



## wwPDB EM Validation Summary Report ⓘ

Jun 27, 2024 – 06:29 AM JST

PDB ID : 8H77  
EMDB ID : EMD-34519  
Title : Hsp90-AhR-p23-XAP2 complex  
Authors : Wen, Z.L.; Zhai, Y.J.; Zhu, Y.; Sun, F.  
Deposited on : 2022-10-19  
Resolution : 3.20 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

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<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>.

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

EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

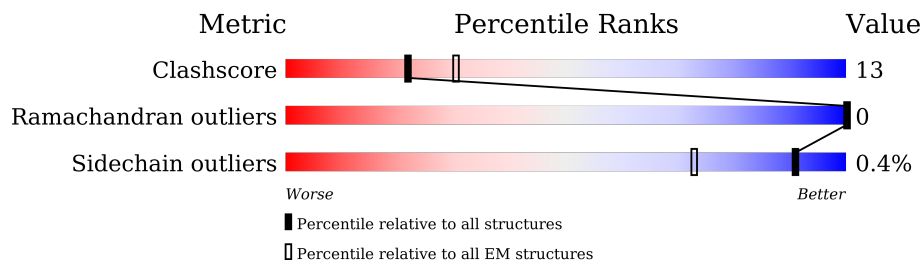
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.20 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	756	 6% 60% 24% 16%
1	B	756	 61% 21% 18%
2	C	172	 56% 9% 34%
2	D	172	 50% 14% 35%
3	E	449	 6% 17% 14% 69%
4	F	339	 47% 54% 37% 9%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	BEF	A	802	-	-	X	-
6	BEF	B	802	-	-	X	-

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 15726 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 Heat shock protein HSP 90-beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	636	Total	C	N	O	S	0	0
			5158	3272	868	995	23		
1	B	620	Total	C	N	O	S	0	0
			5012	3178	843	968	23		

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-31	MET	-	initiating methionine	UNP P11499
A	-30	GLY	-	expression tag	UNP P11499
A	-29	ALA	-	expression tag	UNP P11499
A	-28	TRP	-	expression tag	UNP P11499
A	-27	SER	-	expression tag	UNP P11499
A	-26	HIS	-	expression tag	UNP P11499
A	-25	PRO	-	expression tag	UNP P11499
A	-24	GLN	-	expression tag	UNP P11499
A	-23	PHE	-	expression tag	UNP P11499
A	-22	GLU	-	expression tag	UNP P11499
A	-21	LYS	-	expression tag	UNP P11499
A	-20	GLY	-	expression tag	UNP P11499
A	-19	GLY	-	expression tag	UNP P11499
A	-18	GLY	-	expression tag	UNP P11499
A	-17	SER	-	expression tag	UNP P11499
A	-16	GLY	-	expression tag	UNP P11499
A	-15	GLY	-	expression tag	UNP P11499
A	-14	GLY	-	expression tag	UNP P11499
A	-13	SER	-	expression tag	UNP P11499
A	-12	GLY	-	expression tag	UNP P11499
A	-11	GLY	-	expression tag	UNP P11499
A	-10	GLY	-	expression tag	UNP P11499
A	-9	SER	-	expression tag	UNP P11499
A	-8	ALA	-	expression tag	UNP P11499
A	-7	TRP	-	expression tag	UNP P11499
A	-6	SER	-	expression tag	UNP P11499

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	HIS	-	expression tag	UNP P11499
A	-4	PRO	-	expression tag	UNP P11499
A	-3	GLN	-	expression tag	UNP P11499
A	-2	PHE	-	expression tag	UNP P11499
A	-1	GLU	-	expression tag	UNP P11499
A	0	LYS	-	expression tag	UNP P11499
B	-31	MET	-	initiating methionine	UNP P11499
B	-30	GLY	-	expression tag	UNP P11499
B	-29	ALA	-	expression tag	UNP P11499
B	-28	TRP	-	expression tag	UNP P11499
B	-27	SER	-	expression tag	UNP P11499
B	-26	HIS	-	expression tag	UNP P11499
B	-25	PRO	-	expression tag	UNP P11499
B	-24	GLN	-	expression tag	UNP P11499
B	-23	PHE	-	expression tag	UNP P11499
B	-22	GLU	-	expression tag	UNP P11499
B	-21	LYS	-	expression tag	UNP P11499
B	-20	GLY	-	expression tag	UNP P11499
B	-19	GLY	-	expression tag	UNP P11499
B	-18	GLY	-	expression tag	UNP P11499
B	-17	SER	-	expression tag	UNP P11499
B	-16	GLY	-	expression tag	UNP P11499
B	-15	GLY	-	expression tag	UNP P11499
B	-14	GLY	-	expression tag	UNP P11499
B	-13	SER	-	expression tag	UNP P11499
B	-12	GLY	-	expression tag	UNP P11499
B	-11	GLY	-	expression tag	UNP P11499
B	-10	GLY	-	expression tag	UNP P11499
B	-9	SER	-	expression tag	UNP P11499
B	-8	ALA	-	expression tag	UNP P11499
B	-7	TRP	-	expression tag	UNP P11499
B	-6	SER	-	expression tag	UNP P11499
B	-5	HIS	-	expression tag	UNP P11499
B	-4	PRO	-	expression tag	UNP P11499
B	-3	GLN	-	expression tag	UNP P11499
B	-2	PHE	-	expression tag	UNP P11499
B	-1	GLU	-	expression tag	UNP P11499
B	0	LYS	-	expression tag	UNP P11499

- Molecule 2 is a protein called Prostaglandin E synthase 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	113	Total	C	N	O	S	0	0
			942	591	166	179	6		
2	D	111	Total	C	N	O	S	0	0
			928	584	164	174	6		

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-11	MET	-	initiating methionine	UNP Q9R0Q7
C	-10	ALA	-	expression tag	UNP Q9R0Q7
C	-9	GLU	-	expression tag	UNP Q9R0Q7
C	-8	GLN	-	expression tag	UNP Q9R0Q7
C	-7	LYS	-	expression tag	UNP Q9R0Q7
C	-6	LEU	-	expression tag	UNP Q9R0Q7
C	-5	ILE	-	expression tag	UNP Q9R0Q7
C	-4	SER	-	expression tag	UNP Q9R0Q7
C	-3	GLU	-	expression tag	UNP Q9R0Q7
C	-2	GLU	-	expression tag	UNP Q9R0Q7
C	-1	ASP	-	expression tag	UNP Q9R0Q7
C	0	LEU	-	expression tag	UNP Q9R0Q7
D	-11	MET	-	initiating methionine	UNP Q9R0Q7
D	-10	ALA	-	expression tag	UNP Q9R0Q7
D	-9	GLU	-	expression tag	UNP Q9R0Q7
D	-8	GLN	-	expression tag	UNP Q9R0Q7
D	-7	LYS	-	expression tag	UNP Q9R0Q7
D	-6	LEU	-	expression tag	UNP Q9R0Q7
D	-5	ILE	-	expression tag	UNP Q9R0Q7
D	-4	SER	-	expression tag	UNP Q9R0Q7
D	-3	GLU	-	expression tag	UNP Q9R0Q7
D	-2	GLU	-	expression tag	UNP Q9R0Q7
D	-1	ASP	-	expression tag	UNP Q9R0Q7
D	0	LEU	-	expression tag	UNP Q9R0Q7

- Molecule 3 is a protein called Aryl hydrocarbon receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	140	Total	C	N	O	S	0	0
			1134	720	208	199	7		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	-11	GLY	-	expression tag	UNP P30561

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-10	PRO	-	expression tag	UNP P30561
E	-9	GLY	-	expression tag	UNP P30561
E	-8	ALA	-	expression tag	UNP P30561
E	-7	SER	-	expression tag	UNP P30561
E	-6	GLY	-	expression tag	UNP P30561
E	-5	GLY	-	expression tag	UNP P30561
E	-4	GLY	-	expression tag	UNP P30561
E	-3	SER	-	expression tag	UNP P30561
E	-2	GLY	-	expression tag	UNP P30561
E	-1	ALA	-	expression tag	UNP P30561
E	0	GLY	-	expression tag	UNP P30561

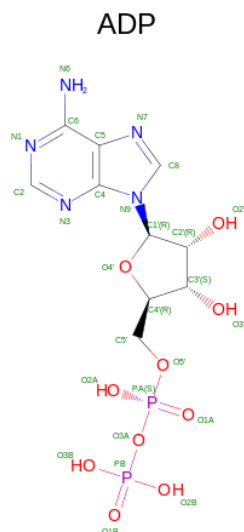
- Molecule 4 is a protein called AH receptor-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	F	310	Total	C	N	O	S	0	0
			2490	1574	439	466	11		

There are 10 discrepancies between the modelled and reference sequences:

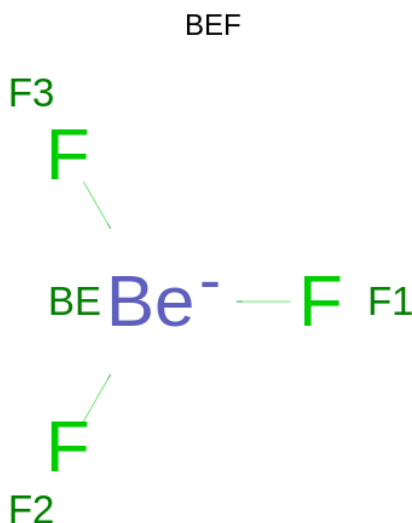
Chain	Residue	Modelled	Actual	Comment	Reference
F	-8	MET	-	initiating methionine	UNP O08915
F	-7	ALA	-	expression tag	UNP O08915
F	-6	TYR	-	expression tag	UNP O08915
F	-5	PRO	-	expression tag	UNP O08915
F	-4	TYR	-	expression tag	UNP O08915
F	-3	ASP	-	expression tag	UNP O08915
F	-2	VAL	-	expression tag	UNP O08915
F	-1	PRO	-	expression tag	UNP O08915
F	0	ASP	-	expression tag	UNP O08915
F	1	TYR	-	expression tag	UNP O08915

- Molecule 5 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total 27	C 10	N 5	O 10	P 2	0
5	B	1	Total 27	C 10	N 5	O 10	P 2	0

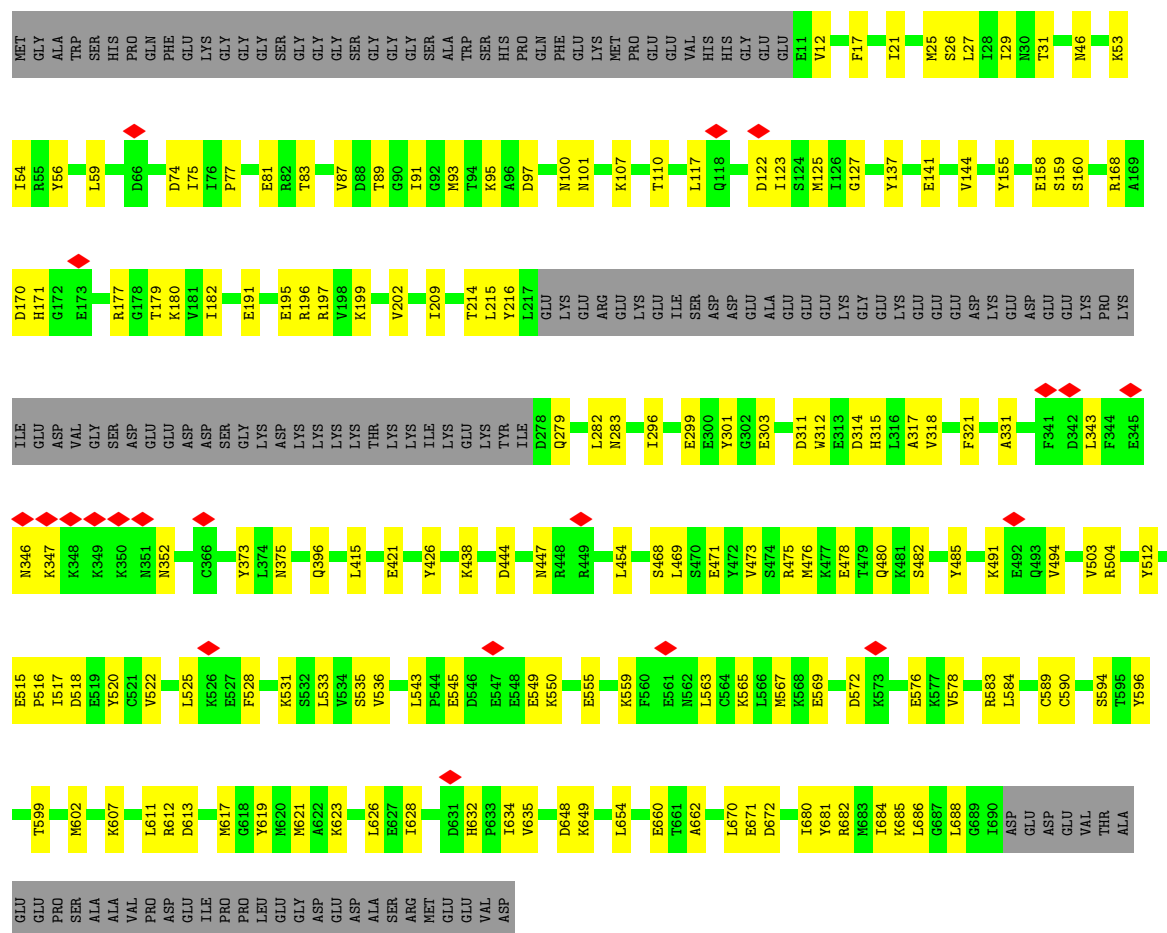
- Molecule 6 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula:  $\text{BeF}_3$ ).



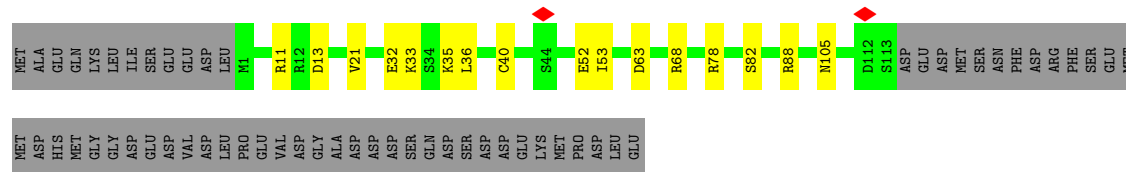
Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total 4	Be 1	F 3	0
6	B	1	Total 4	Be 1	F 3	0



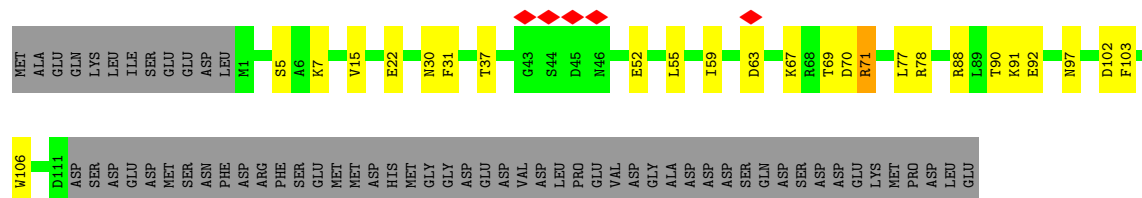




• Molecule 2: Prostaglandin E synthase 3



• Molecule 2: Prostaglandin E synthase 3



• Molecule 3: Aryl hydrocarbon receptor



GLY PRO GLY GLN SER LEU SER LEU PRO PHE PRO GLN ASP GLN ALA MET SER SER GLY ALA ASN ILE THR TYR ALA SER ARG LYS ARG ARG LYS VAL VAL GLN LYS THR VAL ASP LYS PRO GLY ILE PRO ALA SER GLU GLY ILE LYS ASP SER ASN PRO LYS VAL HIS ARG ARG LEU THR ASN THR GLU LEU ASP ARG GLN

LEU ALA SER LEU SER LEU PHE PRO PHE LEU ASP GLN ASP ILE ASN MET SER LYS ASP PHE VAL ASP LYS LEU SER VAL THR ALA LEU ARG ALA SER LEU VAL SER ARG TYR THR LYS VAL SER ARG VAL THR ILE SER PHE PHE ASP LYS VAL PRO GLY ALA LEU LYS GLN SER PHE MET ASP VAL ILE ASP ARG HIS CYS GLN ASP THR ARG LEU THR GLU ASP THR ARG GLN

ASP LEU GLN GLY GLY PHE LEU LEU GLN ASP ALA ASN MET GLY PHE VAL ASP LYS VAL VAL THR ALA THR ASP ALA LEU VAL PHE SER TYR THR LYS VAL THR ILE GLN ASP TYR ASP LYS HIS CYS ILE LEU THR ARG LEU ASP THR ARG ASP THR ARG PHE

GLN ARG GLN LEU TRP ALA LEU ASP PRO SER ALA GLN GLY VAL ASP LYS GLU ALA HIS GLY ASP GLY PRO PRO GLN ALA VAL PHE VAL THR TYR THR THR ASP ILE GLN ASP TYR PRO GLY ALA GLN SER PHE MET ASP VAL ILE ASP ARG CYS GLN SER VAL TYR LEU ARG ARG CYS LEU THR LEU THR ASP ASN THR ARG SER ALA ASP GLY PHE

LEU ALA MET ASN PHE GLN TRP ALA LEU ASP PRO SER ALA GLN GLY VAL ASP LYS GLU ALA HIS GLY ASP GLY PRO PRO GLN ALA VAL PHE VAL THR TYR THR THR ASP ILE GLN ASP TYR PRO GLY ALA LEU LYS GLN SER PHE MET ASP VAL ILE ASP ARG HIS CYS GLN SER VAL TYR LEU ARG ARG CYS LEU THR LEU THR ASP ASN THR ARG SER ALA ASP GLY PHE

C294 D295 G298 Q299 L300 I301 Y304 T305 E306 V307 E308 L309 C310 T311 R312 G313 S314 Y316 Q317 F318 A322 D323 H324 L325 H326 C327 A328 E329 S330 H331 I332 S340 G341 T342 T343 V344 F345 R346 A349 K350 H351 S352 R353 V356 Q356 S359 N360 A361 R362 I363 I364 T365 R366

R366 N367 G368 R369 P370 D371 Y372 I373 Q377 R378 F379 L380 T381 D382 E383 E384 G385 R386 E387 Q390 R391 R392 S393 T394 S395 L396 P397 F398 H399 F400 A401 A405 V406 L407 TYR GLU ILE SER SER PRO PHE SER PRO ILE MET ASP PRO LEU PRO ILE ARG THR LYS ASN THR SER

ARG LYS ASP TRP ALA PRO GLN

• Molecule 4: AH receptor-interacting protein



MET TYR TYR ASP VAL PRO TYR A2 D3 L4 I5 A6 R7 L8 R9 E10 D11 G12 I13 Q14 K15 R16 V17 I18 Q19 E20 G21 R22 G23 E24 L25 P26 D27 F28 Q29 D30 G31 T32 K33 A34 T35 F36 H37 F38 R39 T40 L41 H42 S43 D44 M45 E46 G47 S48 V49 I50 D51

D52 S53 R54 T55 R56 G57 K58 P59 M60 E61 L62 I63 V64 G65 K66 K67 F68 G69 L70 P71 V72 W73 E74 T75 I76 V77 G78 T79 M80 R81 E82 G83 E84 I85 A86 Q87 F88 L89 C90 D91 I92 K93 H94 V95 V96 L97 Y98 F99 L100 V101 A102 K103 S104 R105 L106 N107 I108 A109 E110 G111

K112 D113 PRO LEU GLY GLN ARG HIS CYS GLY ILE ALA GLN MET HIS GLU HIS SER L133 G134 H135 A136 D137 L138 D139 A140 L141 Q142 Q143 Q144 P145 Q146 P147 L148 I149 F150 H151 I152 E153 M154 L155 K156 V157 E158 S159 P160 G161 T162 Y163 Q164 D165 D166 W168 A169 M170 T171

D172 E173 E174 K175 A176 K177 A178 V179 P180 H183 Q184 E185 G186 N187 R188 E192 G193 Q194 V195 A199 Y202 T206 A207 C208 K209 L292 E293 L294 A299 P300 V301 V302 S303 R304 E306 L306 R307 A308 L309 E310 T311 Q217 P218 G219 W223 T224 Q225 L226 D227 L228 Q229 T230 L234 Y237 C240 K241 L242 V243 A244 Q245

D252 H253 S256 T257 L258 N259 K260 V261 D262 D263 N264 V265 K266 A267 K270 R271 E283 A286 D287 F288 A289 K290 L292 E293 L294 A299 P300 V301 V302 S303 R304 E306 L306 R307 A308 L309 E310 T311 Q314 Q315 E318 E319 D320 A322 R323 F324 R325 G326 I327 F328 S329

H330

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	266830	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 ( $e^-/\text{\AA}^2$ )	60	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.197	Depositor
Minimum map value	-0.137	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.02	Depositor
Map size ( $\text{\AA}$ )	273.92, 273.92, 273.92	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.07, 1.07, 1.07	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.30	0/5242	0.48	0/7042
1	B	0.30	0/5095	0.46	0/6851
2	C	0.31	0/966	0.46	0/1301
2	D	0.39	0/952	0.55	0/1282
3	E	0.31	0/1161	0.56	0/1563
4	F	0.27	0/2539	0.49	0/3427
All	All	0.30	0/15955	0.49	0/21466

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
4	F	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	F	109	ALA	Peptide

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within

the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5158	0	5213	130	0
1	B	5012	0	5050	115	0
2	C	942	0	892	9	0
2	D	928	0	883	21	0
3	E	1134	0	1136	64	0
4	F	2490	0	2479	107	0
5	A	27	0	12	4	0
5	B	27	0	12	6	0
6	A	4	0	0	2	0
6	B	4	0	0	2	0
All	All	15726	0	15677	404	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 13.

The worst 5 of 404 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)
3:E:286:LYS:CE	3:E:292:ILE:HG21	1.04	1.48
3:E:286:LYS:HE3	3:E:292:ILE:CG2	0.91	1.39
3:E:286:LYS:HE3	3:E:292:ILE:HG23	1.30	1.09
3:E:332:ILE:HD11	4:F:223:TRP:CZ2	1.94	1.01
3:E:286:LYS:HE2	3:E:292:ILE:HG21	1.48	0.95

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	632/756 (84%)	598 (95%)	34 (5%)	0	<b>100</b> <b>100</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	616/756 (82%)	590 (96%)	26 (4%)	0	100	100
2	C	111/172 (64%)	108 (97%)	3 (3%)	0	100	100
2	D	109/172 (63%)	104 (95%)	5 (5%)	0	100	100
3	E	138/449 (31%)	127 (92%)	11 (8%)	0	100	100
4	F	306/339 (90%)	287 (94%)	19 (6%)	0	100	100
All	All	1912/2644 (72%)	1814 (95%)	98 (5%)	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	575/673 (85%)	573 (100%)	2 (0%)	92	96
1	B	559/673 (83%)	558 (100%)	1 (0%)	93	98
2	C	106/160 (66%)	105 (99%)	1 (1%)	78	91
2	D	104/160 (65%)	102 (98%)	2 (2%)	57	81
3	E	121/382 (32%)	120 (99%)	1 (1%)	81	93
4	F	265/290 (91%)	265 (100%)	0	100	100
All	All	1730/2338 (74%)	1723 (100%)	7 (0%)	91	95

5 of 7 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	68	ARG
2	D	71	ARG
3	E	284	LYS
2	D	97	ASN
1	B	672	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 10 such sidechains are listed below:

Mol	Chain	Res	Type
4	F	42	HIS
4	F	146	GLN
4	F	183	HIS
2	C	84	GLN
3	E	331	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

4 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	BEF	B	802	1	0,3,3	-	-	-		
5	ADP	B	801	-	24,29,29	1.26	2 (8%)	29,45,45	2.03	7 (24%)
6	BEF	A	802	-	0,3,3	-	-	-		
5	ADP	A	801	-	24,29,29	0.92	1 (4%)	29,45,45	1.50	4 (13%)

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
5	ADP	B	801	-	-	5/12/32/32	0/3/3/3
5	ADP	A	801	-	-	1/12/32/32	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	801	ADP	C2'-C1'	-3.46	1.48	1.53
5	A	801	ADP	C5-C4	2.26	1.46	1.40
5	B	801	ADP	C2'-C3'	-2.12	1.47	1.53

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	801	ADP	O3'-C3'-C2'	-4.74	96.49	111.82
5	B	801	ADP	C2'-C3'-C4'	3.67	109.78	102.64
5	B	801	ADP	N3-C2-N1	-3.65	122.97	128.68
5	A	801	ADP	PA-O3A-PB	-3.52	120.73	132.83
5	B	801	ADP	O3'-C3'-C4'	-3.51	100.91	111.05

There are no chirality outliers.

5 of 6 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	801	ADP	C5'-O5'-PA-O1A
5	B	801	ADP	C5'-O5'-PA-O2A
5	B	801	ADP	C5'-O5'-PA-O3A
5	B	801	ADP	C3'-C4'-C5'-O5'
5	B	801	ADP	O4'-C4'-C5'-O5'

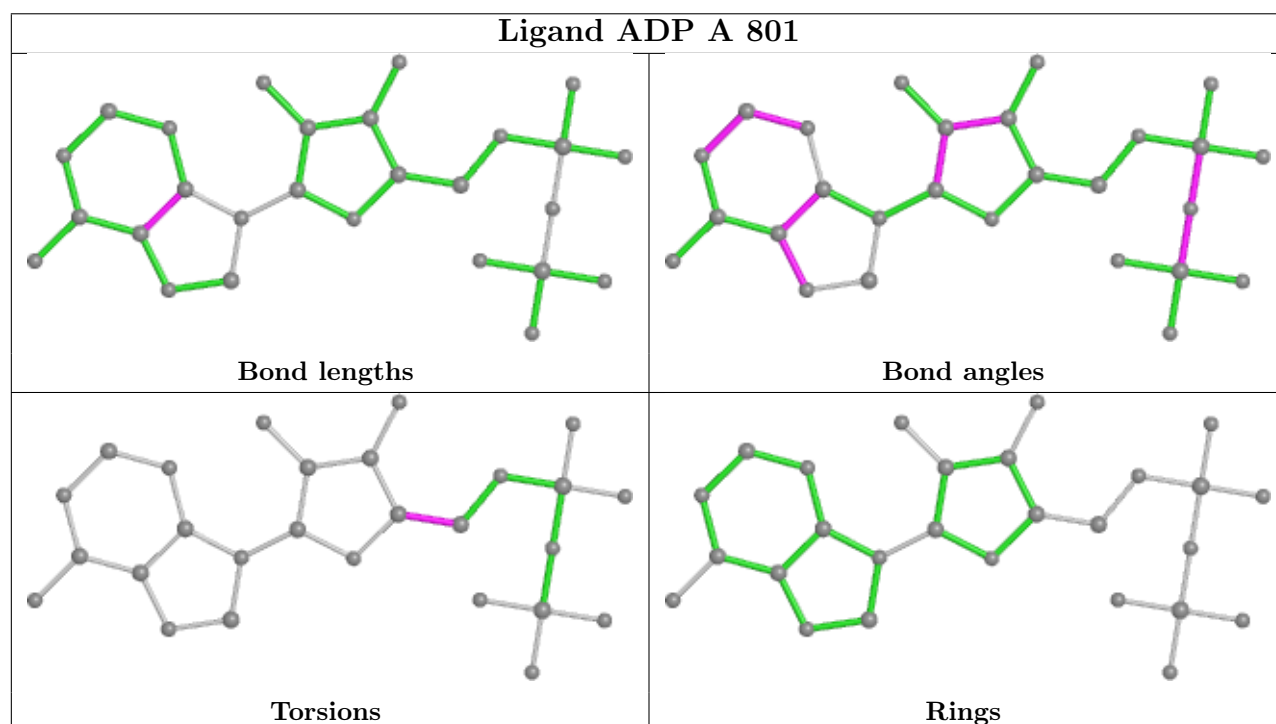
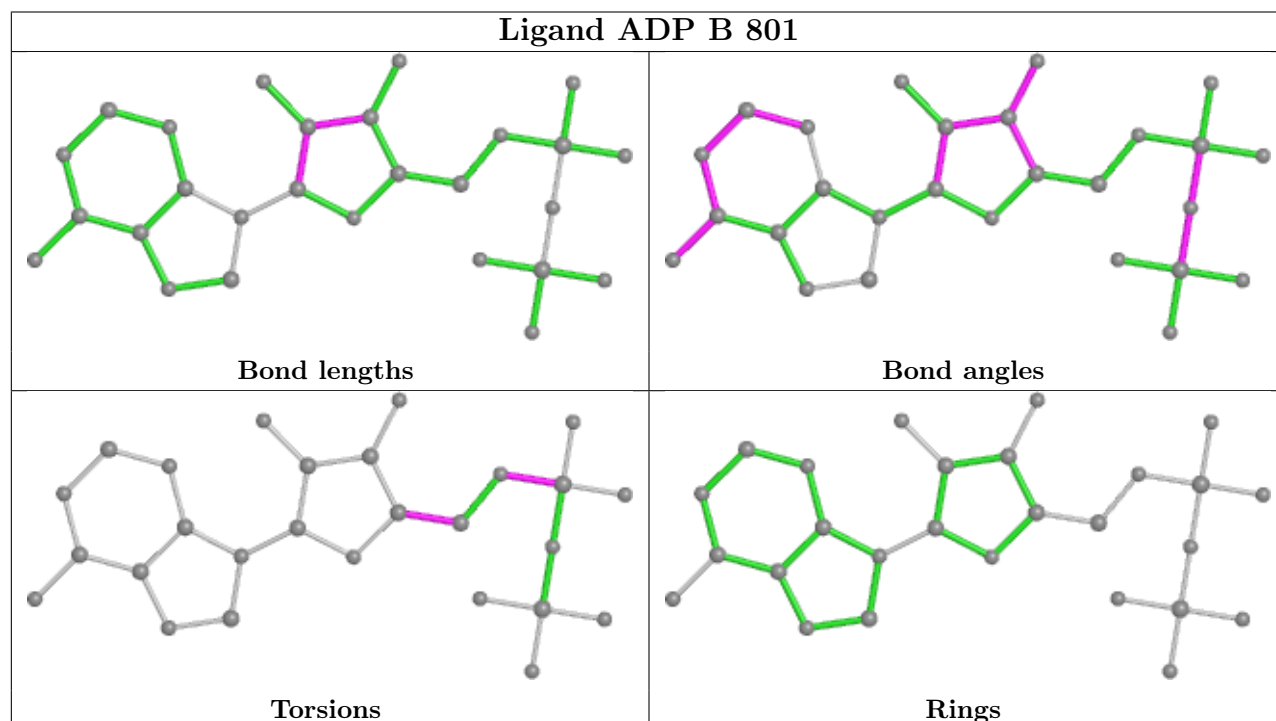
There are no ring outliers.

4 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	802	BEF	2	0
5	B	801	ADP	6	0
6	A	802	BEF	2	0
5	A	801	ADP	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 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 [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

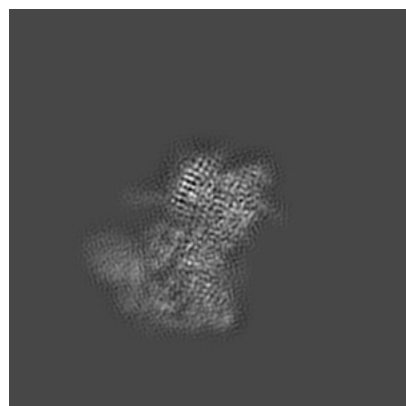
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-34519. These allow visual inspection of the internal detail of the map and identification of artifacts.

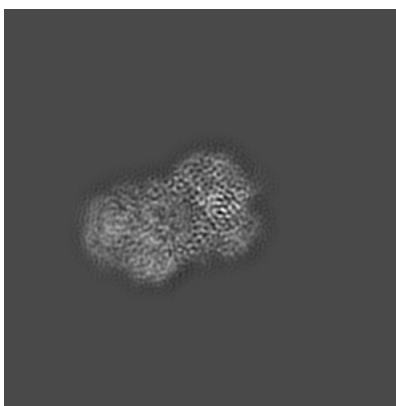
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

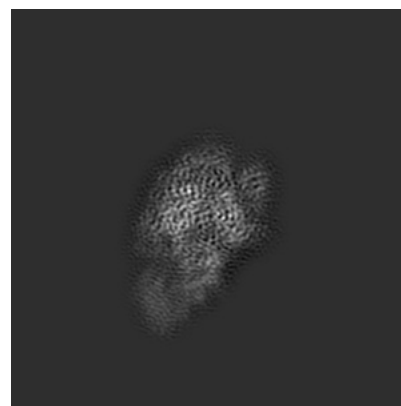
#### 6.1.1 Primary map



X

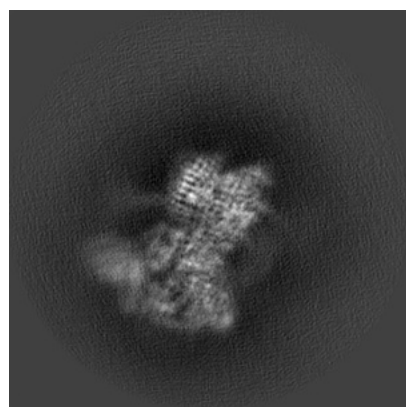


Y

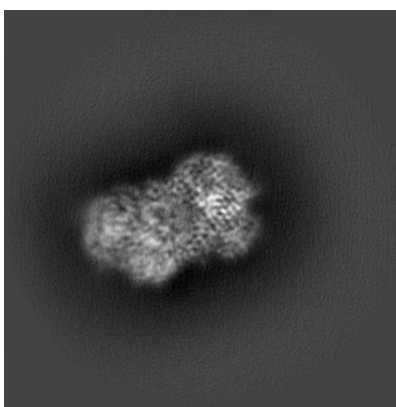


Z

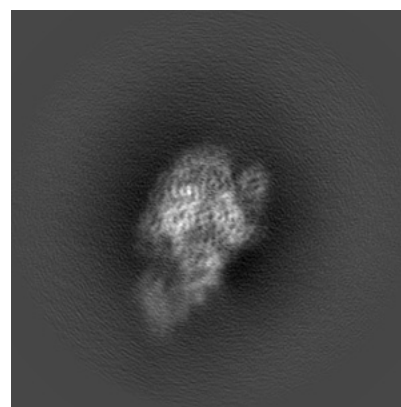
#### 6.1.2 Raw map



X



Y

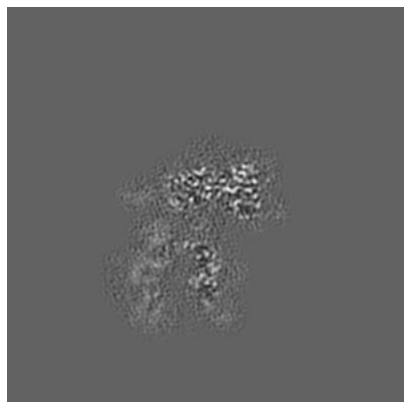


Z

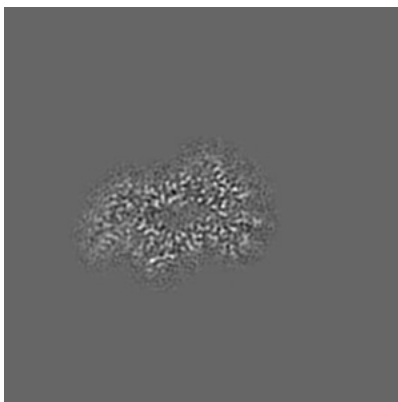
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

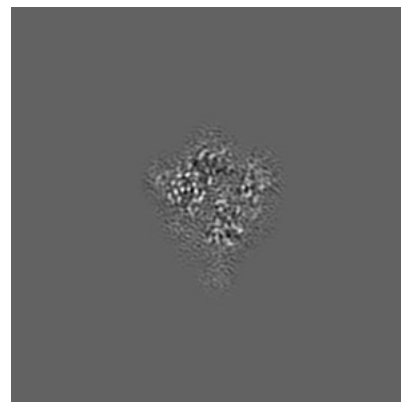
### 6.2.1 Primary map



X Index: 128

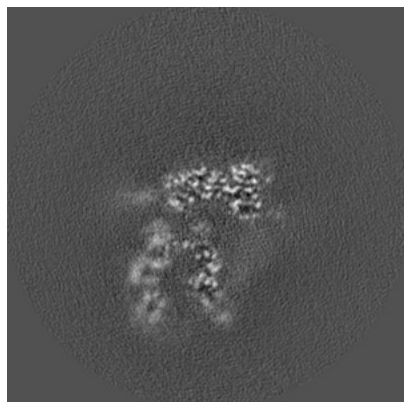


Y Index: 128

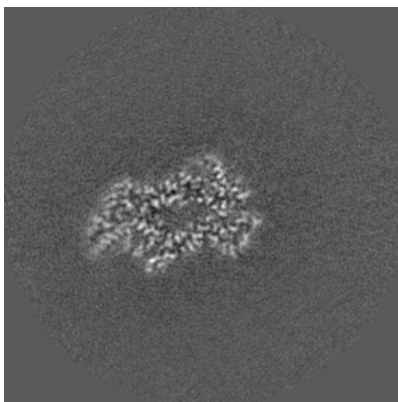


Z Index: 128

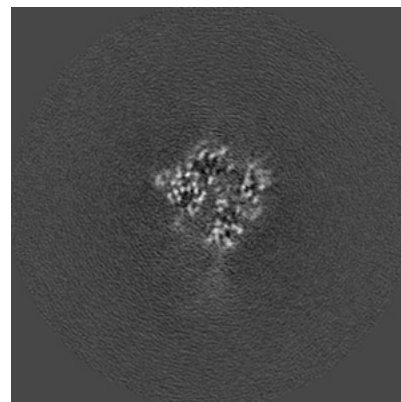
### 6.2.2 Raw map



X Index: 128



Y Index: 128

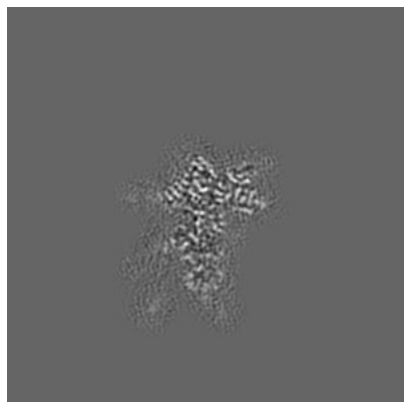


Z Index: 128

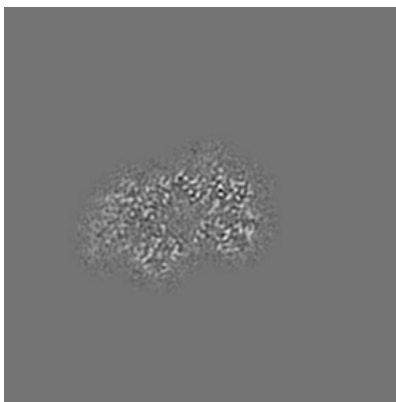
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

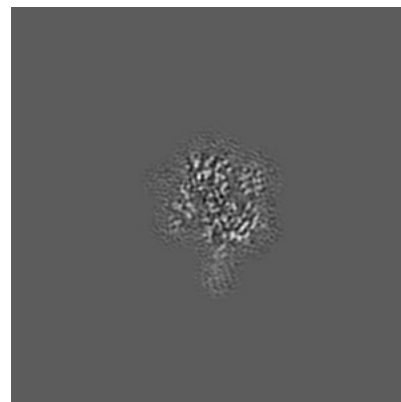
### 6.3.1 Primary map



X Index: 136

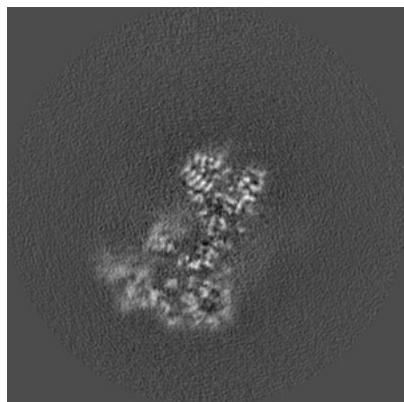


Y Index: 125

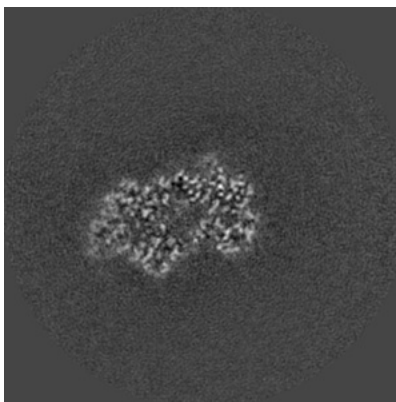


Z Index: 135

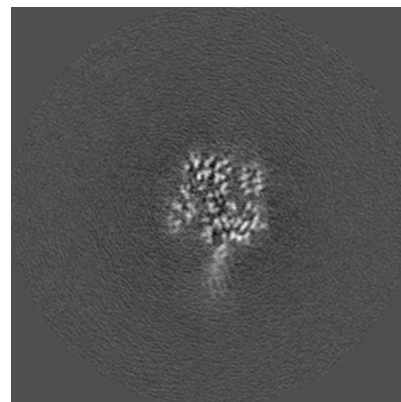
### 6.3.2 Raw map



X Index: 112



Y Index: 125

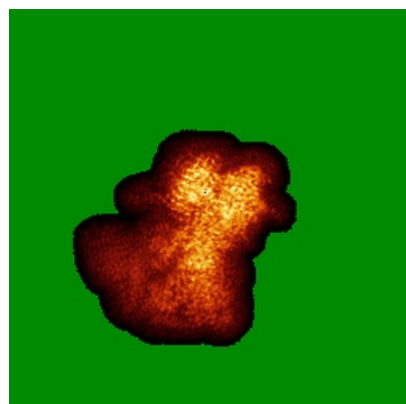


Z Index: 135

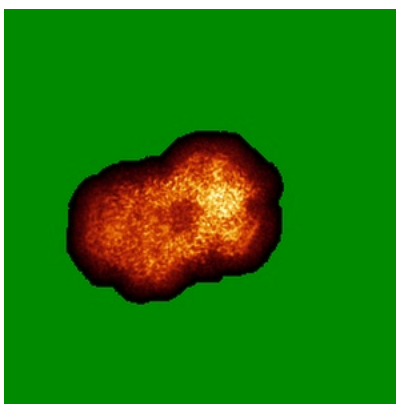
The images above show the largest variance slices of the map in three orthogonal directions.

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

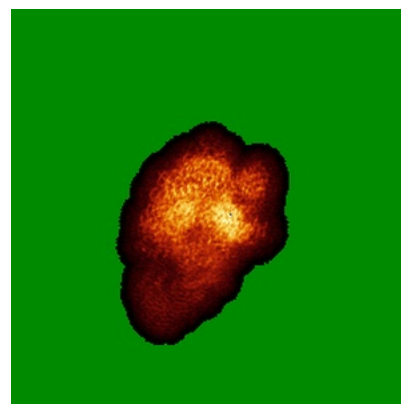
### 6.4.1 Primary map



X

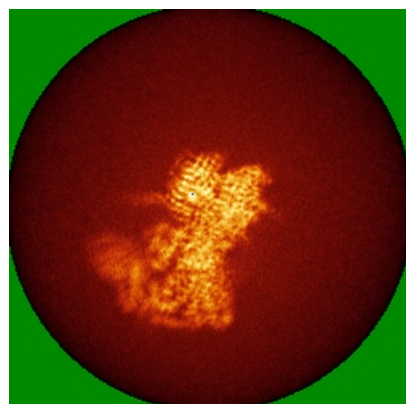


Y

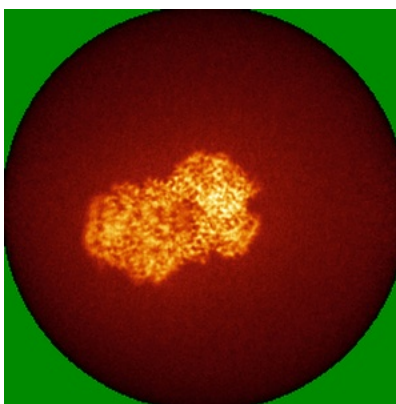


Z

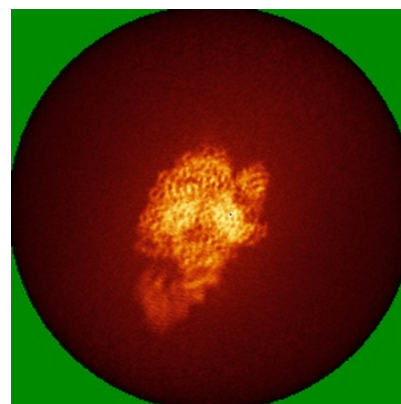
### 6.4.2 Raw map



X



Y



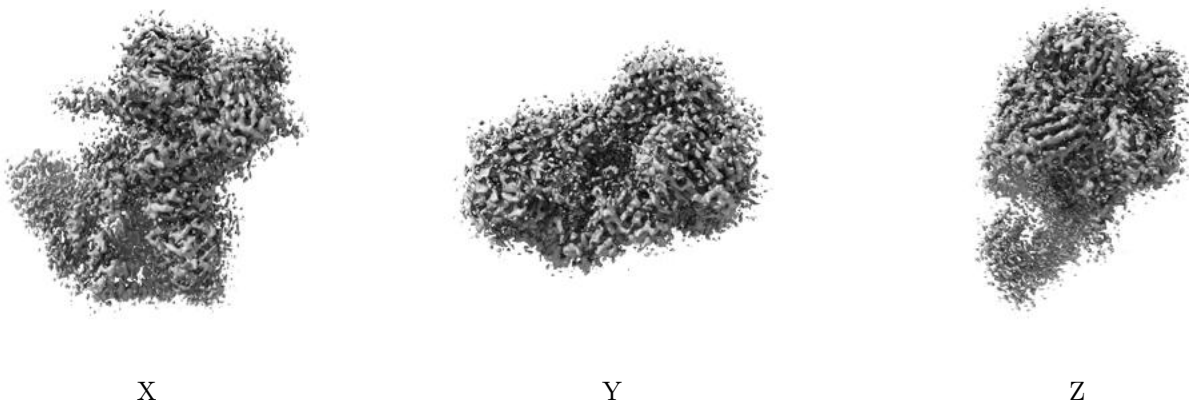
Z

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



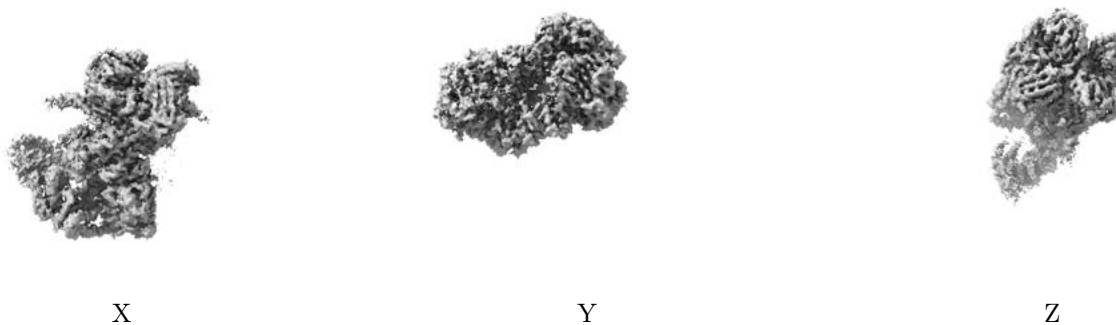
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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



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](#)

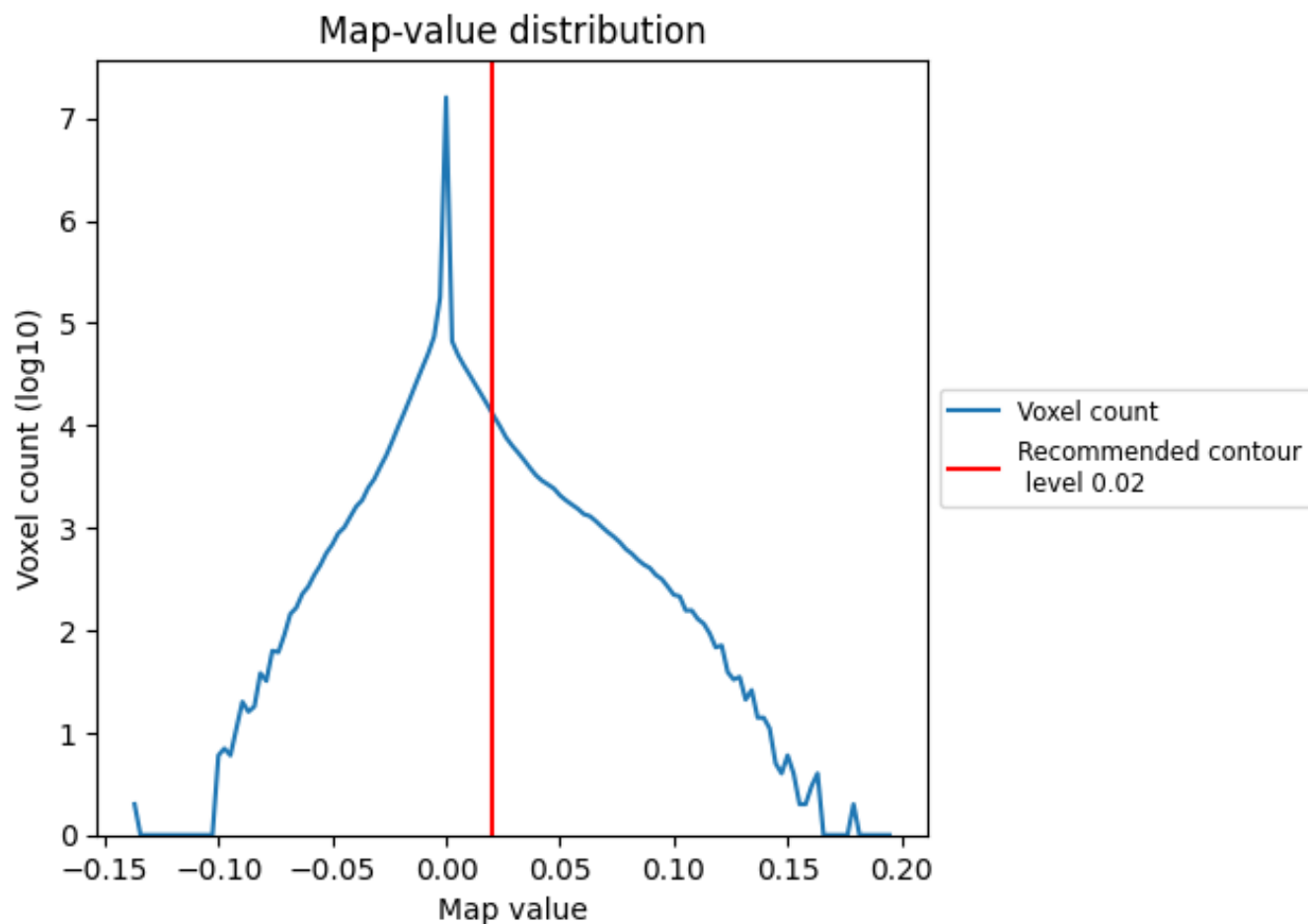
This section was not generated. No masks/segmentation were deposited.



## 7 Map analysis [i](#)

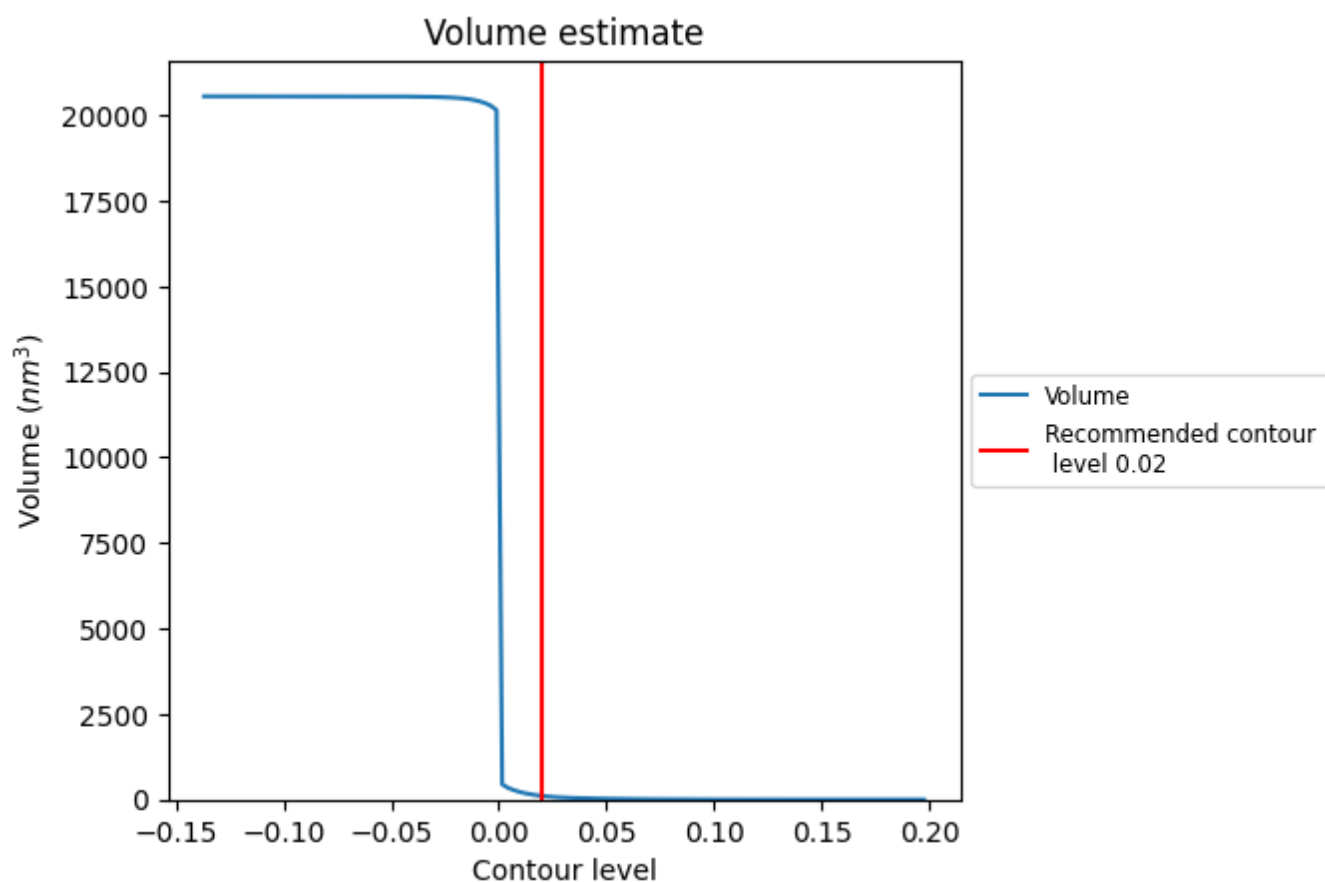
This section contains the results of statistical analysis of the map.

### 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.

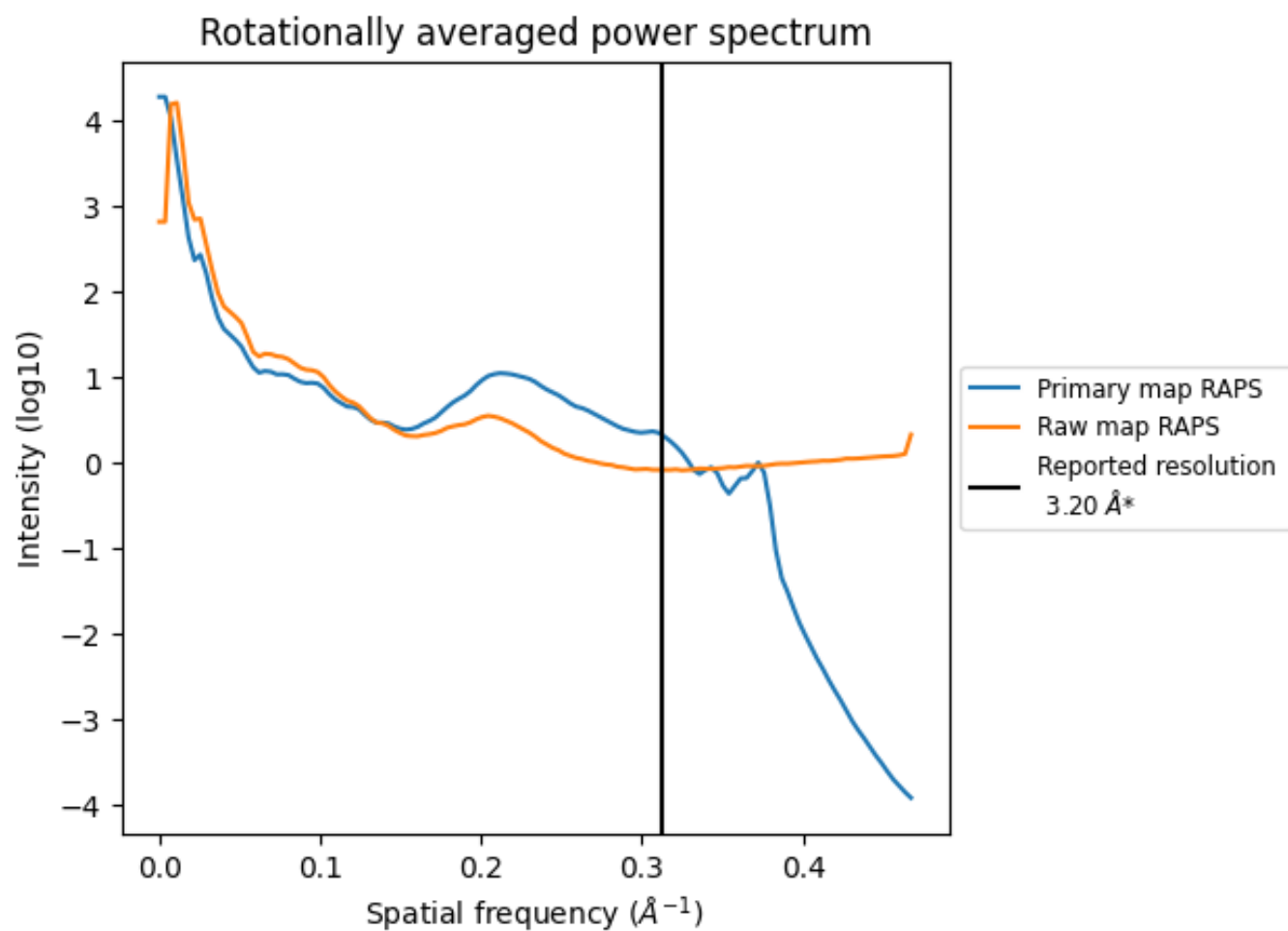
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 106 nm<sup>3</sup>; this corresponds to an approximate mass of 96 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 ⓘ

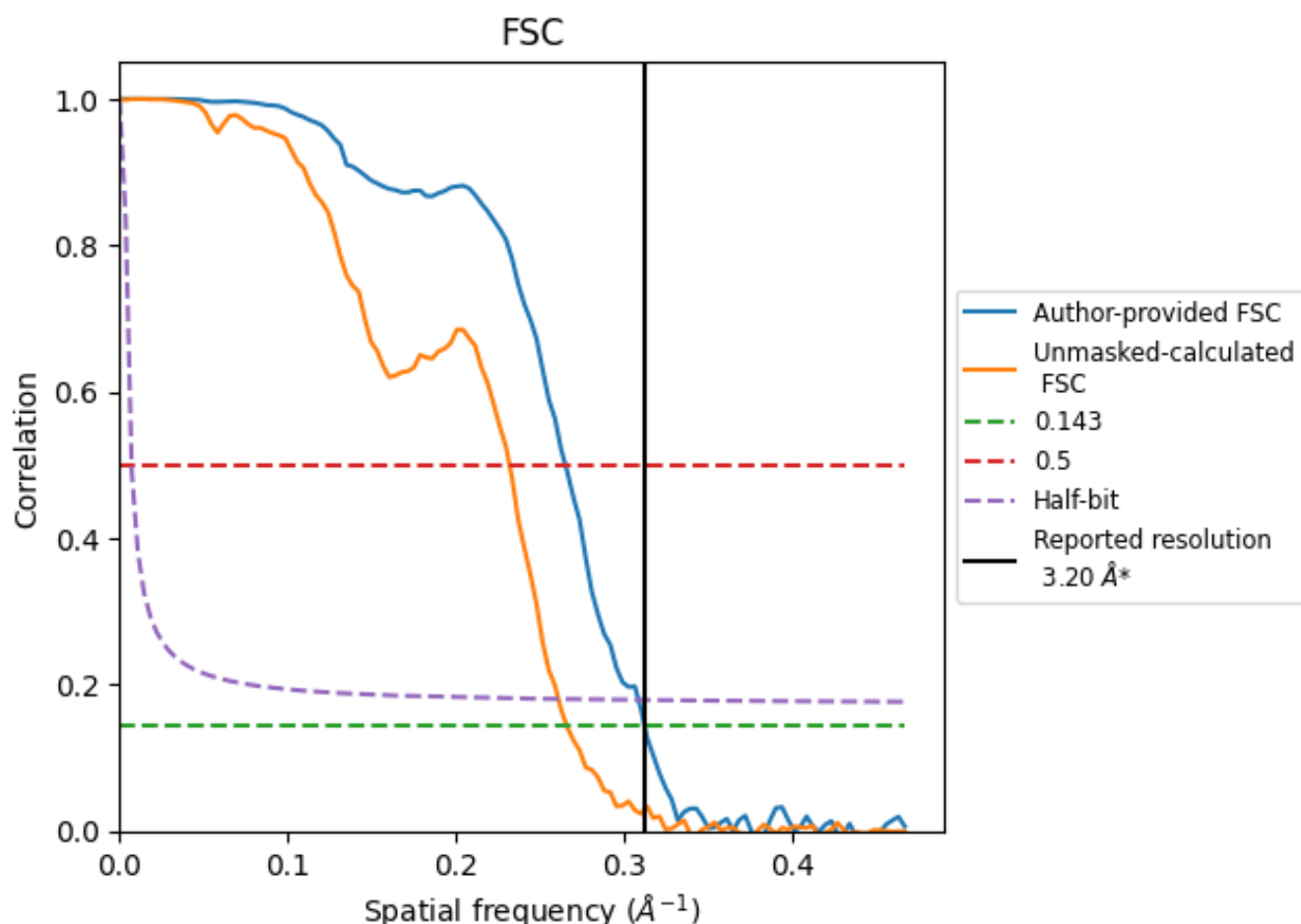


\*Reported resolution corresponds to spatial frequency of  $0.312 \text{ \AA}^{-1}$

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.312  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

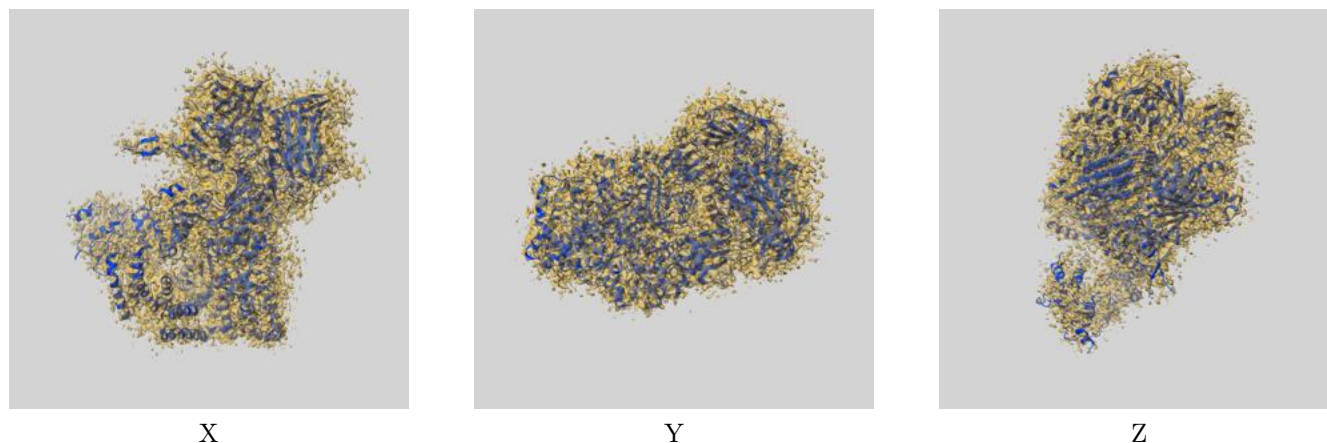
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.20	3.77	3.24
Unmasked-calculated*	3.76	4.31	3.83

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.76 differs from the reported value 3.2 by more than 10 %

## 9 Map-model fit [i](#)

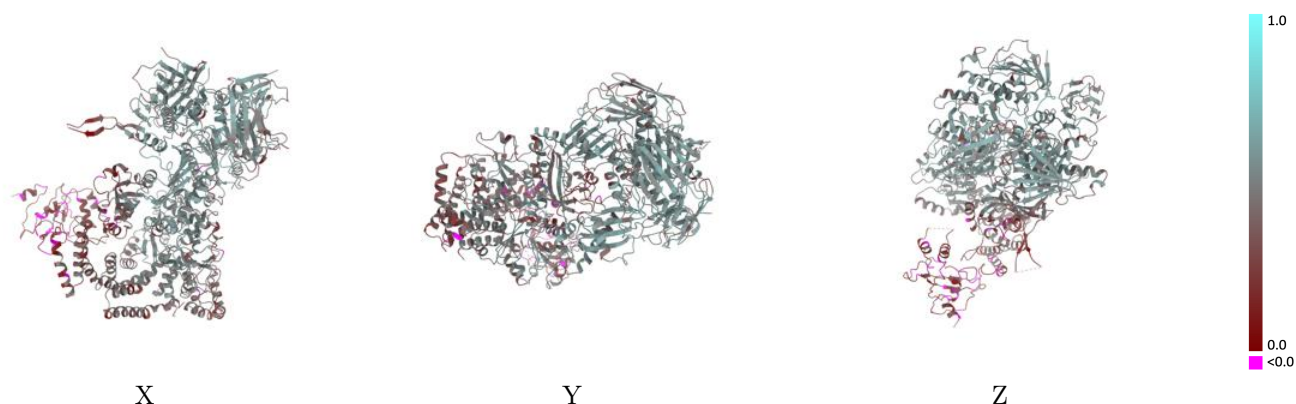
This section contains information regarding the fit between EMDB map EMD-34519 and PDB model 8H77. Per-residue inclusion information can be found in [section 3](#) on [page 9](#).

### 9.1 Map-model overlay [i](#)



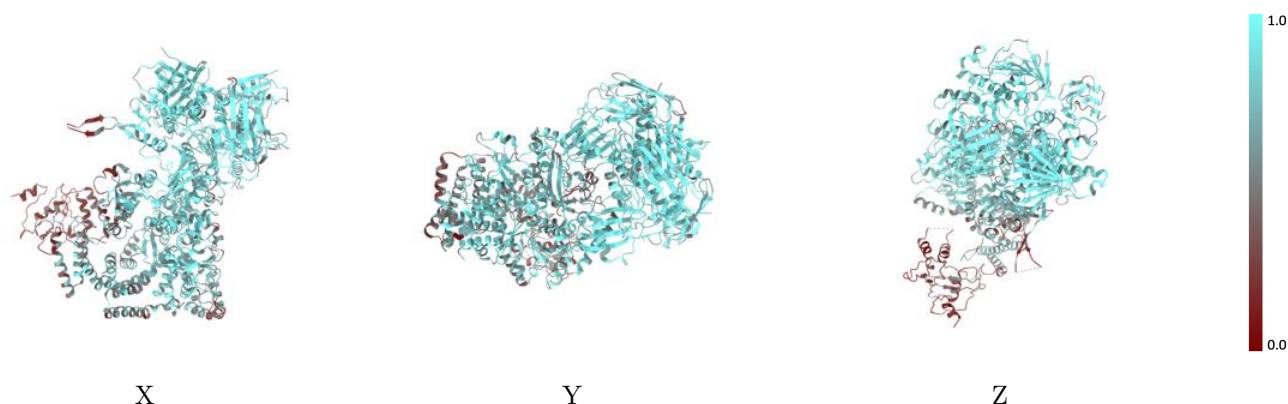
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



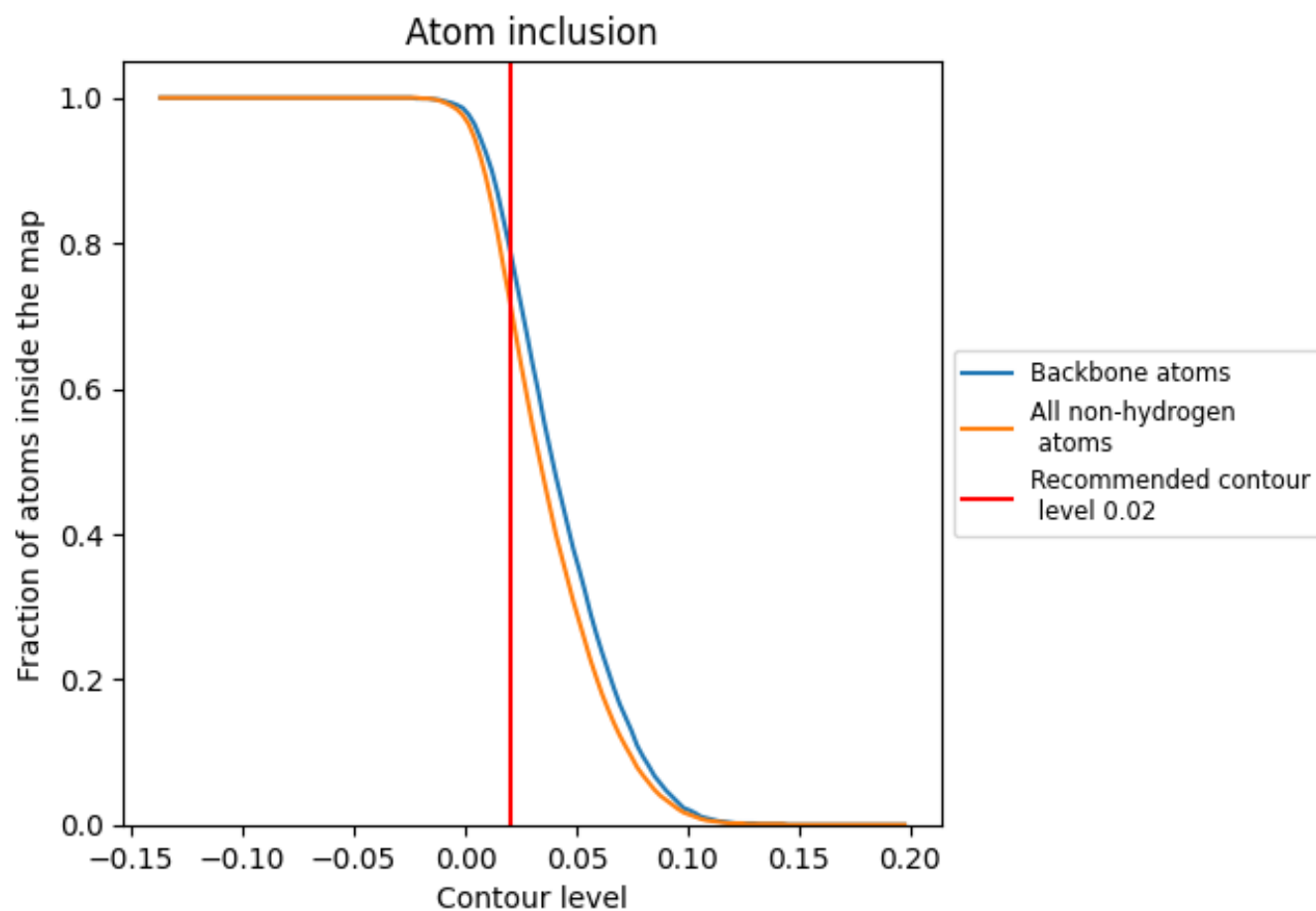
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.02).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.



9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div><div></div>0.7220</div>	<div><div></div>0.4500</div>
A	<div><div></div>0.7750</div>	<div><div></div>0.4840</div>
B	<div><div></div>0.8090</div>	<div><div></div>0.5130</div>
C	<div><div></div>0.8380</div>	<div><div></div>0.5290</div>
D	<div><div></div>0.7880</div>	<div><div></div>0.4980</div>
E	<div><div></div>0.6060</div>	<div><div></div>0.3470</div>
F	<div><div></div>0.4150</div>	<div><div></div>0.2510</div>

1.0

0.0

<0.0