



Full wwPDB EM Validation Report ⓘ

Sep 27, 2022 – 01:00 am BST

PDB ID : 7P7C
EMDB ID : EMD-13235
Title : Complex I from E. coli, DDM/LMNG-purified, Apo, Open state
Authors : Kravchuk, V.; Kampjut, D.; Sazanov, L.
Deposited on : 2021-07-19
Resolution : 2.40 Å(reported)
Based on initial models : 4HEA, 3RKO

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:

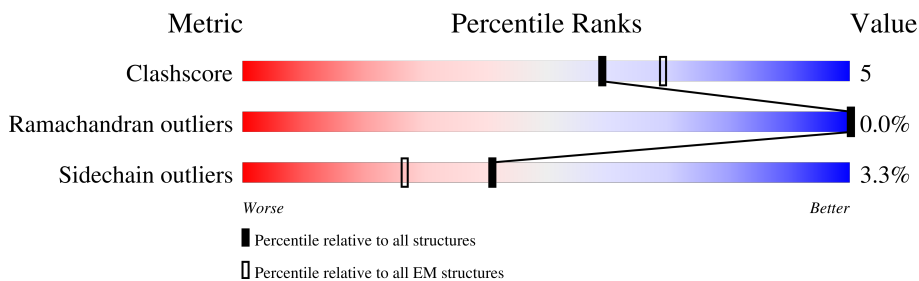
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA)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

1 Overall quality at a glance

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

The reported resolution of this entry is 2.40 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 $\leq 5\%$. 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	439	
2	E	156	
3	G	905	
4	C	600	
5	B	220	
6	I	180	
7	H	325	
8	A	147	

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Mol	Chain	Length	Quality of chain
9	L	613	 5% 83% 13% ..
10	M	504	 82% 17% .
11	N	485	 80% 17% ..
12	K	100	 87% 13%
13	J	162	 81% 19% .

2 Entry composition [i](#)

There are 21 unique types of molecules in this entry. The entry contains 38320 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	7013	4384	1266	1326	37	0	0

- Molecule 4 is a protein called NADH-quinone oxidoreductase subunit C/D.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	588	4735	3034	822	855	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	198	1568	994	272	286	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
			Total	C	N	O	S		
7	H	311	Total	C	N	O	S	0	0
			2438	1640	383	397	18		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	A	101	Total	C	N	O	S	0	0
			800	549	123	124	4		

- Molecule 9 is a protein called Proton-translocating NADH-quinone oxidoreductase, chain L.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	L	597	Total	C	N	O	S	0	0
			4559	3036	725	766	32		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
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
			Total	C	N	O	S		
11	N	476	Total	C	N	O	S	0	0
			3602	2408	569	606	19		

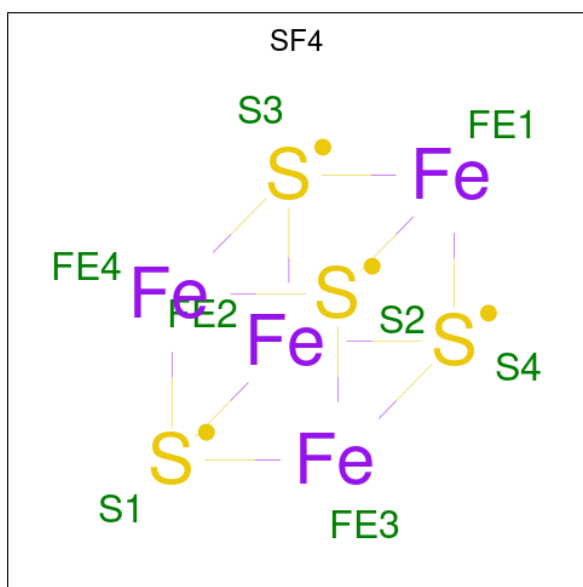
- Molecule 12 is a protein called NADH-quinone oxidoreductase subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
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.

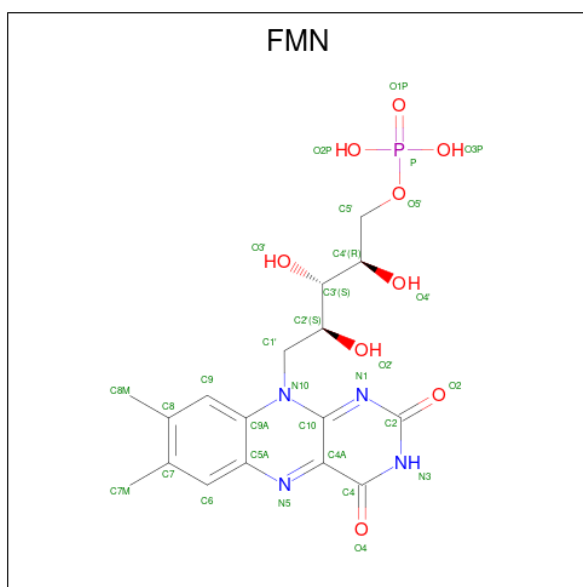
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	J	162	Total	C	N	O	S	0	0
			1218	820	187	204	7		

- Molecule 14 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



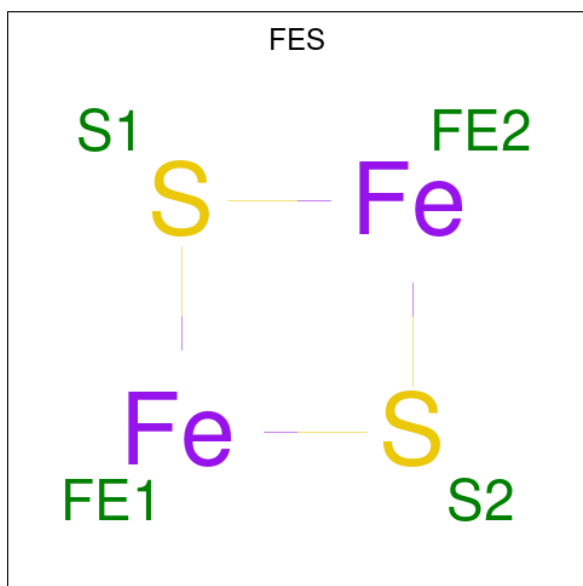
Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
14	F	1	8	4	4	0
14	G	1	24	12	12	0
14	G	1	24	12	12	0
14	G	1	24	12	12	0
14	B	1	8	4	4	0
14	I	1	16	8	8	0
14	I	1	16	8	8	0

- Molecule 15 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C₁₇H₂₁N₄O₉P).



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

- Molecule 16 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).

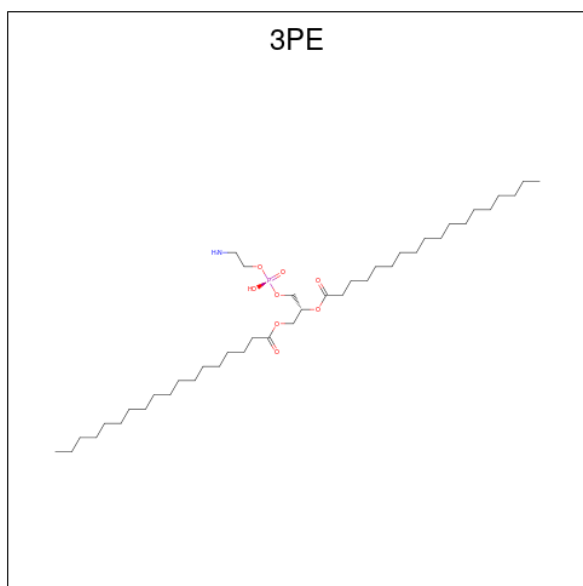


Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
16	E	1	4	2	2	0
16	G	1	4	2	2	0

- Molecule 17 is CALCIUM ION (three-letter code: CA) (formula: Ca).

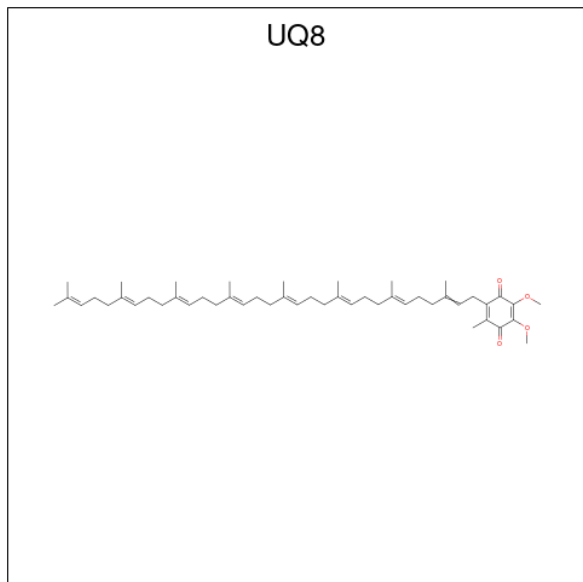
Mol	Chain	Residues	Atoms		AltConf
17	G	1	Total	Ca	0
			1	1	

- Molecule 18 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



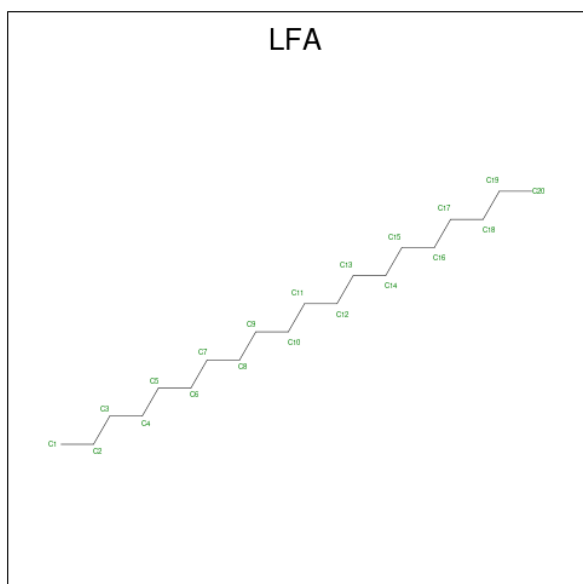
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
18	H	1	Total	C	N	O	P	0
			102	82	2	16	2	
18	H	1	Total	C	N	O	P	0
			102	82	2	16	2	
18	L	1	Total	C	N	O	P	0
			178	138	4	32	4	
18	L	1	Total	C	N	O	P	0
			178	138	4	32	4	
18	L	1	Total	C	N	O	P	0
			178	138	4	32	4	
18	L	1	Total	C	N	O	P	0
			178	138	4	32	4	
18	M	1	Total	C	N	O	P	0
			153	123	3	24	3	
18	M	1	Total	C	N	O	P	0
			153	123	3	24	3	
18	M	1	Total	C	N	O	P	0
			153	123	3	24	3	
18	J	1	Total	C	N	O	P	0
			51	41	1	8	1	

- Molecule 19 is Ubiquinone-8 (three-letter code: UQ8) (formula: $C_{49}H_{74}O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms		AltConf
			Total	C O	
19	H	1	29	25 4	0

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



Mol	Chain	Residues	Atoms		AltConf
			Total	C	
20	H	1	20	20	0

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Mol	Chain	Residues	Atoms		AltConf
20	N	1	Total 34	C 34	0
20	N	1	Total 34	C 34	0

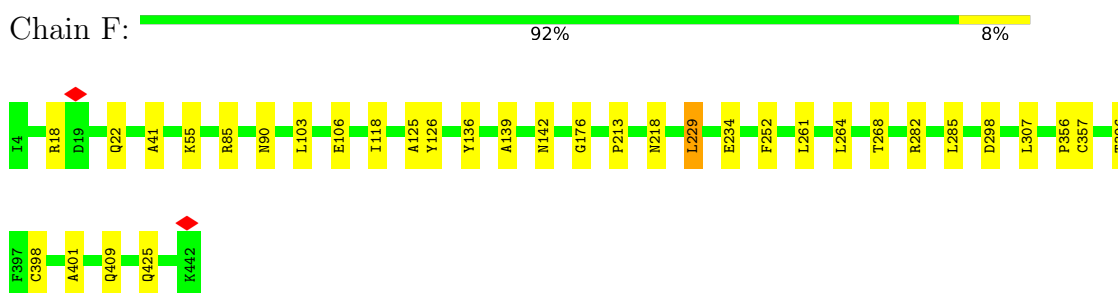
- Molecule 21 is water.

Mol	Chain	Residues	Atoms		AltConf
21	F	86	Total 86	O 86	0
21	E	24	Total 24	O 24	0
21	G	328	Total 328	O 328	0
21	C	150	Total 150	O 150	0
21	B	28	Total 28	O 28	0
21	I	72	Total 72	O 72	0
21	H	32	Total 32	O 32	0
21	A	9	Total 9	O 9	0
21	L	49	Total 49	O 49	0
21	M	74	Total 74	O 74	0
21	N	59	Total 59	O 59	0
21	K	19	Total 19	O 19	0
21	J	18	Total 18	O 18	0

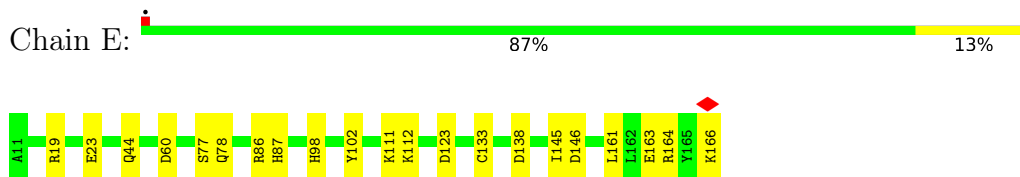
3 Residue-property plots [i](#)

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.

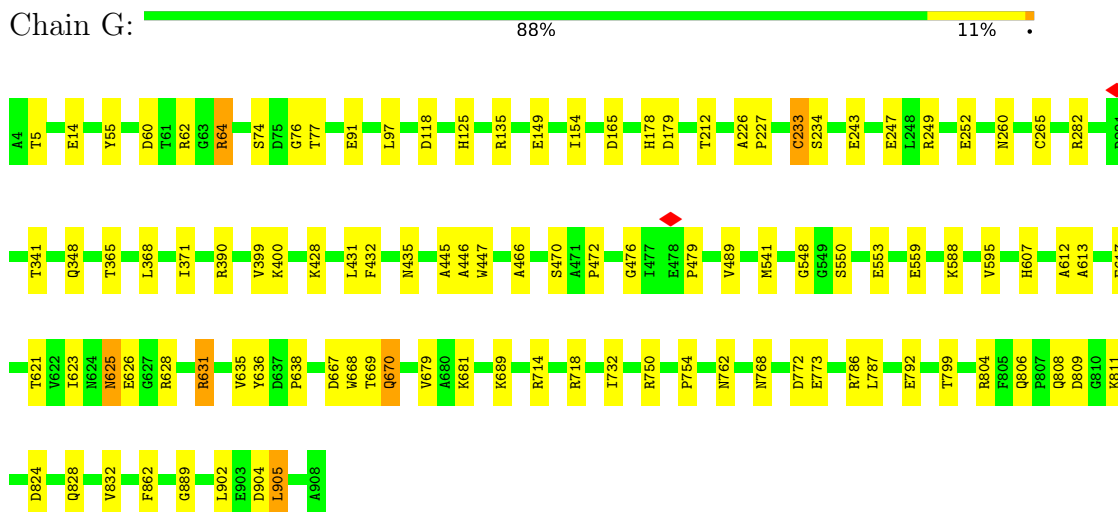
- Molecule 1: NADH-quinone oxidoreductase subunit F



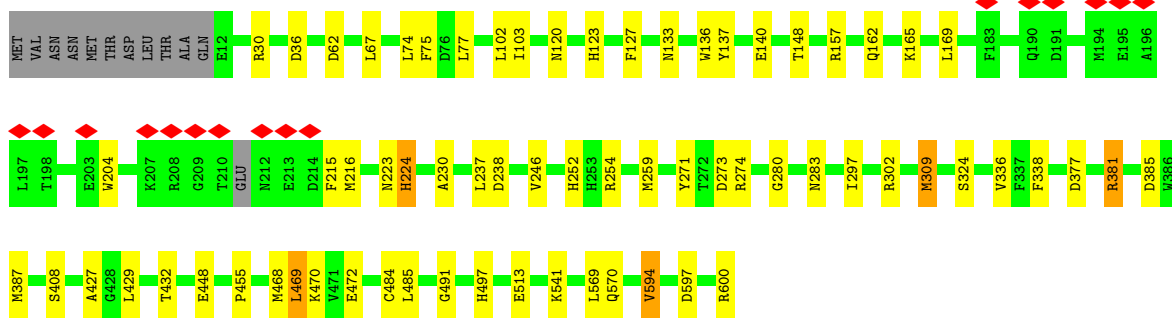
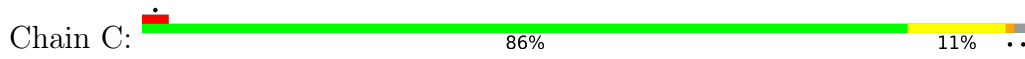
- Molecule 2: NADH dehydrogenase I subunit E



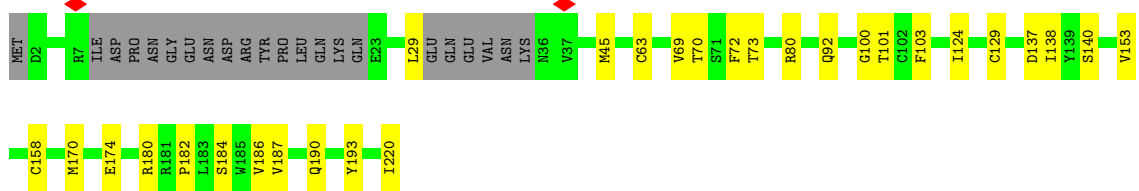
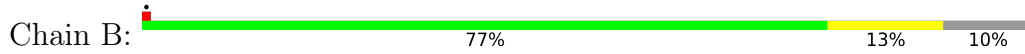
- Molecule 3: NADH-quinone oxidoreductase



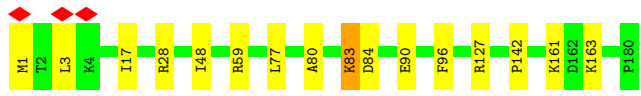
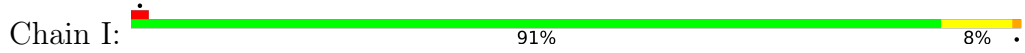
- Molecule 4: NADH-quinone oxidoreductase subunit C/D



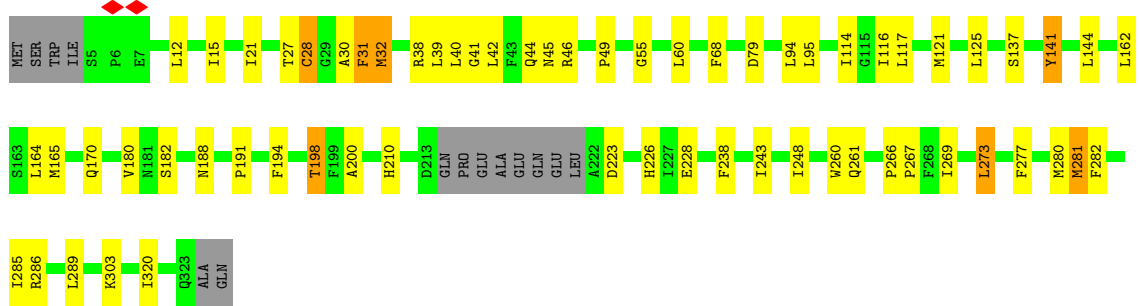
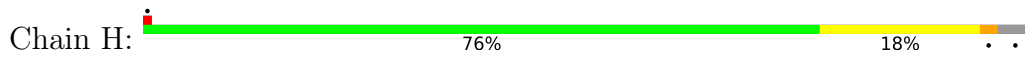
• Molecule 5: NADH-quinone oxidoreductase subunit B



• Molecule 6: NADH-quinone oxidoreductase subunit I

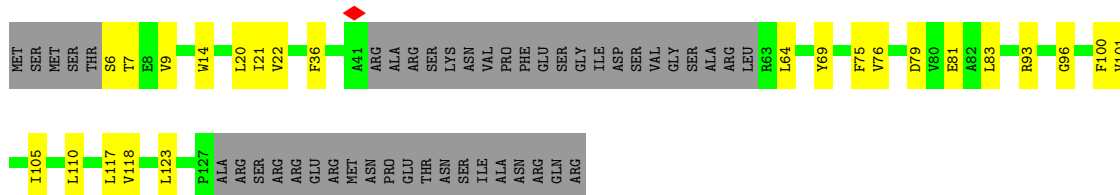


• Molecule 7: NADH-quinone oxidoreductase subunit H

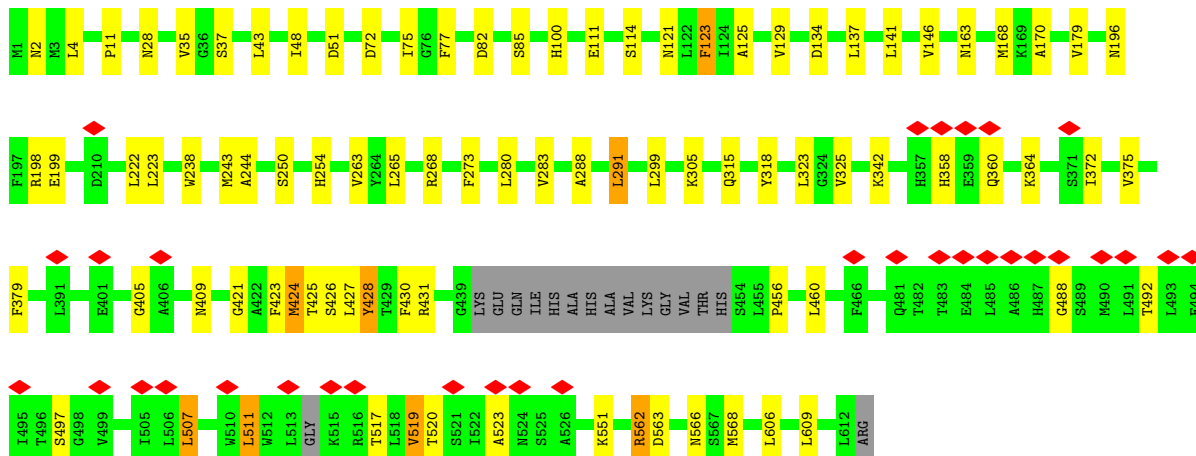
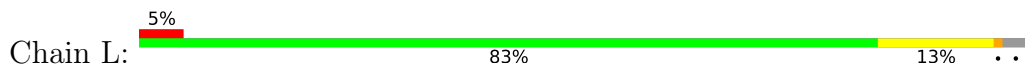


• Molecule 8: NADH-quinone oxidoreductase subunit A

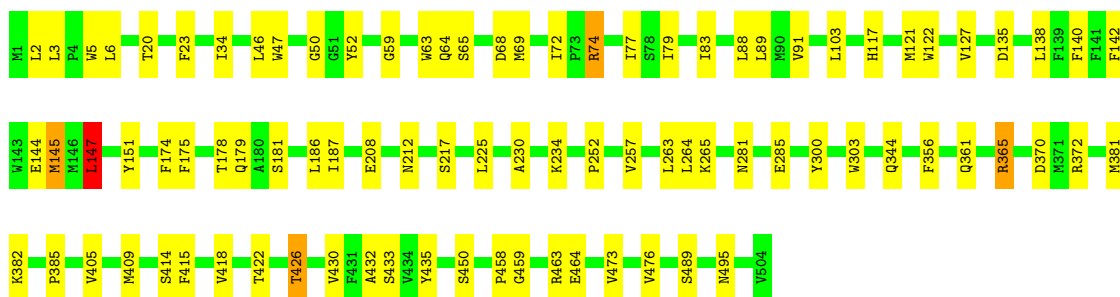
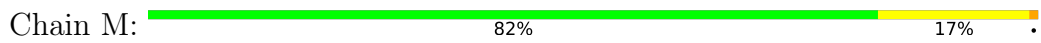




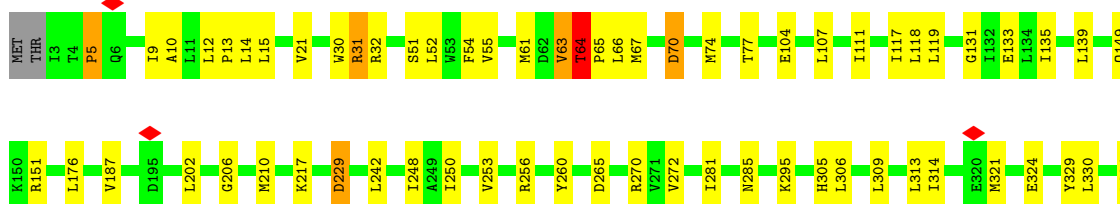
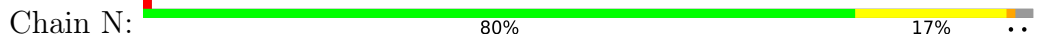
• Molecule 9: Proton-translocating NADH-quinone oxidoreductase, chain L

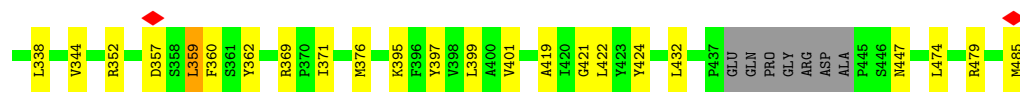


• Molecule 10: NADH dehydrogenase I subunit M

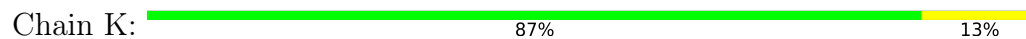


• Molecule 11: NADH-quinone oxidoreductase subunit N

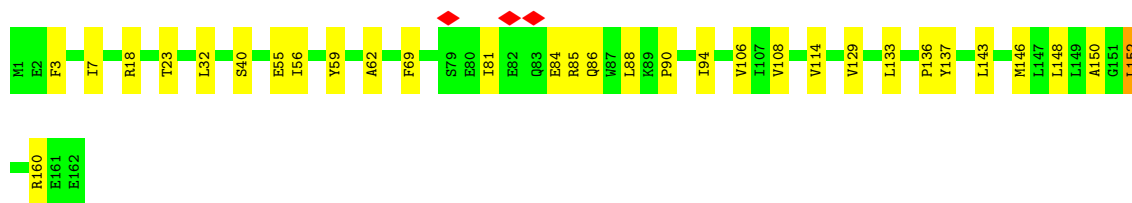
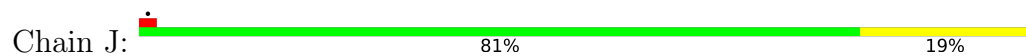




- Molecule 12: NADH-quinone oxidoreductase subunit K



- Molecule 13: NADH-quinone oxidoreductase subunit J



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	167032	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 ($e^-/\text{\AA}^2$)	78	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	0.680	Depositor
Minimum map value	-0.077	Depositor
Average map value	0.005	Depositor
Map value standard deviation	0.023	Depositor
Recommended contour level	0.055	Depositor
Map size (Å)	154.5, 208.5, 243.0	wwPDB
Map dimensions	486, 417, 309	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.5, 0.5, 0.5	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, FES, UQ8, 3PE, CA, LFA, 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	F	0.28	0/3486	0.53	0/4713
2	E	0.29	0/1248	0.55	1/1691 (0.1%)
3	G	0.30	0/7164	0.56	2/9715 (0.0%)
4	C	0.30	0/4865	0.54	0/6605
5	B	0.30	0/1601	0.57	0/2168
6	I	0.30	0/1470	0.56	0/1985
7	H	0.33	0/2510	0.54	2/3415 (0.1%)
8	A	0.32	0/825	0.58	0/1123
9	L	0.29	0/4675	0.55	4/6371 (0.1%)
10	M	0.30	0/4074	0.54	1/5546 (0.0%)
11	N	0.34	1/3691 (0.0%)	0.61	4/5037 (0.1%)
12	K	0.30	0/769	0.50	0/1040
13	J	0.32	0/1244	0.57	0/1698
All	All	0.31	1/37622 (0.0%)	0.55	14/51107 (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	2
11	N	0	2
All	All	0	4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	N	5	PRO	CG-CD	-8.49	1.22	1.50

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	N	5	PRO	N-CD-CG	-10.30	87.75	103.20
3	G	904	ASP	CB-CG-OD1	9.50	126.85	118.30
9	L	511	LEU	CA-CB-CG	8.06	133.84	115.30
9	L	507	LEU	CA-CB-CG	7.57	132.72	115.30
10	M	147	LEU	CB-CG-CD1	-6.71	99.59	111.00
9	L	134	ASP	CB-CG-OD1	6.38	124.04	118.30
9	L	51	ASP	CB-CG-OD1	6.08	123.77	118.30
11	N	5	PRO	CA-N-CD	-5.80	103.38	111.50
11	N	313	LEU	CA-CB-CG	5.72	128.45	115.30
7	H	79	ASP	CB-CG-OD1	5.56	123.31	118.30
7	H	273	LEU	CA-CB-CG	5.54	128.03	115.30
3	G	902	LEU	CA-CB-CG	5.44	127.81	115.30
2	E	60	ASP	CB-CG-OD2	5.33	123.10	118.30
11	N	5	PRO	CA-CB-CG	-5.03	94.45	104.00

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	G	260	ASN	Peptide
3	G	668	TRP	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	18	0
2	E	1220	0	1187	11	0
3	G	7013	0	6811	56	0
4	C	4735	0	4635	38	0
5	B	1568	0	1553	17	0
6	I	1436	0	1415	9	0
7	H	2438	0	2488	41	0
8	A	800	0	810	18	0
9	L	4559	0	4701	43	0
10	M	3953	0	4053	51	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	N	3602	0	3769	55	0
12	K	760	0	817	9	0
13	J	1218	0	1287	24	0
14	B	8	0	0	1	0
14	F	8	0	0	0	0
14	G	24	0	0	0	0
14	I	16	0	0	0	0
15	F	31	0	19	2	0
16	E	4	0	0	0	0
16	G	4	0	0	0	0
17	G	1	0	0	0	0
18	H	102	0	164	6	0
18	J	51	0	82	2	0
18	L	178	0	267	5	0
18	M	153	0	246	3	0
19	H	29	0	33	0	0
20	H	20	0	42	2	0
20	N	34	0	69	0	0
21	A	9	0	0	2	0
21	B	28	0	0	0	0
21	C	150	0	0	1	0
21	E	24	0	0	0	0
21	F	86	0	0	0	0
21	G	328	0	0	4	0
21	H	32	0	0	0	0
21	I	72	0	0	2	0
21	J	18	0	0	0	0
21	K	19	0	0	0	0
21	L	49	0	0	1	0
21	M	74	0	0	3	0
21	N	59	0	0	2	0
All	All	38320	0	37822	358	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 (358) 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:HB3	1.82	0.79
7:H:116:ILE:HD11	7:H:164:LEU:HB3	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:141:TYR:HB3	7:H:223:ASP:H	1.57	0.69
10:M:181:SER:HB2	10:M:230:ALA:HA	1.74	0.68
11:N:248:ILE:HG12	11:N:330:LEU:HD22	1.78	0.65
3:G:828:GLN:NE2	3:G:889:GLY:O	2.30	0.64
9:L:223:LEU:HD13	9:L:283:VAL:HG22	1.79	0.64
11:N:295:LYS:HD3	11:N:344:VAL:HG11	1.79	0.64
3:G:808:GLN:HB2	3:G:811:LYS:HB2	1.80	0.64
6:I:83:LYS:HE2	6:I:83:LYS:H	1.63	0.64
3:G:768:ASN:ND2	21:G:1110:HOH:O	2.33	0.62
10:M:414:SER:O	10:M:418:VAL:N	2.31	0.62
11:N:111:ILE:HG21	13:J:150:ALA:HB2	1.81	0.62
3:G:165:ASP:O	3:G:400:LYS:NZ	2.32	0.62
9:L:11:PRO:HB2	9:L:125:ALA:HB2	1.81	0.61
10:M:50:GLY:HA2	10:M:64:GLN:HE21	1.65	0.61
7:H:114:ILE:HB	7:H:117:LEU:HB2	1.83	0.61
5:B:182:PRO:HB3	5:B:190:GLN:HA	1.83	0.61
9:L:129:VAL:HG11	9:L:141:LEU:HD23	1.84	0.60
10:M:365:ARG:NH1	10:M:458:PRO:O	2.34	0.60
3:G:476:GLY:O	3:G:804:ARG:NH2	2.34	0.60
11:N:64:THR:HB	11:N:66:LEU:H	1.65	0.60
11:N:376:MET:HG3	11:N:432:LEU:HD11	1.83	0.60
10:M:79:ILE:HA	10:M:138:LEU:HD22	1.84	0.59
11:N:65:PRO:HG2	13:J:136:PRO:HB3	1.83	0.59
18:L:801:3PE:H2C1	10:M:476:VAL:HG21	1.84	0.59
4:C:309:MET:HE2	4:C:484:CYS:HB3	1.84	0.59
10:M:344:GLN:NE2	21:M:1307:HOH:O	2.35	0.59
3:G:541:MET:HG3	3:G:625:ASN:HA	1.84	0.59
5:B:124:ILE:HG12	5:B:153:VAL:HB	1.84	0.59
3:G:625:ASN:HD22	3:G:626:GLU:N	2.01	0.58
3:G:621:THR:OG1	3:G:631:ARG:NH1	2.37	0.57
8:A:117:LEU:HD11	13:J:152:LEU:HD11	1.86	0.57
1:F:85:ARG:HG2	1:F:213:PRO:HG2	1.86	0.57
5:B:186:VAL:HG23	5:B:187:VAL:HG23	1.87	0.57
10:M:265:LYS:NZ	21:M:1311:HOH:O	2.38	0.56
10:M:135:ASP:HB3	10:M:138:LEU:HB3	1.87	0.56
1:F:218:ASN:ND2	15:F:502:FMN:O2	2.38	0.56
9:L:325:VAL:O	9:L:409:ASN:ND2	2.38	0.56
4:C:254:ARG:HG3	5:B:103:PHE:HE1	1.70	0.56
10:M:144:GLU:OE2	10:M:179:GLN:NE2	2.38	0.56
3:G:368:LEU:HD21	3:G:390:ARG:HB3	1.88	0.56
3:G:625:ASN:HD22	3:G:625:ASN:C	2.09	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:260:TRP:HB2	7:H:267:PRO:HB3	1.88	0.55
9:L:163:ASN:HD22	9:L:244:ALA:HB1	1.71	0.55
5:B:69:VAL:HA	5:B:72:PHE:HD2	1.72	0.55
3:G:55:TYR:HB3	3:G:60:ASP:HB3	1.87	0.55
6:I:161:LYS:NZ	21:I:307:HOH:O	2.40	0.55
8:A:69:TYR:OH	12:K:74:SER:O	2.25	0.55
9:L:37:SER:OG	9:L:121:ASN:OD1	2.24	0.55
4:C:324:SER:HB2	4:C:336:VAL:HA	1.89	0.55
8:A:6:SER:OG	8:A:7:THR:N	2.39	0.55
10:M:234:LYS:NZ	21:M:1312:HOH:O	2.39	0.55
1:F:282:ARG:HB2	1:F:285:LEU:HD12	1.89	0.54
10:M:72:ILE:HB	10:M:77:ILE:HB	1.89	0.54
5:B:101:THR:HA	5:B:129:CYS:HB3	1.88	0.54
7:H:320:ILE:HG12	8:A:93:ARG:HH21	1.72	0.54
5:B:29:LEU:HD13	5:B:180:ARG:HG2	1.90	0.54
6:I:127:ARG:NH2	21:I:308:HOH:O	2.40	0.54
10:M:59:GLY:O	10:M:495:ASN:ND2	2.41	0.54
8:A:101:VAL:O	8:A:105:ILE:HD12	2.08	0.54
3:G:118:ASP:OD1	3:G:762:ASN:ND2	2.39	0.53
9:L:250:SER:O	9:L:254:HIS:ND1	2.38	0.53
13:J:81:ILE:HG23	13:J:86:GLN:HE22	1.72	0.53
11:N:51:SER:HA	11:N:54:PHE:HD2	1.72	0.53
3:G:399:VAL:HG13	3:G:428:LYS:HB2	1.90	0.53
12:K:85:ARG:NH1	13:J:160:ARG:O	2.41	0.53
7:H:200:ALA:HB1	18:H:401:3PE:H3D1	1.91	0.53
3:G:341:THR:OG1	3:G:348:GLN:OE1	2.27	0.53
6:I:59:ARG:NH2	6:I:142:PRO:O	2.41	0.53
10:M:463:ARG:NH2	10:M:464:GLU:OE2	2.41	0.53
3:G:91:GLU:HG3	3:G:125:HIS:HB2	1.91	0.53
4:C:77:LEU:HB3	4:C:137:TYR:HB3	1.90	0.52
10:M:381:MET:HB2	10:M:385:PRO:HD3	1.92	0.52
11:N:334:LEU:O	11:N:338:LEU:HB2	2.09	0.52
13:J:129:VAL:O	13:J:133:LEU:HB2	2.09	0.52
7:H:162:LEU:HA	7:H:165:MET:HB2	1.91	0.52
4:C:157:ARG:O	4:C:162:GLN:NE2	2.41	0.52
4:C:594:VAL:HG23	4:C:597:ASP:HB2	1.92	0.52
9:L:566:ASN:ND2	21:L:911:HOH:O	2.43	0.52
4:C:230:ALA:O	4:C:252:HIS:NE2	2.40	0.52
7:H:180:VAL:O	7:H:261:GLN:NE2	2.43	0.51
11:N:202:LEU:HD22	13:J:114:VAL:HG11	1.92	0.51
2:E:138:ASP:OD1	2:E:138:ASP:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:140:GLU:OE2	4:C:600:ARG:NH2	2.43	0.51
3:G:714:ARG:NH1	5:B:137:ASP:OD1	2.37	0.51
7:H:21:ILE:HG12	20:H:403:LFA:H62	1.91	0.51
9:L:85:SER:OG	9:L:268:ARG:NH2	2.44	0.51
9:L:179:VAL:HG22	10:M:426:THR:HG22	1.92	0.51
3:G:626:GLU:OE2	3:G:786:ARG:NH1	2.44	0.51
10:M:147:LEU:HD11	10:M:178:THR:OG1	2.11	0.51
10:M:3:LEU:HA	10:M:6:LEU:HB2	1.93	0.51
1:F:90:ASN:ND2	15:F:502:FMN:O4'	2.43	0.51
3:G:626:GLU:OE2	3:G:628:ARG:NH2	2.43	0.51
1:F:85:ARG:HB2	1:F:125:ALA:HA	1.92	0.51
7:H:38:ARG:NH1	7:H:55:GLY:O	2.43	0.51
7:H:285:ILE:HG23	7:H:289:LEU:HD12	1.92	0.51
11:N:352:ARG:NH1	11:N:357:ASP:O	2.44	0.51
3:G:125:HIS:CD2	4:C:513:GLU:HG2	2.46	0.50
3:G:617:GLU:HG2	3:G:638:PRO:HG3	1.93	0.50
1:F:106:GLU:O	1:F:142:ASN:ND2	2.44	0.50
3:G:623:ILE:HD12	3:G:787:LEU:HD11	1.91	0.50
9:L:405:GLY:O	9:L:409:ASN:ND2	2.43	0.50
10:M:370:ASP:OD2	10:M:372:ARG:NH2	2.42	0.50
12:K:33:ILE:HG23	13:J:32:LEU:HD22	1.94	0.50
8:A:100:PHE:N	21:A:201:HOH:O	2.45	0.50
11:N:118:LEU:HD22	13:J:143:LEU:HD13	1.92	0.50
7:H:116:ILE:HG13	7:H:164:LEU:HD23	1.93	0.50
7:H:121:MET:HG2	13:J:56:ILE:HB	1.94	0.50
18:H:404:3PE:H2E2	18:H:404:3PE:H3G2	1.94	0.50
9:L:606:LEU:HB3	13:J:106:VAL:HG11	1.94	0.50
3:G:178:HIS:HD1	3:G:179:ASP:H	1.58	0.50
9:L:507:LEU:O	9:L:511:LEU:HD12	2.12	0.50
10:M:142:PHE:HA	10:M:145:MET:HG3	1.94	0.50
7:H:30:ALA:HB1	7:H:60:LEU:HD11	1.93	0.50
11:N:305:HIS:ND1	11:N:329:TYR:OH	2.39	0.50
7:H:281:MET:HB3	18:H:401:3PE:H3G1	1.93	0.50
3:G:786:ARG:NH1	21:G:1149:HOH:O	2.46	0.49
4:C:133:ASN:OD1	4:C:133:ASN:N	2.38	0.49
9:L:562:ARG:HE	9:L:562:ARG:HA	1.77	0.49
7:H:303:LYS:NZ	8:A:123:LEU:O	2.46	0.49
10:M:263:LEU:HD11	10:M:356:PHE:HD2	1.78	0.49
11:N:324:GLU:OE2	11:N:397:TYR:OH	2.25	0.49
4:C:224:HIS:HB2	4:C:230:ALA:HA	1.93	0.49
13:J:90:PRO:O	13:J:94:ILE:HB	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:455:PRO:HB2	4:C:469:LEU:HD22	1.93	0.49
8:A:96:GLY:O	21:A:201:HOH:O	2.19	0.49
11:N:63:VAL:O	11:N:67:MET:CB	2.56	0.49
13:J:3:PHE:CE1	13:J:7:ILE:HD11	2.48	0.49
4:C:204:TRP:HB3	4:C:246:VAL:HG11	1.94	0.49
8:A:76:VAL:HG22	13:J:62:ALA:HB1	1.95	0.49
9:L:519:VAL:HG12	18:L:803:3PE:H31	1.94	0.49
3:G:149:GLU:OE2	6:I:163:LYS:NZ	2.44	0.49
3:G:226:ALA:HB3	3:G:635:VAL:HG22	1.95	0.49
9:L:196:ASN:HB3	9:L:199:GLU:HB2	1.95	0.49
10:M:46:LEU:HD23	10:M:88:LEU:HD12	1.95	0.49
4:C:381:ARG:HG2	4:C:485:LEU:HD21	1.94	0.48
9:L:82:ASP:N	9:L:82:ASP:OD1	2.42	0.48
3:G:365:THR:O	3:G:786:ARG:NH2	2.45	0.48
13:J:85:ARG:HB3	13:J:88:LEU:HD12	1.95	0.48
10:M:432:ALA:HA	10:M:435:TYR:CE2	2.48	0.48
1:F:298:ASP:OD1	1:F:409:GLN:NE2	2.40	0.48
11:N:419:ALA:HA	11:N:422:LEU:HD12	1.95	0.48
9:L:288:ALA:HA	9:L:291:LEU:HD23	1.95	0.48
9:L:358:HIS:ND1	9:L:360:GLN:OE1	2.46	0.48
18:L:804:3PE:H262	18:L:804:3PE:H321	1.96	0.48
18:H:404:3PE:H281	8:A:20:LEU:HD11	1.94	0.48
9:L:75:ILE:HG21	9:L:137:LEU:HD23	1.94	0.48
7:H:125:LEU:HD13	18:H:404:3PE:H2G1	1.96	0.48
11:N:369:ARG:NE	21:N:601:HOH:O	2.28	0.47
9:L:243:MET:HG3	9:L:305:LYS:HB3	1.95	0.47
9:L:263:VAL:HG13	9:L:323:LEU:HD11	1.96	0.47
11:N:77:THR:HG23	11:N:117:ILE:HG12	1.95	0.47
3:G:5:THR:O	3:G:76:GLY:N	2.47	0.47
6:I:17:ILE:HD11	7:H:289:LEU:HG	1.96	0.47
11:N:421:GLY:HA2	11:N:424:TYR:CE2	2.49	0.47
4:C:223:ASN:HA	4:C:230:ALA:HB1	1.96	0.47
9:L:35:VAL:HG22	9:L:100:HIS:HB3	1.96	0.47
7:H:194:PHE:O	7:H:198:THR:OG1	2.26	0.47
10:M:74:ARG:O	10:M:74:ARG:NH1	2.47	0.47
12:K:50:GLY:HA3	12:K:58:GLY:HA3	1.97	0.47
10:M:88:LEU:HA	10:M:91:VAL:HG22	1.97	0.47
10:M:281:ASN:O	10:M:285:GLU:HG2	2.15	0.47
3:G:559:GLU:O	3:G:588:LYS:NZ	2.36	0.47
5:B:92:GLN:NE2	7:H:226:HIS:O	2.49	0.46
7:H:27:THR:O	7:H:31:PHE:HB2	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:N:360:PHE:CE2	11:N:362:TYR:HB3	2.50	0.46
18:M:1201:3PE:H3E1	18:M:1201:3PE:H272	1.98	0.46
8:A:6:SER:HB3	8:A:9:VAL:HG12	1.96	0.46
7:H:188:ASN:HA	7:H:191:PRO:HD2	1.97	0.46
7:H:28:CYS:O	7:H:32:MET:HB2	2.15	0.46
12:K:57:ASP:OD2	13:J:137:TYR:OH	2.21	0.46
4:C:274:ARG:NH2	5:B:158:CYS:SG	2.87	0.46
7:H:269:ILE:O	7:H:273:LEU:HG	2.15	0.46
7:H:95:LEU:HD13	7:H:243:ILE:HD13	1.98	0.46
9:L:299:LEU:HB2	9:L:424:MET:HE3	1.98	0.46
3:G:97:LEU:HD22	3:G:154:ILE:HB	1.98	0.46
3:G:466:ALA:HB3	3:G:489:VAL:HG21	1.98	0.46
3:G:550:SER:OG	3:G:553:GLU:OE2	2.32	0.46
9:L:273:PHE:HB3	9:L:280:LEU:HD13	1.98	0.46
13:J:3:PHE:O	13:J:7:ILE:HG13	2.16	0.46
3:G:613:ALA:HB1	3:G:617:GLU:HB2	1.99	0.46
4:C:338:PHE:HE2	7:H:45:ASN:HB2	1.81	0.46
9:L:179:VAL:HG21	10:M:430:VAL:HG23	1.98	0.46
10:M:151:TYR:HB2	10:M:175:PHE:HD2	1.80	0.46
11:N:256:ARG:HE	11:N:260:TYR:HE2	1.63	0.46
1:F:264:LEU:HD13	1:F:268:THR:HG21	1.98	0.45
9:L:421:GLY:O	9:L:425:THR:OG1	2.28	0.45
18:L:801:3PE:H2G2	10:M:473:VAL:HG22	1.98	0.45
11:N:187:VAL:HG12	11:N:260:TYR:HB3	1.98	0.45
4:C:381:ARG:NH2	4:C:385:ASP:OD1	2.43	0.45
3:G:227:PRO:HD3	3:G:754:PRO:HB3	1.99	0.45
10:M:187:ILE:HD11	11:N:399:LEU:HD22	1.99	0.45
1:F:176:GLY:O	2:E:77:SER:OG	2.34	0.45
3:G:243:GLU:HG2	3:G:636:TYR:HB3	1.99	0.45
7:H:137:SER:HB3	7:H:228:GLU:HG3	1.98	0.45
9:L:163:ASN:ND2	9:L:244:ALA:HB1	2.30	0.45
2:E:145:ILE:HG22	2:E:146:ASP:H	1.81	0.45
3:G:824:ASP:O	3:G:828:GLN:HG3	2.15	0.45
8:A:81:GLU:HG3	13:J:148:LEU:HD13	1.99	0.45
3:G:74:SER:O	3:G:77:THR:OG1	2.31	0.45
4:C:74:LEU:HA	4:C:102:LEU:HD23	1.99	0.45
7:H:41:GLY:HA2	7:H:46:ARG:HG3	1.99	0.45
18:H:404:3PE:H3B1	18:J:201:3PE:H3B2	1.98	0.45
9:L:456:PRO:O	9:L:460:LEU:HD12	2.17	0.45
9:L:520:THR:HA	9:L:523:ALA:HB3	1.97	0.45
11:N:206:GLY:O	11:N:210:MET:HG3	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:40:LEU:O	7:H:44:GLN:HB2	2.17	0.45
1:F:357:CYS:HB2	1:F:401:ALA:HB2	1.98	0.45
5:B:70:THR:O	5:B:73:THR:OG1	2.34	0.45
11:N:10:ALA:HB3	11:N:63:VAL:HG21	1.99	0.45
13:J:7:ILE:HD12	18:J:201:3PE:H361	1.99	0.45
1:F:176:GLY:HA3	2:E:78:GLN:HG2	1.98	0.45
7:H:266:PRO:HB2	20:H:403:LFA:H172	1.99	0.45
4:C:123:HIS:HA	4:C:148:THR:O	2.18	0.44
7:H:144:LEU:HD13	8:A:64:LEU:HD22	1.97	0.44
12:K:9:ILE:HG12	13:J:108:VAL:HG22	1.99	0.44
3:G:670:GLN:NE2	3:G:732:ILE:O	2.50	0.44
4:C:216:MET:HG3	4:C:237:LEU:HB2	1.99	0.44
9:L:222:LEU:HD22	9:L:265:LEU:HD11	1.99	0.44
10:M:415:PHE:HB2	10:M:422:THR:HG21	1.99	0.44
11:N:176:LEU:HD22	11:N:202:LEU:HD11	1.97	0.44
7:H:15:ILE:HD11	8:A:14:TRP:HB3	2.00	0.44
11:N:321:MET:HG3	11:N:401:VAL:HG12	1.99	0.44
13:J:40:SER:HB2	13:J:55:GLU:HB3	2.00	0.44
13:J:84:GLU:HB2	13:J:86:GLN:HE21	1.81	0.44
10:M:103:LEU:O	10:M:463:ARG:NE	2.43	0.44
2:E:161:LEU:HA	2:E:164:ARG:HD3	1.99	0.44
4:C:541:LYS:HE2	4:C:594:VAL:HG22	1.99	0.44
7:H:39:LEU:HD11	7:H:280:MET:SD	2.57	0.44
9:L:123:PHE:HE1	9:L:146:VAL:HB	1.82	0.44
1:F:136:TYR:HB3	1:F:139:ALA:HB3	1.98	0.44
10:M:252:PRO:HG2	10:M:257:VAL:HG21	1.99	0.44
9:L:563:ASP:OD1	10:M:300:TYR:OH	2.27	0.43
10:M:65:SER:HB3	10:M:83:ILE:HG22	2.00	0.43
11:N:309:LEU:HD11	11:N:330:LEU:HD21	1.99	0.43
3:G:348:GLN:NE2	3:G:548:GLY:O	2.37	0.43
6:I:48:ILE:HB	6:I:96:PHE:HZ	1.82	0.43
7:H:170:GLN:HE21	7:H:170:GLN:HB3	1.61	0.43
9:L:358:HIS:HB3	9:L:360:GLN:HG2	2.01	0.43
11:N:30:TRP:HB3	11:N:31:ARG:CZ	2.49	0.43
11:N:217:LYS:HB3	11:N:250:ILE:HD13	2.00	0.43
1:F:103:LEU:HD22	1:F:261:LEU:HD23	2.01	0.43
2:E:44:GLN:NE2	2:E:78:GLN:O	2.44	0.43
4:C:302:ARG:HD2	4:C:491:GLY:H	1.83	0.43
5:B:138:ILE:HG23	5:B:140:SER:H	1.84	0.43
8:A:75:PHE:O	8:A:79:ASP:HB2	2.18	0.43
9:L:425:THR:HA	9:L:428:TYR:CE1	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:N:5:PRO:O	11:N:9:ILE:HG13	2.18	0.43
2:E:86:ARG:NH1	2:E:166:LYS:O	2.43	0.43
10:M:365:ARG:HH12	10:M:459:GLY:C	2.22	0.43
12:K:3:PRO:HG2	12:K:6:HIS:CE1	2.54	0.43
5:B:100:GLY:HA2	14:B:301:SF4:S4	2.58	0.43
9:L:488:GLY:O	9:L:492:THR:HG23	2.18	0.43
10:M:63:TRP:NE1	10:M:208:GLU:OE2	2.49	0.43
10:M:89:LEU:HD12	10:M:489:SER:HB3	1.99	0.43
10:M:405:VAL:O	10:M:409:MET:HB2	2.19	0.43
7:H:38:ARG:HD2	7:H:38:ARG:HA	1.85	0.43
10:M:265:LYS:HA	10:M:265:LYS:HD3	1.63	0.43
11:N:64:THR:HB	11:N:66:LEU:N	2.33	0.43
1:F:41:ALA:HB2	1:F:229:LEU:HD22	2.00	0.43
9:L:423:PHE:O	9:L:427:LEU:HG	2.19	0.43
9:L:609:LEU:HG	11:N:272:VAL:HG21	2.00	0.43
11:N:12:LEU:HA	11:N:15:LEU:HD12	2.01	0.43
4:C:75:PHE:HB2	4:C:103:ILE:HG13	2.01	0.43
4:C:120:ASN:OD1	4:C:120:ASN:N	2.40	0.43
1:F:55:LYS:HE3	1:F:55:LYS:HB2	1.82	0.42
3:G:595:VAL:HG12	3:G:612:ALA:HB2	2.00	0.42
18:L:802:3PE:H3C2	18:L:802:3PE:H291	2.00	0.42
11:N:21:VAL:HG13	11:N:107:LEU:HD11	2.01	0.42
3:G:282:ARG:HA	3:G:282:ARG:HD2	1.88	0.42
12:K:34:GLY:HA2	12:K:37:ILE:HD12	2.00	0.42
2:E:87:HIS:ND1	2:E:146:ASP:OD2	2.52	0.42
3:G:679:VAL:HG11	3:G:689:LYS:HB2	2.02	0.42
3:G:718:ARG:NH1	21:G:1166:HOH:O	2.51	0.42
11:N:485:MET:H	11:N:485:MET:HG2	1.63	0.42
3:G:390:ARG:HD2	3:G:390:ARG:HA	1.82	0.42
10:M:34:ILE:HD13	10:M:34:ILE:HA	1.88	0.42
2:E:123:ASP:OD1	2:E:123:ASP:N	2.40	0.42
4:C:259:MET:HG2	4:C:271:TYR:CE1	2.55	0.42
1:F:356:PRO:HB2	1:F:396:THR:HG22	2.02	0.42
3:G:431:LEU:O	3:G:446:ALA:N	2.52	0.42
3:G:435:ASN:ND2	21:G:1146:HOH:O	2.44	0.42
5:B:80:ARG:HA	7:H:49:PRO:HA	2.01	0.42
5:B:180:ARG:HB2	5:B:193:TYR:HB2	2.02	0.42
8:A:21:ILE:HD12	8:A:22:VAL:HG23	2.01	0.42
10:M:217:SER:O	18:M:1202:3PE:N	2.52	0.42
3:G:212:THR:HG22	3:G:832:VAL:HG21	2.02	0.42
6:I:80:ALA:HB2	6:I:90:GLU:HB2	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:M:117:HIS:O	10:M:121:MET:HG2	2.19	0.42
4:C:215:PHE:HA	4:C:237:LEU:O	2.20	0.42
9:L:170:ALA:HA	9:L:238:TRP:HB2	2.02	0.42
11:N:9:ILE:O	11:N:12:LEU:HG	2.20	0.42
3:G:431:LEU:HB3	3:G:445:ALA:HA	2.01	0.42
10:M:52:TYR:CE2	10:M:88:LEU:HD13	2.54	0.42
11:N:32:ARG:NH1	11:N:104:GLU:OE1	2.39	0.42
1:F:18:ARG:HE	1:F:22:GLN:HB2	1.84	0.42
10:M:127:VAL:HG11	10:M:264:LEU:HD13	2.02	0.42
11:N:281:ILE:O	11:N:285:ASN:ND2	2.53	0.42
7:H:303:LYS:HE3	8:A:118:VAL:HG13	2.01	0.41
10:M:225:LEU:HD23	10:M:225:LEU:HA	1.85	0.41
11:N:13:PRO:HD3	11:N:55:VAL:HG21	2.02	0.41
11:N:229:ASP:OD1	11:N:229:ASP:N	2.53	0.41
4:C:280:GLY:N	4:C:283:ASN:OD1	2.54	0.41
11:N:270:ARG:HG3	11:N:314:ILE:HG23	2.01	0.41
4:C:297:ILE:HG12	4:C:497:HIS:CG	2.55	0.41
7:H:94:LEU:HD13	7:H:94:LEU:HA	1.95	0.41
10:M:140:PHE:CE1	10:M:186:LEU:HB2	2.56	0.41
2:E:19:ARG:O	2:E:23:GLU:HG2	2.20	0.41
3:G:64:ARG:HE	3:G:64:ARG:HB3	1.74	0.41
11:N:309:LEU:HD23	11:N:309:LEU:HA	1.89	0.41
3:G:862:PHE:HB3	3:G:905:LEU:HD12	2.01	0.41
4:C:169:LEU:HD23	4:C:169:LEU:HA	1.91	0.41
11:N:330:LEU:HA	11:N:330:LEU:HD23	1.75	0.41
1:F:118:ILE:HG21	1:F:229:LEU:HD13	2.02	0.41
4:C:600:ARG:NH2	21:C:733:HOH:O	2.45	0.41
9:L:28:ASN:OD1	9:L:28:ASN:N	2.53	0.41
11:N:52:LEU:HD23	11:N:52:LEU:HA	1.89	0.41
11:N:133:GLU:HG3	12:K:68:LEU:HD22	2.03	0.41
13:J:94:ILE:HD12	13:J:94:ILE:HA	1.90	0.41
2:E:98:HIS:HA	2:E:102:TYR:HD1	1.85	0.41
3:G:368:LEU:HD12	3:G:371:ILE:HD12	2.03	0.41
5:B:170:MET:O	5:B:174:GLU:HG2	2.19	0.41
9:L:551:LYS:HD2	9:L:551:LYS:HA	1.79	0.41
10:M:2:LEU:HA	10:M:5:TRP:HD1	1.84	0.41
10:M:20:THR:HB	10:M:23:PHE:HD2	1.85	0.41
11:N:119:LEU:HD22	11:N:253:VAL:HG11	2.03	0.41
7:H:210:HIS:HB3	7:H:286:ARG:HA	2.03	0.41
11:N:70:ASP:O	11:N:74:MET:HG3	2.21	0.41
3:G:178:HIS:CD2	3:G:178:HIS:H	2.37	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:432:PHE:HD1	3:G:447:TRP:HB3	1.86	0.41
3:G:472:PRO:HG3	3:G:799:THR:HA	2.03	0.41
4:C:165:LYS:HA	4:C:165:LYS:HD3	1.70	0.41
4:C:223:ASN:OD1	4:C:223:ASN:N	2.53	0.41
6:I:28:ARG:NH1	7:H:42:LEU:O	2.39	0.41
11:N:131:GLY:O	11:N:135:ILE:HG13	2.20	0.41
11:N:149:GLN:HE21	11:N:151:ARG:HB2	1.86	0.41
9:L:372:ILE:HD12	9:L:375:VAL:HB	2.02	0.41
10:M:361:GLN:O	10:M:365:ARG:HD2	2.21	0.41
4:C:67:LEU:HD23	4:C:67:LEU:HA	1.94	0.40
4:C:136:TRP:H	4:C:570:GLN:NE2	2.19	0.40
4:C:429:LEU:O	4:C:432:THR:OG1	2.33	0.40
10:M:47:TRP:CG	10:M:88:LEU:HD21	2.56	0.40
11:N:14:LEU:HD21	13:J:143:LEU:HD11	2.03	0.40
11:N:139:LEU:HD13	11:N:242:LEU:HD13	2.02	0.40
3:G:247:GLU:HG3	3:G:249:ARG:HE	1.85	0.40
3:G:233:CYS:SG	3:G:234:SER:N	2.94	0.40
4:C:468:MET:O	4:C:472:GLU:HG2	2.20	0.40
4:C:427:ALA:HB2	4:C:470:LYS:HE3	2.03	0.40
5:B:101:THR:HB	5:B:103:PHE:CZ	2.56	0.40
11:N:359:LEU:HD22	11:N:359:LEU:HA	1.91	0.40
3:G:772:ASP:OD1	3:G:773:GLU:N	2.49	0.40
7:H:248:ILE:HD13	7:H:248:ILE:HA	1.95	0.40
8:A:110:LEU:HD12	8:A:110:LEU:HA	1.87	0.40
9:L:4:LEU:HD23	9:L:48:ILE:HD13	2.04	0.40
18:M:1201:3PE:H291	18:M:1201:3PE:H2C2	1.88	0.40
11:N:306:LEU:HD13	11:N:306:LEU:HA	1.93	0.40
11:N:371:ILE:N	21:N:601:HOH:O	2.54	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	437/439 (100%)	432 (99%)	5 (1%)	0	100	100
2	E	154/156 (99%)	150 (97%)	4 (3%)	0	100	100
3	G	903/905 (100%)	881 (98%)	21 (2%)	1 (0%)	51	68
4	C	584/600 (97%)	569 (97%)	15 (3%)	0	100	100
5	B	192/220 (87%)	184 (96%)	8 (4%)	0	100	100
6	I	178/180 (99%)	174 (98%)	4 (2%)	0	100	100
7	H	307/325 (94%)	298 (97%)	9 (3%)	0	100	100
8	A	97/147 (66%)	95 (98%)	2 (2%)	0	100	100
9	L	591/613 (96%)	579 (98%)	12 (2%)	0	100	100
10	M	502/504 (100%)	488 (97%)	14 (3%)	0	100	100
11	N	472/485 (97%)	459 (97%)	12 (2%)	1 (0%)	47	62
12	K	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
13	J	160/162 (99%)	156 (98%)	4 (2%)	0	100	100
All	All	4675/4836 (97%)	4561 (98%)	112 (2%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	N	64	THR
3	G	669	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	353/353 (100%)	346 (98%)	7 (2%)	55	74
2	E	129/129 (100%)	125 (97%)	4 (3%)	40	60
3	G	730/732 (100%)	710 (97%)	20 (3%)	44	65
4	C	504/519 (97%)	488 (97%)	16 (3%)	39	59
5	B	171/192 (89%)	167 (98%)	4 (2%)	50	70

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	I	154/154 (100%)	149 (97%)	5 (3%)	39	59
7	H	256/269 (95%)	244 (95%)	12 (5%)	26	42
8	A	79/119 (66%)	77 (98%)	2 (2%)	47	67
9	L	473/486 (97%)	448 (95%)	25 (5%)	22	37
10	M	413/413 (100%)	399 (97%)	14 (3%)	37	56
11	N	377/385 (98%)	367 (97%)	10 (3%)	44	65
12	K	79/79 (100%)	78 (99%)	1 (1%)	69	84
13	J	126/128 (98%)	120 (95%)	6 (5%)	25	41
All	All	3844/3958 (97%)	3718 (97%)	126 (3%)	41	57

All (126) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	126	TYR
1	F	229	LEU
1	F	234	GLU
1	F	252	PHE
1	F	307	LEU
1	F	398	CYS
1	F	425	GLN
2	E	111	LYS
2	E	112	LYS
2	E	133	CYS
2	E	163	GLU
3	G	14	GLU
3	G	62	ARG
3	G	64	ARG
3	G	135	ARG
3	G	233	CYS
3	G	252	GLU
3	G	265	CYS
3	G	470	SER
3	G	479	PRO
3	G	607	HIS
3	G	625	ASN
3	G	631	ARG
3	G	667	ASP
3	G	670	GLN
3	G	681	LYS

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Mol	Chain	Res	Type
3	G	750	ARG
3	G	792	GLU
3	G	806	GLN
3	G	809	ASP
3	G	905	LEU
4	C	30	ARG
4	C	36	ASP
4	C	62	ASP
4	C	127	PHE
4	C	224	HIS
4	C	238	ASP
4	C	273	ASP
4	C	309	MET
4	C	377	ASP
4	C	381	ARG
4	C	387	MET
4	C	408	SER
4	C	448	GLU
4	C	469	LEU
4	C	569	LEU
4	C	594	VAL
5	B	45	MET
5	B	63	CYS
5	B	184	SER
5	B	220	ILE
6	I	1	MET
6	I	3	LEU
6	I	77	LEU
6	I	83	LYS
6	I	84	ASP
7	H	12	LEU
7	H	28	CYS
7	H	31	PHE
7	H	32	MET
7	H	68	PHE
7	H	141	TYR
7	H	182	SER
7	H	198	THR
7	H	238	PHE
7	H	277	PHE
7	H	281	MET
7	H	282	PHE

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Mol	Chain	Res	Type
8	A	36	PHE
8	A	83	LEU
9	L	2	ASN
9	L	43	LEU
9	L	72	ASP
9	L	77	PHE
9	L	111	GLU
9	L	114	SER
9	L	123	PHE
9	L	168	MET
9	L	198	ARG
9	L	291	LEU
9	L	315	GLN
9	L	318	TYR
9	L	342	LYS
9	L	364	LYS
9	L	379	PHE
9	L	424	MET
9	L	426	SER
9	L	428	TYR
9	L	430	PHE
9	L	431	ARG
9	L	497	SER
9	L	517	THR
9	L	519	VAL
9	L	562	ARG
9	L	568	MET
10	M	68	ASP
10	M	69	MET
10	M	74	ARG
10	M	122	TRP
10	M	145	MET
10	M	147	LEU
10	M	174	PHE
10	M	212	ASN
10	M	303	TRP
10	M	365	ARG
10	M	382	LYS
10	M	426	THR
10	M	433	SER
10	M	450	SER
11	N	31	ARG

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Mol	Chain	Res	Type
11	N	61	MET
11	N	70	ASP
11	N	229	ASP
11	N	265	ASP
11	N	359	LEU
11	N	395	LYS
11	N	447	ASN
11	N	474	LEU
11	N	479	ARG
12	K	46	PHE
13	J	18	ARG
13	J	23	THR
13	J	59	TYR
13	J	69	PHE
13	J	146	MET
13	J	152	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
3	G	625	ASN
4	C	570	GLN
7	H	183	GLN
7	H	312	ASN
9	L	163	ASN
13	J	86	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 25 ligands modelled in this entry, 1 is monoatomic - leaving 24 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
14	SF4	B	301	5	0,12,12	-	-	-		
18	3PE	L	803	-	31,31,50	0.37	0	34,36,55	0.36	0
16	FES	E	201	2	0,4,4	-	-	-		
18	3PE	H	401	-	50,50,50	0.31	0	53,55,55	0.29	0
18	3PE	L	801	-	50,50,50	0.30	0	53,55,55	0.28	0
20	LFA	N	502	-	13,13,19	0.13	0	12,12,18	0.13	0
14	SF4	G	1002	3	0,12,12	-	-	-		
18	3PE	H	404	-	50,50,50	0.31	0	53,55,55	0.31	0
20	LFA	H	403	-	19,19,19	0.14	0	18,18,18	0.11	0
18	3PE	J	201	-	50,50,50	0.30	0	53,55,55	0.29	0
14	SF4	I	202	6	0,12,12	-	-	-		
15	FMN	F	502	-	33,33,33	1.06	2 (6%)	48,50,50	1.27	6 (12%)
20	LFA	N	501	-	19,19,19	0.14	0	18,18,18	0.16	0
14	SF4	F	501	1	0,12,12	-	-	-		
18	3PE	M	1203	-	50,50,50	0.29	0	53,55,55	0.28	0
18	3PE	M	1202	-	50,50,50	0.31	0	53,55,55	0.30	0
14	SF4	G	1001	3	0,12,12	-	-	-		
14	SF4	G	1003	3	0,12,12	-	-	-		
18	3PE	L	802	-	43,43,50	0.33	0	46,48,55	0.31	0
18	3PE	M	1201	-	50,50,50	0.29	0	53,55,55	0.32	0
19	UQ8	H	402	-	29,29,53	0.26	0	35,38,67	0.52	1 (2%)
14	SF4	I	201	6	0,12,12	-	-	-		
16	FES	G	1004	3	0,4,4	-	-	-		
18	3PE	L	804	-	50,50,50	0.30	0	53,55,55	0.27	0

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
14	SF4	B	301	5	-	-	0/6/5/5
18	3PE	L	803	-	-	8/35/35/54	-
18	3PE	H	401	-	-	8/54/54/54	-
16	FES	E	201	2	-	-	0/1/1/1
18	3PE	L	801	-	-	8/54/54/54	-
20	LFA	N	502	-	-	0/11/11/17	-
14	SF4	G	1002	3	-	-	0/6/5/5
18	3PE	H	404	-	-	13/54/54/54	-
20	LFA	H	403	-	-	1/17/17/17	-
18	3PE	J	201	-	-	12/54/54/54	-
14	SF4	I	202	6	-	-	0/6/5/5
15	FMN	F	502	-	-	6/18/18/18	0/3/3/3
20	LFA	N	501	-	-	0/17/17/17	-
14	SF4	F	501	1	-	-	0/6/5/5
18	3PE	M	1203	-	-	13/54/54/54	-
18	3PE	M	1202	-	-	9/54/54/54	-
14	SF4	G	1001	3	-	-	0/6/5/5
14	SF4	G	1003	3	-	-	0/6/5/5
18	3PE	L	802	-	-	14/47/47/54	-
18	3PE	M	1201	-	-	13/54/54/54	-
19	UQ8	H	402	-	-	3/23/47/75	0/1/1/1
14	SF4	I	201	6	-	-	0/6/5/5
16	FES	G	1004	3	-	-	0/1/1/1
18	3PE	L	804	-	-	12/54/54/54	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	F	502	FMN	C4A-N5	3.55	1.37	1.30
15	F	502	FMN	C10-N1	2.22	1.37	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	F	502	FMN	C4-N3-C2	-3.25	119.64	125.64
15	F	502	FMN	C4A-C10-N10	2.91	120.73	116.48
15	F	502	FMN	C4A-C4-N3	2.72	120.09	113.19
15	F	502	FMN	O4-C4-C4A	-2.53	119.89	126.60
15	F	502	FMN	C4A-C10-N1	-2.41	119.15	124.73
15	F	502	FMN	C10-C4A-N5	-2.26	120.07	124.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
19	H	402	UQ8	C7-C6-C5	-2.14	115.91	118.48

There are no chirality outliers.

All (120) 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
18	H	401	3PE	C11-O13-P-O12
18	H	401	3PE	O13-C11-C12-N
18	H	404	3PE	C1-O11-P-O14
18	H	404	3PE	O13-C11-C12-N
18	L	801	3PE	C1-O11-P-O14
18	L	801	3PE	O13-C11-C12-N
18	L	802	3PE	C11-O13-P-O12
18	L	802	3PE	C11-O13-P-O14
18	L	803	3PE	C1-O11-P-O12
18	L	803	3PE	C11-O13-P-O11
18	L	803	3PE	C11-O13-P-O12
18	L	803	3PE	C11-O13-P-O14
18	L	804	3PE	C11-O13-P-O12
18	L	804	3PE	O13-C11-C12-N
18	M	1201	3PE	C1-O11-P-O12
18	M	1201	3PE	C1-O11-P-O13
18	M	1201	3PE	C1-O11-P-O14
18	M	1201	3PE	O13-C11-C12-N
18	M	1202	3PE	C11-O13-P-O11
18	M	1202	3PE	C11-O13-P-O14
18	M	1202	3PE	O13-C11-C12-N
18	M	1203	3PE	C11-O13-P-O14
18	M	1203	3PE	O13-C11-C12-N
18	J	201	3PE	C1-O11-P-O12
18	J	201	3PE	C1-O11-P-O13
18	J	201	3PE	C1-O11-P-O14
18	J	201	3PE	C11-O13-P-O12
18	J	201	3PE	C11-O13-P-O14
19	H	402	UQ8	C14-C16-C17-C18
18	L	804	3PE	O21-C2-C3-O31
18	L	802	3PE	C31-C32-C33-C34
18	M	1201	3PE	C3C-C3D-C3E-C3F

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Mol	Chain	Res	Type	Atoms
18	H	401	3PE	C11-O13-P-O11
18	H	404	3PE	C1-O11-P-O13
18	L	802	3PE	C1-O11-P-O13
18	L	802	3PE	C11-O13-P-O11
18	L	804	3PE	C1-O11-P-O13
18	L	804	3PE	C11-O13-P-O11
18	M	1201	3PE	C11-O13-P-O11
18	M	1202	3PE	C1-O11-P-O13
18	M	1203	3PE	C11-O13-P-O11
18	J	201	3PE	C11-O13-P-O11
18	H	401	3PE	C3D-C3E-C3F-C3G
18	L	803	3PE	C35-C36-C37-C38
18	M	1203	3PE	C3E-C3F-C3G-C3H
20	H	403	LFA	C14-C15-C16-C17
18	J	201	3PE	C21-C22-C23-C24
18	L	801	3PE	C37-C38-C39-C3A
18	L	801	3PE	C23-C24-C25-C26
18	L	804	3PE	C2A-C2B-C2C-C2D
18	L	803	3PE	C1-O11-P-O13
18	M	1202	3PE	C24-C25-C26-C27
18	L	801	3PE	C3E-C3F-C3G-C3H
18	M	1203	3PE	C26-C27-C28-C29
15	F	502	FMN	C5'-O5'-P-O1P
18	M	1202	3PE	C3B-C3C-C3D-C3E
18	L	802	3PE	O13-C11-C12-N
18	J	201	3PE	O13-C11-C12-N
18	M	1202	3PE	C2-C1-O11-P
18	L	804	3PE	C1-C2-C3-O31
18	L	802	3PE	O21-C2-C3-O31
18	M	1203	3PE	C3C-C3D-C3E-C3F
18	L	804	3PE	C2-C1-O11-P
18	M	1201	3PE	C2-C1-O11-P
18	M	1203	3PE	C2-C1-O11-P
18	M	1201	3PE	C39-C3A-C3B-C3C
18	J	201	3PE	O21-C21-C22-C23
18	M	1201	3PE	C3D-C3E-C3F-C3G
18	L	804	3PE	C25-C26-C27-C28
18	H	404	3PE	C34-C35-C36-C37
18	J	201	3PE	C2-C1-O11-P
18	H	404	3PE	C1-O11-P-O12
18	L	802	3PE	C1-O11-P-O12
18	L	802	3PE	C1-O11-P-O14

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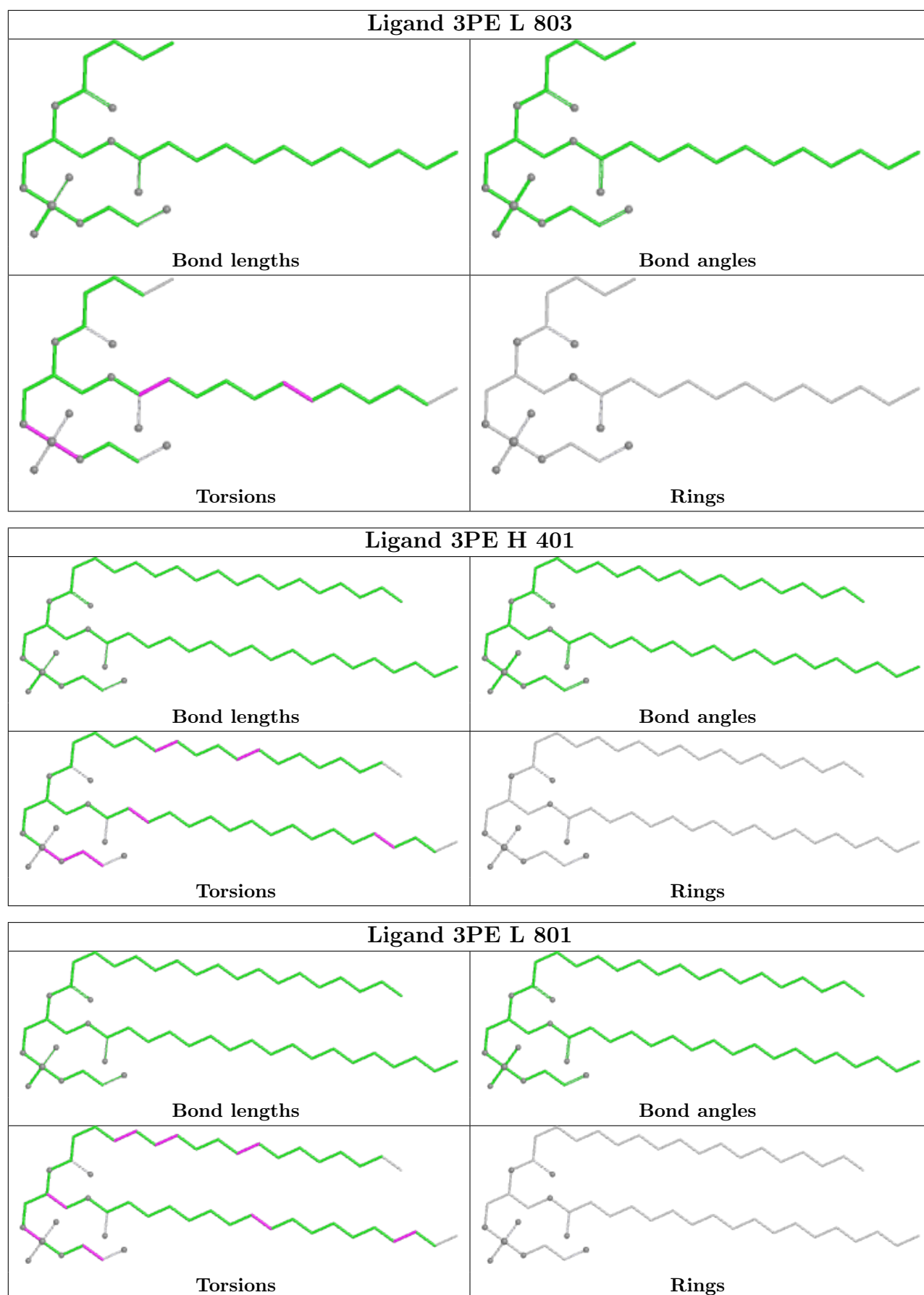
Mol	Chain	Res	Type	Atoms
18	L	803	3PE	C1-O11-P-O14
18	L	804	3PE	C1-O11-P-O12
18	L	804	3PE	C1-O11-P-O14
18	L	804	3PE	C11-O13-P-O14
18	M	1201	3PE	C11-O13-P-O14
18	M	1202	3PE	C1-O11-P-O14
18	H	404	3PE	C2E-C2F-C2G-C2H
18	H	401	3PE	C12-C11-O13-P
18	H	404	3PE	C21-C22-C23-C24
18	H	404	3PE	C28-C29-C2A-C2B
18	M	1203	3PE	C2E-C2F-C2G-C2H
18	M	1201	3PE	O31-C31-C32-C33
18	J	201	3PE	C23-C24-C25-C26
18	L	802	3PE	C3E-C3F-C3G-C3H
18	H	401	3PE	C25-C26-C27-C28
18	M	1203	3PE	C31-C32-C33-C34
15	F	502	FMN	C4'-C5'-O5'-P
18	H	401	3PE	C31-C32-C33-C34
18	L	801	3PE	O21-C2-C3-O31
18	H	401	3PE	C29-C2A-C2B-C2C
18	L	801	3PE	C29-C2A-C2B-C2C
18	L	802	3PE	C3B-C3C-C3D-C3E
18	H	404	3PE	C3C-C3D-C3E-C3F
18	M	1201	3PE	O21-C21-C22-C23
19	H	402	UQ8	C12-C11-C9-C10
18	M	1203	3PE	O11-C1-C2-C3
18	M	1203	3PE	O21-C2-C3-O31
18	J	201	3PE	O21-C2-C3-O31
18	L	801	3PE	C25-C26-C27-C28
18	H	404	3PE	C33-C34-C35-C36
18	M	1203	3PE	C2F-C2G-C2H-C2I
18	L	802	3PE	C1-C2-C3-O31
18	M	1201	3PE	O22-C21-C22-C23
18	H	404	3PE	C2F-C2G-C2H-C2I
18	H	404	3PE	C12-C11-O13-P
18	L	802	3PE	C12-C11-O13-P
18	M	1202	3PE	C12-C11-O13-P
19	H	402	UQ8	C18-C19-C21-C22
18	L	802	3PE	O31-C31-C32-C33
18	H	404	3PE	C26-C27-C28-C29
18	M	1203	3PE	O11-C1-C2-O21
18	L	803	3PE	O31-C31-C32-C33

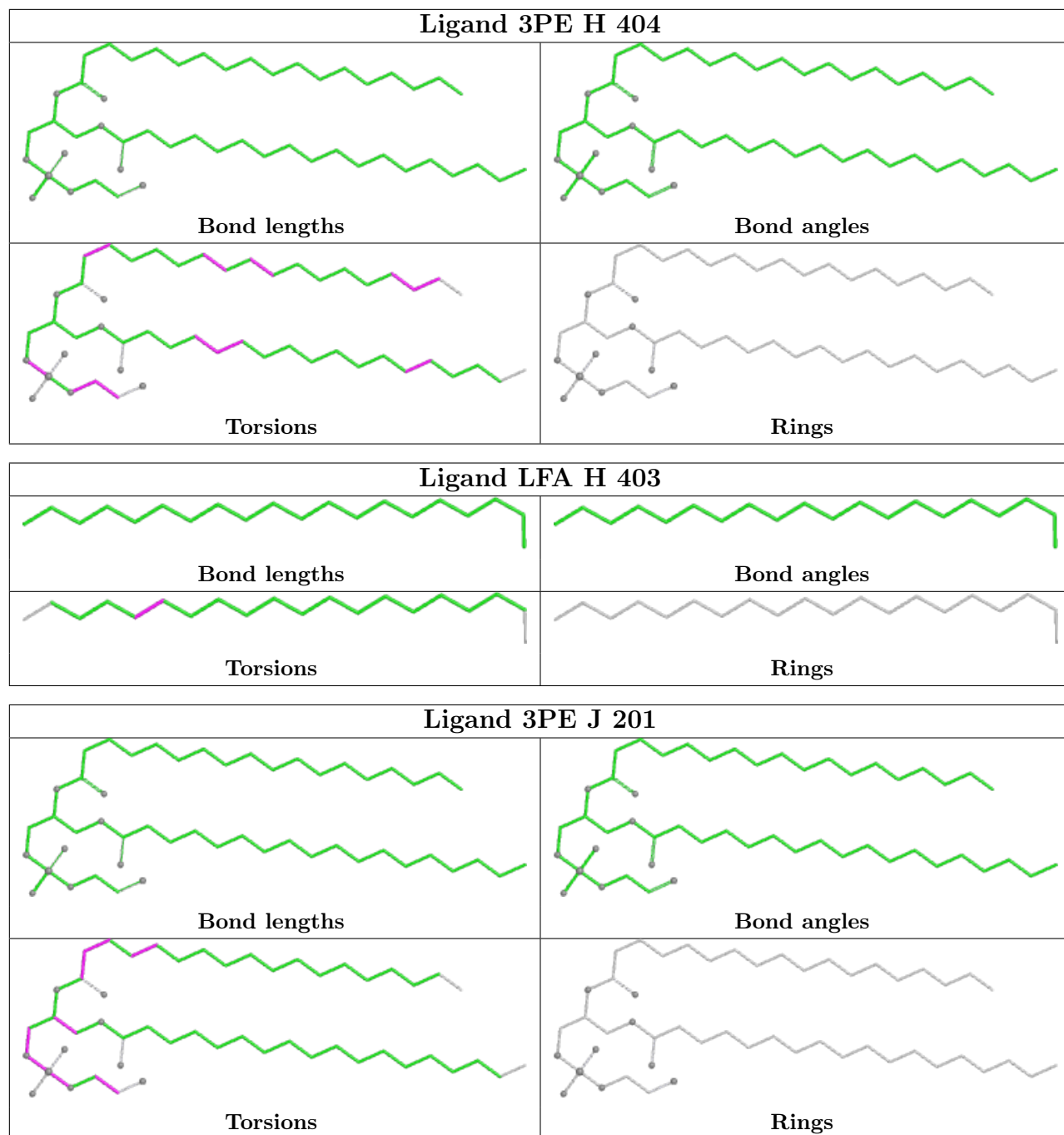
There are no ring outliers.

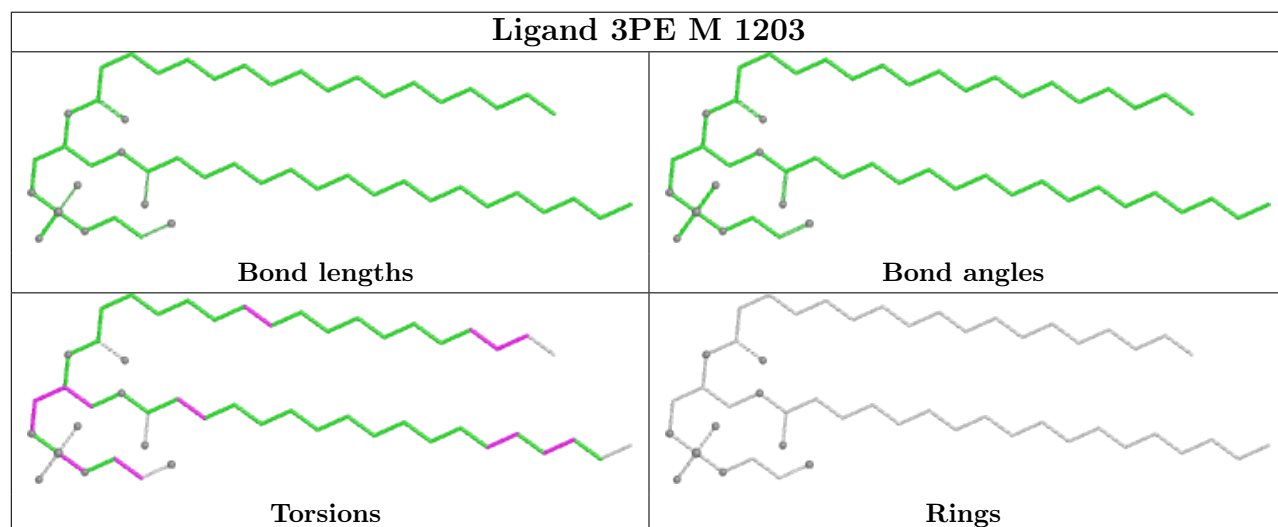
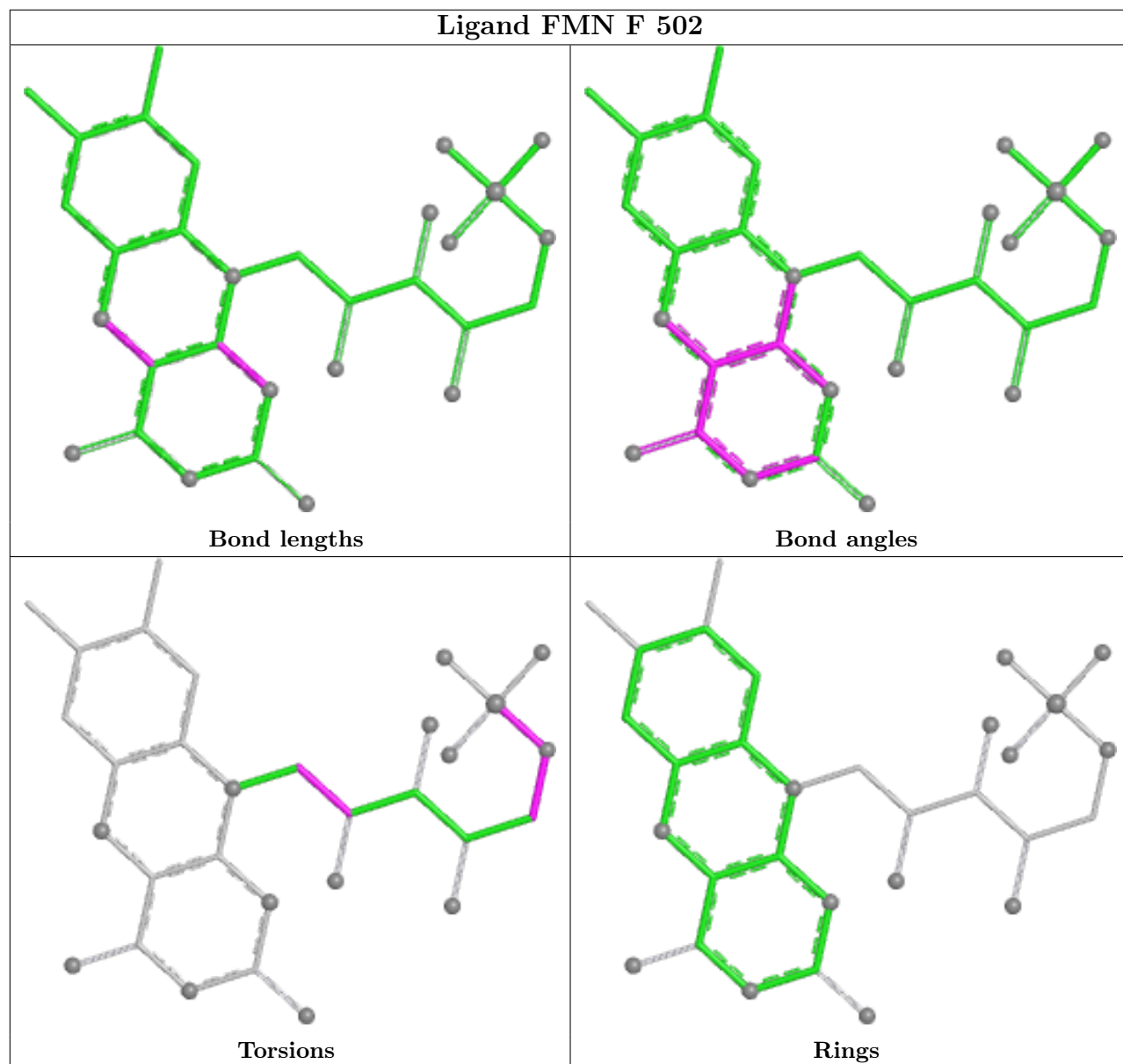
12 monomers are involved in 20 short contacts:

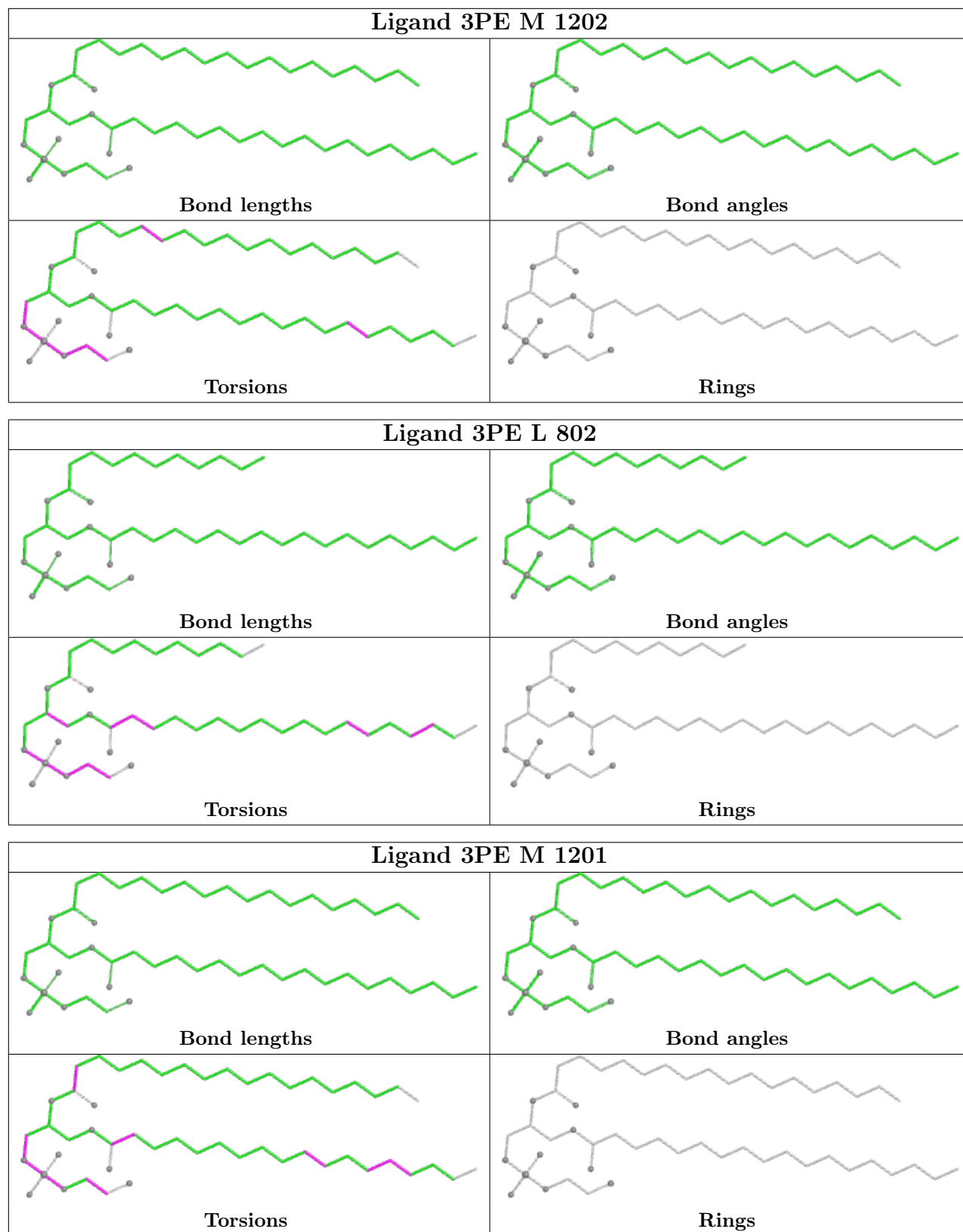
Mol	Chain	Res	Type	Clashes	Symm-Clashes
14	B	301	SF4	1	0
18	L	803	3PE	1	0
18	H	401	3PE	2	0
18	L	801	3PE	2	0
18	H	404	3PE	4	0
20	H	403	LFA	2	0
18	J	201	3PE	2	0
15	F	502	FMN	2	0
18	M	1202	3PE	1	0
18	L	802	3PE	1	0
18	M	1201	3PE	2	0
18	L	804	3PE	1	0

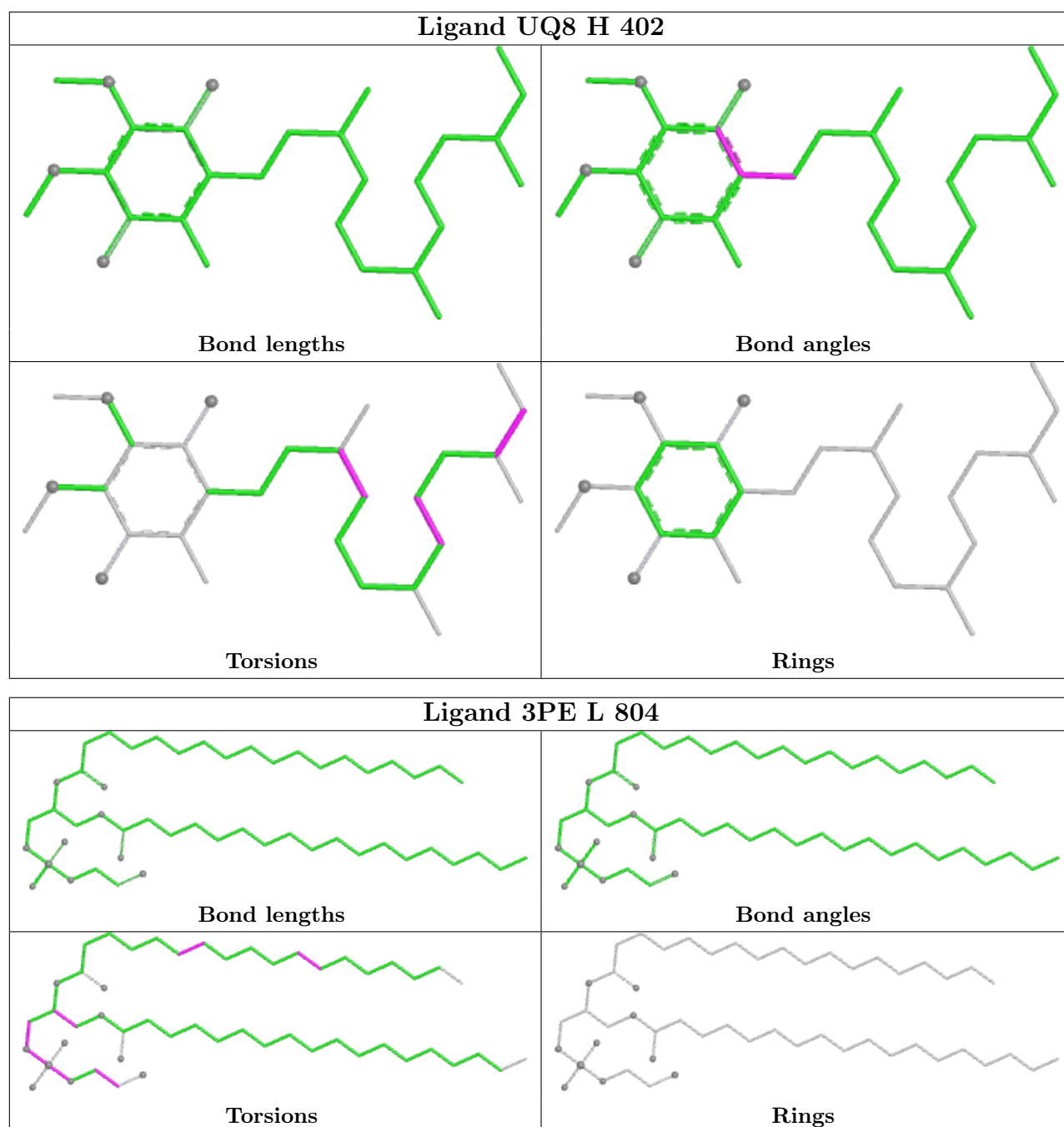
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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











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.

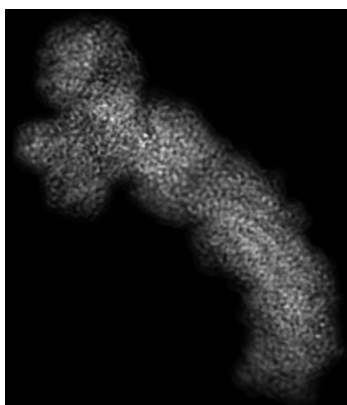
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13235. These allow visual inspection of the internal detail of the map and identification of artifacts.

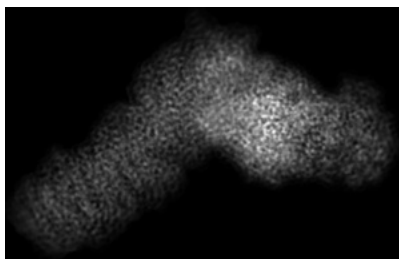
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

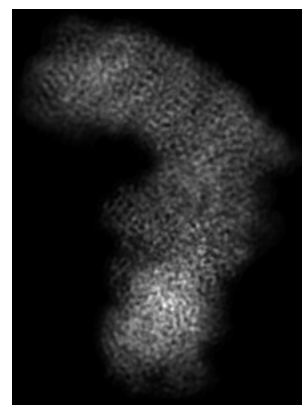
6.1.1 Primary map



X



Y

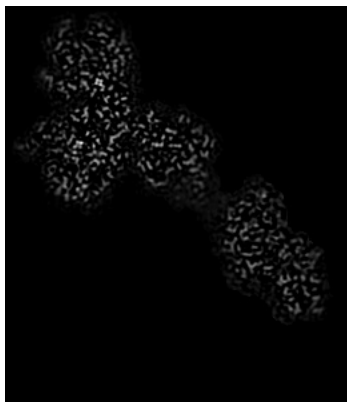


Z

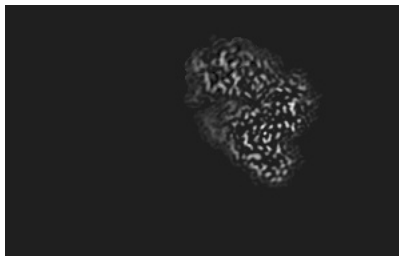
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

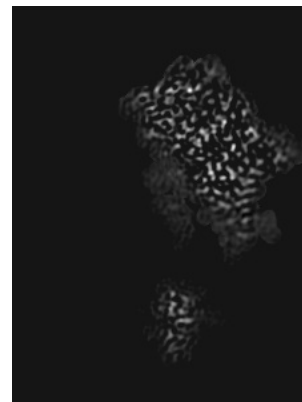
6.2.1 Primary map



X Index: 154



Y Index: 208

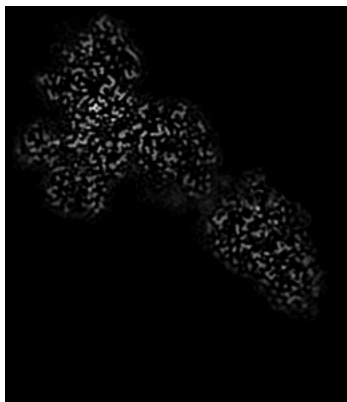


Z Index: 243

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: 167



Y Index: 112



Z Index: 320

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 0.055. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

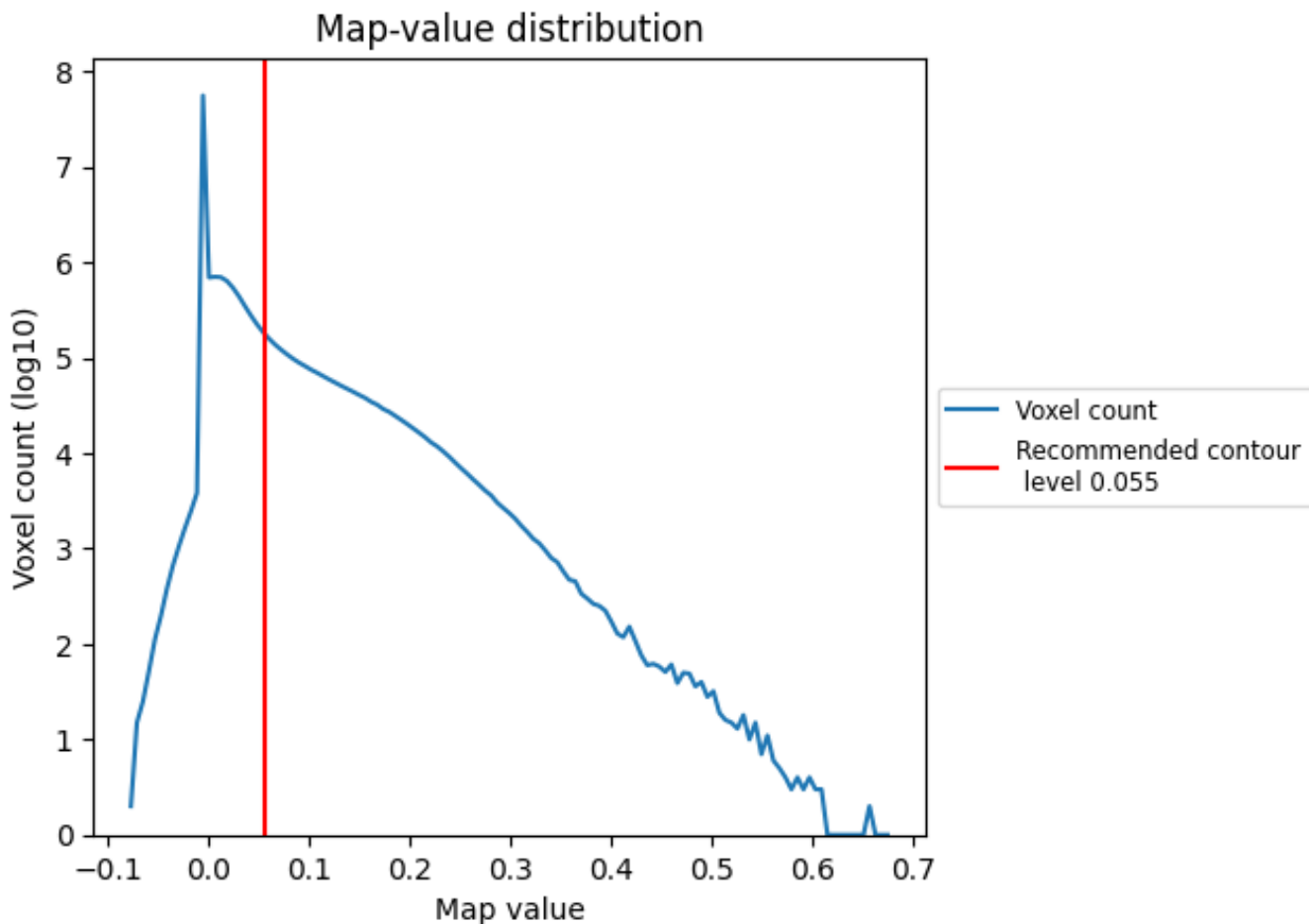
6.5 Mask visualisation

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

7 Map analysis [i](#)

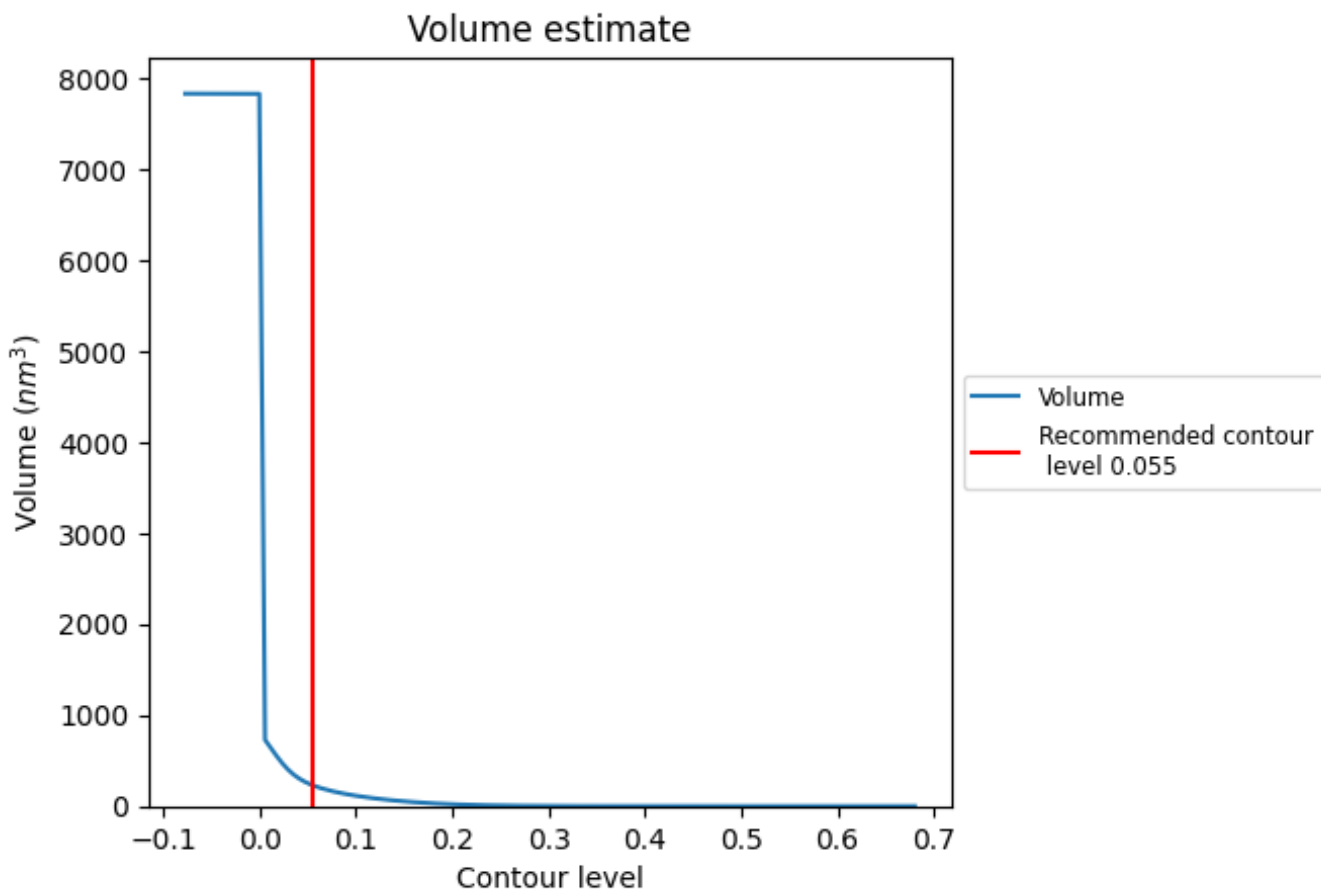
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

7.2 Volume estimate [i](#)



The volume at the recommended contour level is 231 nm³; this corresponds to an approximate mass of 208 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.

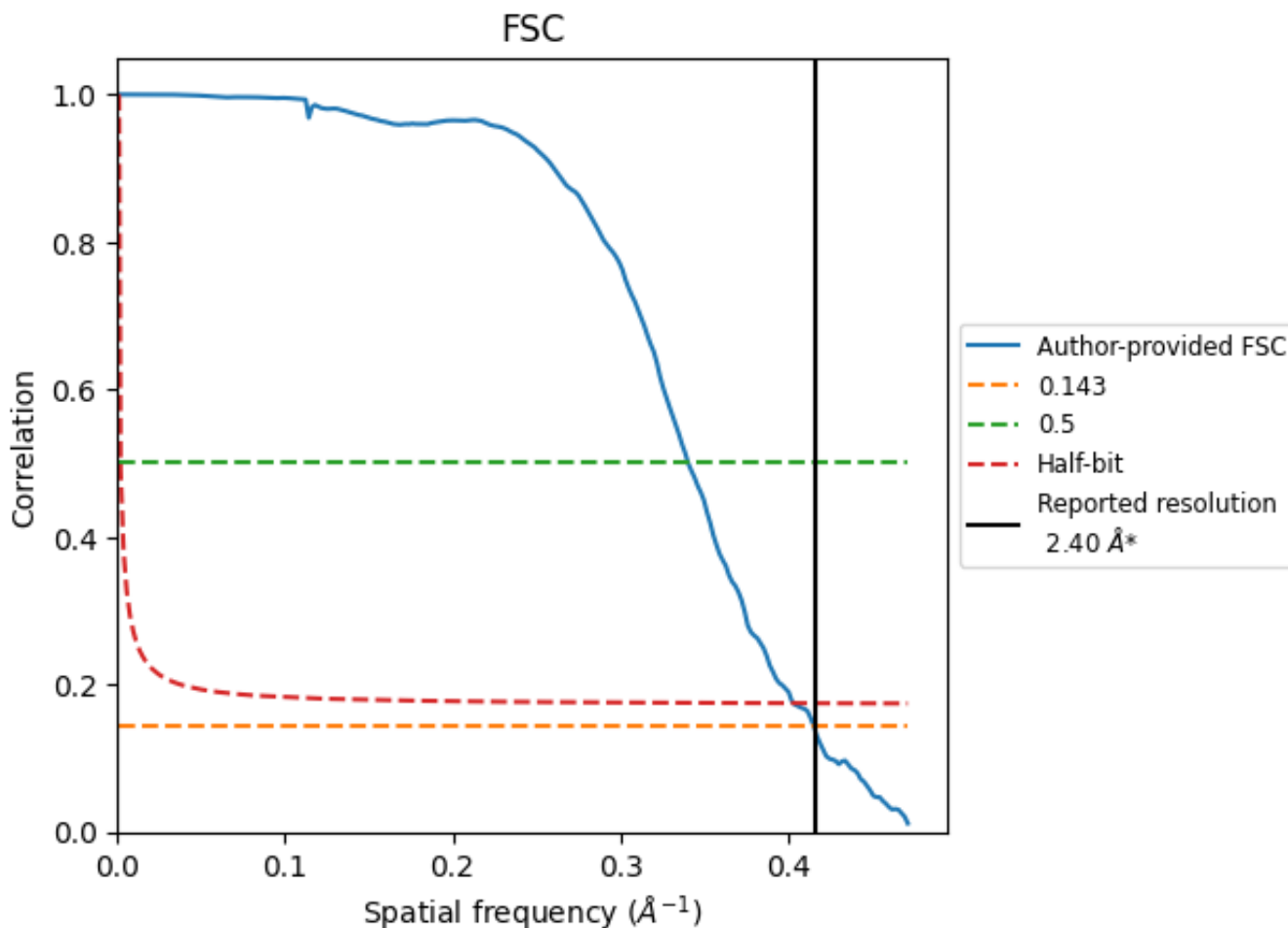
7.3 Rotationally averaged power spectrum [i](#)

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

8 Fourier-Shell correlation [\(i\)](#)

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 [\(i\)](#)



*Reported resolution corresponds to spatial frequency of 0.417 Å⁻¹

8.2 Resolution estimates [i](#)

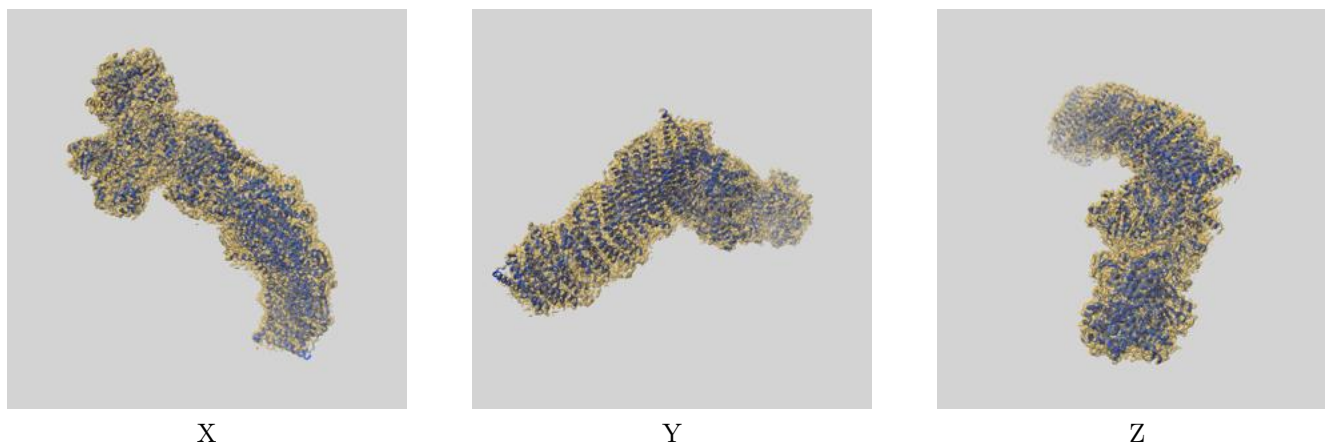
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	2.41	2.94	2.48
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

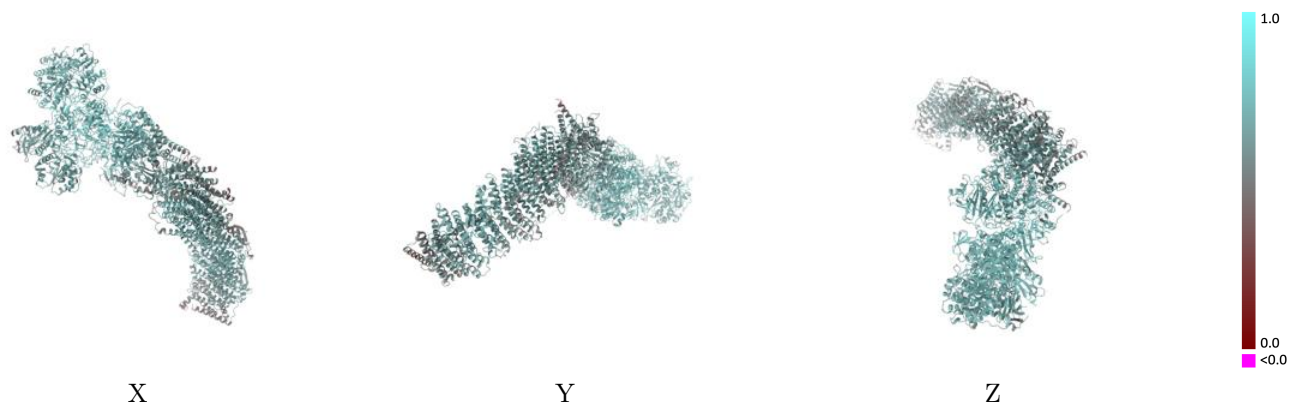
This section contains information regarding the fit between EMDB map EMD-13235 and PDB model 7P7C. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



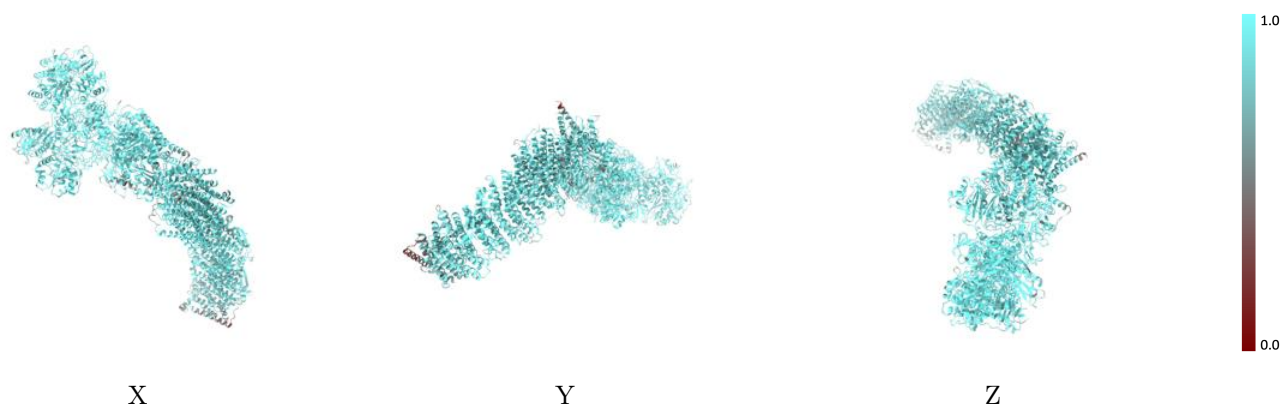
The images above show the 3D surface view of the map at the recommended contour level 0.055 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [\(i\)](#)



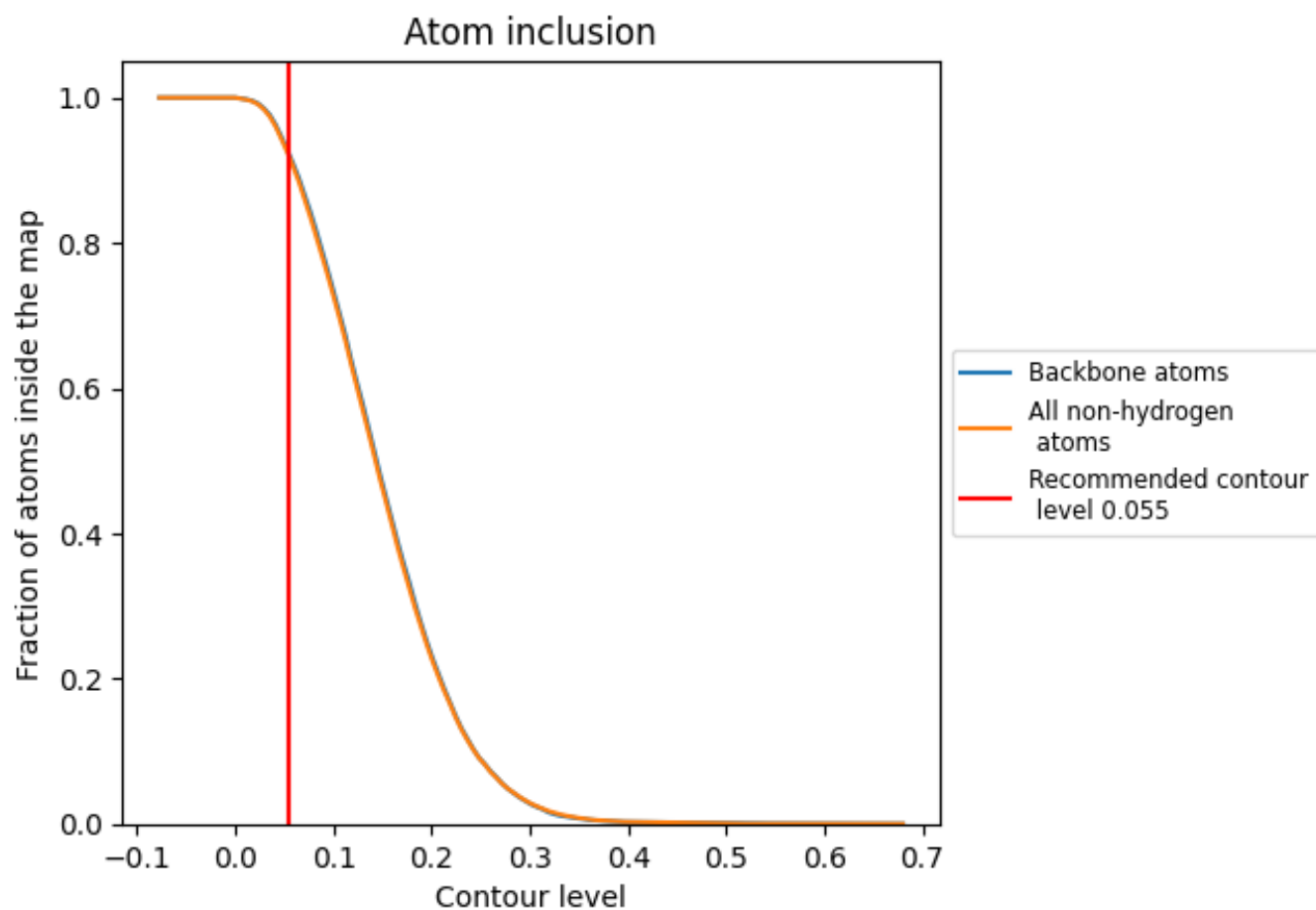
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.055).





























9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 92% 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 (0.055) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9192	 0.6500
A	 0.8929	 0.5810
B	 0.9335	 0.6690
C	 0.9415	 0.6920
E	 0.9426	 0.6860
F	 0.9451	 0.6850
G	 0.9509	 0.6900
H	 0.8889	 0.5860
I	 0.9385	 0.7040
J	 0.9074	 0.6260
K	 0.9745	 0.6940
L	 0.8378	 0.5800
M	 0.9214	 0.6270
N	 0.9251	 0.6230

