wwPDB EM Validation Summary Report

Nov 21, 2022 – 08:21 PM JST

PDB ID	:	7DGZ
EMDB ID	:	EMD-30676
Title	:	Activity optimized complex I (closed form)
Authors	:	Jeon, T.J.; Lee, S.G.; Yoo, S.H.; Ryu, J.H.; Kim, D.S.; Hyun, J.K.; Kim, H.M.; Ryu, S.E.
Deposited on	:	2020-11-12
Resolution	:	3.80 Å(reported)

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

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

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

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

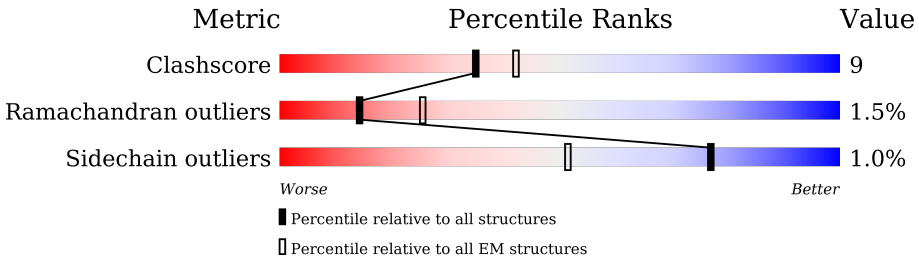
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.80 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	2	347	88% 10%
2	3	115	32% 61% 25% 6% 5%
3	4	459	9% 85% 14%
4	5	98	7% 79% 19%
5	7	175	30% 86% 10%
6	8	444	79% 17%
7	9	217	8% 71% 23% 5%
8	A	704	78% 18%

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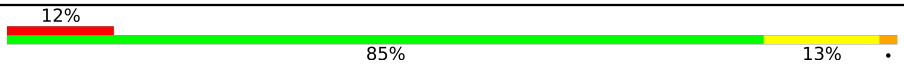
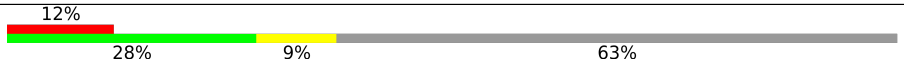
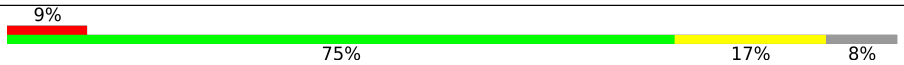
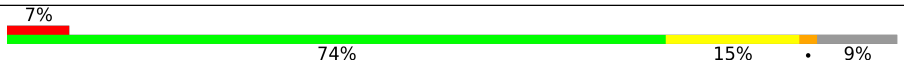
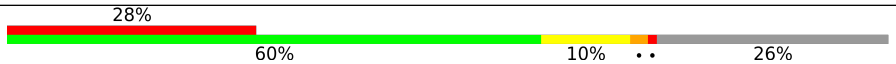
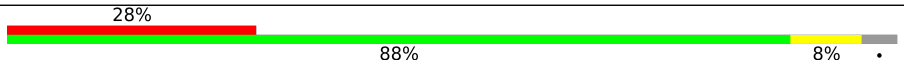
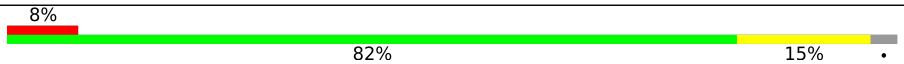
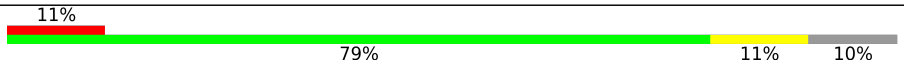
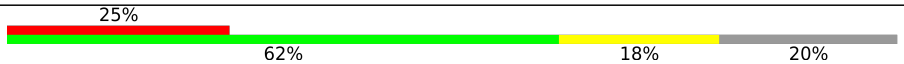
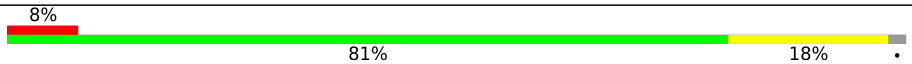
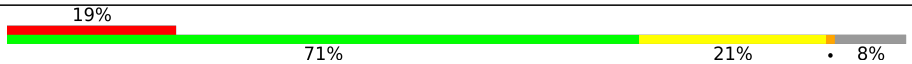
Mol	Chain	Length	Quality of chain
9	B	430	
10	C	228	
11	D	179	
12	E	176	
13	F	75	
14	G	133	
15	H	105	
16	I	96	
17	J	70	
18	K	98	
19	L	83	
20	N	115	
21	O	127	
22	P	112	
23	Q	171	
24	R	345	
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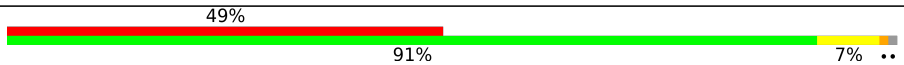
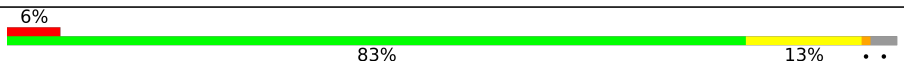
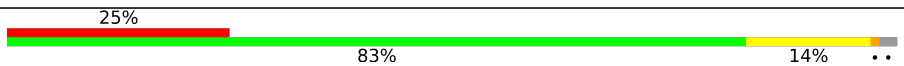
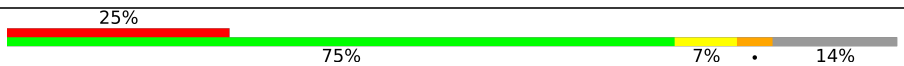
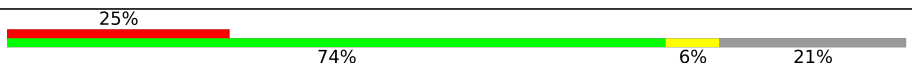
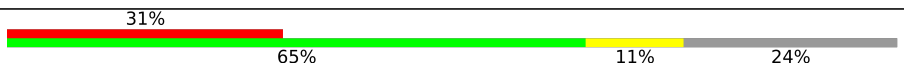
26	T	140	
27	U	145	
28	V	143	
29	M	88	
29	W	88	
30	X	57	
31	Y	72	
32	Z	97	

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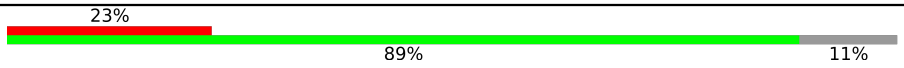
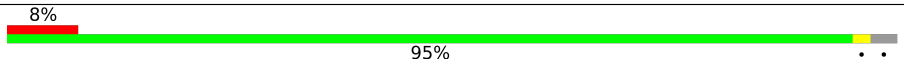
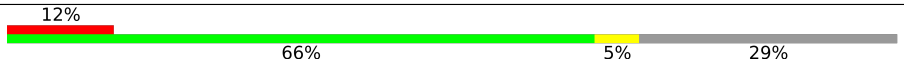
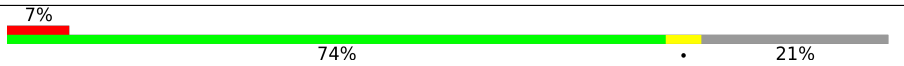
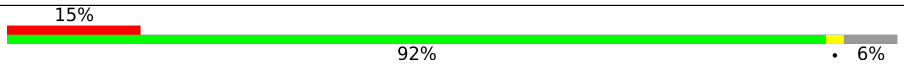
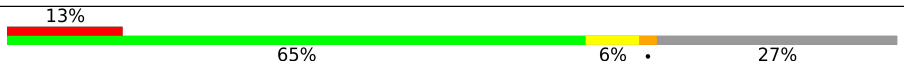
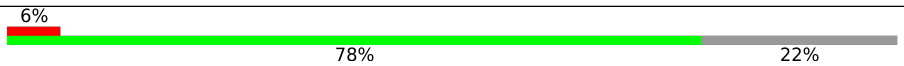
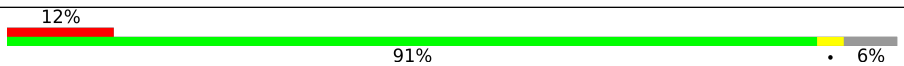
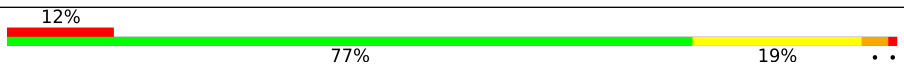
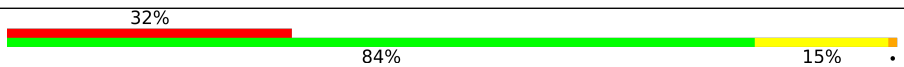
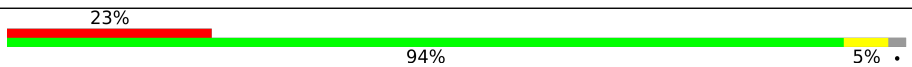
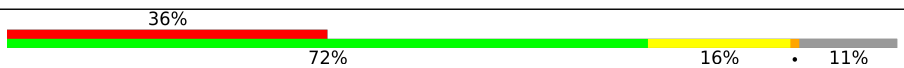
Mol	Chain	Length	Quality of chain
33	a	128	
34	b	143	
35	c	127	
36	d	136	
37	f	178	
38	h	125	
39	i	49	
40	j	120	
41	1	318	
42	6	606	
43	g	176	
44	e	158	

2 Entry composition (i)

There are 52 unique types of molecules in this entry. The entry contains 60921 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 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	2	344	2582	1707	404	437	34	0	0

- Molecule 2 is a protein called NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	3	112	864	582	127	150	5	0	0

- Molecule 3 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	4	458	3447	2293	548	574	32	1	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	5	96	697	454	109	124	10	0	0

- Molecule 5 is a protein called NADH-ubiquinone oxidoreductase chain 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	7	172	1186	798	179	202	7	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	8	427	2965	1864	552	534	15	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
7	9	207	Total	C	N	O	S	0	0
			1535	978	261	286	10		

- Molecule 8 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	A	688	Total	C	N	O	S	0	0
			5183	3254	915	978	36		

- Molecule 9 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	B	430	Total	C	N	O	S	0	0
			3410	2178	587	620	25		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
10	C	208	Total	C	N	O	S	0	0
			1705	1102	294	306	3		

- Molecule 11 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	D	152	Total	C	N	O	S	0	0
			1200	769	209	208	14		

- Molecule 12 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	E	176	Total	C	N	O	S	0	0
			1388	874	239	264	11		

- Molecule 13 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	F	28	Total	C	N	O	0	0
			183	116	32	35		

- Molecule 14 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	G	123	Total	C	N	O	S	0	0
			981	619	177	182	3		

- Molecule 15 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	H	96	Total	C	N	O	S	0	0
			780	494	147	134	5		

- Molecule 16 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	I	71	Total	C	N	O	S	0	0
			530	331	99	97	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	J	69	Total	C	N	O	S	0	0
			530	344	96	88	2		

- Molecule 18 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	K	84	Total	C	N	O	0	0
			652	409	125	118		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	L	80	Total	C	N	O	S	0	0
			602	398	97	105	2		

- Molecule 20 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	N	111	Total	C	N	O	S	0	0
			862	559	149	152	2		

- Molecule 21 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	O	114	Total	C	N	O	S	0	0
			925	595	170	156	4		

- Molecule 22 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	P	90	Total	C	N	O	S	0	0
			698	442	128	126	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Q	168	Total	C	N	O	S	0	0
			1345	851	242	243	9		

- Molecule 24 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	R	319	Total	C	N	O	S	0	0
			2407	1548	431	425	3		

- Molecule 25 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	S	319	Total	C	N	O	S	0	0
			2299	1457	395	438	9		

- Molecule 26 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	T	138	Total	C	N	O	S	0	0
			942	599	165	172	6		

- Molecule 27 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	U	132	Total	C	N	O	S	0	0
			1019	659	179	178	3		

- Molecule 28 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	V	138	Total	C	N	O	S	0	0
			1093	702	189	193	9		

- Molecule 29 is a protein called Acyl carrier protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	W	86	Total	C	N	O	S	0	0
			616	400	98	114	4		
29	M	80	Total	C	N	O	S	0	0
			642	413	96	128	5		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
30	X	49	Total	C	N	O	0	0
			372	243	64	65		

- Molecule 31 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Y	57	Total	C	N	O	S	0	0
			409	277	65	66	1		

- Molecule 32 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Z	74	Total	C	N	O	S	0	0
			493	320	89	82	2		

- Molecule 33 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	a	114	Total	C	N	O	0	0
			857	550	159	148		

- Molecule 34 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	b	139	Total	C	N	O	S	0	0
			1032	672	190	168	2		

- Molecule 35 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	c	90	Total	C	N	O	0	0
			617	391	119	107		

- Molecule 36 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	d	107	Total	C	N	O	S	0	0
			708	445	134	125	4		

- Molecule 37 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	f	167	Total	C	N	O	S	0	0
			1156	739	205	208	4		

- Molecule 38 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	h	91	Total	C	N	O	S	0	0
			721	461	123	135	2		

- Molecule 39 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	i	38	Total	C	N	O	0	0
			277	185	46	46		

- Molecule 40 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	j	113	Total	C	N	O	S	0	0
			892	587	149	153	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
41	1	317	Total	C	N	O	S	0	0
			2500	1676	384	417	23		

- Molecule 42 is a protein called NADH-ubiquinone oxidoreductase chain 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	6	606	Total	C	N	O	S	0	0
			4765	3172	732	819	42		

- Molecule 43 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10.

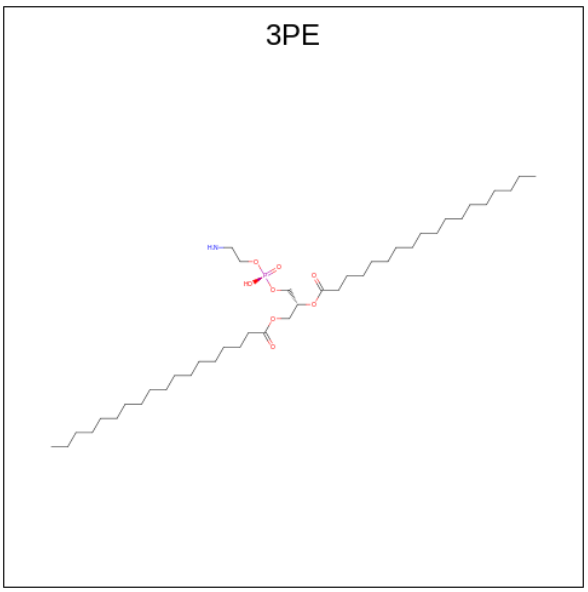
Mol	Chain	Residues	Atoms					AltConf	Trace
43	g	173	Total	C	N	O	S	0	0
			1351	849	246	248	8		

- Molecule 44 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	e	141	Total	C	N	O	S	0	0
			864	539	161	160	4		

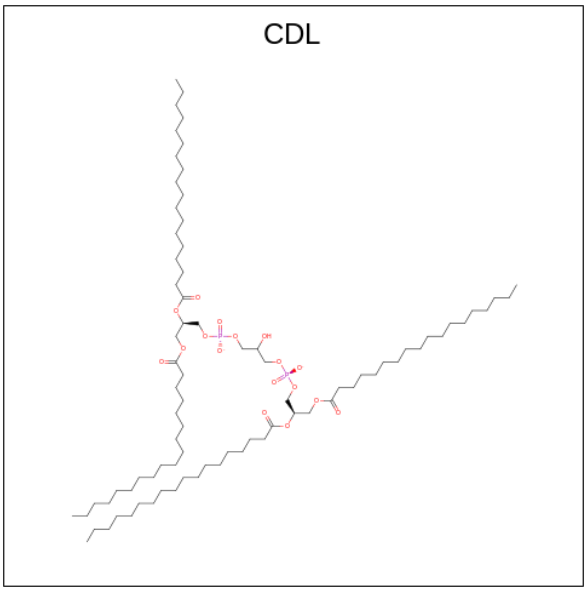
- Molecule 45 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE)

(formula: $C_{41}H_{82}NO_8P$) (labeled as "Ligand of Interest" by depositor).



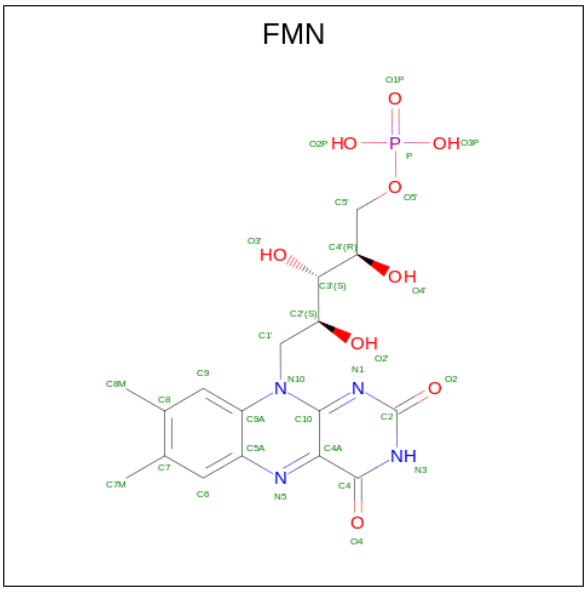
Mol	Chain	Residues	Atoms					AltConf
45	2	1	Total	C	N	O	P	0
			41	31	1	8	1	
45	4	1	Total	C	N	O	P	0
			41	31	1	8	1	
45	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
45	V	1	Total	C	N	O	P	0
			51	41	1	8	1	

- Molecule 46 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$) (labeled as "Ligand of Interest" by depositor).



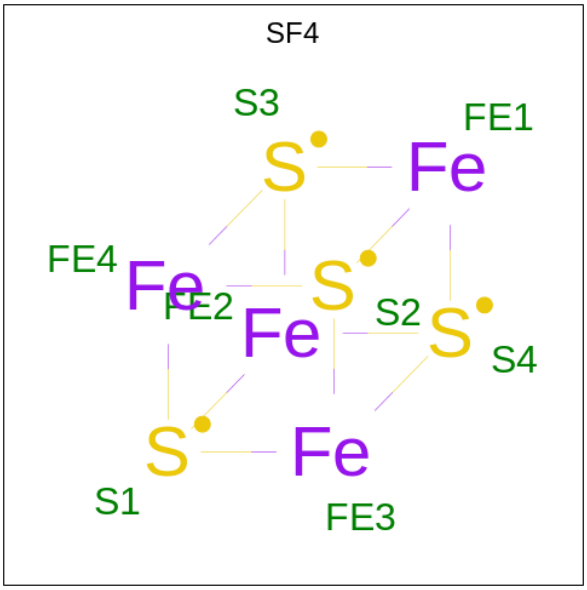
Mol	Chain	Residues	Atoms				AltConf
46	4	1	Total	C	O	P	0
			82	63	17	2	
46	J	1	Total	C	O	P	0
			58	39	17	2	

- Molecule 47 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



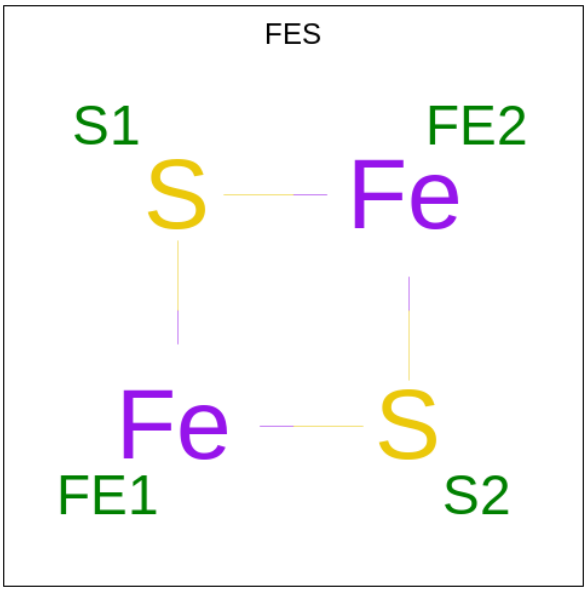
Mol	Chain	Residues	Atoms					AltConf
47	8	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 48 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



Mol	Chain	Residues	Atoms	AltConf
48	8	1	Total Fe S 8 4 4	0
48	A	1	Total Fe S 16 8 8	0
48	A	1	Total Fe S 16 8 8	0
48	D	1	Total Fe S 8 4 4	0
48	E	1	Total Fe S 16 8 8	0
48	E	1	Total Fe S 16 8 8	0

- Molecule 49 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).

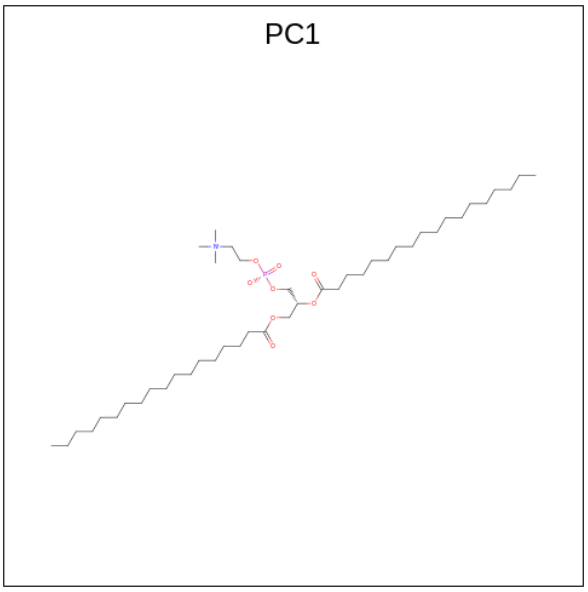


Mol	Chain	Residues	Atoms			AltConf
49	9	1	Total 4	Fe 2	S 2	0
49	A	1	Total 4	Fe 2	S 2	0

- Molecule 50 is ZINC ION (three-letter code: ZN) (formula: Zn).

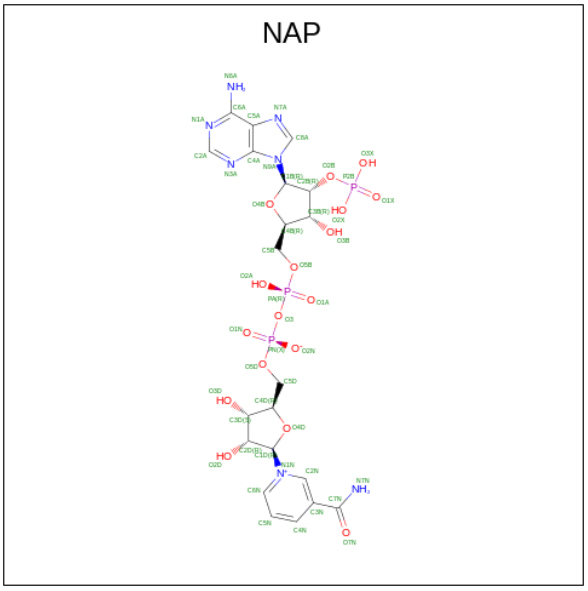
Mol	Chain	Residues	Atoms		AltConf
50	I	1	Total 1	Zn 1	0

- Molecule 51 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
51	L	1	Total	C	N	O	P	0
			47	37	1	8	1	
51	Q	1	Total	C	N	O	P	0
			46	36	1	8	1	
51	S	1	Total	C	N	O	P	0
			47	37	1	8	1	
51	j	1	Total	C	N	O	P	0
			39	29	1	8	1	

- Molecule 52 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$).



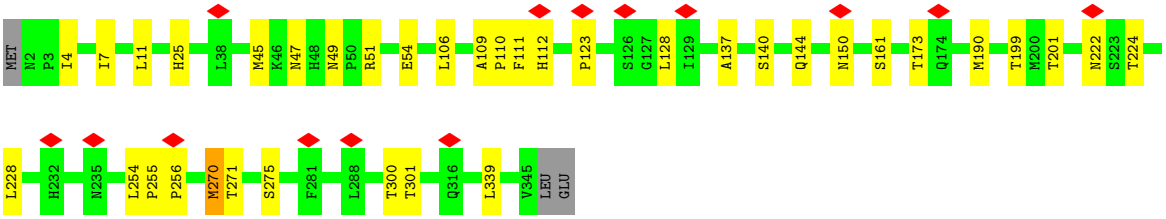
Mol	Chain	Residues	Atoms					AltConf
52	R	1	Total	C	N	O	P	0
			48	21	7	17	3	

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.

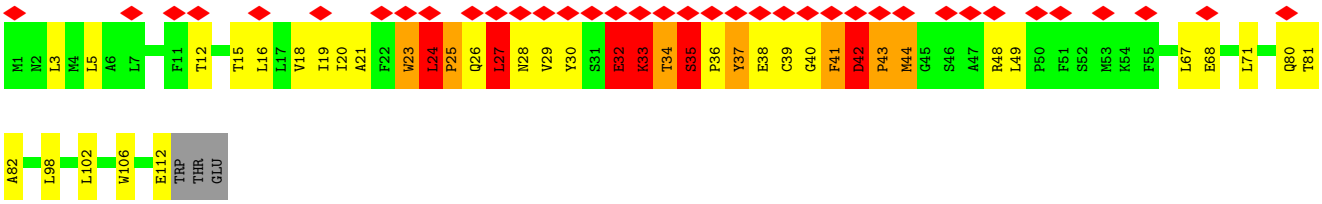
• Molecule 1: NADH-ubiquinone oxidoreductase chain 2

Chain 2:



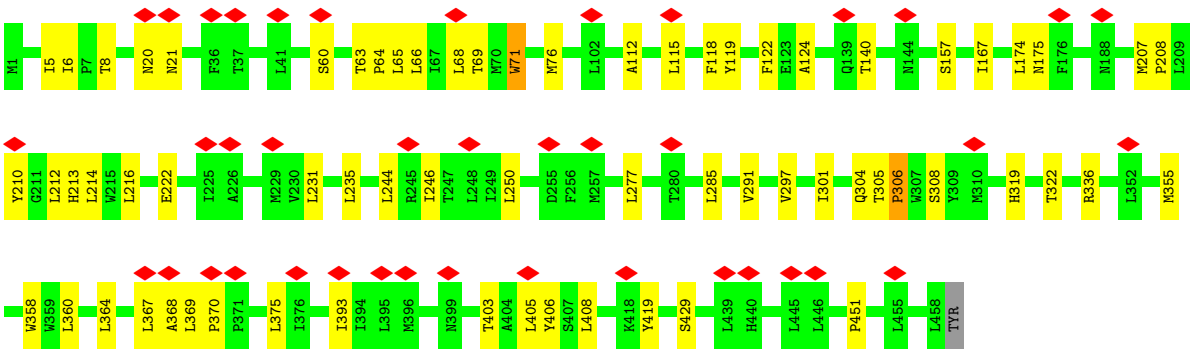
• Molecule 2: NADH-ubiquinone oxidoreductase chain 3

Chain 3:



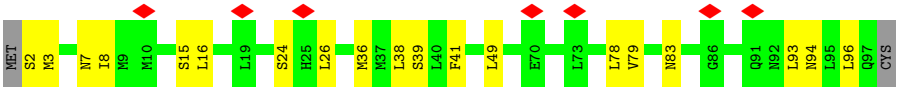
• Molecule 3: NADH-ubiquinone oxidoreductase chain 4

Chain 4:



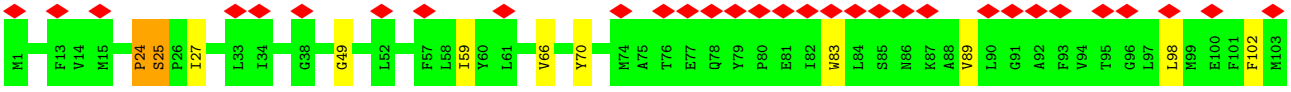
• Molecule 4: NADH-ubiquinone oxidoreductase chain 4L

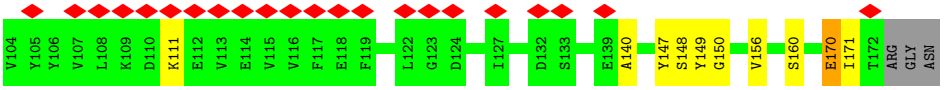
Chain 5:



• Molecule 5: NADH-ubiquinone oxidoreductase chain 6

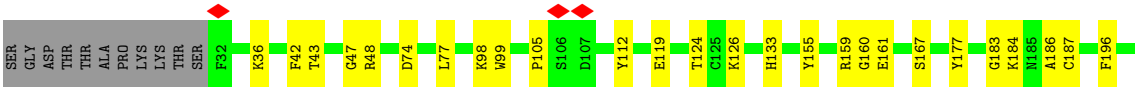
Chain 7:

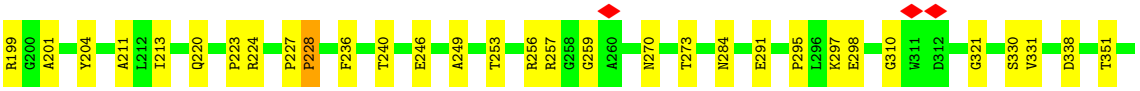


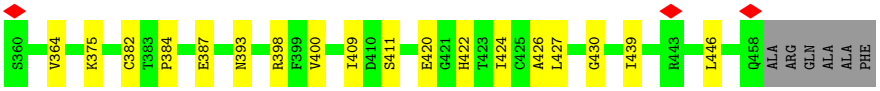


• Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial

Chain 8:

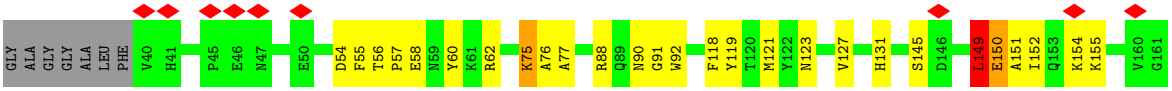


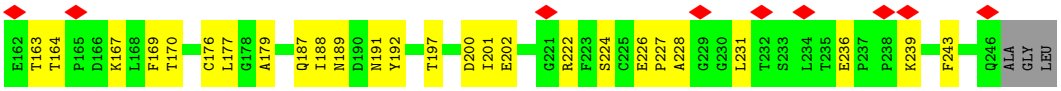




• Molecule 7: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

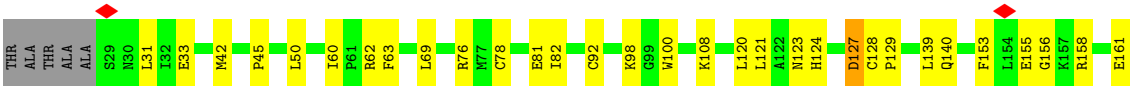
Chain 9:

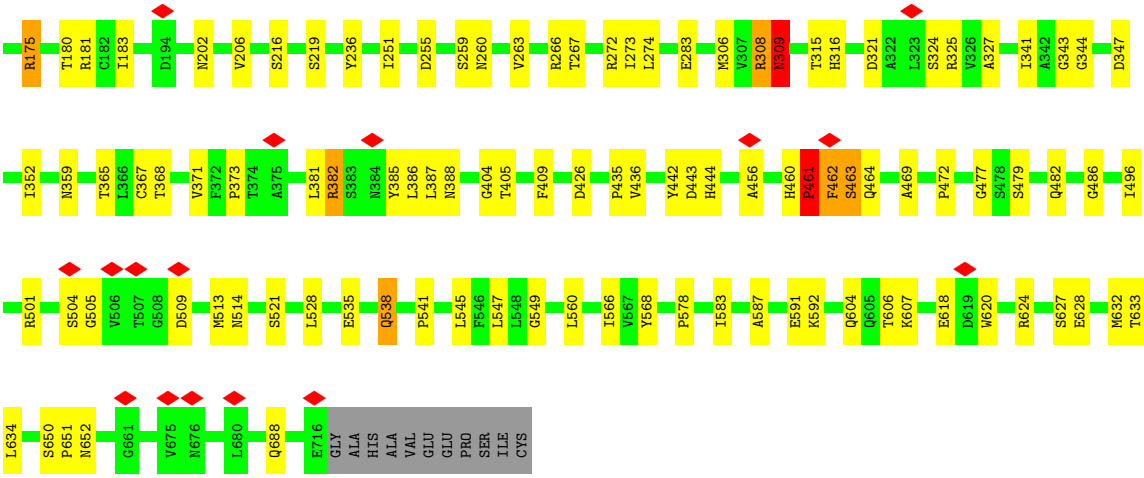




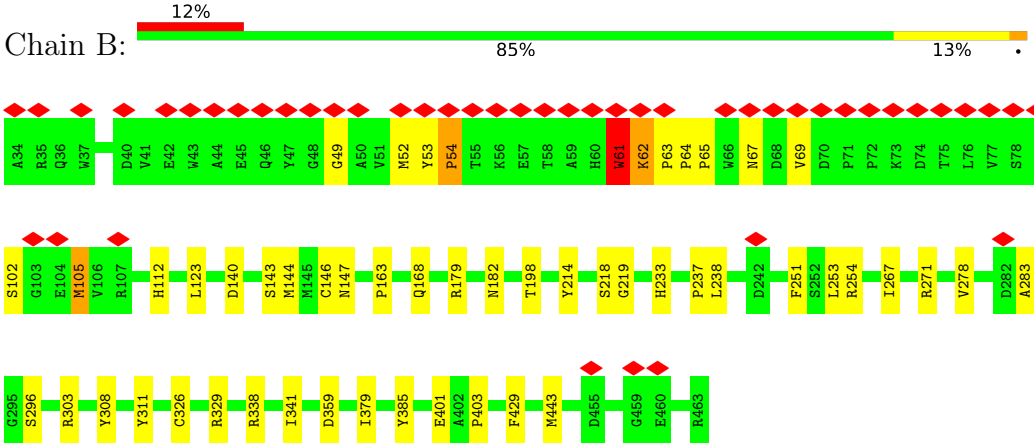
• Molecule 8: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

Chain A:

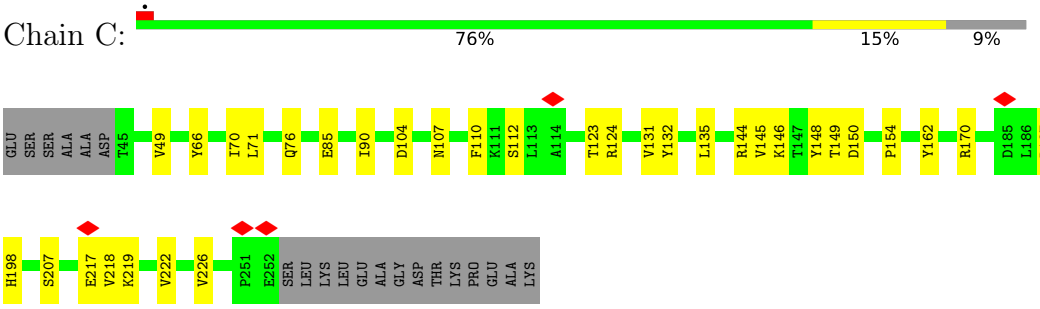




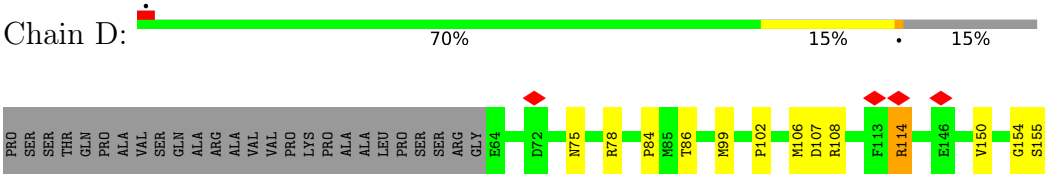
• Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

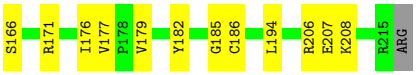


• Molecule 10: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial



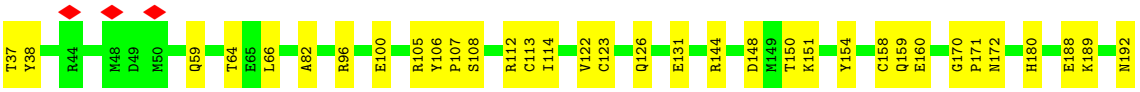
• Molecule 11: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

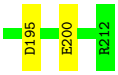




• Molecule 12: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

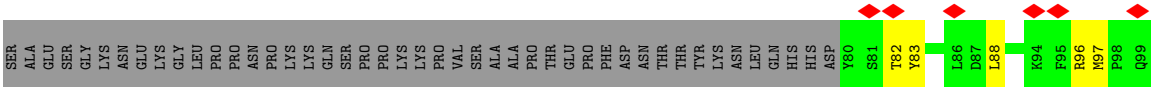
Chain E:

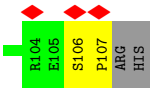




• Molecule 13: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

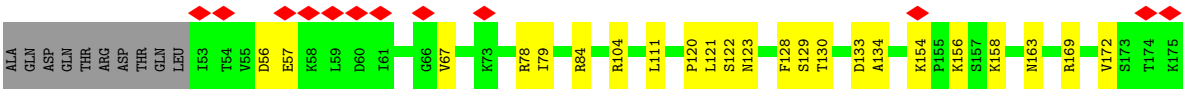
Chain F:





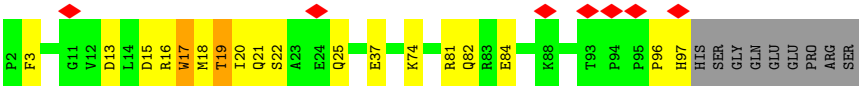
• Molecule 14: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain G:



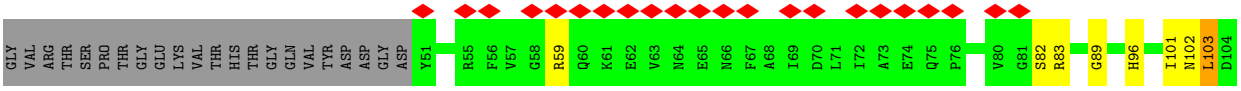
• Molecule 15: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

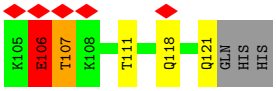
Chain H:



• Molecule 16: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

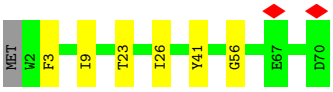
Chain I:





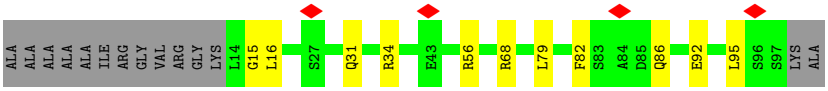
• Molecule 17: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

Chain J:



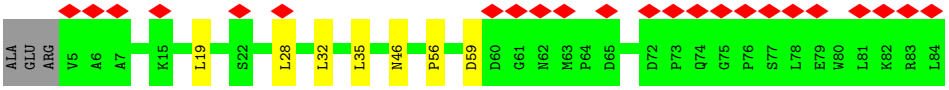
• Molecule 18: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

Chain K:



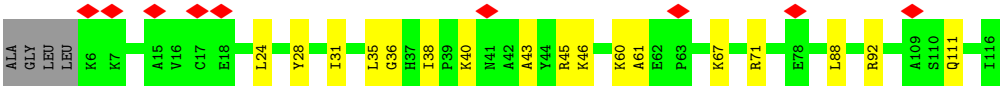
• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

Chain L:



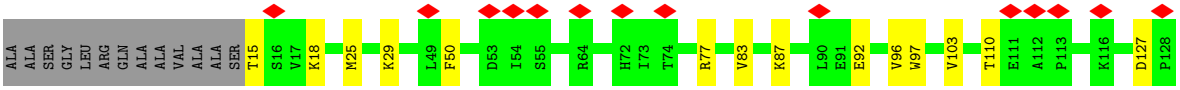
• Molecule 20: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5

Chain N:



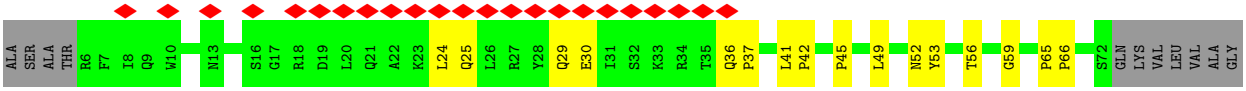
• Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

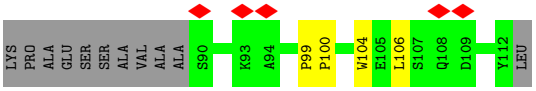
Chain O:



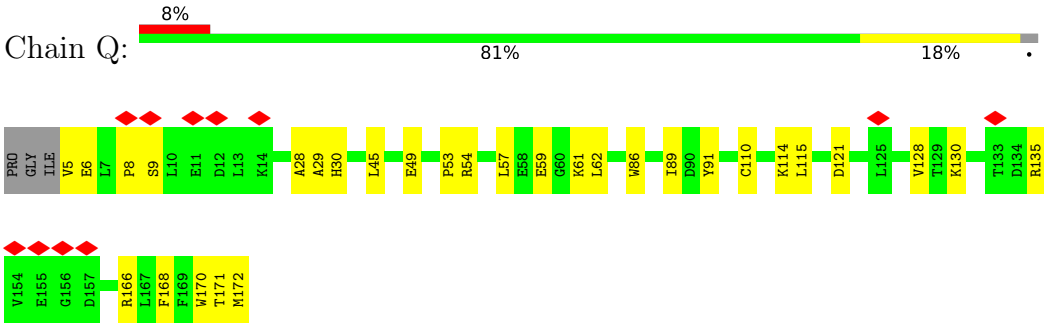
• Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain P:

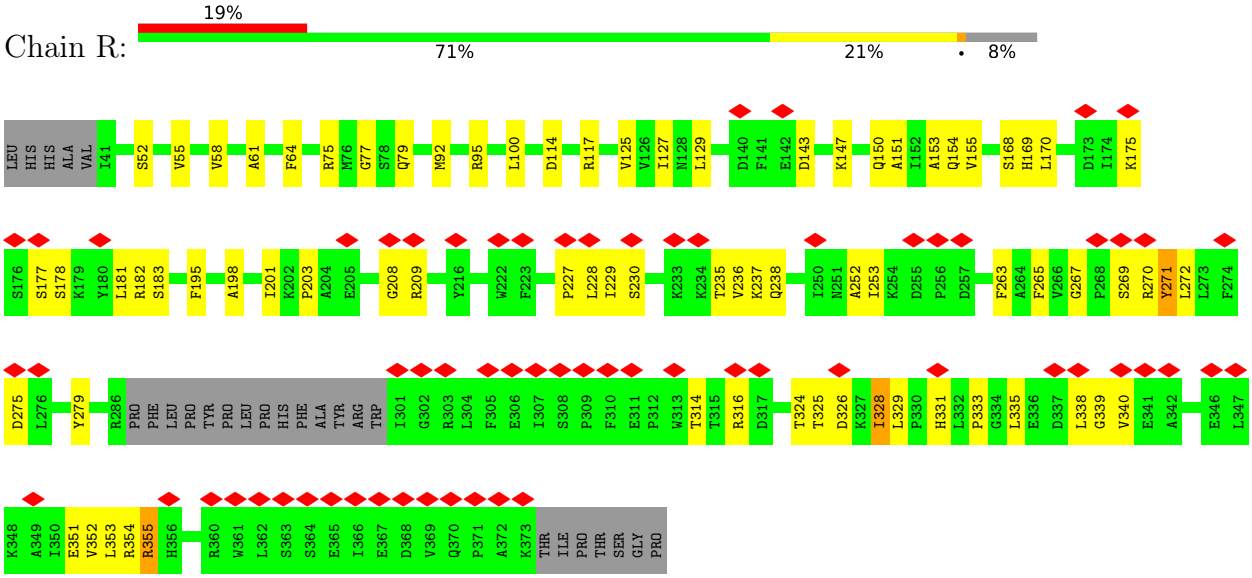




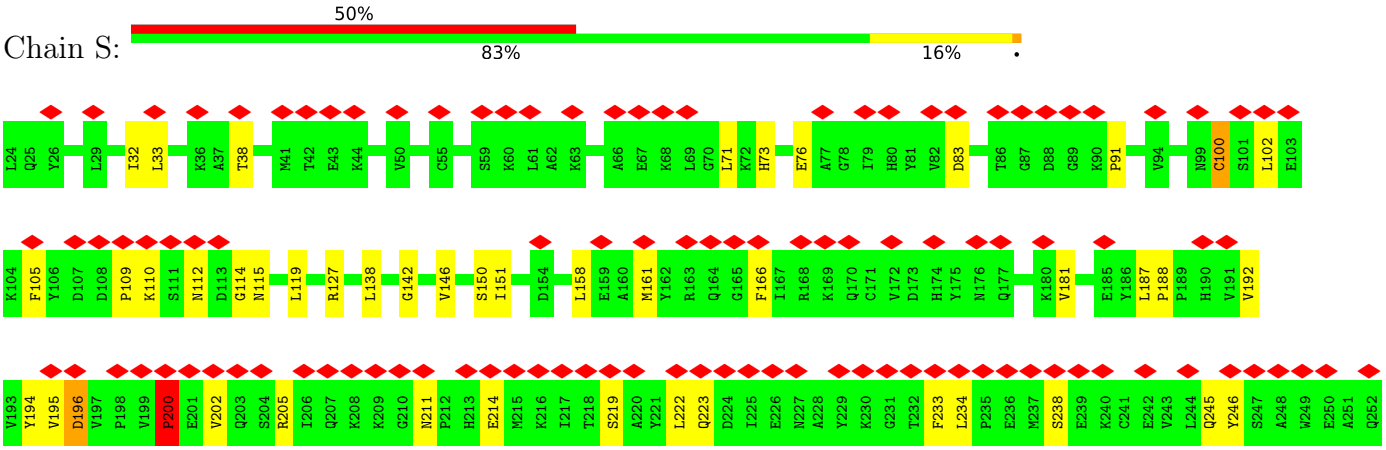
• Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8



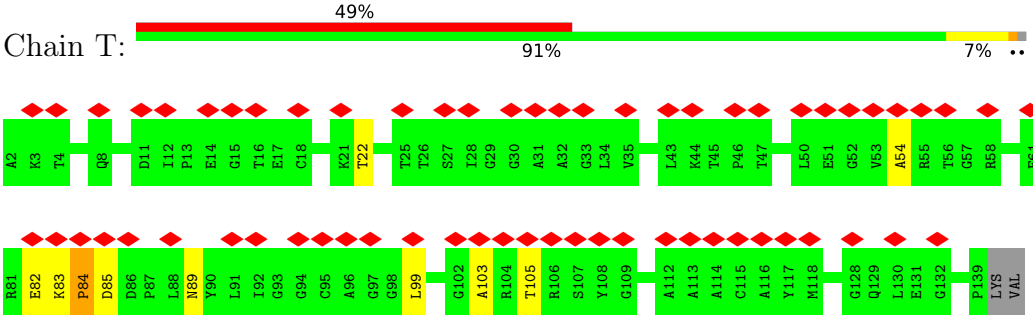
• Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial



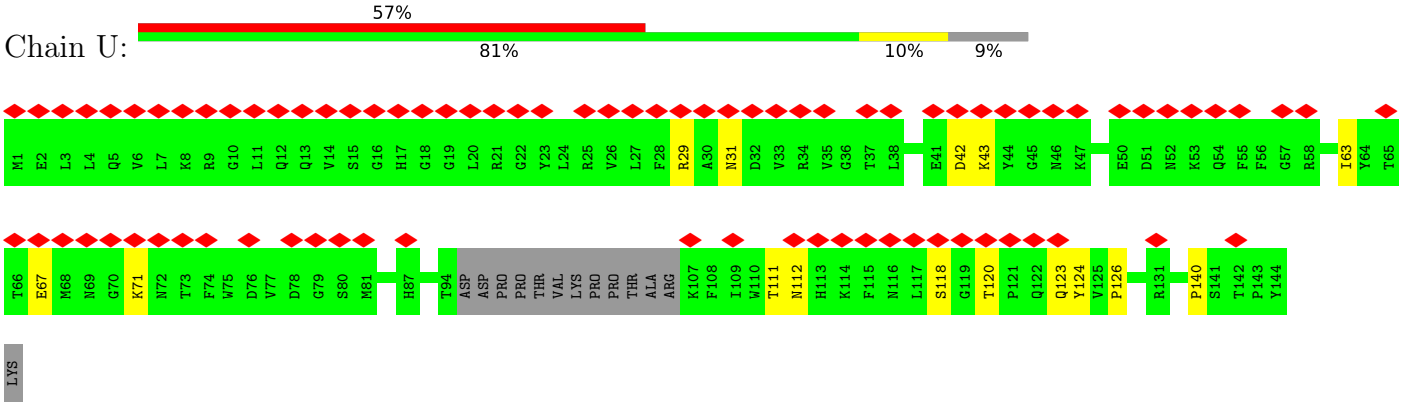
• Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial



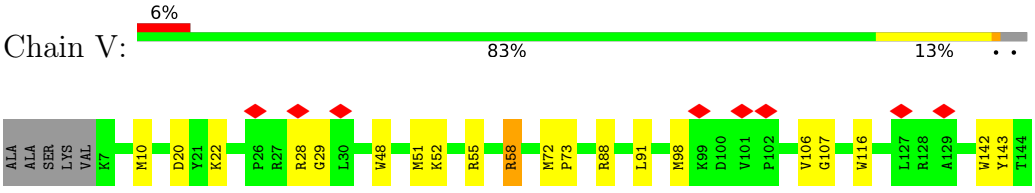
• Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11



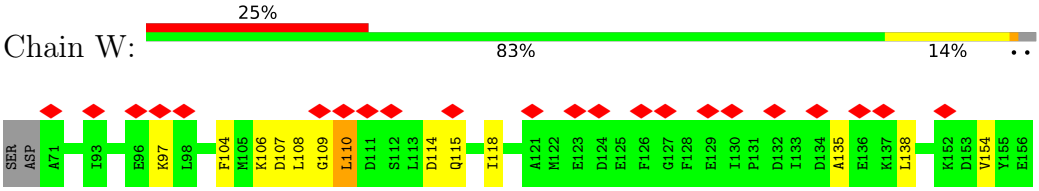
• Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12



• Molecule 28: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13

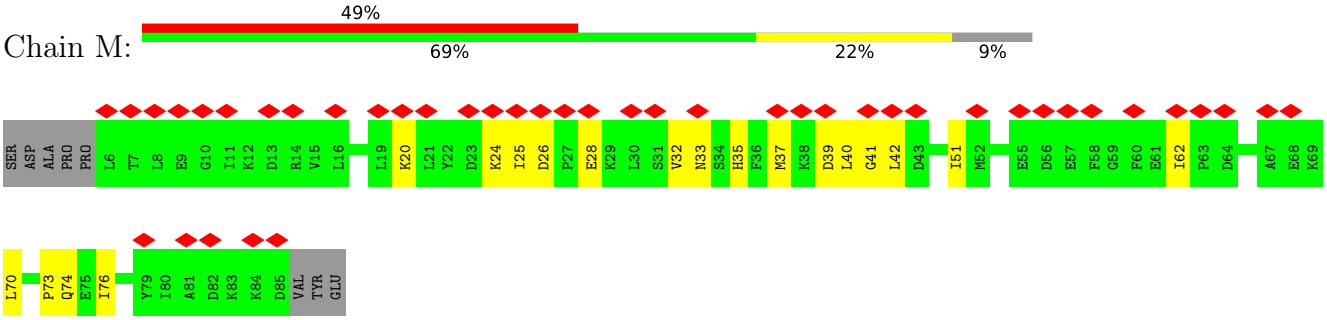


• Molecule 29: Acyl carrier protein, mitochondrial



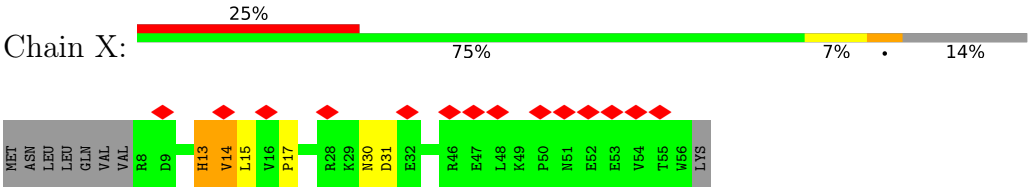
• Molecule 29: Acyl carrier protein, mitochondrial

Chain M:



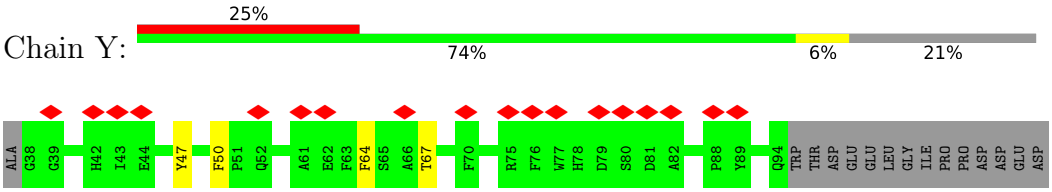
• Molecule 30: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

Chain X:



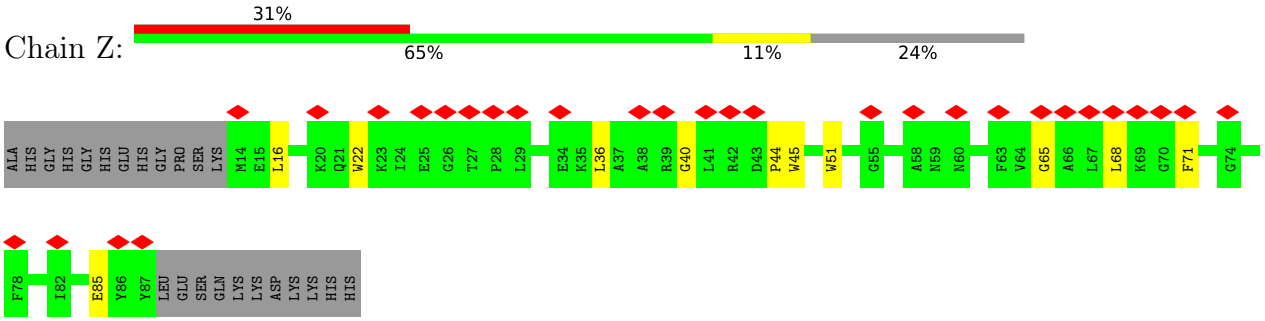
• Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain Y:



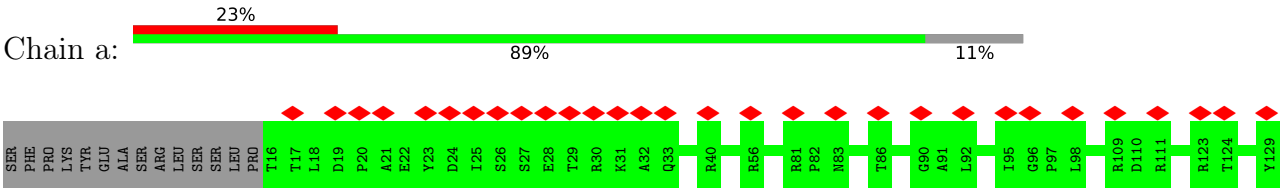
• Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

Chain Z:



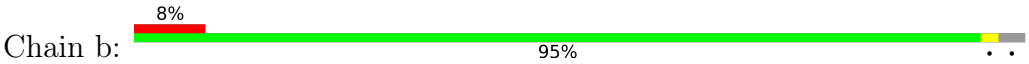
• Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

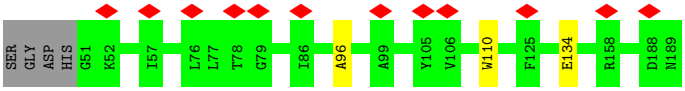
Chain a:



• Molecule 34: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

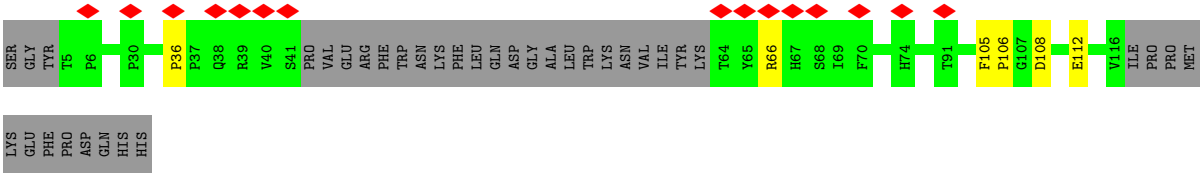
Chain b:





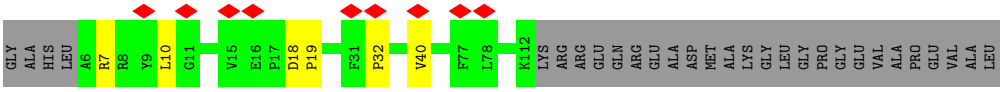
• Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain c:



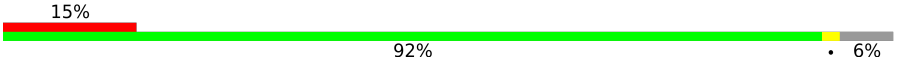
• Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7

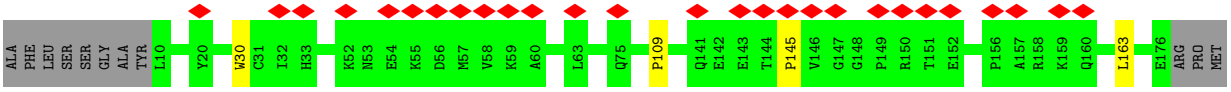
Chain d:



• Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9

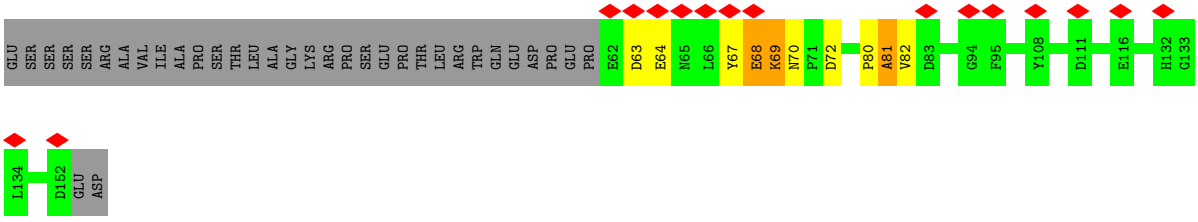
Chain f:





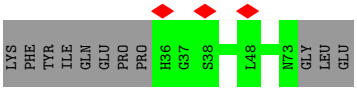
• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

Chain h:



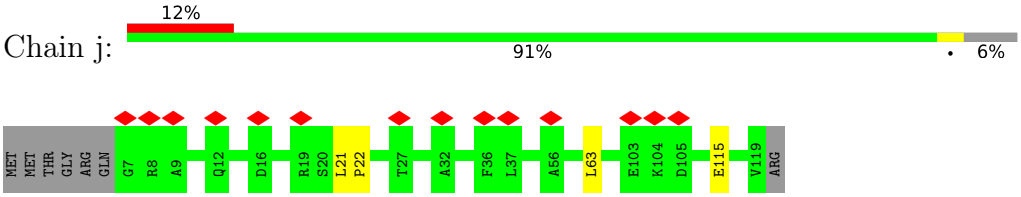
• Molecule 39: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

Chain i:



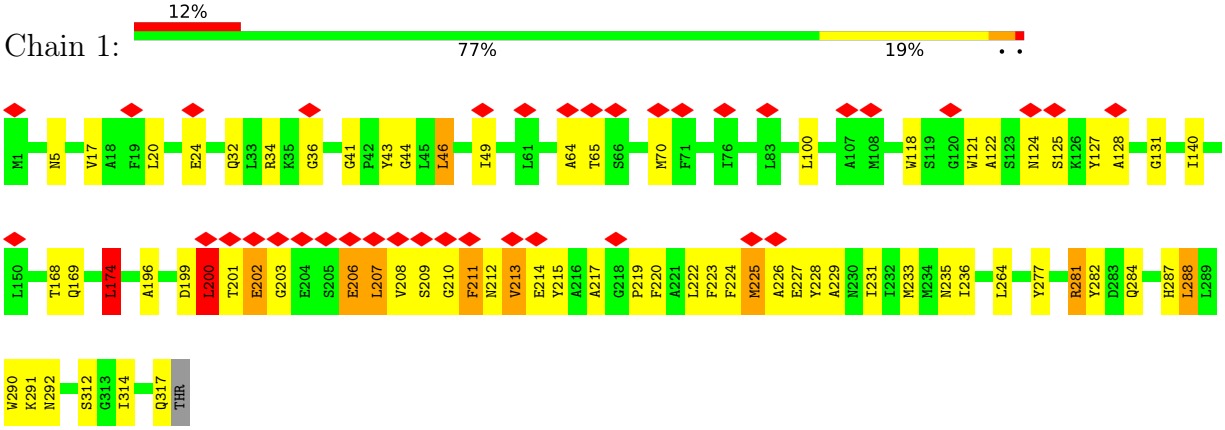
• Molecule 40: NADH dehydrogenase [ubiquinone] 1 subunit C2

Chain j:



• Molecule 41: NADH-ubiquinone oxidoreductase chain 1

Chain 1:

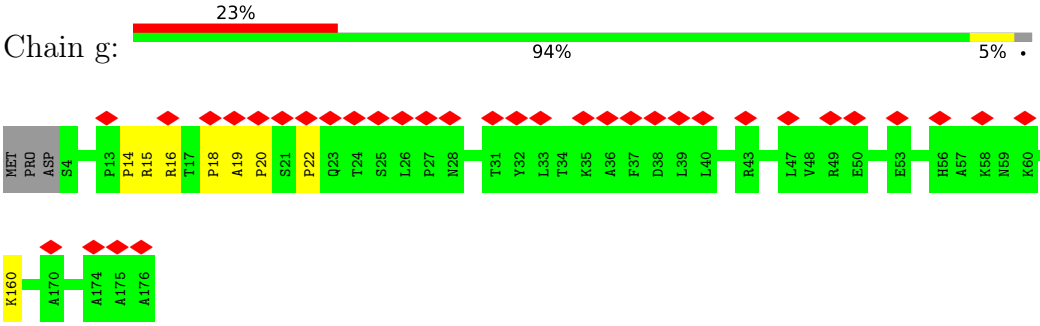


• Molecule 42: NADH-ubiquinone oxidoreductase chain 5

Chain 6:

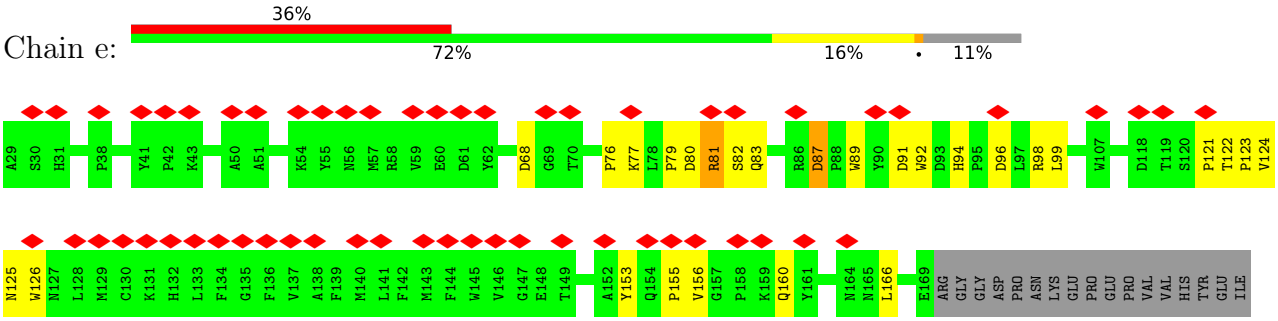
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

Chain g:



• Molecule 44: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial

Chain e:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	146842	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	35	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	1.143	Depositor
Minimum map value	-0.274	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.017	Depositor
Recommended contour level	0.111	Depositor
Map size (Å)	391.244, 391.244, 391.244	wwPDB
Map dimensions	280, 280, 280	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3973, 1.3973, 1.3973	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, SF4, PC1, 3PE, CDL, FMN, NAP, FES

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	2	0.43	0/2646	0.71	0/3618
2	3	0.43	0/887	0.91	4/1216 (0.3%)
3	4	0.40	0/3538	0.74	2/4845 (0.0%)
4	5	0.37	0/706	0.70	0/960
5	7	0.37	0/1213	0.68	0/1659
6	8	0.36	0/3035	0.60	3/4130 (0.1%)
7	9	0.33	0/1572	0.66	2/2150 (0.1%)
8	A	0.40	0/5269	0.66	3/7152 (0.0%)
9	B	0.50	0/3500	0.71	2/4748 (0.0%)
10	C	0.44	0/1756	0.65	0/2394
11	D	0.53	0/1231	0.67	0/1669
12	E	0.52	0/1418	0.67	0/1922
13	F	0.36	0/188	1.00	1/259 (0.4%)
14	G	0.41	0/1004	0.70	1/1359 (0.1%)
15	H	0.36	0/800	0.61	0/1076
16	I	0.39	0/538	0.71	0/722
17	J	0.34	0/545	0.52	0/740
18	K	0.30	0/663	0.63	1/896 (0.1%)
19	L	0.34	0/623	0.66	1/862 (0.1%)
20	N	0.31	0/882	0.60	0/1203
21	O	0.34	0/948	0.58	0/1279
22	P	0.34	0/719	0.67	0/981
23	Q	0.32	0/1381	0.63	0/1869
24	R	0.33	0/2465	0.67	0/3349
25	S	0.33	0/2348	0.68	1/3198 (0.0%)
26	T	0.34	0/959	0.62	0/1305
27	U	0.31	0/1053	0.65	1/1439 (0.1%)
28	V	0.36	0/1121	0.62	0/1515
29	M	0.31	0/651	0.65	0/876
29	W	0.28	0/624	0.67	0/847
30	X	0.32	0/383	0.65	0/523
31	Y	0.31	0/428	0.49	0/592

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	Z	0.36	0/506	0.71	1/688 (0.1%)
33	a	0.32	0/878	0.62	0/1195
34	b	0.33	0/1058	0.63	0/1434
35	c	0.31	0/632	0.70	3/871 (0.3%)
36	d	0.31	0/724	0.58	0/989
37	f	0.29	0/1191	0.56	1/1639 (0.1%)
38	h	0.37	0/743	0.63	0/1013
39	i	0.27	0/286	0.45	0/392
40	j	0.37	0/922	0.70	2/1254 (0.2%)
41	1	0.41	0/2572	0.73	4/3513 (0.1%)
42	6	0.33	0/4892	0.64	3/6660 (0.0%)
43	g	0.31	0/1380	0.59	0/1872
44	e	0.29	0/888	0.77	1/1234 (0.1%)
All	All	0.38	0/61766	0.67	37/84107 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	2	0	9
3	4	0	6
4	5	0	3
5	7	0	5
6	8	0	1
7	9	0	4
8	A	0	12
9	B	0	3
10	C	0	1
11	D	0	3
12	E	0	1
15	H	0	1
16	I	0	1
20	N	0	1
22	P	0	2
23	Q	0	1
24	R	0	4
25	S	0	4
26	T	0	3
27	U	0	1
28	V	0	3

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Mol	Chain	#Chirality outliers	#Planarity outliers
29	M	0	1
29	W	0	1
34	b	0	3
36	d	0	1
37	f	0	1
38	h	0	2
40	j	0	2
41	1	0	1
42	6	0	5
43	g	0	1
44	e	0	3
All	All	0	90

There are no bond length outliers.

The worst 5 of 37 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	3	42	ASP	C-N-CD	-14.16	89.45	120.60
2	3	35	SER	C-N-CD	-7.03	105.13	120.60
3	4	212	LEU	CA-CB-CG	7.02	131.45	115.30
35	c	36	PRO	C-N-CD	-6.84	105.55	120.60
42	6	362	LEU	CA-CB-CG	6.45	130.14	115.30

There are no chirality outliers.

5 of 90 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	2	106	LEU	Peptide
1	2	111	PHE	Peptide
1	2	128	LEU	Peptide
1	2	199	THR	Peptide
1	2	45	MET	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	2582	0	2612	22	0
2	3	864	0	866	63	0
3	4	3447	0	3442	36	0
4	5	697	0	708	12	0
5	7	1186	0	1123	14	0
6	8	2965	0	2596	47	0
7	9	1535	0	1491	34	0
8	A	5183	0	5179	75	0
9	B	3410	0	3318	74	0
10	C	1705	0	1645	25	0
11	D	1200	0	1195	28	0
12	E	1388	0	1340	23	0
13	F	183	0	132	5	0
14	G	981	0	965	15	0
15	H	780	0	753	18	0
16	I	530	0	508	8	0
17	J	530	0	503	5	0
18	K	652	0	636	6	0
19	L	602	0	592	5	0
20	N	862	0	868	10	0
21	O	925	0	907	15	0
22	P	698	0	659	13	0
23	Q	1345	0	1282	18	0
24	R	2407	0	2296	52	0
25	S	2299	0	2028	32	0
26	T	942	0	890	4	0
27	U	1019	0	900	9	0
28	V	1093	0	1048	27	0
29	M	642	0	642	13	0
29	W	616	0	579	16	0
30	X	372	0	314	3	0
31	Y	409	0	318	3	0
32	Z	493	0	395	6	0
33	a	857	0	765	0	0
34	b	1032	0	954	0	0
35	c	617	0	492	0	0
36	d	708	0	513	0	0
37	f	1156	0	892	0	0
38	h	721	0	632	0	0
39	i	277	0	240	0	0
40	j	892	0	835	0	0
41	1	2500	0	2615	114	0
42	6	4765	0	4893	70	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
43	g	1351	0	1262	0	0
44	e	864	0	567	0	0
45	2	41	0	59	1	0
45	4	41	0	59	1	0
45	B	51	0	82	1	0
45	V	51	0	82	0	0
46	4	82	0	114	1	0
46	J	58	0	60	1	0
47	8	31	0	19	2	0
48	8	8	0	0	0	0
48	A	16	0	0	1	0
48	D	8	0	0	0	0
48	E	16	0	0	0	0
49	9	4	0	0	0	0
49	A	4	0	0	0	0
50	I	1	0	0	0	0
51	L	47	0	71	2	0
51	Q	46	0	66	1	0
51	S	47	0	71	2	0
51	j	39	0	55	0	0
52	R	48	0	23	3	0
All	All	60921	0	58151	791	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

The worst 5 of 791 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:1:17:VAL:HG21	41:1:225:MET:CE	1.21	1.61
41:1:17:VAL:CG2	41:1:225:MET:CE	1.78	1.60
41:1:131:GLY:CA	41:1:207:LEU:CD1	1.75	1.58
41:1:200:LEU:CD1	41:1:206:GLU:HG2	1.37	1.51
9:B:88:HIS:CD2	11:D:114:ARG:HH11	1.27	1.51

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	2	342/347 (99%)	298 (87%)	44 (13%)	0	100 100
2	3	110/115 (96%)	78 (71%)	18 (16%)	14 (13%)	0 5
3	4	457/459 (100%)	374 (82%)	77 (17%)	6 (1%)	12 48
4	5	94/98 (96%)	80 (85%)	14 (15%)	0	100 100
5	7	170/175 (97%)	135 (79%)	31 (18%)	4 (2%)	6 37
6	8	425/444 (96%)	344 (81%)	79 (19%)	2 (0%)	29 66
7	9	205/217 (94%)	165 (80%)	39 (19%)	1 (0%)	29 66
8	A	686/704 (97%)	563 (82%)	118 (17%)	5 (1%)	22 60
9	B	428/430 (100%)	353 (82%)	65 (15%)	10 (2%)	6 38
10	C	206/228 (90%)	175 (85%)	31 (15%)	0	100 100
11	D	150/179 (84%)	131 (87%)	19 (13%)	0	100 100
12	E	174/176 (99%)	148 (85%)	25 (14%)	1 (1%)	25 62
13	F	26/75 (35%)	17 (65%)	9 (35%)	0	100 100
14	G	121/133 (91%)	99 (82%)	20 (16%)	2 (2%)	9 43
15	H	94/105 (90%)	73 (78%)	21 (22%)	0	100 100
16	I	69/96 (72%)	56 (81%)	11 (16%)	2 (3%)	4 34
17	J	67/70 (96%)	63 (94%)	3 (4%)	1 (2%)	10 46
18	K	82/98 (84%)	62 (76%)	20 (24%)	0	100 100
19	L	78/83 (94%)	68 (87%)	10 (13%)	0	100 100
20	N	109/115 (95%)	91 (84%)	18 (16%)	0	100 100
21	O	112/127 (88%)	98 (88%)	14 (12%)	0	100 100
22	P	86/112 (77%)	66 (77%)	20 (23%)	0	100 100
23	Q	166/171 (97%)	117 (70%)	47 (28%)	2 (1%)	13 50
24	R	315/345 (91%)	249 (79%)	64 (20%)	2 (1%)	25 62
25	S	317/320 (99%)	249 (78%)	65 (20%)	3 (1%)	17 54

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
26	T	136/140 (97%)	113 (83%)	22 (16%)	1 (1%)	22 60
27	U	128/145 (88%)	101 (79%)	27 (21%)	0	100 100
28	V	136/143 (95%)	119 (88%)	15 (11%)	2 (2%)	10 46
29	M	78/88 (89%)	62 (80%)	16 (20%)	0	100 100
29	W	84/88 (96%)	65 (77%)	19 (23%)	0	100 100
30	X	47/57 (82%)	37 (79%)	8 (17%)	2 (4%)	2 26
31	Y	55/72 (76%)	44 (80%)	11 (20%)	0	100 100
32	Z	72/97 (74%)	49 (68%)	23 (32%)	0	100 100
33	a	112/128 (88%)	87 (78%)	25 (22%)	0	100 100
34	b	137/143 (96%)	117 (85%)	20 (15%)	0	100 100
35	c	86/127 (68%)	63 (73%)	19 (22%)	4 (5%)	2 24
36	d	105/136 (77%)	74 (70%)	26 (25%)	5 (5%)	2 24
37	f	165/178 (93%)	126 (76%)	38 (23%)	1 (1%)	25 62
38	h	89/125 (71%)	60 (67%)	24 (27%)	5 (6%)	2 21
39	i	36/49 (74%)	34 (94%)	2 (6%)	0	100 100
40	j	111/120 (92%)	95 (86%)	16 (14%)	0	100 100
41	1	315/318 (99%)	267 (85%)	42 (13%)	6 (2%)	8 42
42	6	604/606 (100%)	513 (85%)	81 (13%)	10 (2%)	9 43
43	g	171/176 (97%)	138 (81%)	28 (16%)	5 (3%)	4 34
44	e	139/158 (88%)	74 (53%)	45 (32%)	20 (14%)	0 4
All	All	7895/8516 (93%)	6390 (81%)	1389 (18%)	116 (2%)	14 46

5 of 116 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	3	24	LEU
2	3	30	TYR
2	3	33	LYS
2	3	34	THR
2	3	35	SER

5.3.2 Protein sidechains (i)

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

entries.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	2	274/316 (87%)	274 (100%)	0	100 100
2	3	90/101 (89%)	80 (89%)	10 (11%)	6 29
3	4	351/413 (85%)	351 (100%)	0	100 100
4	5	75/86 (87%)	75 (100%)	0	100 100
5	7	104/142 (73%)	104 (100%)	0	100 100
6	8	236/353 (67%)	236 (100%)	0	100 100
7	9	160/183 (87%)	159 (99%)	1 (1%)	86 92
8	A	551/588 (94%)	550 (100%)	1 (0%)	93 97
9	B	359/371 (97%)	352 (98%)	7 (2%)	57 76
10	C	183/204 (90%)	183 (100%)	0	100 100
11	D	126/150 (84%)	125 (99%)	1 (1%)	81 89
12	E	145/151 (96%)	145 (100%)	0	100 100
13	F	13/69 (19%)	13 (100%)	0	100 100
14	G	105/119 (88%)	105 (100%)	0	100 100
15	H	80/95 (84%)	78 (98%)	2 (2%)	47 70
16	I	52/79 (66%)	50 (96%)	2 (4%)	33 61
17	J	50/59 (85%)	50 (100%)	0	100 100
18	K	66/81 (82%)	66 (100%)	0	100 100
19	L	63/71 (89%)	63 (100%)	0	100 100
20	N	88/101 (87%)	88 (100%)	0	100 100
21	O	95/113 (84%)	95 (100%)	0	100 100
22	P	72/96 (75%)	72 (100%)	0	100 100
23	Q	142/154 (92%)	141 (99%)	1 (1%)	84 91
24	R	232/298 (78%)	232 (100%)	0	100 100
25	S	205/283 (72%)	203 (99%)	2 (1%)	76 86
26	T	79/101 (78%)	79 (100%)	0	100 100
27	U	95/131 (72%)	95 (100%)	0	100 100
28	V	107/120 (89%)	106 (99%)	1 (1%)	78 88
29	M	73/81 (90%)	73 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
29	W	57/81 (70%)	55 (96%)	2 (4%)	36 64
30	X	32/54 (59%)	32 (100%)	0	100 100
31	Y	29/62 (47%)	29 (100%)	0	100 100
32	Z	28/75 (37%)	28 (100%)	0	100 100
33	a	70/114 (61%)	70 (100%)	0	100 100
34	b	85/124 (68%)	85 (100%)	0	100 100
35	c	45/121 (37%)	45 (100%)	0	100 100
36	d	42/119 (35%)	42 (100%)	0	100 100
37	f	80/160 (50%)	79 (99%)	1 (1%)	69 82
38	h	70/112 (62%)	64 (91%)	6 (9%)	10 40
39	i	23/45 (51%)	23 (100%)	0	100 100
40	j	88/106 (83%)	88 (100%)	0	100 100
41	1	274/275 (100%)	265 (97%)	9 (3%)	38 65
42	6	523/534 (98%)	515 (98%)	8 (2%)	65 81
43	g	130/157 (83%)	128 (98%)	2 (2%)	65 81
44	e	44/141 (31%)	39 (89%)	5 (11%)	5 28
All	All	5891/7389 (80%)	5830 (99%)	61 (1%)	77 86

5 of 61 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
29	W	106	LYS
43	g	16	ARG
38	h	69	LYS
43	g	15	ARG
44	e	160	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 56 such sidechains are listed below:

Mol	Chain	Res	Type
20	N	83	GLN
29	M	74	GLN
26	T	89	ASN
44	e	160	GLN
42	6	226	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 21 ligands modelled in this entry, 1 is monoatomic - leaving 20 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	$\#\|Z\| > 2$
51	PC1	S	401	-	46,46,53	1.00	4 (8%)	52,54,61	1.00	2 (3%)
48	SF4	8	502	-	0,12,12	-	-	-		
45	3PE	2	401	-	40,40,50	0.95	4 (10%)	43,45,55	1.18	2 (4%)
48	SF4	E	302	-	0,12,12	-	-	-		
49	FES	A	803	-	0,4,4	-	-	-		
46	CDL	J	101	-	57,57,99	1.14	7 (12%)	63,69,111	1.19	4 (6%)
51	PC1	L	200	-	46,46,53	1.01	4 (8%)	52,54,61	1.06	2 (3%)
45	3PE	B	501	-	50,50,50	0.85	4 (8%)	53,55,55	1.13	2 (3%)
48	SF4	A	801	-	0,12,12	-	-	-		
49	FES	9	301	-	0,4,4	-	-	-		
45	3PE	V	201	-	50,50,50	0.85	4 (8%)	53,55,55	1.10	2 (3%)
46	CDL	4	501	-	81,81,99	0.97	7 (8%)	87,93,111	1.11	5 (5%)
47	FMN	8	501	-	33,33,33	1.10	2 (6%)	48,50,50	1.62	11 (22%)
52	NAP	R	601	-	45,52,52	4.64	20 (44%)	56,80,80	1.79	7 (12%)
51	PC1	j	201	-	38,38,53	1.12	4 (10%)	44,46,61	1.09	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
48	SF4	E	301	-	0,12,12	-	-	-		
45	3PE	4	502	-	40,40,50	0.92	3 (7%)	43,45,55	1.37	3 (6%)
48	SF4	A	802	-	0,12,12	-	-	-		
51	PC1	Q	201	-	45,45,53	1.00	4 (8%)	51,53,61	1.07	2 (3%)
48	SF4	D	301	-	0,12,12	-	-	-		

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
51	PC1	S	401	-	-	32/50/50/57	-
48	SF4	8	502	-	-	-	0/6/5/5
45	3PE	2	401	-	-	21/44/44/54	-
48	SF4	E	302	-	-	-	0/6/5/5
49	FES	A	803	-	-	-	0/1/1/1
46	CDL	J	101	-	-	31/68/68/110	-
51	PC1	L	200	-	-	23/50/50/57	-
45	3PE	B	501	-	-	26/54/54/54	-
48	SF4	A	801	-	-	-	0/6/5/5
49	FES	9	301	-	-	-	0/1/1/1
45	3PE	V	201	-	-	21/54/54/54	-
46	CDL	4	501	-	-	39/92/92/110	-
47	FMN	8	501	-	-	10/18/18/18	0/3/3/3
52	NAP	R	601	-	-	15/31/67/67	0/5/5/5
51	PC1	j	201	-	-	23/42/42/57	-
48	SF4	E	301	-	-	-	0/6/5/5
45	3PE	4	502	-	-	24/44/44/54	-
48	SF4	A	802	-	-	-	0/6/5/5
51	PC1	Q	201	-	-	20/49/49/57	-
48	SF4	D	301	-	-	-	0/6/5/5

The worst 5 of 67 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	R	601	NAP	O4D-C1D	16.10	1.63	1.41
52	R	601	NAP	O4B-C1B	14.70	1.61	1.41
52	R	601	NAP	C2D-C1D	-14.38	1.31	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	R	601	NAP	C7N-N7N	6.91	1.46	1.33
52	R	601	NAP	O4D-C4D	-6.72	1.30	1.45

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
52	R	601	NAP	C5A-C6A-N6A	7.27	131.40	120.35
52	R	601	NAP	N3A-C2A-N1A	-6.08	119.17	128.68
52	R	601	NAP	N6A-C6A-N1A	-5.17	107.84	118.57
45	4	502	3PE	O21-C21-C22	4.88	122.02	111.50
51	L	200	PC1	O21-C21-C22	4.60	121.42	111.50

There are no chirality outliers.

5 of 285 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	2	401	3PE	C11-O13-P-O12
45	2	401	3PE	C11-O13-P-O14
45	2	401	3PE	C22-C21-O21-C2
45	4	502	3PE	C1-O11-P-O12
45	4	502	3PE	C1-O11-P-O13

There are no ring outliers.

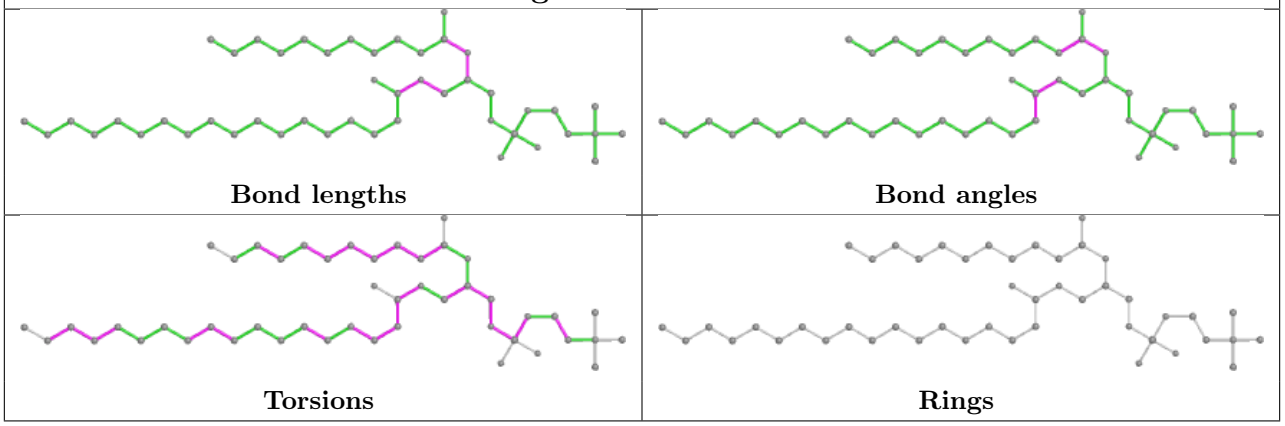
11 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
51	S	401	PC1	2	0
45	2	401	3PE	1	0
46	J	101	CDL	1	0
51	L	200	PC1	2	0
45	B	501	3PE	1	0
48	A	801	SF4	1	0
46	4	501	CDL	1	0
47	8	501	FMN	2	0
52	R	601	NAP	3	0
45	4	502	3PE	1	0
51	Q	201	PC1	1	0

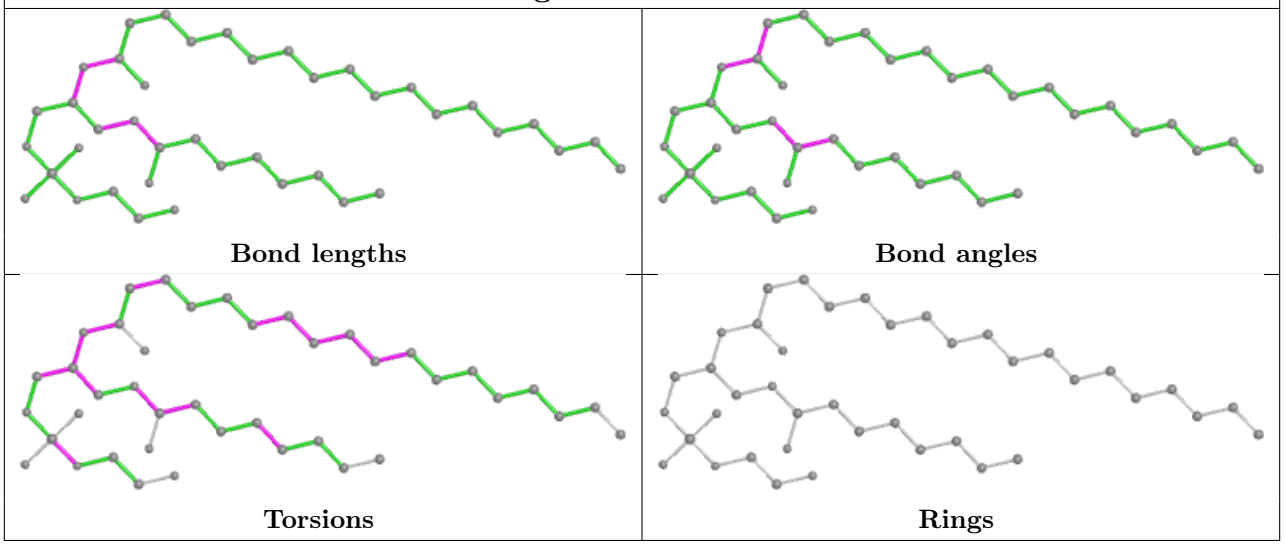
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

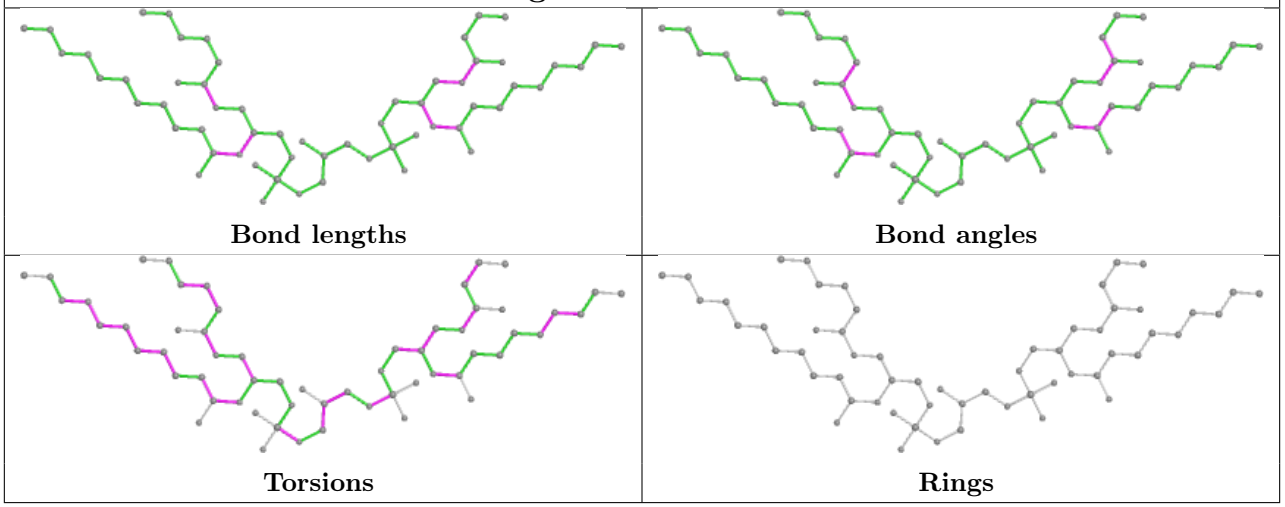
Ligand PC1 S 401



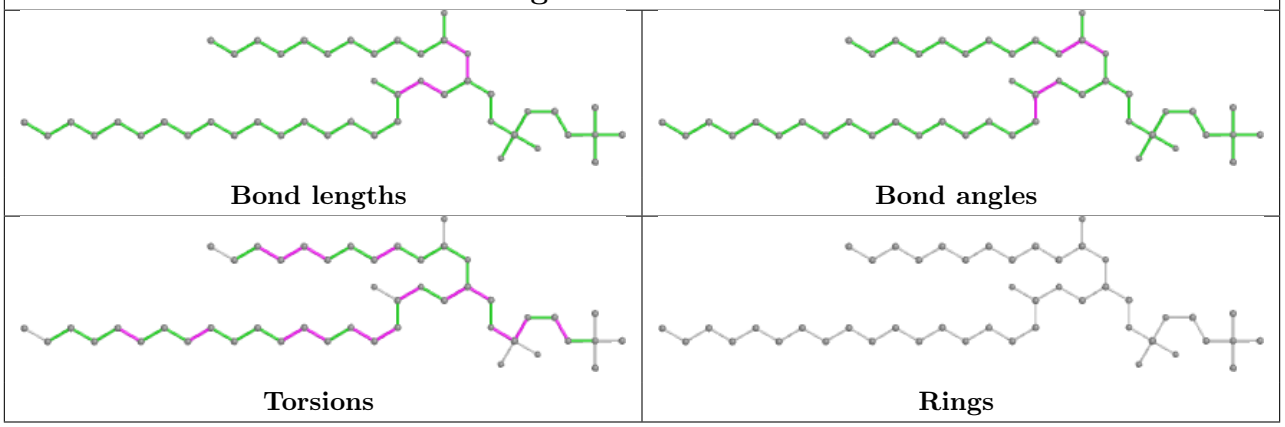
Ligand 3PE 2 401



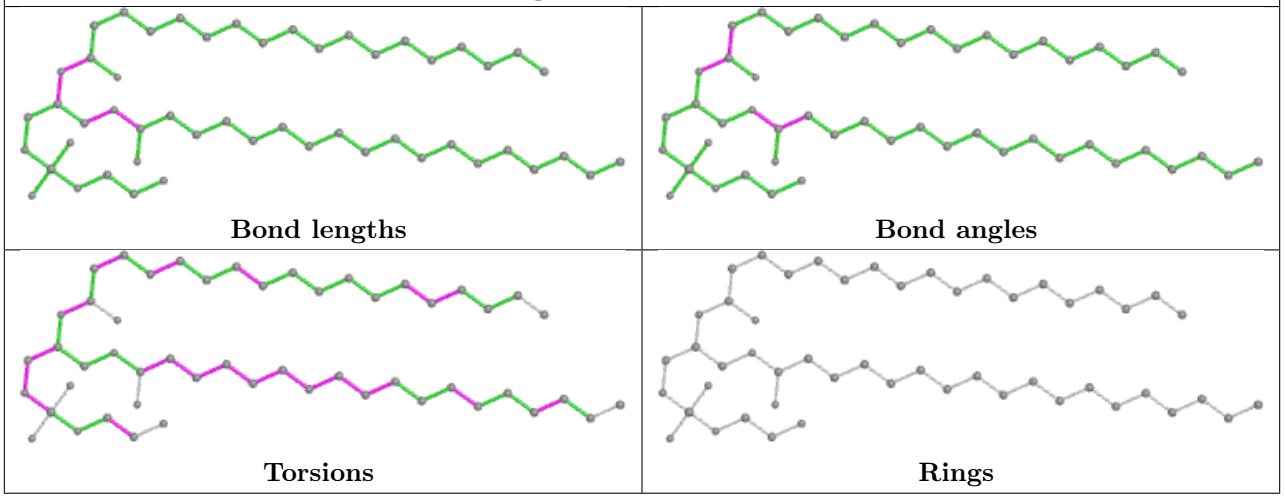
Ligand CDL J 101



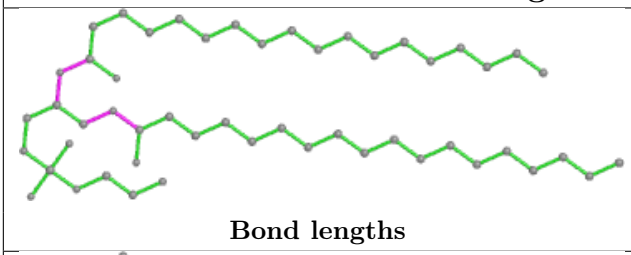
Ligand PC1 L 200



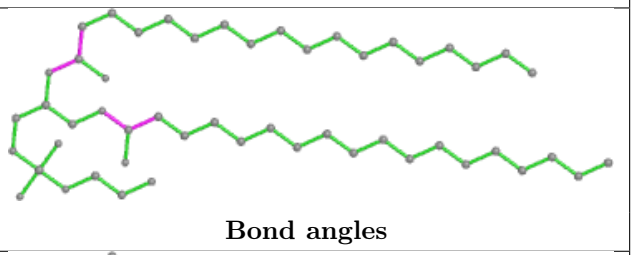
Ligand 3PE B 501



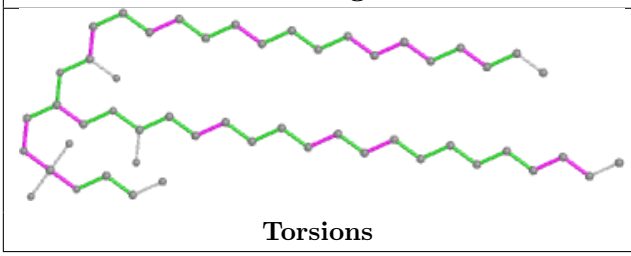
Ligand 3PE V 201



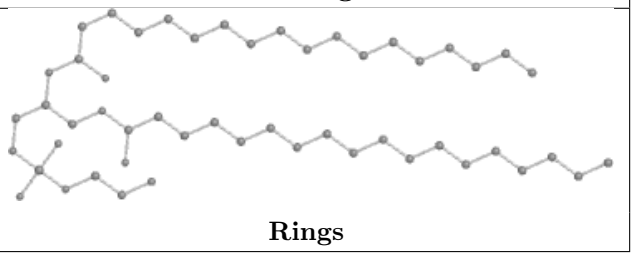
Bond lengths



Bond angles

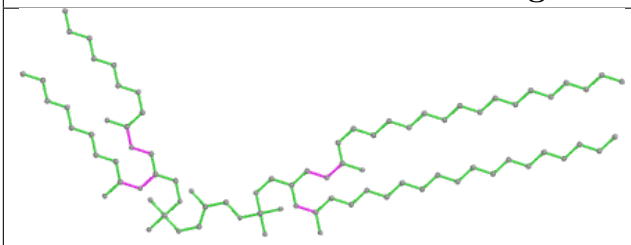


Torsions



Rings

Ligand CDL 4 501



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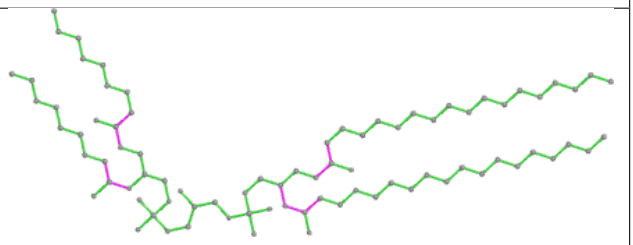
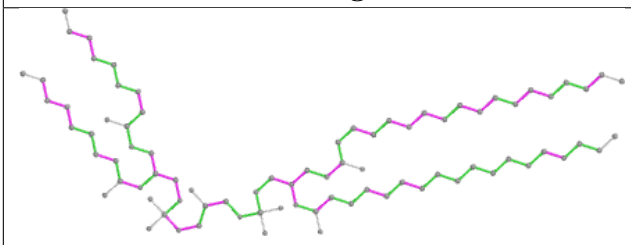
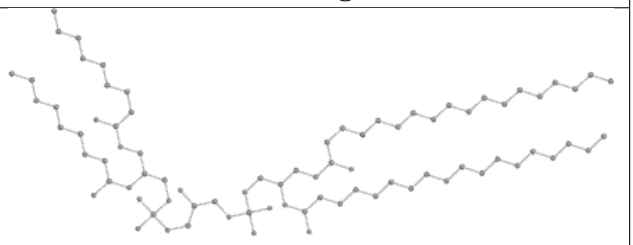


Bond angles

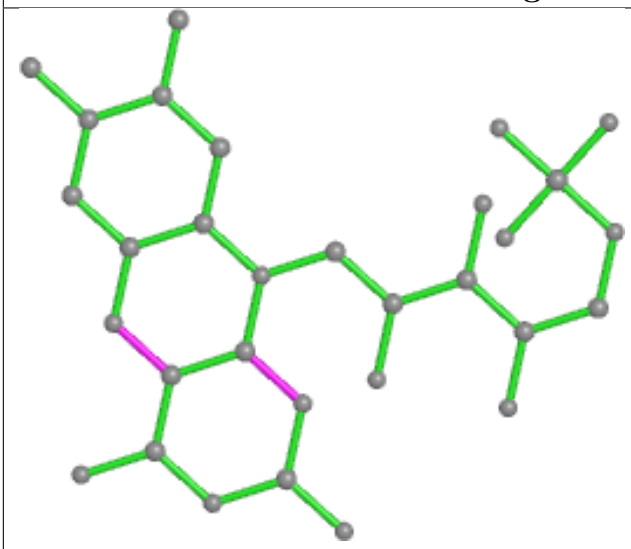


Torsions

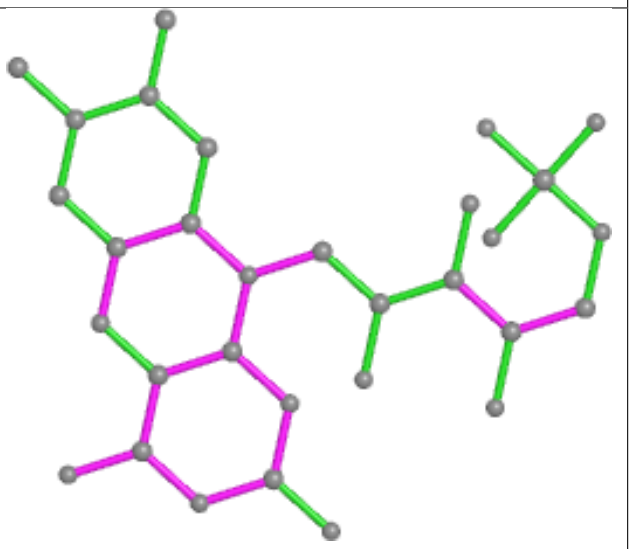


Rings

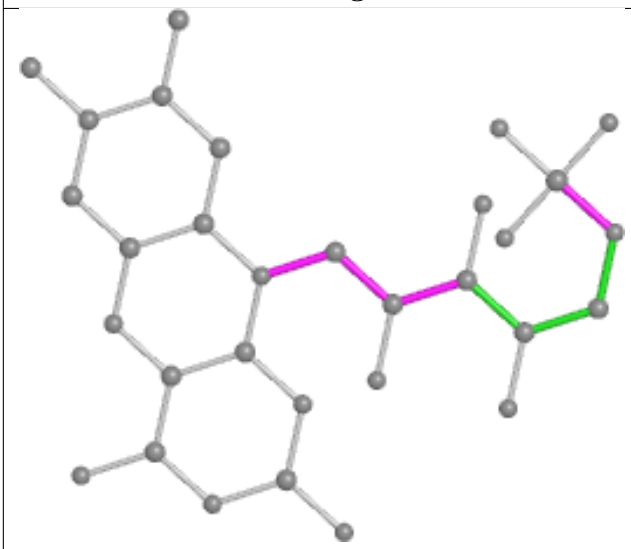
Ligand FMN 8 501



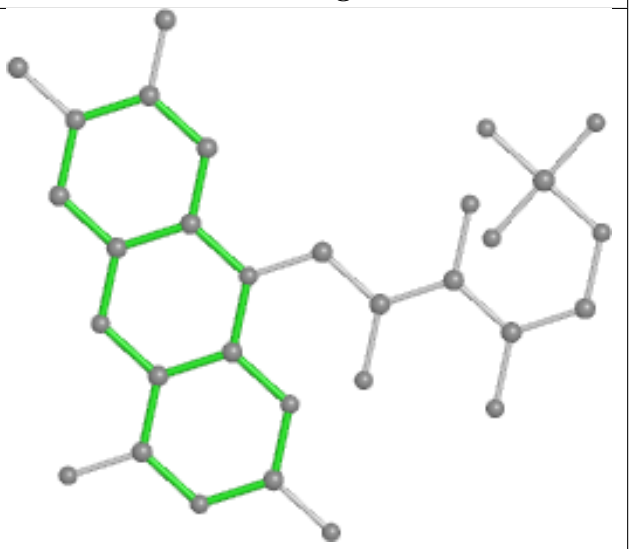
Bond lengths



Bond angles

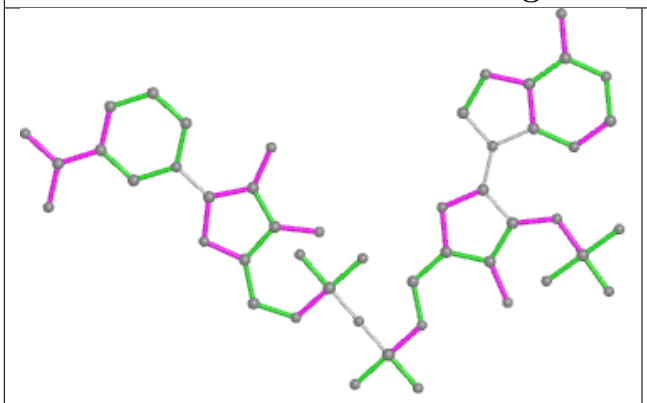


Torsions

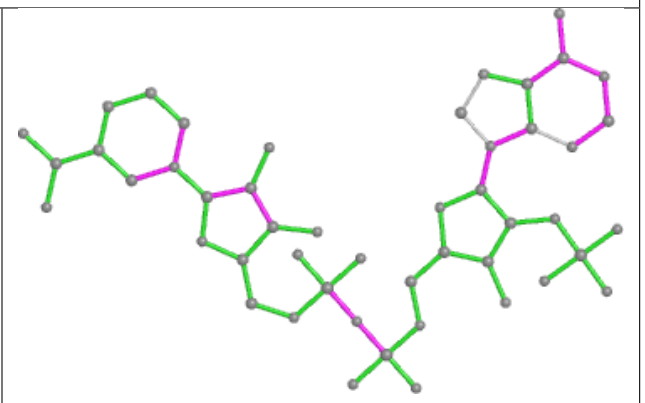


Rings

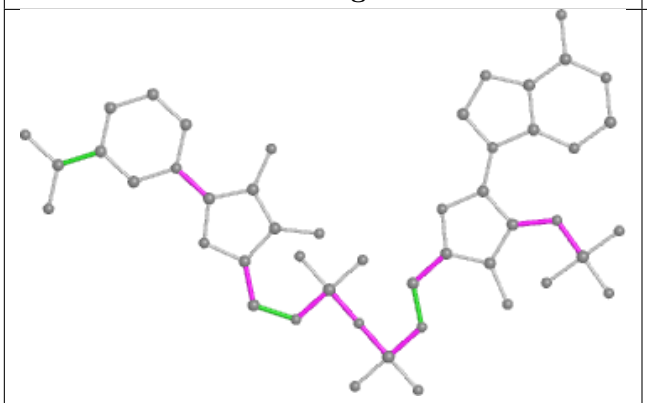
Ligand NAP R 601



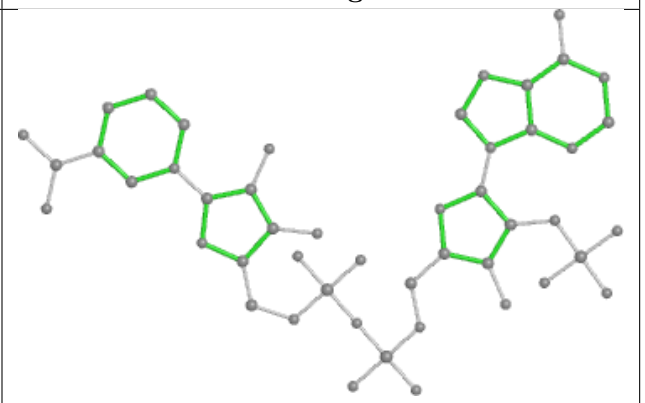
Bond lengths



Bond angles

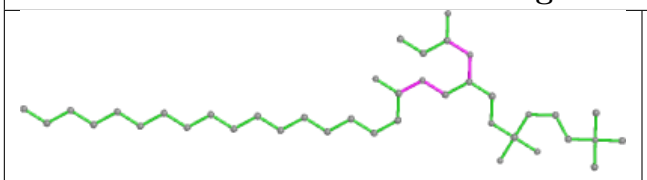


Torsions

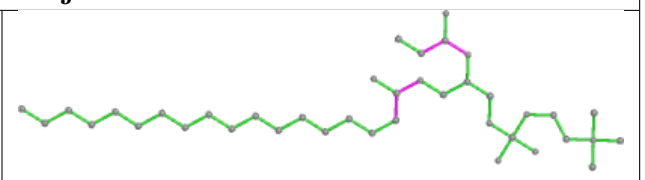


Rings

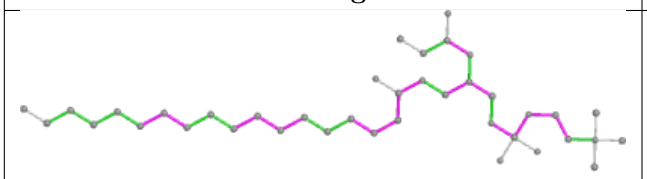
Ligand PC1 j 201



Bond lengths



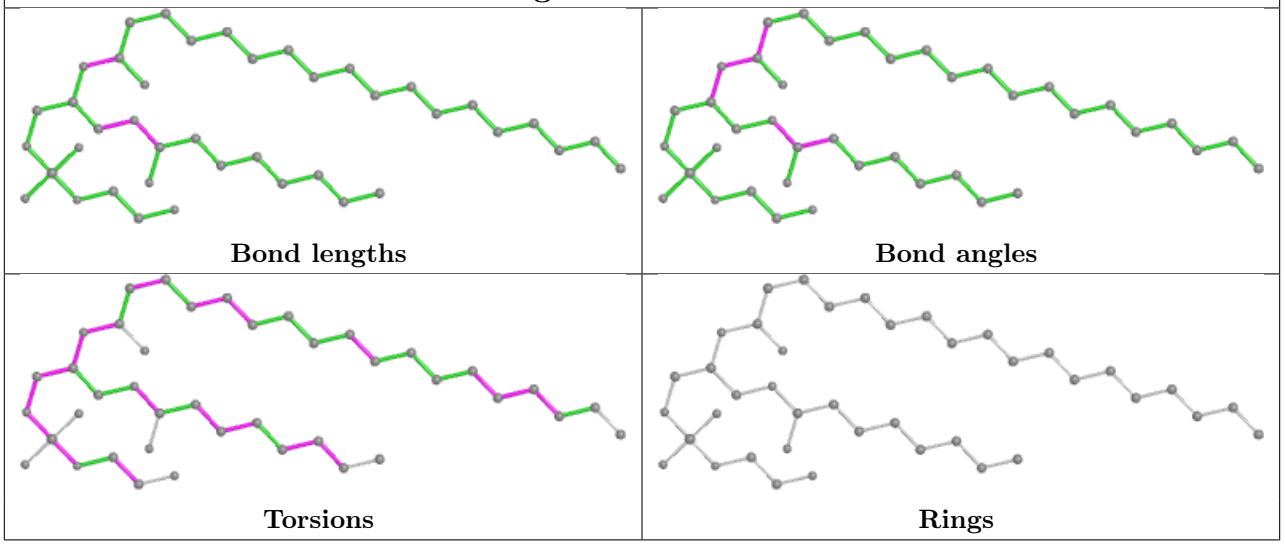
Bond angles



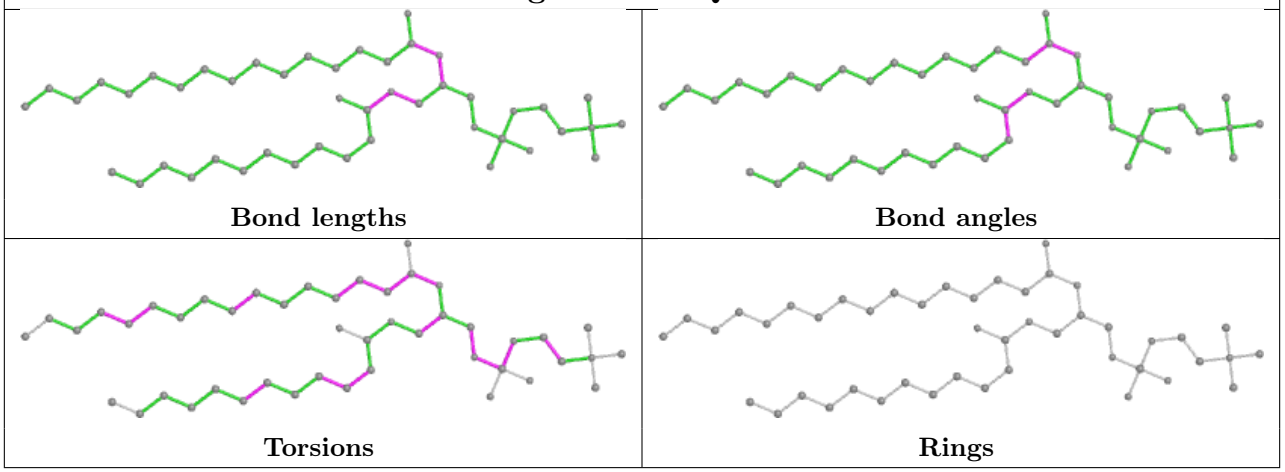
Torsions

Rings

Ligand 3PE 4 502



Ligand PC1 Q 201



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

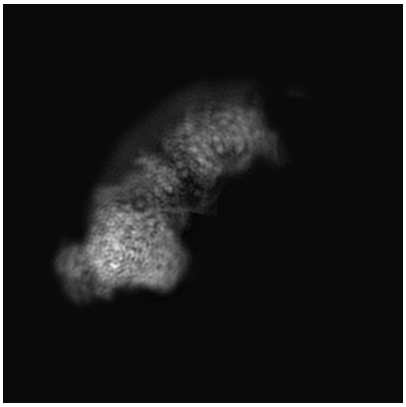
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30676. These allow visual inspection of the internal detail of the map and identification of artifacts.

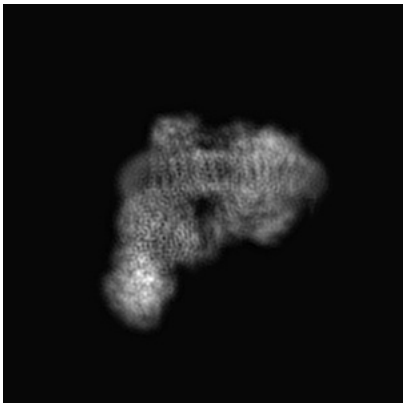
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

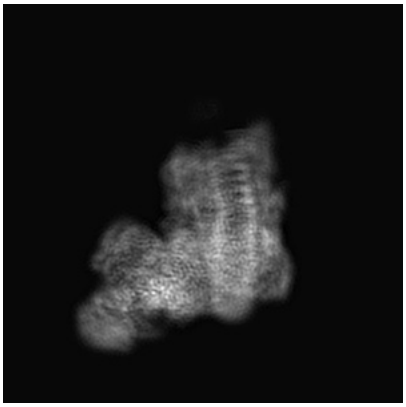
6.1.1 Primary map



X



Y

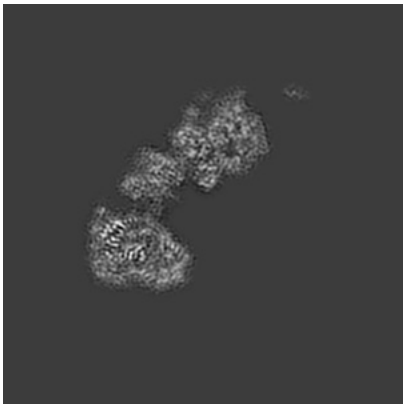


Z

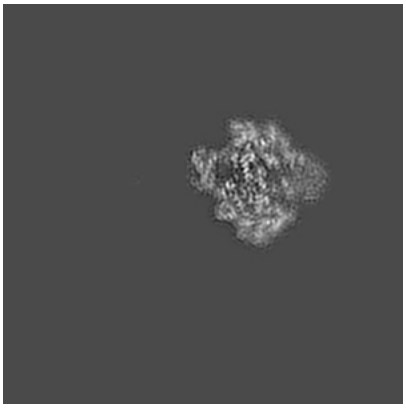
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 140



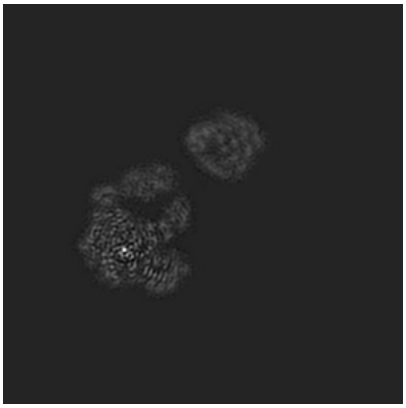
Y Index: 140

Z Index: 140

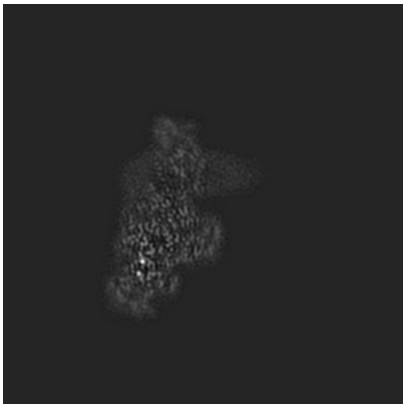
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

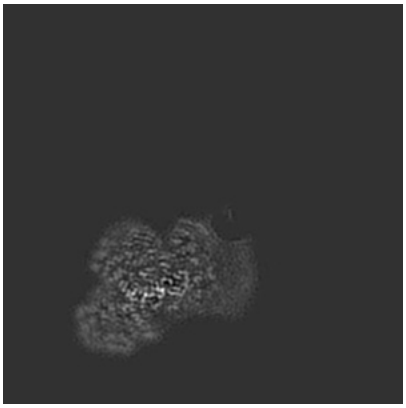
6.3.1 Primary map



X Index: 124



Y Index: 76



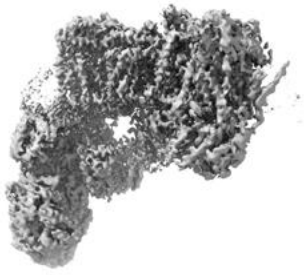
Z Index: 96

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.111. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

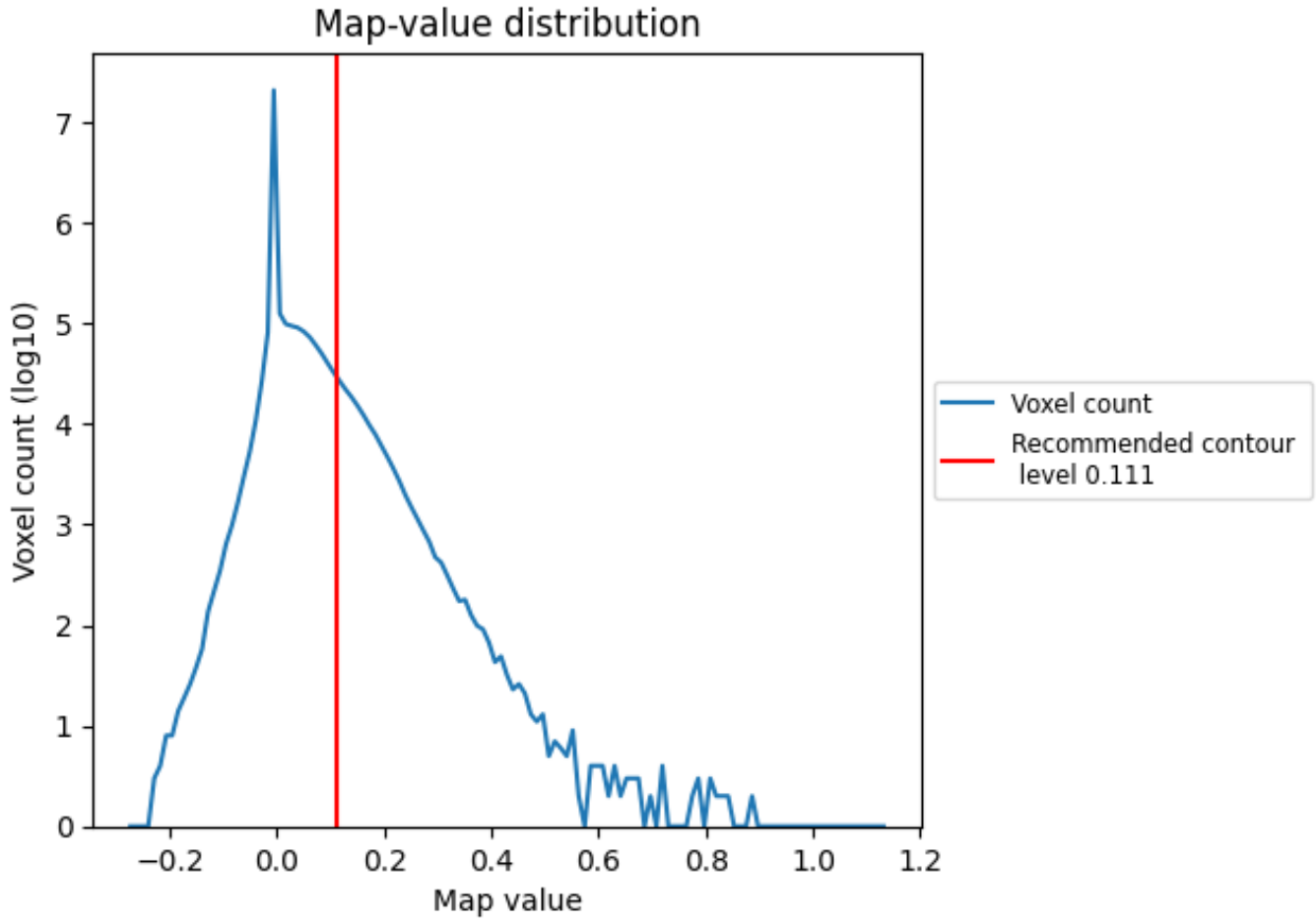
6.5 Mask visualisation (i)

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

7 Map analysis

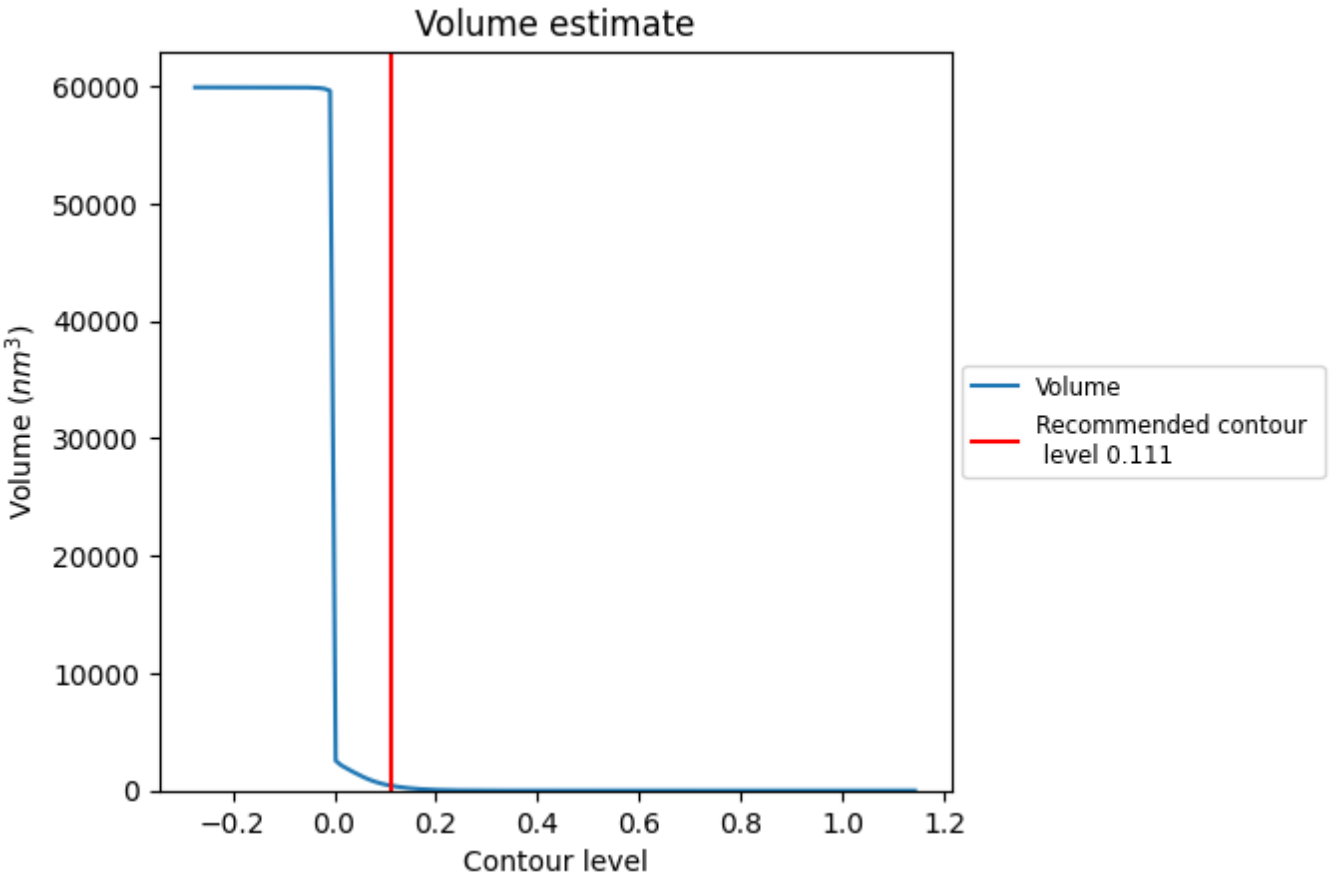
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

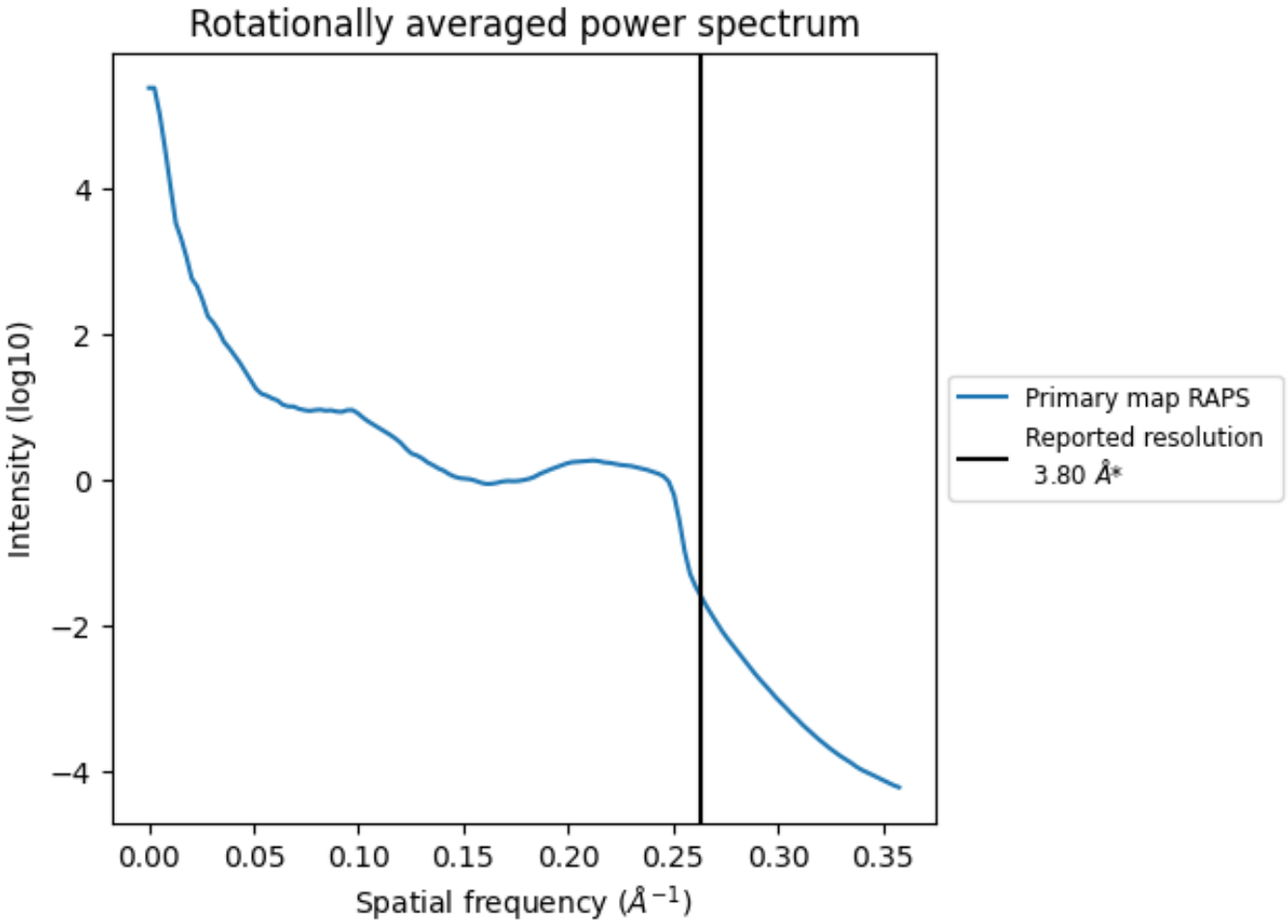
7.2 Volume estimate (i)



The volume at the recommended contour level is 422 nm^3; this corresponds to an approximate mass of 381 kDa.

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

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

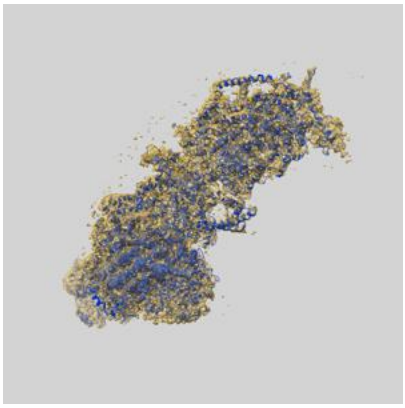
8 Fourier-Shell correlation (i)

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

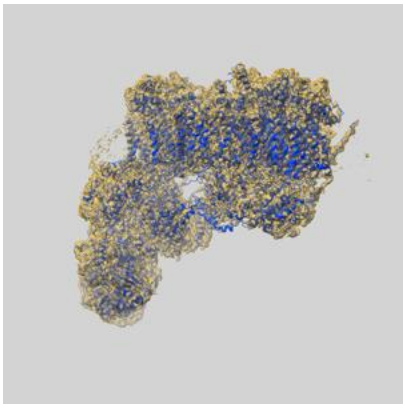
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30676 and PDB model 7DGZ. Per-residue inclusion information can be found in section 3 on page 18.

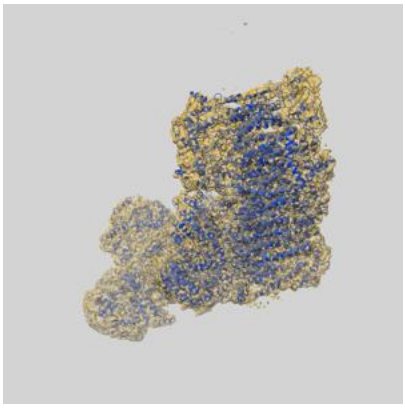
9.1 Map-model overlay



X



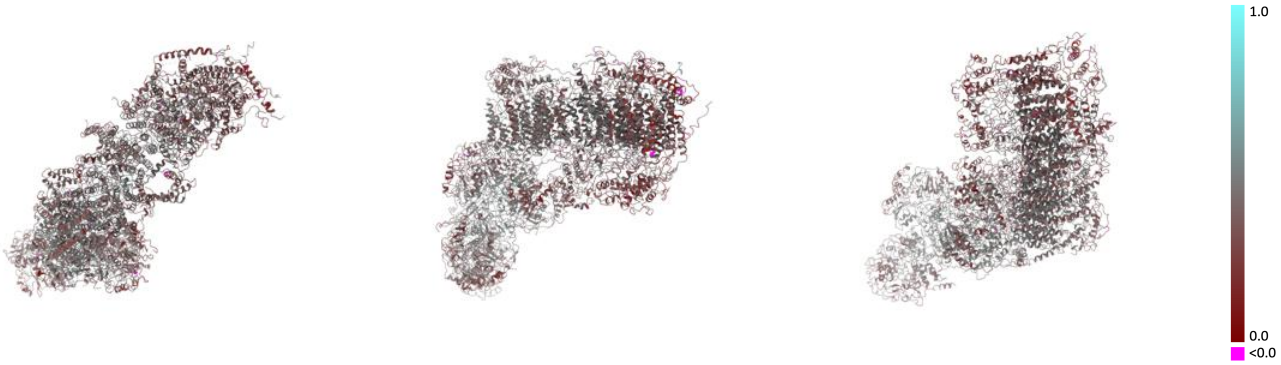
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.111 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

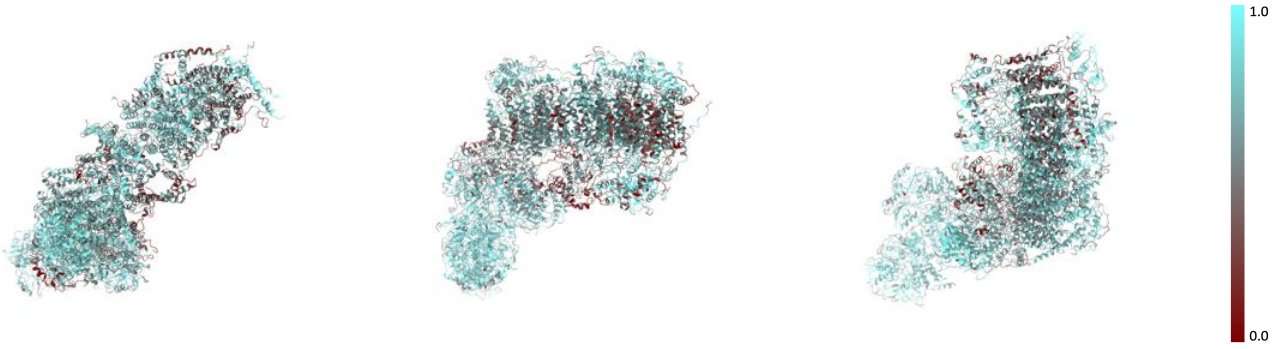
9.2 Q-score mapped to coordinate model



X Y Z

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

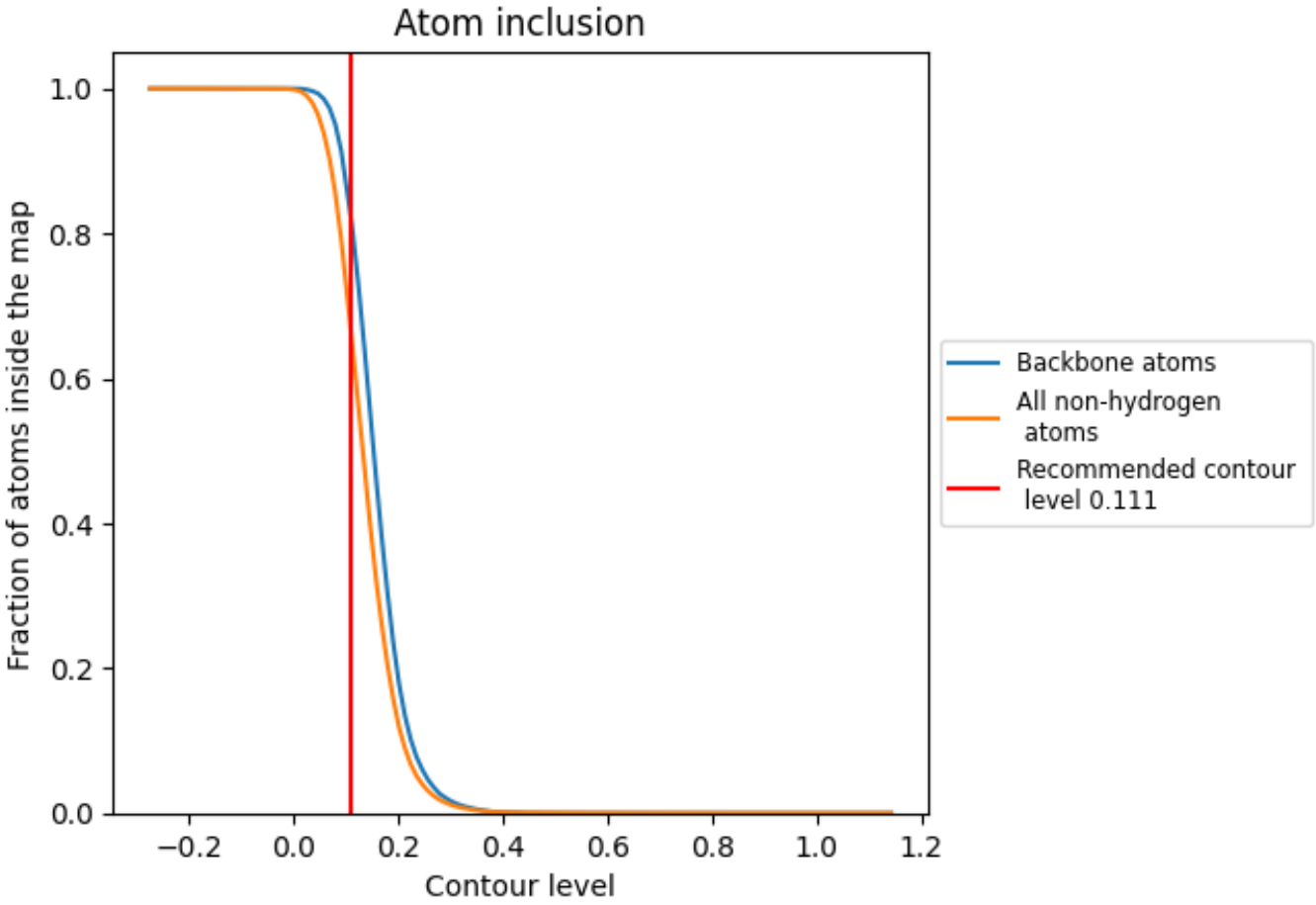
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.111).

9.4 Atom inclusion (i)



At the recommended contour level, 82% of all backbone atoms, 66% 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 (0.111) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6583	0.3970
1	0.6542	0.4450
2	0.7026	0.4400
3	0.4720	0.3970
4	0.6495	0.4310
5	0.6517	0.4170
6	0.5005	0.3600
7	0.5221	0.3890
8	0.8224	0.3680
9	0.7548	0.3410
A	0.8067	0.4290
B	0.7364	0.4640
C	0.8114	0.4650
D	0.7846	0.4690
E	0.8435	0.4640
F	0.5475	0.2900
G	0.7296	0.4560
H	0.7207	0.4280
I	0.5483	0.4010
J	0.6888	0.4240
K	0.7457	0.3520
L	0.5674	0.3910
M	0.3972	0.2920
N	0.7403	0.3910
O	0.6878	0.4050
P	0.5362	0.3740
Q	0.7160	0.3820
R	0.6203	0.3730
S	0.4022	0.3490
T	0.4502	0.3680
U	0.3602	0.3690
V	0.6958	0.3990
W	0.5866	0.2980
X	0.5383	0.3400
Y	0.5732	0.3310

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
Z	0.5331	0.3110
a	0.6223	0.3860
b	0.7388	0.4150
c	0.6589	0.3290
d	0.7853	0.2910
e	0.5592	0.3690
f	0.6878	0.3400
g	0.6152	0.3390
h	0.6311	0.3680
i	0.6593	0.3650
j	0.6685	0.4040