Full wwPDB EM Validation Report ⓘ

Sep 27, 2022 – 12:57 am BST

PDB ID	:	7Z84
EMDB ID	:	EMD-14542
Title	:	Complex I from E. coli, DDM/LMNG-purified, under Turnover at pH 8, Open-ready state
Authors	:	Kravchuk, V.; Kampjut, D.; Sazanov, L.
Deposited on	:	2022-03-16
Resolution	:	2.87 Å(reported)
Based on initial models	:	3RKO, 4HEA

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:

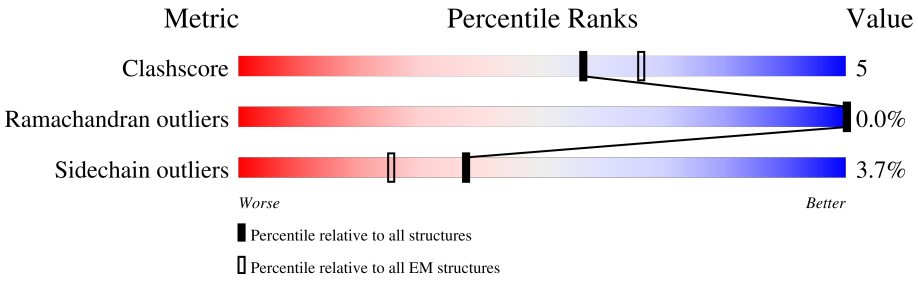
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.87 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	F	445	82% 17%
2	E	166	82% 12% 6%
3	G	908	86% 13%
4	C	600	83% 13%
5	B	220	74% 20% 5%
6	I	180	83% 16%
7	H	325	79% 20%
8	A	147	64% 12% 23%

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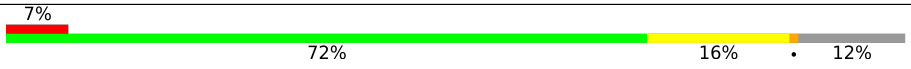
Mol	Chain	Length	Quality of chain
9	L	613	
10	M	509	
11	N	485	
12	K	100	
13	J	184	

2 Entry composition

There are 20 unique types of molecules in this entry. The entry contains 37772 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-quinone oxidoreductase subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	F	439	3407	2162	596	629	20	0	0

- Molecule 2 is a protein called NADH dehydrogenase I subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E	156	1220	768	215	229	8	0	0

- Molecule 3 is a protein called NADH-quinone oxidoreductase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	G	905	7022	4388	1269	1328	37	0	0

- Molecule 4 is a protein called NADH-quinone oxidoreductase subunit CD.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	586	4738	3037	825	852	24	0	0

- Molecule 5 is a protein called NADH-quinone oxidoreductase subunit B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	208	1656	1051	288	301	16	0	0

- Molecule 6 is a protein called NADH-quinone oxidoreductase subunit I.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	I	180	1436	915	242	264	15	0	0

- Molecule 7 is a protein called NADH-quinone oxidoreductase subunit H.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	323	Total	C	N	O	S	0	0
			2544	1707	400	419	18		

- Molecule 8 is a protein called NADH-quinone oxidoreductase subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	A	113	Total	C	N	O	S	0	0
			894	606	143	141	4		

- Molecule 9 is a protein called NADH-quinone oxidoreductase subunit L.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	L	605	Total	C	N	O	S	0	0
			4629	3077	740	780	32		

- Molecule 10 is a protein called NADH dehydrogenase I subunit M.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	M	504	Total	C	N	O	S	0	0
			3953	2661	617	646	29		

- Molecule 11 is a protein called NADH-quinone oxidoreductase subunit N.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	N	470	Total	C	N	O	S	0	0
			3563	2382	563	598	20		

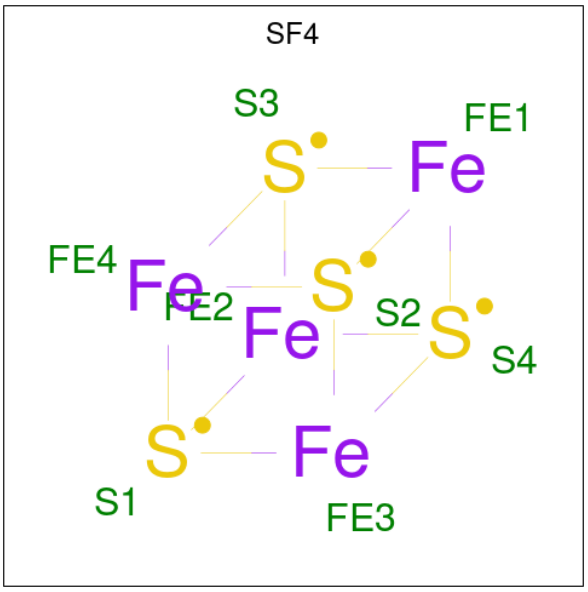
- Molecule 12 is a protein called NADH-quinone oxidoreductase subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	K	100	Total	C	N	O	S	0	0
			760	494	132	129	5		

- Molecule 13 is a protein called NADH-quinone oxidoreductase subunit J.

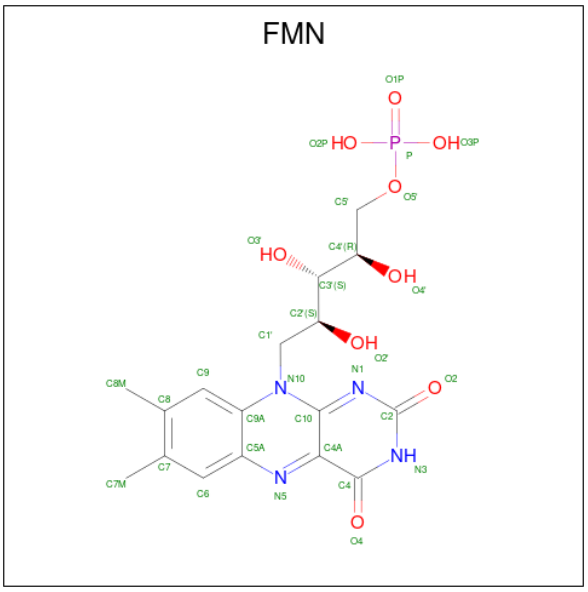
Mol	Chain	Residues	Atoms					AltConf	Trace
13	J	162	Total	C	N	O	S	0	0
			1226	824	188	207	7		

- Molecule 14 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



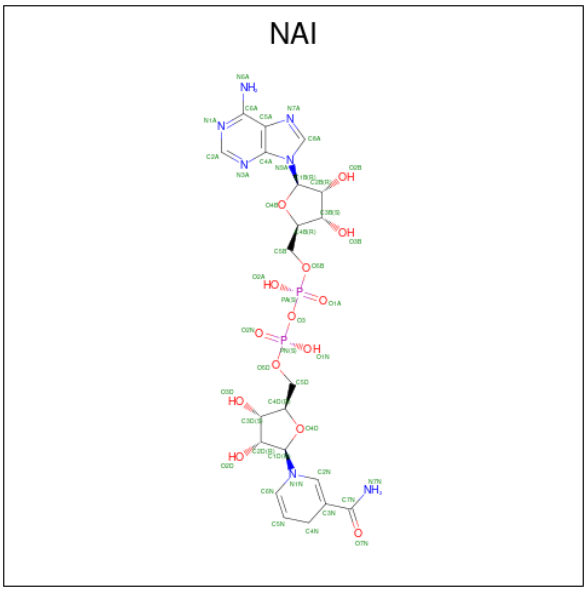
Mol	Chain	Residues	Atoms	AltConf
14	F	1	Total Fe S 8 4 4	0
14	G	1	Total Fe S 24 12 12	0
14	G	1	Total Fe S 24 12 12	0
14	G	1	Total Fe S 24 12 12	0
14	B	1	Total Fe S 8 4 4	0
14	I	1	Total Fe S 16 8 8	0
14	I	1	Total Fe S 16 8 8	0

- Molecule 15 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$).



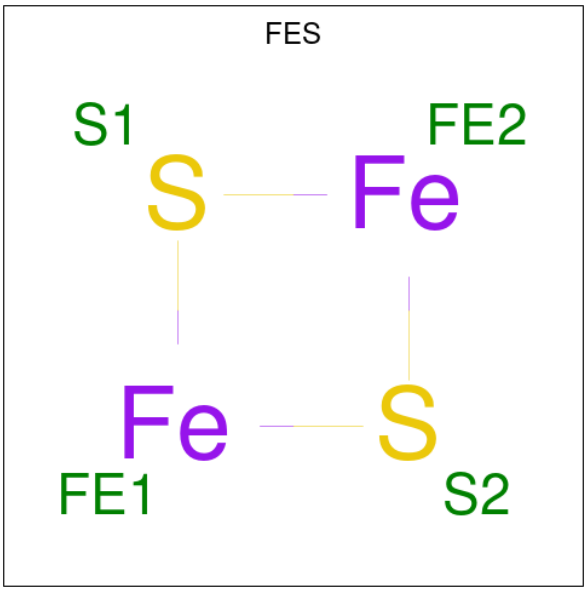
Mol	Chain	Residues	Atoms					AltConf
15	F	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 16 is 1,4-DIHYDRONICOTINAMIDE ADENINE DINUCLEOTIDE (three-letter code: NAI) (formula: $C_{21}H_{29}N_7O_{14}P_2$).



Mol	Chain	Residues	Atoms					AltConf
16	F	1	Total	C	N	O	P	0
			44	21	7	14	2	

- Molecule 17 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).

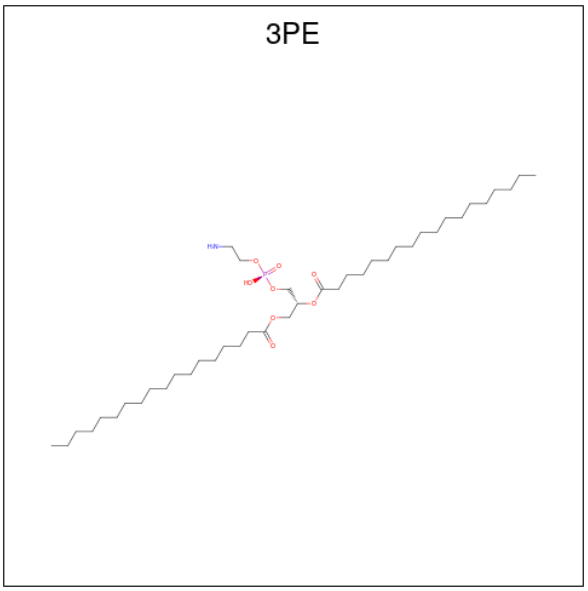


Mol	Chain	Residues	Atoms	AltConf
17	E	1	Total Fe S 4 2 2	0
17	G	1	Total Fe S 4 2 2	0

- Molecule 18 is CALCIUM ION (three-letter code: CA) (formula: Ca).

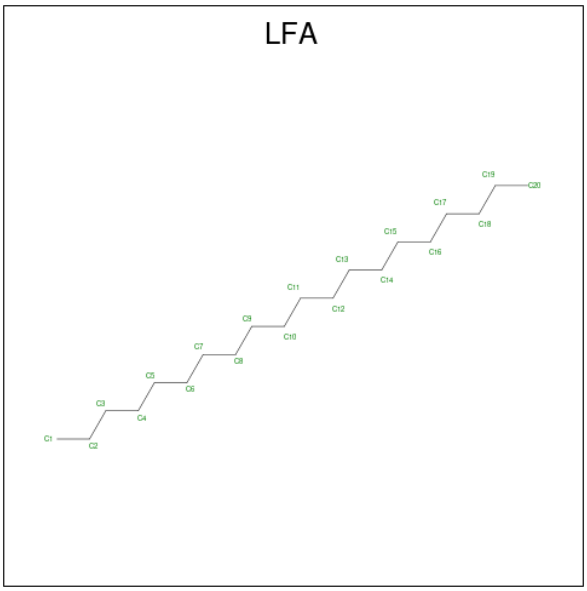
Mol	Chain	Residues	Atoms	AltConf
18	G	1	Total Ca 1 1	0

- Molecule 19 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
19	I	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	H	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	L	1	Total	C	N	O	P	0
			204	164	4	32	4	
19	L	1	Total	C	N	O	P	0
			204	164	4	32	4	
19	L	1	Total	C	N	O	P	0
			204	164	4	32	4	
19	L	1	Total	C	N	O	P	0
			204	164	4	32	4	
19	M	1	Total	C	N	O	P	0
			102	82	2	16	2	
19	M	1	Total	C	N	O	P	0
			102	82	2	16	2	
19	J	1	Total	C	N	O	P	0
			102	82	2	16	2	
19	J	1	Total	C	N	O	P	0
			102	82	2	16	2	

- Molecule 20 is EICOSANE (three-letter code: LFA) (formula: $C_{20}H_{42}$).

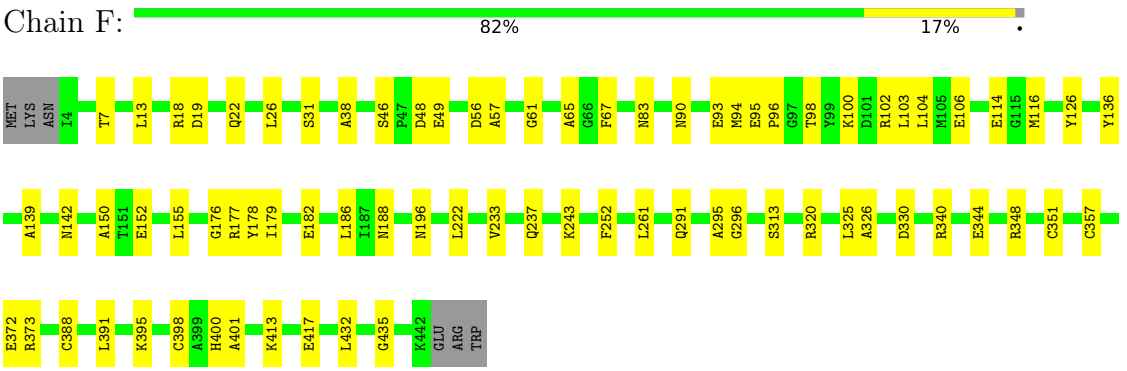


Mol	Chain	Residues	Atoms	AltConf
20	H	1	Total C 20 20	0
20	L	1	Total C 20 20	0
20	M	1	Total C 20 20	0
20	N	1	Total C 14 14	0

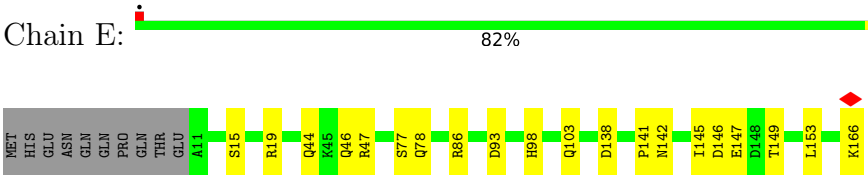
3 Residue-property plots (i)

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.

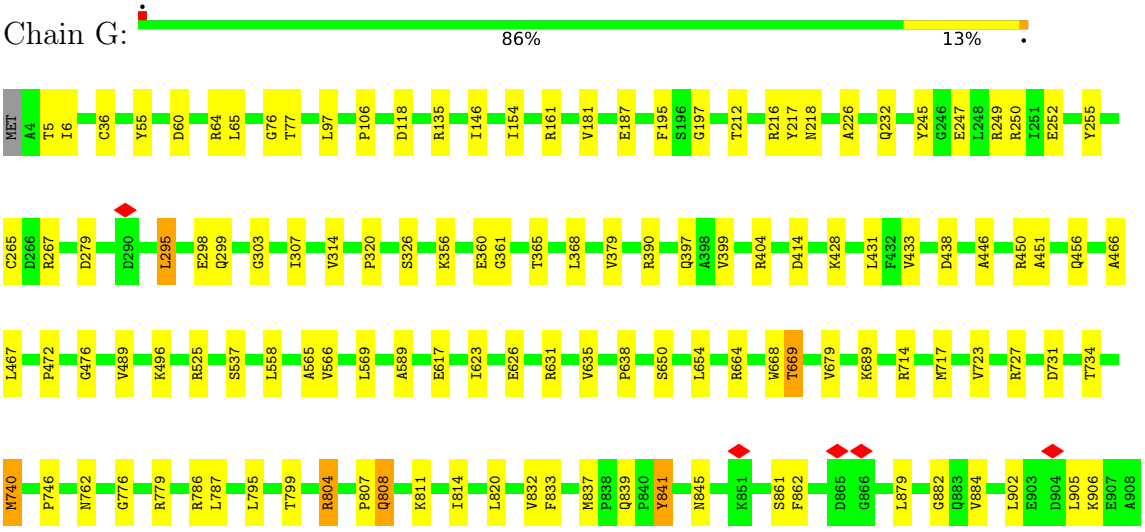
• Molecule 1: NADH-quinone oxidoreductase subunit F



• Molecule 2: NADH dehydrogenase I subunit E

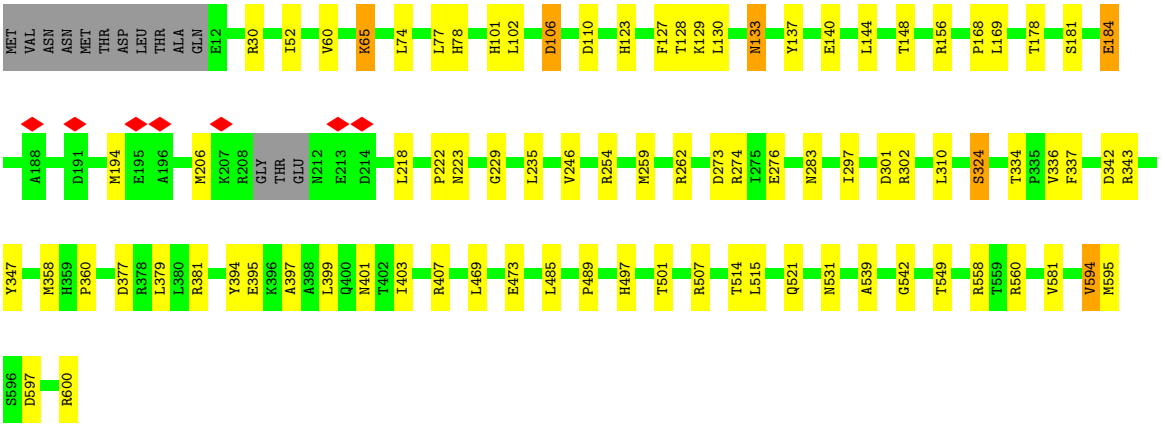


• Molecule 3: NADH-quinone oxidoreductase



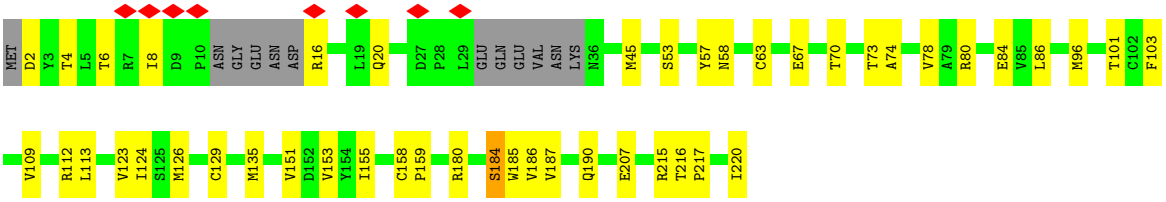
• Molecule 4: NADH-quinone oxidoreductase subunit CD

Chain C:



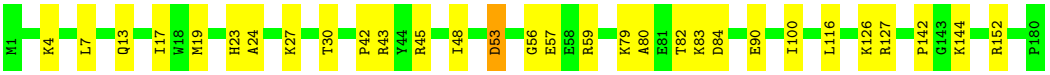
• Molecule 5: NADH-quinone oxidoreductase subunit B

Chain B:



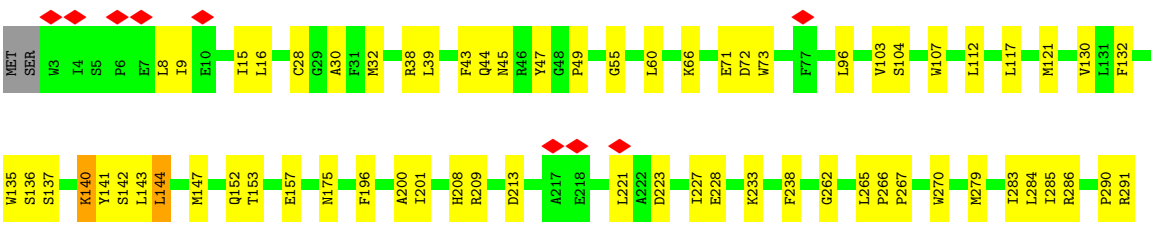
• Molecule 6: NADH-quinone oxidoreductase subunit I

Chain I:



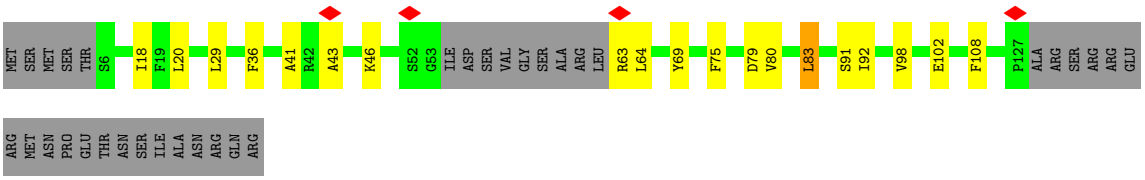
• Molecule 7: NADH-quinone oxidoreductase subunit H

Chain H:



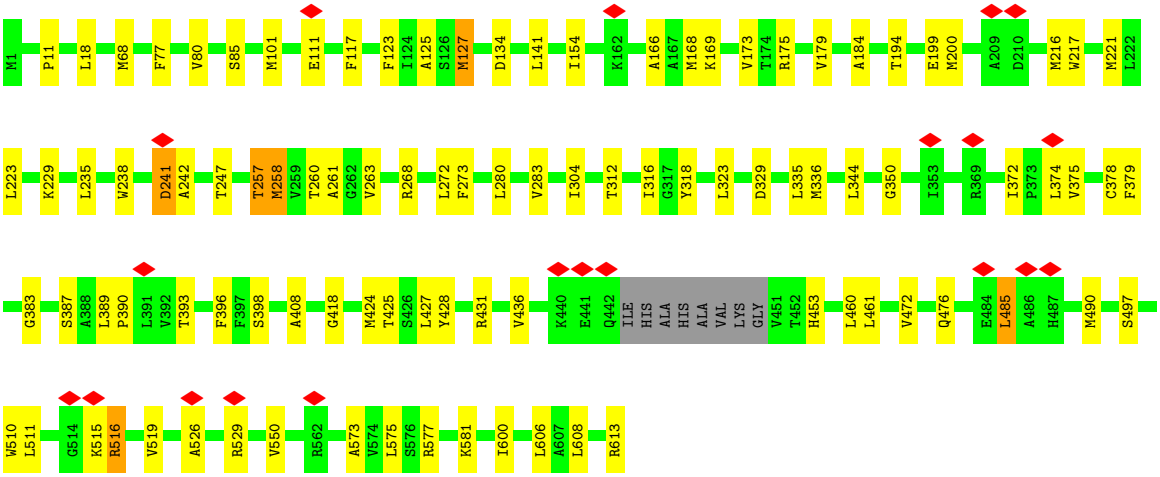
• Molecule 8: NADH-quinone oxidoreductase subunit A

Chain A:



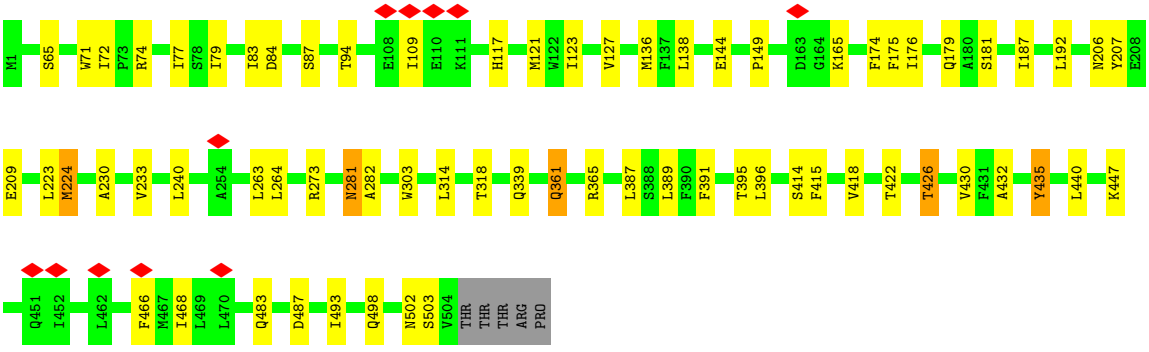
• Molecule 9: NADH-quinone oxidoreductase subunit L

Chain L:



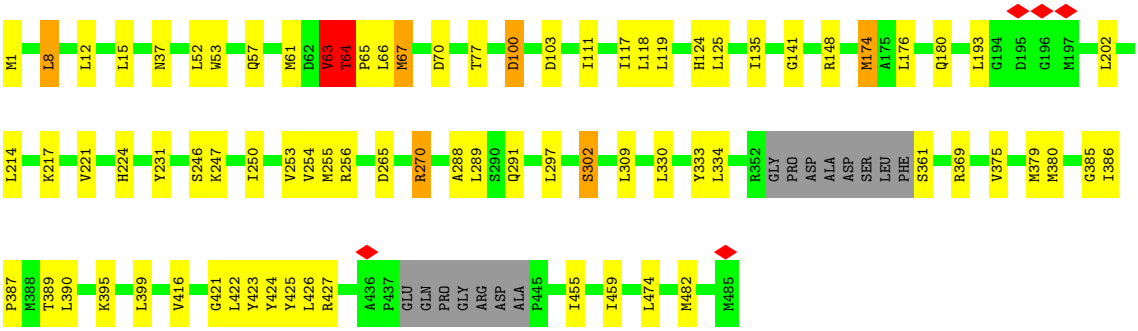
• Molecule 10: NADH dehydrogenase I subunit M

Chain M:

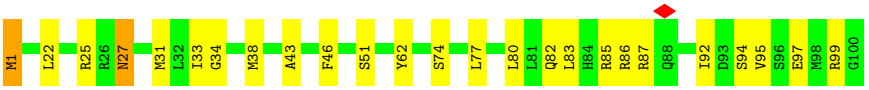


• Molecule 11: NADH-quinone oxidoreductase subunit N

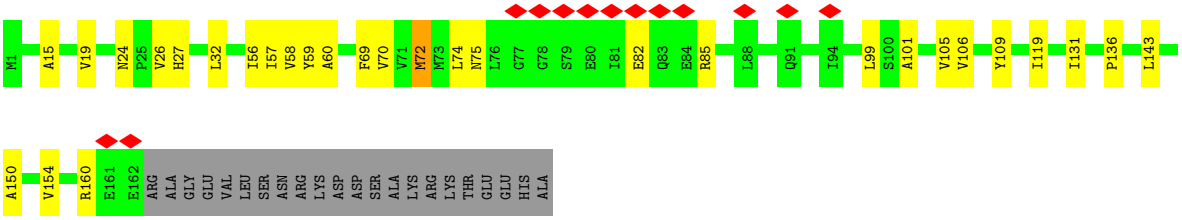
Chain N:



• Molecule 12: NADH-quinone oxidoreductase subunit K



• Molecule 13: NADH-quinone oxidoreductase subunit J



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	40884	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	80	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.495	Depositor
Minimum map value	0.000	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	156.87999, 211.99998, 240.61998	wwPDB
Map dimensions	148, 200, 227	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CA, 3PE, FES, FMN, LFA, NAI, SF4

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	F	0.28	0/3486	0.53	0/4713
2	E	0.26	0/1248	0.53	0/1691
3	G	0.27	0/7173	0.53	0/9726
4	C	0.27	0/4868	0.52	0/6605
5	B	0.27	0/1692	0.54	0/2292
6	I	0.28	0/1470	0.54	1/1985 (0.1%)
7	H	0.30	0/2620	0.55	2/3565 (0.1%)
8	A	0.28	0/921	0.53	0/1251
9	L	0.28	0/4747	0.52	2/6468 (0.0%)
10	M	0.28	0/4074	0.52	2/5546 (0.0%)
11	N	0.29	0/3649	0.54	2/4977 (0.0%)
12	K	0.28	0/769	0.59	1/1040 (0.1%)
13	J	0.29	0/1252	0.53	0/1708
All	All	0.28	0/37969	0.53	10/51567 (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
3	G	0	1
9	L	0	1
11	N	0	2
All	All	0	4

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	M	109	ILE	CG1-CB-CG2	-7.39	95.13	111.40
7	H	144	LEU	CA-CB-CG	6.33	129.87	115.30
7	H	8	LEU	CA-CB-CG	6.25	129.67	115.30
10	M	136	MET	CB-CG-SD	5.76	129.67	112.40
11	N	255	MET	CB-CG-SD	5.65	129.36	112.40
12	K	95	VAL	CA-CB-CG1	5.57	119.25	110.90
9	L	374	LEU	CA-CB-CG	5.46	127.87	115.30
11	N	64	THR	N-CA-C	-5.18	97.00	111.00
6	I	53	ASP	CB-CG-OD1	5.15	122.93	118.30
9	L	141	LEU	CA-CB-CG	5.11	127.06	115.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	G	669	THR	Peptide
9	L	257	THR	Peptide
11	N	63	VAL	Peptide
11	N	64	THR	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	F	3407	0	3374	38	0
2	E	1220	0	1187	10	0
3	G	7022	0	6824	63	0
4	C	4738	0	4658	50	0
5	B	1656	0	1644	29	0
6	I	1436	0	1415	23	0
7	H	2544	0	2591	44	0
8	A	894	0	904	13	0
9	L	4629	0	4772	47	0
10	M	3953	0	4053	38	0
11	N	3563	0	3741	49	0
12	K	760	0	817	15	0
13	J	1226	0	1297	22	0
14	B	8	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	F	8	0	0	0	0
14	G	24	0	0	1	0
14	I	16	0	0	0	0
15	F	31	0	19	1	0
16	F	44	0	27	2	0
17	E	4	0	0	1	0
17	G	4	0	0	0	0
18	G	1	0	0	0	0
19	H	51	0	82	5	0
19	I	51	0	82	1	0
19	J	102	0	164	4	0
19	L	204	0	328	11	0
19	M	102	0	164	0	0
20	H	20	0	42	2	0
20	L	20	0	42	1	0
20	M	20	0	42	0	0
20	N	14	0	27	0	0
All	All	37772	0	38296	389	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 5.

All (389) 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)
11:N:63:VAL:O	11:N:67:MET:HB2	1.74	0.87
10:M:181:SER:HB2	10:M:230:ALA:HA	1.66	0.78
9:L:223:LEU:HD13	9:L:283:VAL:HG22	1.72	0.71
1:F:95:GLU:HB2	16:F:503:NAI:H42N	1.74	0.70
11:N:65:PRO:HG2	13:J:136:PRO:HB3	1.75	0.68
1:F:46:SER:HB3	1:F:49:GLU:HG3	1.74	0.68
11:N:386:ILE:HD11	11:N:422:LEU:HD21	1.77	0.66
4:C:560:ARG:HH12	4:C:600:ARG:HH21	1.44	0.66
11:N:309:LEU:HD11	11:N:330:LEU:HD21	1.78	0.65
11:N:217:LYS:HB3	11:N:250:ILE:HD13	1.79	0.65
3:G:862:PHE:HB3	3:G:905:LEU:HD23	1.79	0.63
4:C:194:MET:HG2	5:B:112:ARG:HH21	1.64	0.62
11:N:1:MET:HB3	11:N:65:PRO:HD3	1.81	0.62
5:B:8:ILE:HD11	8:A:41:ALA:HB1	1.81	0.62
11:N:125:LEU:HD13	11:N:174:MET:HB3	1.82	0.62
4:C:395:GLU:HA	4:C:399:LEU:HB2	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:N:77:THR:HG23	11:N:117:ILE:HG12	1.79	0.62
19:L:803:3PE:H331	19:L:803:3PE:H231	1.83	0.61
1:F:176:GLY:HA3	2:E:78:GLN:HG2	1.83	0.61
9:L:600:ILE:HG13	13:J:99:LEU:HD21	1.83	0.61
10:M:123:ILE:HG13	10:M:149:PRO:HB2	1.83	0.60
11:N:100:ASP:OD2	11:N:148:ARG:NH2	2.34	0.60
11:N:64:THR:HB	11:N:66:LEU:H	1.67	0.60
13:J:24:ASN:HB3	13:J:27:HIS:HB2	1.83	0.60
12:K:83:LEU:O	12:K:87:ARG:HB2	2.02	0.60
9:L:85:SER:OG	9:L:268:ARG:NH2	2.35	0.59
19:L:803:3PE:H3D1	19:L:803:3PE:H2D2	1.84	0.59
3:G:845:ASN:ND2	3:G:879:LEU:O	2.35	0.59
4:C:276:GLU:O	4:C:283:ASN:ND2	2.30	0.58
7:H:103:VAL:HG21	20:H:402:LFA:H81	1.84	0.58
9:L:166:ALA:HB1	9:L:242:ALA:HA	1.85	0.58
9:L:168:MET:HB3	19:L:803:3PE:H321	1.86	0.58
9:L:11:PRO:HB2	9:L:125:ALA:HB2	1.86	0.58
4:C:218:LEU:HB3	4:C:235:LEU:HB2	1.85	0.57
3:G:451:ALA:O	3:G:456:GLN:NE2	2.36	0.57
9:L:606:LEU:HB3	13:J:106:VAL:HG11	1.86	0.57
11:N:380:MET:HE3	11:N:425:TYR:HD1	1.69	0.57
3:G:617:GLU:HG2	3:G:638:PRO:HG3	1.87	0.57
4:C:594:VAL:HG23	4:C:597:ASP:HB2	1.87	0.56
10:M:206:ASN:HD22	10:M:209:GLU:HG2	1.69	0.56
7:H:103:VAL:HG11	20:H:402:LFA:H61	1.87	0.56
1:F:296:GLY:O	1:F:320:ARG:NH2	2.39	0.56
7:H:104:SER:HB3	7:H:107:TRP:HB2	1.88	0.56
5:B:186:VAL:HG23	5:B:187:VAL:HG23	1.88	0.56
1:F:102:ARG:O	1:F:106:GLU:HB2	2.06	0.56
1:F:106:GLU:O	1:F:142:ASN:ND2	2.38	0.56
3:G:472:PRO:HG3	3:G:799:THR:HA	1.88	0.56
5:B:124:ILE:HG12	5:B:153:VAL:HB	1.88	0.56
12:K:82:GLN:OE1	12:K:85:ARG:NH1	2.38	0.56
4:C:324:SER:HB2	4:C:336:VAL:HA	1.88	0.56
12:K:80:LEU:HD21	13:J:74:LEU:HD11	1.86	0.56
11:N:37:ASN:ND2	11:N:103:ASP:OD2	2.34	0.55
11:N:231:TYR:OH	11:N:247:LYS:NZ	2.40	0.55
11:N:53:TRP:NE1	11:N:57:GLN:OE1	2.40	0.55
11:N:111:ILE:HG21	13:J:150:ALA:HB2	1.88	0.55
4:C:133:ASN:OD1	4:C:133:ASN:N	2.32	0.55
5:B:53:SER:OG	7:H:66:LYS:NZ	2.35	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:71:GLU:OE2	8:A:46:LYS:NZ	2.40	0.54
3:G:723:VAL:HG11	6:I:127:ARG:HB3	1.89	0.54
1:F:98:THR:HA	1:F:325:LEU:HD12	1.90	0.54
3:G:397:GLN:O	3:G:404:ARG:NH2	2.40	0.54
20:L:802:LFA:H121	13:J:99:LEU:HD13	1.90	0.54
11:N:288:ALA:HB1	11:N:297:LEU:HD12	1.89	0.54
6:I:7:LEU:HD22	19:I:203:3PE:H381	1.88	0.54
6:I:48:ILE:HG12	6:I:116:LEU:HG	1.90	0.54
1:F:116:MET:HG2	1:F:222:LEU:HD13	1.90	0.54
9:L:175:ARG:NH2	10:M:396:LEU:O	2.40	0.54
1:F:348:ARG:NH2	2:E:93:ASP:OD1	2.40	0.53
7:H:137:SER:HB2	7:H:228:GLU:HG3	1.90	0.53
6:I:23:HIS:O	7:H:45:ASN:ND2	2.39	0.53
5:B:101:THR:HA	5:B:129:CYS:HB3	1.90	0.53
10:M:79:ILE:HA	10:M:138:LEU:HD22	1.90	0.53
4:C:259:MET:SD	4:C:262:ARG:NH1	2.81	0.53
9:L:318:TYR:OH	9:L:418:GLY:O	2.22	0.53
12:K:85:ARG:NH1	13:J:160:ARG:O	2.42	0.53
3:G:368:LEU:HD21	3:G:390:ARG:HB3	1.90	0.53
3:G:399:VAL:HG13	3:G:428:LYS:HB2	1.91	0.53
3:G:714:ARG:NH1	4:C:178:THR:OG1	2.42	0.53
9:L:179:VAL:HG22	10:M:426:THR:HG22	1.91	0.53
7:H:141:TYR:HB3	7:H:223:ASP:HA	1.90	0.52
1:F:357:CYS:HB2	1:F:401:ALA:HB2	1.91	0.52
9:L:263:VAL:HG13	9:L:323:LEU:HD11	1.90	0.52
10:M:127:VAL:HG11	10:M:264:LEU:HD13	1.91	0.52
1:F:103:LEU:HD13	1:F:261:LEU:HD23	1.90	0.52
4:C:140:GLU:OE2	4:C:600:ARG:NH2	2.42	0.52
4:C:358:MET:HE3	5:B:159:PRO:HG3	1.91	0.52
5:B:217:PRO:HB3	6:I:43:ARG:HB3	1.91	0.52
19:J:201:3PE:H342	19:J:202:3PE:H351	1.91	0.52
6:I:24:ALA:HB2	7:H:43:PHE:HD1	1.74	0.52
8:A:80:VAL:HA	8:A:83:LEU:HD23	1.91	0.52
9:L:344:LEU:HB2	9:L:460:LEU:HB3	1.92	0.52
4:C:101:HIS:NE2	4:C:110:ASP:OD2	2.39	0.52
4:C:229:GLY:HA3	4:C:595:MET:HB2	1.92	0.52
5:B:185:TRP:HA	5:B:190:GLN:HE21	1.75	0.52
7:H:30:ALA:HB1	7:H:60:LEU:HD11	1.91	0.52
10:M:117:HIS:O	10:M:121:MET:HG2	2.09	0.52
6:I:59:ARG:NH2	6:I:142:PRO:O	2.44	0.51
11:N:118:LEU:HD22	13:J:143:LEU:HD13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:N:291:GLN:O	11:N:427:ARG:NH2	2.43	0.51
3:G:569:LEU:HD13	3:G:654:LEU:HD11	1.92	0.51
7:H:117:LEU:O	7:H:121:MET:HG3	2.11	0.51
3:G:267:ARG:HB2	3:G:820:LEU:HG	1.92	0.51
3:G:679:VAL:HG21	3:G:689:LYS:HB2	1.92	0.51
10:M:415:PHE:HB2	10:M:422:THR:HG21	1.93	0.51
3:G:626:GLU:OE1	3:G:786:ARG:NH1	2.43	0.51
1:F:340:ARG:NE	1:F:372:GLU:OE1	2.42	0.51
10:M:72:ILE:HB	10:M:77:ILE:HB	1.92	0.51
10:M:187:ILE:HD11	11:N:399:LEU:HD22	1.93	0.51
10:M:498:GLN:OE1	10:M:502:ASN:ND2	2.39	0.51
1:F:178:TYR:HE2	1:F:400:HIS:HD2	1.59	0.51
1:F:291:GLN:O	1:F:326:ALA:HA	2.11	0.51
4:C:274:ARG:NH2	5:B:158:CYS:SG	2.84	0.51
8:A:75:PHE:O	8:A:79:ASP:HB2	2.11	0.51
3:G:314:VAL:HG12	3:G:565:ALA:HB3	1.93	0.50
3:G:814:ILE:HD11	3:G:902:LEU:HD13	1.94	0.50
10:M:224:MET:HE2	10:M:282:ALA:HB1	1.93	0.50
3:G:320:PRO:HB2	3:G:537:SER:HB2	1.93	0.50
4:C:77:LEU:HB3	4:C:137:TYR:HB3	1.92	0.50
10:M:144:GLU:HB2	11:N:387:PRO:HG2	1.93	0.50
3:G:247:GLU:HG3	3:G:249:ARG:HE	1.77	0.50
7:H:227:ILE:HG13	7:H:228:GLU:HG2	1.93	0.50
19:H:401:3PE:H341	19:H:401:3PE:H251	1.94	0.50
10:M:65:SER:HB3	10:M:83:ILE:HG22	1.93	0.50
3:G:118:ASP:OD1	3:G:762:ASN:ND2	2.45	0.50
4:C:106:ASP:OD1	4:C:106:ASP:N	2.45	0.50
1:F:18:ARG:HH11	1:F:22:GLN:HB2	1.76	0.50
3:G:146:ILE:HD11	3:G:197:GLY:HA2	1.94	0.50
8:A:91:SER:HB2	13:J:131:ILE:HG13	1.93	0.50
4:C:65:LYS:NZ	4:C:130:LEU:O	2.45	0.49
4:C:128:THR:OG1	4:C:129:LYS:NZ	2.45	0.49
4:C:501:THR:HG23	4:C:521:GLN:HB3	1.94	0.49
10:M:87:SER:OG	10:M:273:ARG:NH2	2.43	0.49
1:F:136:TYR:HB3	1:F:139:ALA:HB3	1.93	0.49
11:N:265:ASP:O	11:N:270:ARG:NH2	2.46	0.49
3:G:356:LYS:O	3:G:360:GLU:HB2	2.12	0.49
12:K:86:ARG:HB2	12:K:87:ARG:HH11	1.77	0.49
9:L:577:ARG:NH1	19:L:805:3PE:O22	2.45	0.49
3:G:250:ARG:HD3	3:G:252:GLU:HG3	1.93	0.49
6:I:82:THR:OG1	6:I:84:ASP:OD1	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:L:154:ILE:HD13	9:L:242:ALA:HB1	1.93	0.49
7:H:200:ALA:HB1	19:H:401:3PE:H3C2	1.94	0.49
11:N:180:GLN:HE22	11:N:193:LEU:HD11	1.77	0.49
9:L:408:ALA:HB2	9:L:485:LEU:HG	1.94	0.49
1:F:395:LYS:HE3	3:G:65:LEU:HD12	1.95	0.49
4:C:78:HIS:HE2	4:C:140:GLU:HG2	1.77	0.49
5:B:70:THR:O	5:B:73:THR:OG1	2.29	0.49
7:H:285:ILE:HG13	19:H:401:3PE:H3B2	1.95	0.49
9:L:247:THR:HG21	9:L:350:GLY:HA3	1.94	0.49
4:C:343:ARG:NH2	4:C:347:TYR:OH	2.46	0.48
3:G:6:ILE:HG22	3:G:77:THR:HB	1.94	0.48
4:C:581:VAL:HG11	7:H:221:LEU:HD21	1.95	0.48
12:K:34:GLY:O	12:K:38:MET:HG3	2.13	0.48
3:G:216:ARG:NH1	6:I:90:GLU:OE1	2.42	0.48
4:C:469:LEU:O	4:C:473:GLU:HG3	2.13	0.48
3:G:212:THR:HG22	3:G:832:VAL:HG21	1.96	0.48
3:G:106:PRO:HD3	4:C:515:LEU:HD21	1.93	0.48
4:C:144:LEU:HA	4:C:168:PRO:HD2	1.96	0.48
4:C:401:ASN:OD1	6:I:13:GLN:NE2	2.38	0.48
10:M:94:THR:HA	10:M:264:LEU:HD11	1.96	0.48
10:M:387:LEU:HD13	10:M:468:ILE:HG21	1.95	0.48
11:N:176:LEU:HD22	11:N:202:LEU:HD11	1.96	0.48
19:J:201:3PE:H321	19:J:202:3PE:H341	1.96	0.48
3:G:731:ASP:OD2	3:G:734:THR:OG1	2.32	0.48
5:B:184:SER:OG	8:A:36:PHE:O	2.31	0.48
3:G:55:TYR:HB3	3:G:60:ASP:HB3	1.95	0.47
4:C:379:LEU:HG	5:B:220:ILE:HD11	1.96	0.47
3:G:467:LEU:O	3:G:525:ARG:NH1	2.47	0.47
4:C:52:ILE:HD12	4:C:60:VAL:HG21	1.95	0.47
7:H:96:LEU:HD13	8:A:20:LEU:HD22	1.96	0.47
13:J:15:ALA:O	13:J:19:VAL:HG23	2.14	0.47
2:E:138:ASP:OD1	2:E:138:ASP:N	2.47	0.47
19:H:401:3PE:H292	19:H:401:3PE:H361	1.96	0.47
10:M:176:ILE:HD11	11:N:423:TYR:HB2	1.94	0.47
3:G:807:PRO:HB3	3:G:882:GLY:HA3	1.96	0.47
11:N:217:LYS:HD2	11:N:217:LYS:HA	1.70	0.47
3:G:303:GLY:O	3:G:307:ILE:HG13	2.13	0.47
11:N:302:SER:OG	11:N:333:TYR:OH	2.28	0.47
11:N:386:ILE:O	11:N:389:THR:OG1	2.24	0.47
1:F:150:ALA:HB1	1:F:155:LEU:HB2	1.97	0.47
5:B:67:GLU:HG3	5:B:159:PRO:HB2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:L:184:ALA:HB2	9:L:221:MET:HB2	1.96	0.47
9:L:217:TRP:O	9:L:221:MET:HG2	2.15	0.47
19:L:805:3PE:H2A2	11:N:416:VAL:HG13	1.96	0.47
19:J:202:3PE:H2C1	19:J:202:3PE:H3E1	1.96	0.47
7:H:28:CYS:O	7:H:32:MET:HB2	2.15	0.47
7:H:39:LEU:HB3	7:H:283:ILE:HG21	1.97	0.47
10:M:192:LEU:HB2	10:M:223:LEU:HD13	1.97	0.47
7:H:38:ARG:NH1	7:H:55:GLY:O	2.47	0.47
11:N:70:ASP:N	11:N:70:ASP:OD1	2.47	0.47
1:F:100:LYS:HA	1:F:261:LEU:HD21	1.96	0.46
3:G:5:THR:O	3:G:76:GLY:N	2.48	0.46
8:A:69:TYR:OH	12:K:74:SER:O	2.32	0.46
10:M:314:LEU:O	10:M:318:THR:HG23	2.15	0.46
3:G:245:TYR:HE1	3:G:717:MET:HG2	1.81	0.46
4:C:337:PHE:HB3	5:B:74:ALA:HB2	1.96	0.46
1:F:182:GLU:O	1:F:186:LEU:N	2.42	0.46
3:G:431:LEU:O	3:G:446:ALA:N	2.48	0.46
10:M:71:TRP:HB2	10:M:79:ILE:HG13	1.96	0.46
9:L:515:LYS:HE3	9:L:515:LYS:HA	1.98	0.46
9:L:516:ARG:HB3	9:L:519:VAL:HB	1.97	0.46
10:M:233:VAL:HG23	10:M:240:LEU:HD13	1.98	0.46
5:B:217:PRO:HG3	6:I:144:LYS:HD2	1.98	0.46
10:M:175:PHE:CE1	10:M:179:GLN:HG3	2.51	0.46
1:F:56:ASP:O	1:F:237:GLN:NE2	2.49	0.46
3:G:569:LEU:HD11	3:G:650:SER:HB3	1.97	0.46
4:C:403:ILE:HB	7:H:290:PRO:HG2	1.98	0.46
6:I:80:ALA:HB2	6:I:90:GLU:HB2	1.97	0.46
7:H:121:MET:HG2	13:J:57:ILE:HG13	1.98	0.46
7:H:153:THR:O	7:H:157:GLU:HB2	2.16	0.46
12:K:33:ILE:HG23	13:J:32:LEU:HD22	1.97	0.46
3:G:226:ALA:HB3	3:G:635:VAL:HG22	1.98	0.46
4:C:254:ARG:HG3	5:B:103:PHE:HE1	1.81	0.46
11:N:119:LEU:HD22	11:N:253:VAL:HG11	1.98	0.46
1:F:65:ALA:HB2	16:F:503:NAI:H4D	1.97	0.45
1:F:179:ILE:HG12	1:F:351:CYS:HB3	1.97	0.45
3:G:746:PRO:O	3:G:779:ARG:NH1	2.50	0.45
11:N:421:GLY:HA2	11:N:424:TYR:CZ	2.51	0.45
12:K:1:MET:N	13:J:119:ILE:O	2.41	0.45
9:L:273:PHE:HB3	9:L:280:LEU:HD13	1.97	0.45
11:N:66:LEU:HA	11:N:124:HIS:HB2	1.98	0.45
11:N:141:GLY:HA3	13:J:154:VAL:HG22	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:J:101:ALA:O	13:J:105:VAL:HG23	2.16	0.45
9:L:127:MET:HE1	9:L:261:ALA:HB2	1.97	0.45
11:N:63:VAL:O	11:N:67:MET:CB	2.56	0.45
1:F:38:ALA:HB2	1:F:114:GLU:HG3	1.97	0.45
4:C:184:GLU:HB3	5:B:16:ARG:HH21	1.81	0.45
5:B:58:ASN:HB2	5:B:86:LEU:HG	1.99	0.45
9:L:194:THR:HG21	9:L:199:GLU:HB3	1.97	0.45
2:E:86:ARG:NH2	2:E:166:LYS:O	2.49	0.45
3:G:361:GLY:HA2	3:G:795:LEU:HG	1.97	0.45
4:C:144:LEU:HB3	4:C:169:LEU:HB2	1.99	0.45
11:N:385:GLY:HA3	11:N:395:LYS:HE2	1.98	0.45
12:K:22:LEU:HD12	12:K:31:MET:HB3	1.98	0.45
3:G:36:CYS:O	3:G:161:ARG:NH1	2.47	0.45
19:L:804:3PE:H3A2	19:L:804:3PE:H2E2	1.98	0.45
1:F:57:ALA:HB2	1:F:233:VAL:HG22	1.99	0.45
4:C:334:THR:HG23	7:H:44:GLN:HG2	1.99	0.45
3:G:714:ARG:NH2	3:G:740:MET:SD	2.90	0.45
3:G:808:GLN:HG3	3:G:811:LYS:HB2	1.99	0.45
4:C:302:ARG:NH1	4:C:489:PRO:O	2.47	0.45
7:H:143:LEU:O	7:H:147:MET:HG2	2.17	0.45
9:L:372:ILE:HD12	9:L:375:VAL:HB	1.98	0.45
9:L:550:VAL:HG13	19:L:803:3PE:H232	1.99	0.45
9:L:573:ALA:HB2	19:L:805:3PE:H341	1.99	0.45
5:B:57:TYR:HE2	5:B:113:LEU:HD13	1.82	0.44
8:A:43:ALA:HB3	8:A:46:LYS:HB2	1.99	0.44
13:J:56:ILE:HA	13:J:60:ALA:HB3	1.99	0.44
1:F:13:LEU:HD23	1:F:104:LEU:HD11	1.99	0.44
4:C:397:ALA:HB2	6:I:19:MET:HE2	1.99	0.44
5:B:215:ARG:HB2	6:I:42:PRO:HB3	1.99	0.44
9:L:169:LYS:HD3	9:L:238:TRP:HA	1.99	0.44
1:F:391:LEU:HD23	1:F:401:ALA:HB1	2.00	0.44
9:L:173:VAL:HG13	9:L:235:LEU:HD22	2.00	0.44
10:M:432:ALA:HA	10:M:435:TYR:CE2	2.53	0.44
9:L:179:VAL:HG21	10:M:430:VAL:HG23	1.98	0.44
5:B:135:MET:HB3	6:I:100:ILE:HG21	1.98	0.44
7:H:72:ASP:OD2	7:H:233:LYS:NZ	2.51	0.44
7:H:262:GLY:HA3	7:H:270:TRP:CD1	2.53	0.44
7:H:15:ILE:HG23	8:A:18:ILE:HG21	2.00	0.44
19:J:201:3PE:H3B2	19:J:202:3PE:H3B1	1.98	0.44
3:G:668:TRP:O	3:G:669:THR:OG1	2.25	0.43
4:C:549:THR:HB	4:C:558:ARG:HB3	1.98	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:126:MET:HG3	5:B:155:ILE:HD12	2.00	0.43
6:I:83:LYS:HB3	6:I:83:LYS:HE3	1.77	0.43
10:M:414:SER:O	10:M:418:VAL:N	2.38	0.43
1:F:61:GLY:N	1:F:67:PHE:O	2.48	0.43
2:E:98:HIS:CE1	2:E:103:GLN:HE22	2.36	0.43
3:G:414:ASP:OD1	3:G:414:ASP:N	2.38	0.43
3:G:438:ASP:OD1	3:G:450:ARG:NE	2.48	0.43
6:I:53:ASP:OD1	6:I:57:GLU:N	2.52	0.43
11:N:375:VAL:O	11:N:379:MET:HG2	2.18	0.43
3:G:379:VAL:HB	3:G:433:VAL:HG12	2.00	0.43
9:L:127:MET:HG3	9:L:257:THR:HB	2.00	0.43
1:F:93:GLU:OE2	1:F:100:LYS:N	2.52	0.43
2:E:142:ASN:ND2	17:E:201:FES:S1	2.92	0.43
3:G:466:ALA:HB3	3:G:489:VAL:HG21	2.00	0.43
7:H:213:ASP:OD1	7:H:213:ASP:N	2.49	0.43
7:H:279:MET:O	7:H:283:ILE:HG12	2.19	0.43
10:M:483:GLN:NE2	10:M:487:ASP:OD1	2.45	0.43
6:I:30:THR:HB	7:H:47:TYR:HE1	1.84	0.43
9:L:510:TRP:HD1	9:L:511:LEU:HD23	1.84	0.43
4:C:222:PRO:HG2	5:B:109:VAL:HG11	2.00	0.43
7:H:38:ARG:HA	7:H:38:ARG:HD2	1.80	0.43
9:L:427:LEU:HD23	9:L:427:LEU:HA	1.81	0.43
3:G:839:GLN:HB2	3:G:841:TYR:CZ	2.54	0.43
6:I:17:ILE:HG23	7:H:284:LEU:HG	2.01	0.43
7:H:132:PHE:O	7:H:136:SER:HB3	2.19	0.43
7:H:265:LEU:HB2	7:H:270:TRP:CD1	2.53	0.43
9:L:526:ALA:HA	9:L:529:ARG:HG3	2.00	0.43
10:M:389:LEU:HA	10:M:440:LEU:HD21	2.01	0.43
10:M:391:PHE:O	10:M:395:THR:HG23	2.18	0.43
2:E:44:GLN:NE2	2:E:78:GLN:O	2.38	0.43
4:C:74:LEU:HA	4:C:102:LEU:HD23	2.01	0.43
7:H:112:LEU:O	7:H:175:ASN:ND2	2.52	0.43
3:G:217:TYR:HB3	6:I:79:LYS:HD2	2.00	0.42
4:C:360:PRO:O	6:I:45:ARG:NH1	2.39	0.42
9:L:18:LEU:HD13	9:L:117:PHE:HB3	2.01	0.42
11:N:214:LEU:HD13	11:N:254:VAL:HG22	2.01	0.42
12:K:77:LEU:HD22	13:J:70:VAL:HG11	2.00	0.42
3:G:428:LYS:HB3	3:G:428:LYS:HE3	1.83	0.42
9:L:390:PRO:HA	9:L:396:PHE:CG	2.54	0.42
11:N:8:LEU:HD12	11:N:15:LEU:HD11	2.01	0.42
9:L:260:THR:HB	9:L:335:LEU:HD11	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:K:43:ALA:HB1	12:K:62:TYR:HD1	1.84	0.42
13:J:82:GLU:HG2	13:J:85:ARG:HE	1.83	0.42
3:G:558:LEU:HD21	3:G:566:VAL:HB	2.01	0.42
3:G:833:PHE:O	3:G:837:MET:N	2.43	0.42
4:C:407:ARG:NH1	7:H:291:ARG:O	2.49	0.42
4:C:539:ALA:N	4:C:542:GLY:O	2.52	0.42
10:M:281:ASN:ND2	10:M:503:SER:O	2.53	0.42
1:F:188:ASN:ND2	1:F:196:ASN:O	2.44	0.42
3:G:476:GLY:O	3:G:804:ARG:NH2	2.44	0.42
4:C:342:ASP:OD2	4:C:394:TYR:OH	2.29	0.42
7:H:9:ILE:HD13	7:H:9:ILE:HA	1.92	0.42
8:A:98:VAL:O	8:A:102:GLU:HG3	2.19	0.42
3:G:390:ARG:HA	3:G:390:ARG:HD2	1.87	0.42
9:L:304:ILE:HD12	9:L:436:VAL:HG21	2.01	0.42
11:N:12:LEU:HD12	11:N:12:LEU:HA	1.90	0.42
13:J:72:MET:O	13:J:75:ASN:ND2	2.52	0.42
8:A:63:ARG:HD3	8:A:64:LEU:H	1.84	0.42
11:N:330:LEU:HD23	11:N:330:LEU:HA	1.76	0.42
4:C:310:LEU:HD23	4:C:310:LEU:HA	1.90	0.42
9:L:229:LYS:HD2	9:L:258:MET:SD	2.59	0.42
11:N:52:LEU:HD23	11:N:52:LEU:HA	1.91	0.42
11:N:289:LEU:O	11:N:427:ARG:NH1	2.53	0.42
12:K:25:ARG:HD2	12:K:25:ARG:HA	1.84	0.42
5:B:8:ILE:HG22	5:B:20:GLN:HB3	2.02	0.41
10:M:165:LYS:HA	10:M:165:LYS:HD3	1.71	0.41
1:F:176:GLY:O	2:E:77:SER:OG	2.37	0.41
4:C:507:ARG:HB2	4:C:514:THR:HG21	2.01	0.41
3:G:232:GLN:HB2	14:G:1003:SF4:S3	2.60	0.41
3:G:496:LYS:H	3:G:496:LYS:HG2	1.61	0.41
3:G:558:LEU:HD22	3:G:589:ALA:HB2	2.02	0.41
9:L:200:MET:HE3	9:L:272:LEU:HD11	2.02	0.41
9:L:378:CYS:HA	9:L:461:LEU:HD11	2.02	0.41
19:L:803:3PE:H3C2	19:L:803:3PE:H2B2	2.02	0.41
1:F:340:ARG:NH1	1:F:344:GLU:OE1	2.42	0.41
4:C:297:ILE:HG12	4:C:497:HIS:CG	2.55	0.41
9:L:425:THR:HA	9:L:428:TYR:CE2	2.55	0.41
5:B:123:VAL:HG12	5:B:151:VAL:HG13	2.02	0.41
1:F:177:ARG:HG3	1:F:179:ILE:HG22	2.03	0.41
3:G:727:ARG:HD3	4:C:181:SER:HA	2.02	0.41
4:C:381:ARG:HD2	4:C:485:LEU:HD21	2.03	0.41
7:H:209:ARG:HA	7:H:209:ARG:HD2	1.91	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:N:221:VAL:HG22	11:N:224:HIS:CE1	2.56	0.41
11:N:380:MET:HE3	11:N:425:TYR:CD1	2.53	0.41
1:F:83:ASN:OD1	1:F:83:ASN:N	2.45	0.41
3:G:255:TYR:OH	3:G:776:GLY:O	2.24	0.41
6:I:27:LYS:HB2	6:I:27:LYS:HE3	1.71	0.41
3:G:295:LEU:HB3	3:G:299:GLN:HG3	2.02	0.41
8:A:41:ALA:O	8:A:46:LYS:NZ	2.45	0.41
10:M:361:GLN:O	10:M:365:ARG:HG2	2.21	0.41
1:F:90:ASN:ND2	15:F:502:FMN:O4'	2.51	0.41
7:H:266:PRO:HA	7:H:267:PRO:HD3	1.97	0.41
9:L:383:GLY:O	9:L:387:SER:OG	2.29	0.41
9:L:389:LEU:O	9:L:393:THR:OG1	2.37	0.41
10:M:84:ASP:OD2	10:M:273:ARG:NH2	2.51	0.41
7:H:201:ILE:HG12	19:H:401:3PE:H382	2.03	0.41
10:M:179:GLN:HE21	10:M:179:GLN:HB3	1.70	0.41
11:N:135:ILE:HD13	11:N:246:SER:HA	2.03	0.41
13:J:57:ILE:HG22	13:J:58:VAL:HG23	2.03	0.41
1:F:435:GLY:HA2	5:B:216:THR:HB	2.03	0.40
2:E:141:PRO:HG2	2:E:153:LEU:HB2	2.04	0.40
2:E:145:ILE:HG22	2:E:146:ASP:H	1.87	0.40
9:L:241:ASP:OD1	9:L:241:ASP:N	2.54	0.40
10:M:175:PHE:CD1	11:N:426:LEU:HD11	2.56	0.40
1:F:330:ASP:OD1	1:F:330:ASP:N	2.42	0.40
9:L:312:THR:O	9:L:316:ILE:HG12	2.21	0.40
10:M:339:GLN:HG2	10:M:493:ILE:HG21	2.03	0.40
11:N:455:ILE:O	11:N:459:ILE:HG12	2.22	0.40
3:G:97:LEU:HD22	3:G:154:ILE:HB	2.02	0.40
3:G:326:SER:HB2	3:G:569:LEU:HD21	2.04	0.40
5:B:80:ARG:HA	7:H:49:PRO:HA	2.03	0.40
7:H:140:LYS:O	7:H:144:LEU:HD22	2.21	0.40
9:L:80:VAL:HB	9:L:134:ASP:HB3	2.02	0.40
11:N:390:LEU:HD21	11:N:474:LEU:HD22	2.04	0.40
11:N:422:LEU:HD23	11:N:422:LEU:HA	1.88	0.40
12:K:92:ILE:HD12	12:K:92:ILE:HA	1.95	0.40
3:G:623:ILE:HD12	3:G:787:LEU:HD11	2.03	0.40
4:C:123:HIS:HA	4:C:148:THR:O	2.21	0.40
6:I:53:ASP:OD1	6:I:56:GLY:N	2.55	0.40
7:H:130:VAL:HG21	7:H:208:HIS:CE1	2.57	0.40
7:H:135:TRP:CE2	13:J:26:VAL:HG21	2.57	0.40
19:L:801:3PE:H2I3	19:L:804:3PE:H391	2.03	0.40
10:M:263:LEU:HD12	10:M:263:LEU:HA	1.92	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:K:27:ASN:O	12:K:31:MET:HG3	2.21	0.40
1:F:96:PRO:HB2	1:F:295:ALA:HB2	2.04	0.40
5:B:2:ASP:OD1	5:B:2:ASP:N	2.55	0.40
9:L:577:ARG:NH1	19:L:805:3PE:O14	2.55	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	F	437/445 (98%)	432 (99%)	5 (1%)	0	100	100
2	E	154/166 (93%)	150 (97%)	4 (3%)	0	100	100
3	G	903/908 (99%)	877 (97%)	26 (3%)	0	100	100
4	C	582/600 (97%)	571 (98%)	11 (2%)	0	100	100
5	B	202/220 (92%)	196 (97%)	6 (3%)	0	100	100
6	I	178/180 (99%)	174 (98%)	4 (2%)	0	100	100
7	H	321/325 (99%)	313 (98%)	8 (2%)	0	100	100
8	A	109/147 (74%)	109 (100%)	0	0	100	100
9	L	601/613 (98%)	590 (98%)	11 (2%)	0	100	100
10	M	502/509 (99%)	491 (98%)	11 (2%)	0	100	100
11	N	464/485 (96%)	456 (98%)	7 (2%)	1 (0%)	47	76
12	K	98/100 (98%)	97 (99%)	1 (1%)	0	100	100
13	J	160/184 (87%)	160 (100%)	0	0	100	100
All	All	4711/4882 (96%)	4616 (98%)	94 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	N	64	THR

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	F	353/359 (98%)	336 (95%)	17 (5%)	25 56
2	E	129/139 (93%)	123 (95%)	6 (5%)	26 57
3	G	732/735 (100%)	712 (97%)	20 (3%)	44 75
4	C	506/519 (98%)	490 (97%)	16 (3%)	39 71
5	B	181/192 (94%)	171 (94%)	10 (6%)	21 50
6	I	154/154 (100%)	151 (98%)	3 (2%)	57 82
7	H	267/269 (99%)	259 (97%)	8 (3%)	41 73
8	A	89/119 (75%)	85 (96%)	4 (4%)	27 59
9	L	481/486 (99%)	455 (95%)	26 (5%)	22 51
10	M	413/418 (99%)	402 (97%)	11 (3%)	44 75
11	N	374/385 (97%)	361 (96%)	13 (4%)	36 68
12	K	79/79 (100%)	72 (91%)	7 (9%)	9 27
13	J	128/146 (88%)	124 (97%)	4 (3%)	40 72
All	All	3886/4000 (97%)	3741 (96%)	145 (4%)	37 66

All (145) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	7	THR
1	F	19	ASP
1	F	26	LEU
1	F	31	SER
1	F	48	ASP
1	F	94	MET
1	F	126	TYR
1	F	152	GLU

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Mol	Chain	Res	Type
1	F	243	LYS
1	F	252	PHE
1	F	313	SER
1	F	373	ARG
1	F	388	CYS
1	F	398	CYS
1	F	413	LYS
1	F	417	GLU
1	F	432	LEU
2	E	15	SER
2	E	19	ARG
2	E	46	GLN
2	E	47	ARG
2	E	147	GLU
2	E	149	THR
3	G	64	ARG
3	G	135	ARG
3	G	181	VAL
3	G	187	GLU
3	G	195	PHE
3	G	218	ASN
3	G	265	CYS
3	G	279	ASP
3	G	295	LEU
3	G	298	GLU
3	G	365	THR
3	G	631	ARG
3	G	664	ARG
3	G	740	MET
3	G	804	ARG
3	G	808	GLN
3	G	841	TYR
3	G	861	SER
3	G	884	VAL
3	G	906	LYS
4	C	30	ARG
4	C	65	LYS
4	C	106	ASP
4	C	127	PHE
4	C	133	ASN
4	C	156	ARG
4	C	184	GLU

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Mol	Chain	Res	Type
4	C	206	MET
4	C	223	ASN
4	C	246	VAL
4	C	273	ASP
4	C	301	ASP
4	C	324	SER
4	C	377	ASP
4	C	531	ASN
4	C	594	VAL
5	B	4	THR
5	B	6	THR
5	B	45	MET
5	B	63	CYS
5	B	78	VAL
5	B	84	GLU
5	B	96	MET
5	B	180	ARG
5	B	184	SER
5	B	207	GLU
6	I	4	LYS
6	I	126	LYS
6	I	152	ARG
7	H	16	LEU
7	H	73	TRP
7	H	140	LYS
7	H	142	SER
7	H	152	GLN
7	H	196	PHE
7	H	238	PHE
7	H	286	ARG
8	A	29	LEU
8	A	83	LEU
8	A	92	ILE
8	A	108	PHE
9	L	68	MET
9	L	77	PHE
9	L	101	MET
9	L	111	GLU
9	L	123	PHE
9	L	127	MET
9	L	216	MET
9	L	241	ASP

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Mol	Chain	Res	Type
9	L	258	MET
9	L	329	ASP
9	L	336	MET
9	L	379	PHE
9	L	398	SER
9	L	424	MET
9	L	431	ARG
9	L	453	HIS
9	L	472	VAL
9	L	476	GLN
9	L	485	LEU
9	L	490	MET
9	L	497	SER
9	L	516	ARG
9	L	575	LEU
9	L	581	LYS
9	L	608	LEU
9	L	613	ARG
10	M	74	ARG
10	M	174	PHE
10	M	207	TYR
10	M	224	MET
10	M	281	ASN
10	M	303	TRP
10	M	361	GLN
10	M	426	THR
10	M	435	TYR
10	M	447	LYS
10	M	466	PHE
11	N	8	LEU
11	N	61	MET
11	N	63	VAL
11	N	67	MET
11	N	100	ASP
11	N	174	MET
11	N	256	ARG
11	N	270	ARG
11	N	302	SER
11	N	334	LEU
11	N	361	SER
11	N	369	ARG
11	N	482	MET

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Mol	Chain	Res	Type
12	K	1	MET
12	K	27	ASN
12	K	46	PHE
12	K	51	SER
12	K	94	SER
12	K	97	GLU
12	K	99	ARG
13	J	59	TYR
13	J	69	PHE
13	J	72	MET
13	J	109	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
2	E	98	HIS
3	G	845	ASN
10	M	206	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 26 ligands modelled in this entry, 1 is monoatomic - leaving 25 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	$\#\|Z\| > 2$
19	3PE	L	805	-	50,50,50	0.30	0	53,55,55	0.28	0
20	LFA	L	802	-	19,19,19	0.14	0	18,18,18	0.12	0
20	LFA	H	402	-	19,19,19	0.16	0	18,18,18	0.11	0
14	SF4	I	202	6	0,12,12	-	-	-		
14	SF4	I	201	6	0,12,12	-	-	-		
20	LFA	M	1201	-	19,19,19	0.15	0	18,18,18	0.11	0
19	3PE	L	801	-	50,50,50	0.30	0	53,55,55	0.27	0
17	FES	E	201	2	0,4,4	-	-	-		
19	3PE	L	804	-	50,50,50	0.31	0	53,55,55	0.29	0
14	SF4	F	501	1	0,12,12	-	-	-		
19	3PE	I	203	-	50,50,50	0.30	0	53,55,55	0.28	0
19	3PE	L	803	-	50,50,50	0.30	0	53,55,55	0.27	0
19	3PE	J	202	-	50,50,50	0.31	0	53,55,55	0.28	0
19	3PE	H	401	-	50,50,50	0.30	0	53,55,55	0.30	0
19	3PE	M	1202	-	50,50,50	0.30	0	53,55,55	0.29	0
14	SF4	G	1001	3	0,12,12	-	-	-		
19	3PE	J	201	-	50,50,50	0.30	0	53,55,55	0.27	0
14	SF4	B	301	5	0,12,12	-	-	-		
19	3PE	M	1203	-	50,50,50	0.30	0	53,55,55	0.27	0
17	FES	G	1004	3	0,4,4	-	-	-		
20	LFA	N	601	-	13,13,19	0.16	0	12,12,18	0.12	0
15	FMN	F	502	-	33,33,33	1.06	2 (6%)	48,50,50	1.24	6 (12%)
16	NAI	F	503	-	42,48,48	0.51	0	47,73,73	0.59	1 (2%)
14	SF4	G	1002	3	0,12,12	-	-	-		
14	SF4	G	1003	3	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
19	3PE	L	805	-	-	13/54/54/54	-
20	LFA	L	802	-	-	0/17/17/17	-
20	LFA	H	402	-	-	1/17/17/17	-
14	SF4	I	202	6	-	-	0/6/5/5
14	SF4	I	201	6	-	-	0/6/5/5
20	LFA	M	1201	-	-	1/17/17/17	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	3PE	L	801	-	-	13/54/54/54	-
17	FES	E	201	2	-	-	0/1/1/1
19	3PE	L	804	-	-	15/54/54/54	-
14	SF4	F	501	1	-	-	0/6/5/5
19	3PE	I	203	-	-	7/54/54/54	-
19	3PE	L	803	-	-	7/54/54/54	-
19	3PE	J	202	-	-	6/54/54/54	-
19	3PE	H	401	-	-	9/54/54/54	-
19	3PE	M	1202	-	-	11/54/54/54	-
14	SF4	G	1001	3	-	-	0/6/5/5
19	3PE	J	201	-	-	11/54/54/54	-
14	SF4	B	301	5	-	-	0/6/5/5
19	3PE	M	1203	-	-	11/54/54/54	-
20	LFA	N	601	-	-	0/11/11/17	-
17	FES	G	1004	3	-	-	0/1/1/1
15	FMN	F	502	-	-	7/18/18/18	0/3/3/3
16	NAI	F	503	-	-	4/25/72/72	0/5/5/5
14	SF4	G	1002	3	-	-	0/6/5/5
14	SF4	G	1003	3	-	-	0/6/5/5

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	F	502	FMN	C4A-N5	3.67	1.37	1.30
15	F	502	FMN	C10-N1	2.27	1.37	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	F	502	FMN	C4-N3-C2	-3.22	119.69	125.64
15	F	502	FMN	C4A-C10-N10	2.81	120.60	116.48
15	F	502	FMN	C4A-C4-N3	2.67	119.97	113.19
15	F	502	FMN	O4-C4-C4A	-2.45	120.09	126.60
15	F	502	FMN	C10-C4A-N5	-2.35	119.87	124.86
16	F	503	NAI	C5A-C6A-N6A	2.33	123.89	120.35
15	F	502	FMN	C4A-C10-N1	-2.28	119.43	124.73

There are no chirality outliers.

All (116) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
15	F	502	FMN	N10-C1'-C2'-O2'
15	F	502	FMN	N10-C1'-C2'-C3'
15	F	502	FMN	C5'-O5'-P-O2P
15	F	502	FMN	C5'-O5'-P-O3P
19	I	203	3PE	C1-O11-P-O13
19	I	203	3PE	O13-C11-C12-N
19	H	401	3PE	O13-C11-C12-N
19	L	801	3PE	C1-O11-P-O14
19	L	801	3PE	C11-O13-P-O12
19	L	803	3PE	C1-O11-P-O14
19	L	803	3PE	O13-C11-C12-N
19	L	804	3PE	C11-O13-P-O11
19	L	804	3PE	C11-O13-P-O12
19	L	804	3PE	C11-O13-P-O14
19	L	804	3PE	C2-C1-O11-P
19	L	804	3PE	O13-C11-C12-N
19	L	805	3PE	C1-O11-P-O14
19	L	805	3PE	O13-C11-C12-N
19	M	1202	3PE	C1-O11-P-O14
19	M	1202	3PE	C11-O13-P-O11
19	M	1202	3PE	C11-O13-P-O14
19	M	1203	3PE	C1-O11-P-O12
19	M	1203	3PE	C11-O13-P-O12
19	M	1203	3PE	C11-O13-P-O14
19	J	201	3PE	C1-O11-P-O12
19	J	201	3PE	C1-O11-P-O14
19	L	804	3PE	C31-C32-C33-C34
19	H	401	3PE	C11-O13-P-O11
19	M	1203	3PE	C11-O13-P-O11
19	J	201	3PE	C1-O11-P-O13
19	M	1203	3PE	C26-C27-C28-C29
19	L	801	3PE	C2C-C2D-C2E-C2F
19	L	803	3PE	C3E-C3F-C3G-C3H
19	L	805	3PE	C2B-C2C-C2D-C2E
19	M	1203	3PE	C3E-C3F-C3G-C3H
19	L	805	3PE	C3B-C3C-C3D-C3E
19	H	401	3PE	C3D-C3E-C3F-C3G
19	L	801	3PE	C37-C38-C39-C3A
20	H	402	LFA	C14-C15-C16-C17
19	L	804	3PE	O21-C2-C3-O31
19	L	801	3PE	C1-O11-P-O13
19	L	801	3PE	C11-O13-P-O11
19	M	1202	3PE	C1-O11-P-O13

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Mol	Chain	Res	Type	Atoms
19	J	201	3PE	C2-C1-O11-P
19	L	801	3PE	C3E-C3F-C3G-C3H
19	L	805	3PE	C1-C2-C3-O31
19	M	1202	3PE	C24-C25-C26-C27
19	L	804	3PE	C39-C3A-C3B-C3C
15	F	502	FMN	C5'-O5'-P-O1P
19	M	1203	3PE	C2-C1-O11-P
19	L	801	3PE	C23-C24-C25-C26
15	F	502	FMN	O2'-C2'-C3'-C4'
19	L	804	3PE	C1-C2-C3-O31
19	L	805	3PE	O21-C2-C3-O31
16	F	503	NAI	PN-O3-PA-O5B
19	I	203	3PE	C2-C1-O11-P
19	M	1202	3PE	C2-C1-O11-P
19	L	801	3PE	C25-C26-C27-C28
19	J	202	3PE	C21-C22-C23-C24
16	F	503	NAI	C5B-O5B-PA-O3
19	L	804	3PE	C3E-C3F-C3G-C3H
19	J	202	3PE	C11-O13-P-O11
19	I	203	3PE	C1-O11-P-O12
19	H	401	3PE	C11-O13-P-O14
19	L	801	3PE	C1-O11-P-O12
19	L	801	3PE	C11-O13-P-O14
19	L	804	3PE	C1-O11-P-O14
19	H	401	3PE	C3F-C3G-C3H-C3I
19	L	804	3PE	C34-C35-C36-C37
19	L	805	3PE	C28-C29-C2A-C2B
19	J	201	3PE	O21-C21-C22-C23
19	L	804	3PE	C3C-C3D-C3E-C3F
19	L	805	3PE	C1-O11-P-O13
19	L	805	3PE	C11-O13-P-O11
19	J	201	3PE	C11-O13-P-O11
19	J	201	3PE	C23-C24-C25-C26
15	F	502	FMN	O2'-C2'-C3'-O3'
19	L	801	3PE	C34-C35-C36-C37
19	L	803	3PE	O21-C2-C3-O31
19	I	203	3PE	C32-C33-C34-C35
16	F	503	NAI	O4D-C1D-N1N-C2N
19	L	803	3PE	C1-O11-P-O13
19	L	805	3PE	C24-C25-C26-C27
19	J	201	3PE	O11-C1-C2-C3
19	M	1202	3PE	C35-C36-C37-C38

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Mol	Chain	Res	Type	Atoms
19	L	805	3PE	C23-C24-C25-C26
16	F	503	NAI	C2D-C1D-N1N-C2N
19	M	1202	3PE	C3B-C3C-C3D-C3E
19	L	804	3PE	C3D-C3E-C3F-C3G
19	J	202	3PE	C3C-C3D-C3E-C3F
19	M	1202	3PE	C25-C26-C27-C28
19	H	401	3PE	O31-C31-C32-C33
19	J	201	3PE	C21-C22-C23-C24
19	M	1203	3PE	O31-C31-C32-C33
19	J	201	3PE	O11-C1-C2-O21
19	H	401	3PE	C29-C2A-C2B-C2C
19	H	401	3PE	O21-C2-C3-O31
19	M	1203	3PE	C2F-C2G-C2H-C2I
19	M	1202	3PE	C2F-C2G-C2H-C2I
19	L	805	3PE	C29-C2A-C2B-C2C
19	M	1203	3PE	O32-C31-C32-C33
19	J	202	3PE	C2F-C2G-C2H-C2I
19	L	805	3PE	C11-O13-P-O14
19	M	1203	3PE	C1-O11-P-O14
19	J	201	3PE	C11-O13-P-O14
19	H	401	3PE	O32-C31-C32-C33
19	M	1202	3PE	C12-C11-O13-P
19	L	801	3PE	C33-C34-C35-C36
19	I	203	3PE	O21-C21-C22-C23
19	J	202	3PE	C3B-C3C-C3D-C3E
20	M	1201	LFA	C11-C12-C13-C14
19	L	804	3PE	C37-C38-C39-C3A
19	J	202	3PE	C26-C27-C28-C29
19	I	203	3PE	C2A-C2B-C2C-C2D
19	L	803	3PE	O21-C21-C22-C23
19	L	803	3PE	O22-C21-C22-C23

There are no ring outliers.

14 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
19	L	805	3PE	4	0
20	L	802	LFA	1	0
20	H	402	LFA	2	0
19	L	801	3PE	1	0
17	E	201	FES	1	0
19	L	804	3PE	2	0

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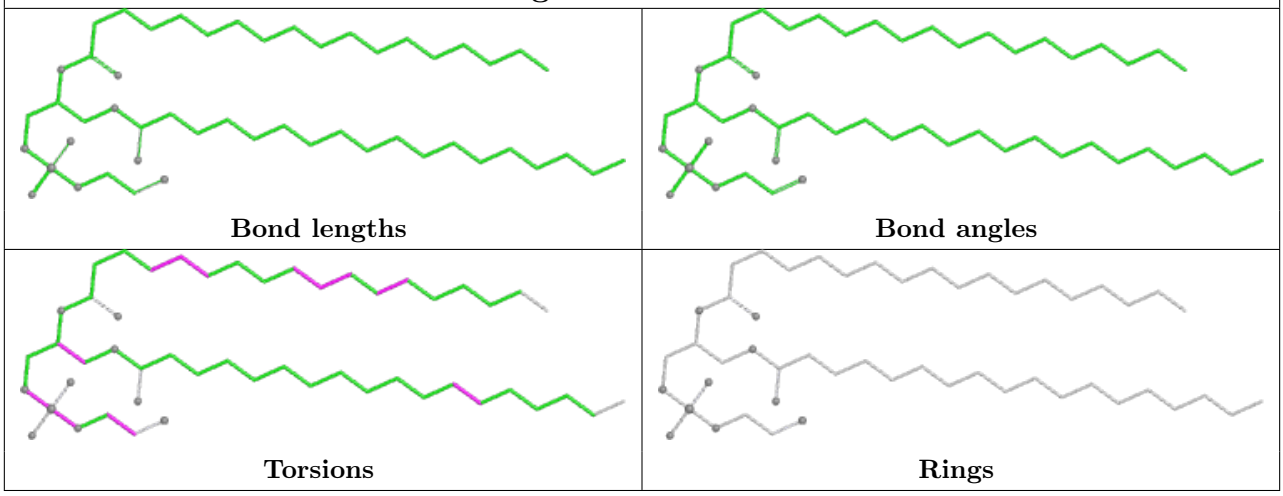
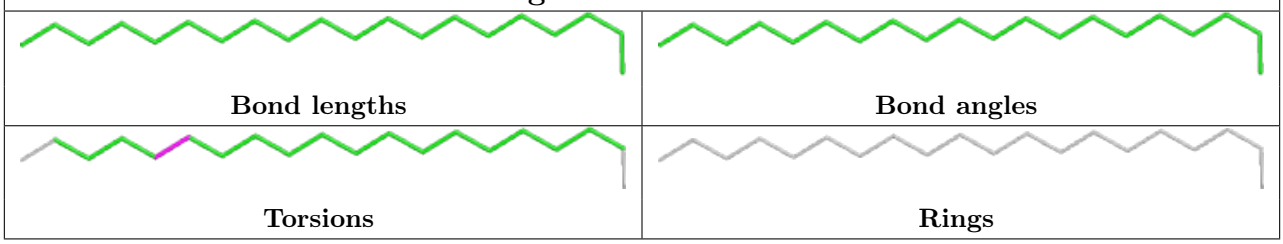
Mol	Chain	Res	Type	Clashes	Symm-Clashes
19	I	203	3PE	1	0
19	L	803	3PE	5	0
19	J	202	3PE	4	0
19	H	401	3PE	5	0
19	J	201	3PE	3	0
15	F	502	FMN	1	0
16	F	503	NAI	2	0
14	G	1003	SF4	1	0

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 3PE L 805



Ligand LFA H 402



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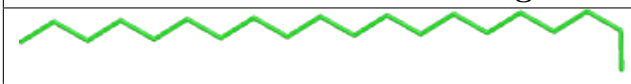
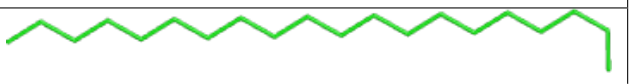
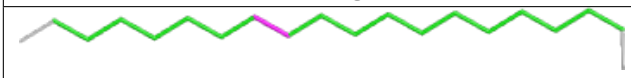
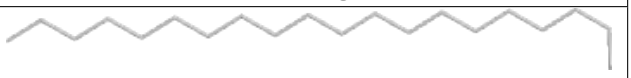
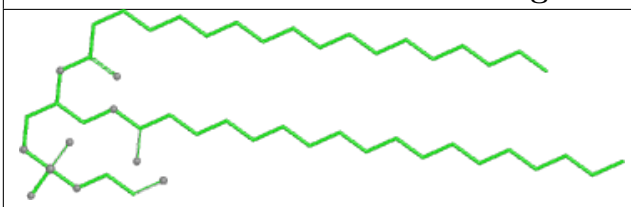
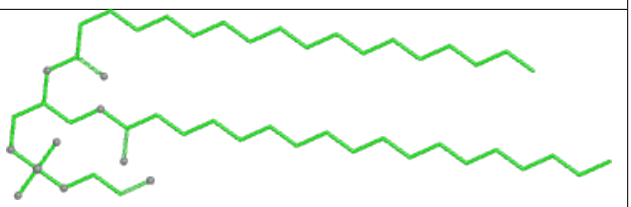
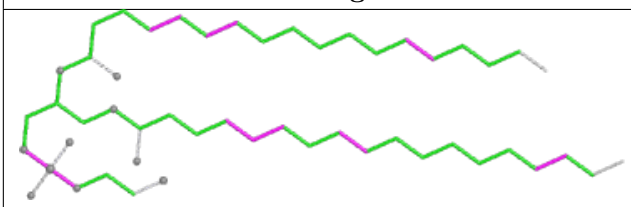
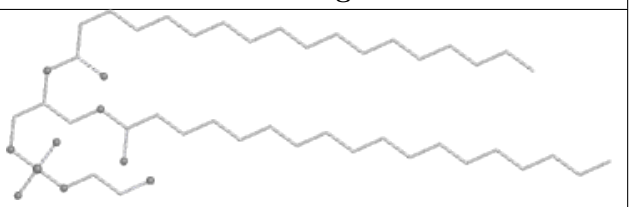
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE L 801	
 Bond lengths	 Bond angles
 Torsions	 Rings

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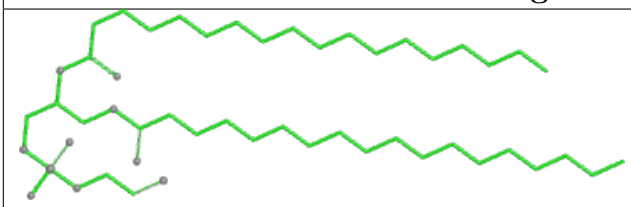
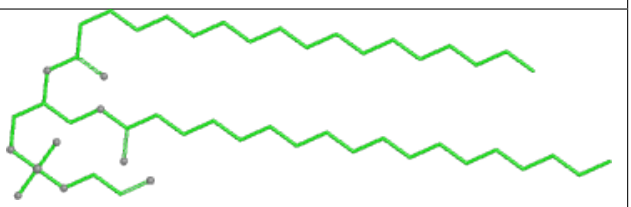
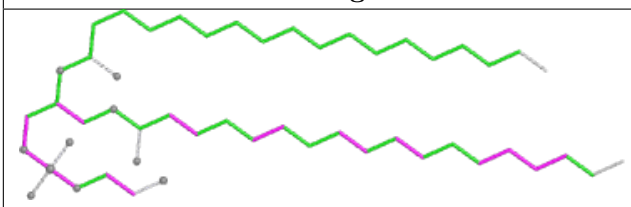
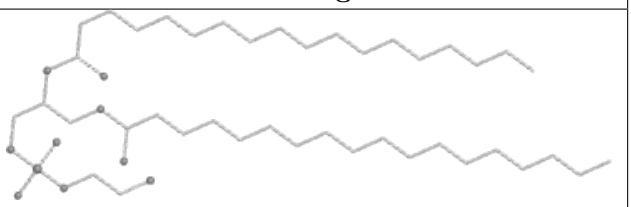
 Bond lengths	 Bond angles
 Torsions	 Rings

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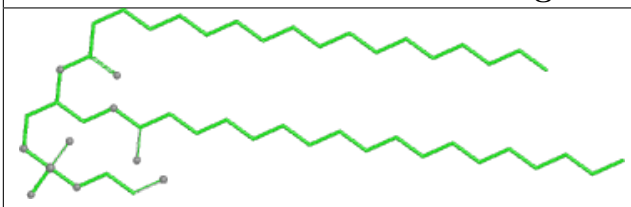
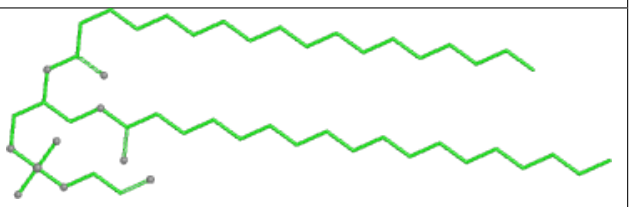
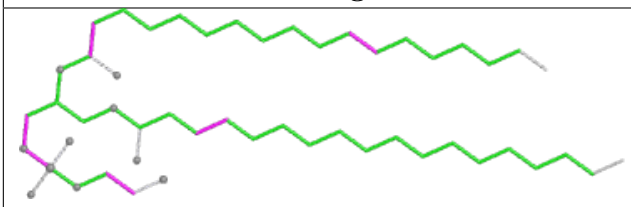
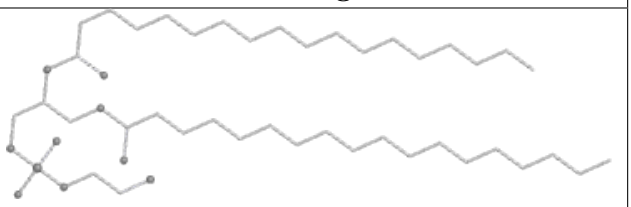
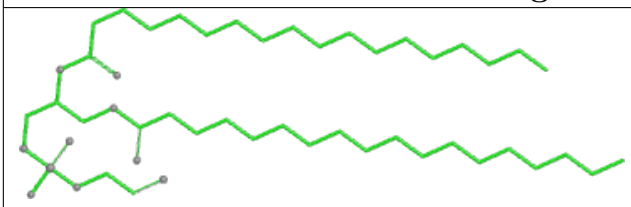
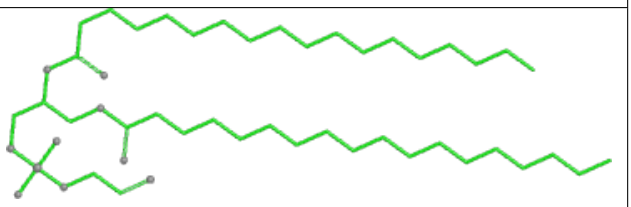
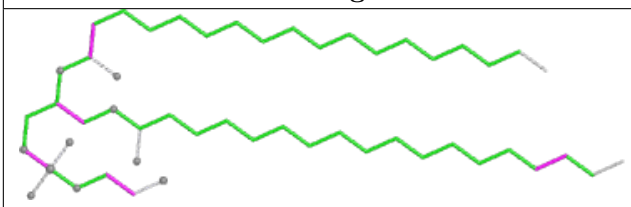
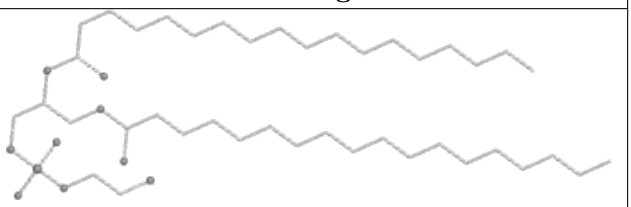
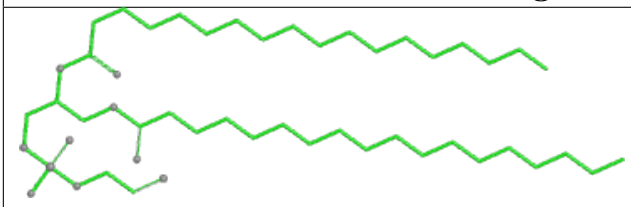
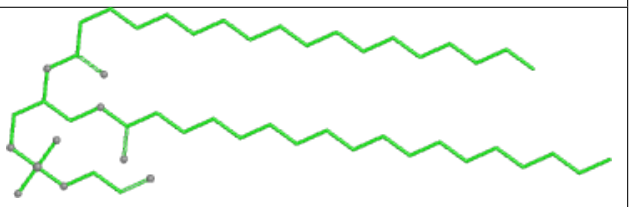
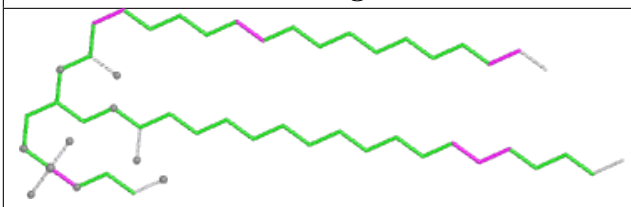
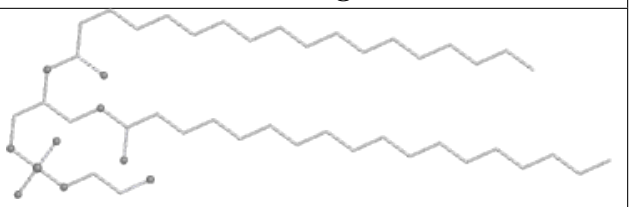
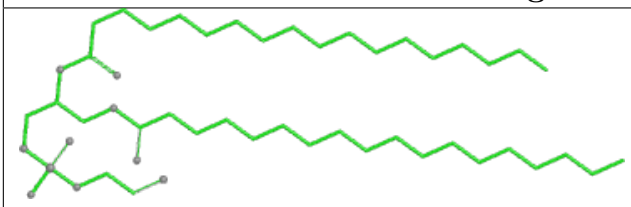
 Bond lengths	 Bond angles
 Torsions	 Rings

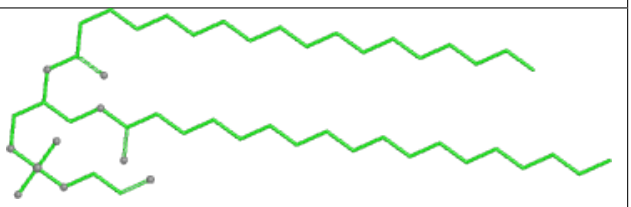
Ligand 3PE L 803	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE J 202	
 Bond lengths	 Bond angles
 Torsions	 Rings

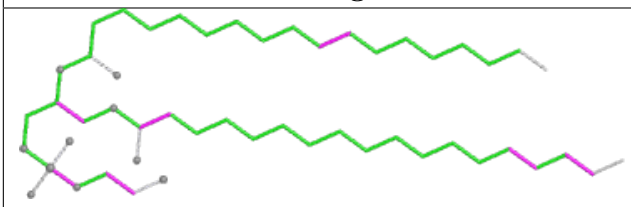
Ligand 3PE H 401



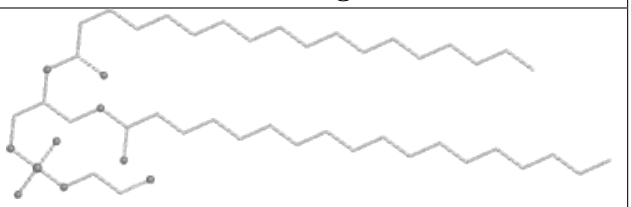
Bond lengths



Bond angles

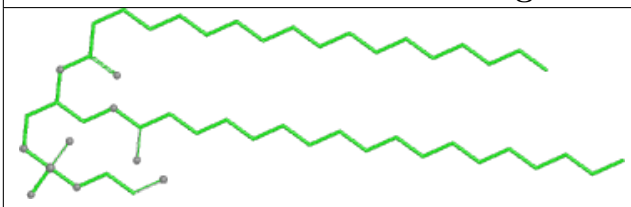


Torsions

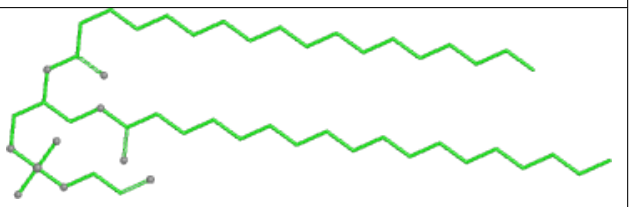


Rings

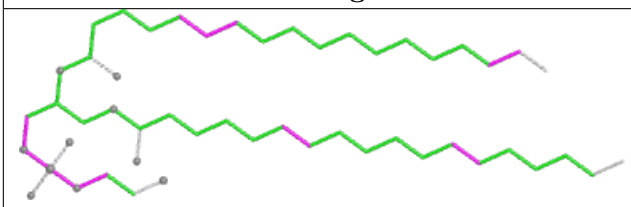
Ligand 3PE M 1202



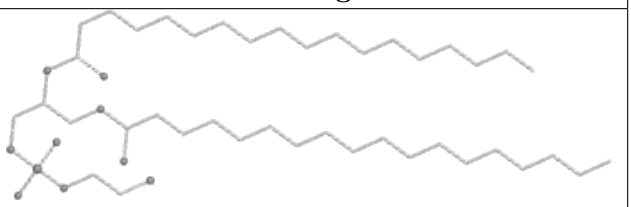
Bond lengths



Bond angles

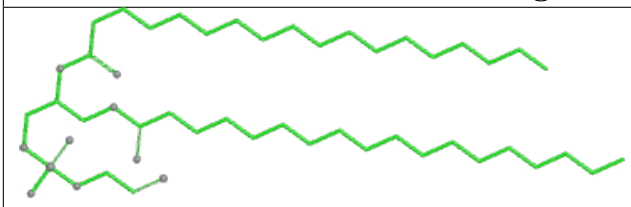


Torsions

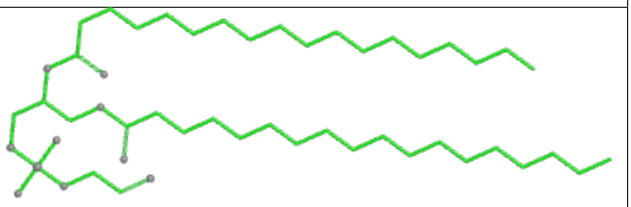


Rings

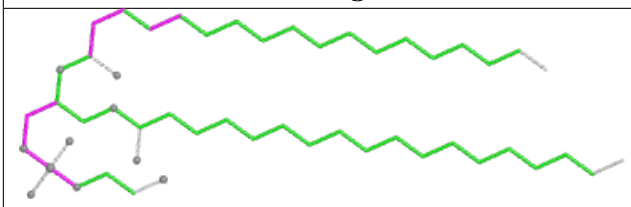
Ligand 3PE J 201



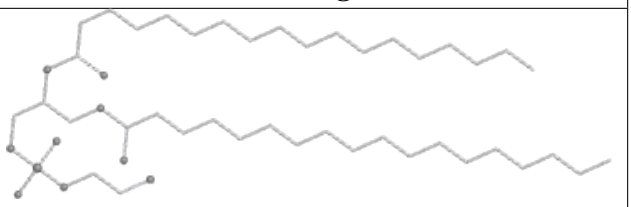
Bond lengths



Bond angles

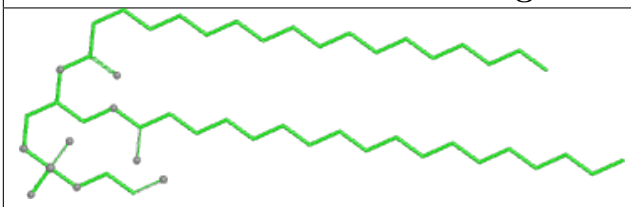


Torsions

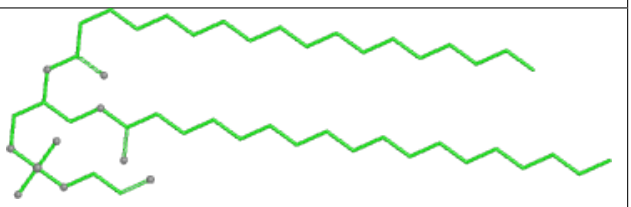


Rings

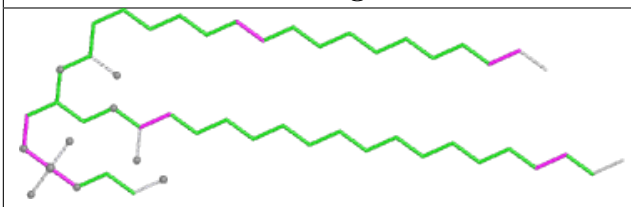
Ligand 3PE M 1203



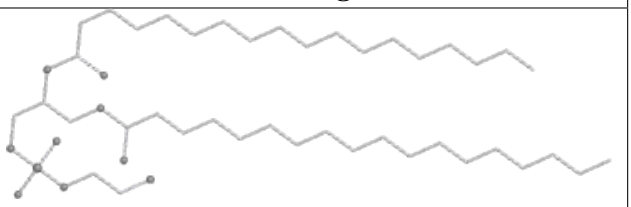
Bond lengths



Bond angles

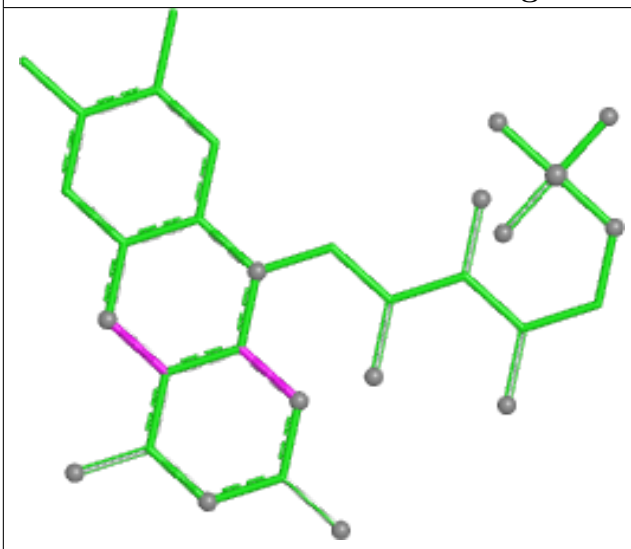


Torsions

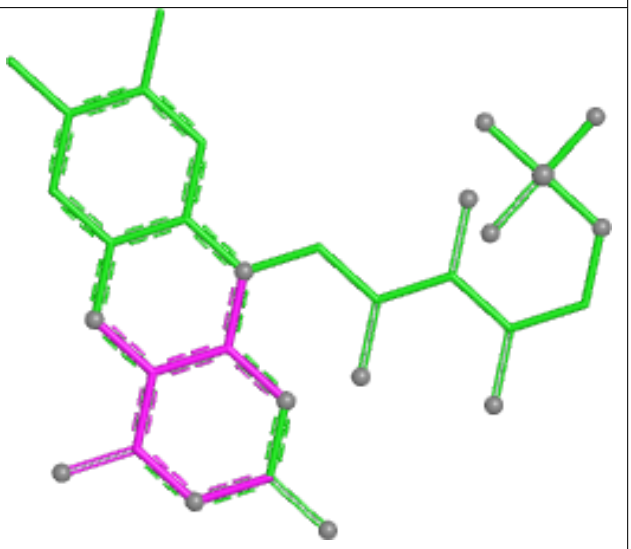


Rings

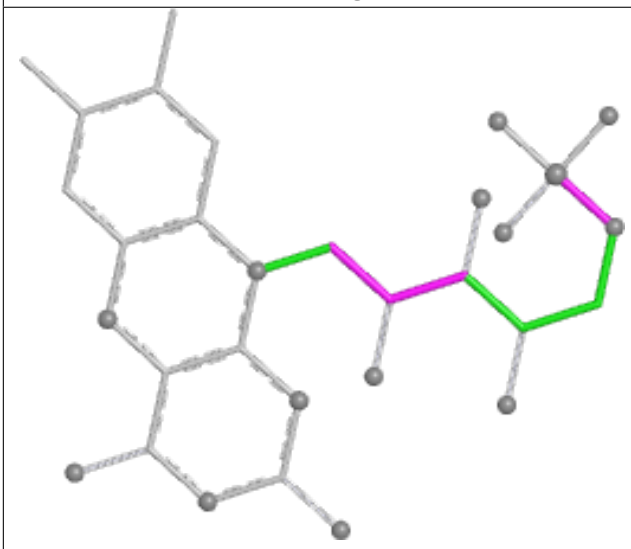
Ligand FMN F 502



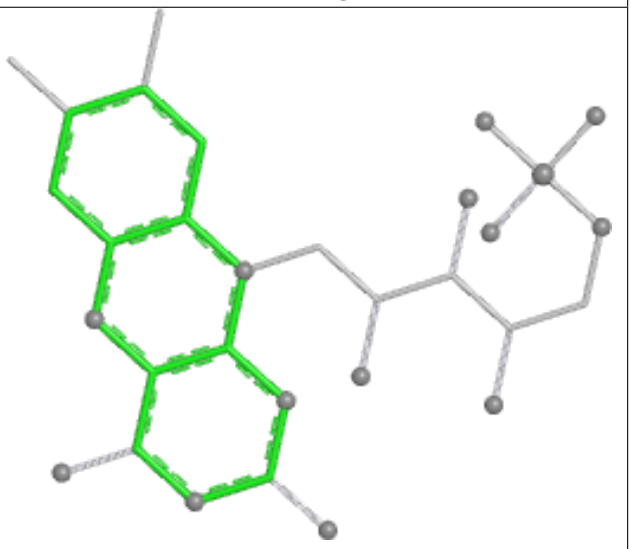
Bond lengths



Bond angles

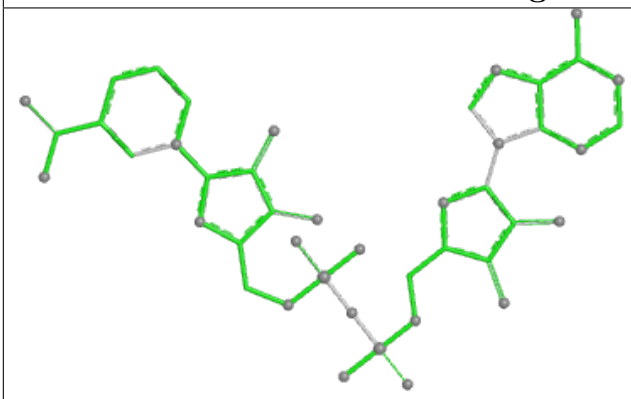


Torsions

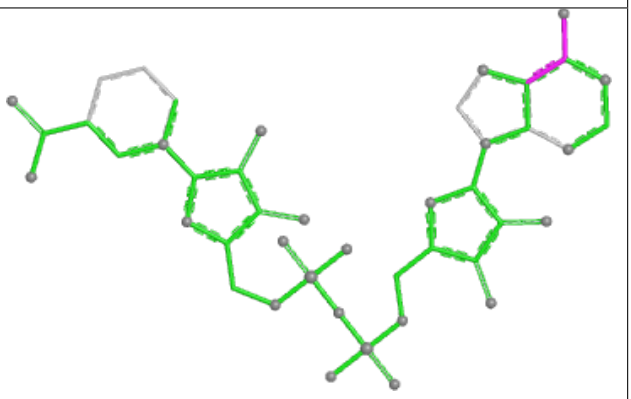


Rings

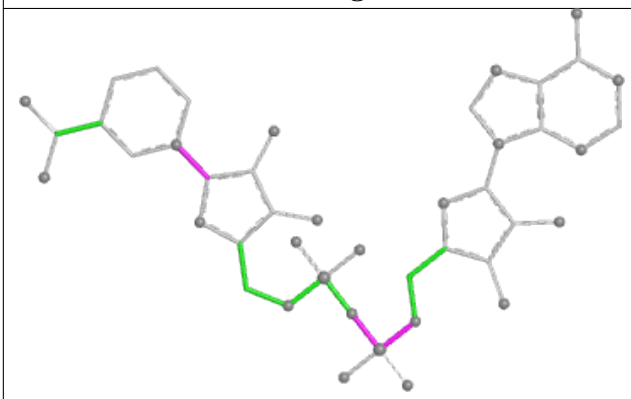
Ligand NAI F 503



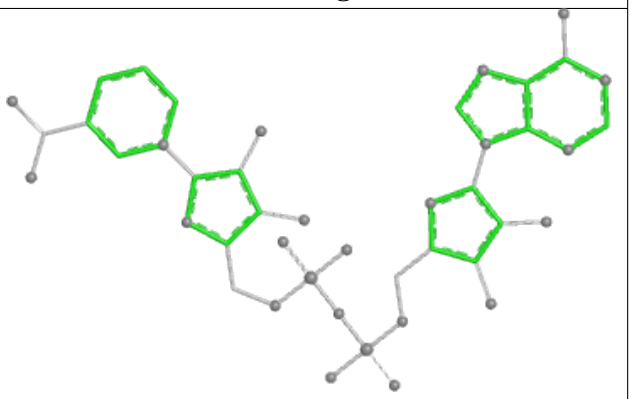
Bond lengths



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.

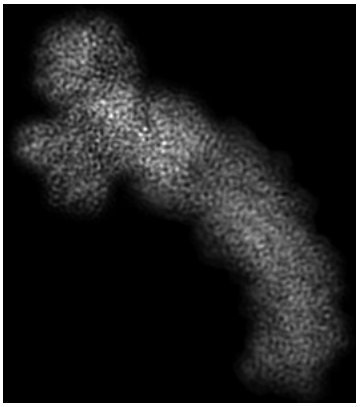
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14542. These allow visual inspection of the internal detail of the map and identification of artifacts.

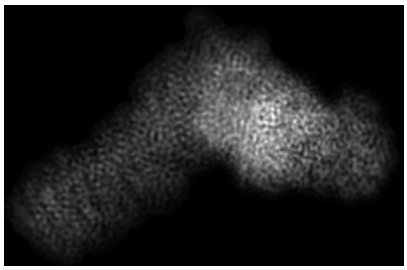
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

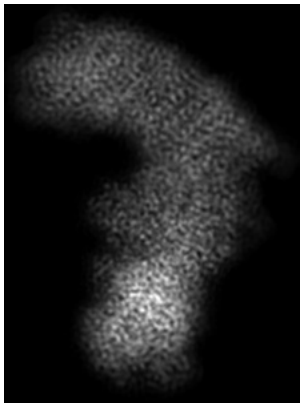
6.1.1 Primary map



X



Y



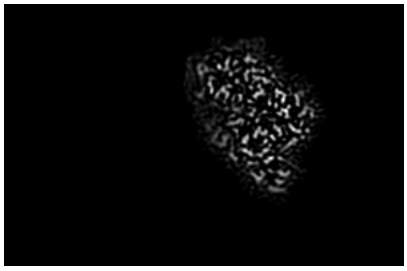
Z

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

6.2 Central slices

6.2.1 Primary map

X Index: 74



Y Index: 100

Z Index: 113

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: 76

Y Index: 53

Z Index: 152

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

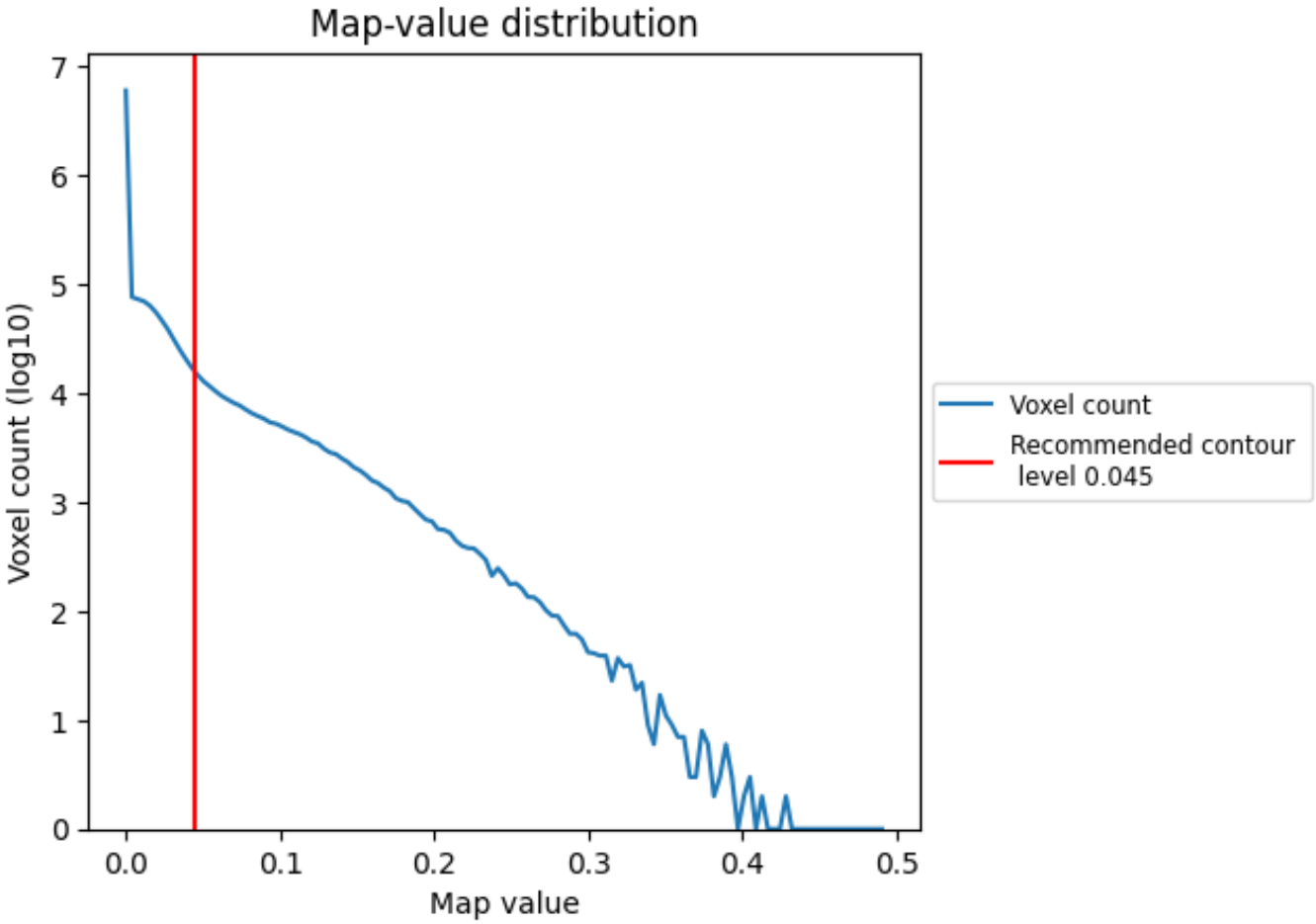
6.5 Mask visualisation (i)

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

7 Map analysis

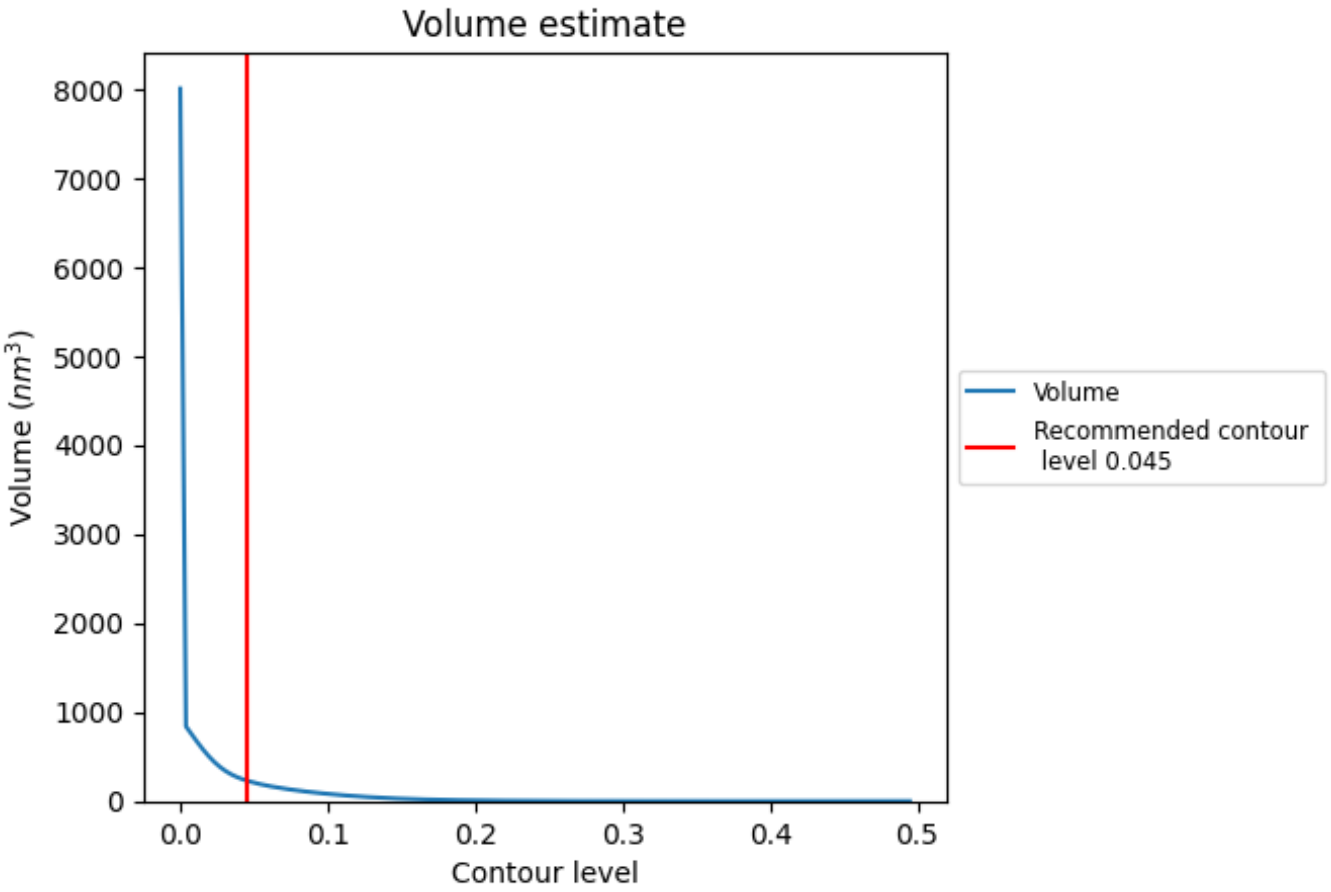
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

7.2 Volume estimate



The volume at the recommended contour level is 231 nm^3; this corresponds to an approximate mass of 209 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.

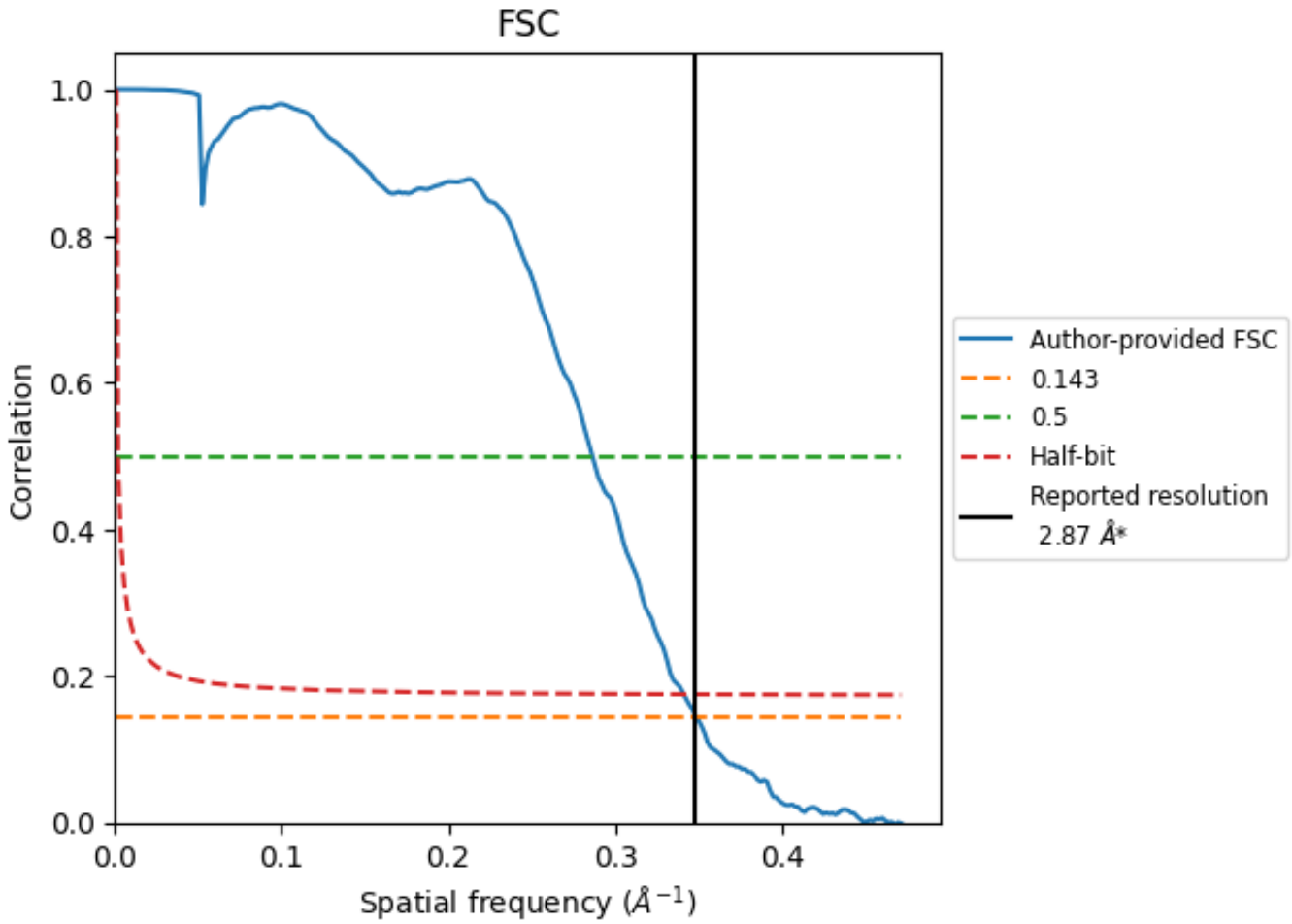
7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.348 Å^{-1}

8.2 Resolution estimates (i)

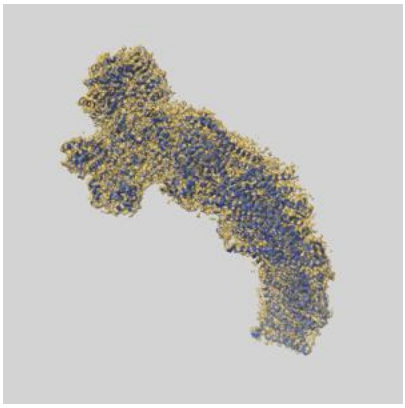
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.87	-	-
Author-provided FSC curve	2.87	3.49	2.93
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

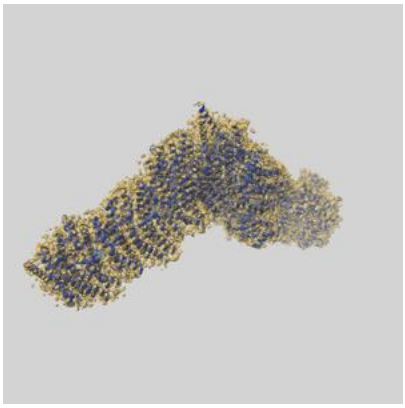
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14542 and PDB model 7Z84. Per-residue inclusion information can be found in section 3 on page 11.

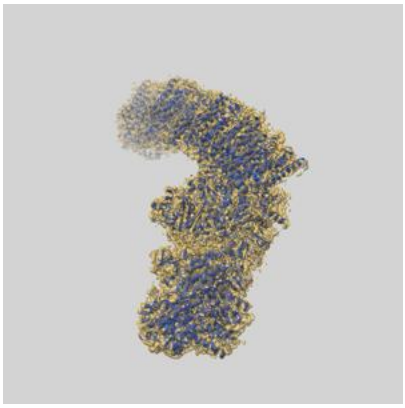
9.1 Map-model overlay



X



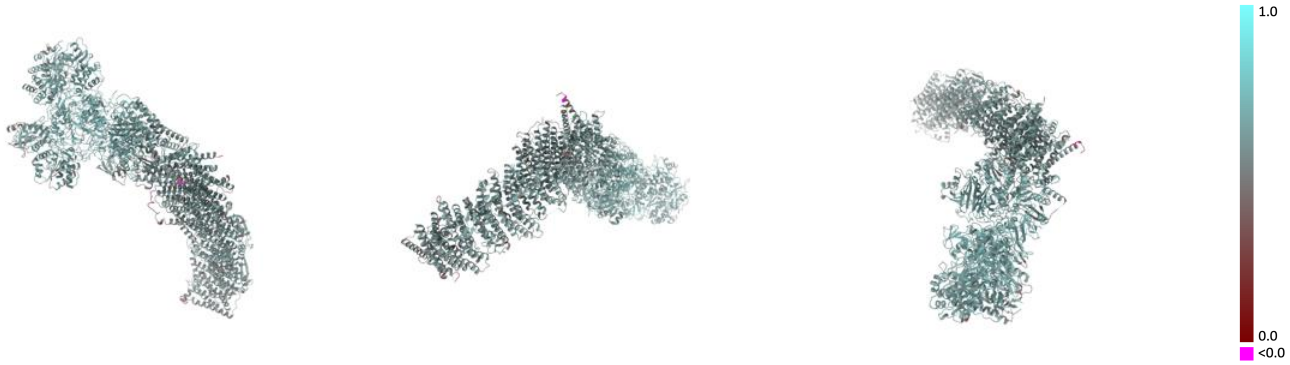
Y



Z

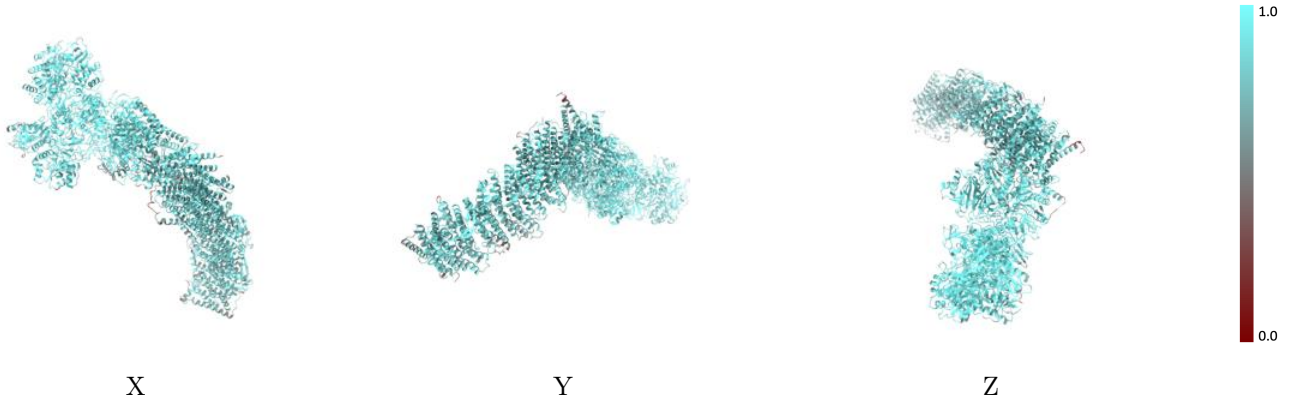
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



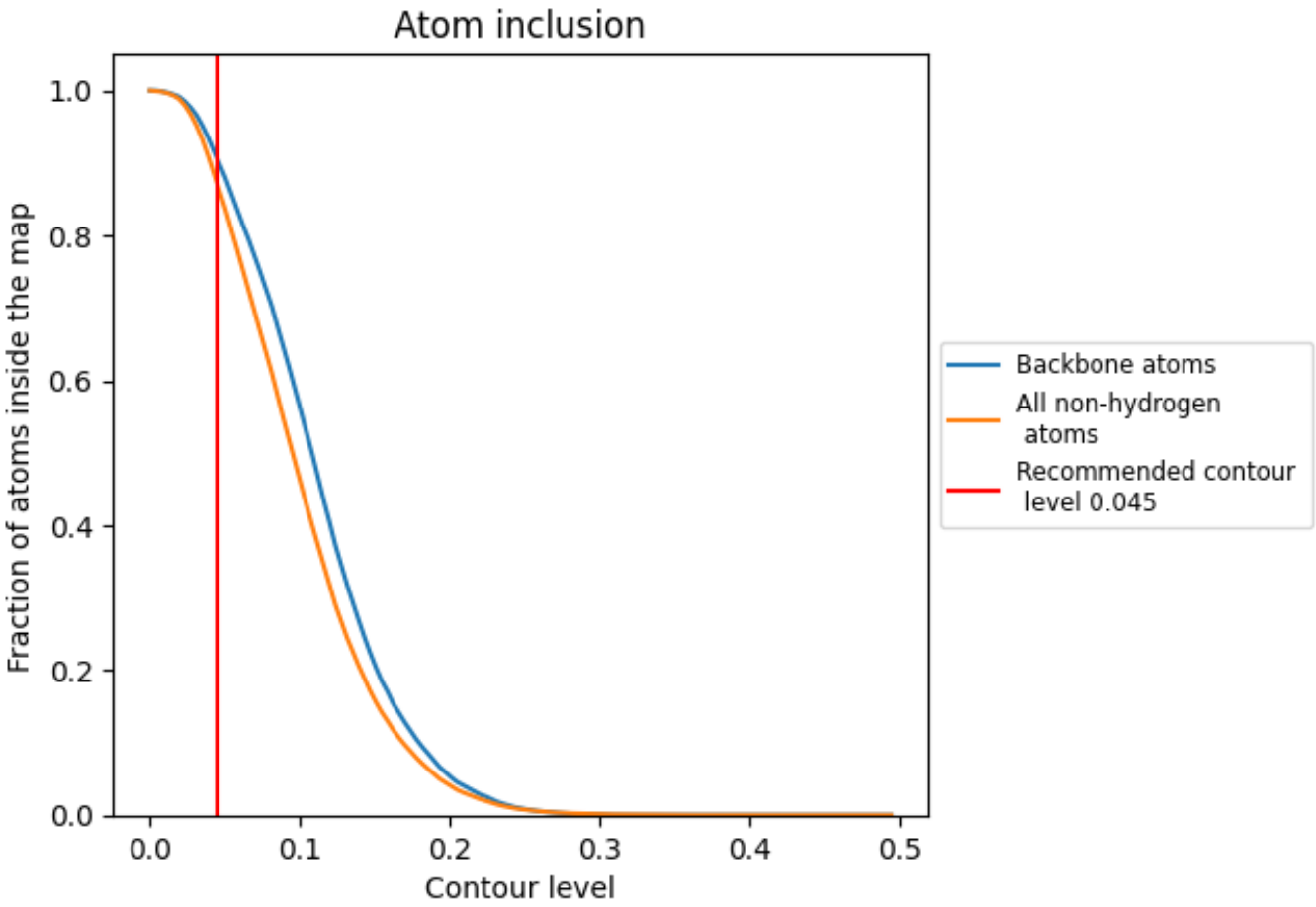
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.045).

9.4 Atom inclusion (i)



At the recommended contour level, 90% of all backbone atoms, 87% 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 (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8705	0.5910
A	0.7918	0.5480
B	0.8850	0.6100
C	0.9136	0.6170
E	0.9185	0.6080
F	0.9292	0.6200
G	0.9371	0.6360
H	0.8330	0.5560
I	0.9208	0.6290
J	0.7588	0.5220
K	0.8389	0.5590
L	0.7915	0.5420
M	0.8025	0.5650
N	0.8623	0.5700