



Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 10:45 PM UTC

PDB ID : 7VV5 / pdb_00007vv5
EMDB ID : EMD-32138
Title : Cryo-EM structure of pseudoallergen receptor MRGPRX2 complex with C48/80, state1
Authors : Li, Y.; Yang, F.
Deposited on : 2021-11-04
Resolution : 2.76 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

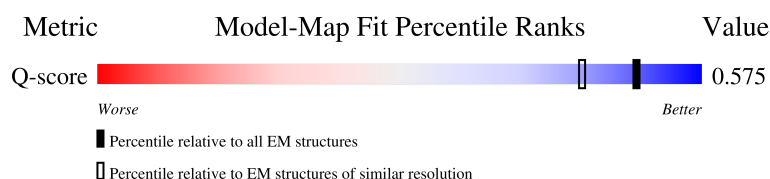
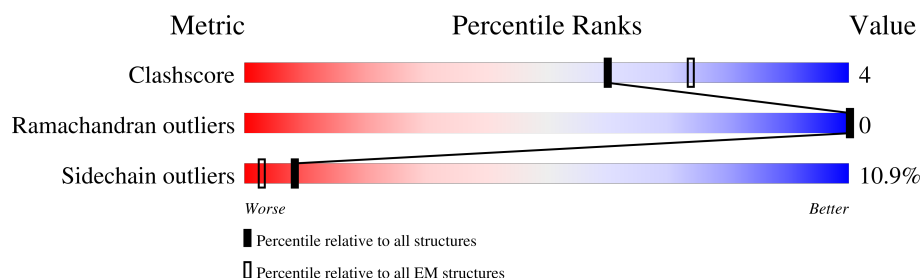
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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) : 2.49

1 Overall quality at a glance

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

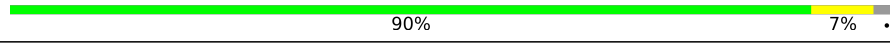
The reported resolution of this entry is 2.76 Å.

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	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	10642 (2.26 - 3.26)

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

Mol	Chain	Length	Quality of chain
1	A	354	
2	B	358	
3	G	58	
4	S	285	

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Mol	Chain	Length	Quality of chain
5	R	330	65% 15% • 19%

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 8829 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 Guanine nucleotide-binding protein G(i) subunit alpha-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	226	Total	C	N	O	S	0	0
			1813	1150	300	349	14		

- Molecule 2 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	339	Total	C	N	O	S	0	0
			2598	1603	464	510	21		

There are 19 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-17	MET	-	initiating methionine	UNP P62873
B	-16	HIS	-	expression tag	UNP P62873
B	-15	HIS	-	expression tag	UNP P62873
B	-14	HIS	-	expression tag	UNP P62873
B	-13	HIS	-	expression tag	UNP P62873
B	-12	HIS	-	expression tag	UNP P62873
B	-11	HIS	-	expression tag	UNP P62873
B	-10	LEU	-	expression tag	UNP P62873
B	-9	GLU	-	expression tag	UNP P62873
B	-8	VAL	-	expression tag	UNP P62873
B	-7	LEU	-	expression tag	UNP P62873
B	-6	PHE	-	expression tag	UNP P62873
B	-5	GLN	-	expression tag	UNP P62873
B	-4	GLY	-	expression tag	UNP P62873
B	-3	PRO	-	expression tag	UNP P62873
B	-2	GLY	-	expression tag	UNP P62873
B	-1	SER	-	expression tag	UNP P62873
B	0	SER	-	expression tag	UNP P62873
B	1	GLY	-	expression tag	UNP P62873

- Molecule 3 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	56	Total	C	N	O	S	0	0
			427	268	76	80	3		

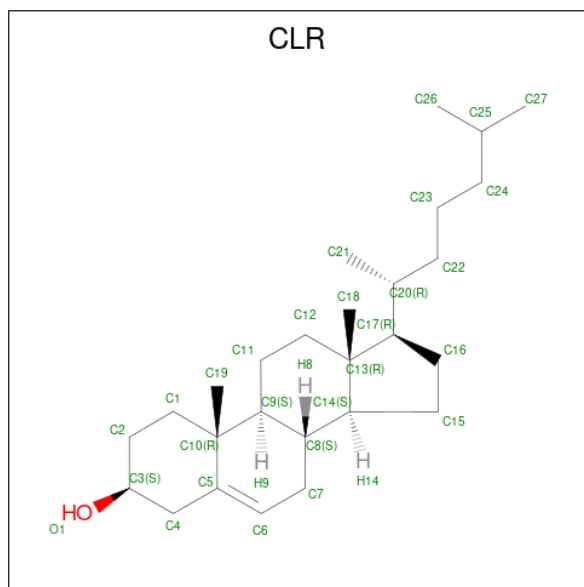
- Molecule 4 is a protein called scFv.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	S	233	Total	C	N	O	S	0	0
			1786	1133	296	347	10		

- Molecule 5 is a protein called Mas-related G-protein coupled receptor member X2.

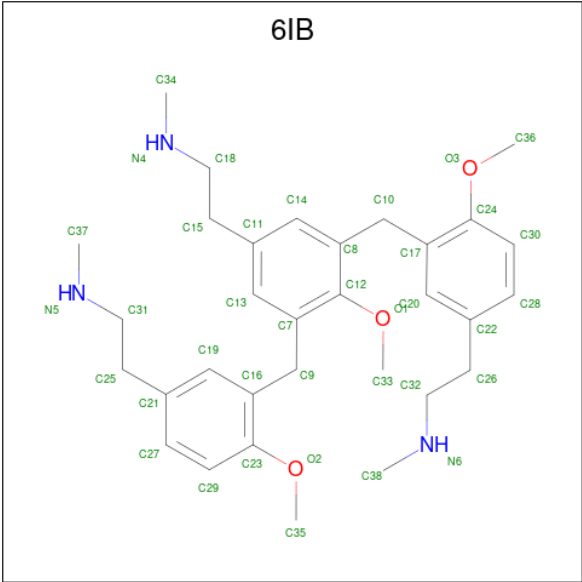
Mol	Chain	Residues	Atoms					AltConf	Trace
5	R	268	Total	C	N	O	S	0	0
			2139	1447	335	339	18		

- Molecule 6 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$).



Mol	Chain	Residues	Atoms			AltConf
6	R	1	Total	C	O	0
			28	27	1	

- Molecule 7 is 2-[4-methoxy-3-[[2-methoxy-3-[[2-methoxy-5-[2-(methylamino)ethyl]phenyl]methyl]-5-[2-(methylamino)ethyl]phenyl]methyl]phenyl]-{N}-methyl-ethanamine (CCD ID: 6IB) (formula: $C_{32}H_{45}N_3O_3$) (labeled as "Ligand of Interest" by depositor).

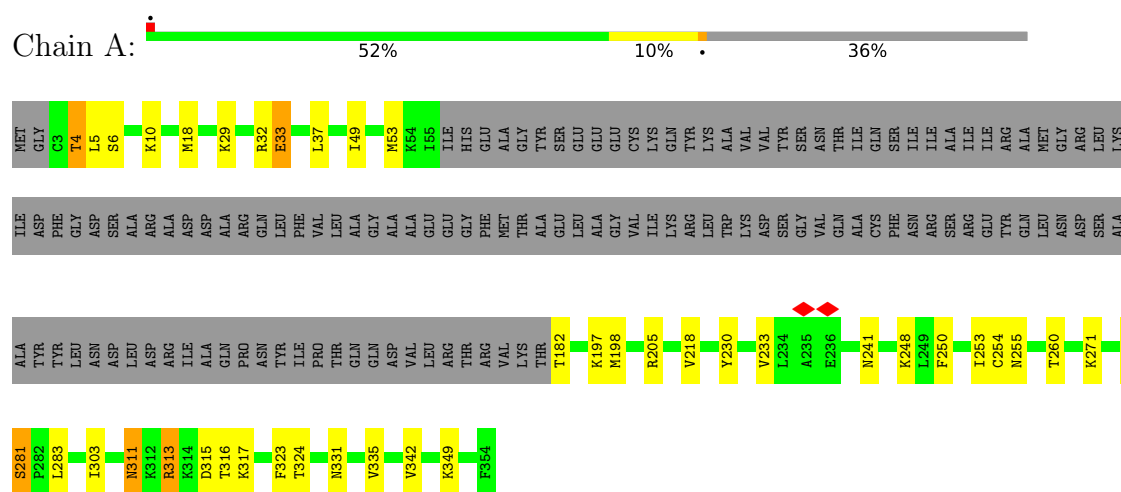


Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
7	R	1	38	32	3	3	0

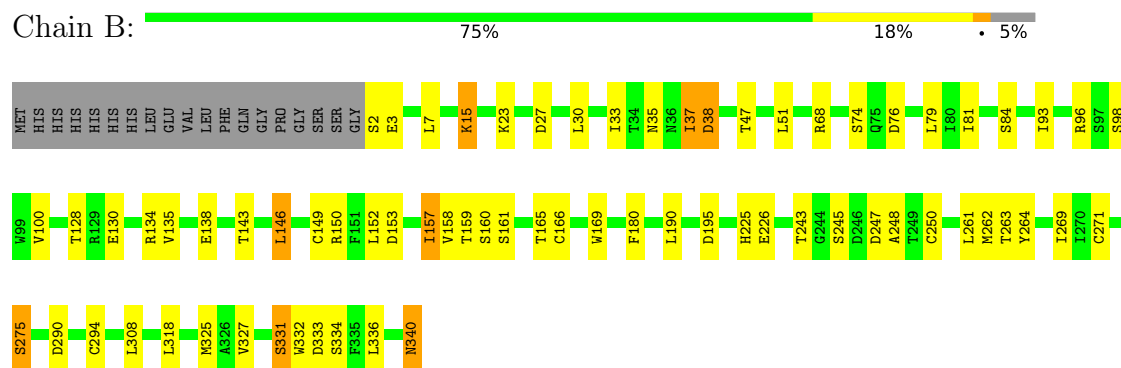
3 Residue-property plots

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.

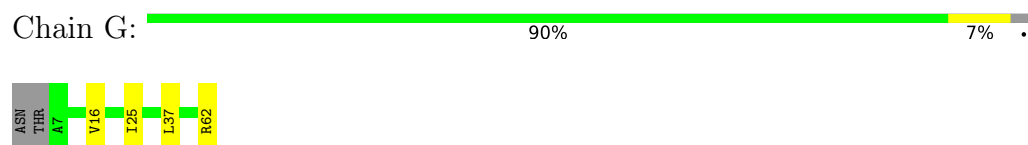
- Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1



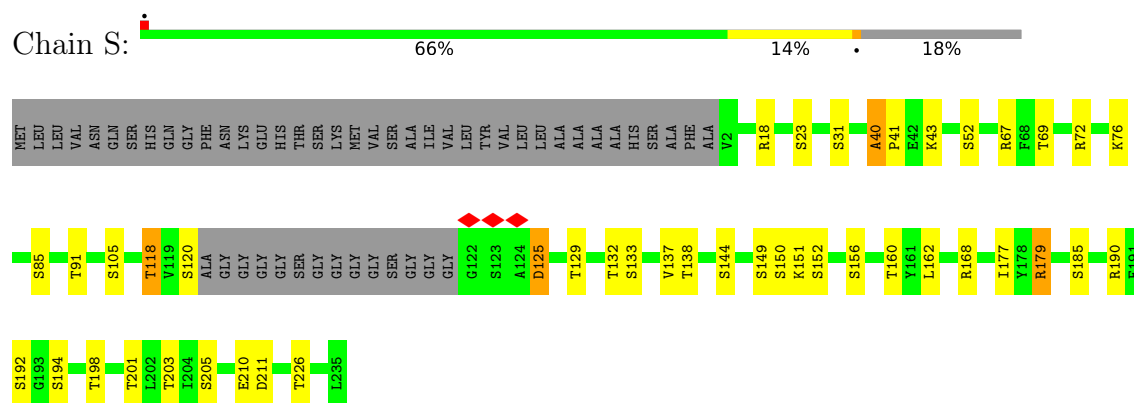
- Molecule 2: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1



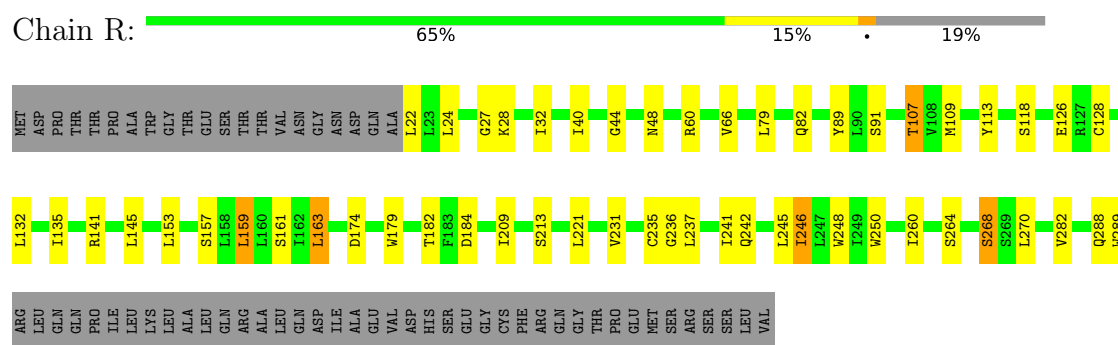
- Molecule 3: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2



- Molecule 4: scFv



- Molecule 5: Mas-related G-protein coupled receptor member X2



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	264735	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	58	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.181	Depositor
Minimum map value	-0.109	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.012	Depositor
Map size (Å)	168.32, 168.32, 168.32	wwPDB
Map dimensions	160, 160, 160	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.052, 1.052, 1.052	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CLR, 6IB

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	0.43	0/1843	0.59	0/2473
2	B	0.60	0/2645	0.68	2/3586 (0.1%)
3	G	0.35	0/433	0.61	0/583
4	S	0.54	1/1830 (0.1%)	0.67	3/2481 (0.1%)
5	R	0.38	0/2202	0.76	1/3001 (0.0%)
All	All	0.50	1/8953 (0.0%)	0.68	6/12124 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	S	40	ALA	C-N	5.71	1.42	1.33

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	S	41	PRO	N-CA-C	5.61	121.95	113.81
2	B	333	ASP	CA-C-N	5.48	130.63	122.74
2	B	333	ASP	C-N-CA	5.48	130.63	122.74
5	R	237	LEU	N-CA-C	5.34	120.88	113.45
4	S	179	ARG	CA-C-N	5.23	131.52	121.54
4	S	179	ARG	C-N-CA	5.23	131.52	121.54

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	1813	0	1788	15	0
2	B	2598	0	2493	29	0
3	G	427	0	439	0	0
4	S	1786	0	1722	12	0
5	R	2139	0	2213	19	0
6	R	28	0	46	1	0
7	R	38	0	0	5	0
All	All	8829	0	8701	78	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 4.

All (78) 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)
1:A:250:PHE:O	1:A:254:CYS:HB2	1.92	0.70
1:A:311:ASN:N	1:A:311:ASN:OD1	2.35	0.60
5:R:82:GLN:NE2	5:R:109:MET:SD	2.75	0.59
2:B:294:CYS:HB2	2:B:308:LEU:HB2	1.85	0.58
2:B:160:SER:HB3	2:B:190:LEU:HD13	1.85	0.57
2:B:248:ALA:HB1	2:B:269:ILE:HG22	1.87	0.57
2:B:245:SER:OG	2:B:247:ASP:OD1	2.24	0.56
4:S:40:ALA:HB3	4:S:43:LYS:HB2	1.89	0.55
7:R:402:6IB:C38	7:R:402:6IB:C35	2.85	0.54
2:B:271:CYS:HB2	2:B:290:ASP:HB2	1.90	0.54
7:R:402:6IB:C14	7:R:402:6IB:C34	2.86	0.54
7:R:402:6IB:C9	7:R:402:6IB:C33	2.86	0.54
7:R:402:6IB:C35	7:R:402:6IB:C32	2.86	0.53
4:S:91:THR:HG23	4:S:118:THR:HA	1.90	0.53
2:B:96:ARG:NH2	2:B:138:GLU:OE2	2.42	0.53
4:S:105:SER:O	4:S:179:ARG:NH2	2.39	0.53
1:A:29:LYS:HZ3	1:A:32:ARG:HD2	1.74	0.52
2:B:250:CYS:HB2	2:B:264:TYR:HB2	1.91	0.52
1:A:260:THR:HG22	1:A:313:ARG:HH11	1.74	0.52
1:A:271:LYS:HD3	1:A:323:PHE:HB3	1.90	0.52
5:R:118:SER:HB2	5:R:153:LEU:HD22	1.92	0.51
2:B:225:HIS:NE2	2:B:243:THR:OG1	2.37	0.51
2:B:149:CYS:HB3	2:B:157:ILE:HD11	1.92	0.51
2:B:331:SER:OG	2:B:332:TRP:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:166:CYS:HB2	2:B:180:PHE:HB2	1.93	0.50
4:S:149:SER:HB3	4:S:198:THR:HA	1.93	0.50
2:B:68:ARG:O	2:B:84:SER:OG	2.30	0.49
1:A:255:ASN:HD21	1:A:311:ASN:HA	1.76	0.49
2:B:146:LEU:HD11	2:B:159:THR:HB	1.95	0.49
4:S:190:ARG:NH2	4:S:211:ASP:OD1	2.46	0.48
2:B:38:ASP:OD2	2:B:38:ASP:N	2.38	0.48
2:B:2:SER:OG	2:B:3:GLU:N	2.42	0.48
5:R:264:SER:O	5:R:268:SER:OG	2.31	0.48
2:B:51:LEU:HB2	2:B:336:LEU:HB2	1.96	0.48
5:R:241:ILE:HG22	5:R:246:ILE:HD12	1.96	0.48
5:R:288:GLN:HG2	5:R:289:TRP:HD1	1.78	0.48
4:S:67:ARG:NH1	4:S:85:SER:O	2.47	0.47
4:S:168:ARG:NH1	4:S:210:GLU:O	2.42	0.47
5:R:107:THR:O	5:R:161:SER:OG	2.32	0.47
2:B:30:LEU:HD23	2:B:262:MET:HB2	1.96	0.47
5:R:184:ASP:OD2	7:R:402:6IB:N4	2.47	0.47
4:S:118:THR:O	4:S:118:THR:OG1	2.33	0.47
2:B:74:SER:OG	2:B:76:ASP:OD1	2.33	0.47
2:B:130:GLU:OE2	2:B:134:ARG:NH1	2.42	0.47
2:B:152:LEU:HD11	2:B:158:VAL:HG23	1.97	0.47
2:B:334:SER:OG	5:R:60:ARG:NH2	2.47	0.47
4:S:52:SER:O	4:S:72:ARG:NH1	2.48	0.47
2:B:325:MET:O	2:B:340:ASN:ND2	2.47	0.46
1:A:18:MET:HE2	1:A:18:MET:HB3	1.81	0.46
2:B:27:ASP:OD1	2:B:27:ASP:N	2.44	0.46
5:R:27:GLY:O	5:R:89:TYR:OH	2.29	0.45
4:S:125:ASP:OD2	4:S:125:ASP:N	2.49	0.45
5:R:66:VAL:HG13	6:R:401:CLR:H42	1.98	0.45
1:A:283:LEU:HD21	1:A:303:ILE:HD11	1.97	0.45
2:B:128:THR:HG22	2:B:130:GLU:H	1.81	0.45
2:B:15:LYS:HE3	2:B:15:LYS:HB2	1.79	0.45
1:A:33:GLU:OE2	1:A:197:LYS:NZ	2.46	0.45
1:A:233:VAL:HA	1:A:241:ASN:HA	2.00	0.43
1:A:53:MET:HG3	1:A:198:MET:HE1	2.01	0.43
1:A:349:LYS:HE3	1:A:349:LYS:HB2	1.91	0.42
5:R:40:ILE:HD13	5:R:270:LEU:HG	2.01	0.42
5:R:113:TYR:OH	5:R:236:GLY:O	2.32	0.42
5:R:44:GLY:O	5:R:48:ASN:ND2	2.52	0.42
5:R:242:GLN:HA	5:R:246:ILE:HB	2.01	0.42
1:A:5:LEU:HB2	1:A:10:LYS:HE3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:37:ILE:HD13	2:B:37:ILE:HA	1.91	0.41
2:B:159:THR:HG1	2:B:169:TRP:HE1	1.65	0.41
5:R:79:LEU:HD23	5:R:79:LEU:HA	1.93	0.41
1:A:4:THR:O	1:A:4:THR:OG1	2.37	0.41
1:A:230:TYR:OH	1:A:281:SER:O	2.35	0.41
5:R:231:VAL:O	5:R:235:CYS:HB2	2.21	0.41
2:B:150:ARG:HD3	2:B:150:ARG:HA	1.91	0.41
4:S:18:ARG:HA	4:S:18:ARG:HD3	1.93	0.41
5:R:126:GLU:OE1	5:R:141:ARG:NH2	2.54	0.41
4:S:149:SER:OG	4:S:151:LYS:O	2.33	0.40
5:R:246:ILE:O	5:R:250:TRP:HB2	2.22	0.40
2:B:275:SER:HB2	2:B:318:LEU:HG	2.04	0.40
5:R:159:LEU:O	5:R:163:LEU:HB2	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	222/354 (63%)	216 (97%)	6 (3%)	0	100	100
2	B	337/358 (94%)	325 (96%)	12 (4%)	0	100	100
3	G	54/58 (93%)	51 (94%)	3 (6%)	0	100	100
4	S	229/285 (80%)	222 (97%)	7 (3%)	0	100	100
5	R	266/330 (81%)	252 (95%)	14 (5%)	0	100	100
All	All	1108/1385 (80%)	1066 (96%)	42 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	199/305 (65%)	178 (89%)	21 (11%)	6	13
2	B	280/298 (94%)	252 (90%)	28 (10%)	7	14
3	G	44/47 (94%)	40 (91%)	4 (9%)	9	17
4	S	196/228 (86%)	170 (87%)	26 (13%)	4	7
5	R	239/292 (82%)	214 (90%)	25 (10%)	6	13
All	All	958/1170 (82%)	854 (89%)	104 (11%)	8	12

All (104) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	THR
1	A	6	SER
1	A	33	GLU
1	A	37	LEU
1	A	49	ILE
1	A	182	THR
1	A	205	ARG
1	A	218	VAL
1	A	248	LYS
1	A	253	ILE
1	A	280	LYS
1	A	281	SER
1	A	311	ASN
1	A	313	ARG
1	A	315	ASP
1	A	316	THR
1	A	317	LYS
1	A	324	THR
1	A	331	ASN
1	A	335	VAL
1	A	342	VAL
2	B	7	LEU
2	B	15	LYS

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Mol	Chain	Res	Type
2	B	23	LYS
2	B	33	ILE
2	B	35	ASN
2	B	37	ILE
2	B	38	ASP
2	B	47	THR
2	B	79	LEU
2	B	81	ILE
2	B	93	ILE
2	B	98	SER
2	B	100	VAL
2	B	135	VAL
2	B	143	THR
2	B	146	LEU
2	B	153	ASP
2	B	157	ILE
2	B	161	SER
2	B	165	THR
2	B	195	ASP
2	B	226	GLU
2	B	261	LEU
2	B	263	THR
2	B	275	SER
2	B	327	VAL
2	B	331	SER
2	B	340	ASN
3	G	16	VAL
3	G	25	ILE
3	G	37	LEU
3	G	62	ARG
4	S	23	SER
4	S	31	SER
4	S	69	THR
4	S	76	LYS
4	S	118	THR
4	S	120	SER
4	S	125	ASP
4	S	129	THR
4	S	132	THR
4	S	133	SER
4	S	137	VAL
4	S	138	THR

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Mol	Chain	Res	Type
4	S	144	SER
4	S	150	SER
4	S	152	SER
4	S	156	SER
4	S	160	THR
4	S	162	LEU
4	S	177	ILE
4	S	185	SER
4	S	192	SER
4	S	194	SER
4	S	201	THR
4	S	203	THR
4	S	205	SER
4	S	226	THR
5	R	22	LEU
5	R	24	LEU
5	R	28	LYS
5	R	32	ILE
5	R	91	SER
5	R	107	THR
5	R	128	CYS
5	R	132	LEU
5	R	135	ILE
5	R	145	LEU
5	R	157	SER
5	R	159	LEU
5	R	163	LEU
5	R	174	ASP
5	R	179	TRP
5	R	182	THR
5	R	209	ILE
5	R	213	SER
5	R	221	LEU
5	R	245	LEU
5	R	246	ILE
5	R	248	TRP
5	R	260	ILE
5	R	268	SER
5	R	282	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	52	GLN
1	A	255	ASN
1	A	256	ASN
1	A	306	GLN
1	A	346	ASN
2	B	6	GLN
2	B	16	ASN
2	B	35	ASN
2	B	175	GLN
2	B	220	GLN
2	B	259	GLN
2	B	293	ASN
2	B	311	HIS
2	B	340	ASN
4	S	13	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

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
7	6IB	R	402	-	40,40,40	0.75	0	49,52,52	1.59	13 (26%)
6	CLR	R	401	-	31,31,31	1.61	2 (6%)	48,48,48	1.58	6 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	6IB	R	402	-	-	15/26/26/26	0/3/3/3
6	CLR	R	401	-	-	9/10/68/68	0/4/4/4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	R	401	CLR	C20-C17	7.60	1.67	1.54
6	R	401	CLR	C13-C17	2.33	1.59	1.55

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	R	401	CLR	C22-C20-C17	5.56	121.86	110.33
6	R	401	CLR	C13-C17-C20	3.52	124.93	119.50
6	R	401	CLR	C17-C13-C14	-3.41	96.18	100.10
7	R	402	6IB	O2-C23-C29	-3.31	118.72	124.30
7	R	402	6IB	O2-C23-C16	3.29	120.86	115.96
7	R	402	6IB	C9-C16-C19	2.85	124.48	120.25
6	R	401	CLR	C16-C17-C20	2.81	116.44	112.18
6	R	401	CLR	C4-C5-C6	-2.81	116.76	120.57
7	R	402	6IB	C35-O2-C23	-2.71	113.53	117.51
7	R	402	6IB	C10-C17-C20	2.68	124.23	120.25
7	R	402	6IB	C28-C22-C20	-2.60	114.96	118.55
7	R	402	6IB	C25-C21-C19	2.53	124.80	120.54
7	R	402	6IB	C17-C20-C22	2.31	125.36	121.76
7	R	402	6IB	C19-C16-C23	-2.31	115.73	118.26
7	R	402	6IB	C16-C19-C21	2.22	125.23	121.76
6	R	401	CLR	C2-C3-C4	-2.14	107.29	110.29
7	R	402	6IB	C26-C22-C20	2.10	124.08	120.54
7	R	402	6IB	C27-C21-C19	-2.10	115.66	118.55
7	R	402	6IB	C32-C26-C22	2.06	117.47	112.83

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	R	401	CLR	C13-C17-C20-C22
6	R	401	CLR	C16-C17-C20-C21
6	R	401	CLR	C16-C17-C20-C22
7	R	402	6IB	C15-C18-N4-C34
7	R	402	6IB	C21-C25-C31-N5
6	R	401	CLR	C17-C20-C22-C23
7	R	402	6IB	C29-C23-O2-C35
6	R	401	CLR	C22-C23-C24-C25
6	R	401	CLR	C21-C20-C22-C23
7	R	402	6IB	C16-C23-O2-C35
6	R	401	CLR	C13-C17-C20-C21
7	R	402	6IB	C20-C22-C26-C32
7	R	402	6IB	C28-C22-C26-C32
6	R	401	CLR	C23-C24-C25-C26
6	R	401	CLR	C23-C24-C25-C27
7	R	402	6IB	C27-C21-C25-C31
7	R	402	6IB	C19-C21-C25-C31
7	R	402	6IB	C8-C10-C17-C24
7	R	402	6IB	C8-C10-C17-C20
7	R	402	6IB	C30-C24-O3-C36
7	R	402	6IB	C7-C12-O1-C33
7	R	402	6IB	C17-C24-O3-C36
7	R	402	6IB	C14-C11-C15-C18
7	R	402	6IB	C13-C11-C15-C18

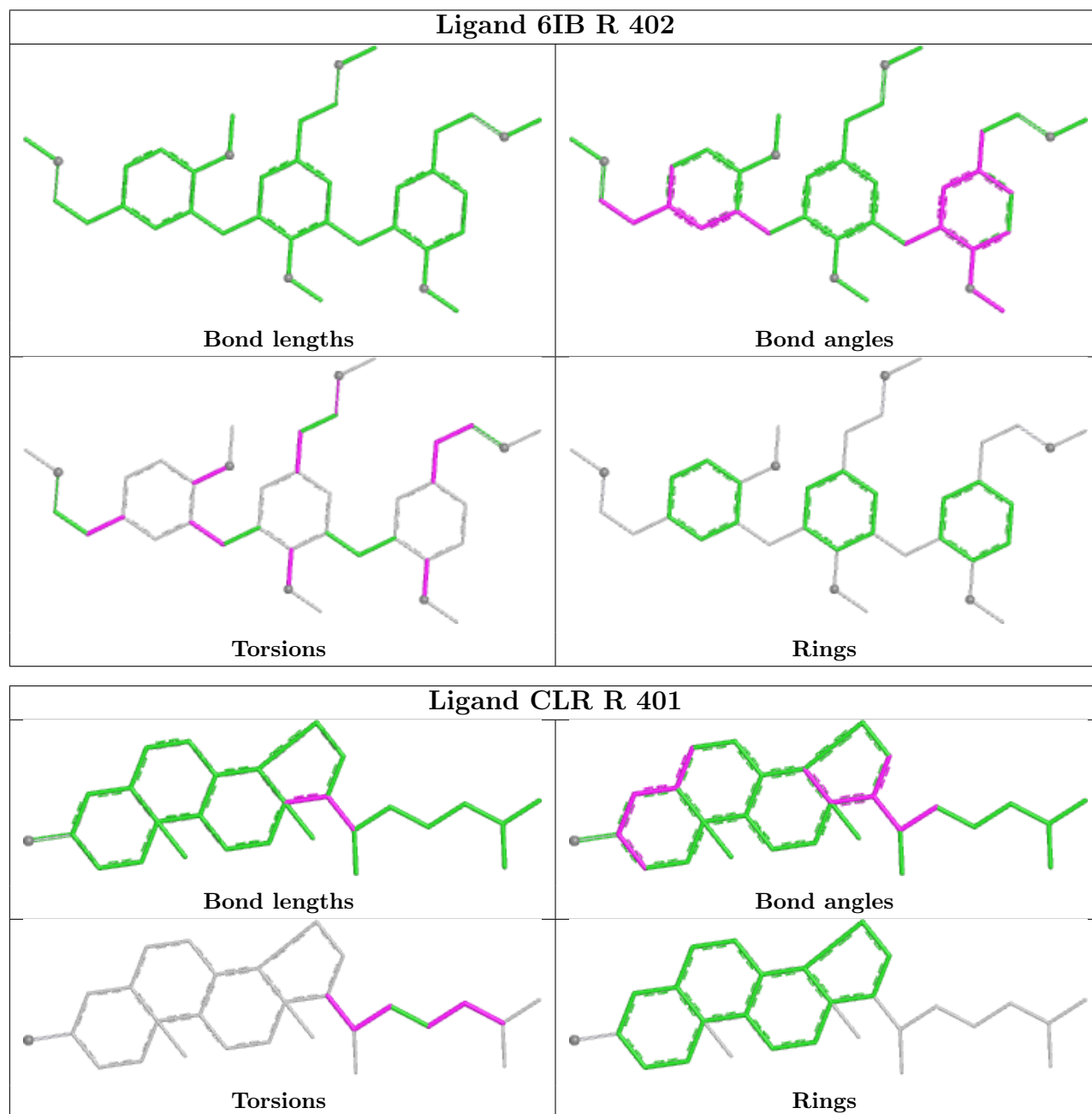
There are no ring outliers.

2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	R	402	6IB	5	0
6	R	401	CLR	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

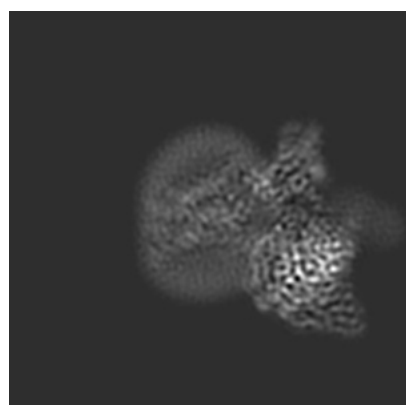
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32138. These allow visual inspection of the internal detail of the map and identification of artifacts.

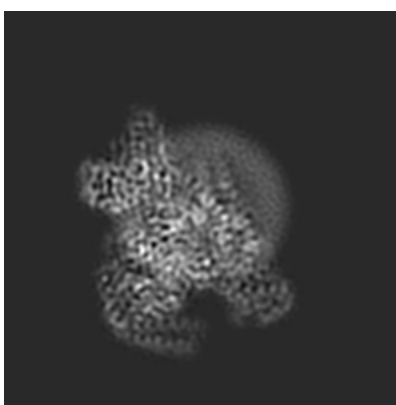
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

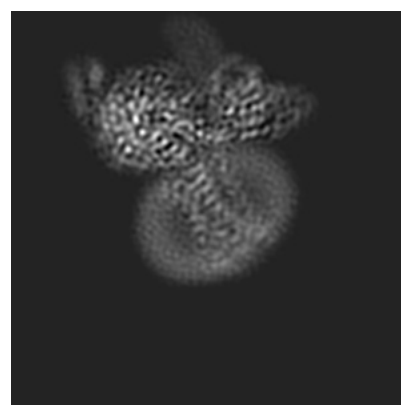
6.1.1 Primary map



X



Y

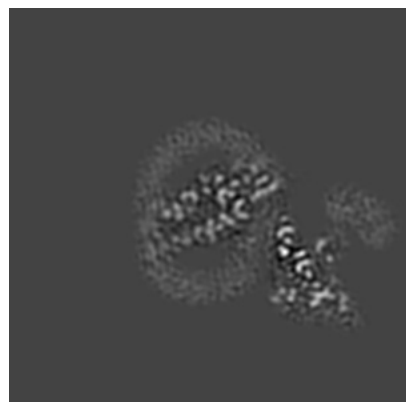


Z

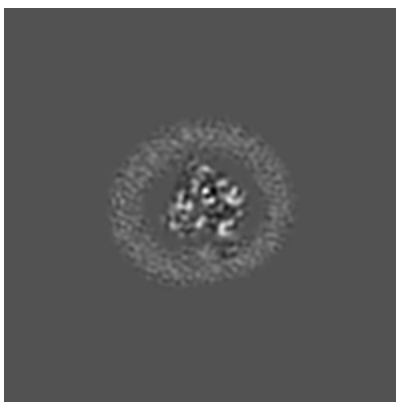
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

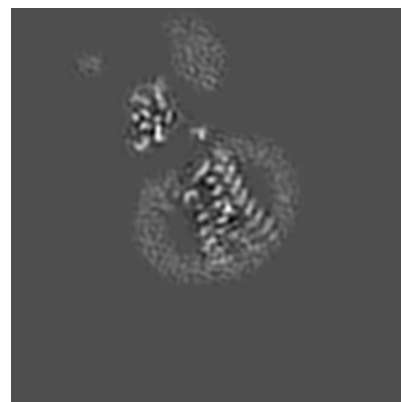
6.2.1 Primary map



X Index: 80



Y Index: 80

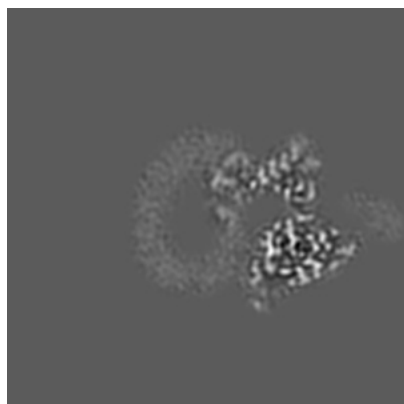


Z Index: 80

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

6.3 Largest variance slices [i](#)

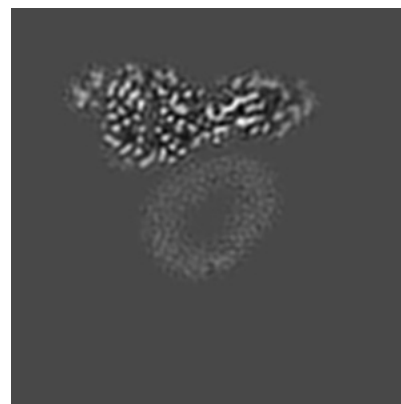
6.3.1 Primary map



X Index: 65



Y Index: 111

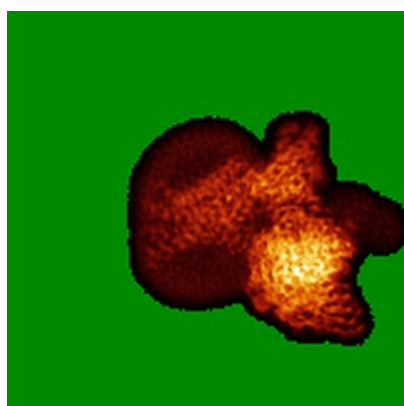


Z Index: 57

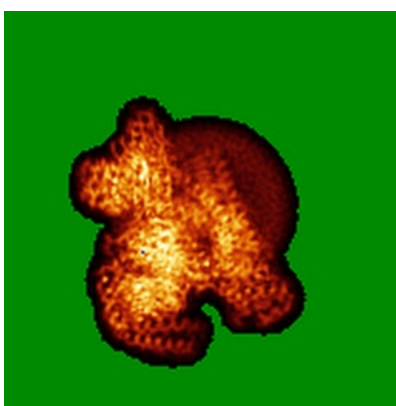
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

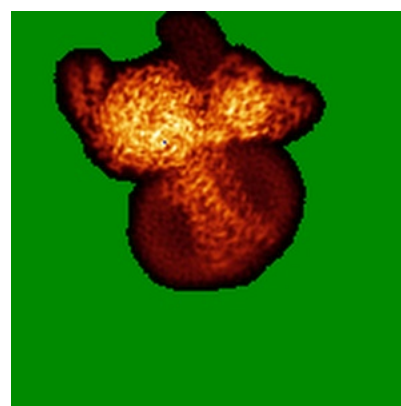
6.4.1 Primary map



X



Y

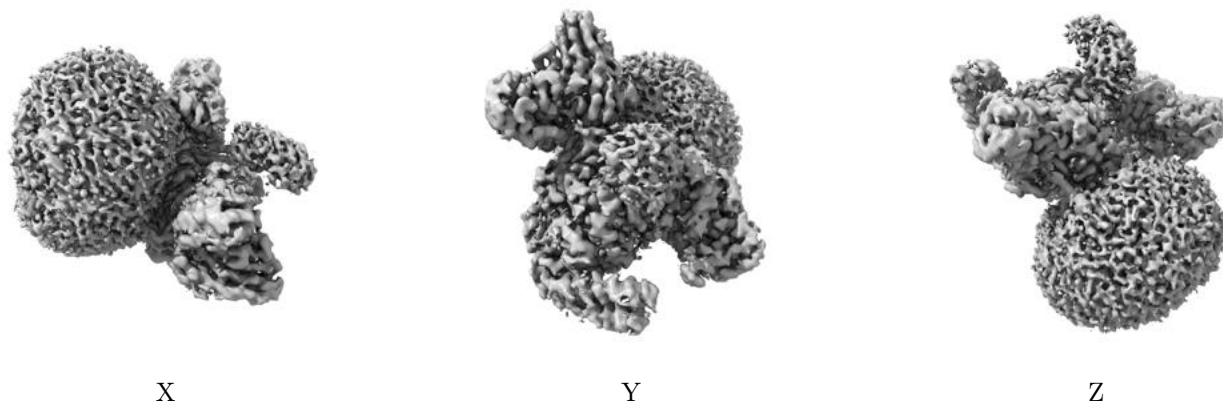


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.012. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

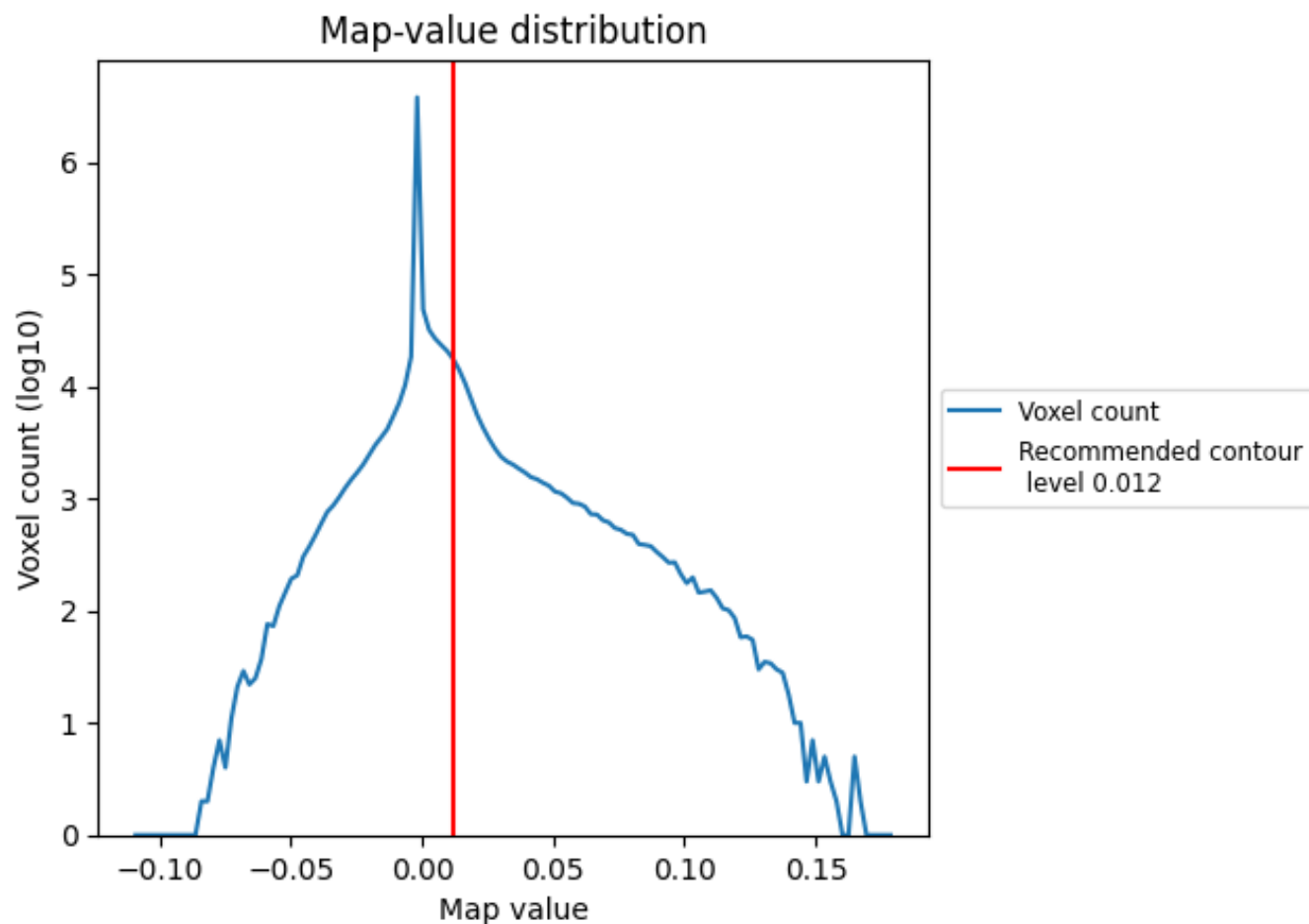
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

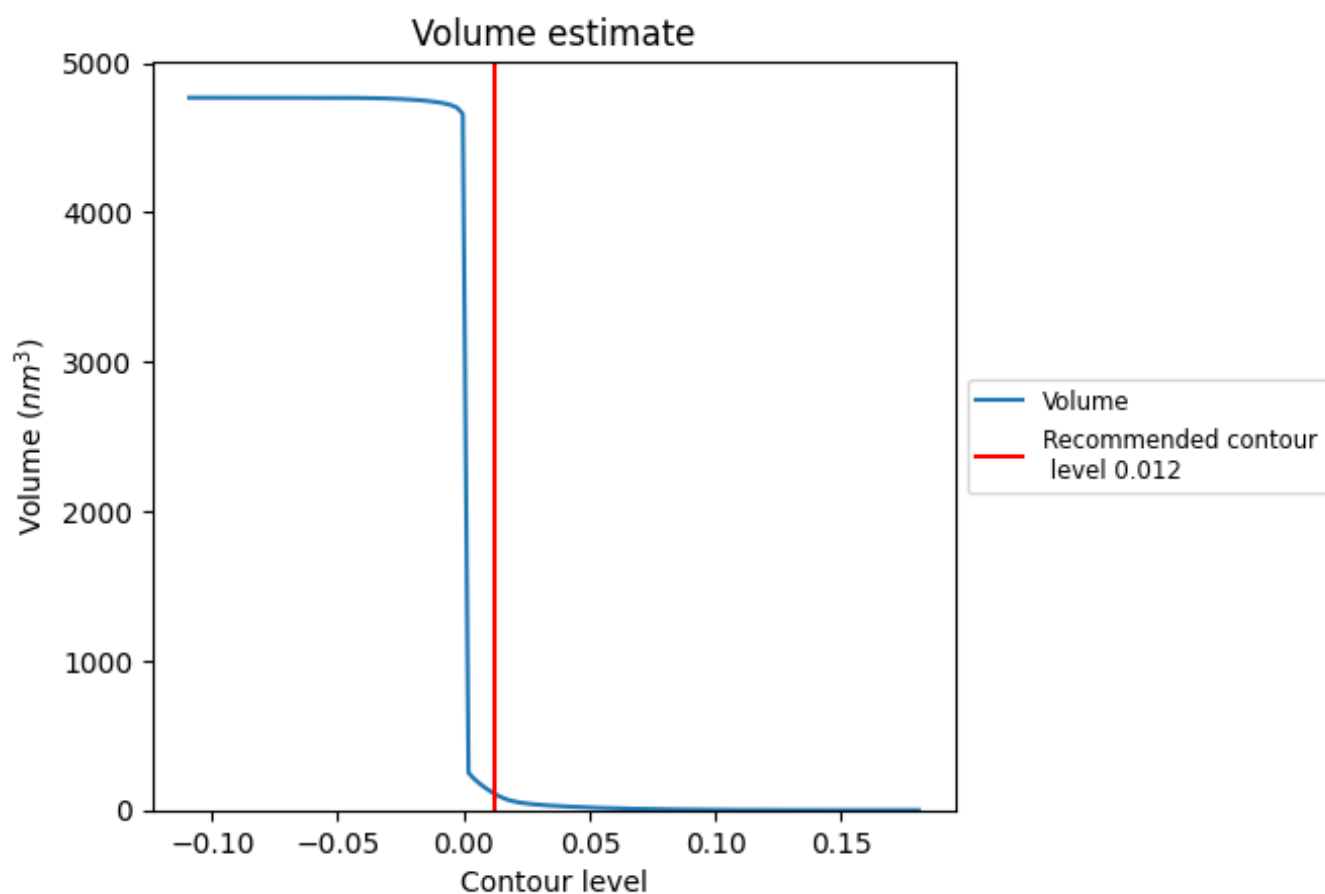
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

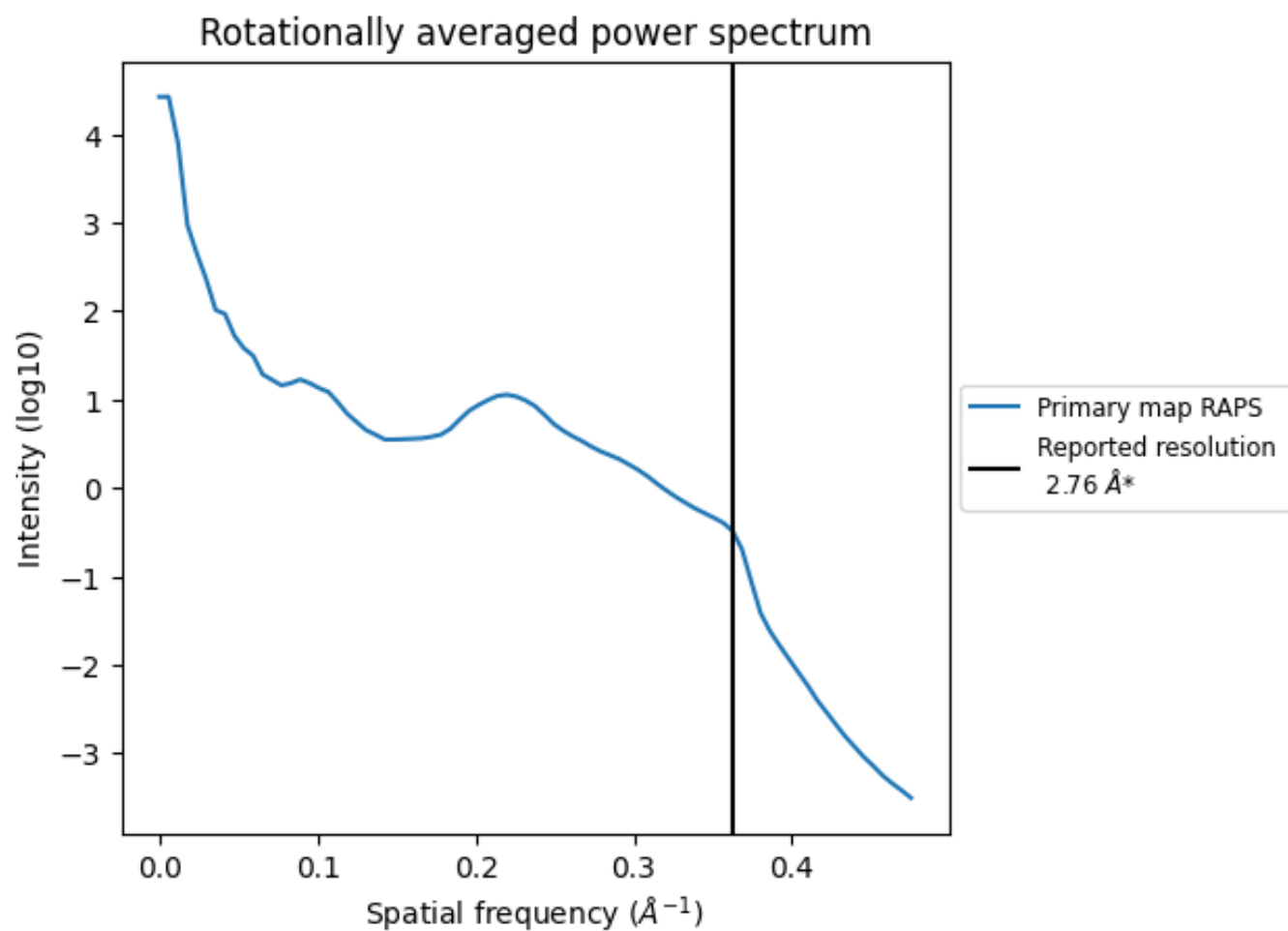
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 113 nm³; this corresponds to an approximate mass of 102 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.362 Å⁻¹

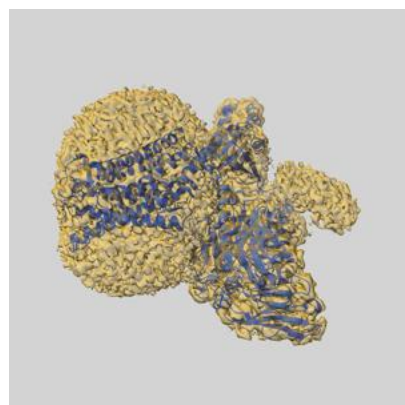
8 Fourier-Shell correlation ⓘ

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

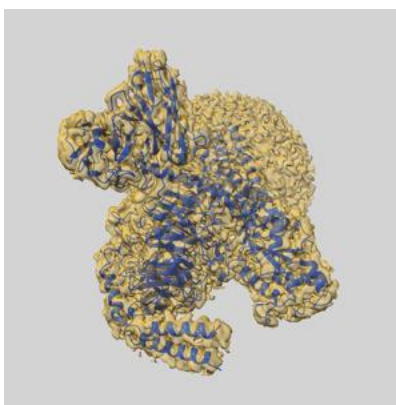
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-32138 and PDB model 7VV5. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

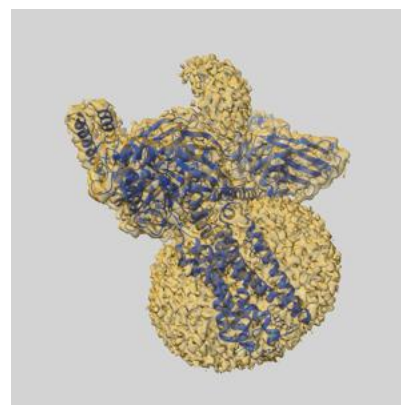
9.1 Map-model overlay [i](#)



X



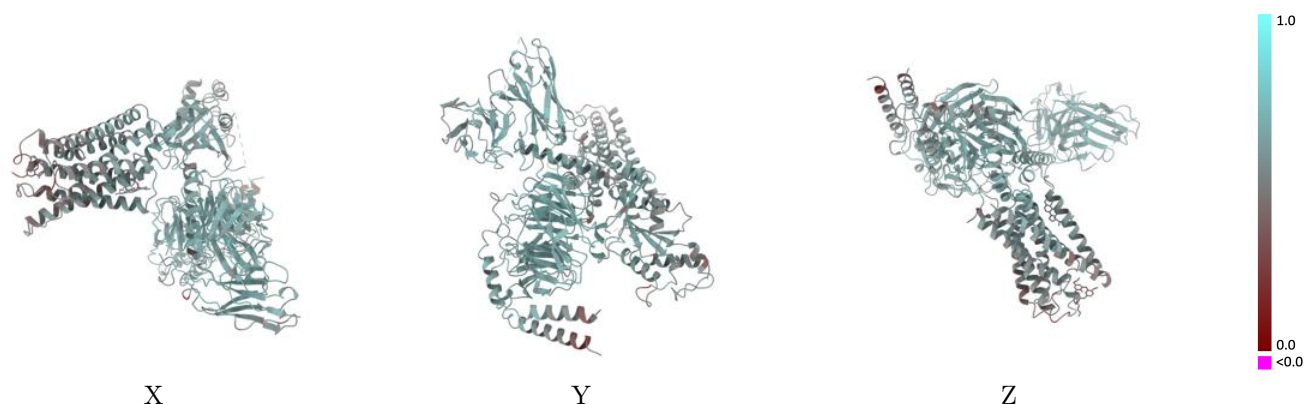
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.012 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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

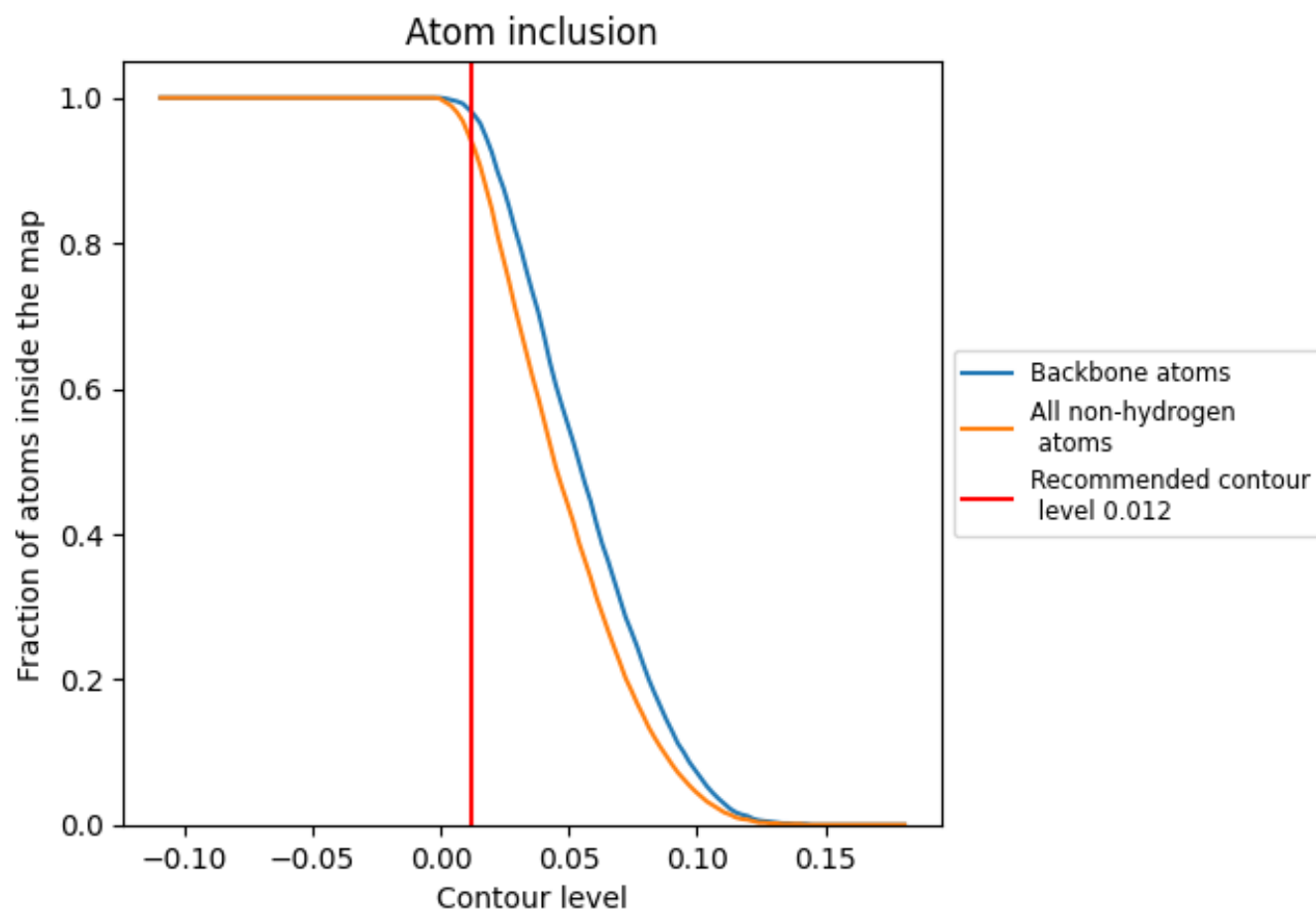


The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)

This section was not generated.

9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 94% 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 (0.012) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9400	0.5750
A	0.9120	0.5640
B	0.9720	0.6130
G	0.9360	0.5600
R	0.9120	0.5200
S	0.9590	0.6000

