wwPDB EM Validation Summary Report ⓘ

Nov 24, 2024 – 03:35 AM JST

PDB ID	:	8IC2
EMDB ID	:	EMD-35352
Title	:	Respiratory complex CI:CIII2, type I, PERK -/- mouse under cold temperature
Authors	:	Shin, Y.-C.; Liao, M.
Deposited on	:	2023-02-10
Resolution	:	6.30 Å(reported)

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

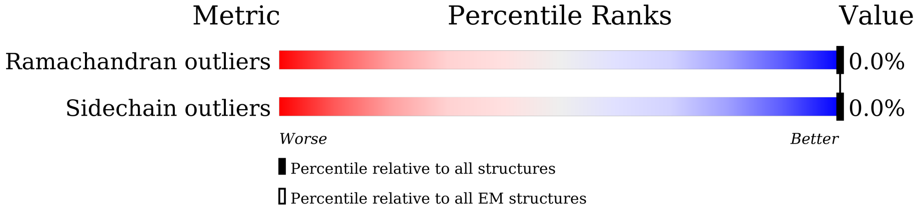
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance ⓘ

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

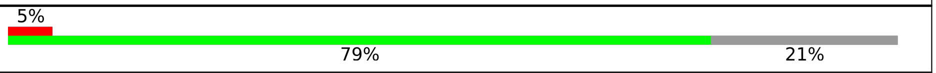
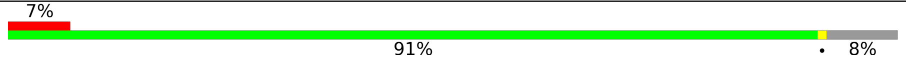
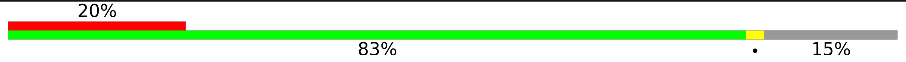
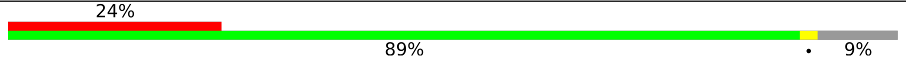
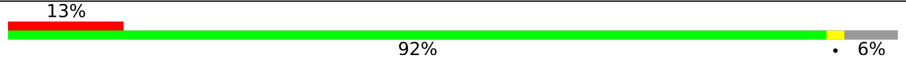
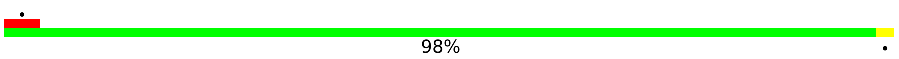
The reported resolution of this entry is 6.30 Å.

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	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	115	
2	B	224	
3	C	263	
4	D	463	
5	E	248	
6	F	464	
7	G	727	
8	H	318	
9	I	212	

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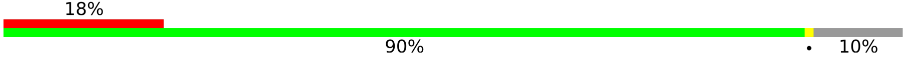
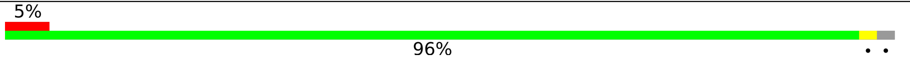
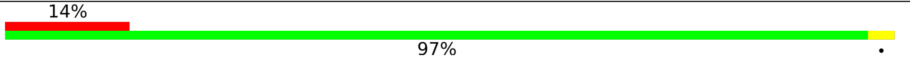
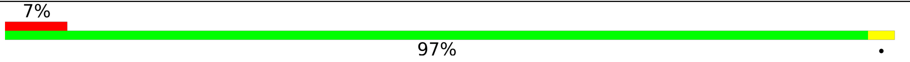
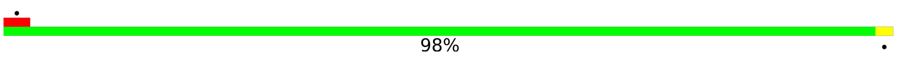
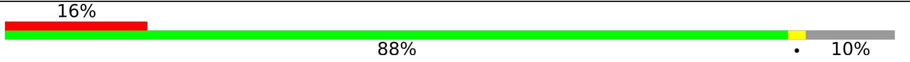
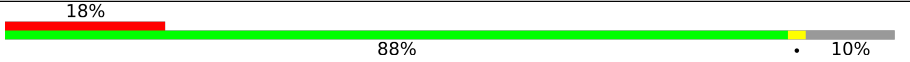
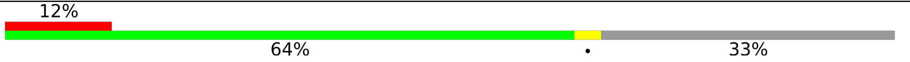
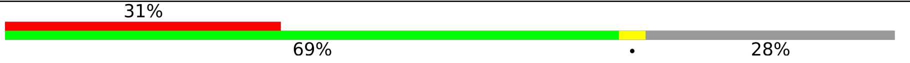
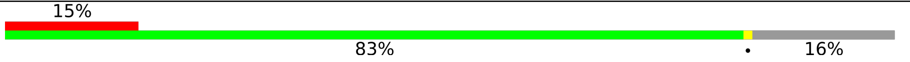
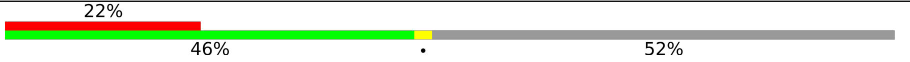
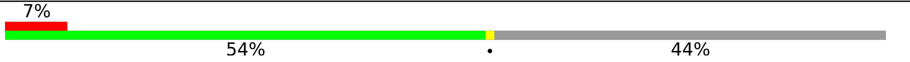
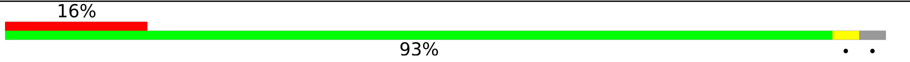
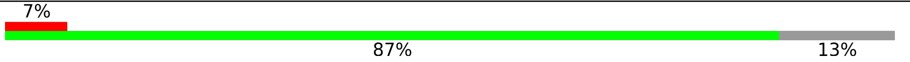
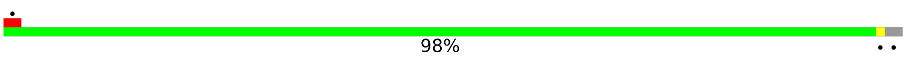
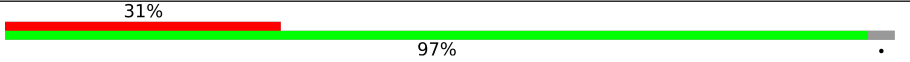
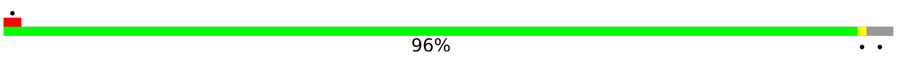
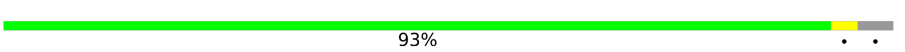
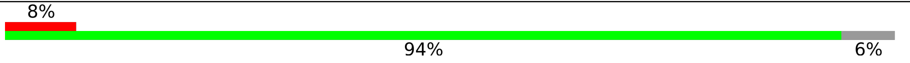
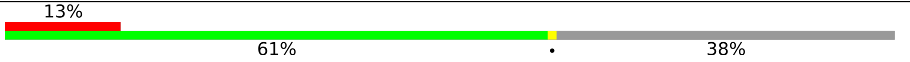
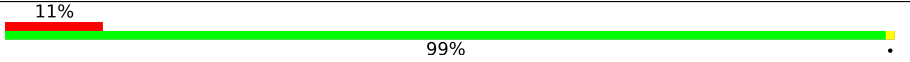
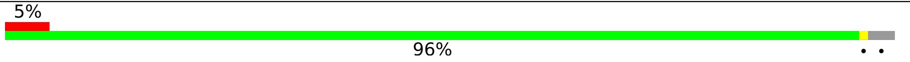
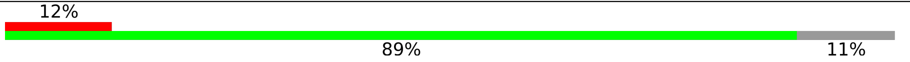
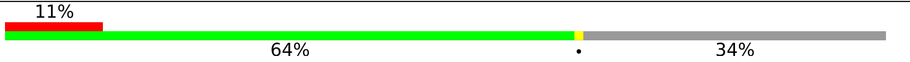
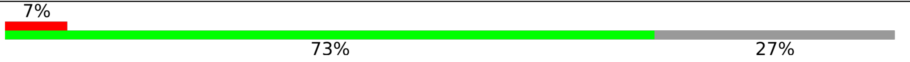
Mol	Chain	Length	Quality of chain
10	J	172	
11	K	98	
12	L	607	
13	M	459	
14	N	345	
15	O	355	
16	P	377	
17	Q	175	
18	R	116	
19	S	99	
20	T	156	
20	U	156	
21	V	116	
22	W	131	
23	X	172	
24	Y	143	
25	Z	144	
26	a	70	
27	b	84	
28	c	76	
29	d	120	
30	e	106	
31	f	57	
32	g	151	
33	h	189	

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Mol	Chain	Length	Quality of chain
34	i	128	9% 71% 29%
35	j	105	9% 64% 36%
36	k	104	11% 64% • 34%
37	l	186	15% 82% • 17%
38	m	129	23% 97% • •
39	n	179	20% 97% • •
40	o	137	22% 88% 12%
41	p	176	11% 94% • 5%
42	q	145	68% 81% • 16%
43	r	113	21% 43% • 55%
44	s	104	14% 27% • 72%
45	AA	480	81% 84% 16%
45	Aa	480	80% 83% 17%
46	AB	453	90% 91% 9%
46	Ab	453	89% 92% 8%
47	AC	381	96% 97% • •
47	Ac	381	90% 97% •
48	AD	325	73% 73% 27%
48	Ad	325	74% 74% 26%
49	AE	274	65% 66% 34%
49	AI	274	18% 18% 82%
49	Ae	274	68% 68% 32%
50	AF	111	86% 87% 13%
50	Af	111	86% 88% 12%
51	AG	82	91% 91% 9%

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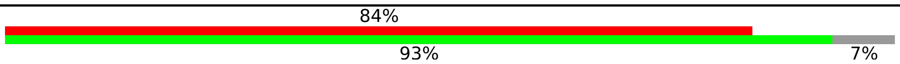
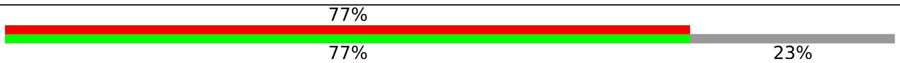
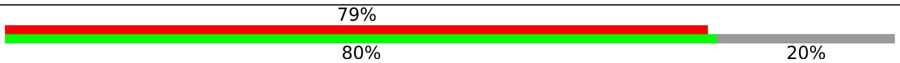
Mol	Chain	Length	Quality of chain
51	Ag	82	
52	AH	89	
52	Ah	89	
53	AJ	64	
53	Aj	64	
54	AK	56	
54	Ak	56	

2 Entry composition ⓘ

There are 70 unique types of molecules in this entry. The entry contains 97017 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	91	737	511	102	118	6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	156	1247	796	223	214	14	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	198	1641	1060	279	299	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	427	3443	2201	592	626	24	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	210	1635	1039	275	310	11	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	424	3273	2062	586	603	22	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	687	5287	3316	918	1012	41	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	317	2531	1701	383	425	22	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	173	1389	875	239	263	12	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	155	1178	797	167	199	15	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	96	721	468	110	134	9	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	606	4798	3181	746	826	45	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	459	3630	2407	567	616	40	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	N	344	2694	1790	416	451	37	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	O	318	2588	1662	426	490	10	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	P	339	2720	1759	476	478	7	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	Q	118	957	608	165	180	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	R	83	660	411	120	126	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	S	83	667	419	126	119	3	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
20	T	75	Total C N O S 604 388 89 122 5	0	0
20	U	87	Total C N O S 700 450 103 142 5	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
21	V	112	Total C N O S 915 596 152 164 3	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
22	W	114	Total C N O S 970 619 180 165 6	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
23	X	169	Total C N O S 1385 882 248 245 10	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
24	Y	139	Total C N O S 1030 657 174 191 8	0	0

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

Mol	Chain	Residues	Atoms	AltConf	Trace
25	Z	139	Total C N O S 1152 741 204 199 8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	a	67	548	356	97	91	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	b	79	620	408	98	110	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	c	47	389	255	67	66	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	d	120	996	651	171	165	9	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	e	103	859	544	157	150	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	f	51	439	284	79	74	2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	g	99	835	541	134	156	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	h	138	1162	762	194	203	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	i	91	765	500	131	131	3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	j	67	574	376	95	102	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	k	69	560	370	97	91	2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	l	155	1304	840	218	235	11	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
38	m	126	1050	676	189	185	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	n	177	1534	981	275	267	11	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	o	121	1038	654	196	180	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	p	167	1415	891	254	262	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	q	122	1020	655	180	181	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	r	51	418	266	78	73	1	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
44	s	29	238	151	39	48	0	0

- Molecule 45 is a protein called Cytochrome b-c1 complex subunit 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	AA	403	3157	1971	562	608	16	0	0

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Mol	Chain	Residues	Atoms	AltConf	Trace
45	Aa	400	Total C N O S 3131 1957 554 604 16	0	0

- Molecule 46 is a protein called Cytochrome b-c1 complex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms	AltConf	Trace
46	AB	413	Total C N O S 3097 1949 542 597 9	0	0
46	Ab	417	Total C N O S 3128 1965 550 604 9	0	0

- Molecule 47 is a protein called Cytochrome b.

Mol	Chain	Residues	Atoms	AltConf	Trace
47	AC	373	Total C N O S 2988 2018 461 489 20	0	0
47	Ac	369	Total C N O S 2956 1995 457 484 20	0	0

- Molecule 48 is a protein called Cytochrome c1, heme protein, mitochondrial.

Mol	Chain	Residues	Atoms	AltConf	Trace
48	AD	238	Total C N O S 1896 1211 326 345 14	0	0
48	Ad	240	Total C N O S 1912 1221 328 349 14	0	0

- Molecule 49 is a protein called Cytochrome b-c1 complex subunit Rieske, mitochondrial.

Mol	Chain	Residues	Atoms	AltConf	Trace
49	AE	181	Total C N O S 1397 885 243 263 6	0	0
49	AI	48	Total C N O 328 210 61 57	0	0
49	Ae	186	Total C N O S 1436 907 251 271 7	0	0

- Molecule 50 is a protein called Cytochrome b-c1 complex subunit 7.

Mol	Chain	Residues	Atoms	AltConf	Trace
50	AF	97	Total C N O S 855 546 152 154 3	0	0

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Mol	Chain	Residues	Atoms	AltConf	Trace
50	Af	98	Total C N O S 864 552 154 155 3	0	0

- Molecule 51 is a protein called Cytochrome b-c1 complex subunit 8.

Mol	Chain	Residues	Atoms	AltConf	Trace
51	AG	75	Total C N O S 634 413 115 105 1	0	0
51	Ag	76	Total C N O S 643 418 116 108 1	0	0

- Molecule 52 is a protein called Cytochrome b-c1 complex subunit 6, mitochondrial.

Mol	Chain	Residues	Atoms	AltConf	Trace
52	AH	64	Total C N O S 527 321 98 103 5	0	0
52	Ah	64	Total C N O S 527 321 98 103 5	0	0

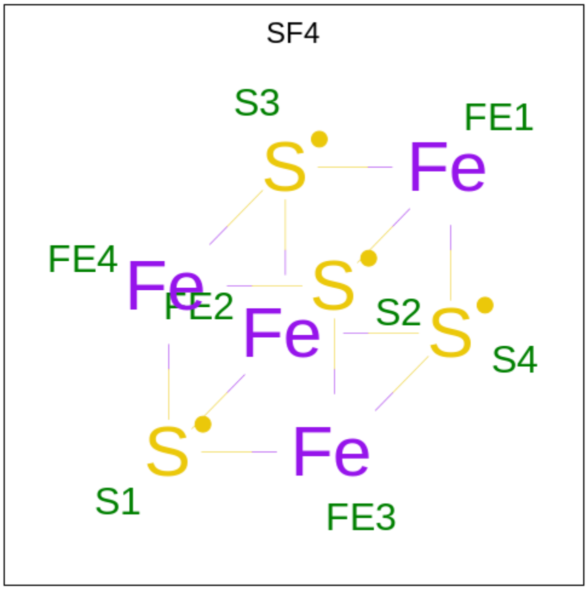
- Molecule 53 is a protein called Cytochrome b-c1 complex subunit 9.

Mol	Chain	Residues	Atoms	AltConf	Trace
53	AJ	41	Total C N O 332 216 57 59	0	0
53	Aj	41	Total C N O 332 216 57 59	0	0

- Molecule 54 is a protein called Cytochrome b-c1 complex subunit 10.

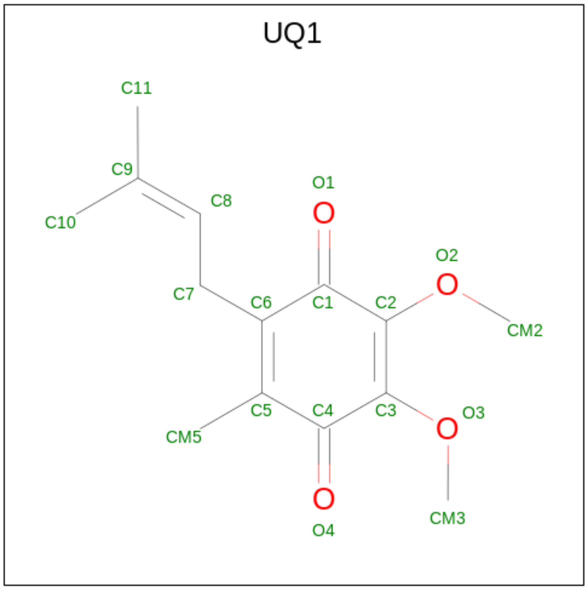
Mol	Chain	Residues	Atoms	AltConf	Trace
54	AK	43	Total C N O S 355 235 64 55 1	0	0
54	Ak	45	Total C N O S 365 242 64 58 1	0	0

- Molecule 55 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4) (labeled as "Ligand of Interest" by depositor).



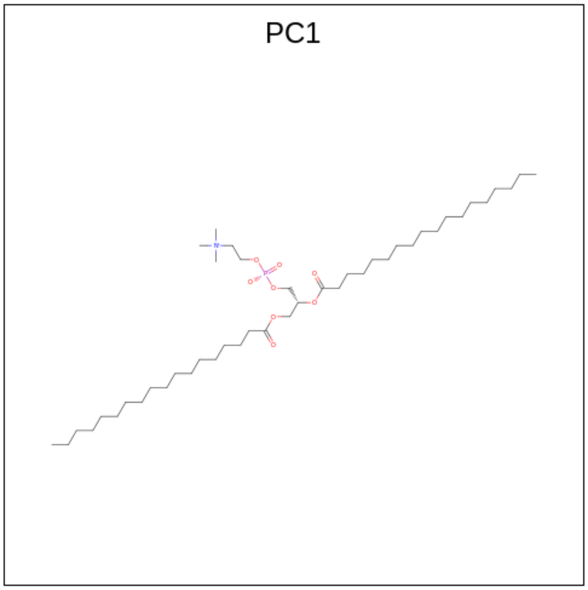
Mol	Chain	Residues	Atoms	AltConf
55	B	1	Total Fe S 8 4 4	0
55	F	1	Total Fe S 8 4 4	0
55	G	1	Total Fe S 8 4 4	0
55	G	1	Total Fe S 8 4 4	0
55	I	1	Total Fe S 8 4 4	0
55	I	1	Total Fe S 8 4 4	0

- Molecule 56 is UBIQUINONE-1 (three-letter code: UQ1) (formula: $C_{14}H_{18}O_4$) (labeled as "Ligand of Interest" by depositor).



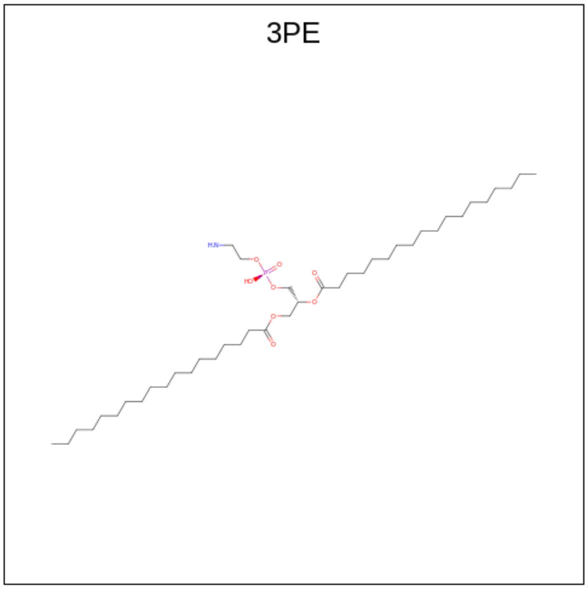
Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
56	B	1	18	14	4	0

- Molecule 57 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
57	B	1	35	25	1	8	1	0
57	I	1	43	33	1	8	1	0

- Molecule 58 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
58	D	1	Total 38	C 28	N 1	O 8	P 1	0
58	H	1	Total 46	C 36	N 1	O 8	P 1	0
58	H	1	Total 51	C 41	N 1	O 8	P 1	0
58	J	1	Total 46	C 36	N 1	O 8	P 1	0
58	L	1	Total 40	C 30	N 1	O 8	P 1	0
58	L	1	Total 49	C 39	N 1	O 8	P 1	0
58	L	1	Total 44	C 34	N 1	O 8	P 1	0
58	M	1	Total 37	C 27	N 1	O 8	P 1	0
58	M	1	Total 49	C 39	N 1	O 8	P 1	0
58	i	1	Total 40	C 30	N 1	O 8	P 1	0
58	m	1	Total 41	C 31	N 1	O 8	P 1	0
58	Ac	1	Total 23	C 13	N 1	O 8	P 1	0

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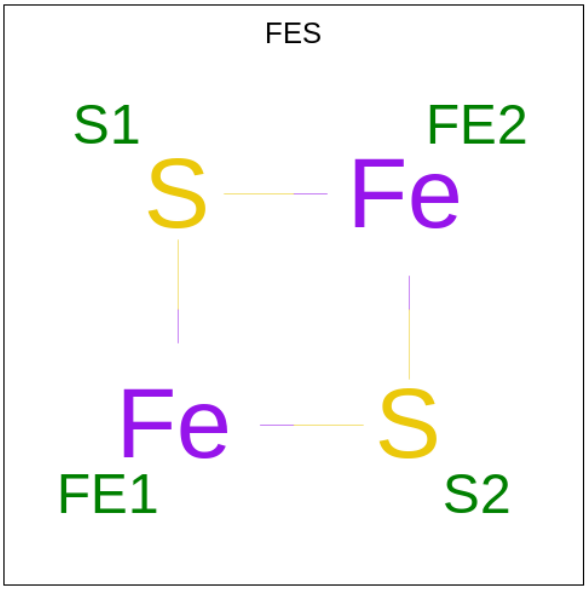
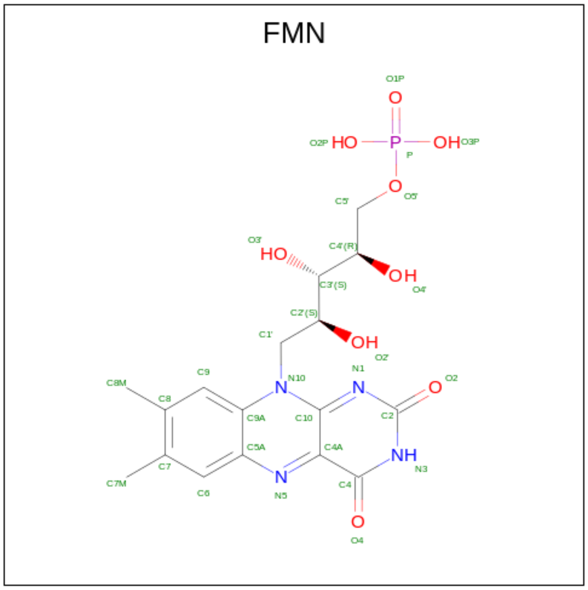
Mol	Chain	Residues	Atoms	AltConf
58	Ac	1	Total C N O P 35 25 1 8 1	0
58	Ag	1	Total C N O P 51 41 1 8 1	0

- Molecule 59 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2) (labeled as "Ligand of Interest" by depositor).



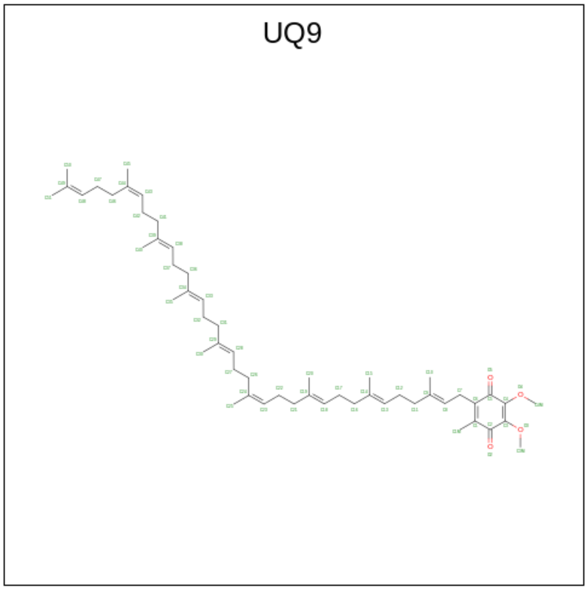
Mol	Chain	Residues	Atoms	AltConf
59	E	1	Total Fe S 4 2 2	0
59	G	1	Total Fe S 4 2 2	0

- Molecule 60 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



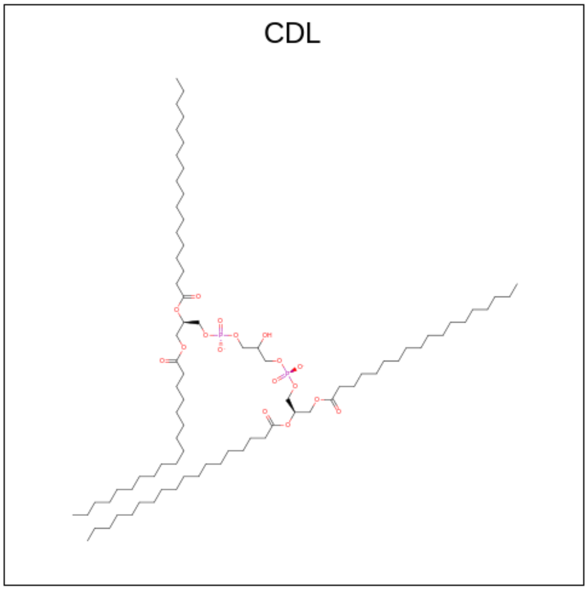
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
60	F	1	31	17	4	9	1	0

- Molecule 61 is Ubiquinone-9 (three-letter code: UQ9) (formula: $C_{54}H_{82}O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
61	H	1	35	31	4	0

- Molecule 62 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$) (labeled as "Ligand of Interest" by depositor).

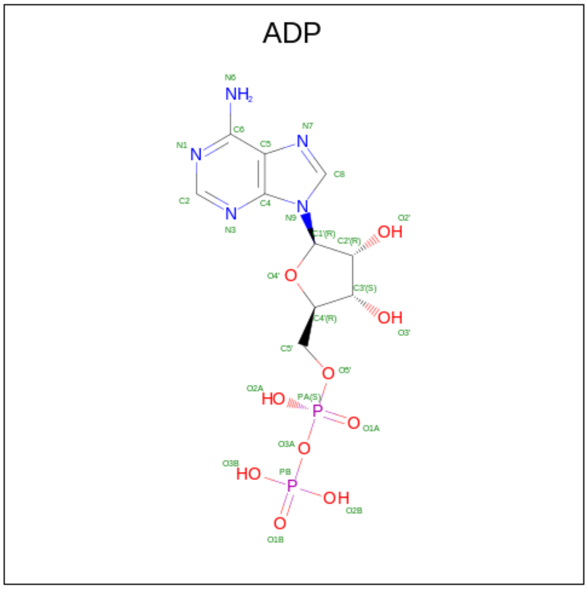


Mol	Chain	Residues	Atoms	AltConf
62	L	1	Total C O P 73 54 17 2	0
62	M	1	Total C O P 82 63 17 2	0
62	Y	1	Total C O P 71 52 17 2	0
62	d	1	Total C O P 65 46 17 2	0
62	h	1	Total C O P 68 49 17 2	0
62	q	1	Total C O P 57 38 17 2	0
62	Aa	1	Total C O P 46 27 17 2	0
62	Ag	1	Total C O P 42 23 17 2	0
62	Ag	1	Total C O P 56 37 17 2	0

- Molecule 63 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

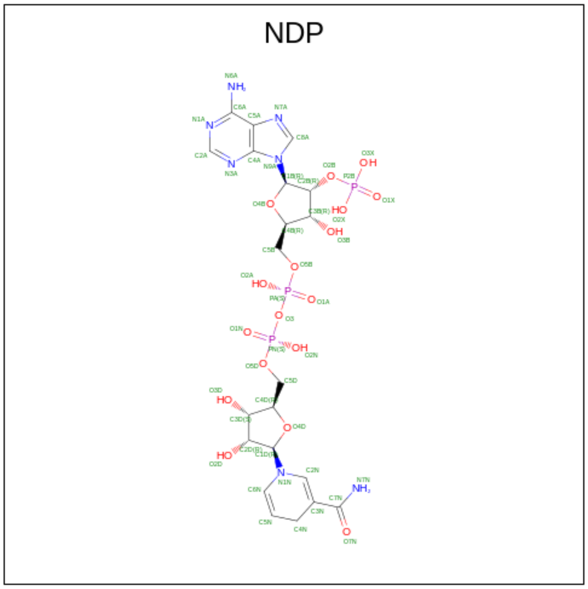
Mol	Chain	Residues	Atoms	AltConf
63	L	1	Total Zn 1 1	0
63	R	1	Total Zn 1 1	0

- Molecule 64 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



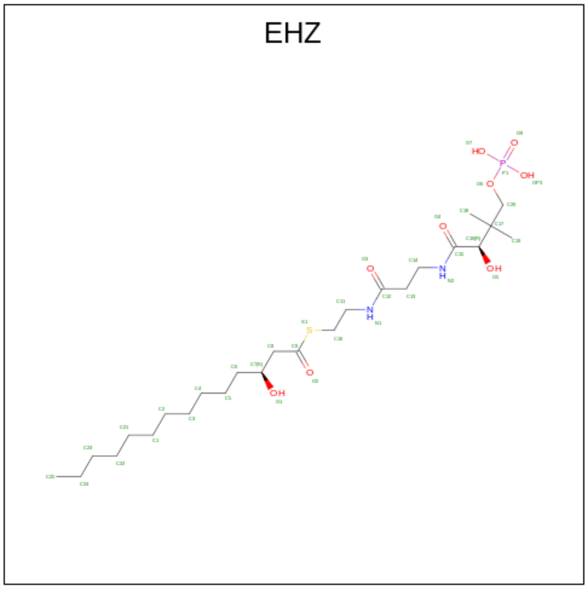
Mol	Chain	Residues	Atoms					AltConf
64	O	1	Total 27	C 10	N 5	O 10	P 2	0

- Molecule 65 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$) (labeled as "Ligand of Interest" by depositor).



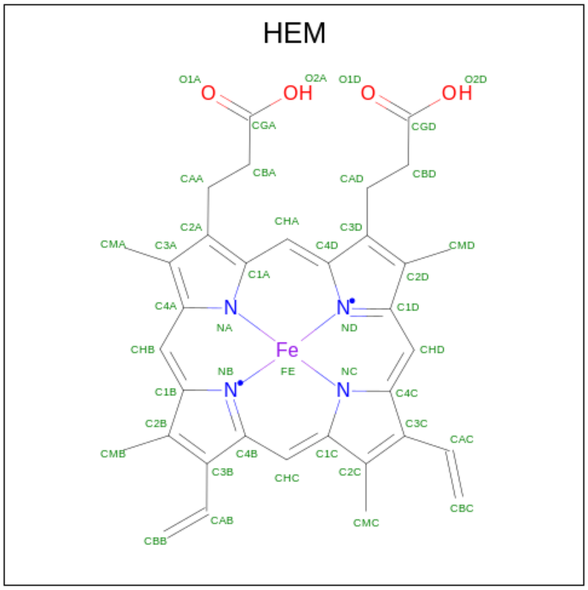
Mol	Chain	Residues	Atoms					AltConf
65	P	1	Total 48	C 21	N 7	O 17	P 3	0

- Molecule 66 is {S}-[2-[3-[[(2 {R})-3,3-dimethyl-2-oxidanyl-4-phosphonooxy-butanoyl]amino]propanoylamino]ethyl] (3 {S})-3-oxidanyltetradecanethioate (three-letter code: EHZ) (formula: $C_{25}H_{49}N_2O_9PS$) (labeled as "Ligand of Interest" by depositor).



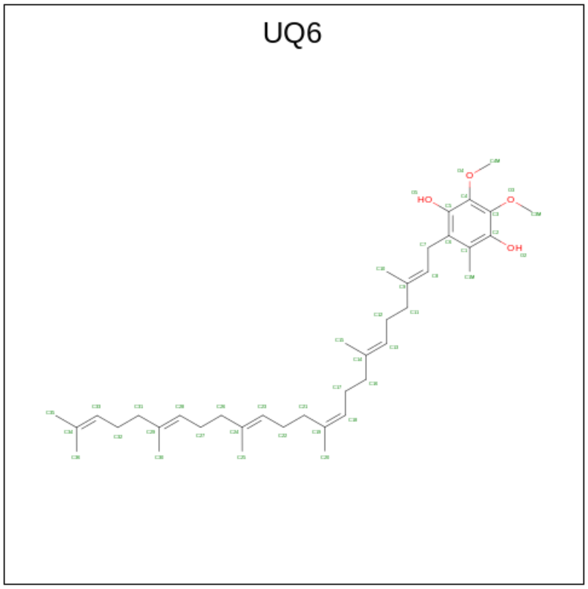
Mol	Chain	Residues	Atoms						AltConf
66	W	1	Total 32	C 19	N 2	O 9	P 1	S 1	0
66	n	1	Total 32	C 19	N 2	O 9	P 1	S 1	0

- Molecule 67 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



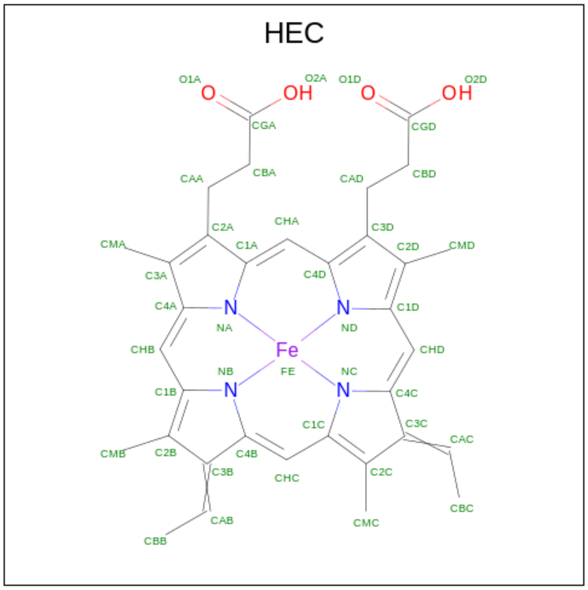
Mol	Chain	Residues	Atoms	AltConf
67	AC	1	Total C Fe N O 43 34 1 4 4	0
67	AC	1	Total C Fe N O 43 34 1 4 4	0
67	Ac	1	Total C Fe N O 43 34 1 4 4	0
67	Ac	1	Total C Fe N O 43 34 1 4 4	0

- Molecule 68 is 5-(3,7,11,15,19,23-HEXAMETHYL-TETRACOSA-2,6,10,14,18,22-HEXAENYL)-2,3-DIMETHOXY-6-METHYL-BENZENE-1,4-DIOL (three-letter code: UQ6) (formula: $C_{39}H_{60}O_4$) (labeled as "Ligand of Interest" by depositor).



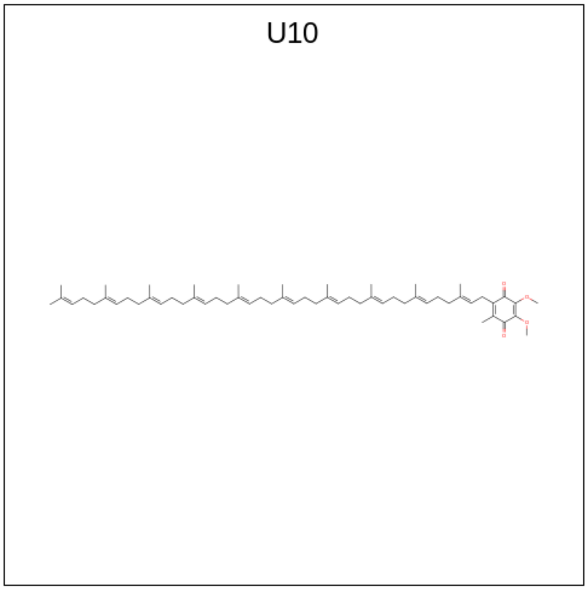
Mol	Chain	Residues	Atoms			AltConf
68	AC	1	Total 28	C 24	O 4	0
68	Ac	1	Total 23	C 19	O 4	0

- Molecule 69 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
69	AD	1	Total 43	C 34	Fe 1	N 4	O 4	0
69	Ad	1	Total 43	C 34	Fe 1	N 4	O 4	0

- Molecule 70 is UBIQUINONE-10 (three-letter code: U10) (formula: $C_{59}H_{90}O_4$) (labeled as "Ligand of Interest" by depositor).



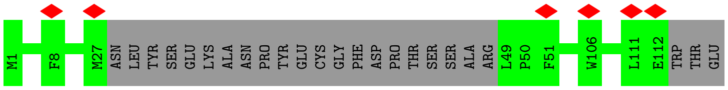
Mol	Chain	Residues	Atoms	AltConf
70	Ac	1	Total C O 23 19 4	0

3 Residue-property plots ⓘ

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

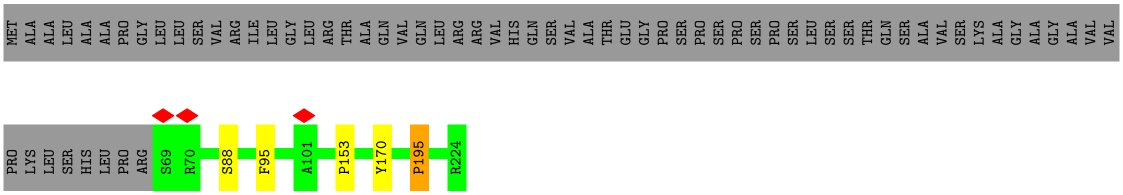
- Molecule 1: NADH-ubiquinone oxidoreductase chain 3

Chain A:



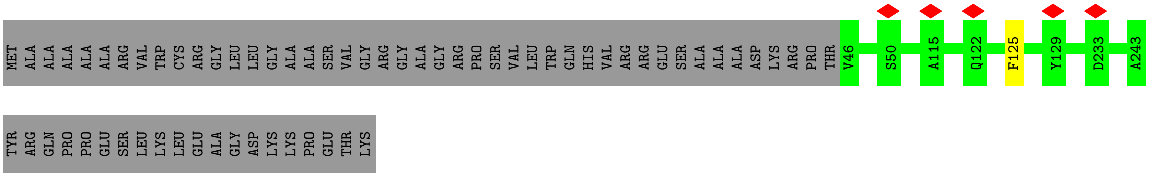
- Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

Chain B:



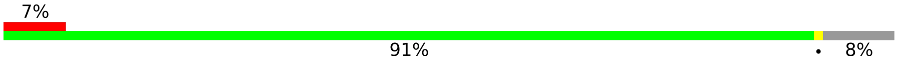
- Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

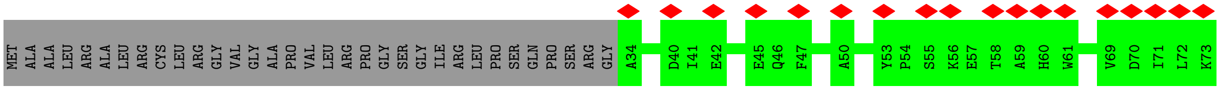
Chain C:

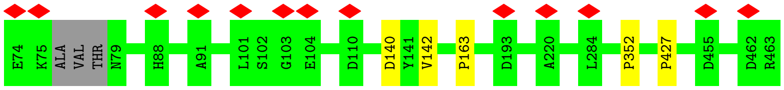


- Molecule 4: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

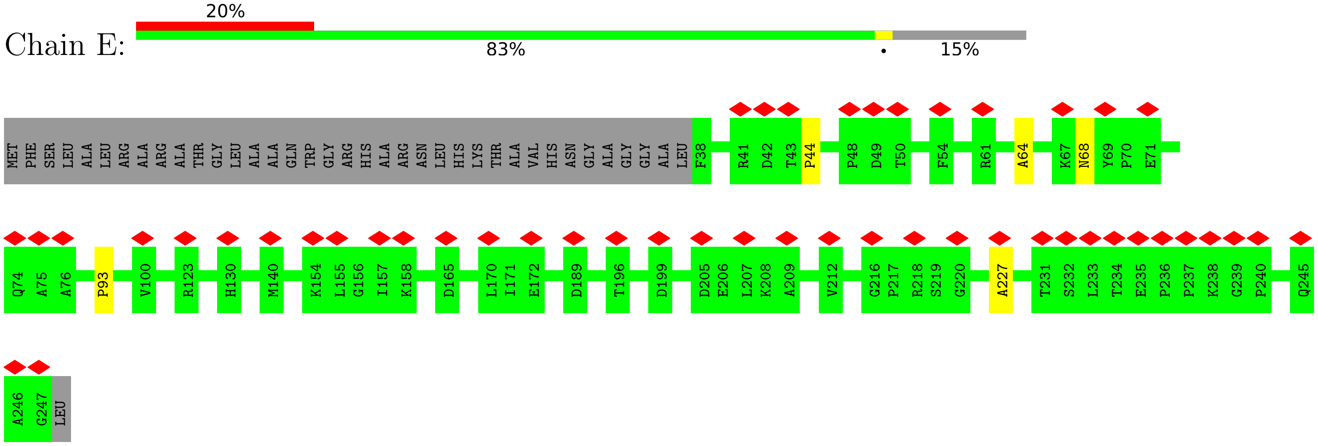
Chain D:



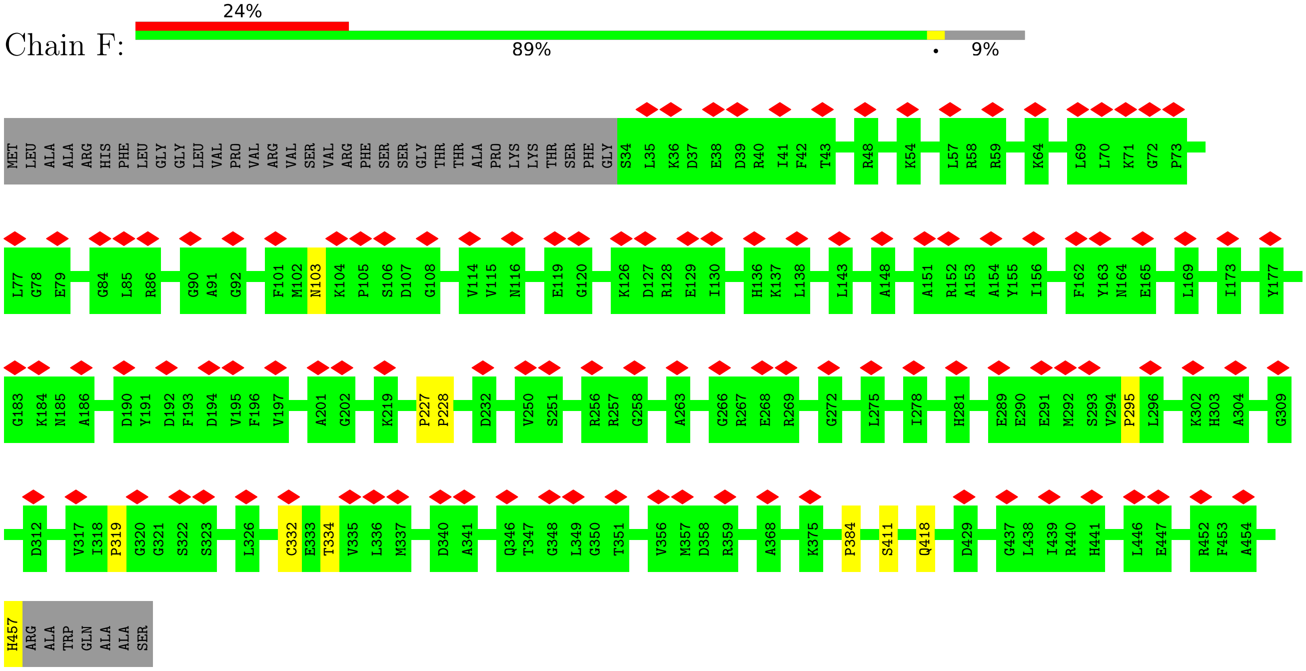




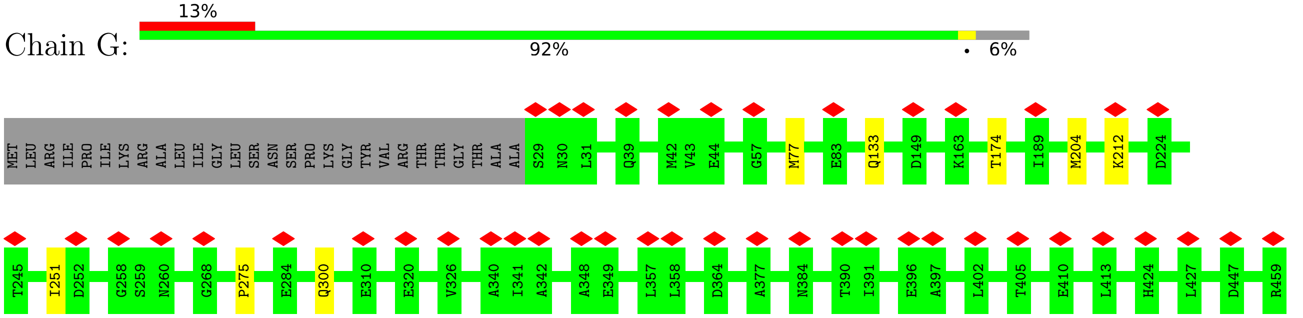
- Molecule 5: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

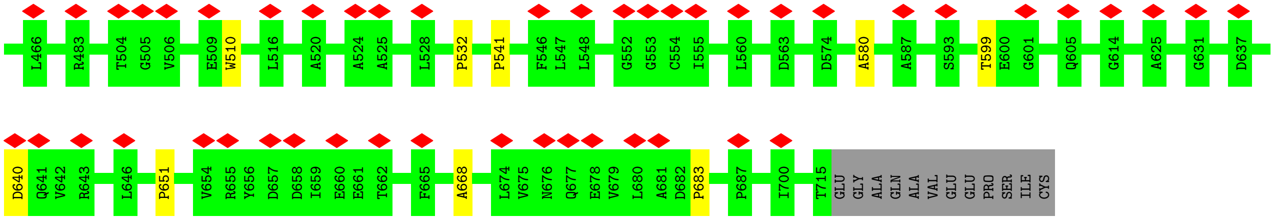


- Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial

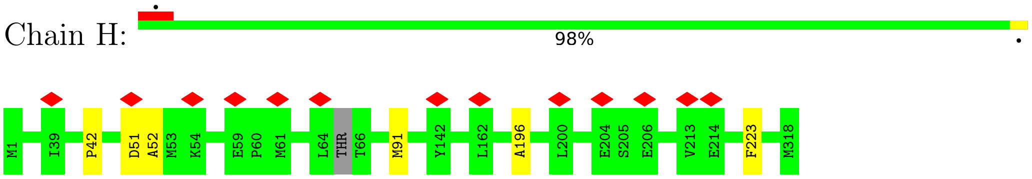


- Molecule 7: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

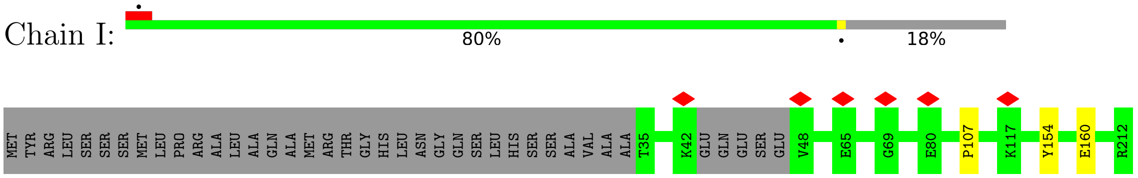




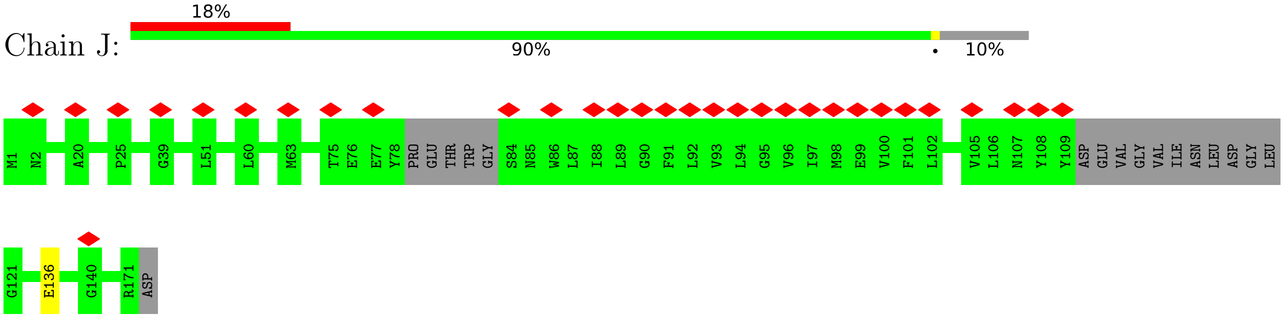
- Molecule 8: NADH-ubiquinone oxidoreductase chain 1



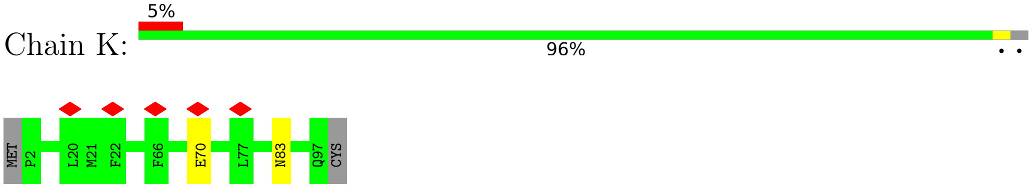
- Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial



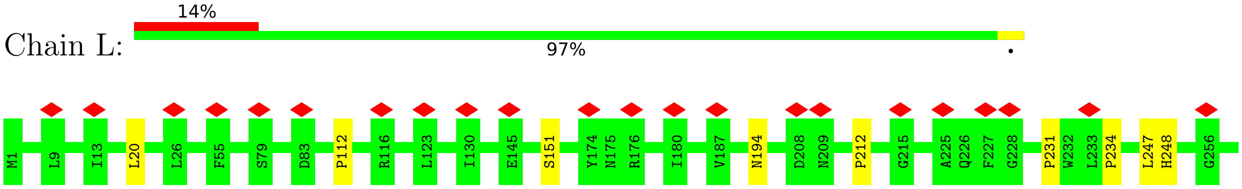
- Molecule 10: NADH-ubiquinone oxidoreductase chain 6

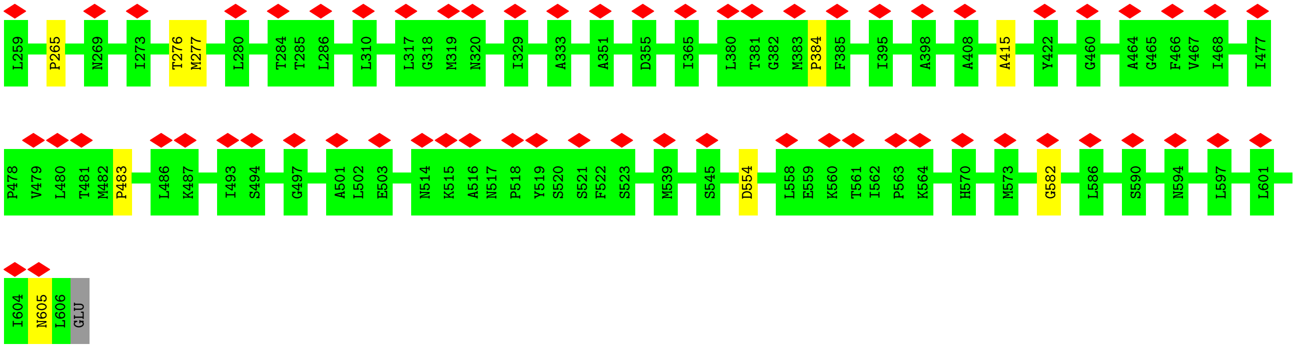


- Molecule 11: NADH-ubiquinone oxidoreductase chain 4L

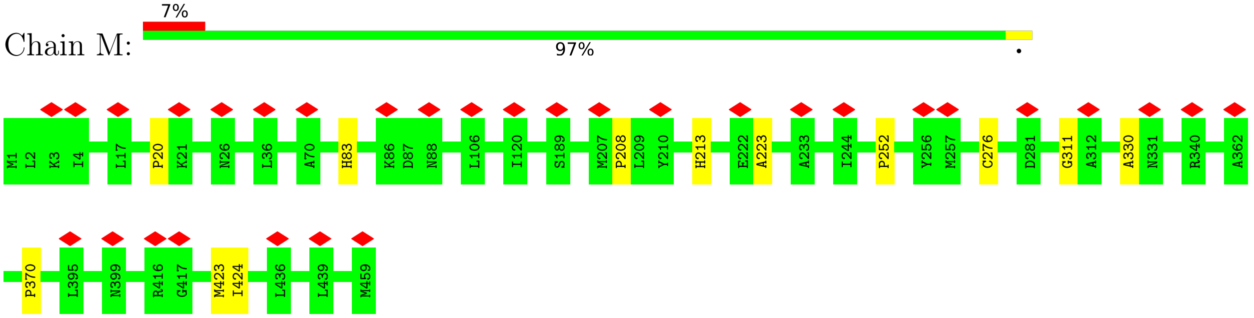


- Molecule 12: NADH-ubiquinone oxidoreductase chain 5

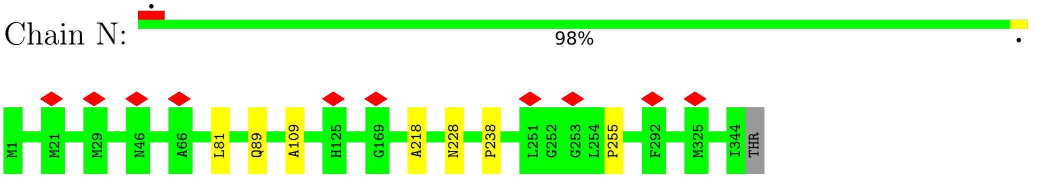




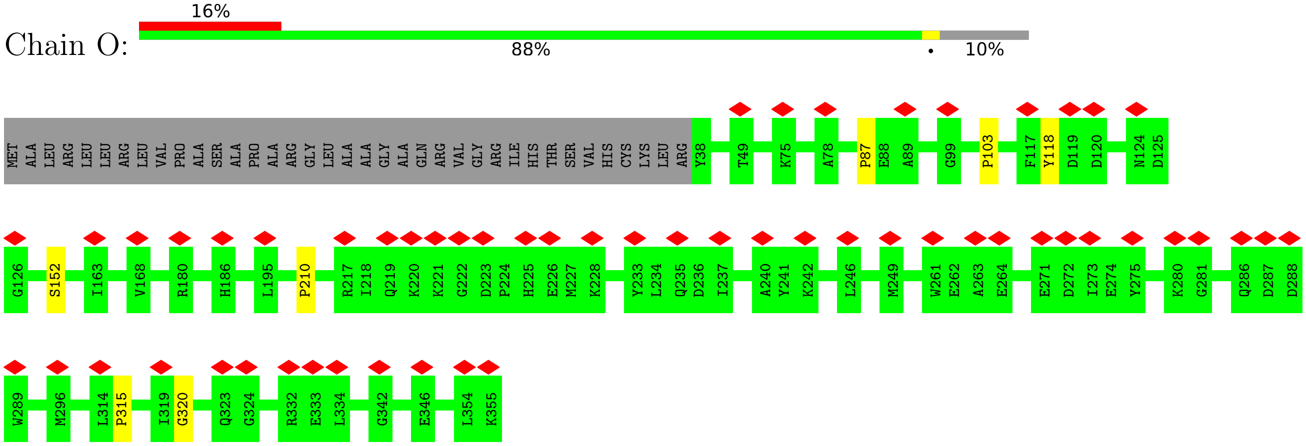
- Molecule 13: NADH-ubiquinone oxidoreductase chain 4



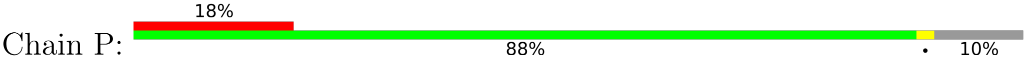
- Molecule 14: NADH-ubiquinone oxidoreductase chain 2

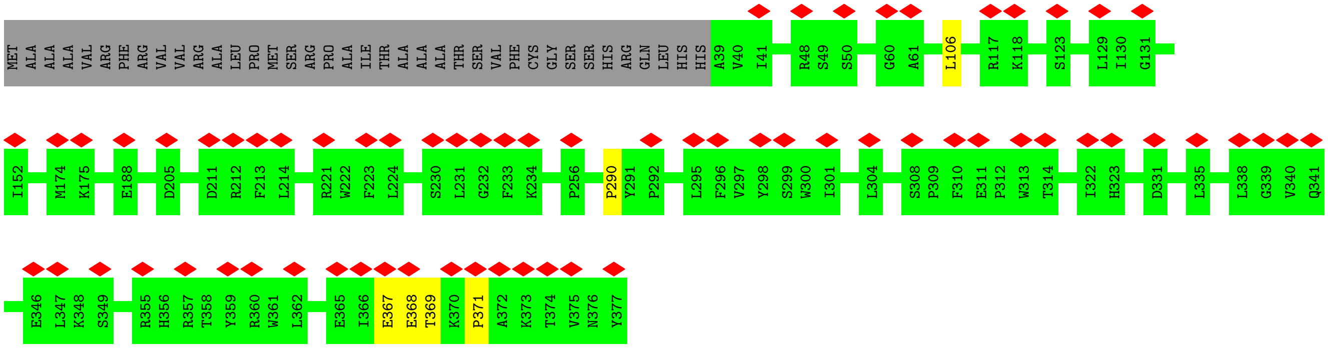


- Molecule 15: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

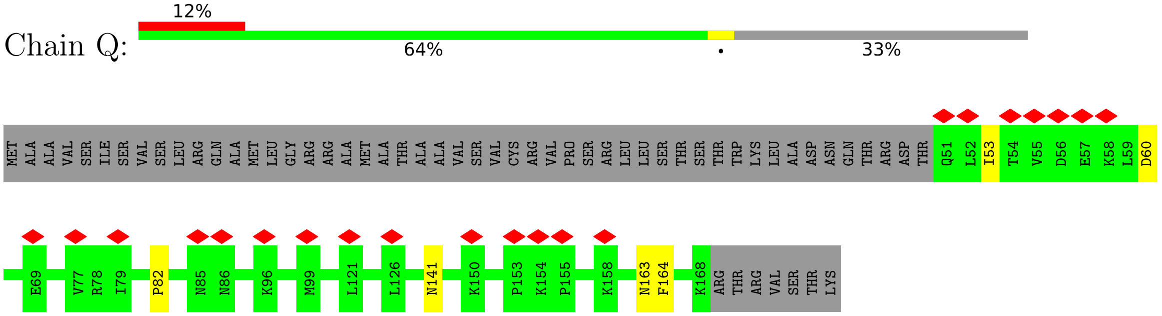


- Molecule 16: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

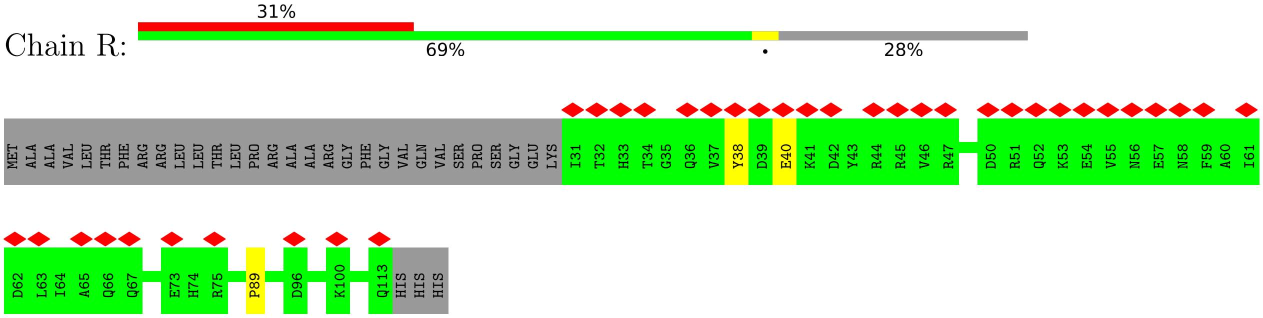




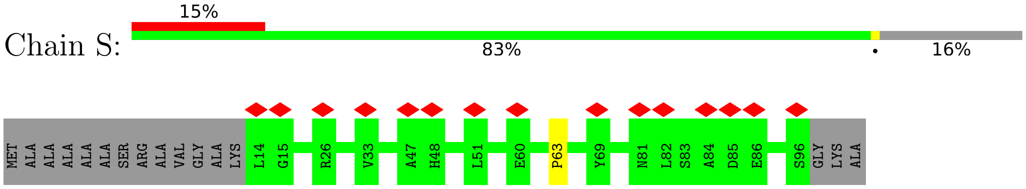
- Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial



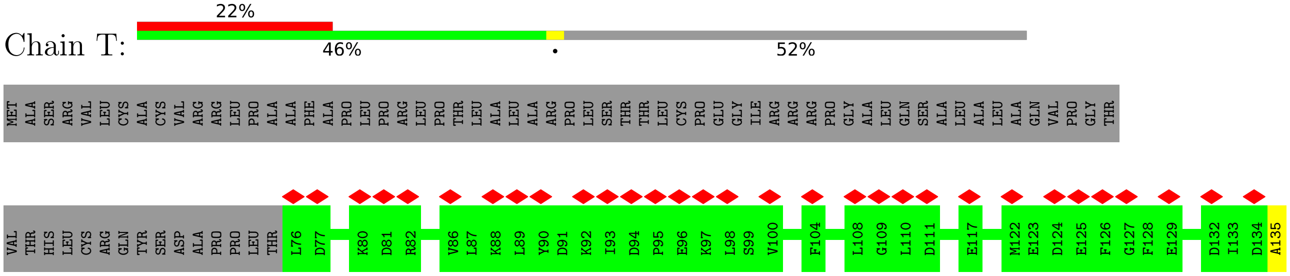
- Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

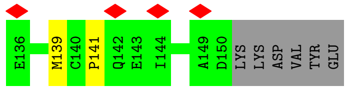


- Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

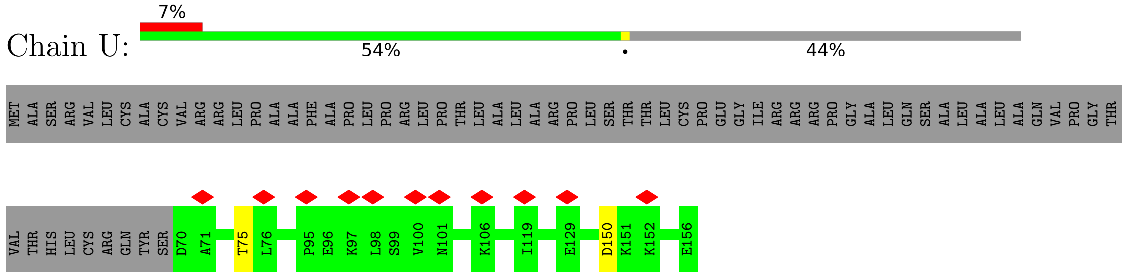


- Molecule 20: Acyl carrier protein, mitochondrial

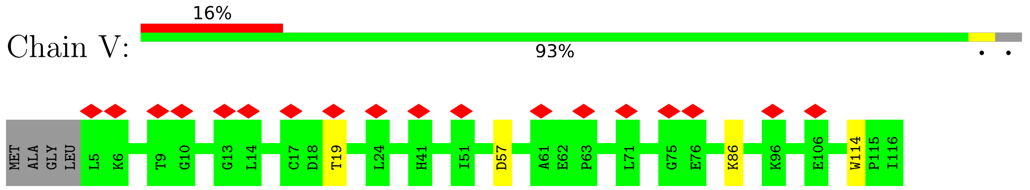




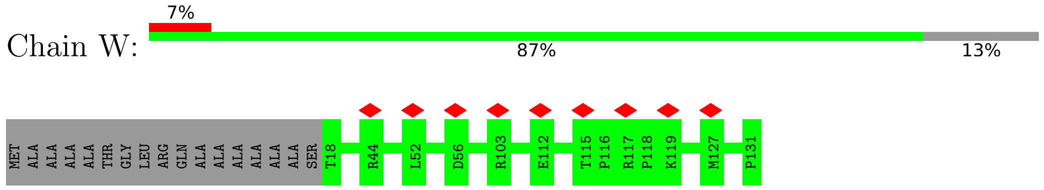
- Molecule 20: Acyl carrier protein, mitochondrial



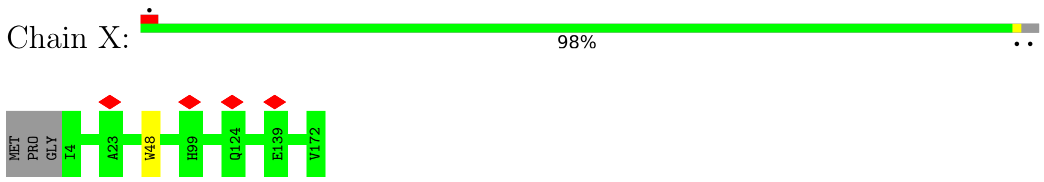
- Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5



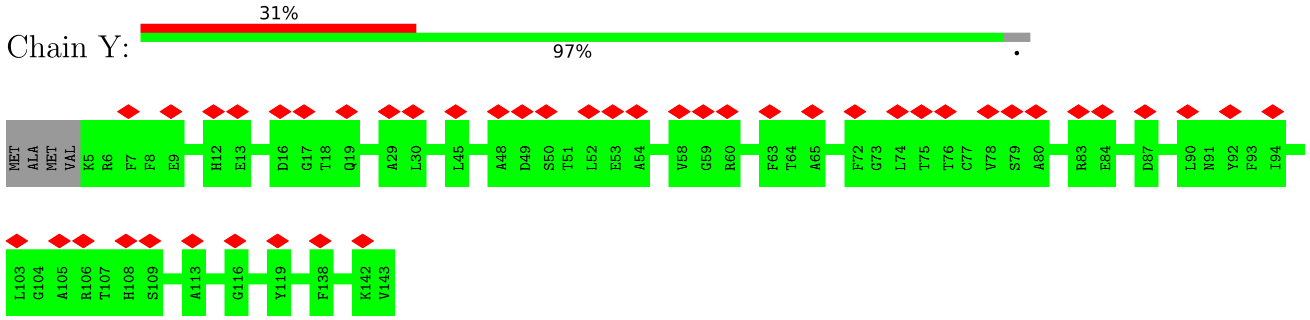
- Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6



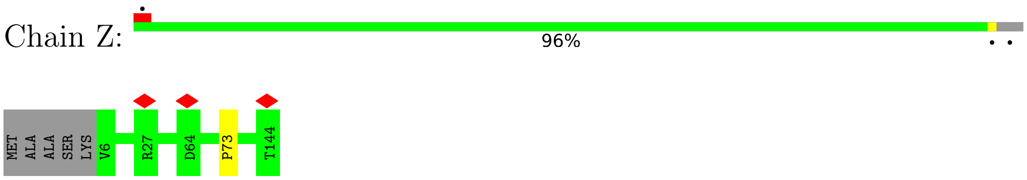
- Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8



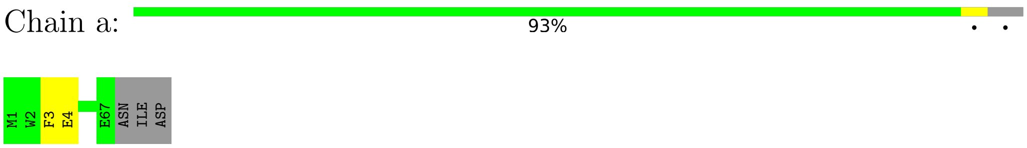
- Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11



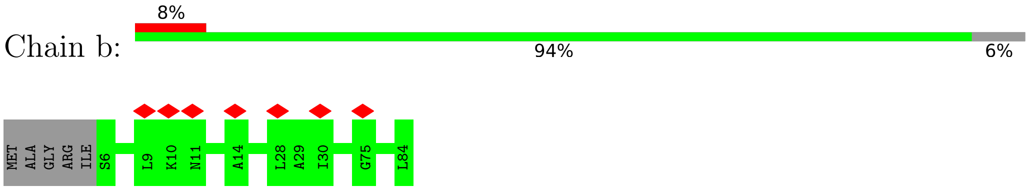
- Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13



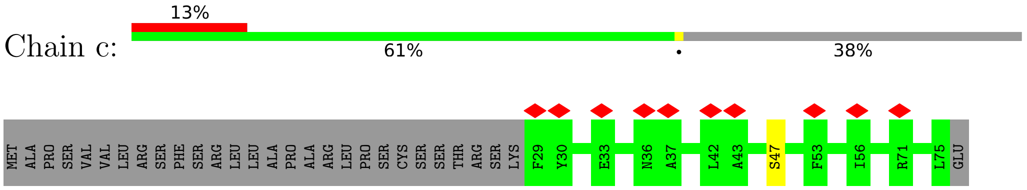
- Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1



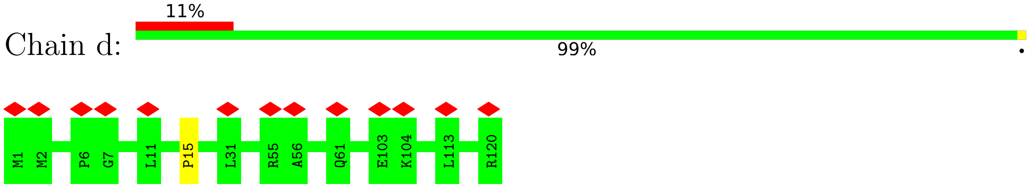
- Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3



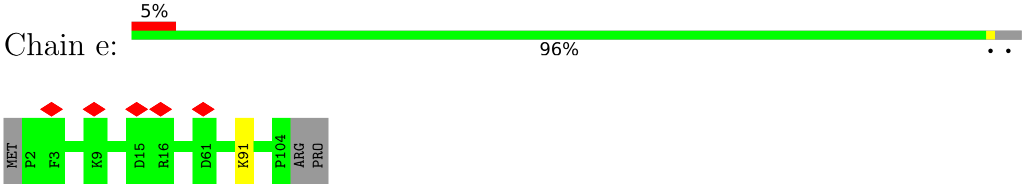
- Molecule 28: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial



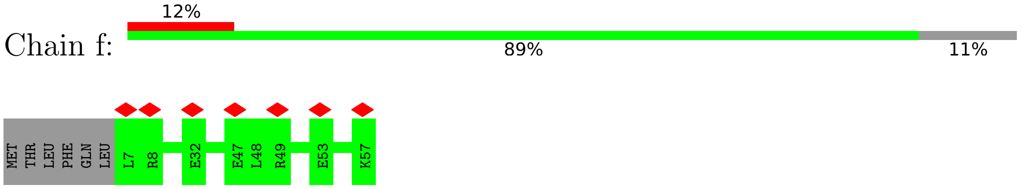
- Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C2



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

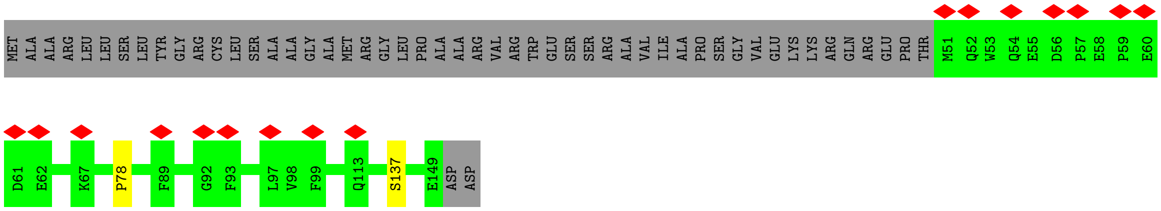


- Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1



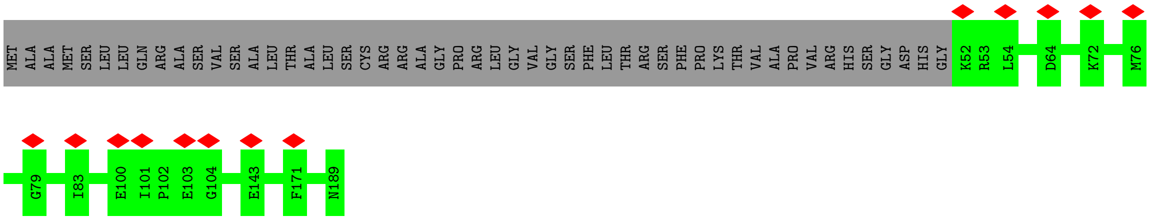
- Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

Chain g:



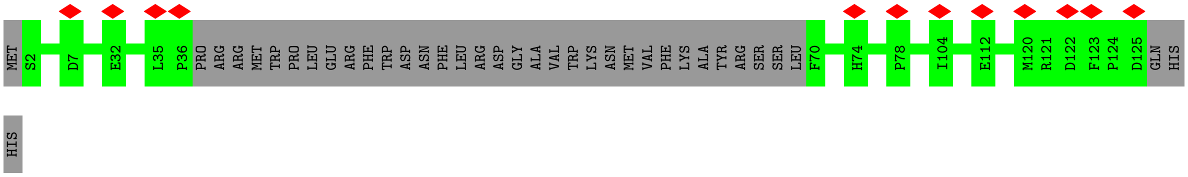
- Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

Chain h:



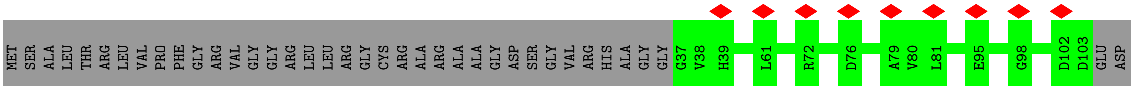
- Molecule 34: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain i:



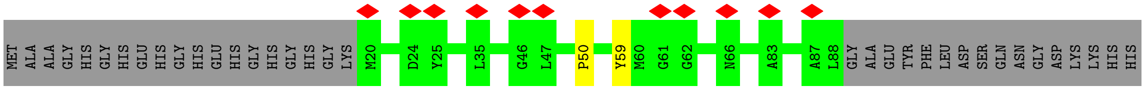
- Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain j:

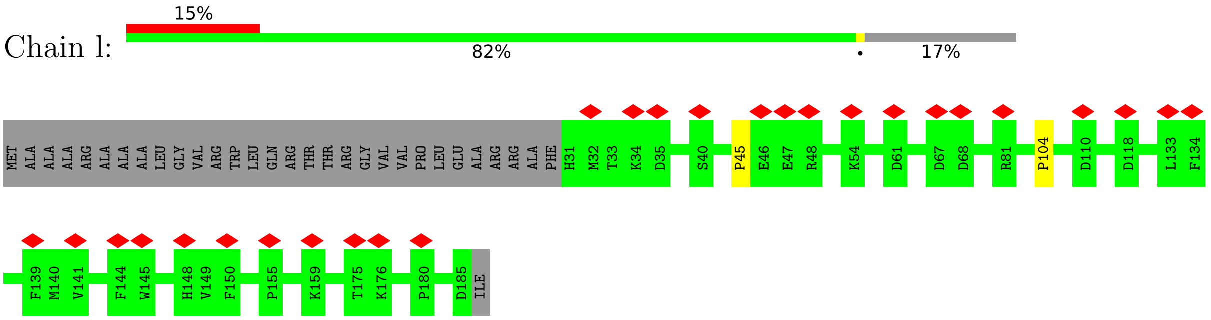


- Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

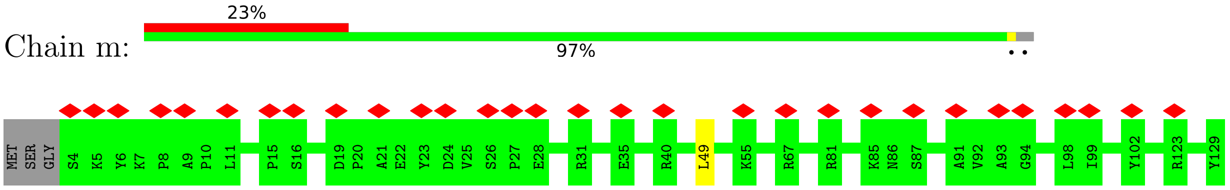
Chain k:



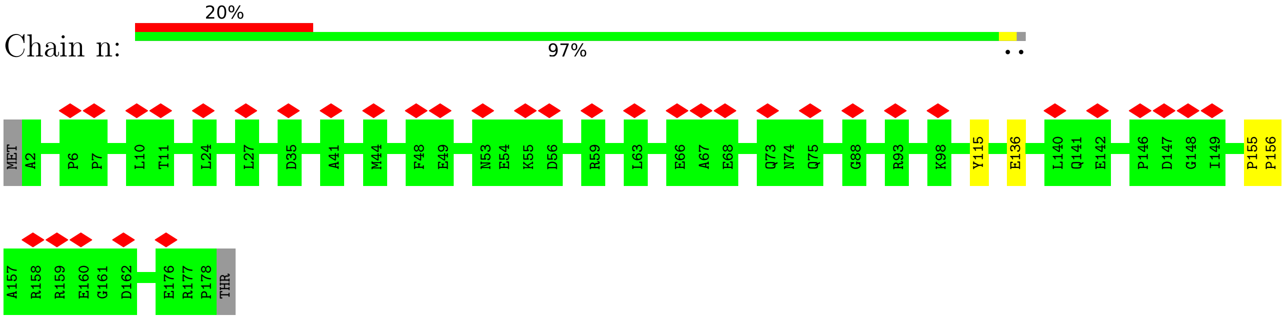
- Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial



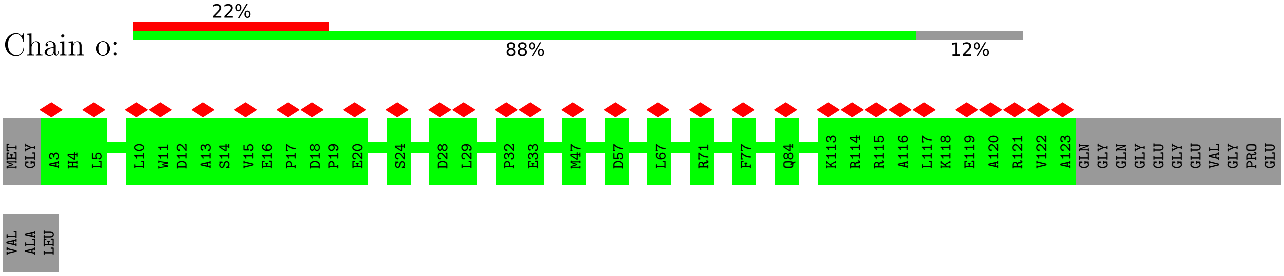
- Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4



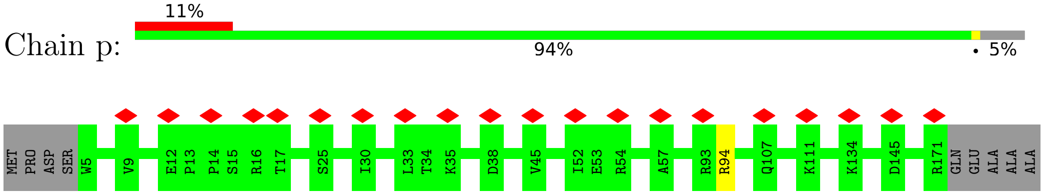
- Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9



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

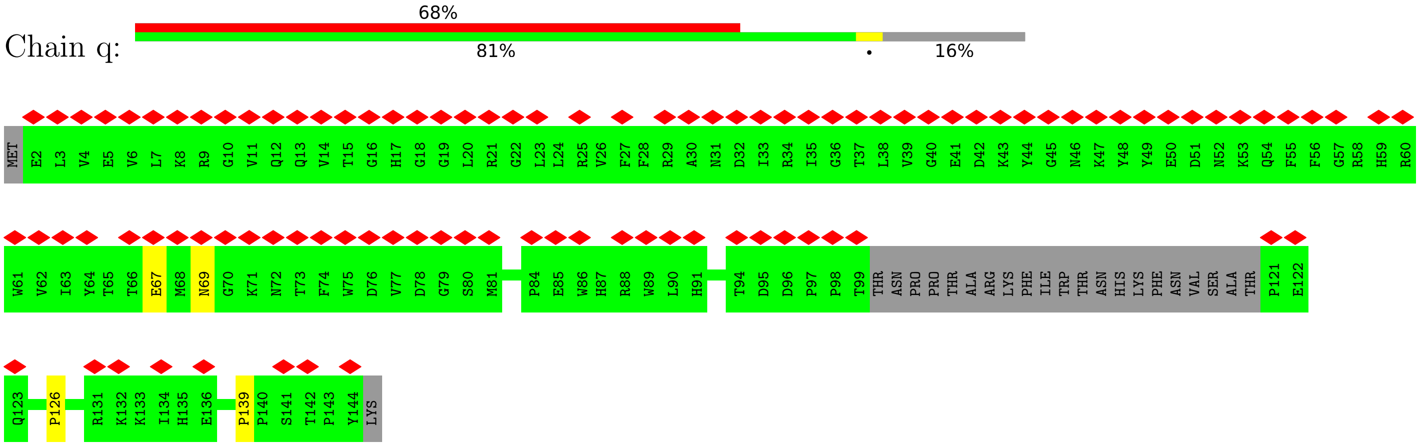


- Molecule 41: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10



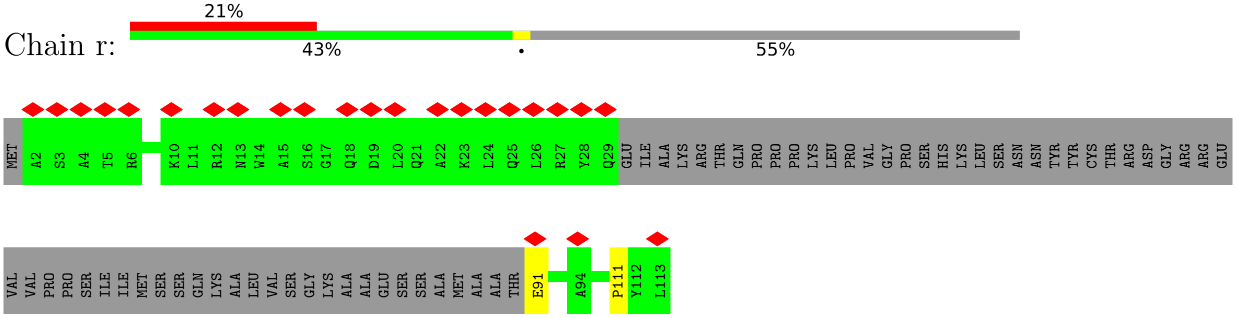
- Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12

Chain q:



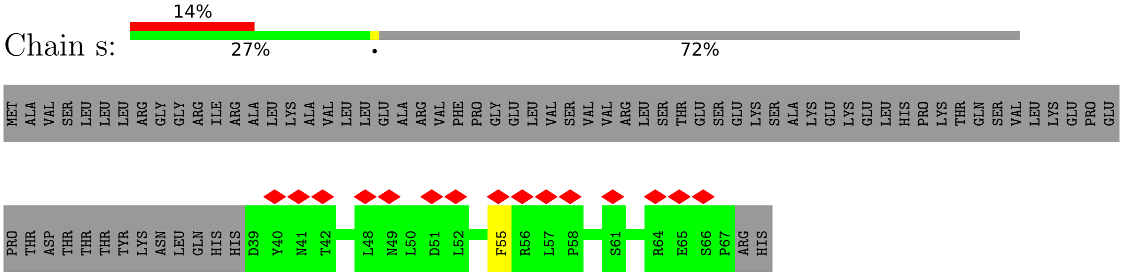
- Molecule 43: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain r:



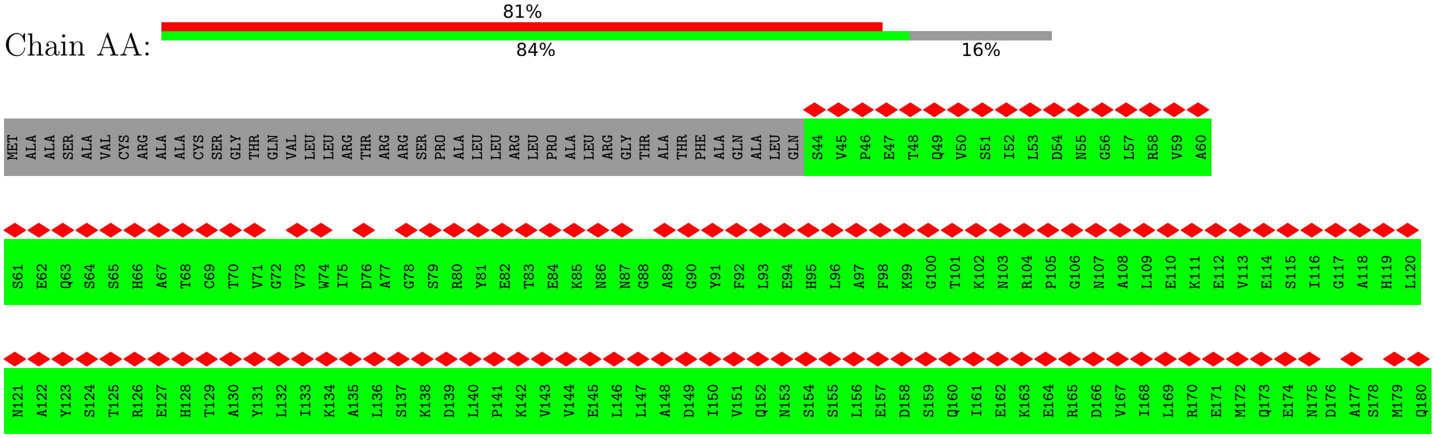
- Molecule 44: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

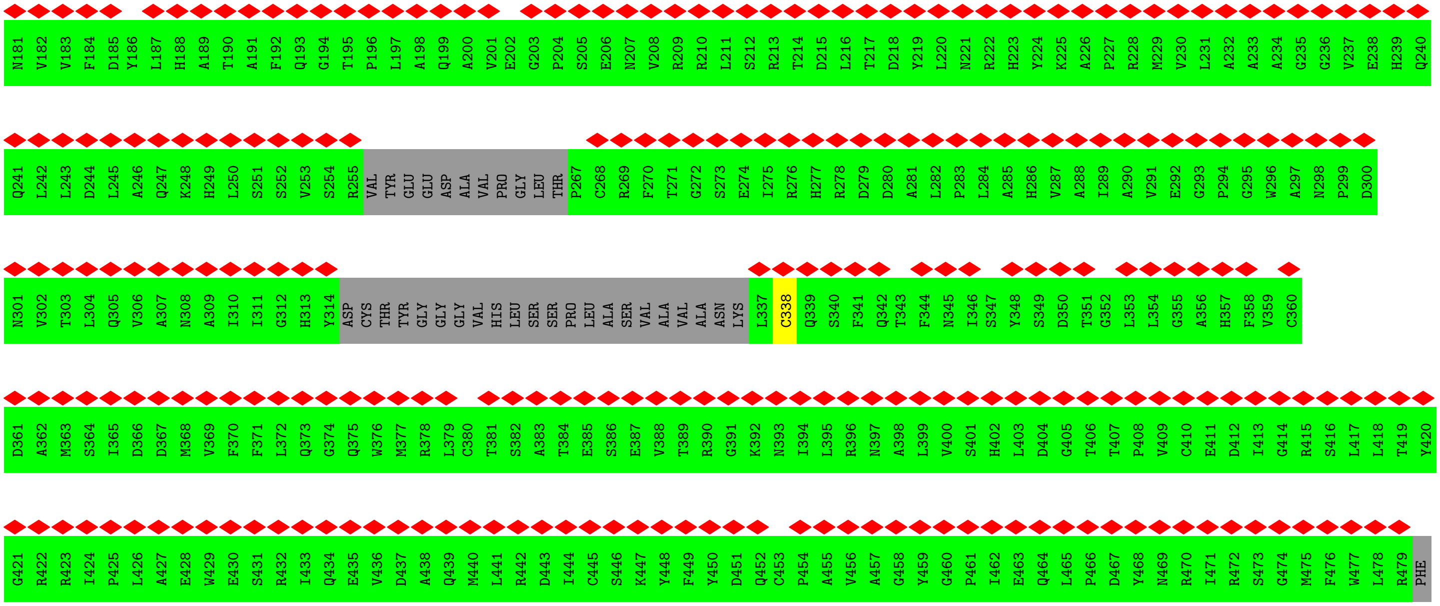
Chain s:



- Molecule 45: Cytochrome b-c1 complex subunit 1, mitochondrial

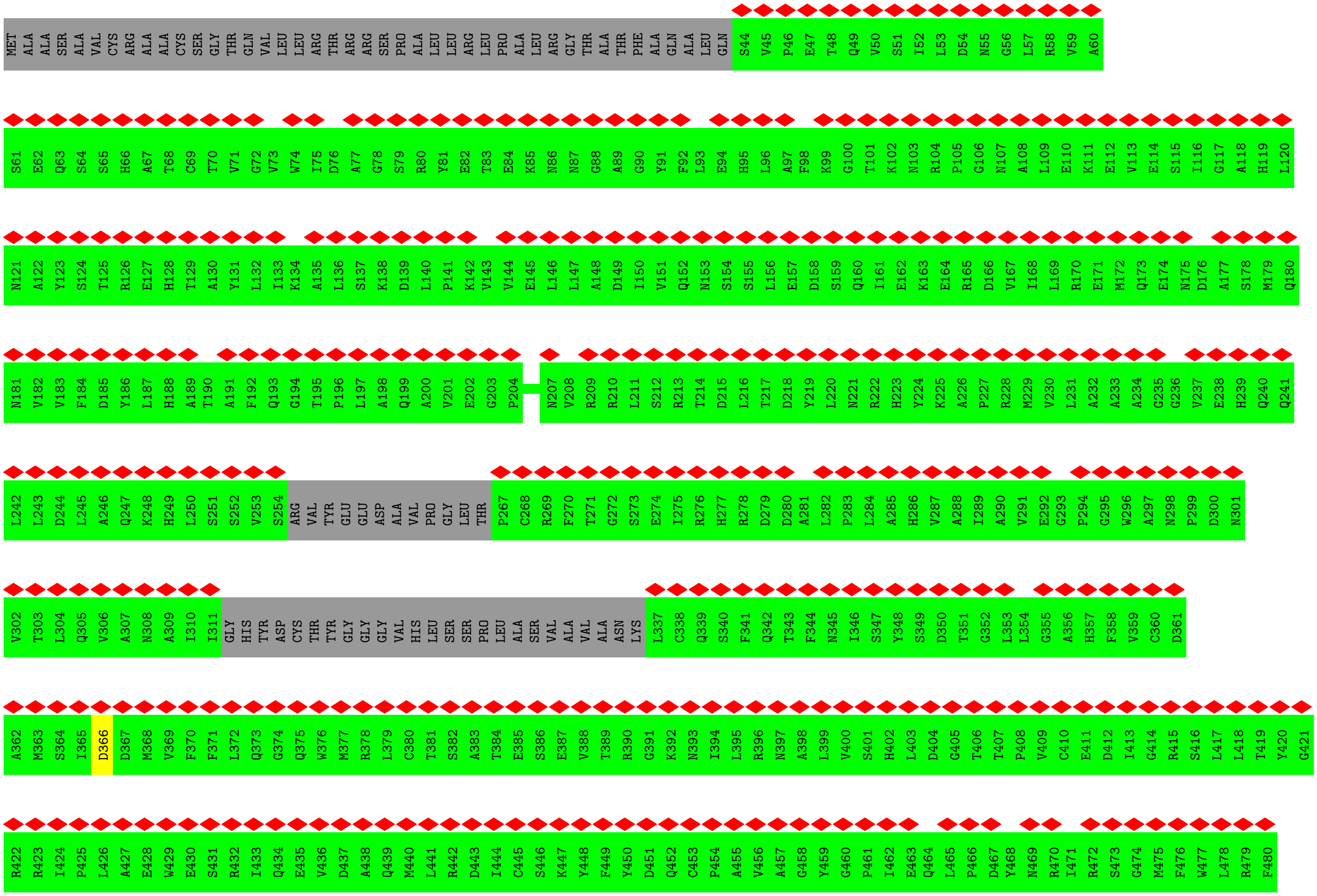
Chain AA:



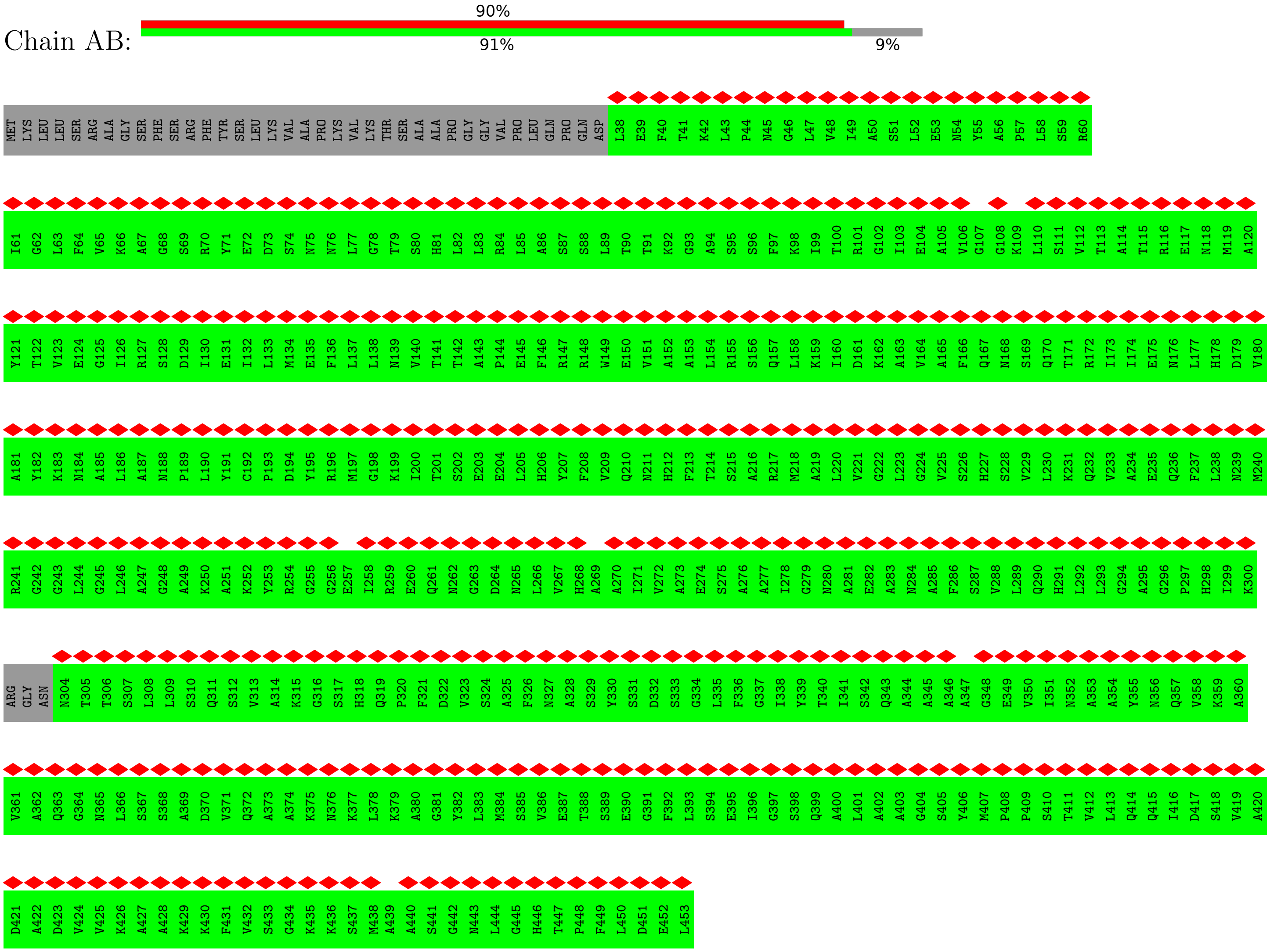


• Molecule 45: Cytochrome b-c1 complex subunit 1, mitochondrial

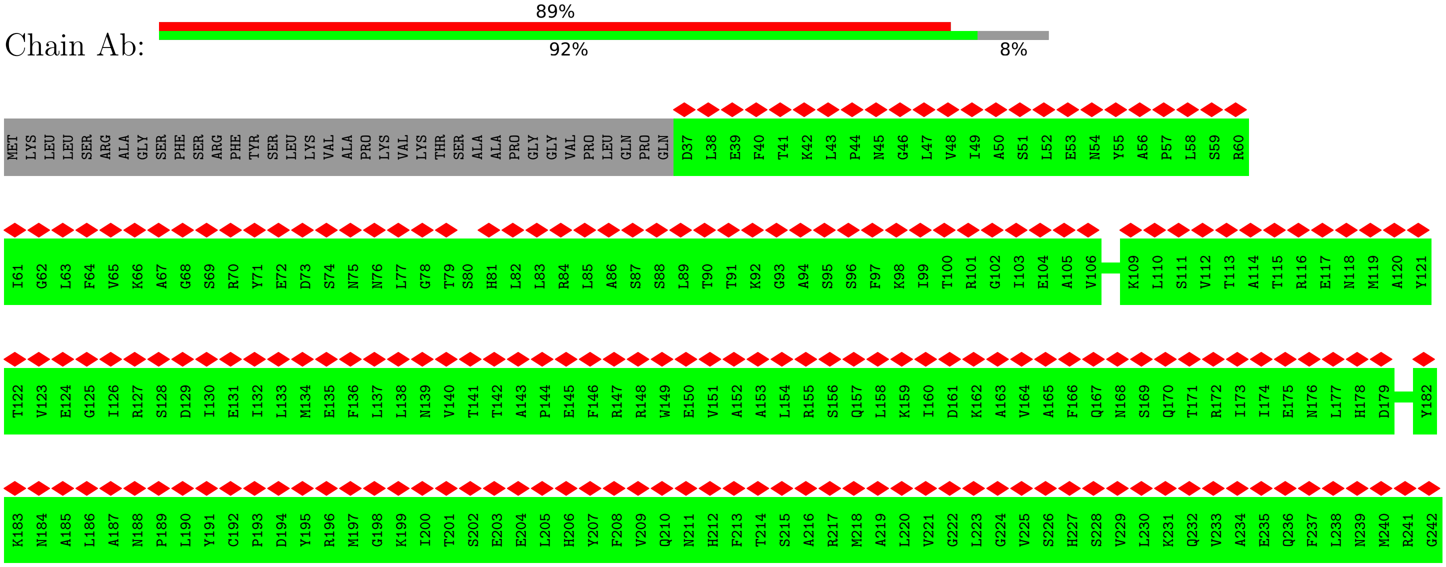
Chain Aa:

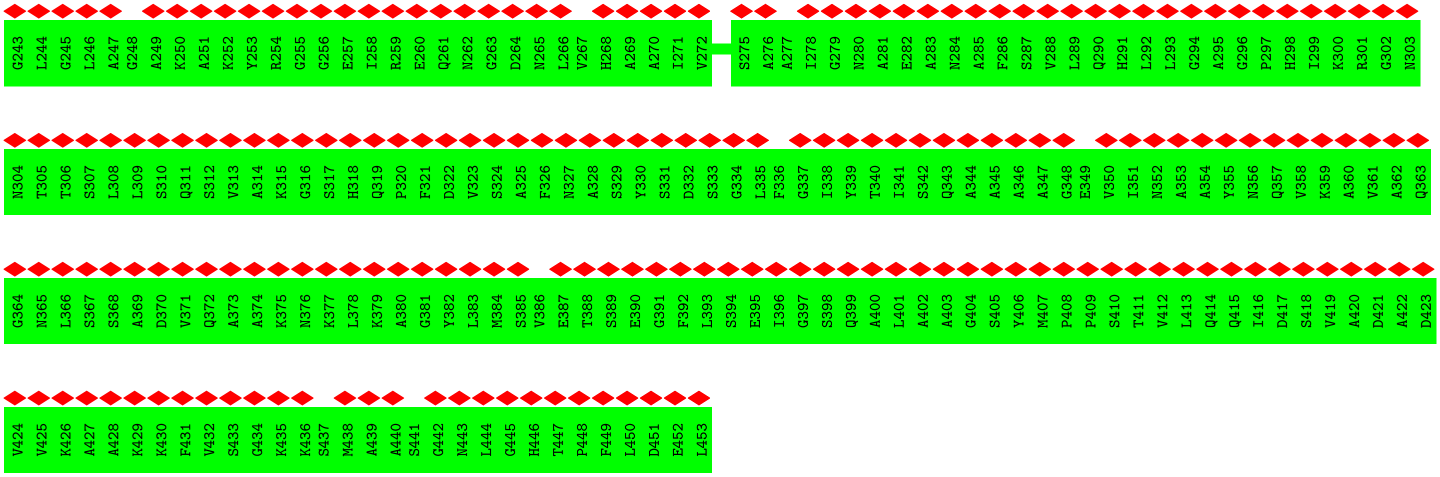


- Molecule 46: Cytochrome b-c1 complex subunit 2, mitochondrial



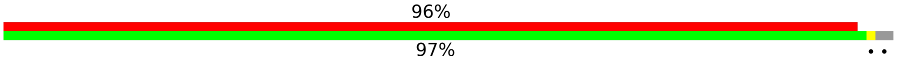
- Molecule 46: Cytochrome b-c1 complex subunit 2, mitochondrial

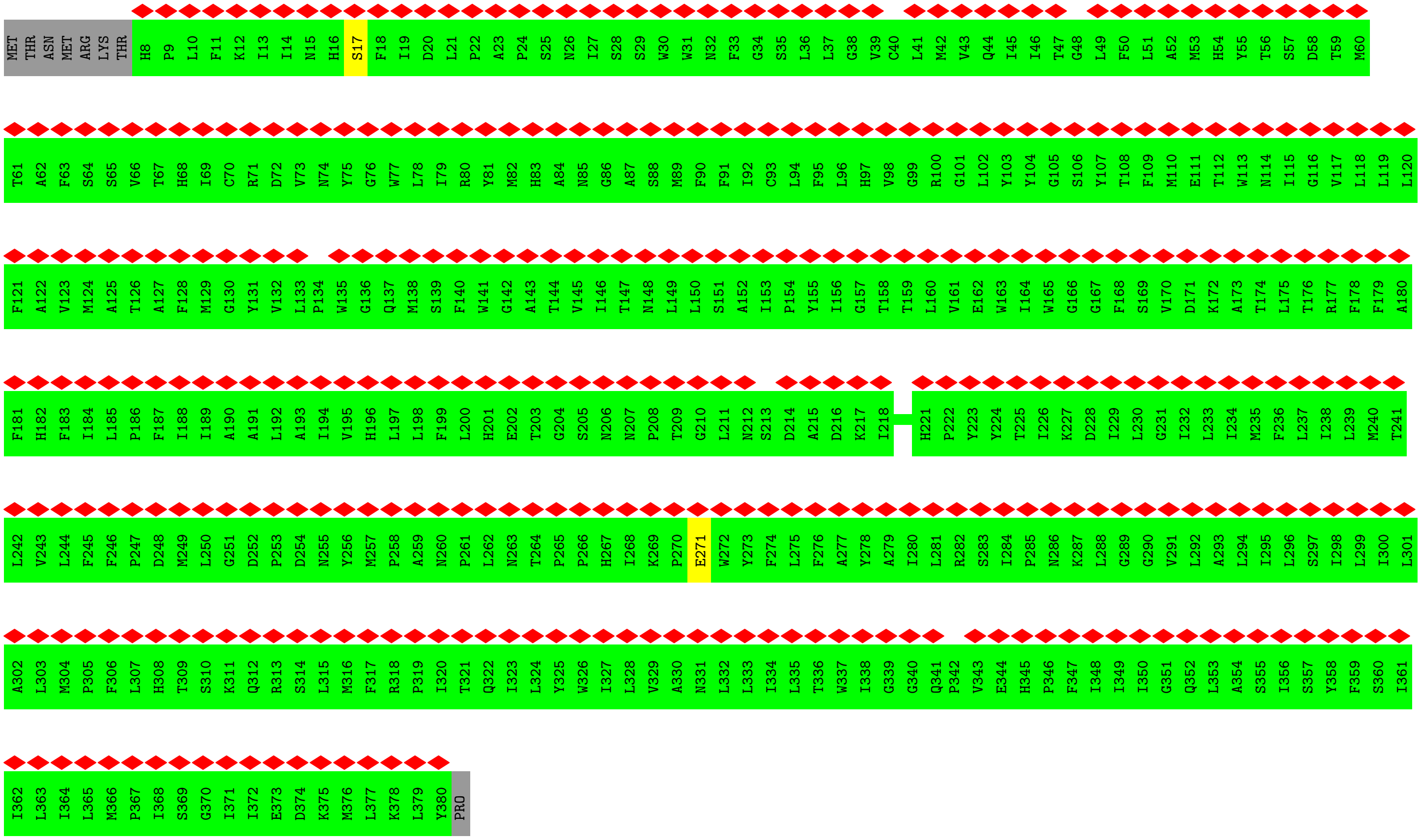




- Molecule 47: Cytochrome b

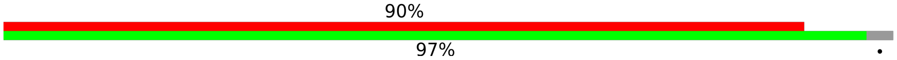
Chain AC:

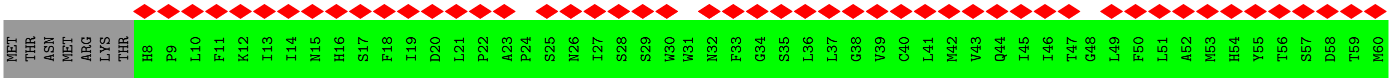


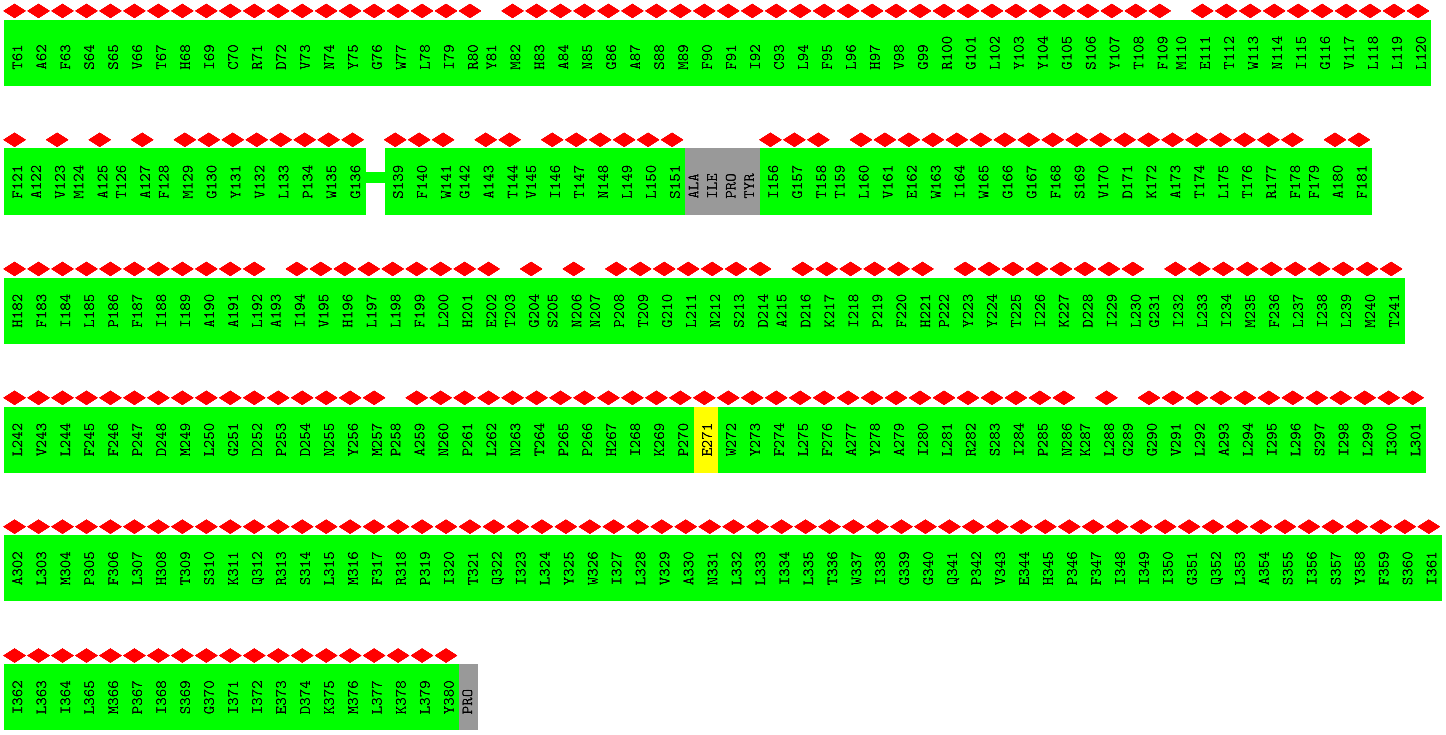


- Molecule 47: Cytochrome b

Chain Ac:

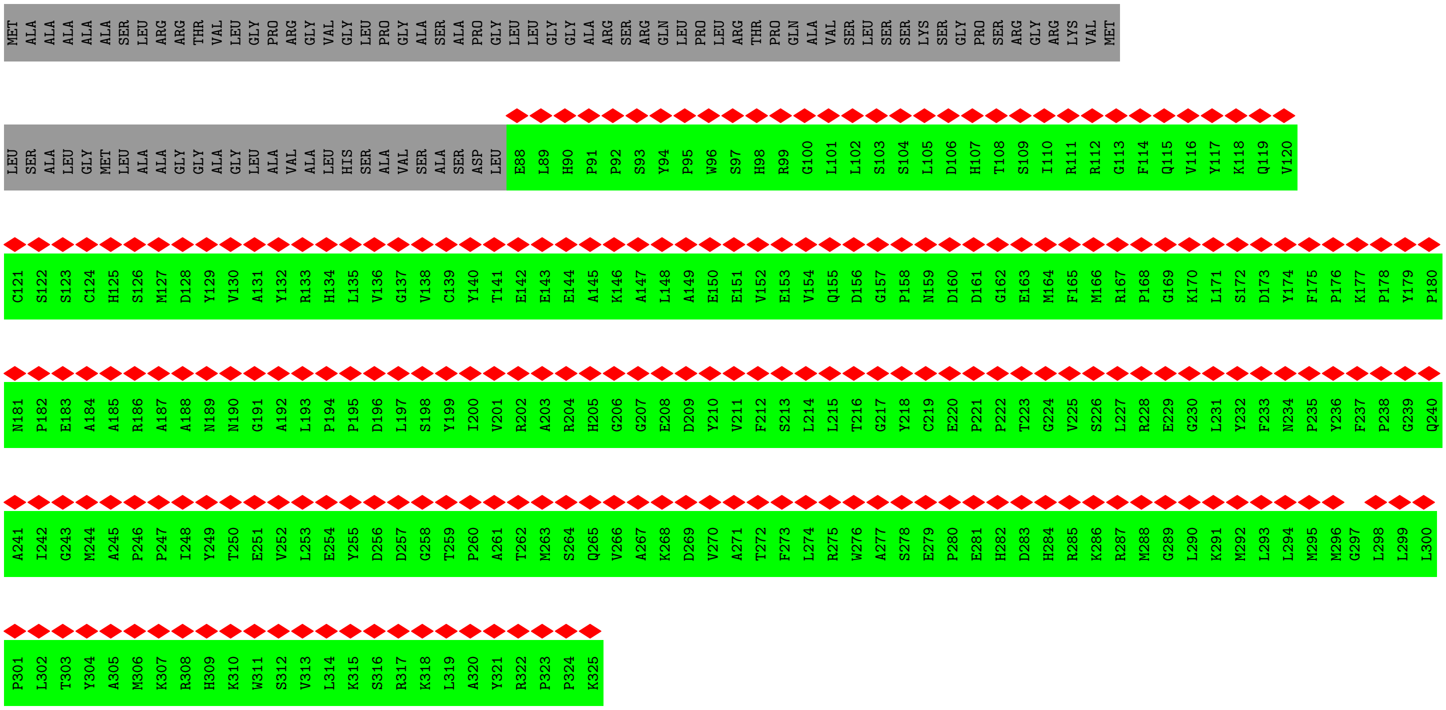






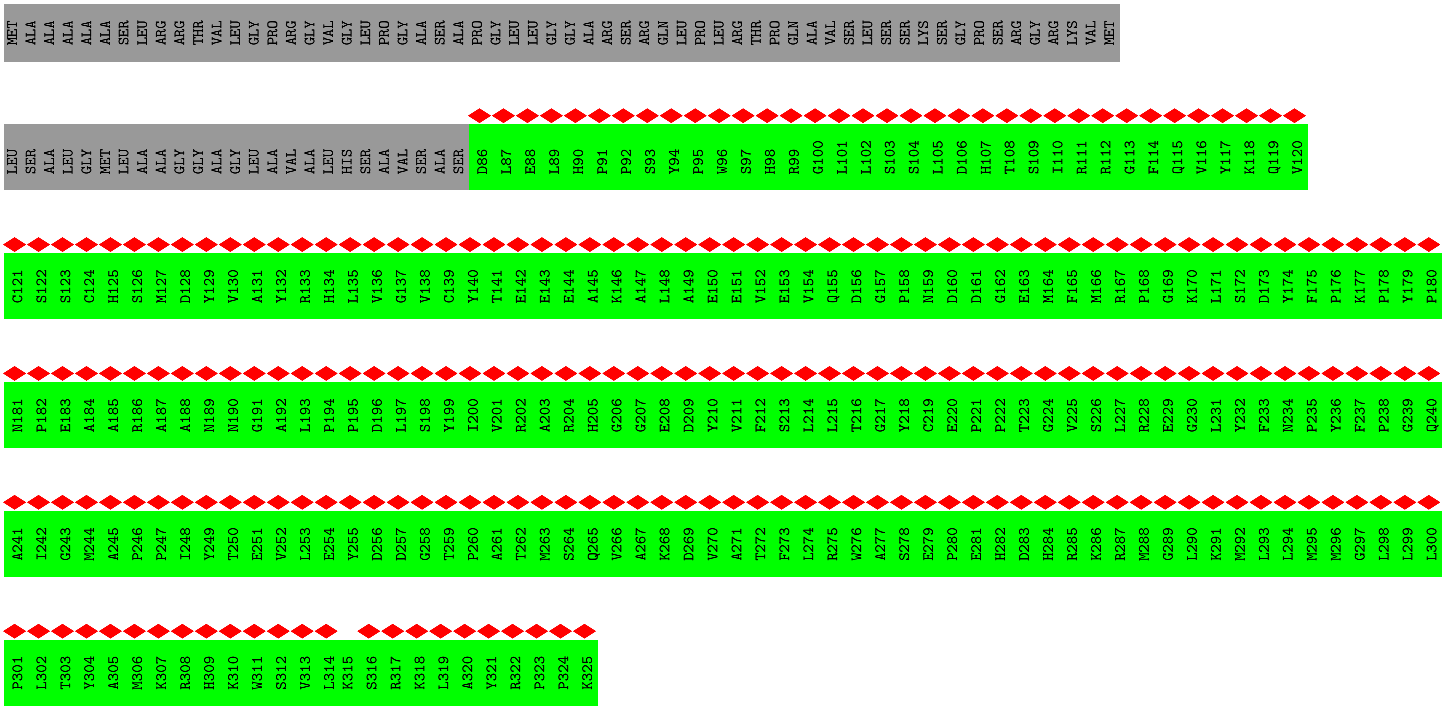
- Molecule 48: Cytochrome c1, heme protein, mitochondrial

Chain AD:



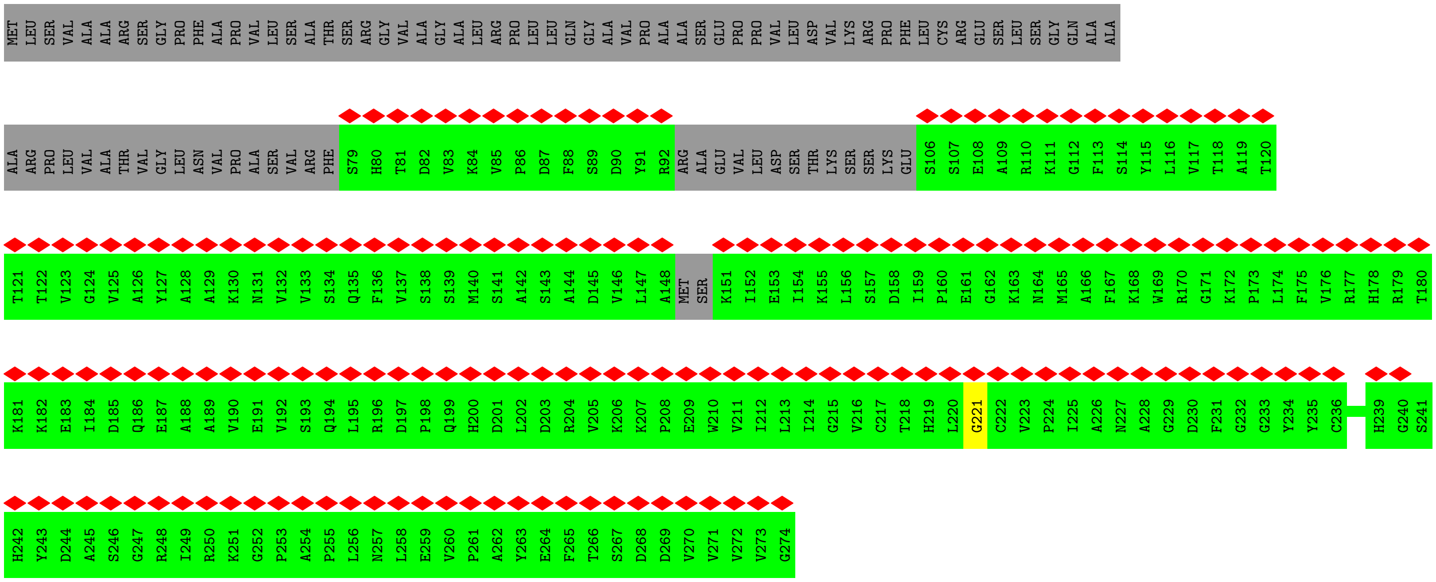
- Molecule 48: Cytochrome c1, heme protein, mitochondrial

Chain Ad:



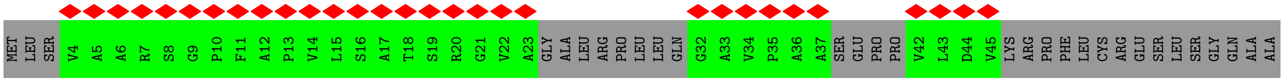
- Molecule 49: Cytochrome b-c1 complex subunit Rieske, mitochondrial

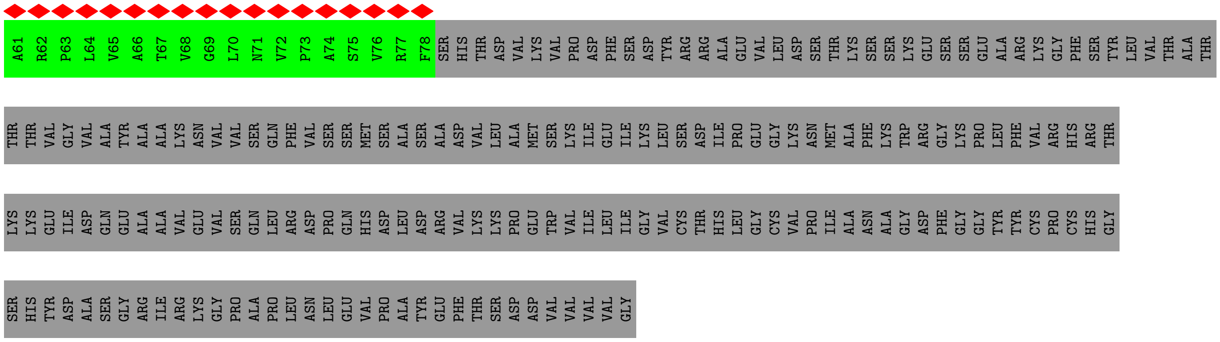
Chain AE:



- Molecule 49: Cytochrome b-c1 complex subunit Rieske, mitochondrial

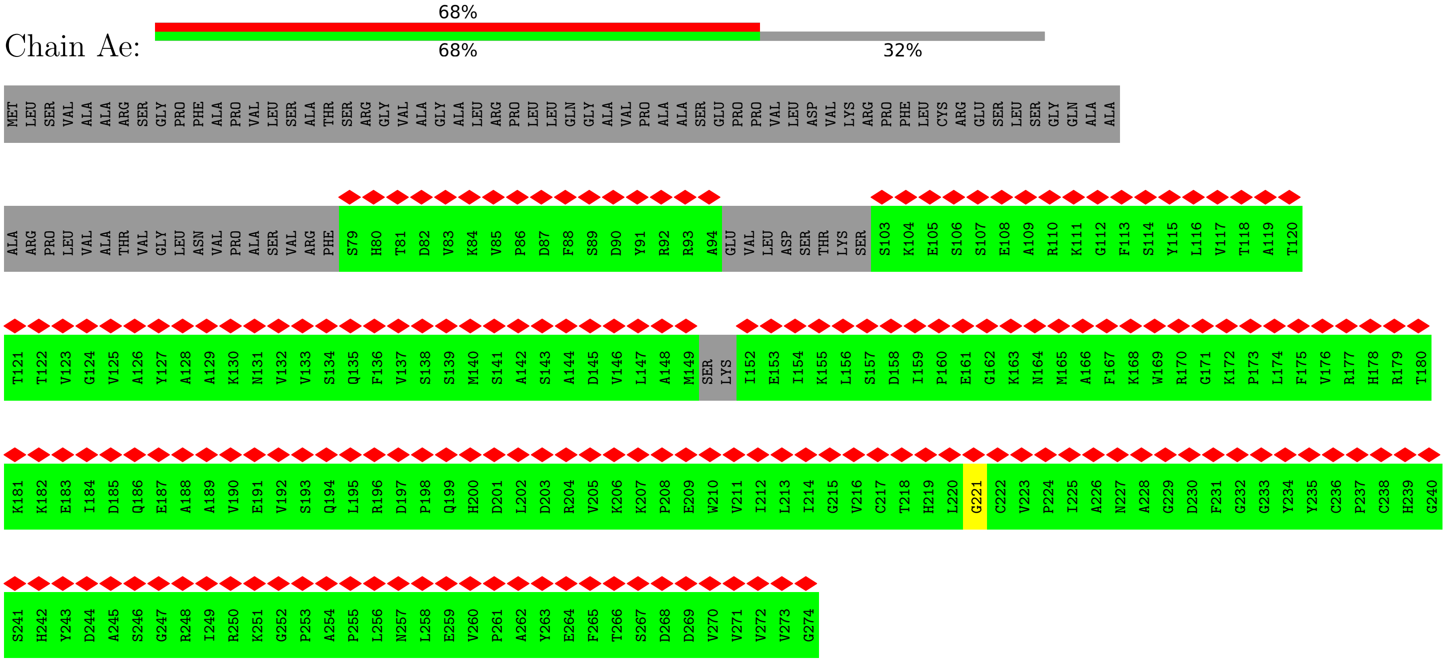
Chain AI:





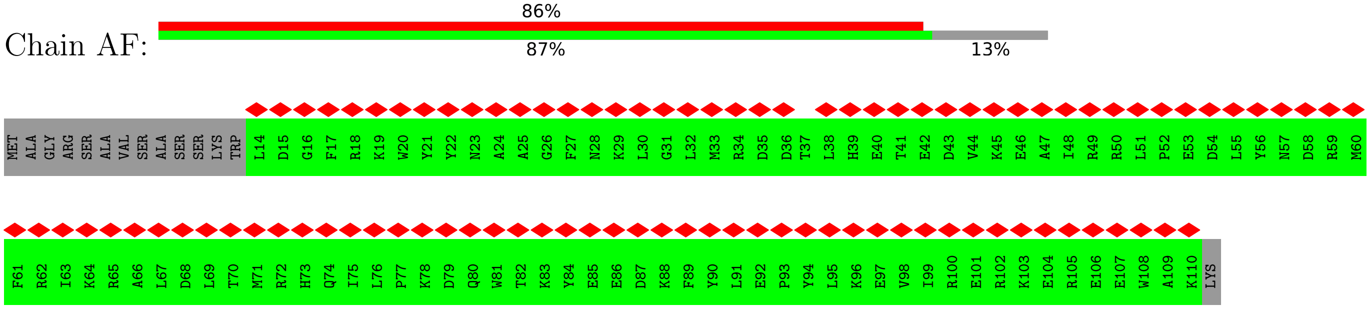
- Molecule 49: Cytochrome b-c1 complex subunit Rieske, mitochondrial

Chain Ae:



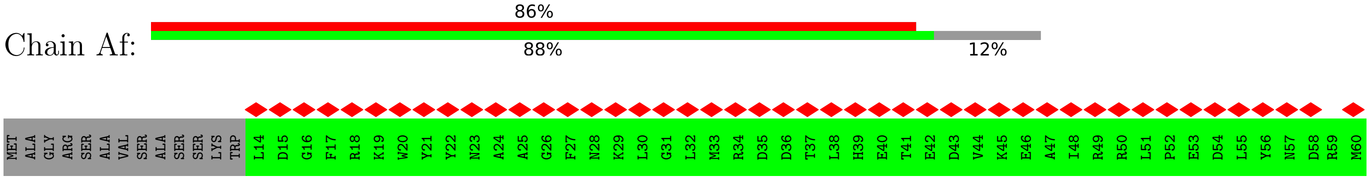
- Molecule 50: Cytochrome b-c1 complex subunit 7

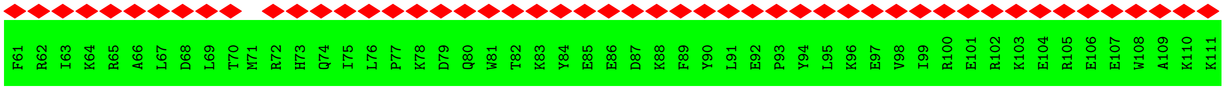
Chain AF:



- Molecule 50: Cytochrome b-c1 complex subunit 7

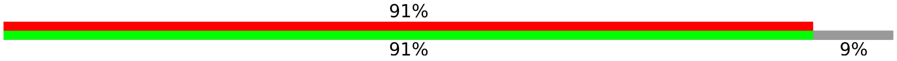
Chain Af:





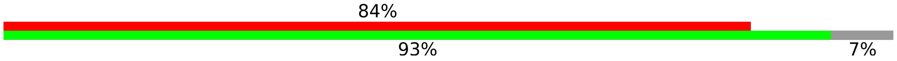
- Molecule 51: Cytochrome b-c1 complex subunit 8

Chain AG:



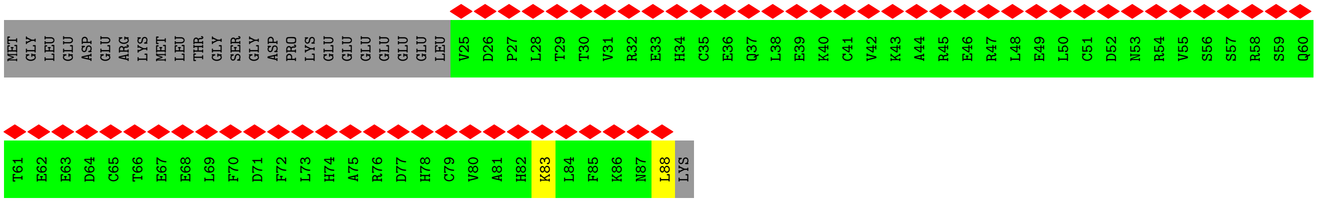
- Molecule 51: Cytochrome b-c1 complex subunit 8

Chain Ag:



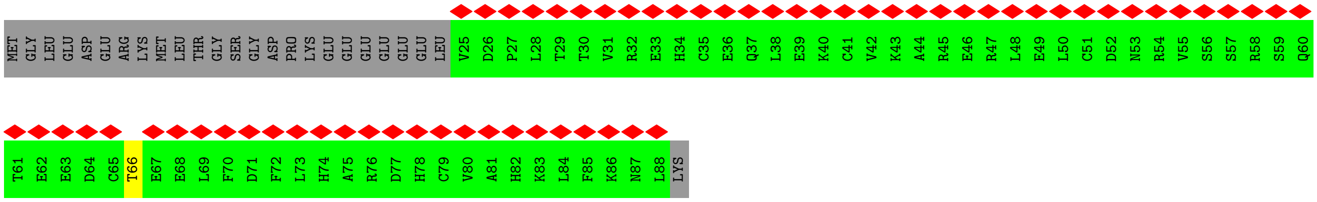
- Molecule 52: Cytochrome b-c1 complex subunit 6, mitochondrial

Chain AH:



- Molecule 52: Cytochrome b-c1 complex subunit 6, mitochondrial

Chain Ah:



- Molecule 53: Cytochrome b-c1 complex subunit 9

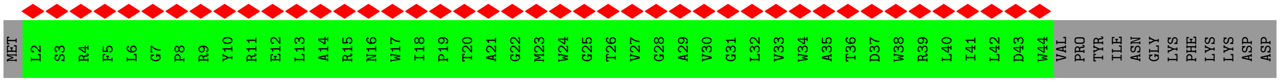
Chain AJ:

- Molecule 53: Cytochrome b-c1 complex subunit 9

Chain Aj:

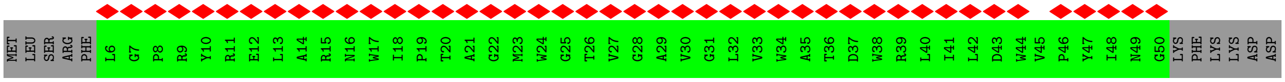
- Molecule 54: Cytochrome b-c1 complex subunit 10

Chain AK:



- Molecule 54: Cytochrome b-c1 complex subunit 10

Chain Ak:



4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	27478	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 $(e^-/\text{Å}^2)$	50.2	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.066	Depositor
Minimum map value	-0.020	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0082	Depositor
Map size (Å)	424.96, 424.96, 424.96	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	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: UQ6, UQ9, CDL, HEM, HEC, 3PE, PC1, FES, FMN, U10, ZN, NDP, EHZ, SF4, ADP, UQ1

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	0.42	0/755	0.56	0/1029
2	B	0.62	2/1278 (0.2%)	0.78	1/1730 (0.1%)
3	C	0.55	0/1687	0.79	1/2297 (0.0%)
4	D	0.60	2/3532 (0.1%)	0.83	6/4782 (0.1%)
5	E	0.58	3/1675 (0.2%)	0.68	3/2282 (0.1%)
6	F	0.59	4/3347 (0.1%)	0.78	9/4522 (0.2%)
7	G	0.62	4/5374 (0.1%)	0.93	16/7281 (0.2%)
8	H	0.55	1/2607 (0.0%)	0.71	5/3561 (0.1%)
9	I	0.61	1/1418 (0.1%)	0.87	2/1915 (0.1%)
10	J	0.39	0/1205	0.59	1/1633 (0.1%)
11	K	0.57	0/732	0.79	2/994 (0.2%)
12	L	0.67	5/4921 (0.1%)	0.90	19/6696 (0.3%)
13	M	0.69	4/3717 (0.1%)	0.90	10/5062 (0.2%)
14	N	0.67	2/2756 (0.1%)	0.85	7/3751 (0.2%)
15	O	0.63	4/2655 (0.2%)	0.74	8/3601 (0.2%)
16	P	0.56	2/2793 (0.1%)	0.71	6/3787 (0.2%)
17	Q	0.58	2/980 (0.2%)	0.80	4/1324 (0.3%)
18	R	0.81	2/671 (0.3%)	0.85	2/903 (0.2%)
19	S	0.66	1/678 (0.1%)	0.90	1/915 (0.1%)
20	T	0.76	1/613 (0.2%)	0.90	4/826 (0.5%)
20	U	0.61	0/712	0.79	2/962 (0.2%)
21	V	0.57	0/937	0.85	4/1270 (0.3%)
22	W	0.47	0/993	0.54	0/1335
23	X	0.48	0/1422	0.70	0/1921
24	Y	0.52	0/1054	0.59	0/1429
25	Z	0.56	1/1183 (0.1%)	0.69	0/1597
26	a	0.57	0/561	0.81	2/755 (0.3%)
27	b	0.45	0/643	0.53	0/884
28	c	0.46	0/400	0.76	1/544 (0.2%)
29	d	0.61	1/1028 (0.1%)	0.63	2/1387 (0.1%)
30	e	0.51	1/881 (0.1%)	0.64	1/1173 (0.1%)
31	f	0.40	0/451	0.44	0/607

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	g	0.63	1/863 (0.1%)	0.92	3/1175 (0.3%)
33	h	0.52	0/1197	0.74	0/1621
34	i	0.56	0/790	0.74	0/1074
35	j	0.51	0/599	0.69	0/820
36	k	0.82	1/578 (0.2%)	0.94	3/782 (0.4%)
37	l	0.69	2/1359 (0.1%)	0.76	1/1855 (0.1%)
38	m	0.55	0/1079	0.75	0/1463
39	n	0.64	1/1589 (0.1%)	0.74	2/2152 (0.1%)
40	o	0.50	0/1063	0.63	0/1427
41	p	0.53	0/1448	0.71	1/1957 (0.1%)
42	q	0.76	2/1054 (0.2%)	0.95	4/1431 (0.3%)
43	r	0.87	2/426 (0.5%)	1.17	2/573 (0.3%)
44	s	0.30	0/244	0.71	1/331 (0.3%)
45	AA	0.35	0/3218	0.58	1/4362 (0.0%)
45	Aa	0.33	0/3191	0.60	1/4326 (0.0%)
46	AB	0.33	0/3146	0.56	0/4252
46	Ab	0.32	0/3178	0.55	0/4296
47	AC	0.36	1/3089 (0.0%)	0.55	1/4221 (0.0%)
47	Ac	0.37	1/3054 (0.0%)	0.54	0/4170
48	AD	0.33	0/1955	0.54	0/2655
48	Ad	0.33	0/1971	0.50	0/2677
49	AE	0.45	0/1428	0.60	1/1934 (0.1%)
49	AI	0.34	0/331	0.53	0/451
49	Ae	0.45	0/1467	0.59	1/1985 (0.1%)
50	AF	0.32	0/875	0.52	0/1173
50	Af	0.32	0/884	0.43	0/1184
51	AG	0.37	0/653	0.56	0/883
51	Ag	0.36	0/662	0.56	0/895
52	AH	0.31	0/534	0.68	2/717 (0.3%)
52	Ah	0.36	0/534	0.58	1/717 (0.1%)
53	AJ	0.35	0/339	0.48	0/457
53	Aj	0.35	0/339	0.48	0/457
54	AK	0.32	0/368	0.46	0/504
54	Ak	0.28	0/379	0.42	0/522
All	All	0.54	54/97543 (0.1%)	0.73	144/132254 (0.1%)

The worst 5 of 54 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	R	89	PRO	N-CD	-15.21	1.26	1.47
12	L	265	PRO	N-CD	13.75	1.67	1.47
36	k	50	PRO	N-CD	-13.70	1.28	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
42	q	139	PRO	N-CD	-13.58	1.28	1.47
14	N	255	PRO	N-CD	-13.52	1.28	1.47

The worst 5 of 144 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
43	r	91	GLU	N-CA-CB	13.66	135.18	110.60
26	a	3	PHE	CB-CA-C	-10.41	89.59	110.40
36	k	50	PRO	CA-N-CD	9.93	125.61	111.70
14	N	255	PRO	CA-N-CD	9.86	125.50	111.70
42	q	139	PRO	CA-N-CD	9.59	125.12	111.70

There are no chirality outliers.

There are no planarity outliers.

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	87/115 (76%)	83 (95%)	4 (5%)	0	100	100
2	B	154/224 (69%)	142 (92%)	11 (7%)	1 (1%)	22	60
3	C	196/263 (74%)	187 (95%)	9 (5%)	0	100	100
4	D	423/463 (91%)	392 (93%)	31 (7%)	0	100	100
5	E	208/248 (84%)	193 (93%)	15 (7%)	0	100	100
6	F	422/464 (91%)	403 (96%)	19 (4%)	0	100	100
7	G	685/727 (94%)	632 (92%)	53 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	H	313/318 (98%)	295 (94%)	18 (6%)	0	100	100
9	I	169/212 (80%)	169 (100%)	0	0	100	100
10	J	149/172 (87%)	136 (91%)	13 (9%)	0	100	100
11	K	94/98 (96%)	92 (98%)	2 (2%)	0	100	100
12	L	604/607 (100%)	576 (95%)	28 (5%)	0	100	100
13	M	457/459 (100%)	439 (96%)	18 (4%)	0	100	100
14	N	342/345 (99%)	331 (97%)	10 (3%)	1 (0%)	37	72
15	O	316/355 (89%)	302 (96%)	14 (4%)	0	100	100
16	P	337/377 (89%)	314 (93%)	23 (7%)	0	100	100
17	Q	116/175 (66%)	114 (98%)	2 (2%)	0	100	100
18	R	81/116 (70%)	75 (93%)	6 (7%)	0	100	100
19	S	81/99 (82%)	77 (95%)	4 (5%)	0	100	100
20	T	73/156 (47%)	72 (99%)	1 (1%)	0	100	100
20	U	85/156 (54%)	83 (98%)	2 (2%)	0	100	100
21	V	110/116 (95%)	107 (97%)	3 (3%)	0	100	100
22	W	112/131 (86%)	111 (99%)	1 (1%)	0	100	100
23	X	167/172 (97%)	153 (92%)	14 (8%)	0	100	100
24	Y	137/143 (96%)	133 (97%)	4 (3%)	0	100	100
25	Z	137/144 (95%)	132 (96%)	5 (4%)	0	100	100
26	a	65/70 (93%)	61 (94%)	4 (6%)	0	100	100
27	b	77/84 (92%)	69 (90%)	8 (10%)	0	100	100
28	c	45/76 (59%)	44 (98%)	1 (2%)	0	100	100
29	d	118/120 (98%)	117 (99%)	1 (1%)	0	100	100
30	e	101/106 (95%)	95 (94%)	6 (6%)	0	100	100
31	f	49/57 (86%)	49 (100%)	0	0	100	100
32	g	97/151 (64%)	91 (94%)	6 (6%)	0	100	100
33	h	136/189 (72%)	130 (96%)	6 (4%)	0	100	100
34	i	87/128 (68%)	80 (92%)	7 (8%)	0	100	100
35	j	65/105 (62%)	61 (94%)	4 (6%)	0	100	100
36	k	67/104 (64%)	64 (96%)	3 (4%)	0	100	100
37	l	153/186 (82%)	141 (92%)	12 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
38	m	124/129 (96%)	117 (94%)	7 (6%)	0	100	100
39	n	175/179 (98%)	165 (94%)	9 (5%)	1 (1%)	22	60
40	o	119/137 (87%)	116 (98%)	3 (2%)	0	100	100
41	p	165/176 (94%)	148 (90%)	17 (10%)	0	100	100
42	q	118/145 (81%)	115 (98%)	3 (2%)	0	100	100
43	r	47/113 (42%)	43 (92%)	4 (8%)	0	100	100
44	s	27/104 (26%)	27 (100%)	0	0	100	100
45	AA	397/480 (83%)	385 (97%)	12 (3%)	0	100	100
45	Aa	394/480 (82%)	385 (98%)	9 (2%)	0	100	100
46	AB	409/453 (90%)	397 (97%)	12 (3%)	0	100	100
46	Ab	415/453 (92%)	406 (98%)	9 (2%)	0	100	100
47	AC	371/381 (97%)	365 (98%)	6 (2%)	0	100	100
47	Ac	365/381 (96%)	361 (99%)	4 (1%)	0	100	100
48	AD	236/325 (73%)	230 (98%)	6 (2%)	0	100	100
48	Ad	238/325 (73%)	229 (96%)	9 (4%)	0	100	100
49	AE	175/274 (64%)	164 (94%)	11 (6%)	0	100	100
49	AI	40/274 (15%)	38 (95%)	2 (5%)	0	100	100
49	Ae	180/274 (66%)	167 (93%)	13 (7%)	0	100	100
50	AF	95/111 (86%)	95 (100%)	0	0	100	100
50	Af	96/111 (86%)	96 (100%)	0	0	100	100
51	AG	73/82 (89%)	73 (100%)	0	0	100	100
51	Ag	74/82 (90%)	74 (100%)	0	0	100	100
52	AH	62/89 (70%)	60 (97%)	2 (3%)	0	100	100
52	Ah	62/89 (70%)	60 (97%)	2 (3%)	0	100	100
53	AJ	39/64 (61%)	39 (100%)	0	0	100	100
53	Aj	39/64 (61%)	39 (100%)	0	0	100	100
54	AK	41/56 (73%)	39 (95%)	2 (5%)	0	100	100
54	Ak	43/56 (77%)	40 (93%)	3 (7%)	0	100	100
All	All	11734/14118 (83%)	11218 (96%)	513 (4%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
14	N	109	ALA
2	B	195	PRO
39	n	156	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	83/104 (80%)	83 (100%)	0	100	100
2	B	132/185 (71%)	130 (98%)	2 (2%)	60	75
3	C	180/227 (79%)	180 (100%)	0	100	100
4	D	369/395 (93%)	369 (100%)	0	100	100
5	E	182/206 (88%)	182 (100%)	0	100	100
6	F	340/370 (92%)	340 (100%)	0	100	100
7	G	579/610 (95%)	579 (100%)	0	100	100
8	H	279/280 (100%)	279 (100%)	0	100	100
9	I	147/178 (83%)	147 (100%)	0	100	100
10	J	124/138 (90%)	124 (100%)	0	100	100
11	K	86/88 (98%)	86 (100%)	0	100	100
12	L	549/550 (100%)	549 (100%)	0	100	100
13	M	415/415 (100%)	415 (100%)	0	100	100
14	N	307/308 (100%)	307 (100%)	0	100	100
15	O	282/309 (91%)	282 (100%)	0	100	100
16	P	296/325 (91%)	296 (100%)	0	100	100
17	Q	105/153 (69%)	105 (100%)	0	100	100
18	R	70/96 (73%)	70 (100%)	0	100	100
19	S	74/80 (92%)	74 (100%)	0	100	100
20	T	69/135 (51%)	69 (100%)	0	100	100
20	U	80/135 (59%)	80 (100%)	0	100	100
21	V	100/102 (98%)	100 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	W	108/114 (95%)	108 (100%)	0	100	100
23	X	152/154 (99%)	151 (99%)	1 (1%)	81	87
24	Y	104/107 (97%)	104 (100%)	0	100	100
25	Z	120/123 (98%)	120 (100%)	0	100	100
26	a	57/60 (95%)	57 (100%)	0	100	100
27	b	70/73 (96%)	70 (100%)	0	100	100
28	c	41/67 (61%)	41 (100%)	0	100	100
29	d	107/107 (100%)	107 (100%)	0	100	100
30	e	91/94 (97%)	91 (100%)	0	100	100
31	f	47/53 (89%)	47 (100%)	0	100	100
32	g	90/129 (70%)	90 (100%)	0	100	100
33	h	123/162 (76%)	123 (100%)	0	100	100
34	i	86/120 (72%)	86 (100%)	0	100	100
35	j	62/87 (71%)	62 (100%)	0	100	100
36	k	54/78 (69%)	54 (100%)	0	100	100
37	l	140/161 (87%)	140 (100%)	0	100	100
38	m	112/114 (98%)	111 (99%)	1 (1%)	75	83
39	n	162/164 (99%)	162 (100%)	0	100	100
40	o	111/121 (92%)	111 (100%)	0	100	100
41	p	152/158 (96%)	152 (100%)	0	100	100
42	q	110/131 (84%)	110 (100%)	0	100	100
43	r	44/96 (46%)	44 (100%)	0	100	100
44	s	28/95 (30%)	28 (100%)	0	100	100
45	AA	341/398 (86%)	341 (100%)	0	100	100
45	Aa	339/398 (85%)	339 (100%)	0	100	100
46	AB	324/356 (91%)	324 (100%)	0	100	100
46	Ab	327/356 (92%)	327 (100%)	0	100	100
47	AC	325/333 (98%)	325 (100%)	0	100	100
47	Ac	322/333 (97%)	322 (100%)	0	100	100
48	AD	203/260 (78%)	203 (100%)	0	100	100
48	Ad	205/260 (79%)	205 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
49	AE	152/224 (68%)	152 (100%)	0	100	100
49	AI	33/224 (15%)	33 (100%)	0	100	100
49	Ae	156/224 (70%)	156 (100%)	0	100	100
50	AF	89/99 (90%)	89 (100%)	0	100	100
50	Af	90/99 (91%)	90 (100%)	0	100	100
51	AG	68/74 (92%)	68 (100%)	0	100	100
51	Ag	69/74 (93%)	69 (100%)	0	100	100
52	AH	61/83 (74%)	61 (100%)	0	100	100
52	Ah	61/83 (74%)	61 (100%)	0	100	100
53	AJ	33/55 (60%)	33 (100%)	0	100	100
53	Aj	33/55 (60%)	33 (100%)	0	100	100
54	AK	34/46 (74%)	34 (100%)	0	100	100
54	Ak	35/46 (76%)	35 (100%)	0	100	100
All	All	10319/12037 (86%)	10315 (100%)	4 (0%)	100	100

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	95	PHE
2	B	170	TYR
23	X	48	TRP
38	m	49	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 202 such sidechains are listed below:

Mol	Chain	Res	Type
17	Q	88	GLN
38	m	75	ASN
52	Ah	37	GLN
21	V	41	HIS
27	b	69	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 51 ligands modelled in this entry, 2 are monoatomic - leaving 49 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	$\#\|Z\| > 2$
67	HEM	AC	402	47	41,50,50	1.35	4 (9%)	45,82,82	1.96	9 (20%)
65	NDP	P	401	-	45,52,52	0.96	2 (4%)	53,80,80	1.17	4 (7%)
62	CDL	M	503	-	81,81,99	1.01	4 (4%)	87,93,111	1.14	6 (6%)
62	CDL	d	201	-	64,64,99	1.13	4 (6%)	70,76,111	1.20	6 (8%)
55	SF4	G	802	7	0,12,12	-	-	-		
58	3PE	M	502	-	48,48,50	0.93	2 (4%)	51,53,55	1.14	3 (5%)
62	CDL	Aa	501	-	45,45,99	0.43	0	51,57,111	0.36	0
67	HEM	AC	401	47	41,50,50	1.24	4 (9%)	45,82,82	1.68	8 (17%)
62	CDL	h	201	-	67,67,99	1.10	4 (5%)	73,79,111	1.15	6 (8%)
67	HEM	Ac	403	47	41,50,50	1.26	3 (7%)	45,82,82	1.69	9 (20%)
58	3PE	i	201	-	39,39,50	1.03	2 (5%)	42,44,55	1.14	3 (7%)
61	UQ9	H	401	-	35,35,58	0.79	2 (5%)	42,45,73	0.50	0
55	SF4	I	303	9	0,12,12	-	-	-		
64	ADP	O	401	-	24,29,29	0.94	1 (4%)	29,45,45	1.37	4 (13%)
62	CDL	L	703	-	72,72,99	1.06	4 (5%)	78,84,111	1.14	6 (7%)
62	CDL	q	201	-	56,56,99	1.21	4 (7%)	62,68,111	1.21	5 (8%)
66	EHZ	W	201	-	27,31,37	1.89	7 (25%)	37,41,47	1.86	11 (29%)
57	PC1	B	303	-	34,34,53	1.15	2 (5%)	40,42,61	1.16	4 (10%)
58	3PE	L	701	-	39,39,50	1.02	2 (5%)	42,44,55	1.06	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
59	FES	E	301	5	0,4,4	-	-	-		
70	U10	Ac	405	-	23,23,63	1.24	3 (13%)	28,31,79	2.08	7 (25%)
58	3PE	M	501	-	36,36,50	1.08	2 (5%)	39,41,55	1.05	3 (7%)
58	3PE	D	501	-	37,37,50	1.06	2 (5%)	40,42,55	1.08	3 (7%)
58	3PE	m	201	-	40,40,50	1.01	2 (5%)	43,45,55	1.15	3 (6%)
62	CDL	Ag	101	-	41,41,99	0.45	0	47,53,111	0.36	0
58	3PE	Ac	401	-	22,22,50	0.47	0	25,27,55	0.74	1 (4%)
58	3PE	Ac	404	-	34,34,50	0.32	0	37,39,55	0.41	0
67	HEM	Ac	402	47	41,50,50	1.22	4 (9%)	45,82,82	1.69	8 (17%)
58	3PE	L	705	-	43,43,50	0.99	2 (4%)	46,48,55	1.08	3 (6%)
58	3PE	H	403	-	50,50,50	0.91	2 (4%)	53,55,55	1.01	2 (3%)
55	SF4	B	301	2	0,12,12	-	-	-		
58	3PE	Ag	103	-	50,50,50	0.31	0	53,55,55	0.29	0
56	UQ1	B	302	-	18,18,18	2.00	2 (11%)	22,25,25	1.18	3 (13%)
68	UQ6	Ac	406	-	23,23,43	2.77	6 (26%)	27,31,55	1.96	5 (18%)
55	SF4	G	801	7	0,12,12	-	-	-		
62	CDL	Ag	102	-	55,55,99	0.39	0	61,67,111	0.33	0
68	UQ6	AC	403	-	28,28,43	2.42	6 (21%)	33,37,55	2.03	9 (27%)
58	3PE	L	702	-	48,48,50	0.92	2 (4%)	51,53,55	1.10	3 (5%)
62	CDL	Y	201	-	70,70,99	1.08	4 (5%)	76,82,111	1.16	7 (9%)
66	EHZ	n	201	-	27,31,37	1.91	7 (25%)	37,41,47	1.56	4 (10%)
60	FMN	F	501	-	33,33,33	1.39	5 (15%)	48,50,50	1.23	7 (14%)
57	PC1	I	301	-	42,42,53	1.04	2 (4%)	48,50,61	1.04	3 (6%)
55	SF4	I	302	9	0,12,12	-	-	-		
69	HEC	AD	401	48	32,50,50	2.17	3 (9%)	24,82,82	1.64	5 (20%)
55	SF4	F	502	6	0,12,12	-	-	-		
59	FES	G	803	7	0,4,4	-	-	-		
58	3PE	H	402	-	45,45,50	0.97	2 (4%)	48,50,55	0.97	2 (4%)
58	3PE	J	201	-	45,45,50	0.97	2 (4%)	48,50,55	1.06	3 (6%)
69	HEC	Ad	401	48	32,50,50	2.15	3 (9%)	24,82,82	1.64	4 (16%)

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
67	HEM	AC	402	47	-	7/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
65	NDP	P	401	-	-	4/30/77/77	0/5/5/5
62	CDL	M	503	-	-	24/92/92/110	-
62	CDL	d	201	-	-	27/75/75/110	-
55	SF4	G	802	7	-	-	0/6/5/5
58	3PE	M	502	-	-	14/52/52/54	-
62	CDL	Aa	501	-	-	17/56/56/110	-
67	HEM	AC	401	47	-	7/12/54/54	-
62	CDL	h	201	-	-	19/78/78/110	-
67	HEM	Ac	403	47	-	6/12/54/54	-
58	3PE	i	201	-	-	9/43/43/54	-
61	UQ9	H	401	-	-	17/30/54/81	0/1/1/1
64	ADP	O	401	-	-	2/12/32/32	0/3/3/3
66	EHZ	W	201	-	-	21/39/39/45	-
62	CDL	L	703	-	-	20/83/83/110	-
62	CDL	q	201	-	-	20/67/67/110	-
55	SF4	I	303	9	-	-	0/6/5/5
57	PC1	B	303	-	-	11/38/38/57	-
58	3PE	L	701	-	-	9/43/43/54	-
59	FES	E	301	5	-	-	0/1/1/1
70	U10	Ac	405	-	-	6/15/39/87	0/1/1/1
58	3PE	M	501	-	-	10/40/40/54	-
58	3PE	D	501	-	-	10/41/41/54	-
58	3PE	m	201	-	-	11/44/44/54	-
62	CDL	Ag	101	-	-	14/52/52/110	-
58	3PE	Ac	401	-	-	7/26/26/54	-
58	3PE	Ac	404	-	-	13/38/38/54	-
67	HEM	Ac	402	47	-	7/12/54/54	-
58	3PE	L	705	-	-	13/47/47/54	-
58	3PE	H	403	-	-	11/54/54/54	-
55	SF4	B	301	2	-	-	0/6/5/5
58	3PE	Ag	103	-	-	10/54/54/54	-
56	UQ1	B	302	-	-	0/9/33/33	0/1/1/1
68	UQ6	Ac	406	-	-	2/15/15/39	0/1/1/1
62	CDL	Ag	102	-	-	13/66/66/110	-
68	UQ6	AC	403	-	-	4/21/21/39	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
55	SF4	G	801	7	-	-	0/6/5/5
58	3PE	L	702	-	-	13/52/52/54	-
62	CDL	Y	201	-	-	16/81/81/110	-
66	EHZ	n	201	-	-	21/39/39/45	-
60	FMN	F	501	-	-	1/18/18/18	0/3/3/3
57	PC1	I	301	-	-	9/46/46/57	-
55	SF4	I	302	9	-	-	0/6/5/5
69	HEC	AD	401	48	-	0/10/54/54	-
55	SF4	F	502	6	-	-	0/6/5/5
59	FES	G	803	7	-	-	0/1/1/1
58	3PE	H	402	-	-	13/49/49/54	-
58	3PE	J	201	-	-	13/49/49/54	-
69	HEC	Ad	401	48	-	0/10/54/54	-

The worst 5 of 112 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
68	AC	403	UQ6	C5-C4	8.00	1.52	1.39
56	B	302	UQ1	C6-C5	7.58	1.49	1.35
69	Ad	401	HEC	C3C-C2C	-6.41	1.34	1.40
69	AD	401	HEC	C3C-C2C	-6.40	1.34	1.40
69	AD	401	HEC	C2B-C3B	-6.15	1.34	1.40

The worst 5 of 171 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
70	Ac	405	U10	C6-C1-C2	7.72	125.28	119.18
66	W	201	EHZ	C8-C9-S1	6.35	121.48	113.63
68	Ac	406	UQ6	C4M-O4-C4	5.92	131.00	114.78
68	AC	403	UQ6	C7-C8-C9	-5.78	118.27	127.24
66	n	201	EHZ	C8-C9-S1	5.56	120.50	113.63

There are no chirality outliers.

5 of 451 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
57	B	303	PC1	C1-O11-P-O12
57	B	303	PC1	C1-O11-P-O14
57	B	303	PC1	C1-O11-P-O13
57	B	303	PC1	O22-C21-O21-C2

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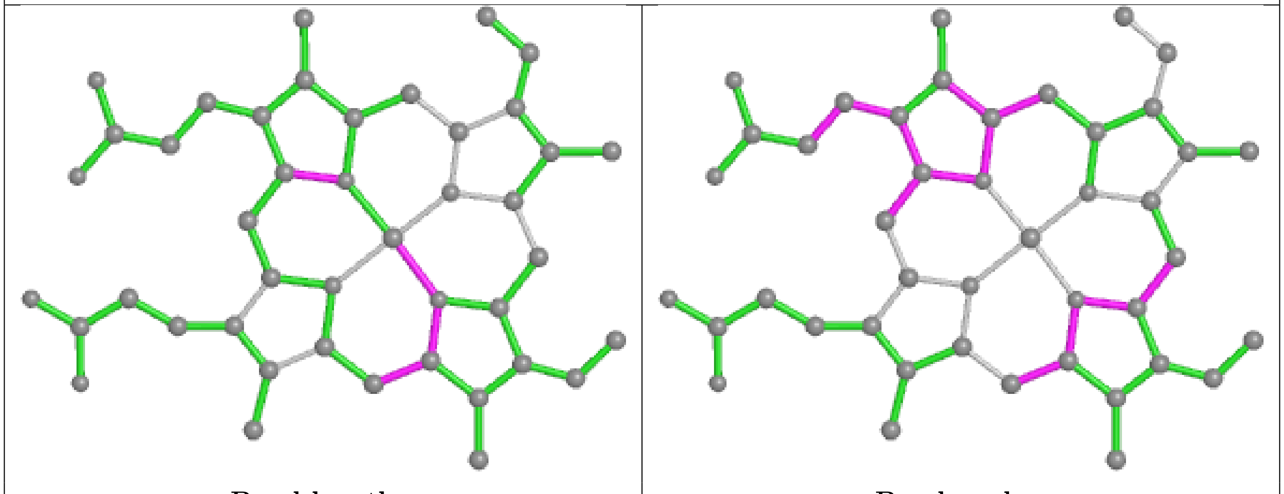
Mol	Chain	Res	Type	Atoms
58	D	501	3PE	C1-O11-P-O14

There are no ring outliers.

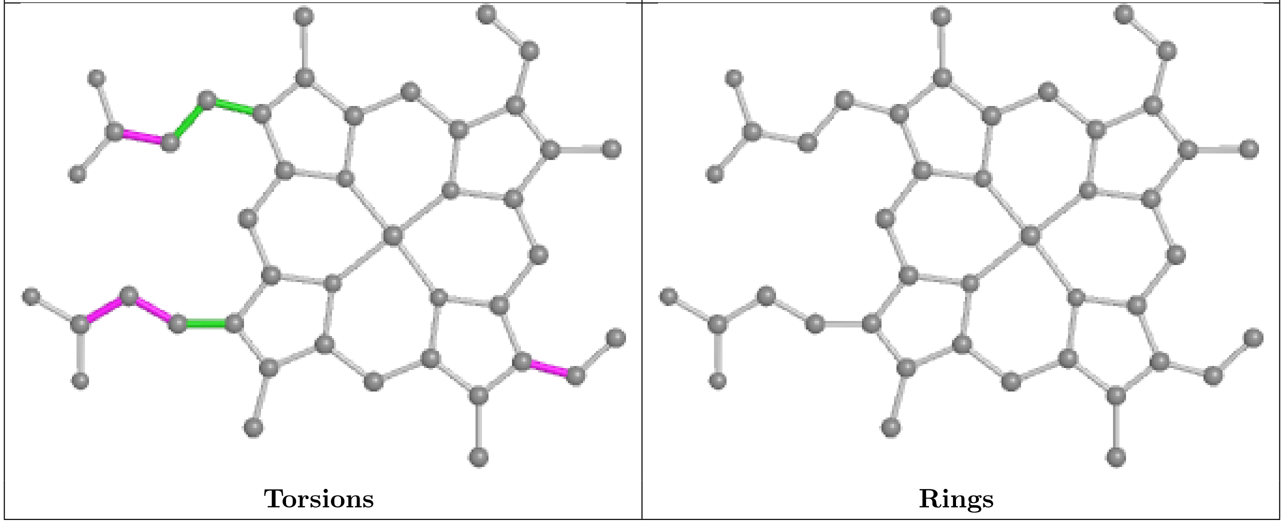
No monomer is involved in short contacts.

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 HEM AC 402

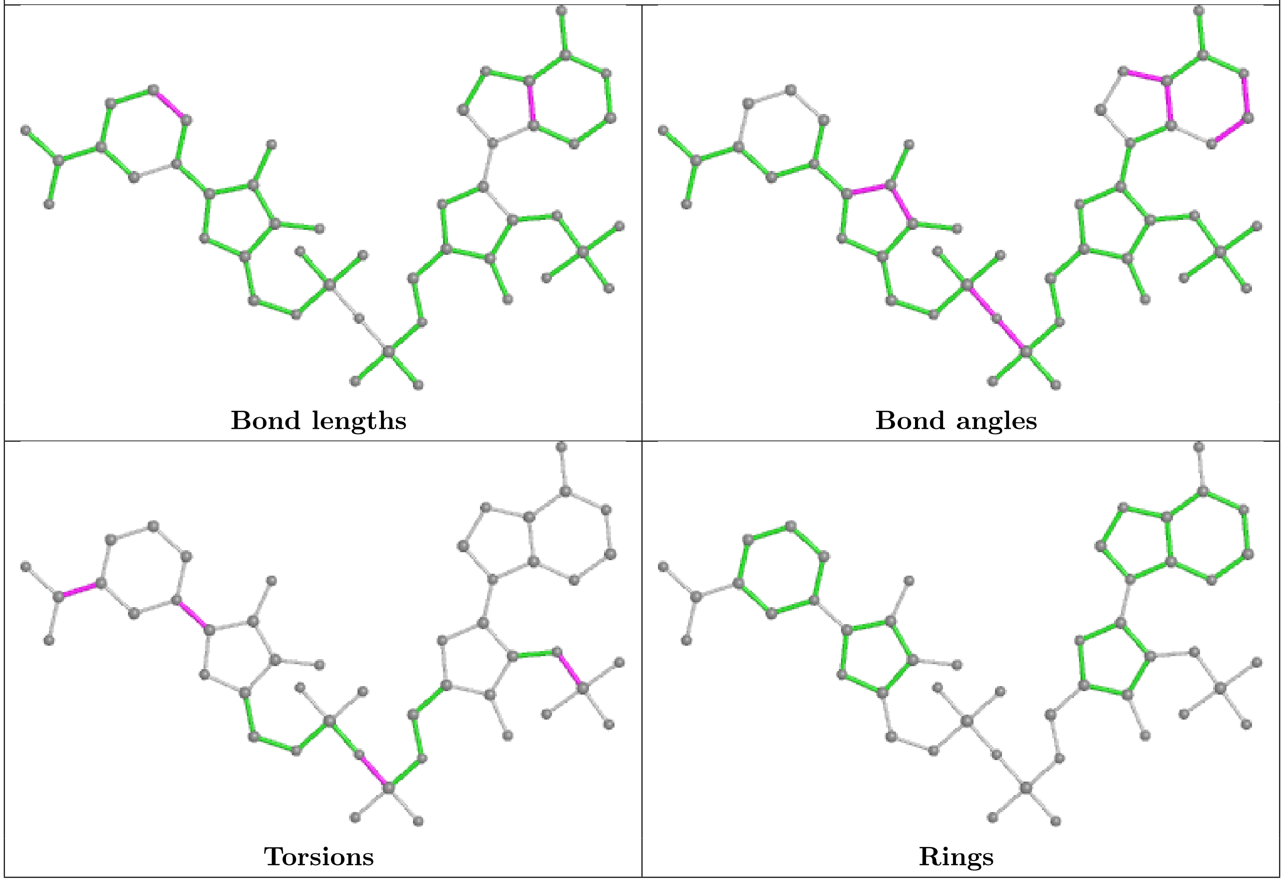


Bond lengths **Bond angles**



Torsions **Rings**

Ligand NDP P 401



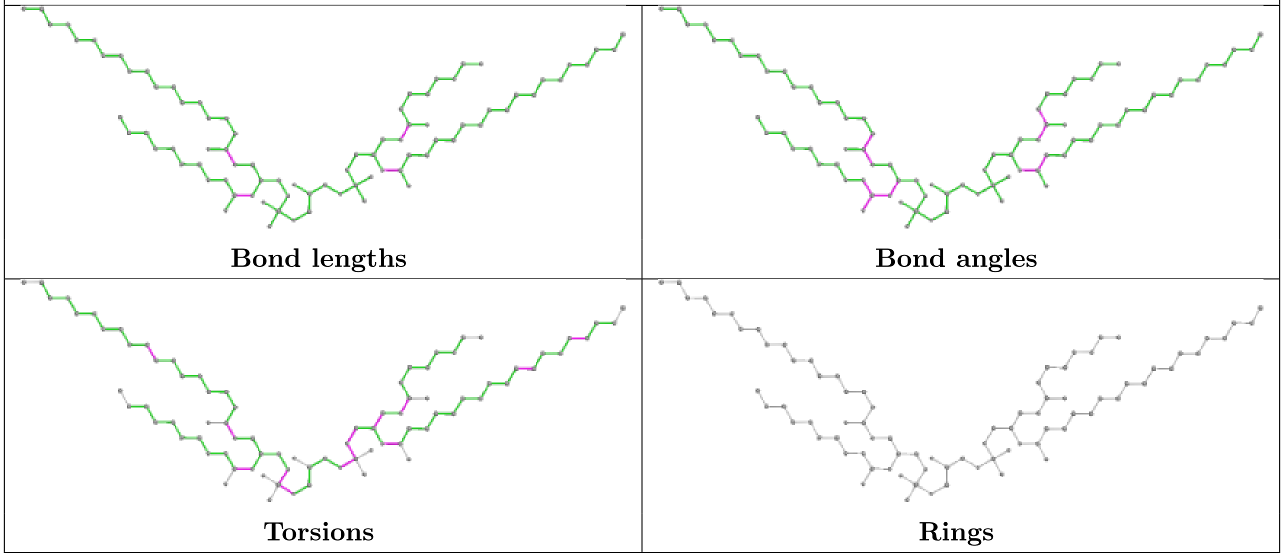
Bond lengths

Bond angles

Torsions

Rings

Ligand CDL M 503



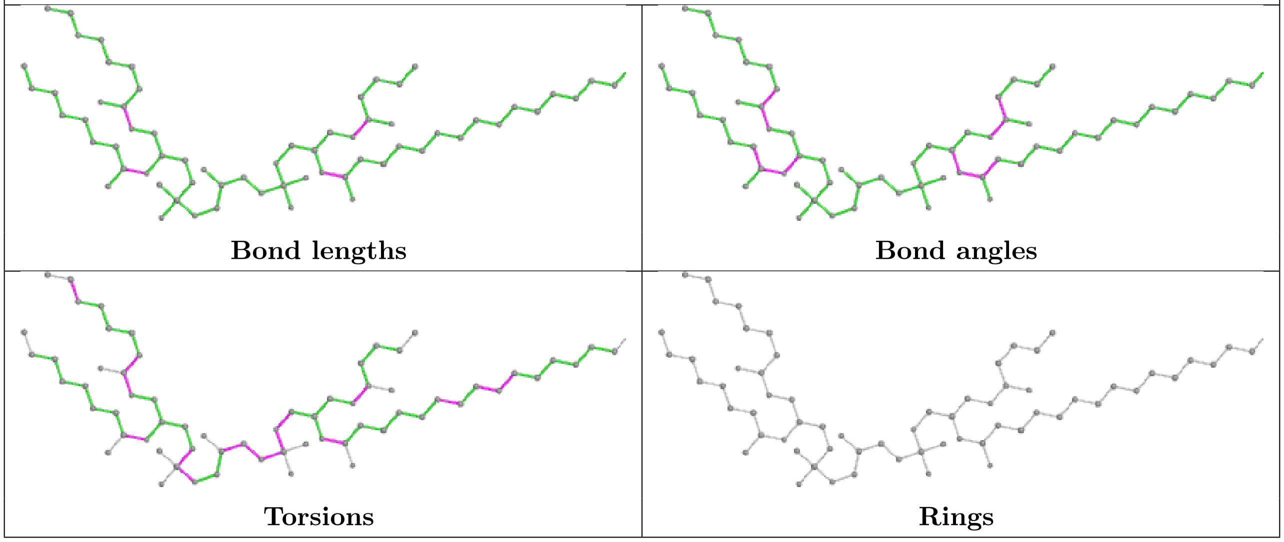
Bond lengths

Bond angles

Torsions

Rings

Ligand CDL d 201



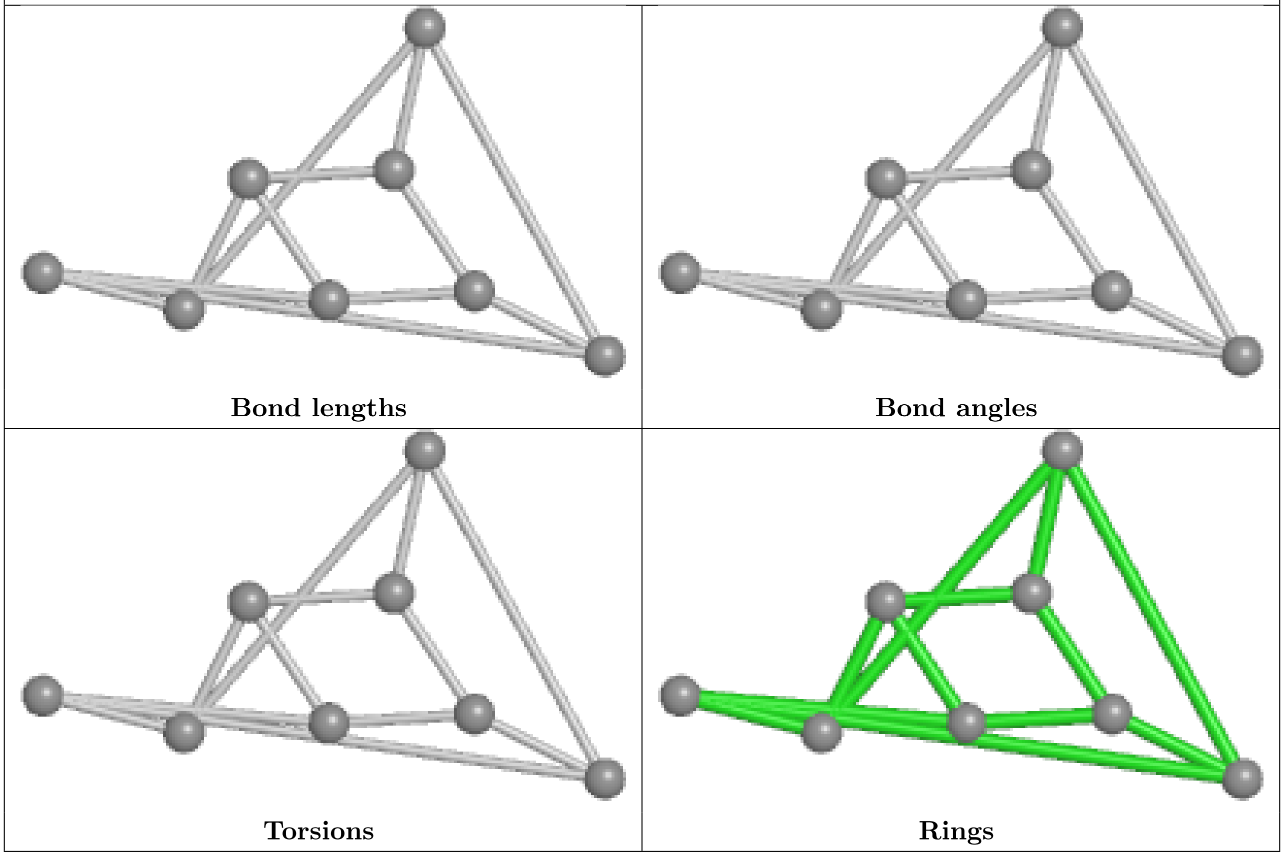
Bond lengths

Bond angles

Torsions

Rings

Ligand SF4 G 802



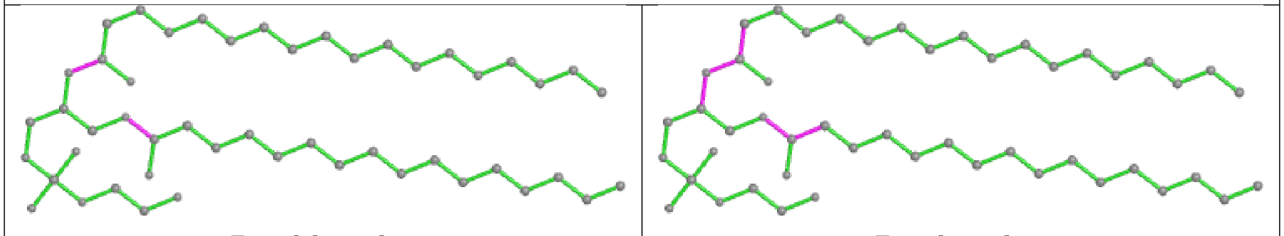
Bond lengths

Bond angles

Torsions

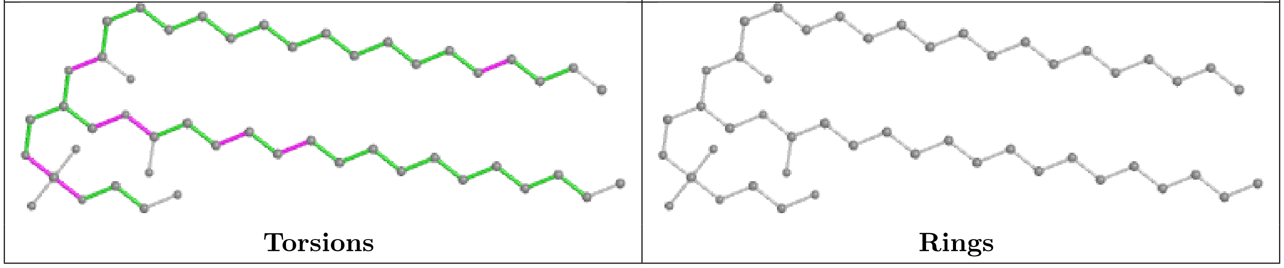
Rings

Ligand 3PE M 502



Bond lengths

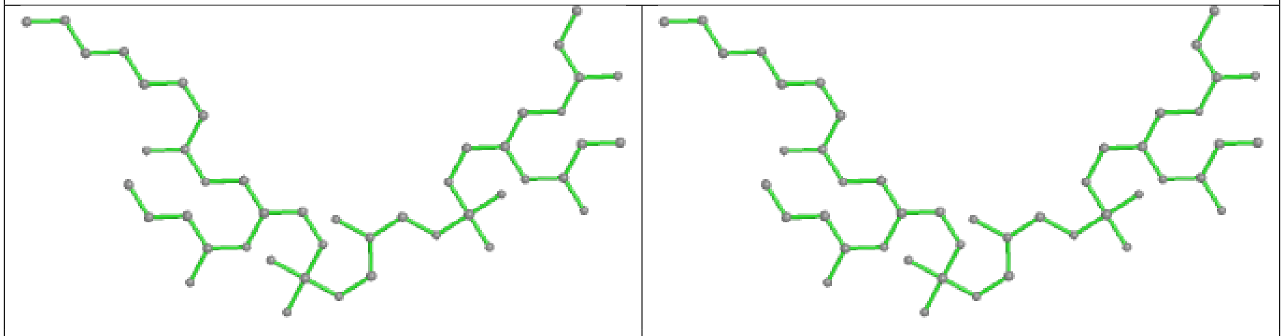
Bond angles



Torsions

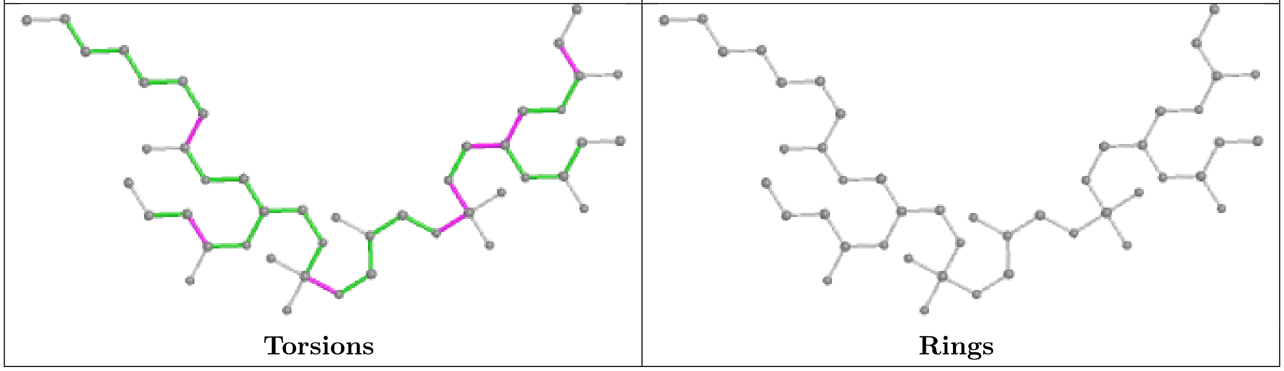
Rings

Ligand CDL Aa 501



Bond lengths

Bond angles



Torsions

Rings

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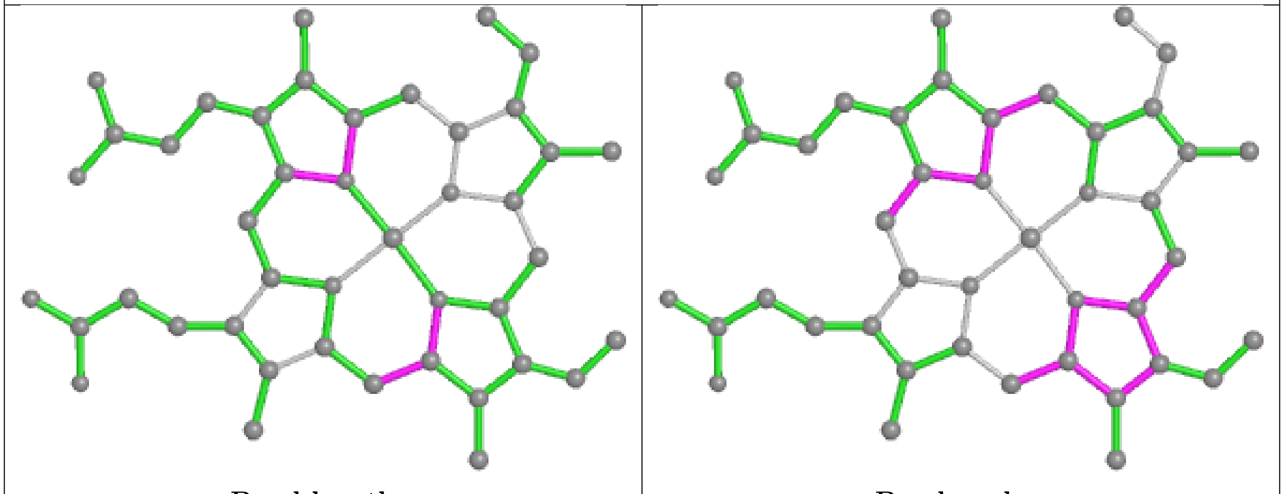
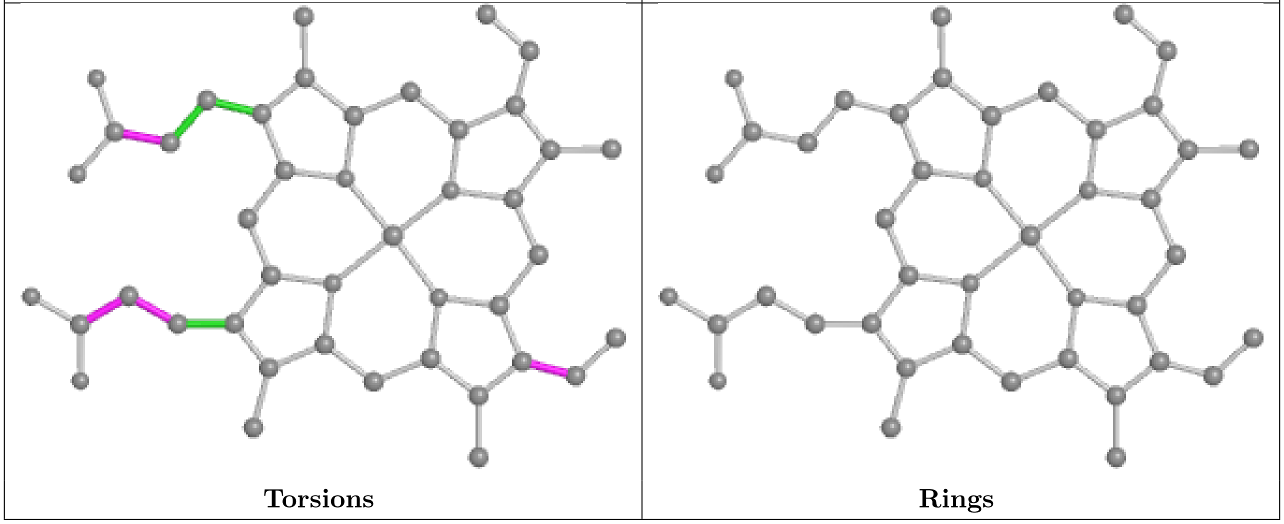


Bond lengths

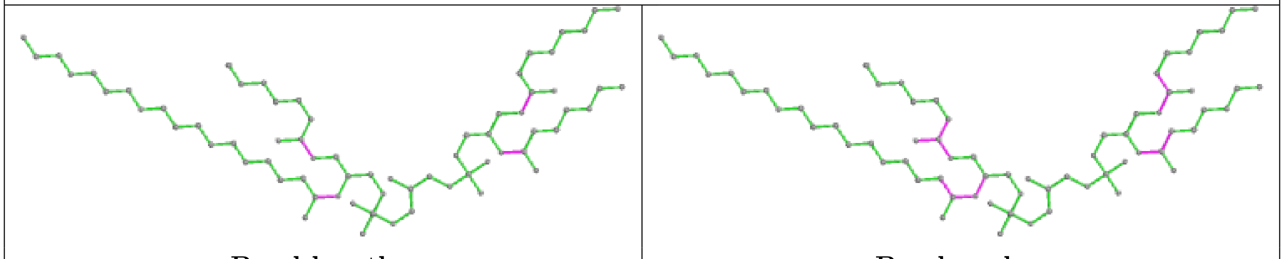
Bond angles



Torsions

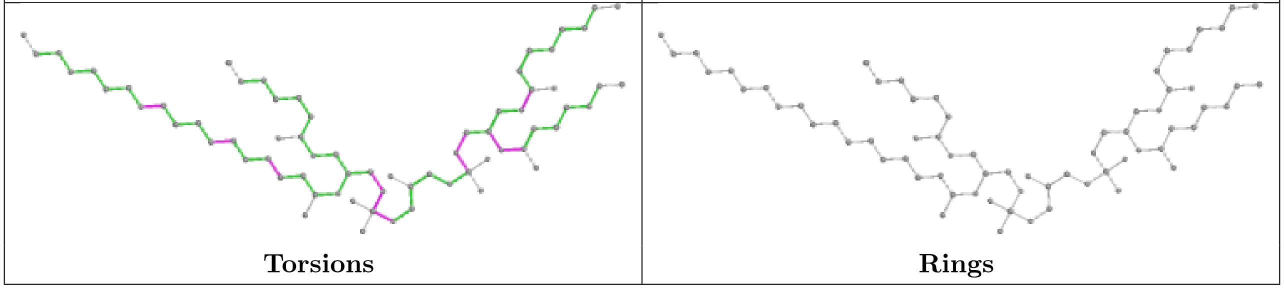
Rings

Ligand CDL h 201



Bond lengths

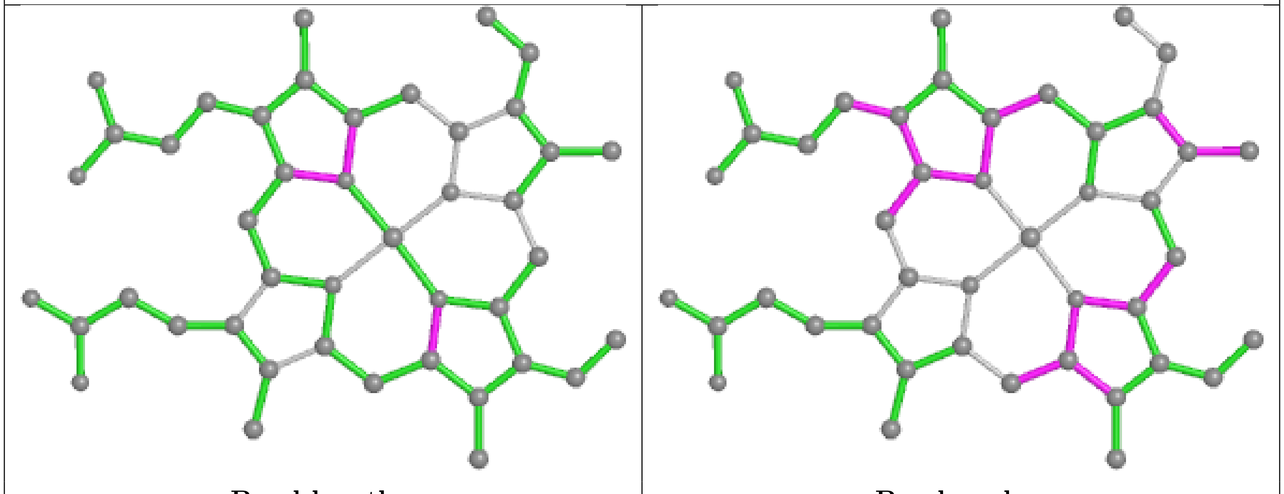
Bond angles



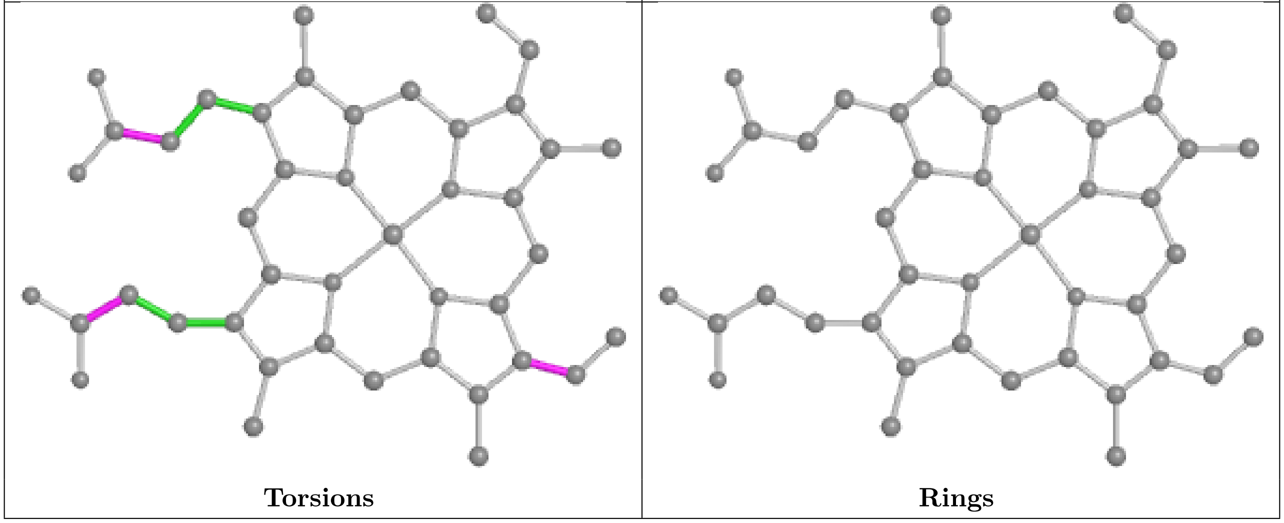
Torsions

Rings

Ligand HEM Ac 403

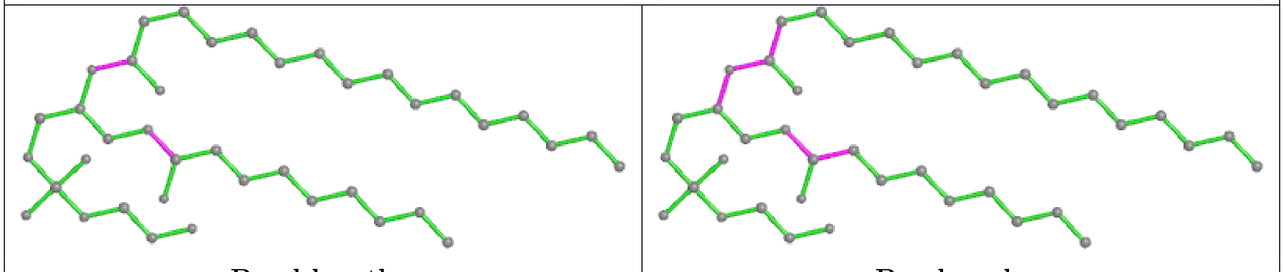


Bond lengths Bond angles

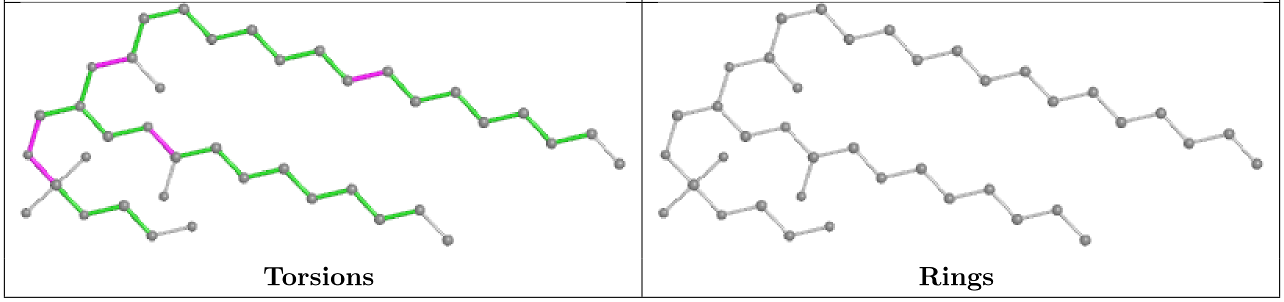


Torsions Rings

Ligand 3PE i 201

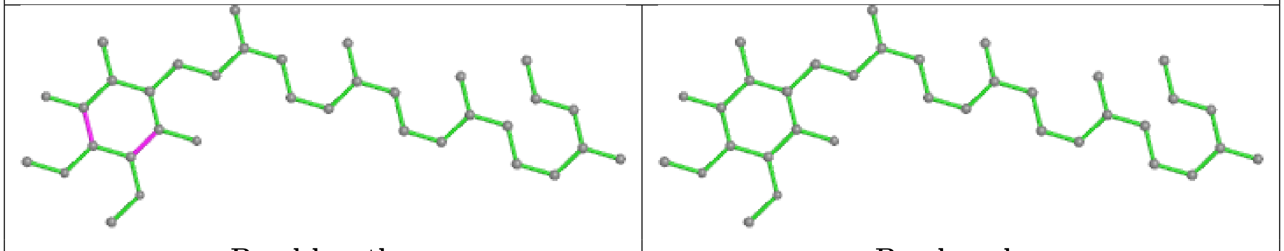


Bond lengths Bond angles

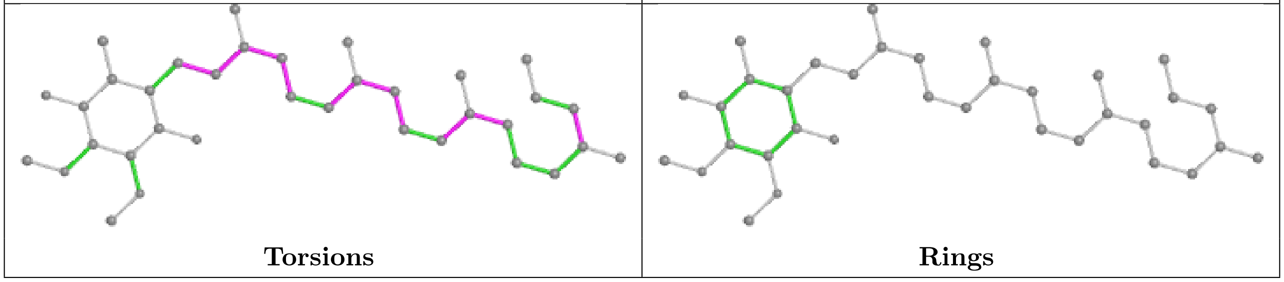


Torsions Rings

Ligand UQ9 H 401

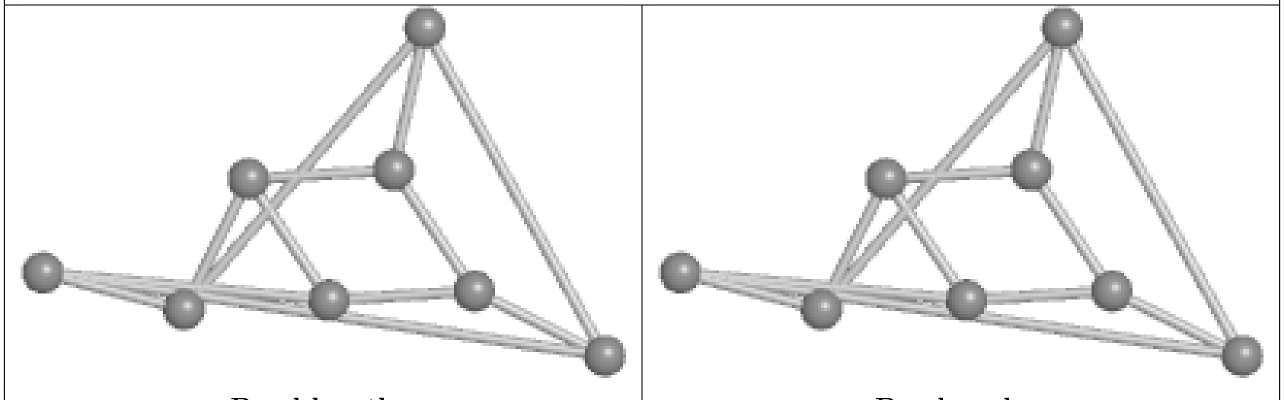


Bond lengths Bond angles

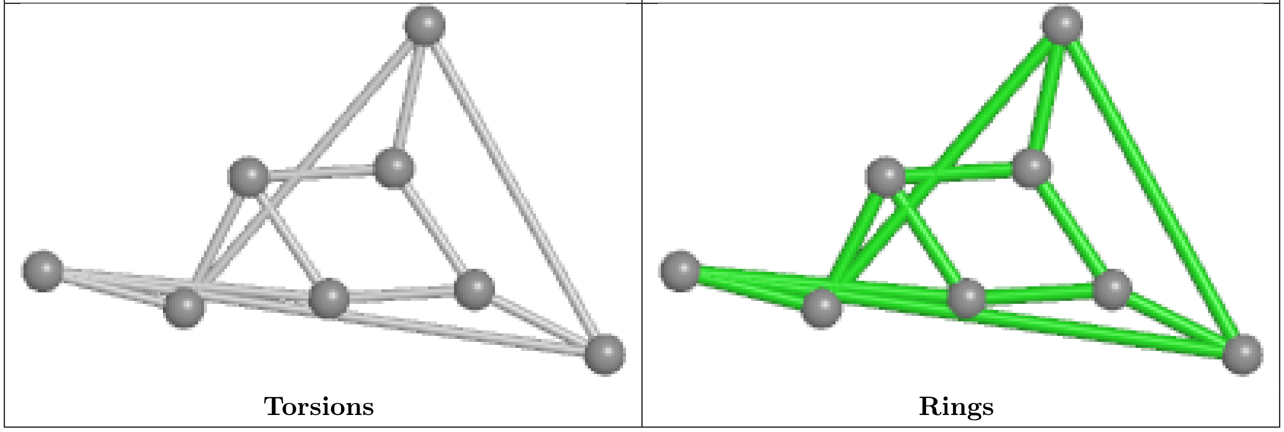


Torsions Rings

Ligand SF4 I 303

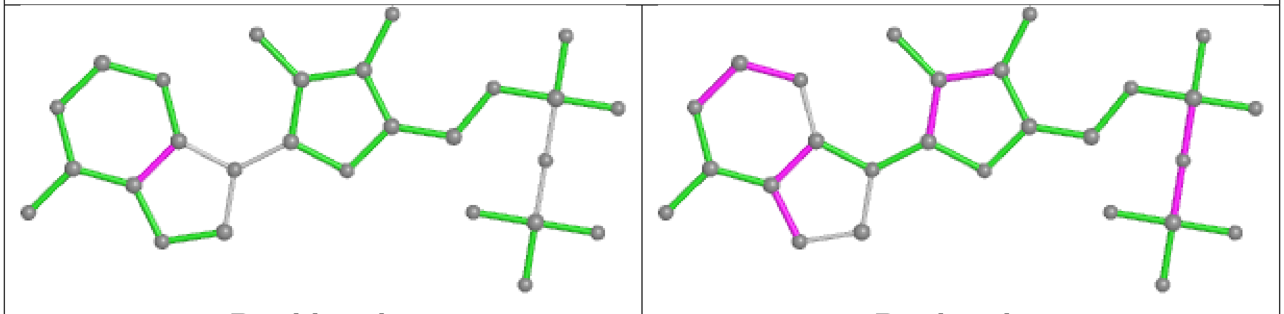


Bond lengths Bond angles

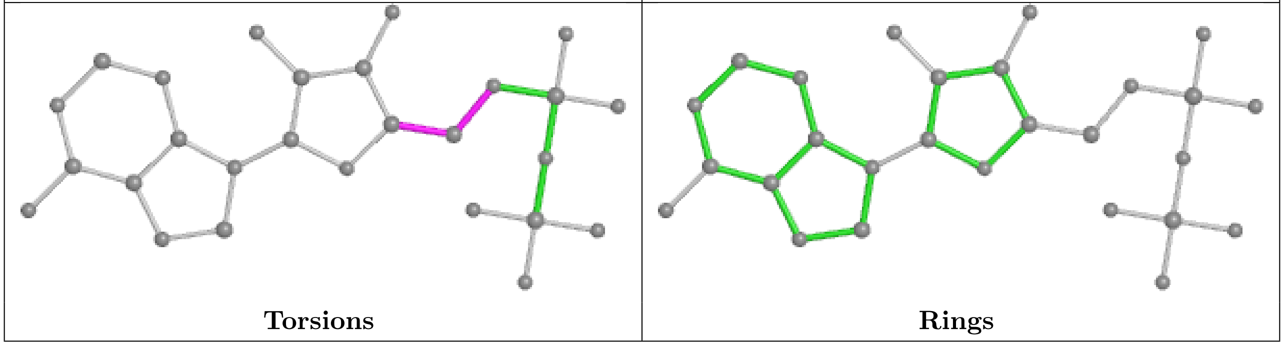


Torsions Rings

Ligand ADP O 401

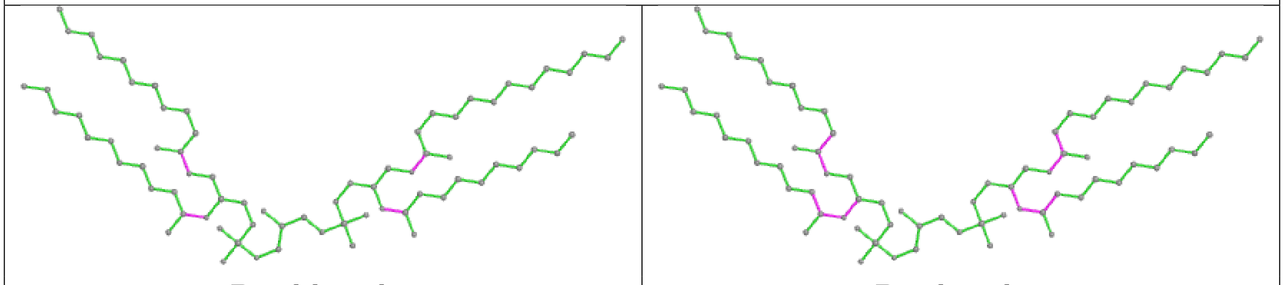


Bond lengths Bond angles

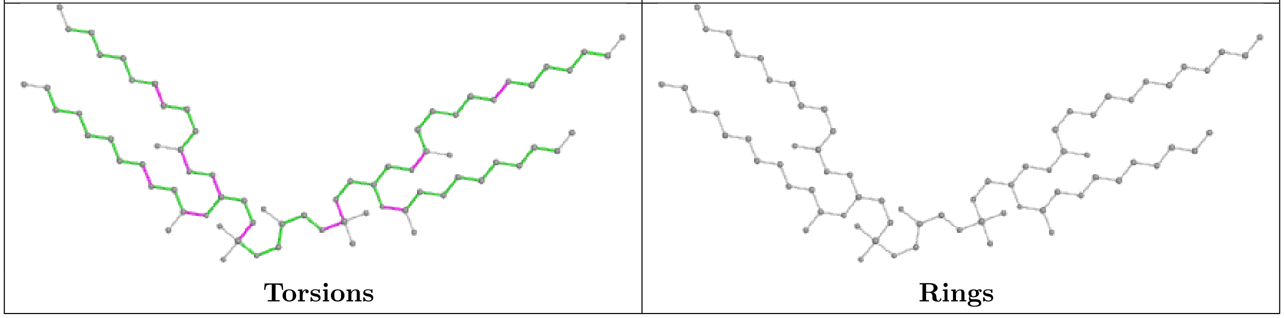


Torsions Rings

Ligand CDL L 703

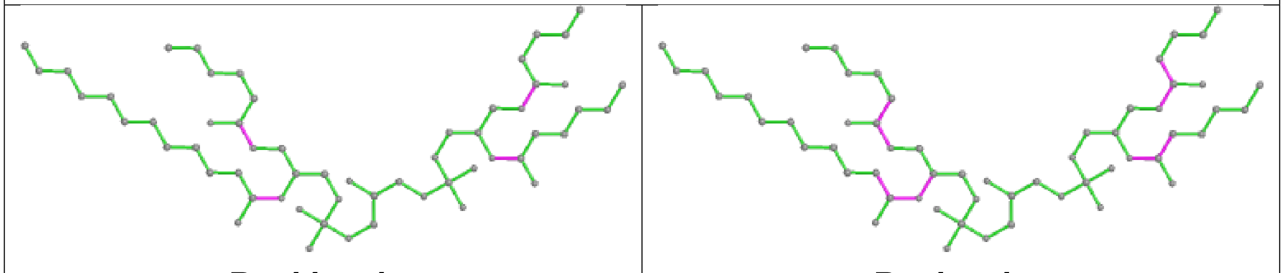


Bond lengths Bond angles

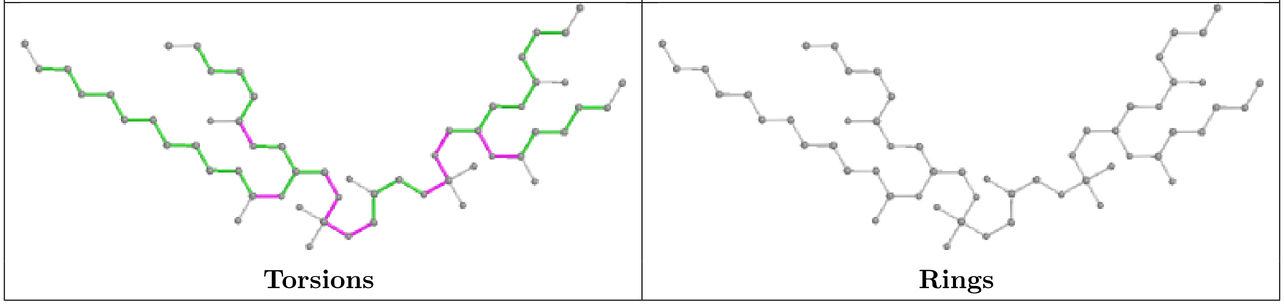


Torsions Rings

Ligand CDL q 201

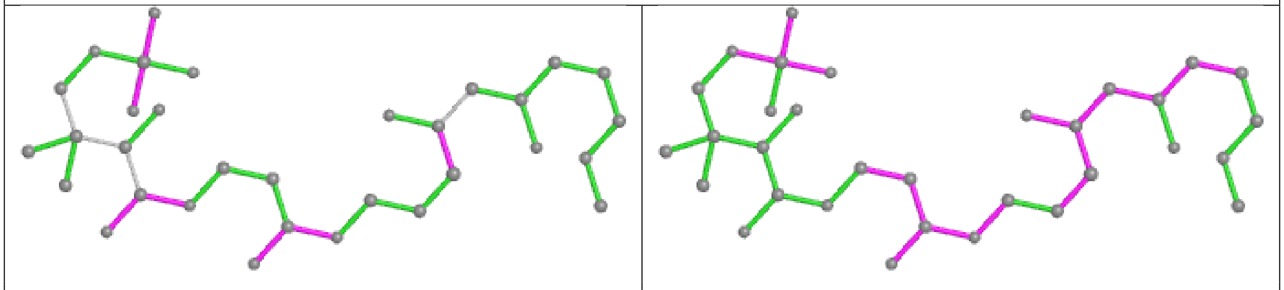


Bond lengths Bond angles

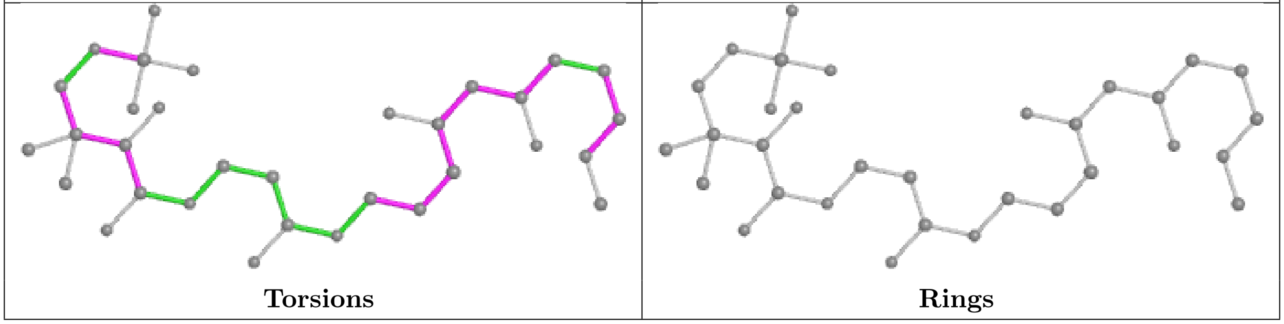


Torsions Rings

Ligand EHZ W 201

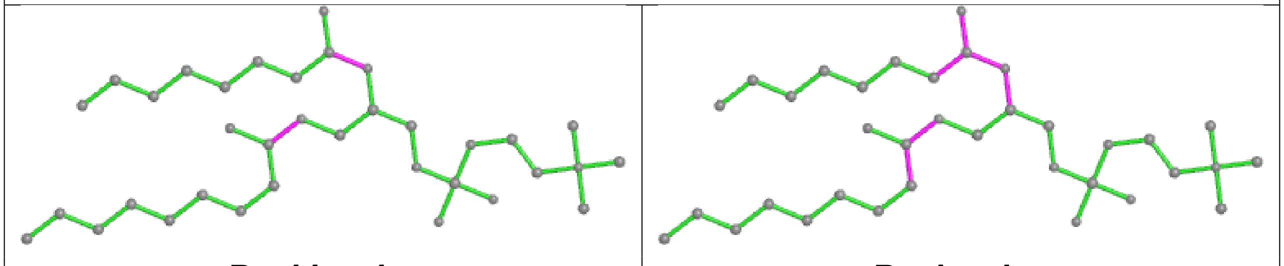


Bond lengths Bond angles

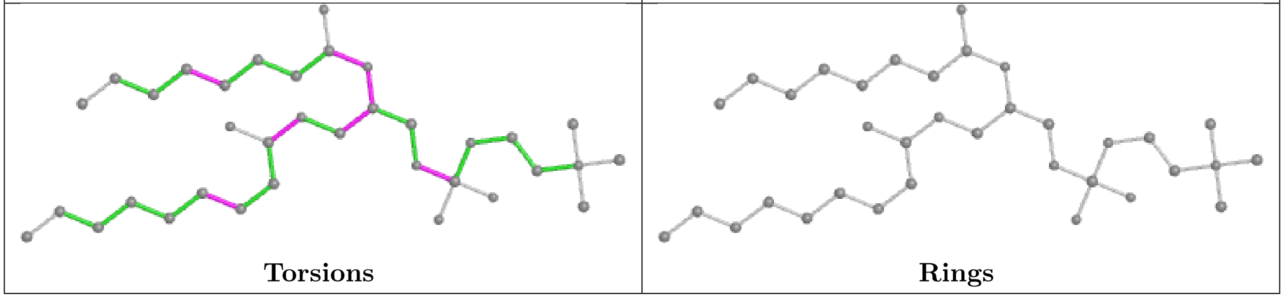


Torsions Rings

Ligand PC1 B 303

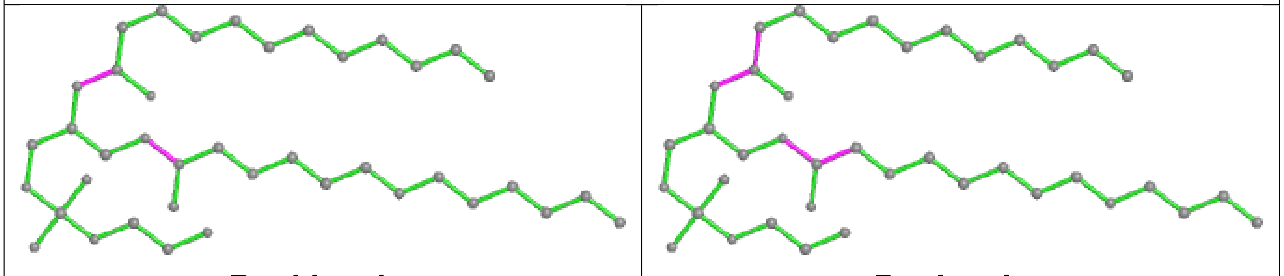


Bond lengths Bond angles

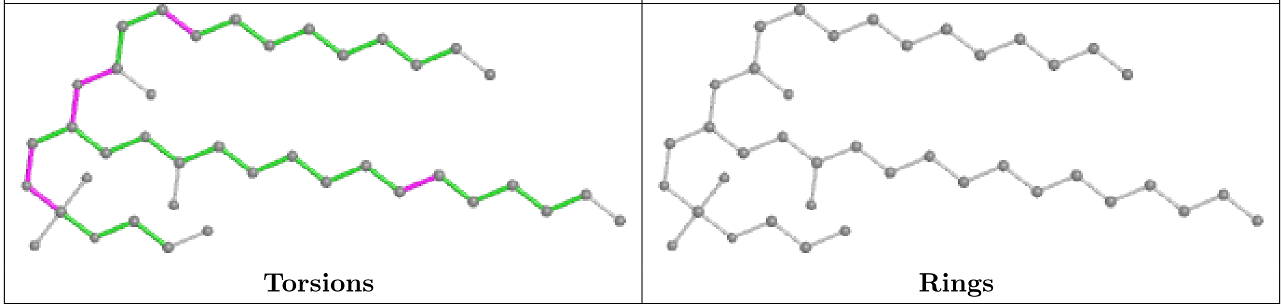


Torsions Rings

Ligand 3PE L 701

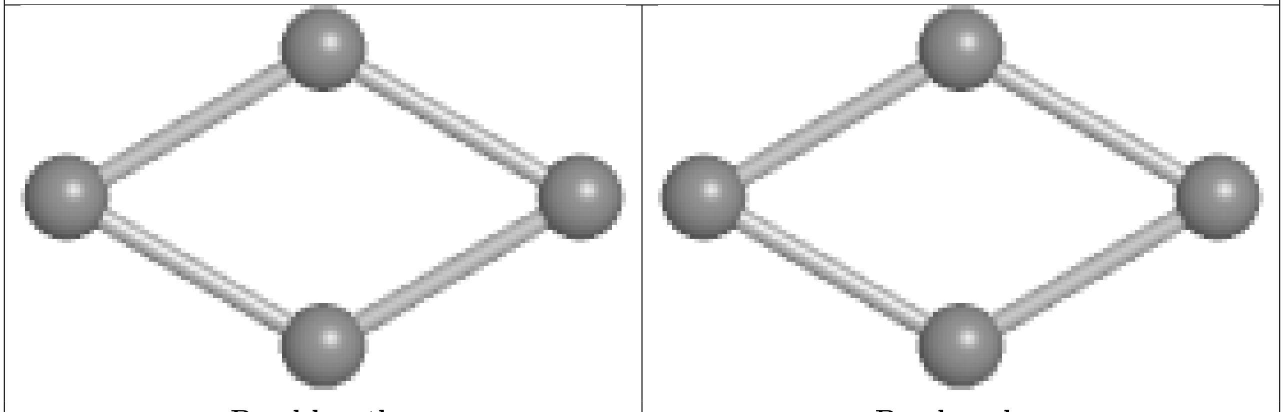


Bond lengths Bond angles



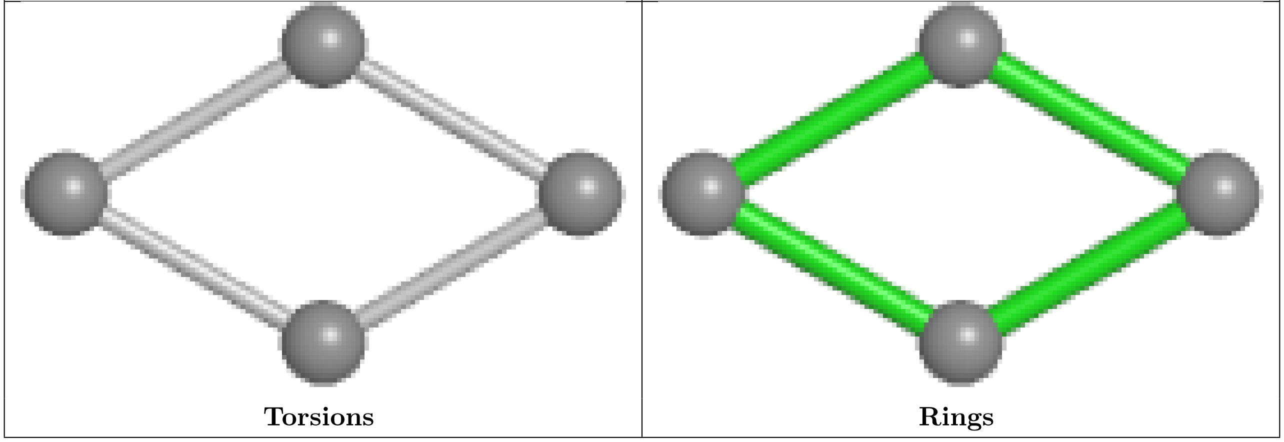
Torsions Rings

Ligand FES E 301



Bond lengths

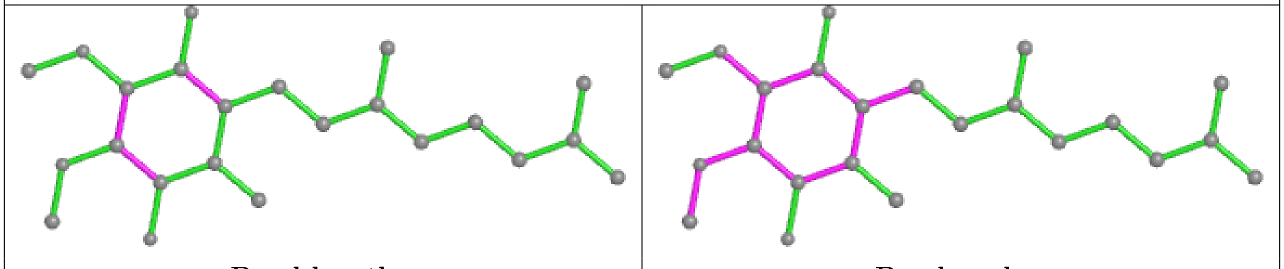
Bond angles



Torsions

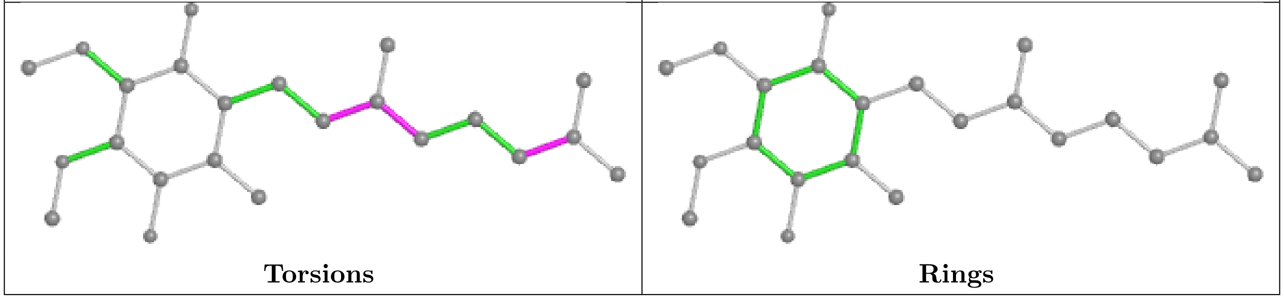
Rings

Ligand U10 Ac 405



Bond lengths

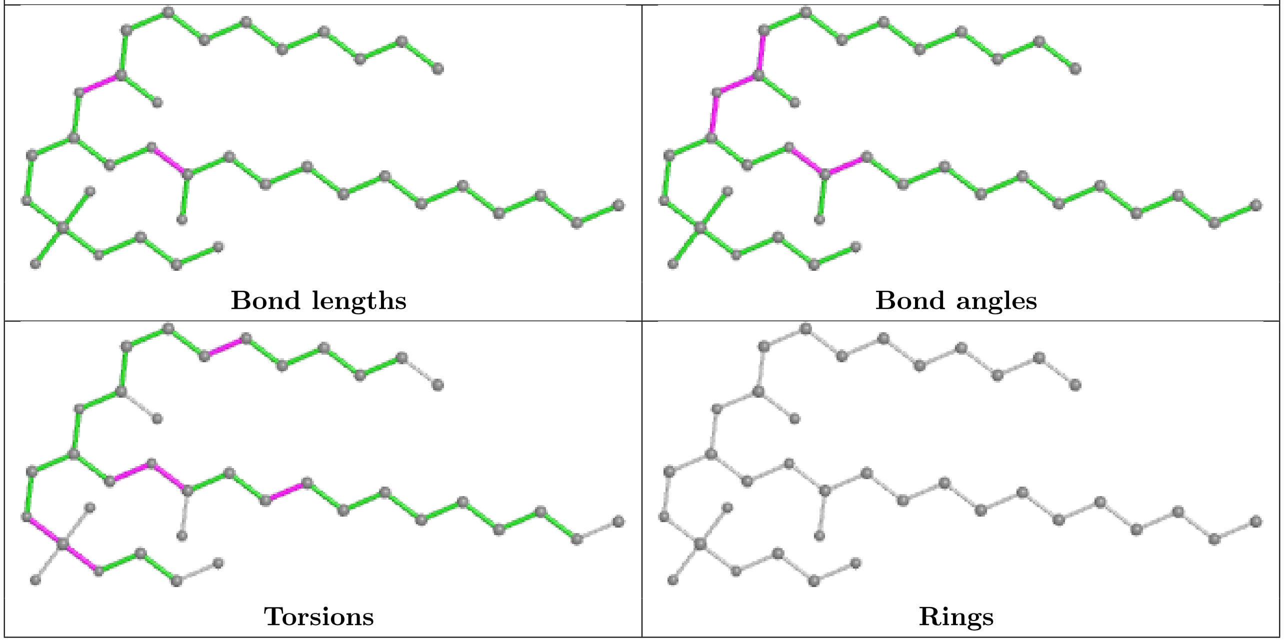
Bond angles



Torsions

Rings

Ligand 3PE M 501



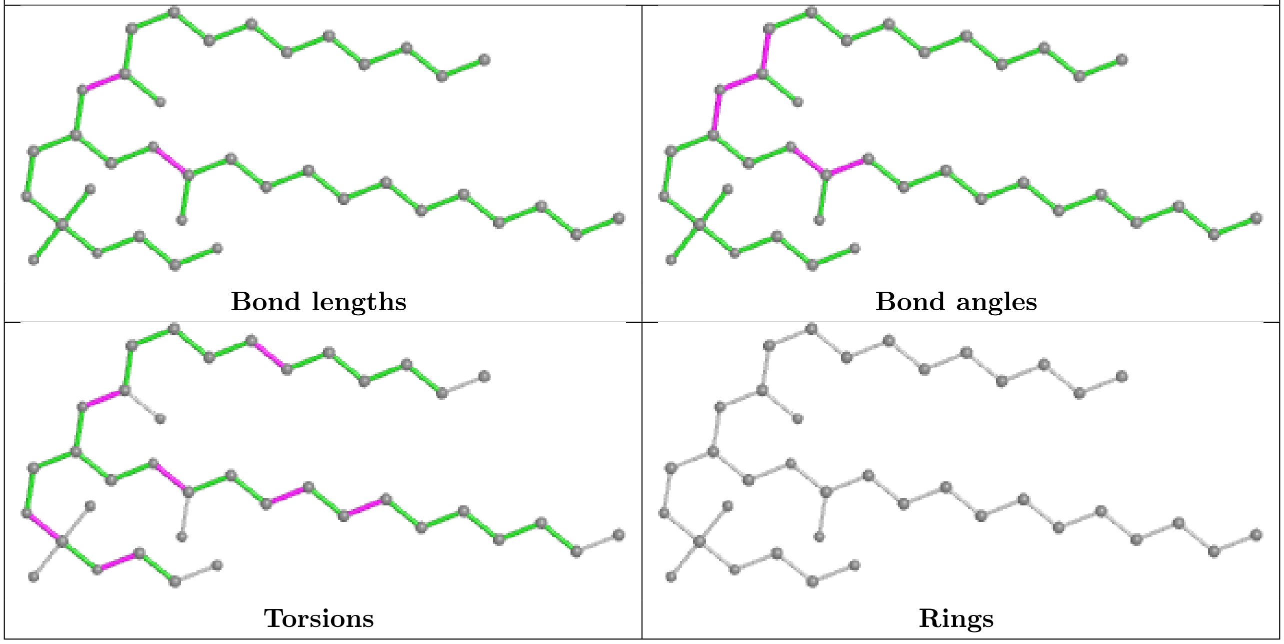
Bond lengths

Bond angles

Torsions

Rings

Ligand 3PE D 501



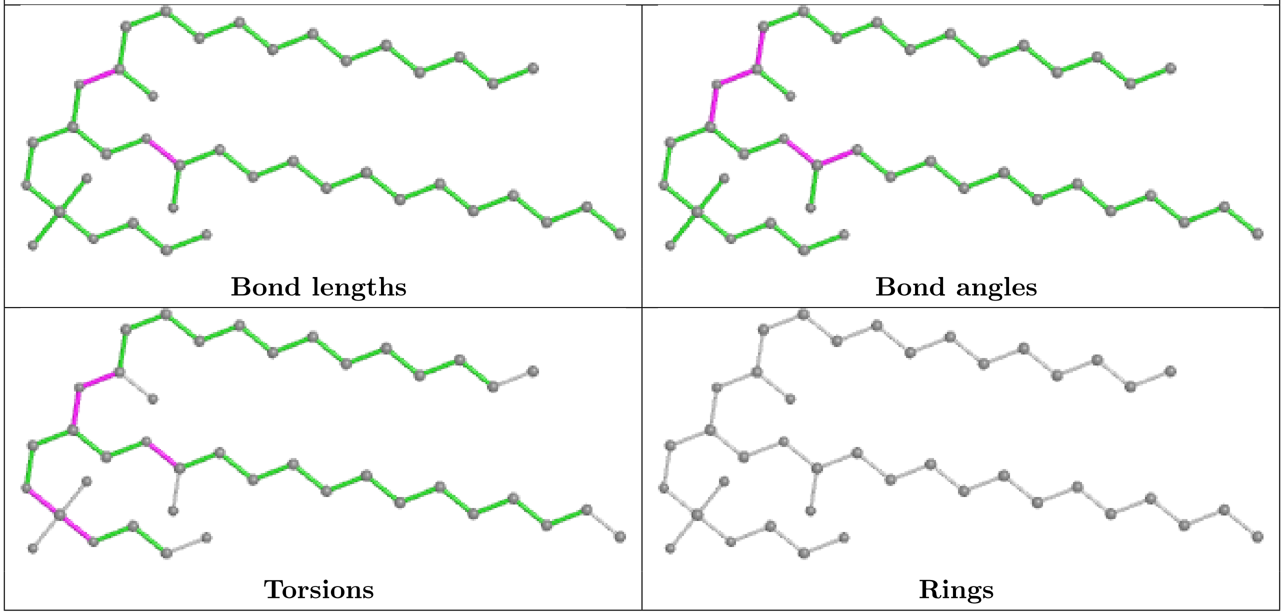
Bond lengths

Bond angles

Torsions

Rings

Ligand 3PE m 201



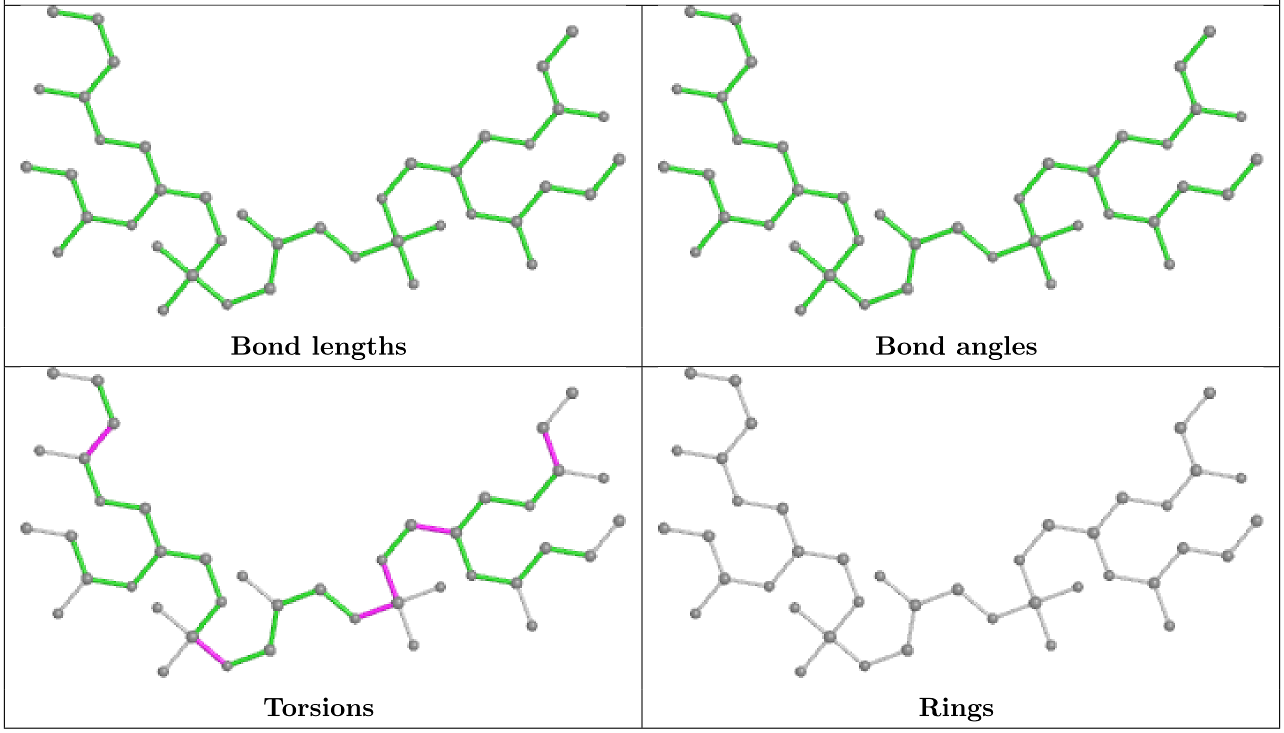
Bond lengths

Bond angles

Torsions

Rings

Ligand CDL Ag 101



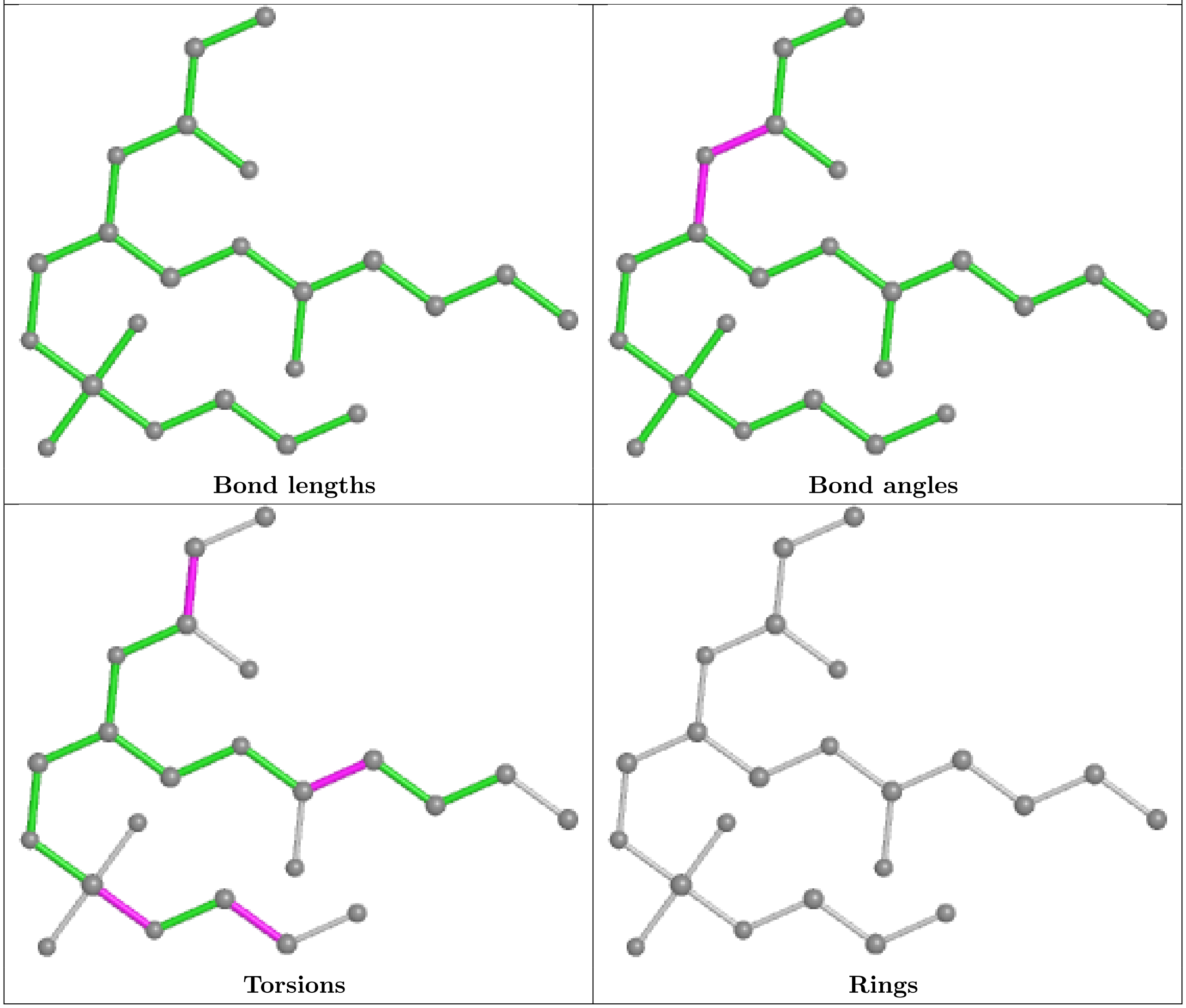
Bond lengths

Bond angles

Torsions

Rings

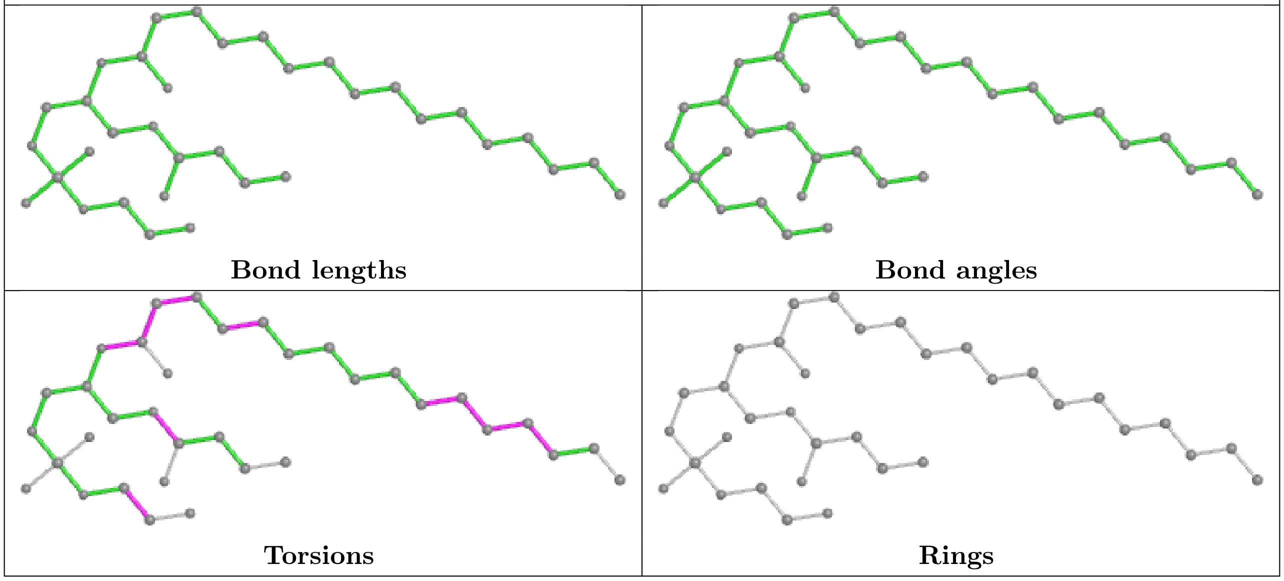
Ligand 3PE Ac 401



Bond lengths Bond angles

Torsions Rings

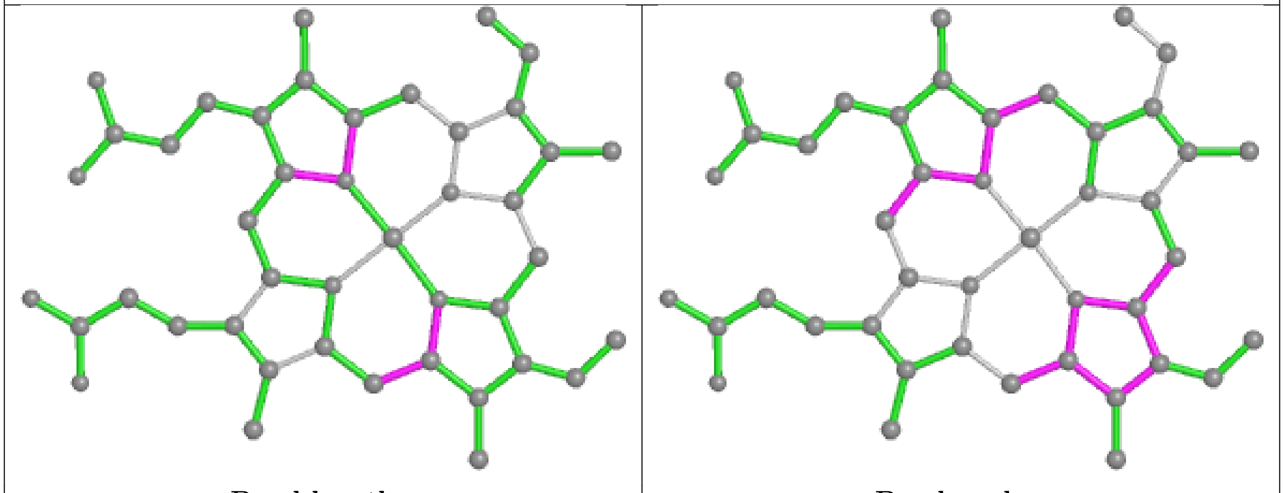
Ligand 3PE Ac 404



Bond lengths Bond angles

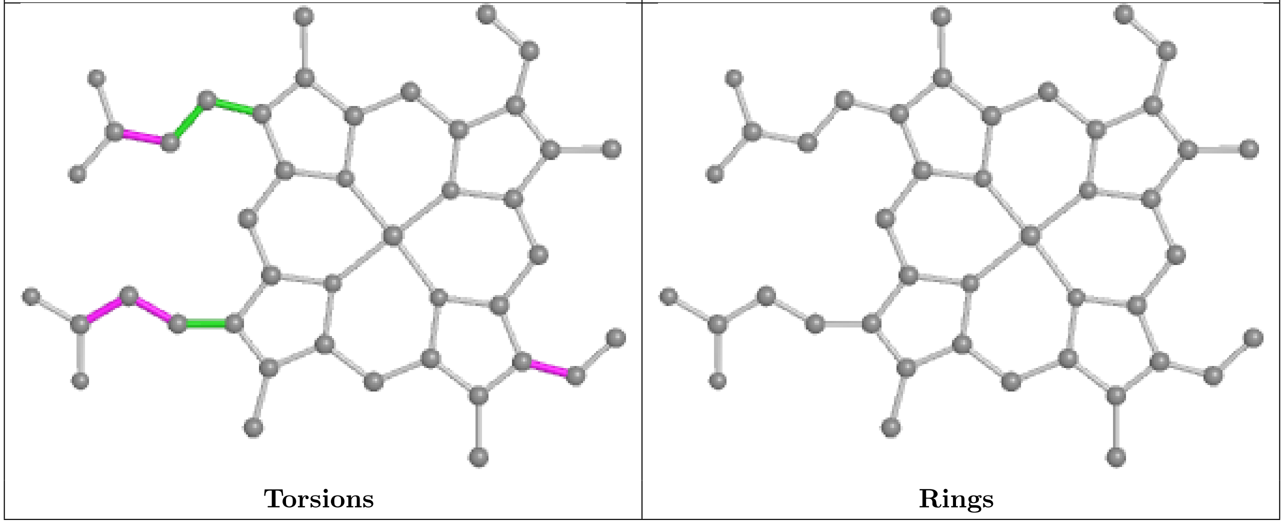
Torsions Rings

Ligand HEM Ac 402



Bond lengths

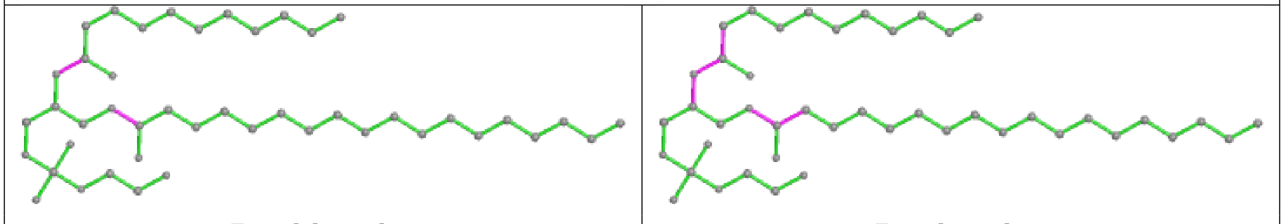
Bond angles



Torsions

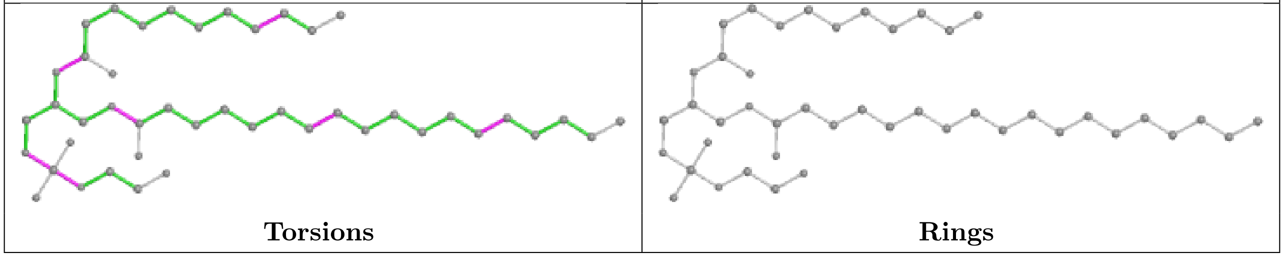
Rings

Ligand 3PE L 705



Bond lengths

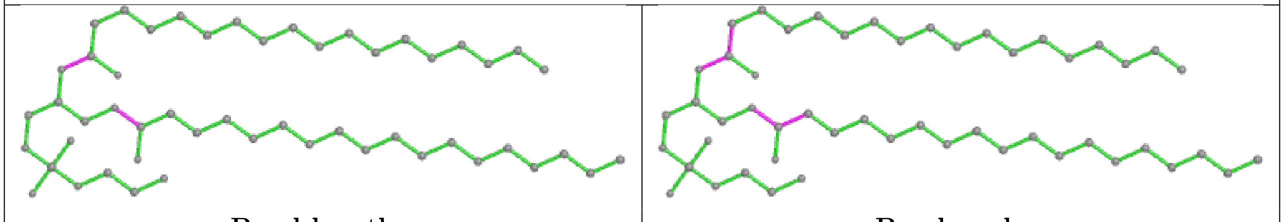
Bond angles



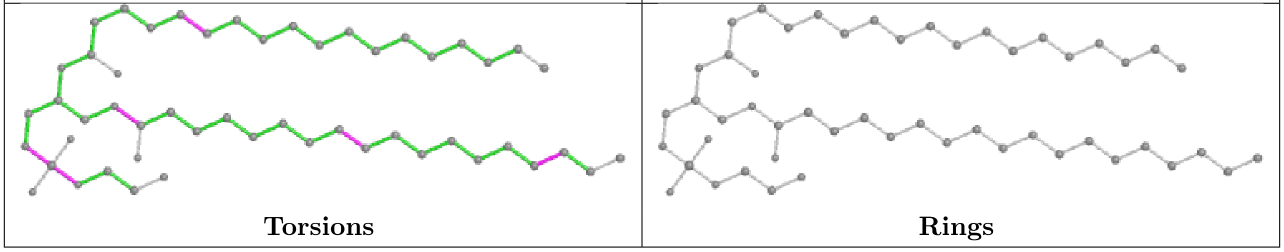
Torsions

Rings

Ligand 3PE H 403

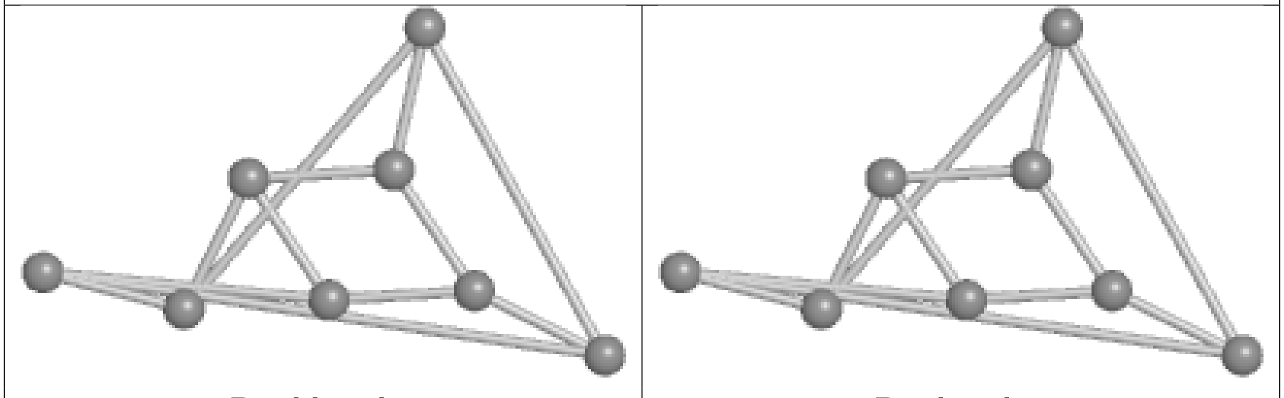


Bond lengths Bond angles

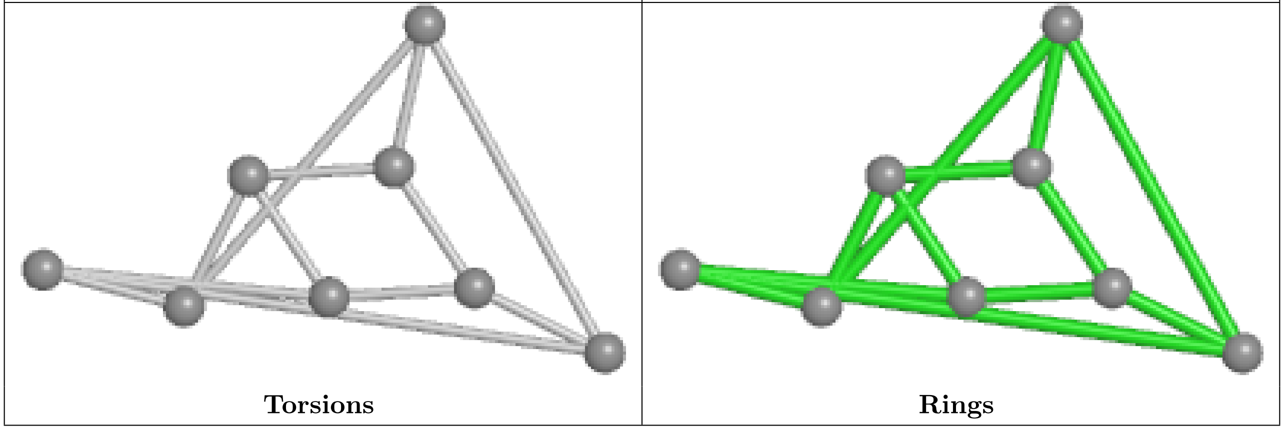


Torsions Rings

Ligand SF4 B 301

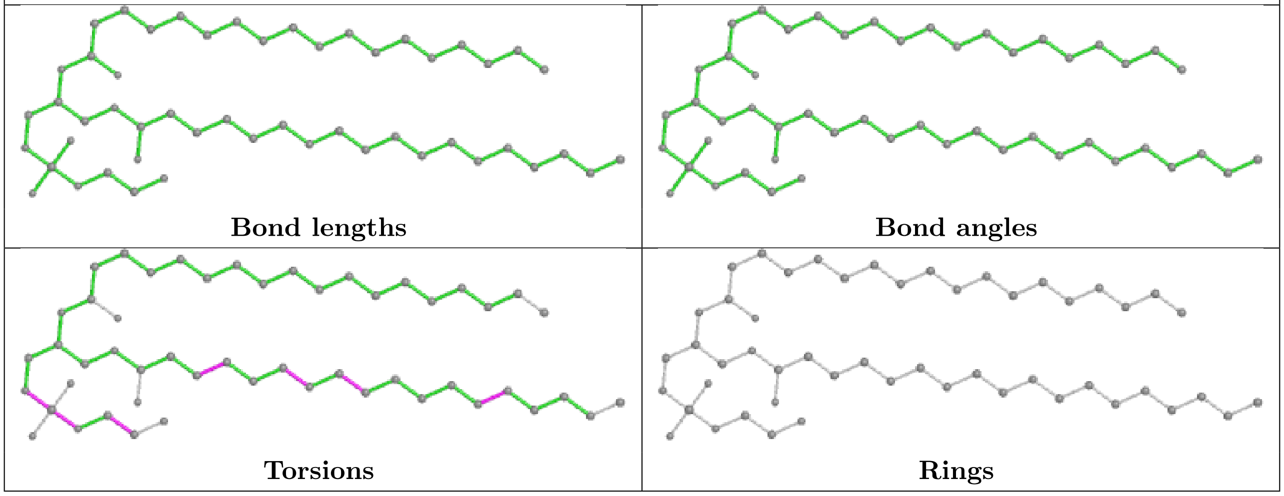


Bond lengths Bond angles



Torsions Rings

Ligand 3PE Ag 103



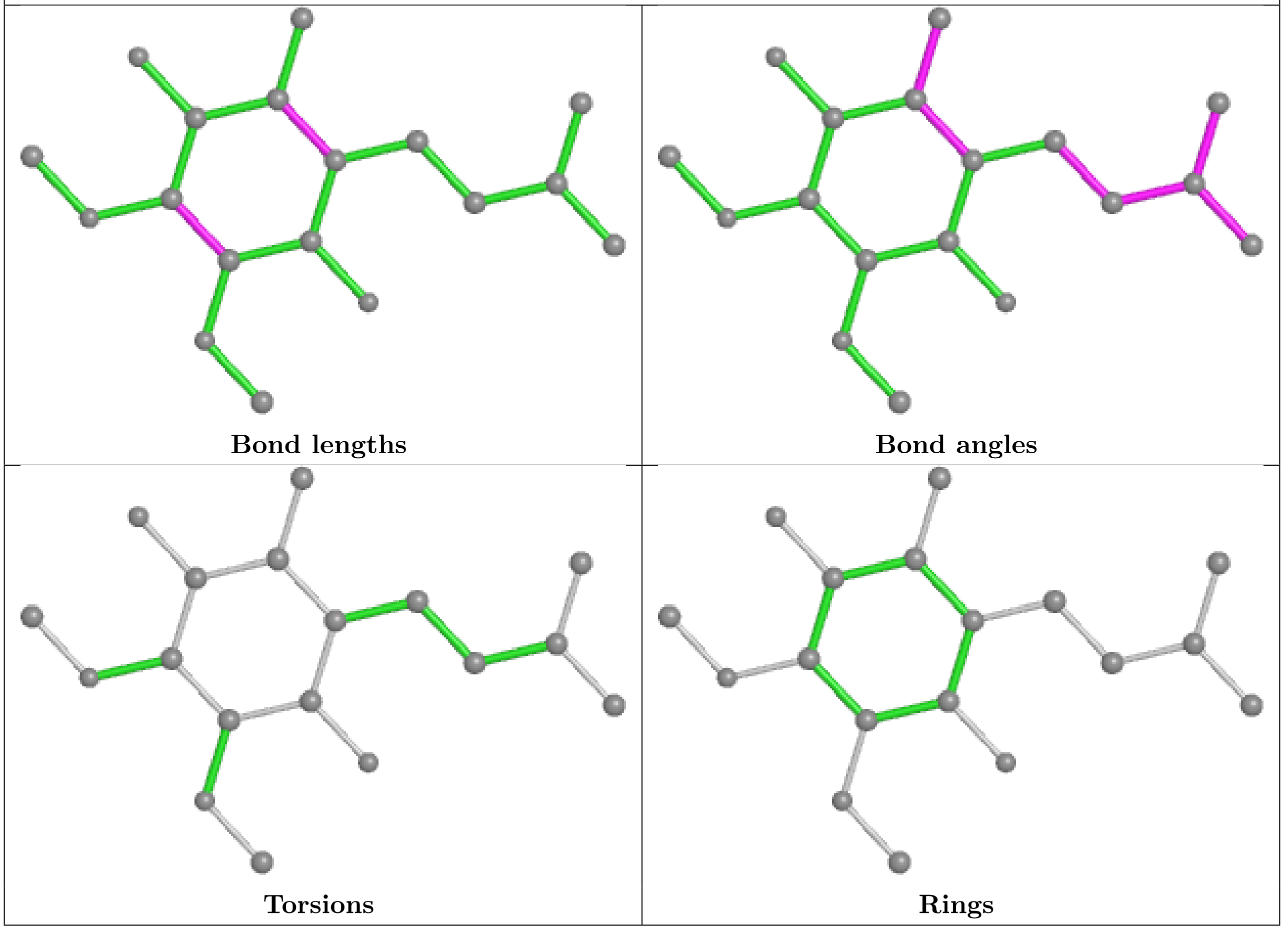
Bond lengths

Bond angles

Torsions

Rings

Ligand UQ1 B 302



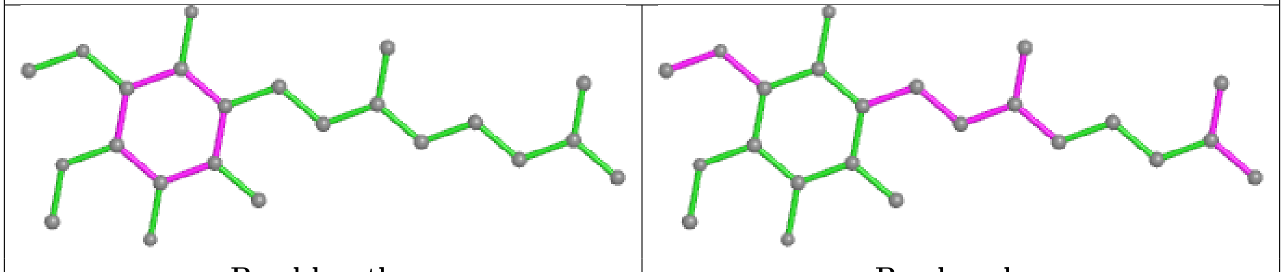
Bond lengths

Bond angles

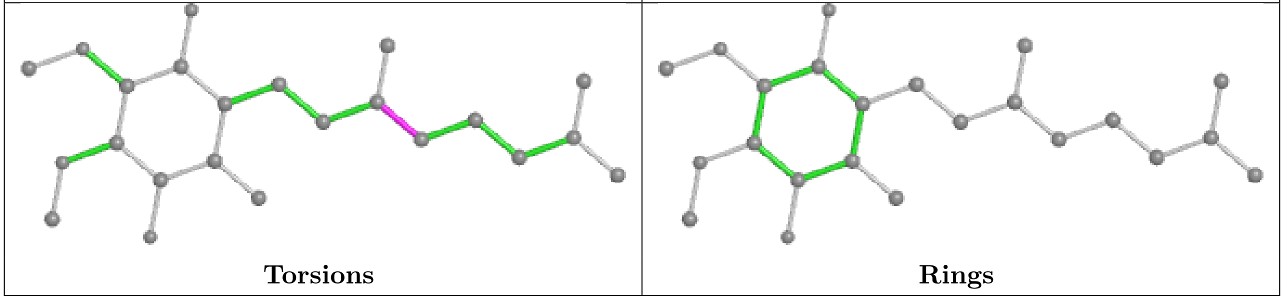
Torsions

Rings

Ligand UQ6 Ac 406

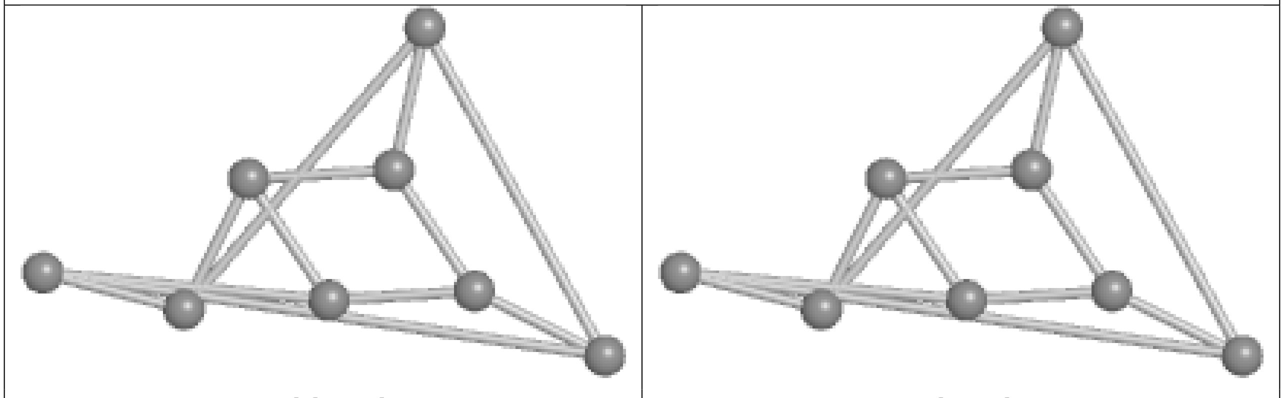


Bond lengths Bond angles

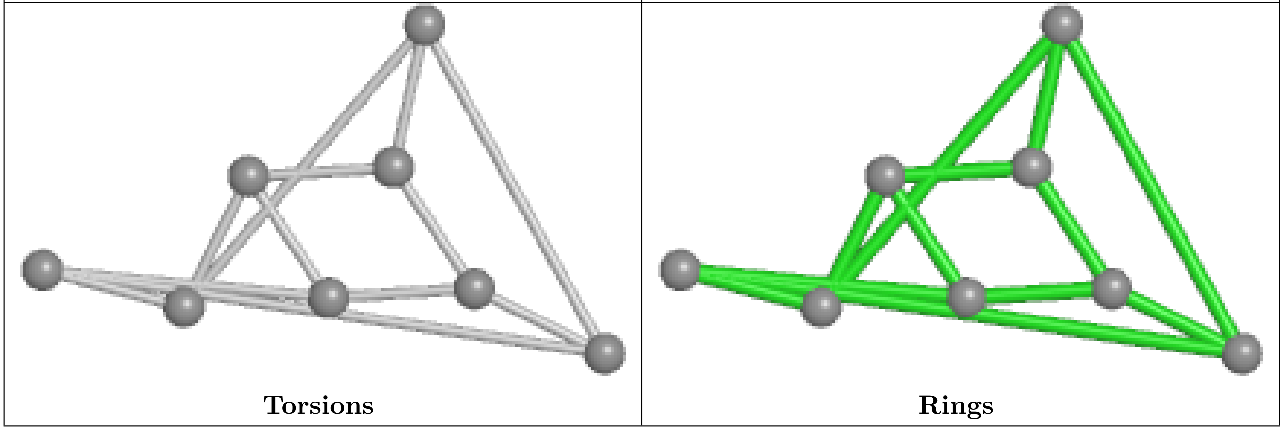


Torsions Rings

Ligand SF4 G 801

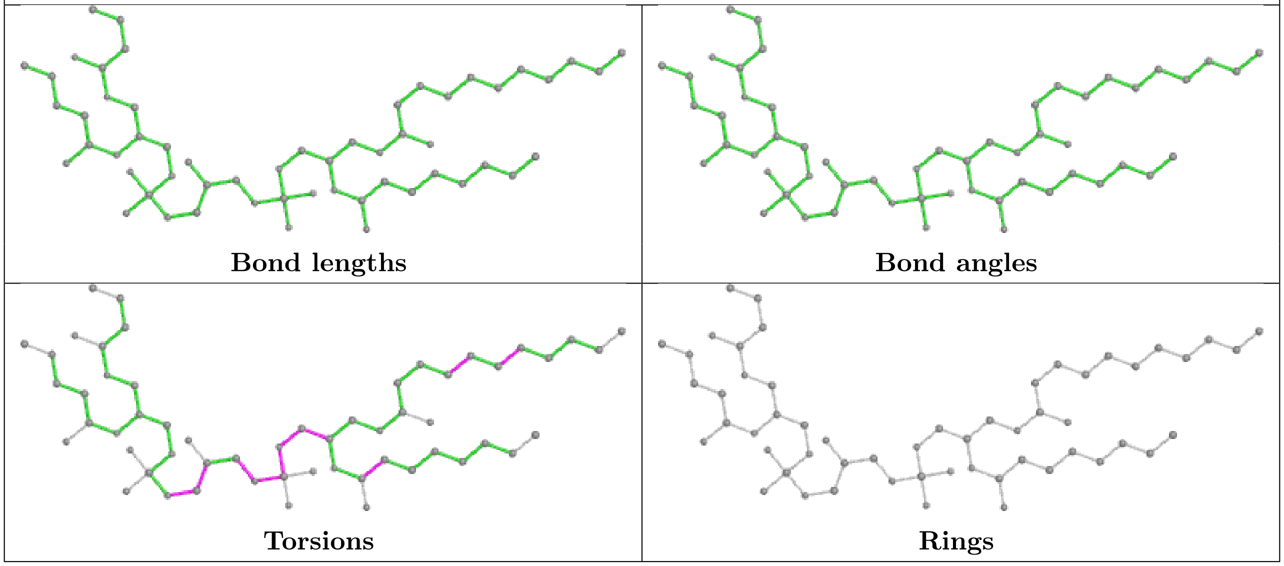


Bond lengths Bond angles

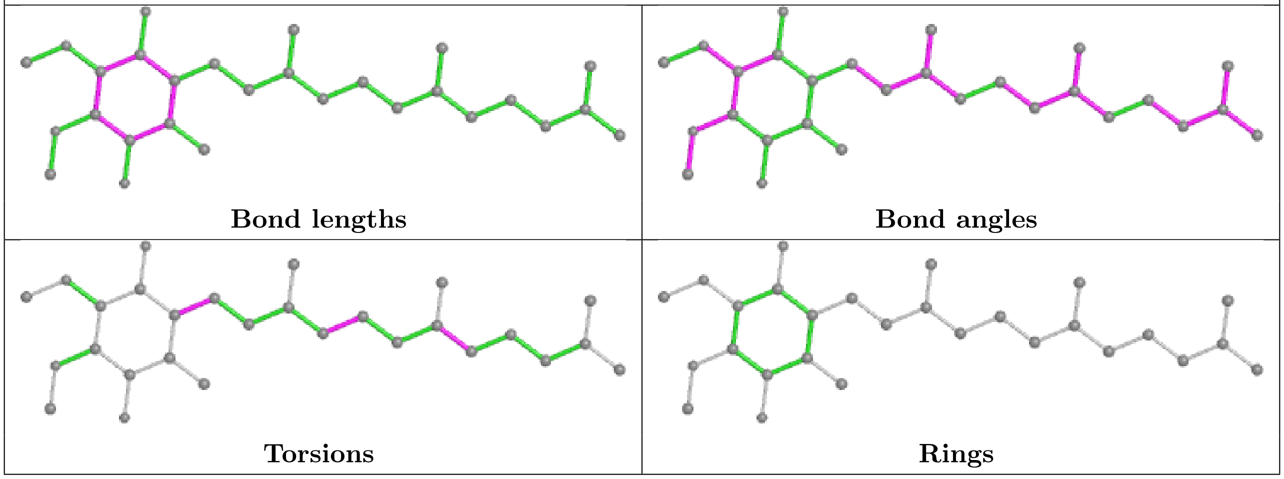


Torsions Rings

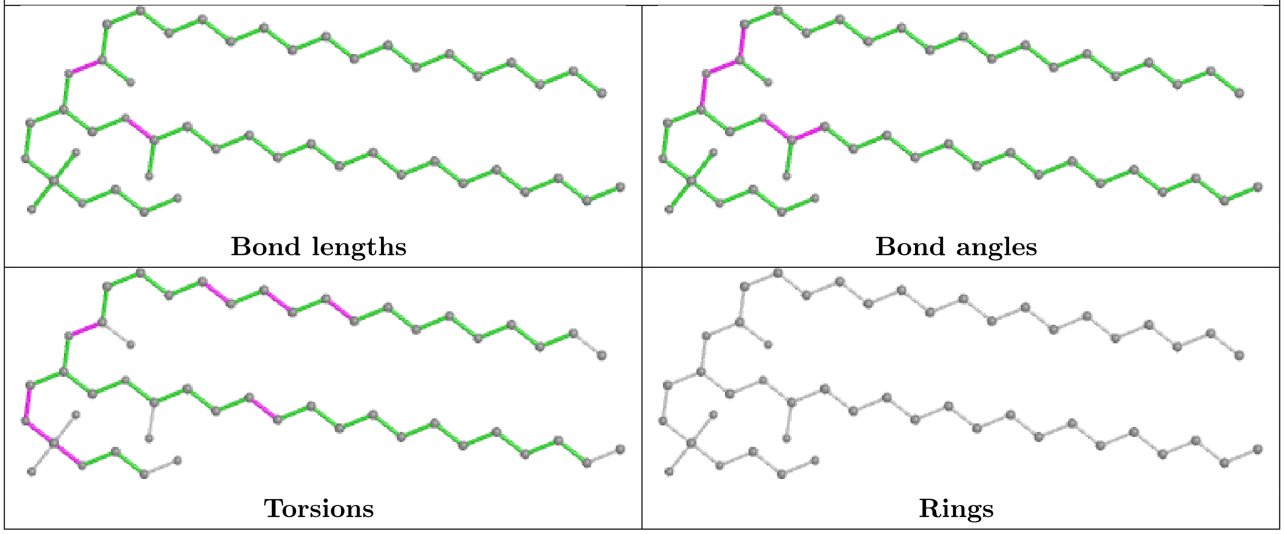
Ligand CDL Ag 102



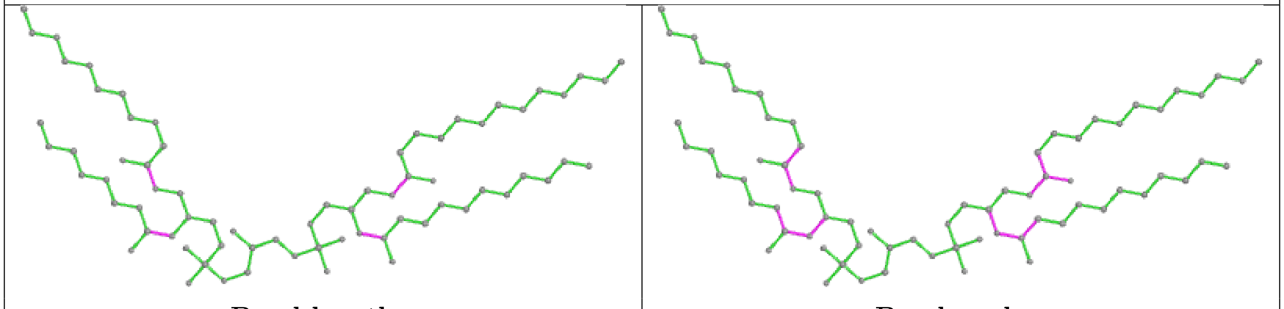
Ligand UQ6 AC 403



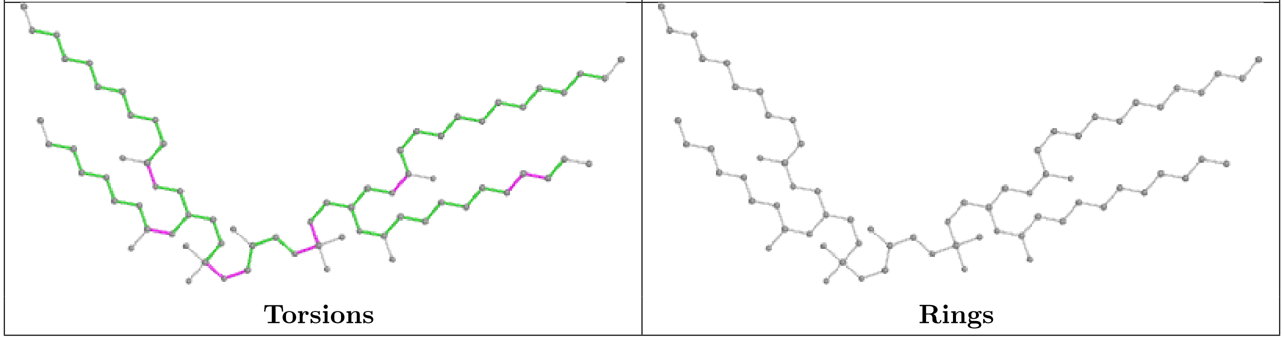
Ligand 3PE L 702



Ligand CDL Y 201

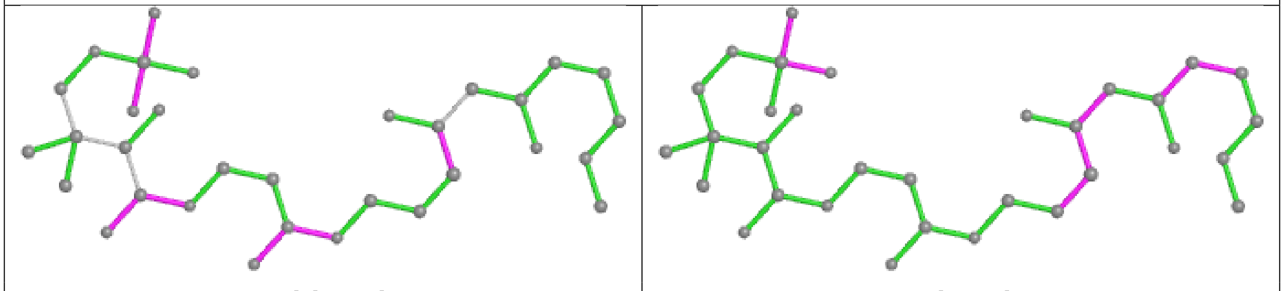


Bond lengths Bond angles

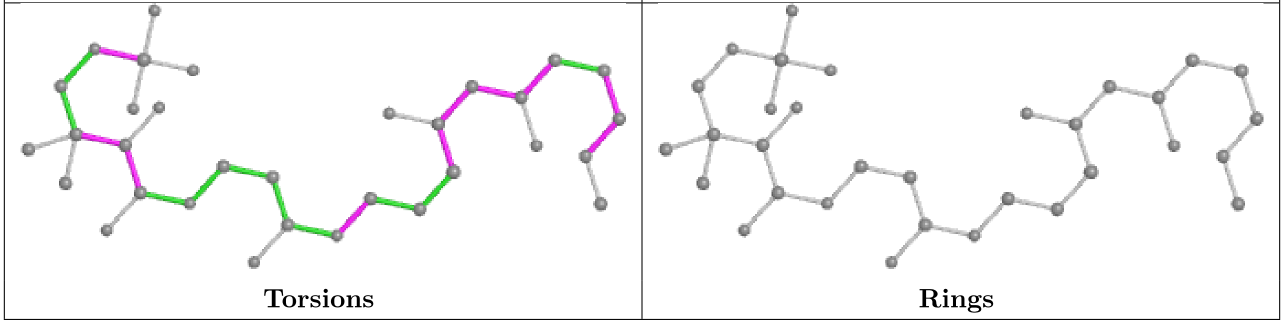


Torsions Rings

Ligand EHZ n 201

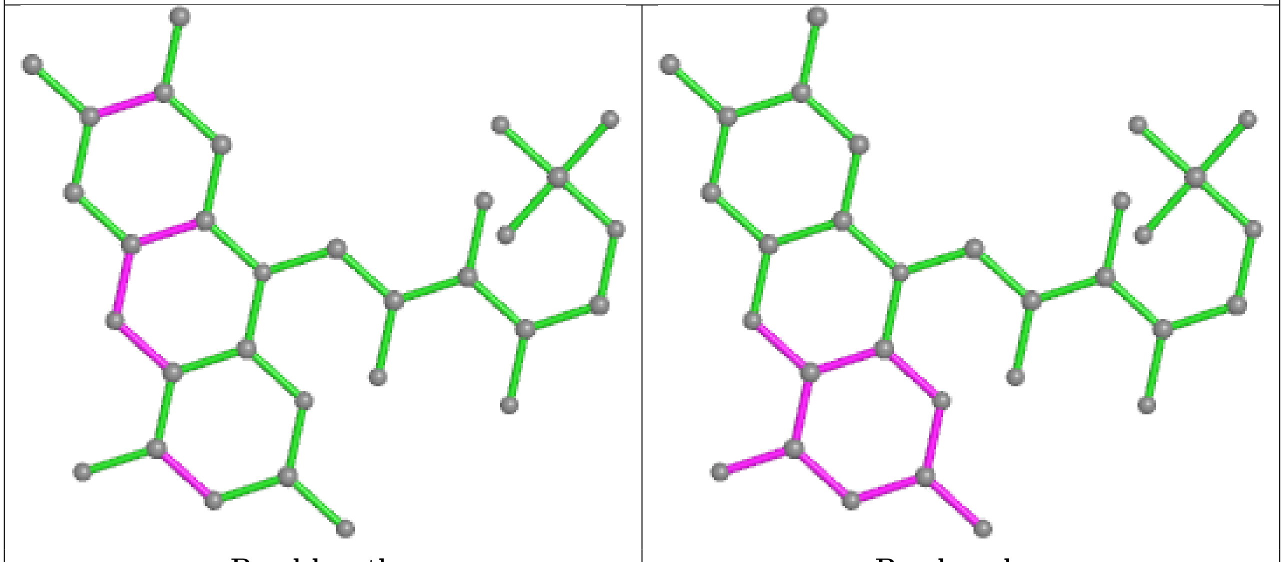


Bond lengths Bond angles

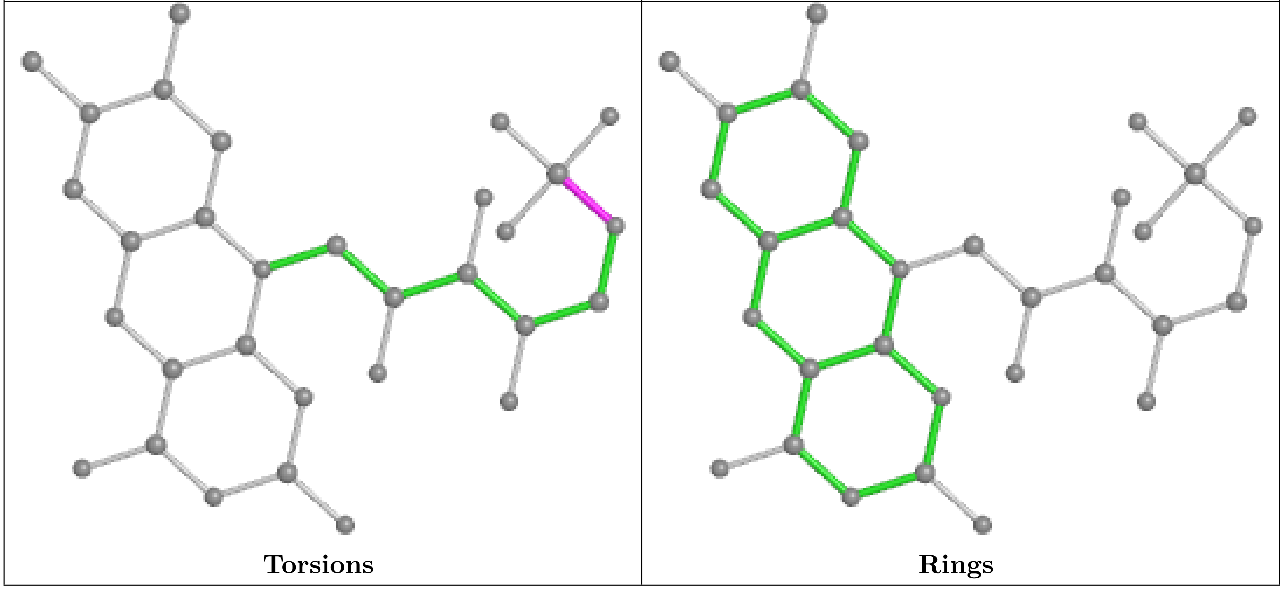


Torsions Rings

Ligand FMN F 501

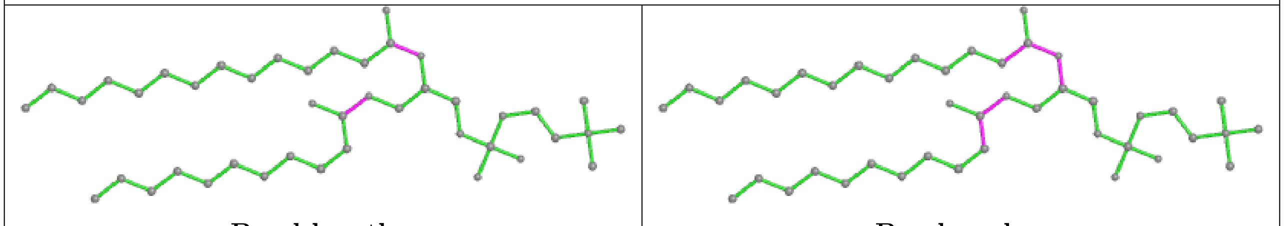


Bond lengths Bond angles

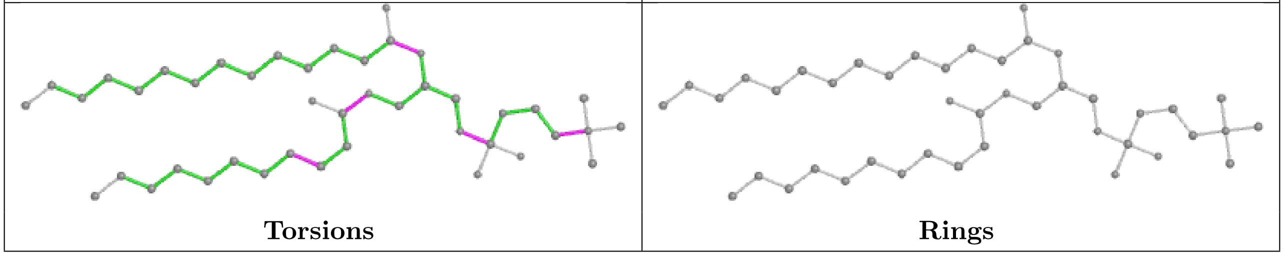


Torsions Rings

Ligand PC1 I 301

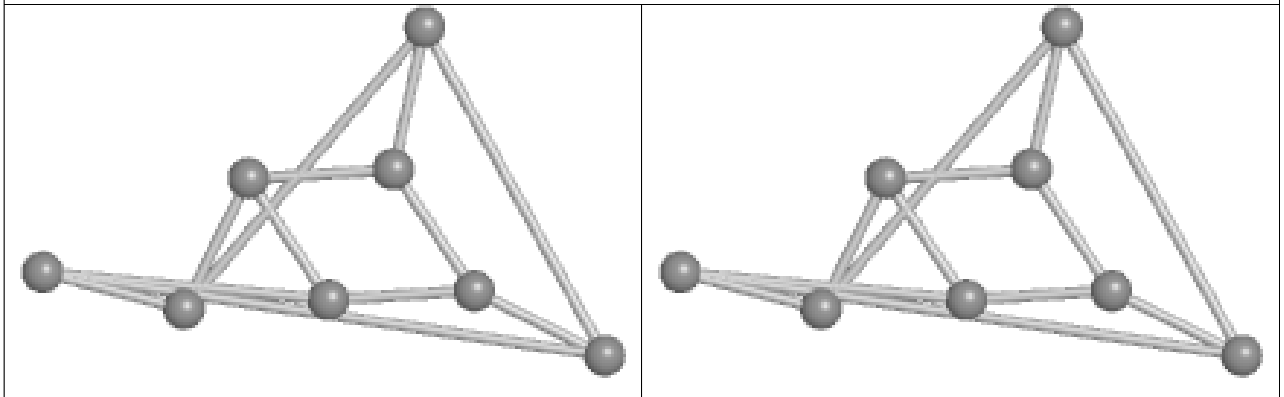


Bond lengths Bond angles



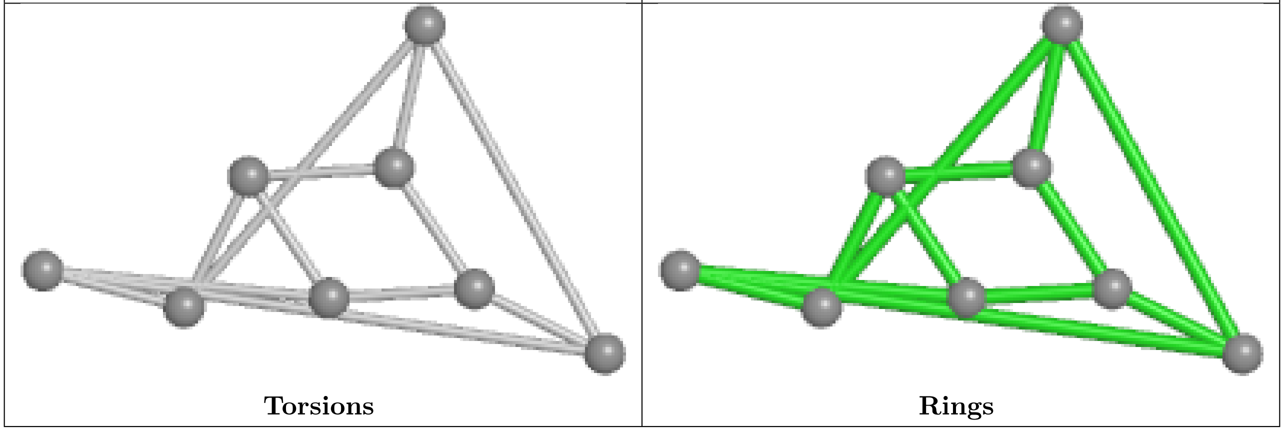
Torsions Rings

Ligand SF4 I 302



Bond lengths

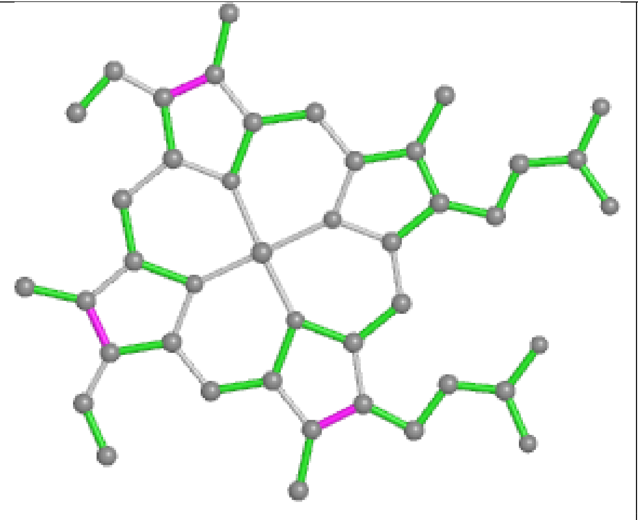
Bond angles



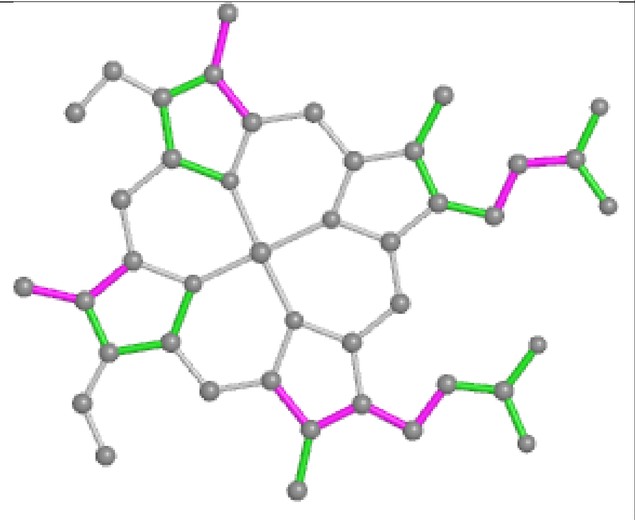
Torsions

Rings

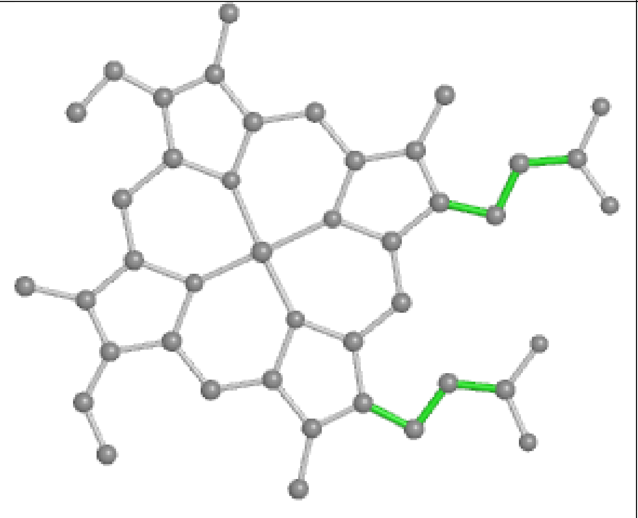
Ligand HEC AD 401



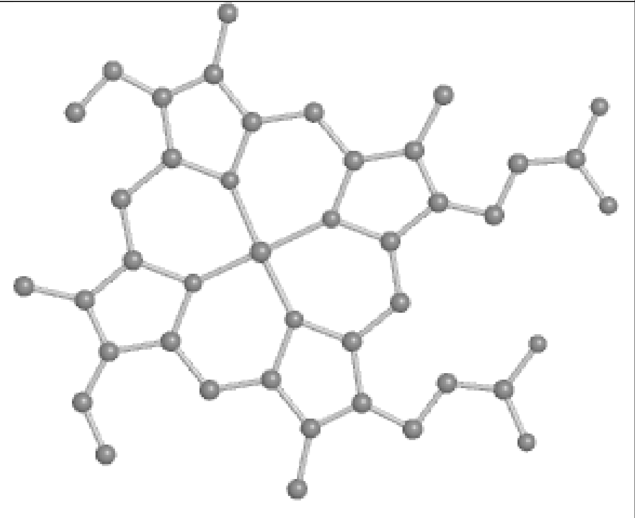
Bond lengths



Bond angles

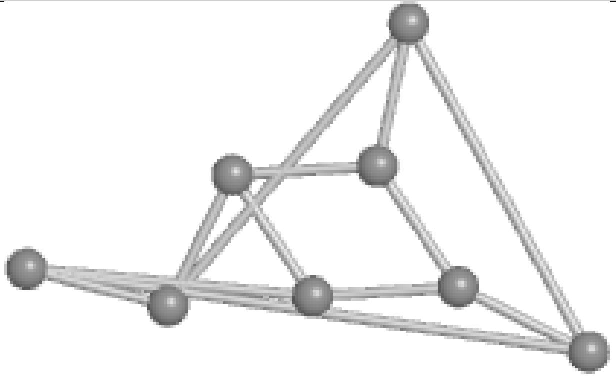


Torsions

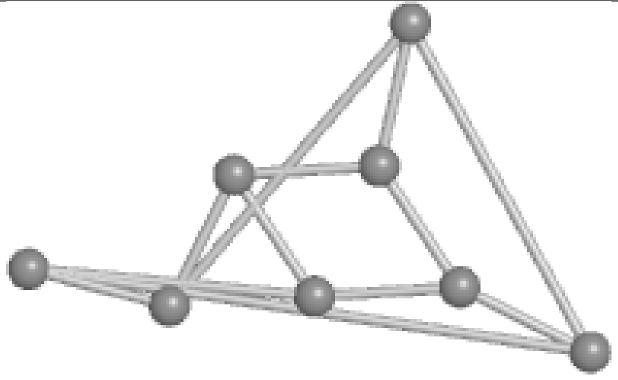


Rings

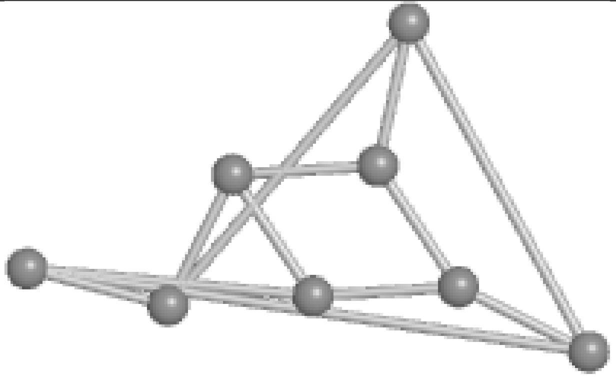
Ligand SF4 F 502



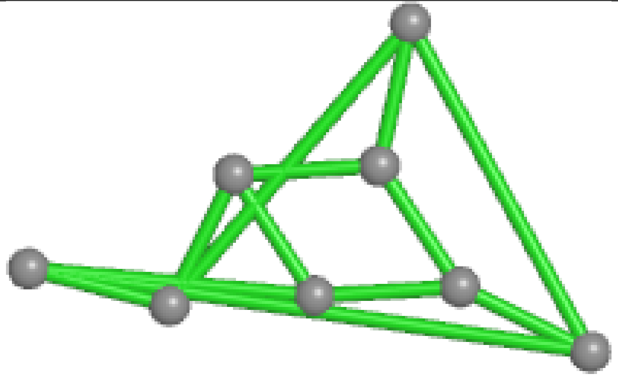
Bond lengths



Bond angles

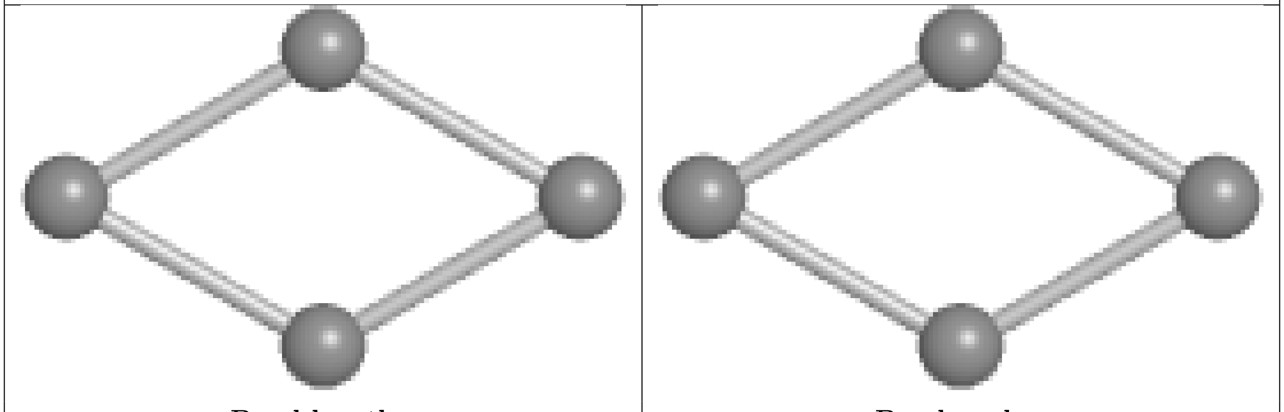


Torsions

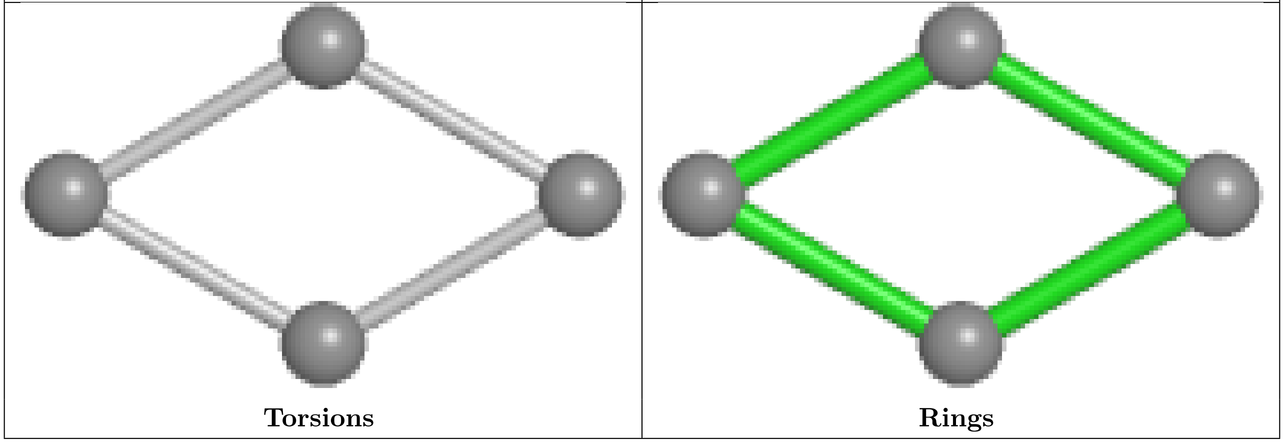


Rings

Ligand FES G 803

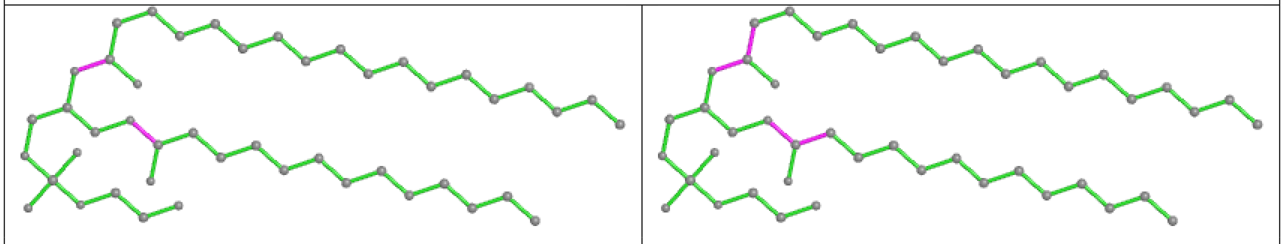


Bond lengths Bond angles

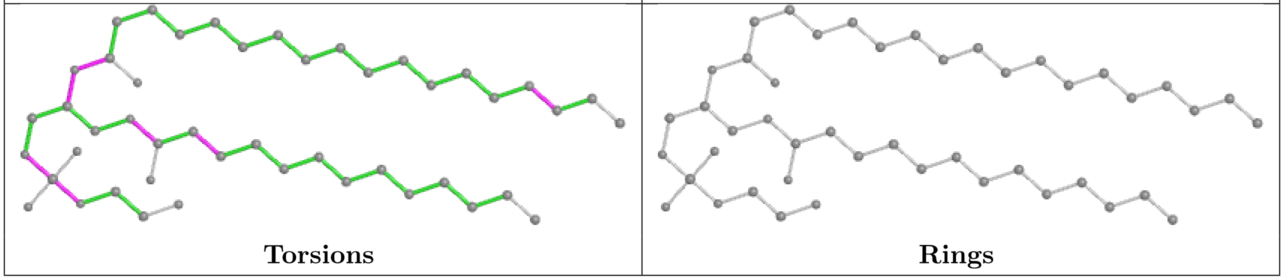


Torsions Rings

Ligand 3PE H 402

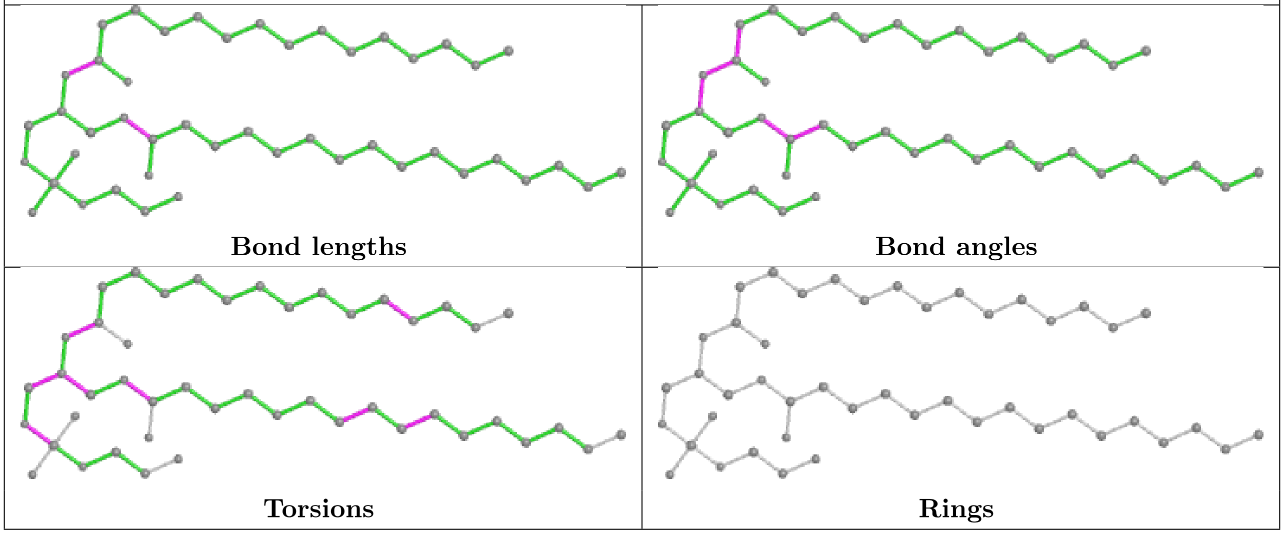


Bond lengths Bond angles



Torsions Rings

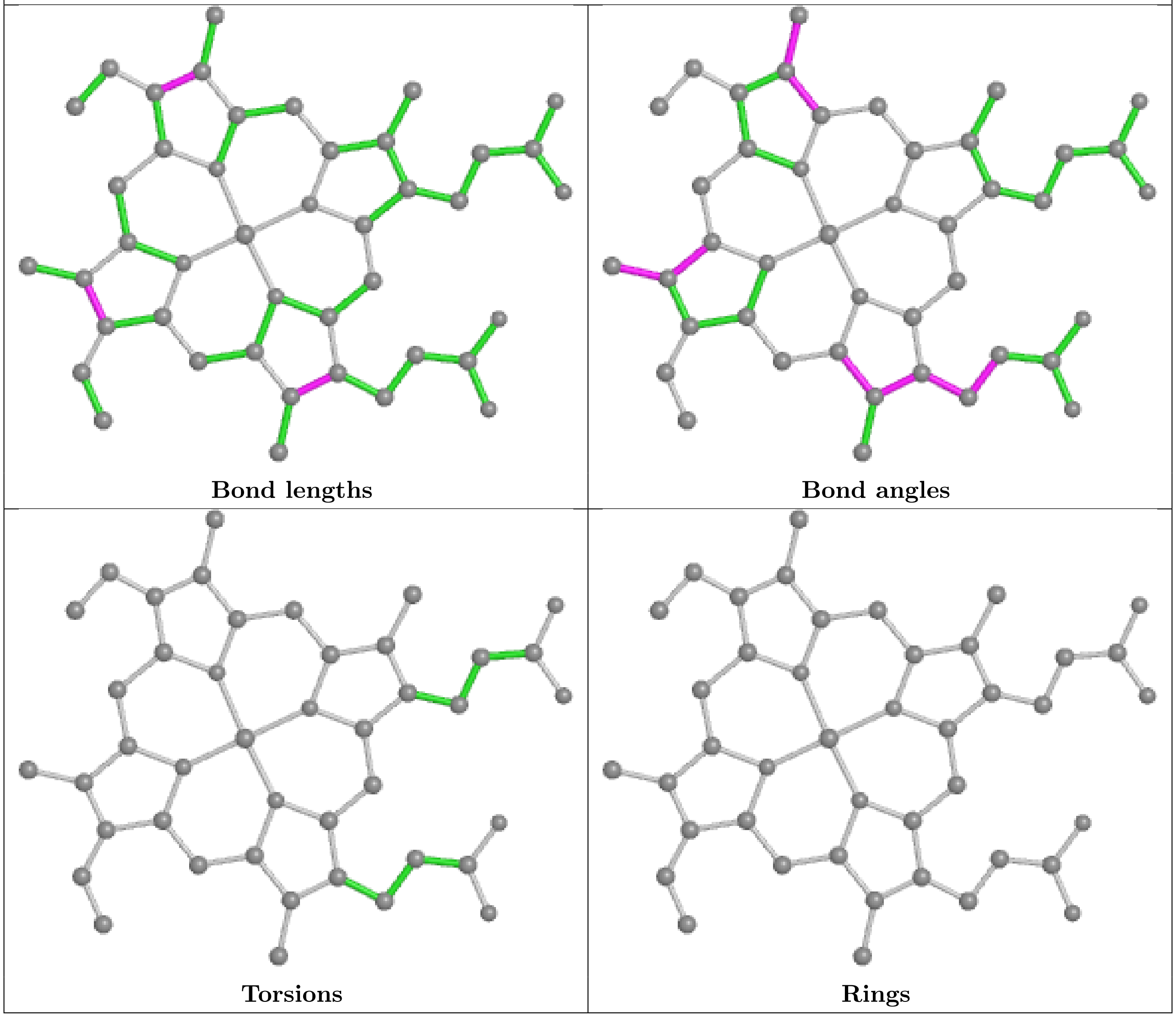
Ligand 3PE J 201



Bond lengths Bond angles

Torsions Rings

Ligand HEC Ad 401



Bond lengths Bond angles

Torsions Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

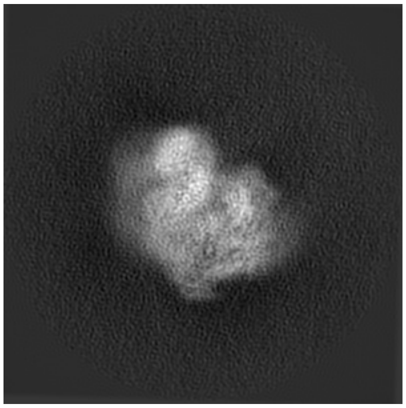
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-35352. These allow visual inspection of the internal detail of the map and identification of artifacts.

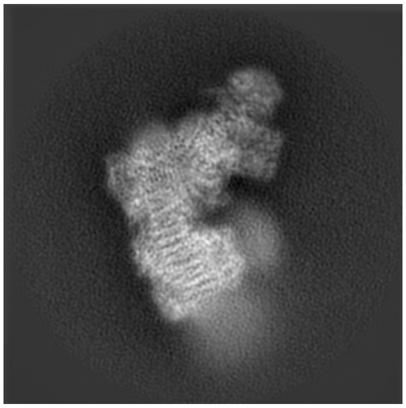
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

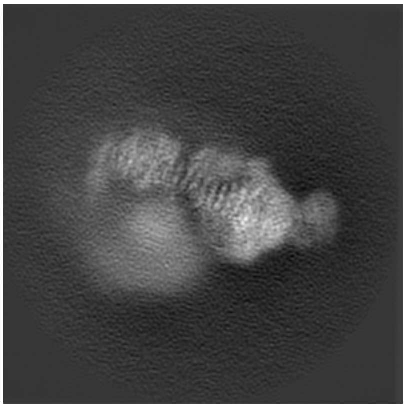
6.1.1 Primary map



X

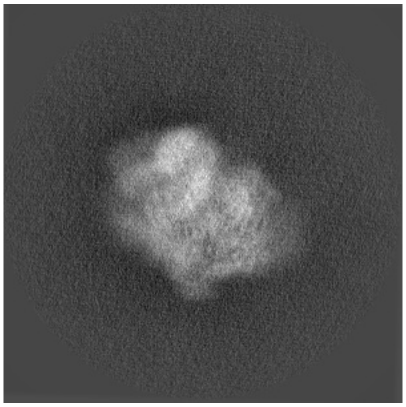


Y

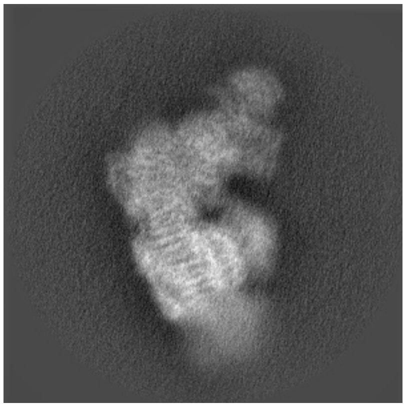


Z

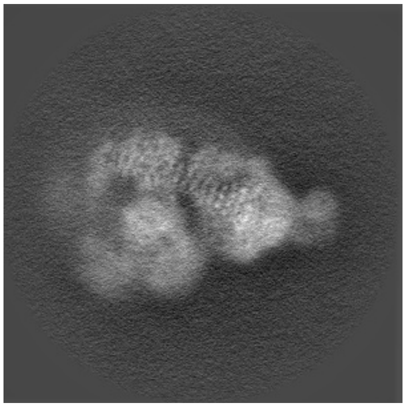
6.1.2 Raw map



X



Y

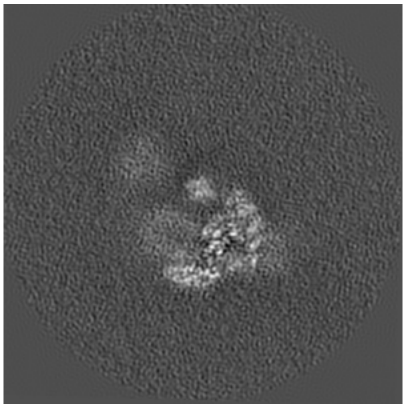


Z

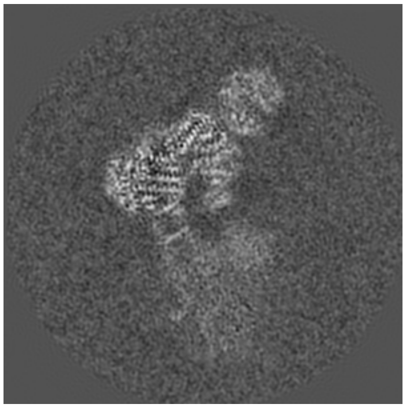
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

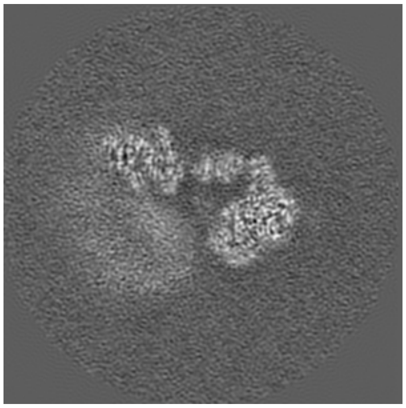
6.2.1 Primary map



X Index: 256

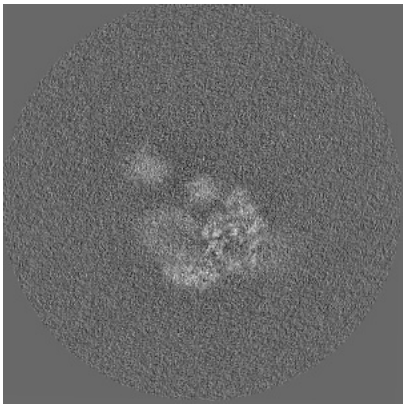


Y Index: 256

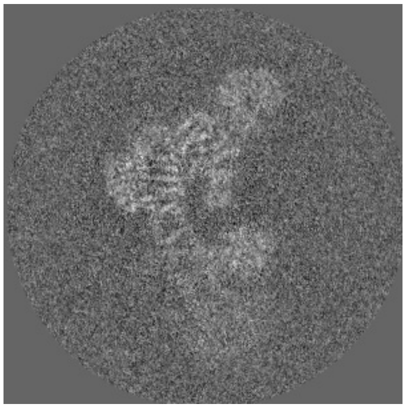


Z Index: 256

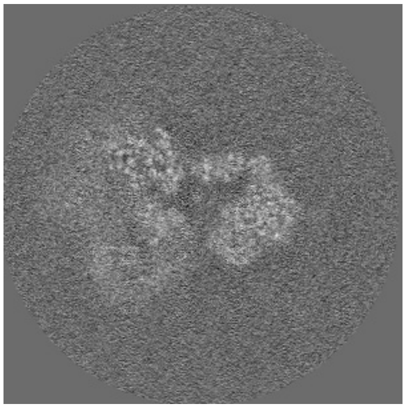
6.2.2 Raw map



X Index: 256



Y Index: 256

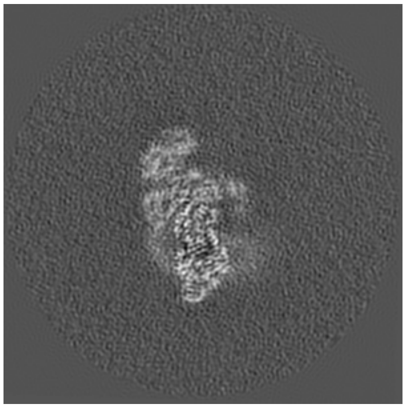


Z Index: 256

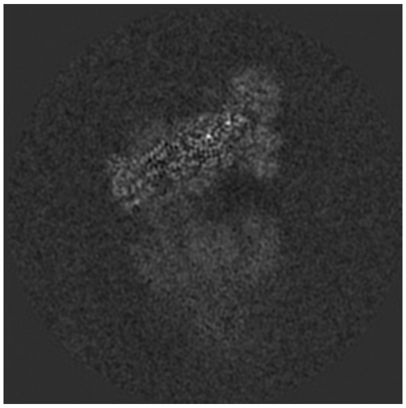
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

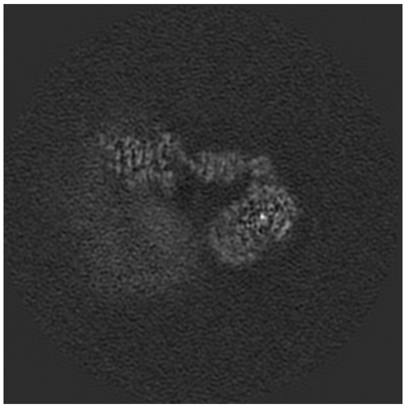
6.3.1 Primary map



X Index: 310

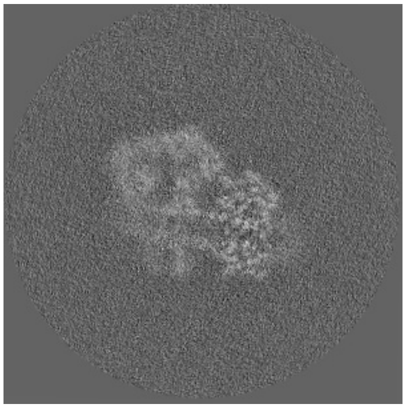


Y Index: 232

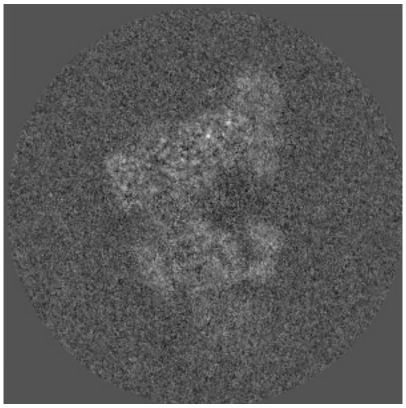


Z Index: 252

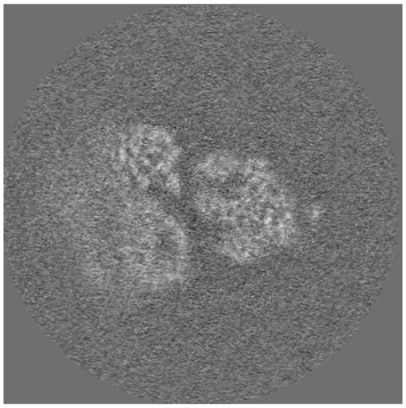
6.3.2 Raw map



X Index: 205



Y Index: 234

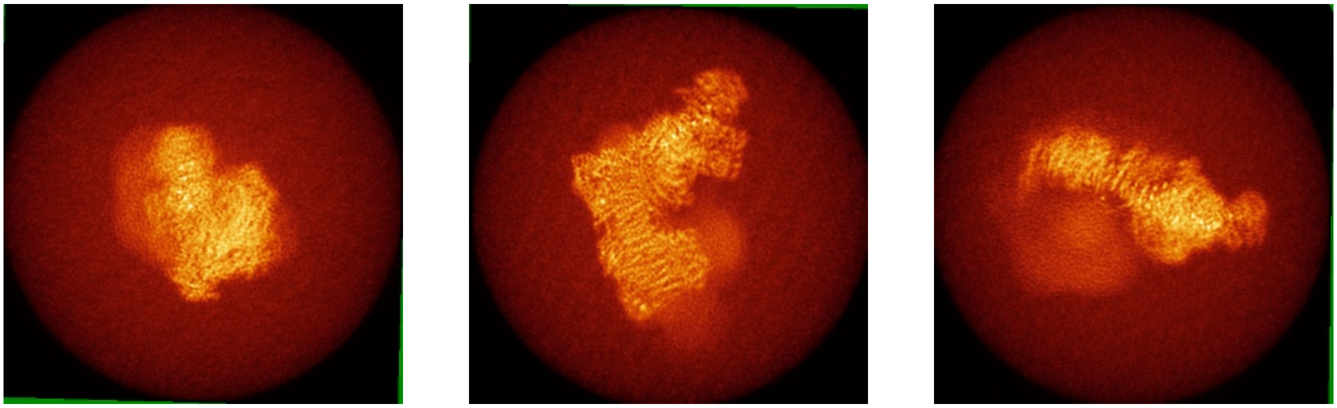


Z Index: 268

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

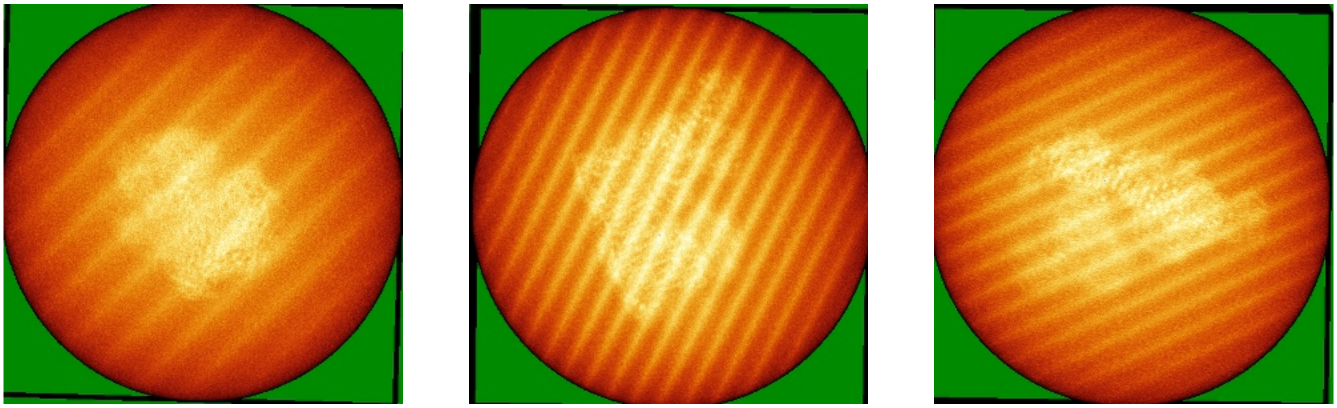
6.4 Orthogonal standard-deviation projections (False-color)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

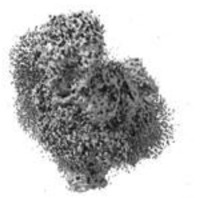


X Y Z

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

6.5 Orthogonal surface views

6.5.1 Primary map



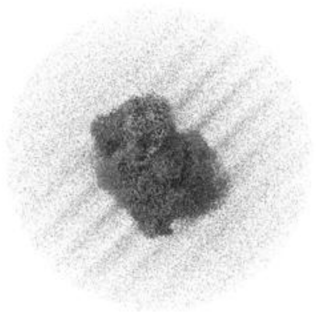
X

Y

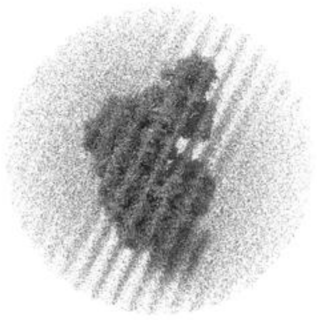
Z

The images above show the 3D surface view of the map at the recommended contour level 0.0082. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X



Y

Z

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

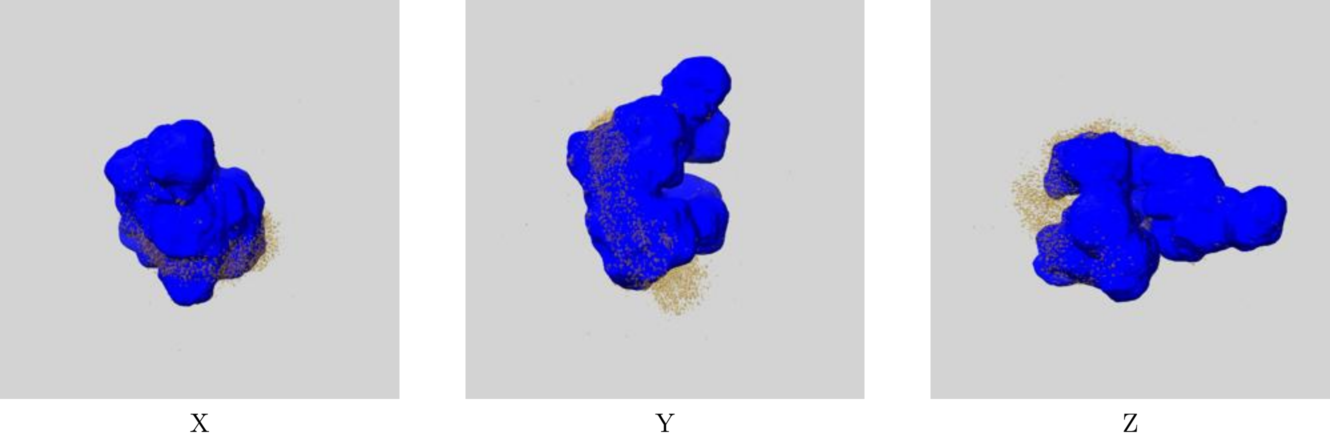
6.6 Mask visualisation ⓘ

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

A mask typically either:

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

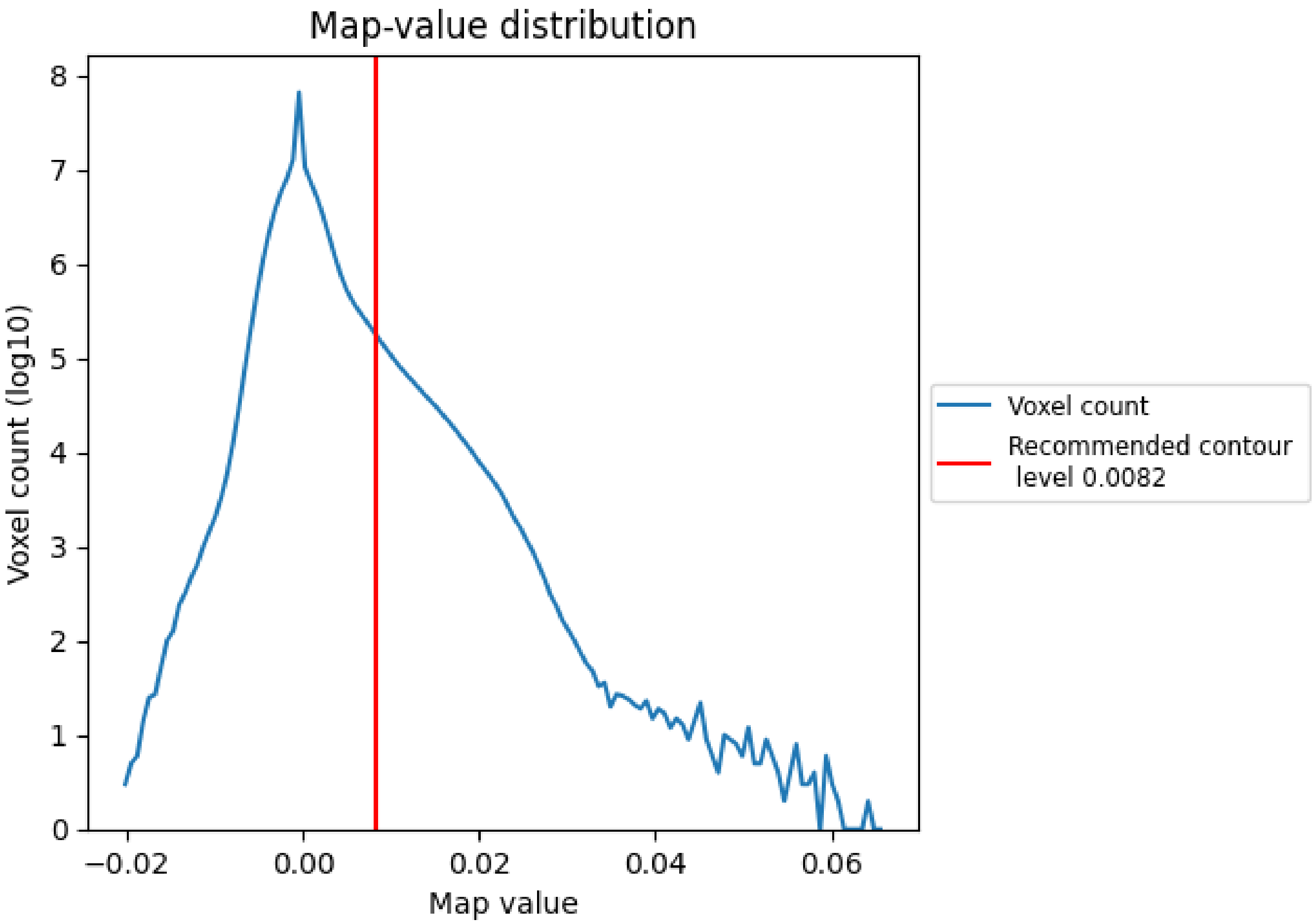
6.6.1 emd_35352_msk_1.map ⓘ


X Y Z

7 Map analysis ⓘ

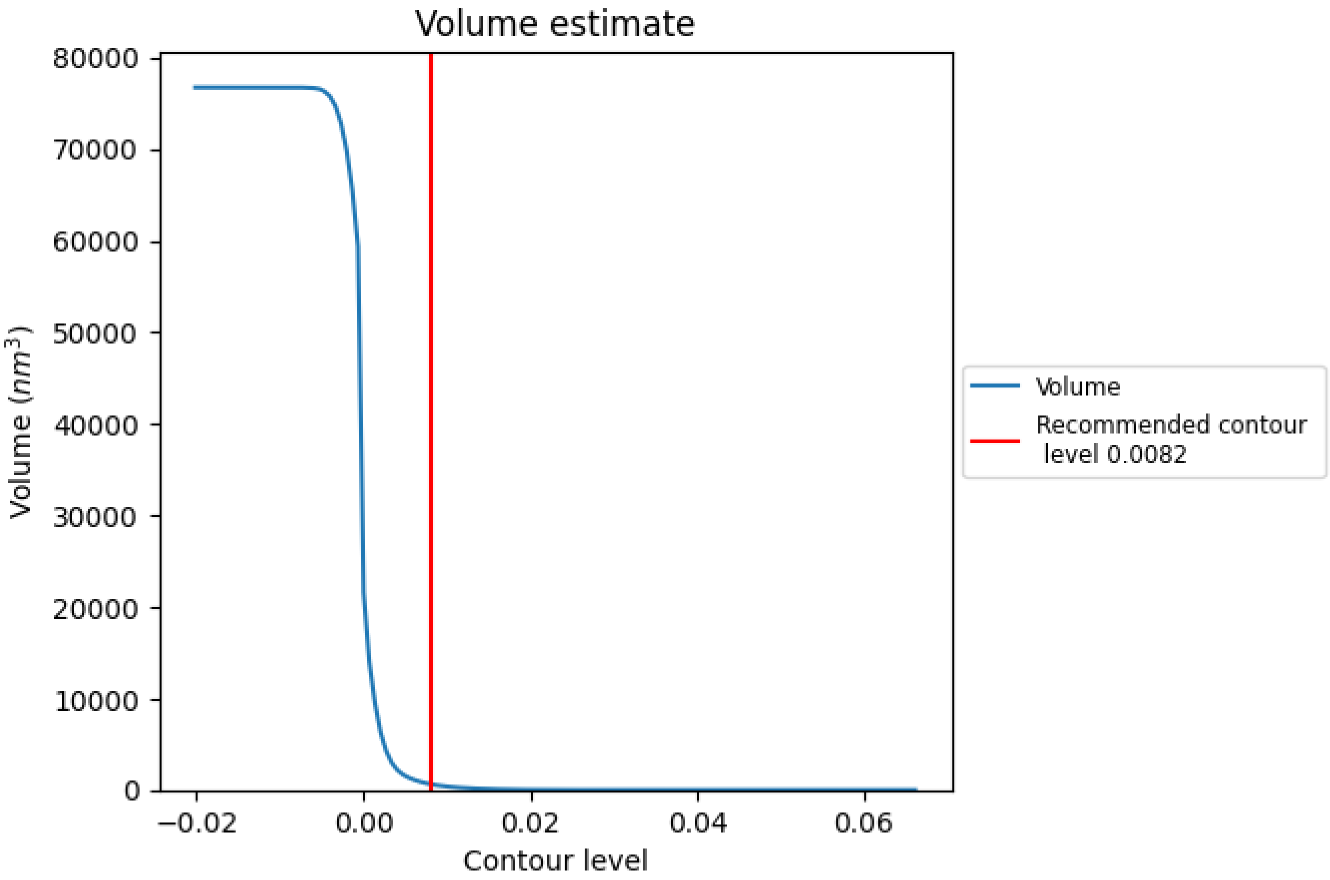
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



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

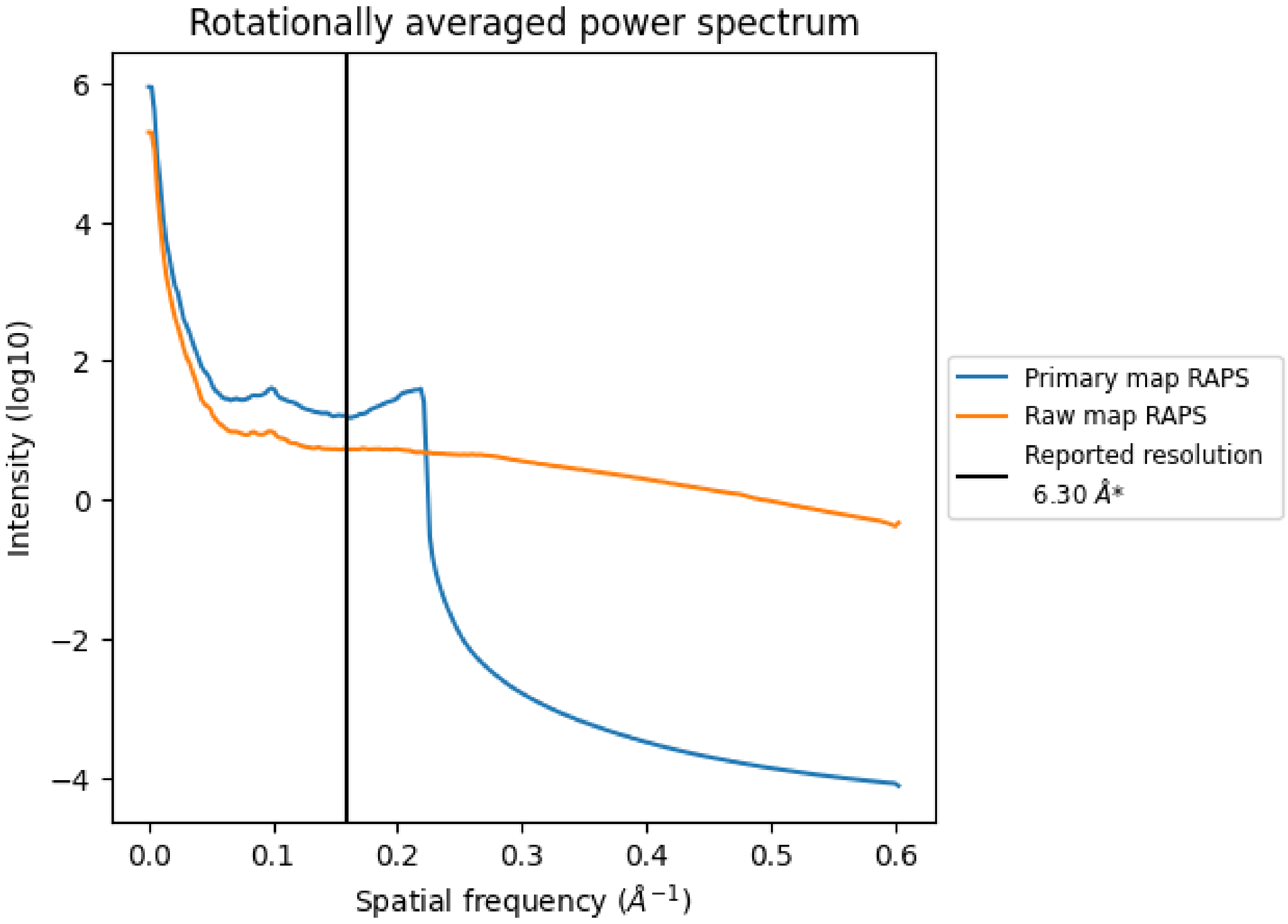
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 617 nm^3; this corresponds to an approximate mass of 557 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 ⓘ

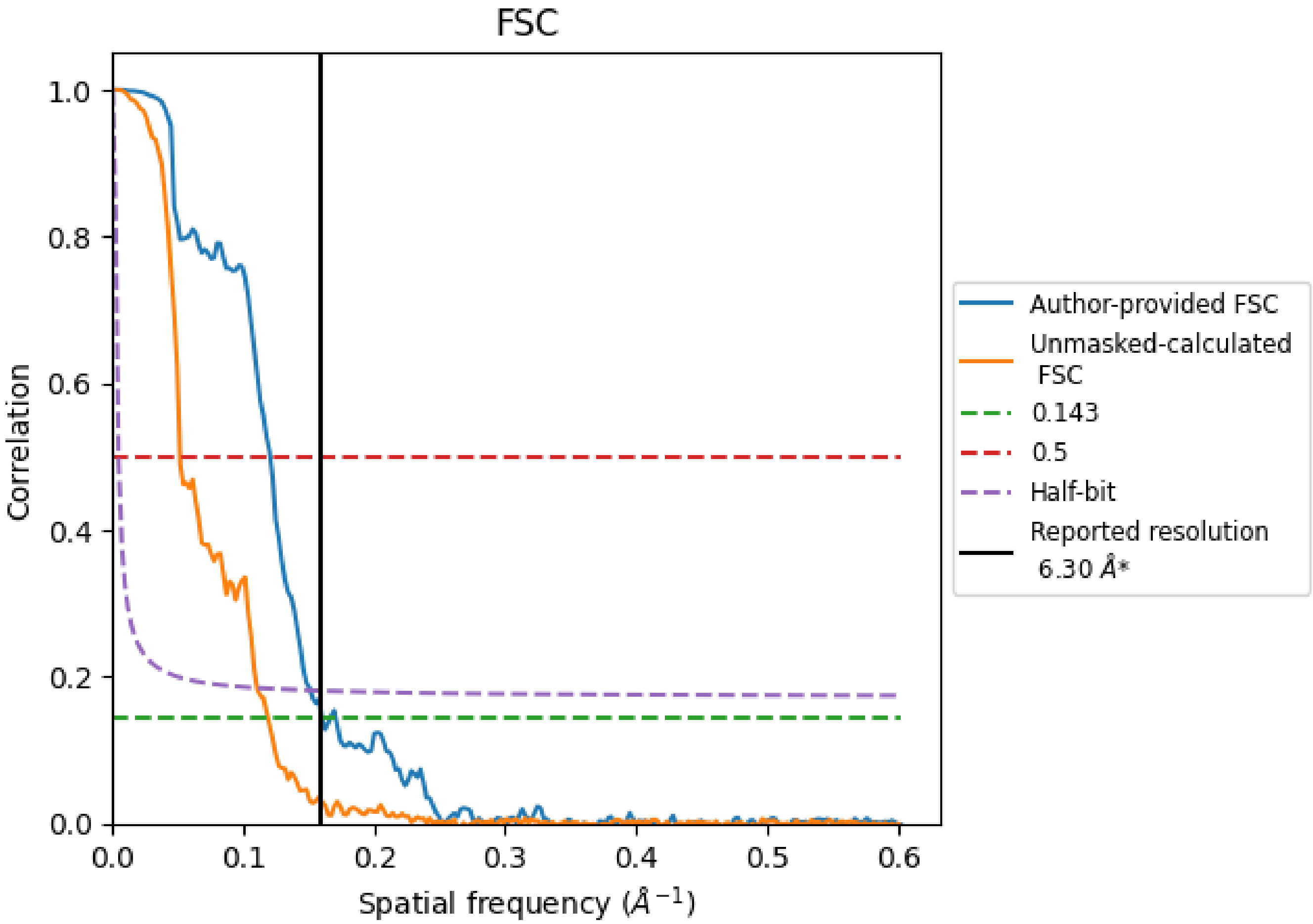


*Reported resolution corresponds to spatial frequency of 0.159 Å^{-1}

8 Fourier-Shell correlation ⓘ

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

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.159 Å^{-1}

8.2 Resolution estimates ⓘ

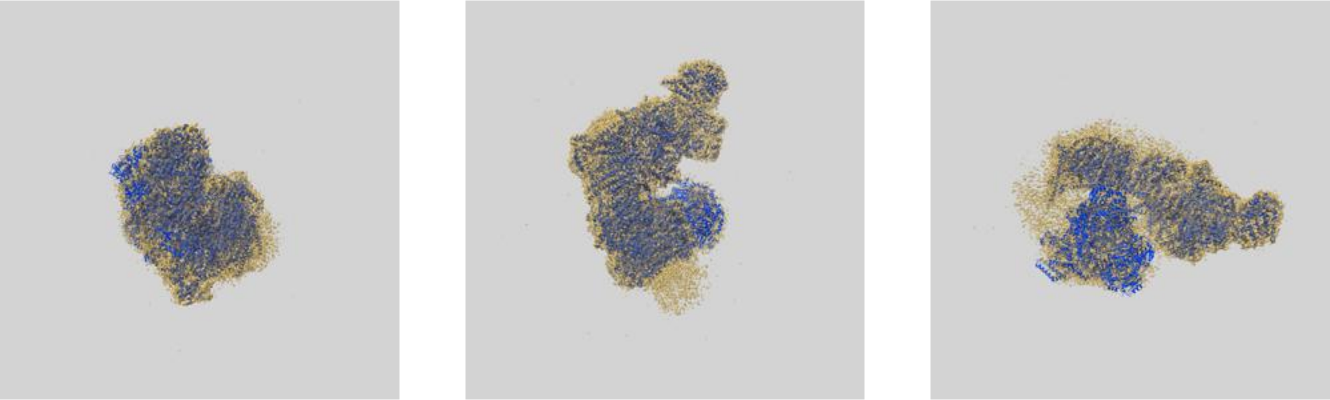
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.30	-	-
Author-provided FSC curve	6.25	8.30	6.61
Unmasked-calculated*	8.42	19.38	9.06

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 8.42 differs from the reported value 6.3 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-35352 and PDB model 8IC2. Per-residue inclusion information can be found in section 3 on page 26.

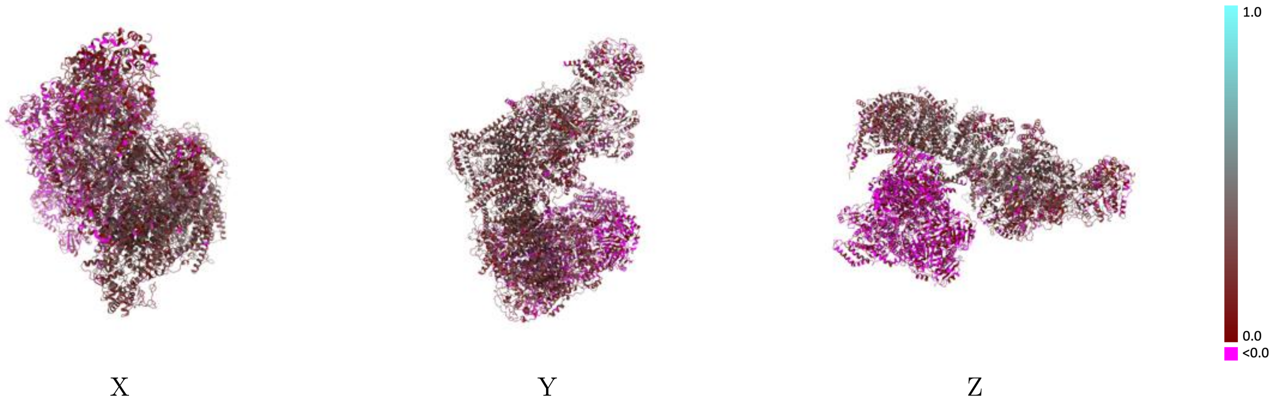
9.1 Map-model overlay ⓘ



X Y Z

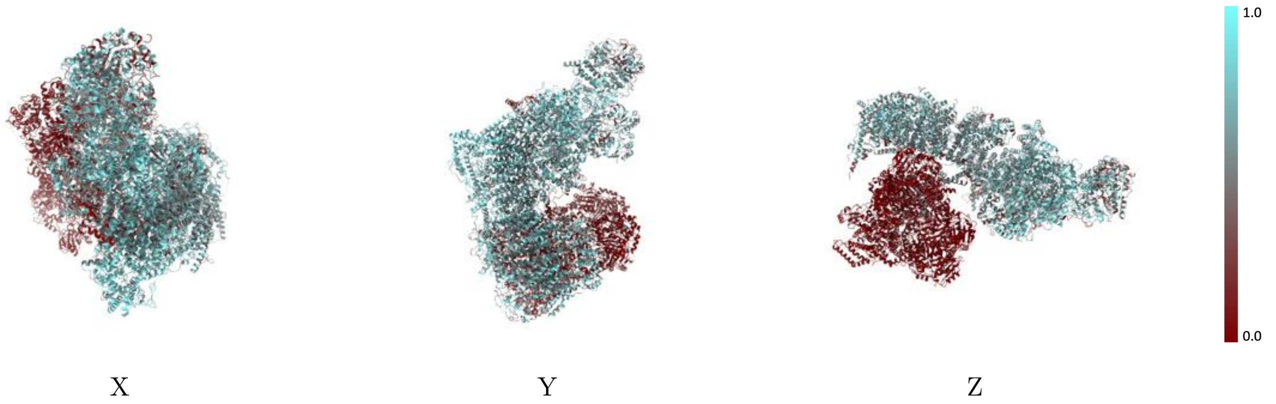
The images above show the 3D surface view of the map at the recommended contour level 0.0082 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ



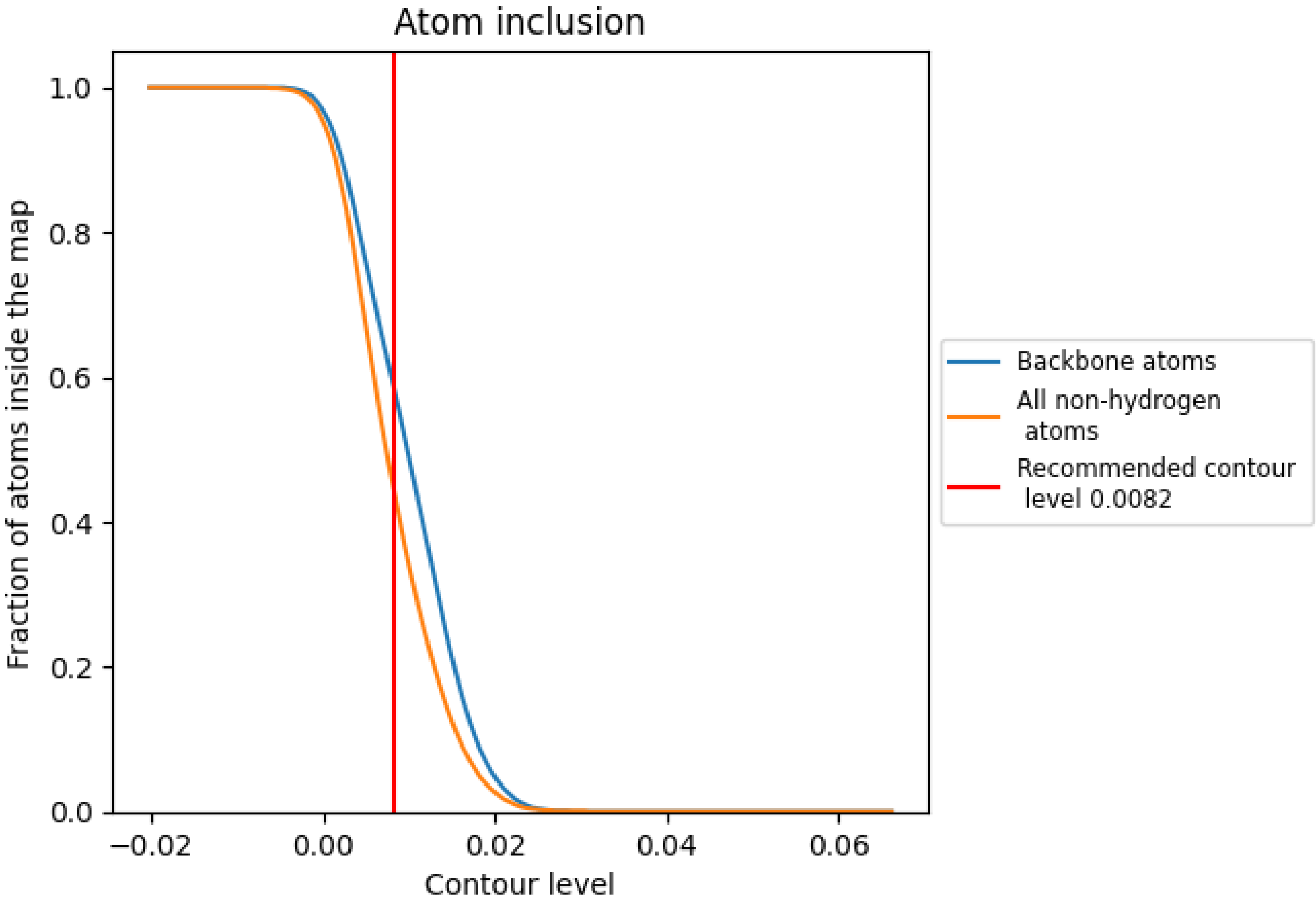
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ



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 (0.0082).

9.4 Atom inclusion ⓘ



At the recommended contour level, 59% of all backbone atoms, 45% 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 (0.0082) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4470	0.1620
A	0.6300	0.2860
AA	0.0700	0.0200
AB	0.0460	0.0120
AC	0.0610	-0.0060
AD	0.0420	-0.0050
AE	0.0500	-0.0000
AF	0.0580	0.0020
AG	0.0440	-0.0140
AH	0.0140	0.0180
AI	0.0780	-0.0240
AJ	0.0650	-0.0270
AK	0.0500	-0.0080
Aa	0.0790	0.0060
Ab	0.0970	0.0020
Ac	0.1120	0.0070
Ad	0.0490	-0.0020
Ae	0.0270	0.0020
Af	0.0760	0.0280
Ag	0.1020	0.0200
Ah	0.0230	0.0210
Aj	0.0370	-0.0150
Ak	0.0460	-0.0170
B	0.7370	0.2950
C	0.7190	0.2680
D	0.7110	0.3040
E	0.5840	0.1820
F	0.5730	0.1700
G	0.6660	0.2170
H	0.6640	0.2950
I	0.7580	0.3010
J	0.5800	0.2550
K	0.6600	0.2980
L	0.6060	0.2500
M	0.6240	0.2910

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Chain	Atom inclusion	Q-score
N	0.6810	0.3080
O	0.6070	0.2140
P	0.6080	0.1960
Q	0.6230	0.2630
R	0.4540	0.1950
S	0.6130	0.1520
T	0.4760	0.1260
U	0.6600	0.2200
V	0.6430	0.1750
W	0.6640	0.2260
X	0.7620	0.2650
Y	0.4750	0.2170
Z	0.7340	0.2500
a	0.7750	0.2800
b	0.7270	0.2540
c	0.5820	0.2290
d	0.6170	0.2230
e	0.7340	0.2790
f	0.6200	0.2590
g	0.6070	0.2300
h	0.6340	0.2510
i	0.6070	0.2300
j	0.6300	0.1610
k	0.6270	0.2090
l	0.6080	0.2260
m	0.5370	0.2100
n	0.6180	0.2200
o	0.5820	0.1390
p	0.6770	0.2430
q	0.2250	0.1500
r	0.4090	0.1190
s	0.3530	0.0670