Full wwPDB EM Validation Report ⓘ

Jul 10, 2024 – 12:07 am BST

PDB ID	:	7Z7T
EMDB ID	:	EMD-14537
Title	:	Complex I from E. coli, LMNG-purified, under Turnover at pH 6, Open state
Authors	:	Kravchuk, V.; Kampjut, D.; Sazanov, L.
Deposited on	:	2022-03-16
Resolution	:	3.10 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:

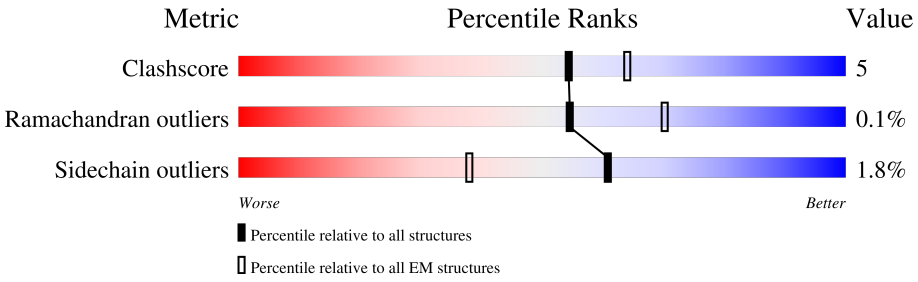
EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.10 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	84% 13%
2	E	166	76% 18% 6%
3	G	908	84% 15%
4	C	596	5% 87% 12%
5	B	220	5% 69% 21% 10%
6	I	180	6% 89% 11%
7	J	184	7% 69% 17% 12%
8	H	325	6% 82% 14%

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Mol	Chain	Length	Quality of chain
9	A	147	54% 13% 31%
10	L	613	8% 85% 13%
11	M	509	85% 14%
12	N	485	81% 16%
13	K	100	80% 20%

2 Entry composition

There are 20 unique types of molecules in this entry. The entry contains 37395 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	7027	4392	1269	1329	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	587	4734	3035	823	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	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 J.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	314	Total	C	N	O	S	0	0
			2474	1665	389	402	18		

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

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

- Molecule 10 is a protein called NADH dehydrogenase subunit L.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	605	Total	C	N	O	S	0	0
			4627	3076	740	779	32		

- Molecule 11 is a protein called NADH dehydrogenase I subunit M.

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

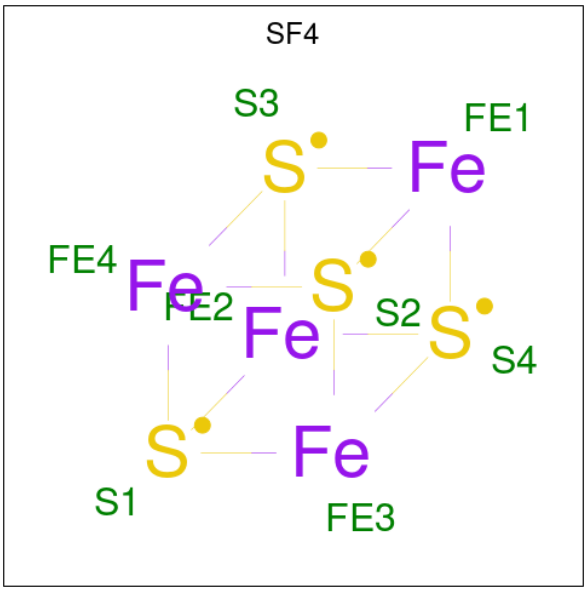
- Molecule 12 is a protein called NADH-quinone oxidoreductase subunit N.

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

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

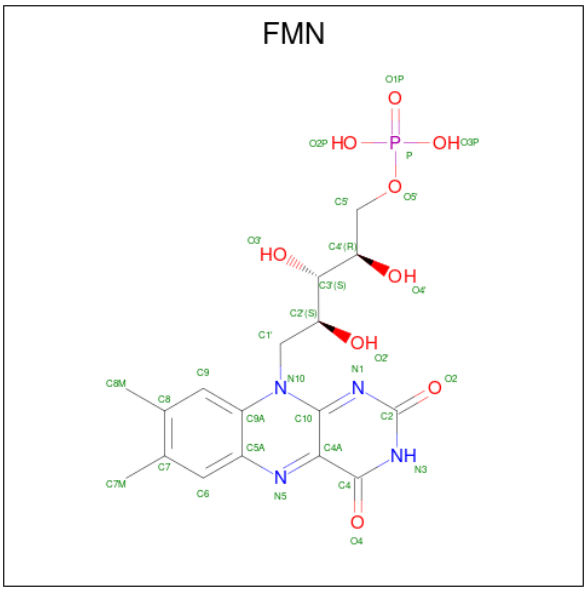
Mol	Chain	Residues	Atoms					AltConf	Trace
13	K	100	Total	C	N	O	S	0	0
			760	494	132	129	5		

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



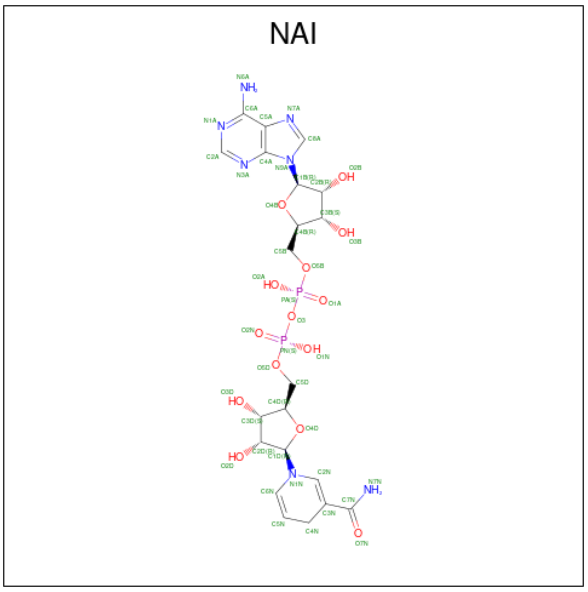
Mol	Chain	Residues	Atoms	AltConf
14	F	1	Total Fe S 8 4 4	0
14	G	1	Total Fe S 8 4 4	0
14	G	1	Total Fe S 8 4 4	0
14	G	1	Total Fe S 8 4 4	0
14	B	1	Total Fe S 8 4 4	0
14	I	1	Total Fe S 8 4 4	0
14	I	1	Total Fe S 8 4 4	0

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



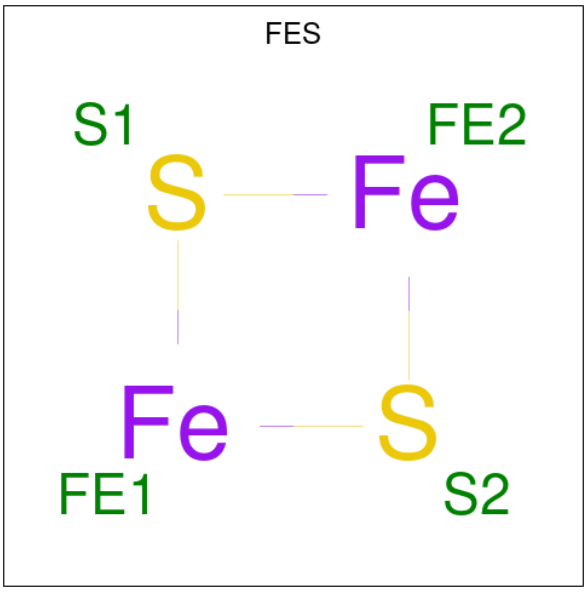
Mol	Chain	Residues	Atoms					AltConf
15	F	1	Total	C	N	O	P	0
			31	17	4	9	1	

- 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).

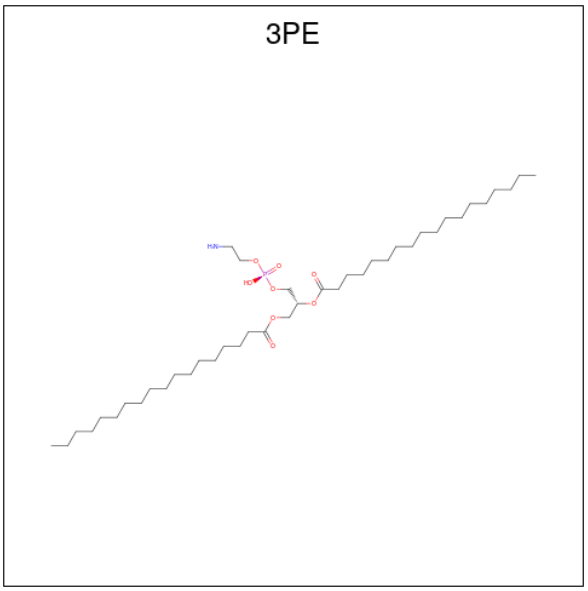


Mol	Chain	Residues	Atoms	AltConf
17	E	1	Total Fe S 4 2 2	0
17	G	1	Total Fe S 4 2 2	0

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

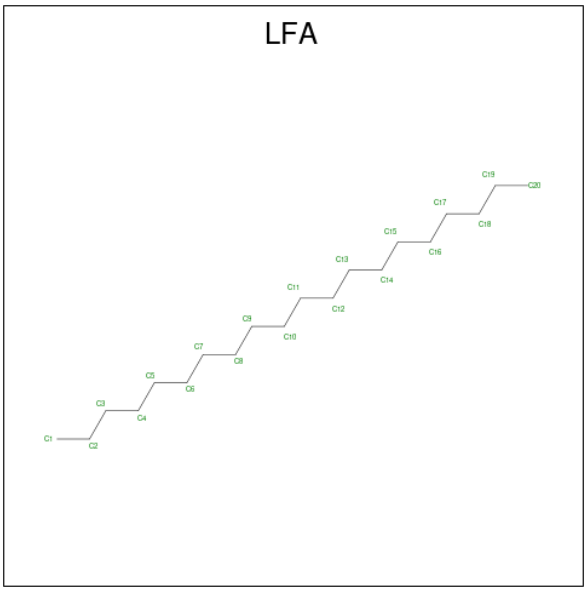
Mol	Chain	Residues	Atoms	AltConf
18	G	1	Total Ca 1 1	0

- 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	H	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	L	1	Total	C	N	O	P	0
			49	39	1	8	1	
19	L	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	M	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	M	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	M	1	Total	C	N	O	P	0
			51	41	1	8	1	
19	N	1	Total	C	N	O	P	0
			51	41	1	8	1	

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



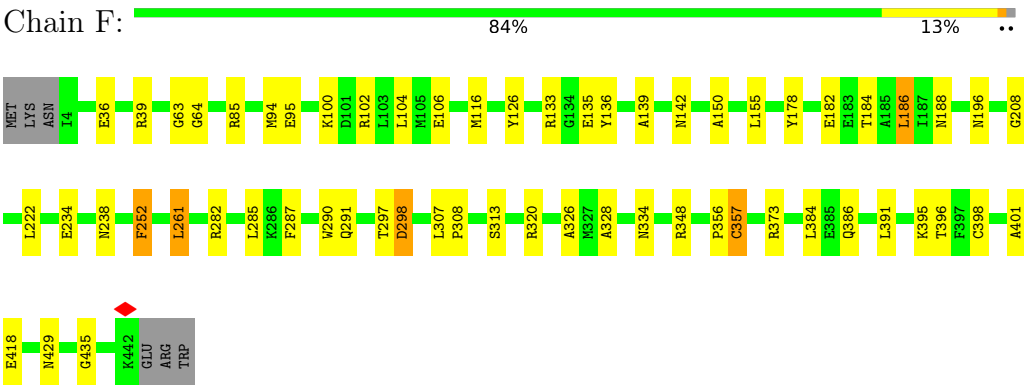
Mol	Chain	Residues	Atoms	AltConf
20	H	1	Total C 20 20	0
20	M	1	Total C 20 20	0
20	N	1	Total C 14 14	0

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.

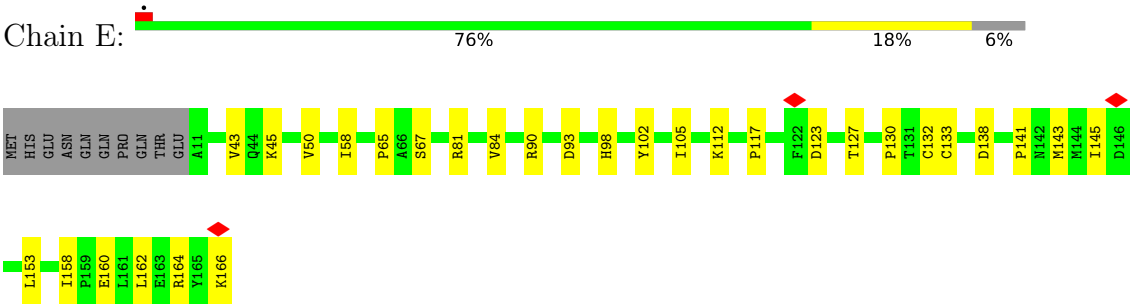
• Molecule 1: NADH-quinone oxidoreductase subunit F

Chain F:



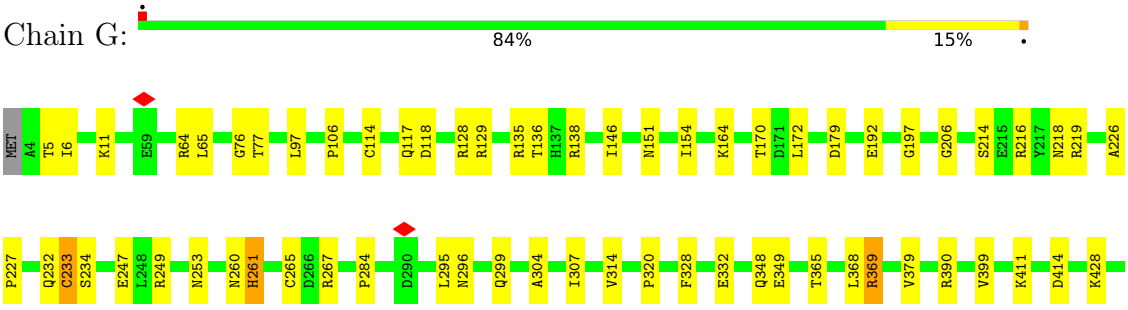
• Molecule 2: NADH dehydrogenase I subunit E

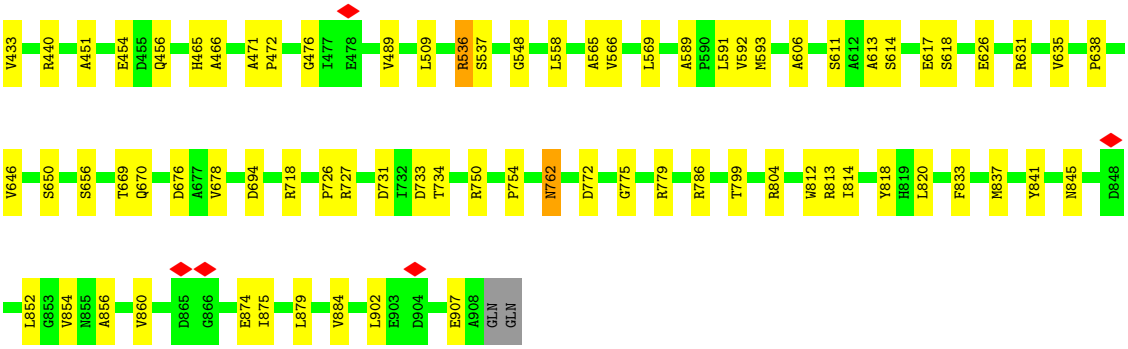
Chain E:



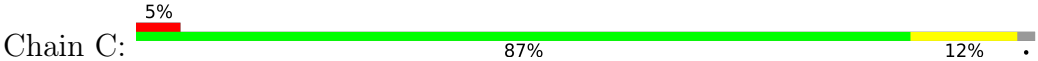
• Molecule 3: NADH-quinone oxidoreductase

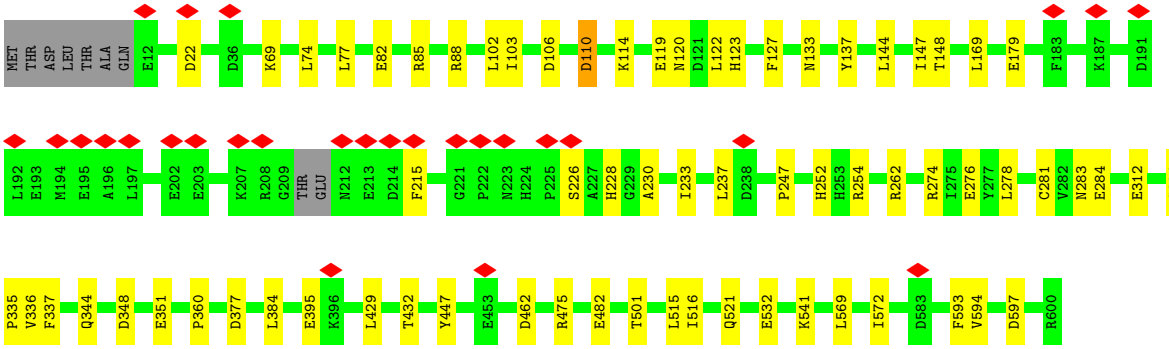
Chain G:



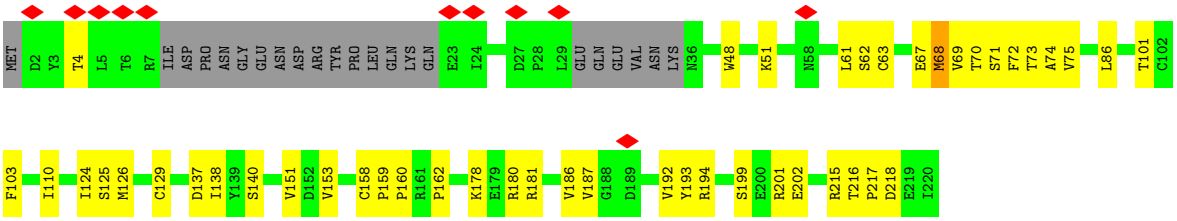


• Molecule 4: NADH-quinone oxidoreductase subunit C/D

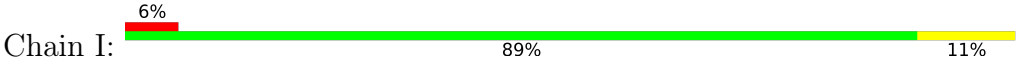




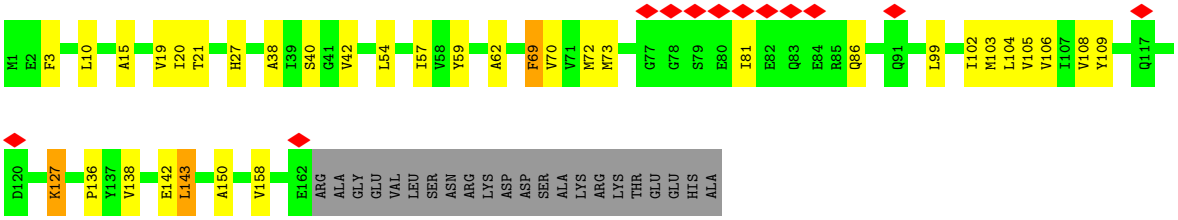
• Molecule 5: NADH-quinone oxidoreductase subunit B



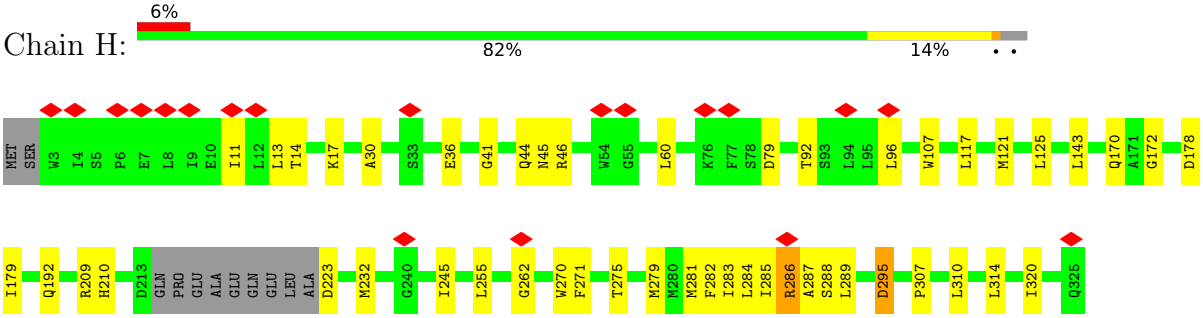
• Molecule 6: NADH-quinone oxidoreductase subunit I



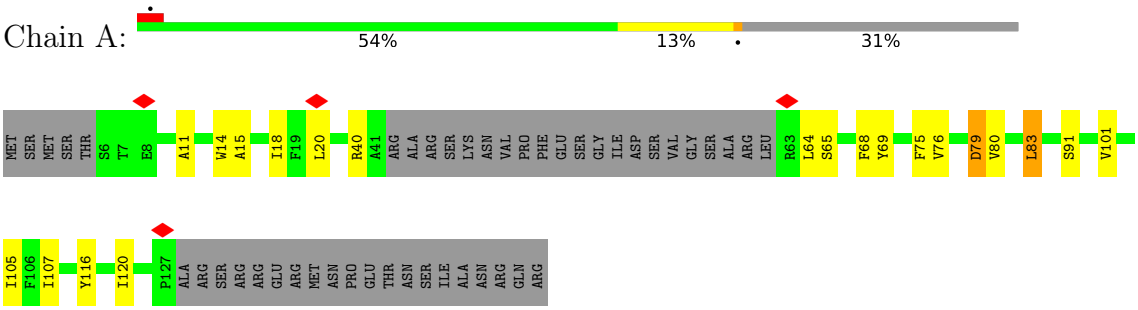
• Molecule 7: NADH-quinone oxidoreductase subunit J



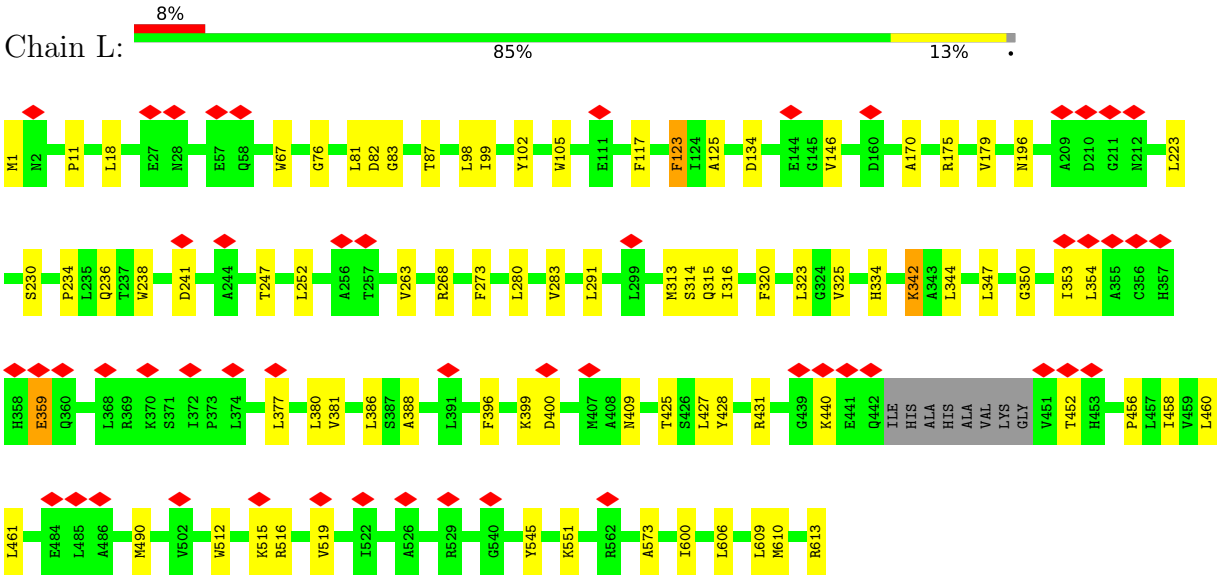
• Molecule 8: NADH-quinone oxidoreductase subunit H



• Molecule 9: NADH-quinone oxidoreductase subunit A

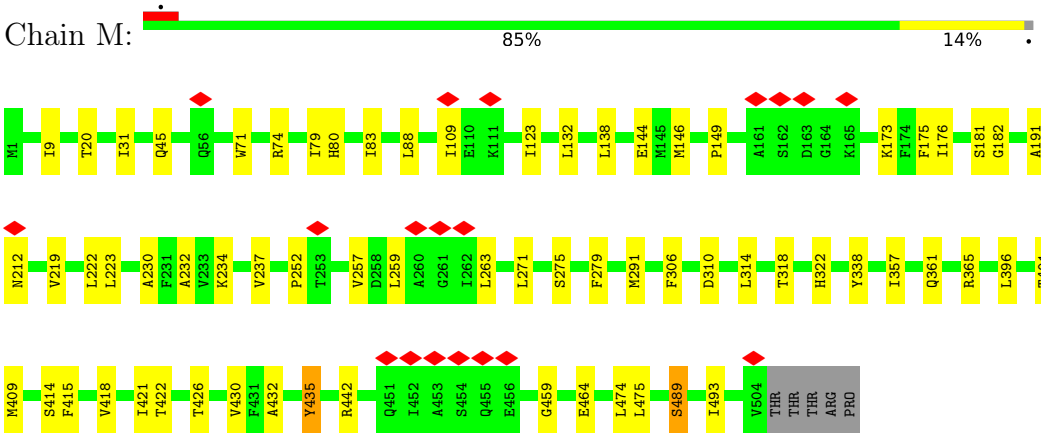


• Molecule 10: NADH dehydrogenase subunit L



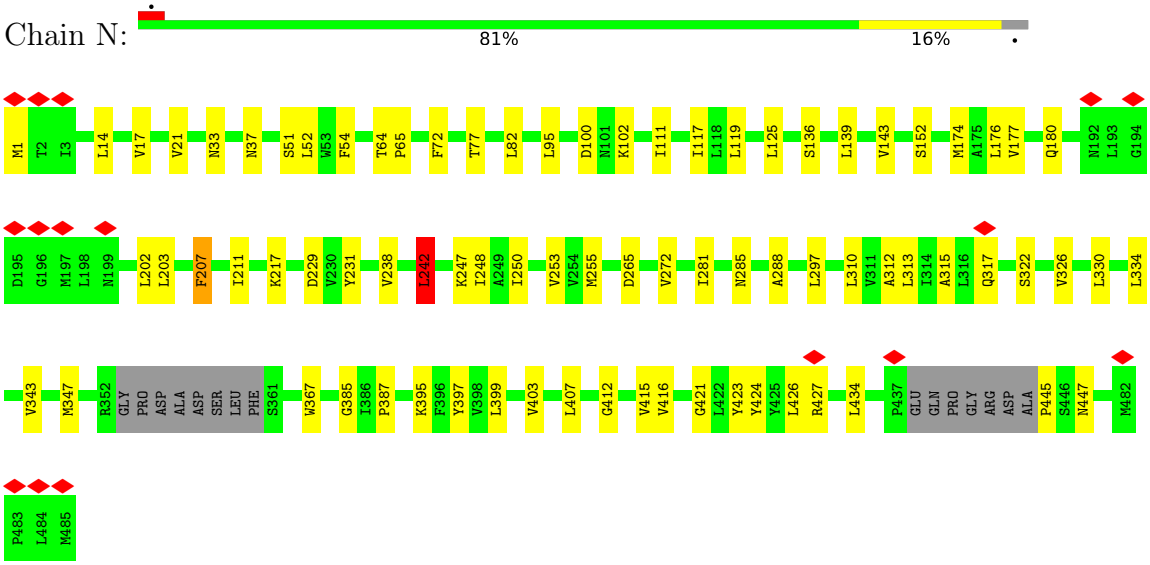
• Molecule 11: NADH dehydrogenase I subunit M

Chain M:



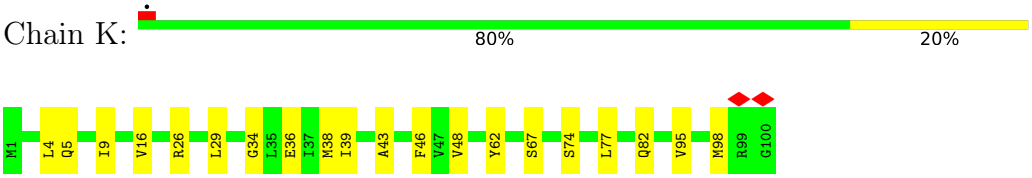
• Molecule 12: NADH-quinone oxidoreductase subunit N

Chain N:



• Molecule 13: NADH-quinone oxidoreductase subunit K

Chain K:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	31887	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	0.241	Depositor
Minimum map value	-0.041	Depositor
Average map value	0.005	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	152.63998, 213.05998, 238.49998	wwPDB
Map dimensions	144, 201, 225	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: FES, 3PE, FMN, LFA, CA, 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	0.29	0/3486	0.52	0/4713
2	E	0.28	0/1248	0.52	0/1691
3	G	0.29	0/7178	0.53	1/9733 (0.0%)
4	C	0.36	1/4864 (0.0%)	0.59	3/6600 (0.0%)
5	B	0.30	0/1601	0.61	1/2168 (0.0%)
6	I	0.30	0/1470	0.54	0/1985
7	J	0.28	0/1252	0.52	1/1708 (0.1%)
8	H	0.30	0/2548	0.51	0/3465
9	A	0.29	0/825	0.50	1/1123 (0.1%)
10	L	0.28	0/4745	0.50	0/6465
11	M	0.29	0/4074	0.51	1/5546 (0.0%)
12	N	0.29	0/3649	0.55	2/4977 (0.0%)
13	K	0.28	0/769	0.58	1/1040 (0.1%)
All	All	0.30	1/37709 (0.0%)	0.54	11/51214 (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
2	E	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	335	PRO	CG-CD	-13.86	1.04	1.50

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	C	335	PRO	N-CD-CG	-16.36	78.66	103.20
12	N	242	LEU	CA-CB-CG	9.03	136.07	115.30
4	C	335	PRO	CA-CB-CG	-9.02	86.85	104.00
5	B	86	LEU	CA-CB-CG	8.04	133.79	115.30
4	C	335	PRO	CA-N-CD	-7.48	101.02	111.50
3	G	694	ASP	CB-CG-OD1	6.17	123.86	118.30
13	K	95	VAL	CG1-CB-CG2	-5.83	101.56	110.90
12	N	82	LEU	CA-CB-CG	5.42	127.77	115.30
11	M	109	ILE	CG1-CB-CG2	-5.37	99.59	111.40
7	J	143	LEU	CA-CB-CG	-5.33	103.05	115.30
9	A	83	LEU	CA-CB-CG	5.13	127.09	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	E	145	ILE	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	41	0
2	E	1220	0	1187	20	0
3	G	7027	0	6829	80	0
4	C	4734	0	4648	43	0
5	B	1568	0	1553	30	0
6	I	1436	0	1415	15	0
7	J	1226	0	1297	25	0
8	H	2474	0	2528	32	0
9	A	800	0	810	18	0
10	L	4627	0	4770	52	0
11	M	3953	0	4053	41	0
12	N	3563	0	3741	49	0
13	K	760	0	817	13	0
14	B	8	0	0	0	0
14	F	8	0	0	0	0
14	G	24	0	0	2	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	I	16	0	0	0	0
15	F	31	0	19	2	0
16	F	44	0	27	6	0
17	E	4	0	0	0	0
17	G	4	0	0	0	0
18	G	1	0	0	0	0
19	A	51	0	82	4	0
19	H	51	0	82	7	0
19	L	100	0	157	4	0
19	M	153	0	246	4	0
19	N	51	0	82	1	0
20	H	20	0	42	0	0
20	M	20	0	42	1	0
20	N	14	0	27	1	0
All	All	37395	0	37828	407	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 (407) 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:M:181:SER:HB2	11:M:230:ALA:HA	1.67	0.76
7:J:108:VAL:HG22	13:K:9:ILE:HD12	1.72	0.72
1:F:95:GLU:HB2	16:F:503:NAI:H42N	1.71	0.71
7:J:86:GLN:HE21	13:K:26:ARG:HH21	1.37	0.71
10:L:223:LEU:HD13	10:L:283:VAL:HG22	1.74	0.69
12:N:217:LYS:HB3	12:N:250:ILE:HD13	1.73	0.69
11:M:338:TYR:HB3	11:M:493:ILE:HD12	1.74	0.67
4:C:344:GLN:HG2	5:B:75:VAL:HG21	1.76	0.67
1:F:357:CYS:HB2	1:F:401:ALA:HB2	1.78	0.64
19:H:401:3PE:H382	9:A:20:LEU:HD12	1.80	0.64
8:H:41:GLY:HA2	8:H:46:ARG:HE	1.63	0.62
10:L:315:GLN:HE21	10:L:386:LEU:HD12	1.64	0.62
1:F:218:ASN:ND2	15:F:502:FMN:O2	2.32	0.61
12:N:77:THR:HG23	12:N:117:ILE:HG12	1.83	0.61
4:C:144:LEU:HB3	4:C:169:LEU:HB2	1.83	0.60
3:G:472:PRO:HG3	3:G:799:THR:HA	1.84	0.59
3:G:592:VAL:HB	3:G:606:ALA:HA	1.83	0.59
7:J:73:MET:HA	9:A:64:LEU:HD12	1.83	0.59
4:C:395:GLU:OE1	4:C:475:ARG:NH2	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:451:ALA:O	3:G:456:GLN:NE2	2.33	0.58
10:L:11:PRO:HB2	10:L:125:ALA:HB2	1.85	0.58
1:F:234:GLU:O	1:F:238:ASN:ND2	2.36	0.58
7:J:158:VAL:O	13:K:82:GLN:NE2	2.36	0.58
10:L:325:VAL:O	10:L:409:ASN:ND2	2.37	0.58
3:G:476:GLY:O	3:G:804:ARG:NH2	2.35	0.58
4:C:85:ARG:NH2	4:C:532:GLU:OE2	2.36	0.57
5:B:217:PRO:HB3	6:I:43:ARG:HB3	1.85	0.57
9:A:69:TYR:OH	13:K:74:SER:O	2.22	0.57
3:G:296:ASN:ND2	3:G:299:GLN:OE1	2.38	0.57
4:C:276:GLU:O	4:C:283:ASN:ND2	2.37	0.57
7:J:70:VAL:HG11	13:K:77:LEU:HD22	1.88	0.56
3:G:216:ARG:NH2	6:I:90:GLU:OE1	2.37	0.56
10:L:179:VAL:HG22	11:M:426:THR:HG22	1.86	0.56
2:E:84:VAL:HB	2:E:127:THR:HG21	1.87	0.56
4:C:110:ASP:OD1	4:C:110:ASP:N	2.38	0.56
12:N:248:ILE:HD11	12:N:334:LEU:HB2	1.88	0.56
3:G:192:GLU:O	3:G:440:ARG:NH2	2.39	0.56
2:E:141:PRO:HG2	2:E:153:LEU:HB2	1.88	0.55
3:G:368:LEU:HD21	3:G:390:ARG:HB3	1.88	0.55
3:G:614:SER:O	3:G:618:SER:OG	2.22	0.55
11:M:365:ARG:NH2	11:M:459:GLY:O	2.39	0.55
3:G:731:ASP:OD2	3:G:734:THR:OG1	2.23	0.55
4:C:254:ARG:HG3	5:B:103:PHE:HE1	1.72	0.55
11:M:175:PHE:HD2	12:N:426:LEU:HD11	1.72	0.55
7:J:73:MET:HE1	9:A:69:TYR:HB2	1.88	0.55
10:L:175:ARG:NH2	11:M:396:LEU:O	2.40	0.55
5:B:181:ARG:HG2	5:B:192:VAL:HG23	1.88	0.55
10:L:353:ILE:HD11	10:L:359:GLU:HA	1.89	0.55
3:G:295:LEU:HB3	3:G:299:GLN:HG3	1.87	0.55
3:G:727:ARG:HD3	4:C:179:GLU:HB2	1.89	0.55
10:L:609:LEU:HG	12:N:272:VAL:HG21	1.89	0.54
2:E:143:MET:HB2	2:E:153:LEU:HD11	1.89	0.54
12:N:229:ASP:HB3	13:K:98:MET:HE3	1.90	0.54
10:L:344:LEU:HB2	10:L:460:LEU:HB3	1.89	0.54
10:L:123:PHE:HE1	10:L:146:VAL:HG13	1.72	0.54
6:I:48:ILE:HG12	6:I:116:LEU:HG	1.89	0.54
10:L:179:VAL:HG21	11:M:430:VAL:HG23	1.90	0.54
12:N:265:ASP:HB3	12:N:317:GLN:HG2	1.90	0.54
3:G:814:ILE:HD11	3:G:902:LEU:HD13	1.91	0.53
7:J:150:ALA:HB2	12:N:111:ILE:HG21	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:112:LYS:HG2	2:E:162:LEU:HD12	1.91	0.53
2:E:117:PRO:HB3	2:E:130:PRO:HD3	1.89	0.53
7:J:57:ILE:HG13	8:H:121:MET:HG2	1.90	0.53
4:C:312:GLU:OE2	4:C:447:TYR:OH	2.26	0.53
4:C:360:PRO:O	6:I:45:ARG:NH1	2.37	0.53
1:F:320:ARG:NH1	16:F:503:NAI:O2D	2.41	0.53
3:G:6:ILE:HG22	3:G:77:THR:HB	1.91	0.53
7:J:62:ALA:HB1	9:A:76:VAL:HG22	1.90	0.53
19:H:401:3PE:H3E1	19:H:401:3PE:H2C1	1.91	0.53
12:N:33:ASN:O	12:N:37:ASN:ND2	2.42	0.53
3:G:349:GLU:HG3	3:G:509:LEU:HD13	1.91	0.53
10:L:263:VAL:HG13	10:L:323:LEU:HD11	1.91	0.53
11:M:414:SER:O	11:M:418:VAL:N	2.36	0.53
19:H:401:3PE:H341	19:A:201:3PE:H321	1.89	0.53
12:N:385:GLY:HA3	12:N:395:LYS:HE2	1.91	0.53
1:F:116:MET:HG2	1:F:222:LEU:HD13	1.91	0.52
10:L:247:THR:HG21	10:L:350:GLY:HA3	1.90	0.52
2:E:67:SER:OG	3:G:164:LYS:NZ	2.41	0.52
10:L:273:PHE:HB3	10:L:280:LEU:HD13	1.91	0.52
4:C:278:LEU:HD12	4:C:541:LYS:HZ1	1.73	0.52
5:B:215:ARG:HB2	6:I:42:PRO:HB3	1.92	0.52
3:G:845:ASN:ND2	3:G:879:LEU:O	2.43	0.52
4:C:215:PHE:HA	4:C:237:LEU:O	2.10	0.52
11:M:123:ILE:HG13	11:M:149:PRO:HB2	1.90	0.52
19:L:1302:3PE:H2C1	12:N:416:VAL:HG12	1.90	0.52
3:G:146:ILE:HD11	3:G:197:GLY:HA2	1.92	0.52
7:J:20:ILE:HG13	7:J:21:THR:HG23	1.92	0.52
11:M:405:VAL:O	11:M:409:MET:HG3	2.09	0.52
12:N:176:LEU:HD22	12:N:202:LEU:HD11	1.92	0.52
12:N:312:ALA:O	12:N:322:SER:OG	2.28	0.52
9:A:14:TRP:O	9:A:18:ILE:HG12	2.10	0.52
8:H:125:LEU:HD13	19:H:401:3PE:H2G1	1.92	0.51
5:B:71:SER:HB3	5:B:162:PRO:HB3	1.92	0.51
11:M:144:GLU:HB2	12:N:387:PRO:HG2	1.93	0.51
19:N:602:3PE:H232	19:N:602:3PE:H331	1.91	0.51
3:G:454:GLU:OE1	3:G:813:ARG:NH1	2.39	0.51
4:C:230:ALA:O	4:C:252:HIS:NE2	2.38	0.51
4:C:384:LEU:HD13	4:C:482:GLU:HG2	1.92	0.51
7:J:69:PHE:HE2	9:A:68:PHE:HB3	1.75	0.51
19:H:401:3PE:H3B1	19:A:201:3PE:H3B2	1.91	0.51
2:E:50:VAL:O	2:E:81:ARG:NH1	2.42	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:536:ARG:NH2	3:G:818:TYR:OH	2.42	0.51
4:C:377:ASP:N	4:C:377:ASP:OD1	2.39	0.51
10:L:291:LEU:HA	10:L:314:SER:HA	1.93	0.51
3:G:670:GLN:HE21	3:G:733:ASP:HA	1.75	0.51
8:H:314:LEU:HD13	9:A:107:ILE:HD12	1.91	0.51
3:G:226:ALA:HB3	3:G:635:VAL:HG22	1.93	0.51
4:C:69:LYS:HE2	4:C:106:ASP:HB3	1.92	0.51
8:H:170:GLN:OE1	8:H:192:GLN:NE2	2.44	0.51
10:L:105:TRP:HB2	10:L:452:THR:HB	1.93	0.51
3:G:284:PRO:HD3	3:G:646:VAL:HB	1.93	0.51
1:F:391:LEU:HD23	1:F:401:ALA:HB1	1.93	0.51
1:F:429:ASN:ND2	3:G:128:ARG:O	2.42	0.51
4:C:114:LYS:NZ	4:C:532:GLU:OE1	2.39	0.51
5:B:101:THR:HA	5:B:129:CYS:HB3	1.93	0.51
7:J:27:HIS:NE2	8:H:79:ASP:OD2	2.42	0.51
8:H:284:LEU:O	8:H:288:SER:OG	2.27	0.51
9:A:75:PHE:O	9:A:79:ASP:HB2	2.11	0.51
11:M:252:PRO:HD2	11:M:257:VAL:HG21	1.92	0.51
3:G:414:ASP:OD1	3:G:414:ASP:N	2.44	0.50
12:N:136:SER:OG	12:N:217:LYS:NZ	2.44	0.50
4:C:77:LEU:HB3	4:C:137:TYR:HB3	1.92	0.50
7:J:106:VAL:HG11	10:L:606:LEU:HB3	1.93	0.50
3:G:138:ARG:NH1	6:I:162:ASP:OD2	2.44	0.50
5:B:61:LEU:HD11	5:B:110:ILE:HD11	1.91	0.50
2:E:105:ILE:HG21	2:E:153:LEU:HD13	1.92	0.50
3:G:860:VAL:HG12	3:G:907:GLU:HA	1.94	0.50
3:G:106:PRO:O	3:G:219:ARG:NH2	2.44	0.50
5:B:74:ALA:O	6:I:30:THR:OG1	2.27	0.50
12:N:119:LEU:HD22	12:N:253:VAL:HG11	1.92	0.50
12:N:421:GLY:HA2	12:N:424:TYR:CZ	2.46	0.50
6:I:23:HIS:O	8:H:45:ASN:ND2	2.34	0.50
8:H:14:THR:HG22	9:A:15:ALA:HB2	1.93	0.50
19:H:401:3PE:H351	19:A:201:3PE:H342	1.92	0.50
19:M:1004:3PE:H3H2	12:N:415:VAL:HG11	1.94	0.50
2:E:160:GLU:OE2	2:E:164:ARG:NH2	2.45	0.50
3:G:214:SER:O	6:I:79:LYS:NZ	2.44	0.50
12:N:177:VAL:HG22	12:N:203:LEU:HD12	1.93	0.50
3:G:613:ALA:HB1	3:G:617:GLU:HB2	1.93	0.49
8:H:36:GLU:OE2	8:H:286:ARG:NH1	2.45	0.49
11:M:83:ILE:HD12	11:M:132:LEU:HD21	1.94	0.49
5:B:217:PRO:HG3	6:I:144:LYS:HD2	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:182:GLU:OE1	1:F:184:THR:OG1	2.29	0.49
1:F:182:GLU:O	1:F:186:LEU:N	2.41	0.49
12:N:231:TYR:OH	12:N:247:LYS:NZ	2.45	0.49
12:N:281:ILE:O	12:N:285:ASN:ND2	2.41	0.49
3:G:5:THR:O	3:G:76:GLY:N	2.45	0.49
4:C:594:VAL:HG23	4:C:597:ASP:HB2	1.95	0.49
7:J:72:MET:HB3	8:H:143:LEU:HD11	1.93	0.49
10:L:516:ARG:HB3	10:L:519:VAL:HB	1.95	0.49
3:G:106:PRO:HD3	4:C:515:LEU:HD21	1.94	0.49
10:L:82:ASP:N	10:L:82:ASP:OD1	2.46	0.49
4:C:133:ASN:OD1	4:C:133:ASN:N	2.44	0.49
1:F:133:ARG:NH2	2:E:133:CYS:O	2.38	0.49
3:G:206:GLY:N	14:G:1001:SF4:S2	2.86	0.49
8:H:285:ILE:HG23	8:H:289:LEU:HD13	1.94	0.49
12:N:238:VAL:O	12:N:242:LEU:HD12	2.13	0.49
1:F:334:ASN:ND2	1:F:418:GLU:OE1	2.44	0.49
3:G:118:ASP:OD1	3:G:762:ASN:ND2	2.46	0.48
3:G:314:VAL:HG22	3:G:565:ALA:HB3	1.95	0.48
10:L:99:ILE:HG21	10:L:252:LEU:HG	1.94	0.48
4:C:344:GLN:NE2	4:C:348:ASP:OD1	2.46	0.48
13:K:43:ALA:HB1	13:K:62:TYR:HD1	1.78	0.48
1:F:136:TYR:HB3	1:F:139:ALA:HB3	1.94	0.48
3:G:852:LEU:HB3	3:G:854:VAL:HG22	1.95	0.48
10:L:381:VAL:HG11	10:L:461:LEU:HD23	1.94	0.48
13:K:36:GLU:HA	13:K:39:ILE:HG22	1.95	0.48
1:F:435:GLY:HA2	5:B:216:THR:HB	1.95	0.48
4:C:103:ILE:HG12	4:C:110:ASP:HB3	1.96	0.48
4:C:334:THR:HG23	8:H:44:GLN:HG2	1.95	0.48
1:F:307:LEU:HD23	1:F:308:PRO:HD2	1.95	0.48
4:C:82:GLU:OE1	4:C:88:ARG:NE	2.39	0.48
7:J:127:LYS:NZ	8:H:172:GLY:O	2.41	0.48
7:J:136:PRO:HB3	12:N:65:PRO:HG2	1.96	0.48
1:F:208:GLY:HA3	1:F:214:THR:HB	1.97	0.47
9:A:101:VAL:O	9:A:105:ILE:HG13	2.14	0.47
13:K:5:GLN:O	13:K:9:ILE:HG12	2.14	0.47
3:G:411:LYS:HA	3:G:411:LYS:HD3	1.71	0.47
11:M:71:TRP:HB2	11:M:79:ILE:HG13	1.96	0.47
10:L:396:PHE:O	10:L:400:ASP:HB2	2.14	0.47
1:F:63:GLY:O	16:F:503:NAI:H2N	2.13	0.47
1:F:252:PHE:HE1	1:F:328:ALA:HB2	1.79	0.47
3:G:379:VAL:HB	3:G:433:VAL:HG12	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:569:LEU:HD13	4:C:572:ILE:HD12	1.97	0.47
5:B:126:MET:HG3	5:B:160:PRO:HG2	1.95	0.47
10:L:82:ASP:OD2	10:L:268:ARG:NH1	2.42	0.47
11:M:489:SER:O	11:M:489:SER:OG	2.32	0.47
4:C:501:THR:HG23	4:C:521:GLN:HB3	1.96	0.47
8:H:245:ILE:HG23	8:H:282:PHE:HD2	1.78	0.47
10:L:83:GLY:O	10:L:87:THR:OG1	2.31	0.47
15:F:502:FMN:O2'	16:F:503:NAI:O2N	2.33	0.47
5:B:67:GLU:HG3	5:B:159:PRO:HB2	1.97	0.47
5:B:124:ILE:HG12	5:B:153:VAL:HB	1.95	0.47
8:H:11:ILE:HD13	9:A:11:ALA:HA	1.97	0.47
19:H:401:3PE:H261	19:A:201:3PE:H271	1.95	0.47
10:L:315:GLN:OE1	10:L:334:HIS:NE2	2.43	0.47
10:L:606:LEU:O	10:L:610:MET:HG2	2.15	0.47
5:B:199:SER:OG	5:B:202:GLU:OE1	2.32	0.47
6:I:80:ALA:HB2	6:I:90:GLU:HB2	1.96	0.47
3:G:320:PRO:HB2	3:G:537:SER:HB2	1.97	0.46
12:N:17:VAL:O	12:N:21:VAL:HG23	2.15	0.46
12:N:95:LEU:HD22	12:N:102:LYS:HB3	1.97	0.46
5:B:138:ILE:HG23	5:B:140:SER:H	1.81	0.46
1:F:356:PRO:HB2	1:F:396:THR:HG22	1.96	0.46
2:E:138:ASP:OD1	2:E:138:ASP:N	2.49	0.46
11:M:79:ILE:HA	11:M:138:LEU:HD22	1.98	0.46
19:M:1004:3PE:H2C1	19:M:1004:3PE:H3F2	1.97	0.46
12:N:180:GLN:HG2	12:N:203:LEU:HB2	1.98	0.46
3:G:617:GLU:HG2	3:G:638:PRO:HG3	1.98	0.46
7:J:99:LEU:HD21	10:L:600:ILE:HG13	1.97	0.46
4:C:281:CYS:HA	4:C:284:GLU:HB2	1.97	0.46
11:M:314:LEU:O	11:M:318:THR:HG23	2.16	0.46
11:M:415:PHE:HB2	11:M:422:THR:HG21	1.97	0.46
4:C:120:ASN:OD1	4:C:120:ASN:N	2.47	0.46
10:L:18:LEU:HD13	10:L:117:PHE:HB3	1.98	0.46
10:L:342:LYS:HA	10:L:342:LYS:HD3	1.73	0.46
10:L:353:ILE:HD12	10:L:353:ILE:HA	1.87	0.46
10:L:573:ALA:HB2	19:L:1302:3PE:H341	1.97	0.46
1:F:291:GLN:O	1:F:326:ALA:HA	2.16	0.45
3:G:365:THR:O	3:G:786:ARG:NH2	2.35	0.45
11:M:208:GLU:HA	11:M:211:LEU:HD12	1.98	0.45
12:N:51:SER:HA	12:N:54:PHE:HD2	1.81	0.45
2:E:123:ASP:OD1	2:E:123:ASP:N	2.43	0.45
3:G:267:ARG:HA	3:G:833:PHE:HZ	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:466:ALA:HB3	3:G:489:VAL:HG21	1.97	0.45
5:B:186:VAL:HG23	5:B:187:VAL:HG22	1.99	0.45
8:H:209:ARG:HD3	8:H:210:HIS:H	1.80	0.45
8:H:223:ASP:OD1	8:H:223:ASP:N	2.49	0.45
8:H:262:GLY:HA3	8:H:270:TRP:CD1	2.51	0.45
12:N:1:MET:HB2	12:N:65:PRO:HD3	1.97	0.45
12:N:445:PRO:O	12:N:447:ASN:ND2	2.49	0.45
2:E:43:VAL:HG21	2:E:58:ILE:HD11	1.99	0.45
2:E:166:LYS:HA	2:E:166:LYS:HD3	1.72	0.45
3:G:261:HIS:CD2	3:G:369:ARG:HD2	2.51	0.45
8:H:92:THR:O	8:H:96:LEU:HG	2.17	0.45
10:L:320:PHE:HA	10:L:323:LEU:HD12	1.99	0.45
1:F:94:MET:HE2	1:F:94:MET:HB3	1.81	0.45
11:M:176:ILE:HD11	12:N:423:TYR:HB2	1.98	0.45
12:N:315:ALA:HB2	12:N:407:LEU:HD11	1.96	0.45
1:F:298:ASP:HB3	1:F:410:SER:HB3	1.98	0.45
3:G:136:THR:HG23	3:G:151:ASN:HD21	1.81	0.45
3:G:833:PHE:O	3:G:837:MET:N	2.47	0.45
4:C:429:LEU:O	4:C:432:THR:OG1	2.30	0.45
9:A:40:ARG:HE	9:A:40:ARG:HB2	1.53	0.45
3:G:558:LEU:HD22	3:G:589:ALA:HB2	1.99	0.45
4:C:233:ILE:HG12	4:C:247:PRO:HA	1.98	0.45
10:L:388:ALA:HB2	10:L:399:LYS:HE3	1.99	0.45
1:F:384:LEU:HD22	1:F:408:LEU:HD21	1.99	0.45
4:C:337:PHE:HB3	5:B:74:ALA:HB2	1.98	0.45
13:K:34:GLY:O	13:K:38:MET:HG3	2.17	0.45
1:F:282:ARG:HB2	1:F:285:LEU:HD12	2.00	0.44
3:G:718:ARG:HD3	3:G:726:PRO:HG3	1.99	0.44
5:B:70:THR:O	5:B:73:THR:OG1	2.34	0.44
12:N:399:LEU:O	12:N:403:VAL:HG23	2.17	0.44
2:E:90:ARG:HE	2:E:90:ARG:HB2	1.69	0.44
3:G:611:SER:OG	3:G:646:VAL:O	2.33	0.44
6:I:51:THR:HG22	6:I:139:ILE:HD11	1.99	0.44
11:M:271:LEU:HA	11:M:275:SER:HB2	1.99	0.44
3:G:841:TYR:HB2	3:G:874:GLU:HG3	1.98	0.44
8:H:30:ALA:HB1	8:H:60:LEU:HD11	2.00	0.44
10:L:134:ASP:OD2	10:L:196:ASN:ND2	2.51	0.44
11:M:401:THR:HG23	11:M:475:LEU:HB3	1.98	0.44
3:G:179:ASP:OD1	3:G:179:ASP:N	2.51	0.44
8:H:179:ILE:HG21	8:H:255:LEU:HD23	1.99	0.44
1:F:348:ARG:NH2	2:E:93:ASP:OD2	2.41	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:281:MET:O	8:H:285:ILE:HG12	2.18	0.44
11:M:9:ILE:HD13	11:M:9:ILE:HA	1.86	0.44
11:M:361:GLN:NE2	11:M:464:GLU:HB3	2.33	0.44
12:N:343:VAL:O	12:N:347:MET:HG2	2.17	0.44
8:H:279:MET:O	8:H:283:ILE:HG12	2.18	0.44
12:N:421:GLY:HA2	12:N:424:TYR:CE2	2.53	0.44
3:G:253:ASN:OD1	3:G:260:ASN:ND2	2.51	0.44
3:G:304:ALA:HB1	3:G:593:MET:HE1	2.00	0.44
3:G:569:LEU:HD11	3:G:650:SER:HB3	2.00	0.44
4:C:569:LEU:HD21	4:C:593:PHE:CD2	2.53	0.44
11:M:318:THR:O	11:M:322:HIS:ND1	2.51	0.44
1:F:102:ARG:O	1:F:106:GLU:HB2	2.18	0.43
3:G:97:LEU:HD22	3:G:154:ILE:HB	2.00	0.43
7:J:102:ILE:HA	7:J:105:VAL:HG22	2.00	0.43
3:G:348:GLN:NE2	3:G:548:GLY:O	2.41	0.43
7:J:15:ALA:O	7:J:19:VAL:HG23	2.19	0.43
3:G:626:GLU:OE1	3:G:786:ARG:NH1	2.47	0.43
10:L:551:LYS:HD3	10:L:551:LYS:HA	1.65	0.43
11:M:404:PHE:O	11:M:408:PHE:HB2	2.17	0.43
11:M:432:ALA:HA	11:M:435:TYR:CE2	2.53	0.43
3:G:247:GLU:HG3	3:G:249:ARG:HE	1.84	0.43
3:G:328:PHE:O	3:G:332:GLU:HG2	2.19	0.43
5:B:4:THR:HG23	5:B:194:ARG:HG3	2.00	0.43
7:J:143:LEU:HD11	12:N:14:LEU:HD21	2.00	0.43
19:L:1302:3PE:H3G1	19:L:1302:3PE:H2I3	2.00	0.43
11:M:474:LEU:HD22	20:M:1002:LFA:H41	1.99	0.43
3:G:772:ASP:HB3	3:G:779:ARG:HA	2.01	0.43
7:J:81:ILE:HD11	13:K:26:ARG:HG3	2.01	0.43
8:H:295:ASP:N	8:H:295:ASP:OD1	2.52	0.43
11:M:232:ALA:HB1	11:M:237:VAL:HB	2.01	0.43
10:L:1:MET:HE1	10:L:81:LEU:HD22	2.00	0.43
13:K:4:LEU:HD12	13:K:48:VAL:HG12	2.01	0.43
1:F:150:ALA:HB1	1:F:155:LEU:HB2	2.01	0.43
1:F:291:GLN:NE2	1:F:297:THR:O	2.45	0.43
4:C:351:GLU:HB3	6:I:41:PRO:HG3	1.99	0.43
9:A:80:VAL:HA	9:A:83:LEU:HD23	2.01	0.43
1:F:308:PRO:O	1:F:313:SER:OG	2.26	0.43
3:G:267:ARG:HB2	3:G:820:LEU:HG	2.00	0.43
3:G:399:VAL:HG13	3:G:428:LYS:HB3	2.00	0.43
4:C:324:SER:HB2	4:C:336:VAL:HA	2.01	0.43
11:M:222:LEU:HD21	19:M:1003:3PE:H321	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:N:125:LEU:HD13	12:N:174:MET:HB3	2.01	0.43
3:G:328:PHE:CG	3:G:678:VAL:HG22	2.54	0.43
3:G:558:LEU:HD21	3:G:566:VAL:HB	2.00	0.43
3:G:902:LEU:HD12	3:G:902:LEU:HA	1.88	0.43
5:B:201:ARG:NH2	6:I:129:ASP:OD1	2.52	0.43
9:A:91:SER:O	9:A:91:SER:OG	2.33	0.43
12:N:139:LEU:HD22	12:N:242:LEU:HG	2.00	0.43
12:N:412:GLY:HA3	20:N:601:LFA:H42	2.00	0.43
12:N:424:TYR:HA	12:N:427:ARG:HD3	2.00	0.43
4:C:274:ARG:NH2	5:B:158:CYS:SG	2.88	0.43
7:J:38:ALA:O	7:J:42:VAL:HG23	2.19	0.43
12:N:367:TRP:NE1	12:N:434:LEU:O	2.43	0.43
12:N:288:ALA:HB1	12:N:297:LEU:HD12	2.01	0.42
1:F:85:ARG:HG2	1:F:213:PRO:HB2	2.02	0.42
2:E:65:PRO:HB3	3:G:170:THR:HB	2.01	0.42
3:G:232:GLN:HB2	14:G:1003:SF4:S3	2.59	0.42
10:L:425:THR:HA	10:L:428:TYR:CE2	2.54	0.42
10:L:431:ARG:HG3	10:L:512:TRP:CE2	2.54	0.42
4:C:122:LEU:HD22	4:C:147:ILE:HG12	2.01	0.42
9:A:116:TYR:O	9:A:120:ILE:HG12	2.18	0.42
11:M:291:MET:HB3	11:M:421:ILE:HG13	2.00	0.42
2:E:45:LYS:HB2	2:E:45:LYS:HE2	1.82	0.42
1:F:188:ASN:ND2	1:F:196:ASN:O	2.37	0.42
8:H:13:LEU:O	8:H:17:LYS:HG3	2.19	0.42
11:M:306:PHE:O	11:M:442:ARG:NH2	2.38	0.42
12:N:217:LYS:HD3	12:N:217:LYS:HA	1.77	0.42
1:F:178:TYR:OH	16:F:503:NAI:H5N	2.20	0.42
5:B:48:TRP:HA	5:B:51:LYS:HE3	2.01	0.42
19:L:1302:3PE:H322	11:M:173:LYS:HA	2.01	0.42
1:F:104:LEU:HD23	1:F:104:LEU:HA	1.94	0.42
3:G:465:HIS:HA	3:G:471:ALA:HB3	2.01	0.42
10:L:98:LEU:HD22	10:L:456:PRO:HA	2.00	0.42
10:L:380:LEU:HD23	10:L:380:LEU:HA	1.91	0.42
12:N:310:LEU:HD12	12:N:313:LEU:HD23	2.02	0.42
2:E:105:ILE:HG23	2:E:158:ILE:HD11	2.02	0.42
5:B:180:ARG:HB2	5:B:193:TYR:HB2	2.01	0.42
3:G:307:ILE:HG21	3:G:591:LEU:HD13	2.01	0.42
3:G:812:TRP:HB3	3:G:884:VAL:HG13	2.01	0.42
5:B:68:MET:O	5:B:71:SER:OG	2.25	0.42
5:B:216:THR:OG1	5:B:218:ASP:OD1	2.26	0.42
11:M:191:ALA:HB3	11:M:223:LEU:HD21	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:M:259:LEU:HD11	11:M:357:ILE:HD11	2.00	0.42
3:G:117:GLN:HG2	4:C:516:ILE:HG12	2.02	0.41
3:G:227:PRO:HD3	3:G:754:PRO:HB3	2.02	0.41
5:B:69:VAL:HA	5:B:72:PHE:HD1	1.85	0.41
8:H:307:PRO:HA	8:H:310:LEU:HD12	2.01	0.41
12:N:207:PHE:O	12:N:211:ILE:HG13	2.20	0.41
6:I:48:ILE:HB	6:I:96:PHE:HZ	1.84	0.41
10:L:427:LEU:HD23	10:L:427:LEU:HA	1.91	0.41
11:M:263:LEU:HD23	11:M:263:LEU:HA	1.84	0.41
2:E:98:HIS:HA	2:E:102:TYR:HD1	1.85	0.41
3:G:11:LYS:HA	3:G:11:LYS:HD2	1.85	0.41
11:M:83:ILE:HG12	11:M:88:LEU:HB2	2.03	0.41
8:H:117:LEU:O	8:H:121:MET:HG3	2.21	0.41
8:H:271:PHE:O	8:H:275:THR:OG1	2.33	0.41
10:L:377:LEU:HA	10:L:380:LEU:HB2	2.02	0.41
11:M:475:LEU:HD23	11:M:475:LEU:HA	1.92	0.41
4:C:334:THR:OG1	8:H:287:ALA:O	2.38	0.41
8:H:320:ILE:HD12	8:H:320:ILE:HA	1.85	0.41
10:L:230:SER:HB3	10:L:316:ILE:HG21	2.03	0.41
3:G:118:ASP:OD2	3:G:762:ASN:N	2.49	0.41
4:C:74:LEU:HA	4:C:102:LEU:HD23	2.03	0.41
10:L:354:LEU:HD23	10:L:354:LEU:HA	1.91	0.41
12:N:255:MET:HG3	12:N:326:VAL:HG11	2.03	0.41
1:F:100:LYS:HB3	1:F:261:LEU:HD11	2.03	0.41
1:F:395:LYS:HE3	3:G:65:LEU:HD12	2.03	0.41
3:G:369:ARG:NH2	3:G:775:GLY:O	2.39	0.41
11:M:219:VAL:HG23	19:M:1004:3PE:H252	2.02	0.41
1:F:36:GLU:OE2	1:F:39:ARG:NE	2.42	0.41
3:G:856:ALA:HB2	3:G:875:ILE:HG12	2.02	0.41
4:C:262:ARG:HH12	5:B:137:ASP:HB3	1.86	0.41
8:H:178:ASP:OD1	8:H:178:ASP:N	2.54	0.41
1:F:133:ARG:HG3	1:F:135:GLU:H	1.86	0.41
3:G:114:CYS:HB3	3:G:117:GLN:HB2	2.03	0.41
9:A:80:VAL:O	9:A:83:LEU:HG	2.21	0.41
10:L:67:TRP:H	10:L:76:GLY:HA2	1.86	0.41
10:L:458:ILE:HD13	10:L:461:LEU:HD12	2.03	0.41
11:M:144:GLU:OE2	11:M:182:GLY:HA3	2.21	0.41
12:N:265:ASP:OD1	12:N:265:ASP:N	2.54	0.41
4:C:226:SER:HB3	4:C:228:HIS:ND1	2.36	0.41
7:J:54:LEU:HD13	9:A:83:LEU:HD13	2.03	0.41
7:J:104:LEU:HD22	13:K:16:VAL:HG21	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:L:170:ALA:HA	10:L:238:TRP:HB2	2.03	0.41
1:F:64:GLY:O	16:F:503:NAI:O3D	2.35	0.40
4:C:123:HIS:HA	4:C:148:THR:O	2.21	0.40
10:L:234:PRO:O	10:L:545:TYR:OH	2.33	0.40
10:L:236:GLN:HG3	10:L:313:MET:HE1	2.02	0.40
10:L:280:LEU:HD12	10:L:280:LEU:HA	1.96	0.40
1:F:106:GLU:O	1:F:142:ASN:ND2	2.53	0.40
3:G:233:CYS:SG	3:G:234:SER:N	2.94	0.40
5:B:62:SER:HB3	5:B:63:CYS:H	1.76	0.40
5:B:125:SER:HB2	5:B:151:VAL:HG11	2.03	0.40
11:M:20:THR:HG21	11:M:31:ILE:HG13	2.02	0.40
1:F:287:PHE:HZ	1:F:290:TRP:HB3	1.87	0.40
10:L:102:TYR:CD1	10:L:347:LEU:HD22	2.57	0.40
10:L:440:LYS:HD3	10:L:440:LYS:HA	1.94	0.40
12:N:52:LEU:HD23	12:N:52:LEU:HA	1.96	0.40
12:N:143:VAL:O	12:N:152:SER:OG	2.36	0.40
12:N:330:LEU:HD23	12:N:330:LEU:HA	1.94	0.40
1:F:386:GLN:HE22	3:G:129:ARG:HH22	1.69	0.40
7:J:138:VAL:O	7:J:142:GLU:HG2	2.22	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%)	431 (99%)	6 (1%)	0	100	100
2	E	154/166 (93%)	150 (97%)	4 (3%)	0	100	100
3	G	903/908 (99%)	873 (97%)	28 (3%)	2 (0%)	47	79
4	C	583/596 (98%)	571 (98%)	12 (2%)	0	100	100
5	B	192/220 (87%)	187 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	I	178/180 (99%)	173 (97%)	5 (3%)	0	100	100
7	J	160/184 (87%)	157 (98%)	3 (2%)	0	100	100
8	H	310/325 (95%)	303 (98%)	7 (2%)	0	100	100
9	A	97/147 (66%)	97 (100%)	0	0	100	100
10	L	601/613 (98%)	586 (98%)	15 (2%)	0	100	100
11	M	502/509 (99%)	492 (98%)	10 (2%)	0	100	100
12	N	464/485 (96%)	457 (98%)	6 (1%)	1 (0%)	47	79
13	K	98/100 (98%)	97 (99%)	1 (1%)	0	100	100
All	All	4679/4878 (96%)	4574 (98%)	102 (2%)	3 (0%)	54	83

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	G	261	HIS
3	G	669	THR
12	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%)	345 (98%)	8 (2%)	50	77
2	E	129/139 (93%)	128 (99%)	1 (1%)	81	92
3	G	733/736 (100%)	720 (98%)	13 (2%)	59	82
4	C	505/515 (98%)	500 (99%)	5 (1%)	76	90
5	B	171/192 (89%)	169 (99%)	2 (1%)	71	88
6	I	154/154 (100%)	152 (99%)	2 (1%)	69	87
7	J	128/146 (88%)	120 (94%)	8 (6%)	18	48
8	H	260/269 (97%)	256 (98%)	4 (2%)	65	85
9	A	79/119 (66%)	77 (98%)	2 (2%)	47	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
10	L	480/485 (99%)	473 (98%)	7 (2%)	65 85
11	M	413/418 (99%)	403 (98%)	10 (2%)	49 76
12	N	374/385 (97%)	369 (99%)	5 (1%)	69 87
13	K	79/79 (100%)	76 (96%)	3 (4%)	33 66
All	All	3858/3996 (96%)	3788 (98%)	70 (2%)	61 82

All (70) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	126	TYR
1	F	186	LEU
1	F	252	PHE
1	F	261	LEU
1	F	298	ASP
1	F	357	CYS
1	F	373	ARG
1	F	398	CYS
2	E	132	CYS
3	G	64	ARG
3	G	135	ARG
3	G	172	LEU
3	G	218	ASN
3	G	233	CYS
3	G	265	CYS
3	G	369	ARG
3	G	536	ARG
3	G	631	ARG
3	G	656	SER
3	G	676	ASP
3	G	750	ARG
3	G	762	ASN
4	C	22	ASP
4	C	110	ASP
4	C	119	GLU
4	C	127	PHE
4	C	462	ASP
5	B	68	MET
5	B	178	LYS
6	I	28	ARG
6	I	83	LYS
7	J	3	PHE

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Mol	Chain	Res	Type
7	J	10	LEU
7	J	40	SER
7	J	59	TYR
7	J	69	PHE
7	J	103	MET
7	J	109	TYR
7	J	127	LYS
8	H	107	TRP
8	H	232	MET
8	H	286	ARG
8	H	295	ASP
9	A	65	SER
9	A	79	ASP
10	L	123	PHE
10	L	241	ASP
10	L	342	LYS
10	L	359	GLU
10	L	490	MET
10	L	515	LYS
10	L	613	ARG
11	M	45	GLN
11	M	74	ARG
11	M	80	HIS
11	M	146	MET
11	M	212	ASN
11	M	234	LYS
11	M	279	PHE
11	M	310	ASP
11	M	435	TYR
11	M	489	SER
12	N	72	PHE
12	N	100	ASP
12	N	207	PHE
12	N	242	LEU
12	N	397	TYR
13	K	29	LEU
13	K	46	PHE
13	K	67	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	238	ASN
3	G	296	ASN
3	G	299	GLN
11	M	113	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 23 ligands modelled in this entry, 1 is monoatomic - leaving 22 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	$\#\|Z\| > 2$
20	LFA	N	601	-	13,13,19	0.14	0	12,12,18	0.12	0
15	FMN	F	502	-	33,33,33	1.05	2 (6%)	48,50,50	1.25	7 (14%)
14	SF4	B	301	5	0,12,12	-	-	-		
20	LFA	M	1002	-	19,19,19	0.15	0	18,18,18	0.10	0
20	LFA	H	402	-	19,19,19	0.16	0	18,18,18	0.13	0
17	FES	G	1004	3	0,4,4	-	-	-		
19	3PE	M	1003	-	50,50,50	0.30	0	53,55,55	0.27	0
14	SF4	G	1003	3	0,12,12	-	-	-		
19	3PE	A	201	-	50,50,50	0.30	0	53,55,55	0.26	0
17	FES	E	201	2	0,4,4	-	-	-		
19	3PE	M	1004	-	50,50,50	0.30	0	53,55,55	0.27	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
14	SF4	G	1001	3	0,12,12	-	-	-		
14	SF4	G	1002	3	0,12,12	-	-	-		
19	3PE	H	401	-	50,50,50	0.31	0	53,55,55	0.28	0
19	3PE	N	602	-	50,50,50	0.30	0	53,55,55	0.30	0
16	NAI	F	503	-	42,48,48	0.51	0	47,73,73	0.54	1 (2%)
19	3PE	L	1301	-	48,48,50	0.31	0	51,53,55	0.30	0
14	SF4	F	501	1	0,12,12	-	-	-		
14	SF4	I	201	6	0,12,12	-	-	-		
19	3PE	L	1302	-	50,50,50	0.30	0	53,55,55	0.28	0
14	SF4	I	202	6	0,12,12	-	-	-		
19	3PE	M	1001	-	50,50,50	0.30	0	53,55,55	0.29	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
20	LFA	N	601	-	-	0/11/11/17	-
15	FMN	F	502	-	-	9/18/18/18	0/3/3/3
14	SF4	B	301	5	-	-	0/6/5/5
20	LFA	M	1002	-	-	0/17/17/17	-
20	LFA	H	402	-	-	1/17/17/17	-
17	FES	G	1004	3	-	-	0/1/1/1
19	3PE	M	1003	-	-	9/54/54/54	-
19	3PE	A	201	-	-	12/54/54/54	-
14	SF4	G	1003	3	-	-	0/6/5/5
19	3PE	M	1004	-	-	12/54/54/54	-
17	FES	E	201	2	-	-	0/1/1/1
14	SF4	G	1001	3	-	-	0/6/5/5
14	SF4	G	1002	3	-	-	0/6/5/5
19	3PE	H	401	-	-	5/54/54/54	-
19	3PE	N	602	-	-	9/54/54/54	-
16	NAI	F	503	-	-	5/25/72/72	0/5/5/5
19	3PE	L	1301	-	-	13/52/52/54	-
14	SF4	F	501	1	-	-	0/6/5/5
14	SF4	I	201	6	-	-	0/6/5/5
19	3PE	L	1302	-	-	13/54/54/54	-
14	SF4	I	202	6	-	-	0/6/5/5
19	3PE	M	1001	-	-	5/54/54/54	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	F	502	FMN	C4A-N5	3.71	1.38	1.30
15	F	502	FMN	C10-N1	2.13	1.37	1.33

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	F	502	FMN	C4-N3-C2	-3.18	119.76	125.64
15	F	502	FMN	C4A-C10-N10	2.91	120.74	116.48
15	F	502	FMN	C4A-C4-N3	2.64	119.90	113.19
15	F	502	FMN	O4-C4-C4A	-2.48	120.02	126.60
15	F	502	FMN	C10-C4A-N5	-2.33	119.91	124.86
16	F	503	NAI	C5A-C6A-N6A	2.29	123.83	120.35
15	F	502	FMN	C4A-C10-N1	-2.23	119.55	124.73
15	F	502	FMN	C9A-C5A-N5	-2.05	120.21	122.43

There are no chirality outliers.

All (93) 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	C1'-C2'-C3'-C4'
15	F	502	FMN	C5'-O5'-P-O2P
15	F	502	FMN	C5'-O5'-P-O3P
19	H	401	3PE	C11-O13-P-O12
19	H	401	3PE	C11-O13-P-O14
19	A	201	3PE	C1-O11-P-O12
19	A	201	3PE	C1-O11-P-O13
19	A	201	3PE	C1-O11-P-O14
19	A	201	3PE	C11-O13-P-O12
19	A	201	3PE	C11-O13-P-O14
19	A	201	3PE	O13-C11-C12-N
19	L	1301	3PE	C1-O11-P-O14
19	L	1302	3PE	C1-O11-P-O12
19	L	1302	3PE	C1-O11-P-O13
19	L	1302	3PE	C1-O11-P-O14
19	L	1302	3PE	C11-O13-P-O11
19	L	1302	3PE	C11-O13-P-O12
19	L	1302	3PE	C11-O13-P-O14
19	M	1001	3PE	C11-O13-P-O14
19	M	1003	3PE	O13-C11-C12-N

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Mol	Chain	Res	Type	Atoms
19	M	1004	3PE	C1-O11-P-O12
19	M	1004	3PE	C11-O13-P-O12
19	M	1004	3PE	C11-O13-P-O14
19	M	1004	3PE	O13-C11-C12-N
19	N	602	3PE	C11-O13-P-O11
19	N	602	3PE	C11-O13-P-O14
19	N	602	3PE	O13-C11-C12-N
19	H	401	3PE	C11-O13-P-O11
19	A	201	3PE	C11-O13-P-O11
19	L	1301	3PE	C11-O13-P-O11
19	M	1001	3PE	C11-O13-P-O11
19	M	1003	3PE	C1-O11-P-O13
19	M	1004	3PE	C11-O13-P-O11
19	N	602	3PE	C1-O11-P-O13
19	M	1004	3PE	C3E-C3F-C3G-C3H
19	M	1004	3PE	C26-C27-C28-C29
19	N	602	3PE	C25-C26-C27-C28
19	L	1302	3PE	C2A-C2B-C2C-C2D
19	L	1302	3PE	C3B-C3C-C3D-C3E
20	H	402	LFA	C14-C15-C16-C17
15	F	502	FMN	O2'-C2'-C3'-C4'
19	L	1301	3PE	C1-O11-P-O13
15	F	502	FMN	C5'-O5'-P-O1P
19	A	201	3PE	O21-C21-C22-C23
19	A	201	3PE	C2-C1-O11-P
19	M	1004	3PE	C2-C1-O11-P
15	F	502	FMN	O2'-C2'-C3'-O3'
19	L	1302	3PE	C25-C26-C27-C28
19	M	1004	3PE	C21-C22-C23-C24
19	M	1004	3PE	C1-O11-P-O13
19	M	1003	3PE	C23-C24-C25-C26
19	L	1301	3PE	C2-C1-O11-P
19	M	1003	3PE	C2-C1-O11-P
19	L	1301	3PE	C1-O11-P-O12
19	L	1301	3PE	C11-O13-P-O14
19	M	1001	3PE	C11-O13-P-O12
19	M	1003	3PE	C1-O11-P-O14
19	M	1004	3PE	C1-O11-P-O14
19	N	602	3PE	C1-O11-P-O12
19	N	602	3PE	C1-O11-P-O14
19	L	1301	3PE	O11-C1-C2-C3
19	L	1301	3PE	O11-C1-C2-O21

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Mol	Chain	Res	Type	Atoms
19	N	602	3PE	O11-C1-C2-O21
19	L	1301	3PE	C37-C38-C39-C3A
19	M	1003	3PE	C11-O13-P-O11
16	F	503	NAI	C2D-C1D-N1N-C2N
16	F	503	NAI	O4D-C1D-N1N-C2N
19	M	1003	3PE	C35-C36-C37-C38
16	F	503	NAI	C2D-C1D-N1N-C6N
19	L	1301	3PE	O21-C2-C3-O31
19	H	401	3PE	C21-C22-C23-C24
19	L	1302	3PE	C23-C24-C25-C26
19	N	602	3PE	O21-C21-C22-C23
19	A	201	3PE	O22-C21-C22-C23
19	L	1302	3PE	C2F-C2G-C2H-C2I
19	L	1302	3PE	O21-C2-C3-O31
19	A	201	3PE	C23-C24-C25-C26
16	F	503	NAI	O4D-C1D-N1N-C6N
19	L	1301	3PE	C3A-C3B-C3C-C3D
19	M	1001	3PE	O31-C31-C32-C33
19	L	1302	3PE	C1-C2-C3-O31
19	M	1004	3PE	C2F-C2G-C2H-C2I
19	M	1003	3PE	C24-C25-C26-C27
19	M	1001	3PE	O32-C31-C32-C33
16	F	503	NAI	C5B-O5B-PA-O1A
19	M	1003	3PE	C11-O13-P-O14
19	A	201	3PE	C34-C35-C36-C37
15	F	502	FMN	C1'-C2'-C3'-O3'
19	L	1301	3PE	O21-C21-C22-C23
19	L	1301	3PE	O22-C21-C22-C23
19	H	401	3PE	C22-C23-C24-C25

There are no ring outliers.

12 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
20	N	601	LFA	1	0
15	F	502	FMN	2	0
20	M	1002	LFA	1	0
19	M	1003	3PE	1	0
14	G	1003	SF4	1	0
19	A	201	3PE	4	0
19	M	1004	3PE	3	0
14	G	1001	SF4	1	0

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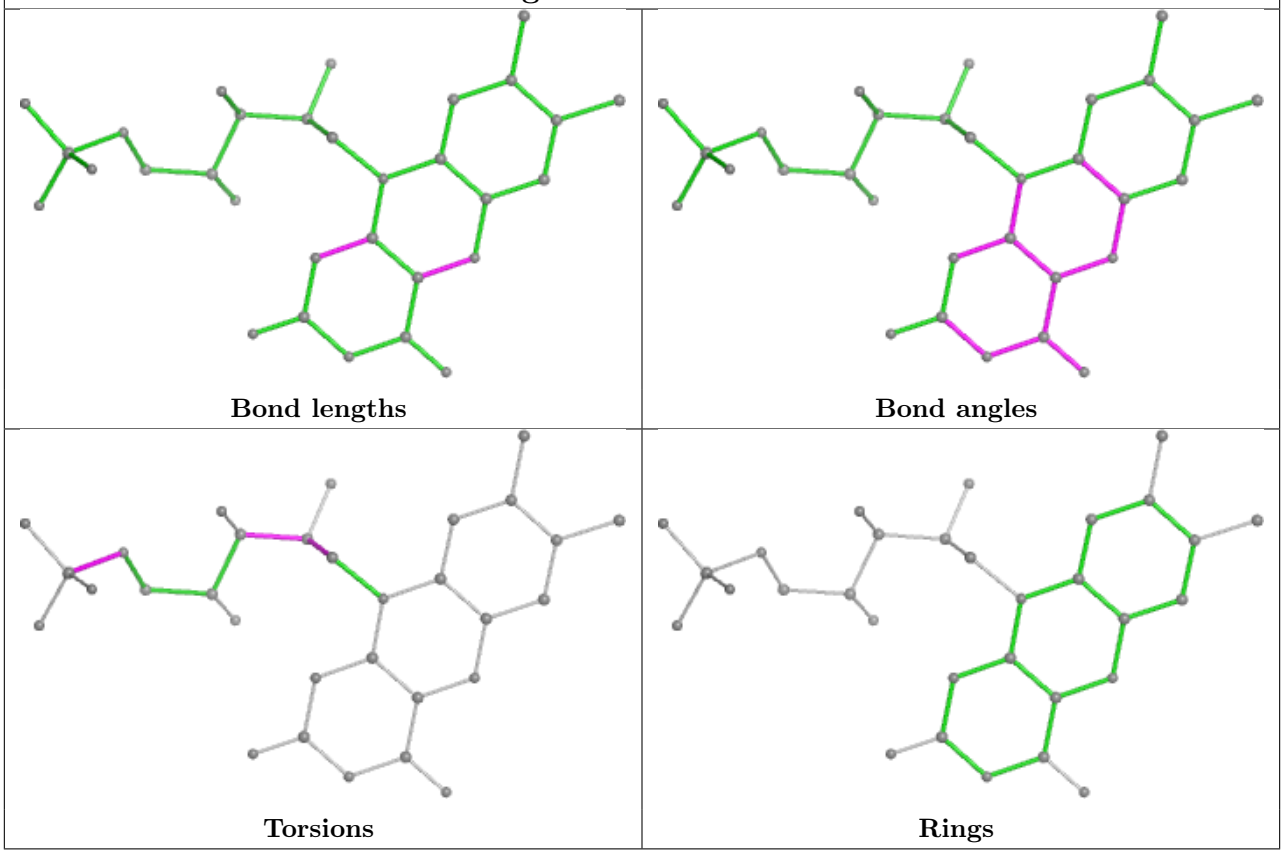
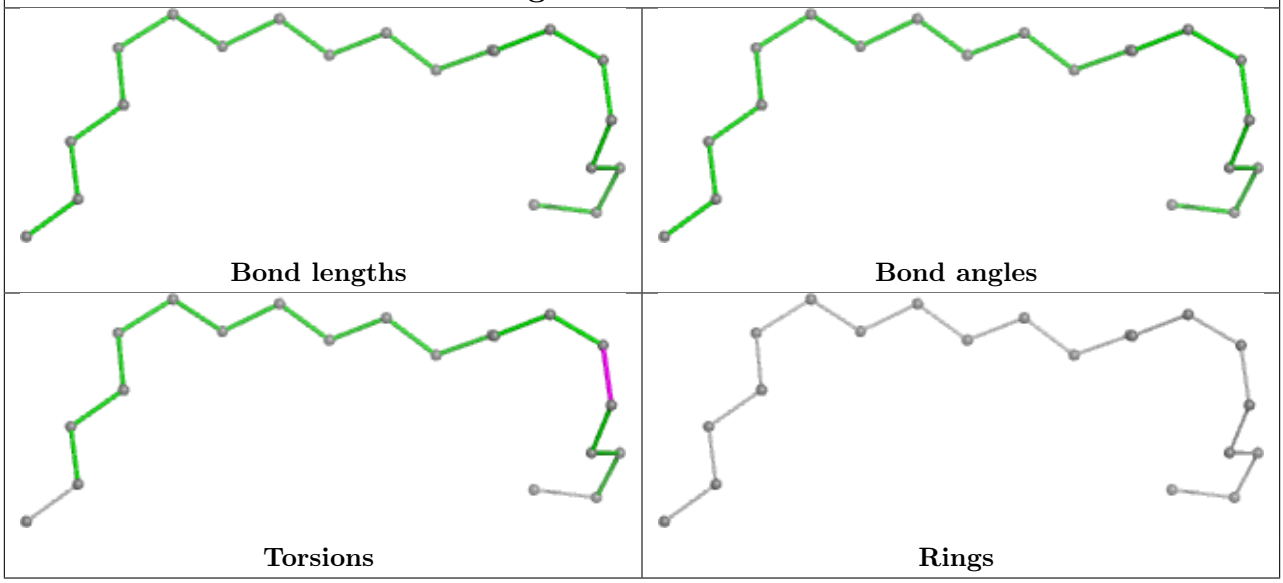
Mol	Chain	Res	Type	Clashes	Symm-Clashes
19	H	401	3PE	7	0
19	N	602	3PE	1	0
16	F	503	NAI	6	0
19	L	1302	3PE	4	0

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.

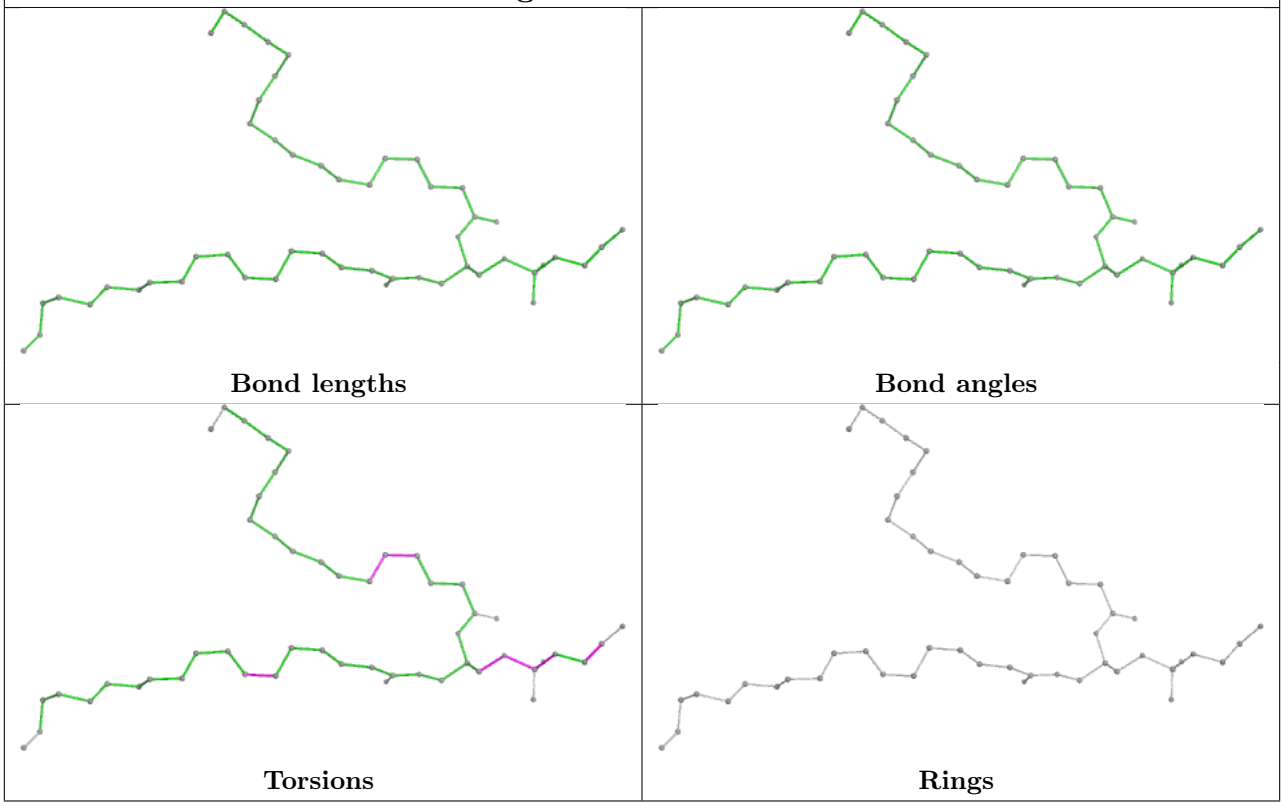
Ligand FMN F 502



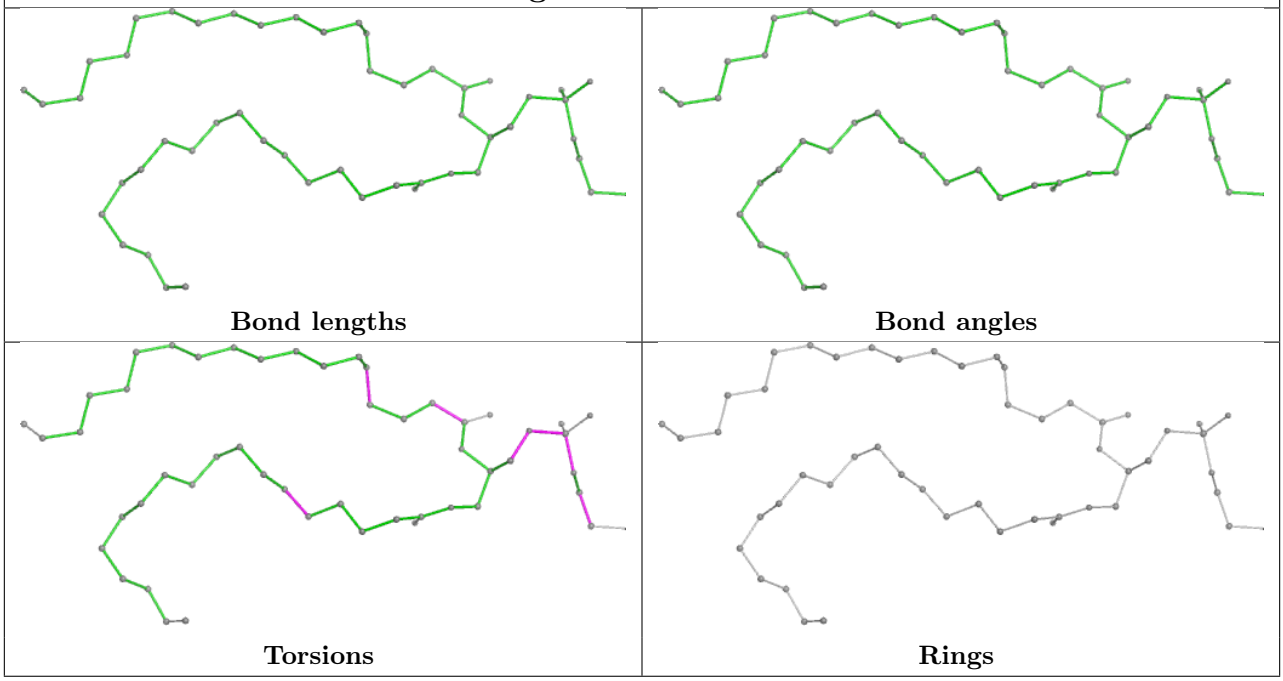
Ligand LFA H 402



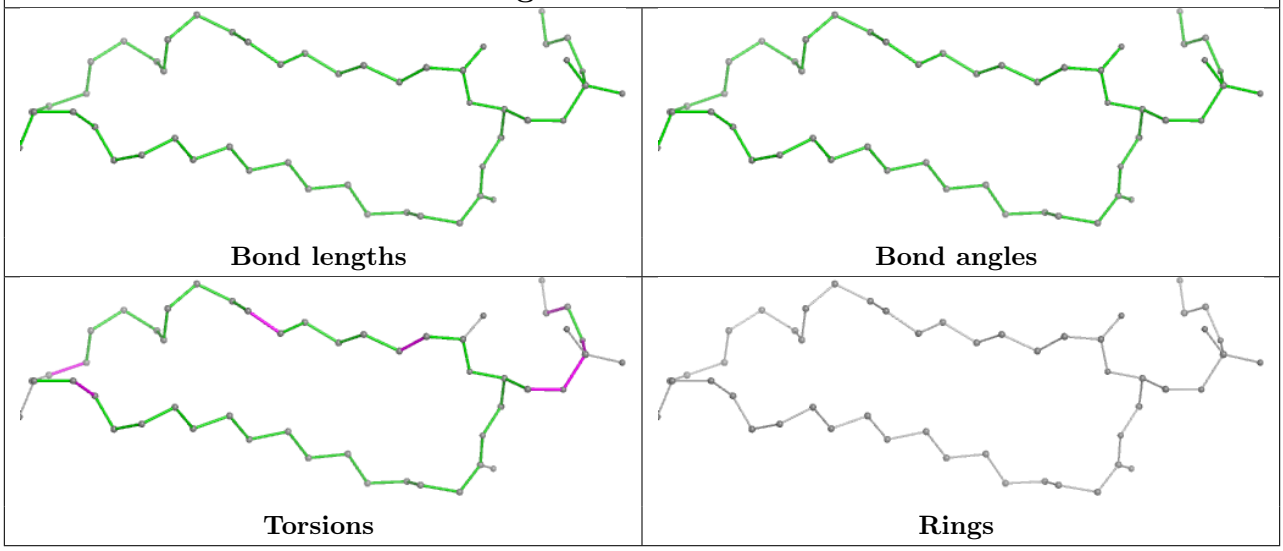
Ligand 3PE M 1003



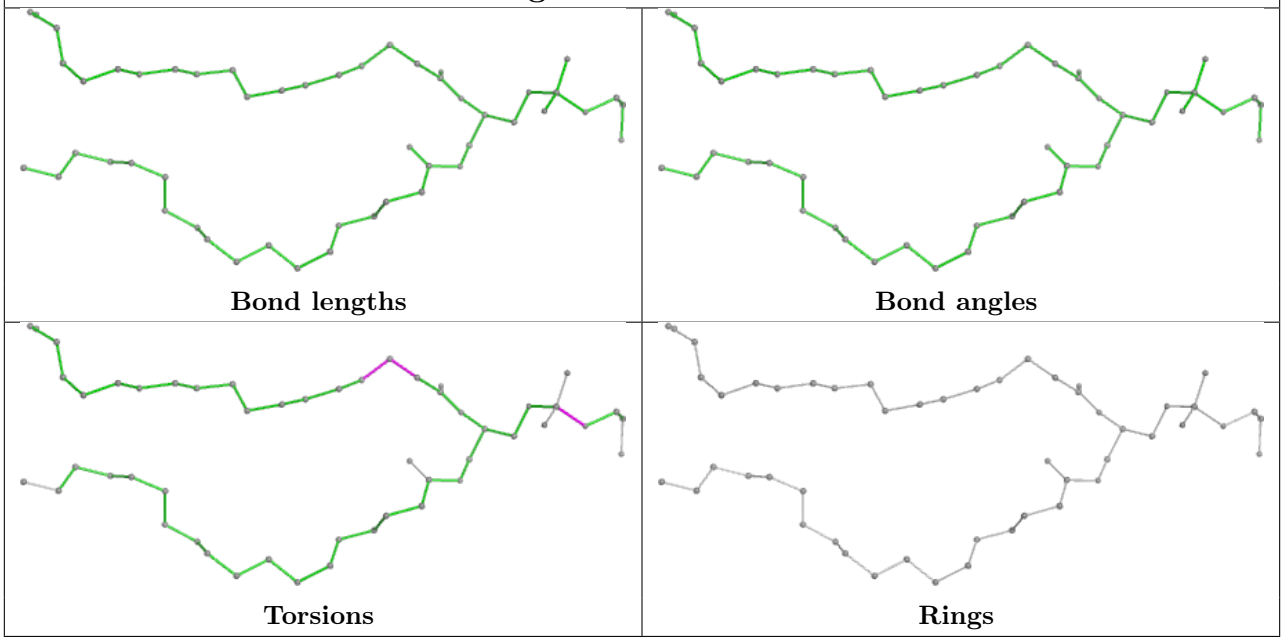
Ligand 3PE A 201



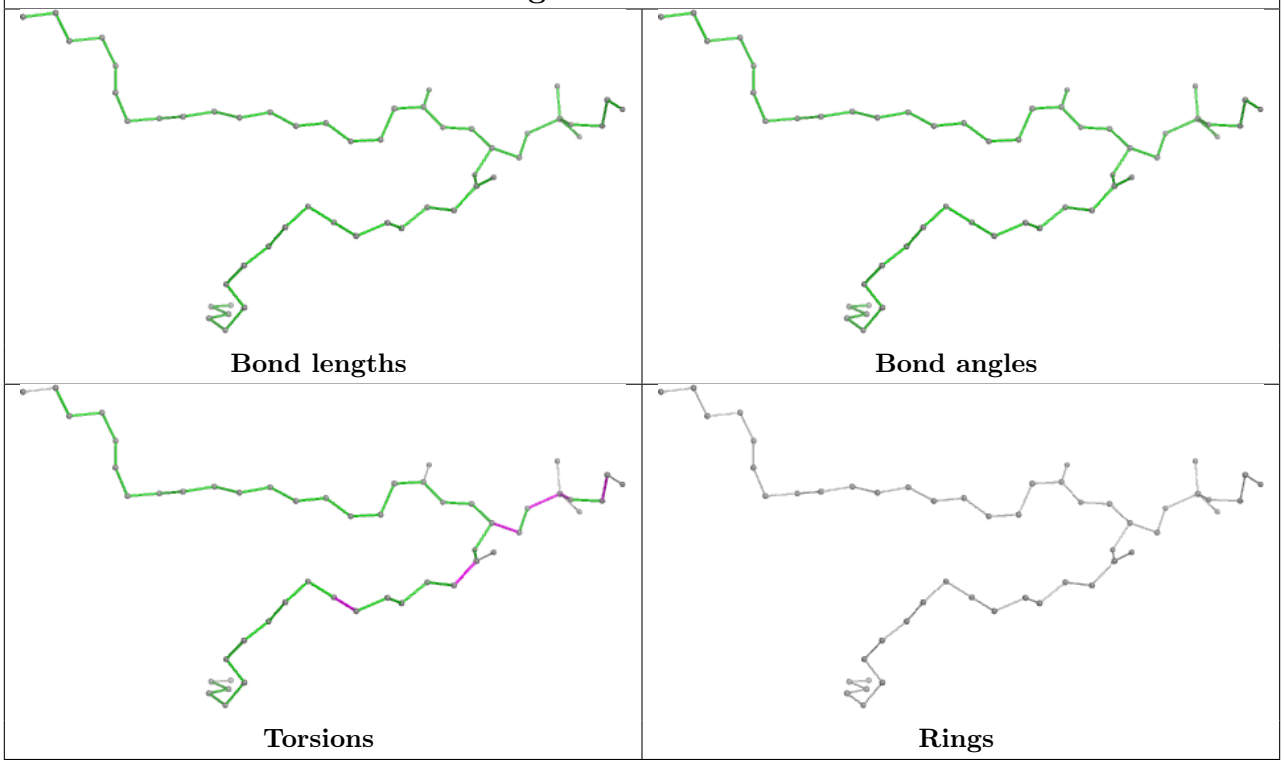
Ligand 3PE M 1004



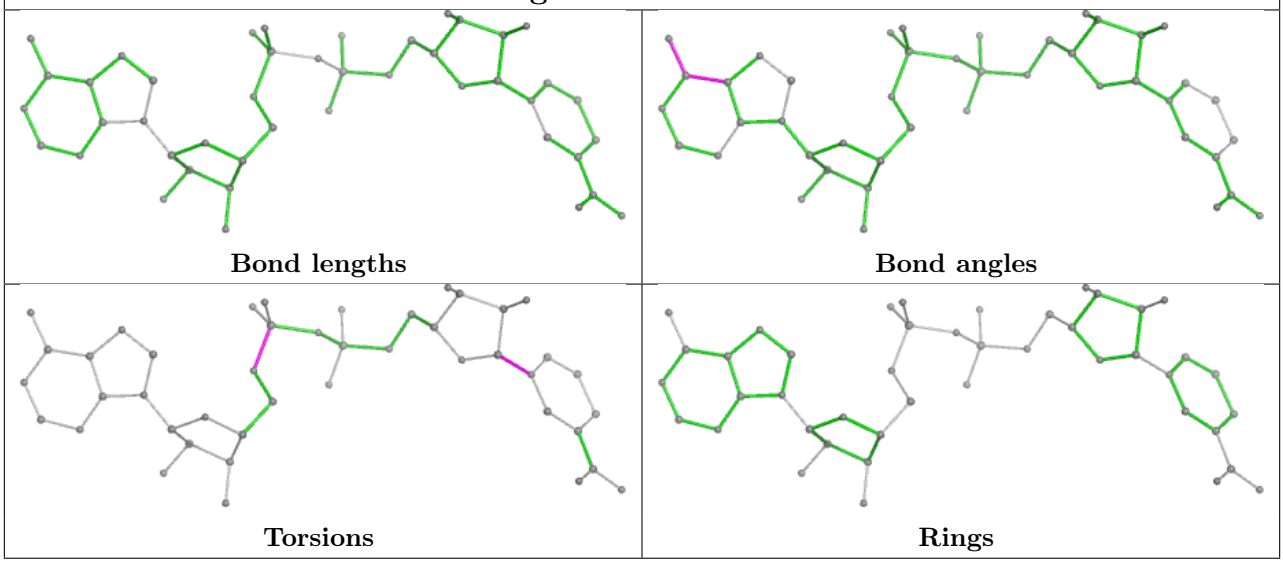
Ligand 3PE H 401



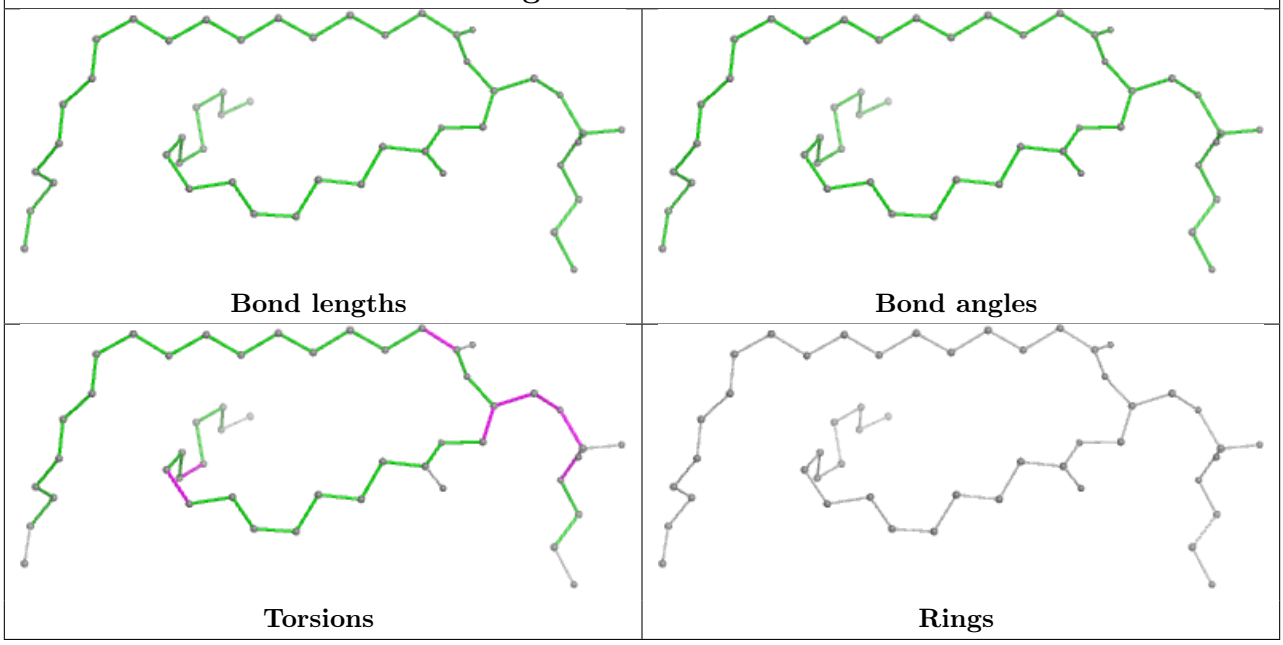
Ligand 3PE N 602



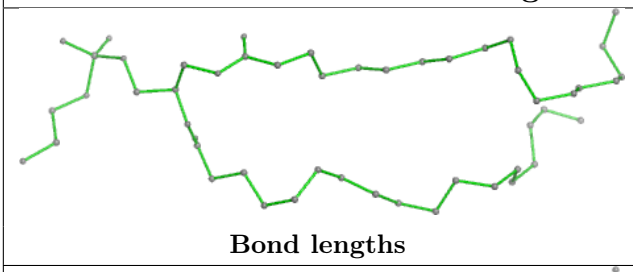
Ligand NAI F 503



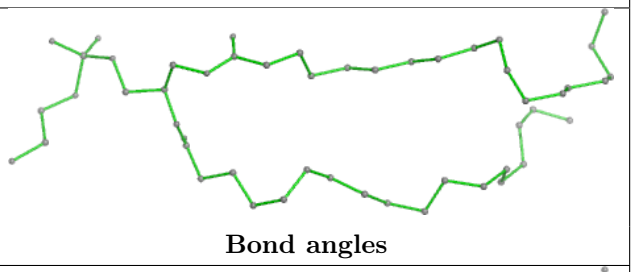
Ligand 3PE L 1301



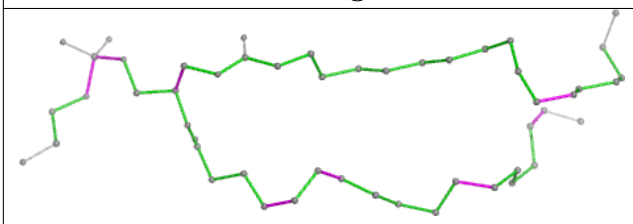
Ligand 3PE L 1302



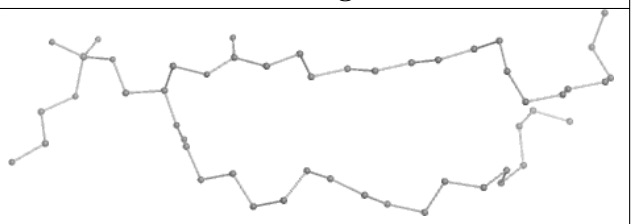
Bond lengths



Bond angles

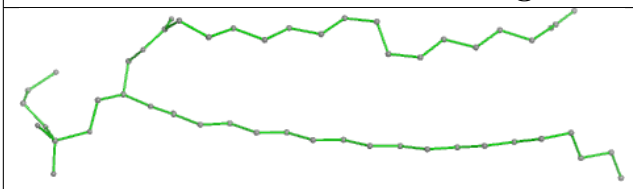


Torsions

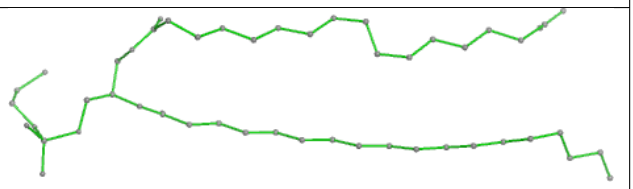


Rings

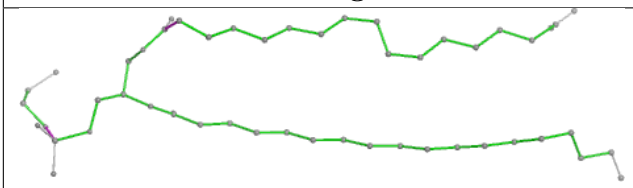
Ligand 3PE M 1001



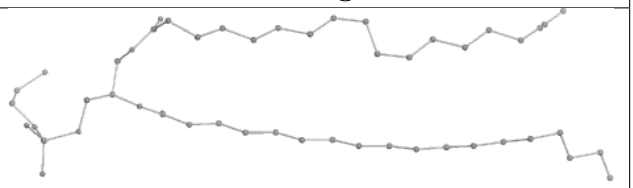
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

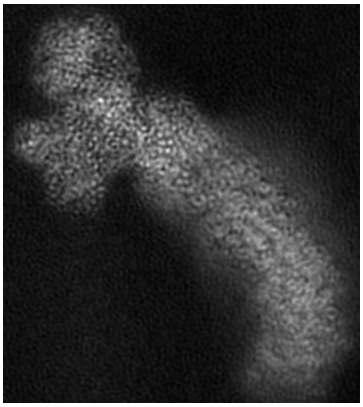
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14537. These allow visual inspection of the internal detail of the map and identification of artifacts.

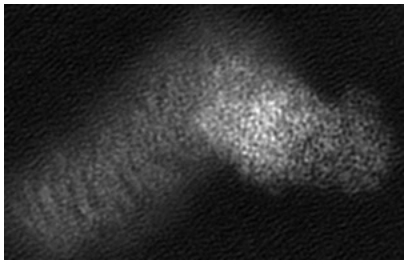
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

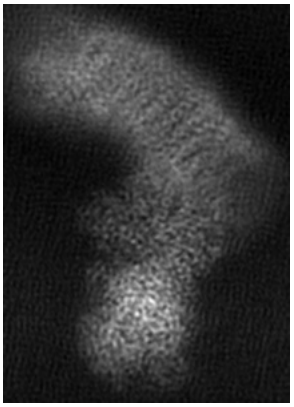
6.1.1 Primary map



X



Y

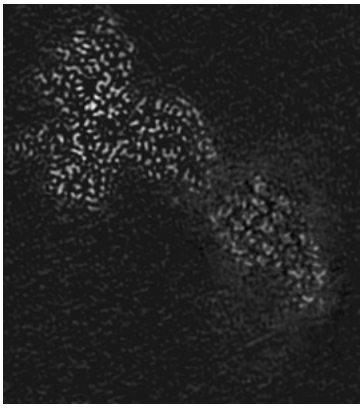


Z

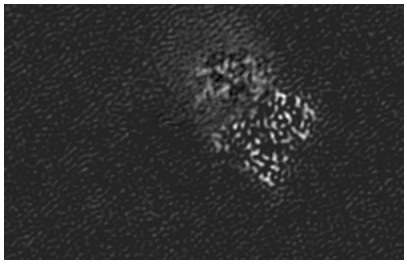
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 72



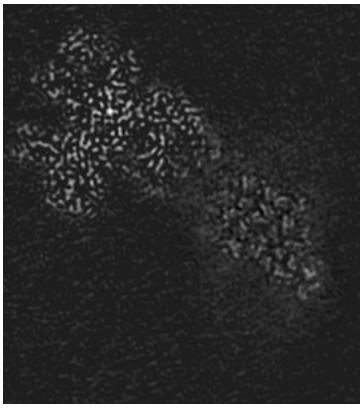
Y Index: 100

Z Index: 112

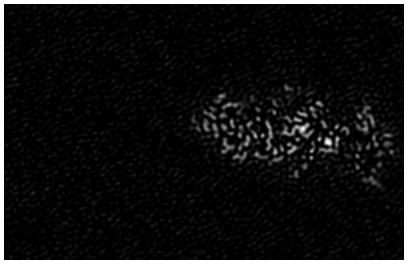
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

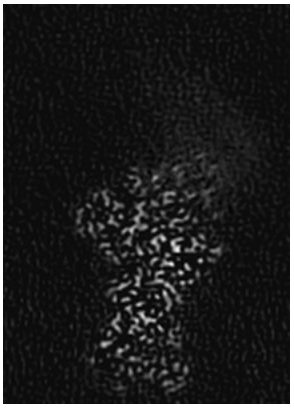
6.3.1 Primary map



X Index: 79



Y Index: 51

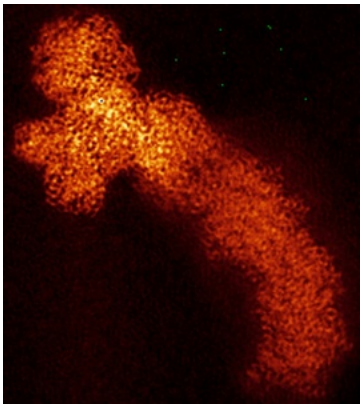


Z Index: 151

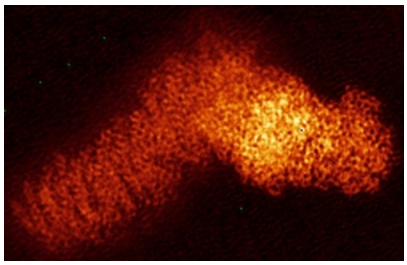
The images above show the largest variance slices of the map in three orthogonal directions.

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

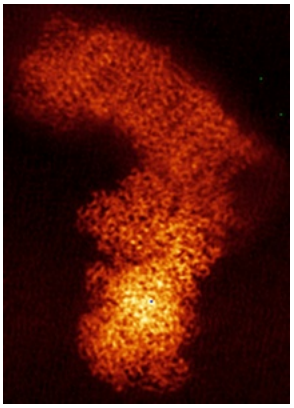
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

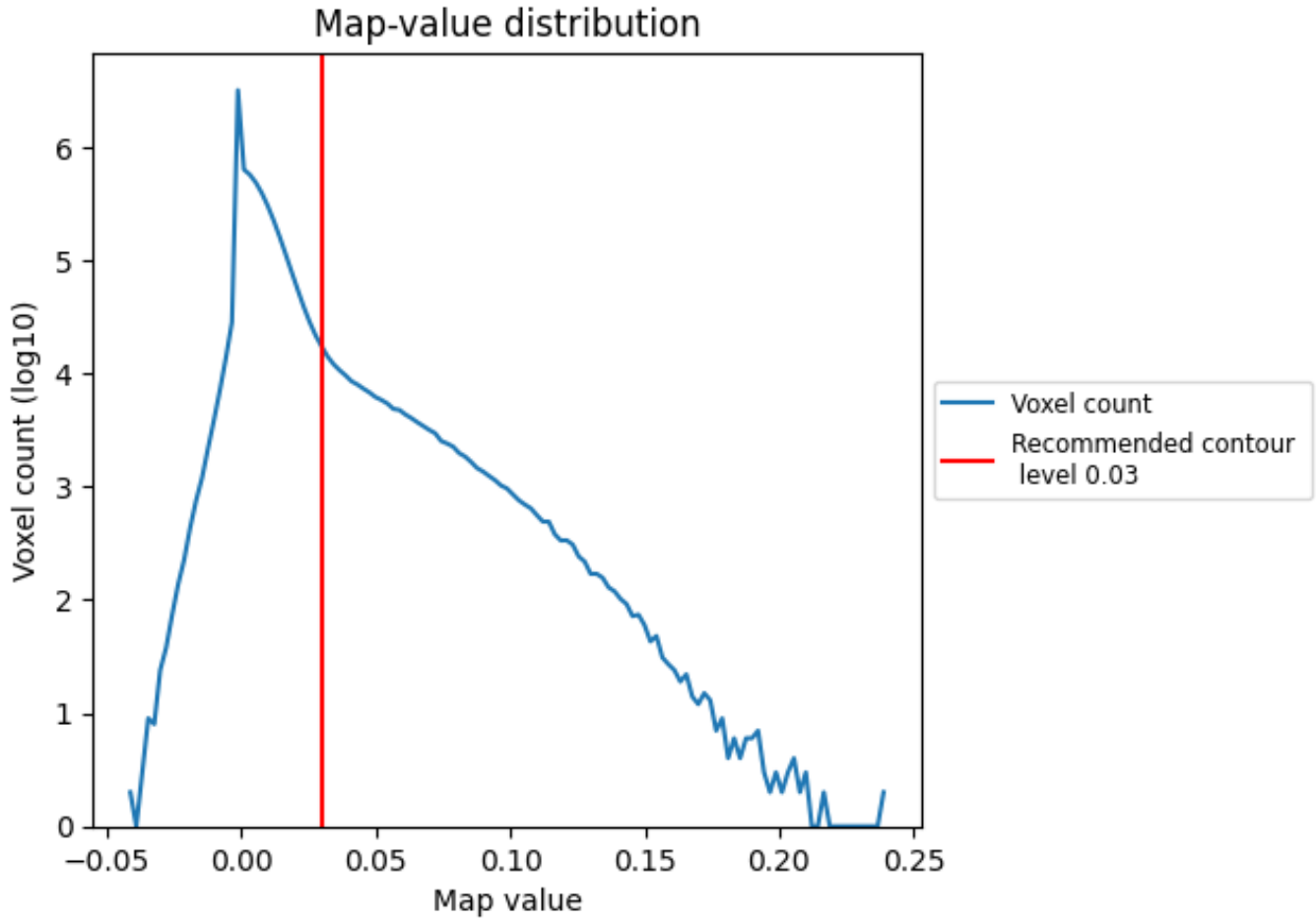
6.6 Mask visualisation (i)

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

7 Map analysis

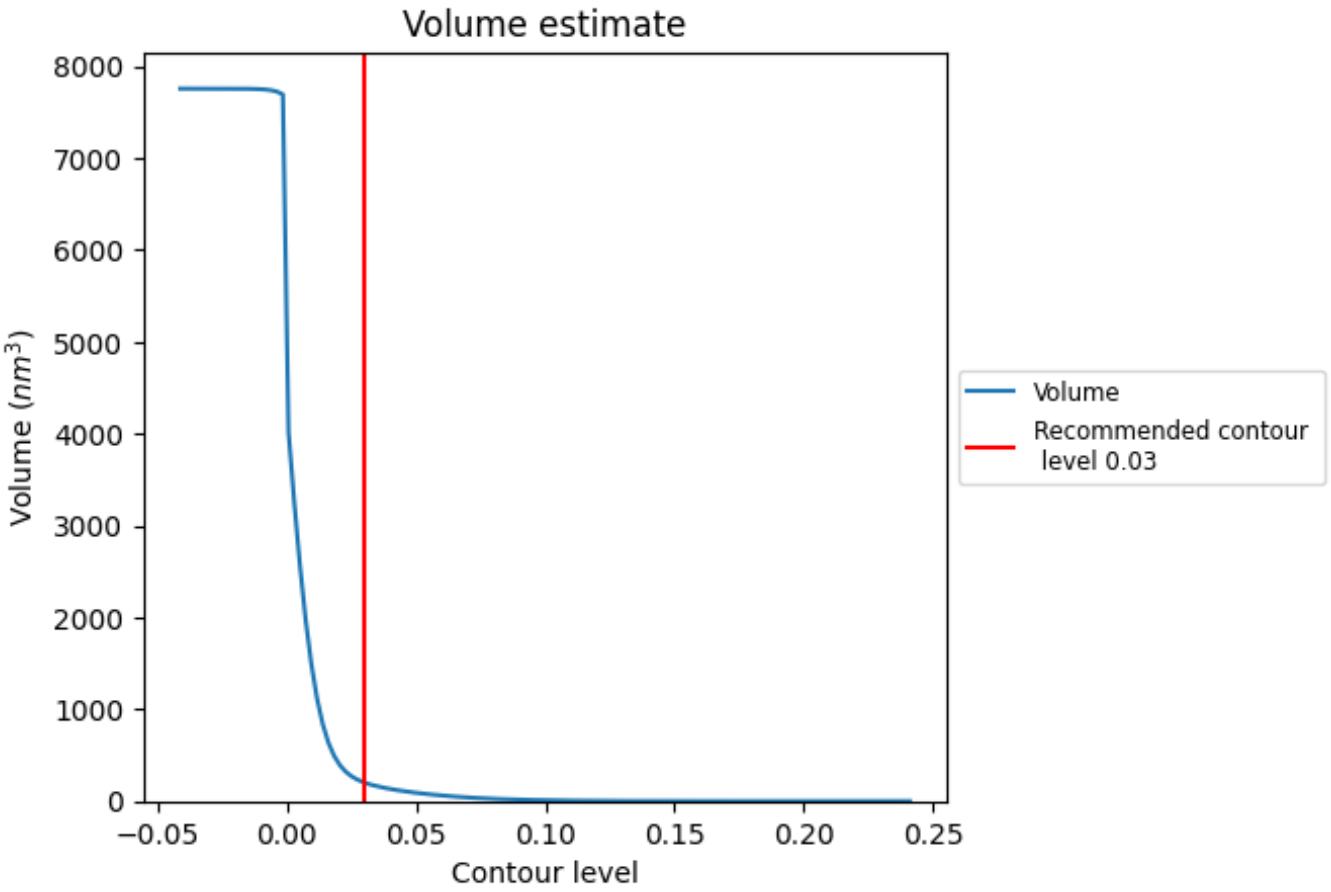
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

7.2 Volume estimate



The volume at the recommended contour level is 202 nm^3; this corresponds to an approximate mass of 183 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.

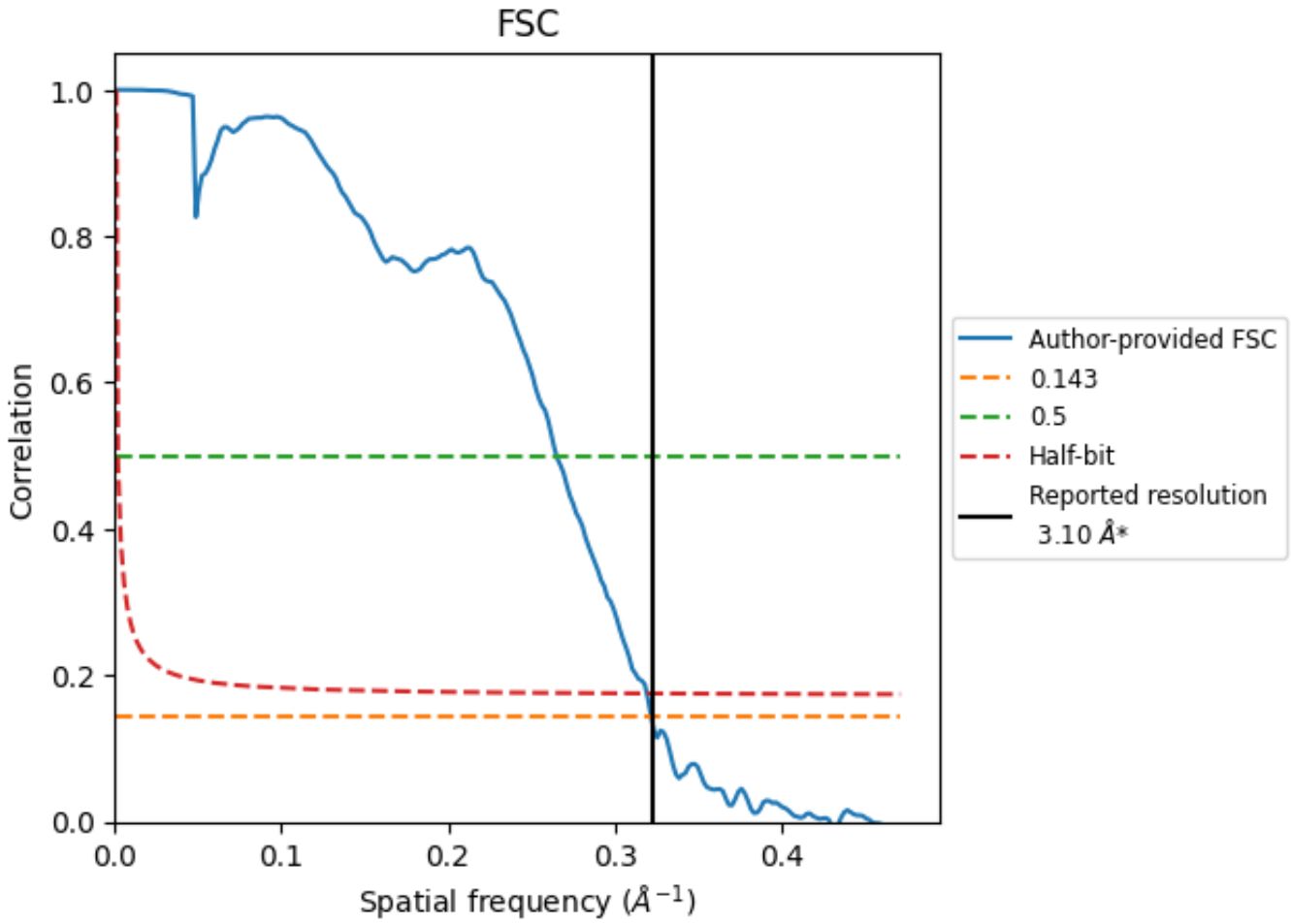
7.3 Rotationally averaged power spectrum

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 0.323 Å^{-1}

8.2 Resolution estimates (i)

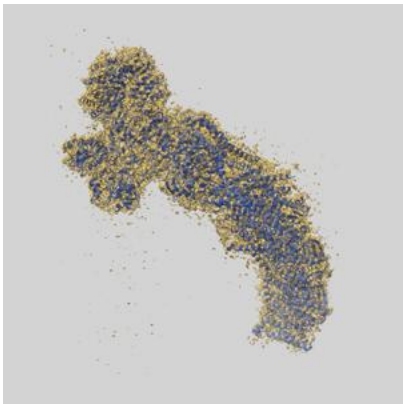
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.11	3.77	3.13
Unmasked-calculated*	-	-	-

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

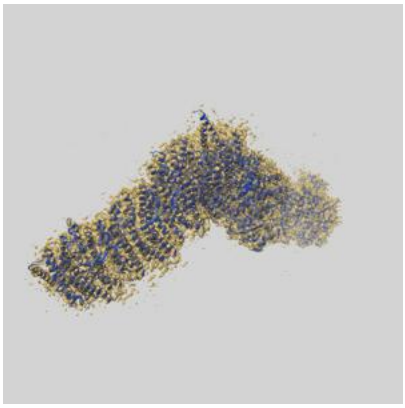
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14537 and PDB model 7Z7T. Per-residue inclusion information can be found in section 3 on page 11.

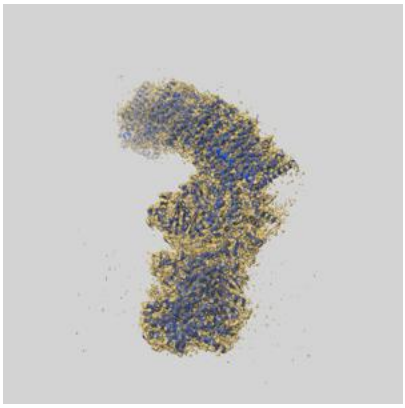
9.1 Map-model overlay



X



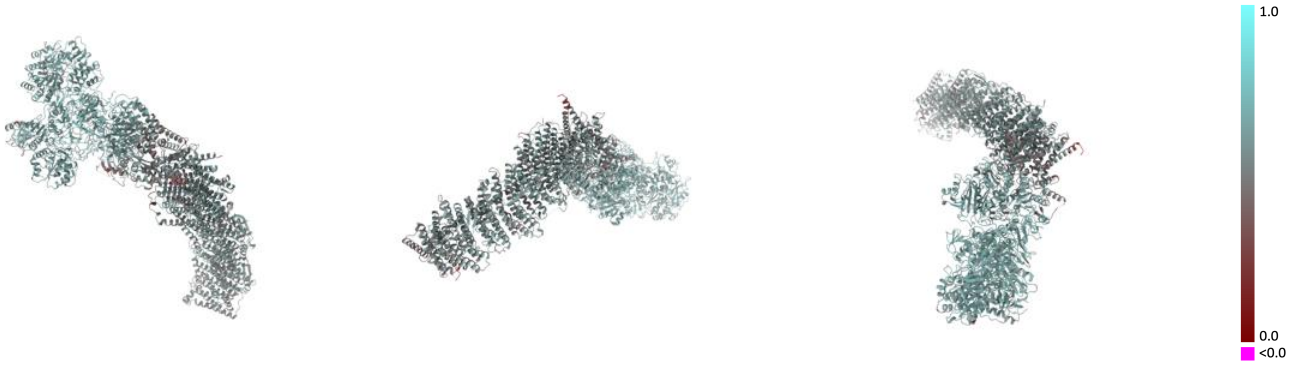
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 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.

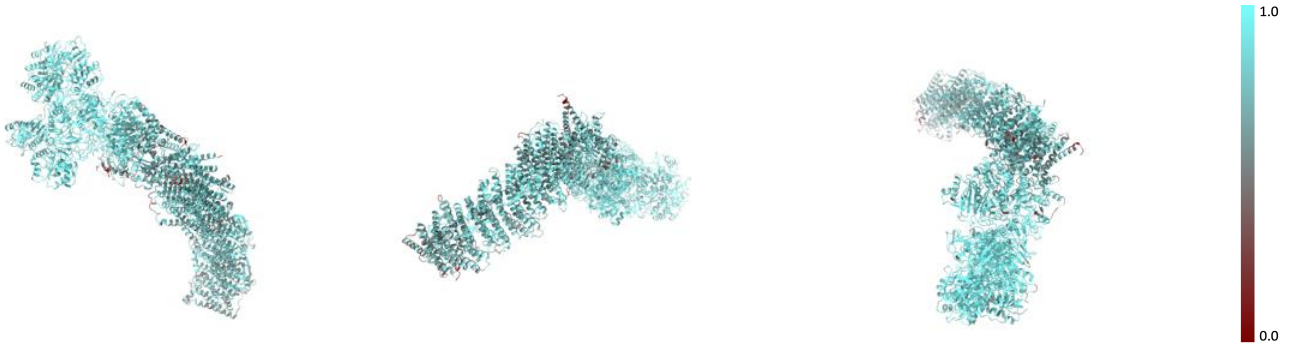
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

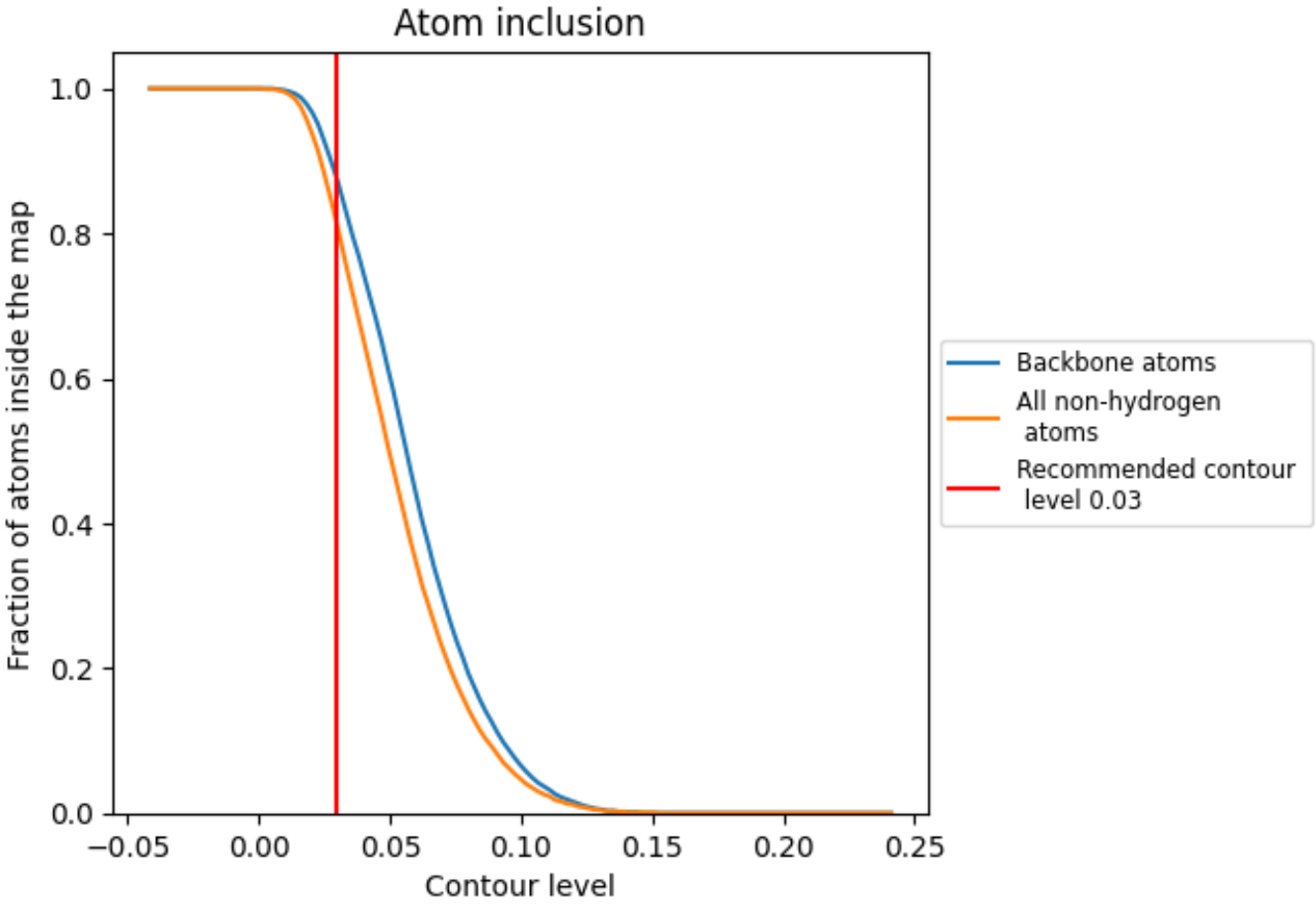
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion (i)



At the recommended contour level, 87% of all backbone atoms, 81% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8110	0.5650
A	0.7100	0.5090
B	0.8140	0.5570
C	0.8410	0.5880
E	0.8760	0.6070
F	0.8840	0.6090
G	0.9090	0.6190
H	0.7250	0.4980
I	0.8620	0.5970
J	0.7530	0.5240
K	0.8010	0.5470
L	0.6960	0.5140
M	0.7600	0.5350
N	0.7800	0.5410