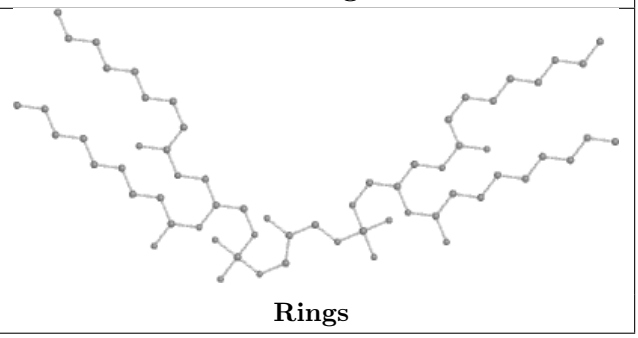
Bond lengths



Bond angles

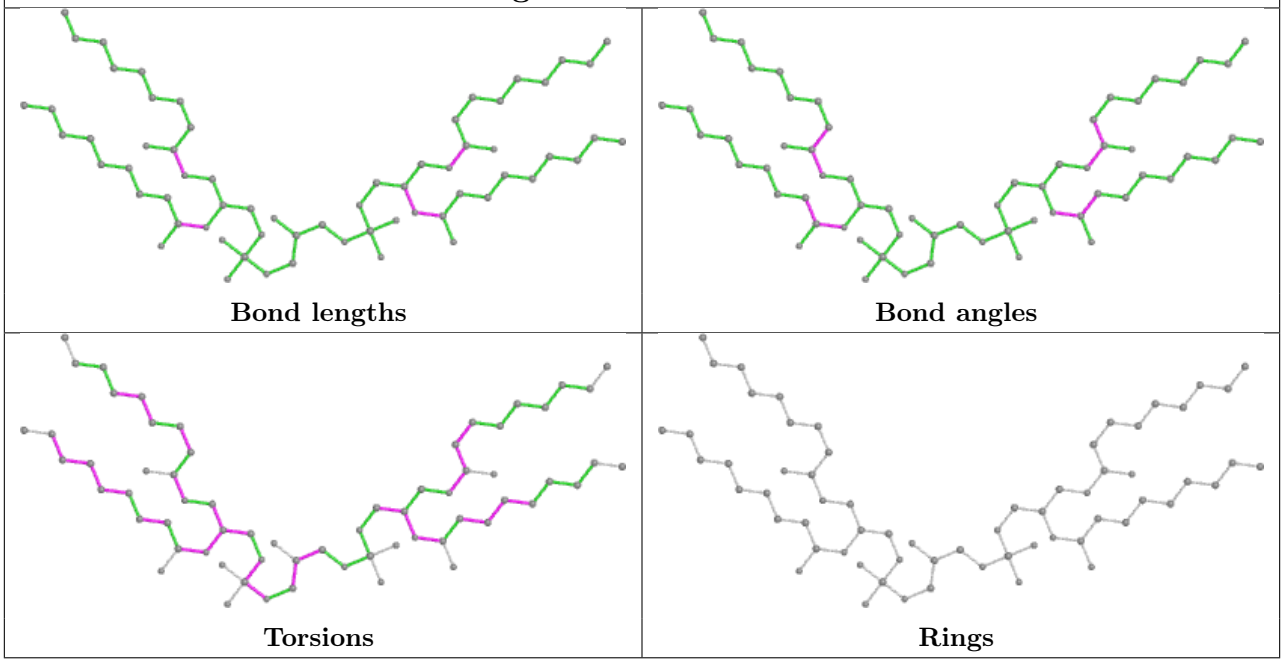


Torsions

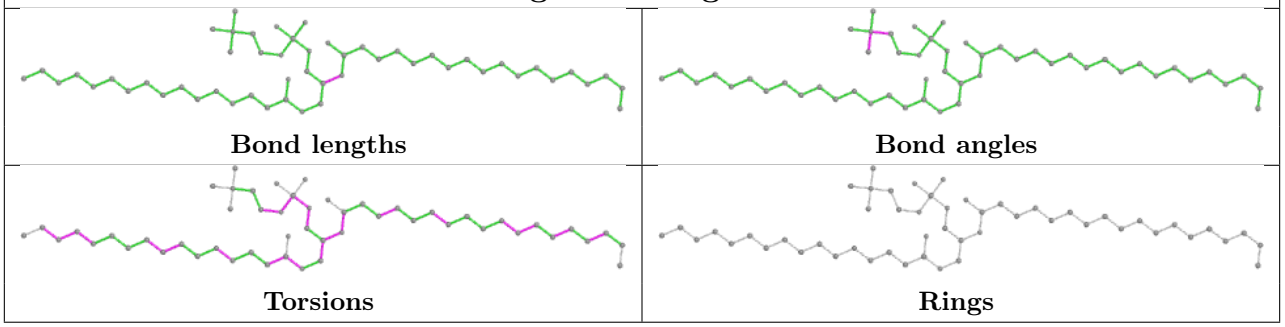


Rings

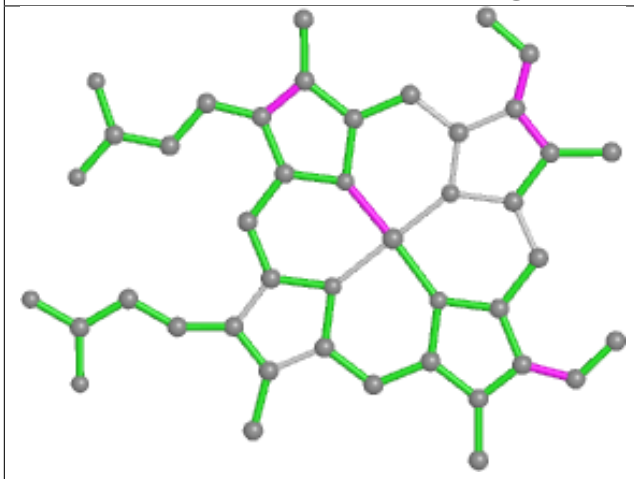
Ligand CDL AY 501



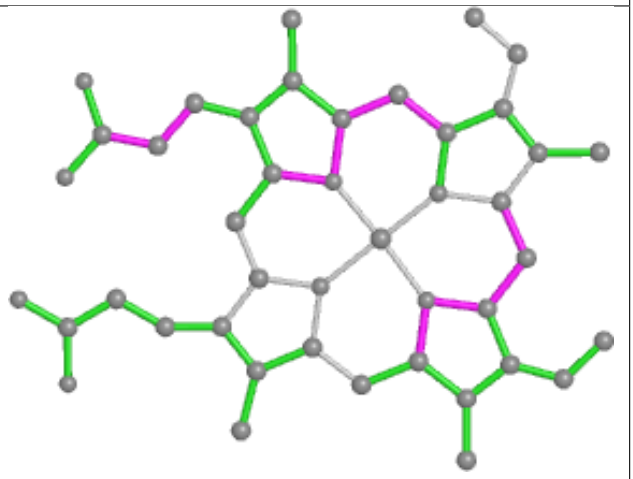
Ligand PLX g 203



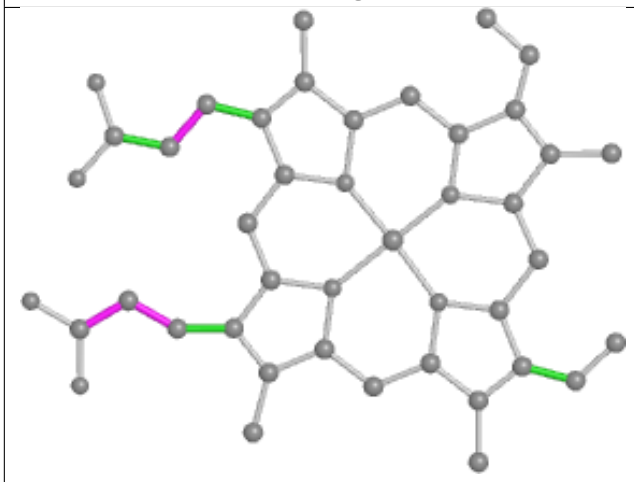
Ligand HEM AV 401



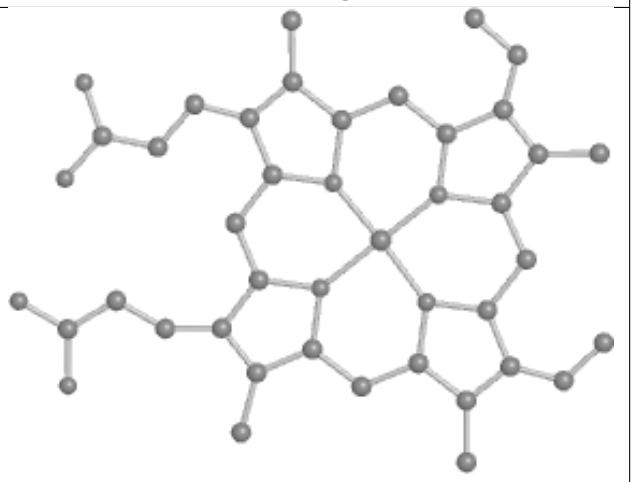
Bond lengths



Bond angles

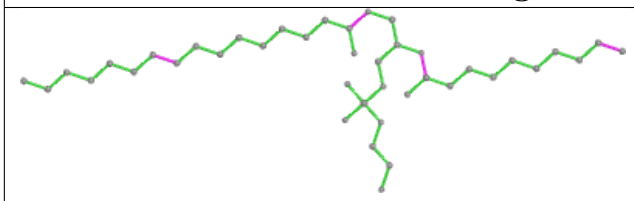


Torsions



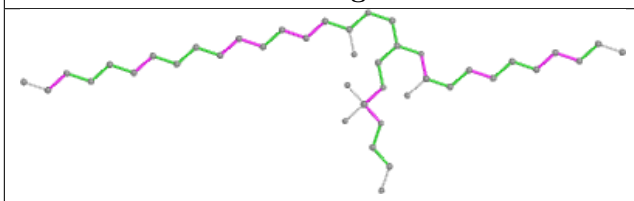
Rings

Ligand PEE AU 401

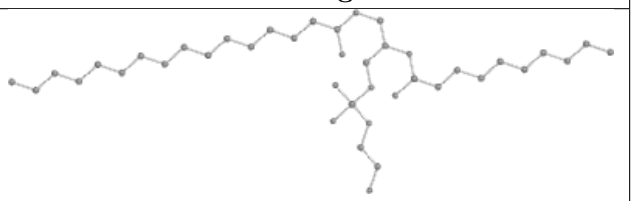


Bond lengths

Bond angles

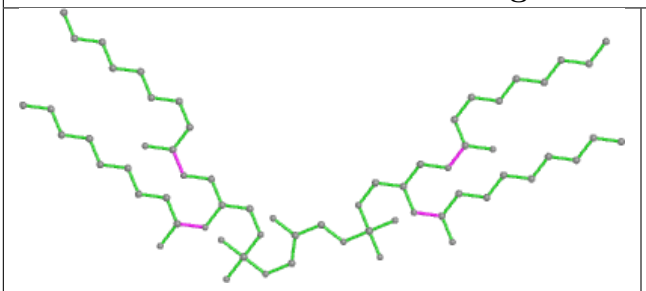


Torsions

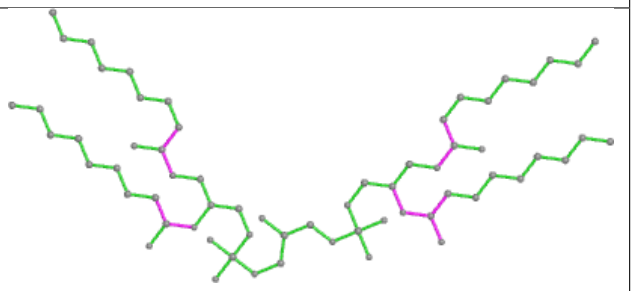


Rings

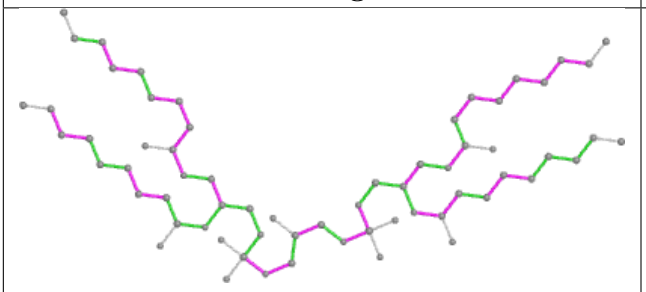
Ligand CDL AG 101



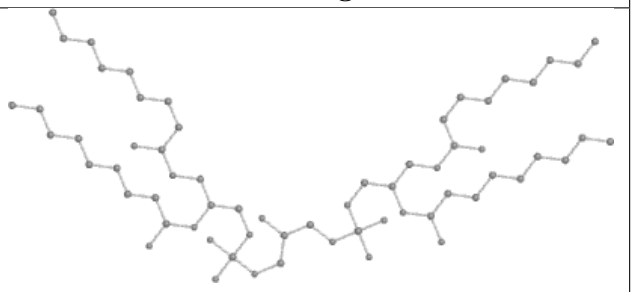
Bond lengths



Bond angles

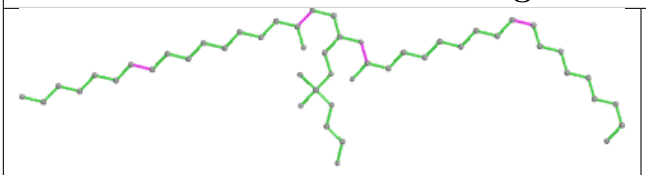


Torsions

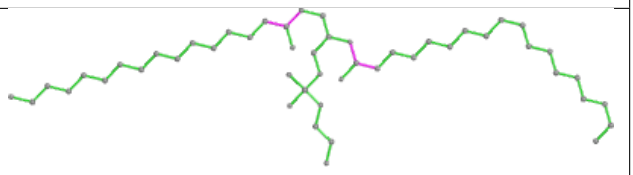


Rings

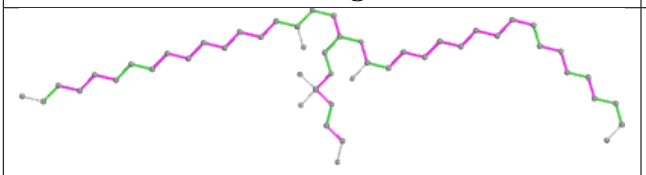
Ligand PEE AV 403



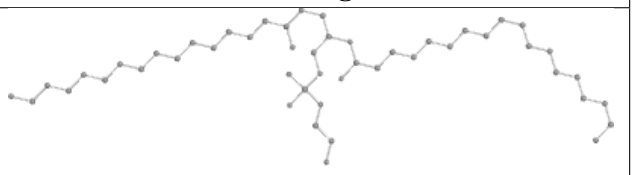
Bond lengths



Bond angles

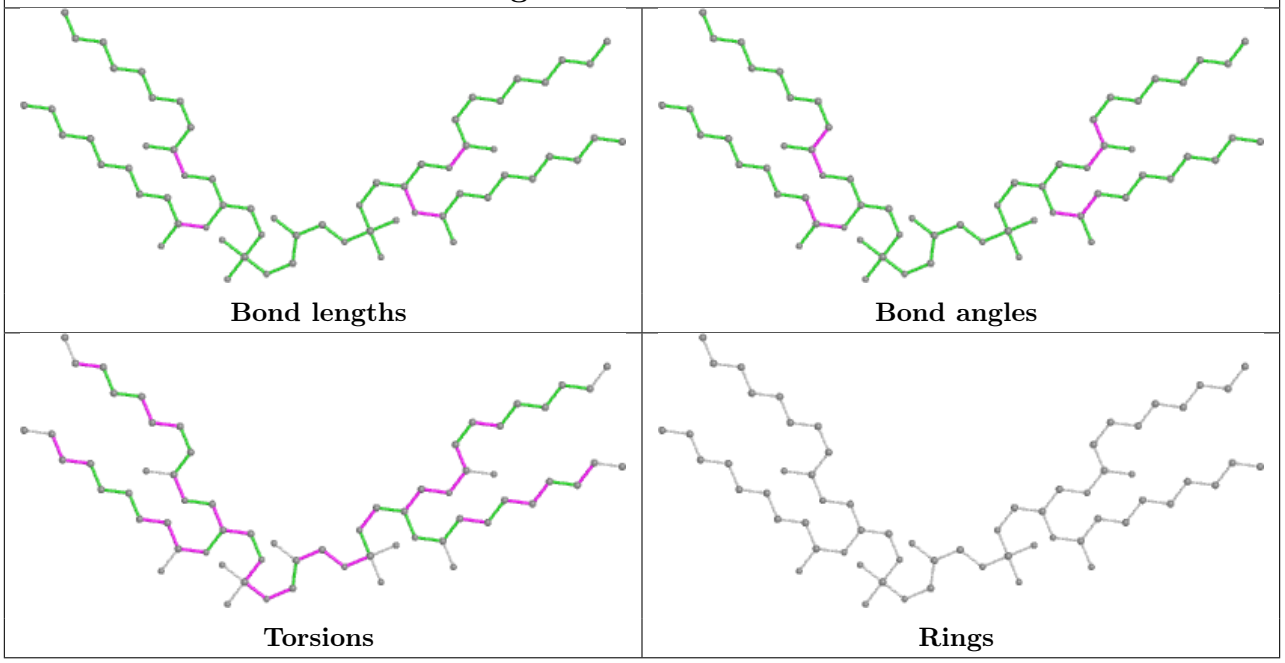


Torsions

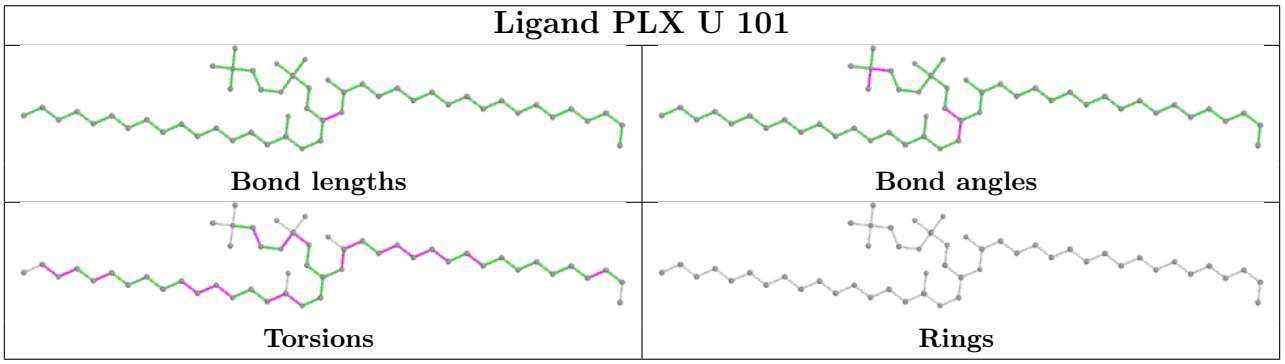


Rings

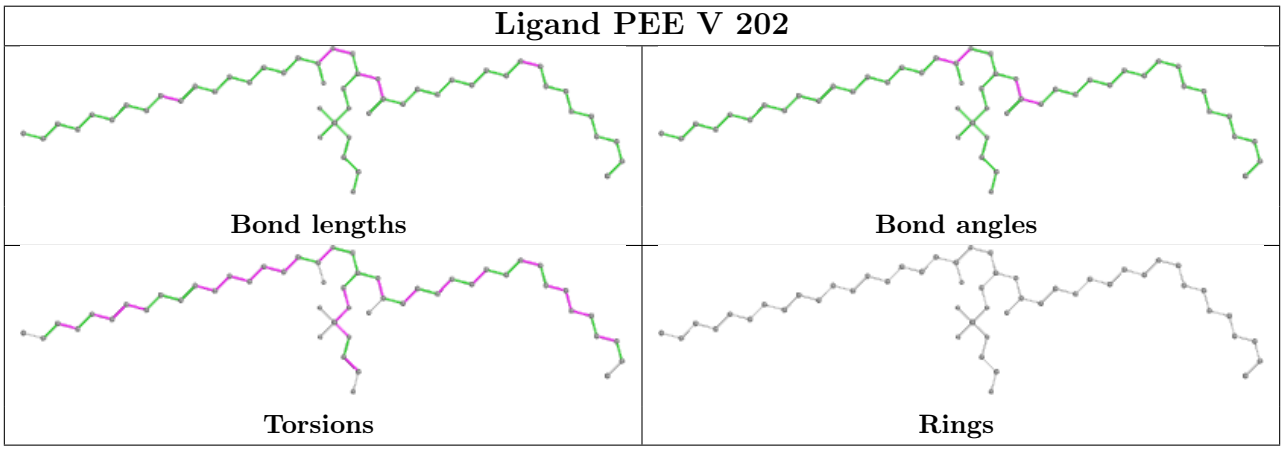
Ligand CDL AN 101



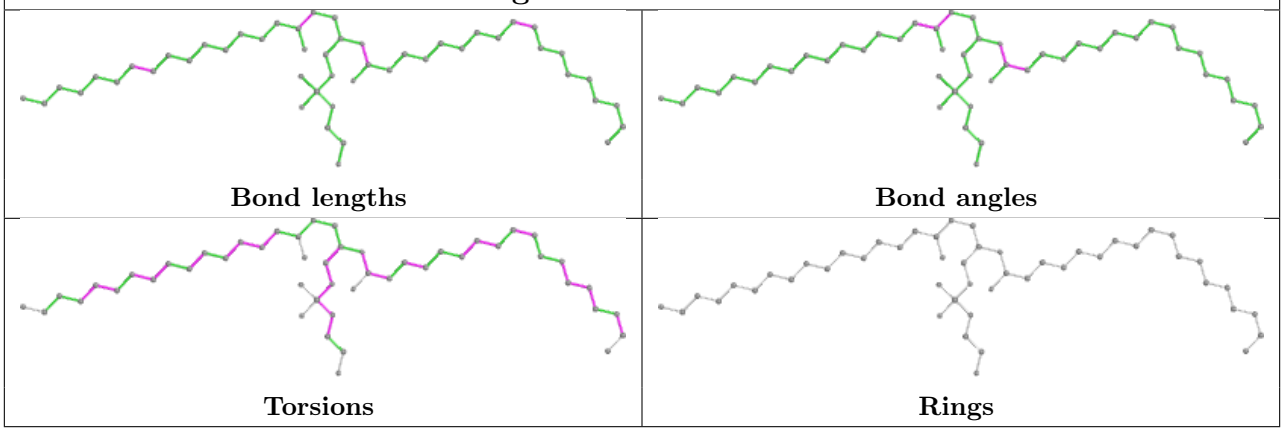
Ligand PLX U 101



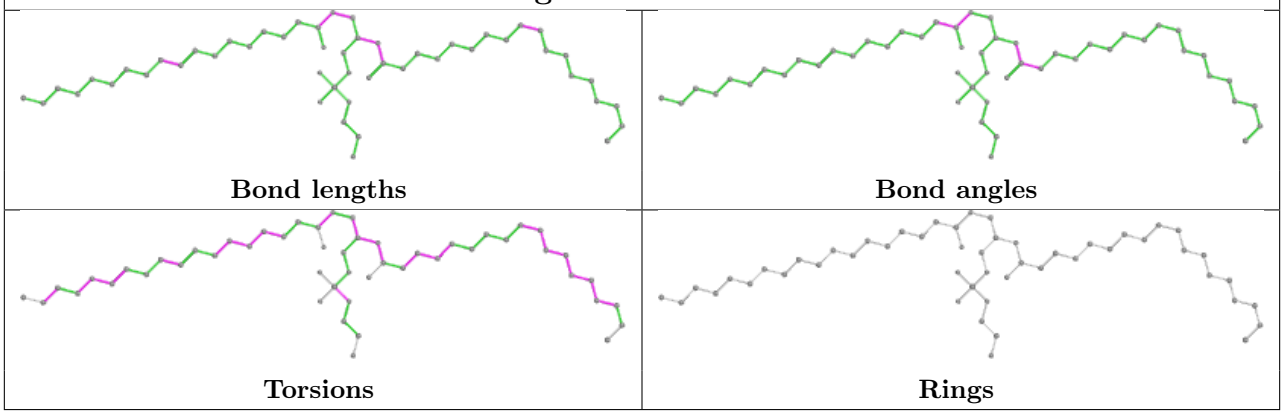
Ligand PEE V 202



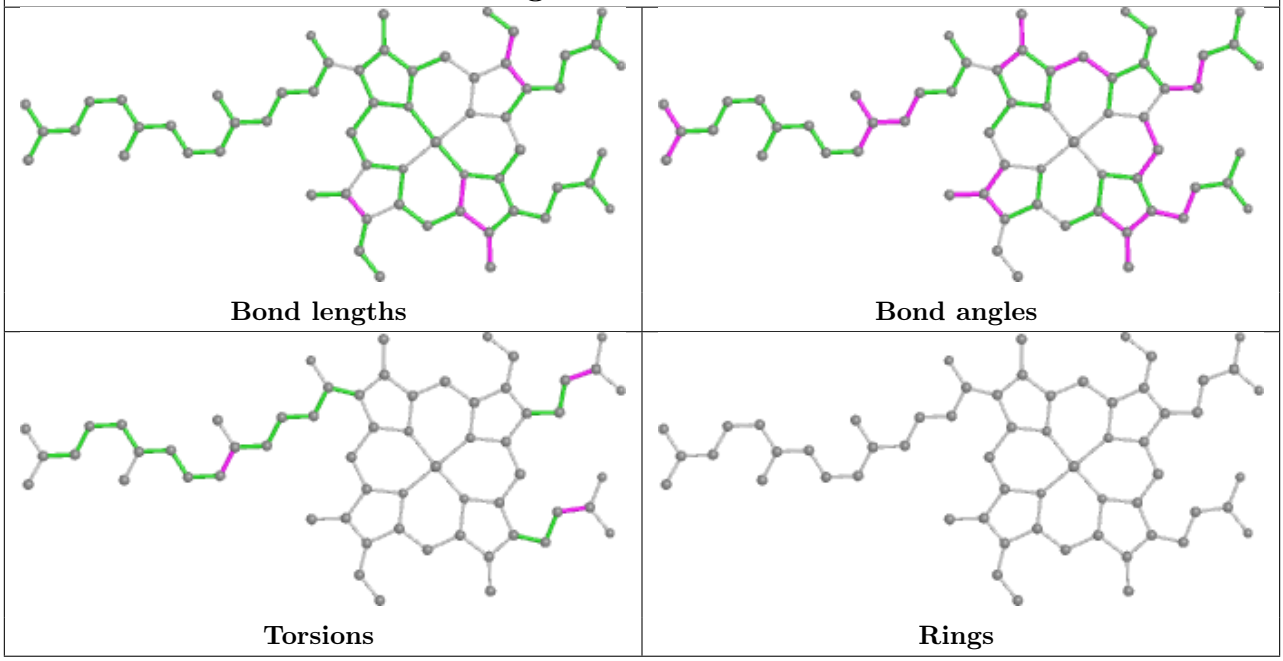
Ligand PEE AH 401



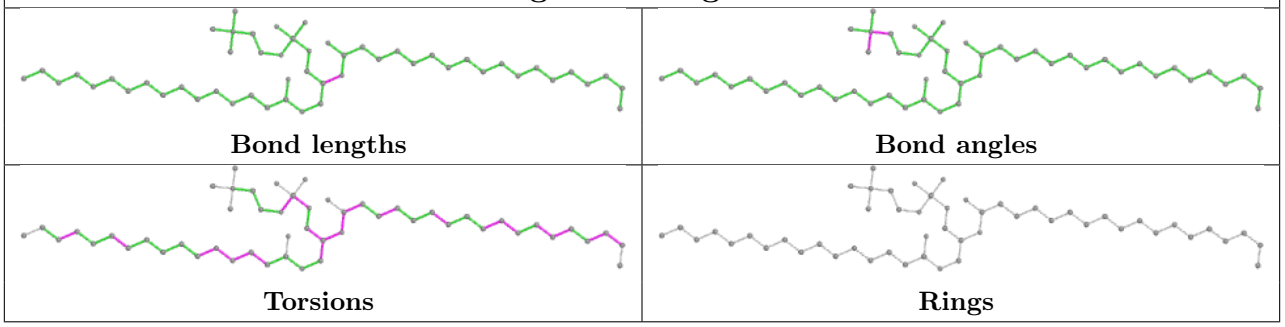
Ligand PEE l 702



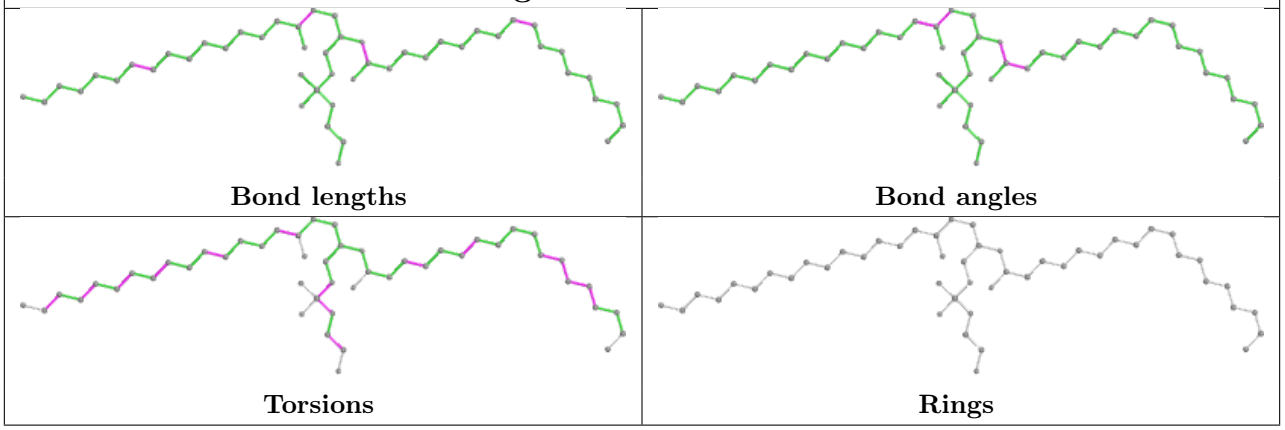
Ligand HEA x 604



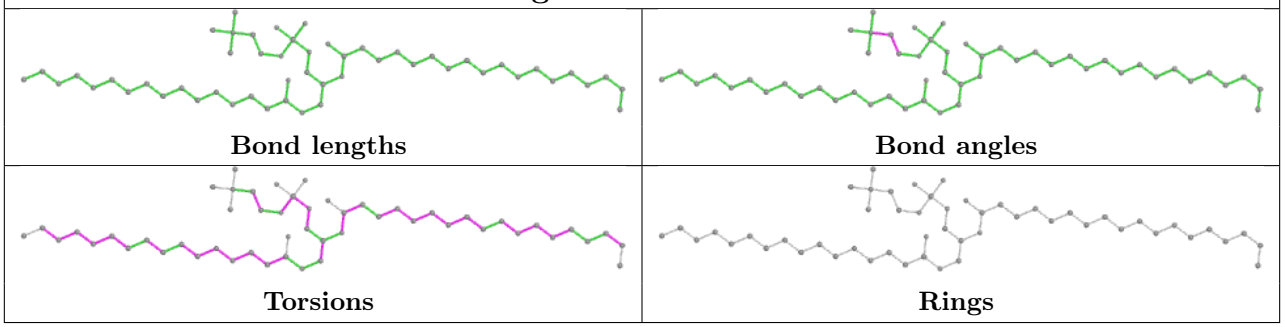
Ligand PLX g 201



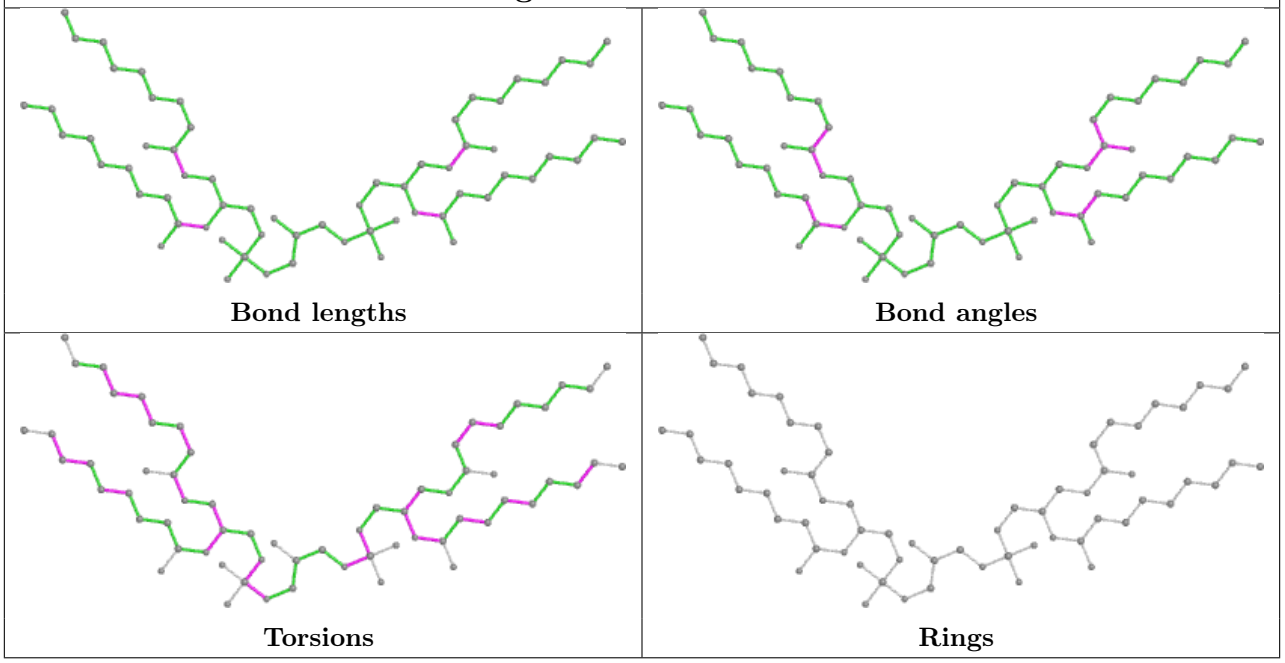
Ligand PEE AY 502



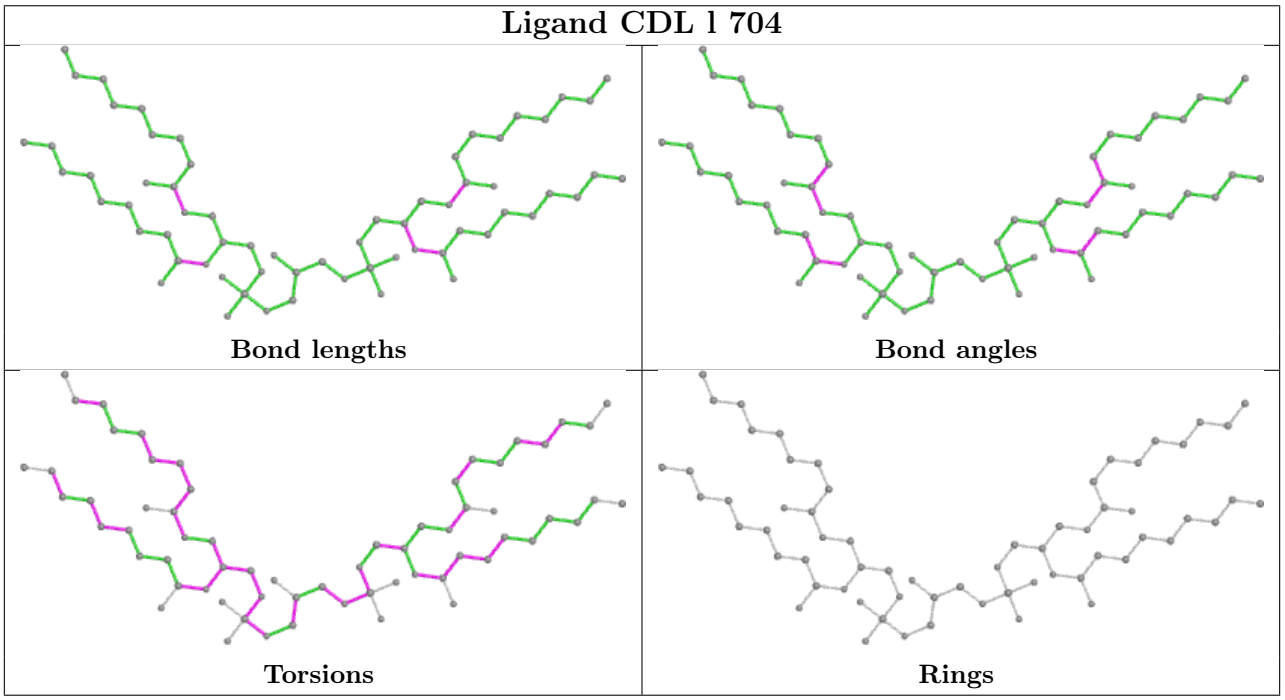
Ligand PLX r 502



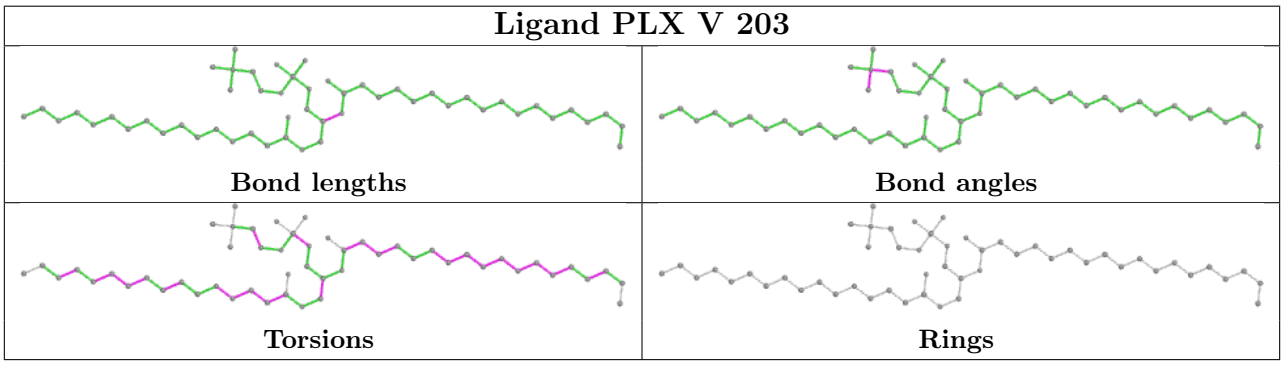
Ligand CDL AJ 405



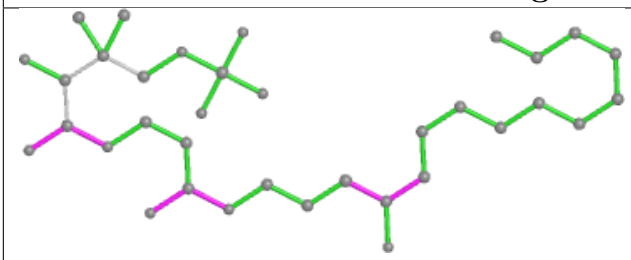
Ligand CDL l 704



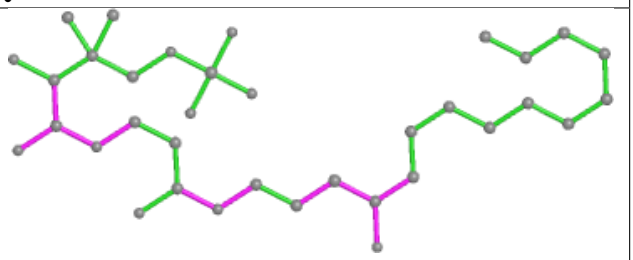
Ligand PLX V 203



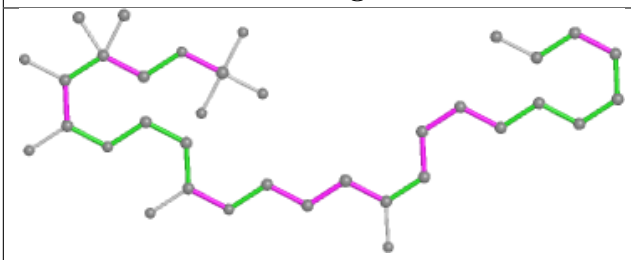
Ligand 8Q1 E 201



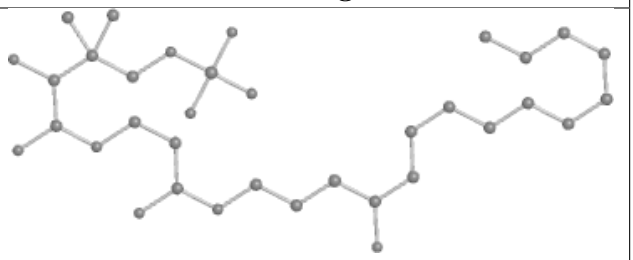
Bond lengths



Bond angles

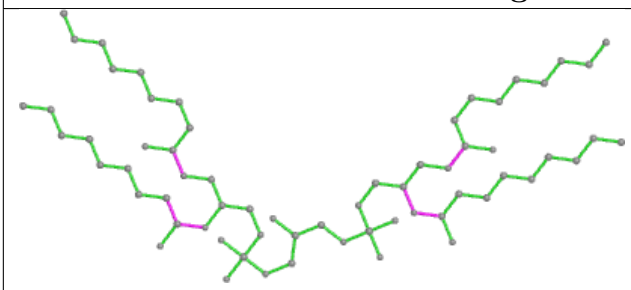


Torsions

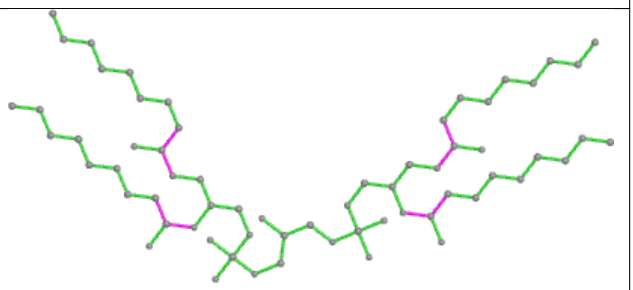


Rings

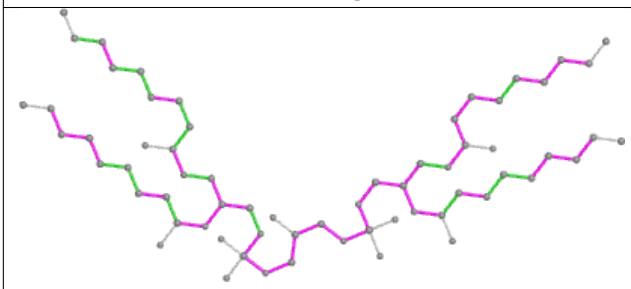
Ligand CDL AU 403



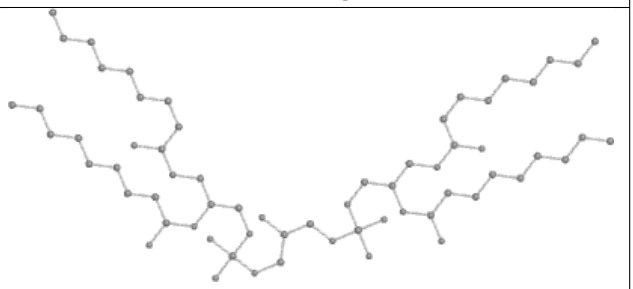
Bond lengths



Bond angles

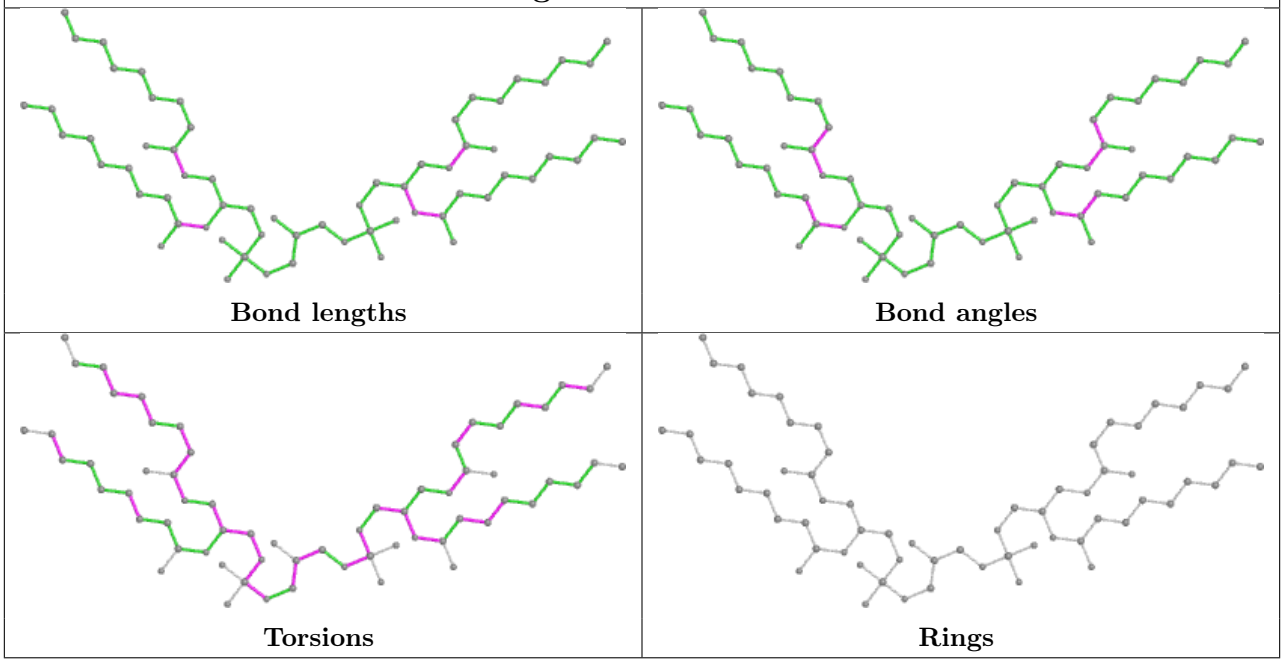


Torsions

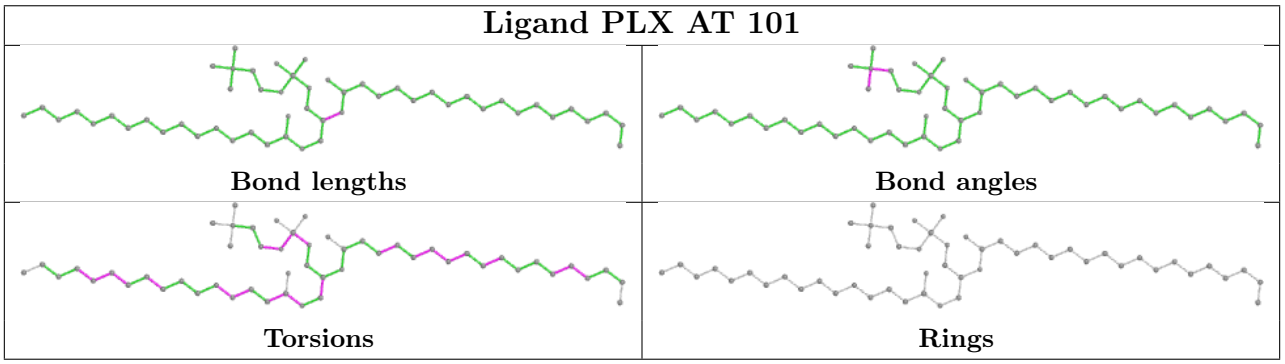


Rings

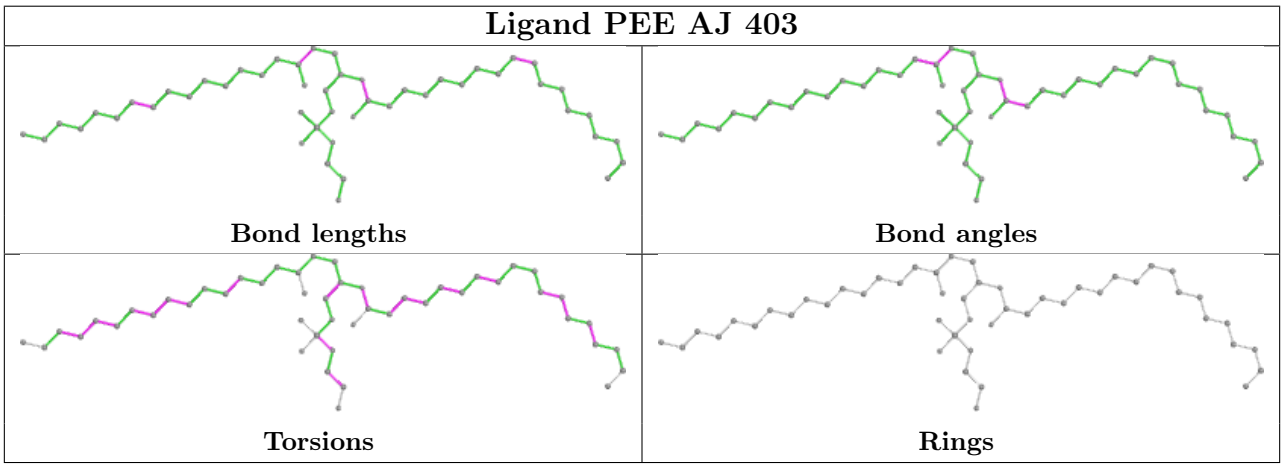
Ligand CDL l 703



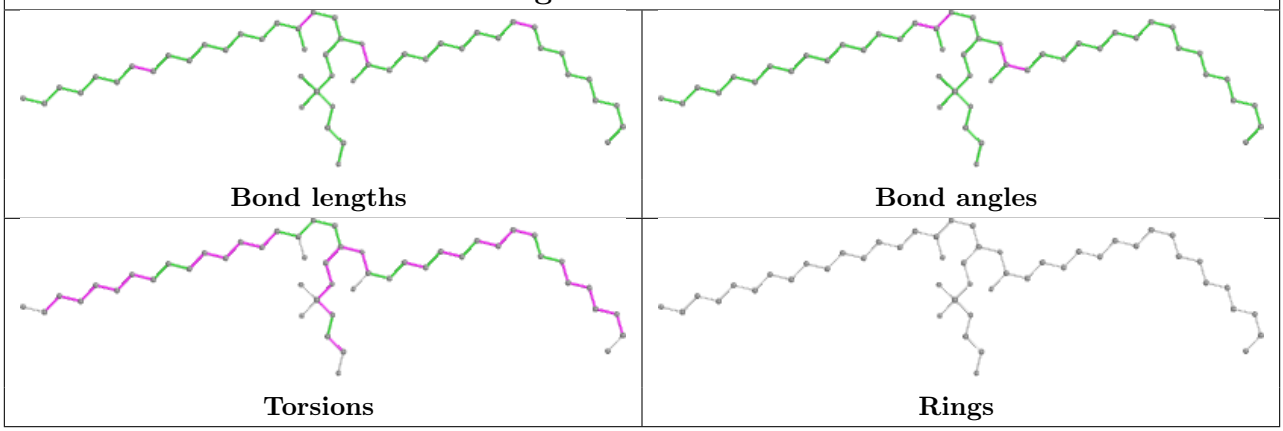
Ligand PLX AT 101



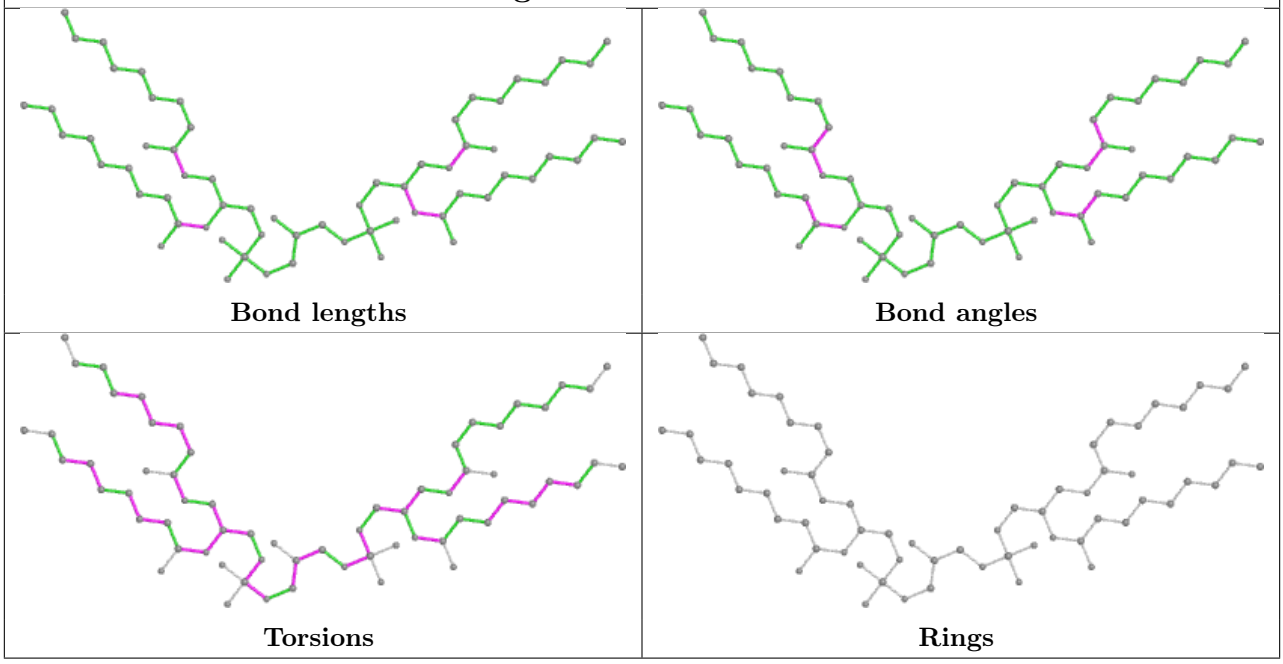
Ligand PEE AJ 403



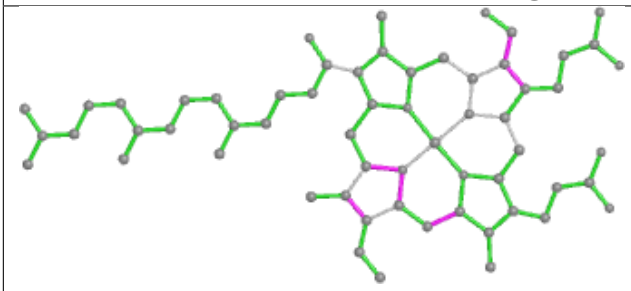
Ligand PEE l 701



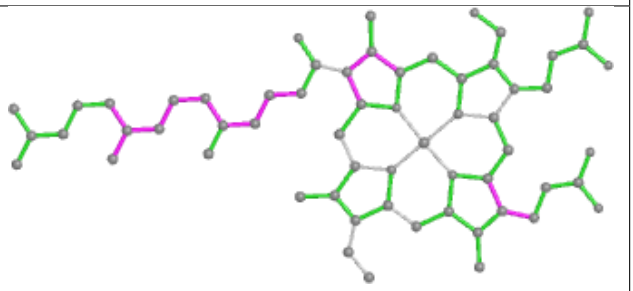
Ligand CDL AL 502



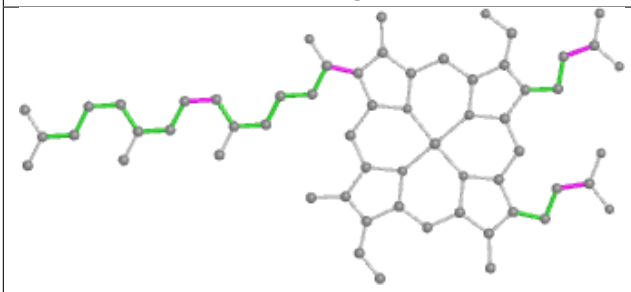
Ligand HEA x 603



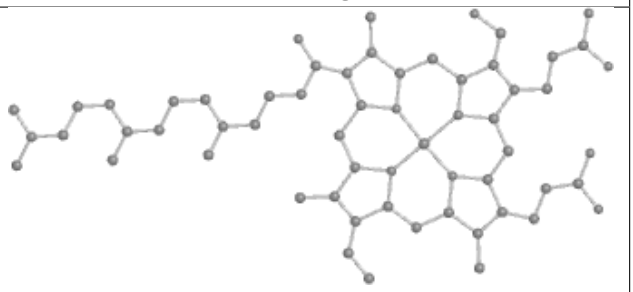
Bond lengths



Bond angles

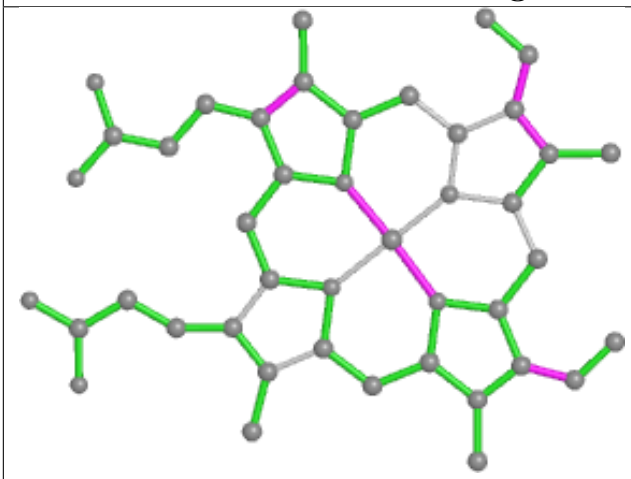


Torsions

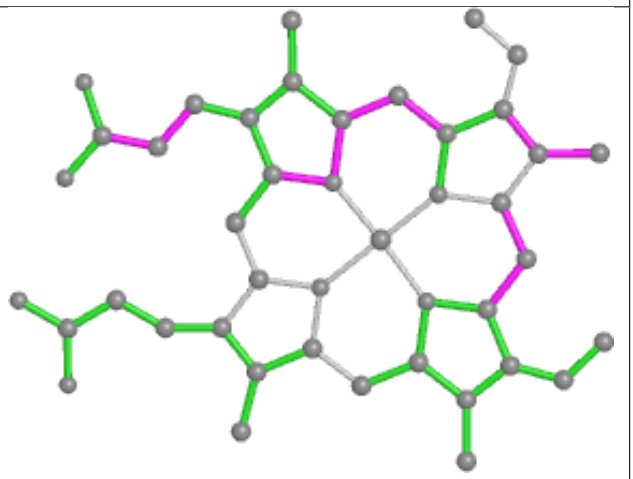


Rings

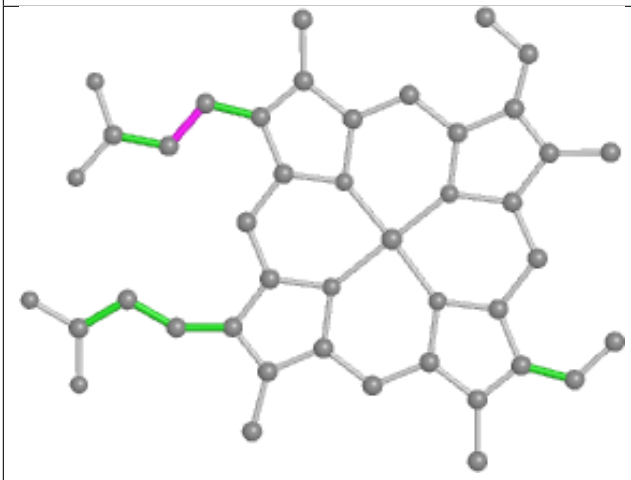
Ligand HEM AJ 401



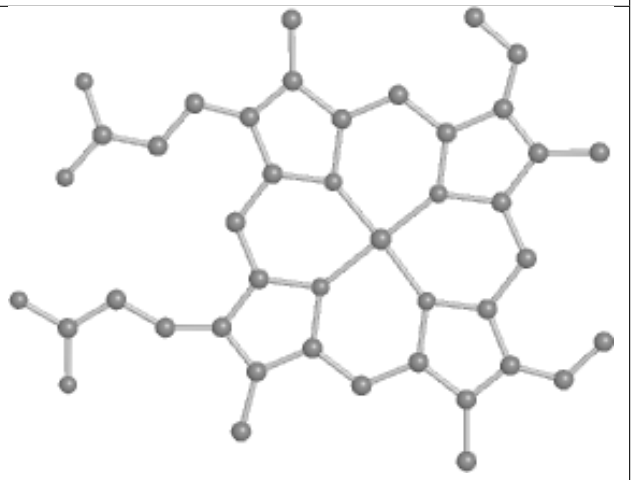
Bond lengths



Bond angles

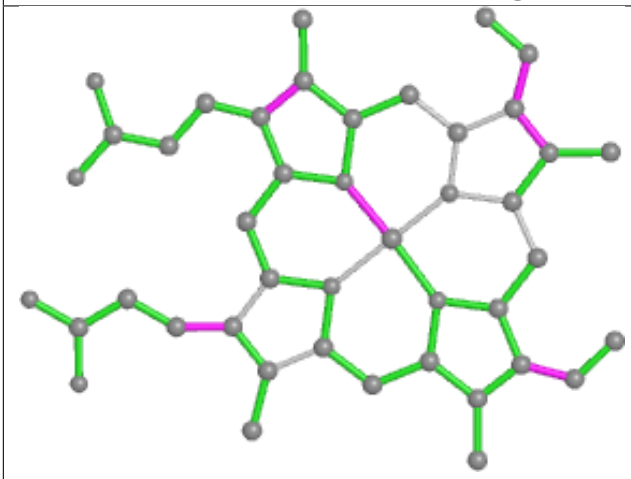


Torsions

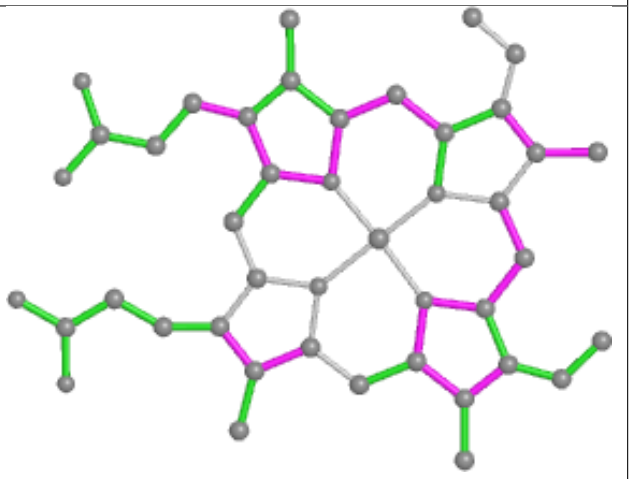


Rings

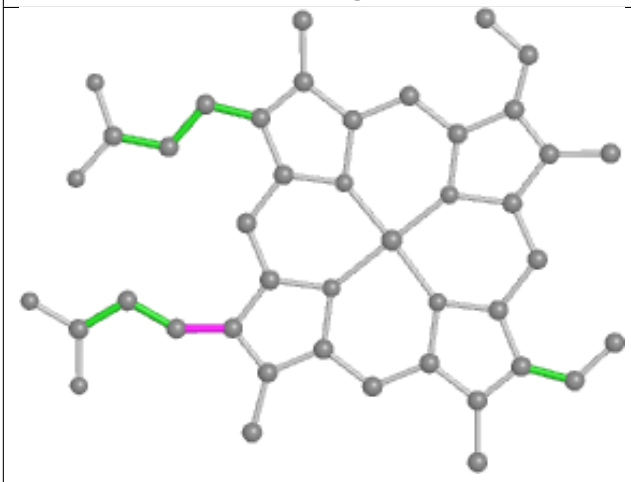
Ligand HEM AJ 402



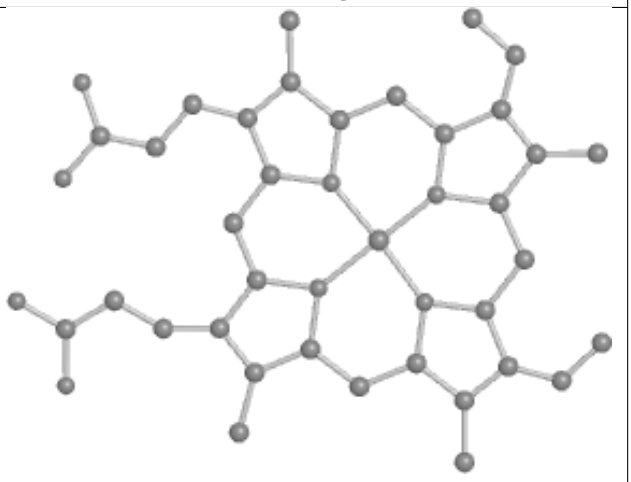
Bond lengths



Bond angles

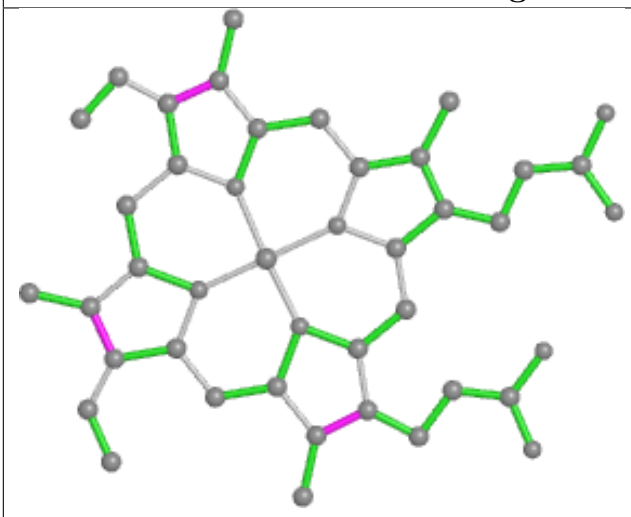


Torsions

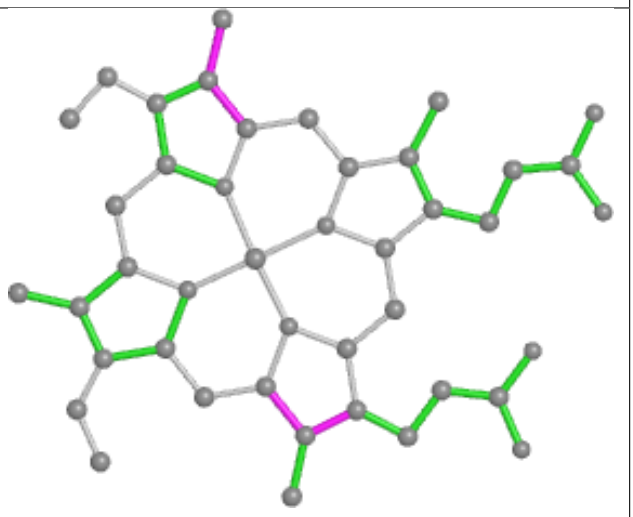


Rings

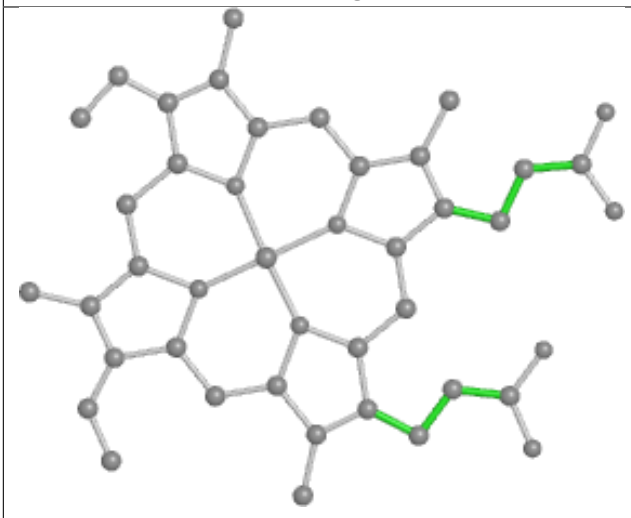
Ligand HEC AU 402



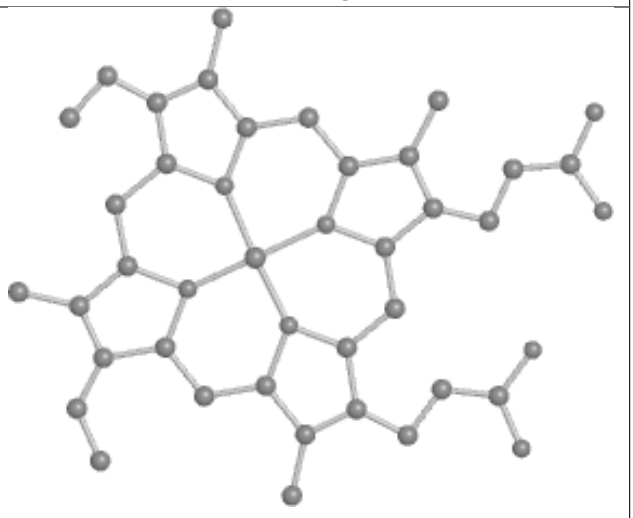
Bond lengths



Bond angles

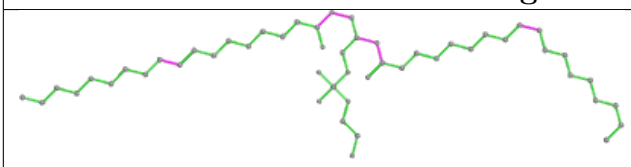


Torsions

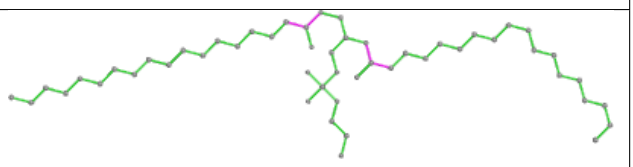


Rings

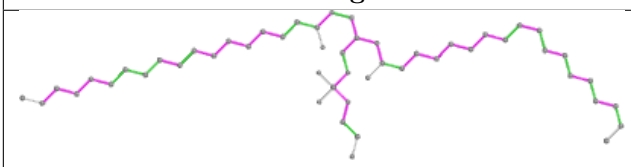
Ligand PEE W 201



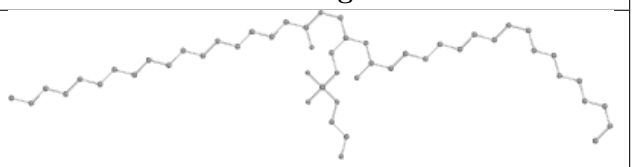
Bond lengths



Bond angles

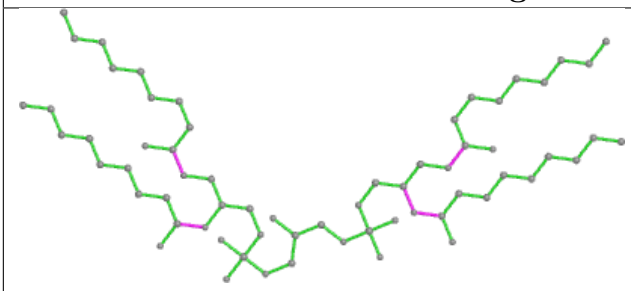


Torsions

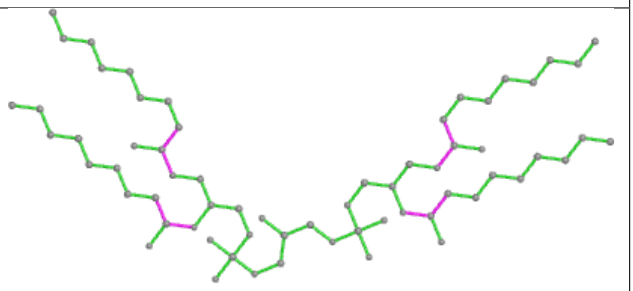


Rings

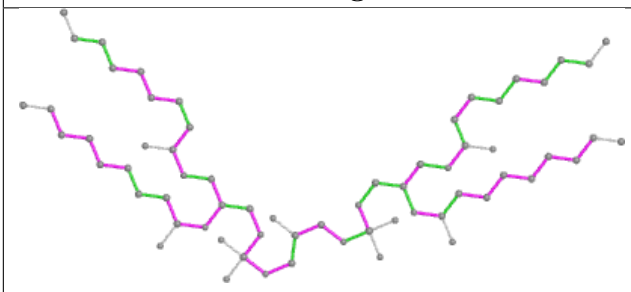
Ligand CDL AH 403



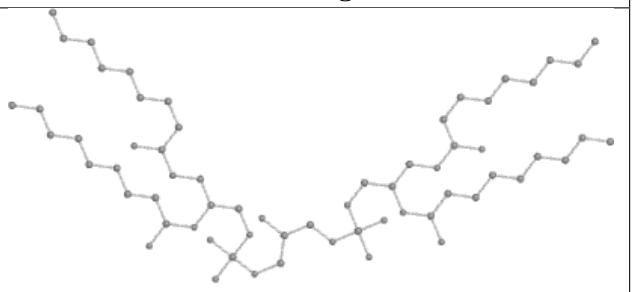
Bond lengths



Bond angles

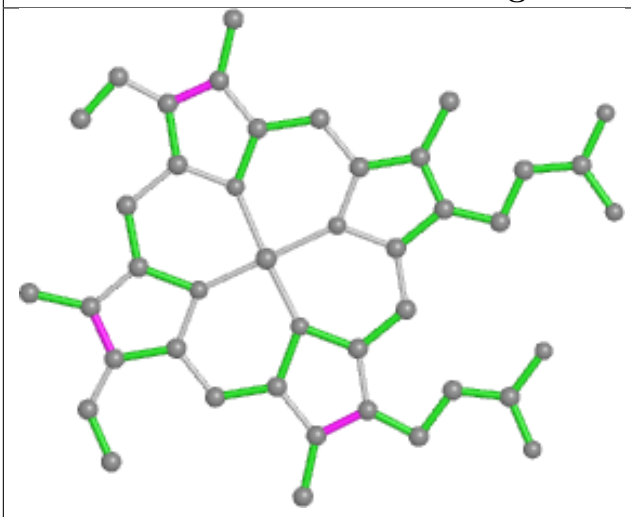


Torsions

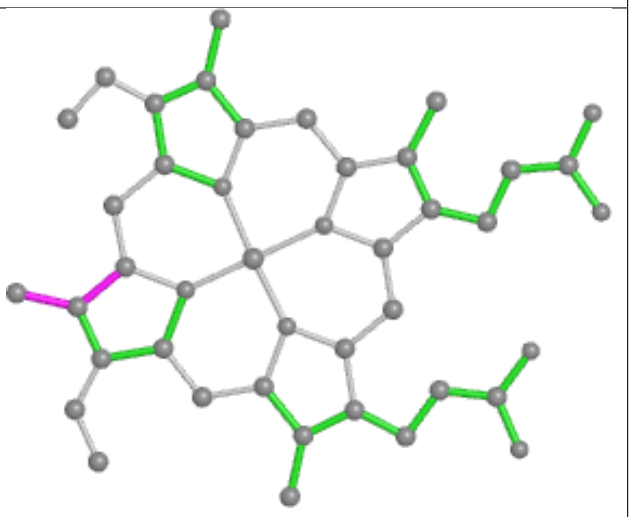


Rings

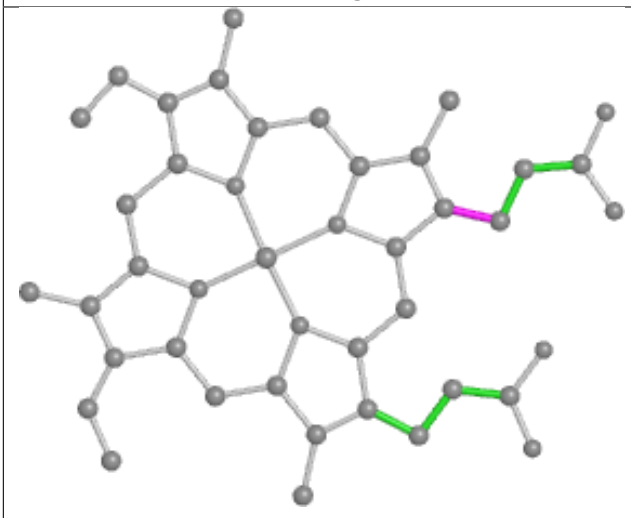
Ligand HEC AH 402



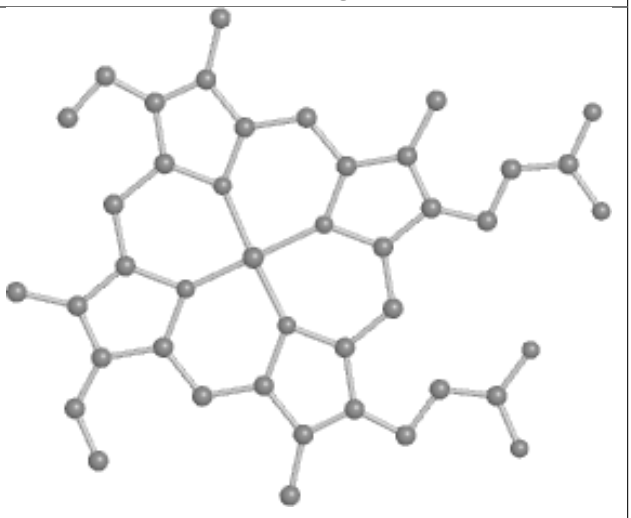
Bond lengths



Bond angles

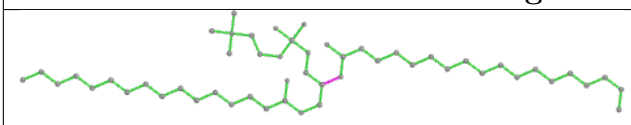


Torsions

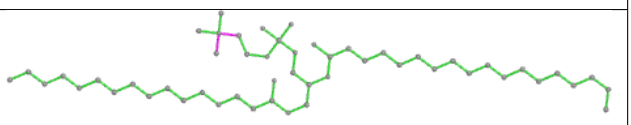


Rings

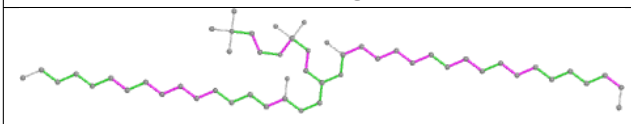
Ligand PLX B 303



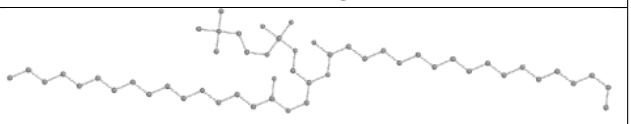
Bond lengths



Bond angles

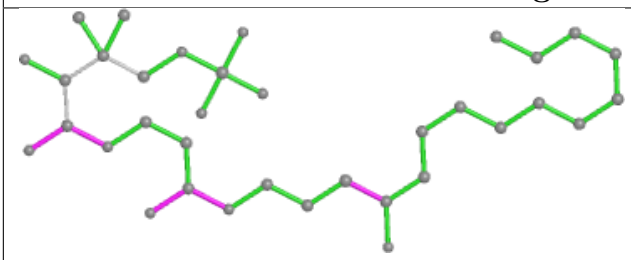


Torsions

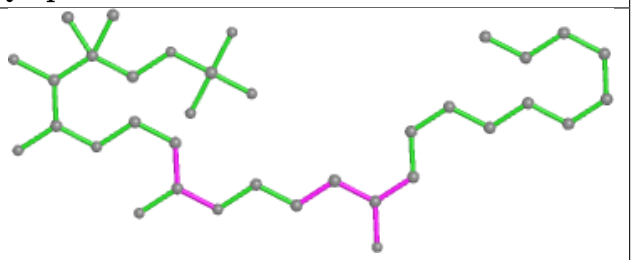


Rings

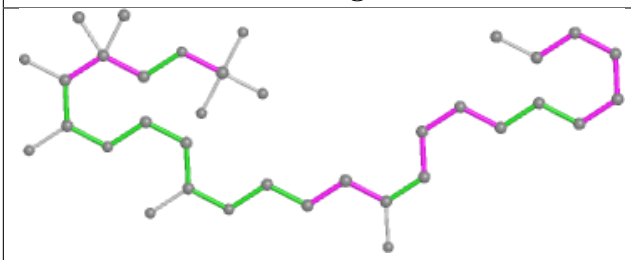
Ligand 8Q1 p 201



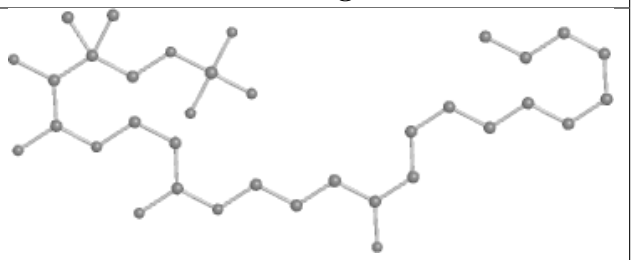
Bond lengths



Bond angles

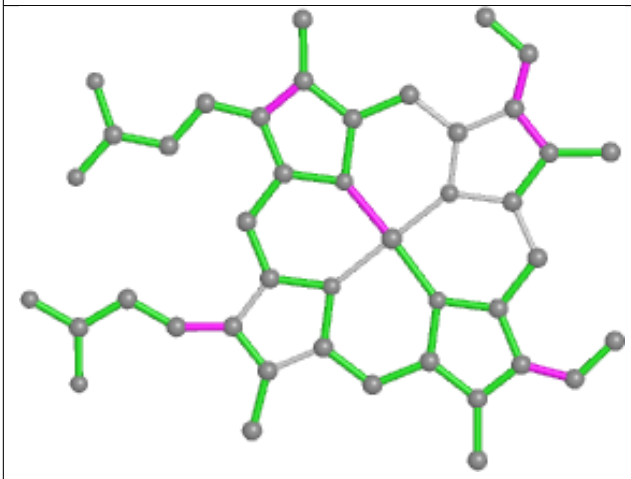


Torsions

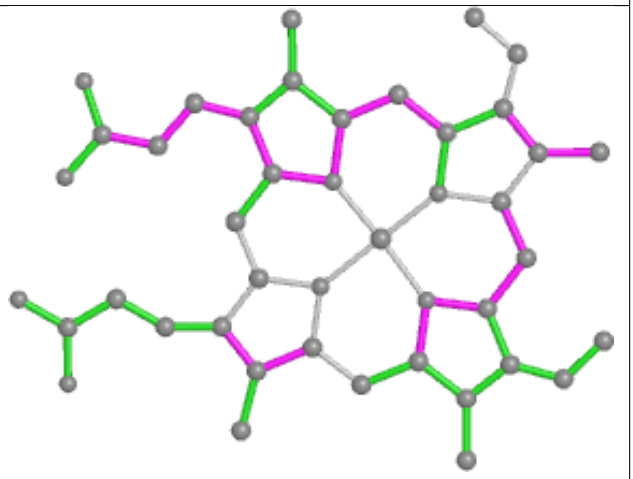


Rings

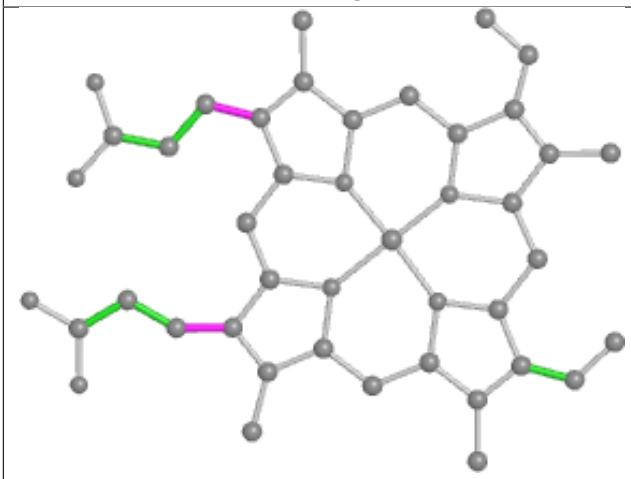
Ligand HEM AV 402



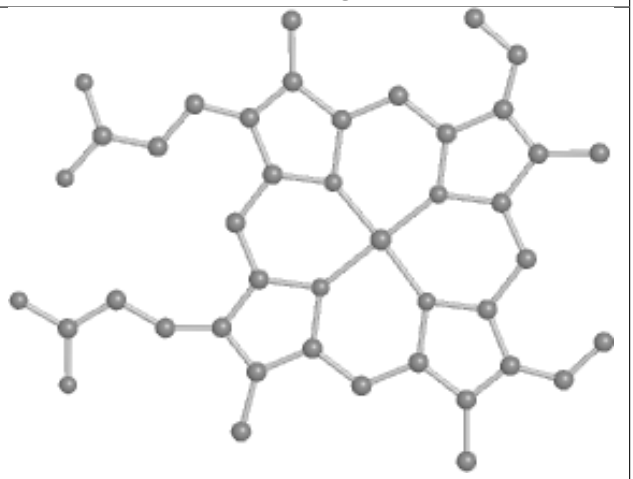
Bond lengths



Bond angles

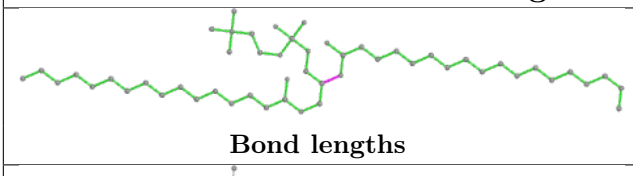


Torsions

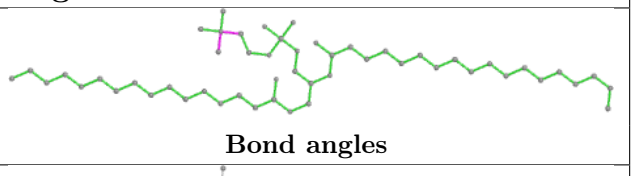


Rings

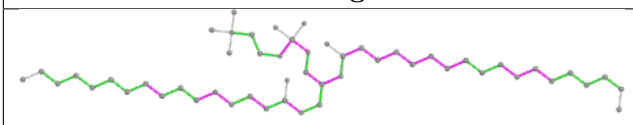
Ligand PLX g 202



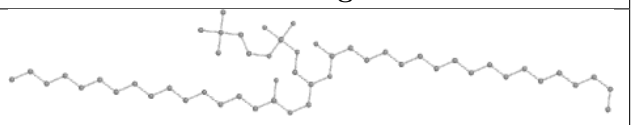
Bond lengths



Bond angles

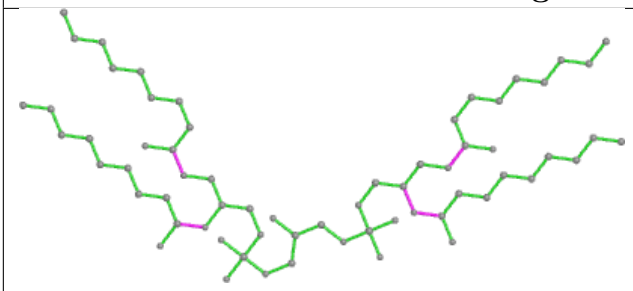


Torsions

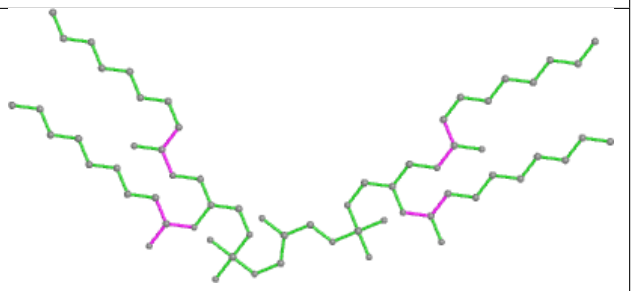


Rings

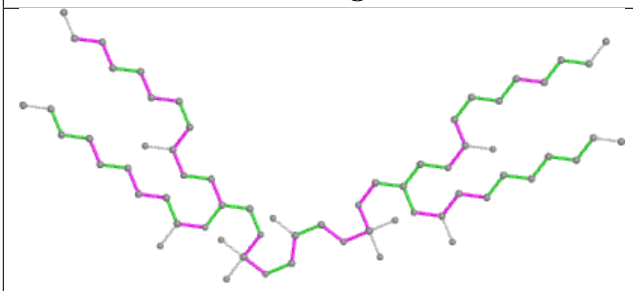
Ligand CDL i 401



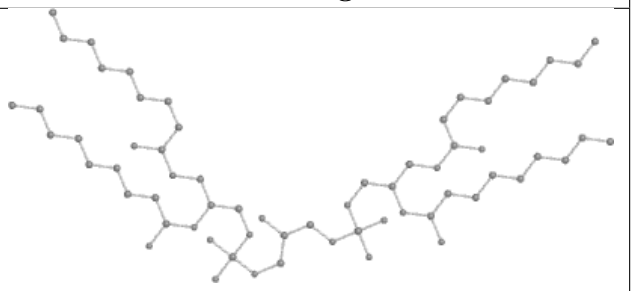
Bond lengths



Bond angles

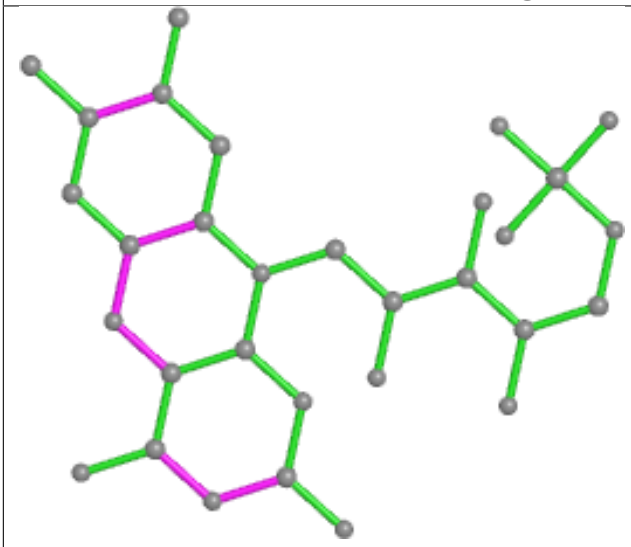


Torsions

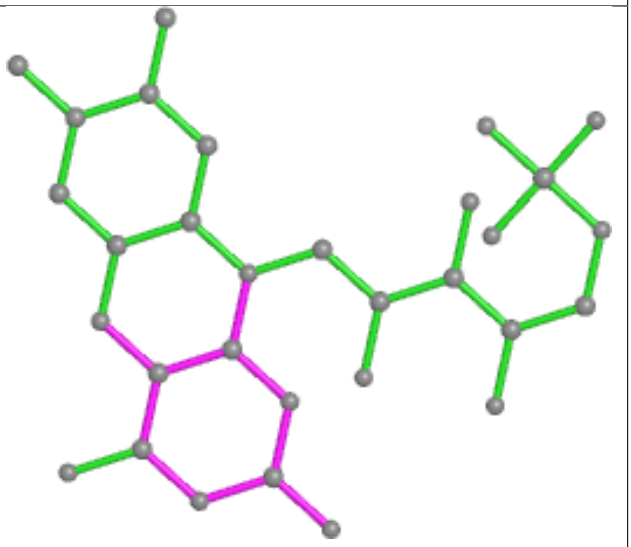


Rings

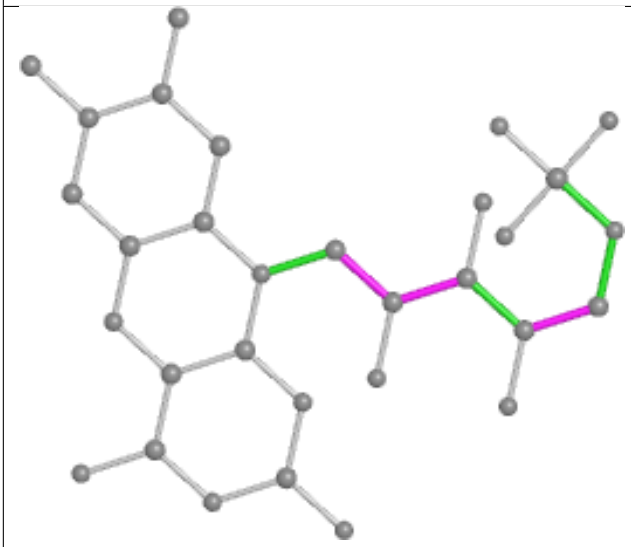
Ligand FMN A 502



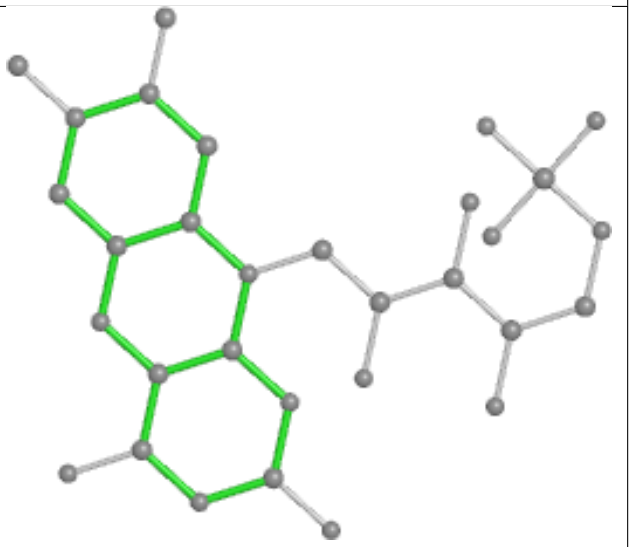
Bond lengths



Bond angles

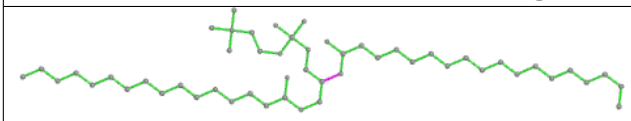


Torsions

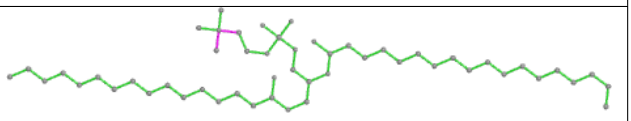


Rings

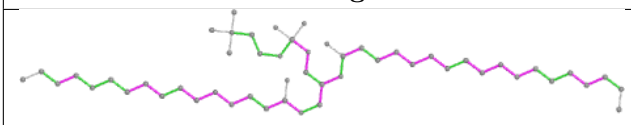
Ligand PLX r 501



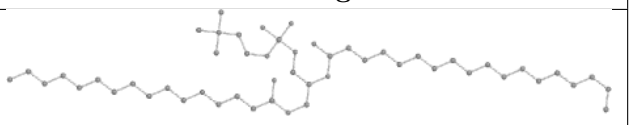
Bond lengths



Bond angles

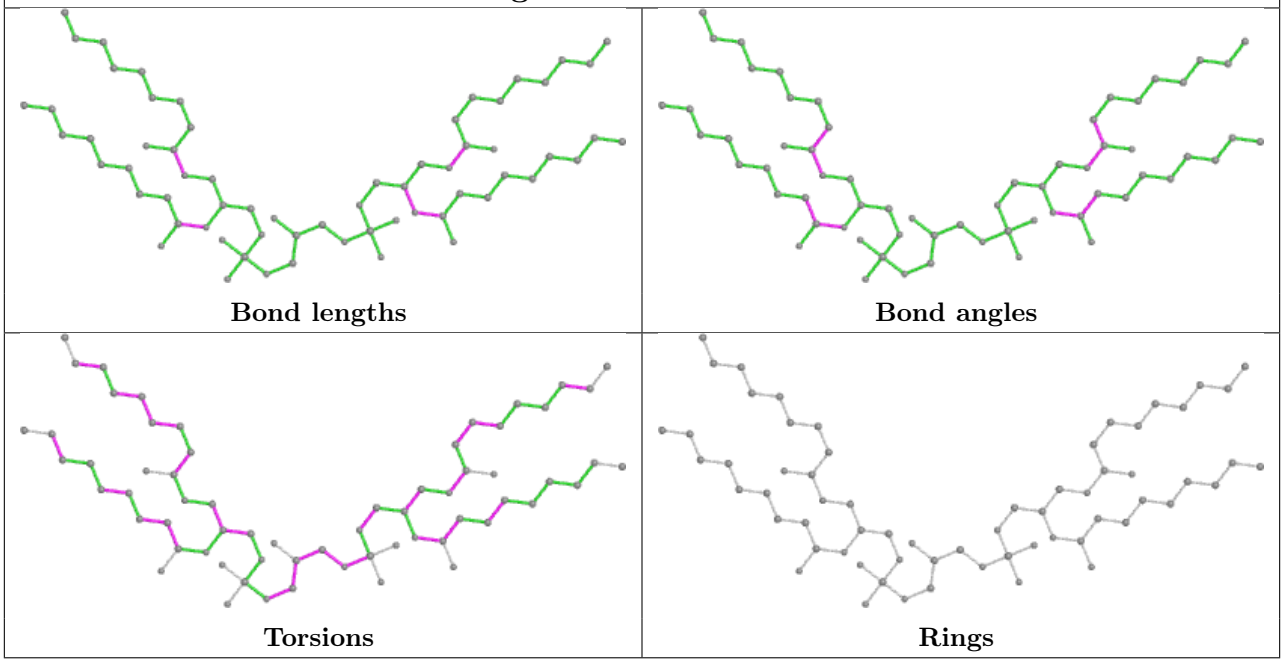


Torsions

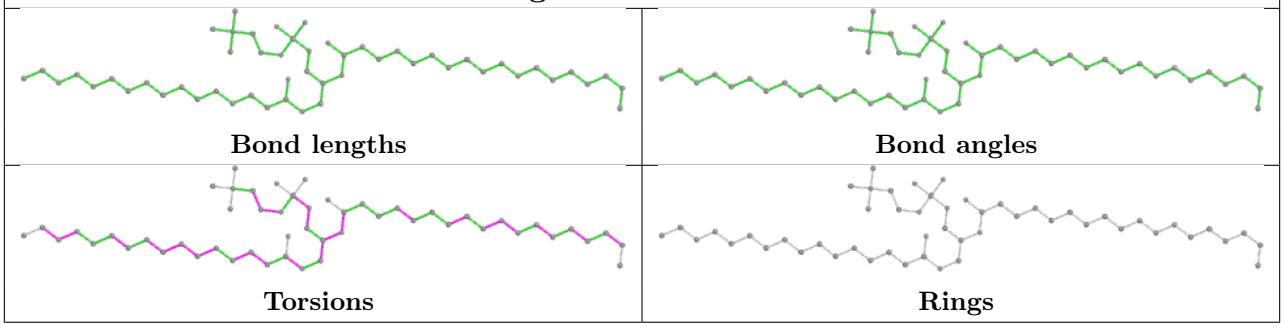


Rings

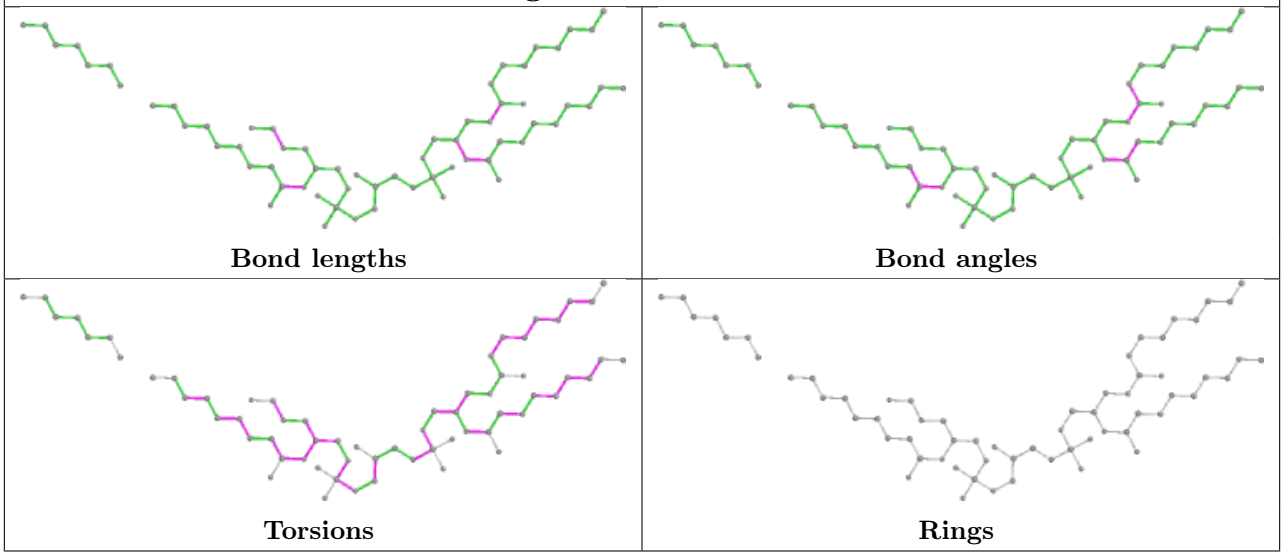
Ligand CDL AA 101



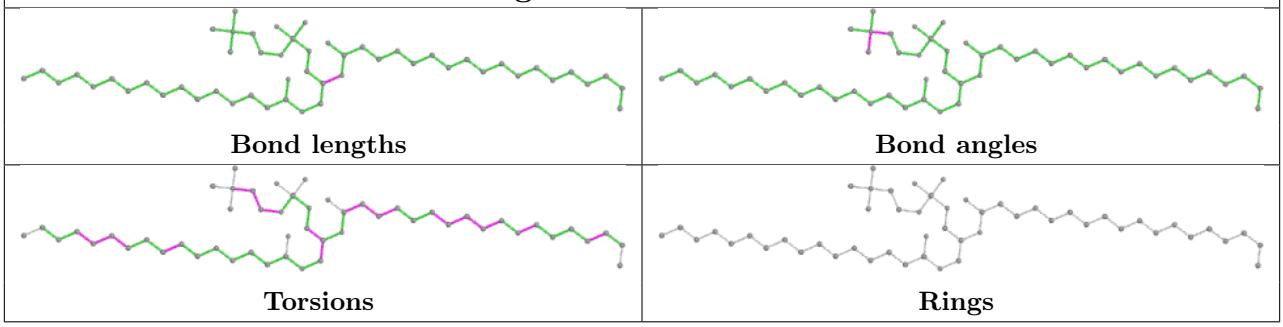
Ligand PLX b 201



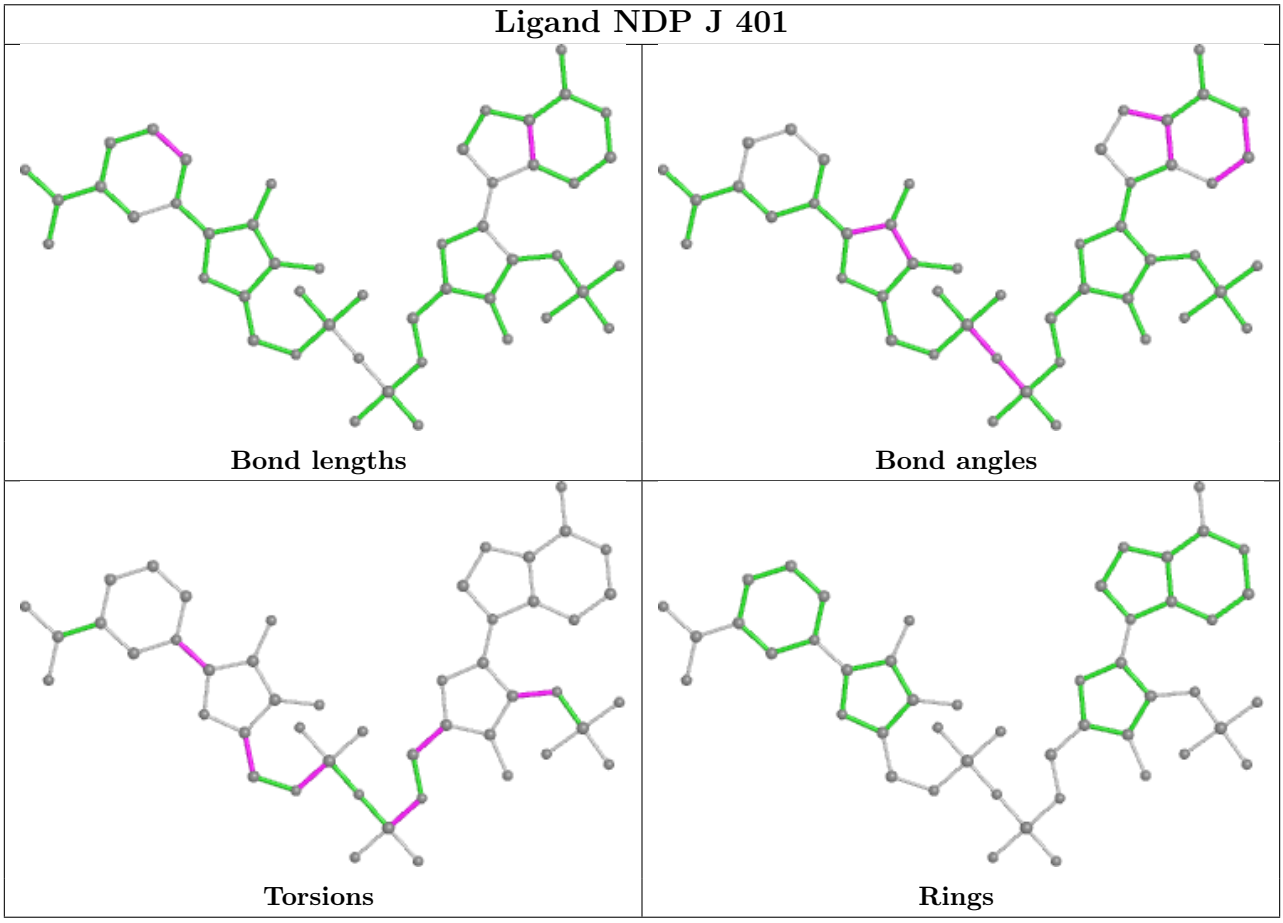
Ligand CDL V 201



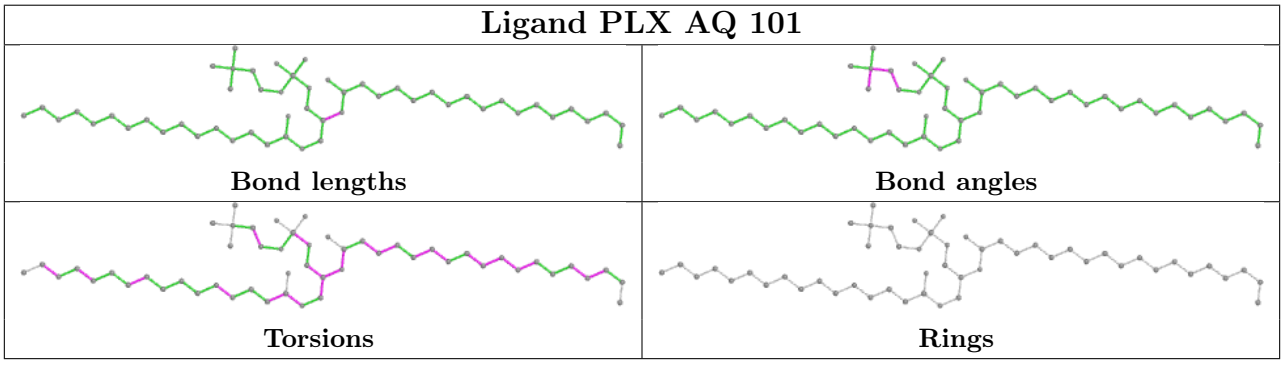
Ligand PLX AL 501



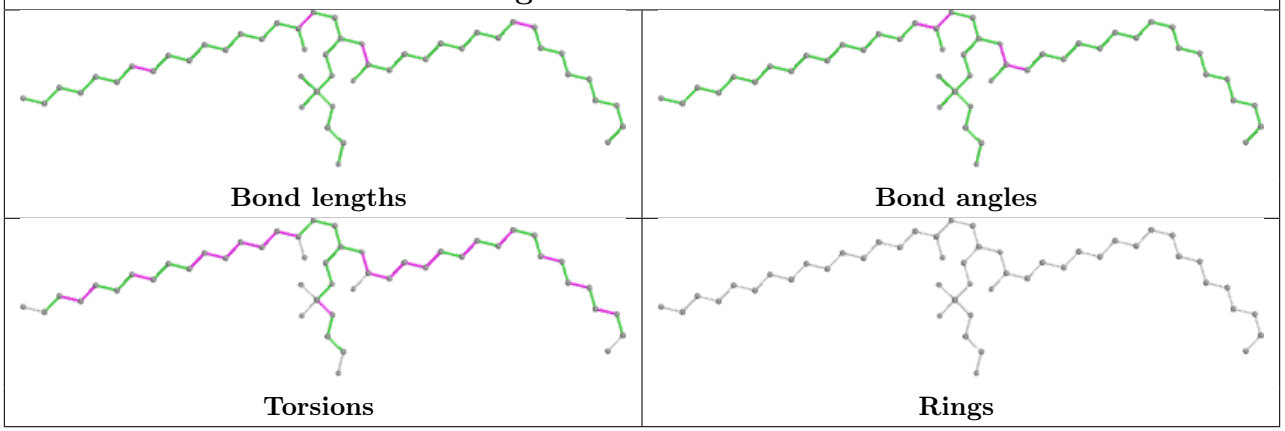
Ligand NDP J 401



Ligand PLX AQ 101



Ligand PEE AL 503



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

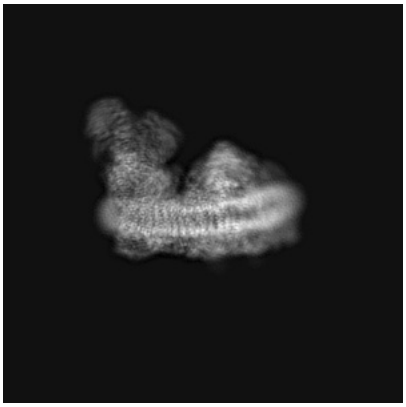
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-6775. These allow visual inspection of the internal detail of the map and identification of artifacts.

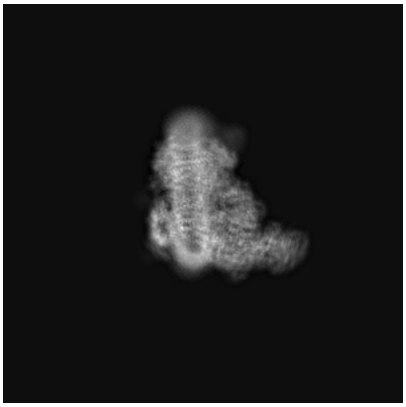
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

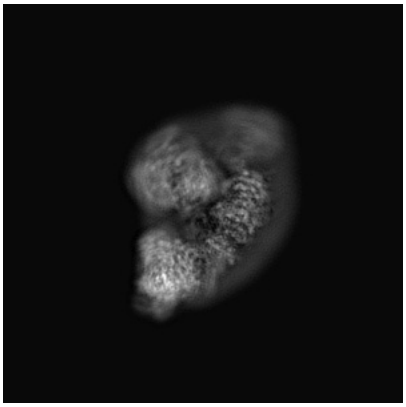
6.1.1 Primary map



X



Y

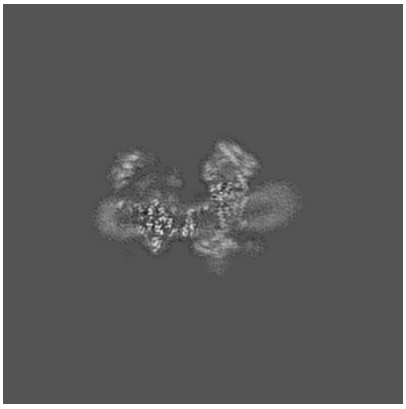


Z

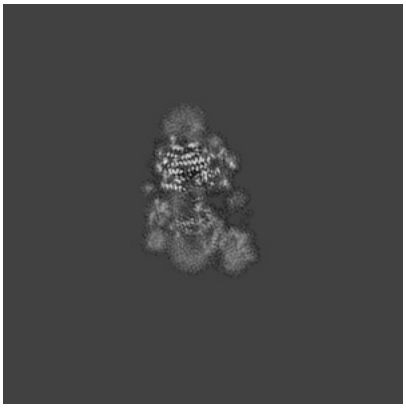
The images above show the map projected in three orthogonal directions.

6.2 Central slices

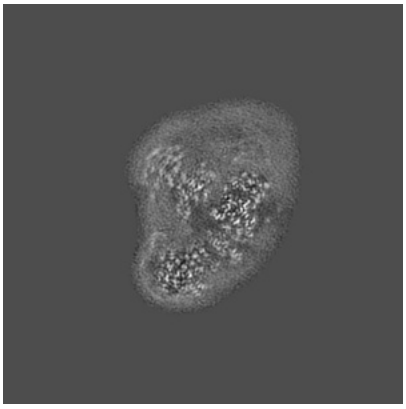
6.2.1 Primary map



X Index: 240



Y Index: 240

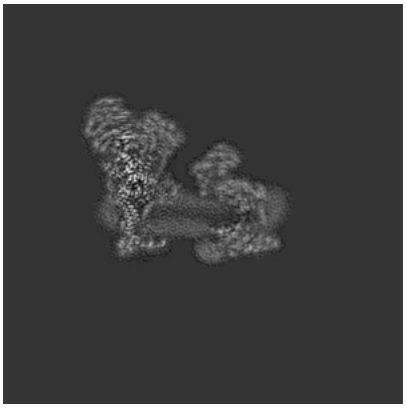


Z Index: 240

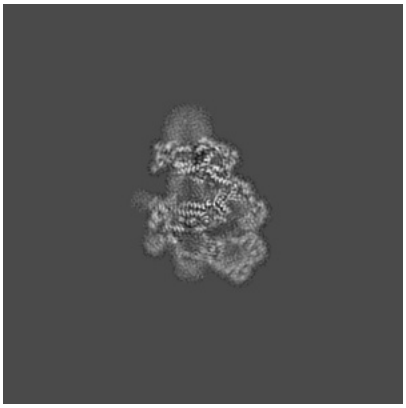
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

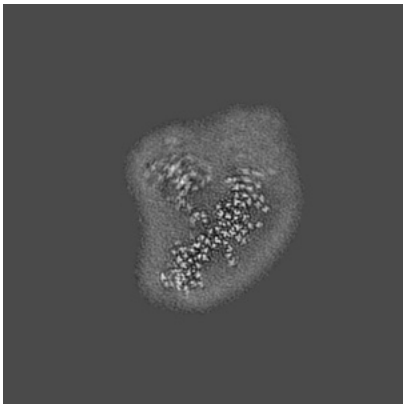
6.3.1 Primary map



X Index: 194



Y Index: 261

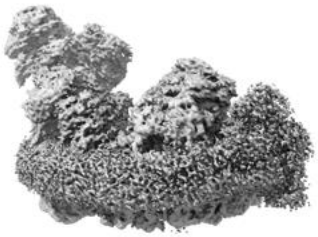


Z Index: 214

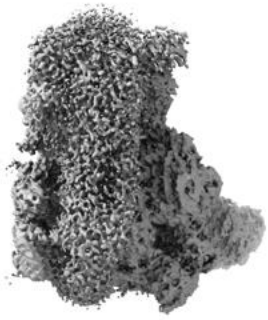
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map



X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.0354. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

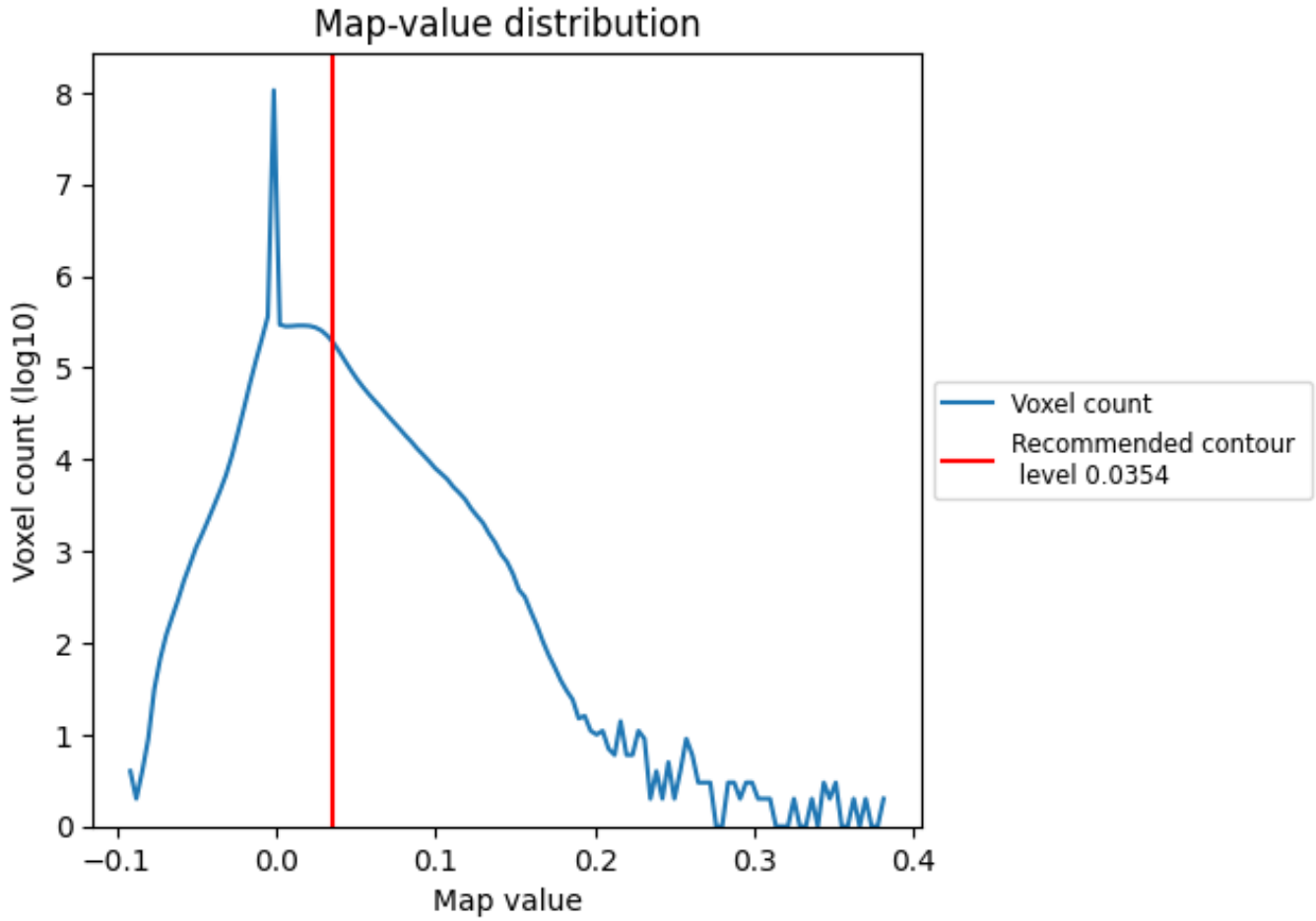
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

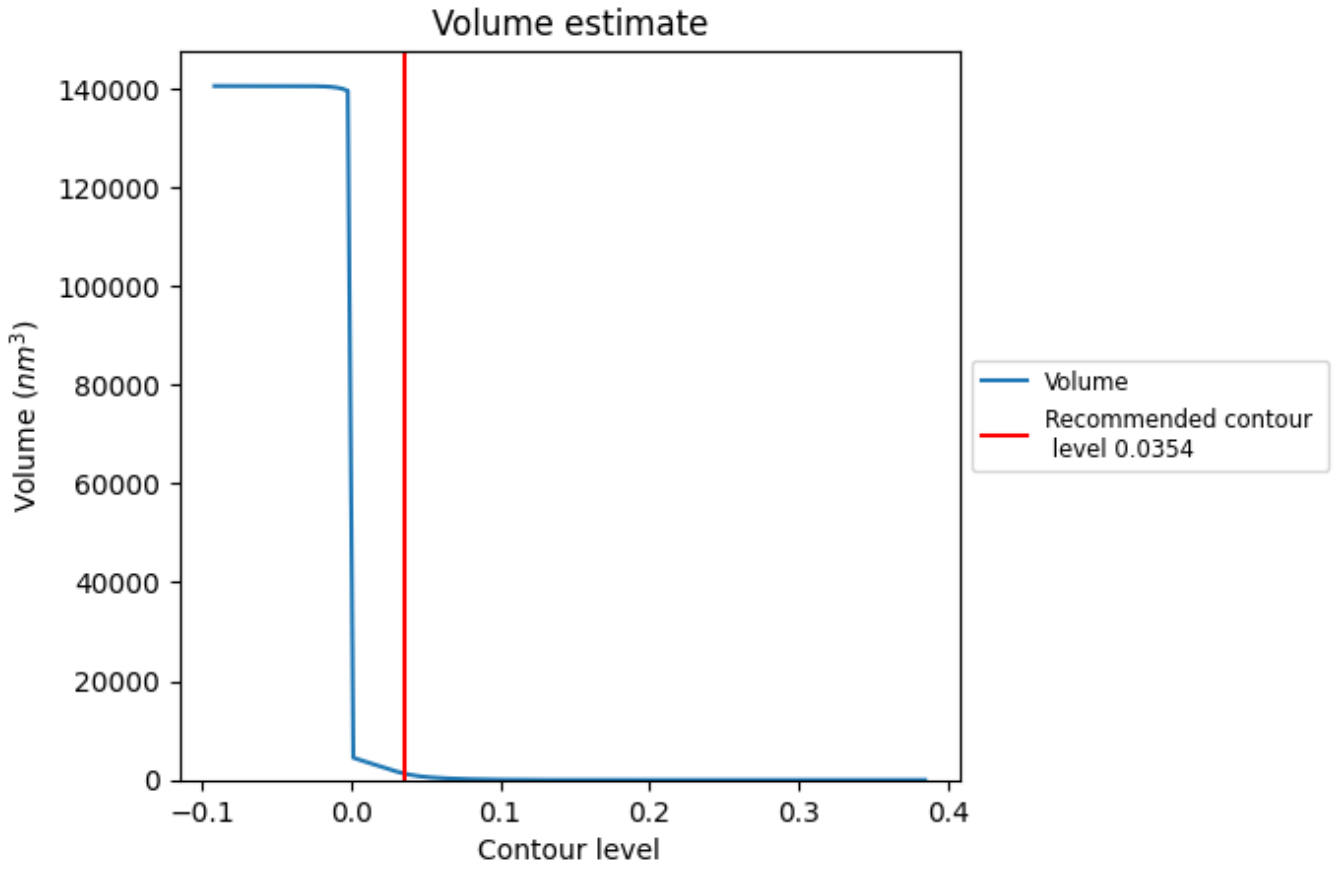
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

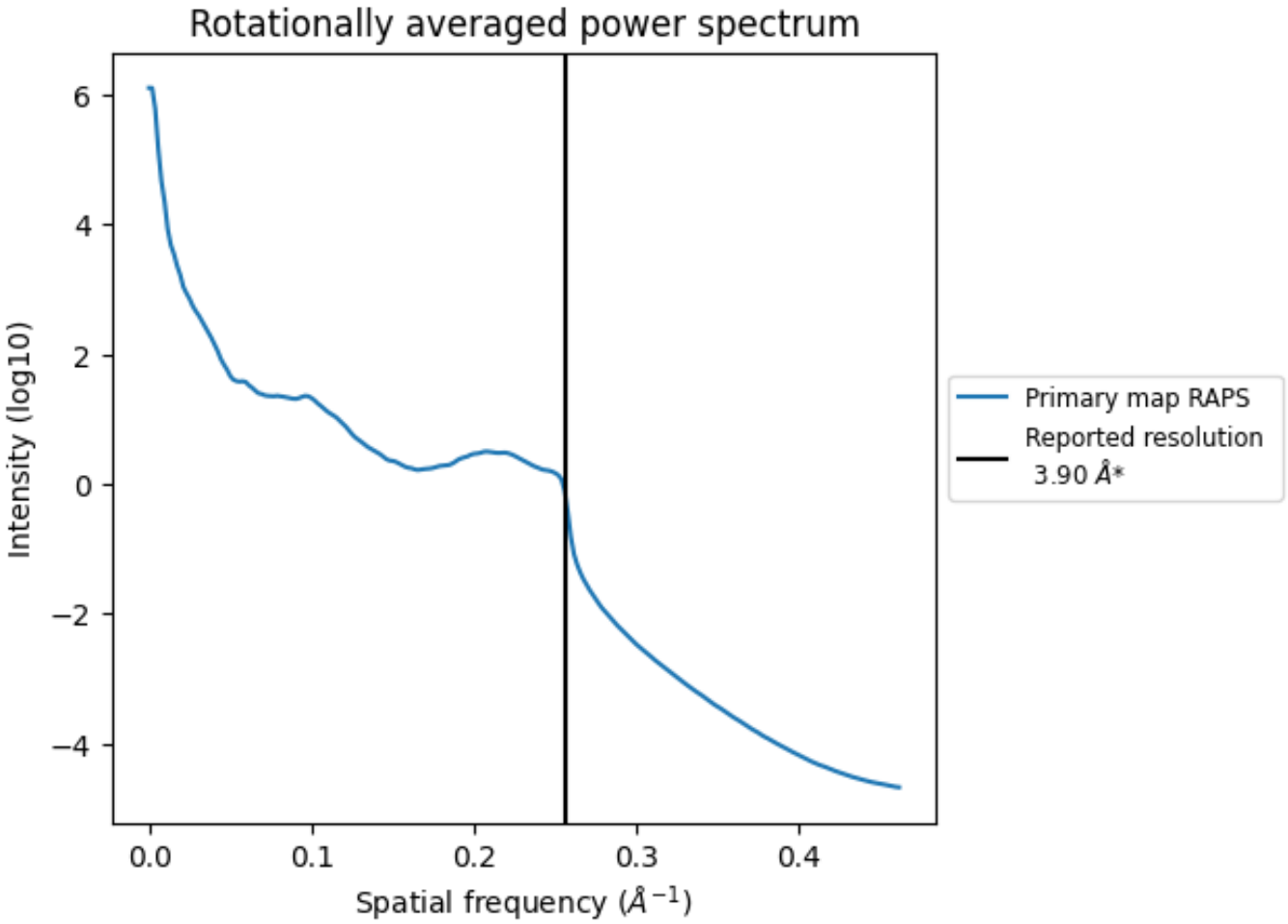
7.2 Volume estimate



The volume at the recommended contour level is 1319 nm^3; this corresponds to an approximate mass of 1191 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 0.256 Å^{-1}

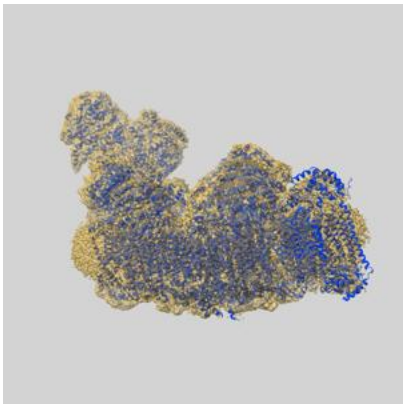
8 Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

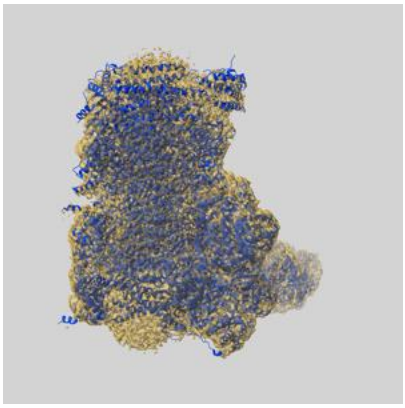
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-6775 and PDB model 5XTH. Per-residue inclusion information can be found in section 3 on page 26.

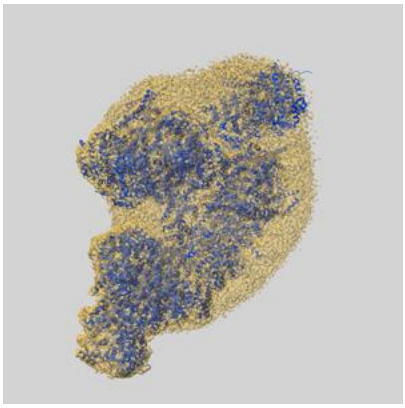
9.1 Map-model overlay



X



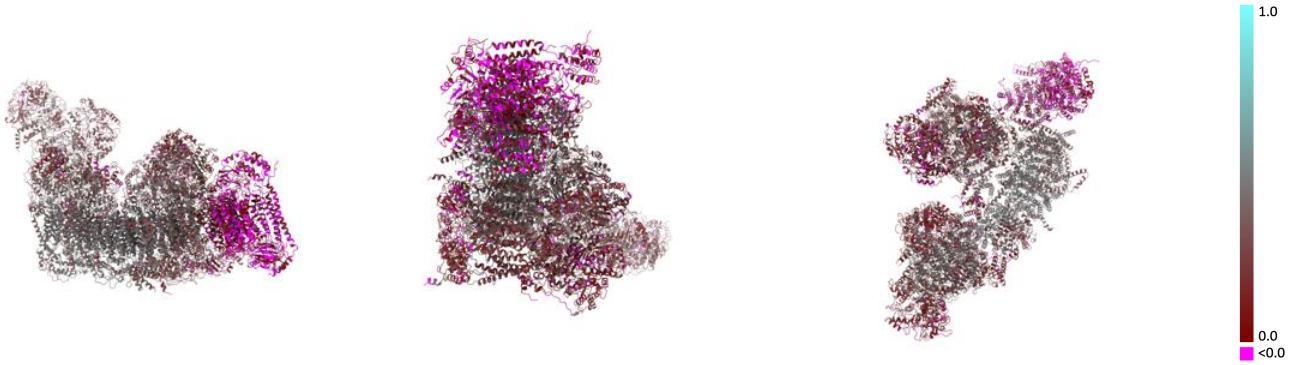
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0354 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

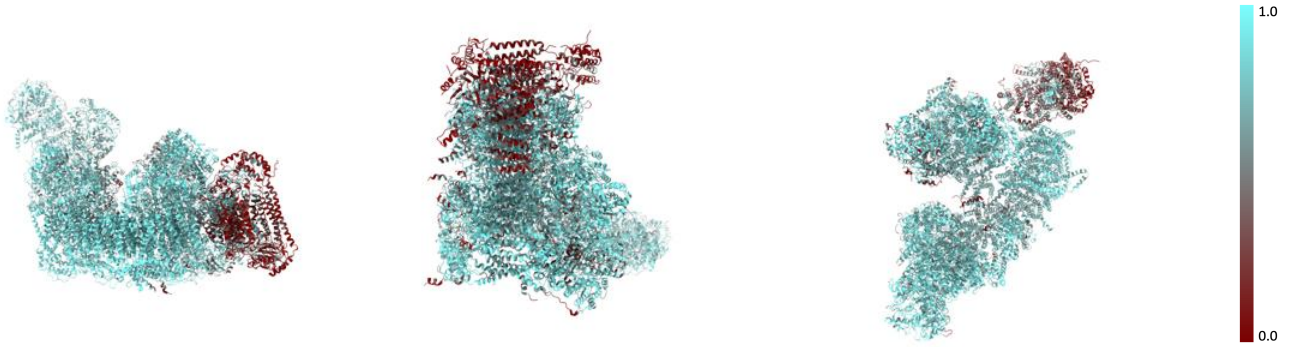
9.2 Q-score mapped to coordinate model



X Y Z

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

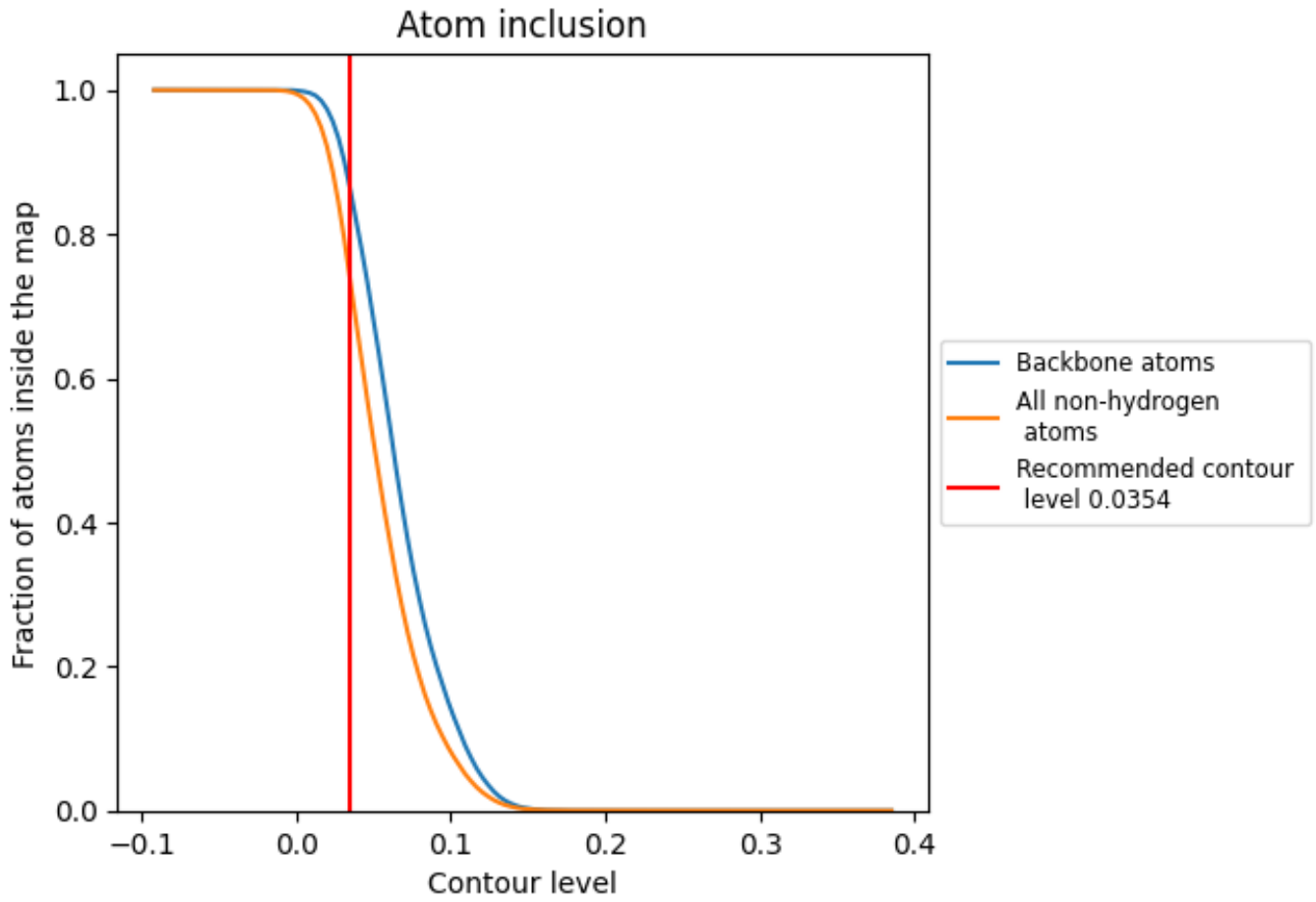
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0354).

9.4 Atom inclusion (i)



At the recommended contour level, 86% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.0354) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7318	0.2930
0	0.1288	0.0250
1	0.1760	0.0530
2	0.4301	0.0700
3	0.2680	0.0410
4	0.3498	0.0370
5	0.0948	0.0310
6	0.3418	0.0880
7	0.1040	0.0240
8	0.2816	0.0120
9	0.1355	0.0240
A	0.7826	0.2470
AA	0.7186	0.3250
AB	0.2283	0.0740
AC	0.6506	0.2070
AD	0.6413	0.2820
AE	0.7306	0.2250
AF	0.7022	0.2830
AG	0.6364	0.2600
AH	0.7733	0.2990
AJ	0.7417	0.3490
AK	0.8260	0.2600
AL	0.7964	0.3320
AN	0.6846	0.1970
AO	0.1153	-0.0360
AP	0.6975	0.1840
AQ	0.6497	0.1980
AR	0.7165	0.1870
AS	0.7787	0.2640
AT	0.6443	0.1700
AU	0.7818	0.2360
AV	0.7582	0.3070
AW	0.6953	0.1790
AY	0.7272	0.1890
B	0.8840	0.4270

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Chain	Atom inclusion	Q-score
C	0.9007	0.4360
E	0.6869	0.2550
F	0.7819	0.1840
G	0.4550	0.1620
H	0.7204	0.2130
I	0.7933	0.3150
J	0.8074	0.2950
K	0.7537	0.2440
L	0.7279	0.3180
M	0.7950	0.2910
N	0.8212	0.3440
O	0.8015	0.2630
P	0.7981	0.3200
Q	0.8197	0.3830
S	0.9091	0.4250
T	0.7845	0.3430
U	0.8795	0.4120
V	0.7819	0.4030
W	0.8903	0.4140
X	0.8662	0.3870
Y	0.8900	0.3530
Z	0.8515	0.3550
a	0.9173	0.4530
b	0.8369	0.3440
c	0.8957	0.4430
d	0.8905	0.4060
e	0.8316	0.4170
f	0.7970	0.3270
g	0.8480	0.4350
h	0.8829	0.4310
i	0.8498	0.4610
j	0.7549	0.3810
k	0.7916	0.4260
l	0.8172	0.4190
m	0.7978	0.4080
n	0.8531	0.3850
o	0.8560	0.4240
p	0.8950	0.4010
r	0.8721	0.4660
s	0.8480	0.4340
u	0.9118	0.4080
v	0.8314	0.3020

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Chain	Atom inclusion	Q-score
w	0.8349	0.3410
x	0.3690	0.0410
y	0.2578	0.0090
z	0.4567	0.0910