W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

Full wwPDB EM Validation Report (i)

Oct 29, 2024 – 06:48 pm GMT

|		
PDB ID	:	8S37
EMDB ID	:	EMD-19690
Title	:	DNA-bound Type IV-A3 CRISPR effector in complex with DinG helicase from K. pneumoniae (state III)
Authors	:	Skorupskaite, A.; Ragozius, V.; Cepaite, R.; Klein, N.; Randau, L.; Malinauskaite, L.; Pausch, P.
Deposited on	:	2024-02-19
Resolution	:	2.90 Å(reported)
Based on initial models	:	., 8RC2

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 2.90 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	Percentile Ranks	Value
Clashscore		9
Ramachandran outliers		0.1%
Sidechain outliers		1.6%
RNA backbone		0.18

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures
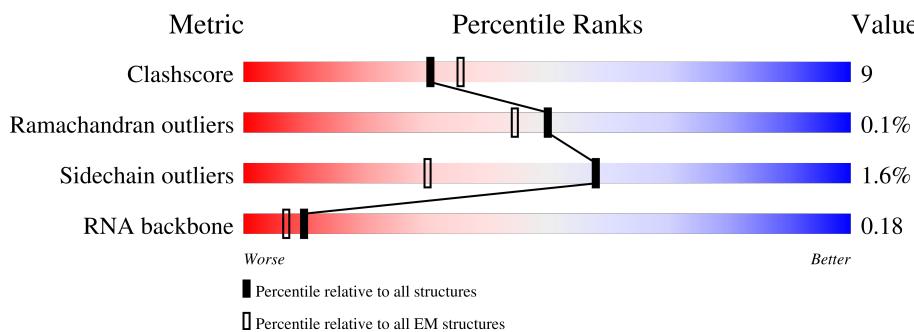
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	350	79% 19% •
1	B	350	80% 18% •
1	C	350	77% 21% •
1	D	350	76% 22% •
1	E	350	57% 15% 28%
1	L	350	48% 9% 43%
2	F	235	78% 21% •

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Mol	Chain	Length	Quality of chain
3	G	263	83% 17%
4	H	61	10% 33% 18% 39%
5	I	60	52% 10% 38%
6	J	60	40% 15% 45%
7	M	624	10% 73% 26%
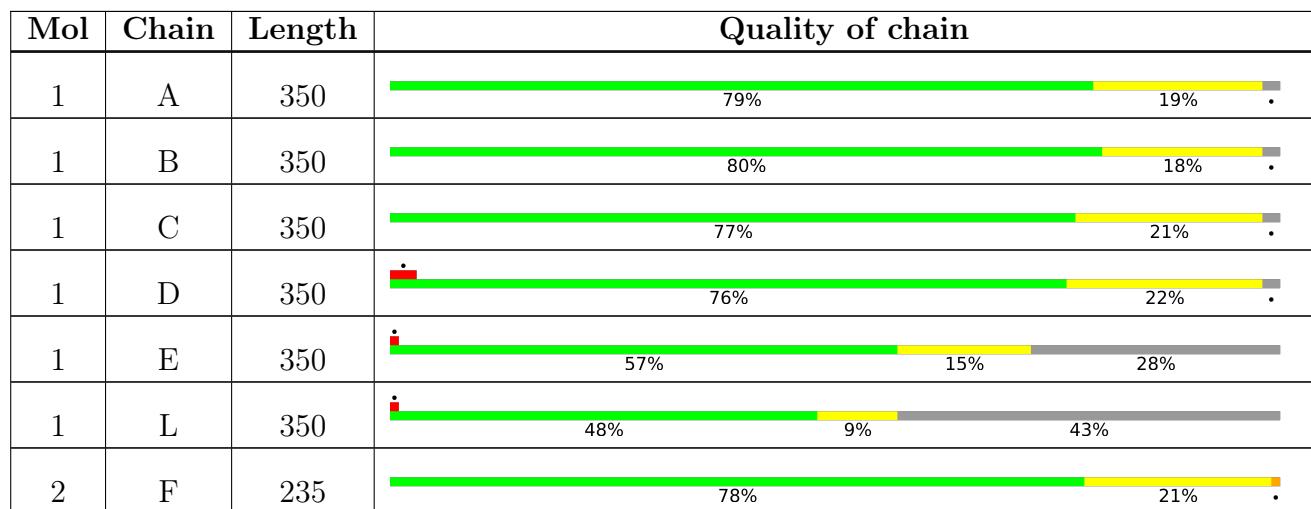
2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 49005 atoms, of which 23920 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 CRISPR type AFERR-associated protein Csf2.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	342	Total	C	H	N	O	S	0	0
			5252	1655	2608	470	510	9		
1	B	343	Total	C	H	N	O	S	0	0
			5276	1661	2621	474	511	9		
1	C	343	Total	C	H	N	O	S	0	0
			5276	1661	2621	474	511	9		
1	D	343	Total	C	H	N	O	S	0	0
			5269	1661	2614	474	511	9		
1	E	253	Total	C	H	N	O	S	0	0
			3752	1212	1838	338	358	6		
1	L	201	Total	C	H	N	O	S	0	0
			3061	981	1518	275	282	5		

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	344	GLY	-	expression tag	UNP A0A333ESG5
A	345	HIS	-	expression tag	UNP A0A333ESG5
A	346	HIS	-	expression tag	UNP A0A333ESG5
A	347	HIS	-	expression tag	UNP A0A333ESG5
A	348	HIS	-	expression tag	UNP A0A333ESG5
A	349	HIS	-	expression tag	UNP A0A333ESG5
A	350	HIS	-	expression tag	UNP A0A333ESG5
B	344	GLY	-	expression tag	UNP A0A333ESG5
B	345	HIS	-	expression tag	UNP A0A333ESG5
B	346	HIS	-	expression tag	UNP A0A333ESG5
B	347	HIS	-	expression tag	UNP A0A333ESG5
B	348	HIS	-	expression tag	UNP A0A333ESG5
B	349	HIS	-	expression tag	UNP A0A333ESG5
B	350	HIS	-	expression tag	UNP A0A333ESG5
C	344	GLY	-	expression tag	UNP A0A333ESG5
C	345	HIS	-	expression tag	UNP A0A333ESG5
C	346	HIS	-	expression tag	UNP A0A333ESG5
C	347	HIS	-	expression tag	UNP A0A333ESG5

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Chain	Residue	Modelled	Actual	Comment	Reference
C	348	HIS	-	expression tag	UNP A0A333ESG5
C	349	HIS	-	expression tag	UNP A0A333ESG5
C	350	HIS	-	expression tag	UNP A0A333ESG5
D	344	GLY	-	expression tag	UNP A0A333ESG5
D	345	HIS	-	expression tag	UNP A0A333ESG5
D	346	HIS	-	expression tag	UNP A0A333ESG5
D	347	HIS	-	expression tag	UNP A0A333ESG5
D	348	HIS	-	expression tag	UNP A0A333ESG5
D	349	HIS	-	expression tag	UNP A0A333ESG5
D	350	HIS	-	expression tag	UNP A0A333ESG5
E	344	GLY	-	expression tag	UNP A0A333ESG5
E	345	HIS	-	expression tag	UNP A0A333ESG5
E	346	HIS	-	expression tag	UNP A0A333ESG5
E	347	HIS	-	expression tag	UNP A0A333ESG5
E	348	HIS	-	expression tag	UNP A0A333ESG5
E	349	HIS	-	expression tag	UNP A0A333ESG5
E	350	HIS	-	expression tag	UNP A0A333ESG5
L	344	GLY	-	expression tag	UNP A0A333ESG5
L	345	HIS	-	expression tag	UNP A0A333ESG5
L	346	HIS	-	expression tag	UNP A0A333ESG5
L	347	HIS	-	expression tag	UNP A0A333ESG5
L	348	HIS	-	expression tag	UNP A0A333ESG5
L	349	HIS	-	expression tag	UNP A0A333ESG5
L	350	HIS	-	expression tag	UNP A0A333ESG5

- Molecule 2 is a protein called CRISPR type AFERR-associated protein Csf3.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	F	235	Total	C	H	N	O	S	0	0
			3625	1150	1833	305	330	7		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	84	MET	VAL	conflict	UNP A0A8G1XN67
F	103	THR	ILE	conflict	UNP A0A8G1XN67

- Molecule 3 is a protein called CRISPR type AFERR-associated protein Csf1.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	G	263	Total	C	H	N	O	S	0	0
			4209	1343	2119	353	382	12		

- Molecule 4 is a RNA chain called crRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	H	37	Total 1186	C 352	H 399	N 142	O 257	P 36	0	0

- Molecule 5 is a DNA chain called TS-DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	I	37	Total 1164	C 355	H 415	N 128	O 229	P 37	0	0

- Molecule 6 is a DNA chain called NTS-DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	J	33	Total 1047	C 323	H 368	N 130	O 193	P 33	0	0

- Molecule 7 is a protein called DEAD/DEAH box helicase.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	M	624	Total 9887	C 3128	H 4966	N 846	O 920	S 27	0	0

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
M	292	GLU	LYS	conflict	UNP A0A422ZM74
M	412	ASN	ASP	conflict	UNP A0A422ZM74
M	421	GLY	ASP	conflict	UNP A0A422ZM74
M	435	GLN	HIS	conflict	UNP A0A422ZM74
M	618	PHE	CYS	conflict	UNP A0A422ZM74

- Molecule 8 is ZINC ION (three-letter code: ZN) (formula: Zn).

| Mol	Chain	Residues	Atoms		AltConf
8	G	1	Total 1	Zn 1	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: CRISPR type AFERR-associated protein Csf2
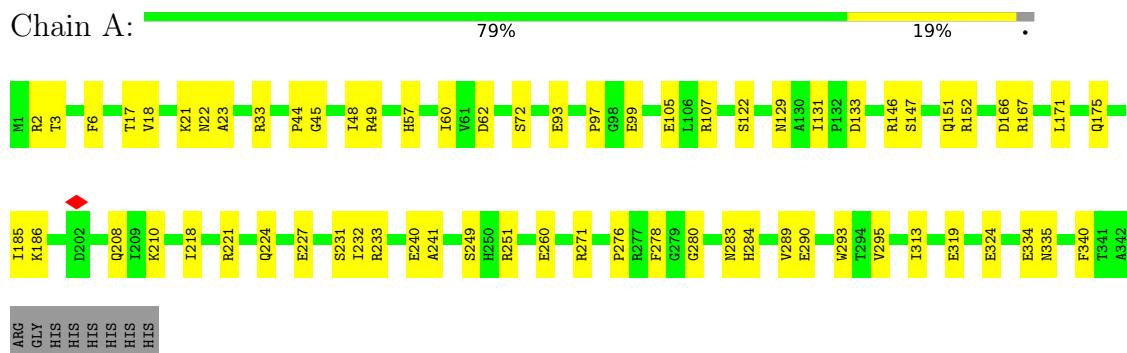
● Molecule 1: CRISPR type AFERR-associated protein Csf2

● Molecule 1: CRISPR type AFERR-associated protein Csf2

● Molecule 1: CRISPR type AFERR-associated protein Csf2

Chain D:

76%   22%

M1 L4 N5 F6 L16 T17 V18 T19 V20 K21 N22 A23 V24 H29 G35 G36 F37 N38 A39 F43 P44 G45 R49 R53 I60 V61 D62 R63 A83 Q84 G85 V86 I100 E105 K109 G117 R118 W119 V125 G128 N129 A130 D135 N136

S147 I148 M149 F150 E158 F159 L160 E161 E174 E177 V180 D181 I182 S183 Q184 I185 K186 T187 L192 A195 A199 D200 K201 D202 T203 K204 A205 E206 L207 Q208 I209 K210 V211 R212 E213 I218 K225 S228 I236 L248 S249 H250 R251 M252 S253 E260

I270 R271 F272 F278 H281 A282 N283 G287 L288 V289 W293 T294 V295 L308 I313 V318 E319 I320 N335 F340 R343 GLY HIS HIS HIS HIS HIS
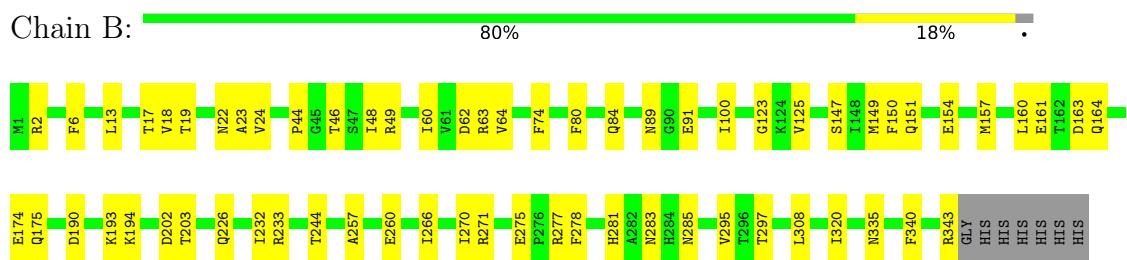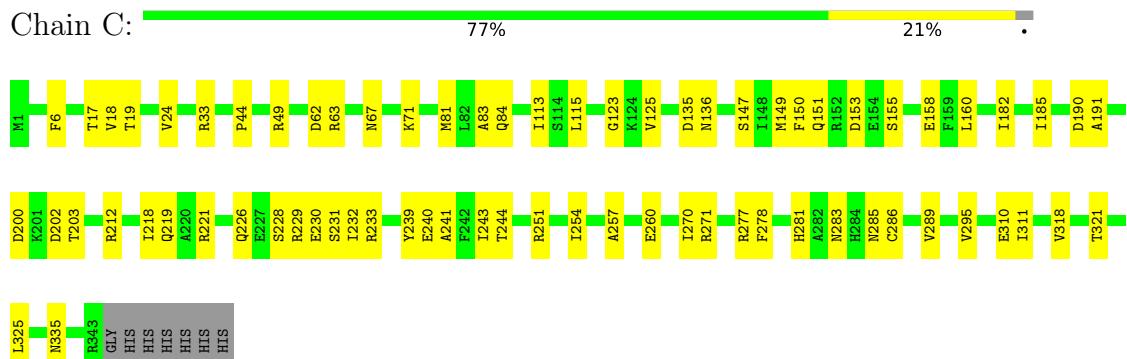
• Molecule 1: CRISPR type AFERR-associated protein Csf2

Chain E:

57%   15%   28%

M1 R2 L13 V18 K21 V24 S25 T26 F37 P44 G45 T46 R49 R53 A56 I60 V61 D62 R63 V64 A68 F74 H79 A83 Q84 E93 T94 F95 A96 L112 I113 S114 L115 R118 W119 V125 G134 D135 N136 Q137

G144 ALA ARG SER ILE MET PHE GLN ARG ASP GLU SER LEU MET GLU PHE LEU GLU THR ASP GLN VAL ASP ARG LEU GLU ARG LEU LEU GLU GLN GLU ALA GLU LEU LYS THR GLN ASP ALA LEU LYS LYS ALA MET LYS SER ALA ASP LYS ASP THR

LYS ALA GLU LEU GLN ILE LYS VAL ARG GLU LEU ASP GLU LYS ILE GLN ALA ARG ASP GLN LYS GLN LEU GLU SER ARG GLU SER ILE ARG ARG P235 I236 T244 I254 A257 E260 R271 F272 P276 R277 H281 A282 N283 H284 N285 V289 H292 W293 T294

L303 E310 I311 V312 E319 K330 F340 R343 GLY HIS HIS HIS HIS HIS

• Molecule 1: CRISPR type AFERR-associated protein Csf2

Chain L:

48%   9%   43%

M1 R2 F6 K9 L13 E14 P15 L16 T17 V18 T19 V20 K21 ASN ALA VAL SER THR S27 G36 F43 R49 K58 V64 GLY LEU ASN ALA ASP GLY LYS SER PRO PHE ASP LEU ALA GLU HIS PHE MET LEU ALA GLN GLY VAL ASP ILE ASN GLY GLU ALA

GLU THR PHE ALA PRO GLY GLU ILE ASN ALA GLY A104 E105 K109 V125 G126 I127 A130 G142 GLY ALA ARG SER ILE MET PHE GLN ARG ASP GLU GLU THR ASP GLN VAL ASP ARG LEU GLU ARG LEU LEU GLU GLN GLU GLN ALA SER

VAL ASP ILE SER GLN ILE LYS THR GLU GLN ASP ALA LEU LYS LYS ALA MET LYS SER ALA ASP LYS ASP THR LYS ALA GLU LEU GLN ILE LYS VAL ARG GLU LEU ASP GLU LYS ILE GLN ALA LYS ASP GLN LYS GLN LEU GLU SER ARG GLU SER ILE ARG ARG PRO ILE D237 L248

S249 H250 R251 M252 S253 I254 K255 N256 A257 T258 D259 E260 E261 F265 H284 N285 C286 G287 L288 V289 V295 E302 F338 D339 PHE THR ALA ARG GLY HIS HIS HIS HIS HIS HIS

• Molecule 2: CRISPR type AFERR-associated protein Csf3

Chain F:

78%   21%

• Molecule 3: CRISPR type AFERR-associated protein Csf1

Chain G:

• Molecule 4: crRNA
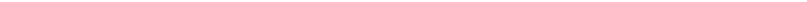
Chain H:

• Molecule 5: TS-DNA

Chain I:

• Molecule 6: NTS-DNA

Chain J:
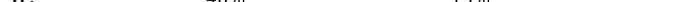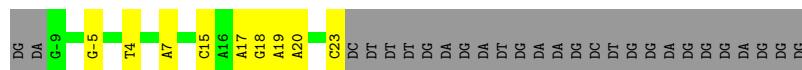
• Molecule 7: DEAD/DEAH box helicase

Chain M:
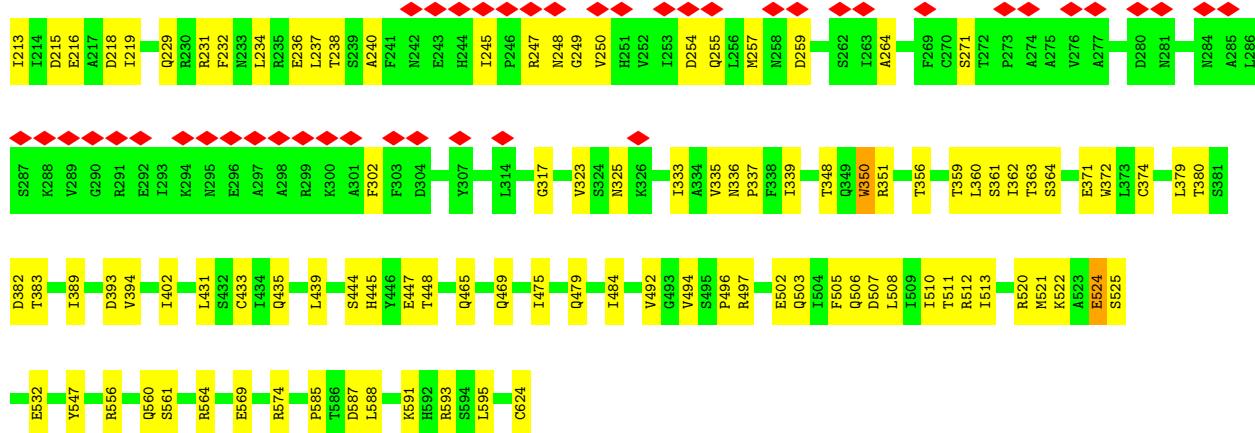
4　Experimental information　ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	46284	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/\text{Å}^2)$	30.31	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	92000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.546	Depositor
Minimum map value	-0.180	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	396.0, 396.0, 396.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.27	0/2693	0.53	0/3635
1	B	0.27	0/2704	0.53	0/3649
1	C	0.27	0/2704	0.54	0/3649
1	D	0.27	0/2704	0.54	0/3649
1	E	0.27	0/1960	0.54	0/2658
1	L	0.26	0/1579	0.57	0/2138
2	F	0.29	0/1833	0.56	0/2496
3	G	0.27	0/2137	0.52	0/2901
4	H	0.35	0/879	0.93	0/1369
5	I	0.62	0/835	0.98	0/1285
6	J	0.63	0/763	0.93	0/1175
7	M	0.26	0/5015	0.55	0/6786
All	All	0.31	0/25806	0.60	0/35390

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	A	2644	2608	2608	50	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2655	2621	2621	49	0
1	C	2655	2621	2621	58	0
1	D	2655	2614	2621	54	0
1	E	1914	1838	1866	40	0
1	L	1543	1518	1517	24	0
2	F	1792	1833	1833	43	0
3	G	2090	2119	2119	29	0
4	H	787	399	402	40	0
5	I	749	415	417	6	0
6	J	679	368	371	10	0
7	M	4921	4966	4967	100	0
8	G	1	0	0	0	0
All	All	25085	23920	23963	428	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 9.

All (428) 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)
7:M:40:ALA:HB1	7:M:44:VAL:HG21	1.56	0.86
7:M:48:LEU:HD21	7:M:86:LEU:HD13	1.55	0.85
1:B:270:ILE:HD11	1:B:320:ILE:HD11	1.58	0.84
1:B:63:ARG:NH2	1:B:335:ASN:O	2.14	0.80
1:D:185:ILE:HG21	1:D:218:ILE:HD11	1.64	0.80
1:C:49:ARG:NH1	4:H:11:A:OP1	2.14	0.79
1:A:33:ARG:NH2	1:A:240:GLU:OE2	2.16	0.79
7:M:107:ALA:O	7:M:163:THR:OG1	2.02	0.77
1:B:49:ARG:NH1	4:H:5:A:OP1	2.17	0.77
1:E:93:GLU:HB3	1:E:96:ALA:HB2	1.67	0.76
1:D:174:GLU:OE2	1:D:228:SER:OG	2.03	0.76
7:M:317:GLY:O	7:M:525:SER:OG	2.02	0.76
4:H:25:G:O2'	4:H:26:G:O4'	2.03	0.75
1:A:167:ARG:NE	1:A:227:GLU:OE2	2.20	0.75
4:H:13:G:O2'	4:H:14:C:O4'	2.02	0.74
1:A:167:ARG:NH2	1:B:89:ASN:OD1	2.21	0.74
2:F:161:SER:OG	4:H:-1:G:OP2	2.04	0.74
1:A:251:ARG:NH2	2:F:150:HIS:O	2.21	0.74
6:J:18:DG:O6	7:M:325:ASN:ND2	2.21	0.73
1:L:2:ARG:O	1:L:257:ALA:N	2.21	0.73
1:D:49:ARG:NH1	4:H:17:C:OP1	2.20	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:283:ASN:O	1:E:49:ARG:NH1	2.21	0.73
4:H:16:C:O2'	4:H:17:C:O4'	2.04	0.72
4:H:7:C:O2'	4:H:8:G:O4'	2.06	0.72
1:L:258:THR:OG1	1:L:261:GLU:OE1	2.07	0.71
1:A:22:ASN:ND2	2:F:82:THR:O	2.22	0.71
7:M:255:GLN:NE2	7:M:259:ASP:OD2	2.24	0.71
7:M:465:GLN:NE2	7:M:469:GLN:O	2.23	0.71
1:C:219:GLN:OE1	1:C:229:ARG:NH2	2.24	0.71
5:I:-22:DC:N4	5:I:-21:DG:O6	2.23	0.70
1:D:158:GLU:OE1	1:D:158:GLU:N	2.25	0.70
1:C:212:ARG:O	1:C:212:ARG:NH1	2.25	0.70
1:E:49:ARG:NE	4:H:23:A:OP1	2.20	0.69
1:A:221:ARG:NH1	1:A:224:GLN:OE1	2.26	0.69
1:C:277:ARG:NH2	1:D:253:SER:OG	2.24	0.69
7:M:587:ASP:O	7:M:593:ARG:NH2	2.26	0.69
1:C:311:ILE:HD11	1:C:325:LEU:HD13	1.75	0.69
7:M:361:SER:OG	7:M:363:THR:O	2.10	0.69
1:D:63:ARG:NH2	1:D:335:ASN:O	2.26	0.69
7:M:70:THR:HG21	7:M:79:ILE:CD1	2.22	0.69
4:H:1:C:O2'	4:H:2:G:O4'	2.07	0.68
3:G:35:ARG:NH2	3:G:58:CYS:SG	2.65	0.68
7:M:81:ARG:NH2	7:M:148:GLU:OE1	2.27	0.68
1:A:280:GLY:N	4:H:2:G:OP1	2.26	0.68
3:G:215:ARG:NH2	6:J:7:DA:OP1	2.27	0.68
1:A:147:SER:O	1:B:84:GLN:NE2	2.27	0.68
7:M:445:HIS:O	7:M:448:THR:OG1	2.13	0.67
1:C:18:VAL:HG11	1:C:44:PRO:CD	2.26	0.66
7:M:27:GLY:O	7:M:30:THR:OG1	2.12	0.66
2:F:102:ARG:NH2	6:J:-5:DG:OP2	2.29	0.66
1:D:270:ILE:HD13	1:D:318:VAL:HG11	1.76	0.66
6:J:19:DA:N6	7:M:325:ASN:OD1	2.28	0.66
1:E:118:ARG:NH1	1:E:119:TRP:O	2.29	0.66
1:C:49:ARG:NH2	1:C:125:VAL:O	2.28	0.65
7:M:88:GLU:OE1	7:M:88:GLU:N	2.29	0.65
1:D:270:ILE:HD11	1:D:320:ILE:HD11	1.79	0.65
2:F:121:ARG:NH1	4:H:-2:C:O2	2.29	0.65
7:M:122:ASP:O	7:M:126:ASP:N	2.29	0.65
1:E:53:ARG:NE	1:E:83:ALA:O	2.30	0.65
2:F:203:VAL:HG22	2:F:215:LYS:HB3	1.79	0.65
1:L:43:PHE:HB3	1:L:130:ALA:HB3	1.78	0.65
1:L:302:GLU:N	1:L:302:GLU:OE1	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:M:431:LEU:HD11	7:M:484:ILE:HD13	1.77	0.64
1:B:150:PHE:CZ	1:B:160:LEU:HD11	2.31	0.64
1:C:182:ILE:HD12	1:C:218:ILE:HG23	1.80	0.64
3:G:104:VAL:HG11	3:G:136:TYR:OH	1.97	0.64
1:B:49:ARG:NH2	1:B:125:VAL:O	2.31	0.64
1:E:292:HIS:HB2	1:E:312:VAL:HG12	1.77	0.64
2:F:137:PHE:CZ	2:F:144:VAL:HG11	2.33	0.64
3:G:158:GLU:O	3:G:162:SER:OG	2.08	0.64
4:H:10:G:O2'	4:H:11:A:O4'	2.10	0.64
7:M:160:GLU:OE1	7:M:160:GLU:N	2.30	0.63
7:M:513:ILE:HD13	7:M:595:LEU:HD13	1.78	0.63
1:C:63:ARG:NH2	1:C:335:ASN:O	2.31	0.63
2:F:30:LEU:HD21	2:F:144:VAL:HG23	1.79	0.63
1:D:18:VAL:HG11	1:D:44:PRO:CD	2.29	0.63
1:C:153:ASP:OD2	1:C:155:SER:OG	2.11	0.62
7:M:317:GLY:HA3	7:M:335:VAL:HG11	1.80	0.62
1:B:275:GLU:OE2	1:B:277:ARG:NE	2.32	0.62
1:A:3:THR:HG21	2:F:36:GLN:HB3	1.79	0.62
7:M:5:ALA:O	7:M:7:PHE:N	2.32	0.62
7:M:271:SER:OG	7:M:521:MET:SD	2.48	0.62
1:A:131:ILE:HG13	2:F:14:LEU:HD13	1.81	0.62
1:C:147:SER:O	1:D:84:GLN:NE2	2.33	0.61
3:G:262:LYS:NZ	6:J:4:DT:OP2	2.24	0.61
6:J:20:DA:OP1	7:M:108:ASN:ND2	2.33	0.61
1:C:151:GLN:NE2	1:E:95:PHE:HB3	2.16	0.61
1:B:48:ILE:HG23	1:B:278:PHE:CZ	2.35	0.60
1:A:60:ILE:HD12	1:A:340:PHE:CE1	2.36	0.60
1:B:22:ASN:OD1	1:B:23:ALA:N	2.34	0.60
1:B:60:ILE:HD12	1:B:340:PHE:CZ	2.36	0.60
1:B:91:GLU:O	1:B:343:ARG:NH2	2.34	0.60
1:B:157:MET:HE1	1:D:100:ILE:HG22	1.83	0.60
1:B:18:VAL:HG11	1:B:44:PRO:CD	2.32	0.60
1:B:260:GLU:OE1	1:B:260:GLU:N	2.34	0.60
3:G:136:TYR:O	3:G:140:THR:OG1	2.14	0.60
3:G:33:CYS:SG	3:G:35:ARG:NE	2.69	0.60
1:D:207:LEU:O	1:D:211:VAL:HG23	2.03	0.59
7:M:439:LEU:HD22	7:M:496:PRO:HG3	1.84	0.59
1:D:183:SER:O	1:D:187:THR:HG23	2.02	0.59
4:H:29:C:OP1	1:L:49:ARG:NH1	2.36	0.59
7:M:521:MET:SD	7:M:522:LYS:N	2.75	0.59
3:G:136:TYR:CE1	3:G:140:THR:HG21	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:284:HIS:ND1	1:L:286:CYS:SG	2.76	0.59
1:L:127:ILE:HG23	1:L:252:MET:HE3	1.85	0.59
1:L:258:THR:N	1:L:261:GLU:OE2	2.35	0.59
3:G:89:TRP:O	3:G:153:GLY:N	2.36	0.58
7:M:13:SER:O	7:M:15:ARG:NH1	2.37	0.58
4:H:-1:G:OP2	4:H:-1:G:N2	2.25	0.58
7:M:502:GLU:OE1	7:M:502:GLU:N	2.36	0.58
1:A:334:GLU:OE1	1:A:334:GLU:N	2.36	0.58
1:D:147:SER:O	1:E:84:GLN:NE2	2.37	0.58
1:E:64:VAL:HG21	1:E:74:PHE:CZ	2.39	0.58
7:M:569:GLU:OE1	7:M:569:GLU:N	2.36	0.58
2:F:85:ARG:NH1	4:H:-1:G:OP2	2.37	0.58
1:A:208:GLN:N	1:A:208:GLN:OE1	2.37	0.58
1:B:281:HIS:N	4:H:9:G:OP2	2.35	0.58
1:D:270:ILE:HD12	1:E:303:LEU:HD23	1.86	0.58
1:D:260:GLU:OE1	1:D:260:GLU:N	2.37	0.57
1:D:105:GLU:OE1	1:D:109:LYS:NZ	2.37	0.57
1:E:135:ASP:OD1	1:E:136:ASN:N	2.37	0.57
7:M:110:VAL:HG13	7:M:115:VAL:HG21	1.86	0.57
1:C:19:THR:N	4:H:14:C:OP2	2.36	0.57
1:C:149:MET:CE	1:D:83:ALA:HB3	2.34	0.57
7:M:192:MET:SD	7:M:192:MET:N	2.78	0.57
1:A:48:ILE:HG23	1:A:278:PHE:CZ	2.40	0.57
1:A:232:ILE:HD13	1:B:80:PHE:CE1	2.40	0.57
1:B:64:VAL:HG21	1:B:74:PHE:CZ	2.39	0.57
1:C:158:GLU:N	1:C:158:GLU:OE1	2.37	0.57
1:B:100:ILE:HG21	2:F:101:PRO:HG2	1.85	0.57
1:D:319:GLU:OE1	1:D:319:GLU:N	2.38	0.57
1:A:151:GLN:OE1	1:A:233:ARG:NH2	2.38	0.56
1:B:147:SER:O	1:C:84:GLN:NE2	2.38	0.56
1:C:260:GLU:N	1:C:260:GLU:OE1	2.38	0.56
4:H:19:C:O2	5:I:-19:DG:N2	2.32	0.56
1:L:105:GLU:OE1	1:L:105:GLU:N	2.36	0.56
7:M:21:TYR:HE2	7:M:40:ALA:HB2	1.70	0.56
7:M:55:LEU:HD12	7:M:56:LEU:N	2.20	0.56
7:M:229:GLN:HB2	7:M:333:ILE:HG23	1.87	0.56
7:M:402:ILE:HD11	7:M:585:PRO:HD3	1.87	0.56
1:B:149:MET:CE	1:C:83:ALA:HB3	2.36	0.56
1:E:277:ARG:NH2	1:E:285:ASN:OD1	2.37	0.56
1:A:147:SER:N	4:H:6:C:OP1	2.39	0.56
2:F:161:SER:OG	4:H:-1:G:N2	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:133:ASP:OD1	1:A:249:SER:OG	2.24	0.56
1:A:175:GLN:OE1	1:A:232:ILE:N	2.39	0.56
1:E:60:ILE:HD12	1:E:340:PHE:CZ	2.40	0.56
1:D:18:VAL:HG11	1:D:44:PRO:HD2	1.88	0.55
4:H:4:G:O2'	4:H:5:A:O4'	2.19	0.55
7:M:37:LEU:CD1	7:M:360:LEU:HD21	2.36	0.55
1:E:294:THR:HG22	1:E:310:GLU:OE1	2.06	0.55
7:M:232:PHE:CZ	7:M:237:LEU:HD22	2.41	0.55
7:M:371:GLU:N	7:M:371:GLU:OE1	2.39	0.55
1:A:21:LYS:NZ	5:I:-1:DG:O6	2.38	0.55
4:H:19:C:O2'	4:H:20:C:O4'	2.23	0.55
1:B:18:VAL:HG11	1:B:44:PRO:HD2	1.89	0.55
1:B:175:GLN:OE1	1:B:232:ILE:N	2.40	0.55
1:B:283:ASN:O	1:C:49:ARG:NE	2.35	0.55
1:A:293:TRP:HZ3	1:A:313:ILE:HD12	1.71	0.55
6:J:17:DA:O3'	7:M:492:VAL:HG11	2.07	0.55
7:M:14:LEU:HD11	7:M:19:GLN:HB3	1.89	0.55
1:A:22:ASN:OD1	1:A:23:ALA:N	2.39	0.54
1:A:93:GLU:N	1:A:93:GLU:OE1	2.40	0.54
3:G:30:CYS:HA	3:G:56:VAL:HG13	1.88	0.54
7:M:7:PHE:HD2	7:M:14:LEU:HD12	1.72	0.54
1:B:64:VAL:HG21	1:B:74:PHE:HZ	1.72	0.54
1:L:250:HIS:NE2	1:L:252:MET:SD	2.81	0.54
7:M:153:LEU:HD22	7:M:157:ILE:HD13	1.89	0.54
1:E:292:HIS:CB	1:E:312:VAL:HG12	2.38	0.54
2:F:214:GLU:N	2:F:214:GLU:OE1	2.40	0.54
1:E:283:ASN:ND2	4:H:29:C:OP2	2.40	0.53
7:M:560:GLN:O	7:M:564:ARG:NH1	2.40	0.53
1:A:49:ARG:NH1	4:H:-1:G:OP1	2.41	0.53
3:G:20:MET:SD	3:G:66:VAL:HG21	2.49	0.53
1:L:284:HIS:O	1:L:285:ASN:ND2	2.41	0.53
7:M:237:LEU:HD21	7:M:302:PHE:HE1	1.74	0.53
1:C:135:ASP:OD1	1:C:136:ASN:N	2.40	0.53
1:D:16:LEU:HD12	1:D:287:GLY:HA2	1.91	0.53
4:H:27:G:O2'	4:H:28:U:O5'	2.26	0.53
2:F:183:ASN:HB2	2:F:188:LEU:HD11	1.90	0.53
3:G:169:ALA:HA	3:G:172:ILE:HD11	1.91	0.52
1:C:62:ASP:OD2	1:C:271:ARG:NH1	2.40	0.52
1:A:18:VAL:HG11	1:A:44:PRO:CD	2.39	0.52
6:J:15:DC:H2'	6:J:15:DC:O2	2.08	0.52
7:M:29:LEU:HD13	7:M:29:LEU:O	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:2:LEU:HD13	2:F:3:ASN:N	2.25	0.52
7:M:16:LYS:NZ	7:M:393:ASP:OD2	2.43	0.52
7:M:348:THR:HG22	7:M:383:THR:HG21	1.91	0.52
1:C:311:ILE:CD1	1:C:325:LEU:HD13	2.39	0.52
2:F:203:VAL:HG22	2:F:215:LYS:CB	2.39	0.52
7:M:147:GLU:OE1	7:M:157:ILE:HD11	2.10	0.52
7:M:447:GLU:OE2	7:M:511:THR:OG1	2.21	0.52
1:C:190:ASP:OD1	1:C:191:ALA:N	2.43	0.52
1:D:43:PHE:HB3	1:D:130:ALA:HB3	1.92	0.51
1:E:62:ASP:OD1	1:E:63:ARG:N	2.44	0.51
1:D:60:ILE:HD12	1:D:340:PHE:CZ	2.45	0.51
1:D:184:GLN:O	1:D:187:THR:OG1	2.24	0.51
3:G:5:VAL:HG22	3:G:163:LEU:HD12	1.92	0.51
1:B:154:GLU:N	1:B:154:GLU:OE1	2.41	0.51
2:F:216:LEU:HD23	2:F:216:LEU:H	1.76	0.51
1:L:13:LEU:H	1:L:13:LEU:HD23	1.76	0.51
7:M:7:PHE:CD1	7:M:12:LEU:HD12	2.46	0.51
7:M:116:ARG:NH1	7:M:137:ALA:O	2.43	0.51
7:M:234:LEU:O	7:M:238:THR:OG1	2.19	0.51
1:E:60:ILE:O	1:E:64:VAL:HG23	2.09	0.51
2:F:68:LEU:HD11	2:F:70:PHE:CZ	2.45	0.50
1:L:261:GLU:OE1	1:L:261:GLU:N	2.44	0.50
2:F:140:SER:O	2:F:144:VAL:HG12	2.11	0.50
1:B:151:GLN:OE1	1:B:233:ARG:NH1	2.43	0.50
1:A:129:ASN:ND2	2:F:15:THR:HG21	2.27	0.50
1:D:180:VAL:O	1:D:183:SER:OG	2.21	0.50
2:F:154:GLY:O	4:H:-6:U:N3	2.44	0.50
1:C:18:VAL:HG11	1:C:44:PRO:HD3	1.92	0.50
1:E:319:GLU:N	1:E:319:GLU:OE1	2.45	0.50
1:L:18:VAL:O	1:L:19:THR:OG1	2.24	0.50
1:E:18:VAL:HG11	1:E:44:PRO:CD	2.42	0.50
3:G:60:PRO:O	3:G:63:THR:OG1	2.29	0.50
2:F:204:SER:OG	4:H:-5:U:O2	2.18	0.49
1:C:149:MET:HE2	1:D:83:ALA:HB3	1.94	0.49
3:G:5:VAL:HG12	3:G:60:PRO:HB2	1.94	0.49
7:M:33:HIS:N	7:M:351:ARG:O	2.37	0.49
1:A:185:ILE:HG21	1:A:218:ILE:HG13	1.94	0.49
1:C:67:ASN:OD1	1:C:71:LYS:N	2.42	0.49
1:E:136:ASN:ND2	1:E:136:ASN:O	2.45	0.49
1:E:260:GLU:OE1	1:E:260:GLU:N	2.45	0.49
1:A:260:GLU:N	1:A:260:GLU:OE1	2.44	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:100:ILE:HG21	2:F:101:PRO:CG	2.43	0.49
1:D:270:ILE:CD1	1:D:318:VAL:HG11	2.41	0.49
7:M:218:ASP:OD1	7:M:556:ARG:NE	2.42	0.49
7:M:359:THR:HG21	7:M:560:GLN:CG	2.42	0.49
7:M:127:LEU:HA	7:M:130:VAL:HG23	1.95	0.49
1:A:107:ARG:NH2	1:A:122:SER:O	2.46	0.48
1:B:100:ILE:HD11	2:F:111:VAL:HG23	1.95	0.48
1:E:84:GLN:NE2	4:H:24:A:OP1	2.46	0.48
2:F:14:LEU:HD11	2:F:168:ASN:CG	2.33	0.48
7:M:532:GLU:N	7:M:532:GLU:OE1	2.46	0.48
1:A:105:GLU:OE1	1:A:105:GLU:N	2.45	0.48
7:M:70:THR:HG22	7:M:215:ASP:HB3	1.96	0.48
1:A:319:GLU:N	1:A:319:GLU:OE1	2.46	0.48
1:C:150:PHE:CZ	1:C:160:LEU:HD11	2.48	0.48
7:M:69:ALA:HB1	7:M:190:HIS:HA	1.93	0.48
7:M:524:GLU:OE1	7:M:525:SER:N	2.47	0.48
1:C:182:ILE:HD11	1:C:221:ARG:HB3	1.96	0.48
1:D:161:GLU:OE1	1:D:161:GLU:N	2.46	0.48
7:M:503:GLN:NE2	7:M:505:PHE:O	2.47	0.48
2:F:57:ASN:O	2:F:61:GLY:N	2.43	0.48
1:C:239:TYR:OH	1:C:286:CYS:SG	2.65	0.48
1:L:14:GLU:OE2	1:L:288:LEU:N	2.47	0.48
7:M:248:ASN:OD1	7:M:249:GLY:N	2.47	0.48
7:M:507:ASP:OD1	7:M:574:ARG:NH1	2.47	0.48
1:D:6:PHE:CD2	1:D:295:VAL:HG22	2.49	0.47
2:F:206:LEU:HD23	2:F:216:LEU:HD21	1.95	0.47
1:C:310:GLU:N	1:C:321:THR:OG1	2.42	0.47
2:F:73:THR:HG22	2:F:229:ILE:HG21	1.97	0.47
1:B:17:THR:HG21	1:B:281:HIS:HB2	1.95	0.47
1:C:231:SER:OG	5:I:-18:DA:OP1	2.32	0.47
7:M:433:CYS:O	7:M:435:GLN:NE2	2.47	0.47
1:B:174:GLU:OE2	1:B:226:GLN:N	2.48	0.47
7:M:374:CYS:O	7:M:379:LEU:N	2.48	0.47
1:C:278:PHE:HD2	1:C:289:VAL:HG11	1.80	0.47
2:F:211:PHE:HD1	2:F:212:VAL:HG13	1.79	0.47
1:L:130:ALA:HB1	1:L:248:LEU:CG	2.45	0.47
2:F:89:LEU:HD13	2:F:113:LEU:HD22	1.97	0.46
1:B:62:ASP:OD2	1:B:271:ARG:NH1	2.47	0.46
1:E:115:LEU:O	1:E:125:VAL:HG12	2.16	0.46
1:A:72:SER:O	2:F:100:SER:OG	2.26	0.46
1:A:62:ASP:OD2	1:A:271:ARG:NH1	2.47	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:PRO:O	4:H:-4:A:N6	2.48	0.46
1:C:226:GLN:OE1	1:C:226:GLN:N	2.48	0.46
1:C:151:GLN:OE1	1:C:233:ARG:NH2	2.46	0.46
1:E:46:THR:OG1	4:H:25:G:OP1	2.20	0.46
1:D:20:VAL:HG12	1:D:22:ASN:OD1	2.15	0.46
3:G:150:GLN:N	3:G:175:CYS:O	2.48	0.46
1:A:6:PHE:CD2	1:A:295:VAL:HG22	2.50	0.46
1:L:253:SER:O	1:L:254:ILE:HD13	2.16	0.46
3:G:1:MET:SD	3:G:1:MET:N	2.82	0.46
1:D:135:ASP:OD1	1:D:136:ASN:N	2.44	0.45
1:E:2:ARG:O	1:E:257:ALA:N	2.48	0.45
3:G:26:VAL:HG22	3:G:27:GLN:H	1.81	0.45
3:G:27:GLN:N	3:G:27:GLN:OE1	2.50	0.45
1:D:118:ARG:NH1	1:D:119:TRP:O	2.49	0.45
1:E:21:LYS:HA	1:E:24:VAL:HG22	1.98	0.45
1:E:281:HIS:N	4:H:27:G:OP2	2.41	0.45
2:F:226:THR:OG1	7:M:624:CYS:O	2.21	0.45
7:M:236:GLU:O	7:M:240:ALA:N	2.46	0.45
1:C:19:THR:HG23	1:C:24:VAL:HG11	1.98	0.45
1:D:24:VAL:HG23	1:D:29:HIS:HA	1.99	0.45
1:D:49:ARG:NH2	1:D:125:VAL:O	2.47	0.45
7:M:503:GLN:NE2	7:M:506:GLN:OE1	2.49	0.45
1:A:48:ILE:HG23	1:A:278:PHE:CE1	2.51	0.45
1:B:2:ARG:O	1:B:257:ALA:N	2.41	0.45
7:M:336:ASN:CB	7:M:339:ILE:HD12	2.47	0.45
1:B:163:ASP:OD1	1:B:164:GLN:N	2.50	0.45
1:B:202:ASP:OD1	1:B:203:THR:N	2.48	0.45
1:C:202:ASP:OD1	1:C:203:THR:N	2.47	0.45
2:F:38:ILE:O	2:F:40:SER:N	2.46	0.45
7:M:475:ILE:HD11	7:M:496:PRO:HB3	1.98	0.45
3:G:2:ASN:ND2	3:G:2:ASN:O	2.50	0.45
7:M:379:LEU:HD23	7:M:380:THR:O	2.17	0.45
2:F:75:GLU:N	2:F:75:GLU:OE1	2.50	0.45
7:M:245:ILE:HG23	7:M:245:ILE:O	2.17	0.45
1:C:151:GLN:HE22	1:E:95:PHE:HB3	1.81	0.45
1:B:161:GLU:OE1	1:B:161:GLU:N	2.48	0.44
1:C:321:THR:O	1:C:325:LEU:HD12	2.17	0.44
2:F:137:PHE:CE2	2:F:144:VAL:HG11	2.51	0.44
2:F:200:ILE:HD12	2:F:222:ALA:HA	1.99	0.44
7:M:29:LEU:HD12	7:M:57:ILE:HD13	1.99	0.44
7:M:380:THR:HG23	7:M:382:ASP:H	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:6:PHE:CD1	1:B:295:VAL:HG22	2.52	0.44
1:D:177:GLU:OE2	1:D:225:LYS:NZ	2.48	0.44
2:F:209:PRO:HG2	2:F:212:VAL:HG22	1.98	0.44
1:B:123:GLY:N	4:H:4:G:OP1	2.48	0.44
1:C:200:ASP:O	1:C:203:THR:N	2.49	0.44
1:D:18:VAL:HG11	1:D:44:PRO:HD3	1.99	0.44
1:C:17:THR:HB	1:C:241:ALA:HB2	2.00	0.44
1:A:18:VAL:HG11	1:A:44:PRO:HD2	1.99	0.44
1:A:186:LYS:HE3	1:A:218:ILE:HD13	2.00	0.44
1:A:260:GLU:OE2	1:A:335:ASN:ND2	2.50	0.44
1:L:125:VAL:HG22	1:L:254:ILE:HD12	1.99	0.44
7:M:382:ASP:OD1	7:M:383:THR:N	2.50	0.44
7:M:475:ILE:HD11	7:M:496:PRO:CB	2.48	0.44
1:C:33:ARG:NH1	1:C:240:GLU:OE2	2.49	0.44
7:M:111:SER:O	7:M:113:GLU:N	2.51	0.44
7:M:479:GLN:NE2	7:M:497:ARG:O	2.49	0.44
7:M:439:LEU:HD23	7:M:508:LEU:CD2	2.47	0.44
1:C:17:THR:HG21	1:C:281:HIS:ND1	2.33	0.44
1:C:228:SER:OG	1:C:230:GLU:O	2.33	0.44
6:J:23:DC:OP2	7:M:202:ARG:NH2	2.51	0.44
1:L:254:ILE:HD11	1:L:265:PHE:CE2	2.53	0.44
7:M:362:ILE:HD13	7:M:372:TRP:CD1	2.52	0.44
1:E:134:GLY:N	1:E:137:GLN:OE1	2.50	0.43
1:A:171:LEU:HD21	1:A:232:ILE:HD12	1.99	0.43
1:C:18:VAL:HG11	1:C:44:PRO:HD2	2.00	0.43
3:G:5:VAL:HA	3:G:8:VAL:HG12	2.00	0.43
7:M:510:ILE:HD11	7:M:561:SER:HB3	1.99	0.43
1:D:148:ILE:HG22	1:D:150:PHE:H	1.84	0.43
1:B:19:THR:HG23	1:B:24:VAL:HG11	2.00	0.43
1:D:60:ILE:HD12	1:D:340:PHE:CE1	2.54	0.43
7:M:364:SER:O	7:M:389:ILE:HG21	2.18	0.43
1:C:6:PHE:CD2	1:C:295:VAL:HG22	2.54	0.43
2:F:203:VAL:O	2:F:204:SER:OG	2.35	0.43
1:A:2:ARG:NH2	1:A:324:GLU:OE2	2.46	0.43
1:C:182:ILE:HA	1:C:185:ILE:HG22	2.00	0.43
1:D:192:LEU:HD21	1:D:211:VAL:CG2	2.49	0.43
1:L:130:ALA:HB1	1:L:248:LEU:HG	2.00	0.43
1:A:283:ASN:O	1:B:49:ARG:NE	2.47	0.43
1:E:13:LEU:O	1:E:244:THR:HG23	2.18	0.43
4:H:21:C:N4	4:H:22:G:O6	2.52	0.43
1:A:284:HIS:NE2	1:B:46:THR:HG22	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:11:ALA:CB	3:G:96:ILE:HG23	2.49	0.43
1:D:130:ALA:HB1	1:D:248:LEU:HB3	1.99	0.42
1:A:166:ASP:OD1	1:A:167:ARG:N	2.52	0.42
6:J:15:DC:O2	6:J:15:DC:C2'	2.67	0.42
1:L:16:LEU:HD11	1:L:289:VAL:CG1	2.49	0.42
7:M:247:ARG:HA	7:M:250:VAL:HG23	2.00	0.42
1:E:282:ALA:N	4:H:27:G:OP1	2.47	0.42
3:G:195:ALA:HB1	3:G:259:LEU:HD12	2.01	0.42
1:L:6:PHE:CE2	1:L:295:VAL:HG22	2.55	0.42
1:C:243:ILE:HD12	1:C:244:THR:O	2.19	0.42
1:D:236:ILE:HG23	4:H:23:A:N6	2.34	0.42
1:A:152:ARG:NH2	4:H:7:C:O2'	2.52	0.42
1:C:254:ILE:HG22	1:C:257:ALA:HB2	2.01	0.42
2:F:25:SER:OG	2:F:27:ASP:OD2	2.24	0.42
7:M:37:LEU:HD13	7:M:360:LEU:HD21	2.01	0.42
7:M:547:TYR:OH	7:M:591:LYS:NZ	2.53	0.42
1:C:231:SER:HG	5:I:-18:DA:P	2.43	0.42
3:G:82:THR:HG21	5:I:3:DG:H4'	2.01	0.42
1:B:13:LEU:O	1:B:244:THR:HG23	2.20	0.42
7:M:444:SER:OG	7:M:512:ARG:NH2	2.53	0.42
1:C:270:ILE:HG12	1:C:318:VAL:HG11	2.01	0.42
1:E:62:ASP:OD2	1:E:271:ARG:NH2	2.52	0.42
7:M:21:TYR:CE2	7:M:38:ILE:HG21	2.55	0.42
1:B:285:ASN:ND2	1:C:251:ARG:O	2.48	0.42
1:D:128:GLY:O	1:D:250:HIS:NE2	2.53	0.42
1:A:17:THR:HB	1:A:241:ALA:HB2	2.02	0.42
1:A:146:ARG:NH2	1:A:231:SER:O	2.50	0.42
1:B:190:ASP:OD2	1:B:194:LYS:NZ	2.53	0.42
1:D:17:THR:HG21	1:D:281:HIS:ND1	2.34	0.42
1:L:256:ASN:ND2	1:L:256:ASN:O	2.53	0.42
1:C:283:ASN:ND2	4:H:17:C:OP2	2.50	0.41
1:A:276:PRO:O	1:A:289:VAL:HG22	2.20	0.41
1:C:285:ASN:ND2	1:D:251:ARG:O	2.49	0.41
1:D:16:LEU:HD11	1:D:278:PHE:HB2	2.02	0.41
1:D:278:PHE:CD2	1:D:289:VAL:HG21	2.55	0.41
7:M:61:ASN:O	7:M:61:ASN:ND2	2.53	0.41
1:D:45:GLY:N	1:D:129:ASN:OD1	2.48	0.41
2:F:142:GLU:OE1	2:F:142:GLU:N	2.47	0.41
3:G:181:THR:N	3:G:184:ASN:OD1	2.53	0.41
1:E:56:ALA:HB1	1:E:112:LEU:HD13	2.02	0.41
1:E:236:ILE:HD12	4:H:29:C:C2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:81:MET:HG3	1:C:113:ILE:HD11	2.02	0.41
1:E:276:PRO:O	1:E:289:VAL:HG22	2.21	0.41
3:G:106:LEU:HD21	3:G:136:TYR:CD2	2.55	0.41
7:M:76:MET:SD	7:M:102:ARG:NH2	2.88	0.41
7:M:216:GLU:N	7:M:356:THR:O	2.52	0.41
1:A:99:GLU:N	1:A:99:GLU:OE1	2.54	0.41
1:D:4:LEU:HD22	1:D:308:LEU:HD12	2.03	0.41
1:D:160:LEU:HD21	1:E:79:HIS:HD2	1.86	0.41
1:E:125:VAL:HG23	1:E:254:ILE:CD1	2.51	0.41
1:L:284:HIS:CG	1:L:286:CYS:HG	2.39	0.41
7:M:264:ALA:CB	7:M:323:VAL:HG23	2.50	0.41
7:M:335:VAL:HG13	7:M:337:PRO:HD3	2.02	0.41
1:B:149:MET:HE2	1:C:83:ALA:HB3	2.03	0.41
1:D:53:ARG:NH2	1:D:117:GLY:O	2.54	0.41
1:E:113:ILE:HD11	1:E:118:ARG:HD3	2.02	0.41
2:F:211:PHE:CD1	2:F:212:VAL:HG13	2.56	0.41
3:G:233:GLU:OE2	3:G:237:ASN:ND2	2.54	0.41
7:M:393:ASP:OD1	7:M:394:VAL:N	2.49	0.41
1:B:6:PHE:CE1	1:B:295:VAL:HG13	2.56	0.41
1:C:123:GLY:N	4:H:10:G:OP1	2.51	0.41
7:M:212:LEU:HD22	7:M:350:TRP:CE3	2.55	0.41
7:M:216:GLU:O	7:M:219:ILE:HG22	2.21	0.41
1:B:297:THR:CG2	1:B:308:LEU:HD21	2.50	0.40
3:G:158:GLU:O	3:G:162:SER:CB	2.69	0.40
1:A:45:GLY:N	1:A:129:ASN:OD1	2.46	0.40
1:C:115:LEU:O	1:C:125:VAL:HG12	2.21	0.40
1:D:293:TRP:HZ3	1:D:313:ILE:HD12	1.87	0.40
7:M:123:GLU:HG2	7:M:130:VAL:HG21	2.03	0.40
7:M:250:VAL:O	7:M:254:ASP:N	2.50	0.40
1:B:18:VAL:HG11	1:B:44:PRO:HD3	2.03	0.40
1:B:266:ILE:O	1:B:270:ILE:HD13	2.21	0.40
1:E:18:VAL:HG11	1:E:44:PRO:HD3	2.03	0.40
7:M:68:ILE:CD1	7:M:213:ILE:HD12	2.50	0.40
7:M:144:VAL:HG13	7:M:145:GLU:H	1.85	0.40
1:D:35:GLY:O	1:D:39:ALA:HB2	2.21	0.40
2:F:233:LEU:HD11	7:M:588:LEU:HD23	2.03	0.40
3:G:217:VAL:HG12	3:G:257:LEU:HD11	2.03	0.40
1:C:232:ILE:HD12	1:D:86:VAL:HG11	2.03	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	340/350 (97%)	340 (100%)	0	0	100	100
1	B	341/350 (97%)	340 (100%)	1 (0%)	0	100	100
1	C	341/350 (97%)	341 (100%)	0	0	100	100
1	D	341/350 (97%)	338 (99%)	3 (1%)	0	100	100
1	E	249/350 (71%)	248 (100%)	1 (0%)	0	100	100
1	L	193/350 (55%)	191 (99%)	2 (1%)	0	100	100
2	F	233/235 (99%)	233 (100%)	0	0	100	100
3	G	261/263 (99%)	261 (100%)	0	0	100	100
7	M	622/624 (100%)	616 (99%)	2 (0%)	4 (1%)	22	52
All	All	2921/3222 (91%)	2908 (100%)	9 (0%)	4 (0%)	50	77

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	M	6	VAL
7	M	152	GLU
7	M	494	VAL
7	M	112	LEU

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	278/285 (98%)	275 (99%)	3 (1%)	70	90
1	B	279/285 (98%)	278 (100%)	1 (0%)	89	97
1	C	279/285 (98%)	279 (100%)	0	100	100
1	D	279/285 (98%)	274 (98%)	5 (2%)	54	82
1	E	197/285 (69%)	194 (98%)	3 (2%)	60	85
1	L	161/285 (56%)	156 (97%)	5 (3%)	35	70
2	F	200/200 (100%)	195 (98%)	5 (2%)	42	75
3	G	237/237 (100%)	232 (98%)	5 (2%)	48	78
7	M	539/539 (100%)	527 (98%)	12 (2%)	47	78
All	All	2449/2686 (91%)	2410 (98%)	39 (2%)	58	84

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	57	HIS
1	A	210	LYS
1	A	290	GLU
1	B	193	LYS
1	D	37	PHE
1	D	62	ASP
1	D	181	ASP
1	D	192	LEU
1	D	272	PHE
1	E	37	PHE
1	E	272	PHE
1	E	330	LYS
2	F	13	SER
2	F	40	SER
2	F	82	THR
2	F	141	SER
2	F	201	LYS
3	G	43	VAL
3	G	164	ARG
3	G	177	ASP
3	G	179	LEU
3	G	190	LEU
1	L	9	LYS
1	L	58	LYS
1	L	109	LYS
1	L	252	MET

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Mol	Chain	Res	Type
1	L	259	ASP
7	M	60	LYS
7	M	72	SER
7	M	80	PHE
7	M	173	ILE
7	M	194	MET
7	M	198	MET
7	M	199	CYS
7	M	231	ARG
7	M	257	MET
7	M	350	TRP
7	M	520	ARG
7	M	524	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	285	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	H	36/61 (59%)	12 (33%)	1 (2%)

All (12) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	H	-4	A
4	H	7	C
4	H	13	G
4	H	16	C
4	H	19	C
4	H	20	C
4	H	23	A
4	H	24	A
4	H	25	G
4	H	28	U
4	H	29	C
4	H	30	U

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	H	19	C

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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-19690. 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 ⓘ
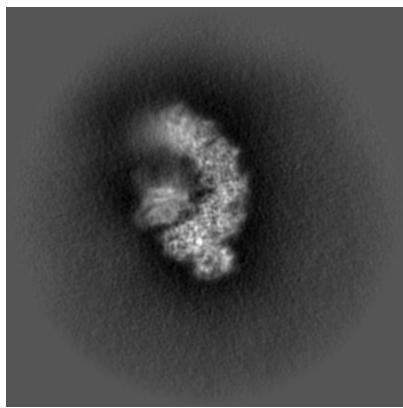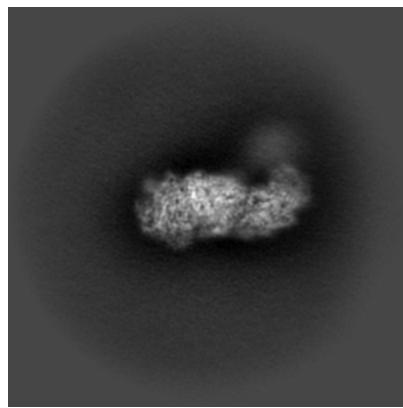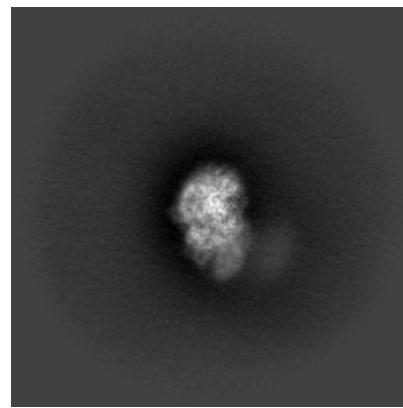
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

| X | Y | Z |
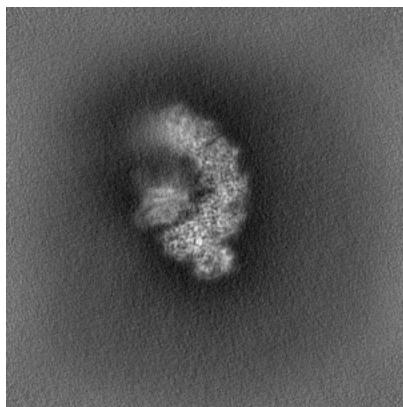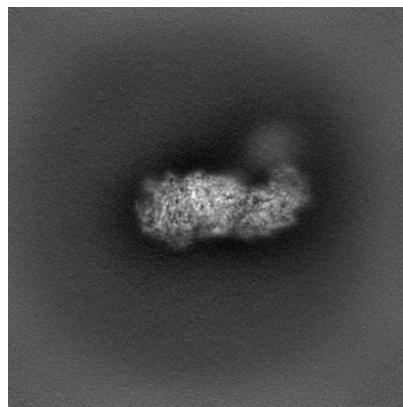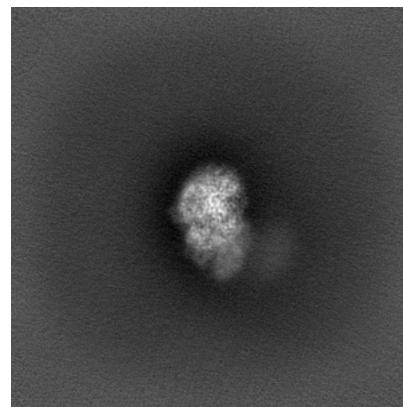
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
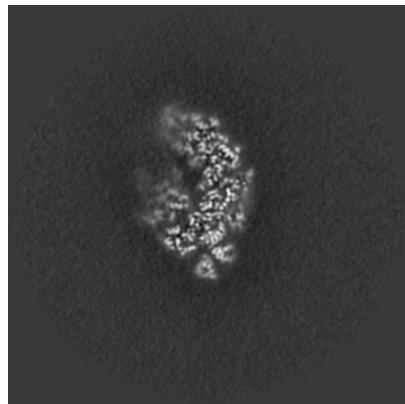
6.2.1 Primary map
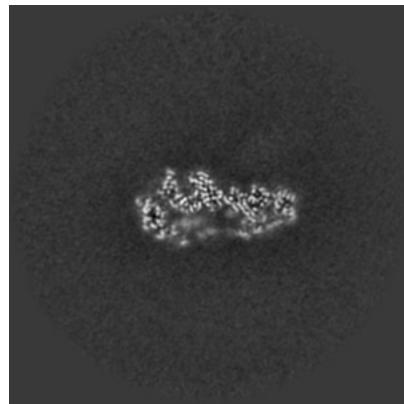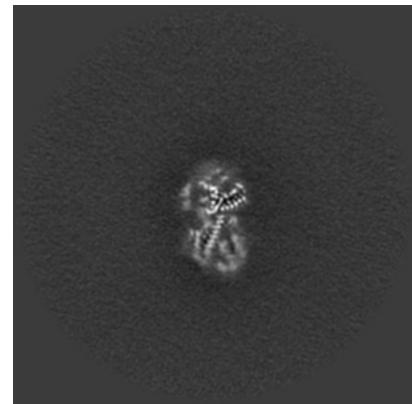
| X Index: 180 | Y Index: 180 | Z Index: 180 |

6.2.2 Raw map
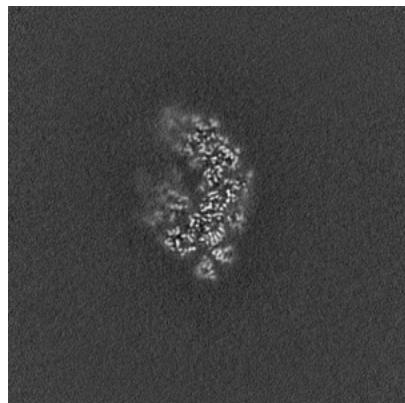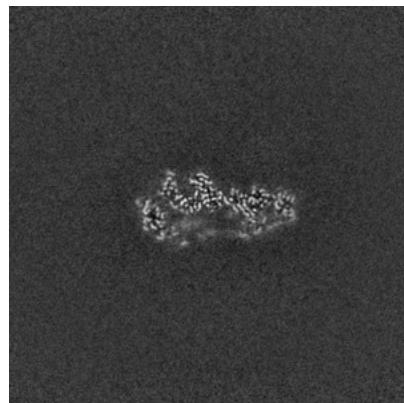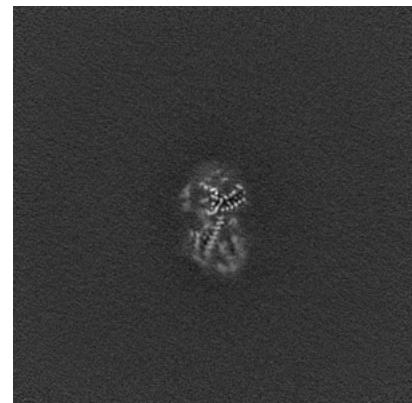
| X Index: 180 | Y Index: 180 | Z Index: 180 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
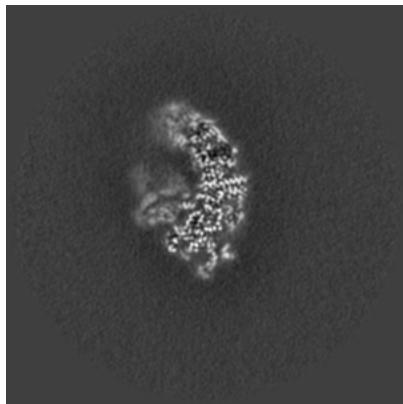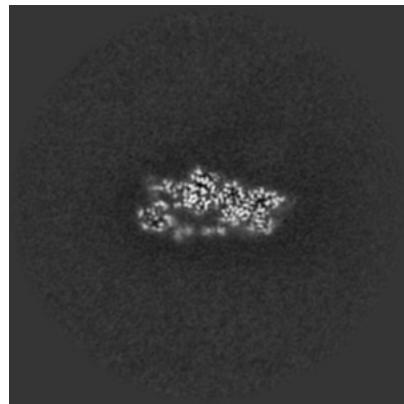
| X Index: 185 | Y Index: 191 | Z Index: 167 |
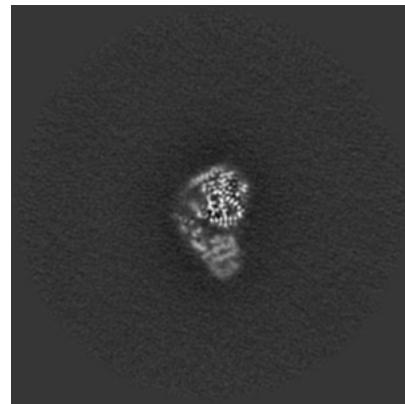
6.3.2 Raw map
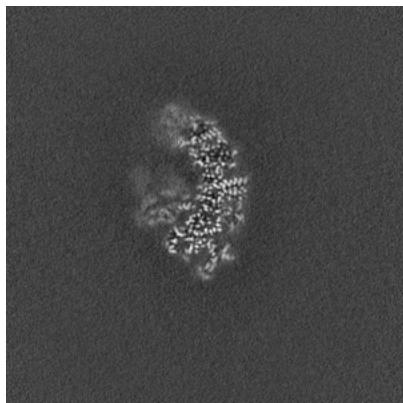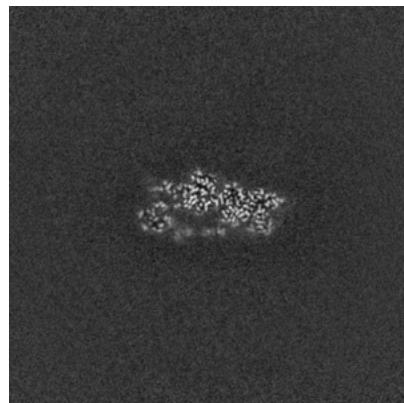
| X Index: 184 | Y Index: 191 | Z Index: 149 |
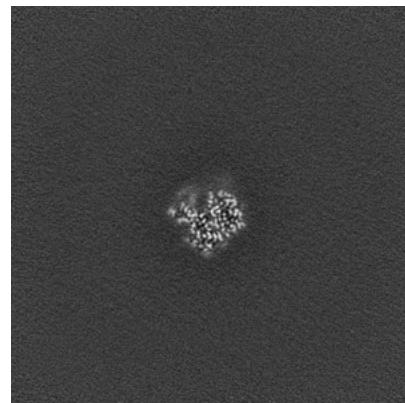
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

X   Y   Z

6.4.2 Raw map

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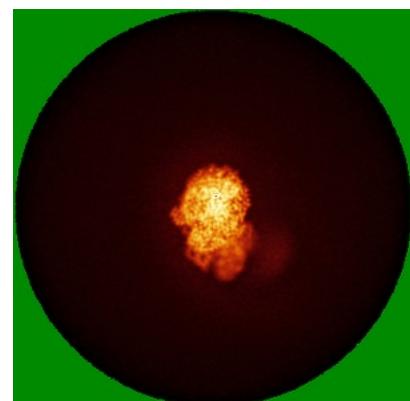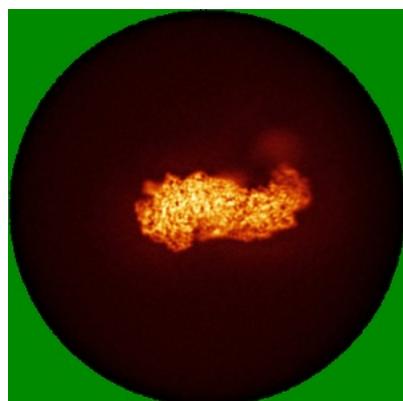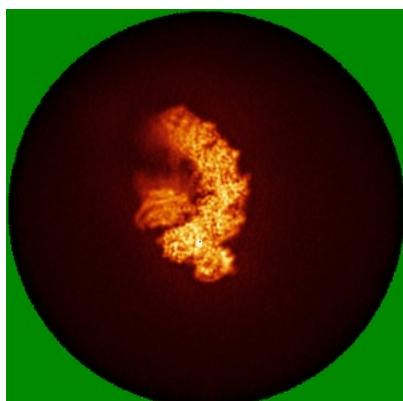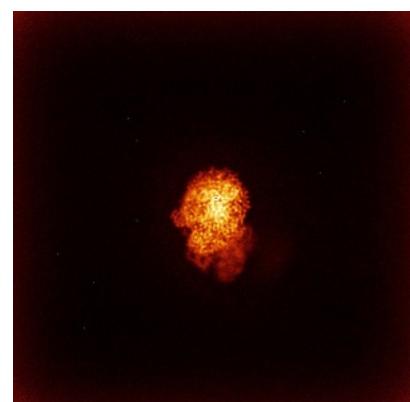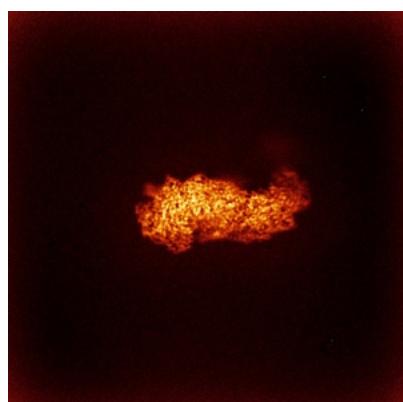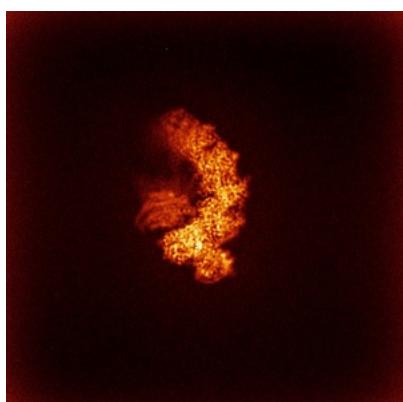
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
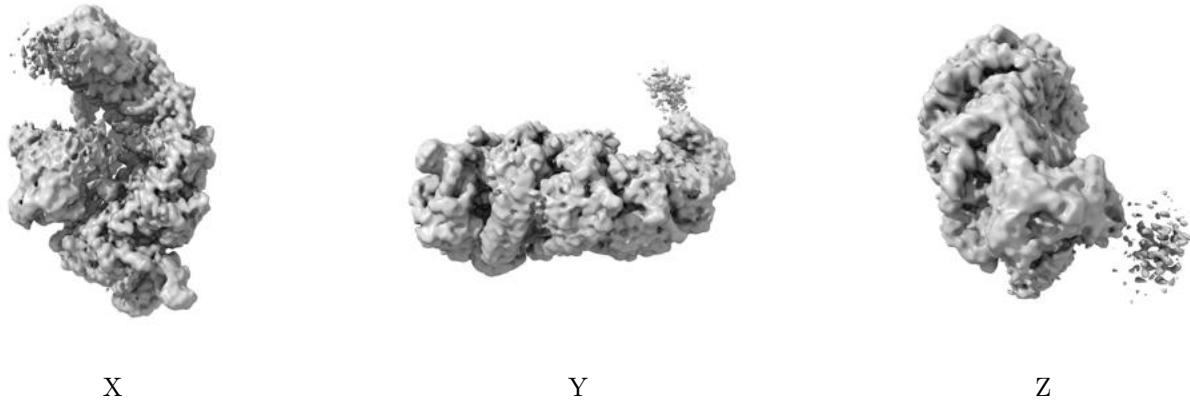
The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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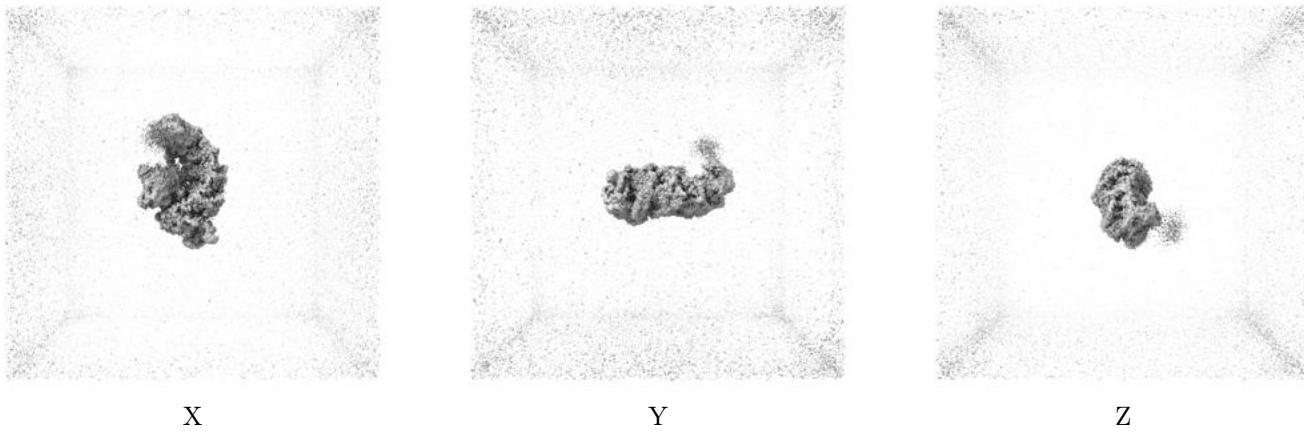
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation (i)

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

7 Map analysis (i)

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

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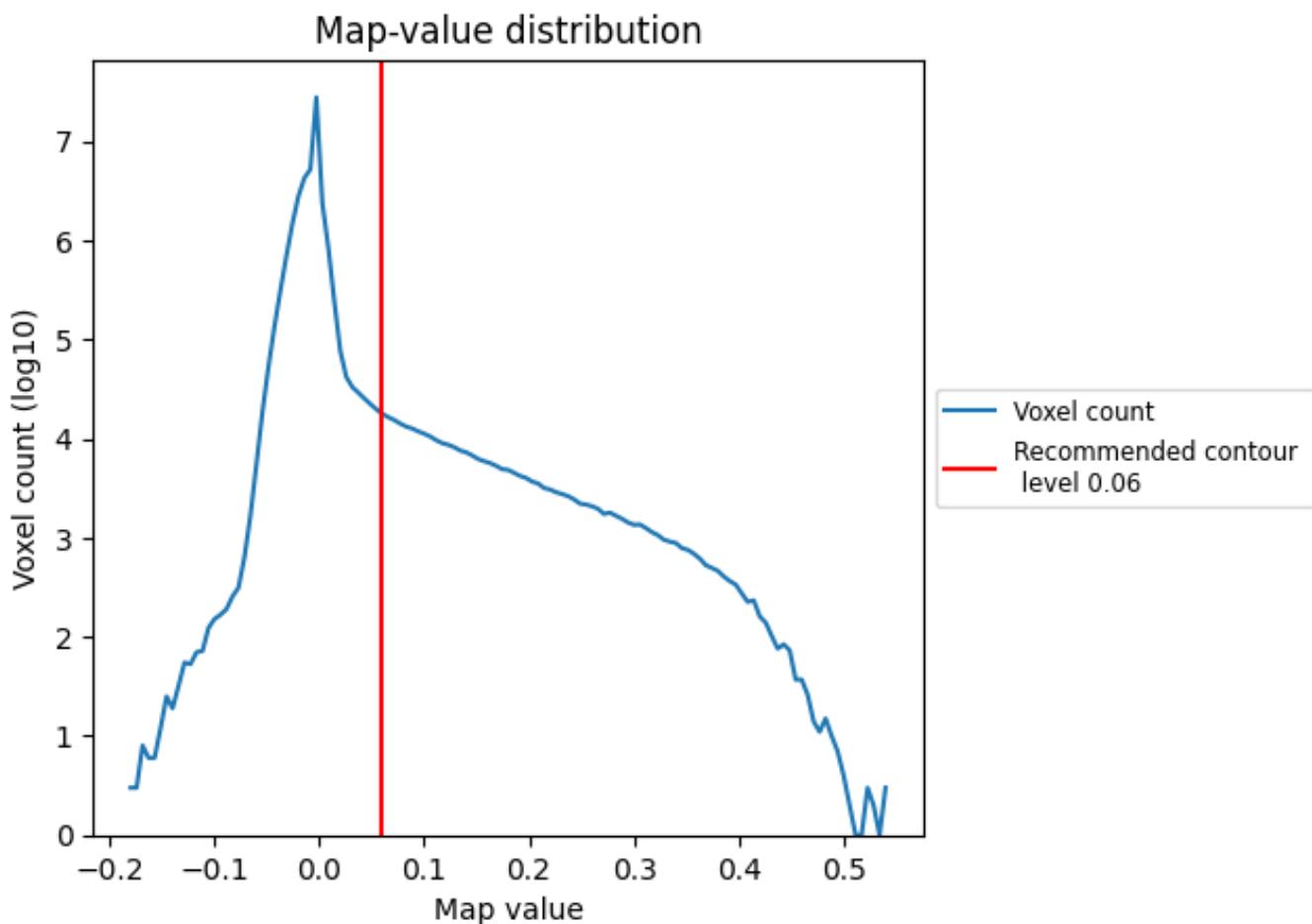
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
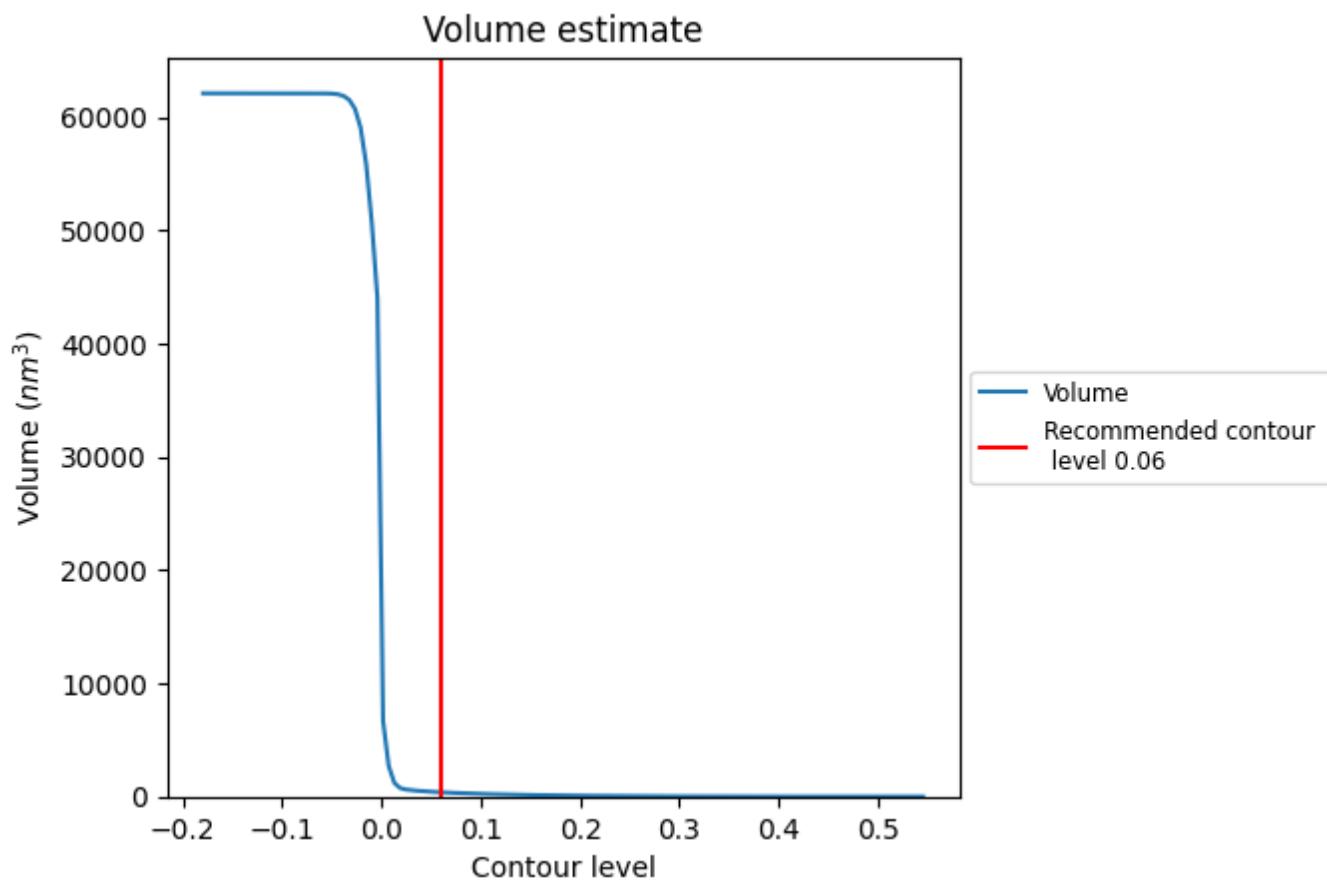
The volume at the recommended contour level is 377 nm^3; this corresponds to an approximate mass of 340 kDa.

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)
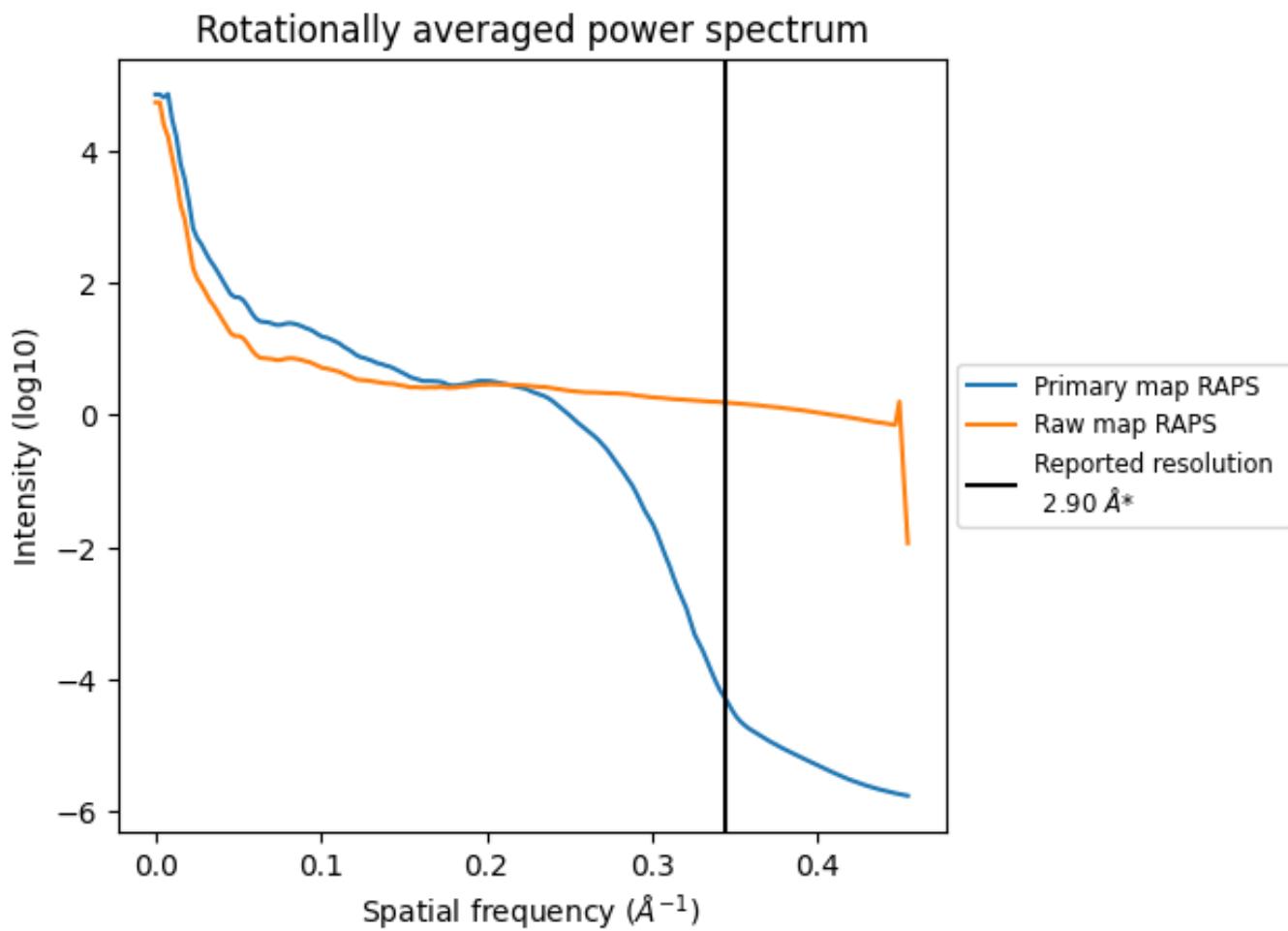
*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

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 ⓘ
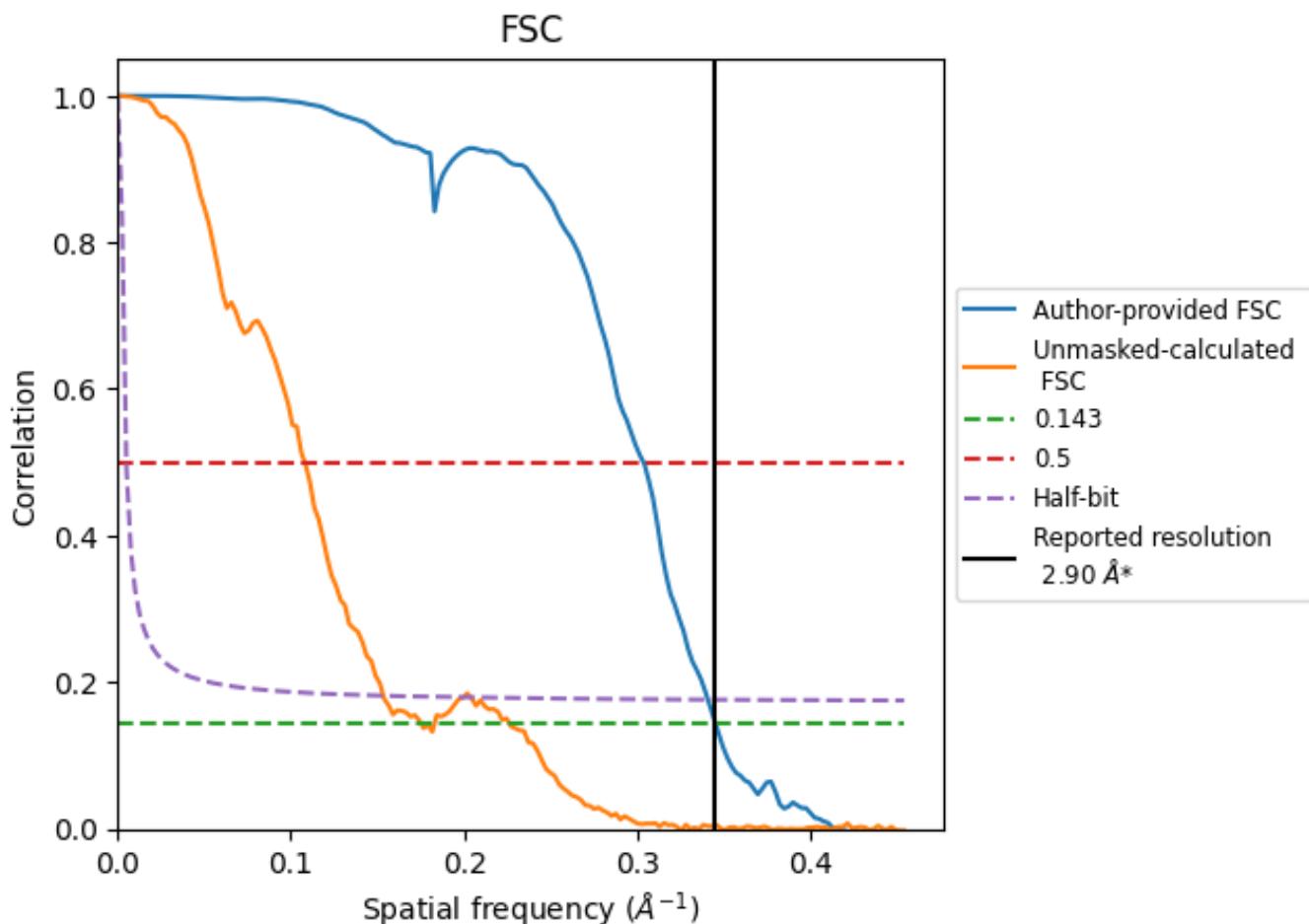
*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.89	3.29	2.93
Unmasked-calculated*	5.70	9.25	6.51

*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 5.70 differs from the reported value 2.9 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-19690 and PDB model 8S37. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ

| X | Y | Z |
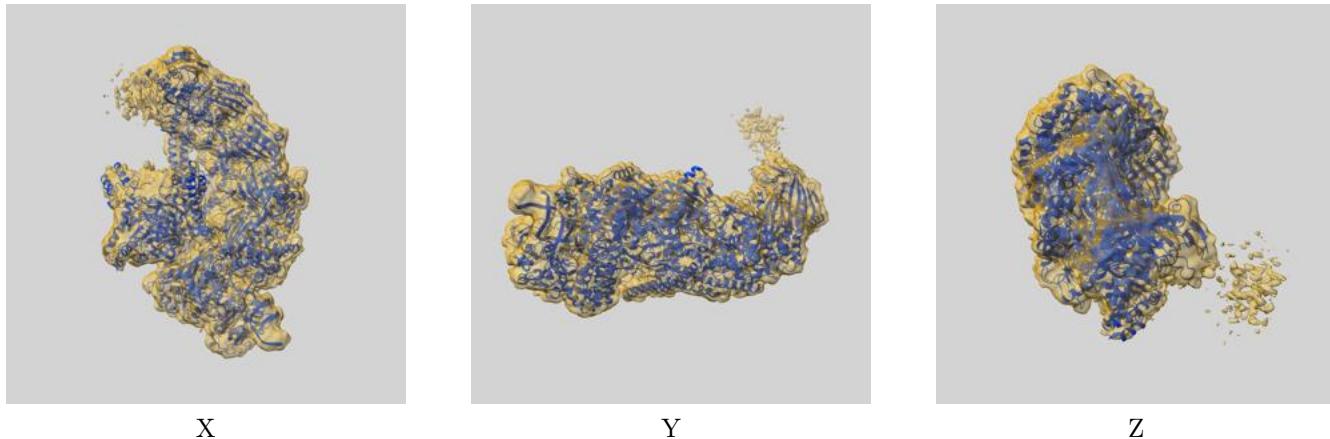
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

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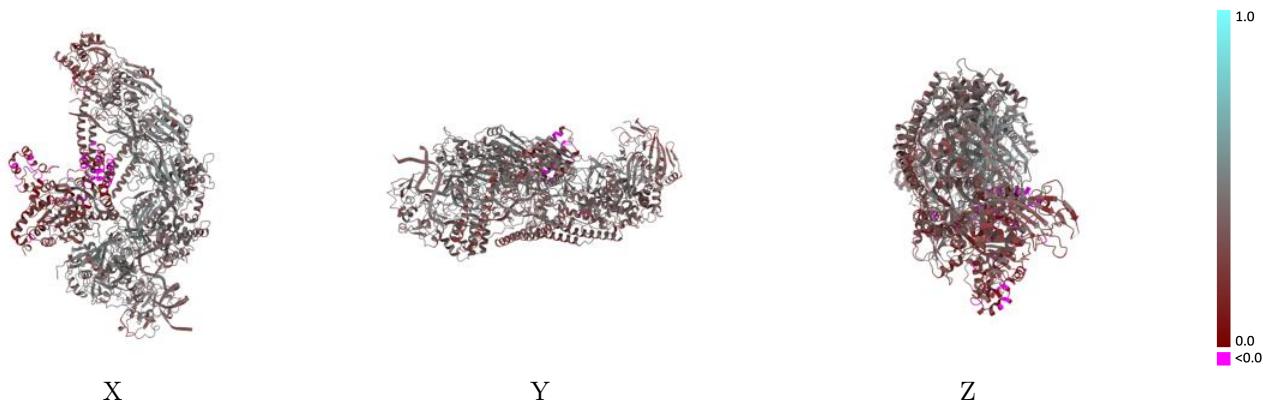
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X Y Z
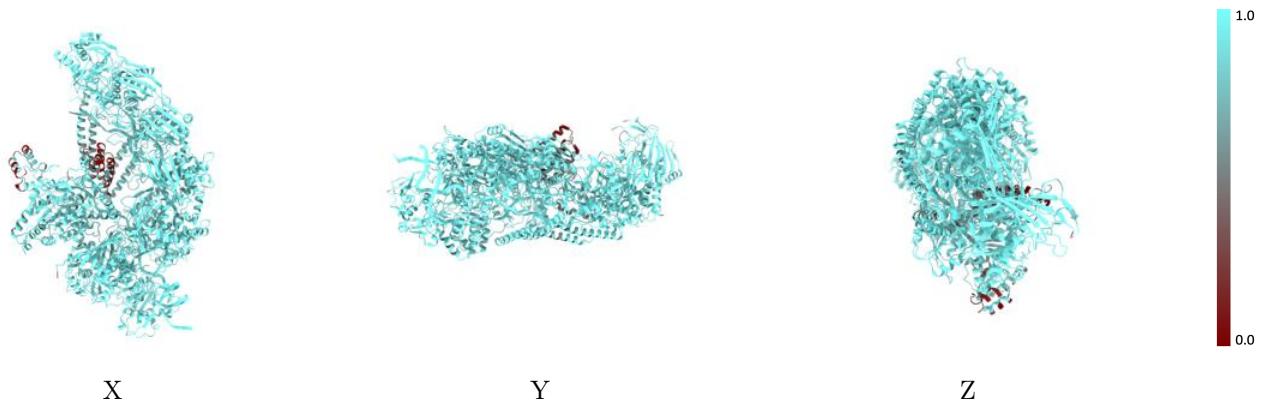
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.06).

9.4 Atom inclusion ⓘ
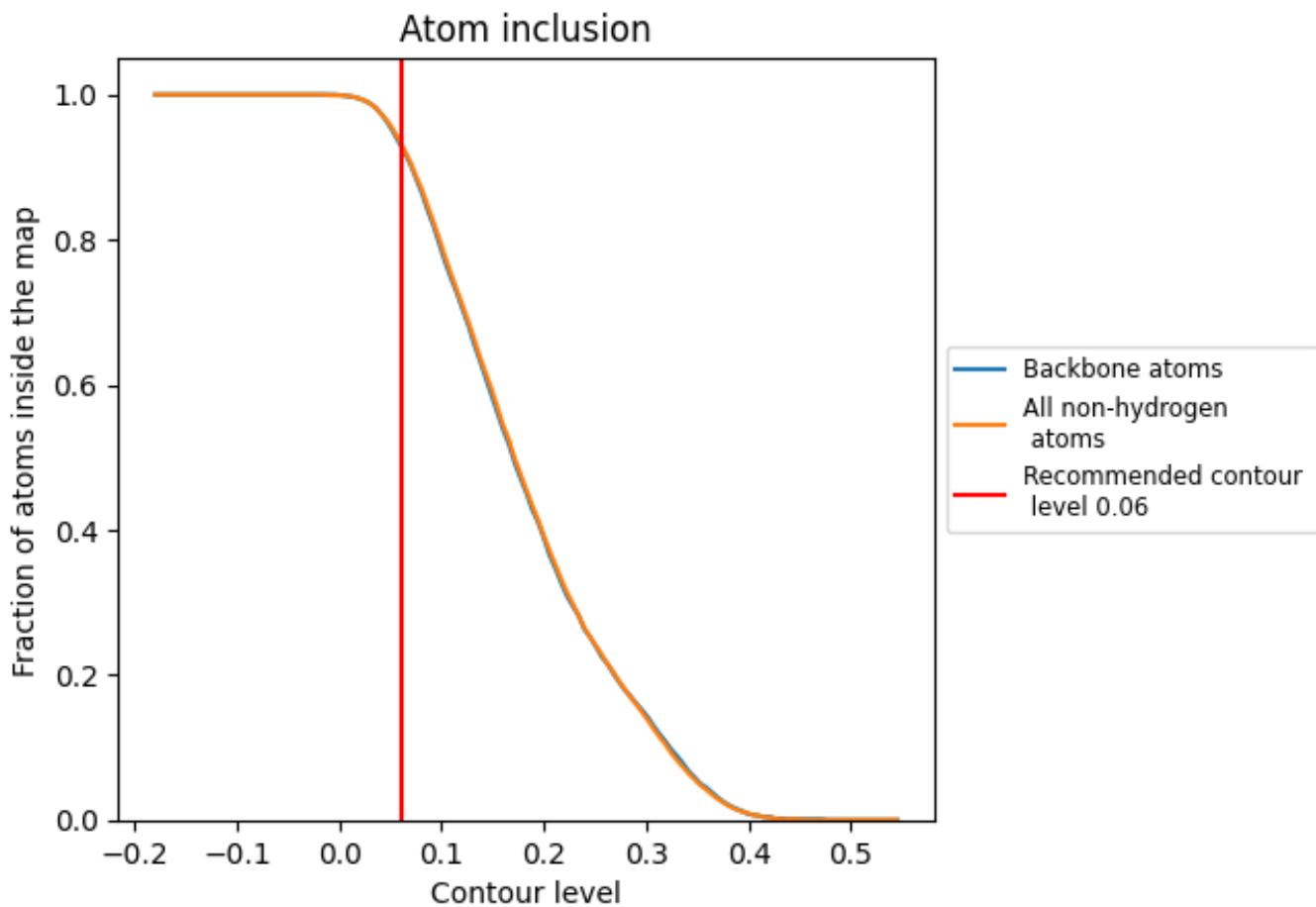
At the recommended contour level, 93% of all backbone atoms, 93% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9340	0.3710
A	0.9590	0.4190
B	0.9590	0.4260
C	0.9570	0.4160
D	0.9230	0.3970
E	0.9620	0.3880
F	0.9720	0.4540
G	0.9640	0.4030
H	0.9990	0.4420
I	0.9760	0.4020
J	0.9970	0.3540
L	0.9460	0.3000
M	0.8420	0.2350
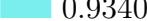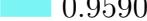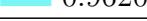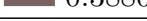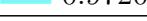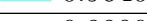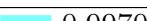
1.0

0.0

<0.0