WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Jan 12, 2026 – 12:25 PM JST

PDB ID	:	8KIC / pdb_00008kic
EMDB ID	:	EMD-37257
Title	:	Bacterial serine protease
Authors	:	Lee, I.-G.; Jeon, H.
Deposited on	:	2023-08-23
Resolution	:	2.50 Å(reported)

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 2.50 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		6
Ramachandran outliers		0.4%
Sidechain outliers		3.5%

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.494

Worse   *Better*

▮ Percentile relative to all EM structures
▯ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	7115 (2.00 - 3.00)

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	463	5% / 56% / 8% / 35%
1	B	463	5% / 54% / 10% / 35%
1	C	463	8% / 55% / 9% · / 35%
1	D	463	15% / 16% · / 81%
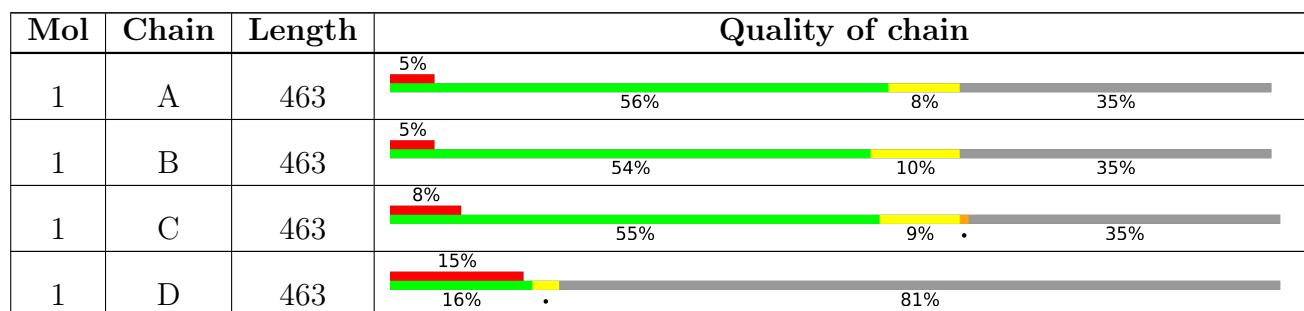
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Mol	Chain	Length	Quality of chain
1	E	463	14% ▇▇ 17% · 81%
1	F	463	18% ▇▇ 16% · 80%
2	G	8	12% ▇ 88% 12%
3	H	5	60% 40%
4	I	7	14% ▇ 86% 14%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 8589 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 peptidase Do.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	D	87	Total	C	N	O	S	0	0
			632	392	113	125	2		
1	E	90	Total	C	N	O	S	0	0
			656	409	116	128	3		
1	F	91	Total	C	N	O	S	0	0
			667	415	120	129	3		
1	C	300	Total	C	N	O	S	0	0
			2178	1366	382	427	3		
1	A	300	Total	C	N	O	S	0	0
			2178	1366	382	427	3		
1	B	300	Total	C	N	O	S	0	0
			2178	1366	382	427	3		

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	214	ALA	SER	engineered mutation	UNP C3SRW2
D	456	LEU	-	expression tag	UNP C3SRW2
D	457	TRP	-	expression tag	UNP C3SRW2
D	458	HIS	-	expression tag	UNP C3SRW2
D	459	HIS	-	expression tag	UNP C3SRW2
D	460	HIS	-	expression tag	UNP C3SRW2
D	461	HIS	-	expression tag	UNP C3SRW2
D	462	HIS	-	expression tag	UNP C3SRW2
D	463	HIS	-	expression tag	UNP C3SRW2
E	214	ALA	SER	engineered mutation	UNP C3SRW2
E	456	LEU	-	expression tag	UNP C3SRW2
E	457	TRP	-	expression tag	UNP C3SRW2
E	458	HIS	-	expression tag	UNP C3SRW2
E	459	HIS	-	expression tag	UNP C3SRW2
E	460	HIS	-	expression tag	UNP C3SRW2
E	461	HIS	-	expression tag	UNP C3SRW2
E	462	HIS	-	expression tag	UNP C3SRW2
E	463	HIS	-	expression tag	UNP C3SRW2

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Chain	Residue	Modelled	Actual	Comment	Reference
F	214	ALA	SER	engineered mutation	UNP C3SRW2
F	456	LEU	-	expression tag	UNP C3SRW2
F	457	TRP	-	expression tag	UNP C3SRW2
F	458	HIS	-	expression tag	UNP C3SRW2
F	459	HIS	-	expression tag	UNP C3SRW2
F	460	HIS	-	expression tag	UNP C3SRW2
F	461	HIS	-	expression tag	UNP C3SRW2
F	462	HIS	-	expression tag	UNP C3SRW2
F	463	HIS	-	expression tag	UNP C3SRW2
C	214	ALA	SER	engineered mutation	UNP C3SRW2
C	456	LEU	-	expression tag	UNP C3SRW2
C	457	TRP	-	expression tag	UNP C3SRW2
C	458	HIS	-	expression tag	UNP C3SRW2
C	459	HIS	-	expression tag	UNP C3SRW2
C	460	HIS	-	expression tag	UNP C3SRW2
C	461	HIS	-	expression tag	UNP C3SRW2
C	462	HIS	-	expression tag	UNP C3SRW2
C	463	HIS	-	expression tag	UNP C3SRW2
A	214	ALA	SER	engineered mutation	UNP C3SRW2
A	456	LEU	-	expression tag	UNP C3SRW2
A	457	TRP	-	expression tag	UNP C3SRW2
A	458	HIS	-	expression tag	UNP C3SRW2
A	459	HIS	-	expression tag	UNP C3SRW2
A	460	HIS	-	expression tag	UNP C3SRW2
A	461	HIS	-	expression tag	UNP C3SRW2
A	462	HIS	-	expression tag	UNP C3SRW2
A	463	HIS	-	expression tag	UNP C3SRW2
B	214	ALA	SER	engineered mutation	UNP C3SRW2
B	456	LEU	-	expression tag	UNP C3SRW2
B	457	TRP	-	expression tag	UNP C3SRW2
B	458	HIS	-	expression tag	UNP C3SRW2
B	459	HIS	-	expression tag	UNP C3SRW2
B	460	HIS	-	expression tag	UNP C3SRW2
B	461	HIS	-	expression tag	UNP C3SRW2
B	462	HIS	-	expression tag	UNP C3SRW2
B	463	HIS	-	expression tag	UNP C3SRW2

- Molecule 2 is a protein called Lysozyme fragment (unknown sequence).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	G	8	40	24	8	8	0	0

• Molecule 3 is a protein called Lysozyme fragment (unknown sequence).

Mol	Chain	Residues	Atoms				AltConf	Trace
3	H	5	Total 25	C 15	N 5	O 5	0	0

• Molecule 4 is a protein called Lysozyme fragment (unknown sequence).

Mol	Chain	Residues	Atoms				AltConf	Trace
4	I	7	Total 35	C 21	N 7	O 7	0	0

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: peptidase Do

Chain D:

• Molecule 1: peptidase Do

Chain E:

ALA THR SER GLY ILE VAL SER ALA LEU GLY ARG SER GLY LEU ASN LEU GLU GLY LEU GLU ASN PHE ILE GLN THR ASP ALA SER ASN ARG ASN ALA GLY GLY GLY ALA LEU LEU ASN LEU ASN GLY LEU ILE GLY ILE ILE ASN THR ALA ILE LEU ALA PRO GLY GLY GLY SER VAL

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

SER GLY SER ALA LYS ALA GLY VAL LYS ALA GLY ASP ILE ILE THR SER LEU ASN GLY LYS PRO LEU ASN SER PHE ALA GLU LEU ARG SER ARG ILE ALA THR THR GLU PRO GLY THR LYS VAL LEU LEU GLY LEU LEU ARG GLY ASN LEU GLU VAL VAL THR LEU ASP THR

SER THR SER SER | S365 A366 S367 A368 E369 M370 I371 T372 P373 A374 L375 E376 G377 A378 T379 L380 S381 D382 G383 Q384 L385 K386 D387 G388 G389 K390 I394 D395 E396 V397 V398 K399 G400 S401 P402 A403 A404 Q405 A406 G407 L408 Q409 K410 D411 D412 I415 G416 D420 R421 V422 N423 S424 I425

A426 E427 M428 R429 K430 V431 L432 A433 A434 K435 P436 A437 L441 Q442 I443 V444 R445 G446 N447 E448 S449 I450 Y451 L452 L453 M454 | ARG LEU TRP HIS HIS HIS HIS HIS HIS

● Molecule 1: peptidase Do

18%

Chain F: 16% · 80%

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

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

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

ALA THR SER GLY ILE VAL SER ALA LEU GLY ARG SER GLY LEU ASN LEU GLU GLY LEU GLU ASN PHE ILE GLN THR ASP ALA SER ASN ARG ASN ALA GLY GLY GLY ALA LEU LEU ASN LEU ASN GLY LEU ILE GLY ILE ILE ASN THR ALA ILE LEU ALA PRO GLY GLY GLY SER VAL

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

SER GLY SER ALA LYS ALA GLY VAL LYS ALA GLY ASP ILE ILE THR SER LEU ASN GLY LYS PRO LEU ASN SER PHE ALA GLU LEU ARG SER ARG ILE ALA THR THR GLU PRO GLY THR LYS VAL LEU LEU GLY LEU LEU ARG GLY ASN LEU GLU VAL VAL THR LEU ASP THR

SER THR SER SER | S365 A366 S367 A368 E369 M370 I371 T372 P373 A374 L375 E376 G377 A378 T379 L380 S381 D382 G383 Q384 L385 K386 D387 G388 K389 G390 G391 I392 K393 I394 D395 E396 V397 V398 K399 G400 S401 P402 A403 A404 Q405 A406 G407 L408 Q409 K410 D411 D412 V413 I414 I415 G416 R419 D420 R421

V422 N423 S424 I425 A426 E427 M428 R429 K430 V431 L432 A433 A434 K435 P436 A437 I438 I439 A440 L441 Q442 I443 V444 R445 G446 N447 E448 S449 L452 L453 M454 R455 | LEU TRP HIS HIS HIS HIS HIS HIS

● Molecule 1: peptidase Do

8%

Chain C: 55% 9% · 35%

MET LYS LYS GLN THR GLN LEU LEU SER ALA LEU ALA LEU SER VAL GLY LEU THR LEU SER ALA PHE GLN ILE ALA VAL ALA SER ILE PRO GLY GLN VAL ALA ASP GLN ALA | P38 M45 V49 G60 T61 ALA SER GLN GLY GLN LYS ILE PRO GLU GLU PHE LYS LYS PHE PHE

GLY ASP ASP LEU PRO ASP GLN PRO ALA Q86 P87 I97 N108 Q113 K116 I117 S118 D128 D135 D136 D139 S149 K150 L151 T152 R163 T180 S187 N195 L196 E197 N201 G227 G241 I242 I246 E263 I264 K265 R266 G267 I271

K272 E275 D279 K282 N285 L286 D287 R290 E296 K305 A306 K309 L317 N318 G319 K320 F321 S324 R331 T334 T335 E336 F337 K340 V341 K342 L346 R347 N348 G349 K350 P351 L352 E353 V354 E355 L358 D359 T360 S361 THR SER SER ALA

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

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

- Molecule 1: peptidase Do

Chain A:
5%   56%   8%   35%

MET LYS LYS GLN THR GLN LEU LEU SER ALA LEU ALA LEU SER VAL GLY LEU THR LEU SER ALA SER ALA PHE GLN ALA VAL ALA SER ILE PRO GLY VAL GLN VAL ALA ASP GLN ALA P38 E47 R57 T61 ALA SER GLN GLY GLN LYS ILE PRO GLU GLU PHE LYS LYS PHE GLY

ASP ASP LEU PRO ASP GLN PRO ALA Q86 L91 N107 N108 I111 N112 Q113 S118 E126 G133 S134 D135 D139 S149 K150 I156 N173 T180 S187 S192 G193 L194 N195 L196 E197 N210 R211 G212 N213 T253 L258 I264 K265 R266

E275 M276 S277 A278 K282 N285 L286 D287 V288 Q289 S303 A304 K305 V308 I313 N318 G319 K320 S324 I332 A333 T334 K340 V341 K342 L345 L346 K350 P351 L352 E353 V354 E355 S361 THR SER SER ALA SER ALA GLU MET ILE THR PRO ALA LEU

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

PRO ALA ILE ILE ALA LEU GLN ILE VAL ARG GLY ASN GLU SER ILE LEU TYR LEU LEU MET ARG LEU TRP HIS HIS HIS HIS HIS HIS

- Molecule 1: peptidase Do

Chain B:
5%   54%   10%   35%

MET LYS LYS GLN THR GLN LEU LEU SER ALA LEU ALA LEU SER VAL GLY LEU THR LEU SER ALA SER ALA PHE GLN ALA VAL ALA SER ILE PRO GLY VAL GLN VAL ALA ASP GLN ALA P38 R57 V58 E59 G60 T61 ALA SER GLN GLY GLN LYS ILE PRO GLU GLU PHE LYS LYS PHE GLY

ASP ASP LEU PRO ASP GLN PRO ALA Q86 P87 F88 E89 G90 L91 G92 S93 S100 K101 H109 K116 Q120 E126 D135 D136 Q137 L151 I156 N173 T180 S187 N195 L196 E197 G198 L199 I209 N210 N213 L233 A234 R252 T253 L254

E263 I264 K265 R266 E275 K282 N285 L286 D287 E296 K305 A306 G307 D312 N318 G319 K320 F325 S330 T334 T339 K342 L345 L346 R347 N348 G349 K350 P351 L352 E353 D359 T360 S361 THR SER SER ALA SER ALA GLU MET ILE THR PRO

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

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

• Molecule 2: Lysozyme fragment (unknown sequence)

Chain G:

88%　　　　12%

X28　X34　X35
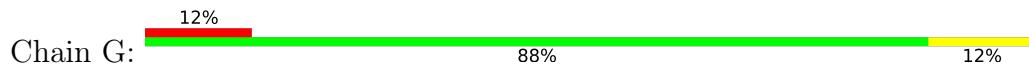
• Molecule 3: Lysozyme fragment (unknown sequence)

Chain H:

60%　　　　40%

X28　X29　X30　X31　X32

• Molecule 4: Lysozyme fragment (unknown sequence)

Chain I:

86%　　　　14%

X28　X32　X33　X34
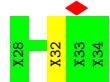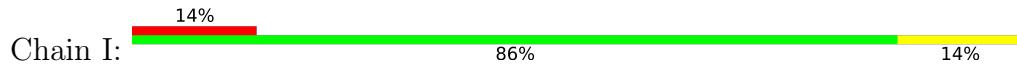
4   Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	382427	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 $(e^-/\text{Å}^2)$	67.7	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1700	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.649	Depositor
Minimum map value	-0.299	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	305.28, 305.28, 305.28	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.848, 0.848, 0.848	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0.18	0/2201	0.37	0/2976
1	B	0.29	0/2201	0.50	0/2976
1	C	0.20	0/2201	0.41	0/2976
1	D	0.33	0/634	0.60	2/851 (0.2%)
1	E	0.27	0/659	0.46	0/886
1	F	0.29	0/670	0.53	0/900
All	All	0.25	0/8566	0.46	2/11565 (0.0%)

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
1	D	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	438	ILE	CA-C-N	-5.48	115.75	122.93
1	D	438	ILE	C-N-CA	-5.48	115.75	122.93

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	445	ARG	Sidechain

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	2178	0	2249	22	0
1	B	2178	0	2249	26	0
1	C	2178	0	2249	25	0
1	D	632	0	663	10	0
1	E	656	0	695	8	0
1	F	667	0	708	9	0
2	G	40	0	13	1	0
3	H	25	0	8	1	0
4	I	35	0	10	1	0
All	All	8589	0	8844	97	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 6.

All (97) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:116:LYS:NZ	1:C:128:ASP:OD1	2.17	0.77
1:D:370:MET:HE3	1:D:370:MET:H	1.48	0.76
1:F:385:LEU:HD11	1:F:415:ILE:HD11	1.68	0.76
1:F:441:LEU:HD21	1:F:454:MET:HE1	1.68	0.76
1:A:210:ASN:H	1:A:213:ASN:HD22	1.35	0.75
1:D:418:ASN:HB3	1:D:419:ARG:HH12	1.51	0.74
1:A:57:ARG:HH21	1:A:118:SER:HB3	1.62	0.65
1:B:210:ASN:H	1:B:213:ASN:HD22	1.43	0.64
1:B:199:LEU:HD22	1:B:330:SER:HA	1.79	0.64
1:F:441:LEU:O	1:F:443:ILE:HG23	1.98	0.63
1:C:135:ASP:OD1	1:C:264:ILE:HG13	2.01	0.60
1:C:275:GLU:OE1	1:C:324:SER:OG	2.18	0.60
1:C:279:ASP:OD1	1:C:279:ASP:N	2.32	0.59
1:D:367:SER:HB2	1:D:370:MET:HE1	1.85	0.59
1:D:418:ASN:HB3	1:D:419:ARG:NH1	2.17	0.59
1:A:211:ARG:HG2	2:G:34:UNK:CB	2.33	0.59
1:C:318:ASN:HA	1:C:342:LYS:HB2	1.86	0.57
1:A:308:VAL:HG13	1:A:345:LEU:HD21	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:336:GLU:HG2	1:C:337:PRO:HD2	1.88	0.56
1:C:331:ARG:HH11	1:C:331:ARG:HG2	1.71	0.55
1:D:444:VAL:HG22	1:D:444:VAL:O	2.06	0.55
1:C:149:SER:OG	1:C:150:LYS:NZ	2.27	0.55
1:A:192:SER:OG	1:A:193:GLY:N	2.40	0.54
1:D:370:MET:H	1:D:370:MET:CE	2.17	0.53
1:C:187:SER:HB3	1:A:180:THR:HG23	1.90	0.53
1:E:415:ILE:O	1:E:415:ILE:HG22	2.09	0.52
1:A:135:ASP:OD2	1:A:266:ARG:NH2	2.40	0.51
1:C:263:GLU:N	1:C:263:GLU:OE1	2.43	0.51
1:D:417:VAL:HG13	1:D:439:ILE:HG23	1.92	0.51
1:C:135:ASP:OD2	1:C:266:ARG:NH2	2.44	0.51
1:C:60:GLY:O	1:C:87:PRO:HA	2.10	0.50
1:B:137:GLN:O	1:B:197:GLU:HB3	2.12	0.50
1:F:368:ALA:HB2	1:F:380:LEU:HG	1.93	0.50
1:B:61:THR:HA	1:B:87:PRO:HA	1.93	0.50
3:H:30:UNK:O	3:H:31:UNK:C	2.60	0.50
1:D:385:LEU:HD11	1:D:415:ILE:HG21	1.92	0.50
1:C:272:LYS:HB2	1:C:296:GLU:HB2	1.93	0.50
1:C:180:THR:HG23	1:B:187:SER:HB3	1.93	0.50
1:B:263:GLU:N	1:B:263:GLU:OE1	2.45	0.50
1:C:264:ILE:O	1:C:265:LYS:HE2	2.12	0.49
1:C:267:GLY:HA3	1:C:358:LEU:HD23	1.95	0.49
1:A:57:ARG:HG3	1:A:91:LEU:HD12	1.95	0.49
1:A:313:ILE:HB	1:A:346:LEU:HB3	1.94	0.49
1:A:277:SER:OG	1:A:278:ALA:N	2.45	0.48
1:E:385:LEU:N	1:E:389:GLY:O	2.40	0.48
1:B:101:LYS:HB3	1:B:101:LYS:HE3	1.65	0.48
1:B:254:LEU:HD22	1:B:264:ILE:HD12	1.96	0.48
1:A:264:ILE:HG21	1:A:266:ARG:NH2	2.29	0.47
1:B:312:ASP:HB2	1:B:345:LEU:HD21	1.97	0.47
1:D:375:LEU:HD22	1:D:408:LEU:HD11	1.96	0.47
1:B:345:LEU:HD22	1:B:346:LEU:H	1.79	0.47
1:A:253:THR:HG21	1:A:334:THR:HG23	1.96	0.47
1:B:91:LEU:HD21	1:B:173:ASN:OD1	2.15	0.46
1:D:385:LEU:HD21	1:D:444:VAL:HG11	1.97	0.46
1:F:390:LYS:O	1:F:421:ARG:NH2	2.39	0.46
1:E:443:ILE:HD11	1:E:450:ILE:HB	1.98	0.46
1:C:163:ARG:NH1	1:A:47:GLU:OE1	2.48	0.46
1:A:133:GLY:HA3	1:A:258:LEU:HD22	1.97	0.46
1:A:187:SER:HB3	1:B:180:THR:HG23	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:59:GLU:HG3	1:B:89:GLU:HG3	1.97	0.46
1:F:398:VAL:HB	1:F:401:SER:HB3	1.98	0.45
1:B:116:LYS:HE3	1:B:116:LYS:HB3	1.60	0.45
1:E:443:ILE:HG12	1:E:450:ILE:O	2.17	0.45
1:A:150:LYS:HE2	1:A:150:LYS:HB2	1.64	0.44
1:B:233:LEU:HD12	1:B:234:ALA:N	2.32	0.44
1:B:318:ASN:HA	1:B:342:LYS:HZ2	1.82	0.44
1:A:57:ARG:NH2	1:A:126:GLU:HG2	2.33	0.44
1:C:350:LYS:HA	1:C:351:PRO:HD3	1.87	0.44
1:B:359:ASP:OD1	1:B:359:ASP:N	2.45	0.44
1:C:108:ASN:HB3	1:C:139:ASP:OD1	2.18	0.43
1:B:109:HIS:HE1	4:I:32:UNK:O	2.01	0.43
1:E:443:ILE:HG13	1:E:444:VAL:N	2.33	0.43
1:F:443:ILE:O	1:F:444:VAL:HG23	2.19	0.43
1:B:156:ILE:HD13	1:B:252:ARG:HG3	2.01	0.43
1:B:137:GLN:HG3	1:B:198:GLY:HA3	2.00	0.43
1:E:394:ILE:HG12	1:E:412:ASP:O	2.19	0.42
1:E:453:LEU:HD12	1:E:453:LEU:HA	1.91	0.42
1:C:241:GLY:O	1:C:242:ILE:HD13	2.18	0.42
1:A:108:ASN:HB3	1:A:139:ASP:OD1	2.20	0.42
1:B:57:ARG:NH2	1:B:120:GLN:HB2	2.35	0.42
1:F:407:GLY:O	1:F:445:ARG:NH2	2.53	0.42
1:A:139:ASP:HB2	1:A:197:GLU:HG2	2.02	0.42
1:A:332:ILE:HD13	1:A:332:ILE:HA	1.90	0.42
1:F:380:LEU:HD22	1:F:394:ILE:HD12	2.01	0.42
1:B:57:ARG:HH22	1:B:126:GLU:CD	2.27	0.42
1:C:86:GLN:HA	1:C:87:PRO:HD3	1.90	0.42
1:A:135:ASP:OD2	1:A:264:ILE:HG13	2.20	0.42
1:B:350:LYS:HA	1:B:351:PRO:HD3	1.93	0.42
1:C:61:THR:HA	1:C:87:PRO:HA	2.02	0.41
1:C:97:ILE:HD13	1:C:97:ILE:HA	1.89	0.41
1:E:415:ILE:HD12	1:E:415:ILE:N	2.36	0.41
1:C:201:ASN:ND2	1:C:331:ARG:HH12	2.19	0.41
1:B:135:ASP:OD1	1:B:266:ARG:NH2	2.53	0.41
1:A:275:GLU:OE1	1:A:324:SER:OG	2.31	0.41
1:B:275:GLU:HG2	1:B:325:PHE:HB3	2.03	0.41
1:B:275:GLU:OE2	1:B:325:PHE:N	2.52	0.40
1:C:227:GLY:HA2	1:C:246:ILE:O	2.21	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	296/463 (64%)	290 (98%)	6 (2%)	0	100	100
1	B	296/463 (64%)	291 (98%)	5 (2%)	0	100	100
1	C	296/463 (64%)	292 (99%)	4 (1%)	0	100	100
1	D	83/463 (18%)	77 (93%)	4 (5%)	2 (2%)	5	8
1	E	88/463 (19%)	81 (92%)	5 (6%)	2 (2%)	5	8
1	F	89/463 (19%)	86 (97%)	2 (2%)	1 (1%)	12	23
All	All	1148/2778 (41%)	1117 (97%)	26 (2%)	5 (0%)	32	49

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	443	ILE
1	E	443	ILE
1	E	444	VAL
1	F	443	ILE
1	D	444	VAL

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	233/362 (64%)	225 (97%)	8 (3%)	32	58
1	B	233/362 (64%)	225 (97%)	8 (3%)	32	58
1	C	233/362 (64%)	223 (96%)	10 (4%)	25	48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	66/362 (18%)	65 (98%)	1 (2%)	60	82
1	E	69/362 (19%)	66 (96%)	3 (4%)	25	48
1	F	70/362 (19%)	68 (97%)	2 (3%)	37	64
All	All	904/2172 (42%)	872 (96%)	32 (4%)	33	57

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	443	ILE
1	E	441	LEU
1	E	443	ILE
1	E	452	LEU
1	F	441	LEU
1	F	443	ILE
1	C	45	MET
1	C	49	VAL
1	C	97	ILE
1	C	113	GLN
1	C	118	SER
1	C	136	ASP
1	C	152	THR
1	C	275	GLU
1	C	279	ASP
1	C	334	THR
1	A	107	ASN
1	A	111	ILE
1	A	118	SER
1	A	149	SER
1	A	156	ILE
1	A	173	ASN
1	A	289	GLN
1	A	303	SER
1	B	58	VAL
1	B	93	SER
1	B	100	SER
1	B	151	LEU
1	B	209	ILE
1	B	334	THR
1	B	339	THR
1	B	360	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	418	ASN
1	E	447	ASN
1	C	113	GLN
1	C	146	GLN
1	C	213	ASN
1	A	210	ASN
1	A	213	ASN
1	A	229	ASN
1	B	98	ASN
1	B	107	ASN
1	B	109	HIS
1	B	213	ASN
1	B	229	ASN
1	B	256	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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 ⓘ

There are no ligands in this entry.

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-37257. 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 ⓘ
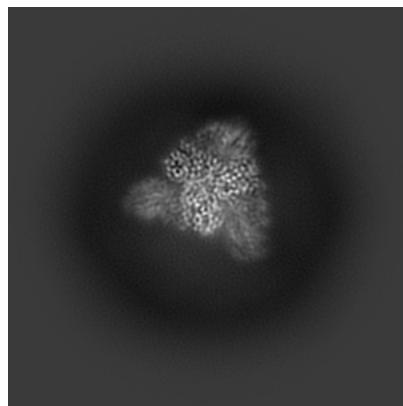
6.1.1 Primary map

X
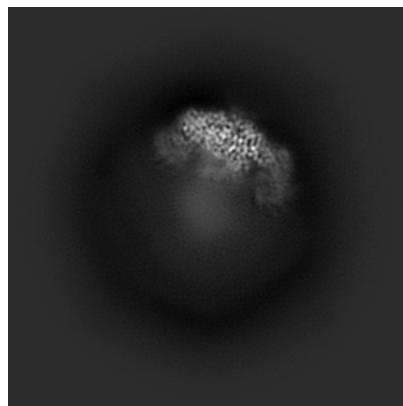
Y
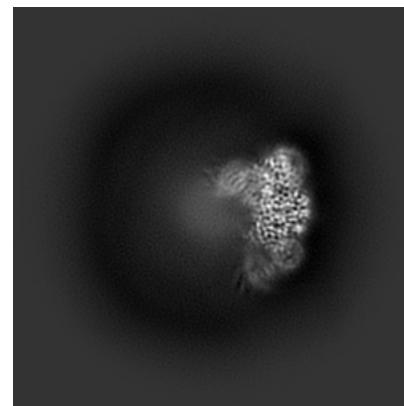
Z

6.1.2 Raw map

X

Y

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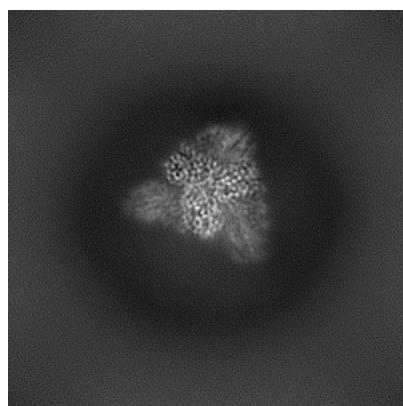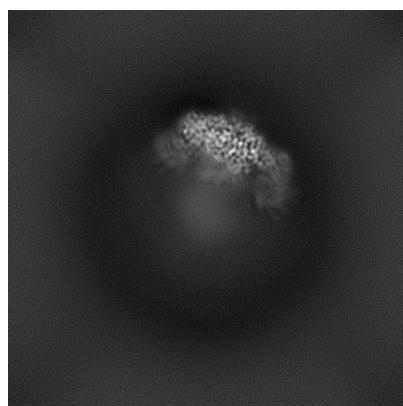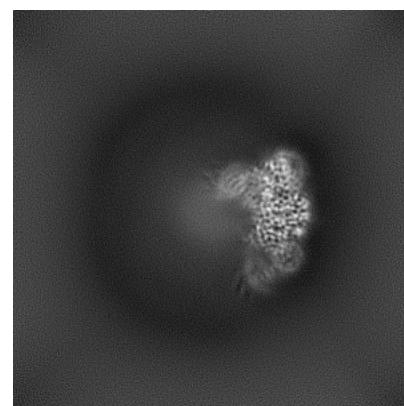
The images above show the map projected in three orthogonal directions.

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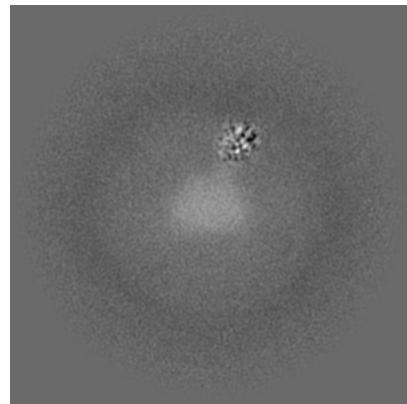
6.2.1 Primary map
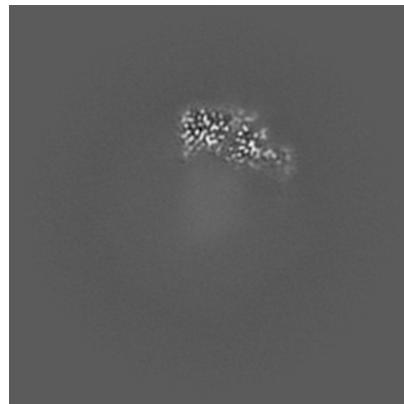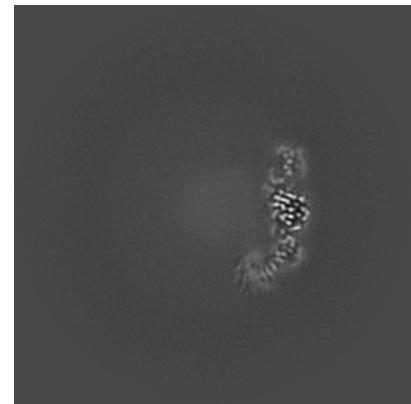
| X Index: 180 | Y Index: 180 | Z Index: 180 |

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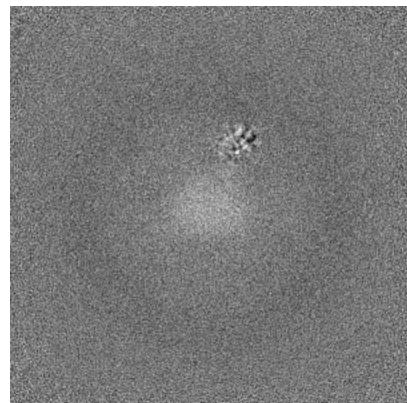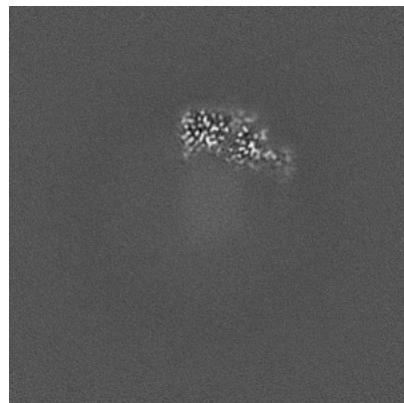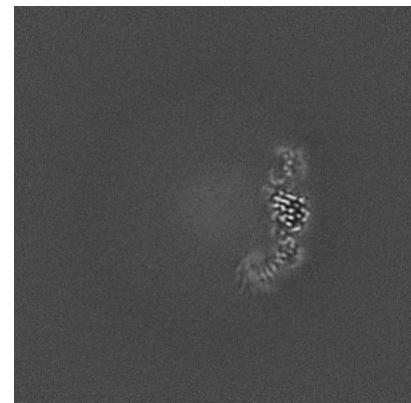
| X Index: 180 | Y Index: 180 | Z Index: 180 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
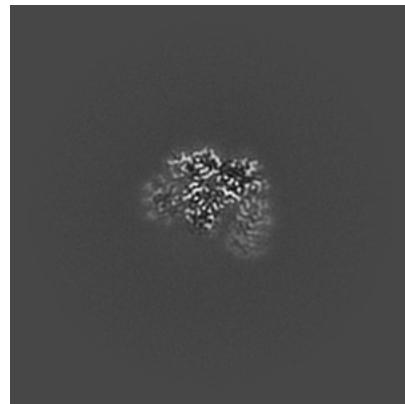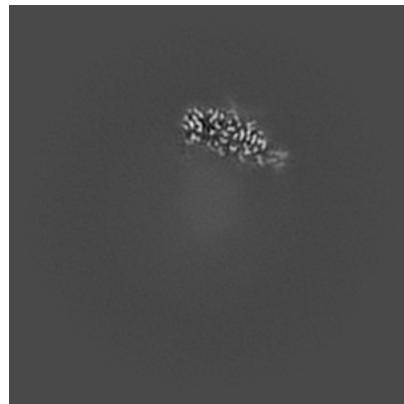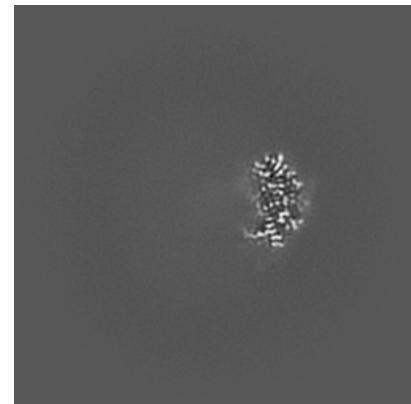
| X Index: 244 | Y Index: 172 | Z Index: 209 |

6.3.2 Raw map
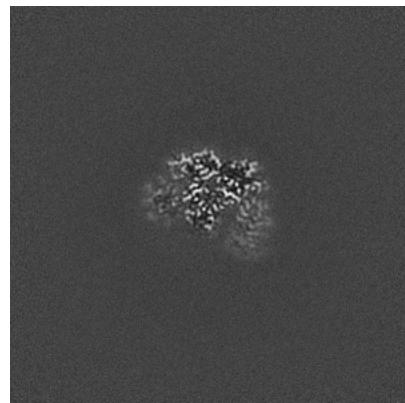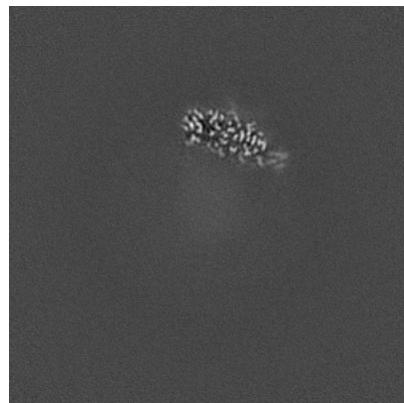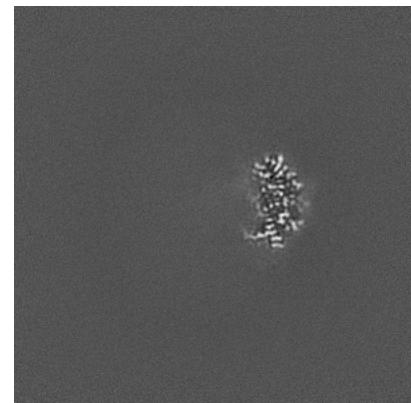
| X Index: 244 | Y Index: 172 | Z Index: 209 |

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
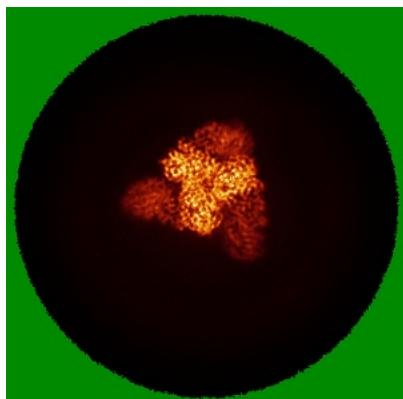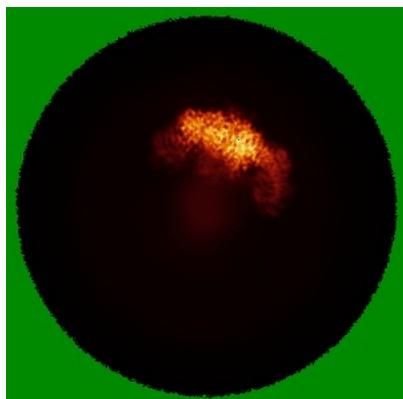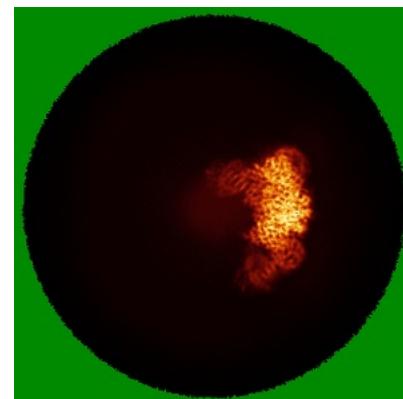
| X | Y | Z |

6.4.2 Raw map

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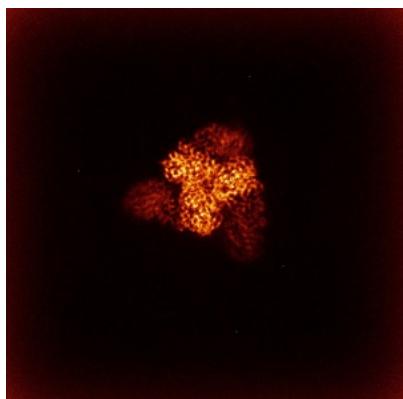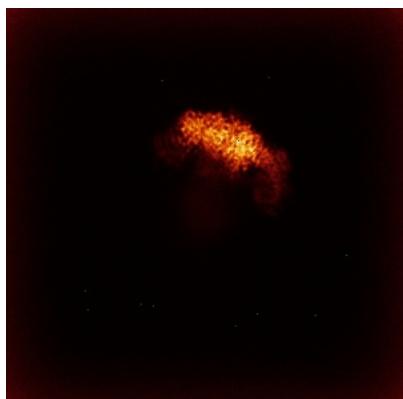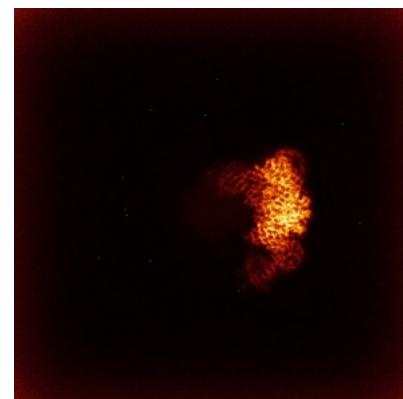
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.1. 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 ⓘ

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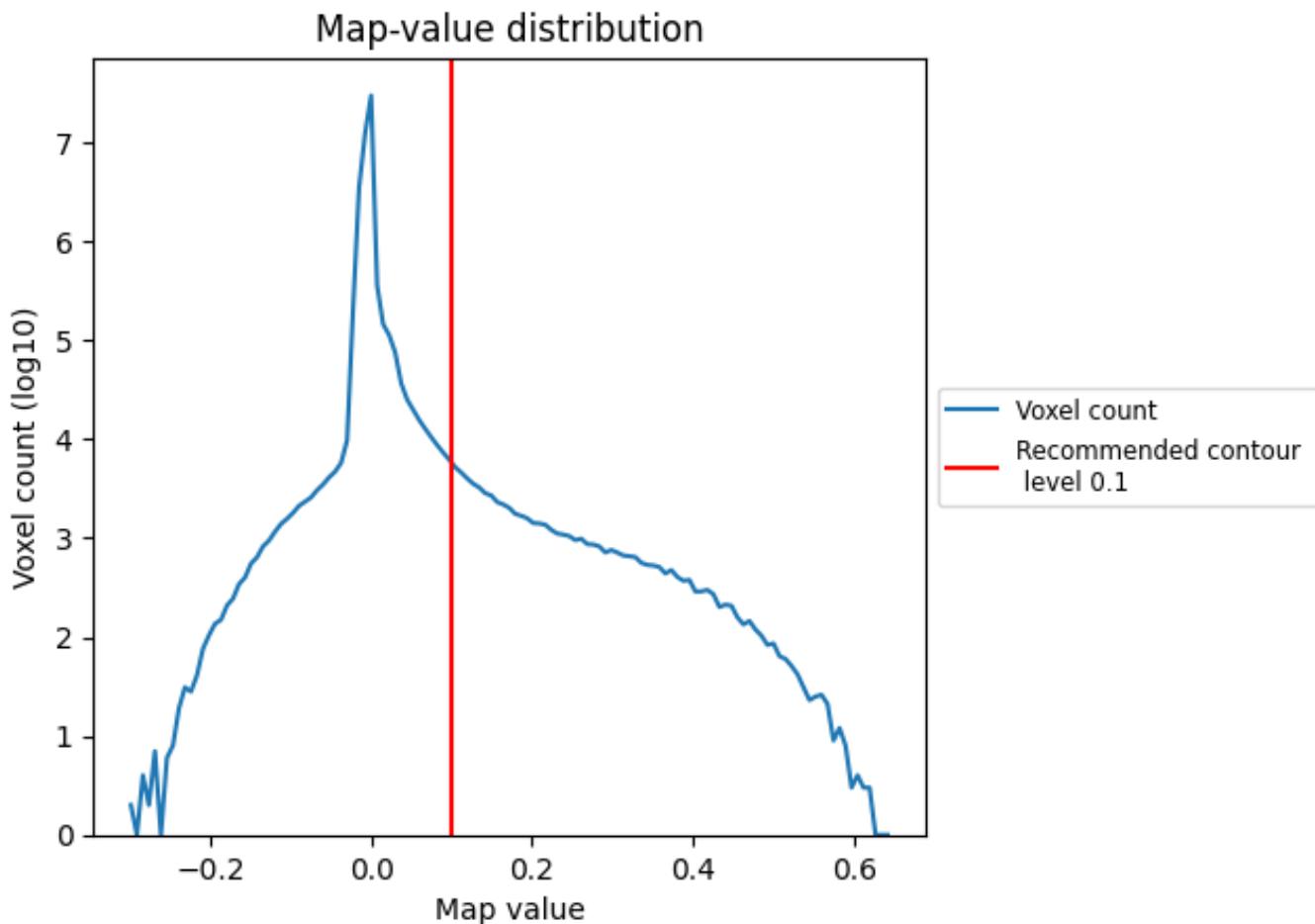
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
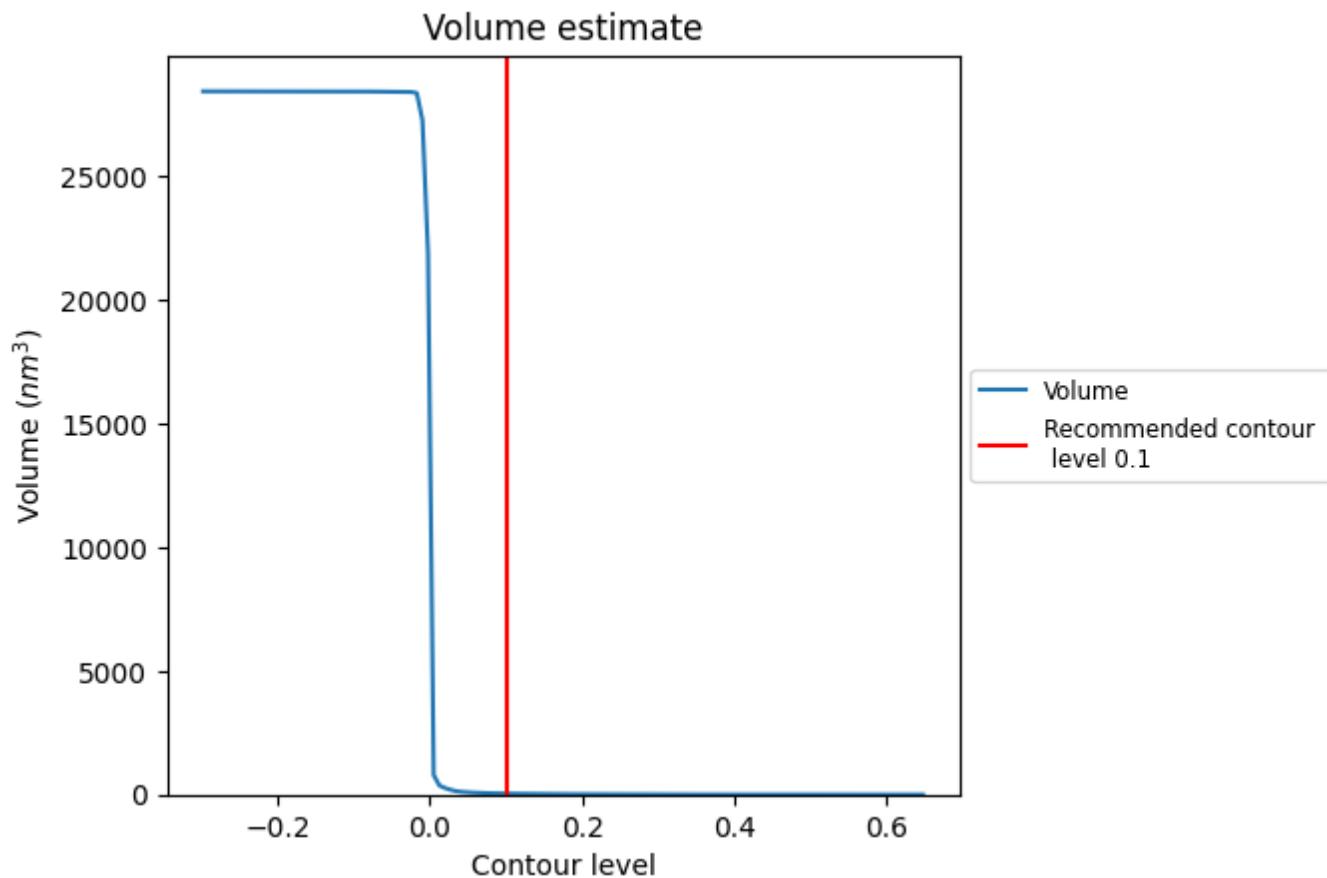
Volume estimate

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 ⓘ
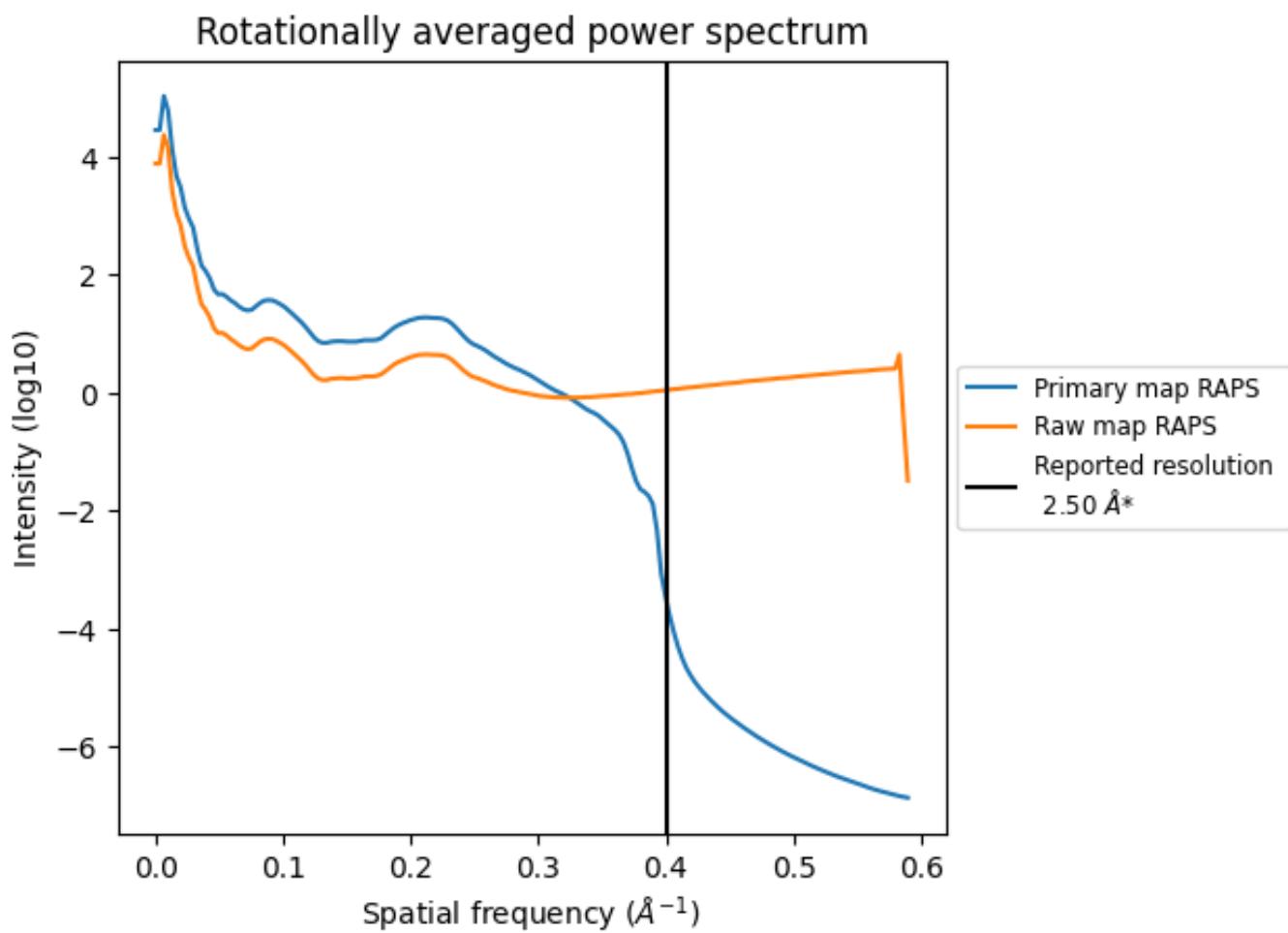
*Reported resolution corresponds to spatial frequency of 0.400 Å^{-1}

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 ⓘ
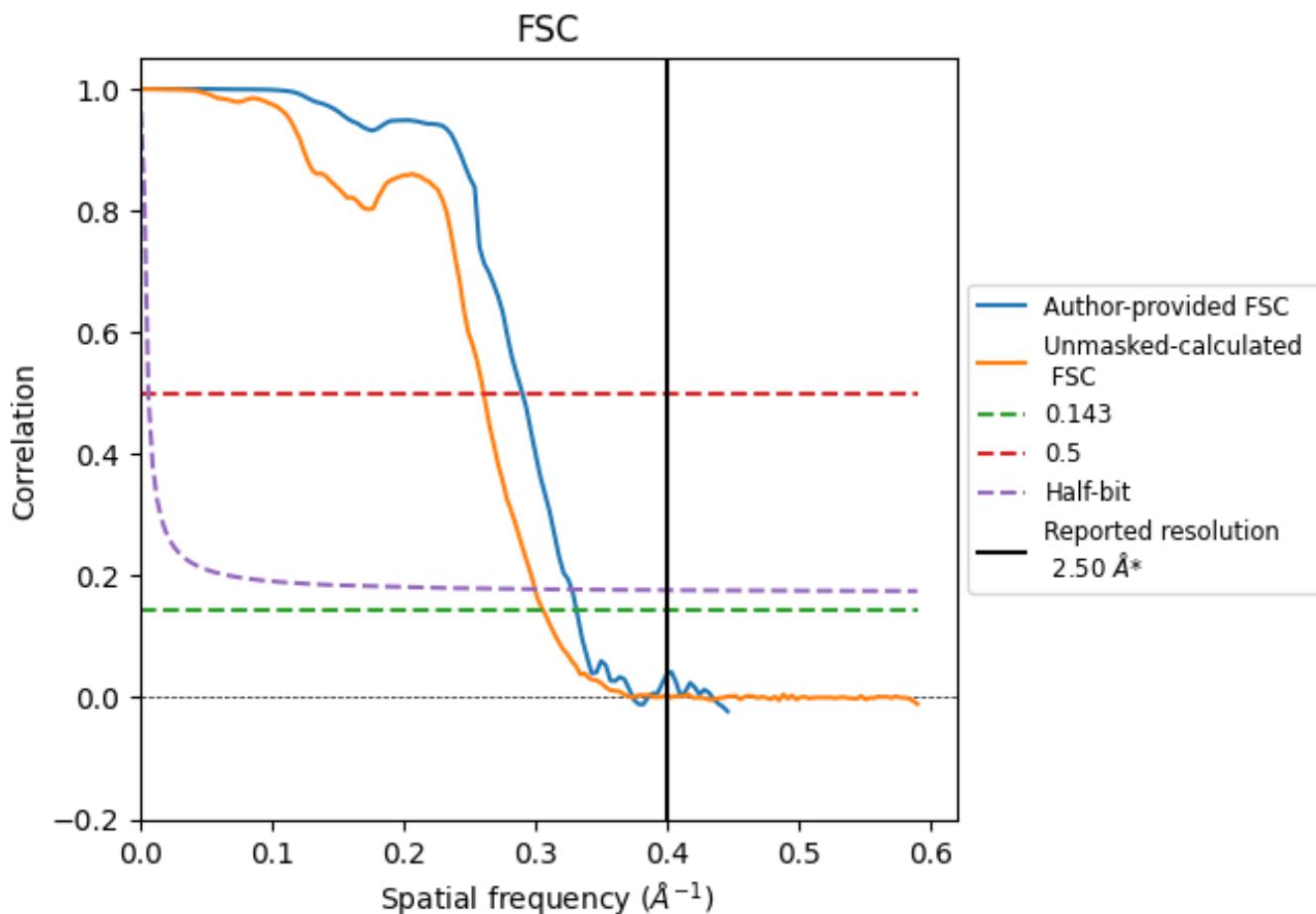
*Reported resolution corresponds to spatial frequency of 0.400 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.50	-	-
Author-provided FSC curve	3.02	3.45	3.05
Unmasked-calculated*	3.27	3.84	3.34

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.02 differs from the reported value 2.5 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.27 differs from the reported value 2.5 by more than 10 %

9　Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-37257 and PDB model 8KIC. Per-residue inclusion information can be found in section 3 on page 7.

## 9.1　Map-model overlay ⓘ

X　　　　　　　　　　　　　Y　　　　　　　　　　　　　Z
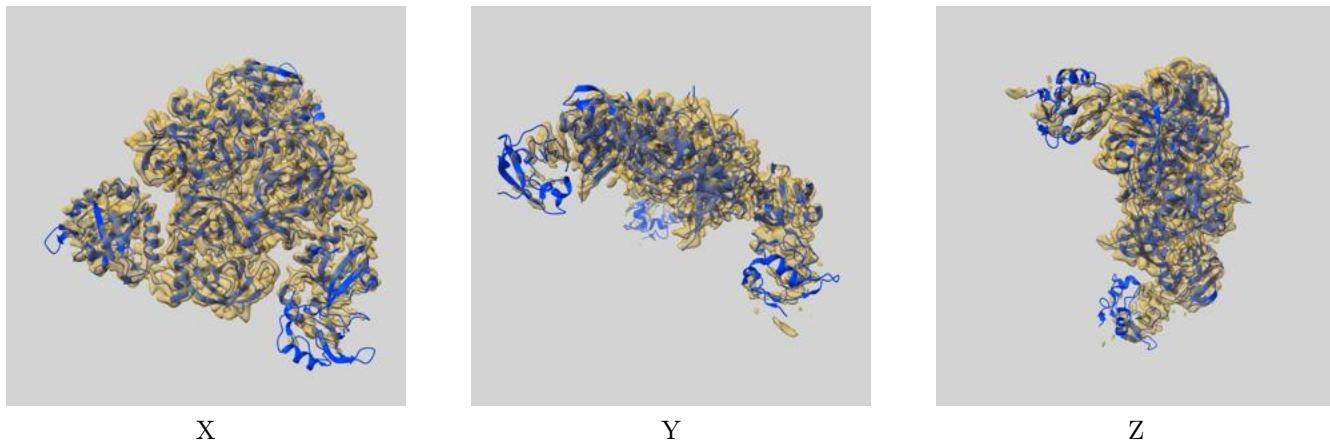
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)
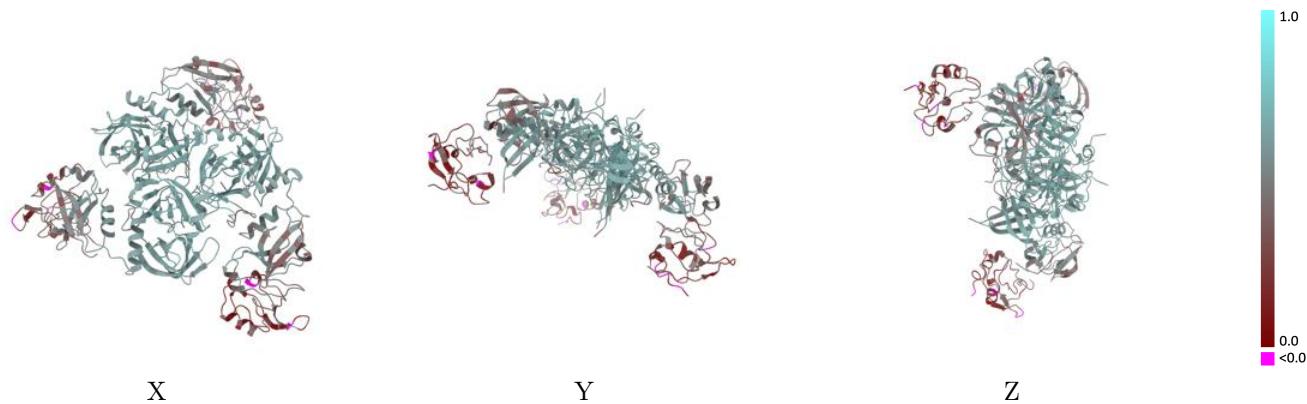
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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)
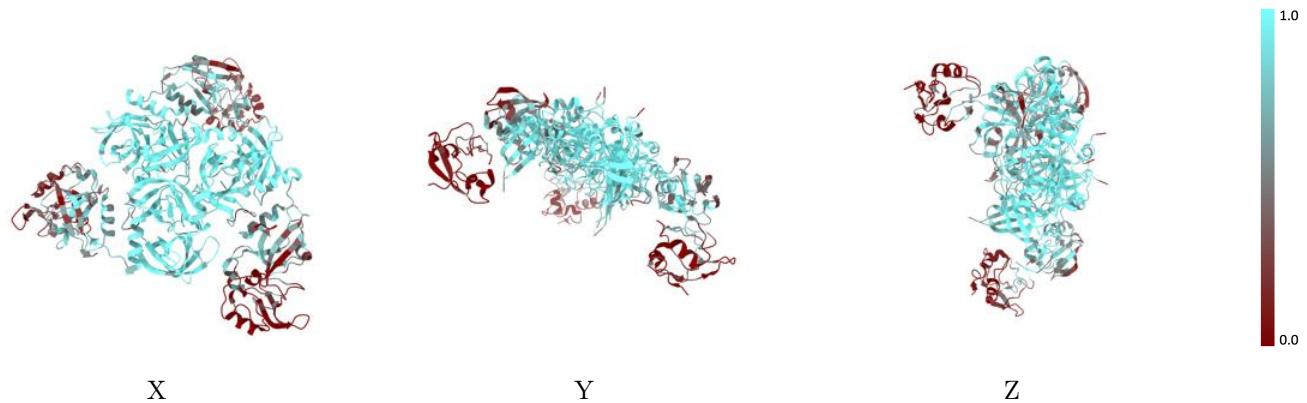
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).

9.4   Atom inclusion ⓘ
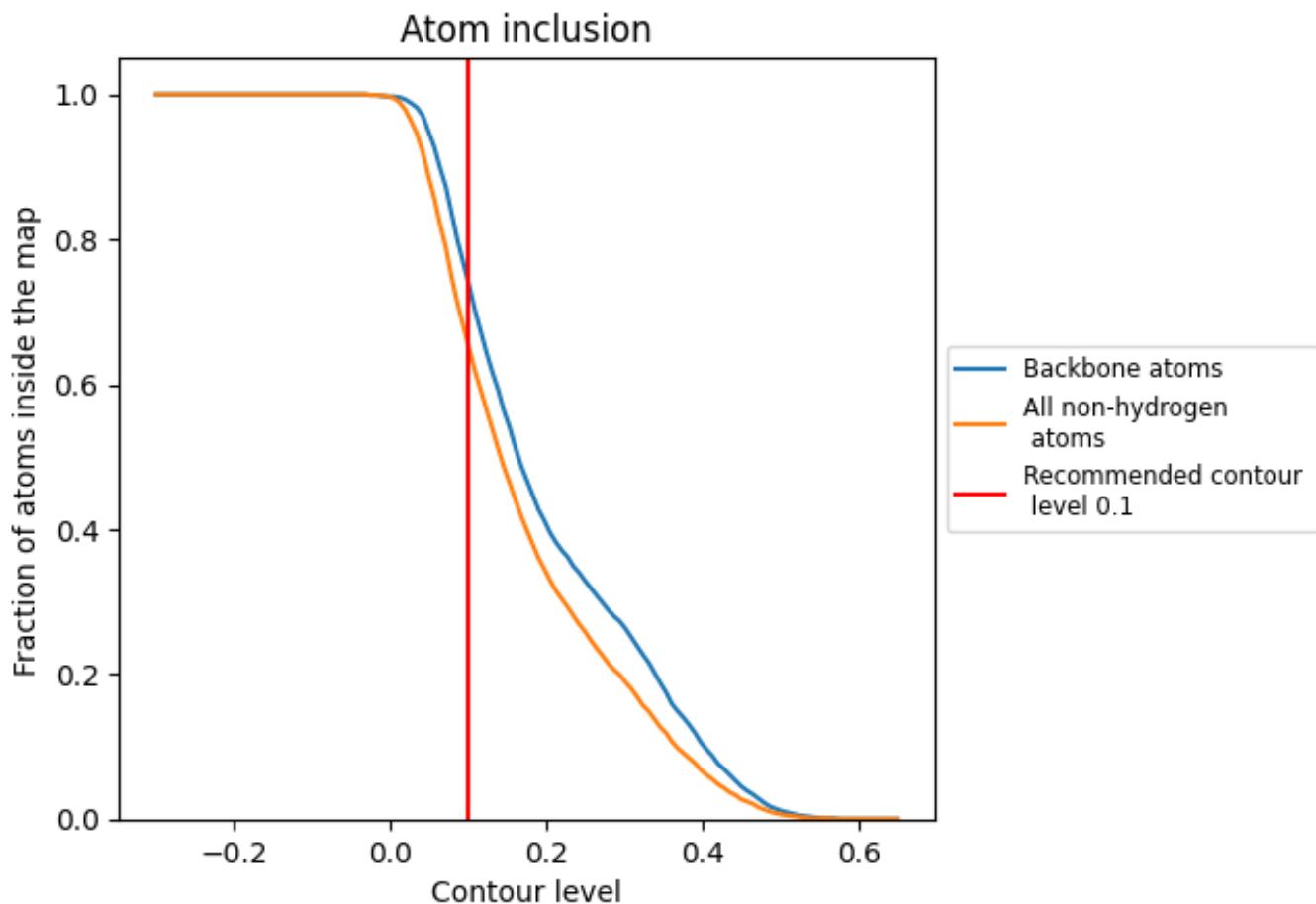
At the recommended contour level, 74% of all backbone atoms, 66% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6550	0.4940
A	0.8040	0.5620
B	0.8120	0.5610
C	0.7650	0.5540
D	0.2020	0.2710
E	0.2380	0.2920
F	0.1100	0.2630
G	0.7750	0.5310
H	0.8400	0.5520
I	0.8290	0.5270

1.0

0.0
<0.0