Full wwPDB EM Validation Report (i)

Mar 20, 2024 – 04:07 AM JST

PDB ID	:	6KLO
EMDB ID	:	EMD-0713
Title	:	Complex structure of Iota toxin enzymatic component (Ia) and binding component (Ib) pore with short stem
Authors	:	Yoshida, T.; Yamada, T.; Kawamoto, A.; Mitsuoka, K.; Iwasaki, K.; Tsuge, H.
Deposited on	:	2019-07-30
Resolution	:	2.80 Å(reported)
Based on initial model	:	3J9C

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 (i) 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 (i)) were used in the production of this report:

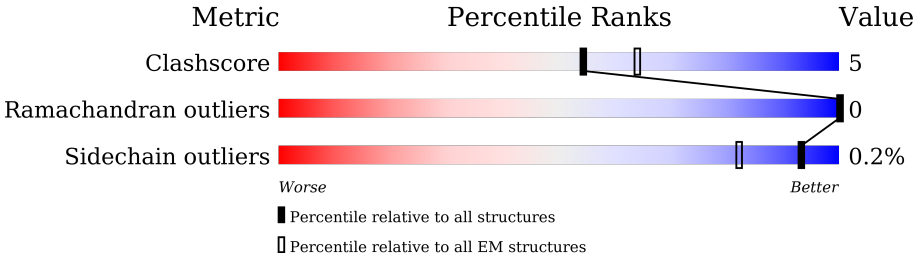
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.80 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 >=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	666	48% 7% 45%
1	B	666	50% 6% 45%
1	C	666	48% 7% 45%
1	D	666	48% 8% 45%
1	E	666	48% 7% 45%
1	F	666	49% 6% 45%
1	G	666	48% 8% 45%
2	H	417	28% 72% 23% 5%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 23275 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 Iota toxin component Ib.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	368	2863	1790	472	596	5	0	0
1	B	368	2863	1790	472	596	5	0	0
1	C	368	2863	1790	472	596	5	0	0
1	D	368	2863	1790	472	596	5	0	0
1	E	368	2863	1790	472	596	5	0	0
1	F	368	2863	1790	472	596	5	0	0
1	G	368	2863	1790	472	596	5	0	0

- Molecule 2 is a protein called Iota toxin component Ia.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	H	396	3220	2054	530	633	3	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-3	GLY	-	expression tag	UNP Q46220
H	-2	SER	-	expression tag	UNP Q46220
H	-1	HIS	-	expression tag	UNP Q46220
H	0	MET	-	expression tag	UNP Q46220

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

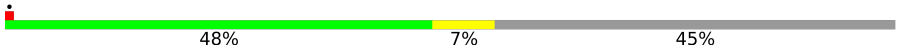
Mol	Chain	Residues	Atoms		AltConf
			Total	Ca	
3	A	2	2	2	0
3	B	2	2	2	0
3	C	2	2	2	0
3	D	2	2	2	0
3	E	2	2	2	0
3	F	2	2	2	0
3	G	2	2	2	0

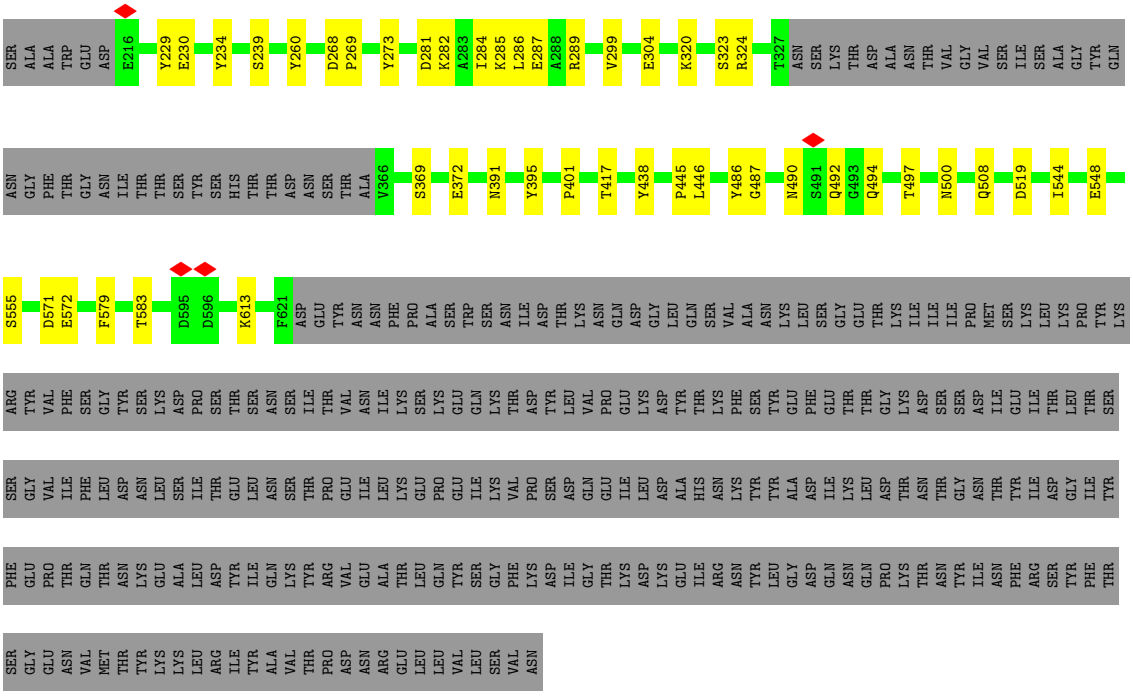
3 Residue-property plots (i)

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: Iota toxin component Ib

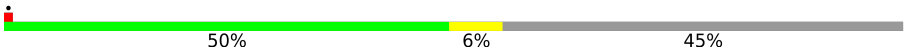
Chain A:

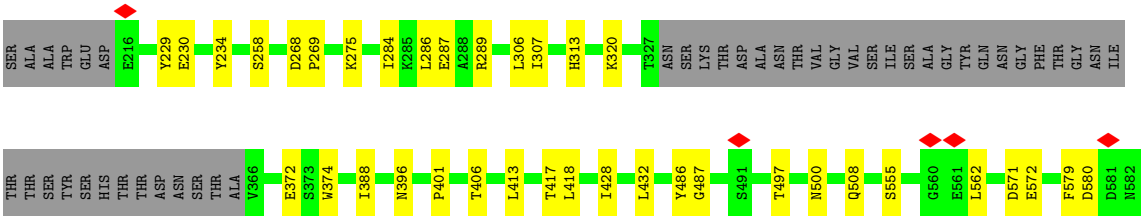


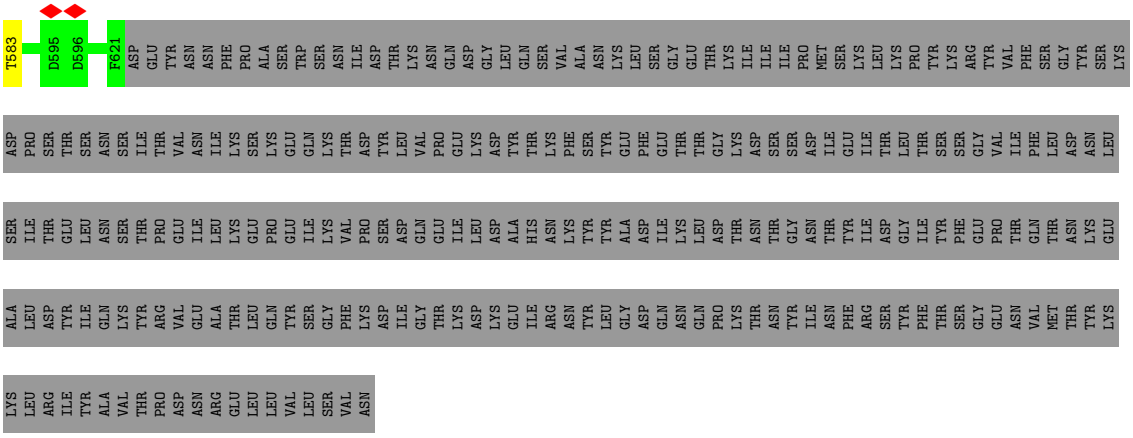


- Molecule 1: Iota toxin component Ib

Chain B:

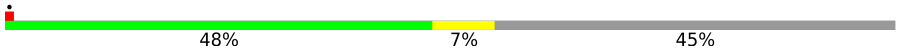


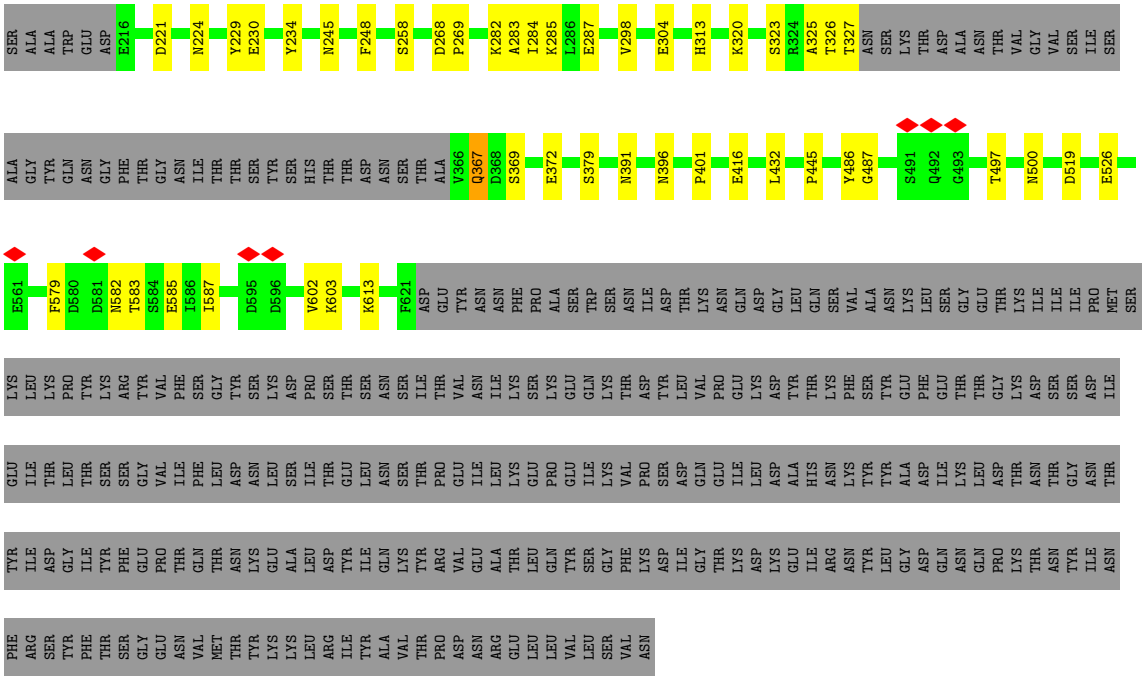




- Molecule 1: Iota toxin component Ib

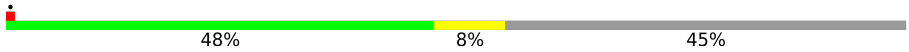
Chain C:

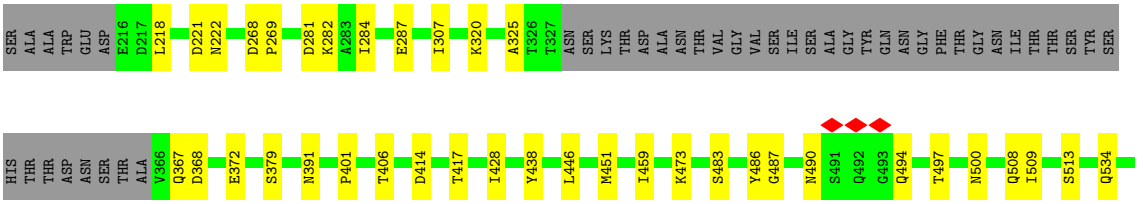


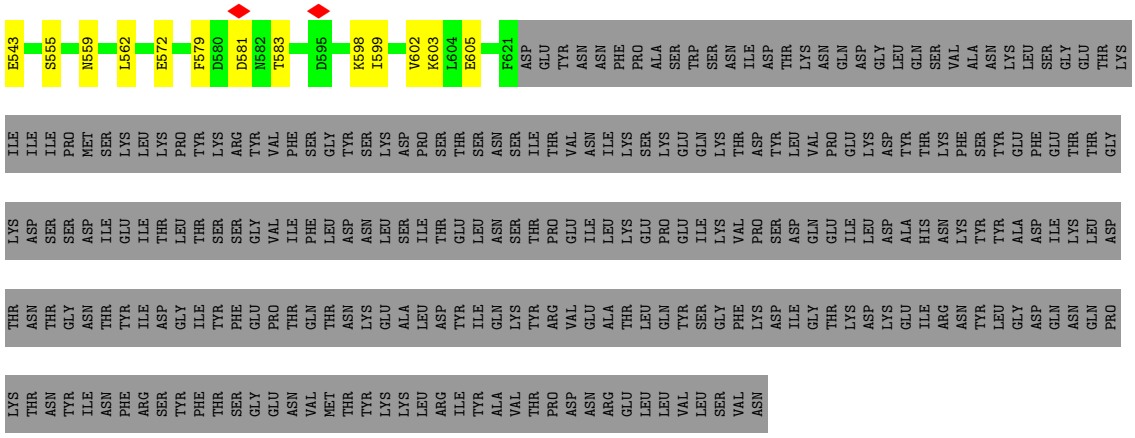


- Molecule 1: Iota toxin component Ib

Chain D:

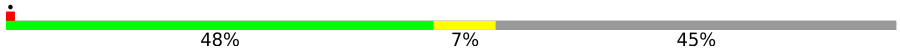


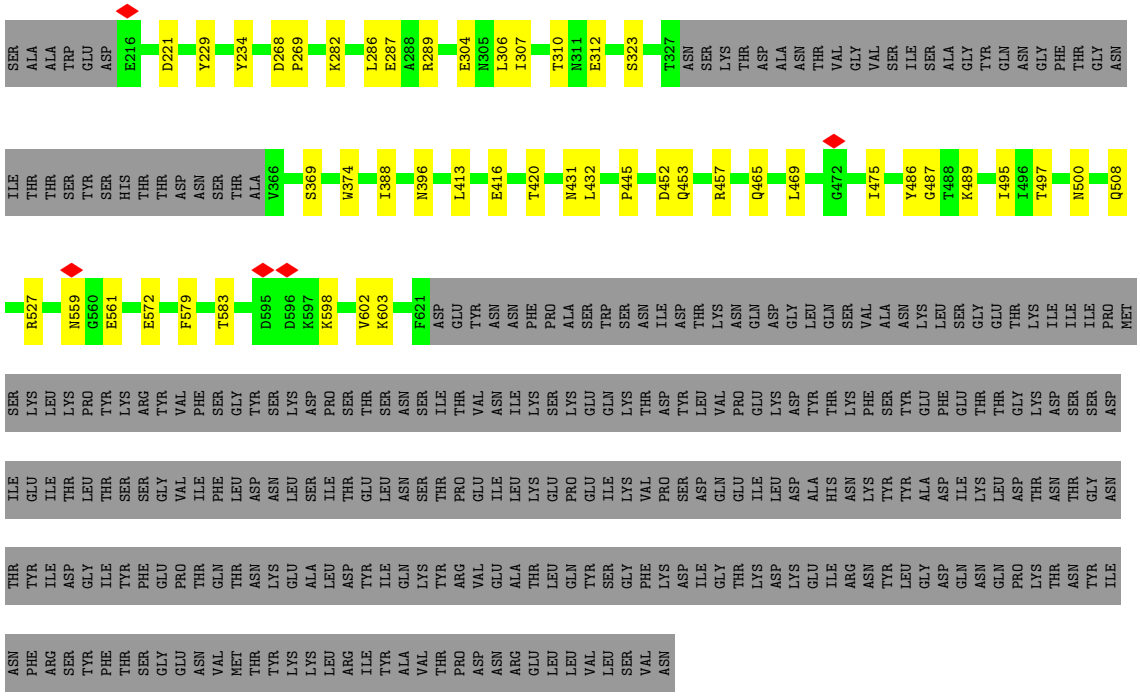




• Molecule 1: Iota toxin component Ib

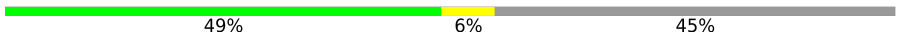
Chain E:

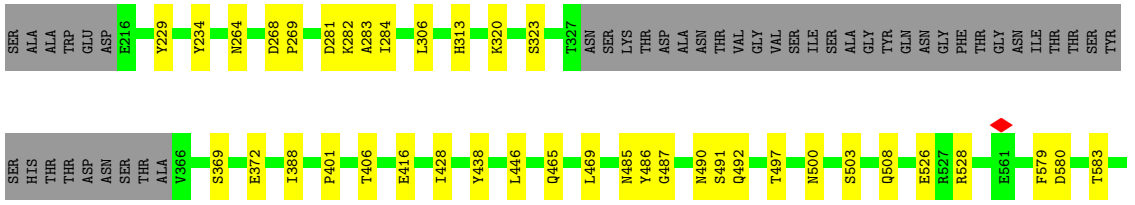


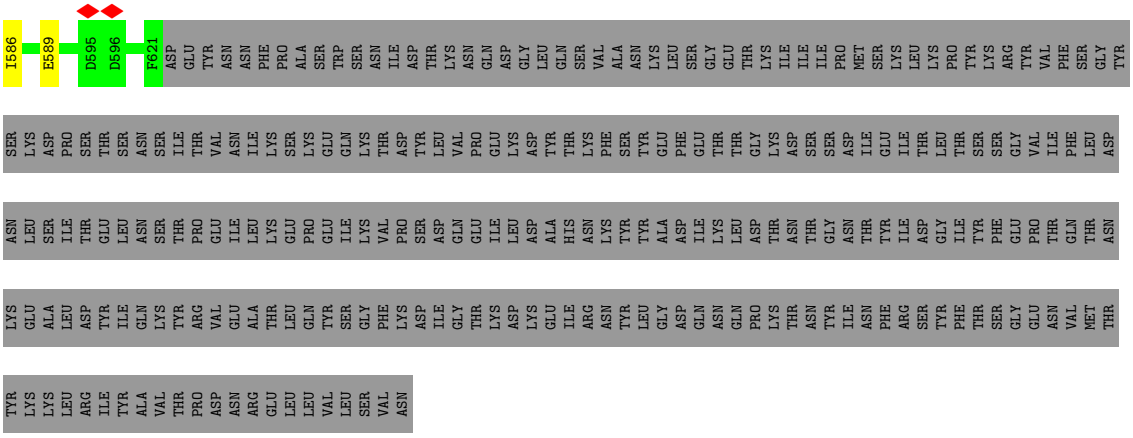


• Molecule 1: Iota toxin component Ib

Chain F:

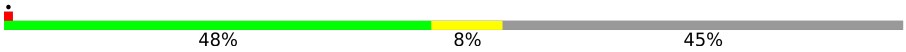


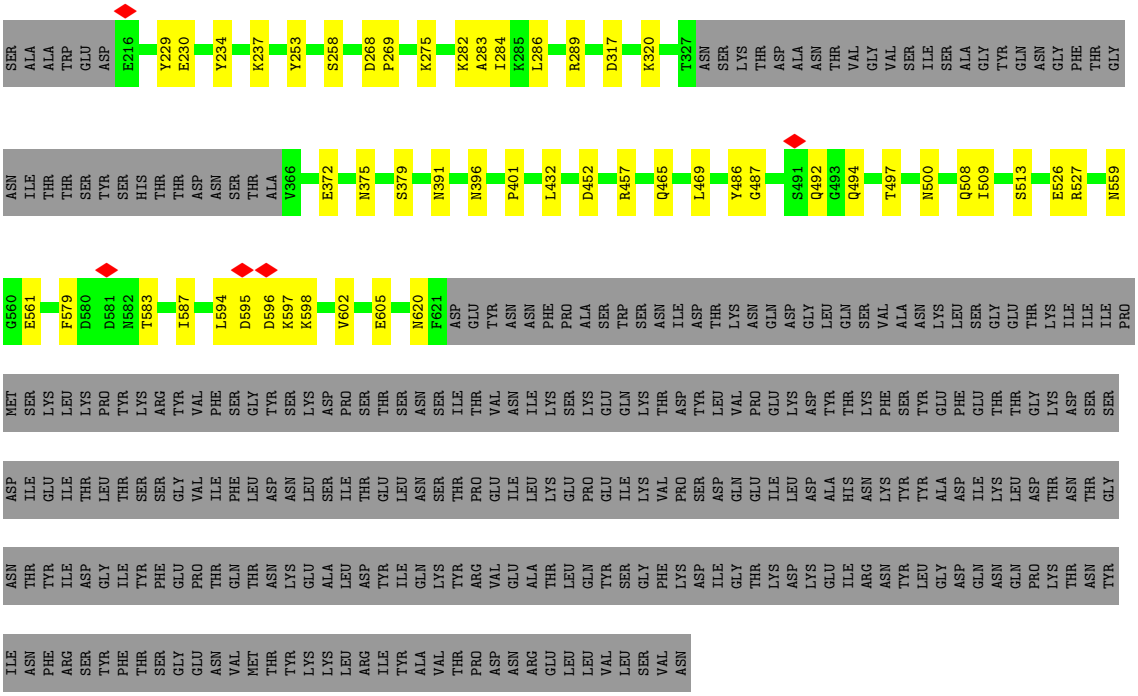




• Molecule 1: Iota toxin component Ib

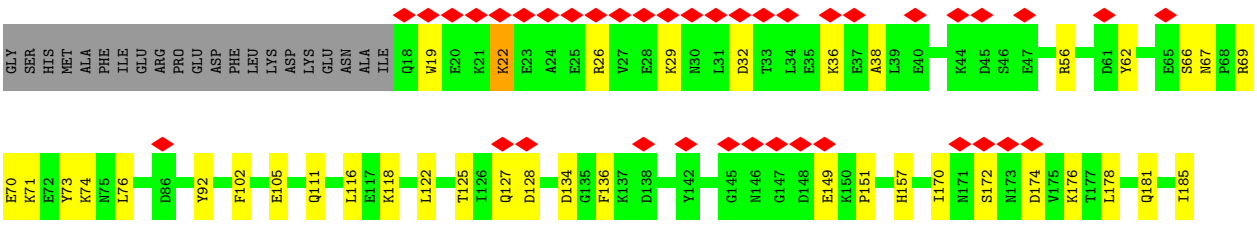
Chain G:

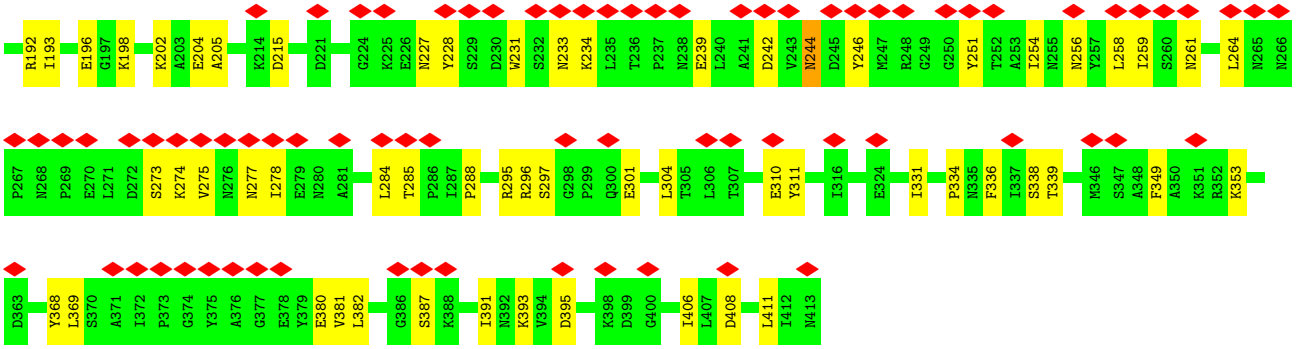




• Molecule 2: Iota toxin component Ia

Chain H:




R192 I193 E196 G197 K198 K202 A203 E204 A205 K214 D215 D221 G224 K225 E226 N227 Y228 S229 D230 W231 S232 N233 K234 L235 T236 P237 N238 E239 L240 A241 D242 V243 N244 D245 Y246 M247 R248 G249 G250 Y251 T252 A253 I254 N255 N256 Y257 L258 I259 S260 N261 L264 N265 N266
P267 N268 P269 E270 L271 D272 S273 K274 V275 N276 N277 I278 E279 N280 A281 L284 T285 P286 I287 P288 R295 R296 S297 G298 P299 Q300 E301 L304 T305 L306 T307 E310 Y311 I316 E324 I331 P334 N335 F336 I337 S338 T339 M346 S347 A348 F349 A350 K351 R352 K353
D363 Y368 L369 S370 A371 I372 P373 G374 Y375 A376 G377 E378 Y379 E380 V381 L382 G386 S387 K388 I391 N392 K393 V394 D395 K398 D399 G400 I406 L407 D408 L411 I412 N413

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	135359	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 ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	59000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.255	Depositor
Minimum map value	-0.144	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.035	Depositor
Map size (Å)	361.6, 361.6, 361.6	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.13, 1.13, 1.13	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: CA

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	0.31	0/2910	0.47	0/3945
1	B	0.31	0/2910	0.47	0/3945
1	C	0.31	0/2910	0.47	0/3945
1	D	0.31	0/2910	0.47	0/3945
1	E	0.31	0/2910	0.47	0/3945
1	F	0.31	0/2910	0.47	0/3945
1	G	0.31	0/2910	0.47	0/3945
2	H	0.26	0/3286	0.44	0/4441
All	All	0.30	0/23656	0.47	0/32056

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	G	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
1	G	605	GLU	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	2863	0	2797	29	0
1	B	2863	0	2797	23	0
1	C	2863	0	2797	31	0
1	D	2863	0	2797	36	0
1	E	2863	0	2797	31	0
1	F	2863	0	2797	29	0
1	G	2863	0	2797	31	0
2	H	3220	0	3204	60	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	2	0	0	0	0
3	G	2	0	0	0	0
All	All	23275	0	22783	249	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 5.

All (249) 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:A:282:LYS:HB2	1:B:508:GLN:HG3	1.62	0.80
1:B:579:PHE:HB3	1:B:583:THR:HG23	1.67	0.75
1:A:508:GLN:HG3	1:G:282:LYS:HB2	1.69	0.74
1:C:282:LYS:HB2	1:D:508:GLN:HG3	1.68	0.74
1:D:490:ASN:HD21	1:D:494:GLN:HB2	1.56	0.71
2:H:234:LYS:HE3	2:H:284:LEU:HD12	1.74	0.69
1:C:224:ASN:ND2	2:H:196:GLU:O	2.26	0.68
1:D:307:ILE:HD11	1:E:416:GLU:HB2	1.75	0.68
1:D:325:ALA:HB3	1:D:367:GLN:HB3	1.76	0.68
1:D:406:THR:HG22	1:D:428:ILE:HG12	1.76	0.68
1:F:313:HIS:NE2	1:G:379:SER:OG	2.26	0.68
2:H:369:LEU:HD23	2:H:382:LEU:HB2	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:489:LYS:HG2	1:E:495:ILE:HG12	1.76	0.67
1:F:579:PHE:HB3	1:F:583:THR:HG23	1.75	0.67
1:E:452:ASP:HB2	1:E:457:ARG:HB3	1.78	0.66
1:D:284:ILE:HD13	1:D:401:PRO:HD2	1.78	0.66
1:A:320:LYS:NZ	1:A:372:GLU:OE1	2.29	0.66
1:F:323:SER:HB3	1:F:369:SER:HB2	1.80	0.64
1:E:323:SER:HB3	1:E:369:SER:HB2	1.80	0.63
2:H:246:TYR:HD1	2:H:254:ILE:HD12	1.64	0.63
2:H:70:GLU:O	2:H:73:TYR:HB3	1.99	0.62
1:A:323:SER:HB3	1:A:369:SER:HB2	1.81	0.62
1:F:406:THR:HG22	1:F:428:ILE:HG12	1.81	0.62
2:H:71:LYS:O	2:H:74:LYS:HB2	1.99	0.62
1:F:284:ILE:HD13	1:F:401:PRO:HD2	1.81	0.61
1:C:326:THR:HG22	1:C:327:THR:H	1.65	0.61
1:G:579:PHE:HB3	1:G:583:THR:HB	1.83	0.61
1:B:320:LYS:NZ	1:B:372:GLU:OE1	2.30	0.61
1:C:587:ILE:HG23	1:C:602:VAL:HG21	1.83	0.60
1:B:230:GLU:OE1	1:B:258:SER:OG	2.19	0.60
1:A:579:PHE:HB3	1:A:583:THR:HB	1.83	0.60
1:F:264:ASN:ND2	1:F:268:ASP:O	2.34	0.60
1:C:313:HIS:NE2	1:D:379:SER:OG	2.34	0.60
2:H:304:LEU:HD11	2:H:310:GLU:HB2	1.84	0.59
1:E:306:LEU:HD21	1:E:388:ILE:HD12	1.84	0.59
1:C:284:ILE:HD13	1:C:401:PRO:HD2	1.84	0.59
1:C:323:SER:HB3	1:C:369:SER:HB2	1.84	0.58
1:A:287:GLU:HG3	1:A:555:SER:HB3	1.84	0.58
1:A:284:ILE:HD13	1:A:401:PRO:HD2	1.85	0.58
2:H:336:PHE:HB3	2:H:382:LEU:HD11	1.86	0.58
1:D:487:GLY:HA2	1:D:497:THR:HG22	1.86	0.58
1:F:229:TYR:HB3	1:F:234:TYR:HB3	1.86	0.58
2:H:127:GLN:HG2	2:H:128:ASP:N	2.19	0.57
1:B:268:ASP:HB2	1:B:269:PRO:HD2	1.85	0.57
2:H:295:ARG:NH1	2:H:338:SER:O	2.37	0.57
1:B:284:ILE:HD13	1:B:401:PRO:HD2	1.87	0.57
1:B:406:THR:HG22	1:B:428:ILE:HG12	1.86	0.56
2:H:231:TRP:HE1	2:H:284:LEU:HD21	1.71	0.56
1:D:282:LYS:HB2	1:E:508:GLN:HG3	1.88	0.56
2:H:174:ASP:HB2	2:H:176:LYS:HZ3	1.70	0.55
2:H:170:ILE:HG22	2:H:172:SER:H	1.70	0.55
2:H:56:ARG:NH1	2:H:215:ASP:OD1	2.30	0.54
1:D:509:ILE:O	1:D:513:SER:OG	2.23	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:259:ILE:HG22	2:H:334:PRO:HG2	1.88	0.54
1:C:320:LYS:NZ	1:C:372:GLU:OE1	2.30	0.54
1:B:229:TYR:HB3	1:B:234:TYR:HB3	1.88	0.54
2:H:19:TRP:O	2:H:22:LYS:HG3	2.08	0.54
1:E:268:ASP:HB2	1:E:269:PRO:HD2	1.90	0.54
1:G:396:ASN:HB2	1:G:432:LEU:HG	1.90	0.54
2:H:111:GLN:O	2:H:198:LYS:NZ	2.40	0.54
1:A:490:ASN:HD21	1:A:494:GLN:HB2	1.73	0.53
1:B:286:LEU:O	1:B:289:ARG:HG2	2.08	0.53
2:H:258:LEU:HD21	2:H:275:VAL:HG11	1.89	0.53
1:C:230:GLU:OE1	1:C:258:SER:OG	2.25	0.53
1:G:595:ASP:OD1	1:G:596:ASP:N	2.41	0.53
2:H:256:ASN:HA	2:H:259:ILE:HG12	1.90	0.53
1:D:543:GLU:HG2	1:D:603:LYS:HD2	1.89	0.53
1:A:544:ILE:HB	1:A:548:GLU:HG3	1.90	0.53
1:G:284:ILE:HD13	1:G:401:PRO:HD2	1.91	0.53
1:G:229:TYR:HB3	1:G:234:TYR:HB3	1.92	0.52
1:D:218:LEU:HD12	2:H:192:ARG:HB2	1.91	0.52
1:F:491:SER:OG	1:F:492:GLN:NE2	2.42	0.52
1:G:487:GLY:HA2	1:G:497:THR:HG22	1.91	0.52
2:H:311:TYR:O	2:H:353:LYS:NZ	2.36	0.52
2:H:331:ILE:HG13	2:H:391:ILE:HD11	1.89	0.52
1:G:452:ASP:HB2	1:G:457:ARG:HB3	1.91	0.52
1:A:286:LEU:O	1:A:289:ARG:HG2	2.09	0.52
1:C:487:GLY:HA2	1:C:497:THR:HG22	1.91	0.52
1:B:313:HIS:NE2	1:C:379:SER:OG	2.42	0.52
1:E:431:ASN:ND2	1:F:503:SER:O	2.43	0.52
2:H:368:TYR:HD1	2:H:381:VAL:HG22	1.74	0.51
2:H:136:PHE:HB3	2:H:178:LEU:HD11	1.92	0.51
1:G:283:ALA:HB3	1:G:401:PRO:HG3	1.91	0.51
2:H:116:LEU:HA	2:H:192:ARG:HH21	1.76	0.51
1:B:486:TYR:CZ	1:B:500:ASN:HB3	2.46	0.51
1:D:579:PHE:HB3	1:D:583:THR:HB	1.92	0.51
1:A:268:ASP:HB2	1:A:269:PRO:HD2	1.93	0.50
1:E:559:ASN:O	1:E:561:GLU:N	2.42	0.50
1:G:526:GLU:O	1:G:527:ARG:NH1	2.43	0.50
2:H:228:TYR:HD2	2:H:368:TYR:HB3	1.74	0.50
1:F:281:ASP:HB3	1:F:284:ILE:HG12	1.93	0.50
1:A:229:TYR:HB3	1:A:234:TYR:HB3	1.94	0.50
1:A:487:GLY:HA2	1:A:497:THR:HG22	1.92	0.50
1:D:581:ASP:OD2	1:D:581:ASP:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:452:ASP:OD1	1:E:453:GLN:N	2.45	0.50
1:G:509:ILE:O	1:G:513:SER:OG	2.28	0.50
1:B:307:ILE:HD11	1:C:416:GLU:HB2	1.94	0.50
1:D:268:ASP:HB2	1:D:269:PRO:HD2	1.94	0.50
1:F:268:ASP:HB2	1:F:269:PRO:HD2	1.93	0.50
1:G:594:LEU:O	1:G:597:LYS:NZ	2.45	0.50
2:H:284:LEU:HG	2:H:285:THR:HG22	1.94	0.49
1:D:572:GLU:OE2	1:D:599:ILE:N	2.43	0.49
1:E:579:PHE:HB3	1:E:583:THR:HB	1.93	0.49
2:H:387:SER:HB3	2:H:411:LEU:HD11	1.93	0.49
1:B:580:ASP:OD1	1:B:583:THR:HG22	2.13	0.49
1:B:372:GLU:HG2	1:B:374:TRP:HZ3	1.77	0.49
1:F:580:ASP:OD1	1:F:583:THR:HG22	2.12	0.49
2:H:284:LEU:H	2:H:284:LEU:HD23	1.76	0.49
1:G:559:ASN:O	1:G:561:GLU:N	2.45	0.49
1:A:571:ASP:OD2	1:A:572:GLU:N	2.46	0.49
1:D:222:ASN:HB2	2:H:193:ILE:HG23	1.95	0.49
1:D:367:GLN:NE2	1:D:368:ASP:O	2.46	0.48
1:A:230:GLU:OE1	1:A:260:TYR:HA	2.13	0.48
2:H:227:ASN:ND2	2:H:288:PRO:HG3	2.27	0.48
1:E:282:LYS:HB2	1:F:508:GLN:HG3	1.96	0.48
1:E:413:LEU:HB2	1:E:475:ILE:HG12	1.93	0.48
2:H:297:SER:OG	2:H:301:GLU:OE1	2.27	0.48
1:D:320:LYS:HD2	1:E:374:TRP:HE1	1.77	0.48
1:C:486:TYR:CZ	1:C:500:ASN:HB3	2.49	0.48
1:E:286:LEU:O	1:E:289:ARG:HG2	2.14	0.48
1:E:287:GLU:OE1	1:E:527:ARG:NE	2.47	0.48
2:H:311:TYR:CE2	2:H:353:LYS:HD3	2.48	0.48
1:A:281:ASP:HB3	1:A:284:ILE:HG12	1.96	0.48
2:H:261:ASN:HB3	2:H:264:LEU:HD21	1.95	0.48
2:H:296:ARG:HD3	2:H:349:PHE:CE2	2.49	0.48
1:A:519:ASP:HB3	1:A:613:LYS:HD3	1.96	0.47
1:B:306:LEU:HD21	1:B:388:ILE:HD12	1.96	0.47
1:E:307:ILE:HD11	1:F:416:GLU:HB2	1.96	0.47
1:B:487:GLY:HA2	1:B:497:THR:HG22	1.96	0.47
2:H:275:VAL:HA	2:H:278:ILE:HG12	1.96	0.47
1:E:487:GLY:HA2	1:E:497:THR:HG22	1.96	0.47
2:H:38:ALA:HB1	2:H:76:LEU:HB2	1.96	0.47
1:E:229:TYR:HB3	1:E:234:TYR:HB3	1.96	0.47
1:C:283:ALA:HB3	1:C:401:PRO:HG3	1.95	0.47
1:D:281:ASP:HB3	1:D:284:ILE:HG12	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:32:ASP:O	2:H:36:LYS:HG3	2.15	0.47
2:H:273:SER:O	2:H:277:ASN:OD1	2.32	0.47
1:F:306:LEU:HD21	1:F:388:ILE:HD12	1.96	0.47
1:D:406:THR:OG1	1:D:483:SER:HB2	2.15	0.47
1:C:326:THR:HG22	1:C:327:THR:N	2.30	0.47
2:H:105:GLU:O	2:H:118:LYS:NZ	2.37	0.47
2:H:62:TYR:O	2:H:66:SER:OG	2.25	0.46
1:D:451:MET:HB3	1:D:459:ILE:HG12	1.98	0.46
1:B:396:ASN:HB2	1:B:432:LEU:HG	1.96	0.46
1:C:391:ASN:HD21	1:D:417:THR:H	1.64	0.46
1:G:587:ILE:HG23	1:G:602:VAL:HG21	1.96	0.46
1:A:391:ASN:HD21	1:B:417:THR:H	1.62	0.46
1:E:486:TYR:CZ	1:E:500:ASN:HB3	2.51	0.46
2:H:339:THR:O	2:H:380:GLU:HG3	2.16	0.46
1:D:414:ASP:OD1	1:D:473:LYS:NZ	2.32	0.46
1:C:325:ALA:HB3	1:C:367:GLN:HB3	1.98	0.46
1:F:406:THR:O	1:F:406:THR:OG1	2.33	0.46
1:F:465:GLN:O	1:F:469:LEU:HB2	2.16	0.46
1:A:323:SER:OG	1:A:324:ARG:N	2.49	0.46
1:A:304:GLU:HG3	1:A:445:PRO:HG3	1.98	0.46
1:E:465:GLN:O	1:E:469:LEU:HB2	2.16	0.46
1:F:526:GLU:OE2	1:F:528:ARG:NH1	2.46	0.46
1:G:237:LYS:HE2	1:G:253:TYR:CZ	2.51	0.45
1:C:285:LYS:HB3	1:C:287:GLU:OE1	2.17	0.45
1:D:221:ASP:N	1:D:221:ASP:OD1	2.50	0.45
1:F:486:TYR:CE1	1:F:500:ASN:HB3	2.52	0.45
1:D:446:LEU:HD22	1:E:420:THR:HG21	1.98	0.45
1:G:596:ASP:O	1:G:598:LYS:N	2.49	0.45
1:C:582:ASN:O	1:C:585:GLU:HG3	2.17	0.45
1:F:320:LYS:NZ	1:F:372:GLU:OE2	2.39	0.45
2:H:127:GLN:HG2	2:H:128:ASP:H	1.80	0.45
1:A:391:ASN:HA	1:A:446:LEU:O	2.17	0.45
1:C:298:VAL:HG21	1:C:526:GLU:HB3	1.99	0.45
1:C:245:ASN:HB3	1:C:248:PHE:CE1	2.51	0.44
1:D:534:GLN:HE21	1:D:605:GLU:HB3	1.81	0.44
1:E:287:GLU:H	1:E:287:GLU:HG3	1.54	0.44
1:G:230:GLU:OE1	1:G:258:SER:OG	2.28	0.44
2:H:185:ILE:HG23	2:H:205:ALA:HB1	1.99	0.44
1:F:487:GLY:HA2	1:F:497:THR:HG22	1.98	0.44
1:C:221:ASP:OD1	1:C:221:ASP:N	2.50	0.44
1:C:268:ASP:HB2	1:C:269:PRO:HD2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:572:GLU:OE1	1:E:598:LYS:HB3	2.18	0.44
1:B:287:GLU:HB3	1:B:555:SER:OG	2.17	0.44
2:H:134:ASP:HA	2:H:181:GLN:O	2.16	0.44
1:D:438:TYR:HE2	1:D:446:LEU:HD11	1.82	0.44
1:E:486:TYR:CE1	1:E:500:ASN:HB3	2.53	0.44
1:G:317:ASP:OD1	1:G:375:ASN:HB2	2.18	0.44
1:A:417:THR:H	1:G:391:ASN:HD21	1.66	0.43
1:E:396:ASN:HB2	1:E:432:LEU:HG	2.00	0.43
1:E:602:VAL:HG12	1:E:603:LYS:H	1.83	0.43
2:H:67:ASN:HD21	2:H:69:ARG:HH21	1.66	0.43
1:G:286:LEU:O	1:G:289:ARG:HG2	2.19	0.43
1:G:268:ASP:HB2	1:G:269:PRO:HD2	2.01	0.43
1:G:465:GLN:O	1:G:469:LEU:HB2	2.18	0.43
1:A:492:GLN:O	1:A:494:GLN:N	2.47	0.43
2:H:242:ASP:HB2	2:H:274:LYS:HD3	2.00	0.43
1:A:438:TYR:HE2	1:A:446:LEU:HD11	1.84	0.43
1:G:486:TYR:CZ	1:G:500:ASN:HB3	2.54	0.43
2:H:244:ASN:C	2:H:244:ASN:HD22	2.22	0.43
1:B:275:LYS:O	1:B:289:ARG:HB2	2.19	0.43
1:C:229:TYR:HB3	1:C:234:TYR:HB3	2.00	0.43
1:C:396:ASN:HB2	1:C:432:LEU:HG	2.01	0.43
1:D:602:VAL:HG12	1:D:603:LYS:H	1.82	0.43
1:A:239:SER:O	1:A:273:TYR:OH	2.28	0.42
1:A:486:TYR:CZ	1:A:500:ASN:HB3	2.54	0.42
1:C:579:PHE:HB3	1:C:583:THR:HB	2.00	0.42
2:H:92:TYR:CE2	2:H:157:HIS:CD2	3.07	0.42
2:H:393:LYS:HB3	2:H:408:ASP:HB3	2.01	0.42
1:D:486:TYR:CZ	1:D:500:ASN:HB3	2.54	0.42
1:G:275:LYS:O	1:G:289:ARG:HB2	2.19	0.42
1:D:559:ASN:OD1	1:D:562:LEU:HB2	2.19	0.42
1:C:285:LYS:HD3	1:C:285:LYS:HA	1.86	0.42
1:E:221:ASP:OD1	1:E:221:ASP:N	2.48	0.42
1:G:620:ASN:OD1	1:G:620:ASN:N	2.53	0.42
1:D:391:ASN:HA	1:D:446:LEU:O	2.20	0.42
1:F:486:TYR:CZ	1:F:500:ASN:HB3	2.54	0.42
2:H:102:PHE:HD1	2:H:125:THR:HG21	1.84	0.42
2:H:26:ARG:O	2:H:29:LYS:HG2	2.20	0.42
1:A:285:LYS:HD3	1:A:285:LYS:HA	1.84	0.42
1:B:413:LEU:HB3	1:B:418:LEU:HD21	2.01	0.42
1:F:586:ILE:O	1:F:589:GLU:HG2	2.19	0.41
1:G:320:LYS:HG2	1:G:372:GLU:HG2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:438:TYR:HE2	1:F:446:LEU:HD11	1.85	0.41
2:H:122:LEU:HA	2:H:125:THR:HG22	2.02	0.41
2:H:239:GLU:HA	2:H:242:ASP:OD2	2.19	0.41
2:H:116:LEU:HA	2:H:192:ARG:NH2	2.34	0.41
2:H:149:GLU:HG3	2:H:151:PRO:HG3	2.00	0.41
1:D:490:ASN:ND2	1:D:494:GLN:HB2	2.29	0.41
1:A:299:VAL:HA	1:A:395:TYR:O	2.20	0.41
1:C:304:GLU:HG3	1:C:445:PRO:HG3	2.01	0.41
1:F:485:ASN:HA	1:F:500:ASN:O	2.21	0.41
1:F:490:ASN:ND2	1:F:492:GLN:OE1	2.54	0.41
1:G:492:GLN:O	1:G:494:GLN:N	2.47	0.41
1:E:310:THR:HG22	1:E:312:GLU:HG2	2.03	0.41
1:F:579:PHE:HB3	1:F:583:THR:CG2	2.48	0.41
2:H:246:TYR:O	2:H:251:TYR:HB3	2.21	0.41
1:E:469:LEU:HD12	1:E:469:LEU:HA	1.93	0.41
1:C:304:GLU:HG3	1:C:445:PRO:HB3	2.03	0.41
1:D:287:GLU:OE1	1:D:555:SER:OG	2.33	0.41
1:F:283:ALA:HB3	1:F:401:PRO:HG3	2.03	0.41
1:A:490:ASN:ND2	1:A:494:GLN:HB2	2.36	0.40
1:B:571:ASP:OD2	1:B:572:GLU:N	2.53	0.40
1:F:282:LYS:HB2	1:G:508:GLN:HG2	2.03	0.40
2:H:228:TYR:CD2	2:H:368:TYR:HB3	2.55	0.40
2:H:395:ASP:OD1	2:H:406:ILE:HB	2.21	0.40
1:D:320:LYS:HG2	1:D:372:GLU:OE1	2.22	0.40
1:D:572:GLU:OE1	1:D:598:LYS:HB3	2.20	0.40
1:E:304:GLU:HG3	1:E:445:PRO:HB3	2.03	0.40
1:G:594:LEU:HG	1:G:595:ASP:O	2.21	0.40
2:H:202:LYS:NZ	2:H:204:GLU:OE2	2.55	0.40
1:B:562:LEU:HD23	1:B:562:LEU:H	1.86	0.40
1:C:519:ASP:HB3	1:C:613:LYS:HD3	2.03	0.40
1:C:602:VAL:HG12	1:C:603:LYS:H	1.87	0.40
1:G:561:GLU:N	1:G:561:GLU:OE1	2.54	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	364/666 (55%)	339 (93%)	25 (7%)	0	100	100
1	B	364/666 (55%)	342 (94%)	22 (6%)	0	100	100
1	C	364/666 (55%)	344 (94%)	20 (6%)	0	100	100
1	D	364/666 (55%)	340 (93%)	24 (7%)	0	100	100
1	E	364/666 (55%)	341 (94%)	23 (6%)	0	100	100
1	F	364/666 (55%)	341 (94%)	23 (6%)	0	100	100
1	G	364/666 (55%)	345 (95%)	19 (5%)	0	100	100
2	H	394/417 (94%)	375 (95%)	19 (5%)	0	100	100
All	All	2942/5079 (58%)	2767 (94%)	175 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	319/590 (54%)	319 (100%)	0	100	100
1	B	319/590 (54%)	319 (100%)	0	100	100
1	C	319/590 (54%)	318 (100%)	1 (0%)	92	98
1	D	319/590 (54%)	319 (100%)	0	100	100
1	E	319/590 (54%)	319 (100%)	0	100	100
1	F	319/590 (54%)	319 (100%)	0	100	100
1	G	319/590 (54%)	319 (100%)	0	100	100
2	H	361/379 (95%)	358 (99%)	3 (1%)	81	94
All	All	2594/4509 (58%)	2590 (100%)	4 (0%)	93	98

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	367	GLN
2	H	22	LYS
2	H	233	ASN
2	H	244	ASN

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

Mol	Chain	Res	Type
1	G	391	ASN

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)

Of 14 ligands modelled in this entry, 14 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

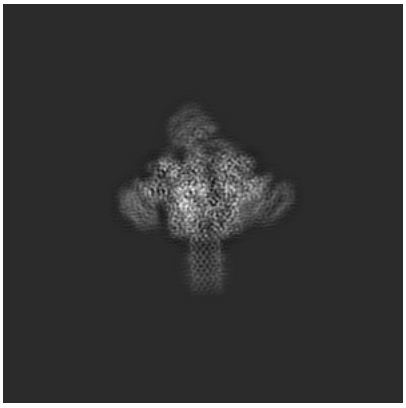
6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-0713. These allow visual inspection of the internal detail of the map and identification of artifacts.

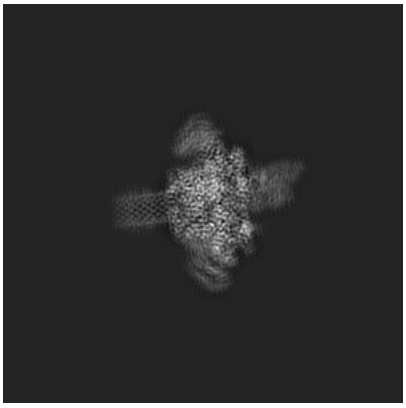
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections (i)

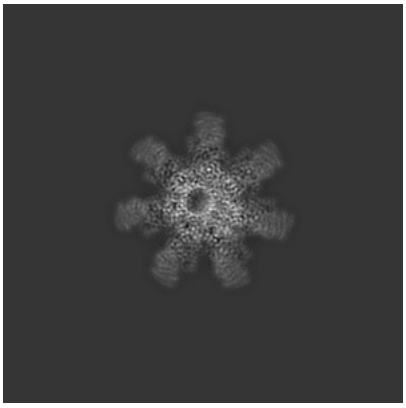
6.1.1 Primary map



X



Y



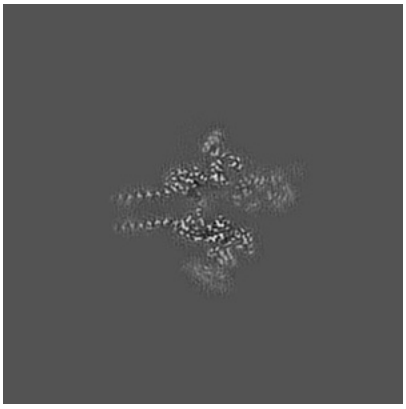
Z

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

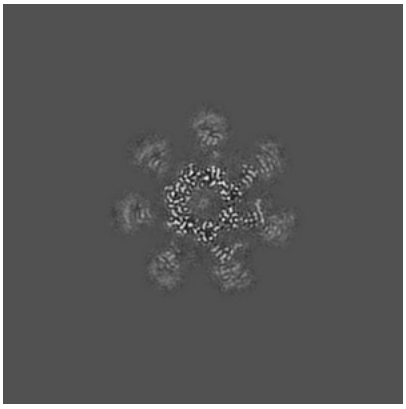
6.2 Central slices (i)

6.2.1 Primary map

X Index: 160



Y Index: 160



Z Index: 160

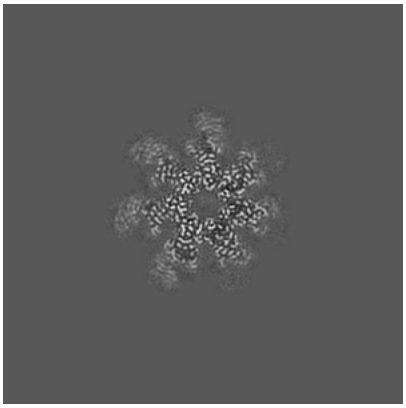
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 142

Y Index: 151

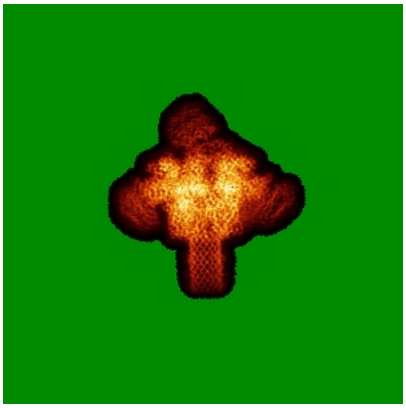


Z Index: 172

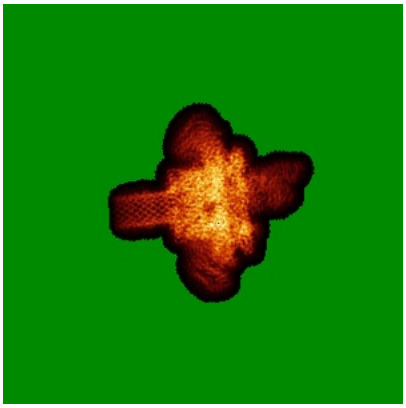
The images above show the largest variance slices of the map in three orthogonal directions.

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

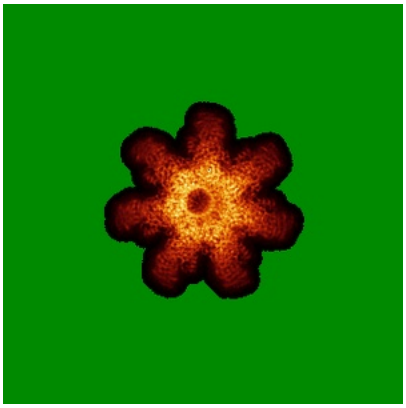
6.4.1 Primary map



X



Y

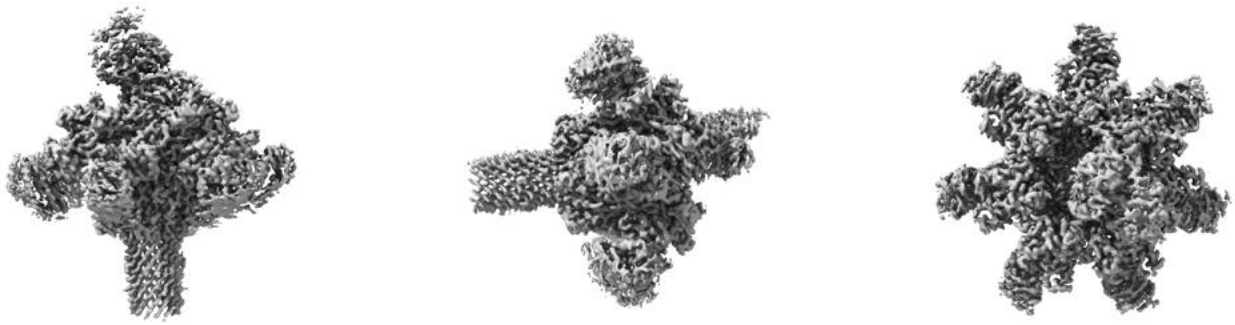


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

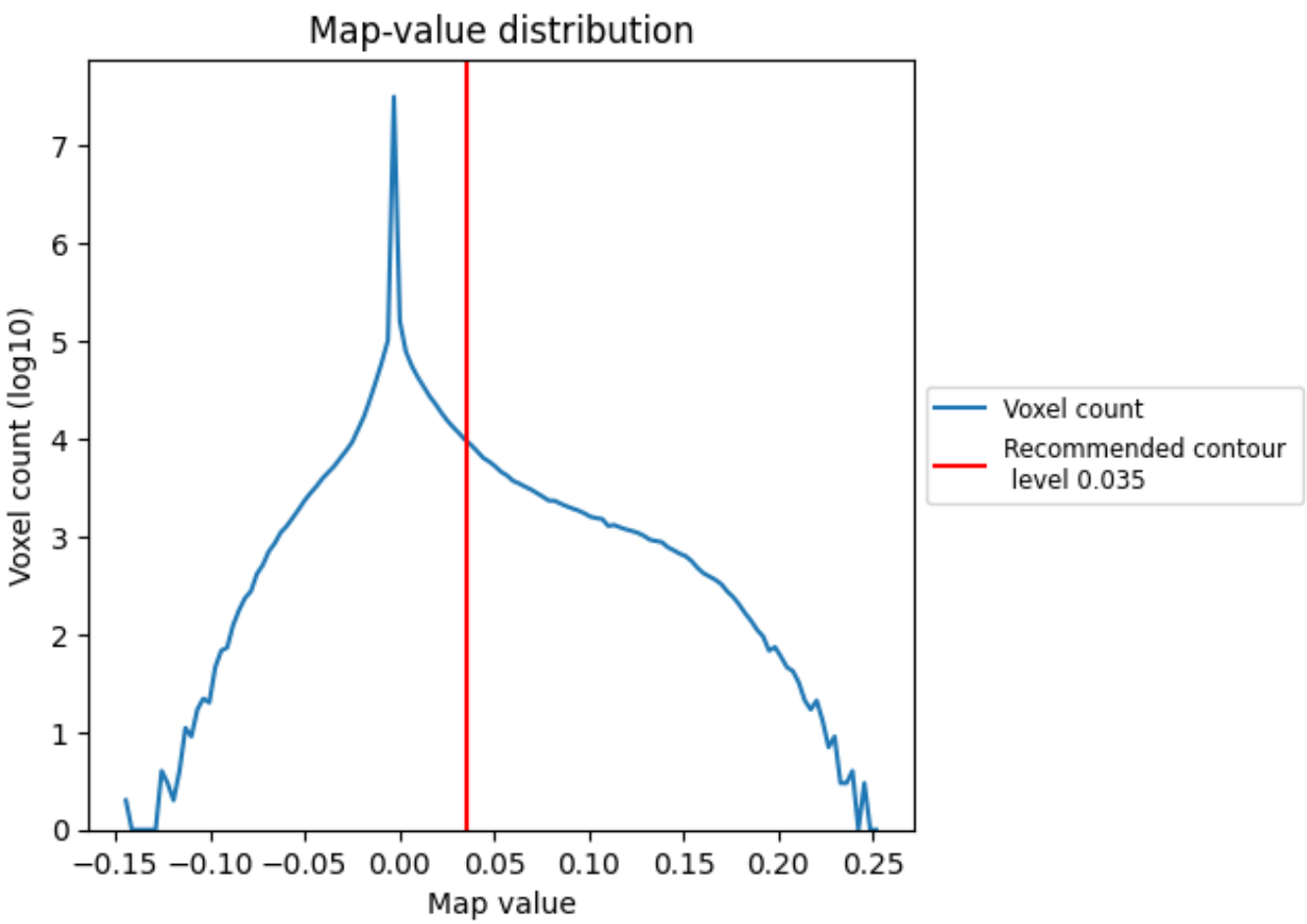
6.6 Mask visualisation (i)

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

7 Map analysis (i)

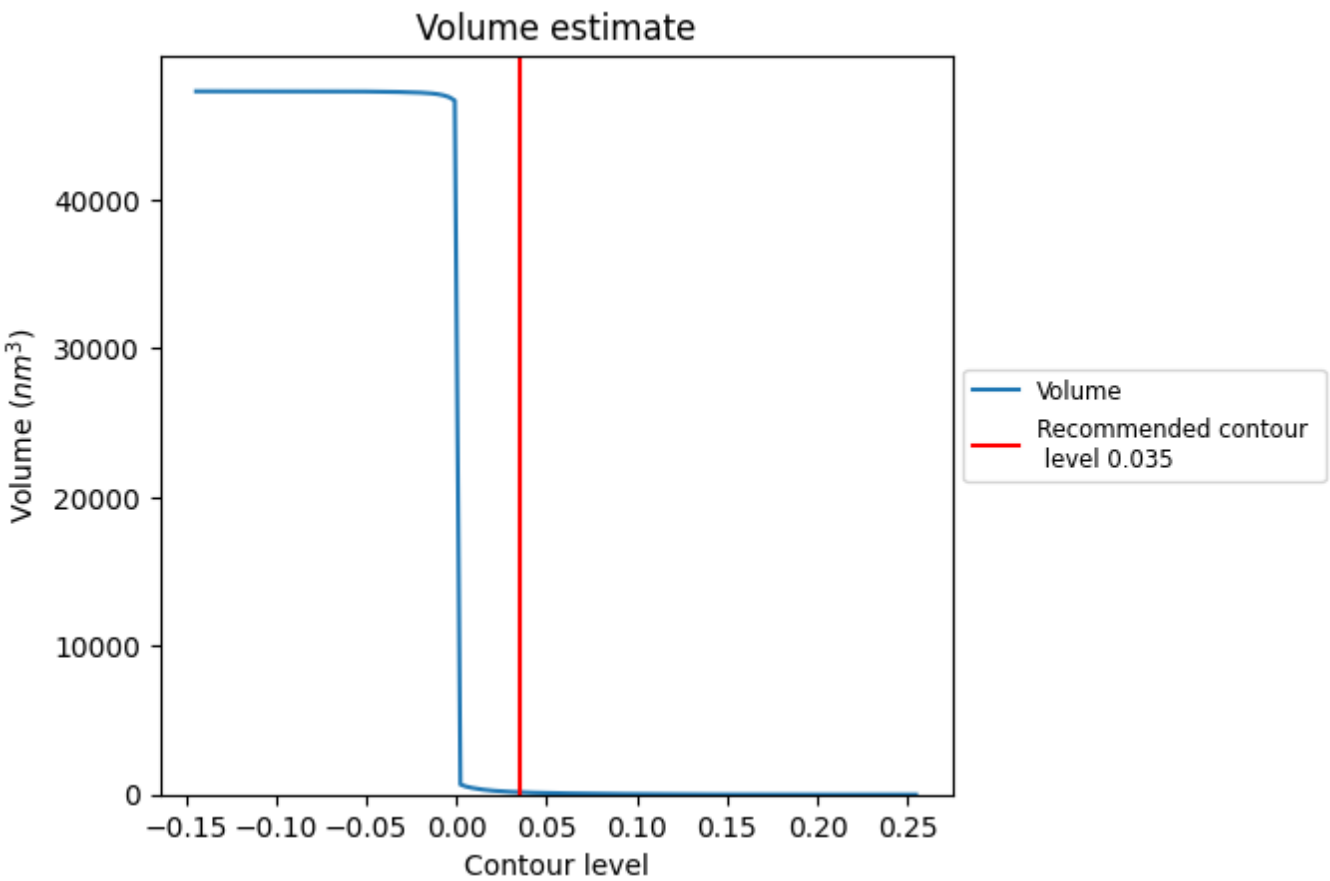
This section contains the results of statistical analysis of the map.

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.

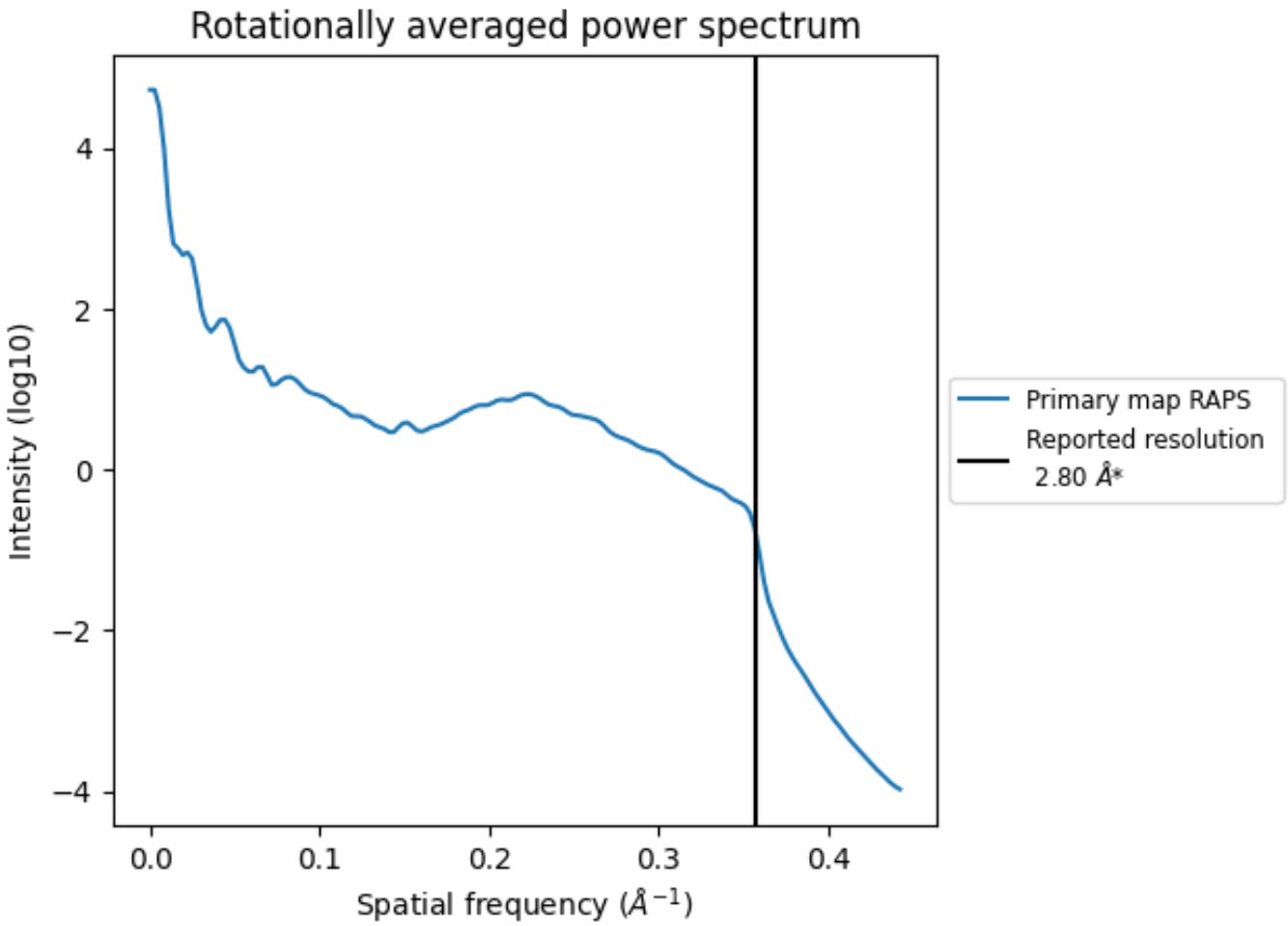
7.2 Volume estimate (i)



The volume at the recommended contour level is 155 nm^3; this corresponds to an approximate mass of 140 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

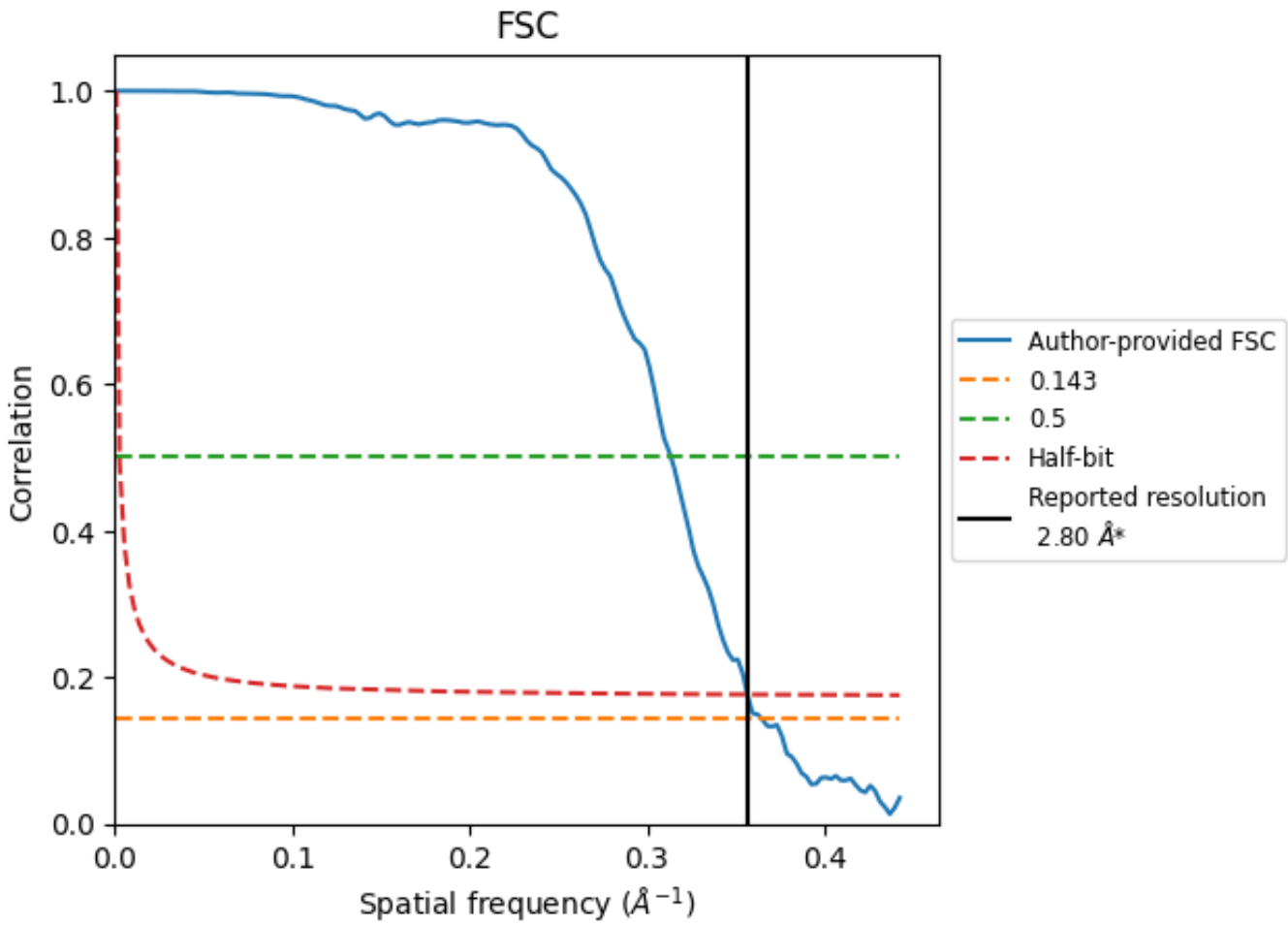


*Reported resolution corresponds to spatial frequency of 0.357 Å^{-1}

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 0.357 Å^{-1}

8.2 Resolution estimates (i)

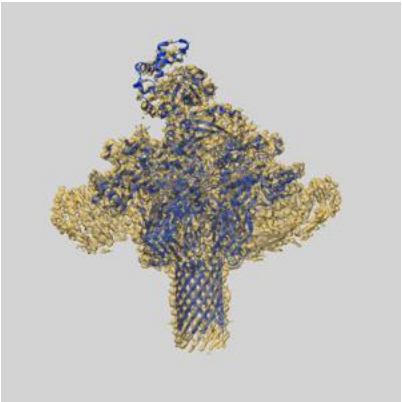
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.80	-	-
Author-provided FSC curve	2.74	3.19	2.80
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

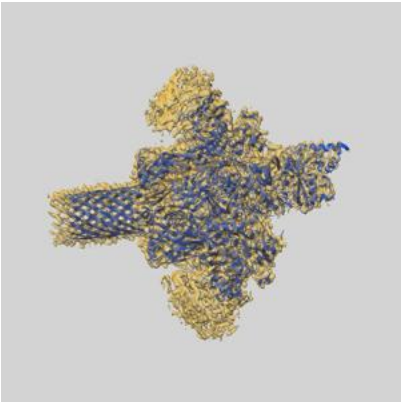
9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-0713 and PDB model 6KLO. Per-residue inclusion information can be found in section 3 on page 5.

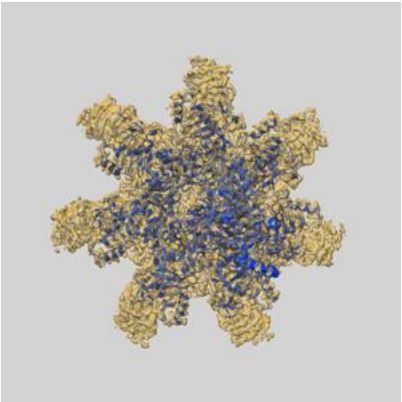
9.1 Map-model overlay (i)



X



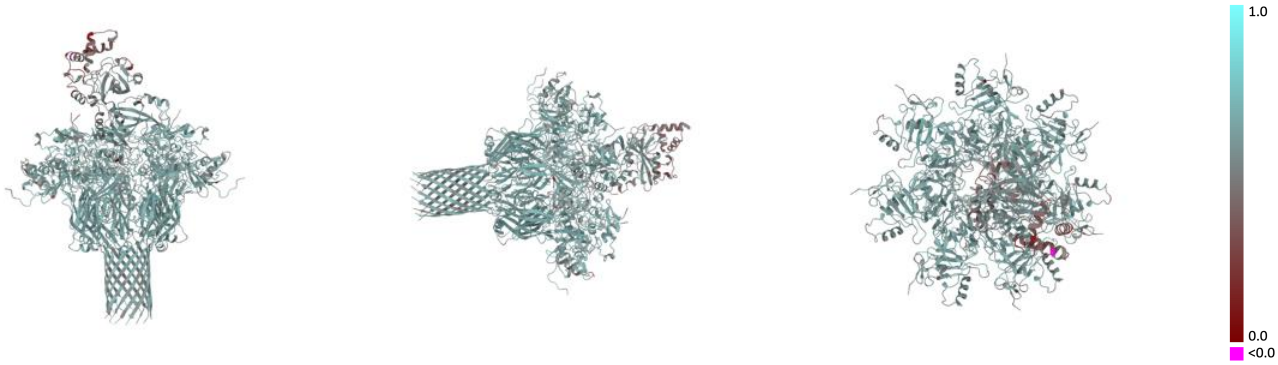
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.035 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

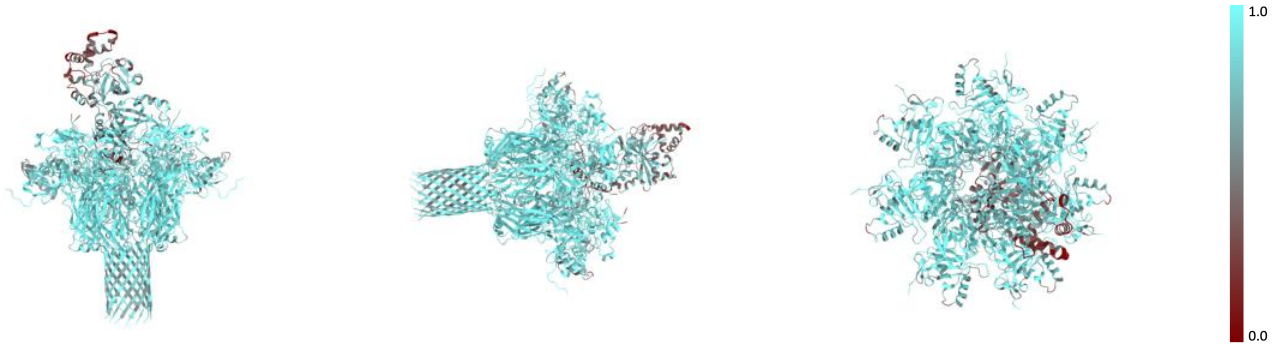
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

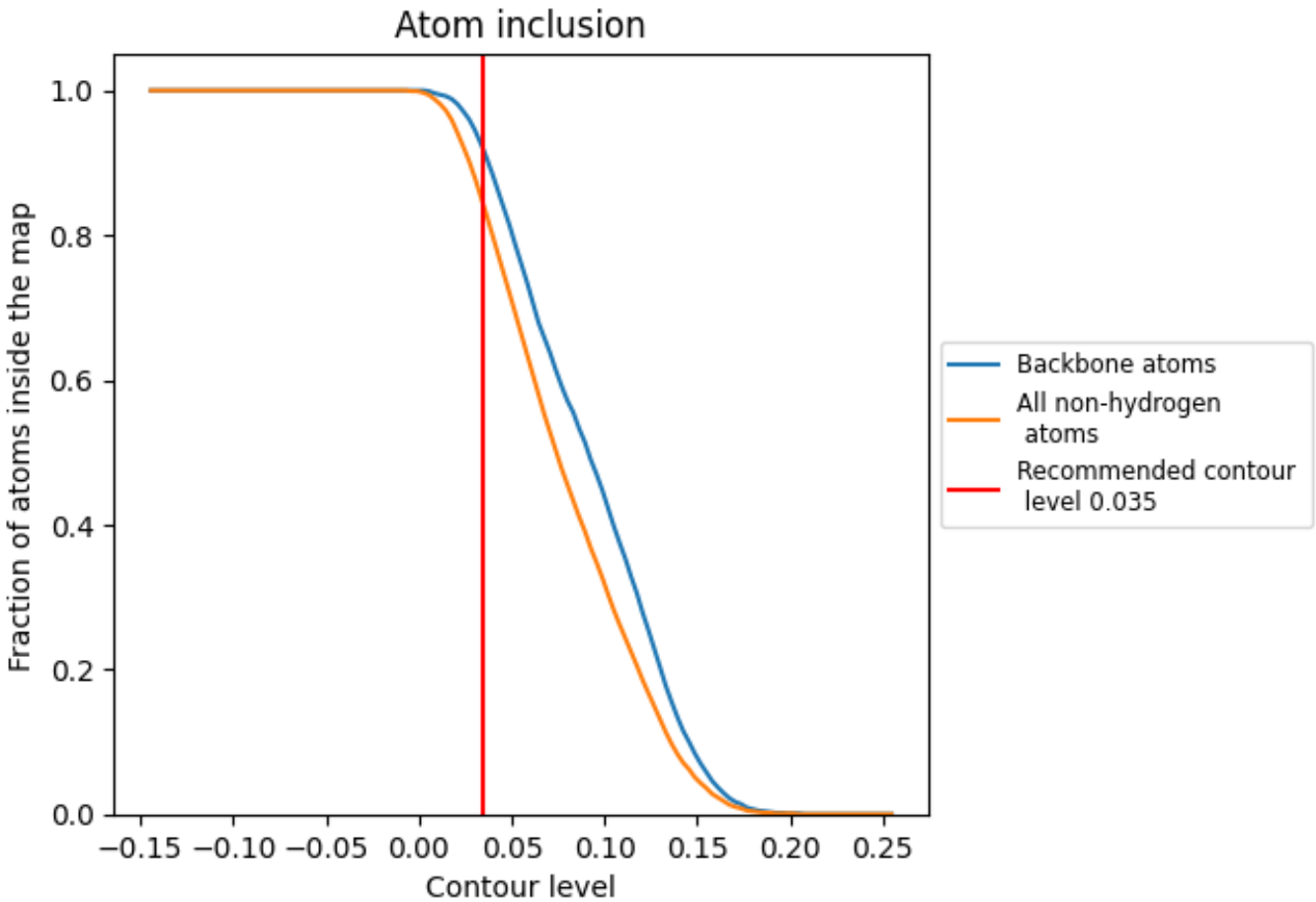
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.035).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8400	0.5860
A	0.8870	0.6010
B	0.8750	0.6030
C	0.8840	0.6030
D	0.8840	0.6020
E	0.8750	0.5990
F	0.8860	0.6020
G	0.8840	0.6010
H	0.5790	0.4900