Full wwPDB EM Validation Report ⓘ

Oct 29, 2026 – 03:17 pm GMT

PDB ID	:	9TC7 / pdb_00009tc7
EMDB ID	:	EMD-55776
Title	:	Inactive-state structure of GPR55 in complex with BI-6229
Authors	:	Claff, T.; Ebenhoch, R.; Kley, J.T.; Weichert, D.
Deposited on	:	2025-11-20
Resolution	:	2.57 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:

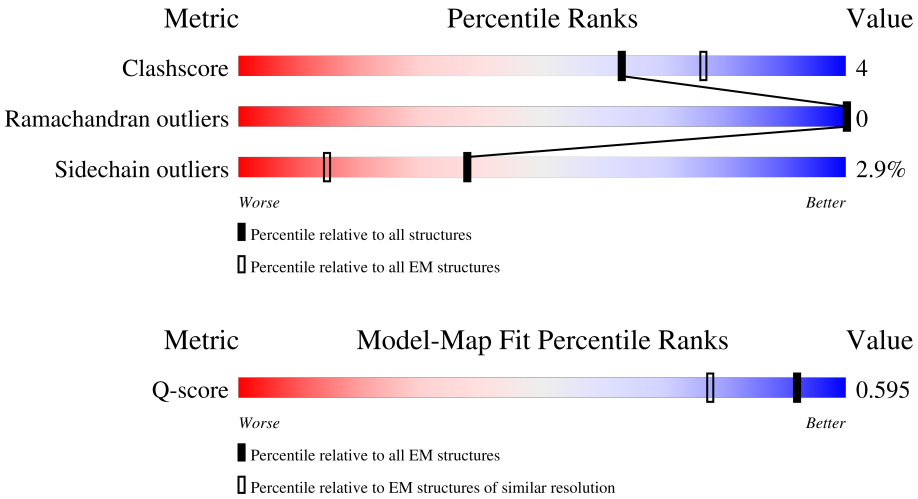
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.2
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data 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)	:	2.51

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 2.57 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	7615 (2.07 - 3.07)

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	H	245	81% 8% 11%
2	L	232	81% 10% 9%
3	N	162	17% 65% 9% 26%
4	A	741	41% 7% 52%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 7148 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 anti-bRIL fab heavy-chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	H	219	Total	C	N	O	S	0	0
			1648	1051	273	319	5		

- Molecule 2 is a protein called anti-bRIL fab light-chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L	212	Total	C	N	O	S	0	0
			1632	1025	272	330	5		

- Molecule 3 is a protein called Fab-Nb.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	N	120	Total	C	N	O	S	0	0
			925	574	163	184	4		

- Molecule 4 is a protein called Green fluorescent protein,G-protein coupled receptor 55,Soluble cytochrome b562.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	A	359	Total	C	N	O	S	0	0
			2883	1899	473	488	23		

There are 106 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-280	MET	-	initiating methionine	UNP P42212
A	-279	LYS	-	expression tag	UNP P42212
A	-278	THR	-	expression tag	UNP P42212
A	-277	ILE	-	expression tag	UNP P42212
A	-276	ILE	-	expression tag	UNP P42212
A	-275	ALA	-	expression tag	UNP P42212
A	-274	LEU	-	expression tag	UNP P42212
A	-273	SER	-	expression tag	UNP P42212

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-272	TYR	-	expression tag	UNP P42212
A	-271	ILE	-	expression tag	UNP P42212
A	-270	PHE	-	expression tag	UNP P42212
A	-269	CYS	-	expression tag	UNP P42212
A	-268	LEU	-	expression tag	UNP P42212
A	-267	VAL	-	expression tag	UNP P42212
A	-266	PHE	-	expression tag	UNP P42212
A	-265	ALA	-	expression tag	UNP P42212
A	-264	ASP	-	expression tag	UNP P42212
A	-263	TYR	-	expression tag	UNP P42212
A	-262	LYS	-	expression tag	UNP P42212
A	-261	ASP	-	expression tag	UNP P42212
A	-260	ASP	-	expression tag	UNP P42212
A	-259	ASP	-	expression tag	UNP P42212
A	-258	ASP	-	expression tag	UNP P42212
A	-257	LYS	-	expression tag	UNP P42212
A	-195	LEU	PHE	engineered mutation	UNP P42212
A	-194	THR	SER	engineered mutation	UNP P42212
A	-179	ARG	GLN	engineered mutation	UNP P42212
A	-160	SER	PHE	engineered mutation	UNP P42212
A	-106	THR	MET	engineered mutation	UNP P42212
A	-96	ALA	VAL	engineered mutation	UNP P42212
A	-20	ALA	-	linker	UNP P42212
A	-19	ALA	-	linker	UNP P42212
A	-18	GLY	-	linker	UNP P42212
A	-17	SER	-	linker	UNP P42212
A	-16	GLY	-	linker	UNP P42212
A	-15	GLU	-	linker	UNP P42212
A	-14	PHE	-	linker	UNP P42212
A	-13	LEU	-	linker	UNP P42212
A	-12	GLU	-	linker	UNP P42212
A	-11	VAL	-	linker	UNP P42212
A	-10	LEU	-	linker	UNP P42212
A	-9	PHE	-	linker	UNP P42212
A	-8	GLN	-	linker	UNP P42212
A	-7	GLY	-	linker	UNP P42212
A	-6	PRO	-	linker	UNP P42212
A	-5	GLY	-	linker	UNP P42212
A	-4	ALA	-	linker	UNP P42212
A	-3	GLY	-	linker	UNP P42212
A	-2	SER	-	linker	UNP P42212
A	-1	ASP	-	linker	UNP P42212

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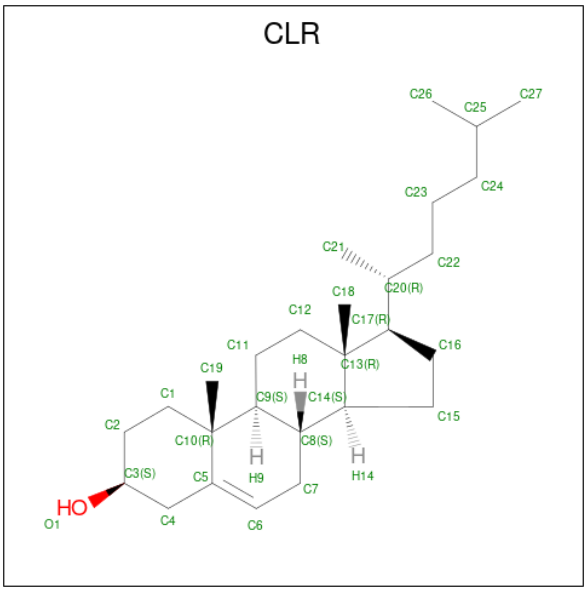
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	-	linker	UNP P42212
A	108	LYS	SER	engineered mutation	UNP Q9Y2T6
A	1007	TRP	MET	engineered mutation	UNP P0ABE7
A	1102	ILE	HIS	engineered mutation	UNP P0ABE7
A	1106	LEU	ARG	engineered mutation	UNP P0ABE7
A	307	GLY	-	expression tag	UNP Q9Y2T6
A	308	ALA	-	expression tag	UNP Q9Y2T6
A	309	GLY	-	expression tag	UNP Q9Y2T6
A	310	SER	-	expression tag	UNP Q9Y2T6
A	311	GLY	-	expression tag	UNP Q9Y2T6
A	312	ALA	-	expression tag	UNP Q9Y2T6
A	313	GLY	-	expression tag	UNP Q9Y2T6
A	314	SER	-	expression tag	UNP Q9Y2T6
A	315	ALA	-	expression tag	UNP Q9Y2T6
A	316	TRP	-	expression tag	UNP Q9Y2T6
A	317	SER	-	expression tag	UNP Q9Y2T6
A	318	HIS	-	expression tag	UNP Q9Y2T6
A	319	PRO	-	expression tag	UNP Q9Y2T6
A	320	GLN	-	expression tag	UNP Q9Y2T6
A	321	PHE	-	expression tag	UNP Q9Y2T6
A	322	GLU	-	expression tag	UNP Q9Y2T6
A	323	LYS	-	expression tag	UNP Q9Y2T6
A	324	GLY	-	expression tag	UNP Q9Y2T6
A	325	GLY	-	expression tag	UNP Q9Y2T6
A	326	GLY	-	expression tag	UNP Q9Y2T6
A	327	SER	-	expression tag	UNP Q9Y2T6
A	328	GLY	-	expression tag	UNP Q9Y2T6
A	329	GLY	-	expression tag	UNP Q9Y2T6
A	330	GLY	-	expression tag	UNP Q9Y2T6
A	331	SER	-	expression tag	UNP Q9Y2T6
A	332	GLY	-	expression tag	UNP Q9Y2T6
A	333	GLY	-	expression tag	UNP Q9Y2T6
A	334	SER	-	expression tag	UNP Q9Y2T6
A	335	ALA	-	expression tag	UNP Q9Y2T6
A	336	TRP	-	expression tag	UNP Q9Y2T6
A	337	SER	-	expression tag	UNP Q9Y2T6
A	338	HIS	-	expression tag	UNP Q9Y2T6
A	339	PRO	-	expression tag	UNP Q9Y2T6
A	340	GLN	-	expression tag	UNP Q9Y2T6
A	341	PHE	-	expression tag	UNP Q9Y2T6
A	342	GLU	-	expression tag	UNP Q9Y2T6
A	343	LYS	-	expression tag	UNP Q9Y2T6

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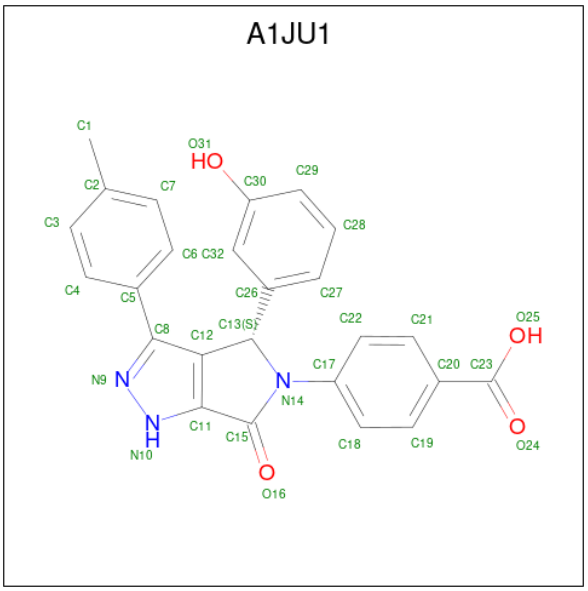
Chain	Residue	Modelled	Actual	Comment	Reference
A	344	GLY	-	expression tag	UNP Q9Y2T6
A	345	ALA	-	expression tag	UNP Q9Y2T6
A	346	GLY	-	expression tag	UNP Q9Y2T6
A	347	SER	-	expression tag	UNP Q9Y2T6
A	348	HIS	-	expression tag	UNP Q9Y2T6
A	349	HIS	-	expression tag	UNP Q9Y2T6
A	350	HIS	-	expression tag	UNP Q9Y2T6
A	351	HIS	-	expression tag	UNP Q9Y2T6
A	352	HIS	-	expression tag	UNP Q9Y2T6
A	353	HIS	-	expression tag	UNP Q9Y2T6
A	354	HIS	-	expression tag	UNP Q9Y2T6
A	355	HIS	-	expression tag	UNP Q9Y2T6
A	356	HIS	-	expression tag	UNP Q9Y2T6
A	357	HIS	-	expression tag	UNP Q9Y2T6

- Molecule 5 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
5	A	1	28	27	1	0

- Molecule 6 is 4-[(4 {S})-4-(3-hydroxyphenyl)-3-(4-methylphenyl)-6-oxidanylidene-1,4-dihydropyrrolo[3,4-c]pyrazol-5-yl]benzoic acid (CCD ID: A1JU1) (formula: $C_{25}H_{19}N_3O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total	C	N	O	0
			32	25	3	4	

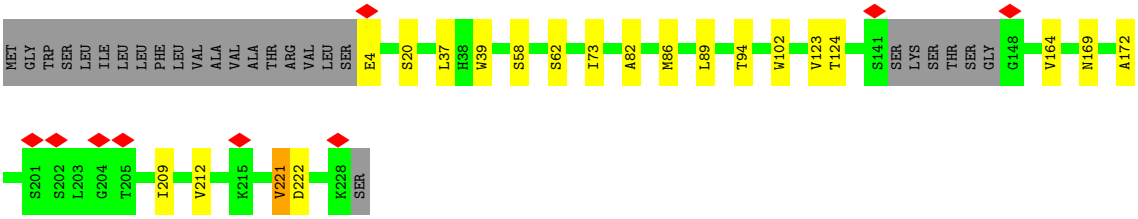
3 Residue-property plots (i)

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: anti-bRIL fab heavy-chain

Chain H:

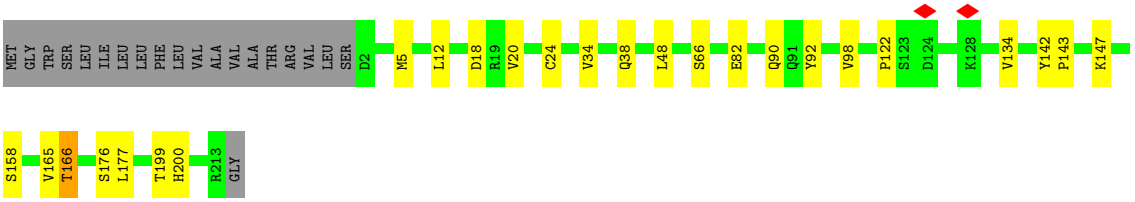




• Molecule 2: anti-bRIL fab light-chain

Chain L:

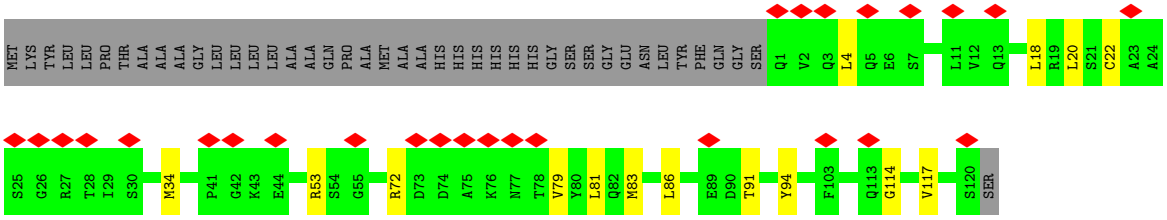




• Molecule 3: Fab-Nb

Chain N:

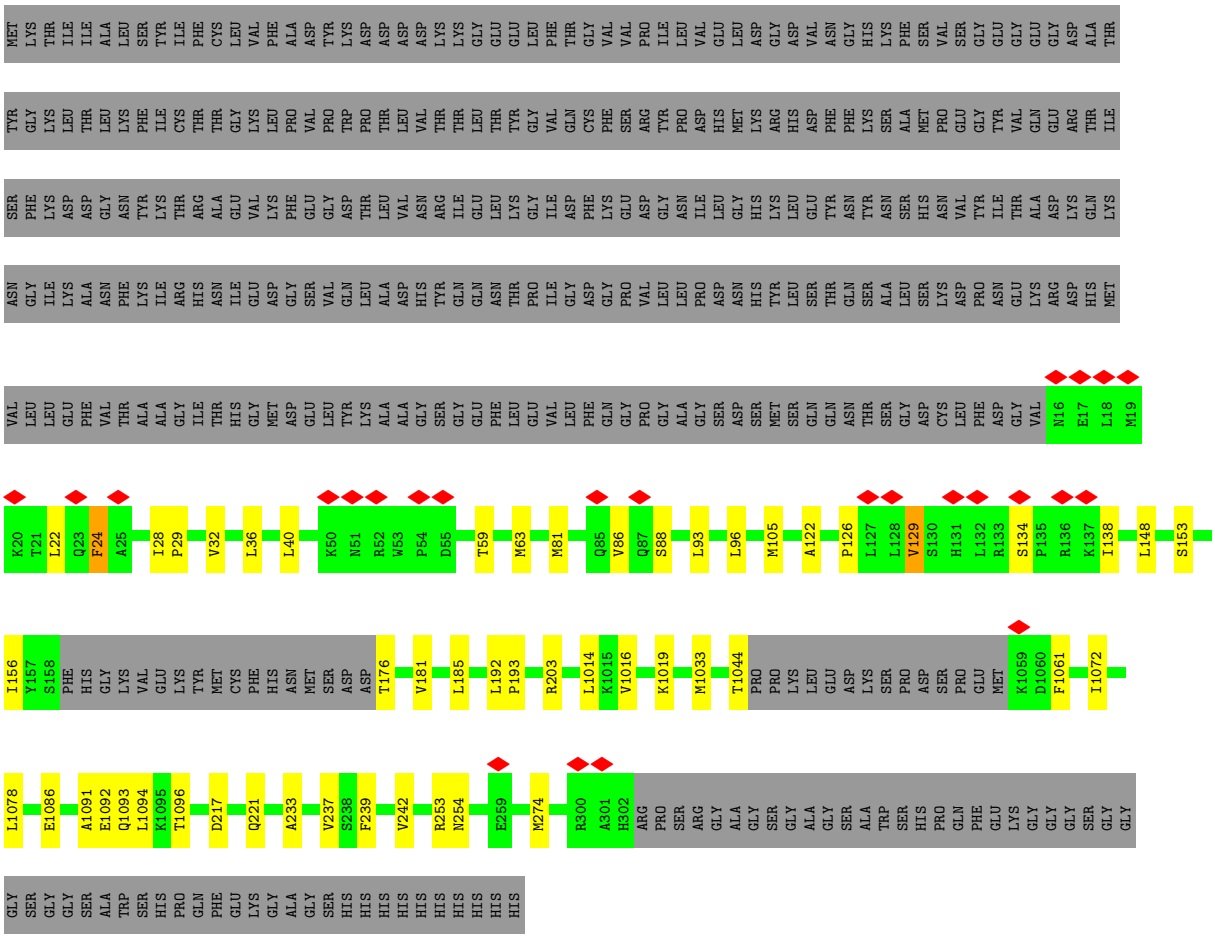




• Molecule 4: Green fluorescent protein,G-protein coupled receptor 55,Soluble cytochrome b562

Chain A:




MET LYS THR ILE ILE ALA LEU SER TYR ILE PHE CYS LEU VAL PHE ALA ASP TYR LYS ASP ASP ASP ASP LYS LYS GLY GLU GLU LEU PHE THR GLY VAL VAL PRO ILE LEU VAL GLU LEU ASP GLY ASP VAL ASN GLY HIS LYS PHE SER VAL SER GLY GLU GLY GLU GLY ASP ALA THR
TYR GLY LYS LEU THR LEU LYS PHE ILE CYS THR THR GLY LYS LEU PRO VAL PRO TRP PRO THR LEU VAL THR THR LEU THR TYR GLY VAL GLN CYS PHE SER ARG TYR PRO ASP HIS MET LYS ARG HIS ASP PHE PHE LYS SER ALA MET PRO GLU GLY TYR VAL GLN GLU ARG THR ILE
SER PHE LYS ASP ASP GLY ASN TYR LYS THR ARG ALA GLU VAL LYS PHE GLU GLY ASP THR LEU VAL ASN ARG ILE GLU LEU LYS GLY ILE ASP PHE LYS GLU ASP GLY ASN ILE LEU LEU GLY HIS LYS LEU GLU SER THR GLN SER ALA LEU SER HIS ASN VAL TYR ILE THR ALA ASP LYS GLN LYS
ASN GLY ILE LYS ALA ASN PHE LYS ILE ARG HIS ASN ILE GLU ASP GLY SER VAL GLN LEU ALA ASP HIS TYR GLN GLN ASN THR PRO ILE GLY ASP GLY PRO VAL LEU LEU PRO ASP ASN HIS TYR LEU SER THR GLN SER ALA LEU SER LYS ASP PRO ASN GLU LYS ARG ASP HIS MET
VAL LEU LEU GLU PHE VAL THR ALA ALA GLY ILE THR HIS GLY MET ASP GLU LEU TYR LYS ALA ALA GLY SER GLY GLU PHE LEU GLU VAL LEU PHE GLN GLY PRO GLY ALA GLY SER ASP SER MET SER GLN GLN ASN THR SER GLY ASP CYS LEU PHE ASP GLY VAL N16 E17 L18 M19
K20 T21 L22 Q23 F24 A25 I28 P29 V32 L36 L40 K50 N51 R52 W53 P54 D55 T59 M63 M81 Q85 V86 Q87 S88 L93 L96 M105 A122 P126 L127 L128 V129 S130 H131 L132 R133 S134 P135 R136 K137 I138 L148 S153
I156 Y157 S158 PHE HIS GLY LYS VAL GLU LYS TYR MET CYS PHE HIS ASN MET SER ASP ASP T176 V181 L185 L192 P193 R203 L1014 K1015 V1016 K1019 M1033 T1044 PRO PRO LYS LEU GLU ASP LYS SER PRO ASP SER PRO GLU MET K1059 D1060 F1061 I1072
L1078 E1086 A1091 E1092 Q1093 L1094 K1095 T1096 D217 Q221 A233 V237 S238 F239 V242 R253 N254 E259 M274 R300 A301 H302 ARG PRO SER ARG GLY ALA GLY SER GLY ALA GLY SER ALA TRP SER HIS PRO GLN PHE GLU LYS GLY GLY GLY SER GLY GLY
GLY SER GLY GLY SER ALA TRP SER HIS PRO GLN PHE GLU LYS GLY ALA GLY SER HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	436701	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 ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	2800	Depositor
Maximum defocus (nm)	28000	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	127.664	Depositor
Minimum map value	-109.112	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	1.136	Depositor
Recommended contour level	12.4	Depositor
Map size (Å)	365.184, 365.184, 365.184	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.951, 0.951, 0.951	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, A1JU1

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	H	0.14	0/1695	0.37	0/2316
2	L	0.13	0/1667	0.35	0/2264
3	N	0.11	0/944	0.26	0/1276
4	A	0.15	0/2952	0.30	0/3996
All	All	0.14	0/7258	0.32	0/9852

There are no bond length outliers.

There are no bond angle outliers.

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	H	1648	0	1591	10	0
2	L	1632	0	1595	11	0
3	N	925	0	873	9	0
4	A	2883	0	2947	28	0
5	A	28	0	46	4	0
6	A	32	0	0	0	0
All	All	7148	0	7052	59	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 (59) 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)
4:A:122:ALA:HA	4:A:129:VAL:HG11	1.75	0.69
3:N:34:MET:HG2	3:N:79:VAL:HG21	1.74	0.68
2:L:38:GLN:HB2	2:L:48:LEU:HD11	1.81	0.63
1:H:94:THR:HG23	1:H:124:THR:HA	1.81	0.63
4:A:181:VAL:HG22	5:A:1201:CLR:H71	1.82	0.62
4:A:59:THR:O	4:A:63:MET:HG2	2.02	0.60
4:A:176:THR:HG22	4:A:253:ARG:HD2	1.82	0.59
3:N:20:LEU:HD12	3:N:81:LEU:HD23	1.84	0.58
4:A:1078:LEU:HD13	4:A:1086:GLU:HB3	1.88	0.55
4:A:24:PHE:HE1	4:A:81:MET:HB3	1.74	0.53
3:N:22:CYS:HB3	3:N:79:VAL:HG23	1.91	0.53
3:N:83:MET:HE2	3:N:86:LEU:HD21	1.89	0.53
3:N:94:TYR:O	3:N:114:GLY:HA2	2.08	0.53
1:H:209:ILE:HD11	1:H:222:ASP:HB3	1.91	0.53
2:L:122:PRO:HD3	2:L:134:VAL:HG22	1.90	0.53
2:L:166:THR:HG22	2:L:176:SER:H	1.74	0.52
1:H:37:LEU:HD13	1:H:82:ALA:HB2	1.92	0.51
4:A:217:ASP:O	4:A:221:GLN:HG2	2.11	0.51
1:H:102:TRP:CH2	2:L:92:TYR:HB2	2.45	0.51
1:H:86:MET:HB3	1:H:89:LEU:HD21	1.93	0.51
4:A:153:SER:HB2	4:A:156:ILE:HD12	1.93	0.51
4:A:1091:ALA:HA	4:A:1094:LEU:HD12	1.92	0.50
2:L:90:GLN:HE21	2:L:98:VAL:HG13	1.77	0.50
4:A:126:PRO:HA	4:A:129:VAL:HG12	1.93	0.49
4:A:1072:ILE:HG13	4:A:1094:LEU:HD21	1.96	0.48
3:N:53:ARG:HA	3:N:72:ARG:HH11	1.79	0.47
4:A:32:VAL:O	4:A:36:LEU:HD12	2.15	0.47
4:A:233:ALA:O	4:A:237:VAL:HG23	2.15	0.46
1:H:212:VAL:HB	1:H:221:VAL:HG13	1.97	0.46
4:A:185:LEU:HA	5:A:1201:CLR:H221	1.98	0.45
5:A:1201:CLR:H263	5:A:1201:CLR:H231	1.77	0.45
1:H:20:SER:HA	1:H:86:MET:O	2.17	0.45
4:A:105:MET:HE3	4:A:239:PHE:HD1	1.82	0.45
1:H:169:ASN:HB3	1:H:172:ALA:HB3	1.98	0.45
2:L:5:MET:HG3	2:L:24:CYS:SG	2.57	0.45
1:H:94:THR:HA	1:H:123:VAL:O	2.17	0.45
4:A:24:PHE:CE1	4:A:81:MET:HB3	2.51	0.45
4:A:93:LEU:HA	4:A:96:LEU:HD22	1.99	0.44
2:L:165:VAL:HG22	2:L:177:LEU:HD12	2.00	0.44
4:A:1092:GLU:O	4:A:1096:THR:HG23	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:91:THR:HA	3:N:117:VAL:O	2.18	0.43
4:A:28:ILE:HB	4:A:29:PRO:HD3	2.00	0.43
4:A:1016:VAL:HA	4:A:1019:LYS:HE3	2.00	0.43
4:A:86:VAL:HG12	4:A:88:SER:H	1.84	0.43
3:N:4:LEU:HD23	3:N:22:CYS:SG	2.59	0.43
2:L:147:LYS:HB3	2:L:199:THR:HG22	2.02	0.42
2:L:142:TYR:HB3	2:L:143:PRO:HD3	2.02	0.42
4:A:203:ARG:HD2	4:A:203:ARG:HA	1.91	0.41
5:A:1201:CLR:H231	5:A:1201:CLR:H211	1.76	0.41
3:N:18:LEU:HD12	3:N:18:LEU:HA	1.88	0.41
4:A:192:LEU:HB3	4:A:193:PRO:HD3	2.01	0.41
2:L:143:PRO:HD2	2:L:200:HIS:CE1	2.56	0.41
4:A:63:MET:HE3	4:A:63:MET:HB3	1.88	0.41
4:A:134:SER:O	4:A:138:ILE:HG12	2.20	0.41
1:H:39:TRP:HD1	1:H:73:ILE:HD12	1.85	0.41
2:L:34:VAL:HA	2:L:90:GLN:O	2.21	0.41
4:A:93:LEU:O	4:A:96:LEU:HD23	2.21	0.40
4:A:1014:LEU:HG	4:A:1033:MET:HE3	2.02	0.40
4:A:176:THR:HA	4:A:253:ARG:NH1	2.36	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	H	215/245 (88%)	209 (97%)	6 (3%)	0	100	100
2	L	210/232 (90%)	201 (96%)	9 (4%)	0	100	100
3	N	118/162 (73%)	116 (98%)	2 (2%)	0	100	100
4	A	353/741 (48%)	349 (99%)	4 (1%)	0	100	100
All	All	896/1380 (65%)	875 (98%)	21 (2%)	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	H	181/203 (89%)	176 (97%)	5 (3%)	38	64
2	L	188/204 (92%)	181 (96%)	7 (4%)	30	55
3	N	96/126 (76%)	96 (100%)	0	100	100
4	A	316/635 (50%)	305 (96%)	11 (4%)	32	57
All	All	781/1168 (67%)	758 (97%)	23 (3%)	38	63

All (23) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	4	GLU
1	H	58	SER
1	H	62	SER
1	H	164	VAL
1	H	221	VAL
2	L	12	LEU
2	L	18	ASP
2	L	20	VAL
2	L	66	SER
2	L	82	GLU
2	L	158	SER
2	L	166	THR
4	A	22	LEU
4	A	24	PHE
4	A	40	LEU
4	A	129	VAL
4	A	148	LEU
4	A	1044	THR
4	A	1061	PHE
4	A	1093	GLN
4	A	242	VAL
4	A	254	ASN

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Mol	Chain	Res	Type
4	A	274	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	H	42	GLN
1	H	211	ASN
2	L	39	GLN
2	L	80	GLN
2	L	90	GLN
2	L	191	HIS
4	A	43	HIS
4	A	65	ASN
4	A	1013	ASN
4	A	1063	HIS
4	A	1071	GLN
4	A	249	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	$\#\|Z\| > 2$
6	A1JU1	A	1202	-	36,36,36	0.40	0	50,53,53	0.38	0
5	CLR	A	1201	-	31,31,31	0.37	0	48,48,48	0.59	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	A1JU1	A	1202	-	-	3/16/32/32	0/5/5/5
5	CLR	A	1201	-	-	5/10/68/68	0/4/4/4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1201	CLR	C20-C22-C23-C24
5	A	1201	CLR	C22-C23-C24-C25
5	A	1201	CLR	C23-C24-C25-C27
5	A	1201	CLR	C21-C20-C22-C23
5	A	1201	CLR	C23-C24-C25-C26
6	A	1202	A1JU1	C6-C5-C8-C12
6	A	1202	A1JU1	C4-C5-C8-C12
6	A	1202	A1JU1	C6-C5-C8-N9

There are no ring outliers.

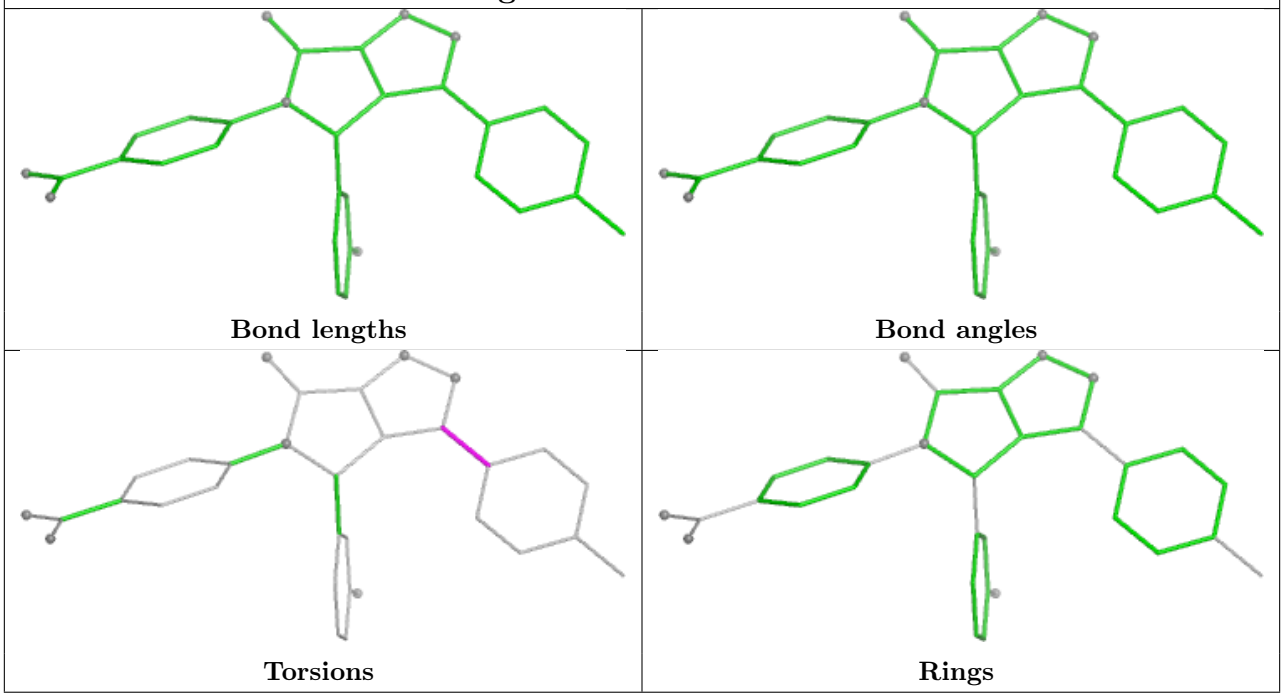
1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1201	CLR	4	0

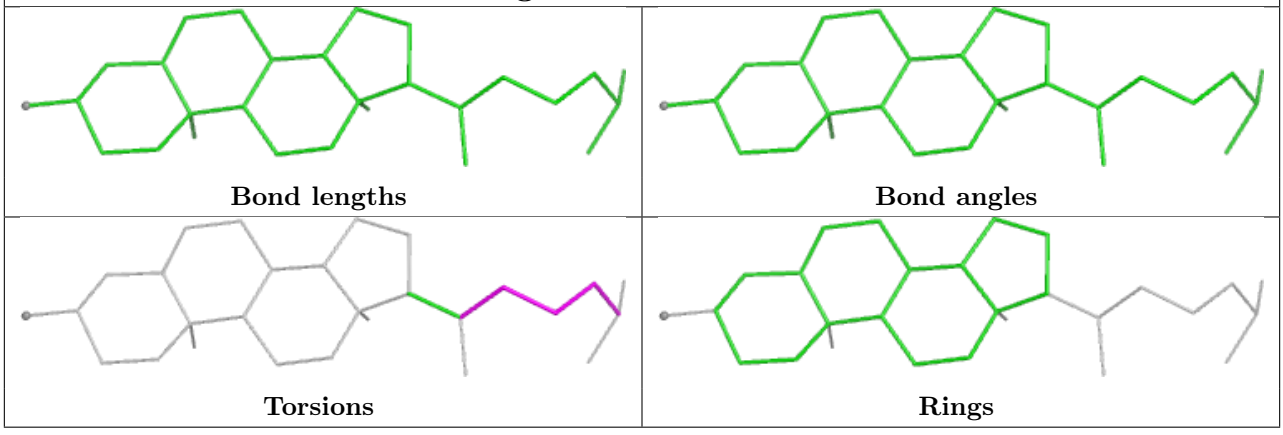
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is

within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand A1JU1 A 1202



Ligand CLR A 1201



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

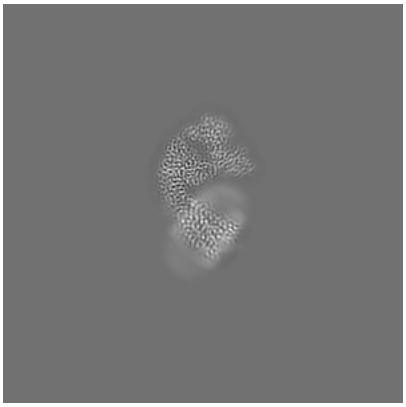
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-55776. These allow visual inspection of the internal detail of the map and identification of artifacts.

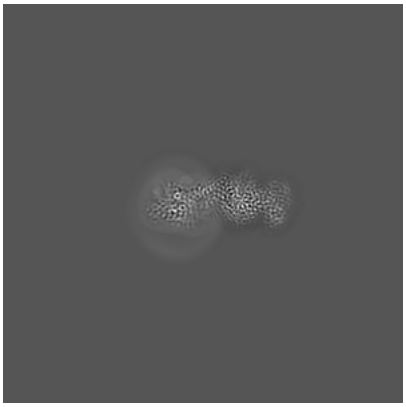
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

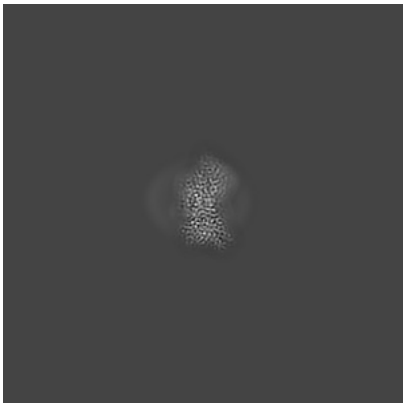
6.1.1 Primary map



X



Y

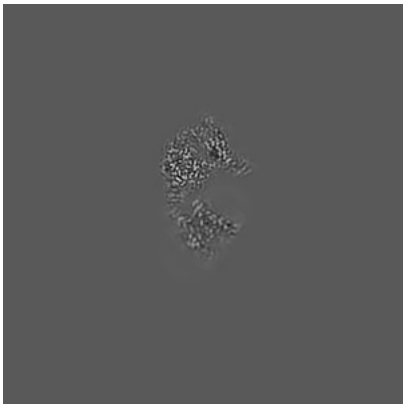


Z

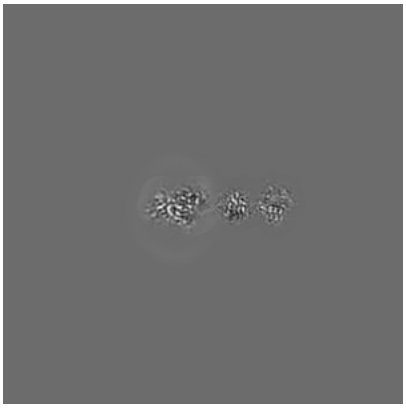
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 192



Y Index: 192

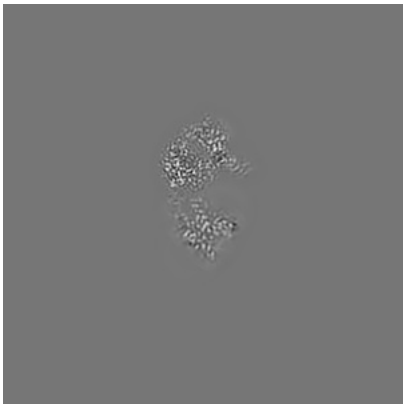


Z Index: 192

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

6.3 Largest variance slices (i)

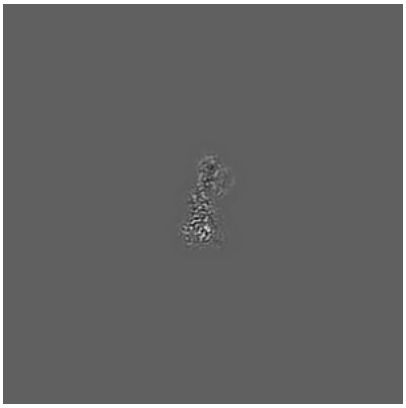
6.3.1 Primary map



X Index: 189



Y Index: 169

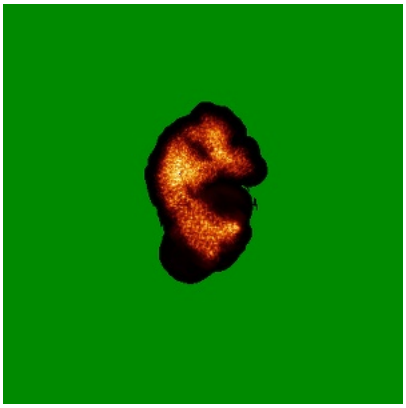


Z Index: 229

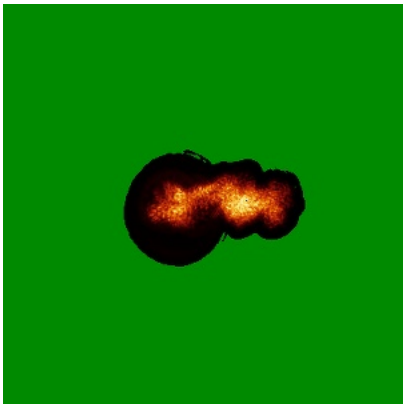
The images above show the largest variance slices of the map in three orthogonal directions.

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

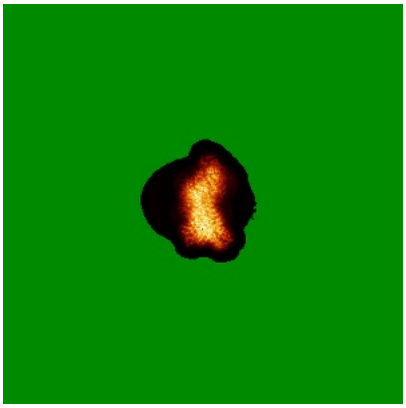
6.4.1 Primary map



X



Y

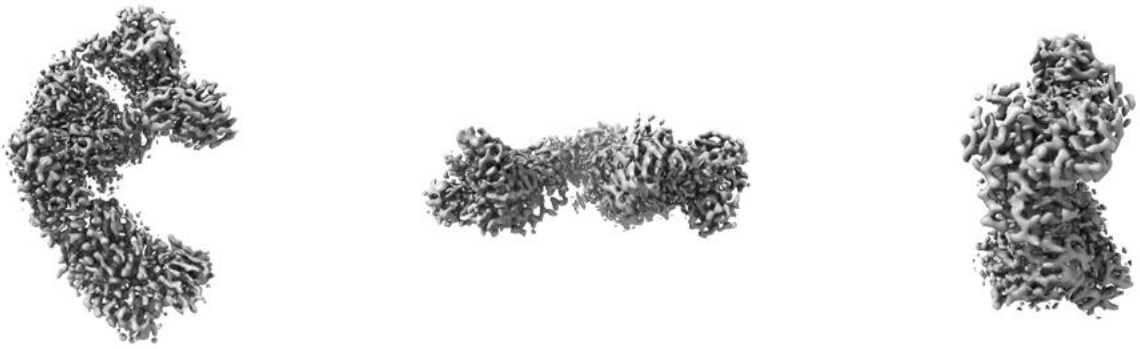


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 12.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

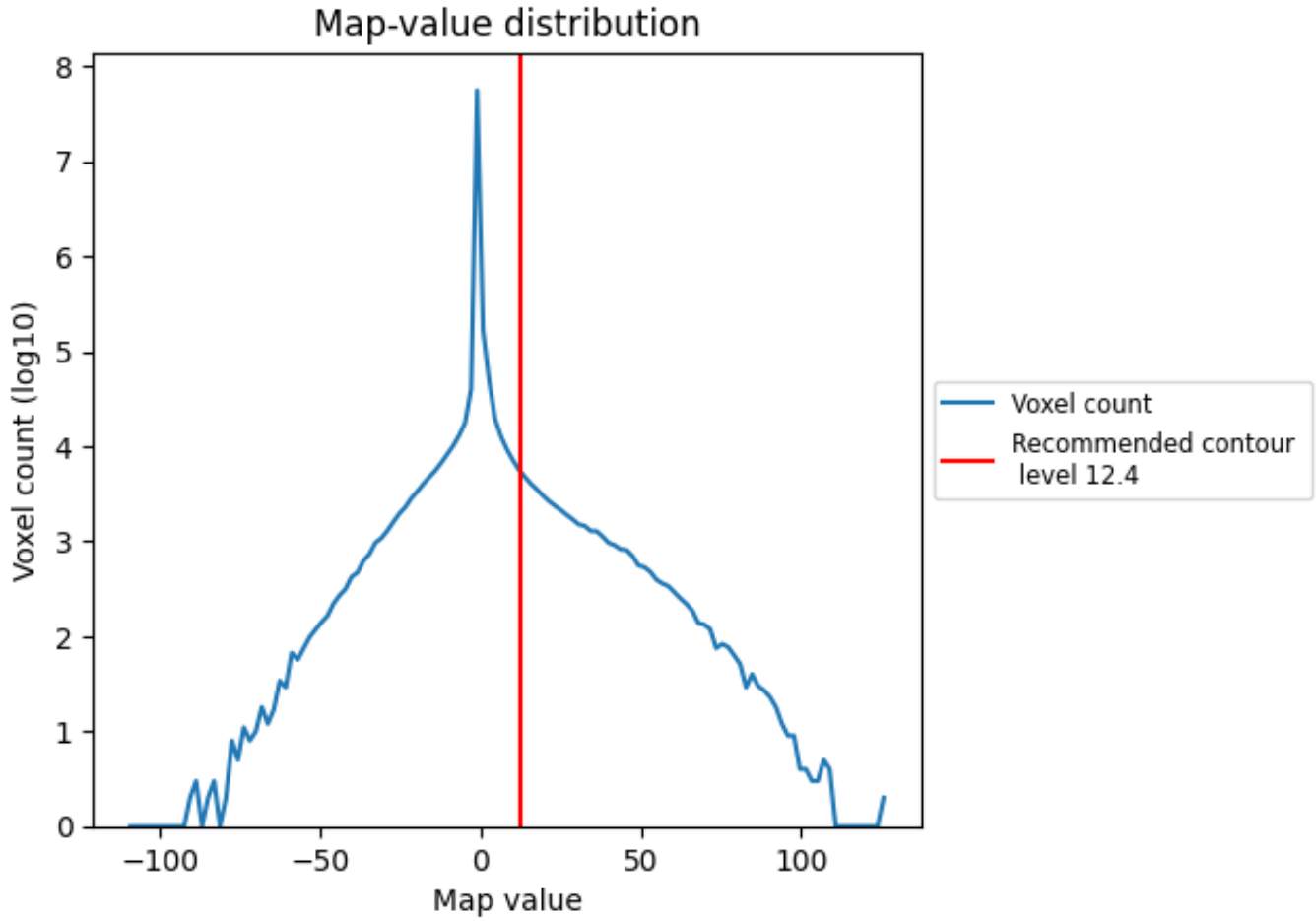
6.6 Mask visualisation (i)

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

7 Map analysis

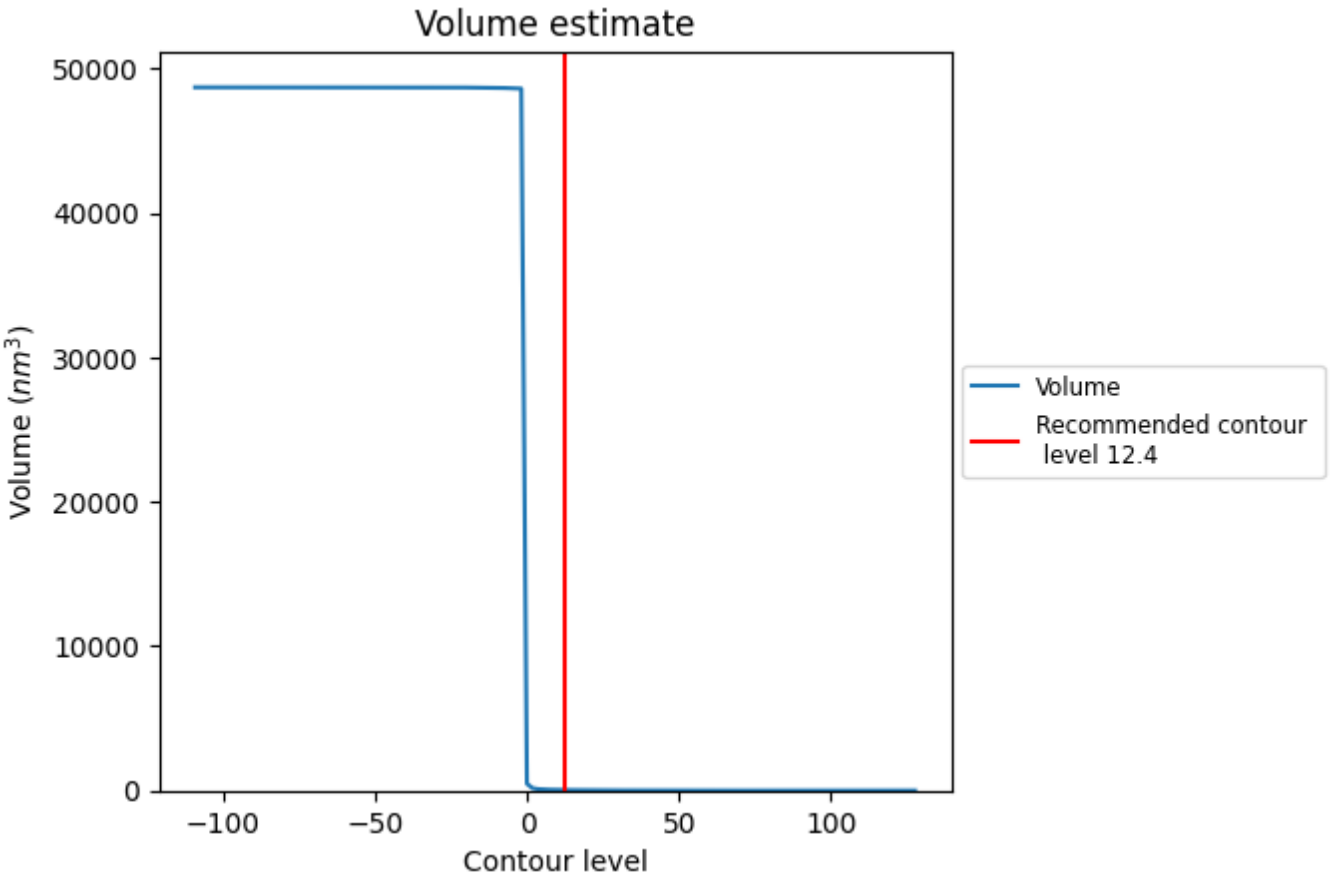
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

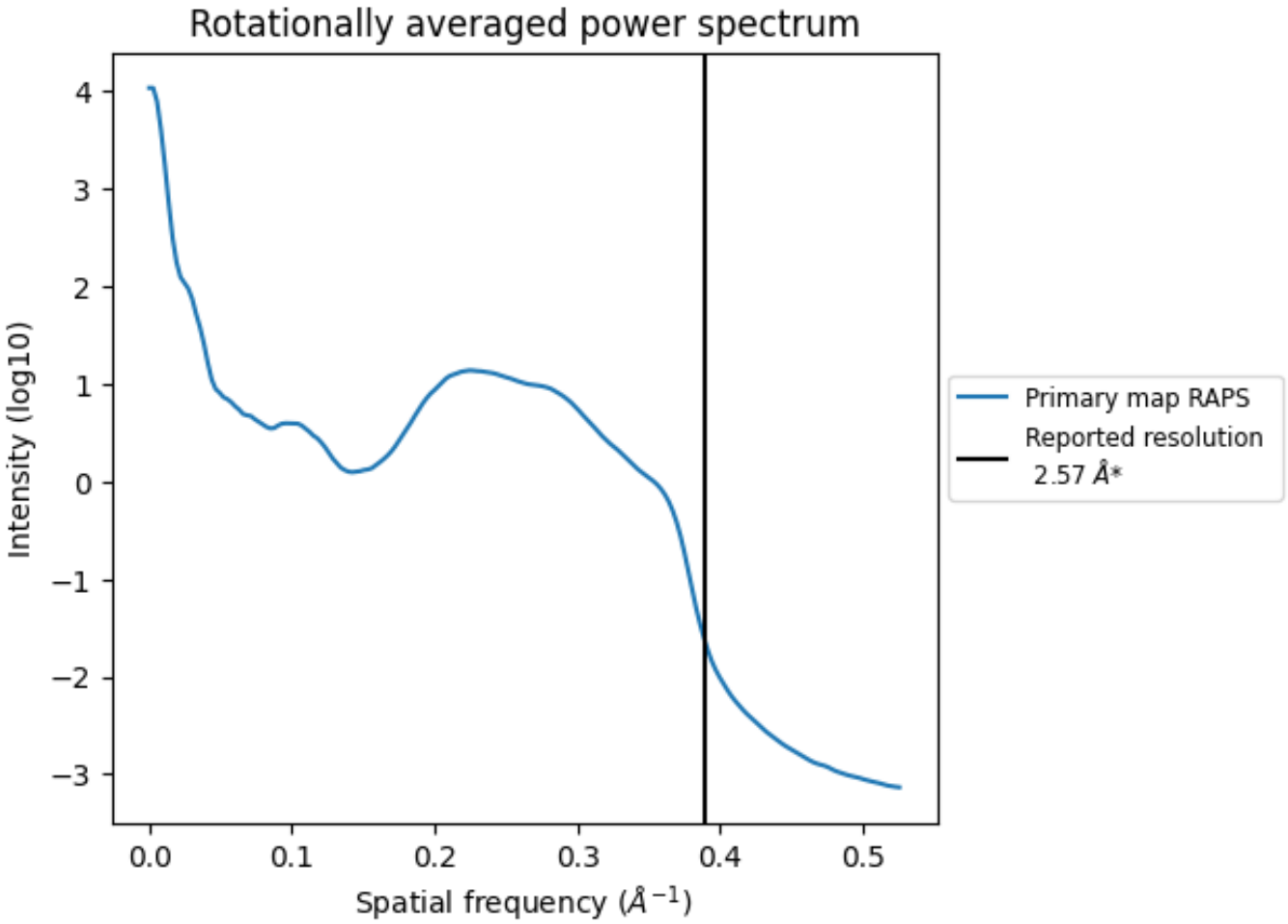
7.2 Volume estimate



The volume at the recommended contour level is 40 nm^3; this corresponds to an approximate mass of 36 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 0.389 Å^{-1}

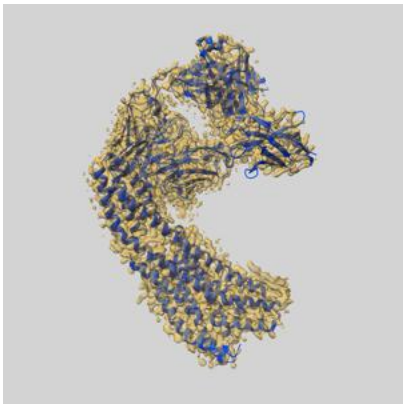
8 Fourier-Shell correlation

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

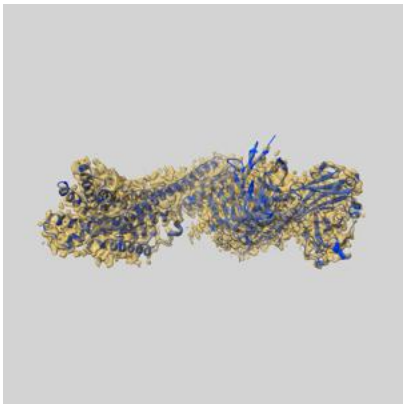
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-55776 and PDB model 9TC7. Per-residue inclusion information can be found in section 3 on page 8.

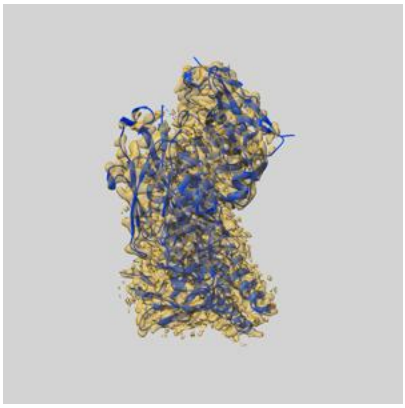
9.1 Map-model overlay



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 12.4 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.

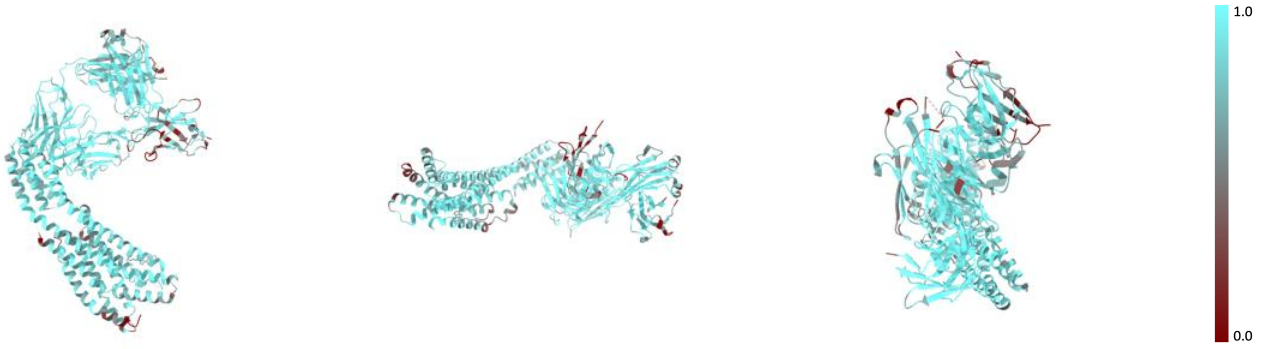
9.2 Q-score mapped to coordinate model (i)



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.

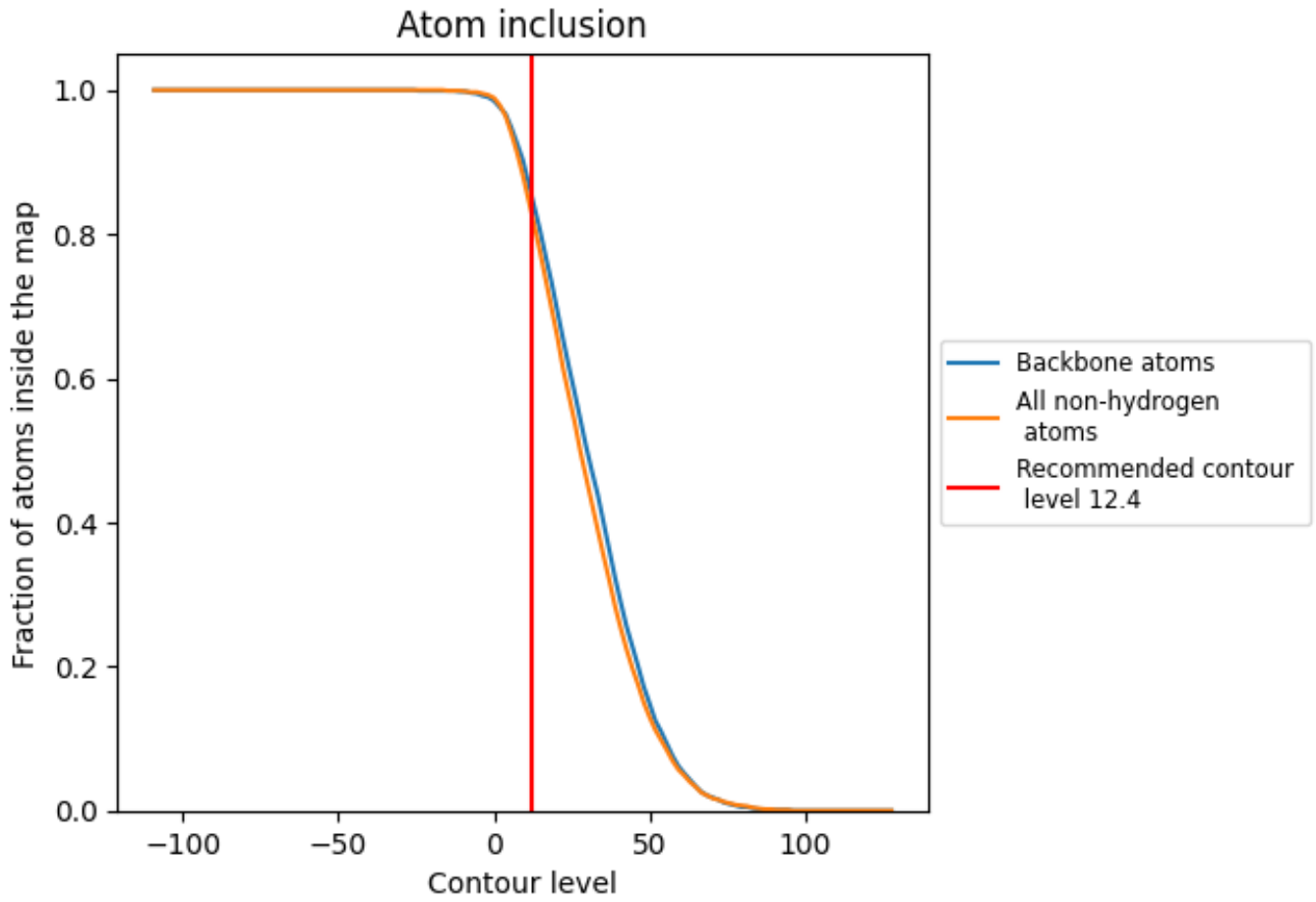
9.3 Atom inclusion mapped to coordinate model (i)



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 (12.4).

9.4 Atom inclusion (i)



At the recommended contour level, 85% of all backbone atoms, 82% 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 (12.4) and Q-score for the entire model and for each chain.



Chain	Atom inclusion	Q-score
All	0.8230	0.5950
A	0.8160	0.5630
H	0.8760	0.6330
L	0.8910	0.6360
N	0.6310	0.5600