Full wwPDB EM Validation Report

Nov 11, 2024 – 04:13 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 Full wwPDB EM Validation Report for a publicly released PDB entry.

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

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

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

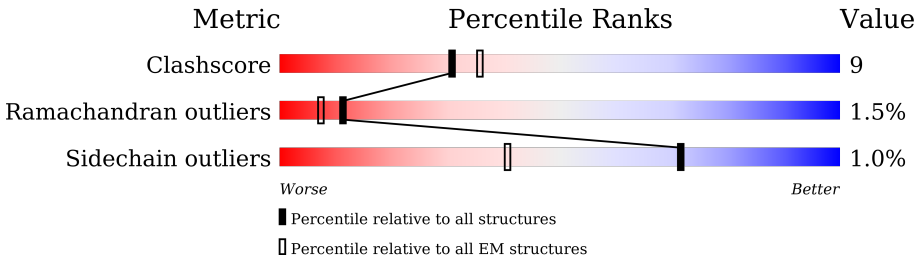
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance

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

The reported resolution of this entry is 3.80 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	210492	15764
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	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	12% 85% 13%
10	C	228	76% 15% 9%
11	D	179	70% 15% 15%
12	E	176	80% 20%
13	F	75	12% 28% 9% 63%
14	G	133	9% 75% 17% 8%
15	H	105	7% 74% 15% 9%
16	I	96	28% 60% 10% 26%
17	J	70	90% 9%
18	K	98	74% 11% 14%
19	L	83	28% 88% 8%
20	N	115	8% 82% 15%
21	O	127	11% 79% 11% 10%
22	P	112	25% 62% 18% 20%
23	Q	171	8% 81% 18%
24	R	345	19% 71% 21% 8%
25	S	320	50% 83% 16%
26	T	140	49% 91% 7%
27	U	145	57% 81% 10% 9%
28	V	143	6% 83% 13%
29	M	88	49% 69% 22% 9%
29	W	88	25% 83% 14%
30	X	57	25% 75% 7% 14%
31	Y	72	25% 74% 6% 21%
32	Z	97	31% 65% 11% 24%

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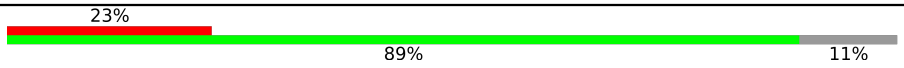
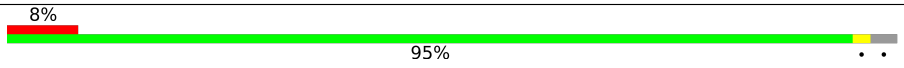
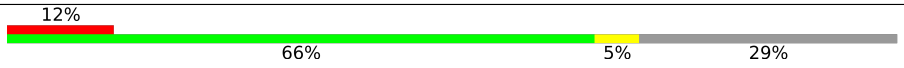
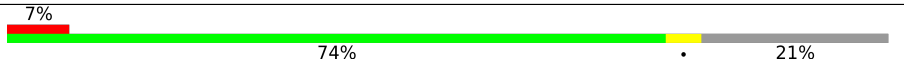
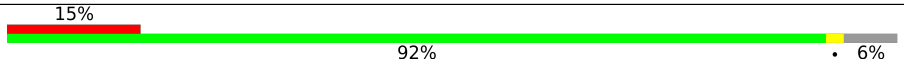
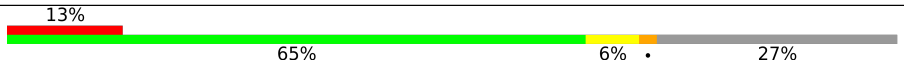
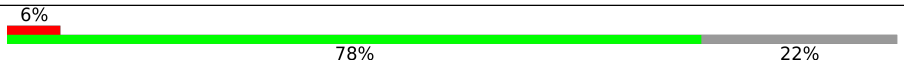
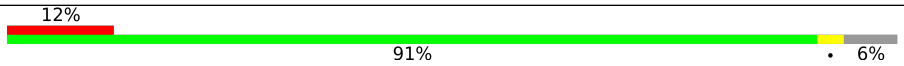
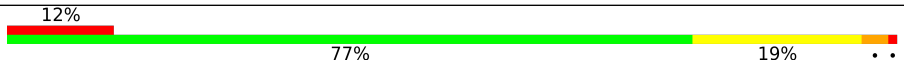
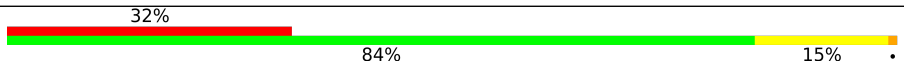
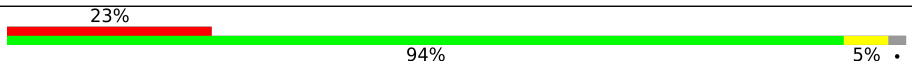
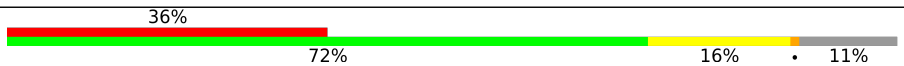
Mol	Chain	Length	Quality of chain
33	a	128	
34	b	143	
35	c	127	
36	d	136	
37	f	178	
38	h	125	
39	i	49	
40	j	120	
41	1	318	
42	6	606	
43	g	176	
44	e	158	

2 Entry composition

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.

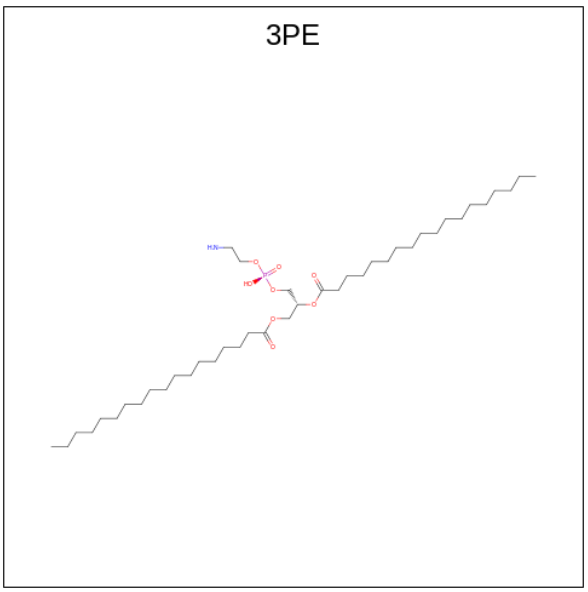
Mol	Chain	Residues	Atoms					AltConf	Trace
43	g	173	Total	C	N	O	S	0	0
			1351	849	246	248	8		

- 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		

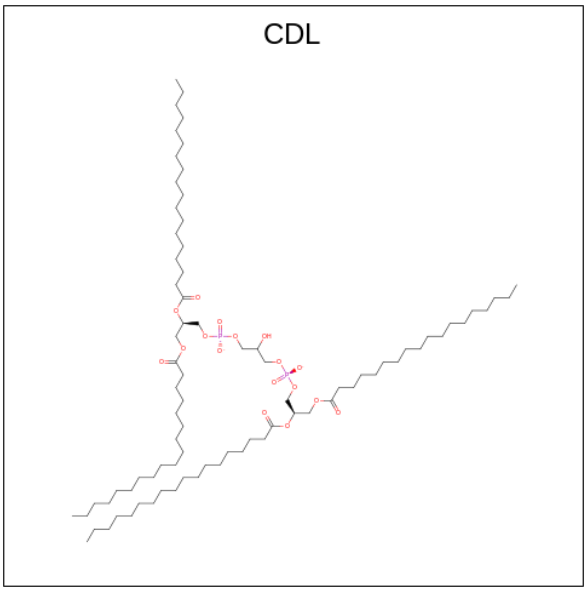
- Molecule 45 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE)

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



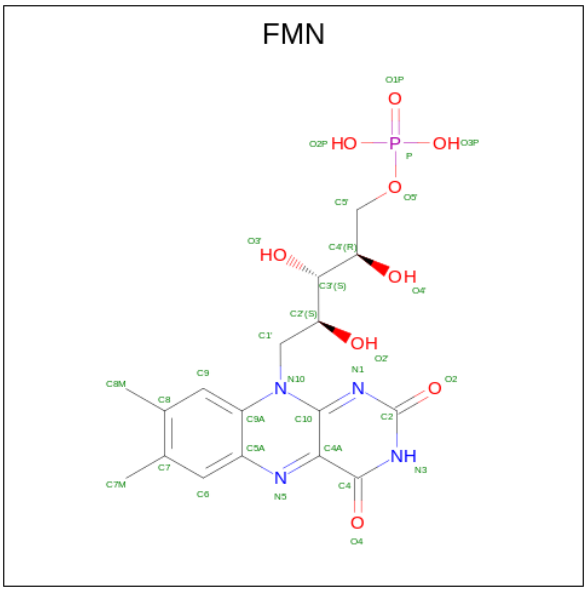
Mol	Chain	Residues	Atoms					AltConf
45	2	1	Total	C	N	O	P	0
			41	31	1	8	1	
45	4	1	Total	C	N	O	P	0
			41	31	1	8	1	
45	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
45	V	1	Total	C	N	O	P	0
			51	41	1	8	1	

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



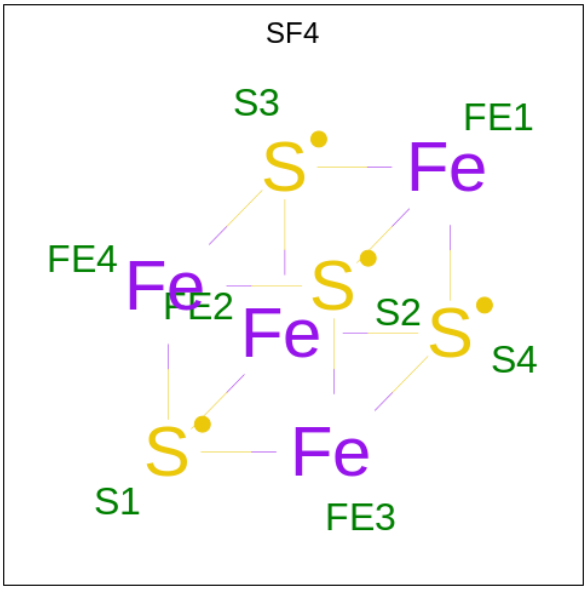
Mol	Chain	Residues	Atoms				AltConf
46	4	1	Total	C	O	P	0
			82	63	17	2	
46	J	1	Total	C	O	P	0
			58	39	17	2	

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



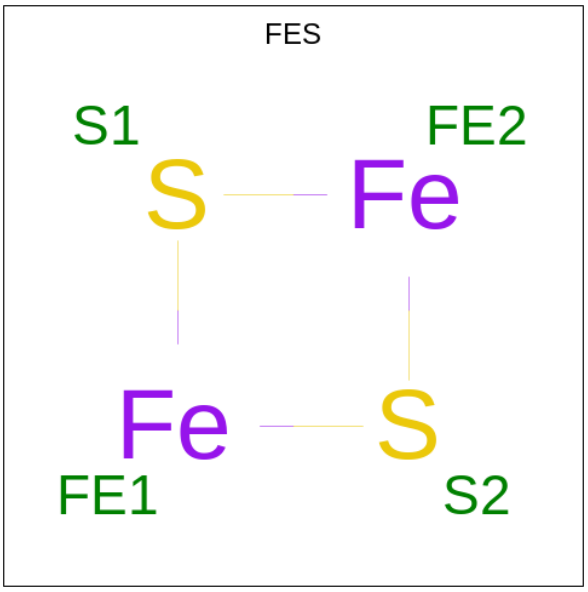
Mol	Chain	Residues	Atoms					AltConf
47	8	1	Total	C	N	O	P	0
			31	17	4	9	1	

- 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 8 4 4	0
48	A	1	Total Fe S 8 4 4	0
48	D	1	Total Fe S 8 4 4	0
48	E	1	Total Fe S 8 4 4	0
48	E	1	Total Fe S 8 4 4	0

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

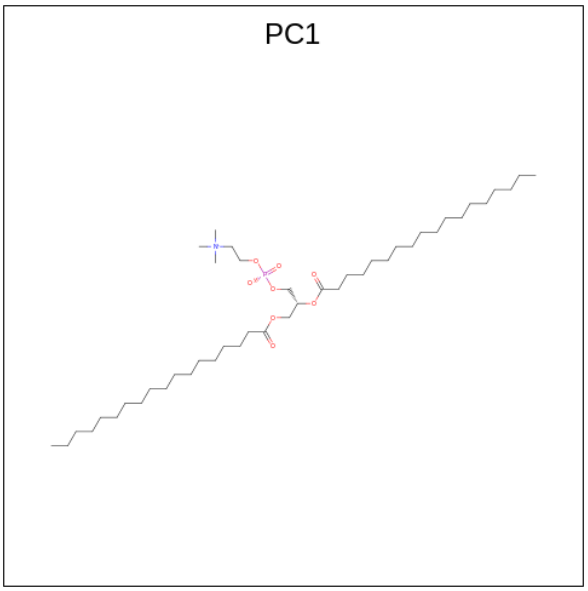


Mol	Chain	Residues	Atoms			AltConf
49	9	1	Total	Fe	S	0
			4	2	2	
49	A	1	Total	Fe	S	0
			4	2	2	

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

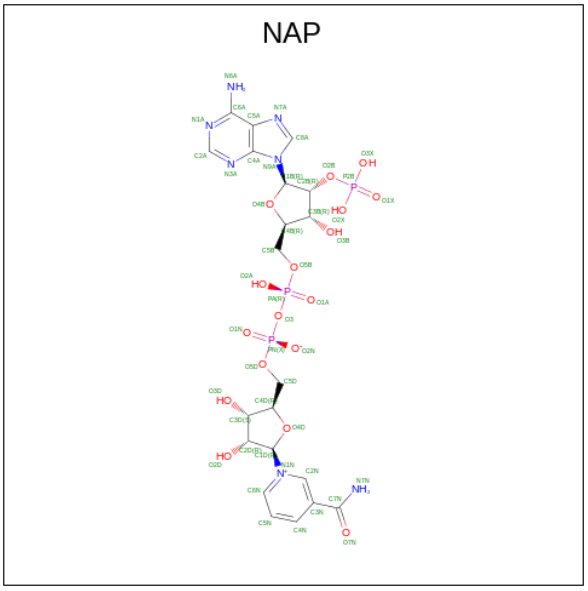
Mol	Chain	Residues	Atoms		AltConf
50	I	1	Total	Zn	0
			1	1	

- 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: $C_{21}H_{28}N_7O_{17}P_3$).



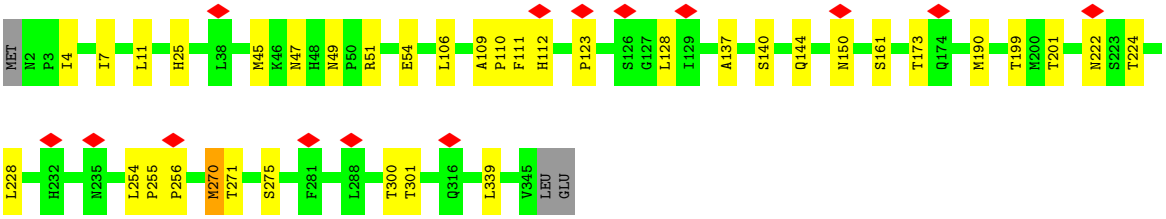
Mol	Chain	Residues	Atoms					AltConf
52	R	1	Total	C	N	O	P	0
			48	21	7	17	3	

3 Residue-property plots (i)

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

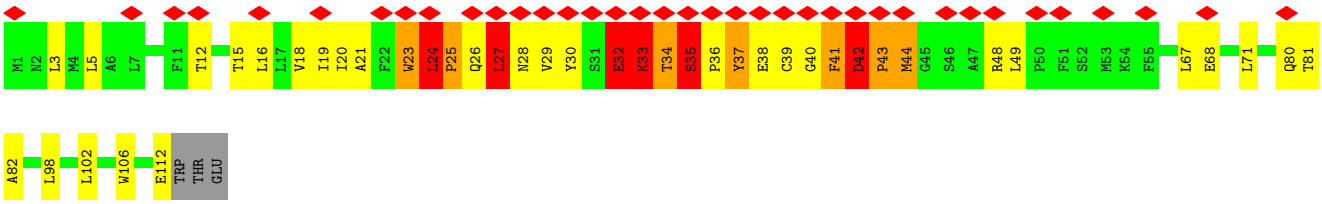
• Molecule 1: NADH-ubiquinone oxidoreductase chain 2

Chain 2:



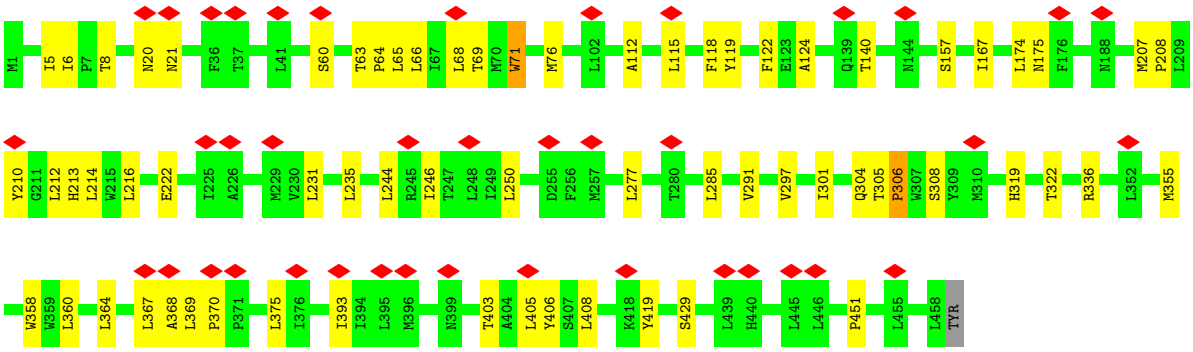
• Molecule 2: NADH-ubiquinone oxidoreductase chain 3

Chain 3:



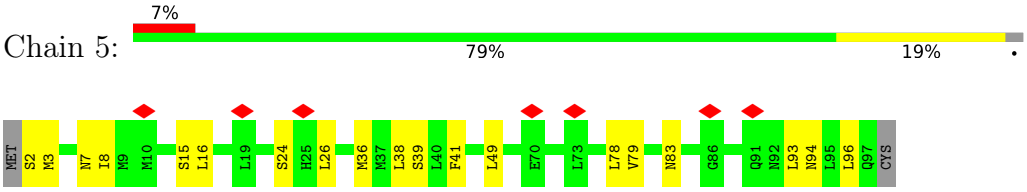
• Molecule 3: NADH-ubiquinone oxidoreductase chain 4

Chain 4:



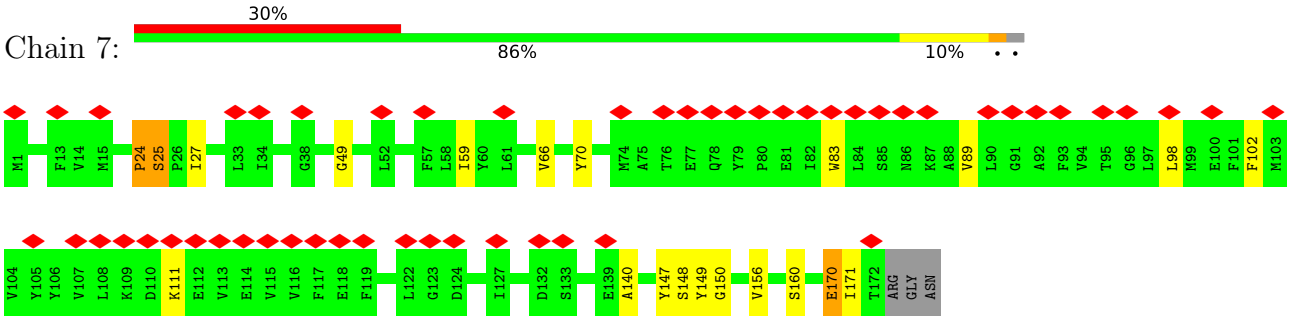
• Molecule 4: NADH-ubiquinone oxidoreductase chain 4L

Chain 5:



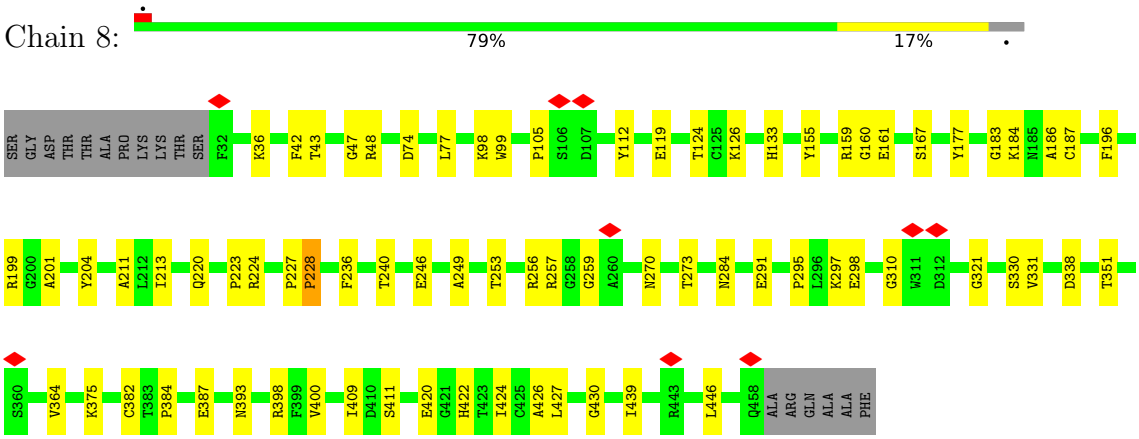
• Molecule 5: NADH-ubiquinone oxidoreductase chain 6

Chain 7:



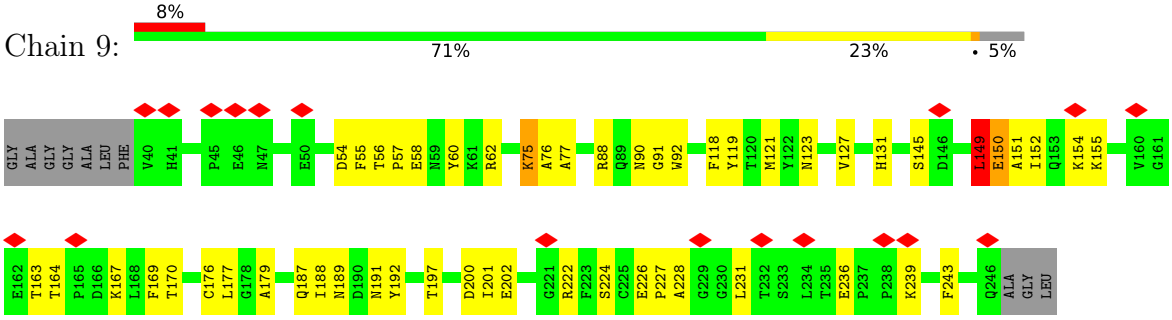
• Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial

Chain 8:



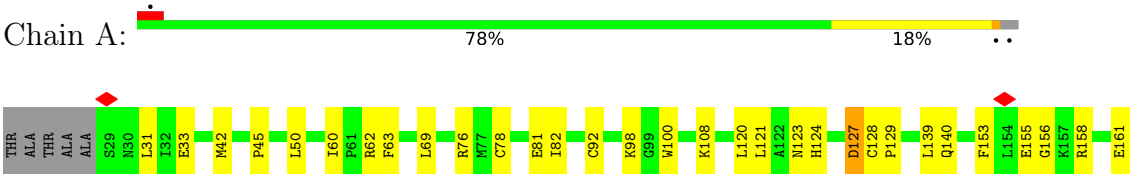
• Molecule 7: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

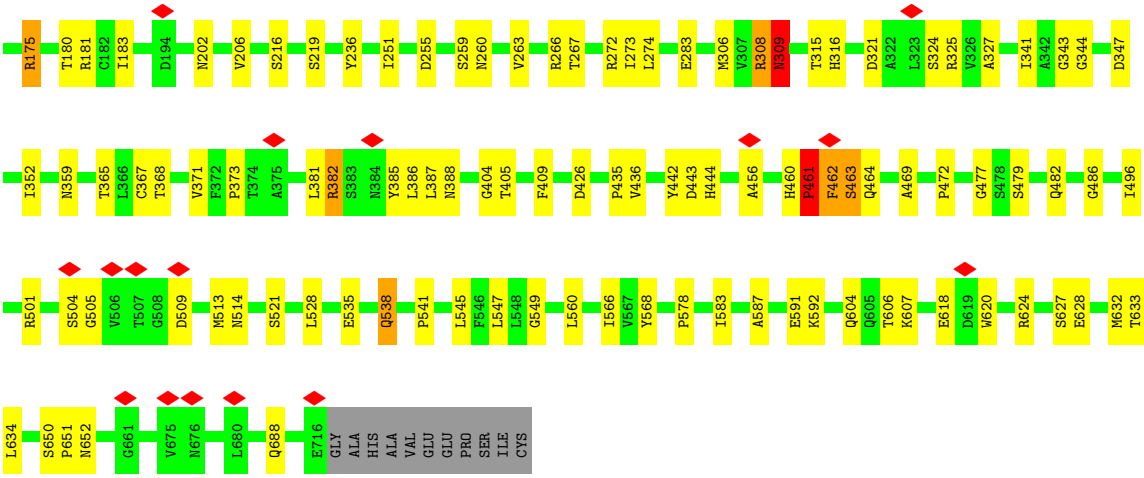
Chain 9:



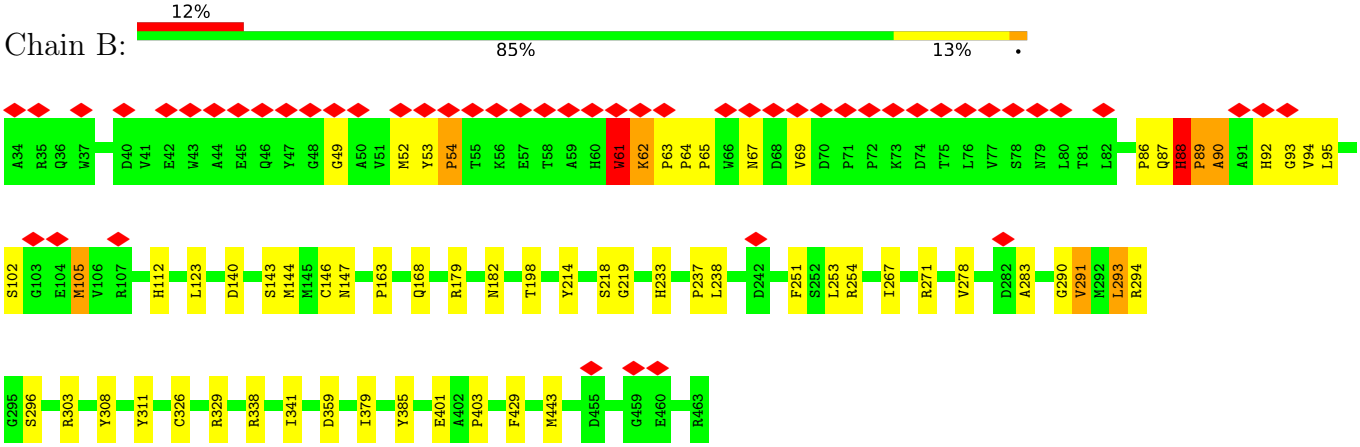
• Molecule 8: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

Chain A:

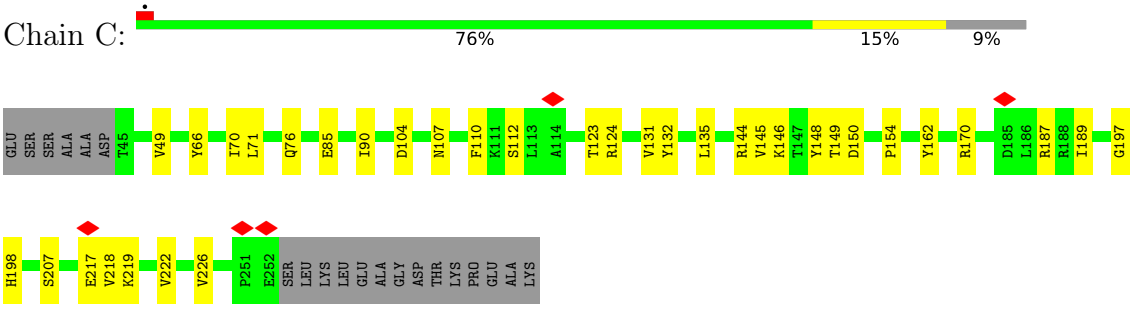




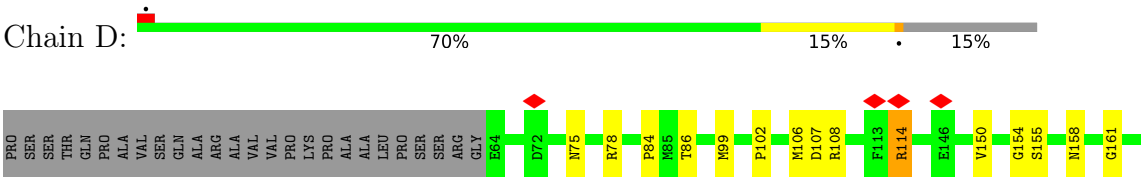
• Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

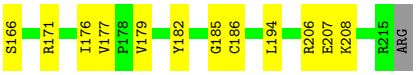


• Molecule 10: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial



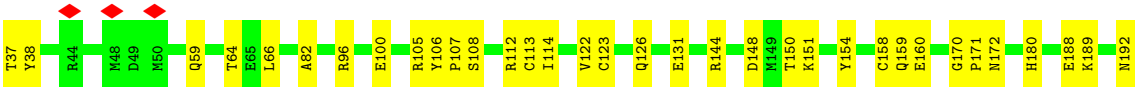
• Molecule 11: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

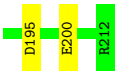




• Molecule 12: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

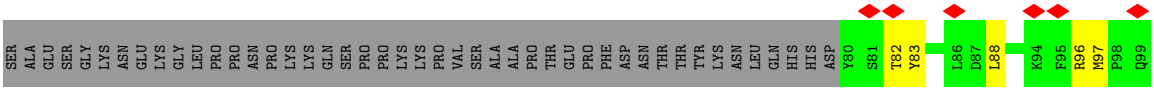
Chain E:

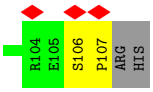




• Molecule 13: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

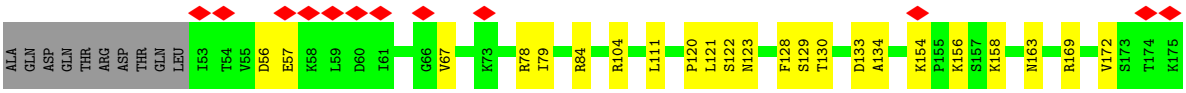
Chain F:





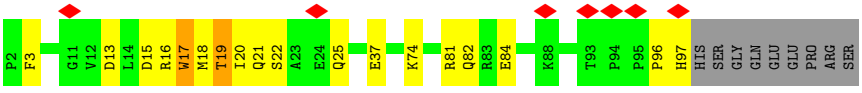
• Molecule 14: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain G:



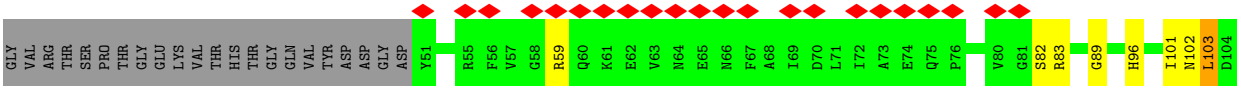
• Molecule 15: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

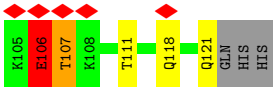
Chain H:



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

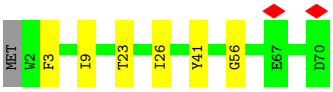
Chain I:





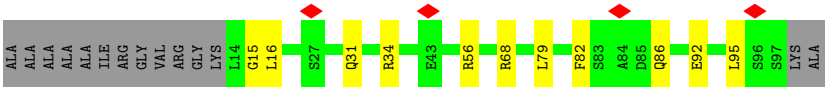
• Molecule 17: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

Chain J:



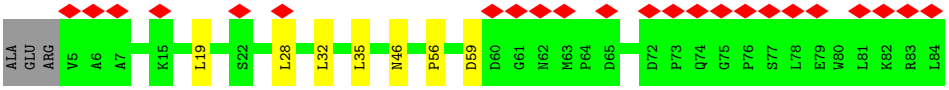
• Molecule 18: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

Chain K:



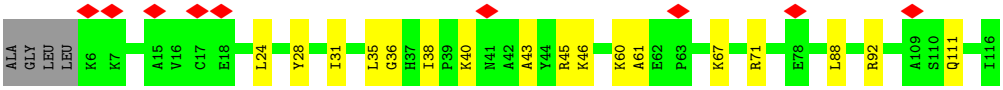
• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

Chain L:



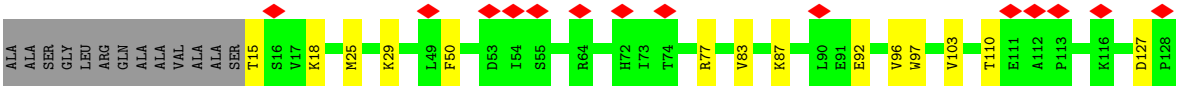
• Molecule 20: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5

Chain N:



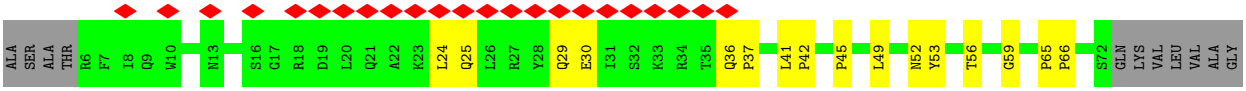
• Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

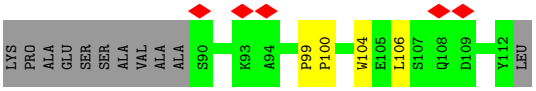
Chain O:



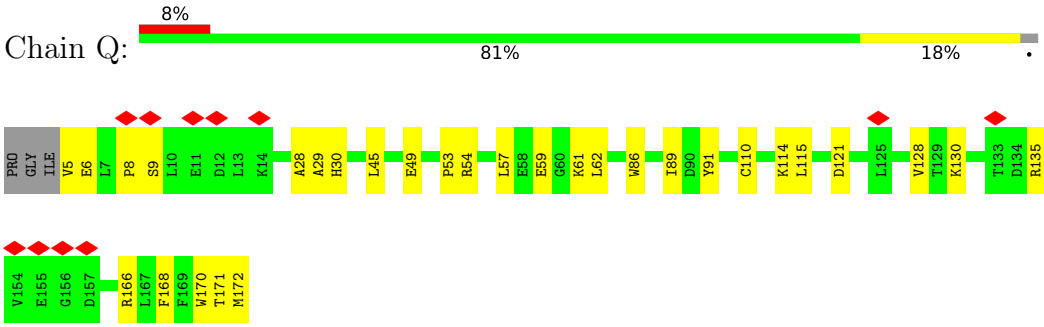
• Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain P:

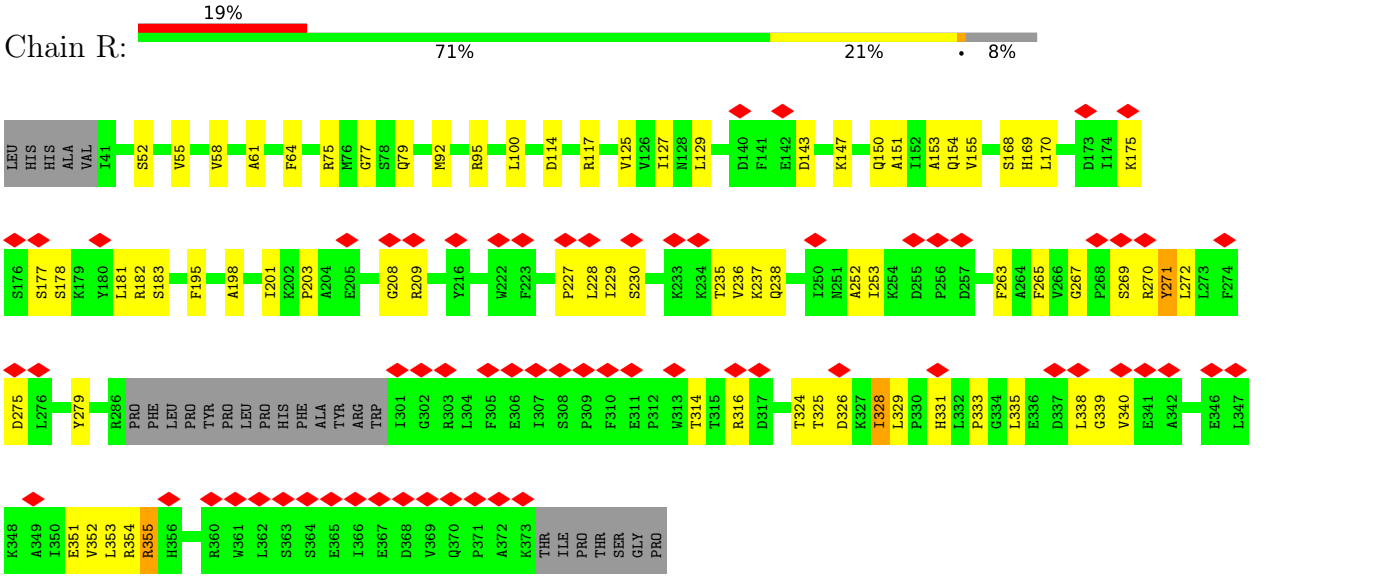




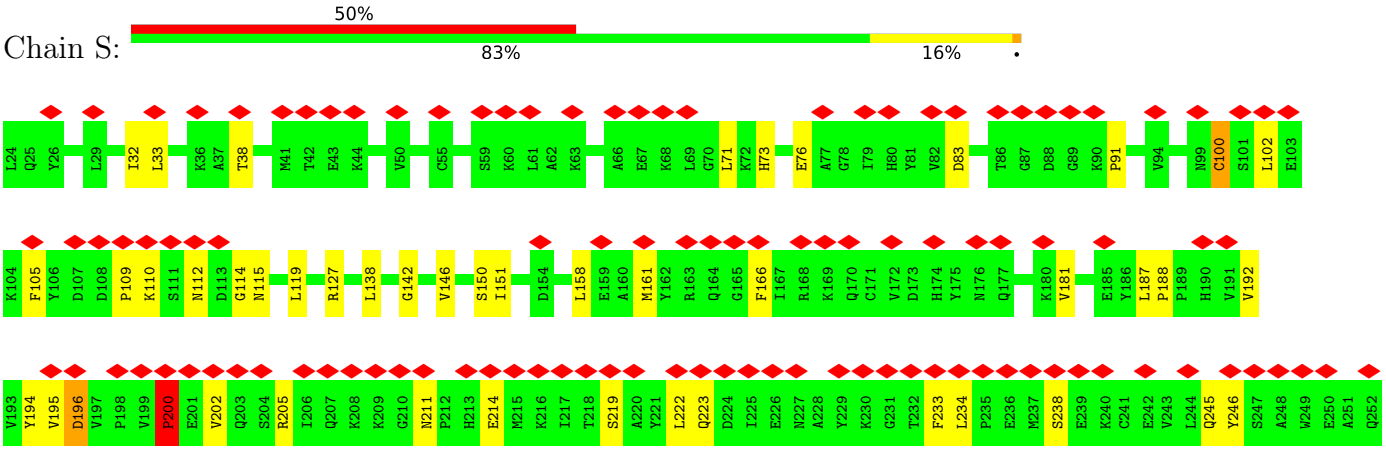
• Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8



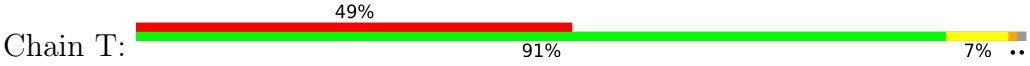
• Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial



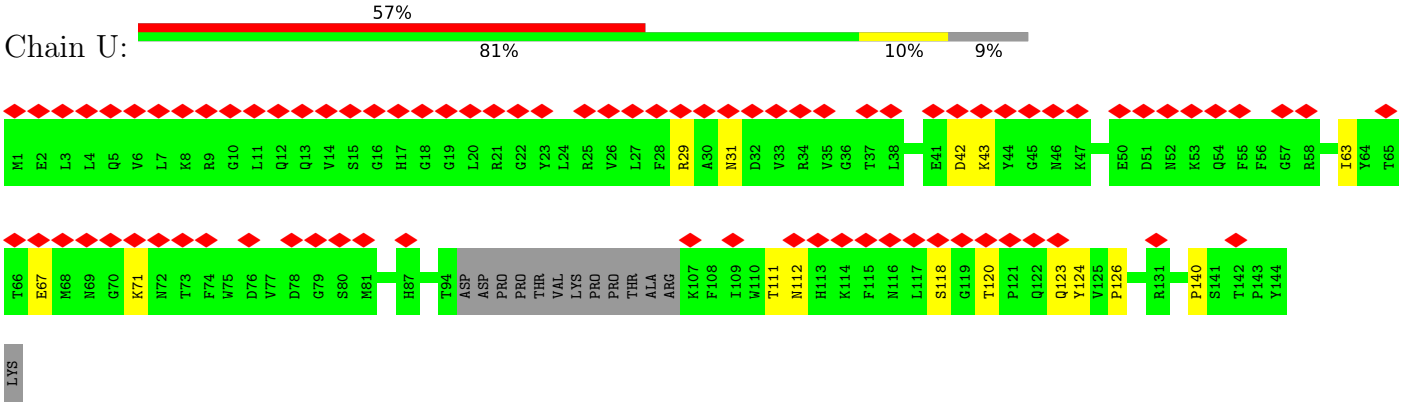
• Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial



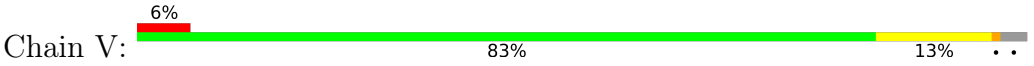
• Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11



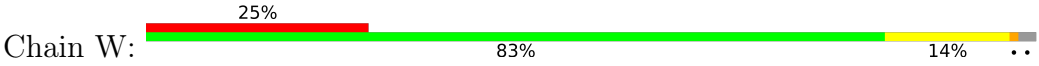
• Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12



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

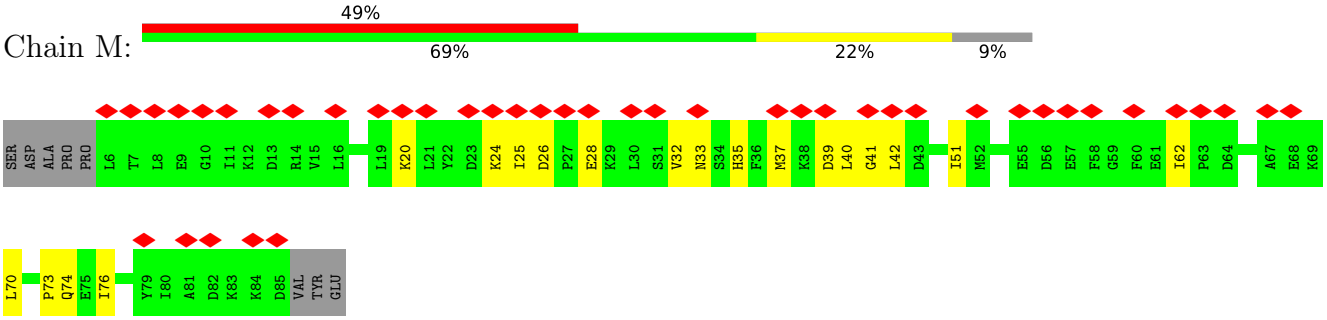


• Molecule 29: Acyl carrier protein, mitochondrial



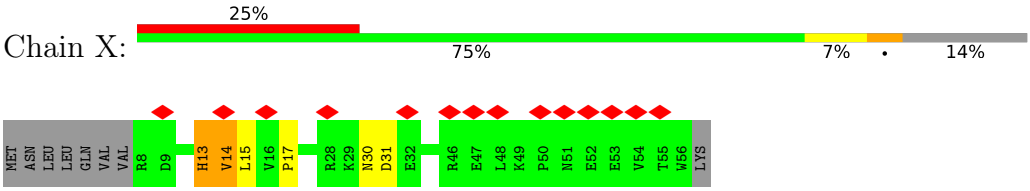
• Molecule 29: Acyl carrier protein, mitochondrial

Chain M:



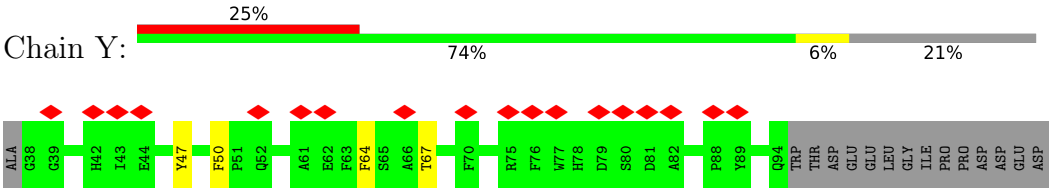
• Molecule 30: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

Chain X:



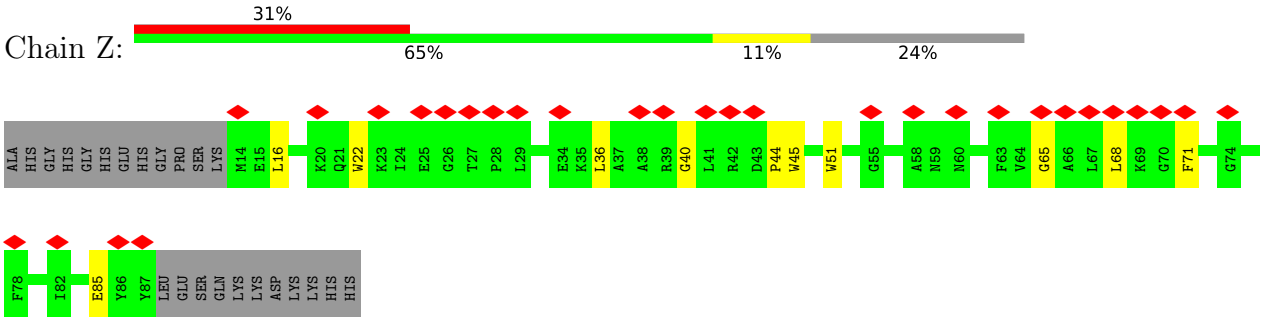
• Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain Y:



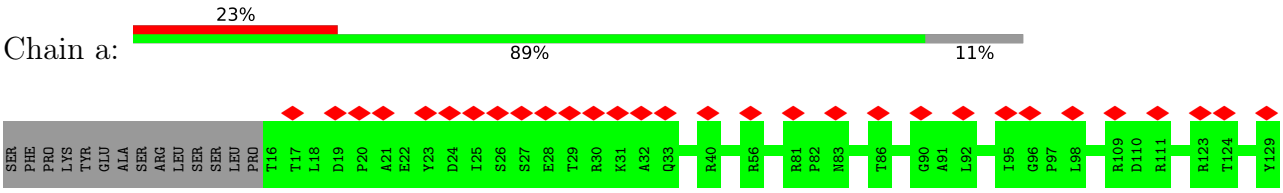
• Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

Chain Z:



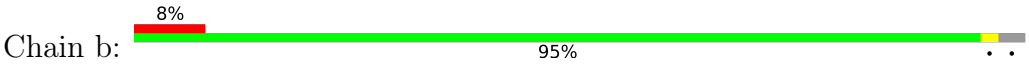
• Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

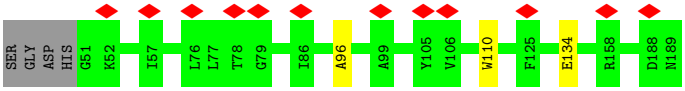
Chain a:



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

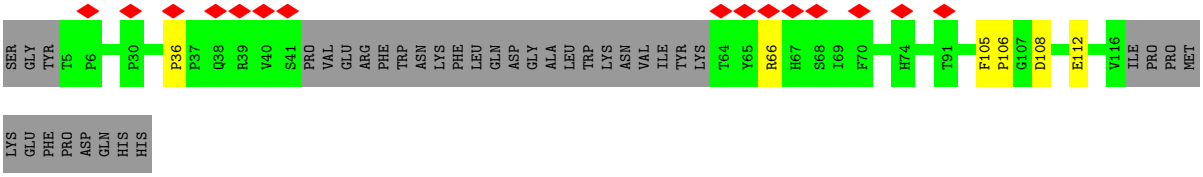
Chain b:





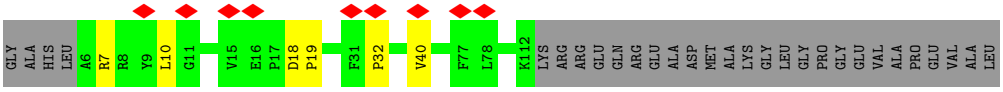
• Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain c:



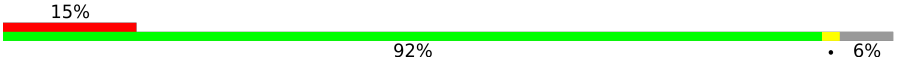
• Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7

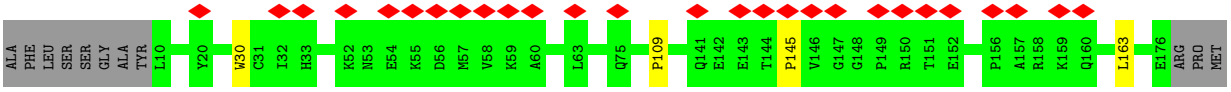
Chain d:



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

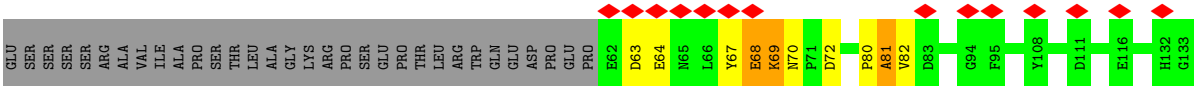
Chain f:

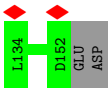




• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

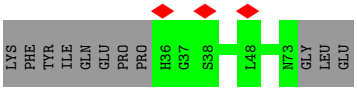
Chain h:





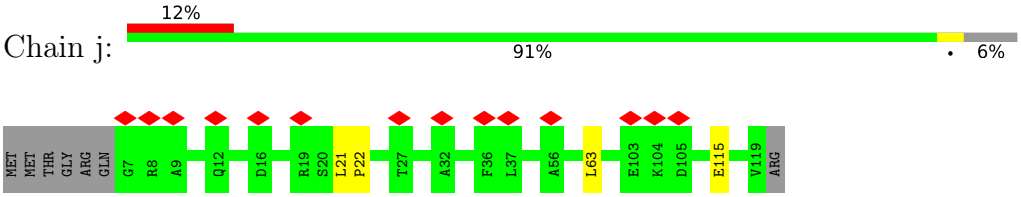
• Molecule 39: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

Chain i:



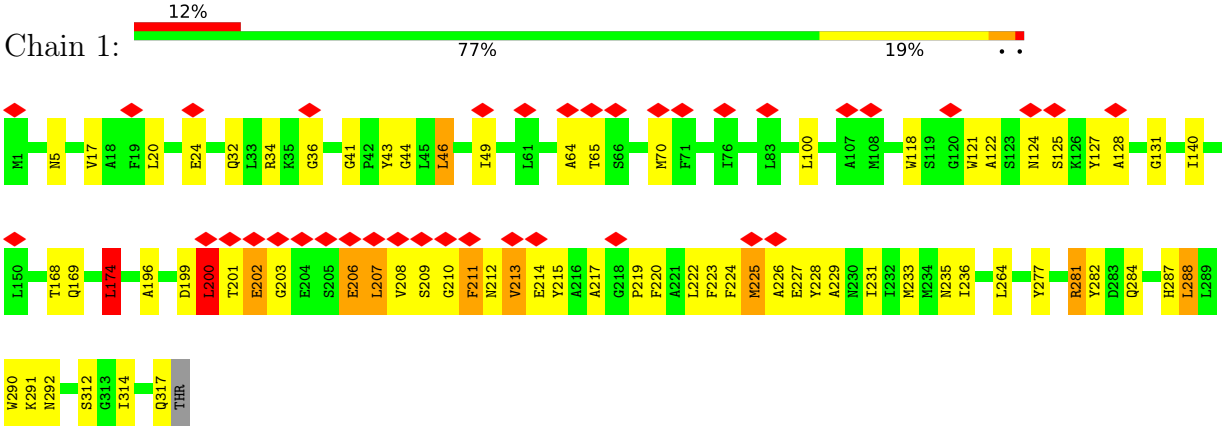
• Molecule 40: NADH dehydrogenase [ubiquinone] 1 subunit C2

Chain j:



• Molecule 41: NADH-ubiquinone oxidoreductase chain 1

Chain 1:

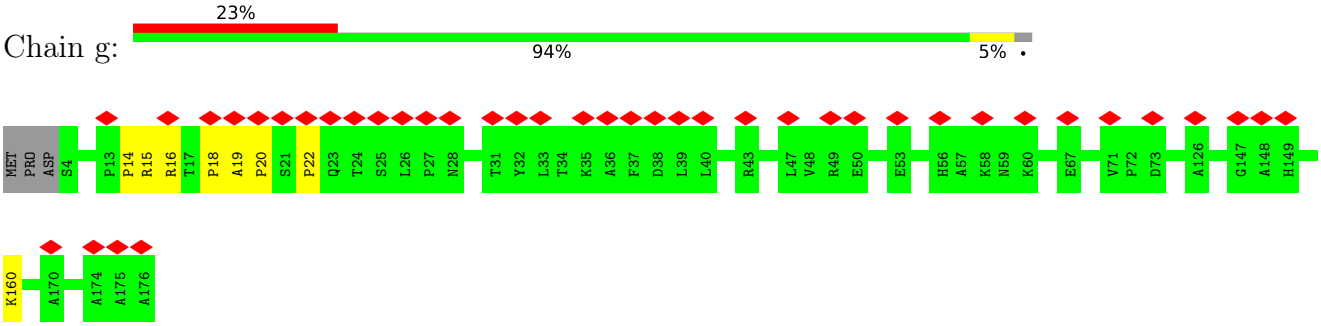


• Molecule 42: NADH-ubiquinone oxidoreductase chain 5

Chain 6:

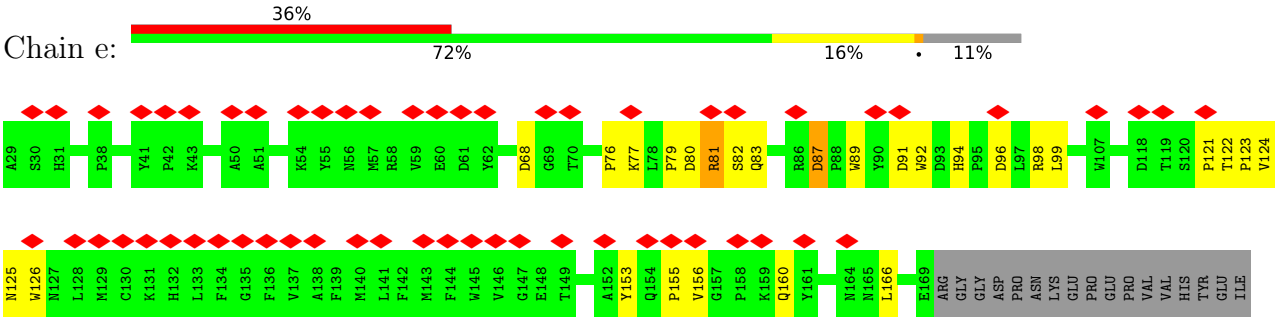
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

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, FES, CDL, PC1, NAP, SF4, 3PE, FMN

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.

All (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
41	1	100	LEU	CA-CB-CG	6.44	130.11	115.30
41	1	174	LEU	CA-CB-CG	6.24	129.66	115.30
37	f	163	LEU	C-N-CA	6.16	147.89	122.00
8	A	560	LEU	CA-CB-CG	5.97	129.03	115.30
41	1	46	LEU	CA-CB-CG	5.91	128.90	115.30
6	8	228	PRO	C-N-CA	5.89	136.42	121.70
7	9	177	LEU	CA-CB-CG	5.81	128.67	115.30
40	j	22	PRO	C-N-CD	-5.81	107.81	120.60
13	F	97	MET	C-N-CD	-5.67	108.11	120.60
2	3	3	LEU	C-N-CA	5.55	135.58	121.70
7	9	149	LEU	CA-CB-CG	5.55	128.06	115.30
27	U	120	THR	C-N-CD	-5.52	108.45	120.60
35	c	66	ARG	C-N-CA	5.52	135.51	121.70
2	3	5	LEU	CA-CB-CG	5.52	128.00	115.30
35	c	36	PRO	C-N-CA	5.38	144.58	122.00
9	B	95	LEU	CA-CB-CG	5.37	127.66	115.30
44	e	87	ASP	N-CA-C	5.31	125.33	111.00
42	6	74	LEU	CA-CB-CG	5.30	127.50	115.30
6	8	36	LYS	C-N-CA	5.28	134.91	121.70
18	K	79	LEU	CA-CB-CG	5.23	127.33	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
25	S	196	ASP	CB-CG-OD2	5.21	122.99	118.30
32	Z	85	GLU	C-N-CA	5.19	134.68	121.70
6	8	259	GLY	C-N-CA	5.19	134.68	121.70
8	A	461	PRO	C-N-CA	5.17	134.63	121.70
8	A	381	LEU	CA-CB-CG	5.14	127.13	115.30
41	1	288	LEU	CA-CB-CG	5.13	127.09	115.30
19	L	28	LEU	CA-CB-CG	5.12	127.08	115.30
14	G	56	ASP	CB-CG-OD1	5.10	122.89	118.30
9	B	293	LEU	N-CA-C	-5.08	97.29	111.00
3	4	65	LEU	CA-CB-CG	5.04	126.90	115.30
42	6	576	LEU	CB-CG-CD1	-5.02	102.47	111.00
40	j	63	LEU	CA-CB-CG	5.02	126.84	115.30

There are no chirality outliers.

All (90) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
41	1	281	ARG	Peptide
1	2	106	LEU	Peptide
1	2	111	PHE	Peptide
1	2	128	LEU	Peptide
1	2	199	THR	Peptide
1	2	222	ASN	Peptide
1	2	270	MET	Peptide
1	2	271	THR	Peptide
1	2	339	LEU	Peptide
1	2	45	MET	Peptide
3	4	140	THR	Peptide
3	4	222	GLU	Peptide
3	4	306	PRO	Peptide
3	4	368	ALA	Peptide
3	4	369	LEU	Peptide
3	4	71	TRP	Peptide
4	5	15	SER	Peptide
4	5	16	LEU	Peptide
4	5	24	SER	Peptide
42	6	29	PRO	Peptide
42	6	351	ASN	Peptide
42	6	352	ASP	Peptide
42	6	549	ALA	Peptide
42	6	71	ILE	Peptide
5	7	140	ALA	Peptide

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Mol	Chain	Res	Type	Group
5	7	148	SER	Peptide
5	7	170	GLU	Peptide
5	7	24	PRO	Peptide
5	7	25	SER	Peptide
6	8	228	PRO	Peptide
7	9	150	GLU	Peptide
7	9	167	LYS	Peptide
7	9	179	ALA	Peptide
7	9	75	LYS	Peptide
8	A	127	ASP	Peptide
8	A	128	CYS	Peptide
8	A	175	ARG	Peptide
8	A	236	TYR	Peptide
8	A	283	GLU	Peptide
8	A	308	ARG	Peptide
8	A	309	ASN	Peptide
8	A	382	ARG	Peptide
8	A	460	HIS	Peptide
8	A	461	PRO	Peptide
8	A	462	PHE	Peptide
8	A	98	LYS	Peptide
9	B	218	SER	Peptide
9	B	290	GLY	Peptide
9	B	291	VAL	Peptide
10	C	198	HIS	Peptide
11	D	161	GLY	Peptide
11	D	186	CYS	Peptide
11	D	84	PRO	Peptide
12	E	107	PRO	Peptide
15	H	84	GLU	Peptide
16	I	106	GLU	Peptide
29	M	24	LYS	Peptide
20	N	40	LYS	Peptide
22	P	36	GLN	Peptide
22	P	52	ASN	Peptide
23	Q	91	TYR	Peptide
24	R	271	TYR	Peptide
24	R	324	THR	Peptide
24	R	333	PRO	Peptide
24	R	355	ARG	Peptide
25	S	100	CYS	Peptide
25	S	275	ASN	Peptide

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Mol	Chain	Res	Type	Group
25	S	278	ASN	Peptide
25	S	38	THR	Peptide
26	T	105	THR	Peptide
26	T	54	ALA	Peptide
26	T	83	LYS	Peptide
27	U	118	SER	Peptide
28	V	10	MET	Peptide
28	V	142	TRP	Peptide
28	V	72	MET	Peptide
29	W	154	VAL	Peptide
34	b	110	TRP	Peptide
34	b	134	GLU	Peptide
34	b	96	ALA	Peptide
36	d	18	ASP	Peptide
44	e	77	LYS	Peptide
44	e	79	PRO	Peptide
44	e	81	ARG	Peptide
37	f	109	PRO	Peptide
43	g	160	LYS	Peptide
38	h	80	PRO	Peptide
38	h	81	ALA	Peptide
40	j	115	GLU	Peptide
40	j	21	LEU	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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
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
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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
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.

All (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
28:V:58:ARG:HH22	41:1:314:ILE:CG2	1.22	1.50
28:V:58:ARG:HH22	41:1:314:ILE:CB	1.22	1.49
41:1:202:GLU:O	41:1:209:SER:CB	1.63	1.42
2:3:24:LEU:HB3	2:3:25:PRO:CD	1.45	1.40
9:B:88:HIS:CD2	11:D:114:ARG:NH1	1.88	1.40
41:1:17:VAL:CG2	41:1:225:MET:HE1	1.43	1.35
41:1:131:GLY:O	41:1:207:LEU:HD12	1.22	1.33
41:1:200:LEU:HD12	41:1:206:GLU:CG	1.58	1.33
41:1:200:LEU:HD12	41:1:206:GLU:CD	1.46	1.31
41:1:131:GLY:CA	41:1:207:LEU:HD11	1.42	1.31
2:3:28:ASN:HD22	2:3:32:GLU:CB	1.43	1.30
28:V:58:ARG:NH2	41:1:314:ILE:HG22	1.43	1.29
41:1:200:LEU:CD1	41:1:206:GLU:CG	2.10	1.29
2:3:41:PHE:CE1	9:B:87:GLN:NE2	2.00	1.29
28:V:58:ARG:NH2	41:1:314:ILE:CB	1.95	1.28
41:1:200:LEU:HA	41:1:206:GLU:OE2	1.28	1.26

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:28:ASN:ND2	2:3:32:GLU:HB2	1.53	1.24
41:1:131:GLY:C	41:1:207:LEU:CD1	2.04	1.24
41:1:131:GLY:HA3	41:1:207:LEU:CD1	1.48	1.23
52:R:601:NAP:O4D	52:R:601:NAP:C1D	1.63	1.22
42:6:507:MET:O	42:6:514:HIS:NE2	1.72	1.22
41:1:131:GLY:CA	41:1:207:LEU:HD13	1.48	1.20
41:1:196:ALA:HA	41:1:199:ASP:OD2	1.41	1.18
25:S:196:ASP:OD1	25:S:246:TYR:HB3	1.39	1.18
42:6:507:MET:O	42:6:514:HIS:CE1	1.96	1.18
9:B:88:HIS:CB	9:B:89:PRO:HD2	1.75	1.17
28:V:58:ARG:HH21	41:1:314:ILE:C	1.49	1.17
41:1:17:VAL:CG2	41:1:225:MET:HE3	1.52	1.14
41:1:131:GLY:O	41:1:207:LEU:CD1	1.92	1.14
28:V:58:ARG:NH2	41:1:314:ILE:CG2	1.94	1.13
2:3:35:SER:HB3	2:3:36:PRO:HD2	1.29	1.12
2:3:41:PHE:CZ	9:B:87:GLN:NE2	2.15	1.12
24:R:328:ILE:HG22	24:R:329:LEU:H	1.05	1.10
28:V:58:ARG:NH2	41:1:314:ILE:HB	1.63	1.08
2:3:24:LEU:HB3	2:3:25:PRO:HD2	1.17	1.06
2:3:28:ASN:ND2	2:3:32:GLU:CB	2.12	1.06
9:B:88:HIS:HB2	9:B:89:PRO:HD2	1.10	1.06
9:B:88:HIS:CB	9:B:89:PRO:CD	2.34	1.05
28:V:58:ARG:NH2	41:1:314:ILE:O	1.90	1.04
1:2:25:HIS:NE2	15:H:18:MET:O	1.91	1.03
25:S:196:ASP:OD1	25:S:246:TYR:CB	2.08	1.01
2:3:28:ASN:HD22	2:3:32:GLU:HB3	1.21	1.01
2:3:24:LEU:HB3	2:3:25:PRO:HD3	1.42	1.00
28:V:58:ARG:NH2	41:1:314:ILE:C	2.15	1.00
29:W:108:LEU:HD11	29:W:114:ASP:CB	1.93	0.99
2:3:24:LEU:CB	2:3:25:PRO:CD	2.39	0.99
41:1:202:GLU:O	41:1:209:SER:HB2	0.81	0.98
29:W:108:LEU:CD1	29:W:114:ASP:CB	2.42	0.97
41:1:200:LEU:HD11	41:1:206:GLU:HG2	1.01	0.97
41:1:17:VAL:HG23	41:1:225:MET:HE1	0.99	0.97
41:1:200:LEU:CA	41:1:206:GLU:OE2	2.13	0.97
29:W:110:LEU:HD12	29:W:110:LEU:H	1.28	0.97
41:1:212:ASN:O	41:1:214:GLU:N	1.97	0.97
24:R:328:ILE:CG2	24:R:329:LEU:H	1.75	0.97
28:V:58:ARG:HH22	41:1:314:ILE:HB	1.16	0.95
41:1:196:ALA:CA	41:1:199:ASP:OD2	2.14	0.94
41:1:131:GLY:HA2	41:1:207:LEU:HD11	0.95	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:39:CYS:SG	2:3:43:PRO:O	2.26	0.94
2:3:38:GLU:OE2	41:1:64:ALA:N	2.00	0.93
24:R:328:ILE:HG22	24:R:329:LEU:N	1.77	0.92
2:3:48:ARG:HH11	2:3:48:ARG:HG3	1.33	0.92
2:3:35:SER:HB3	2:3:36:PRO:CD	1.99	0.92
15:H:19:THR:HG22	15:H:20:ILE:HG23	1.50	0.91
2:3:28:ASN:ND2	2:3:32:GLU:OE1	2.02	0.91
2:3:35:SER:CB	2:3:36:PRO:HD2	2.01	0.90
1:2:25:HIS:CD2	15:H:18:MET:O	2.28	0.87
9:B:88:HIS:HB2	9:B:89:PRO:CD	1.98	0.86
11:D:86:THR:O	11:D:114:ARG:NH2	2.09	0.86
2:3:24:LEU:CB	2:3:25:PRO:HD2	2.05	0.84
41:1:200:LEU:CD1	41:1:206:GLU:CD	2.37	0.83
2:3:33:LYS:O	2:3:37:TYR:CZ	2.32	0.83
41:1:131:GLY:HA2	41:1:207:LEU:CD1	1.75	0.82
2:3:33:LYS:O	2:3:35:SER:N	2.13	0.82
28:V:58:ARG:NH2	41:1:314:ILE:CA	2.43	0.81
2:3:35:SER:CB	2:3:36:PRO:CD	2.54	0.81
9:B:88:HIS:HB3	9:B:89:PRO:CD	2.10	0.80
9:B:88:HIS:CG	11:D:114:ARG:HH11	1.98	0.80
9:B:88:HIS:HD2	11:D:114:ARG:HH11	0.85	0.80
42:6:507:MET:HA	42:6:510:ASN:O	1.81	0.79
41:1:128:ALA:HB2	41:1:210:GLY:O	1.84	0.78
2:3:44:MET:HE2	21:O:50:PHE:HA	1.65	0.77
41:1:131:GLY:HA3	41:1:207:LEU:HD13	0.78	0.77
15:H:15:ASP:O	15:H:17:TRP:CD1	2.37	0.76
41:1:199:ASP:O	41:1:206:GLU:OE1	2.03	0.76
41:1:207:LEU:O	41:1:208:VAL:C	2.23	0.76
9:B:88:HIS:HD2	11:D:114:ARG:NH1	1.51	0.76
9:B:88:HIS:CD2	11:D:114:ARG:HH12	1.99	0.76
29:W:108:LEU:HD13	29:W:114:ASP:CB	2.16	0.73
42:6:514:HIS:CD2	42:6:514:HIS:H	2.07	0.72
2:3:28:ASN:HD21	2:3:32:GLU:HB2	1.51	0.72
2:3:32:GLU:O	2:3:34:THR:N	2.23	0.72
41:1:202:GLU:O	41:1:209:SER:CA	2.39	0.71
29:M:35:HIS:H	29:M:39:ASP:HB3	1.54	0.71
29:W:110:LEU:H	29:W:110:LEU:CD1	2.03	0.71
42:6:294:THR:O	42:6:525:LEU:HD23	1.90	0.71
5:7:150:GLY:HA2	15:H:17:TRP:CZ2	2.26	0.70
7:9:131:HIS:H	7:9:189:ASN:HD21	1.38	0.70
41:1:41:GLY:HA3	41:1:44:GLY:H	1.57	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:1:200:LEU:HD12	41:1:206:GLU:HG2	1.27	0.69
7:9:224:SER:OG	7:9:226:GLU:HG2	1.92	0.69
2:3:44:MET:CE	21:O:50:PHE:HA	2.23	0.69
2:3:81:THR:H	19:L:46:ASN:HD21	1.38	0.69
4:5:94:ASN:O	9:B:62:LYS:NZ	2.25	0.69
41:1:128:ALA:CB	41:1:210:GLY:O	2.41	0.69
9:B:52:MET:O	9:B:54:PRO:HD3	1.93	0.68
26:T:82:GLU:HG3	26:T:84:PRO:HD2	1.75	0.68
19:L:59:ASP:HB3	23:Q:130:LYS:HD2	1.75	0.68
28:V:58:ARG:CZ	41:1:314:ILE:HG22	2.23	0.68
42:6:525:LEU:HD13	42:6:525:LEU:C	2.14	0.68
42:6:527:GLY:C	42:6:529:PHE:H	1.96	0.68
2:3:19:ILE:HG23	2:3:23:TRP:HB2	1.75	0.68
41:1:210:GLY:HA2	41:1:213:VAL:HB	1.76	0.68
29:W:104:PHE:CE2	29:W:138:LEU:O	2.47	0.68
9:B:88:HIS:HB3	9:B:89:PRO:HD3	1.77	0.67
3:4:355:MET:HA	3:4:358:TRP:HD1	1.57	0.67
42:6:506:ASN:O	42:6:510:ASN:O	2.05	0.67
41:1:212:ASN:C	41:1:214:GLU:H	1.95	0.67
10:C:132:TYR:HB2	10:C:145:VAL:HB	1.77	0.67
24:R:170:LEU:O	24:R:328:ILE:HD11	1.94	0.66
24:R:238:GLN:HB3	24:R:267:GLY:HA3	1.77	0.66
42:6:525:LEU:O	42:6:525:LEU:HD22	1.95	0.66
1:2:109:ALA:HB2	1:2:161:SER:HA	1.76	0.66
2:3:33:LYS:O	2:3:37:TYR:CE1	2.47	0.66
24:R:328:ILE:CG2	24:R:329:LEU:N	2.46	0.66
41:1:200:LEU:HD11	41:1:206:GLU:CG	1.95	0.66
41:1:17:VAL:HG21	41:1:225:MET:SD	2.33	0.66
8:A:343:GLY:H	8:A:549:GLY:HA2	1.61	0.65
24:R:170:LEU:O	24:R:328:ILE:CD1	2.44	0.65
41:1:200:LEU:HD12	41:1:206:GLU:OE1	1.96	0.65
42:6:267:THR:O	42:6:274:GLN:NE2	2.29	0.65
8:A:367:CYS:SG	8:A:368:THR:N	2.69	0.65
41:1:206:GLU:O	41:1:208:VAL:N	2.29	0.65
42:6:527:GLY:O	42:6:529:PHE:N	2.29	0.65
11:D:99:MET:HG2	11:D:106:MET:HB2	1.79	0.65
41:1:17:VAL:HG21	41:1:225:MET:HE3	0.65	0.65
2:3:33:LYS:O	2:3:37:TYR:OH	2.14	0.65
41:1:169:GLN:HE21	41:1:174:LEU:HD13	1.62	0.65
41:1:206:GLU:C	41:1:208:VAL:H	1.99	0.65
4:5:96:LEU:HG	9:B:61:TRP:CD2	2.31	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:S:71:LEU:HD23	25:S:146:VAL:HG13	1.79	0.64
26:T:85:ASP:HA	26:T:89:ASN:HD22	1.63	0.64
41:1:17:VAL:HG23	41:1:225:MET:CE	1.76	0.64
10:C:170:ARG:HD3	10:C:187:ARG:HB2	1.79	0.64
11:D:86:THR:H	11:D:114:ARG:NH2	1.97	0.63
6:8:420:GLU:H	6:8:422:HIS:HD2	1.47	0.63
20:N:67:LYS:HG3	20:N:71:ARG:HH11	1.61	0.63
9:B:182:ASN:HD22	9:B:403:PRO:HG2	1.63	0.63
2:3:48:ARG:HG3	2:3:48:ARG:NH1	2.07	0.63
29:W:104:PHE:CE2	29:W:118:ILE:HD12	2.32	0.63
8:A:81:GLU:HG3	8:A:108:LYS:HB3	1.81	0.63
29:W:108:LEU:HD13	29:W:109:GLY:N	2.13	0.63
6:8:211:ALA:HB2	6:8:223:PRO:HB3	1.80	0.62
15:H:82:GLN:HE21	28:V:98:MET:HB2	1.64	0.62
3:4:451:PRO:HG2	42:6:69:LEU:HD23	1.82	0.62
24:R:92:MET:HG3	24:R:95:ARG:HH21	1.63	0.62
25:S:219:SER:HA	25:S:222:LEU:HB2	1.82	0.62
2:3:28:ASN:O	2:3:32:GLU:HG2	2.00	0.62
24:R:201:ILE:HG23	24:R:203:PRO:HD3	1.82	0.61
27:U:29:ARG:HH12	27:U:63:ILE:HG23	1.65	0.61
6:8:98:LYS:NZ	47:8:501:FMN:O3P	2.34	0.61
8:A:124:HIS:NE2	48:A:801:SF4:S3	2.74	0.61
9:B:62:LYS:O	9:B:64:PRO:CD	2.49	0.61
10:C:112:SER:HB2	10:C:135:LEU:HB3	1.83	0.61
6:8:297:LYS:NZ	6:8:310:GLY:O	2.34	0.61
2:3:48:ARG:NH1	2:3:49:LEU:O	2.34	0.61
2:3:28:ASN:O	2:3:32:GLU:CG	2.49	0.60
8:A:127:ASP:OD2	8:A:175:ARG:NH1	2.34	0.60
2:3:20:ILE:O	2:3:20:ILE:HG22	2.00	0.60
6:8:382:CYS:HB3	6:8:384:PRO:HD2	1.83	0.60
41:1:196:ALA:C	41:1:199:ASP:OD2	2.39	0.60
3:4:246:ILE:HG23	3:4:250:LEU:HD23	1.83	0.60
20:N:38:ILE:O	20:N:45:ARG:NH2	2.34	0.60
23:Q:45:LEU:O	23:Q:135:ARG:NH2	2.35	0.59
29:W:97:LYS:NZ	29:W:107:ASP:CB	2.64	0.59
8:A:501:ARG:NH2	8:A:509:ASP:OD1	2.34	0.59
24:R:178:SER:H	24:R:182:ARG:H	1.50	0.59
4:5:93:LEU:HD22	42:6:583:LEU:H	1.67	0.59
6:8:167:SER:HA	13:F:88:LEU:HD21	1.82	0.59
10:C:90:ILE:HD12	10:C:145:VAL:HG13	1.83	0.59
42:6:513:TYR:O	42:6:515:TYR:N	2.32	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:Q:49:GLU:OE1	23:Q:135:ARG:NH2	2.36	0.59
41:1:222:LEU:O	41:1:226:ALA:N	2.22	0.59
7:9:163:THR:HA	7:9:170:THR:HA	1.85	0.59
7:9:222:ARG:HD3	7:9:228:ALA:HB2	1.84	0.59
8:A:183:ILE:HD11	8:A:206:VAL:HG13	1.84	0.59
12:E:105:ARG:NH1	12:E:195:ASP:OD2	2.36	0.59
3:4:175:ASN:ND2	23:Q:168:PHE:O	2.35	0.59
29:M:33:ASN:OD1	29:M:74:GLN:NE2	2.36	0.59
6:8:424:ILE:HG12	8:A:76:ARG:HH21	1.68	0.59
9:B:88:HIS:CG	11:D:114:ARG:NH1	2.61	0.59
6:8:284:ASN:HD22	7:9:228:ALA:HB3	1.68	0.58
9:B:179:ARG:HH22	9:B:303:ARG:HD3	1.68	0.58
24:R:227:PRO:HG2	24:R:230:SER:HA	1.85	0.58
28:V:48:TRP:O	28:V:52:LYS:NZ	2.34	0.58
6:8:411:SER:HB3	22:P:49:LEU:HD13	1.84	0.58
41:1:65:THR:OG1	41:1:124:ASN:ND2	2.35	0.58
41:1:209:SER:O	41:1:209:SER:OG	2.20	0.58
6:8:220:GLN:HE21	7:9:118:PHE:HB2	1.67	0.58
41:1:127:TYR:O	41:1:210:GLY:HA3	2.02	0.58
42:6:454:ILE:HG22	42:6:458:LEU:HD23	1.85	0.58
1:2:173:THR:HG21	9:B:49:GLY:HA2	1.85	0.58
2:3:42:ASP:CB	2:3:43:PRO:CD	2.80	0.58
3:4:214:LEU:HD11	42:6:558:LEU:HB3	1.86	0.58
6:8:257:ARG:HA	7:9:243:PHE:HB2	1.85	0.58
29:W:110:LEU:HD12	29:W:110:LEU:N	2.09	0.58
1:2:150:ASN:HD22	42:6:604:PHE:HA	1.68	0.58
21:O:92:GLU:HG3	21:O:97:TRP:HE3	1.67	0.58
7:9:228:ALA:HA	7:9:231:LEU:HD23	1.85	0.58
3:4:115:LEU:HB2	3:4:174:LEU:HD13	1.85	0.58
8:A:50:LEU:HD21	8:A:62:ARG:HE	1.69	0.58
25:S:211:ASN:HB3	25:S:214:GLU:HB2	1.86	0.58
2:3:41:PHE:CD1	9:B:87:GLN:NE2	2.65	0.58
1:2:144:GLN:HE21	15:H:3:PHE:HB2	1.69	0.58
5:7:83:TRP:HB2	5:7:89:VAL:HG11	1.86	0.58
3:4:60:SER:OG	3:4:63:THR:O	2.20	0.57
3:4:336:ARG:HH22	3:4:429:SER:HA	1.69	0.57
1:2:47:ASN:HD21	1:2:123:PRO:HB2	1.69	0.57
7:9:224:SER:OG	7:9:226:GLU:CG	2.52	0.57
8:A:266:ARG:HG3	8:A:267:THR:HG23	1.86	0.57
42:6:525:LEU:HD13	42:6:526:LEU:HG	1.85	0.57
9:B:88:HIS:N	9:B:88:HIS:HD1	2.02	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:B:163:PRO:HG2	9:B:168:GLN:HE21	1.70	0.57
42:6:514:HIS:O	42:6:515:TYR:C	2.43	0.57
7:9:197:THR:HG23	7:9:200:ASP:H	1.68	0.57
42:6:387:THR:OG1	42:6:388:GLY:N	2.38	0.57
7:9:56:THR:HG22	7:9:58:GLU:H	1.70	0.57
23:Q:168:PHE:H	23:Q:170:TRP:HD1	1.53	0.57
17:J:41:TYR:OH	41:1:317:GLN:NE2	2.36	0.57
23:Q:5:VAL:N	28:V:107:GLY:O	2.38	0.56
6:8:398:ARG:NH2	8:A:155:GLU:OE2	2.37	0.56
7:9:90:ASN:ND2	7:9:92:TRP:O	2.39	0.56
9:B:278:VAL:HG12	9:B:283:ALA:HB2	1.88	0.56
10:C:197:GLY:HA2	14:G:67:VAL:HG13	1.88	0.56
3:4:285:LEU:O	3:4:406:TYR:OH	2.23	0.56
8:A:324:SER:HA	8:A:327:ALA:HB3	1.88	0.56
42:6:514:HIS:CD2	42:6:514:HIS:N	2.72	0.56
9:B:179:ARG:NH2	9:B:401:GLU:O	2.37	0.56
9:B:87:GLN:NE2	9:B:87:GLN:HA	2.21	0.56
42:6:361:GLY:O	42:6:364:LYS:NZ	2.39	0.56
12:E:131:GLU:OE1	12:E:144:ARG:NH1	2.39	0.56
41:1:70:MET:HG3	41:1:121:TRP:HZ3	1.70	0.56
8:A:382:ARG:HD2	8:A:386:LEU:HD23	1.88	0.56
8:A:587:ALA:HB1	8:A:591:GLU:HB2	1.88	0.56
41:1:131:GLY:C	41:1:207:LEU:HD11	1.97	0.55
24:R:209:ARG:NH1	24:R:351:GLU:OE2	2.37	0.55
8:A:387:LEU:HD12	8:A:514:ASN:HB2	1.88	0.55
29:M:70:LEU:HD13	29:M:76:ILE:HG12	1.87	0.55
8:A:82:ILE:HD11	8:A:100:TRP:HB3	1.87	0.55
25:S:100:CYS:HB3	25:S:119:LEU:HB2	1.89	0.55
41:1:207:LEU:O	41:1:209:SER:N	2.39	0.55
8:A:388:ASN:ND2	8:A:513:MET:O	2.35	0.55
24:R:275:ASP:O	24:R:279:TYR:N	2.39	0.55
6:8:159:ARG:HG2	6:8:161:GLU:H	1.72	0.55
8:A:263:VAL:HA	8:A:273:ILE:HG22	1.89	0.55
8:A:568:TYR:HB3	8:A:583:ILE:HG22	1.88	0.55
14:G:111:LEU:HD13	24:R:100:LEU:HD23	1.87	0.55
41:1:131:GLY:C	41:1:207:LEU:HD13	2.03	0.55
42:6:290:MET:O	42:6:524:THR:O	2.24	0.55
3:4:69:THR:HG22	3:4:235:LEU:HD11	1.89	0.55
42:6:523:SER:O	42:6:523:SER:OG	2.22	0.55
10:C:66:TYR:OH	10:C:107:ASN:ND2	2.39	0.54
2:3:71:LEU:O	5:7:147:TYR:OH	2.24	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:49:LEU:HD21	5:7:49:GLY:H	1.72	0.54
6:8:74:ASP:HA	6:8:77:LEU:HB2	1.89	0.54
8:A:426:ASP:HA	14:G:169:ARG:HH12	1.73	0.54
23:Q:8:PRO:O	28:V:88:ARG:NH2	2.40	0.54
28:V:58:ARG:HG3	28:V:58:ARG:O	2.07	0.54
29:M:26:ASP:HB3	29:M:40:LEU:HD21	1.89	0.54
8:A:161:GLU:OE1	16:I:102:ASN:ND2	2.40	0.54
3:4:216:LEU:HD23	3:4:291:VAL:HG22	1.90	0.54
9:B:237:PRO:HD3	12:E:96:ARG:HH22	1.73	0.54
24:R:114:ASP:HA	24:R:117:ARG:HB2	1.88	0.54
24:R:154:GLN:HG3	24:R:155:VAL:HG23	1.90	0.54
5:7:111:LYS:HA	15:H:81:ARG:HH21	1.71	0.54
8:A:251:ILE:HG13	8:A:604:GLN:HB3	1.89	0.54
28:V:55:ARG:HH22	41:1:312:SER:HG	1.50	0.54
2:3:29:VAL:HG12	2:3:29:VAL:O	2.07	0.54
5:7:150:GLY:HA2	15:H:17:TRP:HZ2	1.73	0.54
15:H:19:THR:CG2	15:H:20:ILE:HG23	2.31	0.54
42:6:515:TYR:N	42:6:515:TYR:CD1	2.73	0.54
42:6:550:SER:OG	42:6:551:SER:N	2.39	0.54
42:6:527:GLY:C	42:6:529:PHE:N	2.60	0.53
42:6:583:LEU:HD23	42:6:586:LEU:HD22	1.90	0.53
3:4:301:ILE:O	3:4:304:GLN:NE2	2.41	0.53
6:8:426:ALA:O	6:8:430:GLY:N	2.42	0.53
42:6:515:TYR:HD1	42:6:515:TYR:O	1.91	0.53
24:R:252:ALA:HB2	24:R:338:LEU:HD11	1.91	0.53
6:8:159:ARG:NH1	7:9:176:CYS:O	2.40	0.53
9:B:443:MET:SD	41:1:281:ARG:NH1	2.82	0.53
16:I:107:THR:CB	16:I:121:GLN:HG2	2.39	0.53
26:T:22:THR:OG1	26:T:68:ALA:O	2.26	0.53
28:V:58:ARG:CZ	41:1:314:ILE:CG2	2.81	0.53
10:C:70:ILE:HG13	10:C:71:LEU:HD12	1.91	0.53
21:O:50:PHE:HE1	21:O:96:VAL:HG12	1.73	0.53
4:5:79:VAL:O	4:5:83:ASN:N	2.40	0.53
11:D:150:VAL:HG12	11:D:179:VAL:HG13	1.90	0.53
41:1:206:GLU:C	41:1:208:VAL:N	2.60	0.53
12:E:188:GLU:O	12:E:192:ASN:ND2	2.41	0.53
6:8:201:ALA:HB3	7:9:119:TYR:HB3	1.90	0.53
41:1:200:LEU:HG	41:1:206:GLU:HB3	1.90	0.53
7:9:149:LEU:HD23	7:9:150:GLU:H	1.74	0.53
10:C:207:SER:OG	11:D:171:ARG:NH2	2.42	0.53
24:R:147:LYS:O	24:R:151:ALA:N	2.39	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:8:160:GLY:HA2	6:8:199:ARG:HD2	1.89	0.52
24:R:329:LEU:HG	24:R:331:HIS:H	1.73	0.52
42:6:583:LEU:HB3	42:6:586:LEU:HB2	1.90	0.52
14:G:57:GLU:OE1	21:O:15:THR:N	2.42	0.52
18:K:31:GLN:HB3	18:K:34:ARG:HH21	1.74	0.52
19:L:56:PRO:HA	23:Q:128:VAL:HG23	1.91	0.52
5:7:66:VAL:O	5:7:70:TYR:N	2.42	0.52
9:B:62:LYS:O	9:B:64:PRO:HD3	2.09	0.52
10:C:149:THR:OG1	10:C:150:ASP:N	2.42	0.52
4:5:36:MET:O	4:5:39:SER:OG	2.25	0.52
9:B:385:TYR:HD2	12:E:122:VAL:HG11	1.75	0.52
16:I:59:ARG:NH1	27:U:123:GLN:OE1	2.43	0.52
20:N:36:GLY:O	20:N:45:ARG:NH2	2.43	0.52
41:1:199:ASP:O	41:1:206:GLU:CD	2.48	0.52
11:D:154:GLY:O	11:D:158:ASN:ND2	2.42	0.52
15:H:22:SER:HA	15:H:25:GLN:HE22	1.75	0.52
24:R:64:PHE:HZ	24:R:208:GLY:HA3	1.74	0.52
2:3:39:CYS:O	2:3:41:PHE:N	2.43	0.51
32:Z:22:TRP:NE1	32:Z:51:TRP:O	2.43	0.51
10:C:154:PRO:HG2	21:O:18:LYS:HE2	1.92	0.51
24:R:354:ARG:O	24:R:355:ARG:NH2	2.38	0.51
6:8:204:TYR:HE1	6:8:427:LEU:HD13	1.75	0.51
8:A:352:ILE:HD11	8:A:528:LEU:HD22	1.93	0.51
9:B:198:THR:HG22	41:1:32:GLN:HE22	1.75	0.51
14:G:128:PHE:HD2	14:G:134:ALA:HA	1.74	0.51
6:8:119:GLU:O	6:8:159:ARG:NH2	2.42	0.51
42:6:427:ILE:HG13	42:6:431:LEU:HD12	1.91	0.51
8:A:33:GLU:HG2	8:A:42:MET:HG2	1.93	0.51
25:S:83:ASP:HB3	25:S:91:PRO:HA	1.93	0.51
41:1:17:VAL:CG2	41:1:225:MET:SD	2.92	0.51
2:3:112:GLU:OE2	41:1:290:TRP:NE1	2.44	0.51
3:4:68:LEU:HA	3:4:71:TRP:HD1	1.75	0.51
3:4:118:PHE:O	3:4:122:PHE:N	2.40	0.51
6:8:409:ILE:HG23	6:8:439:ILE:HD12	1.93	0.51
8:A:255:ASP:N	8:A:255:ASP:OD1	2.43	0.51
8:A:382:ARG:HB2	8:A:385:TYR:HB3	1.93	0.51
29:W:108:LEU:HD13	29:W:108:LEU:C	2.31	0.51
42:6:291:CYS:HA	42:6:524:THR:O	2.11	0.51
2:3:24:LEU:CD1	2:3:25:PRO:HD3	2.41	0.51
2:3:44:MET:CE	21:O:50:PHE:C	2.79	0.51
2:3:68:GLU:HG3	2:3:98:LEU:HD12	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:E:59:GLN:HA	12:E:64:THR:HG22	1.92	0.51
24:R:143:ASP:O	24:R:147:LYS:N	2.41	0.51
24:R:314:THR:HG22	24:R:316:ARG:HB2	1.93	0.51
4:5:2:SER:OG	4:5:3:MET:N	2.43	0.50
9:B:62:LYS:O	9:B:64:PRO:N	2.44	0.50
15:H:13:ASP:OD1	15:H:16:ARG:CZ	2.59	0.50
27:U:67:GLU:HA	27:U:71:LYS:HB2	1.92	0.50
8:A:306:MET:HG2	8:A:316:HIS:HA	1.94	0.50
8:A:462:PHE:O	8:A:464:GLN:N	2.44	0.50
17:J:3:PHE:HZ	46:J:101:CDL:HA21	1.76	0.50
29:W:97:LYS:HZ3	29:W:107:ASP:CB	2.23	0.50
2:3:80:GLN:HE22	28:V:58:ARG:NH1	2.09	0.50
7:9:54:ASP:OD1	7:9:60:TYR:OH	2.29	0.50
24:R:182:ARG:O	24:R:183:SER:OG	2.27	0.50
8:A:50:LEU:HG	8:A:60:ILE:HD11	1.93	0.50
9:B:251:PHE:HD2	9:B:341:ILE:HD11	1.77	0.50
10:C:226:VAL:HG11	14:G:120:PRO:HB3	1.92	0.50
6:8:177:TYR:O	13:F:96:ARG:NH1	2.44	0.50
9:B:86:PRO:C	9:B:88:HIS:H	2.15	0.50
9:B:303:ARG:HB3	9:B:311:TYR:HE2	1.75	0.50
9:B:338:ARG:NH1	28:V:22:LYS:O	2.44	0.50
7:9:151:ALA:HA	7:9:154:LYS:HB2	1.94	0.50
8:A:309:ASN:ND2	8:A:315:THR:OG1	2.45	0.50
8:A:461:PRO:HA	8:A:463:SER:HB3	1.94	0.50
23:Q:110:CYS:O	23:Q:114:LYS:N	2.41	0.50
3:4:208:PRO:HG2	3:4:216:LEU:HD22	1.94	0.50
3:4:370:PRO:HA	3:4:375:LEU:HB2	1.94	0.50
6:8:364:VAL:HG12	6:8:400:VAL:HG22	1.94	0.50
9:B:326:CYS:HA	9:B:329:ARG:HG2	1.92	0.50
21:O:25:MET:SD	21:O:29:LYS:NZ	2.85	0.50
5:7:66:VAL:HG11	41:1:140:ILE:HG21	1.94	0.49
9:B:88:HIS:HD1	9:B:88:HIS:H	1.59	0.49
23:Q:57:LEU:O	23:Q:61:LYS:NZ	2.42	0.49
25:S:32:ILE:HG13	25:S:33:LEU:HD12	1.94	0.49
6:8:330:SER:OG	6:8:331:VAL:N	2.43	0.49
10:C:123:THR:HG21	14:G:129:SER:H	1.76	0.49
46:4:501:CDL:H321	46:4:501:CDL:H171	1.94	0.49
7:9:75:LYS:O	7:9:77:ALA:N	2.41	0.49
24:R:265:PHE:HA	24:R:335:LEU:HB2	1.94	0.49
24:R:237:LYS:HG2	24:R:325:THR:HG23	1.94	0.49
6:8:48:ARG:HA	6:8:133:HIS:CG	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:A:251:ILE:HB	8:A:606:THR:HG22	1.94	0.49
41:1:207:LEU:C	41:1:209:SER:N	2.65	0.49
42:6:511:LEU:CB	42:6:514:HIS:NE2	2.75	0.49
15:H:21:GLN:HB3	15:H:37:GLU:HG3	1.95	0.49
24:R:125:VAL:HG21	24:R:253:ILE:HD11	1.94	0.49
28:V:51:MET:HG3	28:V:55:ARG:HH21	1.77	0.49
24:R:55:VAL:HG13	24:R:79:GLN:HB3	1.95	0.49
25:S:200:PRO:HG2	25:S:223:GLN:HE22	1.76	0.49
29:W:115:GLN:HE21	29:W:135:ALA:HB1	1.77	0.49
10:C:222:VAL:HG21	21:O:110:THR:HG21	1.94	0.49
12:E:38:TYR:HB2	22:P:106:LEU:HA	1.95	0.49
29:W:108:LEU:HD21	29:W:114:ASP:O	2.12	0.49
42:6:511:LEU:CB	42:6:514:HIS:CE1	2.96	0.49
8:A:627:SER:OG	8:A:632:MET:O	2.25	0.49
12:E:66:LEU:O	41:1:277:TYR:OH	2.31	0.49
25:S:234:LEU:O	25:S:238:SER:N	2.45	0.49
42:6:350:LEU:HD22	42:6:353:GLU:HB2	1.94	0.49
18:K:92:GLU:HA	18:K:95:LEU:HB3	1.95	0.48
25:S:196:ASP:OD1	25:S:246:TYR:HB2	2.06	0.48
25:S:202:VAL:HA	25:S:205:ARG:HB2	1.95	0.48
8:A:578:PRO:HB3	27:U:140:PRO:HG3	1.95	0.48
9:B:267:ILE:HD11	45:B:501:3PE:H271	1.95	0.48
29:W:104:PHE:HB3	29:W:108:LEU:HG	1.95	0.48
3:4:119:TYR:HE1	3:4:157:SER:HB2	1.78	0.48
18:K:82:PHE:HB3	18:K:86:GLN:HB2	1.95	0.48
2:3:16:LEU:O	2:3:20:ILE:HD13	2.13	0.48
24:R:203:PRO:HG2	52:R:601:NAP:H72N	1.79	0.48
25:S:275:ASN:O	25:S:277:ARG:N	2.40	0.48
42:6:258:PHE:HA	42:6:261:ILE:HD12	1.95	0.48
9:B:52:MET:O	9:B:54:PRO:CD	2.61	0.48
9:B:61:TRP:HA	9:B:61:TRP:CE3	2.48	0.48
23:Q:59:GLU:HA	23:Q:62:LEU:HB2	1.95	0.48
2:3:42:ASP:HA	2:3:43:PRO:HD3	1.64	0.48
8:A:371:VAL:HB	8:A:482:GLN:HG3	1.96	0.48
8:A:545:LEU:H	8:A:566:ILE:HG22	1.78	0.48
8:A:650:SER:OG	8:A:652:ASN:OD1	2.31	0.48
6:8:409:ILE:HD11	6:8:446:LEU:HD11	1.95	0.48
25:S:109:PRO:HB2	25:S:112:ASN:HB3	1.96	0.48
1:2:109:ALA:O	1:2:112:HIS:ND1	2.47	0.48
2:3:19:ILE:HG22	2:3:19:ILE:O	2.13	0.48
6:8:213:ILE:HD11	6:8:236:PHE:HB2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:9:236:GLU:OE1	7:9:239:LYS:NZ	2.45	0.48
9:B:123:LEU:HD22	11:D:166:SER:HB3	1.96	0.48
1:2:224:THR:H	1:2:228:LEU:HD23	1.79	0.47
2:3:28:ASN:ND2	2:3:28:ASN:O	2.47	0.47
3:4:76:MET:HG2	3:4:231:LEU:HD12	1.96	0.47
6:8:201:ALA:HB1	7:9:121:MET:HB2	1.95	0.47
11:D:155:SER:OG	12:E:150:THR:O	2.31	0.47
21:O:83:VAL:O	21:O:87:LYS:N	2.44	0.47
2:3:44:MET:CE	21:O:50:PHE:CA	2.91	0.47
10:C:85:GLU:OE1	10:C:144:ARG:NH1	2.43	0.47
8:A:535:GLU:HA	8:A:538:GLN:HB2	1.95	0.47
9:B:308:TYR:OH	9:B:401:GLU:N	2.46	0.47
52:R:601:NAP:O4D	52:R:601:NAP:C2N	2.63	0.47
41:1:46:LEU:HG	41:1:49:ILE:HD11	1.96	0.47
41:1:168:THR:HG23	41:1:169:GLN:HG3	1.96	0.47
41:1:196:ALA:O	41:1:199:ASP:OD2	2.33	0.47
3:4:167:ILE:HD13	3:4:250:LEU:HD11	1.96	0.47
14:G:79:ILE:HD13	14:G:134:ALA:HB1	1.94	0.47
14:G:154:LYS:HB2	14:G:156:LYS:HE2	1.97	0.47
2:3:48:ARG:HG3	2:3:49:LEU:N	2.30	0.47
6:8:273:THR:HA	6:8:291:GLU:HA	1.96	0.47
7:9:164:THR:N	7:9:169:PHE:O	2.38	0.47
8:A:31:LEU:HA	8:A:45:PRO:HD3	1.97	0.47
23:Q:53:PRO:HD2	28:V:116:TRP:CD1	2.49	0.47
7:9:91:GLY:O	7:9:123:ASN:ND2	2.47	0.47
9:B:61:TRP:HA	9:B:61:TRP:HE3	1.79	0.47
9:B:112:HIS:CD2	10:C:187:ARG:HH22	2.33	0.47
41:1:131:GLY:C	41:1:207:LEU:HD12	1.84	0.47
42:6:507:MET:O	42:6:514:HIS:HE1	1.80	0.47
1:2:7:ILE:O	1:2:11:LEU:N	2.41	0.47
7:9:123:ASN:HD22	7:9:127:VAL:HG11	1.79	0.47
8:A:120:LEU:HD12	8:A:121:LEU:HG	1.97	0.47
9:B:88:HIS:O	9:B:90:ALA:N	2.47	0.47
9:B:140:ASP:OD2	9:B:143:SER:OG	2.33	0.47
20:N:31:ILE:O	20:N:35:LEU:N	2.45	0.47
24:R:150:GLN:HA	24:R:153:ALA:HB3	1.97	0.47
42:6:264:TYR:HA	42:6:267:THR:HG22	1.97	0.47
10:C:49:VAL:HG22	22:P:59:GLY:HA2	1.97	0.47
6:8:270:ASN:HD21	6:8:338:ASP:HA	1.79	0.46
7:9:57:PRO:HA	7:9:60:TYR:HD2	1.80	0.46
8:A:259:SER:OG	8:A:260:ASN:N	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:367:LEU:HD11	3:4:408:LEU:HD11	1.97	0.46
3:4:403:THR:HA	3:4:406:TYR:HB3	1.97	0.46
8:A:587:ALA:O	8:A:592:LYS:NZ	2.38	0.46
5:7:25:SER:O	5:7:27:ILE:N	2.43	0.46
6:8:321:GLY:N	6:8:351:THR:OG1	2.46	0.46
9:B:88:HIS:N	9:B:88:HIS:ND1	2.59	0.46
24:R:235:THR:HA	24:R:236:VAL:HA	1.58	0.46
41:1:200:LEU:HG	41:1:206:GLU:CB	2.46	0.46
42:6:421:ILE:HG22	42:6:501:ALA:HB2	1.97	0.46
7:9:55:PHE:HB2	7:9:60:TYR:CZ	2.51	0.46
12:E:123:CYS:SG	12:E:126:GLN:N	2.89	0.46
24:R:168:SER:OG	24:R:169:HIS:N	2.47	0.46
42:6:68:TRP:CD1	42:6:69:LEU:HG	2.49	0.46
3:4:119:TYR:HA	3:4:122:PHE:HB3	1.97	0.46
3:4:277:LEU:HB2	42:6:546:GLN:HE22	1.80	0.46
4:5:96:LEU:N	4:5:96:LEU:HD22	2.30	0.46
9:B:143:SER:HB2	9:B:146:CYS:HB3	1.97	0.46
24:R:52:SER:OG	24:R:77:GLY:O	2.27	0.46
41:1:212:ASN:C	41:1:214:GLU:N	2.60	0.46
42:6:3:MET:HA	42:6:6:SER:HB2	1.98	0.46
9:B:67:ASN:ND2	25:S:181:VAL:O	2.49	0.46
9:B:238:LEU:HD13	22:P:37:PRO:HD2	1.97	0.46
8:A:443:ASP:N	8:A:443:ASP:OD1	2.48	0.46
32:Z:68:LEU:HD22	32:Z:71:PHE:HD1	1.79	0.46
42:6:521:LYS:HE2	42:6:521:LYS:HB2	1.59	0.46
6:8:124:THR:HG22	6:8:126:LYS:H	1.81	0.46
7:9:62:ARG:NH1	13:F:83:TYR:OH	2.39	0.46
8:A:341:ILE:HD11	8:A:547:LEU:HG	1.97	0.46
16:I:89:GLY:H	16:I:96:HIS:CE1	2.34	0.46
51:L:200:PC1:H141	41:1:291:LYS:HB3	1.97	0.46
25:S:114:GLY:HA3	25:S:115:ASN:HA	1.70	0.46
32:Z:65:GLY:HA2	32:Z:68:LEU:HB2	1.97	0.46
41:1:284:GLN:HA	41:1:287:HIS:HB3	1.96	0.46
29:M:20:LYS:HD3	29:M:28:GLU:H	1.80	0.46
2:3:24:LEU:CB	2:3:25:PRO:HD3	2.25	0.46
12:E:189:LYS:HB2	27:U:124:TYR:CZ	2.51	0.46
23:Q:9:SER:HA	28:V:88:ARG:HH12	1.81	0.46
32:Z:36:LEU:O	32:Z:40:GLY:N	2.40	0.46
12:E:158:CYS:SG	12:E:159:GLN:N	2.88	0.46
41:1:225:MET:SD	41:1:225:MET:C	2.94	0.46
42:6:1:MET:HG2	42:6:59:GLN:HE22	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
42:6:427:ILE:HA	42:6:431:LEU:HB2	1.98	0.46
10:C:110:PHE:O	10:C:162:TYR:OH	2.34	0.45
17:J:9:ILE:HG23	41:1:264:LEU:HD21	1.97	0.45
24:R:329:LEU:HD11	24:R:331:HIS:HD2	1.81	0.45
51:S:401:PC1:H292	51:S:401:PC1:H262	1.78	0.45
10:C:131:VAL:HG22	10:C:146:LYS:HG2	1.98	0.45
2:3:67:LEU:HA	5:7:59:ILE:HD11	1.98	0.45
4:5:7:ASN:HA	4:5:8:ILE:HA	1.70	0.45
12:E:82:ALA:HB2	22:P:25:GLN:HE21	1.82	0.45
2:3:102:LEU:O	2:3:106:TRP:N	2.48	0.45
7:9:187:GLN:HA	7:9:192:TYR:HA	1.99	0.45
8:A:153:PHE:HE2	8:A:156:GLY:HA3	1.81	0.45
8:A:504:SER:H	8:A:505:GLY:HA2	1.81	0.45
9:B:293:LEU:O	9:B:296:SER:N	2.34	0.45
14:G:121:LEU:O	14:G:123:ASN:N	2.45	0.45
24:R:269:SER:HA	24:R:270:ARG:HA	1.60	0.45
41:1:211:PHE:CD2	41:1:211:PHE:O	2.70	0.45
41:1:231:ILE:O	41:1:235:ASN:ND2	2.50	0.45
8:A:121:LEU:HD21	8:A:139:LEU:HB3	1.99	0.45
8:A:140:GLN:HG3	9:B:379:ILE:HG23	1.98	0.45
11:D:75:ASN:OD1	11:D:78:ARG:NH2	2.49	0.45
22:P:99:PRO:HA	22:P:100:PRO:HD3	1.88	0.45
25:S:187:LEU:HD13	25:S:277:ARG:HB2	1.97	0.45
9:B:61:TRP:HH2	42:6:581:LYS:HG2	1.82	0.45
10:C:104:ASP:OD1	10:C:104:ASP:N	2.50	0.45
1:2:110:PRO:HA	1:2:112:HIS:CE1	2.52	0.45
4:5:26:LEU:HD23	4:5:78:LEU:HD13	1.98	0.45
5:7:150:GLY:CA	15:H:17:TRP:CZ2	2.96	0.45
6:8:42:PHE:HB2	7:9:239:LYS:HG3	1.99	0.45
11:D:108:ARG:HD3	41:1:36:GLY:HA2	1.99	0.45
2:3:12:THR:HA	2:3:15:THR:HG22	1.98	0.45
6:8:183:GLY:HA2	6:8:184:LYS:HA	1.73	0.45
8:A:628:GLU:HA	8:A:633:THR:HG22	1.99	0.45
16:I:103:LEU:HD13	16:I:121:GLN:HB3	1.99	0.45
25:S:158:LEU:HA	25:S:161:MET:HB3	1.99	0.45
1:2:270:MET:O	1:2:275:SER:OG	2.34	0.44
45:2:401:3PE:H331	45:2:401:3PE:H362	1.81	0.44
8:A:31:LEU:HD13	8:A:42:MET:HB3	1.99	0.44
9:B:102:SER:N	9:B:105:MET:O	2.50	0.44
23:Q:86:TRP:HA	23:Q:89:ILE:HG22	1.98	0.44
24:R:238:GLN:HE22	24:R:271:TYR:HA	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:41:PHE:O	2:3:41:PHE:CD2	2.70	0.44
42:6:206:PRO:HD2	42:6:266:LEU:HD13	2.00	0.44
42:6:515:TYR:CD1	42:6:515:TYR:O	2.70	0.44
45:4:502:3PE:H2B1	45:4:502:3PE:H2E1	1.75	0.44
28:V:91:LEU:HD11	28:V:106:VAL:HG13	1.99	0.44
32:Z:44:PRO:HA	32:Z:45:TRP:HA	1.76	0.44
42:6:221:THR:HG22	42:6:226:GLN:HG3	2.00	0.44
6:8:213:ILE:HG23	6:8:224:ARG:HH12	1.83	0.44
6:8:387:GLU:HG2	8:A:123:ASN:HD22	1.82	0.44
8:A:373:PRO:HG3	8:A:486:GLY:HA3	1.98	0.44
9:B:143:SER:HB3	9:B:182:ASN:HD21	1.83	0.44
9:B:293:LEU:HD23	9:B:293:LEU:HA	1.74	0.44
19:L:19:LEU:HD22	51:L:200:PC1:H232	1.99	0.44
23:Q:121:ASP:OD1	23:Q:121:ASP:N	2.50	0.44
25:S:73:HIS:HA	25:S:146:VAL:HG23	1.99	0.44
25:S:138:LEU:O	25:S:142:GLY:N	2.51	0.44
2:3:41:PHE:CZ	9:B:87:GLN:CD	2.85	0.44
5:7:150:GLY:CA	15:H:17:TRP:CH2	3.01	0.44
6:8:246:GLU:HA	6:8:249:ALA:HB3	2.00	0.44
20:N:67:LYS:HE3	20:N:71:ARG:HE	1.83	0.44
22:P:29:GLN:HG3	22:P:30:GLU:H	1.82	0.44
24:R:178:SER:H	24:R:181:LEU:HB3	1.82	0.44
28:V:20:ASP:HB2	28:V:22:LYS:HG2	1.98	0.44
1:2:25:HIS:HD2	15:H:19:THR:OG1	2.01	0.44
2:3:27:LEU:HD13	2:3:27:LEU:HA	1.84	0.44
8:A:78:CYS:SG	8:A:92:CYS:N	2.91	0.44
8:A:404:GLY:O	8:A:479:SER:OG	2.36	0.44
27:U:111:THR:OG1	27:U:112:ASN:N	2.51	0.44
8:A:321:ASP:OD2	8:A:325:ARG:NH2	2.50	0.44
7:9:155:LYS:HE3	7:9:202:GLU:HA	2.00	0.44
8:A:308:ARG:HA	8:A:308:ARG:HD2	1.85	0.44
14:G:104:ARG:NH1	21:O:127:ASP:O	2.51	0.44
23:Q:171:THR:OG1	23:Q:172:MET:N	2.50	0.44
29:M:20:LYS:HE3	29:M:28:GLU:HG2	2.00	0.44
1:2:254:LEU:HA	1:2:255:PRO:HD3	1.88	0.44
3:4:405:LEU:HD11	42:6:173:LEU:HG	1.99	0.44
9:B:67:ASN:HB2	25:S:181:VAL:HG13	1.99	0.44
24:R:326:ASP:O	24:R:328:ILE:HG13	2.18	0.44
2:3:24:LEU:HD22	2:3:24:LEU:HA	1.84	0.43
8:A:409:PHE:HB2	8:A:688:GLN:HG2	2.00	0.43
8:A:456:ALA:HA	8:A:496:ILE:HD13	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:F:106:SER:OG	13:F:107:PRO:O	2.31	0.43
22:P:41:LEU:HD12	22:P:42:PRO:HD2	2.00	0.43
28:V:28:ARG:HA	28:V:29:GLY:HA3	1.66	0.43
41:1:118:TRP:O	41:1:122:ALA:N	2.49	0.43
41:1:288:LEU:HA	41:1:292:ASN:HD22	1.81	0.43
42:6:209:SER:OG	42:6:270:ASN:ND2	2.51	0.43
1:2:300:THR:HG23	1:2:301:THR:HG23	2.00	0.43
6:8:155:TYR:HE1	6:8:196:PHE:HD2	1.65	0.43
25:S:290:LEU:O	25:S:294:ASN:N	2.50	0.43
30:X:30:ASN:OD1	30:X:31:ASP:N	2.52	0.43
41:1:215:TYR:HD1	41:1:219:PRO:HB2	1.83	0.43
41:1:226:ALA:O	41:1:229:ALA:HB3	2.18	0.43
42:6:279:CYS:SG	42:6:405:ASN:ND2	2.91	0.43
42:6:578:THR:O	42:6:581:LYS:HE2	2.18	0.43
1:2:54:GLU:OE1	4:5:94:ASN:ND2	2.51	0.43
1:2:137:ALA:O	1:2:140:SER:OG	2.29	0.43
3:4:210:TYR:O	3:4:213:HIS:ND1	2.44	0.43
4:5:38:LEU:HA	4:5:41:PHE:HB3	1.99	0.43
42:6:518:ASN:OD1	42:6:518:ASN:N	2.50	0.43
3:4:207:MET:HA	3:4:208:PRO:HD3	1.86	0.43
7:9:227:PRO:HD2	7:9:231:LEU:HA	1.99	0.43
29:W:109:GLY:HA2	29:W:110:LEU:HA	1.70	0.43
29:M:37:MET:HA	29:M:41:GLY:HA2	2.01	0.43
6:8:295:PRO:HG2	6:8:298:GLU:HG2	1.99	0.43
12:E:170:GLY:HA2	12:E:171:PRO:HD3	1.78	0.43
16:I:101:ILE:H	16:I:101:ILE:HG13	1.68	0.43
41:1:200:LEU:CG	41:1:206:GLU:CG	2.92	0.43
8:A:272:ARG:HH12	8:A:274:LEU:HD11	1.84	0.43
8:A:347:ASP:N	8:A:347:ASP:OD1	2.50	0.43
11:D:102:PRO:HB3	41:1:34:ARG:HD3	2.01	0.43
11:D:182:TYR:HE2	12:E:180:HIS:HB2	1.84	0.43
24:R:58:VAL:HG13	24:R:127:ILE:HD11	2.00	0.43
24:R:178:SER:N	24:R:182:ARG:H	2.14	0.43
25:S:194:TYR:HB3	25:S:245:GLN:HG3	1.99	0.43
42:6:82:MET:HA	42:6:86:SER:HB3	2.00	0.43
7:9:152:ILE:HG12	7:9:201:ILE:HD12	2.00	0.43
9:B:64:PRO:HA	9:B:65:PRO:HD3	1.89	0.43
12:E:37:THR:HA	22:P:104:TRP:HB3	2.00	0.43
24:R:64:PHE:CZ	24:R:208:GLY:HA3	2.53	0.43
41:1:281:ARG:HH21	41:1:284:GLN:HE21	1.65	0.43
42:6:81:LYS:N	42:6:133:THR:O	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:38:GLU:OE2	41:1:64:ALA:CB	2.67	0.43
3:4:66:LEU:O	3:4:69:THR:OG1	2.27	0.43
8:A:344:GLY:O	8:A:521:SER:OG	2.28	0.43
16:I:111:THR:HG22	16:I:118:GLN:HA	2.00	0.43
20:N:60:LYS:HA	20:N:61:ALA:HA	1.78	0.43
31:Y:47:TYR:HD2	32:Z:16:LEU:HD12	1.84	0.43
2:3:38:GLU:OE2	41:1:64:ALA:HB2	2.19	0.43
6:8:43:THR:O	6:8:257:ARG:NH2	2.49	0.43
11:D:75:ASN:HD21	11:D:207:GLU:HA	1.84	0.43
11:D:194:LEU:HD23	11:D:194:LEU:HA	1.84	0.43
24:R:154:GLN:HG3	24:R:155:VAL:H	1.83	0.43
25:S:192:VAL:HG11	25:S:233:PHE:HZ	1.83	0.43
6:8:375:LYS:HD3	6:8:393:ASN:HD22	1.84	0.43
8:A:607:LYS:HE2	14:G:78:ARG:HE	1.83	0.43
11:D:155:SER:OG	11:D:155:SER:O	2.36	0.43
21:O:18:LYS:O	21:O:77:ARG:NH2	2.52	0.43
1:2:256:PRO:HD3	3:4:124:ALA:HA	2.01	0.42
24:R:201:ILE:HD12	24:R:263:PHE:HB2	2.01	0.42
27:U:42:ASP:HA	27:U:43:LYS:HA	1.76	0.42
1:2:4:ILE:HB	51:S:401:PC1:H241	2.01	0.42
2:3:20:ILE:HD12	2:3:20:ILE:N	2.34	0.42
6:8:112:TYR:HB2	6:8:240:THR:HG22	2.01	0.42
9:B:254:ARG:HH21	22:P:24:LEU:HA	1.83	0.42
11:D:107:ASP:OD1	11:D:108:ARG:N	2.52	0.42
22:P:53:TYR:O	22:P:56:THR:OG1	2.36	0.42
24:R:195:PHE:HD2	24:R:198:ALA:HB2	1.83	0.42
25:S:102:LEU:HA	25:S:105:PHE:HE1	1.83	0.42
25:S:110:LYS:HA	25:S:166:PHE:HA	2.01	0.42
25:S:200:PRO:CG	25:S:223:GLN:HE22	2.32	0.42
41:1:207:LEU:O	41:1:210:GLY:N	2.52	0.42
42:6:525:LEU:HD13	42:6:525:LEU:O	2.18	0.42
42:6:556:ILE:O	42:6:560:ALA:N	2.52	0.42
29:M:26:ASP:OD1	29:M:26:ASP:N	2.52	0.42
29:M:32:VAL:HG23	29:M:74:GLN:HE21	1.83	0.42
2:3:48:ARG:NH1	2:3:48:ARG:CG	2.73	0.42
11:D:75:ASN:ND2	11:D:206:ARG:O	2.52	0.42
23:Q:28:ALA:O	23:Q:30:HIS:N	2.51	0.42
24:R:203:PRO:HA	24:R:265:PHE:HB2	2.01	0.42
42:6:310:LEU:HD23	42:6:313:MET:HE3	2.01	0.42
42:6:396:ILE:HD12	42:6:397:GLU:HG3	2.01	0.42
3:4:306:PRO:HA	3:4:308:SER:H	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:A:405:THR:HB	8:A:477:GLY:HA3	2.01	0.42
9:B:253:LEU:HD23	9:B:254:ARG:HH12	1.83	0.42
9:B:359:ASP:HB2	22:P:45:PRO:HG2	2.01	0.42
20:N:43:ALA:HA	20:N:46:LYS:HD3	2.00	0.42
9:B:105:MET:SD	9:B:105:MET:N	2.93	0.42
14:G:130:THR:HG23	14:G:133:ASP:H	1.84	0.42
30:X:13:HIS:O	30:X:15:LEU:N	2.52	0.42
41:1:20:LEU:O	41:1:24:GLU:N	2.51	0.42
41:1:222:LEU:HA	41:1:225:MET:HB3	2.02	0.42
3:4:244:LEU:HD21	3:4:301:ILE:HD12	2.02	0.42
6:8:47:GLY:O	6:8:133:HIS:ND1	2.52	0.42
6:8:253:THR:HA	6:8:256:ARG:HB3	2.02	0.42
25:S:187:LEU:HA	25:S:188:PRO:HD3	1.86	0.42
30:X:14:VAL:HA	30:X:17:PRO:HD2	2.01	0.42
3:4:5:ILE:HA	3:4:8:THR:HG22	2.01	0.42
3:4:319:HIS:HA	3:4:322:THR:HB	2.02	0.42
3:4:360:LEU:O	3:4:364:LEU:N	2.48	0.42
8:A:216:SER:N	8:A:219:SER:OG	2.48	0.42
8:A:624:ARG:NH1	8:A:634:LEU:O	2.35	0.42
10:C:124:ARG:HD2	20:N:111:GLN:HG3	2.02	0.42
14:G:163:ASN:HB3	14:G:172:VAL:HG22	2.01	0.42
17:J:23:THR:HG23	41:1:5:ASN:HD21	1.84	0.42
24:R:61:ALA:H	24:R:129:LEU:HD11	1.83	0.42
7:9:188:ILE:HG13	7:9:191:ASN:H	1.84	0.42
8:A:651:PRO:HD2	18:K:56:ARG:HB3	2.02	0.42
42:6:506:ASN:C	42:6:510:ASN:O	2.58	0.42
29:M:25:ILE:HD12	29:M:42:LEU:HG	2.01	0.42
29:M:51:ILE:HD12	29:M:70:LEU:HD12	2.02	0.42
9:B:326:CYS:SG	9:B:329:ARG:NH1	2.93	0.42
15:H:96:PRO:HA	15:H:97:HIS:HA	1.82	0.42
51:Q:201:PC1:H341	51:Q:201:PC1:H372	1.91	0.42
25:S:102:LEU:HD23	25:S:105:PHE:HE1	1.84	0.42
41:1:202:GLU:O	41:1:209:SER:HA	2.16	0.42
41:1:203:GLY:HA3	41:1:209:SER:CA	2.49	0.42
42:6:246:LEU:O	42:6:251:THR:OG1	2.27	0.42
20:N:88:LEU:HD11	20:N:92:ARG:HH21	1.84	0.41
42:6:378:LEU:O	42:6:381:THR:OG1	2.31	0.41
2:3:44:MET:HE1	21:O:50:PHE:O	2.20	0.41
8:A:180:THR:HG23	8:A:183:ILE:HD12	2.02	0.41
11:D:185:GLY:HA2	12:E:154:TYR:CE2	2.55	0.41
41:1:233:MET:HA	41:1:236:ILE:HG22	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:49:ASN:HD22	1:2:123:PRO:HG2	1.85	0.41
1:2:51:ARG:HG3	9:B:69:VAL:HB	2.01	0.41
8:A:618:GLU:OE2	8:A:620:TRP:NE1	2.53	0.41
10:C:189:ILE:HD13	10:C:189:ILE:HA	1.93	0.41
21:O:50:PHE:HE2	21:O:103:VAL:HG21	1.84	0.41
24:R:175:LYS:O	24:R:177:SER:N	2.49	0.41
24:R:352:VAL:HG13	24:R:353:LEU:HD12	2.02	0.41
27:U:31:ASN:HD21	41:1:43:TYR:HA	1.85	0.41
42:6:313:MET:O	42:6:316:THR:OG1	2.33	0.41
6:8:420:GLU:H	6:8:422:HIS:CD2	2.31	0.41
7:9:88:ARG:NH1	13:F:82:THR:O	2.53	0.41
7:9:145:SER:O	7:9:149:LEU:N	2.53	0.41
8:A:436:VAL:O	8:A:442:TYR:OH	2.31	0.41
10:C:76:GLN:HE22	10:C:148:TYR:HE1	1.67	0.41
12:E:113:CYS:SG	12:E:114:ILE:N	2.94	0.41
18:K:15:GLY:HA2	18:K:16:LEU:HA	1.76	0.41
24:R:228:LEU:HA	24:R:229:ILE:HA	1.80	0.41
42:6:525:LEU:CD1	42:6:526:LEU:HG	2.49	0.41
8:A:69:LEU:O	14:G:158:LYS:NZ	2.38	0.41
8:A:359:ASN:ND2	18:K:68:ARG:HH12	2.19	0.41
11:D:206:ARG:HH21	11:D:208:LYS:HE2	1.84	0.41
12:E:100:GLU:O	12:E:170:GLY:N	2.49	0.41
12:E:106:TYR:CE1	12:E:112:ARG:HG3	2.55	0.41
41:1:217:ALA:HA	41:1:220:PHE:HB3	2.02	0.41
11:D:108:ARG:HH12	41:1:34:ARG:CZ	2.34	0.41
20:N:24:LEU:HB3	20:N:28:TYR:HE2	1.85	0.41
27:U:124:TYR:CE2	27:U:126:PRO:HG3	2.56	0.41
10:C:217:GLU:OE1	24:R:75:ARG:NH2	2.47	0.41
10:C:218:VAL:HG13	10:C:219:LYS:H	1.85	0.41
24:R:253:ILE:HD12	24:R:253:ILE:HA	1.98	0.41
3:4:297:VAL:O	3:4:301:ILE:HG12	2.20	0.41
5:7:98:LEU:O	5:7:102:PHE:N	2.48	0.41
12:E:148:ASP:OD2	12:E:151:LYS:NZ	2.50	0.41
16:I:82:SER:OG	16:I:83:ARG:N	2.53	0.41
25:S:272:LEU:HB3	25:S:275:ASN:HA	2.03	0.41
42:6:512:LYS:O	42:6:513:TYR:C	2.59	0.41
29:M:32:VAL:HA	29:M:73:PRO:HG2	2.03	0.41
3:4:393:ILE:HG21	42:6:184:LEU:HD13	2.02	0.41
8:A:435:PRO:HG3	8:A:444:HIS:ND1	2.35	0.41
26:T:99:LEU:O	26:T:103:ALA:N	2.51	0.41
42:6:338:MET:O	42:6:342:CYS:N	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:5:ILE:HG13	3:4:6:ILE:HG13	2.01	0.41
9:B:143:SER:OG	9:B:147:ASN:OD1	2.38	0.41
10:C:170:ARG:HH11	10:C:170:ARG:HD2	1.75	0.41
22:P:65:PRO:HA	22:P:66:PRO:HD3	1.89	0.41
42:6:282:ALA:O	42:6:285:THR:OG1	2.31	0.41
9:B:53:TYR:HA	9:B:54:PRO:HD3	1.78	0.40
9:B:271:ARG:HA	9:B:271:ARG:HD2	1.90	0.40
15:H:74:LYS:HD2	15:H:74:LYS:HA	1.92	0.40
25:S:76:GLU:O	25:S:127:ARG:NH1	2.54	0.40
25:S:150:SER:OG	25:S:151:ILE:N	2.54	0.40
8:A:158:ARG:NE	8:A:202:ASN:OD1	2.54	0.40
9:B:144:MET:HG3	9:B:214:TYR:HE2	1.86	0.40
12:E:172:ASN:ND2	12:E:200:GLU:OE1	2.54	0.40
17:J:26:ILE:HD13	17:J:26:ILE:HA	1.94	0.40
23:Q:6:GLU:O	23:Q:54:ARG:NH1	2.54	0.40
31:Y:50:PHE:HE1	42:6:364:LYS:HA	1.87	0.40
31:Y:64:PHE:HA	31:Y:67:THR:HG22	2.03	0.40
41:1:225:MET:SD	41:1:225:MET:O	2.79	0.40
1:2:190:MET:HB2	1:2:201:THR:HG23	2.03	0.40
6:8:98:LYS:HG3	6:8:99:TRP:CD1	2.57	0.40
8:A:469:ALA:HB3	8:A:472:PRO:HG3	2.03	0.40
24:R:339:GLY:HA2	24:R:340:VAL:HA	1.94	0.40
41:1:124:ASN:HB3	41:1:125:SER:H	1.72	0.40
5:7:156:VAL:O	5:7:160:SER:N	2.46	0.40
8:A:63:PHE:O	8:A:181:ARG:NH2	2.54	0.40
9:B:233:HIS:NE2	12:E:160:GLU:OE1	2.54	0.40
9:B:303:ARG:HH11	9:B:303:ARG:HD2	1.74	0.40
11:D:176:ILE:HG22	11:D:177:VAL:HG13	2.03	0.40
6:8:186:ALA:HA	6:8:187:CYS:HA	1.60	0.40
47:8:501:FMN:H9	47:8:501:FMN:H1'1	1.58	0.40
19:L:32:LEU:HA	19:L:35:LEU:HD12	2.04	0.40
29:M:51:ILE:HG22	29:M:62:ILE:HG12	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	2	342/347 (99%)	298 (87%)	44 (13%)	0	100 100
2	3	110/115 (96%)	78 (71%)	18 (16%)	14 (13%)	0 4
3	4	457/459 (100%)	374 (82%)	77 (17%)	6 (1%)	10 39
4	5	94/98 (96%)	80 (85%)	14 (15%)	0	100 100
5	7	170/175 (97%)	135 (79%)	31 (18%)	4 (2%)	5 29
6	8	425/444 (96%)	344 (81%)	79 (19%)	2 (0%)	25 58
7	9	205/217 (94%)	165 (80%)	39 (19%)	1 (0%)	25 58
8	A	686/704 (97%)	563 (82%)	118 (17%)	5 (1%)	19 52
9	B	428/430 (100%)	353 (82%)	65 (15%)	10 (2%)	5 30
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%)	22 55
13	F	26/75 (35%)	17 (65%)	9 (35%)	0	100 100
14	G	121/133 (91%)	99 (82%)	20 (16%)	2 (2%)	7 34
15	H	94/105 (90%)	73 (78%)	21 (22%)	0	100 100
16	I	69/96 (72%)	56 (81%)	11 (16%)	2 (3%)	3 26
17	J	67/70 (96%)	63 (94%)	3 (4%)	1 (2%)	8 37
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%)	11 40
24	R	315/345 (91%)	249 (79%)	64 (20%)	2 (1%)	22 55
25	S	317/320 (99%)	249 (78%)	65 (20%)	3 (1%)	14 45
26	T	136/140 (97%)	113 (83%)	22 (16%)	1 (1%)	19 52
27	U	128/145 (88%)	101 (79%)	27 (21%)	0	100 100
28	V	136/143 (95%)	119 (88%)	15 (11%)	2 (2%)	8 37
29	M	78/88 (89%)	62 (80%)	16 (20%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
29	W	84/88 (96%)	65 (77%)	19 (23%)	0	100 100
30	X	47/57 (82%)	37 (79%)	8 (17%)	2 (4%)	2 20
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 18
36	d	105/136 (77%)	74 (70%)	26 (25%)	5 (5%)	2 18
37	f	165/178 (93%)	126 (76%)	38 (23%)	1 (1%)	22 55
38	h	89/125 (71%)	60 (67%)	24 (27%)	5 (6%)	1 16
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%)	6 33
42	6	604/606 (100%)	513 (85%)	81 (13%)	10 (2%)	7 34
43	g	171/176 (97%)	138 (81%)	28 (16%)	5 (3%)	3 26
44	e	139/158 (88%)	74 (53%)	45 (32%)	20 (14%)	0 3
All	All	7895/8516 (93%)	6390 (81%)	1389 (18%)	116 (2%)	11 37

All (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
2	3	40	GLY
2	3	42	ASP
2	3	43	PRO
5	7	171	ILE
8	A	463	SER
9	B	88	HIS
9	B	89	PRO
9	B	294	ARG
16	I	106	GLU
16	I	107	THR

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Mol	Chain	Res	Type
25	S	200	PRO
25	S	276	ASP
36	d	10	LEU
38	h	68	GLU
38	h	69	LYS
38	h	72	ASP
38	h	81	ALA
38	h	82	VAL
41	1	213	VAL
42	6	528	TYR
43	g	14	PRO
43	g	19	ALA
43	g	20	PRO
43	g	22	PRO
44	e	81	ARG
44	e	82	SER
44	e	87	ASP
44	e	99	LEU
44	e	125	ASN
44	e	126	TRP
44	e	153	TYR
2	3	26	GLN
2	3	27	LEU
3	4	20	ASN
3	4	419	TYR
8	A	365	THR
14	G	122	SER
24	R	272	LEU
28	V	143	TYR
30	X	14	VAL
35	c	106	PRO
36	d	40	VAL
41	1	200	LEU
41	1	282	TYR
42	6	31	ASN
42	6	603	ASN
44	e	68	ASP
44	e	96	ASP
44	e	98	ARG
44	e	155	PRO
44	e	156	VAL
3	4	21	ASN

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Mol	Chain	Res	Type
5	7	149	TYR
7	9	76	ALA
8	A	129	PRO
8	A	309	ASN
8	A	541	PRO
9	B	54	PRO
9	B	93	GLY
35	c	108	ASP
36	d	19	PRO
42	6	514	HIS
42	6	516	PRO
42	6	519	ALA
44	e	76	PRO
44	e	123	PRO
2	3	21	ALA
2	3	82	ALA
3	4	64	PRO
3	4	112	ALA
5	7	170	GLU
9	B	63	PRO
9	B	291	VAL
12	E	108	SER
36	d	7	ARG
41	1	174	LEU
41	1	207	LEU
42	6	511	LEU
42	6	551	SER
42	6	581	LYS
43	g	18	PRO
44	e	80	ASP
44	e	83	GLN
2	3	25	PRO
2	3	32	GLU
9	B	61	TRP
9	B	90	ALA
9	B	219	GLY
23	Q	29	ALA
23	Q	166	ARG
35	c	105	PHE
35	c	112	GLU
41	1	206	GLU
42	6	30	SER

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Mol	Chain	Res	Type
44	e	91	ASP
44	e	121	PRO
44	e	122	THR
6	8	227	PRO
14	G	84	ARG
25	S	281	LYS
30	X	13	HIS
44	e	94	HIS
37	f	145	PRO
3	4	305	THR
5	7	24	PRO
6	8	105	PRO
17	J	56	GLY
26	T	84	PRO
24	R	328	ILE
28	V	73	PRO
36	d	32	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	2	274/316 (87%)	274 (100%)	0	100 100
2	3	90/101 (89%)	80 (89%)	10 (11%)	5 21
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%)	84 88
8	A	551/588 (94%)	550 (100%)	1 (0%)	92 94
9	B	359/371 (97%)	352 (98%)	7 (2%)	52 69
10	C	183/204 (90%)	183 (100%)	0	100 100
11	D	126/150 (84%)	125 (99%)	1 (1%)	79 84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
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%)	42 62
16	I	52/79 (66%)	50 (96%)	2 (4%)	28 52
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%)	81 86
24	R	232/298 (78%)	232 (100%)	0	100 100
25	S	205/283 (72%)	203 (99%)	2 (1%)	73 80
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%)	75 82
29	M	73/81 (90%)	73 (100%)	0	100 100
29	W	57/81 (70%)	55 (96%)	2 (4%)	31 54
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%)	65 76
38	h	70/112 (62%)	64 (91%)	6 (9%)	8 31
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%)	33 56

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
42	6	523/534 (98%)	515 (98%)	8 (2%)	60 74
43	g	130/157 (83%)	128 (98%)	2 (2%)	60 74
44	e	44/141 (31%)	39 (89%)	5 (11%)	4 21
All	All	5891/7389 (80%)	5830 (99%)	61 (1%)	71 80

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	3	18	VAL
2	3	23	TRP
2	3	24	LEU
2	3	27	LEU
2	3	32	GLU
2	3	33	LYS
2	3	37	TYR
2	3	41	PHE
2	3	42	ASP
2	3	44	MET
7	9	149	LEU
8	A	538	GLN
9	B	61	TRP
9	B	62	LYS
9	B	88	HIS
9	B	92	HIS
9	B	94	VAL
9	B	105	MET
9	B	429	PHE
11	D	114	ARG
15	H	17	TRP
15	H	19	THR
16	I	103	LEU
16	I	106	GLU
23	Q	115	LEU
25	S	195	VAL
25	S	200	PRO
28	V	58	ARG
29	W	106	LYS
29	W	110	LEU
37	f	30	TRP
38	h	63	ASP
38	h	64	GLU

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Mol	Chain	Res	Type
38	h	67	TYR
38	h	68	GLU
38	h	69	LYS
38	h	70	ASN
41	1	200	LEU
41	1	201	THR
41	1	202	GLU
41	1	211	PHE
41	1	223	PHE
41	1	224	PHE
41	1	225	MET
41	1	227	GLU
41	1	228	TYR
42	6	514	HIS
42	6	515	TYR
42	6	517	SER
42	6	518	ASN
42	6	520	PHE
42	6	522	PHE
42	6	524	THR
42	6	525	LEU
43	g	15	ARG
43	g	16	ARG
44	e	89	TRP
44	e	92	TRP
44	e	124	VAL
44	e	160	GLN
44	e	166	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (56) such sidechains are listed below:

Mol	Chain	Res	Type
1	2	49	ASN
2	3	10	ASN
2	3	28	ASN
2	3	80	GLN
3	4	26	ASN
3	4	168	GLN
3	4	374	ASN
4	5	7	ASN
5	7	46	ASN
6	8	281	HIS

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Mol	Chain	Res	Type
6	8	422	HIS
7	9	90	ASN
7	9	189	ASN
8	A	142	GLN
8	A	309	ASN
8	A	359	ASN
8	A	571	HIS
9	B	87	GLN
9	B	112	HIS
9	B	182	ASN
9	B	250	ASN
10	C	249	GLN
11	D	98	HIS
11	D	158	ASN
12	E	192	ASN
12	E	204	ASN
15	H	82	GLN
19	L	46	ASN
20	N	83	GLN
20	N	111	GLN
24	R	43	HIS
24	R	251	ASN
24	R	323	HIS
24	R	331	HIS
25	S	223	GLN
26	T	89	ASN
27	U	31	ASN
29	W	115	GLN
30	X	13	HIS
35	c	14	GLN
37	f	139	GLN
38	h	70	ASN
39	i	62	HIS
40	j	88	HIS
41	1	5	ASN
41	1	124	ASN
41	1	284	GLN
41	1	292	ASN
41	1	317	GLN
42	6	226	GLN
42	6	270	ASN
42	6	332	HIS

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Mol	Chain	Res	Type
42	6	405	ASN
42	6	546	GLN
44	e	160	GLN
29	M	74	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 oligosaccharides 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	L	200	-	46,46,53	1.01	4 (8%)	52,54,61	1.06	2 (3%)
46	CDL	4	501	-	81,81,99	0.97	7 (8%)	87,93,111	1.11	5 (5%)
48	SF4	E	302	-	0,12,12	-	-	-		
48	SF4	E	301	-	0,12,12	-	-	-		
51	PC1	Q	201	-	45,45,53	1.00	4 (8%)	51,53,61	1.07	2 (3%)
45	3PE	B	501	-	50,50,50	0.85	4 (8%)	53,55,55	1.13	2 (3%)
48	SF4	D	301	-	0,12,12	-	-	-		
45	3PE	2	401	-	40,40,50	0.95	4 (10%)	43,45,55	1.18	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
52	NAP	R	601	-	45,52,52	4.64	20 (44%)	56,80,80	1.79	7 (12%)
47	FMN	8	501	-	33,33,33	1.10	2 (6%)	48,50,50	1.62	11 (22%)
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	J	101	-	57,57,99	1.14	7 (12%)	63,69,111	1.19	4 (6%)
48	SF4	8	502	-	0,12,12	-	-	-		
51	PC1	S	401	-	46,46,53	1.00	4 (8%)	52,54,61	1.00	2 (3%)
48	SF4	A	801	-	0,12,12	-	-	-		
51	PC1	j	201	-	38,38,53	1.12	4 (10%)	44,46,61	1.09	2 (4%)
45	3PE	4	502	-	40,40,50	0.92	3 (7%)	43,45,55	1.37	3 (6%)
49	FES	A	803	-	0,4,4	-	-	-		
48	SF4	A	802	-	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	L	200	-	-	23/50/50/57	-
46	CDL	4	501	-	-	39/92/92/110	-
48	SF4	E	302	-	-	-	0/6/5/5
48	SF4	E	301	-	-	-	0/6/5/5
51	PC1	Q	201	-	-	20/49/49/57	-
49	FES	A	803	-	-	-	0/1/1/1
45	3PE	B	501	-	-	26/54/54/54	-
48	SF4	D	301	-	-	-	0/6/5/5
45	3PE	2	401	-	-	21/44/44/54	-
52	NAP	R	601	-	-	15/31/67/67	0/5/5/5
47	FMN	8	501	-	-	10/18/18/18	0/3/3/3
49	FES	9	301	-	-	-	0/1/1/1
45	3PE	V	201	-	-	21/54/54/54	-
46	CDL	J	101	-	-	31/68/68/110	-
48	SF4	8	502	-	-	-	0/6/5/5
48	SF4	A	801	-	-	-	0/6/5/5
51	PC1	S	401	-	-	32/50/50/57	-
51	PC1	j	201	-	-	23/42/42/57	-
45	3PE	4	502	-	-	24/44/44/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
48	SF4	A	802	-	-	-	0/6/5/5

All (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
52	R	601	NAP	C7N-N7N	6.91	1.46	1.33
52	R	601	NAP	O4D-C4D	-6.72	1.30	1.45
52	R	601	NAP	O4B-C4B	-5.82	1.32	1.45
52	R	601	NAP	C3N-C7N	5.36	1.58	1.50
52	R	601	NAP	O3D-C3D	-4.26	1.32	1.43
52	R	601	NAP	O2D-C2D	3.81	1.51	1.43
52	R	601	NAP	O7N-C7N	-3.46	1.17	1.24
47	8	501	FMN	C4A-N5	3.38	1.37	1.30
52	R	601	NAP	C6A-N6A	2.92	1.44	1.34
46	4	501	CDL	OB6-CB5	2.79	1.42	1.34
52	R	601	NAP	O3B-C3B	-2.69	1.36	1.43
52	R	601	NAP	C2A-N3A	2.63	1.36	1.32
45	V	201	3PE	O21-C2	-2.62	1.40	1.46
46	4	501	CDL	OB8-CB7	2.57	1.40	1.33
51	Q	201	PC1	O21-C2	-2.56	1.40	1.46
51	S	401	PC1	O21-C2	-2.55	1.40	1.46
46	4	501	CDL	OA6-CA4	-2.52	1.40	1.46
46	4	501	CDL	OA8-CA7	2.50	1.40	1.33
46	J	101	CDL	OB8-CB7	2.49	1.40	1.33
51	j	201	PC1	O21-C2	-2.47	1.40	1.46
46	J	101	CDL	OB6-CB4	-2.47	1.40	1.46
52	R	601	NAP	PA-O5B	2.44	1.69	1.59
46	J	101	CDL	OA6-CA4	-2.44	1.40	1.46
45	4	502	3PE	O21-C21	2.43	1.41	1.34
46	J	101	CDL	OA8-CA7	2.42	1.40	1.33
51	L	200	PC1	O31-C31	2.40	1.40	1.33
45	B	501	3PE	O21-C2	-2.39	1.40	1.46
45	4	502	3PE	O31-C3	-2.39	1.39	1.45
45	V	201	3PE	O31-C31	2.38	1.40	1.33
47	8	501	FMN	C10-N1	2.37	1.38	1.33
52	R	601	NAP	C5A-N7A	-2.36	1.31	1.39
45	2	401	3PE	O21-C21	2.35	1.40	1.34
51	j	201	PC1	O31-C31	2.35	1.40	1.33
52	R	601	NAP	C5A-C4A	-2.34	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
51	S	401	PC1	O31-C31	2.33	1.40	1.33
51	L	200	PC1	O21-C2	-2.31	1.40	1.46
45	2	401	3PE	O31-C3	-2.31	1.39	1.45
45	B	501	3PE	O31-C3	-2.30	1.39	1.45
51	Q	201	PC1	O31-C3	-2.30	1.39	1.45
51	L	200	PC1	O31-C3	-2.30	1.39	1.45
52	R	601	NAP	P2B-O2B	2.29	1.63	1.59
45	V	201	3PE	O31-C3	-2.27	1.40	1.45
51	j	201	PC1	O31-C3	-2.27	1.40	1.45
51	j	201	PC1	O21-C21	2.26	1.40	1.34
45	2	401	3PE	O31-C31	2.23	1.39	1.33
51	S	401	PC1	O21-C21	2.22	1.40	1.34
45	B	501	3PE	O21-C21	2.22	1.40	1.34
46	J	101	CDL	OB6-CB5	2.18	1.40	1.34
51	L	200	PC1	O21-C21	2.16	1.40	1.34
52	R	601	NAP	C4N-C3N	-2.15	1.35	1.39
45	4	502	3PE	O31-C31	2.14	1.39	1.33
46	J	101	CDL	OB8-CB6	-2.12	1.40	1.45
45	B	501	3PE	O31-C31	2.12	1.39	1.33
46	4	501	CDL	OA6-CA5	2.10	1.40	1.34
45	2	401	3PE	O21-C2	-2.10	1.41	1.46
46	J	101	CDL	OA6-CA5	2.09	1.40	1.34
51	S	401	PC1	O31-C3	-2.08	1.40	1.45
52	R	601	NAP	PN-O5D	2.08	1.67	1.59
46	4	501	CDL	OA8-CA6	-2.04	1.40	1.45
51	Q	201	PC1	O21-C21	2.04	1.40	1.34
51	Q	201	PC1	O31-C31	2.03	1.39	1.33
45	V	201	3PE	O21-C21	2.01	1.40	1.34
52	R	601	NAP	O2B-C2B	2.01	1.51	1.44
46	4	501	CDL	OB8-CB6	-2.01	1.40	1.45

All (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
45	B	501	3PE	O21-C21-C22	4.53	121.26	111.50
45	2	401	3PE	O21-C21-C22	4.38	120.94	111.50
46	4	501	CDL	OA6-CA5-C11	4.30	120.78	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
46	J	101	CDL	OA6-CA5-C11	4.18	120.50	111.50
45	V	201	3PE	O21-C21-C22	4.17	120.48	111.50
46	J	101	CDL	OB6-CB5-C51	4.08	120.30	111.50
47	8	501	FMN	C4-N3-C2	-3.87	118.50	125.64
51	S	401	PC1	O21-C21-C22	3.84	119.78	111.50
51	Q	201	PC1	O21-C21-C22	3.83	119.75	111.50
47	8	501	FMN	C4A-C10-N1	-3.82	115.87	124.73
51	j	201	PC1	O21-C21-C22	3.54	120.68	110.80
52	R	601	NAP	C1B-N9A-C4A	-3.48	120.52	126.64
47	8	501	FMN	C10-N1-C2	3.22	123.33	116.90
46	4	501	CDL	CB4-OB6-CB5	3.20	125.67	117.79
46	4	501	CDL	OB6-CB5-C51	3.05	118.08	111.50
47	8	501	FMN	C1'-N10-C9A	-3.02	115.47	120.51
47	8	501	FMN	C4A-C4-N3	3.00	120.81	113.19
52	R	601	NAP	PN-O3-PA	-2.86	123.00	132.83
51	j	201	PC1	O31-C31-C32	2.86	120.89	111.91
46	4	501	CDL	OA8-CA7-C31	2.84	120.83	111.91
47	8	501	FMN	C5A-C9A-N10	2.80	120.85	117.95
46	J	101	CDL	OA8-CA7-C31	2.80	120.69	111.91
47	8	501	FMN	C4-C4A-C10	2.76	121.43	116.79
45	2	401	3PE	O31-C31-C32	2.76	120.56	111.91
47	8	501	FMN	O4-C4-C4A	-2.71	119.40	126.60
46	J	101	CDL	OB8-CB7-C71	2.66	120.25	111.91
45	4	502	3PE	O31-C31-C32	2.63	120.17	111.91
51	S	401	PC1	O31-C31-C32	2.63	120.16	111.91
51	L	200	PC1	O31-C31-C32	2.60	120.08	111.91
47	8	501	FMN	C4A-C10-N10	2.59	120.27	116.48
45	B	501	3PE	O31-C31-C32	2.56	119.94	111.91
45	V	201	3PE	O31-C31-C32	2.48	119.70	111.91
52	R	601	NAP	C3D-C2D-C1D	2.42	104.62	100.98
46	4	501	CDL	OB8-CB7-C71	2.40	119.44	111.91
47	8	501	FMN	C5'-C4'-C3'	-2.30	107.76	112.20
51	Q	201	PC1	O31-C31-C32	2.26	119.01	111.91
45	4	502	3PE	C2-O21-C21	2.12	123.01	117.79
47	8	501	FMN	C9A-C5A-N5	-2.07	120.18	122.43
52	R	601	NAP	C6N-N1N-C2N	-2.06	120.10	121.97

There are no chirality outliers.

All (285) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	2	401	3PE	C11-O13-P-O12

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Mol	Chain	Res	Type	Atoms
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
45	4	502	3PE	C1-O11-P-O14
45	4	502	3PE	C22-C21-O21-C2
45	B	501	3PE	C1-O11-P-O12
45	B	501	3PE	C1-O11-P-O13
45	B	501	3PE	C1-O11-P-O14
45	B	501	3PE	O13-C11-C12-N
45	B	501	3PE	O22-C21-O21-C2
45	B	501	3PE	C22-C21-O21-C2
45	V	201	3PE	C1-O11-P-O12
45	V	201	3PE	C1-O11-P-O14
45	V	201	3PE	O21-C2-C3-O31
46	4	501	CDL	C1-CA2-OA2-PA1
46	4	501	CDL	CA2-OA2-PA1-OA4
46	J	101	CDL	CB2-C1-CA2-OA2
46	J	101	CDL	CA2-OA2-PA1-OA3
46	J	101	CDL	CA2-OA2-PA1-OA5
46	J	101	CDL	OA7-CA5-OA6-CA4
47	8	501	FMN	C2'-C1'-N10-C10
47	8	501	FMN	N10-C1'-C2'-O2'
47	8	501	FMN	N10-C1'-C2'-C3'
47	8	501	FMN	C1'-C2'-C3'-O3'
47	8	501	FMN	C1'-C2'-C3'-C4'
47	8	501	FMN	C5'-O5'-P-O2P
47	8	501	FMN	C5'-O5'-P-O3P
51	L	200	PC1	C11-O13-P-O14
51	L	200	PC1	C1-O11-P-O12
51	L	200	PC1	C1-O11-P-O14
51	L	200	PC1	O13-C11-C12-N
51	Q	201	PC1	C1-O11-P-O12
51	Q	201	PC1	C1-O11-P-O14
51	Q	201	PC1	C1-O11-P-O13
51	Q	201	PC1	O22-C21-O21-C2
51	S	401	PC1	C11-O13-P-O12
51	S	401	PC1	C1-O11-P-O14
51	S	401	PC1	O13-C11-C12-N
51	j	201	PC1	C11-O13-P-O12
51	j	201	PC1	C11-O13-P-O14
51	j	201	PC1	C1-O11-P-O14

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Mol	Chain	Res	Type	Atoms
51	j	201	PC1	C22-C21-O21-C2
52	R	601	NAP	C5B-O5B-PA-O1A
52	R	601	NAP	C5B-O5B-PA-O2A
52	R	601	NAP	C1B-C2B-O2B-P2B
52	R	601	NAP	C5D-O5D-PN-O1N
52	R	601	NAP	C5D-O5D-PN-O2N
52	R	601	NAP	C2D-C1D-N1N-C2N
52	R	601	NAP	C2D-C1D-N1N-C6N
46	4	501	CDL	OB9-CB7-OB8-CB6
45	2	401	3PE	O22-C21-O21-C2
51	j	201	PC1	O22-C21-O21-C2
46	4	501	CDL	C71-CB7-OB8-CB6
46	J	101	CDL	C11-CA5-OA6-CA4
51	Q	201	PC1	C22-C21-O21-C2
45	4	502	3PE	C32-C31-O31-C3
46	J	101	CDL	C31-CA7-OA8-CA6
46	J	101	CDL	C71-CB7-OB8-CB6
51	S	401	PC1	C32-C31-O31-C3
45	4	502	3PE	O22-C21-O21-C2
46	J	101	CDL	OB9-CB7-OB8-CB6
51	S	401	PC1	O32-C31-O31-C3
51	j	201	PC1	O32-C31-O31-C3
46	J	101	CDL	O1-C1-CA2-OA2
46	J	101	CDL	OA9-CA7-OA8-CA6
47	8	501	FMN	O2'-C2'-C3'-O3'
52	R	601	NAP	O4B-C4B-C5B-O5B
52	R	601	NAP	O4D-C4D-C5D-O5D
51	j	201	PC1	C32-C31-O31-C3
45	4	502	3PE	O32-C31-O31-C3
45	2	401	3PE	C32-C31-O31-C3
46	J	101	CDL	CA2-C1-CB2-OB2
51	L	200	PC1	C32-C31-O31-C3
51	L	200	PC1	C31-C32-C33-C34
45	B	501	3PE	O11-C1-C2-O21
45	2	401	3PE	O32-C31-O31-C3
46	4	501	CDL	C11-CA5-OA6-CA4
51	L	200	PC1	O32-C31-O31-C3
46	4	501	CDL	CA5-C11-C12-C13
47	8	501	FMN	O2'-C2'-C3'-C4'
51	Q	201	PC1	C31-C32-C33-C34
51	j	201	PC1	C31-C32-C33-C34
46	4	501	CDL	OA7-CA5-OA6-CA4

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Mol	Chain	Res	Type	Atoms
45	2	401	3PE	C11-O13-P-O11
45	V	201	3PE	C1-O11-P-O13
46	4	501	CDL	CA2-OA2-PA1-OA5
51	L	200	PC1	C11-O13-P-O11
51	L	200	PC1	C1-O11-P-O13
51	S	401	PC1	C11-O13-P-O11
51	S	401	PC1	C1-O11-P-O13
51	j	201	PC1	C11-O13-P-O11
51	S	401	PC1	C23-C24-C25-C26
45	2	401	3PE	C27-C28-C29-C2A
45	B	501	3PE	C32-C33-C34-C35
51	S	401	PC1	C3E-C3F-C3G-C3H
45	2	401	3PE	C3-C2-O21-C21
46	J	101	CDL	C54-C55-C56-C57
46	J	101	CDL	O1-C1-CB2-OB2
51	S	401	PC1	C31-C32-C33-C34
51	j	201	PC1	C36-C37-C38-C39
45	B	501	3PE	C2D-C2E-C2F-C2G
46	4	501	CDL	CA7-C31-C32-C33
46	4	501	CDL	C62-C63-C64-C65
51	L	200	PC1	C34-C35-C36-C37
51	L	200	PC1	C39-C3A-C3B-C3C
51	j	201	PC1	C3B-C3C-C3D-C3E
46	4	501	CDL	C77-C78-C79-C80
45	4	502	3PE	C28-C29-C2A-C2B
46	J	101	CDL	C15-C16-C17-C18
45	4	502	3PE	C32-C33-C34-C35
46	4	501	CDL	C78-C79-C80-C81
45	B	501	3PE	C2C-C2D-C2E-C2F
45	2	401	3PE	C26-C27-C28-C29
45	B	501	3PE	C31-C32-C33-C34
51	Q	201	PC1	C2B-C2C-C2D-C2E
45	B	501	3PE	C33-C34-C35-C36
46	J	101	CDL	C53-C54-C55-C56
51	S	401	PC1	C25-C26-C27-C28
51	S	401	PC1	C32-C33-C34-C35
46	4	501	CDL	C54-C55-C56-C57
45	4	502	3PE	C31-C32-C33-C34
45	V	201	3PE	C32-C33-C34-C35
45	B	501	3PE	C26-C27-C28-C29
46	4	501	CDL	C75-C76-C77-C78
51	j	201	PC1	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
46	4	501	CDL	CA2-C1-CB2-OB2
45	4	502	3PE	C24-C25-C26-C27
45	2	401	3PE	C25-C26-C27-C28
45	V	201	3PE	C26-C27-C28-C29
46	4	501	CDL	C13-C14-C15-C16
45	V	201	3PE	C2A-C2B-C2C-C2D
45	B	501	3PE	C21-C22-C23-C24
45	V	201	3PE	C36-C37-C38-C39
51	L	200	PC1	C27-C28-C29-C2A
45	V	201	3PE	C2E-C2F-C2G-C2H
51	S	401	PC1	C39-C3A-C3B-C3C
45	B	501	3PE	C35-C36-C37-C38
51	L	200	PC1	C25-C26-C27-C28
51	S	401	PC1	C24-C25-C26-C27
46	J	101	CDL	CA7-C31-C32-C33
51	L	200	PC1	C3C-C3D-C3E-C3F
45	4	502	3PE	C2E-C2F-C2G-C2H
45	B	501	3PE	C23-C24-C25-C26
46	4	501	CDL	C80-C81-C82-C83
46	4	501	CDL	OA6-CA4-CA6-OA8
45	B	501	3PE	C34-C35-C36-C37
45	V	201	3PE	C2B-C2C-C2D-C2E
46	4	501	CDL	C73-C74-C75-C76
51	S	401	PC1	C22-C23-C24-C25
46	4	501	CDL	C74-C75-C76-C77
45	B	501	3PE	O11-C1-C2-C3
46	4	501	CDL	C34-C35-C36-C37
51	S	401	PC1	C21-C22-C23-C24
45	4	502	3PE	C21-C22-C23-C24
51	L	200	PC1	C26-C27-C28-C29
52	R	601	NAP	C3B-C4B-C5B-O5B
46	4	501	CDL	C52-C53-C54-C55
46	4	501	CDL	C84-C85-C86-C87
47	8	501	FMN	C5'-O5'-P-O1P
46	4	501	CDL	O1-C1-CB2-OB2
51	L	200	PC1	O21-C2-C3-O31
51	S	401	PC1	O21-C2-C3-O31
45	4	502	3PE	C35-C36-C37-C38
45	B	501	3PE	C3E-C3F-C3G-C3H
45	2	401	3PE	C28-C29-C2A-C2B
46	4	501	CDL	C15-C16-C17-C18
51	S	401	PC1	C3F-C3G-C3H-C3I

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Mol	Chain	Res	Type	Atoms
51	L	200	PC1	O11-C1-C2-C3
45	V	201	3PE	C38-C39-C3A-C3B
51	Q	201	PC1	C21-C22-C23-C24
51	Q	201	PC1	C2A-C2B-C2C-C2D
45	2	401	3PE	C1-C2-C3-O31
45	V	201	3PE	C1-C2-C3-O31
46	4	501	CDL	CA3-CA4-CA6-OA8
46	J	101	CDL	CA3-CA4-CA6-OA8
51	j	201	PC1	C1-C2-C3-O31
51	S	401	PC1	C3D-C3E-C3F-C3G
45	4	502	3PE	C23-C24-C25-C26
45	4	502	3PE	C2C-C2D-C2E-C2F
45	2	401	3PE	O11-C1-C2-O21
51	L	200	PC1	O11-C1-C2-O21
51	L	200	PC1	C35-C36-C37-C38
46	4	501	CDL	C81-C82-C83-C84
46	J	101	CDL	OA6-CA4-CA6-OA8
46	J	101	CDL	C12-C13-C14-C15
45	4	502	3PE	C2-C1-O11-P
45	V	201	3PE	O21-C21-C22-C23
52	R	601	NAP	PN-O3-PA-O5B
52	R	601	NAP	PA-O3-PN-O5D
45	V	201	3PE	C3F-C3G-C3H-C3I
46	J	101	CDL	C16-C17-C18-C19
46	4	501	CDL	OA5-CA3-CA4-CA6
46	4	501	CDL	OB5-CB3-CB4-CB6
51	S	401	PC1	O11-C1-C2-C3
51	j	201	PC1	C35-C36-C37-C38
46	J	101	CDL	C11-C12-C13-C14
45	B	501	3PE	C2-C1-O11-P
51	Q	201	PC1	C1-C2-C3-O31
51	S	401	PC1	O11-C1-C2-O21
46	4	501	CDL	OB6-CB4-CB6-OB8
51	Q	201	PC1	O21-C2-C3-O31
51	j	201	PC1	O21-C2-C3-O31
52	R	601	NAP	C5B-O5B-PA-O3
52	R	601	NAP	C2B-O2B-P2B-O3X
46	J	101	CDL	CB7-C71-C72-C73
51	Q	201	PC1	C32-C33-C34-C35
51	j	201	PC1	C1-O11-P-O13
46	J	101	CDL	C31-C32-C33-C34
51	L	200	PC1	C11-O13-P-O12

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Mol	Chain	Res	Type	Atoms
51	S	401	PC1	C11-O13-P-O14
51	S	401	PC1	C1-O11-P-O12
45	2	401	3PE	O11-C1-C2-C3
45	4	502	3PE	O11-C1-C2-C3
46	J	101	CDL	OB5-CB3-CB4-CB6
45	4	502	3PE	O13-C11-C12-N
45	B	501	3PE	C3B-C3C-C3D-C3E
46	4	501	CDL	OA5-CA3-CA4-OA6
45	V	201	3PE	C2C-C2D-C2E-C2F
51	Q	201	PC1	C35-C36-C37-C38
45	V	201	3PE	C23-C24-C25-C26
46	4	501	CDL	CB3-CB4-CB6-OB8
51	Q	201	PC1	O13-C11-C12-N
51	j	201	PC1	O13-C11-C12-N
45	2	401	3PE	O21-C2-C3-O31
46	4	501	CDL	C14-C15-C16-C17
45	V	201	3PE	C2-C1-O11-P
51	Q	201	PC1	C2-C1-O11-P
51	S	401	PC1	C2-C1-O11-P
46	4	501	CDL	C35-C36-C37-C38
45	4	502	3PE	C34-C35-C36-C37
45	4	502	3PE	C11-O13-P-O11
45	V	201	3PE	C11-O13-P-O11
46	J	101	CDL	CB2-OB2-PB2-OB5
51	L	200	PC1	C1-C2-C3-O31
51	S	401	PC1	C1-C2-C3-O31
45	2	401	3PE	C33-C34-C35-C36
46	4	501	CDL	CA4-CA3-OA5-PA1
45	B	501	3PE	C38-C39-C3A-C3B
45	B	501	3PE	C37-C38-C39-C3A
45	B	501	3PE	C36-C37-C38-C39
45	V	201	3PE	C3E-C3F-C3G-C3H
51	j	201	PC1	C3A-C3B-C3C-C3D
51	j	201	PC1	C37-C38-C39-C3A
45	4	502	3PE	C1-C2-O21-C21
46	4	501	CDL	CB3-CB4-OB6-CB5
51	L	200	PC1	C32-C33-C34-C35
46	J	101	CDL	OB7-CB5-OB6-CB4
51	L	200	PC1	C22-C23-C24-C25
46	4	501	CDL	C71-C72-C73-C74
51	S	401	PC1	C34-C35-C36-C37
45	2	401	3PE	C29-C2A-C2B-C2C

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Mol	Chain	Res	Type	Atoms
46	J	101	CDL	C14-C15-C16-C17
45	2	401	3PE	C21-C22-C23-C24
46	4	501	CDL	C52-C51-CB5-OB6
51	Q	201	PC1	O21-C21-C22-C23
51	Q	201	PC1	C26-C27-C28-C29
51	S	401	PC1	C38-C39-C3A-C3B
51	S	401	PC1	O31-C31-C32-C33
51	j	201	PC1	O31-C31-C32-C33
52	R	601	NAP	C5D-O5D-PN-O3
46	J	101	CDL	C51-CB5-OB6-CB4
51	S	401	PC1	O21-C21-C22-C23
45	4	502	3PE	C2D-C2E-C2F-C2G
46	4	501	CDL	C52-C51-CB5-OB7
51	Q	201	PC1	O22-C21-C22-C23
46	J	101	CDL	CB3-CB4-CB6-OB8
51	S	401	PC1	O32-C31-C32-C33
45	4	502	3PE	C11-O13-P-O14
45	V	201	3PE	C11-O13-P-O14
51	Q	201	PC1	C11-O13-P-O14
51	S	401	PC1	C27-C28-C29-C2A
51	j	201	PC1	O32-C31-C32-C33
45	V	201	3PE	O22-C21-C22-C23
46	J	101	CDL	C13-C14-C15-C16
51	j	201	PC1	C12-C11-O13-P
46	J	101	CDL	C12-C11-CA5-OA6
51	Q	201	PC1	C22-C23-C24-C25
51	j	201	PC1	O11-C1-C2-O21
51	S	401	PC1	O22-C21-C22-C23
45	2	401	3PE	O31-C31-C32-C33
45	B	501	3PE	O31-C31-C32-C33
45	B	501	3PE	O32-C31-C32-C33
45	2	401	3PE	O32-C31-C32-C33

There are no ring outliers.

11 monomers are involved in 16 short contacts:

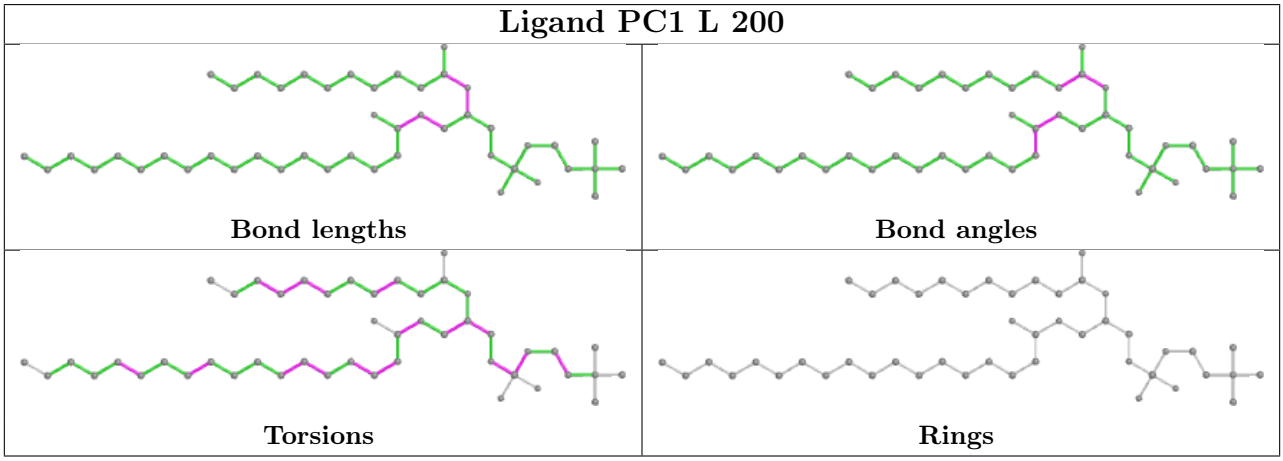
Mol	Chain	Res	Type	Clashes	Symm-Clashes
51	L	200	PC1	2	0
46	4	501	CDL	1	0
51	Q	201	PC1	1	0
45	B	501	3PE	1	0
45	2	401	3PE	1	0

Continued on next page...

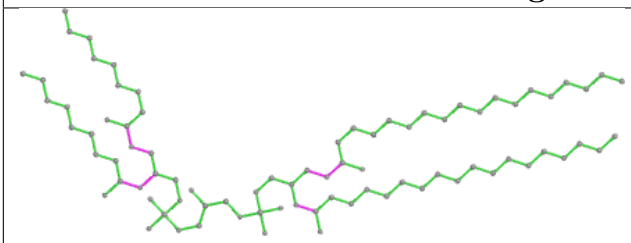
Continued from previous page...

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

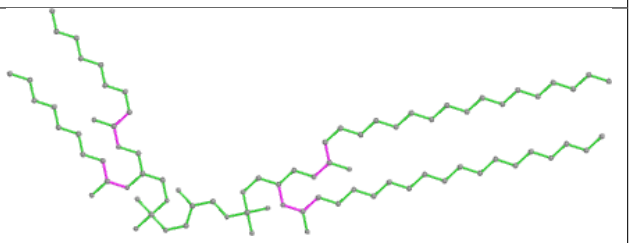
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



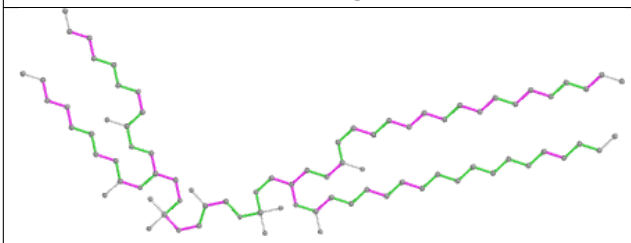
Ligand CDL 4 501



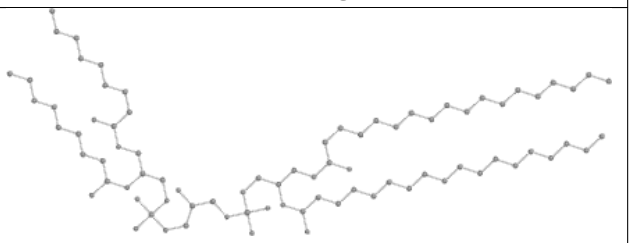
Bond lengths



Bond angles

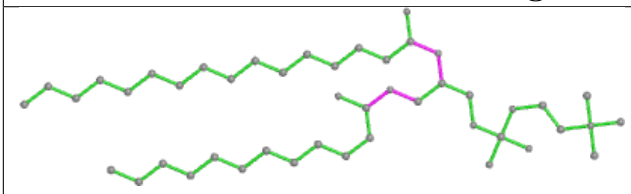


Torsions

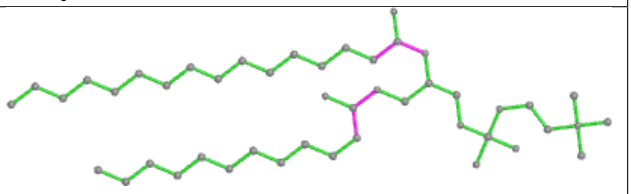


Rings

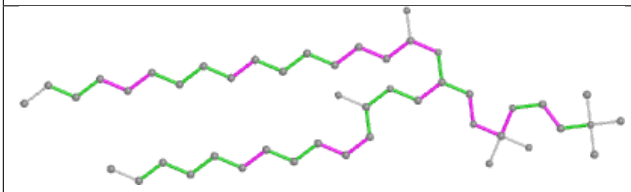
Ligand PC1 Q 201



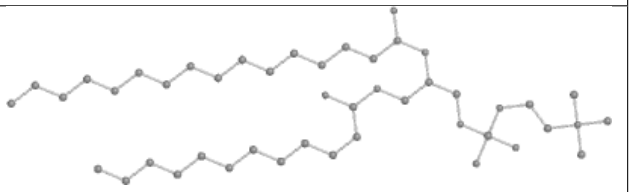
Bond lengths



Bond angles

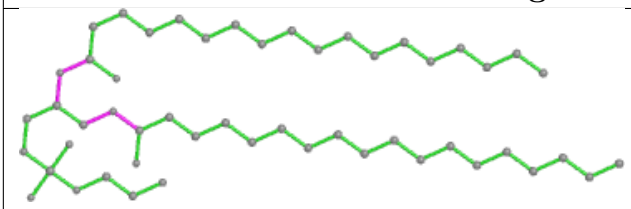


Torsions

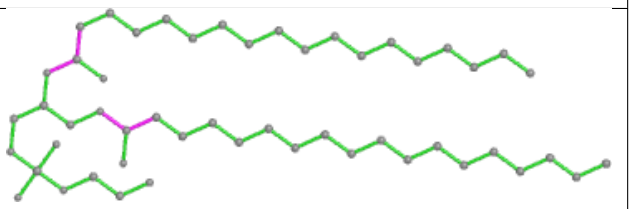


Rings

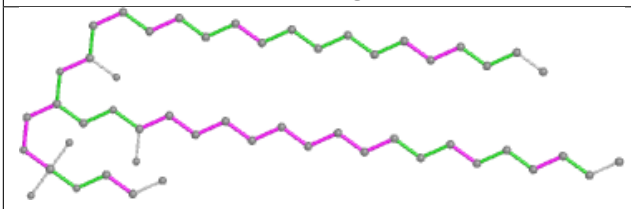
Ligand 3PE B 501



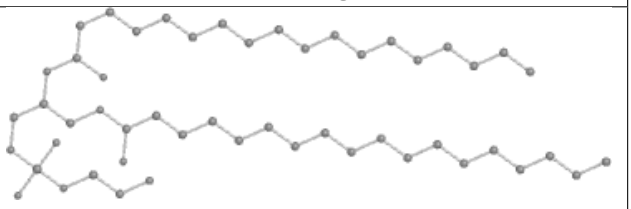
Bond lengths



Bond angles

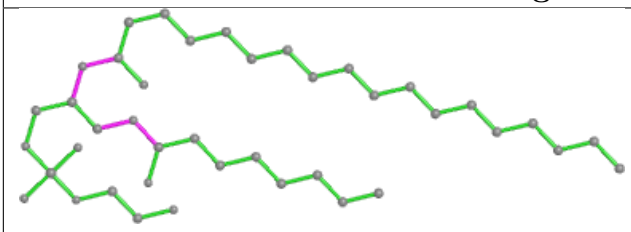


Torsions

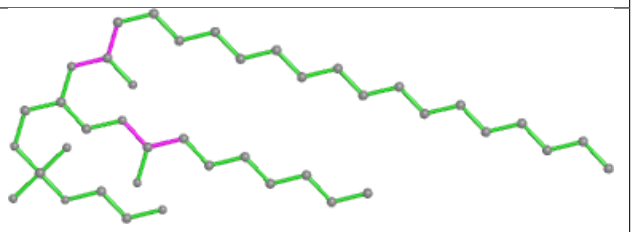


Rings

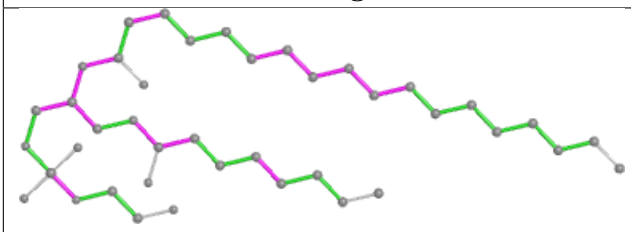
Ligand 3PE 2 401



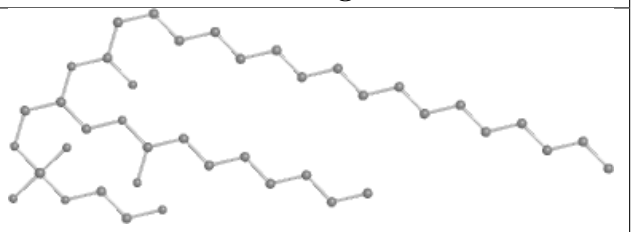
Bond lengths



Bond angles

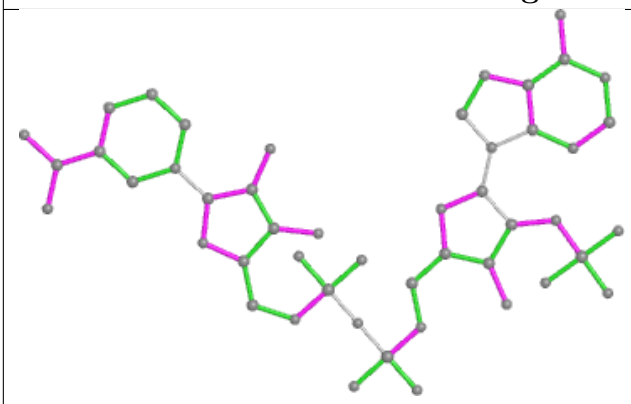


Torsions

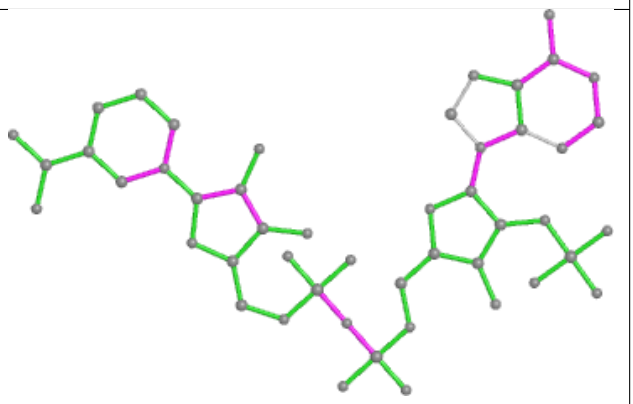


Rings

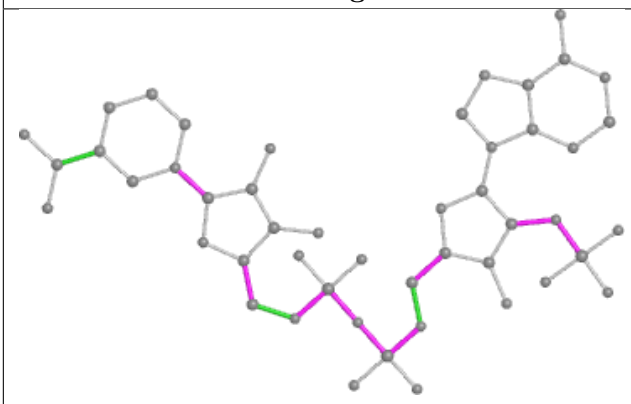
Ligand NAP R 601



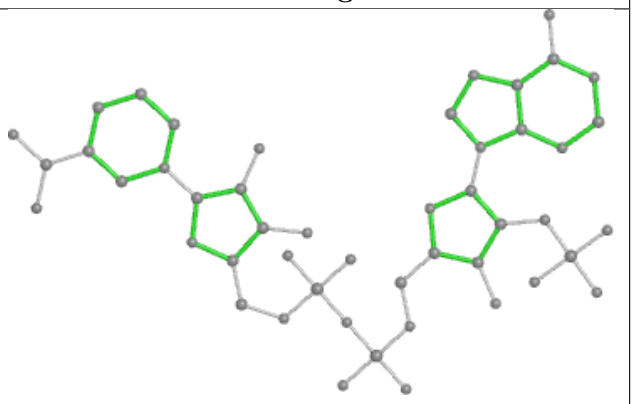
Bond lengths



Bond angles

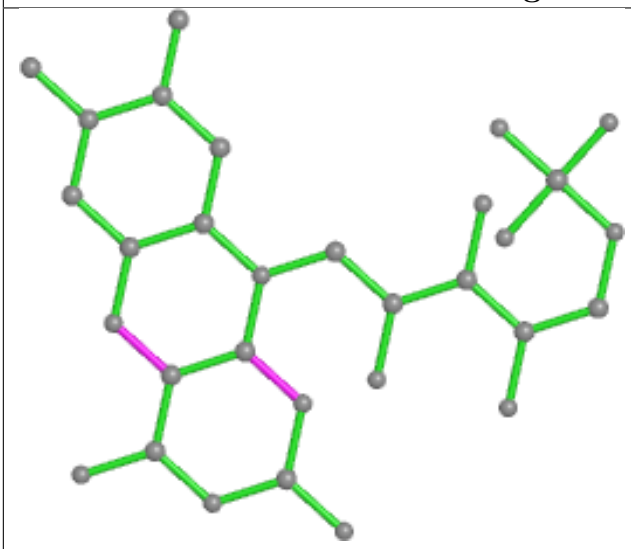


Torsions

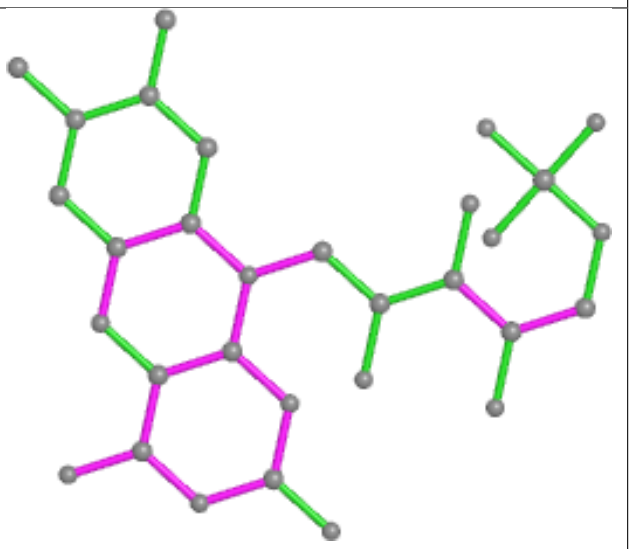


Rings

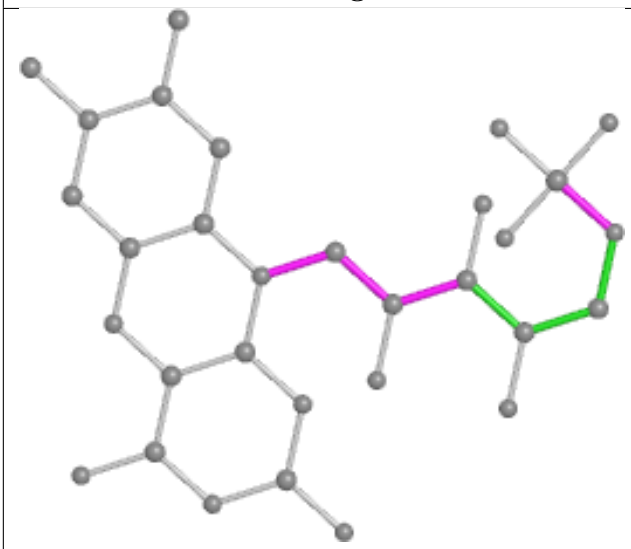
Ligand FMN 8 501



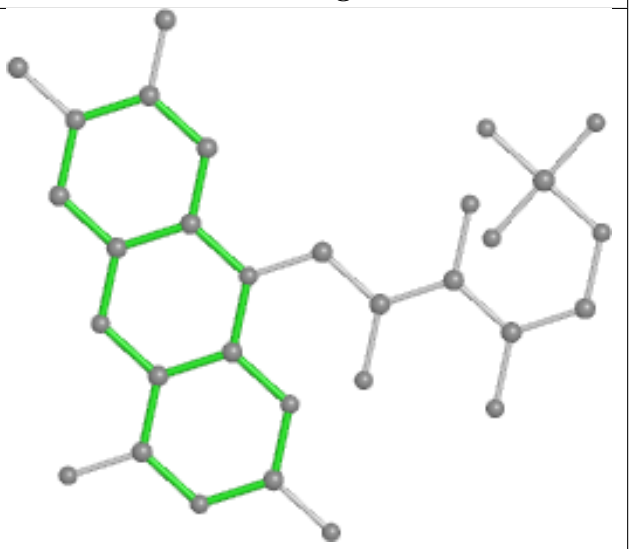
Bond lengths



Bond angles

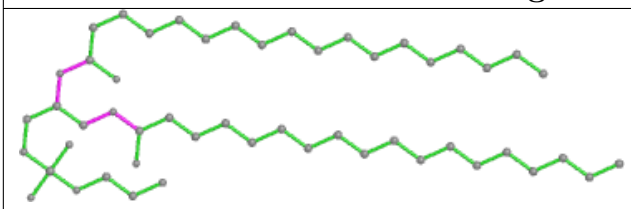


Torsions

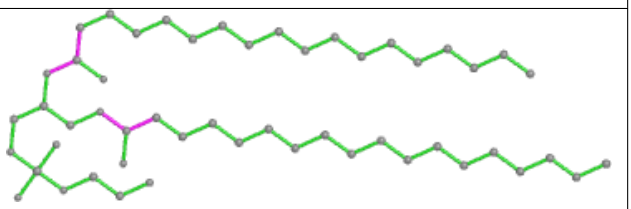


Rings

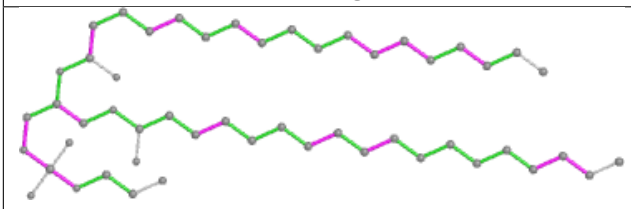
Ligand 3PE V 201



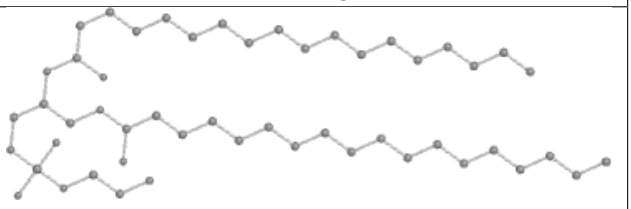
Bond lengths



Bond angles

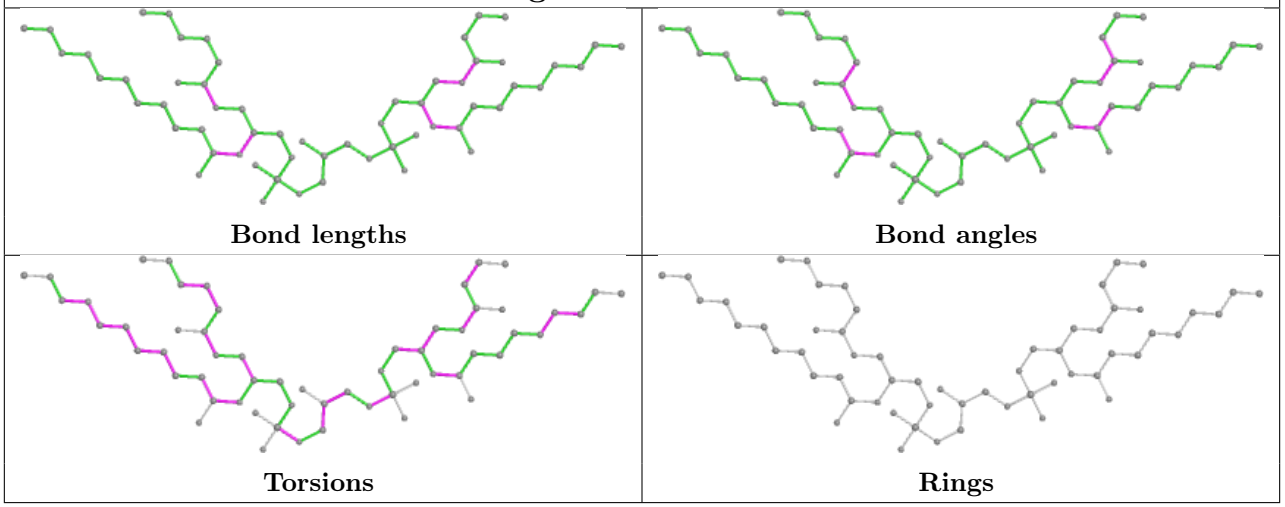


Torsions

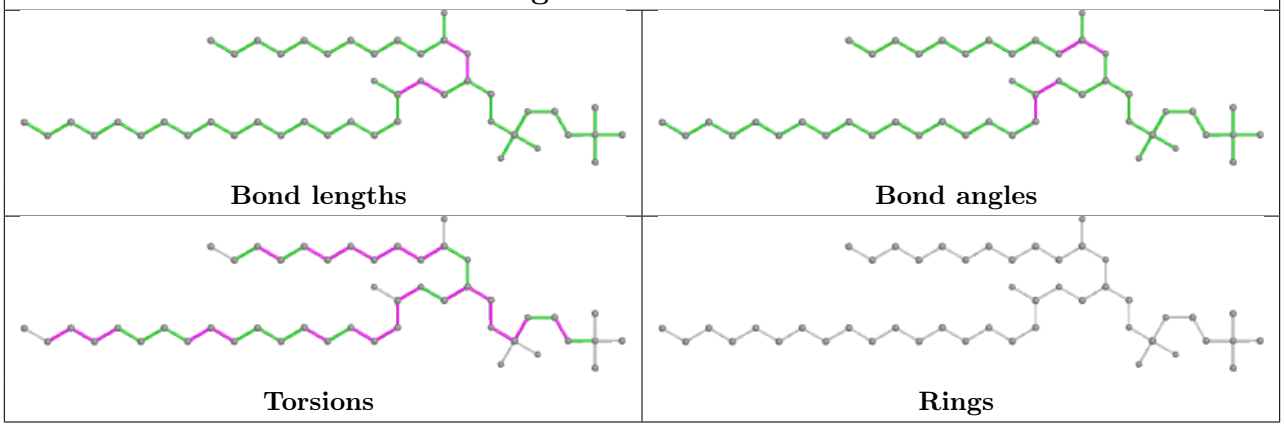


Rings

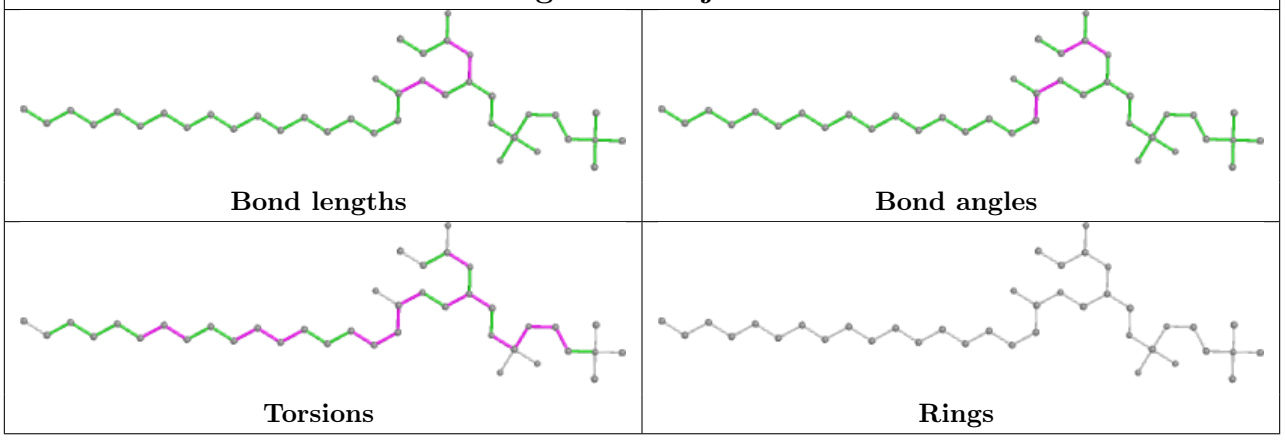
Ligand CDL J 101



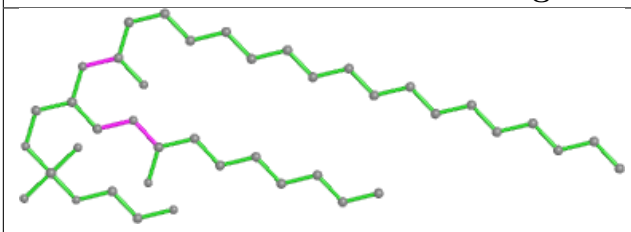
Ligand PC1 S 401



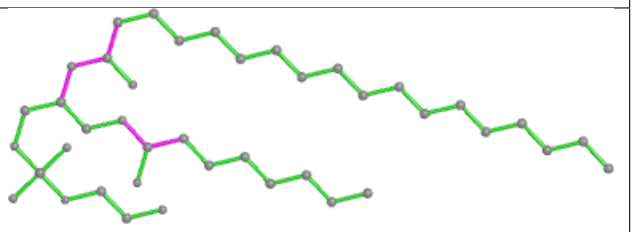
Ligand PC1 j 201



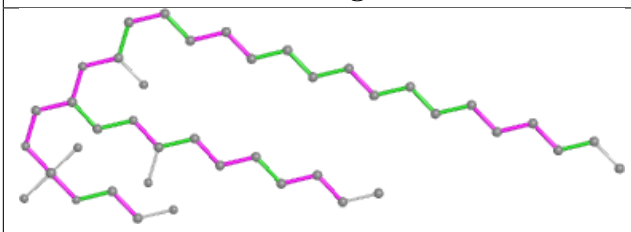
Ligand 3PE 4 502



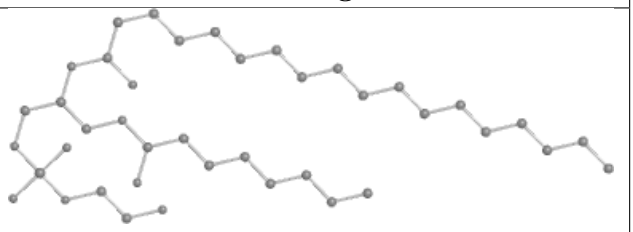
Bond lengths



Bond angles



Torsions



Rings

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.

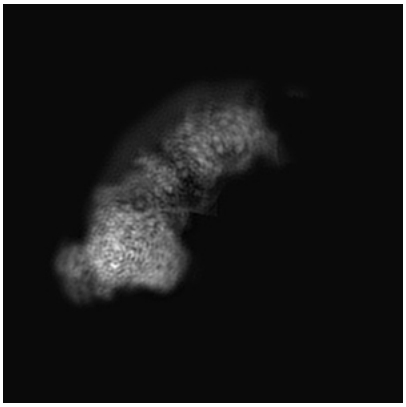
6 Map visualisation

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.

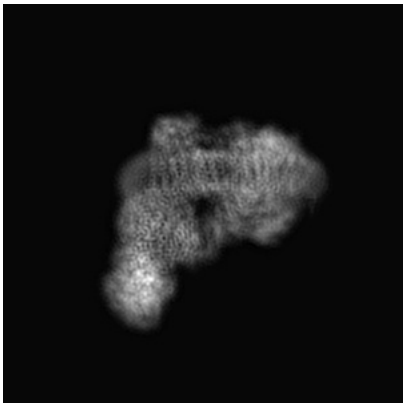
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

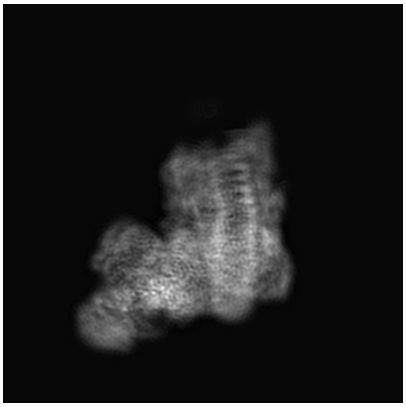
6.1.1 Primary map



X



Y

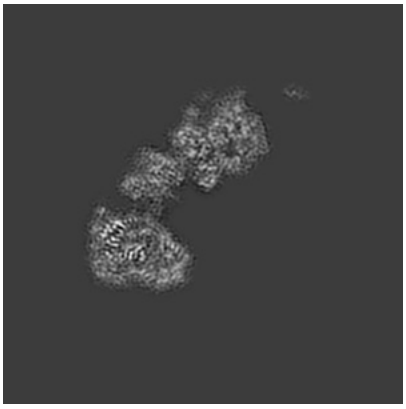


Z

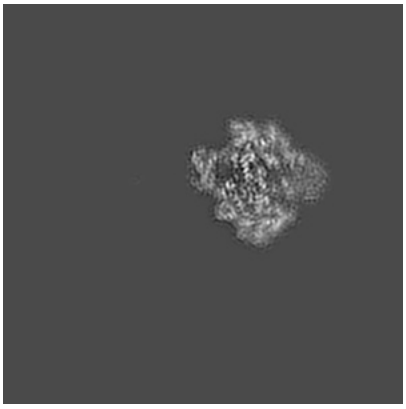
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 140



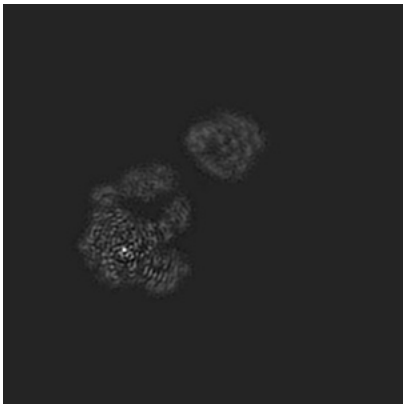
Y Index: 140

Z Index: 140

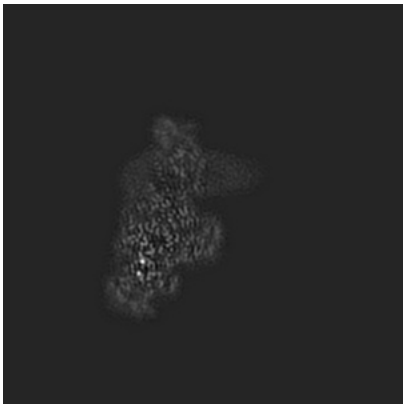
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

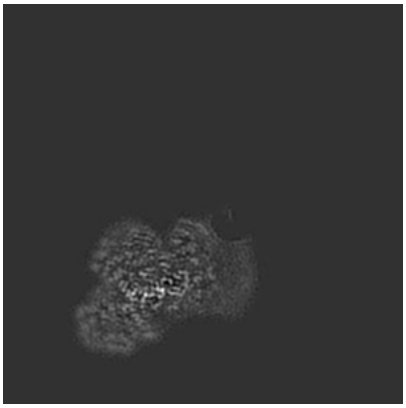
6.3.1 Primary map



X Index: 124



Y Index: 76

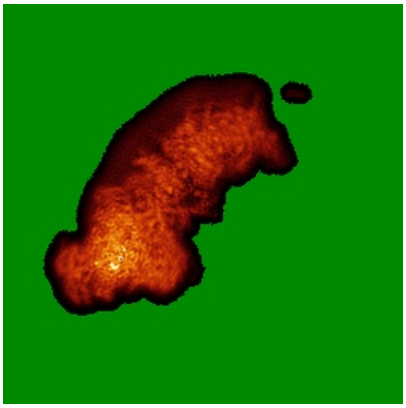


Z Index: 96

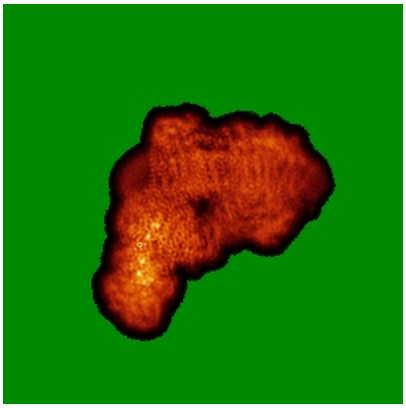
The images above show the largest variance slices of the map in three orthogonal directions.

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

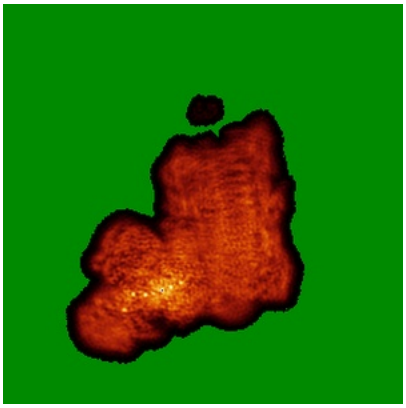
6.4.1 Primary map



X



Y

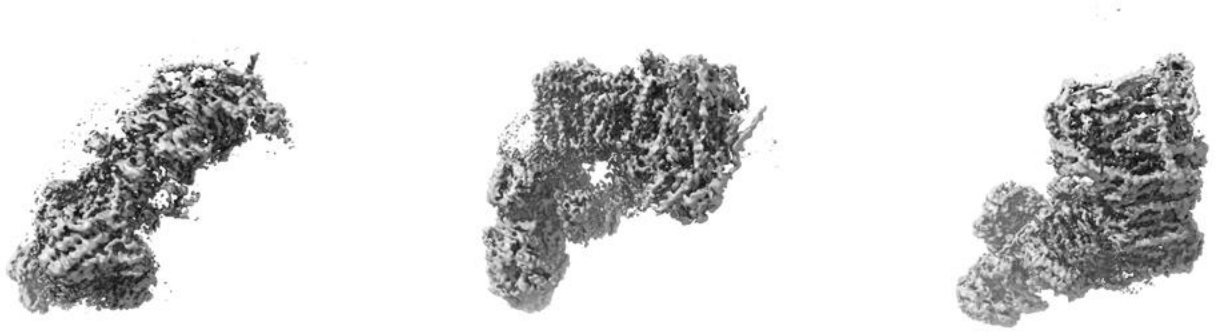


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

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

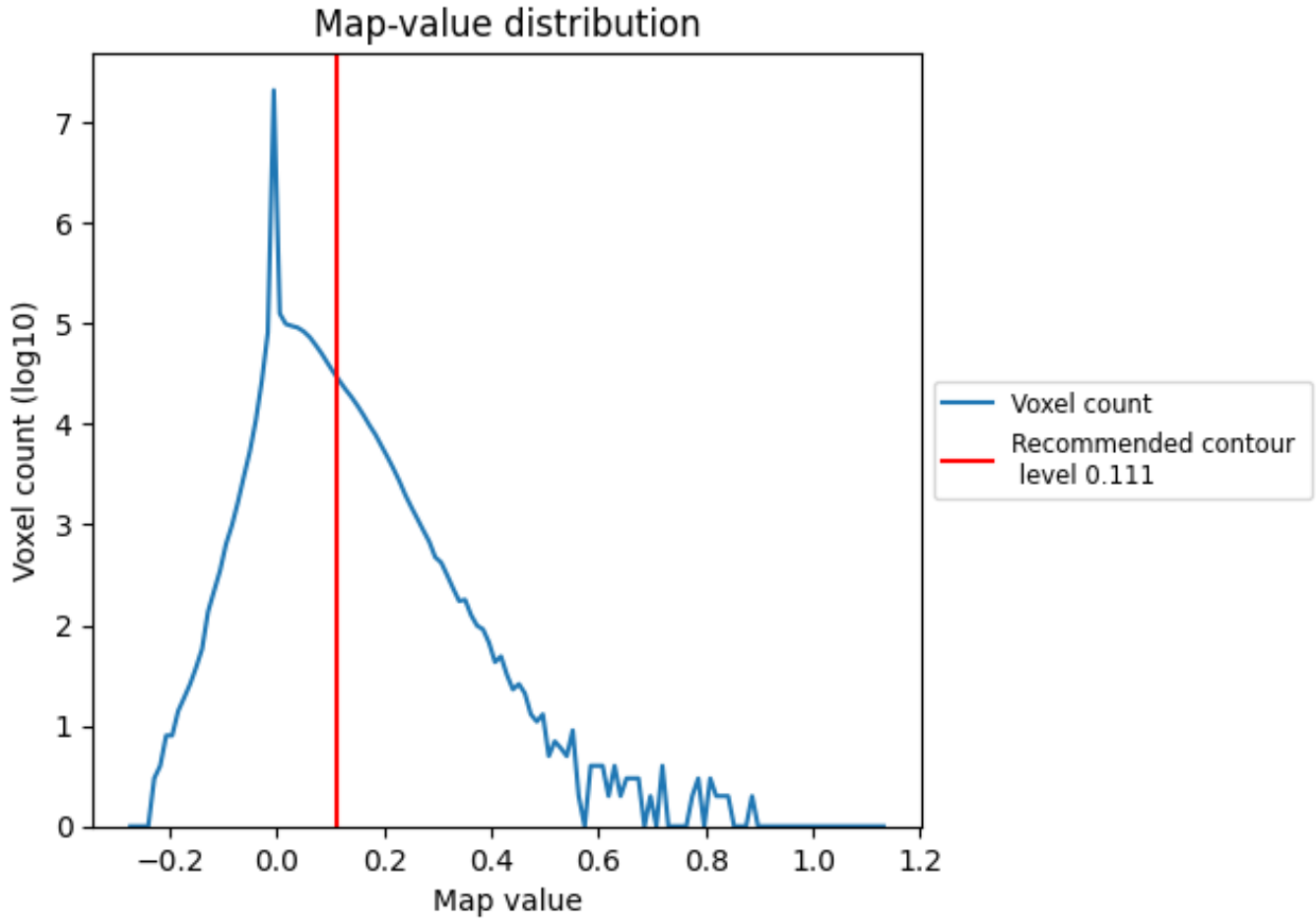
6.6 Mask visualisation (i)

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

7 Map analysis

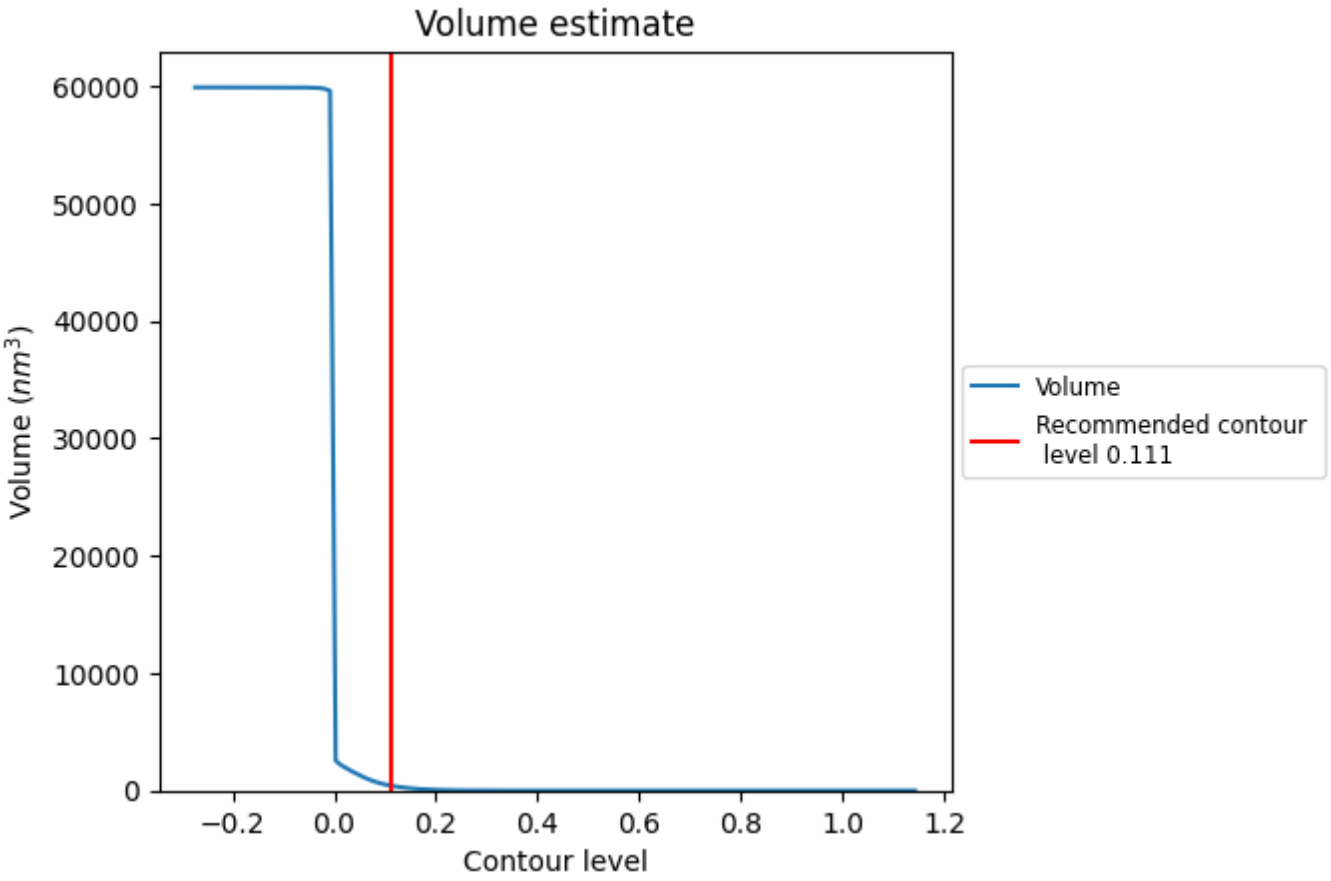
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

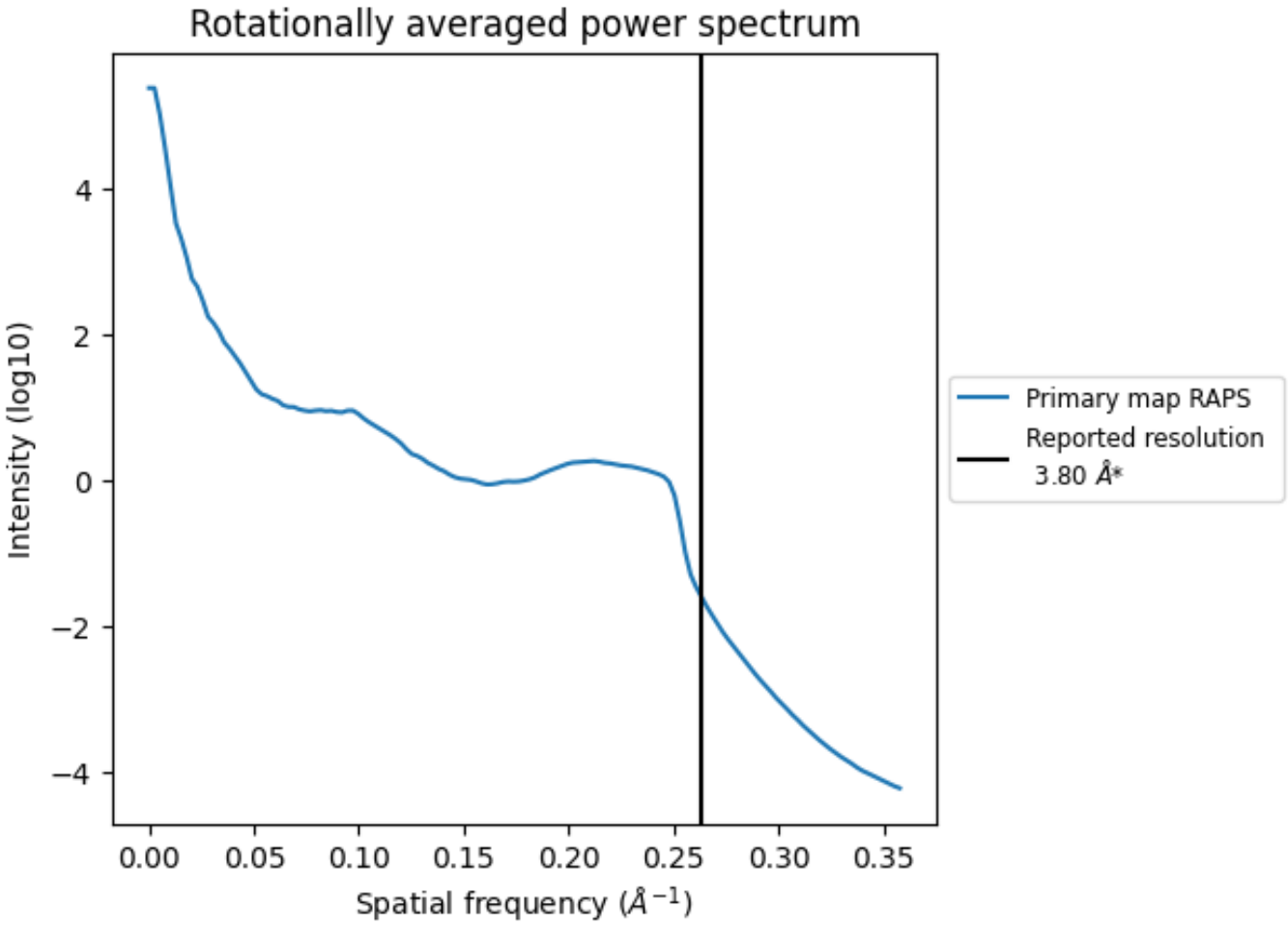
7.2 Volume estimate



The volume at the recommended contour level is 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}

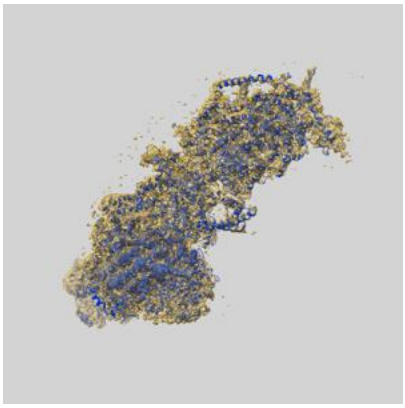
8 Fourier-Shell correlation

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

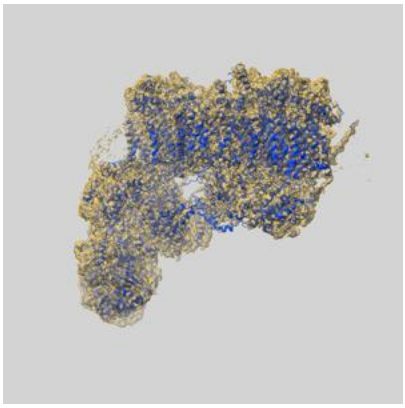
9 Map-model fit

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.

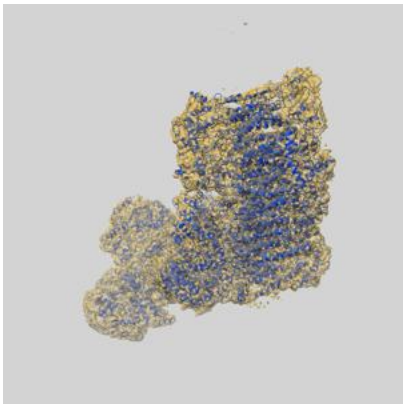
9.1 Map-model overlay



X



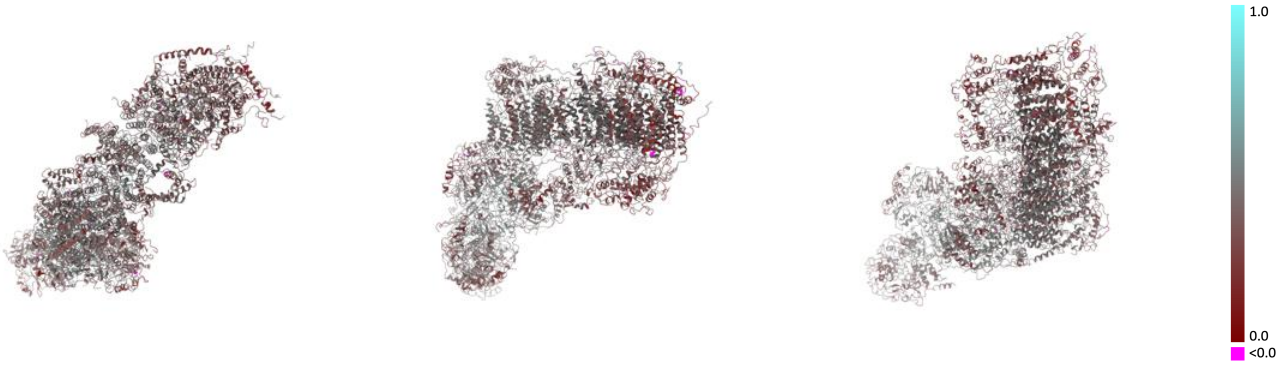
Y



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.

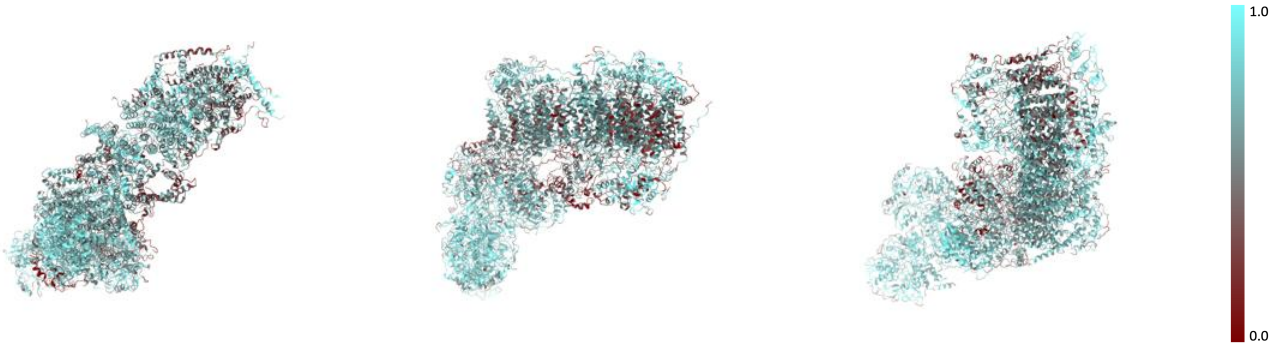
9.2 Q-score mapped to coordinate model



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.

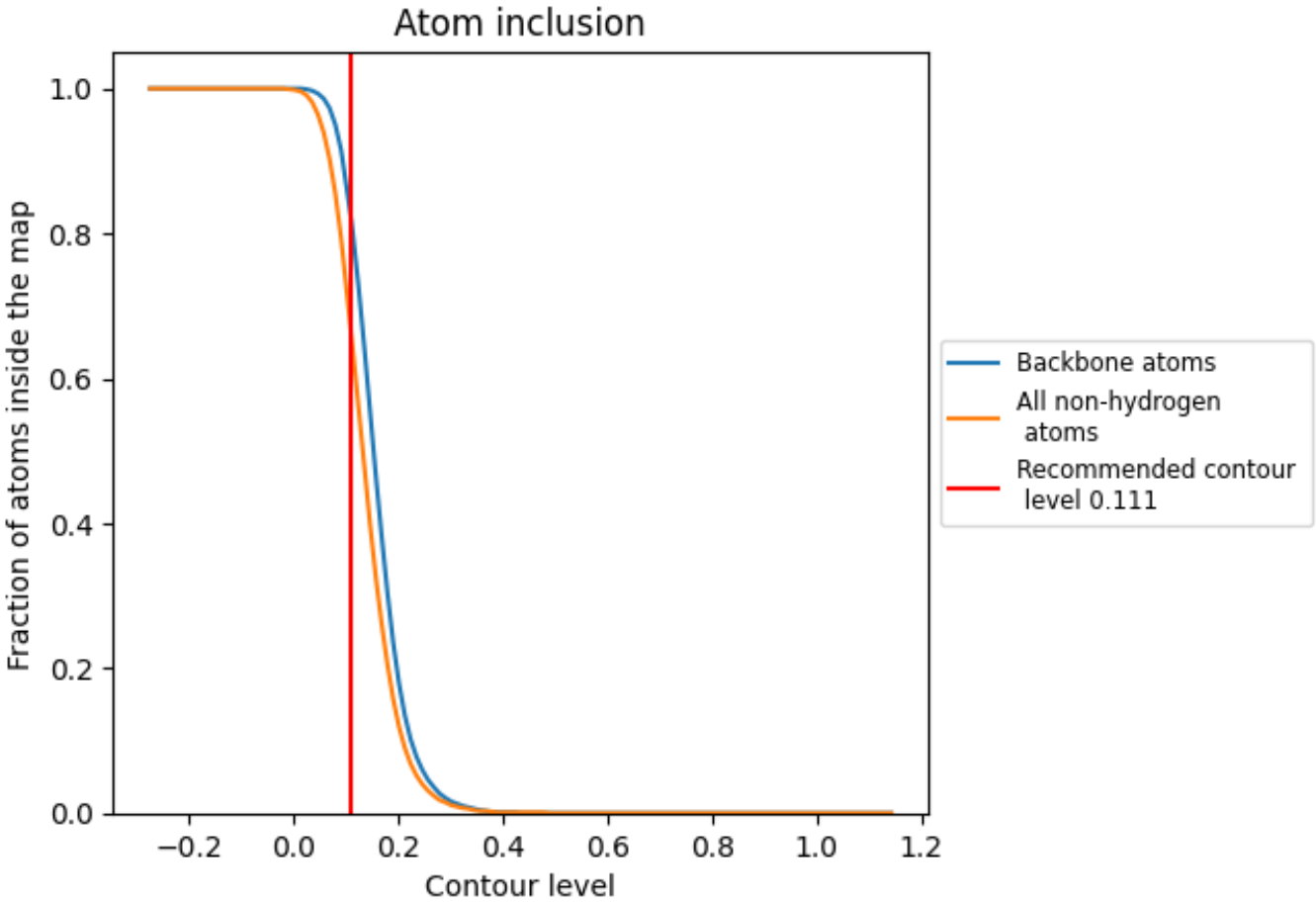
9.3 Atom inclusion mapped to coordinate model



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	0.6580	0.3970
1	0.6540	0.4450
2	0.7030	0.4400
3	0.4720	0.3970
4	0.6490	0.4310
5	0.6520	0.4170
6	0.5000	0.3600
7	0.5220	0.3890
8	0.8220	0.3680
9	0.7550	0.3410
A	0.8070	0.4290
B	0.7360	0.4640
C	0.8110	0.4650
D	0.7850	0.4690
E	0.8440	0.4640
F	0.5470	0.2900
G	0.7300	0.4560
H	0.7210	0.4280
I	0.5480	0.4010
J	0.6890	0.4240
K	0.7460	0.3520
L	0.5670	0.3910
M	0.3970	0.2920
N	0.7400	0.3910
O	0.6880	0.4050
P	0.5360	0.3740
Q	0.7160	0.3820
R	0.6200	0.3730
S	0.4020	0.3490
T	0.4500	0.3680
U	0.3600	0.3690
V	0.6960	0.3990
W	0.5870	0.2980
X	0.5380	0.3400
Y	0.5730	0.3310

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Chain	Atom inclusion	Q-score
Z	0.5330	0.3110
a	0.6220	0.3860
b	0.7390	0.4150
c	0.6590	0.3290
d	0.7850	0.2910
e	0.5590	0.3690
f	0.6880	0.3400
g	0.6150	0.3390
h	0.6310	0.3680
i	0.6590	0.3650
j	0.6680	0.4040