Full wwPDB EM Validation Report

Nov 15, 2025 – 01:35 PM EST

PDB ID	:	9O3E / pdb_00009o3e
EMDB ID	:	EMD-70077
Title	:	Plasmodium falciparum 20S proteasome bound to inhibitor 159
Authors	:	Han, Y.; Deng, X.; Ray, S.; Phillips, M.
Deposited on	:	2025-04-07
Resolution	:	2.79 Å(reported)
Based on initial model	:	7LXT

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:

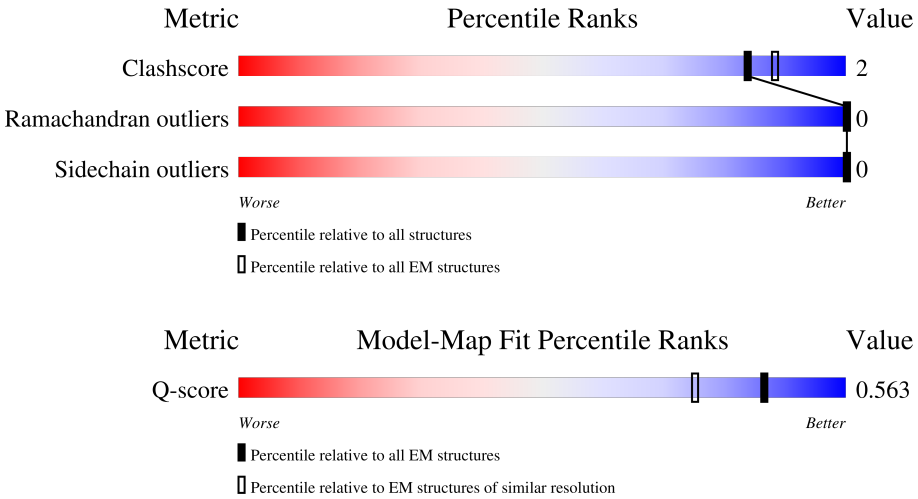
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

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 2.79 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	10811 (2.29 - 3.29)

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	A	260	11% 82% • 13%
1	O	260	13% 86% • 10%
2	B	235	14% 86% 5% 9%
2	P	235	13% 87% • 9%

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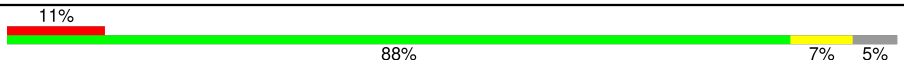
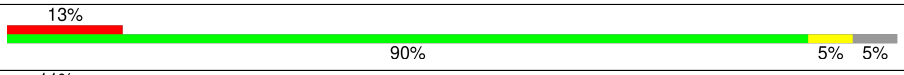
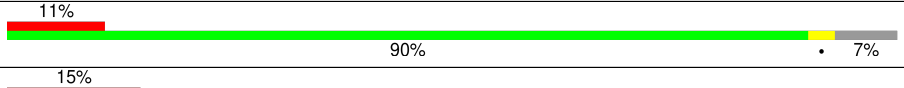
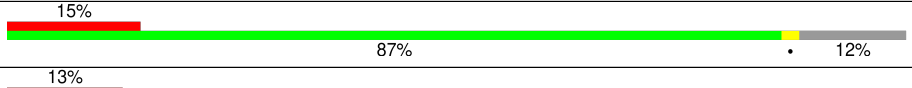
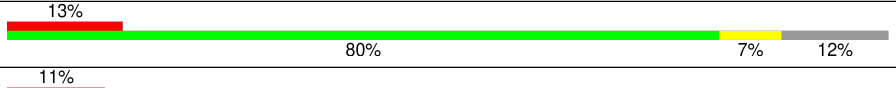
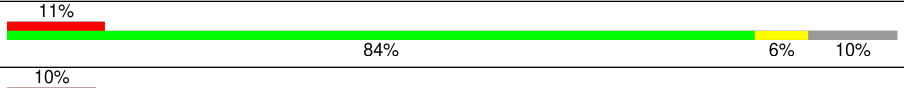
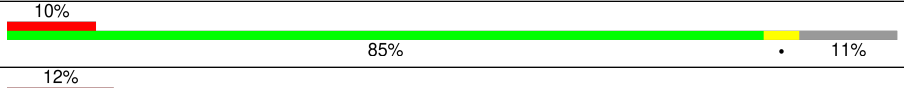
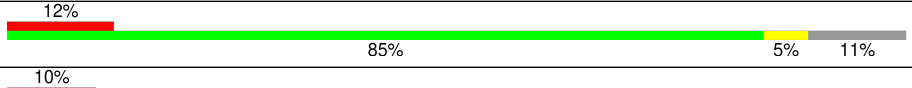
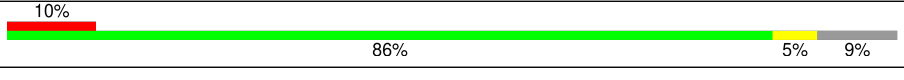
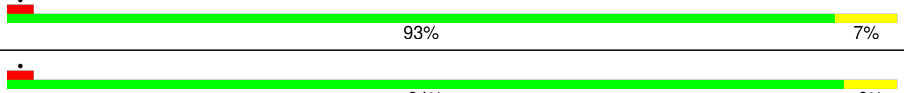
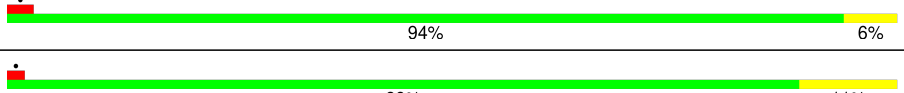
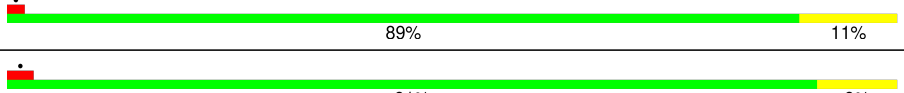
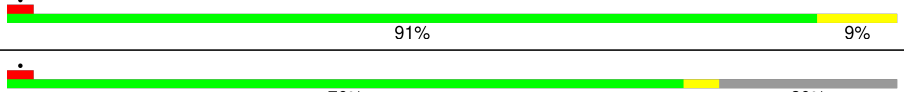
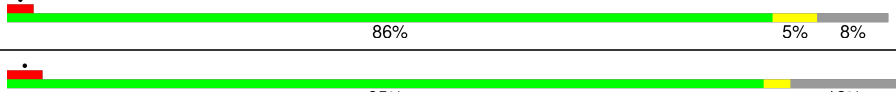
Mol	Chain	Length	Quality of chain
3	C	246	
3	Q	246	
4	D	241	
4	R	241	
5	E	256	
5	S	256	
6	F	254	
6	T	254	
7	G	252	
7	U	252	
8	H	252	
8	V	252	
9	J	218	
9	X	218	
10	K	195	
10	Y	195	
11	L	211	
11	Z	211	
12	N	284	
12	b	284	
13	I	229	
13	W	229	
14	M	240	
14	a	240	

2 Entry composition

There are 15 unique types of molecules in this entry. The entry contains 48693 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 Proteasome endopeptidase complex.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	225	Total	C	N	O	S	0	0
			1764	1113	292	345	14		
1	O	234	Total	C	N	O	S	0	0
			1840	1158	309	359	14		

- Molecule 2 is a protein called Proteasome endopeptidase complex.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	213	Total	C	N	O	S	0	0
			1696	1092	280	318	6		
2	P	213	Total	C	N	O	S	0	0
			1697	1094	278	319	6		

- Molecule 3 is a protein called Proteasome subunit alpha type.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	234	Total	C	N	O	S	0	0
			1865	1195	305	362	3		
3	Q	231	Total	C	N	O	S	0	0
			1843	1182	298	360	3		

- Molecule 4 is a protein called Proteasome subunit alpha type.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	230	Total	C	N	O	S	0	0
			1824	1166	309	341	8		
4	R	225	Total	C	N	O	S	0	0
			1776	1137	300	331	8		

- Molecule 5 is a protein called Proteasome subunit alpha type.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	226	Total	C	N	O	S	0	0
			1738	1097	287	343	11		
5	S	224	Total	C	N	O	S	0	0
			1724	1088	285	340	11		

- Molecule 6 is a protein called Proteasome endopeptidase complex.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	228	Total	C	N	O	S	0	0
			1812	1158	297	347	10		
6	T	227	Total	C	N	O	S	0	0
			1803	1153	296	344	10		

- Molecule 7 is a protein called Proteasome subunit alpha type-3, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	225	Total	C	N	O	S	0	0
			1849	1182	307	348	12		
7	U	229	Total	C	N	O	S	0	0
			1879	1199	313	355	12		

- Molecule 8 is a protein called Proteasome subunit beta type-6, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	212	Total	C	N	O	S	0	0
			1712	1089	296	315	12		
8	V	213	Total	C	N	O	S	0	0
			1720	1093	298	317	12		

- Molecule 9 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	206	Total	C	N	O	S	0	0
			1617	1032	262	309	14		
9	X	206	Total	C	N	O	S	0	0
			1618	1032	262	310	14		

- Molecule 10 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	195	Total	C	N	O	S	0	0
			1614	1042	266	298	8		

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Mol	Chain	Residues	Atoms					AltConf	Trace
10	Y	195	Total	C	N	O	S	0	0
			1613	1042	266	297	8		

- Molecule 11 is a protein called Proteasome subunit beta type.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	211	Total	C	N	O	S	0	0
			1662	1060	275	319	8		
11	Z	211	Total	C	N	O	S	0	0
			1662	1060	275	319	8		

- Molecule 12 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	N	228	Total	C	N	O	S	0	0
			1876	1199	317	352	8		
12	b	228	Total	C	N	O	S	0	0
			1876	1199	317	352	8		

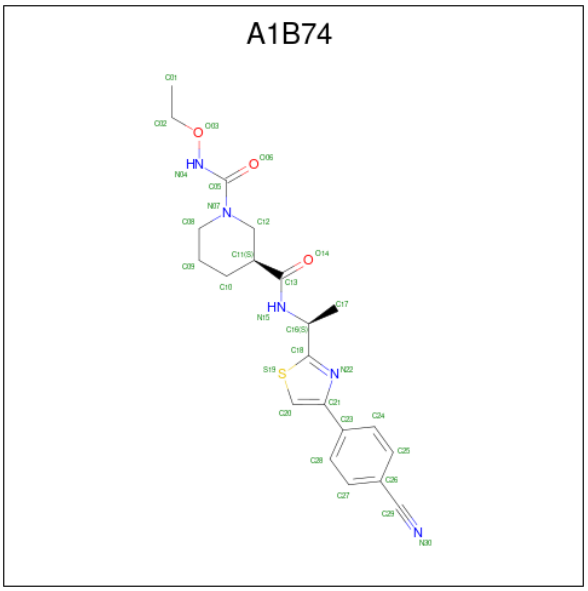
- Molecule 13 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	W	210	Total	C	N	O	S	0	0
			1595	1006	274	302	13		
13	I	210	Total	C	N	O	S	0	0
			1595	1006	274	302	13		

- Molecule 14 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	M	212	Total	C	N	O	S	0	0
			1687	1079	281	320	7		
14	a	211	Total	C	N	O	S	0	0
			1676	1073	277	319	7		

- Molecule 15 is (3S)-N 3 -{(1S)-1-[4-(4-cyanophenyl)-1,3-thiazol-2-yl]ethyl}-N 1 -ethoxypiperidine-1,3-dicarboxamide (CCD ID: A1B74) (formula: $C_{21}H_{25}N_5O_3S$) (labeled as "Ligand of Interest" by depositor).



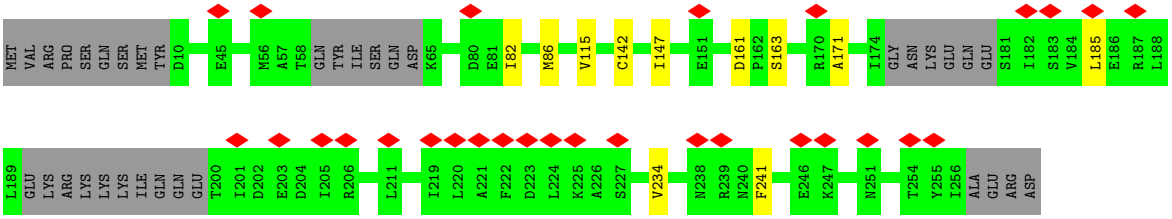
Mol	Chain	Residues	Atoms					AltConf
15	M	1	Total	C	N	O	S	0
			30	21	5	3	1	
15	a	1	Total	C	N	O	S	0
			30	21	5	3	1	

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.

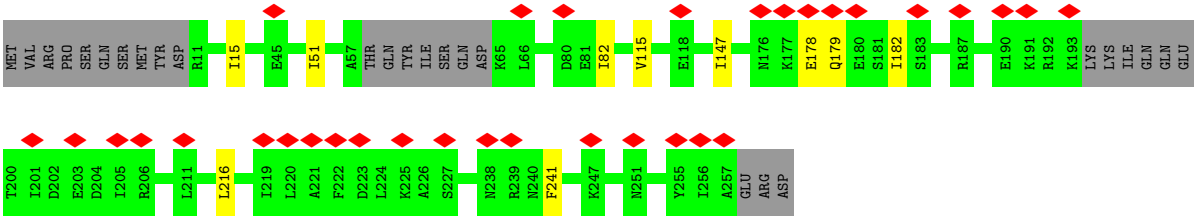
• Molecule 1: Proteasome endopeptidase complex

Chain A:



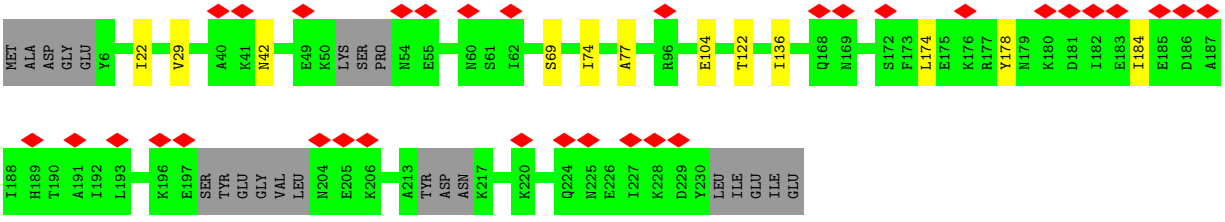
• Molecule 1: Proteasome endopeptidase complex

Chain O:



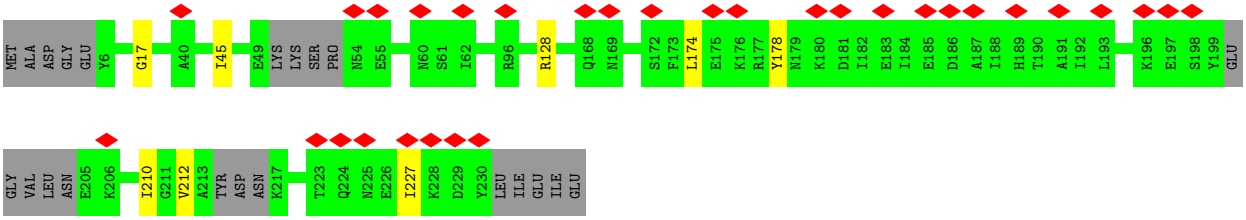
• Molecule 2: Proteasome endopeptidase complex

Chain B:

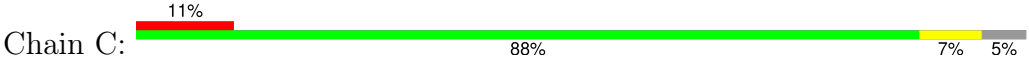


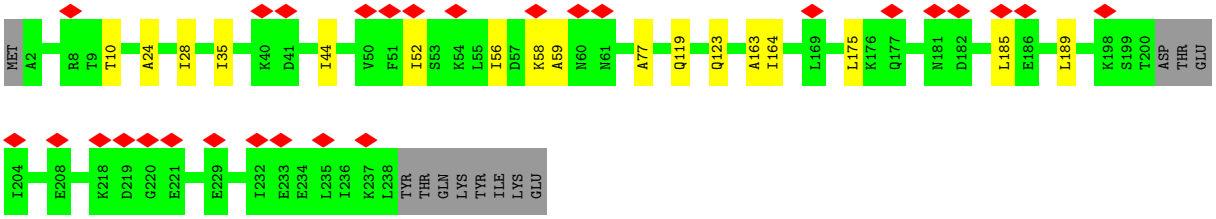
• Molecule 2: Proteasome endopeptidase complex

Chain P:

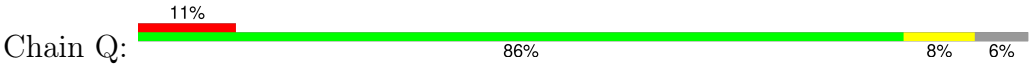


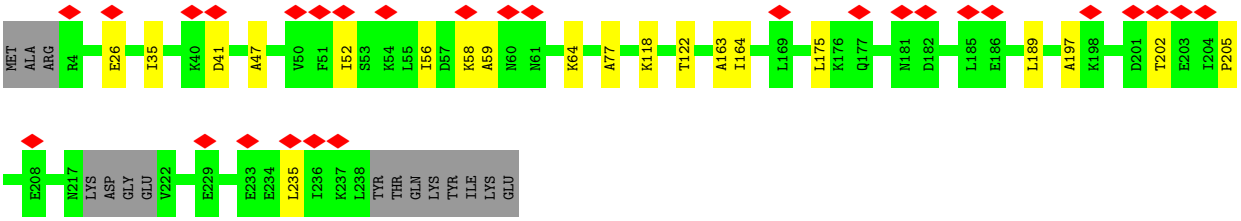
• Molecule 3: Proteasome subunit alpha type



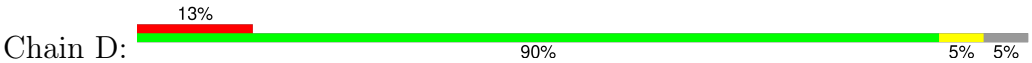


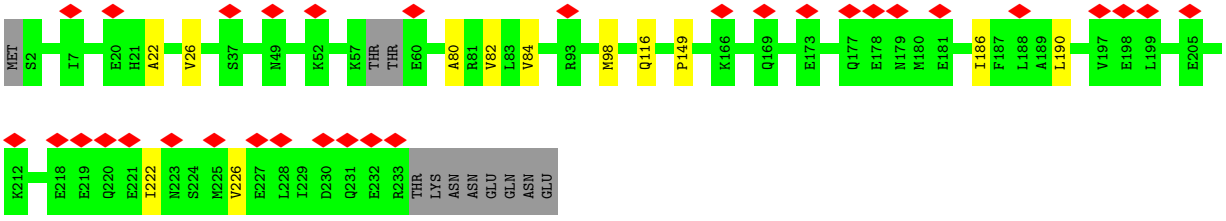
• Molecule 3: Proteasome subunit alpha type



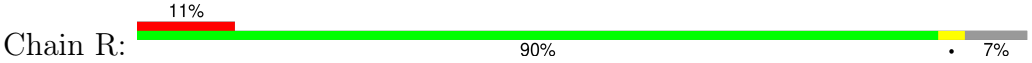


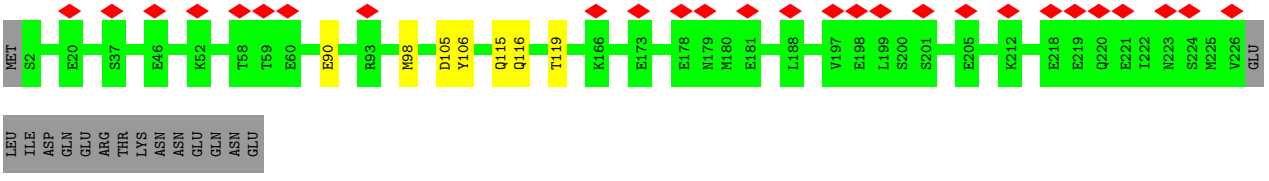
• Molecule 4: Proteasome subunit alpha type





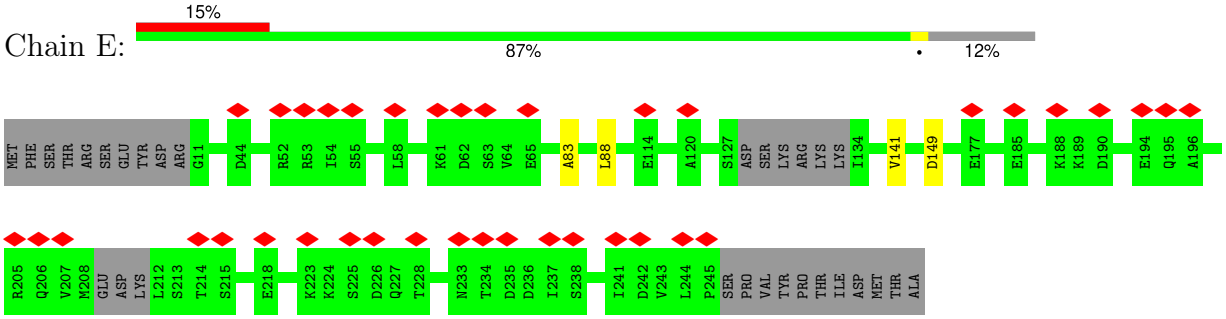
• Molecule 4: Proteasome subunit alpha type





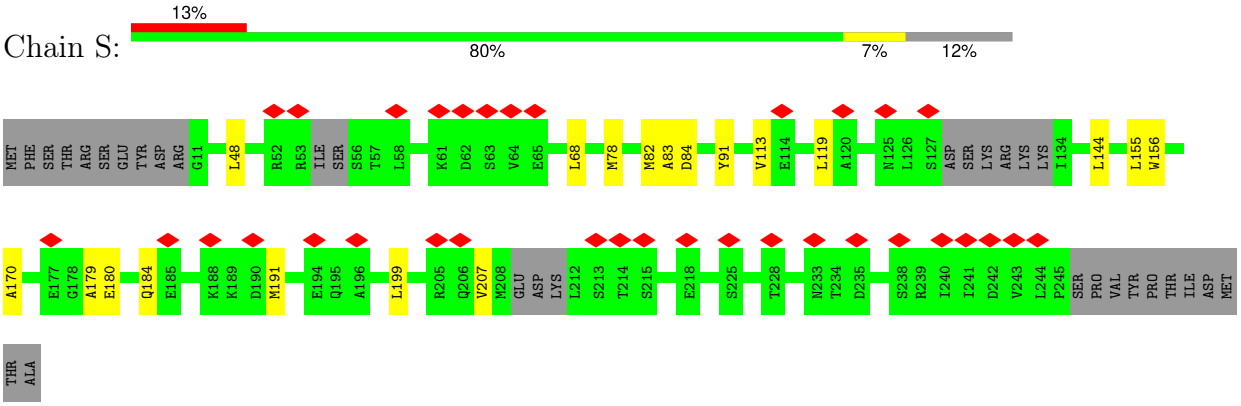
• Molecule 5: Proteasome subunit alpha type

Chain E:



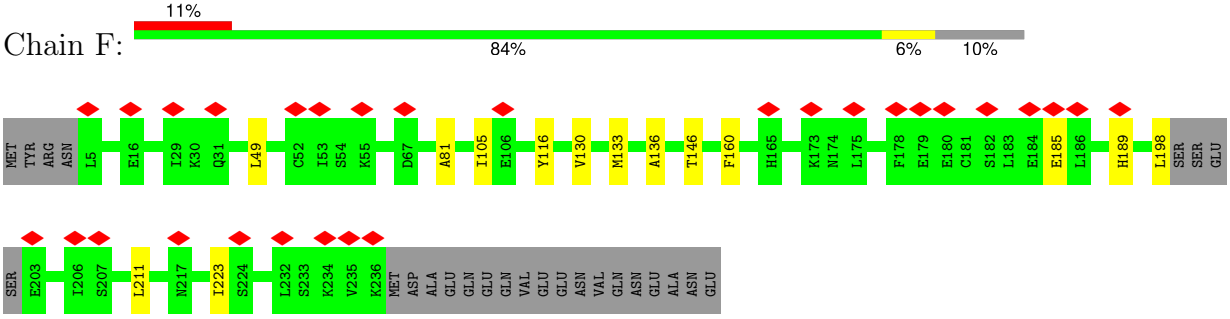
• Molecule 5: Proteasome subunit alpha type

Chain S:



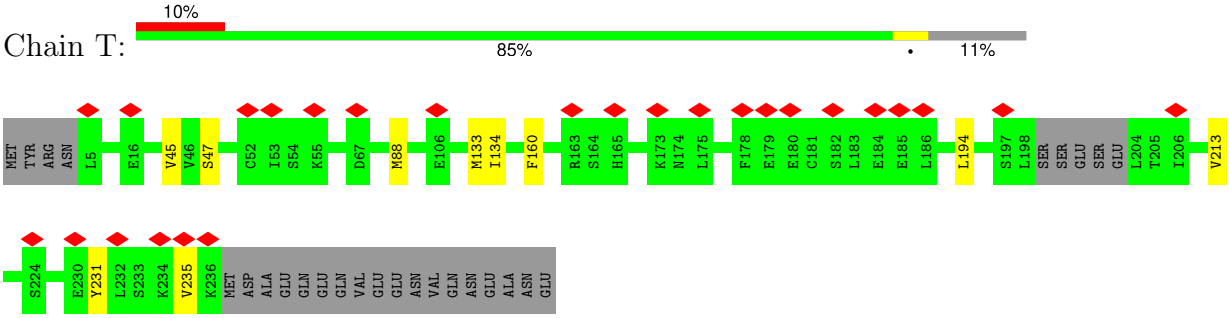
• Molecule 6: Proteasome endopeptidase complex

Chain F:



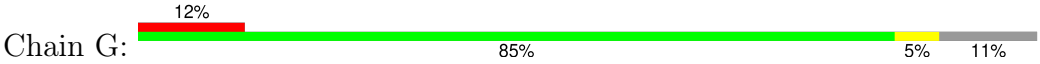
• Molecule 6: Proteasome endopeptidase complex

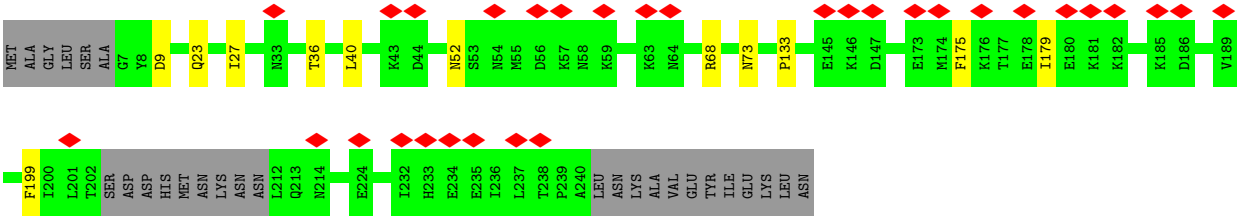
Chain T:



• Molecule 7: Proteasome subunit alpha type-3, putative

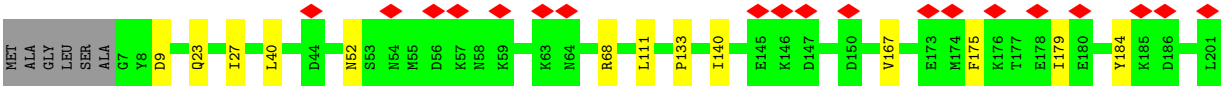
Chain G:

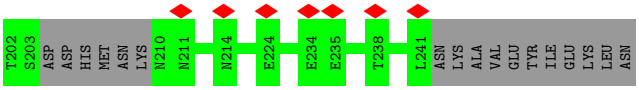




• Molecule 7: Proteasome subunit alpha type-3, putative

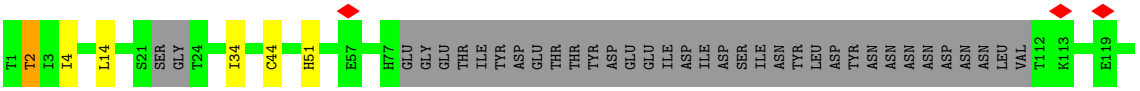
Chain U:

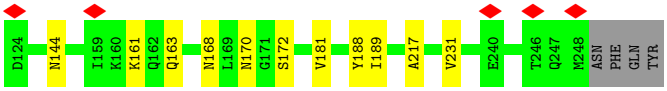




• Molecule 8: Proteasome subunit beta type-6, putative

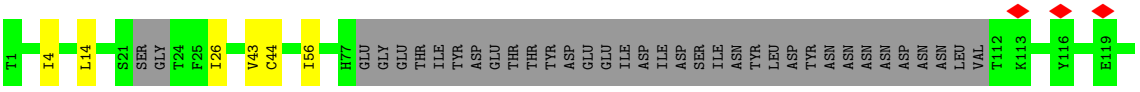
Chain H:

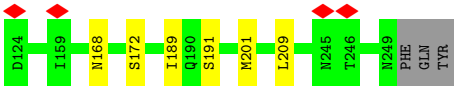




• Molecule 8: Proteasome subunit beta type-6, putative

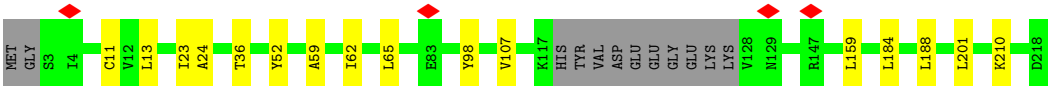
Chain V:





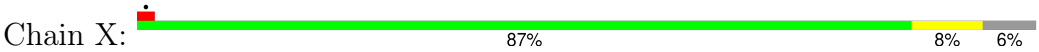
• Molecule 9: Proteasome subunit beta

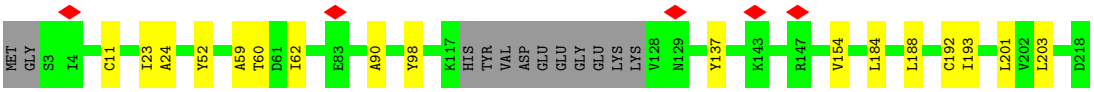
Chain J:



• Molecule 9: Proteasome subunit beta

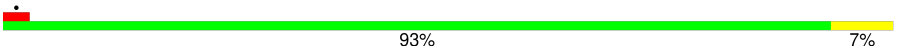
Chain X:

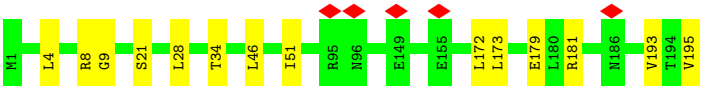




• Molecule 10: Proteasome subunit beta

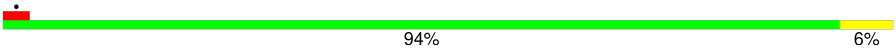
Chain K:





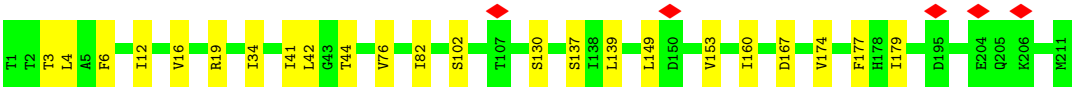
• Molecule 10: Proteasome subunit beta

Chain Y:



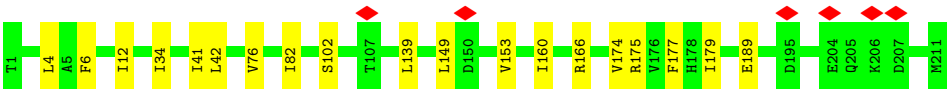
• Molecule 11: Proteasome subunit beta type

Chain L:



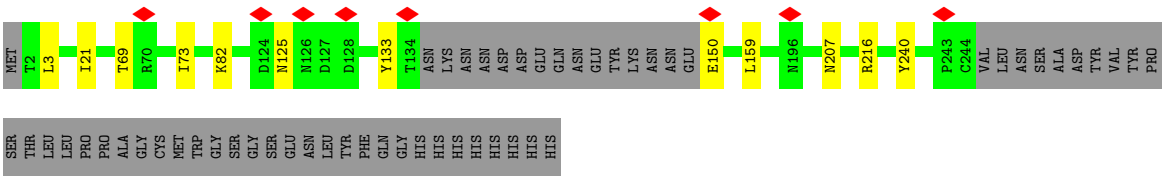
• Molecule 11: Proteasome subunit beta type

Chain Z:



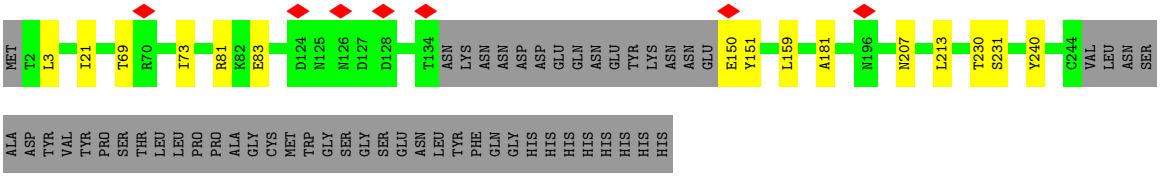
• Molecule 12: Proteasome subunit beta

Chain N:



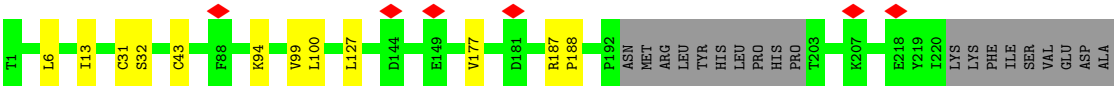
• Molecule 12: Proteasome subunit beta

Chain b:



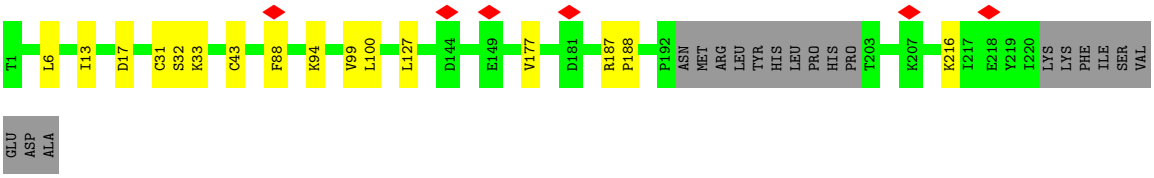
• Molecule 13: Proteasome subunit beta

Chain W:



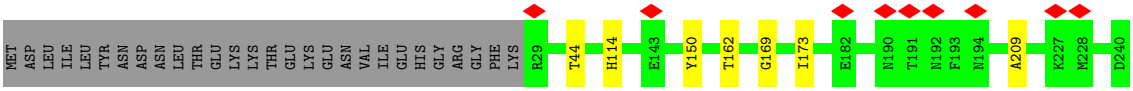
• Molecule 13: Proteasome subunit beta

Chain I:



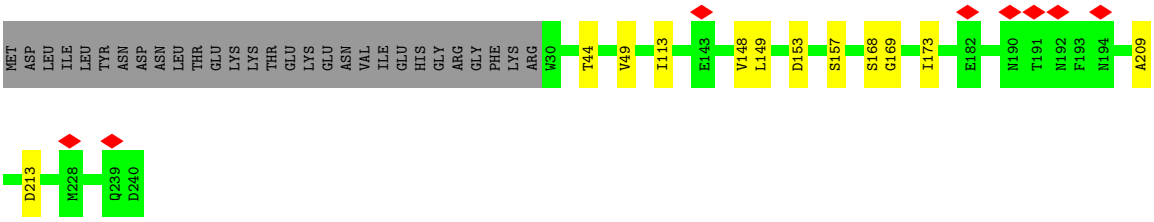
• Molecule 14: Proteasome subunit beta

Chain M:



• Molecule 14: Proteasome subunit beta

Chain a:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	45233	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	1.250	Depositor
Minimum map value	-0.818	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.055	Depositor
Recommended contour level	0.25	Depositor
Map size (Å)	297.57602, 297.57602, 297.57602	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8266001, 0.8266001, 0.8266001	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: A1B74

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	A	0.17	0/1786	0.36	0/2411
1	O	0.17	0/1863	0.38	0/2511
2	B	0.21	0/1724	0.41	0/2322
2	P	0.20	0/1726	0.42	0/2326
3	C	0.29	0/1898	0.53	0/2568
3	Q	0.29	0/1876	0.52	0/2541
4	D	0.20	0/1853	0.41	0/2497
4	R	0.19	0/1806	0.41	0/2437
5	E	0.17	0/1760	0.37	0/2377
5	S	0.17	0/1745	0.36	0/2355
6	F	0.18	0/1845	0.40	0/2484
6	T	0.19	0/1836	0.42	0/2472
7	G	0.21	0/1890	0.41	0/2554
7	U	0.18	0/1920	0.39	0/2595
8	H	0.27	0/1740	0.48	1/2332 (0.0%)
8	V	0.19	0/1748	0.41	0/2343
9	J	0.19	0/1643	0.42	0/2219
9	X	0.17	0/1644	0.40	0/2219
10	K	0.19	0/1649	0.40	0/2223
10	Y	0.19	0/1648	0.41	0/2223
11	L	0.24	0/1696	0.47	1/2286 (0.0%)
11	Z	0.23	0/1696	0.47	1/2286 (0.0%)
12	N	0.21	0/1915	0.45	1/2585 (0.0%)
12	b	0.23	0/1915	0.47	1/2585 (0.0%)
13	I	0.27	0/1625	0.48	0/2207
13	W	0.27	0/1625	0.48	0/2207
14	M	0.19	0/1719	0.42	0/2328
14	a	0.17	0/1708	0.40	0/2314
All	All	0.21	0/49499	0.43	5/66807 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	N	3	LEU	N-CA-C	-5.69	106.69	113.97
8	H	2	THR	CA-CB-OG1	-5.64	101.13	109.60
12	b	3	LEU	N-CA-C	-5.39	106.71	113.72
11	L	6	PHE	CA-CB-CG	5.32	119.12	113.80
11	Z	6	PHE	CA-CB-CG	5.12	118.92	113.80

There are no chirality outliers.

There are no planarity outliers.

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	A	1764	0	1762	6	0
1	O	1840	0	1844	6	0
2	B	1696	0	1720	8	0
2	P	1697	0	1715	5	0
3	C	1865	0	1868	10	0
3	Q	1843	0	1841	12	0
4	D	1824	0	1856	8	0
4	R	1776	0	1812	6	0
5	E	1738	0	1743	3	0
5	S	1724	0	1726	12	0
6	F	1812	0	1819	8	0
6	T	1803	0	1813	5	0
7	G	1849	0	1802	7	0
7	U	1879	0	1830	8	0
8	H	1712	0	1729	13	0
8	V	1720	0	1735	7	0
9	J	1617	0	1613	10	0
9	X	1618	0	1613	11	0
10	K	1614	0	1584	7	0
10	Y	1613	0	1584	7	0
11	L	1662	0	1618	16	0
11	Z	1662	0	1618	13	0
12	N	1876	0	1847	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
12	b	1876	0	1847	8	0
13	I	1595	0	1597	12	0
13	W	1595	0	1597	7	0
14	M	1687	0	1694	5	0
14	a	1676	0	1681	8	0
15	M	30	0	0	0	0
15	a	30	0	0	0	0
All	All	48693	0	48508	214	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 2.

All (214) 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:L:42:LEU:HD12	11:L:179:ILE:HD11	1.60	0.82
9:J:65:LEU:HD22	9:J:107:VAL:HG21	1.63	0.81
11:Z:42:LEU:HD12	11:Z:179:ILE:HD11	1.67	0.77
14:a:44:THR:HG22	14:a:49:VAL:HG12	1.73	0.71
3:Q:35:ILE:HD11	3:Q:175:LEU:HD11	1.73	0.70
8:V:43:VAL:HG11	8:V:56:ILE:HD12	1.72	0.70
11:Z:175:ARG:NH1	11:Z:189:GLU:O	2.28	0.67
3:Q:52:ILE:HB	3:Q:56:ILE:HD11	1.77	0.66
3:C:52:ILE:HB	3:C:56:ILE:HD11	1.78	0.66
10:K:179:GLU:OE2	10:K:181:ARG:NH2	2.29	0.65
4:R:116:GLN:NE2	5:S:84:ASP:OD1	2.29	0.65
3:C:35:ILE:HD11	3:C:175:LEU:HD11	1.78	0.64
6:F:185:GLU:O	6:F:189:HIS:ND1	2.29	0.64
11:L:19:ARG:NH2	9:X:192:CYS:SG	2.71	0.63
9:J:98:TYR:OH	13:I:94:LYS:HE3	1.99	0.61
14:M:173:ILE:HD11	14:M:209:ALA:HB2	1.83	0.60
10:Y:7:LEU:HD13	10:Y:143:LEU:HD22	1.85	0.59
14:a:173:ILE:HD11	14:a:209:ALA:HB2	1.85	0.59
2:B:74:ILE:HD13	2:B:136:ILE:HD13	1.85	0.58
8:H:51:HIS:HD2	13:I:88:PHE:CE1	2.21	0.58
2:P:45:ILE:HG22	2:P:212:VAL:HG22	1.85	0.58
10:Y:172:LEU:HD12	10:Y:173:LEU:HD22	1.86	0.58
8:H:2:THR:HG21	8:H:217:ALA:CB	2.32	0.58
13:W:94:LYS:HE3	9:X:98:TYR:OH	2.04	0.57
9:X:24:ALA:HB1	9:X:184:LEU:HD22	1.87	0.57
11:Z:4:LEU:O	11:Z:4:LEU:HD12	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:22:ILE:HD11	2:B:122:THR:HG23	1.85	0.57
13:W:13:ILE:CD1	13:W:177:VAL:HG13	2.34	0.57
13:I:13:ILE:CD1	13:I:177:VAL:HG13	2.34	0.56
11:L:130:SER:OG	11:L:167:ASP:OD2	2.21	0.56
6:F:211:LEU:HD22	6:F:223:ILE:HD12	1.87	0.56
11:L:4:LEU:HD12	11:L:4:LEU:O	2.06	0.56
8:H:34:ILE:HG21	8:H:231:VAL:HG21	1.87	0.55
6:T:45:VAL:HG22	6:T:213:VAL:HG22	1.89	0.55
10:K:8:ARG:NH1	10:K:9:GLY:O	2.40	0.55
12:N:82:LYS:NZ	12:N:125:ASN:OD1	2.38	0.55
10:Y:8:ARG:NH1	10:Y:9:GLY:O	2.39	0.54
10:K:21:SER:O	10:K:28:LEU:N	2.40	0.54
11:L:160:ILE:HG21	11:L:174:VAL:HG23	1.89	0.54
3:Q:197:ALA:HB2	3:Q:205:PRO:HG3	1.90	0.54
8:H:168:ASN:OD1	8:H:172:SER:OG	2.26	0.54
8:H:14:LEU:HD22	8:H:44:CYS:SG	2.48	0.54
8:V:14:LEU:HD22	8:V:44:CYS:SG	2.48	0.54
9:J:24:ALA:HB1	9:J:184:LEU:HD22	1.89	0.53
4:R:115:GLN:O	4:R:119:THR:HG23	2.09	0.52
11:Z:4:LEU:HD13	11:Z:139:LEU:HD11	1.90	0.52
8:H:4:ILE:HG23	8:H:181:VAL:HG12	1.92	0.52
11:Z:160:ILE:HG21	11:Z:174:VAL:HG23	1.89	0.52
3:C:10:THR:HG21	3:C:123:GLN:O	2.09	0.52
5:E:88:LEU:HD12	5:E:141:VAL:HG21	1.92	0.52
3:C:35:ILE:HD12	3:C:163:ALA:HB2	1.92	0.51
8:H:51:HIS:HD2	13:I:88:PHE:HE1	1.58	0.51
11:L:12:ILE:HD13	11:L:102:SER:HB2	1.92	0.51
3:C:58:LYS:O	3:C:59:ALA:C	2.54	0.51
9:X:52:TYR:CD1	9:X:203:LEU:HD21	2.46	0.51
13:I:187:ARG:HB3	13:I:188:PRO:HD3	1.93	0.51
1:A:86:MET:HE3	1:A:142:CYS:SG	2.51	0.51
7:G:27:ILE:HD11	7:G:133:PRO:HG2	1.92	0.51
3:C:119:GLN:OE1	4:D:82:VAL:HG11	2.11	0.51
12:b:207:ASN:OD1	12:b:240:TYR:OH	2.26	0.51
6:F:49:LEU:HD21	6:F:198:LEU:HD21	1.91	0.50
13:W:187:ARG:HB3	13:W:188:PRO:HD3	1.93	0.50
6:F:133:MET:HE3	6:F:160:PHE:CE2	2.47	0.50
2:B:74:ILE:HD13	2:B:136:ILE:CD1	2.40	0.50
7:G:73:ASN:O	12:N:133:TYR:OH	2.28	0.49
8:H:2:THR:HG21	8:H:217:ALA:HB3	1.92	0.49
8:H:144:ASN:ND2	8:H:170:ASN:O	2.44	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:36:THR:HG21	7:G:175:PHE:CD2	2.48	0.49
7:U:27:ILE:HD11	7:U:133:PRO:HG2	1.93	0.49
7:U:40:LEU:HD22	7:U:179:ILE:HD11	1.94	0.49
6:F:211:LEU:CD2	6:F:223:ILE:HD12	2.42	0.49
10:K:34:THR:HG21	10:K:51:ILE:HG23	1.94	0.49
12:N:69:THR:O	12:N:73:ILE:HD12	2.12	0.49
3:C:24:ALA:O	3:C:28:ILE:HD12	2.13	0.48
14:a:169:GLY:O	14:a:173:ILE:HD12	2.13	0.48
11:L:4:LEU:HD13	11:L:139:LEU:HD11	1.95	0.48
1:O:179:GLN:HA	1:O:182:ILE:HD12	1.96	0.48
3:Q:58:LYS:O	3:Q:59:ALA:C	2.56	0.48
12:N:207:ASN:OD1	12:N:240:TYR:OH	2.26	0.48
13:W:99:VAL:HG23	13:W:127:LEU:HD12	1.96	0.48
11:L:3:THR:HG22	11:L:16:VAL:HG12	1.95	0.48
5:S:91:TYR:CG	5:S:119:LEU:HD22	2.49	0.47
14:M:169:GLY:O	14:M:173:ILE:HD12	2.14	0.47
2:B:69:SER:OG	2:B:104:GLU:OE2	2.30	0.47
3:Q:35:ILE:HD12	3:Q:163:ALA:HB2	1.96	0.47
8:V:201:MET:HE1	8:V:209:LEU:HD22	1.96	0.47
13:I:31:CYS:SG	13:I:32:SER:N	2.87	0.47
13:W:31:CYS:SG	13:W:32:SER:N	2.87	0.47
6:T:133:MET:HE3	6:T:160:PHE:CE2	2.49	0.47
14:M:44:THR:HG22	14:M:162:THR:O	2.14	0.47
1:A:171:ALA:HB1	1:A:185:LEU:HD23	1.96	0.47
2:B:22:ILE:HD11	2:B:122:THR:CG2	2.44	0.47
13:I:99:VAL:HG23	13:I:127:LEU:HD12	1.96	0.47
3:C:185:LEU:O	3:C:189:LEU:HD23	2.14	0.46
9:X:60:THR:N	10:Y:123:ASN:OD1	2.48	0.46
9:J:13:LEU:HD22	9:J:159:LEU:HD22	1.98	0.46
9:J:52:TYR:CE2	9:J:201:LEU:HD21	2.50	0.46
4:R:105:ASP:OD1	4:R:106:TYR:N	2.48	0.46
11:Z:41:ILE:HD12	11:Z:76:VAL:HG22	1.97	0.46
6:F:105:ILE:HD12	6:F:136:ALA:HB3	1.97	0.46
5:S:113:VAL:HG21	5:S:156:TRP:HB2	1.98	0.46
9:J:36:THR:O	11:Z:166:ARG:NH2	2.48	0.46
3:Q:197:ALA:HB1	3:Q:202:THR:O	2.15	0.46
5:S:144:LEU:HD11	5:S:170:ALA:HB3	1.98	0.45
10:Y:21:SER:O	10:Y:28:LEU:N	2.49	0.45
1:A:147:ILE:HD11	1:A:241:PHE:HE1	1.81	0.45
4:D:80:ALA:O	4:D:84:VAL:HG23	2.17	0.45
3:Q:118:LYS:O	3:Q:122:THR:HG23	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:b:230:THR:HG22	12:b:231:SER:H	1.81	0.45
3:Q:189:LEU:HD23	3:Q:235:LEU:CD1	2.46	0.45
10:Y:8:ARG:NH1	10:Y:113:TYR:O	2.47	0.45
12:b:81:ARG:NE	12:b:83:GLU:OE1	2.48	0.45
2:B:42:ASN:O	2:B:184:ILE:HD11	2.17	0.45
4:D:22:ALA:O	4:D:26:VAL:HG23	2.17	0.45
6:F:116:TYR:CE2	6:F:146:THR:HG22	2.52	0.45
13:W:43:CYS:HB3	13:W:100:LEU:HD13	1.99	0.45
6:F:81:ALA:HB2	6:F:130:VAL:HG21	1.98	0.45
9:X:23:ILE:CG2	9:X:201:LEU:HD23	2.47	0.45
9:X:52:TYR:CE2	9:X:201:LEU:HD21	2.52	0.45
4:D:98:MET:SD	11:L:82:ILE:HD11	2.57	0.45
12:b:181:ALA:HA	12:b:213:LEU:HD21	1.98	0.45
14:a:44:THR:HG23	14:a:149:LEU:HD12	1.99	0.45
13:I:43:CYS:HB3	13:I:100:LEU:HD13	1.99	0.45
12:N:216:ARG:NH1	8:V:26:ILE:O	2.48	0.45
2:P:210:ILE:HD12	2:P:227:ILE:HG12	1.99	0.45
14:M:173:ILE:HD11	14:M:209:ALA:CB	2.47	0.45
8:H:4:ILE:HD11	8:H:189:ILE:CD1	2.47	0.45
5:S:91:TYR:CD2	5:S:119:LEU:HD22	2.52	0.44
4:R:116:GLN:HG3	5:S:83:ALA:HB1	1.98	0.44
7:U:9:ASP:O	7:U:23:GLN:NE2	2.50	0.44
9:X:154:VAL:HG21	9:X:193:ILE:HG13	2.00	0.44
3:Q:47:ALA:HB1	3:Q:64:LYS:HG3	2.00	0.44
5:S:191:MET:HE1	5:S:199:LEU:HD22	1.99	0.44
8:V:4:ILE:HD11	8:V:189:ILE:CD1	2.48	0.44
12:b:21:ILE:HD11	12:b:159:LEU:HB3	1.99	0.44
14:a:168:SER:OG	14:a:213:ASP:OD2	2.30	0.44
1:A:82:ILE:HD11	1:A:115:VAL:O	2.17	0.44
12:N:150:GLU:N	12:N:150:GLU:OE1	2.51	0.44
4:R:98:MET:SD	11:Z:82:ILE:HD11	2.58	0.44
9:X:59:ALA:HA	9:X:62:ILE:HD12	1.99	0.44
14:a:153:ASP:OD1	14:a:157:SER:N	2.50	0.44
11:L:41:ILE:CD1	11:L:76:VAL:HG22	2.47	0.44
3:C:77:ALA:HB3	3:C:164:ILE:HD12	1.99	0.44
11:L:3:THR:HB	11:L:44:THR:HG21	2.00	0.44
11:L:41:ILE:HD12	11:L:76:VAL:HG22	1.99	0.44
2:B:174:LEU:O	2:B:178:TYR:N	2.48	0.43
6:T:88:MET:HE1	6:T:134:ILE:HD12	2.00	0.43
14:M:114:HIS:CE1	14:M:150:TYR:HH	2.36	0.43
11:Z:12:ILE:HD13	11:Z:102:SER:HB2	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:b:150:GLU:N	12:b:150:GLU:OE1	2.51	0.43
4:D:26:VAL:HG21	4:D:149:PRO:HG3	2.00	0.43
5:S:78:MET:HE3	5:S:82:MET:SD	2.59	0.43
9:X:11:CYS:SG	9:X:188:LEU:HD21	2.58	0.43
11:Z:4:LEU:HD21	11:Z:160:ILE:HG12	2.01	0.43
12:b:69:THR:O	12:b:73:ILE:HD12	2.18	0.43
8:H:51:HIS:CD2	13:I:88:PHE:HE1	2.34	0.43
3:Q:77:ALA:HB3	3:Q:164:ILE:HD12	2.00	0.43
8:H:188:TYR:O	8:V:191:SER:OG	2.31	0.43
9:X:90:ALA:HB1	9:X:137:TYR:OH	2.19	0.43
11:L:149:LEU:O	11:L:153:VAL:HG23	2.19	0.43
11:Z:34:ILE:HG21	11:Z:177:PHE:CD2	2.54	0.42
1:A:147:ILE:HD12	1:A:234:VAL:HG22	2.00	0.42
4:D:116:GLN:HG3	5:E:83:ALA:HB1	2.02	0.42
8:V:168:ASN:OD1	8:V:172:SER:OG	2.36	0.42
12:b:151:TYR:CD1	12:b:230:THR:HG21	2.54	0.42
13:I:6:LEU:C	13:I:6:LEU:HD12	2.44	0.42
9:J:11:CYS:SG	9:J:188:LEU:HD21	2.60	0.42
3:Q:41:ASP:OD1	3:Q:41:ASP:N	2.53	0.42
11:Z:41:ILE:CD1	11:Z:76:VAL:HG22	2.50	0.42
9:J:59:ALA:HA	9:J:62:ILE:HD12	2.00	0.42
1:O:178:GLU:O	1:O:179:GLN:NE2	2.53	0.42
13:W:6:LEU:C	13:W:6:LEU:HD12	2.45	0.42
1:O:147:ILE:HD11	1:O:241:PHE:HE1	1.85	0.42
7:G:40:LEU:HD22	7:G:179:ILE:HD11	2.02	0.42
10:K:172:LEU:HD23	10:K:173:LEU:HD22	2.01	0.42
6:T:231:TYR:O	6:T:235:VAL:HG23	2.20	0.42
7:G:9:ASP:O	7:G:23:GLN:NE2	2.53	0.42
7:G:52:ASN:OD1	7:G:68:ARG:NH1	2.52	0.42
2:P:174:LEU:O	2:P:178:TYR:N	2.52	0.42
7:U:40:LEU:HD21	7:U:184:TYR:CG	2.55	0.42
10:K:193:VAL:CG1	10:K:195:VAL:HG22	2.50	0.42
14:a:44:THR:HG23	14:a:149:LEU:CD1	2.50	0.42
2:B:29:VAL:HG23	2:B:77:ALA:O	2.20	0.41
12:N:21:ILE:HD11	12:N:159:LEU:HB3	2.01	0.41
7:U:167:VAL:HG11	7:U:175:PHE:CB	2.50	0.41
5:E:149:ASP:N	5:E:149:ASP:OD1	2.53	0.41
4:R:90:GLU:OE2	4:R:106:TYR:OH	2.36	0.41
10:K:4:LEU:HD22	10:K:46:LEU:HG	2.03	0.41
11:L:34:ILE:HG21	11:L:177:PHE:CD2	2.55	0.41
5:S:48:LEU:HD21	5:S:155:LEU:CD1	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:T:47:SER:HB3	6:T:194:LEU:HD22	2.02	0.41
7:U:52:ASN:OD1	7:U:68:ARG:NE	2.52	0.41
7:U:167:VAL:HG11	7:U:175:PHE:HB2	2.01	0.41
11:Z:149:LEU:O	11:Z:153:VAL:HG23	2.20	0.41
7:G:179:ILE:HD12	7:G:199:PHE:HE2	1.85	0.41
11:L:3:THR:HB	11:L:44:THR:CG2	2.50	0.41
2:P:17:GLY:N	3:Q:26:GLU:OE2	2.53	0.41
5:S:68:LEU:HD11	5:S:78:MET:HE1	2.03	0.41
14:a:113:ILE:HD13	14:a:148:VAL:HB	2.03	0.41
4:D:186:ILE:O	4:D:190:LEU:HD23	2.21	0.41
4:D:222:ILE:O	4:D:226:VAL:HG23	2.21	0.41
8:H:161:LYS:O	8:H:163:GLN:NE2	2.53	0.41
9:J:23:ILE:CG2	9:J:201:LEU:HD23	2.51	0.41
11:L:137:SER:OG	10:Y:138:LEU:O	2.32	0.41
13:I:17:ASP:OD1	13:I:33:LYS:NZ	2.45	0.41
7:U:111:LEU:HD11	7:U:140:ILE:HG12	2.02	0.41
9:J:210:LYS:HD2	13:I:216:LYS:HE3	2.02	0.40
1:A:161:ASP:OD1	1:A:163:SER:OG	2.39	0.40
5:S:179:ALA:HB2	5:S:207:VAL:HG11	2.03	0.40
1:O:51:ILE:HG12	1:O:216:LEU:HD22	2.02	0.40
5:S:180:GLU:O	5:S:184:GLN:NE2	2.54	0.40
3:C:44:ILE:HD12	3:C:189:LEU:HD22	2.02	0.40
1:O:15:ILE:HG22	2:P:128:ARG:HB3	2.02	0.40
1:O:82:ILE:HD11	1:O:115:VAL:O	2.21	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	A	217/260 (84%)	216 (100%)	1 (0%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	O	228/260 (88%)	224 (98%)	4 (2%)	0	100	100
2	B	205/235 (87%)	204 (100%)	1 (0%)	0	100	100
2	P	205/235 (87%)	202 (98%)	3 (2%)	0	100	100
3	C	230/246 (94%)	218 (95%)	12 (5%)	0	100	100
3	Q	227/246 (92%)	221 (97%)	6 (3%)	0	100	100
4	D	226/241 (94%)	219 (97%)	7 (3%)	0	100	100
4	R	223/241 (92%)	216 (97%)	7 (3%)	0	100	100
5	E	220/256 (86%)	218 (99%)	2 (1%)	0	100	100
5	S	216/256 (84%)	215 (100%)	1 (0%)	0	100	100
6	F	224/254 (88%)	220 (98%)	4 (2%)	0	100	100
6	T	223/254 (88%)	218 (98%)	5 (2%)	0	100	100
7	G	221/252 (88%)	214 (97%)	7 (3%)	0	100	100
7	U	225/252 (89%)	217 (96%)	8 (4%)	0	100	100
8	H	206/252 (82%)	194 (94%)	12 (6%)	0	100	100
8	V	207/252 (82%)	198 (96%)	9 (4%)	0	100	100
9	J	202/218 (93%)	193 (96%)	9 (4%)	0	100	100
9	X	202/218 (93%)	193 (96%)	9 (4%)	0	100	100
10	K	193/195 (99%)	186 (96%)	7 (4%)	0	100	100
10	Y	193/195 (99%)	183 (95%)	10 (5%)	0	100	100
11	L	209/211 (99%)	204 (98%)	5 (2%)	0	100	100
11	Z	209/211 (99%)	199 (95%)	10 (5%)	0	100	100
12	N	224/284 (79%)	215 (96%)	9 (4%)	0	100	100
12	b	224/284 (79%)	216 (96%)	8 (4%)	0	100	100
13	I	206/229 (90%)	197 (96%)	9 (4%)	0	100	100
13	W	206/229 (90%)	196 (95%)	10 (5%)	0	100	100
14	M	210/240 (88%)	197 (94%)	13 (6%)	0	100	100
14	a	209/240 (87%)	201 (96%)	8 (4%)	0	100	100
All	All	5990/6746 (89%)	5794 (97%)	196 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	A	198/231 (86%)	198 (100%)	0	100	100
1	O	205/231 (89%)	205 (100%)	0	100	100
2	B	186/205 (91%)	186 (100%)	0	100	100
2	P	186/205 (91%)	186 (100%)	0	100	100
3	C	201/213 (94%)	201 (100%)	0	100	100
3	Q	200/213 (94%)	200 (100%)	0	100	100
4	D	196/207 (95%)	196 (100%)	0	100	100
4	R	191/207 (92%)	191 (100%)	0	100	100
5	E	194/223 (87%)	194 (100%)	0	100	100
5	S	192/223 (86%)	192 (100%)	0	100	100
6	F	203/227 (89%)	203 (100%)	0	100	100
6	T	202/227 (89%)	202 (100%)	0	100	100
7	G	206/229 (90%)	206 (100%)	0	100	100
7	U	210/229 (92%)	210 (100%)	0	100	100
8	H	193/231 (84%)	193 (100%)	0	100	100
8	V	194/231 (84%)	194 (100%)	0	100	100
9	J	181/191 (95%)	181 (100%)	0	100	100
9	X	181/191 (95%)	181 (100%)	0	100	100
10	K	174/174 (100%)	174 (100%)	0	100	100
10	Y	174/174 (100%)	174 (100%)	0	100	100
11	L	176/176 (100%)	176 (100%)	0	100	100
11	Z	176/176 (100%)	176 (100%)	0	100	100
12	N	205/255 (80%)	205 (100%)	0	100	100
12	b	205/255 (80%)	205 (100%)	0	100	100
13	I	176/194 (91%)	176 (100%)	0	100	100
13	W	176/194 (91%)	176 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
14	M	190/216 (88%)	190 (100%)	0	100	100
14	a	189/216 (88%)	189 (100%)	0	100	100
All	All	5360/5944 (90%)	5360 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	74	ASN
2	B	27	ASN
3	C	88	ASN
4	D	223	ASN
6	F	31	GLN
6	F	60	GLN
7	G	58	ASN
7	G	64	ASN
8	H	35	ASN
8	H	51	HIS
8	H	245	ASN
11	L	70	ASN
11	L	199	HIS
1	O	70	ASN
1	O	217	GLN
2	P	224	GLN
4	R	116	GLN
7	U	58	ASN
7	U	75	ASN
7	U	89	ASN
7	U	123	HIS
8	V	114	ASN
13	W	106	ASN
13	W	114	HIS
9	X	50	ASN
11	Z	40	ASN
11	Z	70	ASN
11	Z	158	ASN
11	Z	162	HIS
11	Z	199	HIS
12	b	39	ASN
12	b	225	GLN

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Mol	Chain	Res	Type
14	M	179	ASN
14	M	186	GLN
14	M	233	ASN
13	I	106	ASN
13	I	114	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

2 ligands are modelled in this entry.

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	$\#\|Z\| > 2$
15	A1B74	a	301	-	26,32,32	2.41	9 (34%)	33,43,43	2.00	6 (18%)
15	A1B74	M	301	-	26,32,32	2.42	9 (34%)	33,43,43	2.00	5 (15%)

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
15	A1B74	a	301	-	-	1/21/36/36	0/3/3/3
15	A1B74	M	301	-	-	1/21/36/36	0/3/3/3

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	M	301	A1B74	C23-C21	-6.01	1.39	1.49
15	a	301	A1B74	C23-C21	-5.93	1.39	1.49
15	M	301	A1B74	C13-N15	5.34	1.45	1.34
15	M	301	A1B74	C05-N07	5.32	1.45	1.36
15	a	301	A1B74	C13-N15	5.31	1.45	1.34
15	a	301	A1B74	C05-N07	5.24	1.45	1.36
15	M	301	A1B74	C26-C29	3.92	1.52	1.44
15	a	301	A1B74	C26-C29	3.92	1.52	1.44
15	a	301	A1B74	C11-C13	2.90	1.56	1.51
15	M	301	A1B74	C11-C13	2.73	1.56	1.51
15	a	301	A1B74	C12-N07	2.65	1.49	1.46
15	M	301	A1B74	C12-N07	2.57	1.49	1.46
15	a	301	A1B74	O06-C05	-2.50	1.18	1.23
15	M	301	A1B74	O06-C05	-2.47	1.18	1.23
15	M	301	A1B74	O14-C13	-2.36	1.18	1.23
15	a	301	A1B74	O14-C13	-2.35	1.18	1.23
15	M	301	A1B74	C08-N07	2.31	1.51	1.47
15	a	301	A1B74	C08-N07	2.19	1.51	1.47

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	M	301	A1B74	N04-C05-N07	6.08	121.71	116.77
15	a	301	A1B74	N04-C05-N07	6.00	121.64	116.77
15	M	301	A1B74	C21-C20-S19	-5.29	105.29	111.79
15	a	301	A1B74	C21-C20-S19	-4.99	105.66	111.79
15	a	301	A1B74	C20-C21-C23	-4.33	123.42	129.44
15	M	301	A1B74	C18-C16-N15	-4.27	105.65	111.70
15	M	301	A1B74	C20-C21-C23	-4.23	123.57	129.44
15	a	301	A1B74	C18-C16-N15	-4.11	105.87	111.70
15	a	301	A1B74	C12-C11-C13	-2.28	105.79	110.07
15	M	301	A1B74	C12-C11-C13	-2.16	106.01	110.07
15	a	301	A1B74	C16-N15-C13	-2.12	119.97	122.91

There are no chirality outliers.

All (2) torsion outliers are listed below:

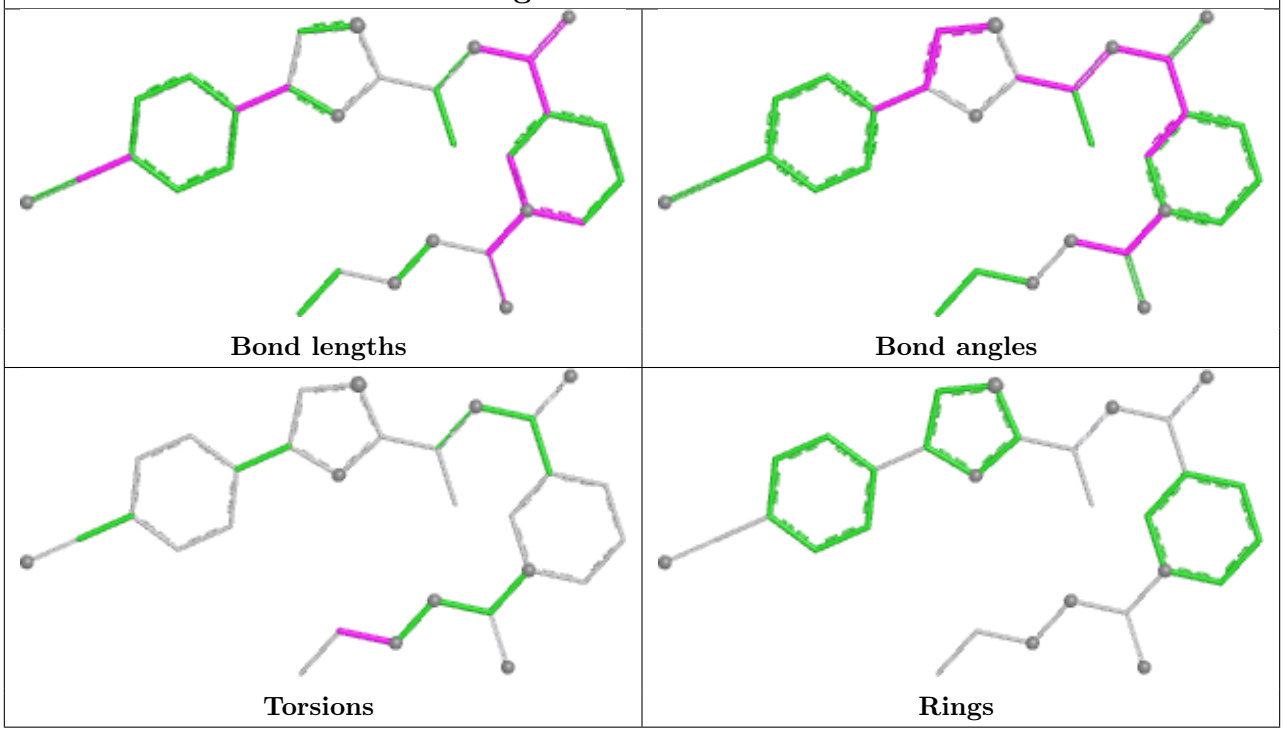
Mol	Chain	Res	Type	Atoms
15	M	301	A1B74	C01-C02-O03-N04
15	a	301	A1B74	C01-C02-O03-N04

There are no ring outliers.

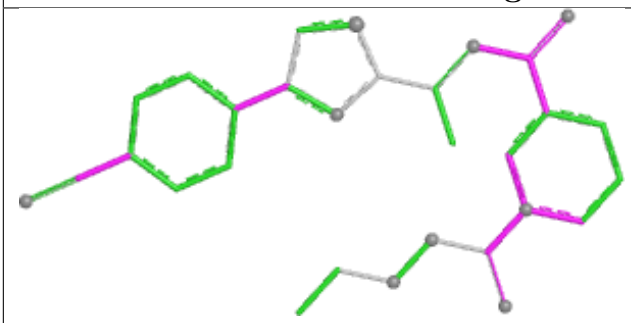
No monomer is involved in short contacts.

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.

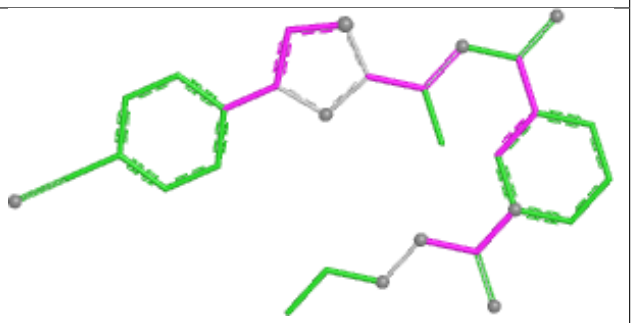
Ligand A1B74 a 301



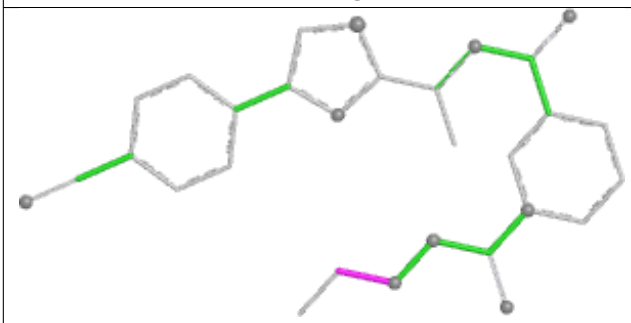
Ligand A1B74 M 301



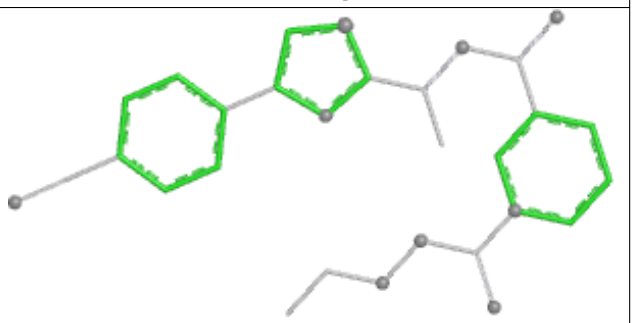
Bond lengths



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.

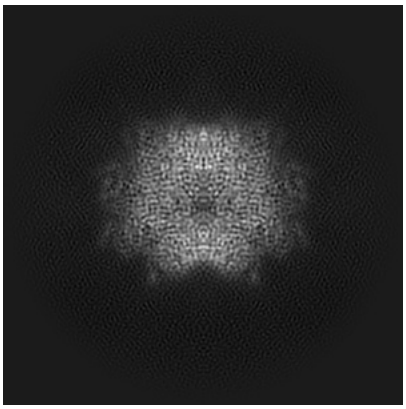
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-70077. These allow visual inspection of the internal detail of the map and identification of artifacts.

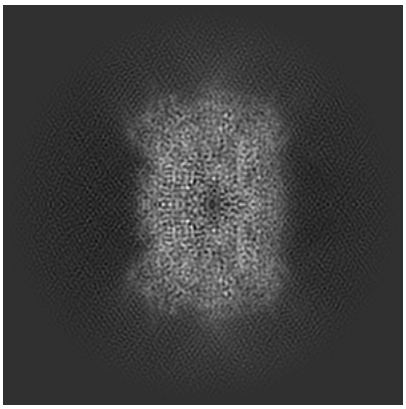
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

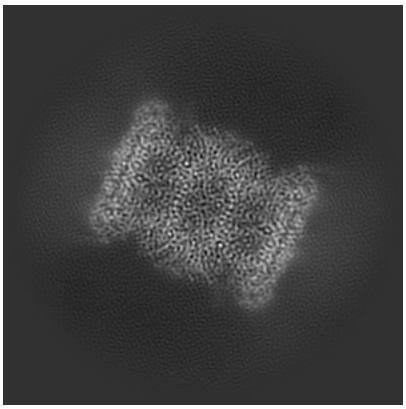
6.1.1 Primary map



X

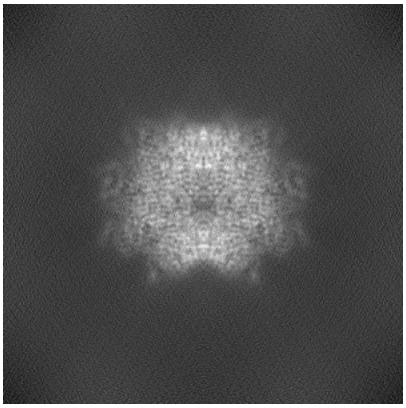


Y

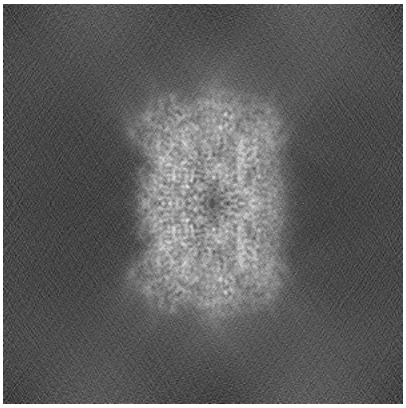


Z

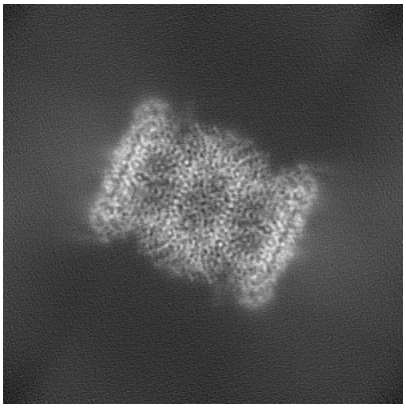
6.1.2 Raw map



X



Y

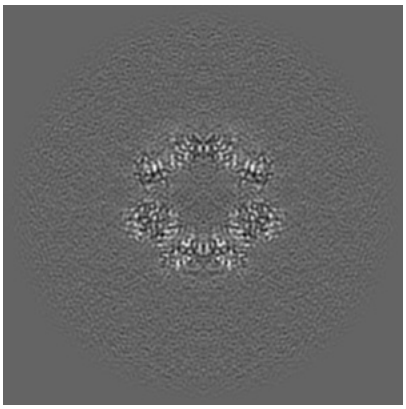


Z

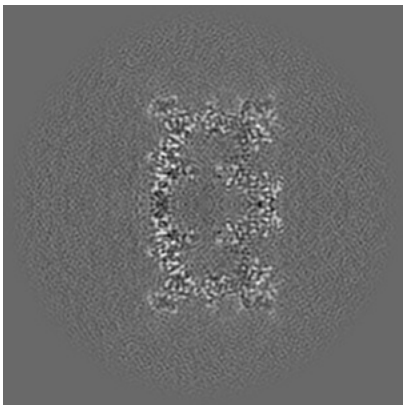
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

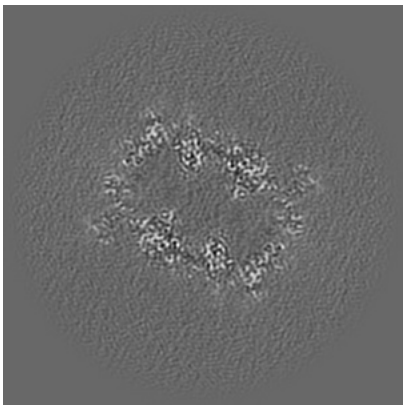
6.2.1 Primary map



X Index: 180

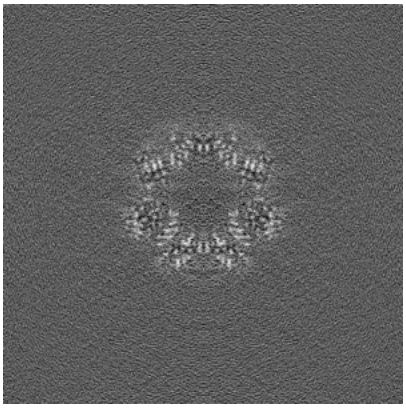


Y Index: 180

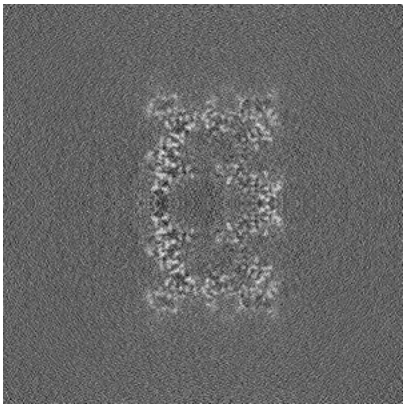


Z Index: 180

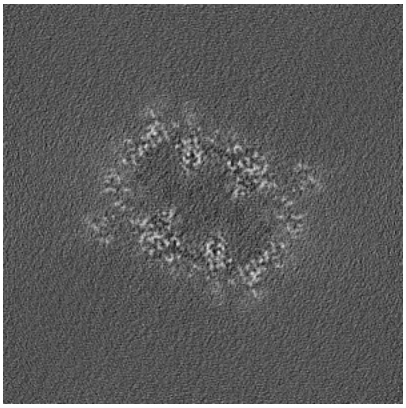
6.2.2 Raw map



X Index: 180



Y Index: 180

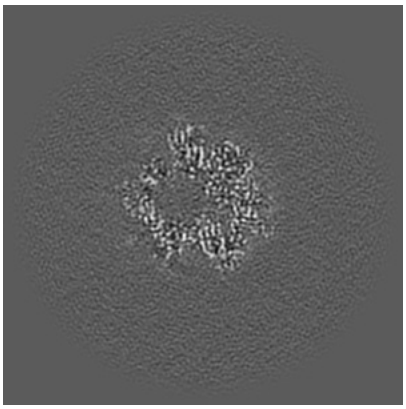


Z Index: 180

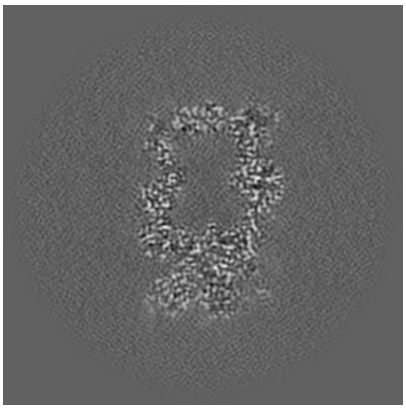
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

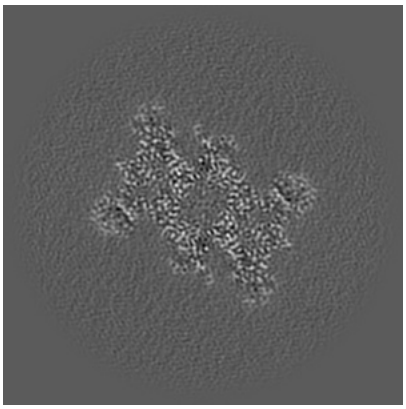
6.3.1 Primary map



X Index: 205

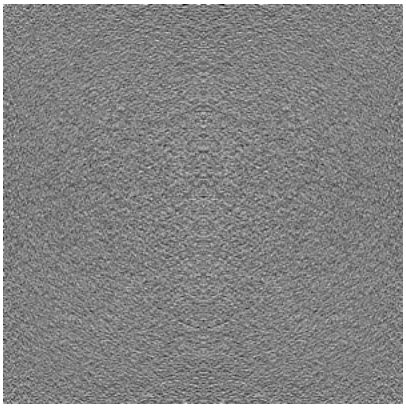


Y Index: 167

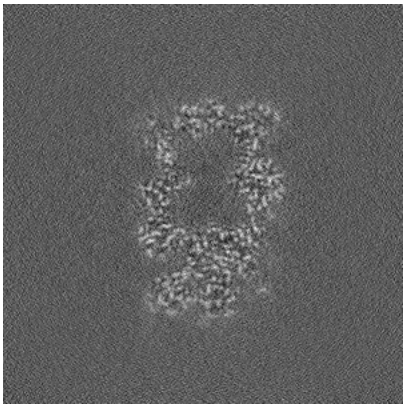


Z Index: 153

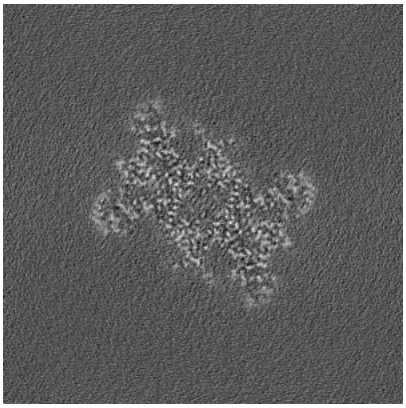
6.3.2 Raw map



X Index: 0



Y Index: 166

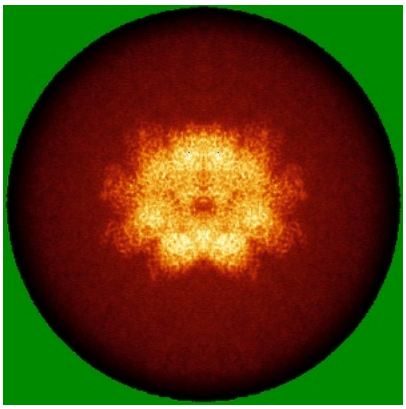


Z Index: 152

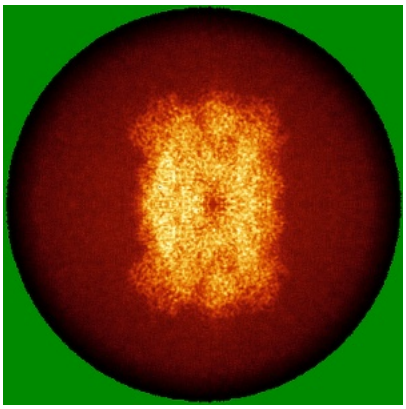
The images above show the largest variance slices of the map in three orthogonal directions.

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

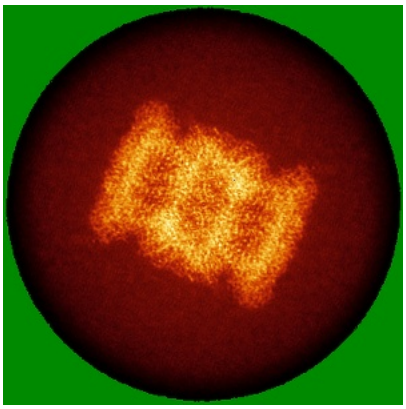
6.4.1 Primary map



X

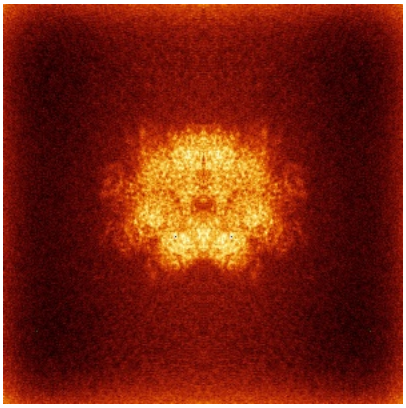


Y

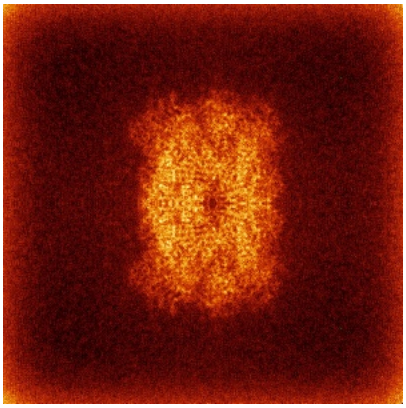


Z

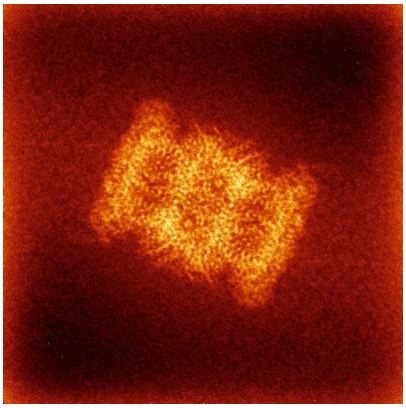
6.4.2 Raw map



X



Y

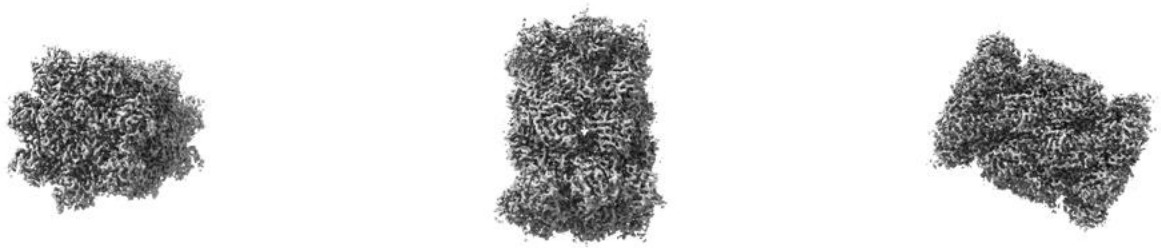


Z

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)

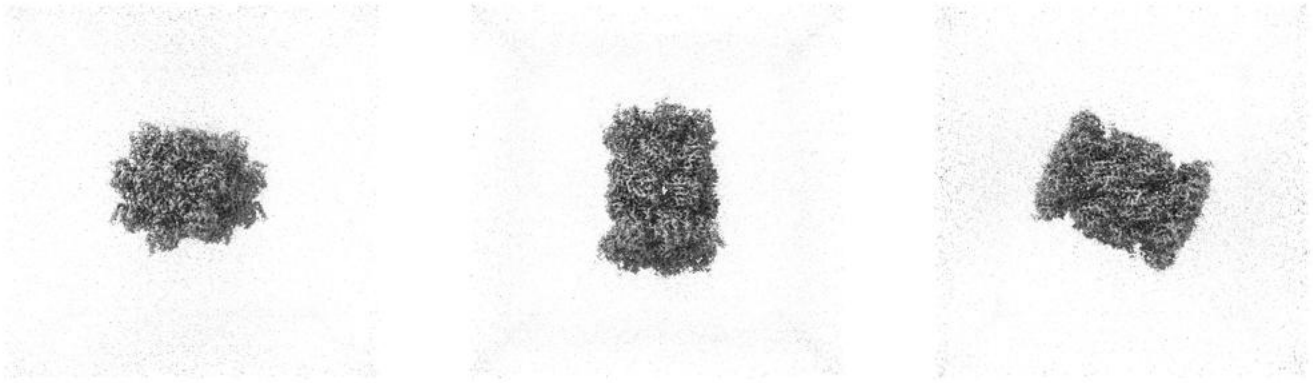
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.25. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

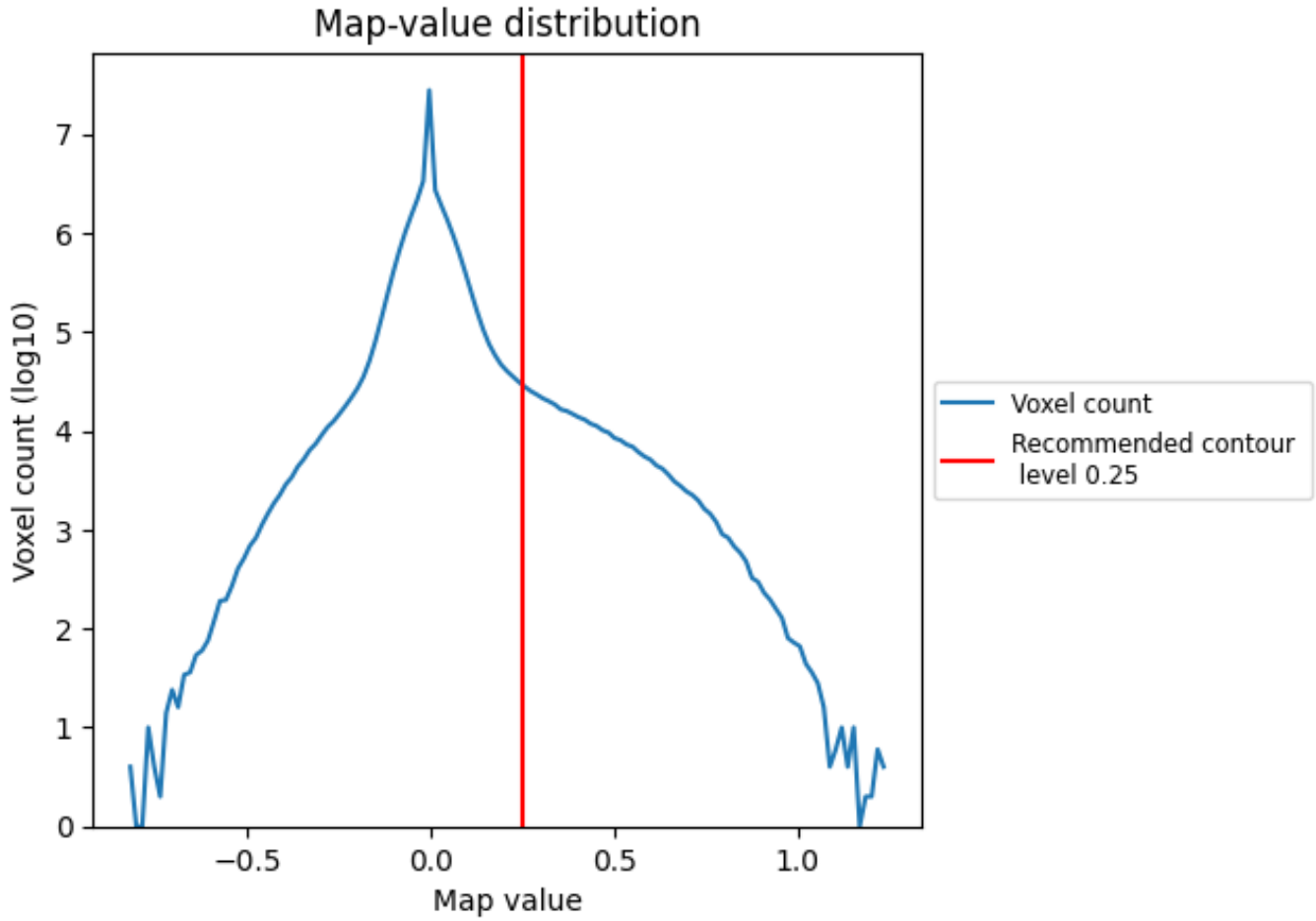
6.6 Mask visualisation (i)

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

7 Map analysis

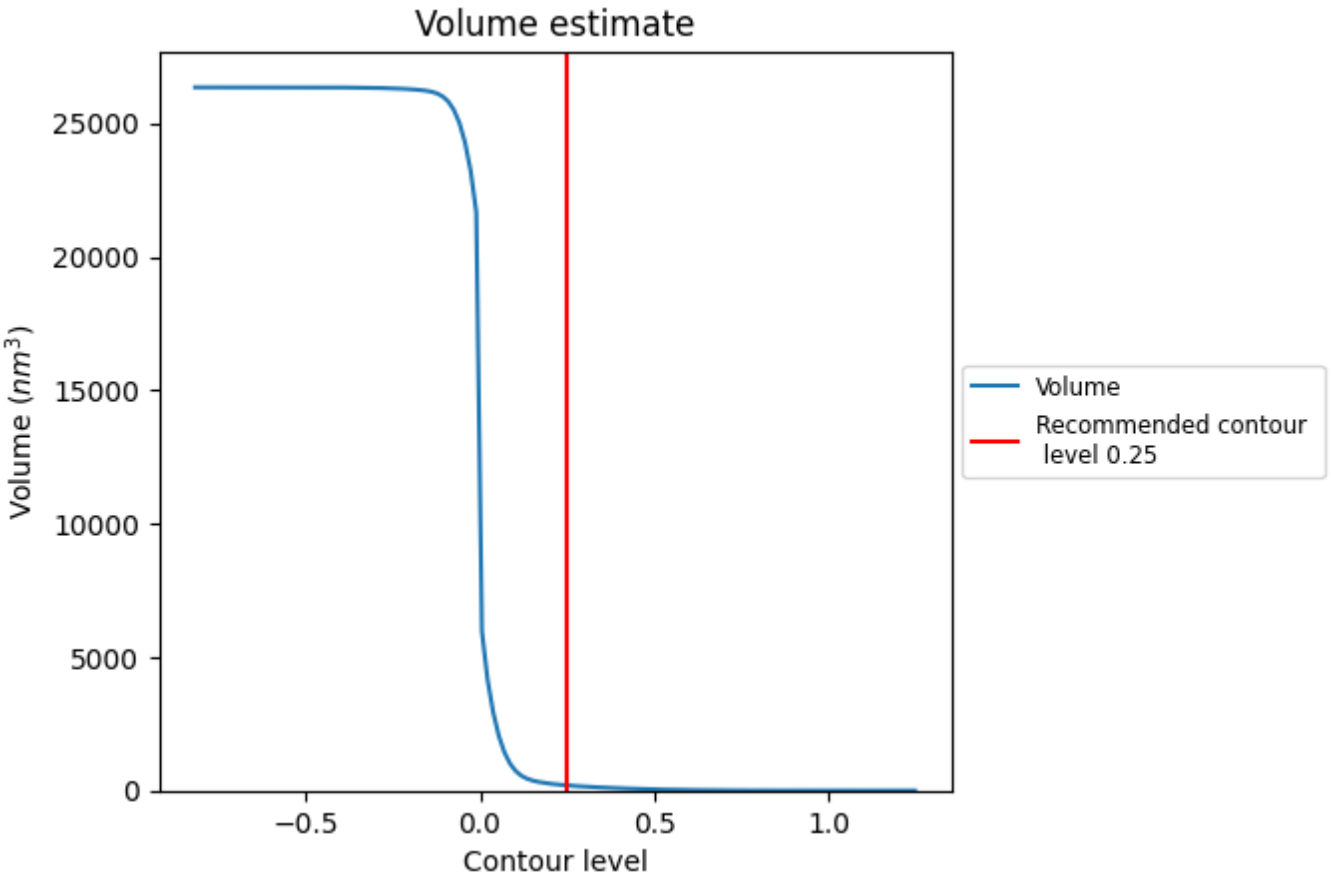
This section contains the results of statistical analysis of the map.

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.

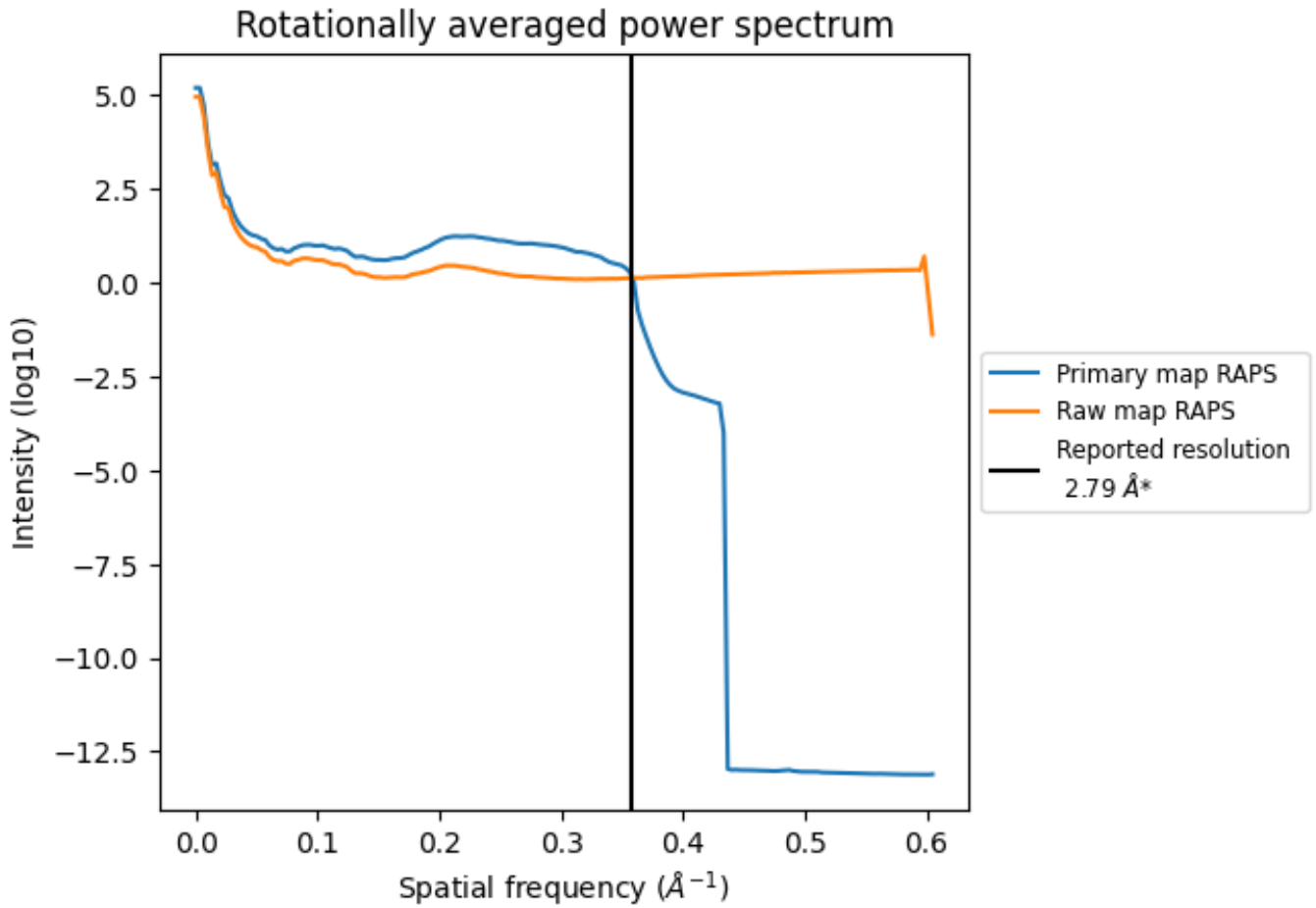
7.2 Volume estimate



The volume at the recommended contour level is 195 nm^3; this corresponds to an approximate mass of 176 kDa.

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

7.3 Rotationally averaged power spectrum (i)

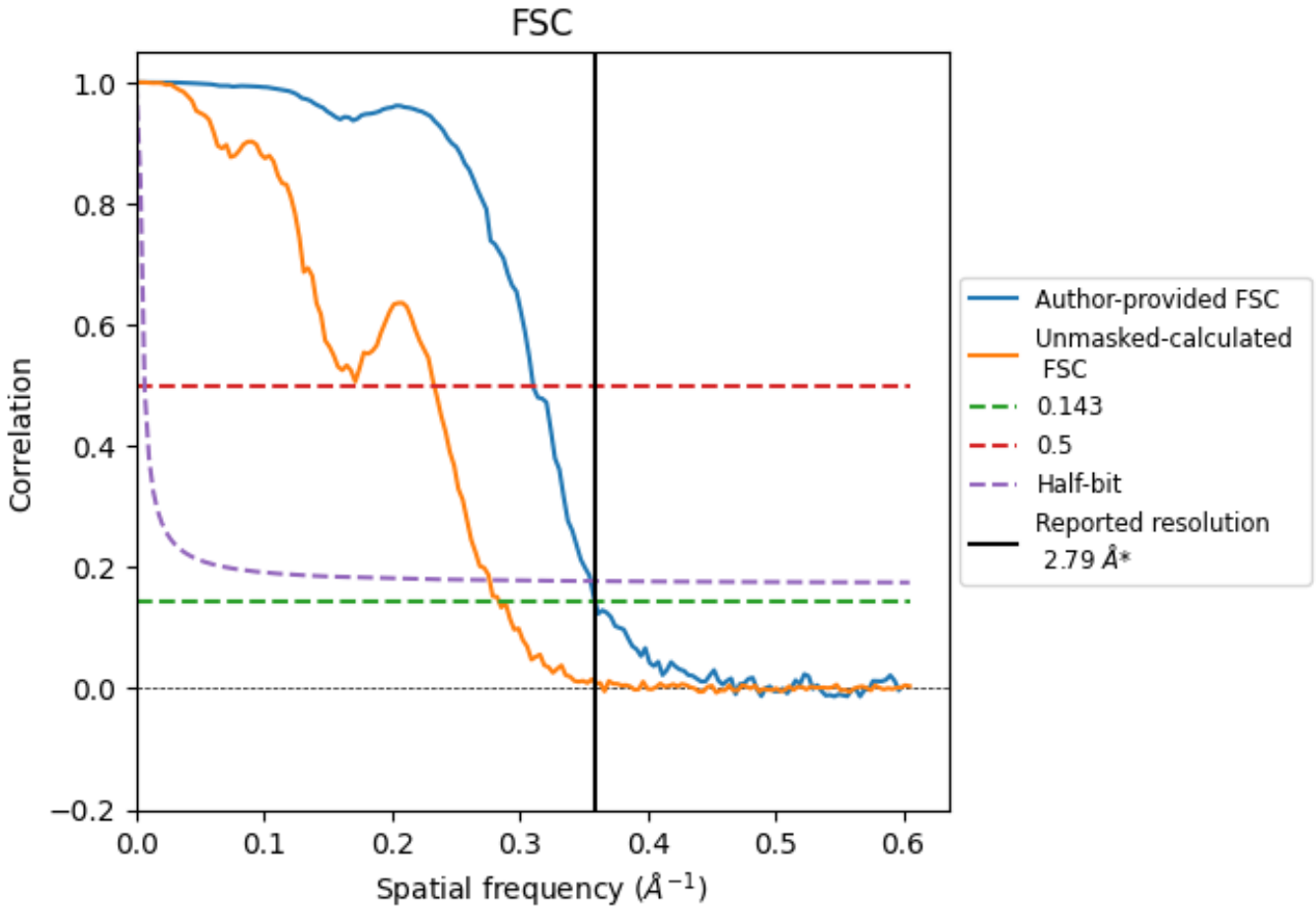


*Reported resolution corresponds to spatial frequency of 0.358 $Å^{-1}$

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 0.358 Å^{-1}

8.2 Resolution estimates (i)

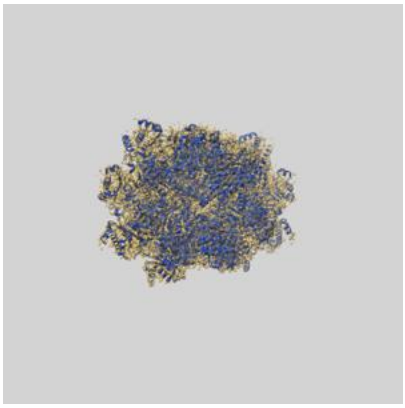
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.79	-	-
Author-provided FSC curve	2.79	3.22	2.81
Unmasked-calculated*	3.52	4.29	3.62

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.52 differs from the reported value 2.79 by more than 10 %

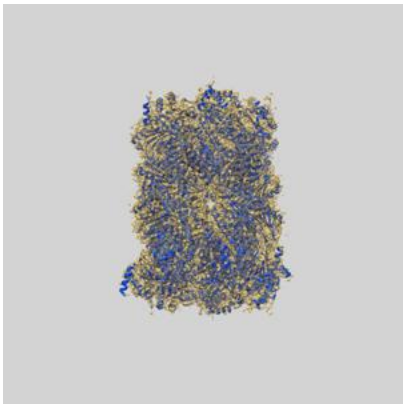
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-70077 and PDB model 9O3E. Per-residue inclusion information can be found in section 3 on page 8.

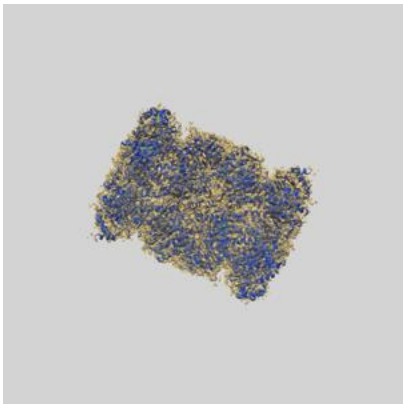
9.1 Map-model overlay



X



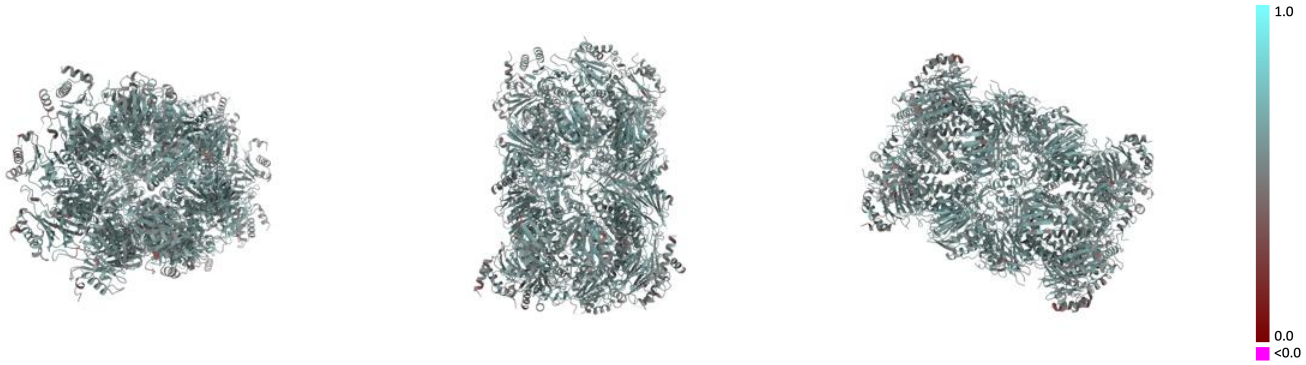
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.25 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.

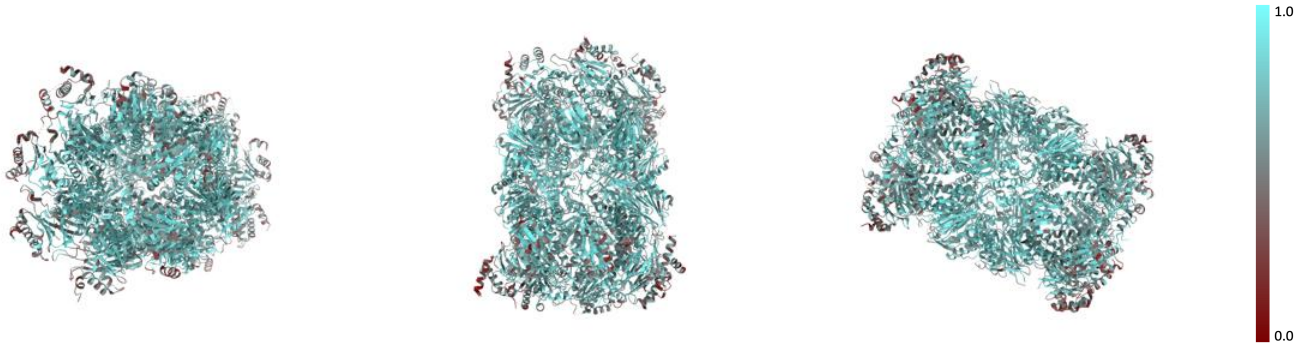
9.2 Q-score mapped to coordinate model (i)



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.

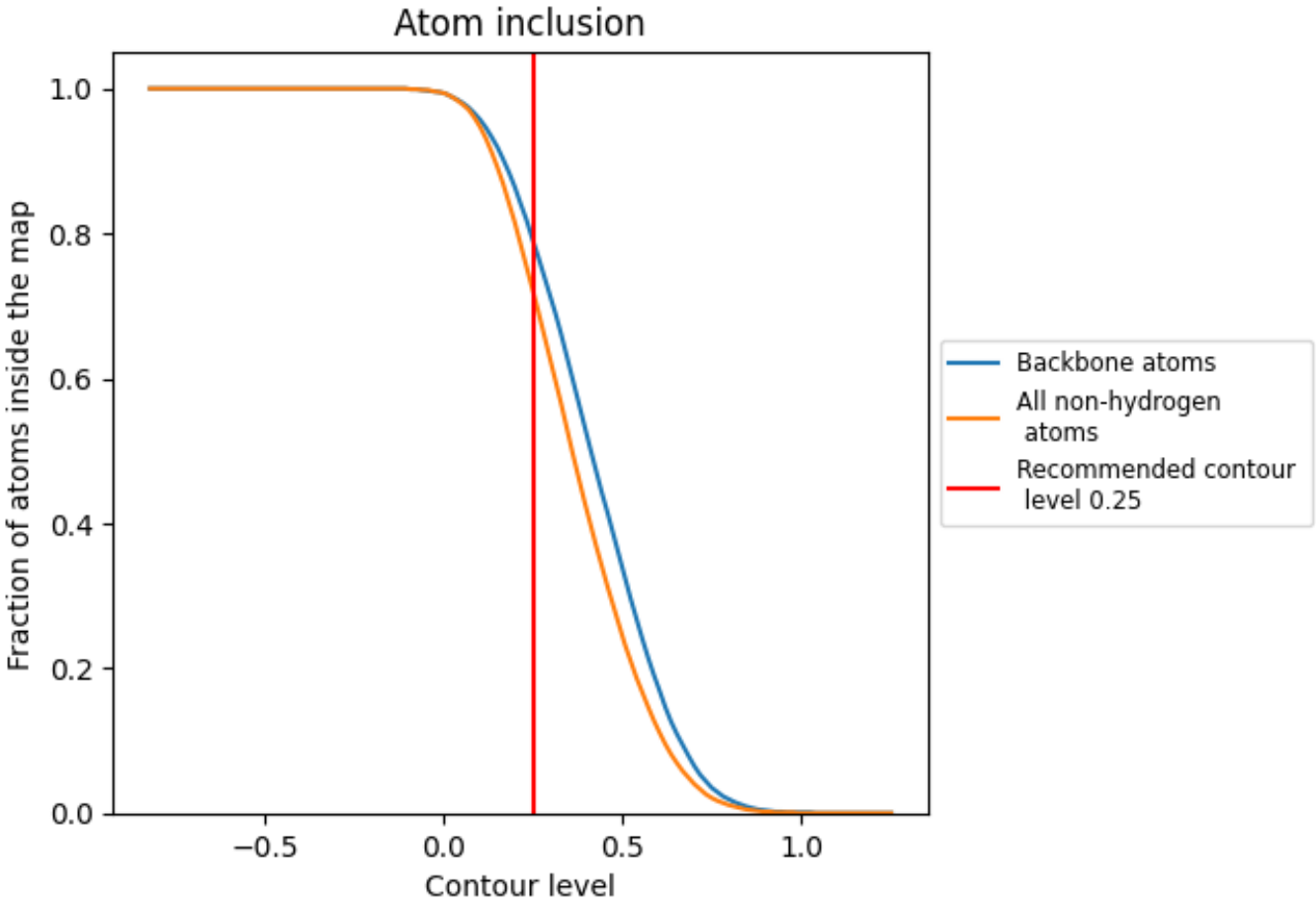
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.25).

9.4 Atom inclusion (i)



At the recommended contour level, 79% of all backbone atoms, 72% 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 (0.25) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7210	0.5630
A	0.6620	0.5500
B	0.6780	0.5520
C	0.6710	0.5500
D	0.6420	0.5450
E	0.6390	0.5340
F	0.6690	0.5570
G	0.6800	0.5420
H	0.7680	0.5820
I	0.7490	0.5710
J	0.8040	0.5870
K	0.7870	0.5650
L	0.7990	0.5810
M	0.7760	0.5800
N	0.7870	0.5870
O	0.6370	0.5420
P	0.6770	0.5490
Q	0.6670	0.5520
R	0.6610	0.5410
S	0.6470	0.5420
T	0.6820	0.5610
U	0.6860	0.5500
V	0.7700	0.5790
W	0.7530	0.5710
X	0.8020	0.5900
Y	0.7880	0.5680
Z	0.8010	0.5800
a	0.7810	0.5810
b	0.7810	0.5870