WORLDWIDE wwPDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Apr 15, 2024 – 05:22 PM EDT

PDB ID	:	8TQK
EMDB ID	:	EMD-41506
Title	:	Human parainfluenza virus type 3 prefusion F trimer in complex with rPIV3-18 Fab
Authors	:	Otrelo-Cardoso, A.R.; Jardetzky, T.S.
Deposited on	:	2023-08-07
Resolution	:	3.20 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
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)	:	2.36.1

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	Percentile Ranks	Value
Clashscore		12
Ramachandran outliers		0.2%
Sidechain outliers		1.2%

Worse   *Better*

∎ Percentile relative to all structures

▯ Percentile relative to all EM structures
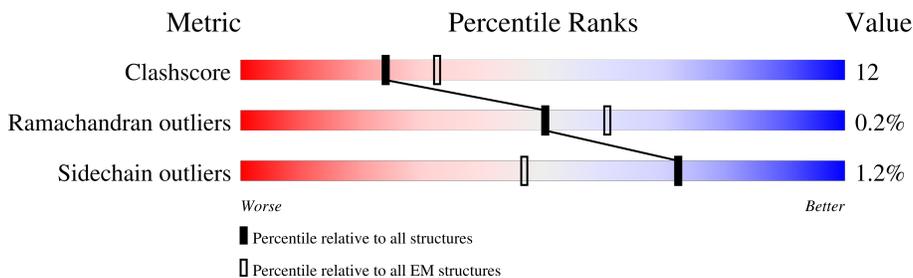
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 >=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	D	224	34% 17% 48%
1	F	224	38% 14% 48%
1	H	224	46% 6% 48%
2	E	214	38% 11% 51%
2	G	214	37% 11% 51%
2	L	214	39% 9% 51%
3	A	516	65% 16% 19%
3	B	516	65% 15% 20%

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Mol	Chain	Length	Quality of chain
3	C	516	67% 14% 19%

2   Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 29229 atoms, of which 14504 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 Heavy chain Fab rPIV3-18.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	D	116	Total 1757	C 569	H 860	N 154	O 169	S 5	0	0
1	F	116	Total 1765	C 571	H 864	N 154	O 171	S 5	0	0
1	H	116	Total 1740	C 566	H 849	N 151	O 169	S 5	0	0

- Molecule 2 is a protein called Light chain Fab rPIV3-28.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	E	105	Total 1528	C 509	H 720	N 137	O 159	S 3	0	0
2	G	105	Total 1527	C 510	H 716	N 137	O 161	S 3	0	0
2	L	104	Total 1514	C 509	H 711	N 133	O 158	S 3	0	0

- Molecule 3 is a protein called Fusion glycoprotein F0.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	A	417	Total 6440	C 2027	H 3238	N 535	O 622	S 18	0	0
3	B	415	Total 6463	C 2027	H 3265	N 535	O 620	S 16	0	0
3	C	418	Total 6495	C 2034	H 3281	N 537	O 625	S 18	0	0

There are 177 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	162	CYS	GLN	engineered mutation	UNP A0A059QA82
A	168	CYS	LEU	engineered mutation	UNP A0A059QA82
A	213	CYS	ILE	engineered mutation	UNP A0A059QA82

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Chain	Residue	Modelled	Actual	Comment	Reference
A	230	CYS	GLY	engineered mutation	UNP A0A059QA82
A	463	VAL	ALA	engineered mutation	UNP A0A059QA82
A	474	TYR	ILE	engineered mutation	UNP A0A059QA82
A	482	SER	-	expression tag	UNP A0A059QA82
A	483	ALA	-	expression tag	UNP A0A059QA82
A	484	ILE	-	expression tag	UNP A0A059QA82
A	485	GLU	-	expression tag	UNP A0A059QA82
A	486	ASP	-	expression tag	UNP A0A059QA82
A	487	LYS	-	expression tag	UNP A0A059QA82
A	488	ILE	-	expression tag	UNP A0A059QA82
A	489	GLU	-	expression tag	UNP A0A059QA82
A	490	GLU	-	expression tag	UNP A0A059QA82
A	491	ILE	-	expression tag	UNP A0A059QA82
A	492	LEU	-	expression tag	UNP A0A059QA82
A	493	SER	-	expression tag	UNP A0A059QA82
A	494	LYS	-	expression tag	UNP A0A059QA82
A	495	ILE	-	expression tag	UNP A0A059QA82
A	496	TYR	-	expression tag	UNP A0A059QA82
A	497	HIS	-	expression tag	UNP A0A059QA82
A	498	ILE	-	expression tag	UNP A0A059QA82
A	499	GLU	-	expression tag	UNP A0A059QA82
A	500	ASN	-	expression tag	UNP A0A059QA82
A	501	GLU	-	expression tag	UNP A0A059QA82
A	502	ILE	-	expression tag	UNP A0A059QA82
A	503	ALA	-	expression tag	UNP A0A059QA82
A	504	ARG	-	expression tag	UNP A0A059QA82
A	505	ILE	-	expression tag	UNP A0A059QA82
A	506	LYS	-	expression tag	UNP A0A059QA82
A	507	LYS	-	expression tag	UNP A0A059QA82
A	508	LEU	-	expression tag	UNP A0A059QA82
A	509	ILE	-	expression tag	UNP A0A059QA82
A	510	GLY	-	expression tag	UNP A0A059QA82
A	511	GLU	-	expression tag	UNP A0A059QA82
A	512	ALA	-	expression tag	UNP A0A059QA82
A	513	PRO	-	expression tag	UNP A0A059QA82
A	514	GLY	-	expression tag	UNP A0A059QA82
A	515	SER	-	expression tag	UNP A0A059QA82
A	516	GLU	-	expression tag	UNP A0A059QA82
A	517	ASN	-	expression tag	UNP A0A059QA82
A	518	LEU	-	expression tag	UNP A0A059QA82
A	519	TYR	-	expression tag	UNP A0A059QA82
A	520	PHE	-	expression tag	UNP A0A059QA82

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Chain	Residue	Modelled	Actual	Comment	Reference
A	521	GLN	-	expression tag	UNP A0A059QA82
A	522	GLY	-	expression tag	UNP A0A059QA82
A	523	GLY	-	expression tag	UNP A0A059QA82
A	524	SER	-	expression tag	UNP A0A059QA82
A	525	GLY	-	expression tag	UNP A0A059QA82
A	526	SER	-	expression tag	UNP A0A059QA82
A	527	HIS	-	expression tag	UNP A0A059QA82
A	528	HIS	-	expression tag	UNP A0A059QA82
A	529	HIS	-	expression tag	UNP A0A059QA82
A	530	HIS	-	expression tag	UNP A0A059QA82
A	531	HIS	-	expression tag	UNP A0A059QA82
A	532	HIS	-	expression tag	UNP A0A059QA82
A	533	HIS	-	expression tag	UNP A0A059QA82
A	534	HIS	-	expression tag	UNP A0A059QA82
B	162	CYS	GLN	engineered mutation	UNP A0A059QA82
B	168	CYS	LEU	engineered mutation	UNP A0A059QA82
B	213	CYS	ILE	engineered mutation	UNP A0A059QA82
B	230	CYS	GLY	engineered mutation	UNP A0A059QA82
B	463	VAL	ALA	engineered mutation	UNP A0A059QA82
B	474	TYR	ILE	engineered mutation	UNP A0A059QA82
B	482	SER	-	expression tag	UNP A0A059QA82
B	483	ALA	-	expression tag	UNP A0A059QA82
B	484	ILE	-	expression tag	UNP A0A059QA82
B	485	GLU	-	expression tag	UNP A0A059QA82
B	486	ASP	-	expression tag	UNP A0A059QA82
B	487	LYS	-	expression tag	UNP A0A059QA82
B	488	ILE	-	expression tag	UNP A0A059QA82
B	489	GLU	-	expression tag	UNP A0A059QA82
B	490	GLU	-	expression tag	UNP A0A059QA82
B	491	ILE	-	expression tag	UNP A0A059QA82
B	492	LEU	-	expression tag	UNP A0A059QA82
B	493	SER	-	expression tag	UNP A0A059QA82
B	494	LYS	-	expression tag	UNP A0A059QA82
B	495	ILE	-	expression tag	UNP A0A059QA82
B	496	TYR	-	expression tag	UNP A0A059QA82
B	497	HIS	-	expression tag	UNP A0A059QA82
B	498	ILE	-	expression tag	UNP A0A059QA82
B	499	GLU	-	expression tag	UNP A0A059QA82
B	500	ASN	-	expression tag	UNP A0A059QA82
B	501	GLU	-	expression tag	UNP A0A059QA82
B	502	ILE	-	expression tag	UNP A0A059QA82
B	503	ALA	-	expression tag	UNP A0A059QA82

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Chain	Residue	Modelled	Actual	Comment	Reference
B	504	ARG	-	expression tag	UNP A0A059QA82
B	505	ILE	-	expression tag	UNP A0A059QA82
B	506	LYS	-	expression tag	UNP A0A059QA82
B	507	LYS	-	expression tag	UNP A0A059QA82
B	508	LEU	-	expression tag	UNP A0A059QA82
B	509	ILE	-	expression tag	UNP A0A059QA82
B	510	GLY	-	expression tag	UNP A0A059QA82
B	511	GLU	-	expression tag	UNP A0A059QA82
B	512	ALA	-	expression tag	UNP A0A059QA82
B	513	PRO	-	expression tag	UNP A0A059QA82
B	514	GLY	-	expression tag	UNP A0A059QA82
B	515	SER	-	expression tag	UNP A0A059QA82
B	516	GLU	-	expression tag	UNP A0A059QA82
B	517	ASN	-	expression tag	UNP A0A059QA82
B	518	LEU	-	expression tag	UNP A0A059QA82
B	519	TYR	-	expression tag	UNP A0A059QA82
B	520	PHE	-	expression tag	UNP A0A059QA82
B	521	GLN	-	expression tag	UNP A0A059QA82
B	522	GLY	-	expression tag	UNP A0A059QA82
B	523	GLY	-	expression tag	UNP A0A059QA82
B	524	SER	-	expression tag	UNP A0A059QA82
B	525	GLY	-	expression tag	UNP A0A059QA82
B	526	SER	-	expression tag	UNP A0A059QA82
B	527	HIS	-	expression tag	UNP A0A059QA82
B	528	HIS	-	expression tag	UNP A0A059QA82
B	529	HIS	-	expression tag	UNP A0A059QA82
B	530	HIS	-	expression tag	UNP A0A059QA82
B	531	HIS	-	expression tag	UNP A0A059QA82
B	532	HIS	-	expression tag	UNP A0A059QA82
B	533	HIS	-	expression tag	UNP A0A059QA82
B	534	HIS	-	expression tag	UNP A0A059QA82
C	162	CYS	GLN	engineered mutation	UNP A0A059QA82
C	168	CYS	LEU	engineered mutation	UNP A0A059QA82
C	213	CYS	ILE	engineered mutation	UNP A0A059QA82
C	230	CYS	GLY	engineered mutation	UNP A0A059QA82
C	463	VAL	ALA	engineered mutation	UNP A0A059QA82
C	474	TYR	ILE	engineered mutation	UNP A0A059QA82
C	482	SER	-	expression tag	UNP A0A059QA82
C	483	ALA	-	expression tag	UNP A0A059QA82
C	484	ILE	-	expression tag	UNP A0A059QA82
C	485	GLU	-	expression tag	UNP A0A059QA82
C	486	ASP	-	expression tag	UNP A0A059QA82

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| Chain	Residue	Modelled	Actual	Comment	Reference
C	487	LYS	-	expression tag	UNP A0A059QA82
C	488	ILE	-	expression tag	UNP A0A059QA82
C	489	GLU	-	expression tag	UNP A0A059QA82
C	490	GLU	-	expression tag	UNP A0A059QA82
C	491	ILE	-	expression tag	UNP A0A059QA82
C	492	LEU	-	expression tag	UNP A0A059QA82
C	493	SER	-	expression tag	UNP A0A059QA82
C	494	LYS	-	expression tag	UNP A0A059QA82
C	495	ILE	-	expression tag	UNP A0A059QA82
C	496	TYR	-	expression tag	UNP A0A059QA82
C	497	HIS	-	expression tag	UNP A0A059QA82
C	498	ILE	-	expression tag	UNP A0A059QA82
C	499	GLU	-	expression tag	UNP A0A059QA82
C	500	ASN	-	expression tag	UNP A0A059QA82
C	501	GLU	-	expression tag	UNP A0A059QA82
C	502	ILE	-	expression tag	UNP A0A059QA82
C	503	ALA	-	expression tag	UNP A0A059QA82
C	504	ARG	-	expression tag	UNP A0A059QA82
C	505	ILE	-	expression tag	UNP A0A059QA82
C	506	LYS	-	expression tag	UNP A0A059QA82
C	507	LYS	-	expression tag	UNP A0A059QA82
C	508	LEU	-	expression tag	UNP A0A059QA82
C	509	ILE	-	expression tag	UNP A0A059QA82
C	510	GLY	-	expression tag	UNP A0A059QA82
C	511	GLU	-	expression tag	UNP A0A059QA82
C	512	ALA	-	expression tag	UNP A0A059QA82
C	513	PRO	-	expression tag	UNP A0A059QA82
C	514	GLY	-	expression tag	UNP A0A059QA82
C	515	SER	-	expression tag	UNP A0A059QA82
C	516	GLU	-	expression tag	UNP A0A059QA82
C	517	ASN	-	expression tag	UNP A0A059QA82
C	518	LEU	-	expression tag	UNP A0A059QA82
C	519	TYR	-	expression tag	UNP A0A059QA82
C	520	PHE	-	expression tag	UNP A0A059QA82
C	521	GLN	-	expression tag	UNP A0A059QA82
C	522	GLY	-	expression tag	UNP A0A059QA82
C	523	GLY	-	expression tag	UNP A0A059QA82
C	524	SER	-	expression tag	UNP A0A059QA82
C	525	GLY	-	expression tag	UNP A0A059QA82
C	526	SER	-	expression tag	UNP A0A059QA82
C	527	HIS	-	expression tag	UNP A0A059QA82
C	528	HIS	-	expression tag	UNP A0A059QA82

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Chain	Residue	Modelled	Actual	Comment	Reference
C	529	HIS	-	expression tag	UNP A0A059QA82
C	530	HIS	-	expression tag	UNP A0A059QA82
C	531	HIS	-	expression tag	UNP A0A059QA82
C	532	HIS	-	expression tag	UNP A0A059QA82
C	533	HIS	-	expression tag	UNP A0A059QA82
C	534	HIS	-	expression tag	UNP A0A059QA82

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: Heavy chain Fab rPIV3-18

Chain D:

- Molecule 1: Heavy chain Fab rPIV3-18

Chain F:

- Molecule 1: Heavy chain Fab rPIV3-18

Chain H:

ASN THR LYS VAL ASP LYS LYS VAL GLU PRO LYS SER CYS

• Molecule 2: Light chain Fab rPIV3-28

Chain E:

| 38% | 11% | 51% |

D1 Q6 S9 T10 A13 T22 C23 L33 T34 W35 Y36 I46 V58 R61 F71 Q79 P80 D81 D82 Y86 Y87 C88 Q89 Q90 F91 S95 W96 T97 F98 G101 T102 R103 V104 E105 ILE LYS ARG THR VAL ALA ALA PRO SER VAL PHE ILE PHE

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

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

• Molecule 2: Light chain Fab rPIV3-28

Chain G:

| 37% | 11% | 51% |

D1 M4 S7 I21 T22 C23 R24 A25 W35 P44 Y49 K50 S67 G68 T69 E70 D81 D82 C88 Q89 Q90 F91 N92 T93 Y94 S95 W96 T97 T102 E105 ILE LYS ARG THR VAL ALA ALA PRO SER VAL PHE ILE PHE PRO PRO SER ASP GLU GLN

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

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

• Molecule 2: Light chain Fab rPIV3-28

Chain L:

| 39% | 9% | 51% |

ASP F2 Q3 M4 P8 S9 V19 C23 V29 K39 V58 P59 S76 S77 L78 D81 D82 F83 C88 Q89 Q90 W96 T97 T102 E105 ILE LYS ARG THR VAL ALA ALA PRO SER VAL PHE ILE PHE PRO PRO SER ASP GLU GLN LEU LYS SER GLY

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

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

• Molecule 3: Fusion glycoprotein F0

Chain A:

| 65% | 16% | 19% |

Q19 V28 M38 E58 D65 Q66 K72 L78 I79 K87 V92 I93 V94 THR ASN GLN GLN GLU SER ASN GLU ASN THR ASP PRO ARG THR GLU ARG PHE GLY GLY V114 I115 I118 A119 I128 T129 A130 A131 L134 V135 L147 V161 C162 S163 SER

VAL GLY N167 C168 S174 V175 Q176 D177 L210 T211 N212 C213 F214 G215 ASP ASN ILE GLY SER LEU GLN GLU LYS G225 C230 Y235 R236 T237 N238 I242 Y251 V269 D270 L271 Y274 P283 L289 N290 T291 Q292 I293 E307 W308 Y309 M317 V328

S336 L348 E351 M352 L356 S357 V368 R375 F378 V379 N380 V383 C394 N395 G396 I397 D406 I412 T413 HIS K415 E416 C417 N418 T419 I420 L426 F427 N428 T429 N430 F437 TYR THR PRO ASP ASP I443 I454 S457 I458 E459 L460 N461 K462 V463

K464 L467 E468 E472 TRP TYR ARG ARG SER ASN GLN LYS LEU SER ALA ILE GLU ASP LYS ILE GLU GLU ILE LEU SER LYS ILE TYR HIS ILE GLU GLU ILE ALA ARG ILE LYS LYS LEU ILE GLY GLU ALA PRO GLY SER GLU ASN LEU TYR PHE GLN GLY GLY SER GLY SER

HIS HIS HIS HIS HIS HIS HIS HIS

• Molecule 3: Fusion glycoprotein F0

Chain B:

65% 15% 20%

Q19 N33 S34 D59 S60 N61 S62 C63 G64 D65 Q66 Y83 V92 T95 ASN GLN GLU SER ASN GLU ASN THR ASP PRO ARG THR GLU ARG PHE PHE GLY GLY V114 I115 G116 T117 I118 A119 V122 A123 T124 Q127 I128 A140 D143 I144 L147 I151 R152

D153 T154 N155 K156 V161 CYS SER SER VAL GLY ASN CYS I169 V175 Q176 D177 Y178 K181 E182 A188 C192 L199 L203 T204 Q205 L210 T211 G215 ASP ASN ILE GLY SER LEU GLN GLU LYS G225 Y251 I262 L271 P283 T291 Q292 I293

E307 W308 Y309 S314 H315 Y338 L348 E351 M352 T366 T367 V368 R375 F378 V383 C394 N395 T413 H414 T419 I420 G421 I422 N423 G424 K431 F437 TYR THR PRO ASP ASP I443 N446 V449 I454 D455 I456 S457 I458 E459 V463

L467 E468 E472 TRP TYR ARG ARG SER ASN GLN LYS LEU SER ALA ILE GLU ASP LYS ILE GLU GLU ILE LEU SER LYS ILE TYR HIS ILE GLU GLU ILE ALA ARG ILE LYS LYS LEU ILE GLY GLU ALA PRO GLY SER GLU ASN LEU TYR PHE GLN GLY GLY SER GLY SER HIS HIS

HIS HIS HIS HIS HIS

• Molecule 3: Fusion glycoprotein F0

Chain C:

67% 14% 19%

Q19 V28 G29 V30 N33 S34 L51 D59 C63 D76 R77 L78 I79 I80 P81 V92 T95 ASN GLN GLU SER ASN GLU ASN THR ASP PRO ARG THR GLU ARG PHE PHE GLY GLY V114 I118 K146 L147 I151 R152 D153 Q159 S163 SER VAL GLY

N167 S174 D177 Y178 I187 G191 C192 L210 T211 G215 ASP ASN ILE GLY SER LEU GLN GLU LYS G225 I226 R236 T237 N238 T244 T245 Y251 D268 V269 D270 L271 N272 D273 L278 P283 V296 D297 S298 Q304 N305 Y309 I310 P311 L312

A334 S337 Y338 L348 E351 M352 L356 I360 V368 V373 F378 V383 C394 N395 G396 I397 T413 HIS K415 I420 G421 L426 F437 TYR THR PRO ASP ASP I443 T444 L445 N446 I454 I458 D466 L467 E468 E472 TRP TYR ARG ARG

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

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	278016	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 $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.267	Depositor
Minimum map value	-0.499	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.051	Depositor
Recommended contour level	0.25	Depositor
Map size (Å)	275.2, 275.2, 275.2	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.86, 0.86, 0.86	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	D	0.34	1/918 (0.1%)	0.61	0/1239
1	F	0.32	0/922	0.61	0/1244
1	H	0.31	0/912	0.58	0/1232
2	E	0.33	0/829	0.66	1/1128 (0.1%)
2	G	0.37	0/832	0.68	1/1132 (0.1%)
2	L	0.37	0/825	0.63	0/1123
3	A	0.31	0/3240	0.58	0/4391
3	B	0.30	0/3238	0.60	0/4389
3	C	0.31	0/3252	0.57	0/4406
All	All	0.32	1/14968 (0.0%)	0.60	2/20284 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	14	PRO	N-CD	5.10	1.54	1.47

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	81	ASP	CB-CG-OD2	5.26	123.04	118.30
2	E	81	ASP	CB-CG-OD2	5.23	123.01	118.30

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	D	897	860	859	50	0
1	F	901	864	861	27	0
1	H	891	849	846	6	0
2	E	808	720	772	25	0
2	G	811	716	770	39	0
2	L	803	711	763	24	0
3	A	3202	3238	3262	78	0
3	B	3198	3265	3270	83	0
3	C	3214	3281	3281	74	0
All	All	14725	14504	14684	349	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 12.

All (349) 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)
2:E:13:ALA:O	2:E:105:GLU:OE1	1.63	1.14
2:G:92:ASN:ND2	3:C:191:GLY:HA3	1.69	1.07
2:L:89:GLN:NE2	2:L:96:TRP:CE3	2.25	1.03
2:L:89:GLN:HE22	2:L:96:TRP:HE3	1.07	0.95
1:D:22:CYS:SG	1:D:92:CYS:CB	2.58	0.92
2:E:23:CYS:HG	2:E:88:CYS:HG	1.15	0.89
3:C:348:LEU:HD13	3:C:352:MET:SD	2.12	0.89
3:A:210:LEU:O	3:A:211:THR:OG1	1.90	0.89
3:B:210:LEU:O	3:B:211:THR:OG1	1.92	0.88
3:B:422:ILE:HG22	3:B:423:ASN:H	1.40	0.87
3:C:33:ASN:OD1	3:C:34:SER:N	2.08	0.86
2:E:61:ARG:NH2	2:E:82:ASP:OD2	2.08	0.86
1:D:98:TRP:CZ3	3:B:192:CYS:HB2	2.11	0.85
2:L:4:MET:CE	2:L:23:CYS:SG	2.64	0.85
2:L:39:LYS:NZ	2:L:83:PHE:CE1	2.44	0.85
2:L:8:PRO:O	2:L:102:THR:HG22	1.77	0.84
2:L:23:CYS:HG	2:L:88:CYS:HG	1.05	0.84
2:G:92:ASN:HD22	3:C:191:GLY:HA3	1.41	0.84
1:D:66:ARG:O	1:D:82(A):SER:OG	1.96	0.84
3:B:422:ILE:HG22	3:B:423:ASN:N	1.93	0.83
2:G:92:ASN:ND2	3:C:191:GLY:CA	2.43	0.80
3:B:309:TYR:HD2	3:B:368:VAL:HG22	1.47	0.80
1:D:33:VAL:CG2	3:B:61:ASN:OD1	2.30	0.79
3:A:58:GLU:OE1	3:A:58:GLU:N	2.16	0.79
3:A:237:THR:HG21	3:A:242:ILE:HG13	1.65	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:33:VAL:HG21	3:B:61:ASN:OD1	1.84	0.78
2:L:4:MET:HE2	2:L:23:CYS:SG	2.24	0.78
2:E:103:ARG:HG3	2:E:103:ARG:HH11	1.49	0.76
3:B:446:ASN:OD1	3:B:446:ASN:O	2.04	0.76
1:D:22:CYS:SG	1:D:92:CYS:HB3	2.24	0.75
3:A:460:LEU:HD11	3:B:456:ILE:HG23	1.69	0.74
3:A:379:VAL:HG12	3:B:122:VAL:HG22	1.69	0.74
3:B:422:ILE:CG2	3:B:423:ASN:H	2.01	0.73
2:G:92:ASN:HD22	3:C:191:GLY:CA	2.03	0.72
3:A:418:ASN:O	3:A:419:THR:HG23	1.90	0.72
2:L:4:MET:SD	2:L:90:GLN:HB3	2.30	0.72
1:D:58:PHE:CE1	3:B:188:ALA:HB1	2.26	0.71
2:L:8:PRO:O	2:L:102:THR:CG2	2.39	0.70
3:B:309:TYR:CD2	3:B:368:VAL:HG22	2.27	0.70
1:H:66:ARG:NH2	1:H:86:ASP:OD2	2.26	0.69
3:B:394:CYS:SG	3:B:395:ASN:N	2.64	0.69
3:B:124:THR:OG1	3:B:127:GLN:OE1	2.09	0.69
3:C:244:THR:HG23	3:C:245:THR:N	2.07	0.69
3:A:309:TYR:HD2	3:A:368:VAL:HG22	1.57	0.69
1:D:57:THR:HG22	1:D:57:THR:O	1.93	0.69
2:E:46:ILE:HD12	2:E:46:ILE:O	1.93	0.68
3:A:428:ASN:HB2	3:B:116:GLY:O	1.94	0.68
3:C:312:LEU:HD21	3:C:356:LEU:HD21	1.74	0.68
2:L:4:MET:HE3	2:L:23:CYS:SG	2.34	0.68
1:D:22:CYS:HG	1:D:92:CYS:CB	2.03	0.67
2:E:103:ARG:HG3	2:E:103:ARG:NH1	2.06	0.67
3:A:378:PHE:HB3	3:A:383:VAL:HG12	1.76	0.67
1:D:65:GLY:O	1:D:82(B):ARG:NH2	2.28	0.66
2:L:89:GLN:NE2	2:L:96:TRP:HE3	1.74	0.66
3:C:304:GLN:O	3:C:304:GLN:HG3	1.94	0.66
2:G:92:ASN:ND2	3:C:192:CYS:N	2.43	0.66
3:A:457:SER:O	3:A:461:ASN:ND2	2.28	0.66
2:E:89:GLN:OE1	2:E:98:PHE:CE1	2.49	0.66
3:A:459:GLU:O	3:A:463:VAL:HG23	1.96	0.65
3:B:414:HIS:NE2	3:B:431:LYS:HA	2.12	0.65
3:B:422:ILE:CG2	3:B:423:ASN:N	2.58	0.65
2:G:93:THR:HG22	3:C:191:GLY:N	2.13	0.64
2:G:93:THR:HG22	3:C:191:GLY:CA	2.27	0.64
1:D:98:TRP:CE3	3:B:63:CYS:HB2	2.33	0.64
3:A:418:ASN:O	3:A:419:THR:CG2	2.46	0.64
1:D:22:CYS:HG	1:D:92:CYS:HG	1.46	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:422:ILE:HG22	3:B:423:ASN:OD1	1.98	0.63
3:A:378:PHE:CG	3:B:118:ILE:HD12	2.33	0.63
3:A:378:PHE:CD2	3:B:118:ILE:HD12	2.33	0.63
3:B:454:ILE:O	3:B:458:ILE:HD12	1.99	0.62
3:A:454:ILE:O	3:A:458:ILE:HD12	1.99	0.62
3:A:430:ASN:HB2	3:B:117:THR:HG22	1.80	0.62
2:E:82:ASP:OD1	2:E:86:TYR:OH	2.17	0.62
3:A:72:LYS:HD3	3:A:274:TYR:CE1	2.34	0.62
3:B:175:VAL:HG23	3:B:175:VAL:O	1.99	0.61
3:C:297:ASP:OD1	3:C:298:SER:N	2.33	0.61
3:A:237:THR:CG2	3:A:242:ILE:HG13	2.30	0.61
3:C:244:THR:HG23	3:C:245:THR:H	1.66	0.61
1:D:4:LEU:HD12	1:D:102:VAL:CG1	2.31	0.61
1:D:45:LEU:O	2:E:98:PHE:CD2	2.53	0.61
1:F:105:GLN:O	1:F:105:GLN:NE2	2.34	0.61
3:C:309:TYR:HD2	3:C:368:VAL:HG22	1.66	0.60
3:A:237:THR:HG21	3:A:242:ILE:CG1	2.30	0.60
3:A:464:LYS:O	3:A:468:GLU:HG3	2.01	0.60
2:E:33:LEU:HD11	2:E:88:CYS:SG	2.42	0.60
2:G:93:THR:CG2	3:C:191:GLY:CA	2.80	0.60
3:A:78:LEU:HD12	3:A:211:THR:HG23	1.83	0.60
1:D:33:VAL:HG23	3:B:61:ASN:OD1	2.01	0.60
2:L:39:LYS:NZ	2:L:83:PHE:CD1	2.70	0.60
3:A:251:TYR:OH	3:A:283:PRO:O	2.20	0.60
1:D:58:PHE:HE1	3:B:188:ALA:HB1	1.65	0.60
1:D:99:ASP:HB3	3:B:65:ASP:OD2	2.02	0.60
3:A:351:GLU:OE1	3:A:351:GLU:N	2.34	0.59
3:C:251:TYR:OH	3:C:283:PRO:O	2.19	0.59
3:A:430:ASN:HB2	3:B:117:THR:CG2	2.33	0.59
3:A:307:GLU:OE1	3:A:375:ARG:NH2	2.35	0.59
2:G:92:ASN:ND2	3:C:192:CYS:H	2.01	0.58
3:B:92:VAL:O	3:B:119:ALA:HB3	2.04	0.58
3:B:422:ILE:O	3:B:424:GLY:N	2.36	0.58
3:B:467:LEU:HD12	3:B:468:GLU:N	2.19	0.58
2:E:34:THR:HG1	2:E:91:PHE:HE1	1.50	0.58
1:F:98:TRP:CE3	3:C:63:CYS:HB2	2.37	0.58
3:A:383:VAL:HG22	3:A:412:ILE:HD11	1.85	0.58
3:C:351:GLU:OE1	3:C:351:GLU:N	2.37	0.58
1:D:82:MET:HG2	1:D:82(C):LEU:HD21	1.85	0.58
2:E:105:GLU:O	2:E:105:GLU:HG2	2.04	0.58
3:C:151:ILE:HG22	3:C:159:GLN:NE2	2.19	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:58:PHE:CE1	3:B:188:ALA:CB	2.86	0.57
2:G:92:ASN:HD22	2:G:92:ASN:C	2.08	0.57
3:A:406:ASP:OD2	3:A:406:ASP:N	2.38	0.57
3:C:92:VAL:O	3:C:118:ILE:O	2.23	0.57
3:C:177:ASP:OD1	3:C:178:TYR:N	2.37	0.56
2:E:23:CYS:CB	2:E:88:CYS:SG	2.93	0.56
1:F:83:ARG:HG2	1:F:84:ALA:H	1.70	0.56
3:A:87:LYS:HD2	3:A:87:LYS:N	2.21	0.56
2:G:102:THR:O	2:G:102:THR:OG1	2.21	0.56
2:L:19:VAL:CG2	2:L:78:LEU:HD11	2.36	0.56
2:G:93:THR:HG22	3:C:191:GLY:HA2	1.88	0.56
2:G:96:TRP:N	2:G:96:TRP:CD1	2.73	0.55
2:E:34:THR:OG1	2:E:91:PHE:HE1	1.90	0.55
3:A:328:VAL:HG12	3:A:328:VAL:O	2.06	0.55
3:A:309:TYR:CD2	3:A:368:VAL:HG22	2.39	0.54
1:F:5:LEU:O	1:F:22:CYS:SG	2.66	0.54
2:G:21:ILE:CG2	2:G:102:THR:HG21	2.37	0.54
3:B:65:ASP:OD1	3:B:66:GLN:N	2.41	0.54
3:A:131:ALA:O	3:A:135:VAL:HG23	2.07	0.54
3:C:163:SER:O	3:C:163:SER:OG	2.22	0.54
3:A:163:SER:O	3:A:163:SER:OG	2.25	0.54
3:C:244:THR:CG2	3:C:245:THR:N	2.70	0.53
1:D:47:TRP:CD1	2:E:96:TRP:HB2	2.44	0.53
3:B:177:ASP:OD1	3:B:178:TYR:N	2.41	0.53
3:B:314:SER:HG	3:B:315:HIS:CE1	2.25	0.53
3:B:154:THR:HG22	3:B:156:LYS:H	1.72	0.53
3:B:262:ILE:HD12	3:B:262:ILE:O	2.08	0.53
3:A:130:ALA:O	3:A:134:LEU:HD22	2.09	0.53
3:C:226:ILE:O	3:C:226:ILE:HG22	2.09	0.53
3:C:244:THR:CG2	3:C:245:THR:H	2.22	0.53
3:C:454:ILE:O	3:C:458:ILE:HD12	2.09	0.53
1:F:66:ARG:NH2	1:F:86:ASP:OD2	2.42	0.53
3:C:237:THR:HG23	3:C:238:ASN:HD22	1.74	0.53
3:C:397:ILE:HD11	3:C:426:LEU:HD11	1.91	0.52
1:F:11:LEU:HD13	1:F:12:VAL:N	2.25	0.52
1:F:99:ASP:OD1	1:F:100:TYR:N	2.37	0.52
3:A:426:LEU:HD11	3:B:114:VAL:HG22	1.91	0.52
3:A:28:VAL:HG12	3:A:28:VAL:O	2.09	0.52
1:D:55:GLU:N	1:D:55:GLU:OE1	2.43	0.52
3:A:426:LEU:HD12	3:B:114:VAL:O	2.10	0.52
1:D:12:VAL:HG22	1:D:13:ARG:N	2.25	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:68:THR:HG22	1:F:81:GLU:HB3	1.90	0.52
1:D:45:LEU:HB3	2:E:98:PHE:CZ	2.45	0.52
1:F:95:MET:SD	2:G:96:TRP:HZ2	2.33	0.52
3:B:153:ASP:O	3:B:153:ASP:OD2	2.28	0.52
3:C:467:LEU:HD12	3:C:468:GLU:N	2.25	0.52
1:D:52:THR:HG21	3:B:59:ASP:OD2	2.11	0.51
2:E:6:GLN:HB2	2:E:22:THR:O	2.11	0.51
2:G:4:MET:HG2	2:G:97:THR:HG22	1.93	0.51
3:C:210:LEU:O	3:C:211:THR:OG1	2.22	0.51
2:E:79:GLN:HG3	2:E:80:PRO:HD2	1.93	0.51
3:A:378:PHE:CD2	3:B:118:ILE:CD1	2.94	0.51
2:G:91:PHE:HD1	2:G:91:PHE:O	1.94	0.50
3:A:328:VAL:O	3:A:328:VAL:CG1	2.58	0.50
3:C:337:SER:OG	3:C:338:TYR:N	2.44	0.50
2:L:19:VAL:HG21	2:L:78:LEU:HD11	1.93	0.50
2:L:39:LYS:NZ	2:L:83:PHE:HE1	2.08	0.50
3:B:114:VAL:O	3:B:114:VAL:HG13	2.12	0.50
3:C:378:PHE:CD1	3:C:383:VAL:HG12	2.47	0.50
1:D:22:CYS:SG	1:D:92:CYS:HB2	2.46	0.50
2:G:7:SER:O	2:G:22:THR:HG22	2.12	0.50
3:C:147:LEU:C	3:C:147:LEU:HD13	2.31	0.50
1:F:83:ARG:HG2	1:F:84:ALA:N	2.27	0.50
3:B:83:TYR:CD2	3:B:271:LEU:HD22	2.47	0.49
3:B:351:GLU:N	3:B:351:GLU:OE1	2.45	0.49
3:C:268:ASP:OD1	3:C:269:VAL:N	2.45	0.49
1:D:22:CYS:HB3	1:D:92:CYS:HG	1.76	0.49
2:G:94:TYR:CE2	3:C:187:ILE:O	2.65	0.49
3:B:394:CYS:O	3:B:395:ASN:C	2.51	0.49
3:A:459:GLU:HA	3:A:459:GLU:OE1	2.13	0.49
3:A:293:ILE:HG12	3:A:317:MET:HB2	1.94	0.48
1:D:5:LEU:HD23	1:D:6:GLU:N	2.28	0.48
2:G:92:ASN:HD21	3:C:191:GLY:HA3	1.66	0.48
3:C:394:CYS:SG	3:C:395:ASN:N	2.87	0.48
1:D:45:LEU:HB3	2:E:98:PHE:CE2	2.48	0.48
2:E:36:TYR:HE1	2:E:89:GLN:HB3	1.78	0.48
3:B:437:PHE:CG	3:B:437:PHE:O	2.67	0.48
1:D:40:ALA:HB3	1:D:43:LYS:HB2	1.95	0.48
3:C:51:LEU:HD13	3:C:278:LEU:HD13	1.95	0.48
1:D:98:TRP:CE3	3:B:192:CYS:HB2	2.47	0.48
1:F:95:MET:SD	2:G:96:TRP:CZ2	3.07	0.48
1:F:96:PHE:CZ	2:G:49:TYR:HB2	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:273:ASP:O	3:C:273:ASP:OD2	2.32	0.47
1:D:22:CYS:CB	1:D:92:CYS:HG	2.27	0.47
3:A:115:ILE:HD12	3:C:426:LEU:O	2.14	0.47
3:C:378:PHE:HD1	3:C:383:VAL:HG12	1.79	0.47
3:B:151:ILE:HD12	3:B:151:ILE:O	2.14	0.47
3:B:291:THR:O	3:B:291:THR:CG2	2.62	0.47
3:C:334:ALA:HB3	3:C:337:SER:O	2.14	0.47
3:A:238:ASN:OD1	3:A:238:ASN:C	2.53	0.47
1:F:19:ARG:HD3	1:F:81:GLU:HB2	1.96	0.47
3:B:147:LEU:HD22	3:B:161:VAL:CG2	2.45	0.47
3:A:213:CYS:SG	3:A:230:CYS:CB	3.03	0.47
3:B:205:GLN:HA	3:B:205:GLN:OE1	2.14	0.47
3:B:366:THR:HG22	3:B:449:VAL:HG23	1.97	0.47
2:E:23:CYS:SG	2:E:71:PHE:HB2	2.55	0.46
1:F:100(A):ASP:OD1	1:F:100(B):THR:N	2.48	0.46
1:D:15:GLY:N	1:D:82(C):LEU:O	2.49	0.46
2:L:29:VAL:HG21	2:L:90:GLN:HB2	1.97	0.46
1:H:56:ARG:O	1:H:57:THR:OG1	2.32	0.46
3:A:72:LYS:HD3	3:A:274:TYR:CZ	2.50	0.46
3:B:143:ASP:OD2	3:B:143:ASP:N	2.48	0.46
3:B:199:LEU:HD23	3:B:203:LEU:HG	1.98	0.46
3:B:348:LEU:HD22	3:B:352:MET:SD	2.55	0.46
1:F:67:PHE:N	1:F:67:PHE:CD1	2.83	0.46
3:C:153:ASP:OD1	3:C:153:ASP:N	2.46	0.46
3:A:336:SER:O	3:A:336:SER:OG	2.32	0.46
3:A:177:ASP:OD1	3:A:177:ASP:N	2.47	0.46
3:C:383:VAL:CG2	3:C:420:ILE:HD13	2.46	0.46
3:A:397:ILE:HD11	3:A:426:LEU:CD2	2.46	0.46
3:A:147:LEU:HD13	3:A:147:LEU:O	2.16	0.46
3:A:394:CYS:SG	3:A:395:ASN:N	2.87	0.46
3:B:437:PHE:O	3:B:437:PHE:CD2	2.69	0.46
3:C:146:LYS:HZ3	3:C:146:LYS:HB2	1.81	0.46
3:C:237:THR:HG23	3:C:238:ASN:ND2	2.30	0.46
1:D:58:PHE:CZ	3:B:188:ALA:HB2	2.52	0.45
2:G:92:ASN:ND2	3:C:191:GLY:C	2.70	0.45
2:L:83:PHE:O	2:L:83:PHE:CG	2.69	0.45
1:D:98:TRP:CD1	1:D:98:TRP:N	2.83	0.45
3:A:128:ILE:HD13	3:A:128:ILE:N	2.31	0.45
3:C:59:ASP:OD1	3:C:59:ASP:O	2.34	0.45
3:C:311:PRO:O	3:C:312:LEU:HD12	2.16	0.45
1:D:22:CYS:HG	1:D:92:CYS:HB3	1.72	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:153:ASP:O	3:B:154:THR:OG1	2.23	0.45
1:F:4:LEU:HB3	1:F:22:CYS:SG	2.56	0.45
2:L:83:PHE:CD1	2:L:83:PHE:O	2.70	0.45
2:G:91:PHE:O	2:G:91:PHE:CD1	2.70	0.45
1:D:29:PHE:O	1:D:29:PHE:CG	2.70	0.45
1:H:49:SER:OG	1:H:50:SER:N	2.50	0.45
2:L:9:SER:O	2:L:102:THR:HA	2.16	0.45
3:B:140:ALA:O	3:B:144:ILE:HG12	2.17	0.45
3:B:147:LEU:HD22	3:B:161:VAL:HG22	1.98	0.45
3:C:304:GLN:O	3:C:305:ASN:HB2	2.15	0.45
1:D:4:LEU:HD12	1:D:102:VAL:HG11	1.99	0.45
2:G:93:THR:CG2	3:C:191:GLY:HA2	2.45	0.45
3:B:59:ASP:OD2	3:B:59:ASP:C	2.55	0.45
1:F:73:ASN:OD1	1:F:73:ASN:N	2.48	0.45
1:D:102:VAL:HG12	1:D:103:TRP:N	2.32	0.44
2:G:24:ARG:NH1	2:G:70:GLU:OE2	2.49	0.44
2:L:4:MET:HE2	2:L:23:CYS:HG	1.81	0.44
2:L:58:VAL:HG13	2:L:59:PRO:HD2	1.98	0.44
3:B:307:GLU:OE2	3:B:375:ARG:NH2	2.49	0.44
1:D:33:VAL:HG22	1:D:52:THR:HG23	1.99	0.44
3:B:378:PHE:HD1	3:B:383:VAL:HG12	1.82	0.44
3:C:394:CYS:HA	3:C:421:GLY:H	1.82	0.44
3:A:161:VAL:O	3:A:168:CYS:HA	2.17	0.44
3:C:278:LEU:HD12	3:C:278:LEU:N	2.31	0.44
1:F:103:TRP:HE1	2:G:44:PRO:HD2	1.83	0.44
3:B:33:ASN:OD1	3:B:34:SER:N	2.50	0.44
3:C:445:LEU:O	3:C:446:ASN:OD1	2.36	0.44
1:F:81:GLU:OE2	1:F:82:MET:O	2.36	0.44
3:B:293:ILE:HG21	3:B:338:TYR:CE2	2.53	0.44
1:D:57:THR:O	1:D:57:THR:CG2	2.64	0.44
1:D:58:PHE:HE1	3:B:188:ALA:CB	2.27	0.44
2:G:25:ALA:O	2:G:69:THR:HG23	2.18	0.44
2:G:93:THR:HG23	3:C:191:GLY:CA	2.48	0.44
2:L:76:SER:OG	2:L:77:SER:N	2.50	0.44
3:C:78:LEU:HD13	3:C:211:THR:HG22	1.99	0.44
1:D:52:THR:HG22	3:B:59:ASP:OD1	2.17	0.43
3:A:65:ASP:O	3:A:66:GLN:HB2	2.19	0.43
3:C:368:VAL:HG13	3:C:373:VAL:CG2	2.48	0.43
1:H:86:ASP:N	1:H:86:ASP:OD1	2.51	0.43
3:A:115:ILE:HD12	3:A:115:ILE:N	2.33	0.43
3:A:379:VAL:HG23	3:A:380:ASN:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:296:VAL:HG11	3:C:312:LEU:HD23	2.00	0.43
1:D:29:PHE:O	1:D:71:ARG:NH2	2.52	0.43
3:A:79:ILE:HG23	3:A:269:VAL:HG11	2.00	0.43
3:A:378:PHE:CZ	3:B:128:ILE:HD12	2.53	0.43
3:A:394:CYS:O	3:A:395:ASN:C	2.56	0.43
3:B:413:THR:O	3:B:414:HIS:HB3	2.18	0.43
2:G:67:SER:OG	2:G:68:GLY:N	2.51	0.43
3:A:78:LEU:HD23	3:A:78:LEU:O	2.18	0.43
3:C:76:ASP:HA	3:C:79:ILE:HG22	1.99	0.43
3:B:118:ILE:HG22	3:B:119:ALA:O	2.18	0.43
2:L:19:VAL:HG23	2:L:78:LEU:CD1	2.48	0.43
3:A:79:ILE:HG22	3:A:271:LEU:HD13	2.01	0.43
3:B:291:THR:O	3:B:291:THR:HG23	2.19	0.43
1:F:7:SER:HB2	1:F:21:SER:O	2.19	0.43
3:A:118:ILE:O	3:A:119:ALA:HB3	2.19	0.43
3:A:147:LEU:HD13	3:A:147:LEU:C	2.40	0.43
3:A:418:ASN:C	3:A:419:THR:HG23	2.38	0.43
3:B:147:LEU:HD12	3:B:147:LEU:O	2.19	0.43
2:E:89:GLN:OE1	2:E:98:PHE:CZ	2.72	0.43
1:H:2:VAL:N	1:H:25:SER:O	2.52	0.43
3:A:115:ILE:HD12	3:A:115:ILE:H	1.83	0.43
2:E:103:ARG:HH11	2:E:103:ARG:CG	2.22	0.42
3:C:28:VAL:HG11	3:C:360:ILE:HG23	2.01	0.42
2:G:92:ASN:ND2	2:G:92:ASN:C	2.72	0.42
2:G:92:ASN:HD21	3:C:191:GLY:C	2.22	0.42
2:G:92:ASN:HD21	3:C:192:CYS:N	2.14	0.42
1:F:99:ASP:O	2:G:50:LYS:NZ	2.50	0.42
3:C:28:VAL:HG23	3:C:30:VAL:HG23	2.01	0.42
3:B:151:ILE:O	3:B:152:ARG:C	2.57	0.42
3:C:270:ASP:O	3:C:271:LEU:HB2	2.19	0.42
1:F:29:PHE:CD1	1:F:29:PHE:C	2.93	0.42
2:L:19:VAL:HG23	2:L:78:LEU:HD11	2.02	0.42
1:F:6:GLU:O	1:F:7:SER:OG	2.27	0.42
3:B:251:TYR:OH	3:B:283:PRO:O	2.37	0.42
3:C:467:LEU:HD12	3:C:467:LEU:C	2.39	0.42
1:D:52:THR:HG22	1:D:53:SER:N	2.35	0.42
1:D:52:THR:CG2	3:B:59:ASP:OD2	2.68	0.42
2:G:93:THR:CG2	3:C:191:GLY:N	2.81	0.42
3:A:78:LEU:HD12	3:A:211:THR:CG2	2.49	0.42
1:F:47:TRP:CZ3	2:G:95:SER:OG	2.59	0.41
1:H:69:VAL:HG12	1:H:80:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:33:LEU:HD12	2:E:89:GLN:O	2.20	0.41
3:A:176:GLN:HA	3:A:176:GLN:OE1	2.20	0.41
3:A:289:LEU:HD12	3:A:290:ASN:HB2	2.02	0.41
3:B:181:LYS:HB3	3:B:182:GLU:OE1	2.20	0.41
1:D:28:THR:HG21	1:D:31:LYS:NZ	2.35	0.41
3:A:28:VAL:O	3:A:28:VAL:CG1	2.67	0.41
3:A:417:CYS:O	3:A:429:THR:HG21	2.19	0.41
3:A:289:LEU:HD12	3:A:289:LEU:C	2.41	0.41
3:A:356:LEU:N	3:A:356:LEU:CD2	2.83	0.41
3:A:415:LYS:N	3:A:415:LYS:HE2	2.35	0.41
3:B:383:VAL:HG21	3:B:420:ILE:HD13	2.01	0.41
1:F:82(C):LEU:HD23	1:F:83:ARG:O	2.21	0.41
3:B:147:LEU:HD12	3:B:151:ILE:HG23	2.02	0.41
3:B:456:ILE:H	3:B:456:ILE:HG13	1.60	0.41
1:F:39:GLN:O	1:F:39:GLN:HG2	2.21	0.41
2:G:35:TRP:CH2	2:G:88:CYS:HB3	2.55	0.41
3:A:38:MET:HB3	3:A:291:THR:HG21	2.03	0.41
3:B:459:GLU:O	3:B:463:VAL:HG22	2.21	0.41
3:C:383:VAL:HG21	3:C:420:ILE:HD13	2.03	0.41
1:F:68:THR:CG2	1:F:81:GLU:HB3	2.51	0.41
3:C:394:CYS:HA	3:C:420:ILE:HA	2.02	0.41
3:A:92:VAL:O	3:A:119:ALA:HB3	2.20	0.40
3:A:383:VAL:HG13	3:A:420:ILE:HD11	2.03	0.40
3:B:383:VAL:CG2	3:B:420:ILE:HD13	2.51	0.40
3:A:348:LEU:HD22	3:A:352:MET:CE	2.50	0.40
3:A:460:LEU:O	3:A:464:LYS:HG3	2.21	0.40
1:D:59:TYR:OH	1:D:67:PHE:O	2.35	0.40
2:G:21:ILE:HG21	2:G:102:THR:HG21	2.03	0.40
2:G:93:THR:C	2:G:95:SER:N	2.75	0.40
3:C:59:ASP:OD1	3:C:59:ASP:C	2.59	0.40
3:C:80:ILE:HB	3:C:81:PRO:HD3	2.03	0.40
1:D:35:ALA:HB1	1:D:49:SER:O	2.21	0.40
1:D:42:GLY:O	1:D:43:LYS:HD2	2.22	0.40
3:A:428:ASN:C	3:A:429:THR:HG22	2.42	0.40
3:A:464:LYS:O	3:A:467:LEU:HG	2.20	0.40
3:C:394:CYS:CA	3:C:420:ILE:HA	2.51	0.40
1:D:47:TRP:CZ3	2:E:95:SER:HA	2.56	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	D	114/224 (51%)	111 (97%)	3 (3%)	0	100	100
1	F	114/224 (51%)	110 (96%)	4 (4%)	0	100	100
1	H	114/224 (51%)	111 (97%)	3 (3%)	0	100	100
2	E	103/214 (48%)	100 (97%)	3 (3%)	0	100	100
2	G	103/214 (48%)	98 (95%)	5 (5%)	0	100	100
2	L	102/214 (48%)	96 (94%)	6 (6%)	0	100	100
3	A	405/516 (78%)	385 (95%)	18 (4%)	2 (0%)	29	67
3	B	405/516 (78%)	378 (93%)	27 (7%)	0	100	100
3	C	406/516 (79%)	375 (92%)	30 (7%)	1 (0%)	47	79
All	All	1866/2862 (65%)	1764 (94%)	99 (5%)	3 (0%)	50	79

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	174	SER
3	C	174	SER
3	A	236	ARG

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	D	92/189 (49%)	90 (98%)	2 (2%)	52	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	93/189 (49%)	93 (100%)	0	100	100
1	H	91/189 (48%)	88 (97%)	3 (3%)	38	71
2	E	89/189 (47%)	88 (99%)	1 (1%)	73	88
2	G	90/189 (48%)	86 (96%)	4 (4%)	28	64
2	L	89/189 (47%)	85 (96%)	4 (4%)	27	63
3	A	366/457 (80%)	363 (99%)	3 (1%)	81	93
3	B	366/457 (80%)	364 (100%)	2 (0%)	88	95
3	C	369/457 (81%)	368 (100%)	1 (0%)	92	96
All	All	1645/2505 (66%)	1625 (99%)	20 (1%)	72	88

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	100(D)	ASP
1	D	103	TRP
2	E	97	THR
2	G	82	ASP
2	G	90	GLN
2	G	92	ASN
2	G	97	THR
1	H	82(A)	SER
1	H	100(D)	ASP
1	H	100(E)	PHE
2	L	78	LEU
2	L	81	ASP
2	L	97	THR
2	L	105	GLU
3	A	214	PHE
3	A	235	TYR
3	A	357	SER
3	B	414	HIS
3	B	419	THR
3	C	472	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
2	E	6	GLN

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Mol	Chain	Res	Type
2	E	38	HIS
2	E	90	GLN
2	G	92	ASN
3	C	238	ASN

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 monosaccharides 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 (i)

This section contains visualisations of the EMDB entry EMD-41506. 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
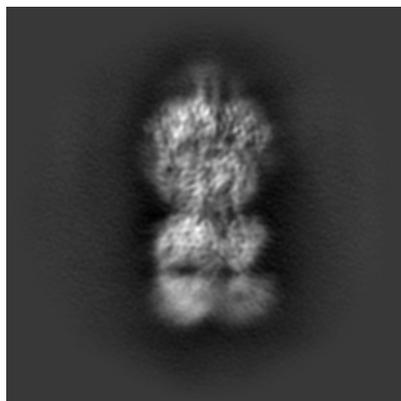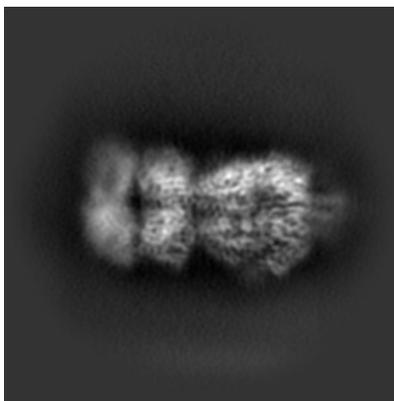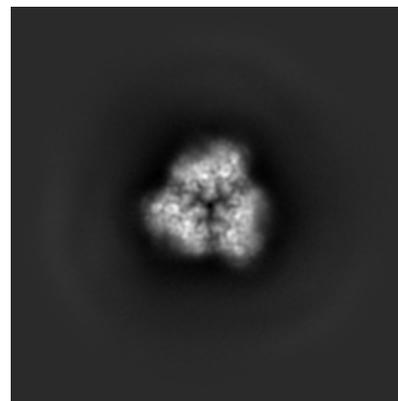
X   Y   Z

6.1.2 Raw map

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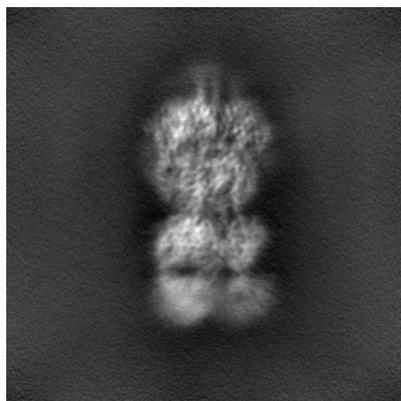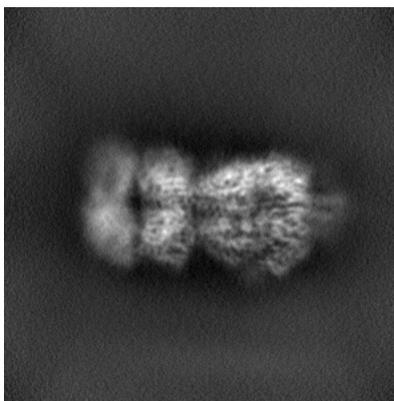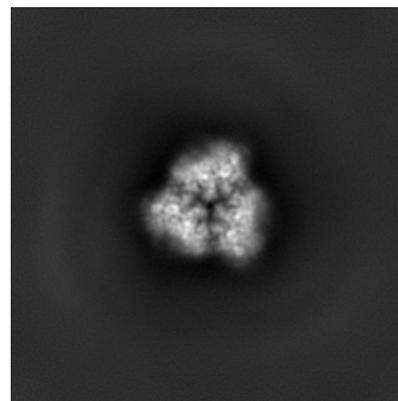
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
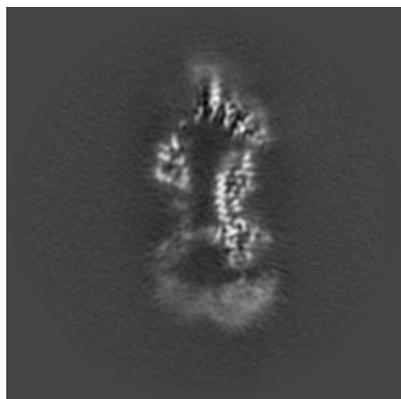
6.2.1 Primary map
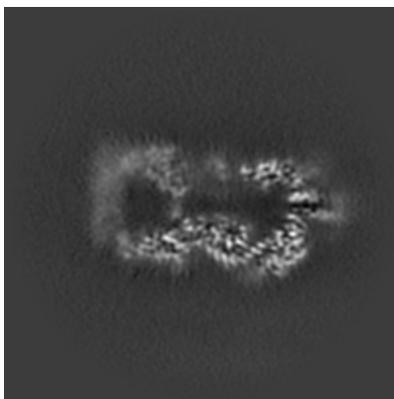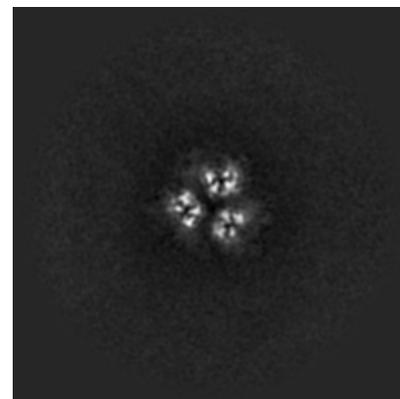
X Index: 160	Y Index: 160	Z Index: 160

6.2.2 Raw map
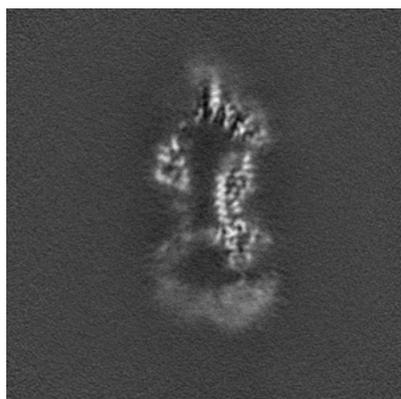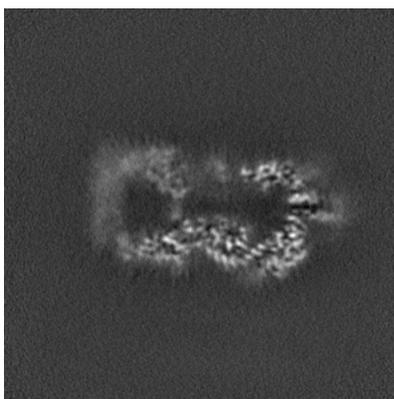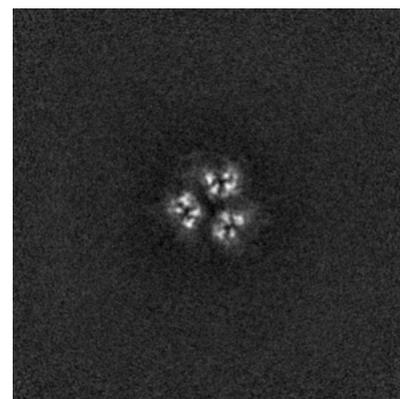
X Index: 160	Y Index: 160	Z Index: 160

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
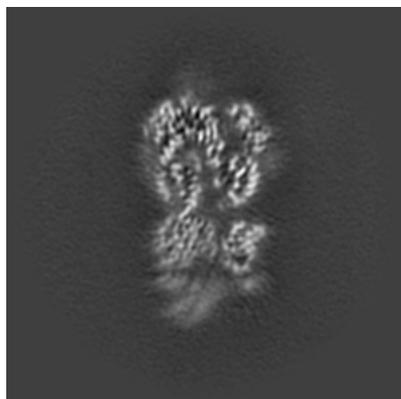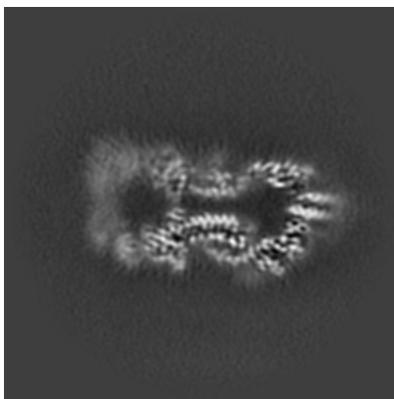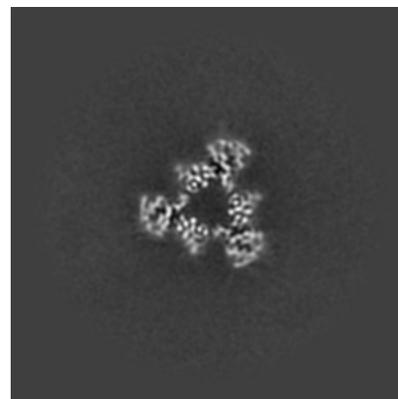
X Index: 180	Y Index: 155	Z Index: 219

6.3.2 Raw map
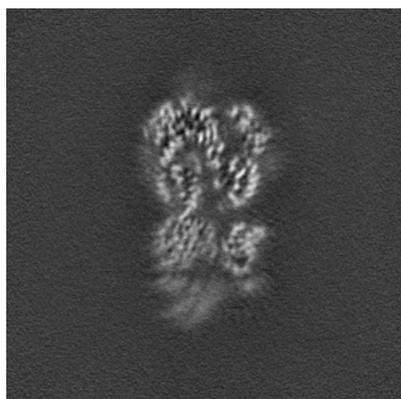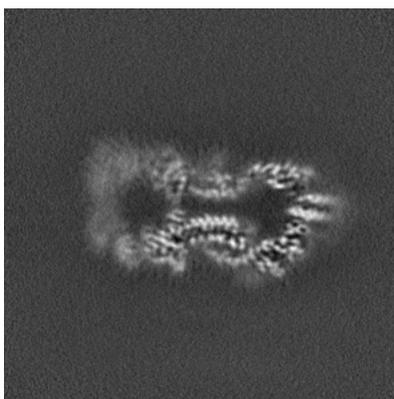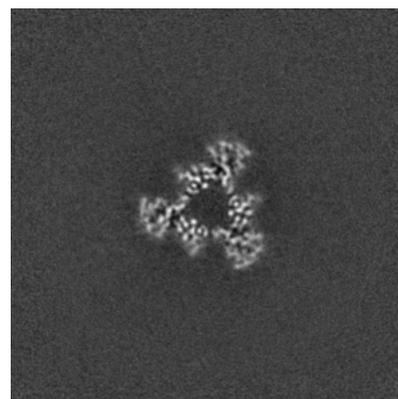
X Index: 180	Y Index: 155	Z Index: 220

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
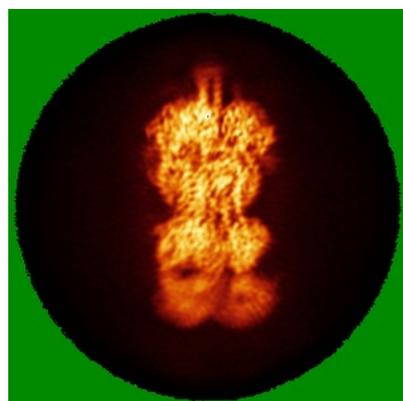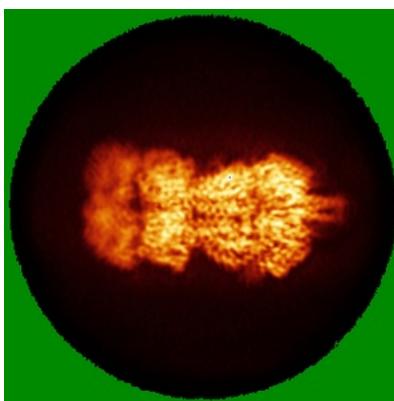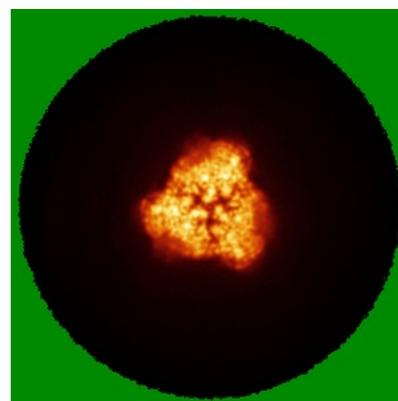
| X | Y | Z |

6.4.2   Raw map

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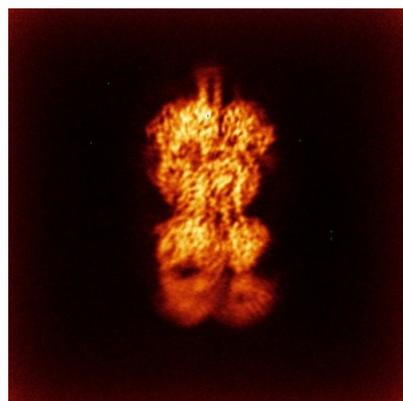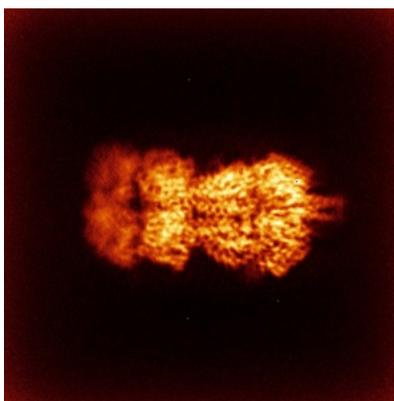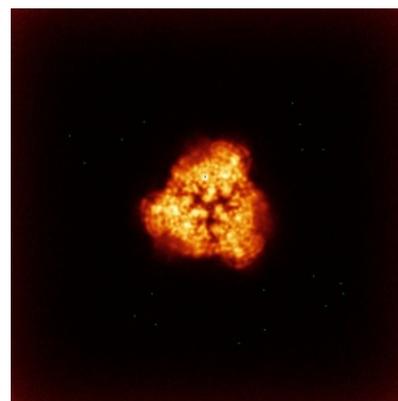
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X   Y   Z
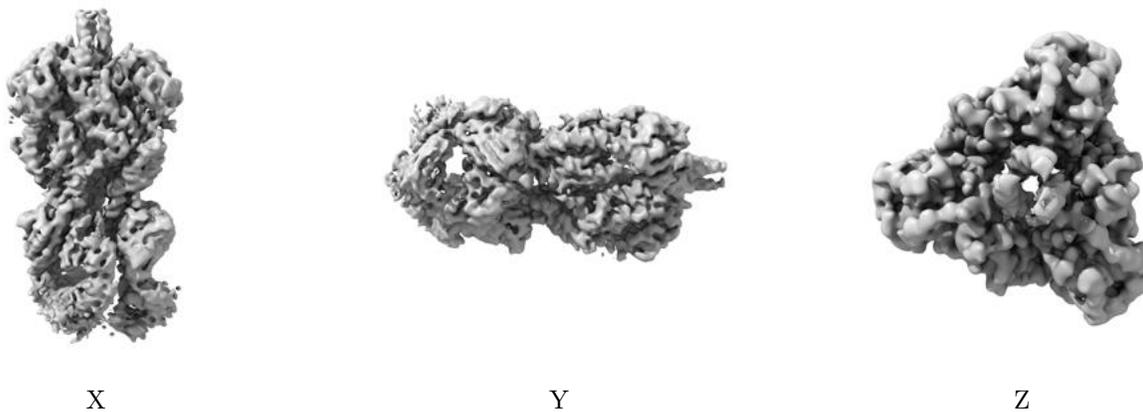
The images above show the 3D surface view of the map at the recommended contour level 0.25. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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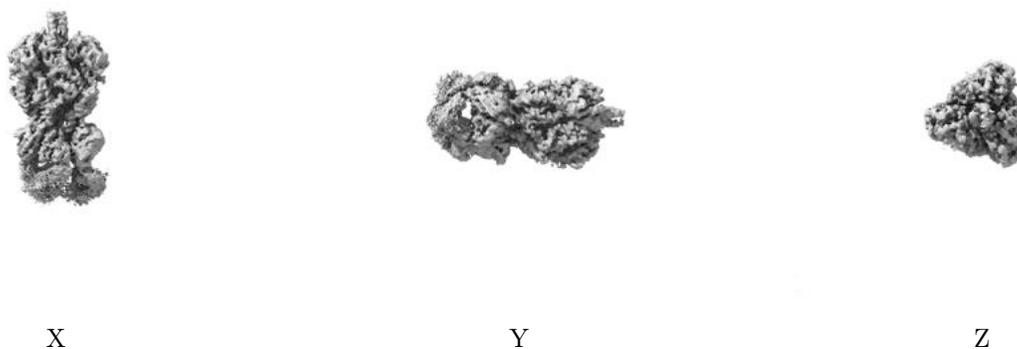
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation (i)

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

7 Map analysis ⓘ

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

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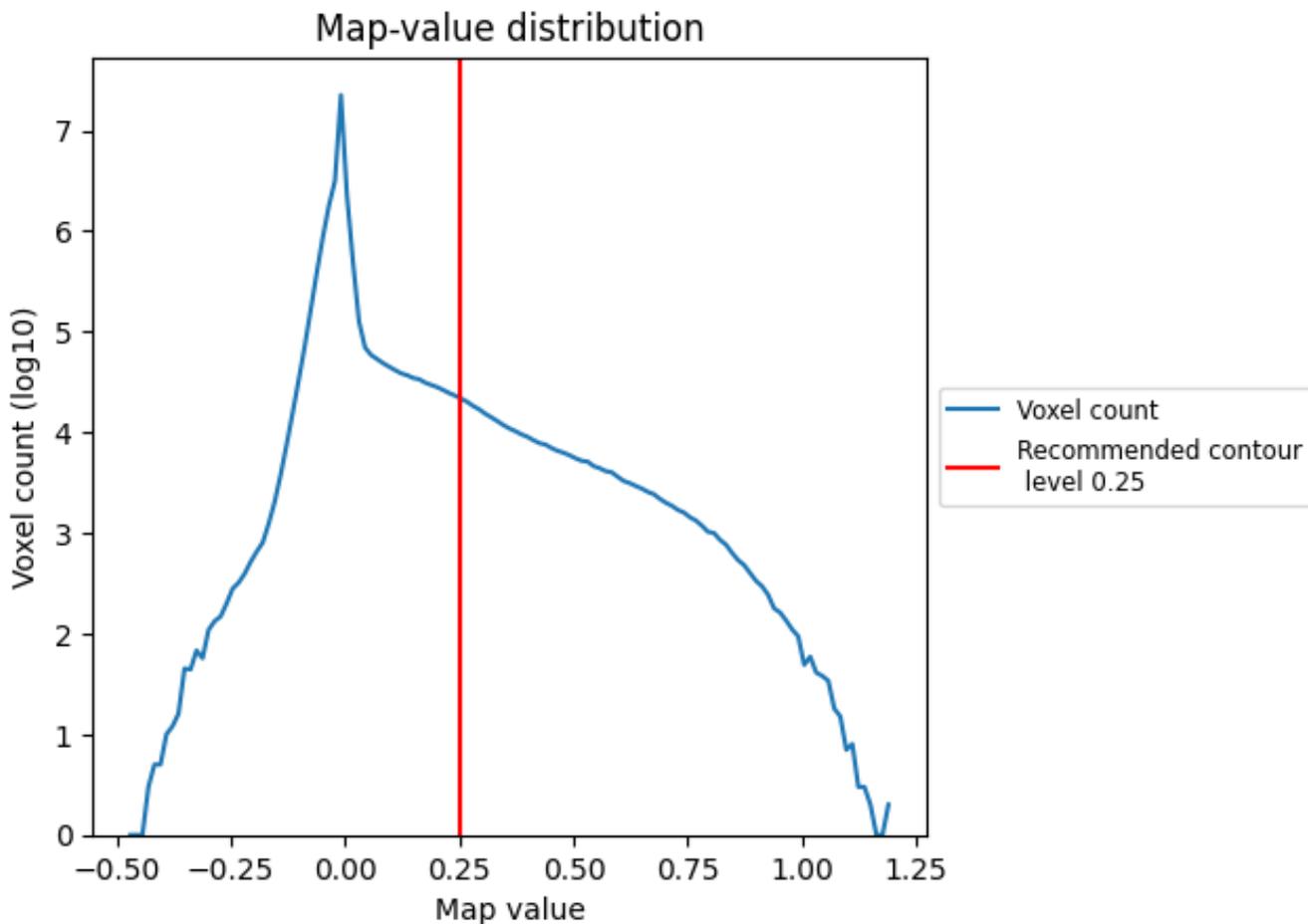
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
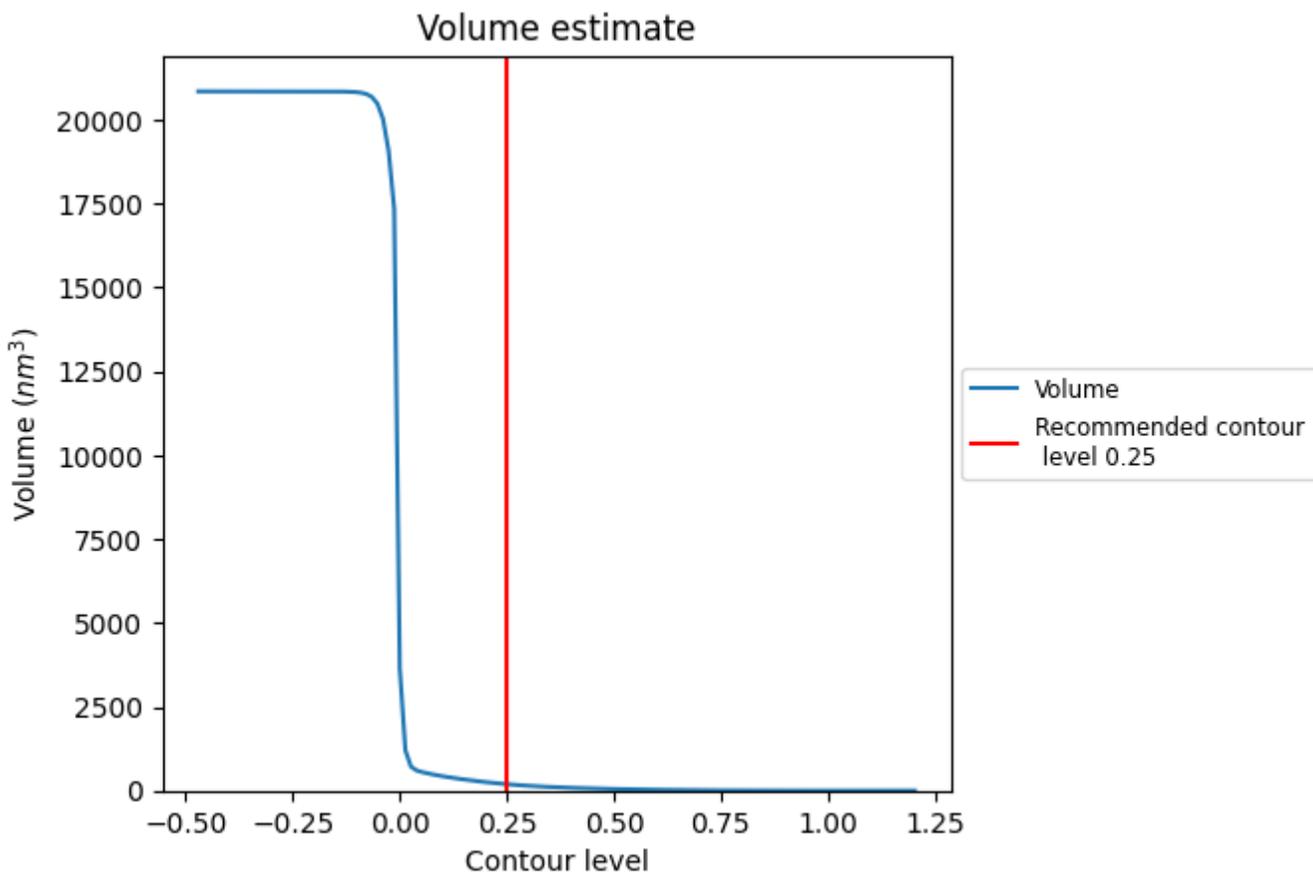
The volume at the recommended contour level is 192 nm^3; this corresponds to an approximate mass of 173 kDa.

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 ⓘ
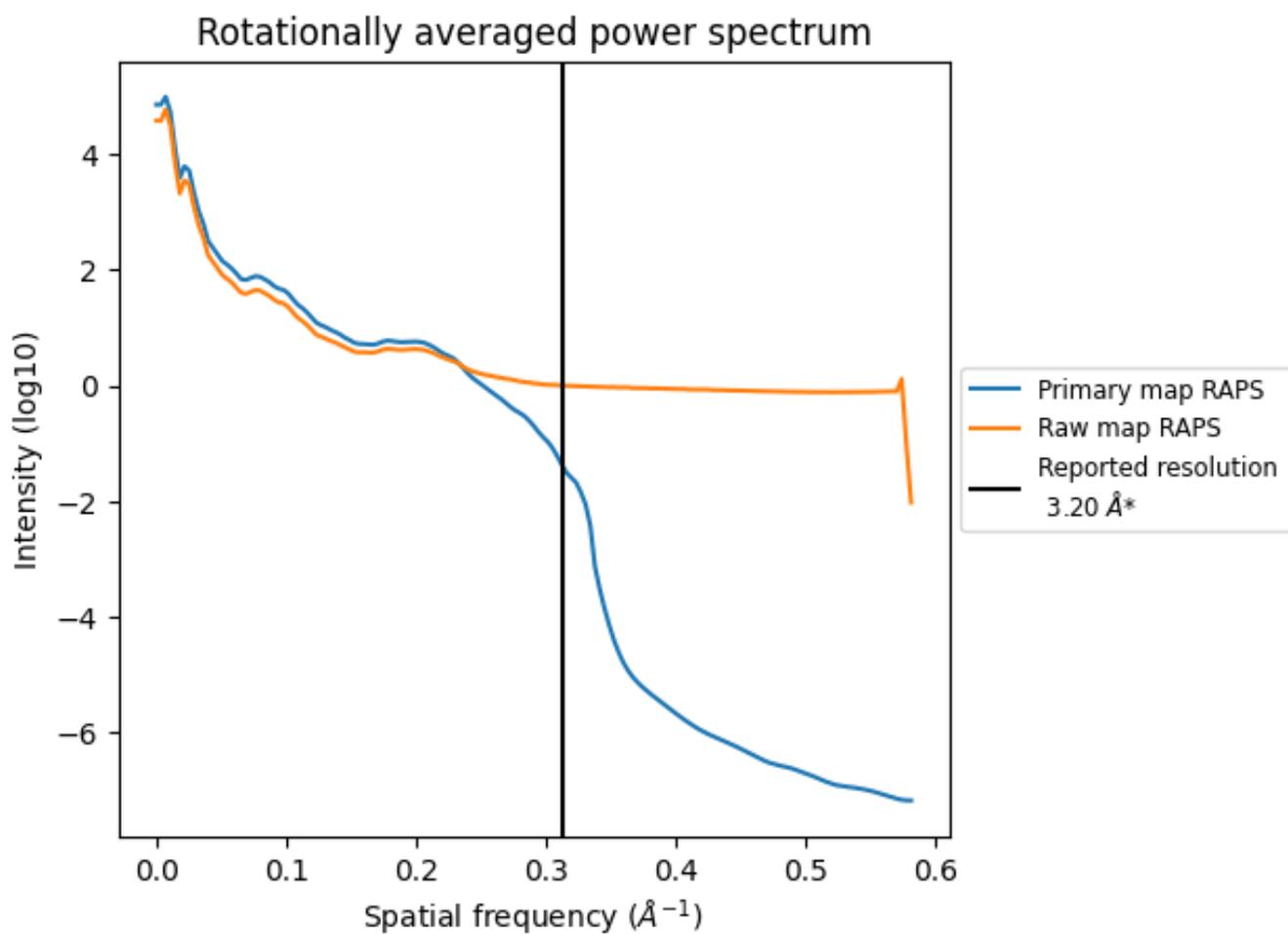
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

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)
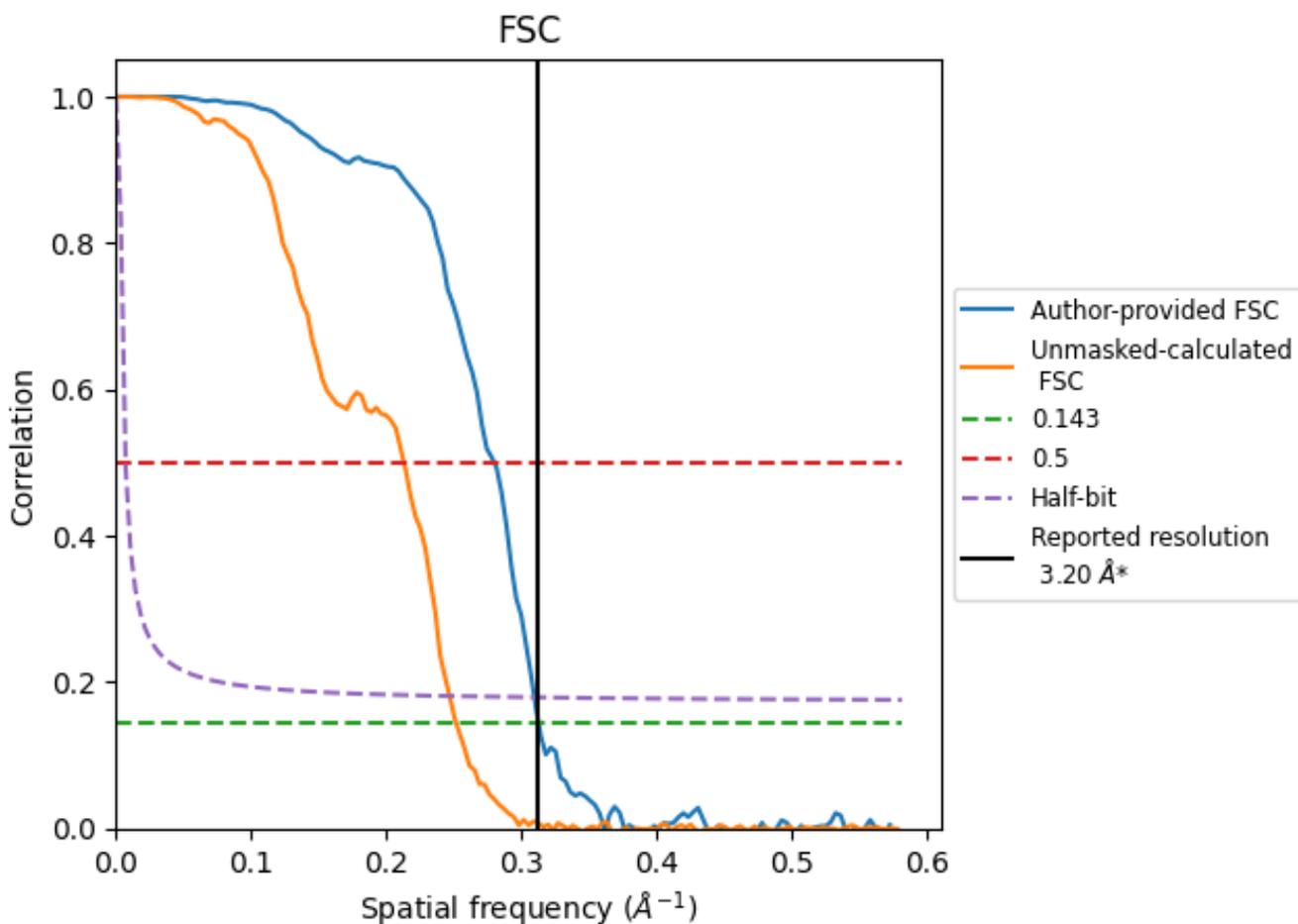
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2　Resolution estimates ⓘ

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	3.58	3.23
Unmasked-calculated*	3.97	4.69	4.05

*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 3.97 differs from the reported value 3.2 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-41506 and PDB model 8TQK. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay ⓘ

| X | Y | Z |
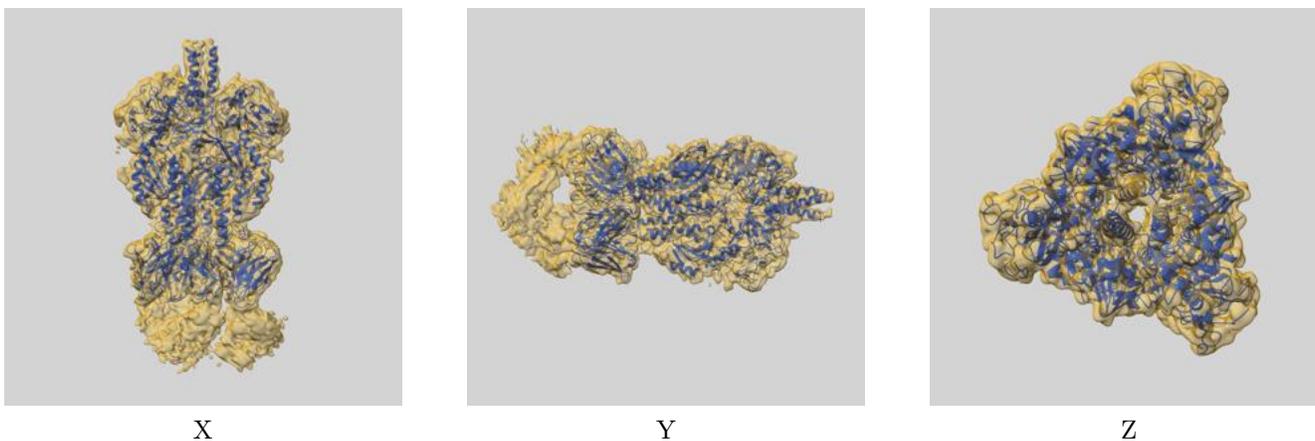
The images above show the 3D surface view of the map at the recommended contour level 0.25 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X Y Z
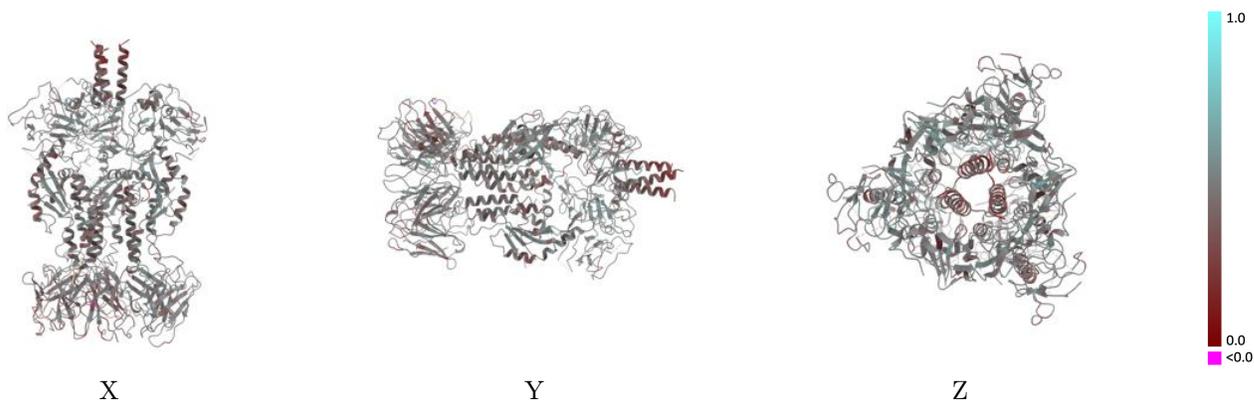
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
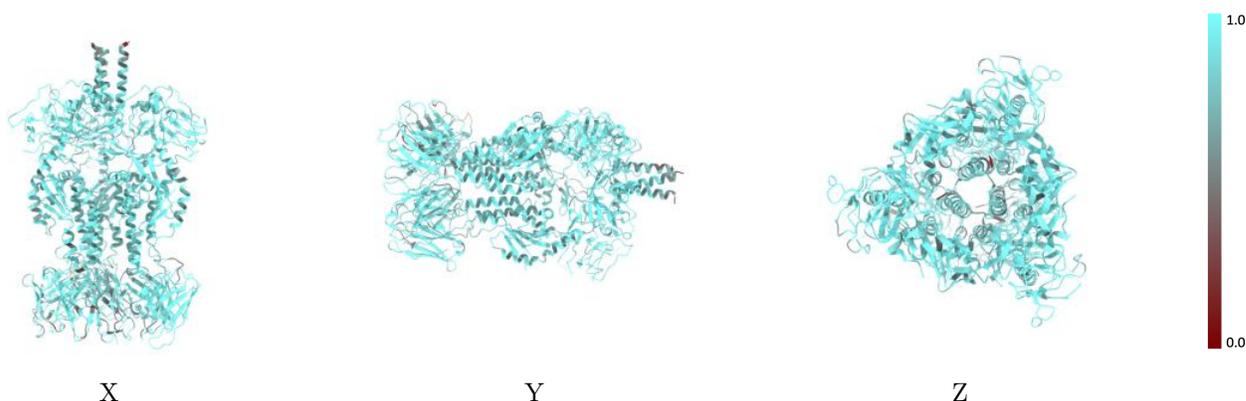
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.25).

9.4　Atom inclusion ⓘ
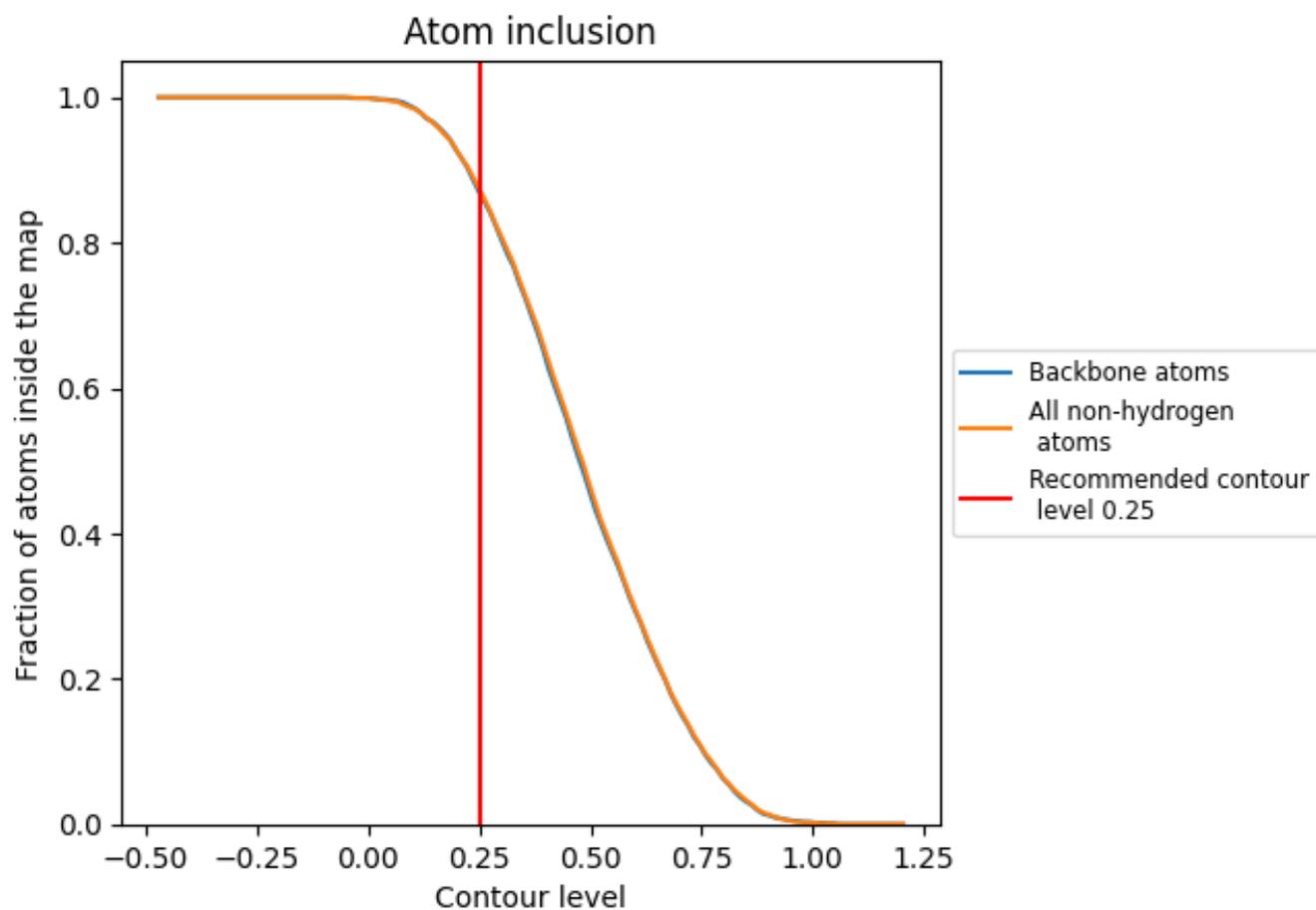
At the recommended contour level, 87% of all backbone atoms, 87% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.25) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8740	0.4510
A	0.8900	0.4590
B	0.8770	0.4550
C	0.8870	0.4590
D	0.8580	0.4100
E	0.7740	0.3900
F	0.9030	0.4530
G	0.8850	0.4320
H	0.9100	0.4720
L	0.9100	0.4650

1.0

0.0
<0.0