Full wwPDB EM Validation Report

Nov 20, 2022 – 05:51 PM JST

PDB ID	:	7CBM
EMDB ID	:	EMD-30336
Title	:	Cryo-EM structure of the flagellar distal rod with partial hook from Salmonella
Authors	:	Tan, J.X.; Chang, S.H.; Wang, X.F.; Xu, C.H.; Zhou, Y.; Zhang, X.; Zhu, Y.Q.
Deposited on	:	2020-06-12
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:

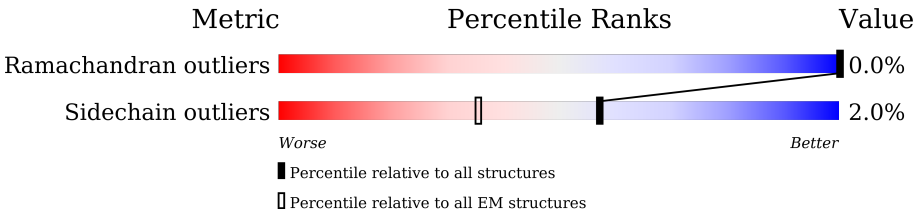
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 3.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
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	260	7% 98% .
1	B	260	15% 98% .
1	C	260	10% 97% .
1	D	260	9% 99% .
1	E	260	8% 97% .
1	F	260	7% 99% .
1	G	260	6% 99% .
1	H	260	7% 99% .
1	I	260	7% 98% .

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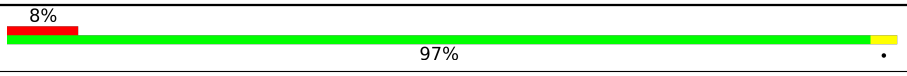
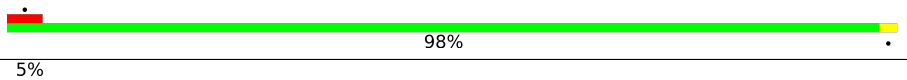
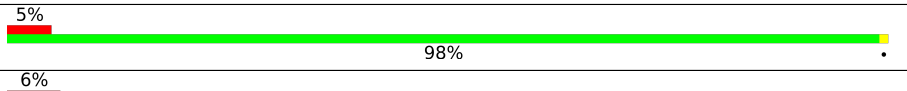
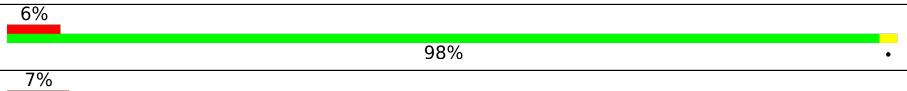
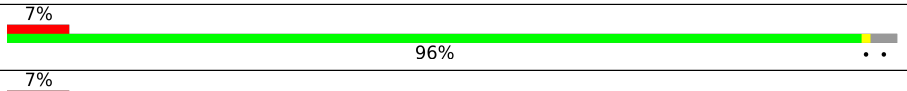
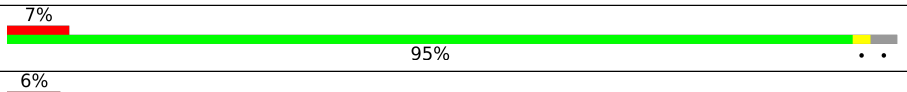
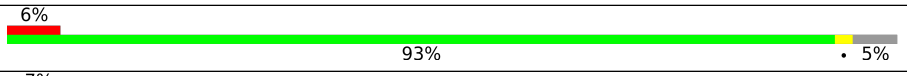
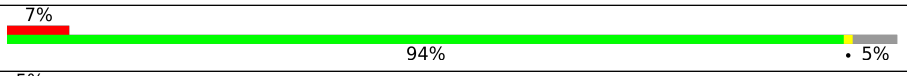
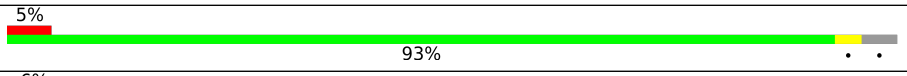
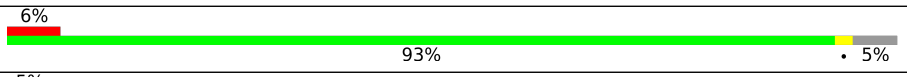
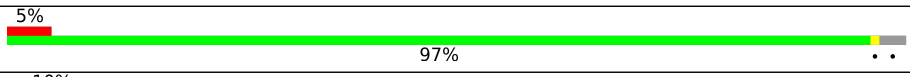
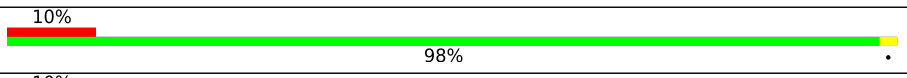
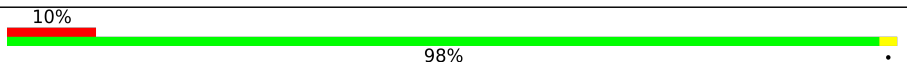
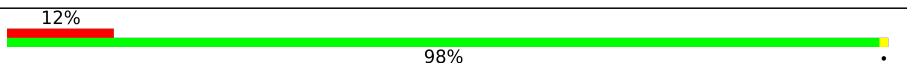
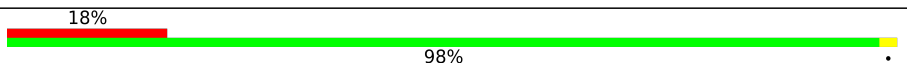
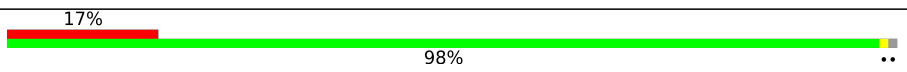
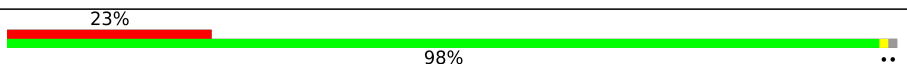
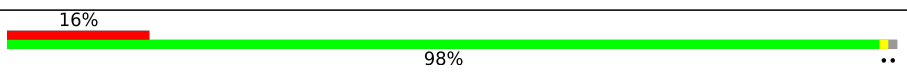
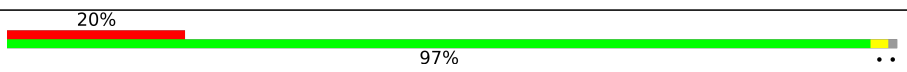
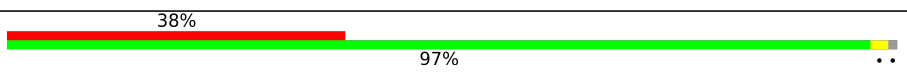
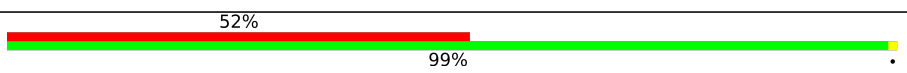
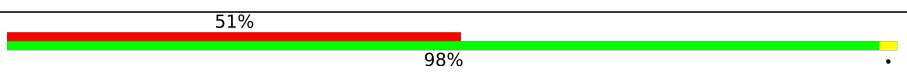
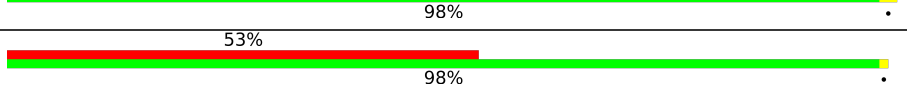
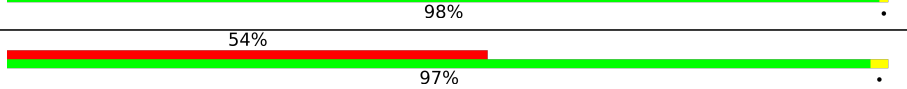
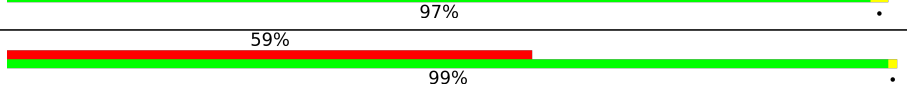
Mol	Chain	Length	Quality of chain
1	J	260	
1	K	260	
1	L	260	
1	M	260	
1	N	260	
1	O	260	
1	P	260	
1	Q	260	
1	R	260	
1	S	260	
1	T	260	
1	U	260	
1	V	260	
1	W	260	
1	X	260	
2	a	251	
2	b	251	
2	c	251	
2	d	251	
2	e	251	
3	DA	403	
3	DB	403	
3	DC	403	
3	DD	403	
3	DE	403	

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Mol	Chain	Length	Quality of chain
3	DF	403	67% 98%
3	DG	403	72% 99%
3	DH	403	76% 98%
3	DI	403	80% 98%
3	DJ	403	82% 97%
3	DK	403	88% 99%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 87698 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 Flagellar basal-body rod protein FlgG.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	B	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	C	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	D	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	E	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	F	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	G	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	H	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	I	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	J	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	K	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	L	259	Total	C	N	O	S	0	0
			1941	1197	340	399	5		
1	M	260	Total	C	N	O	S	0	0
			1949	1202	341	400	6		
1	N	251	Total	C	N	O	S	0	0
			1887	1167	330	384	6		
1	O	252	Total	C	N	O	S	0	0
			1894	1172	331	385	6		
1	P	248	Total	C	N	O	S	0	0
			1862	1151	327	379	5		
1	Q	247	Total	C	N	O	S	0	0
			1858	1149	326	378	5		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	R	250	Total	C	N	O	S	0	0
			1875	1159	329	382	5		
1	S	247	Total	C	N	O	S	0	0
			1858	1149	326	378	5		
1	T	253	Total	C	N	O	S	0	0
			1902	1176	333	388	5		
1	U	259	Total	C	N	O	S	0	0
			1941	1197	340	399	5		
1	V	259	Total	C	N	O	S	0	0
			1941	1197	340	399	5		
1	W	259	Total	C	N	O	S	0	0
			1941	1197	340	399	5		
1	X	259	Total	C	N	O	S	0	0
			1941	1197	340	399	5		

- Molecule 2 is a protein called Flagellar basal-body rod protein FlgF.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	a	249	Total	C	N	O	S	0	0
			1812	1111	325	368	8		
2	b	248	Total	C	N	O	S	0	0
			1804	1106	324	367	7		
2	c	249	Total	C	N	O	S	0	0
			1812	1111	325	368	8		
2	d	249	Total	C	N	O	S	0	0
			1812	1111	325	368	8		
2	e	249	Total	C	N	O	S	0	0
			1812	1111	325	368	8		

- Molecule 3 is a protein called Flagellar hook protein FlgE.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	DA	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DB	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DC	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DD	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DE	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		

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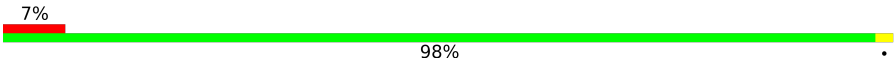
Mol	Chain	Residues	Atoms					AltConf	Trace
3	DF	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DG	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DH	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DI	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DJ	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DK	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		

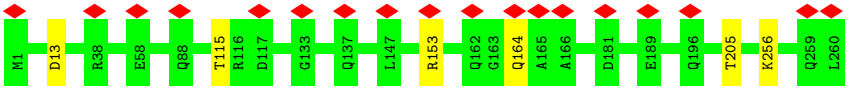
3 Residue-property plots (i)

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: Flagellar basal-body rod protein FlgG

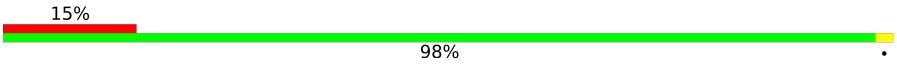
Chain A:

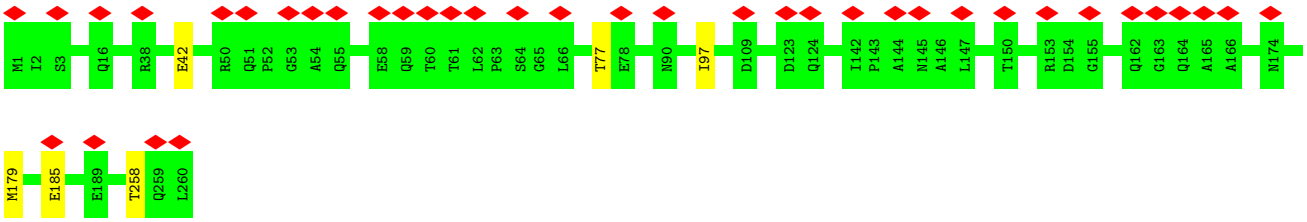




• Molecule 1: Flagellar basal-body rod protein FlgG

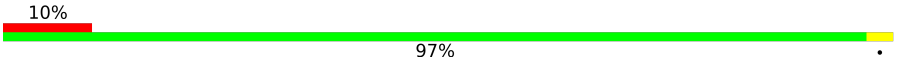
Chain B:

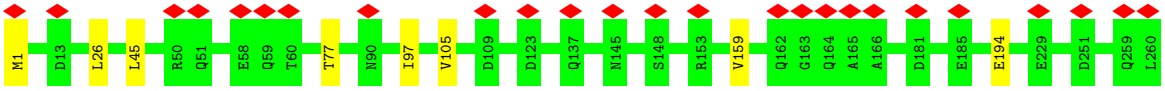




• Molecule 1: Flagellar basal-body rod protein FlgG

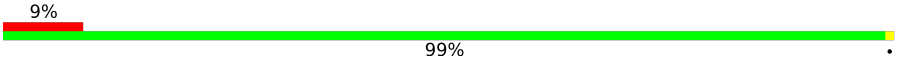
Chain C:

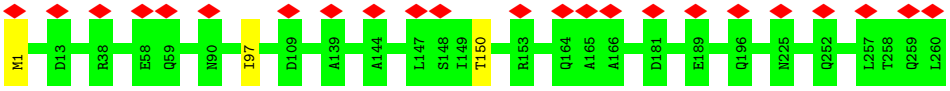




• Molecule 1: Flagellar basal-body rod protein FlgG

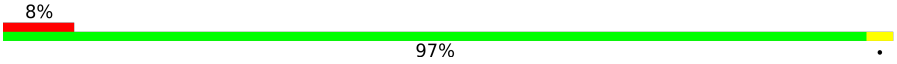
Chain D:



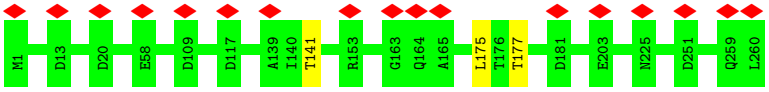


• Molecule 1: Flagellar basal-body rod protein FlgG

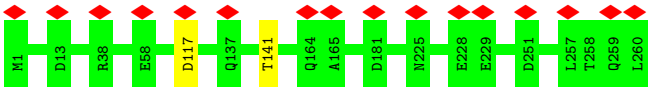
Chain E:



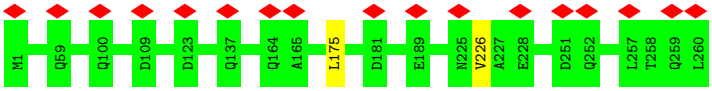
• Molecule 1: Flagellar basal-body rod protein FlgG



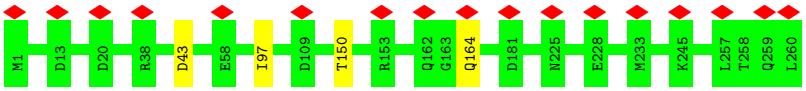
• Molecule 1: Flagellar basal-body rod protein FlgG



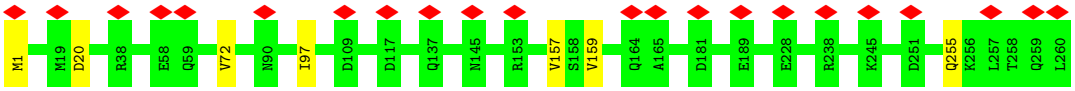
• Molecule 1: Flagellar basal-body rod protein FlgG



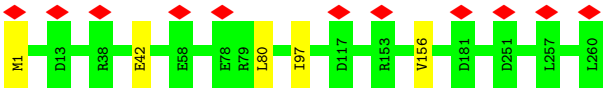
• Molecule 1: Flagellar basal-body rod protein FlgG



• Molecule 1: Flagellar basal-body rod protein FlgG

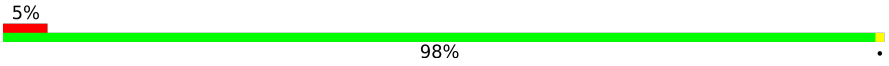


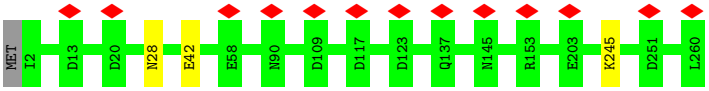
• Molecule 1: Flagellar basal-body rod protein FlgG



• Molecule 1: Flagellar basal-body rod protein FlgG

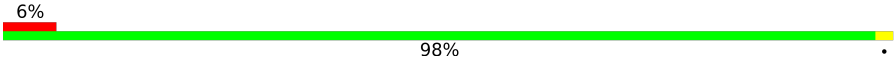
Chain L:

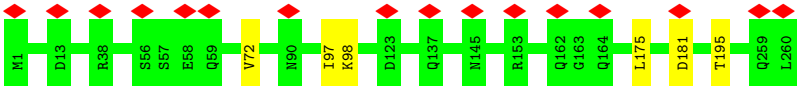




• Molecule 1: Flagellar basal-body rod protein FlgG

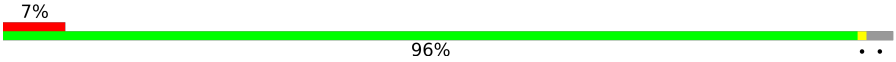
Chain M:

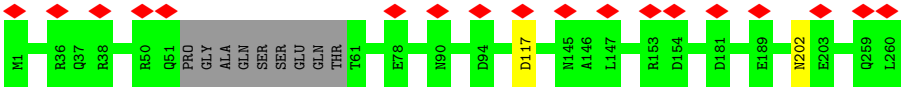




• Molecule 1: Flagellar basal-body rod protein FlgG

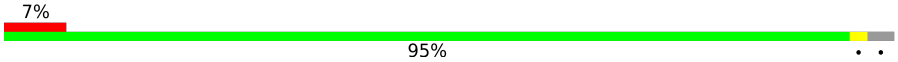
Chain N:

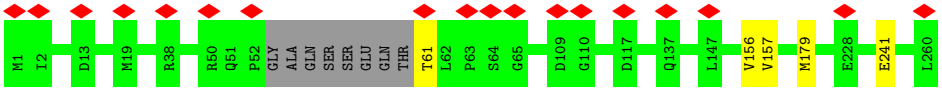




• Molecule 1: Flagellar basal-body rod protein FlgG

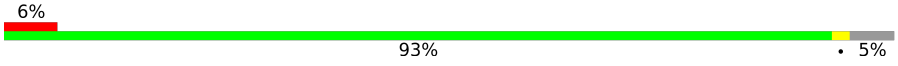
Chain O:

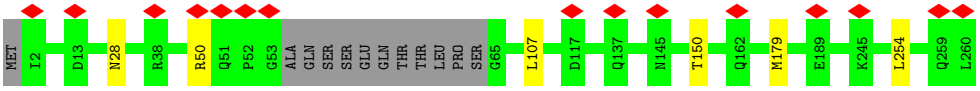




• Molecule 1: Flagellar basal-body rod protein FlgG

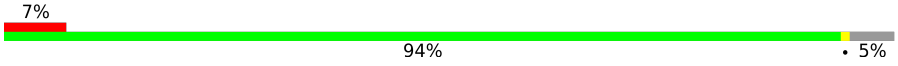
Chain P:

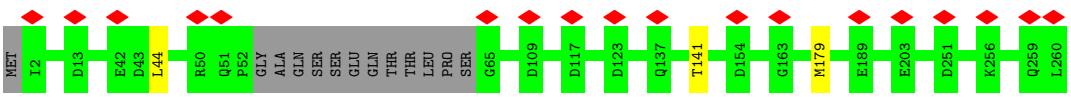




• Molecule 1: Flagellar basal-body rod protein FlgG

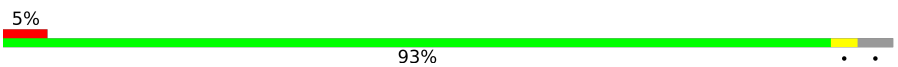
Chain Q:

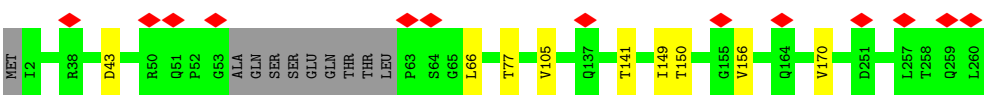




• Molecule 1: Flagellar basal-body rod protein FlgG

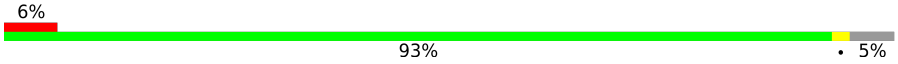
Chain R:

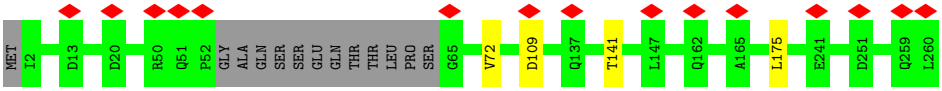




• Molecule 1: Flagellar basal-body rod protein FlgG

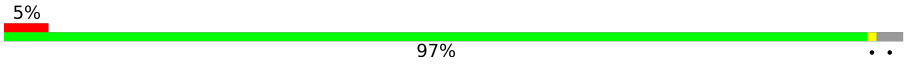
Chain S:

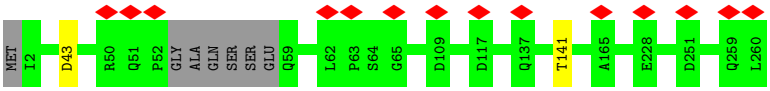




• Molecule 1: Flagellar basal-body rod protein FlgG

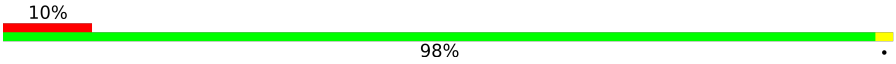
Chain T:

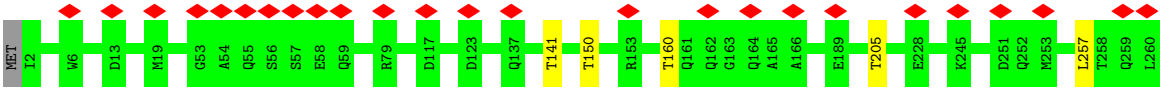




• Molecule 1: Flagellar basal-body rod protein FlgG

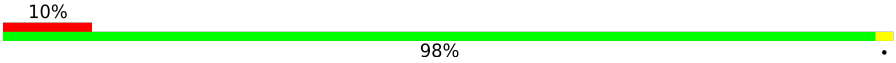
Chain U:

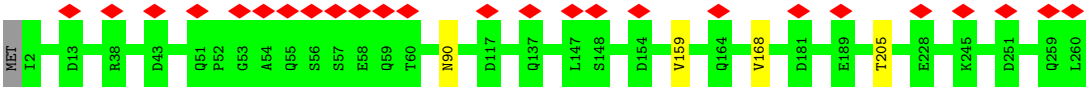




• Molecule 1: Flagellar basal-body rod protein FlgG

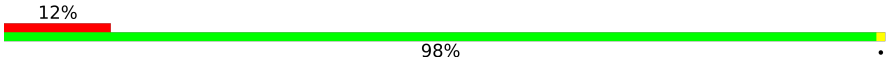
Chain V:

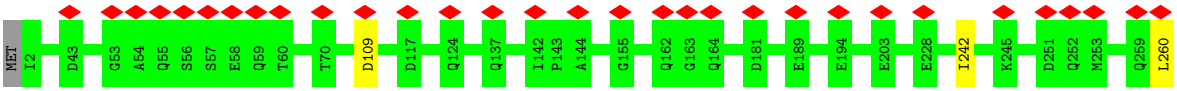




• Molecule 1: Flagellar basal-body rod protein FlgG

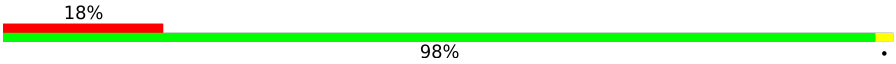
Chain W:

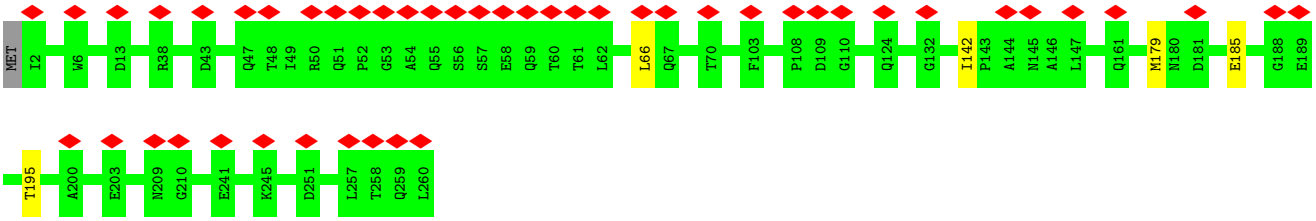




• Molecule 1: Flagellar basal-body rod protein FlgG

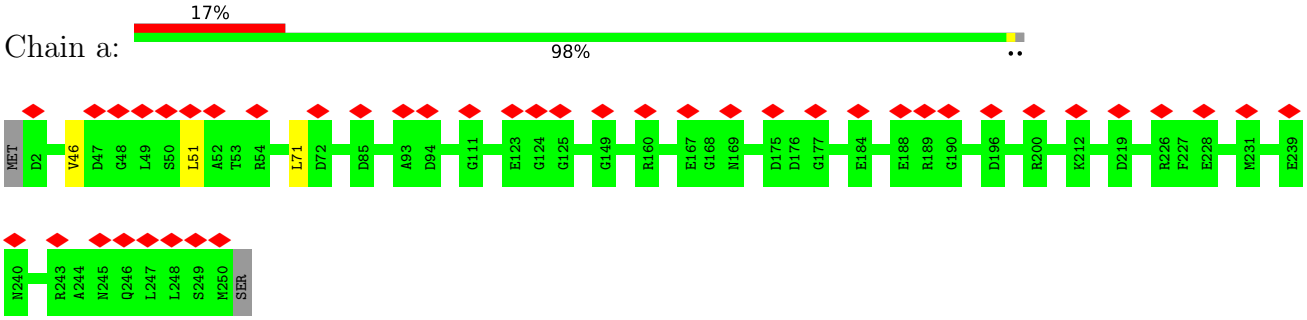
Chain X:





• Molecule 2: Flagellar basal-body rod protein FlgF

Chain a:



• Molecule 2: Flagellar basal-body rod protein FlgF

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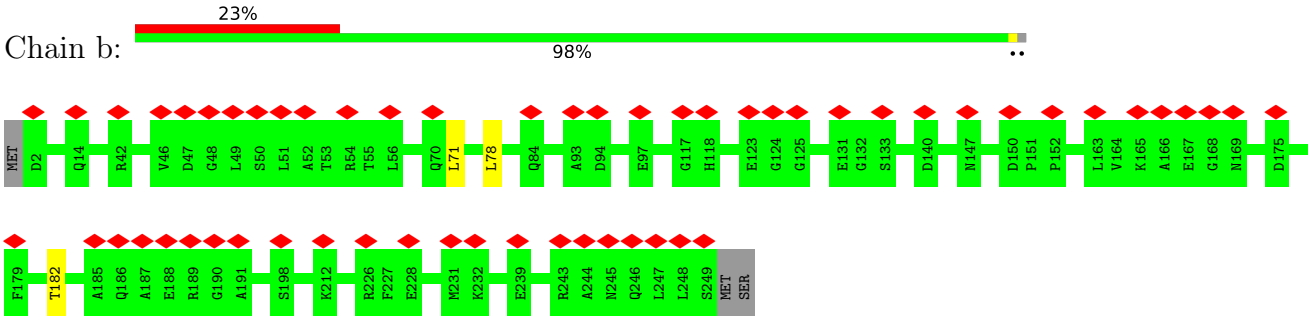
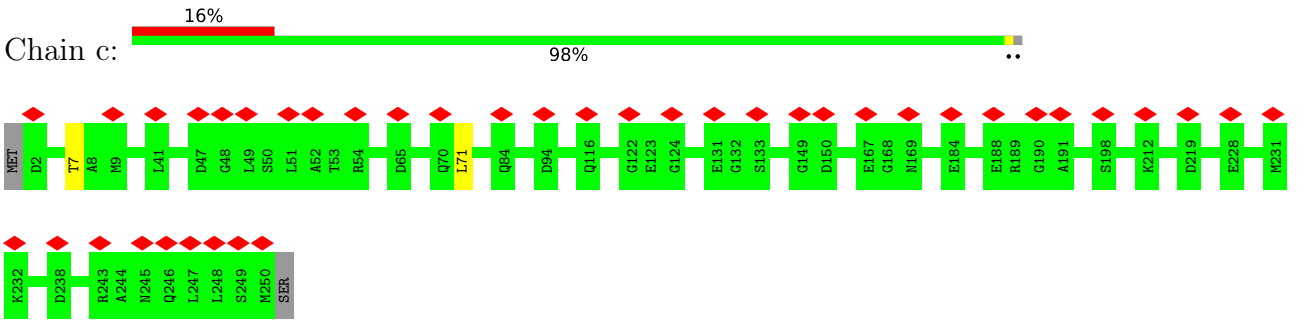


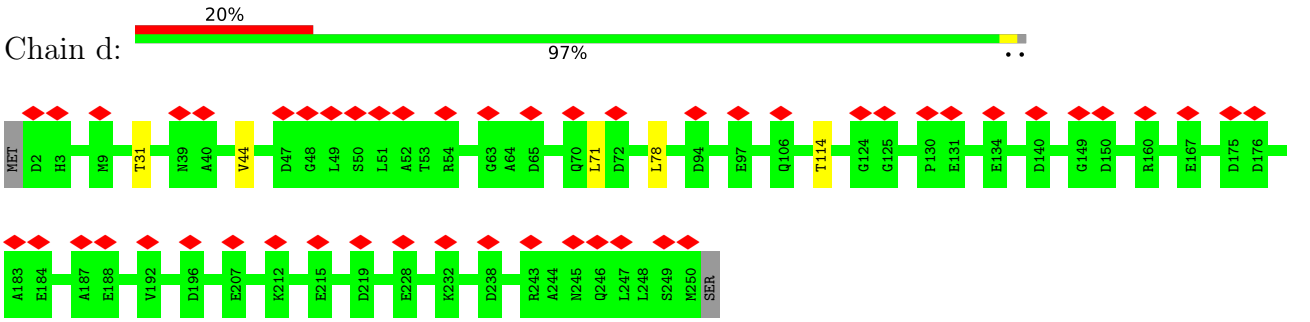
• Molecule 2: Flagellar basal-body rod protein FlgF

Chain c:



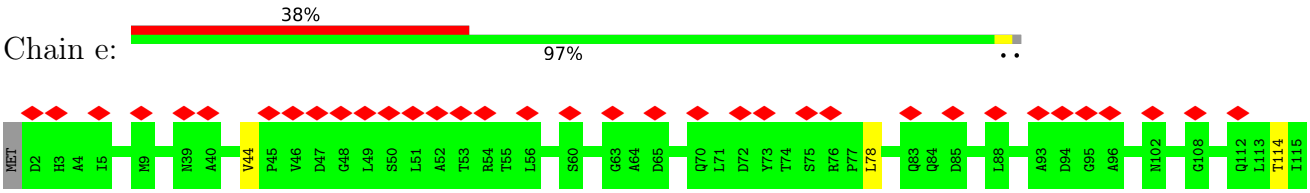
• Molecule 2: Flagellar basal-body rod protein FlgF

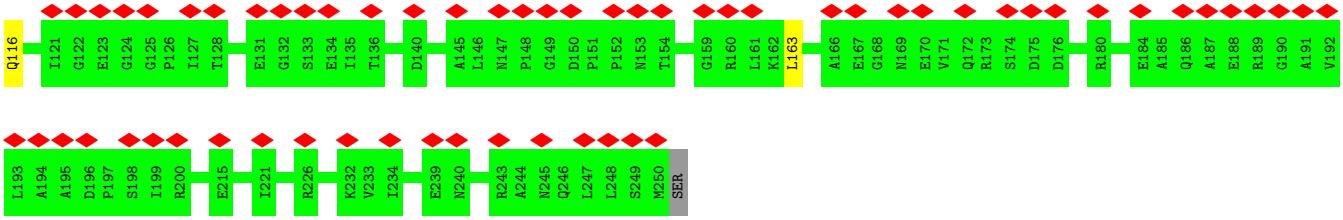
Chain d:



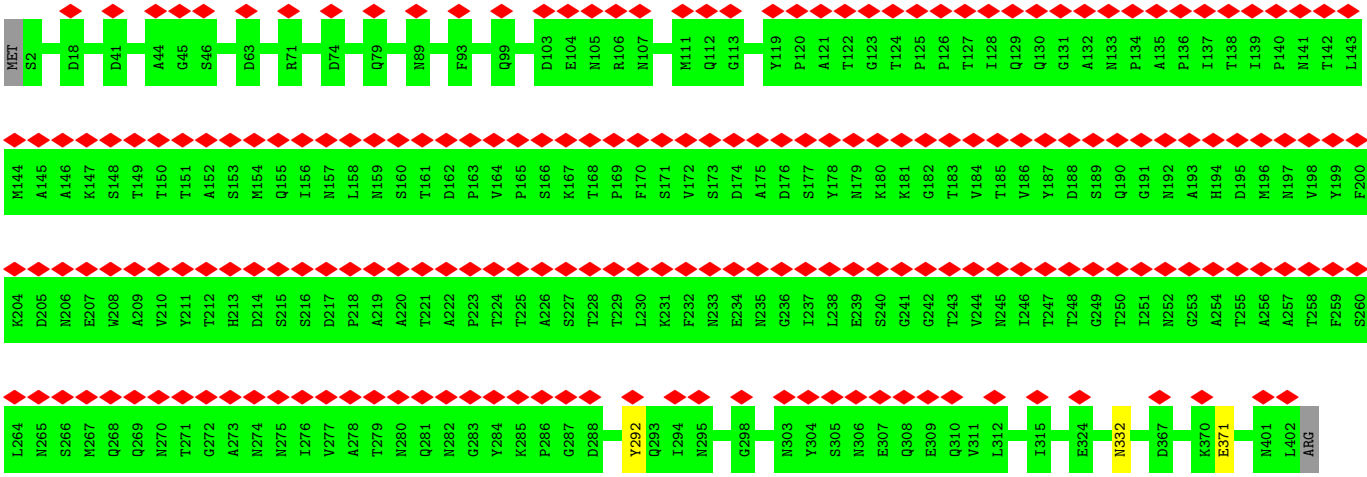
• Molecule 2: Flagellar basal-body rod protein FlgF

Chain e:

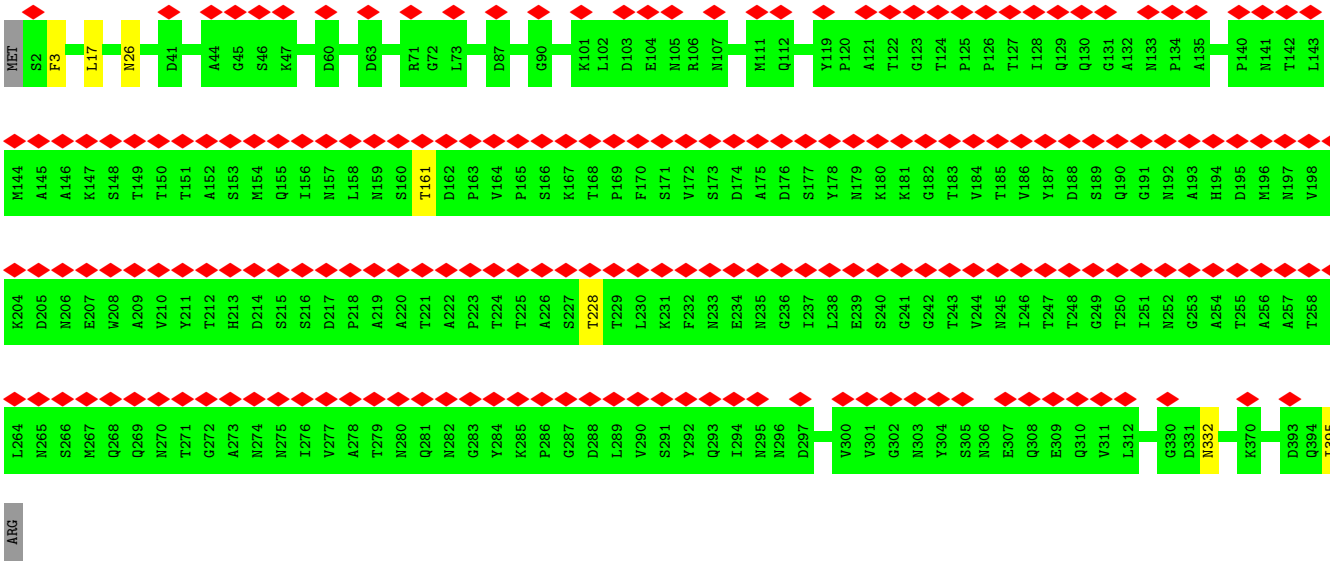




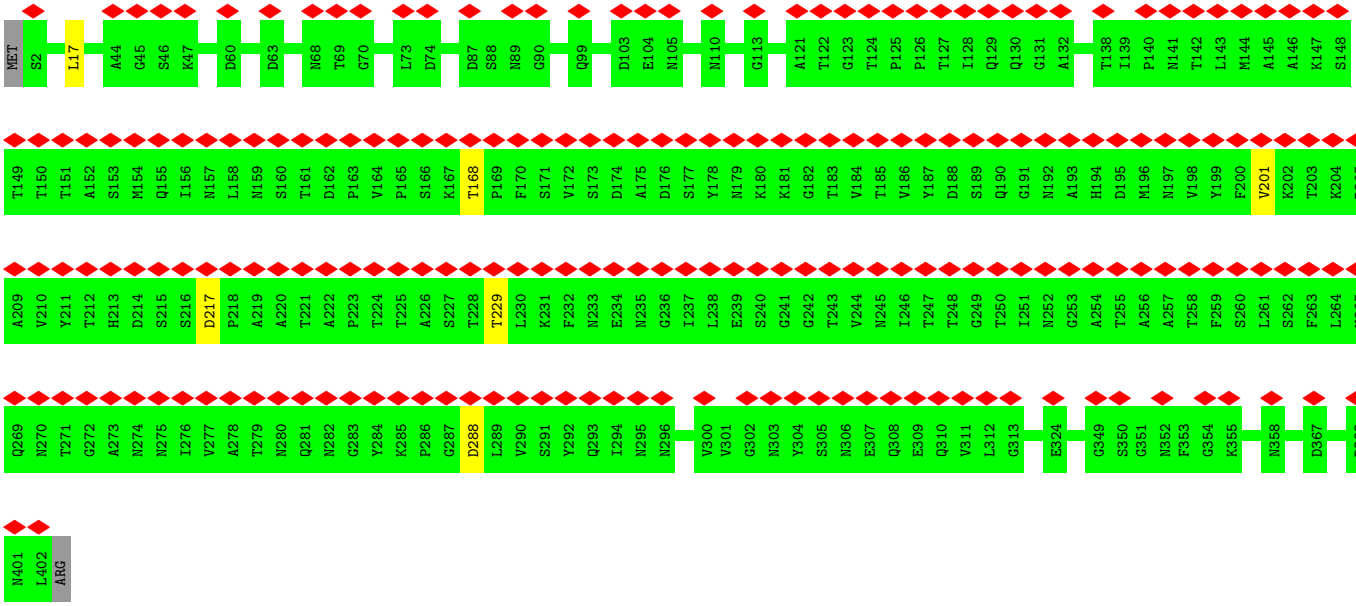
• Molecule 3: Flagellar hook protein FlgE



• Molecule 3: Flagellar hook protein FlgE

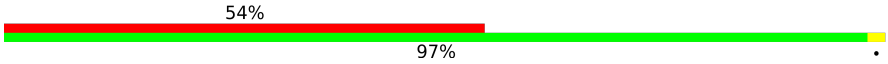


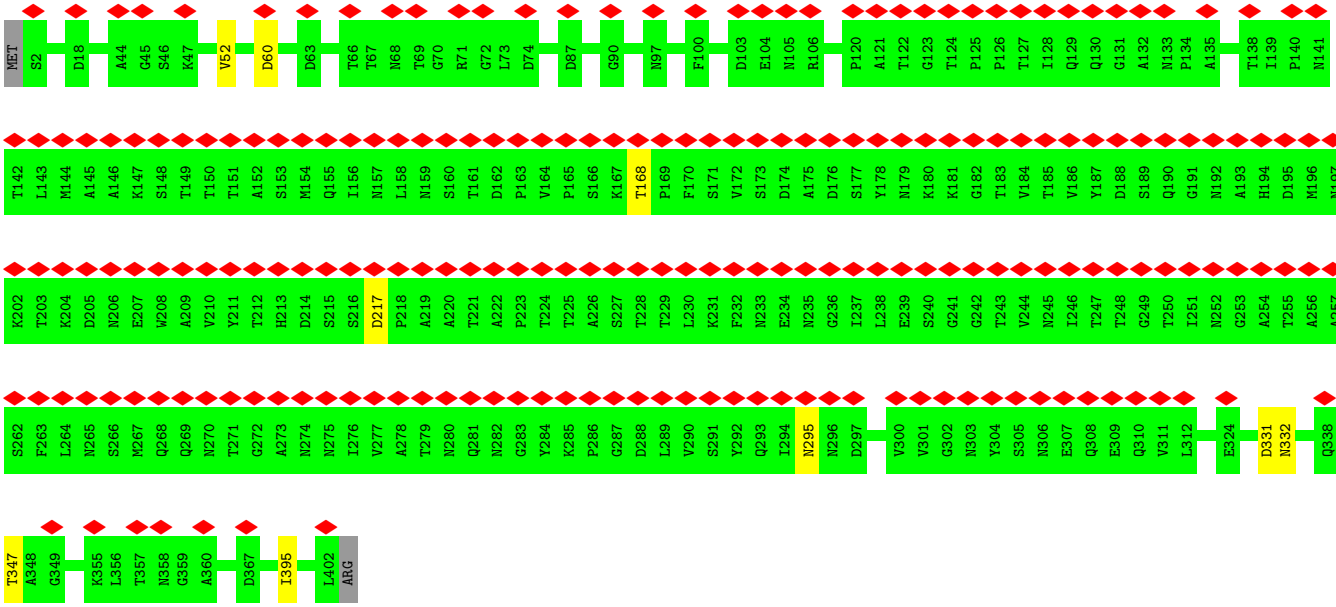
• Molecule 3: Flagellar hook protein FlgE



• Molecule 3: Flagellar hook protein FlgE

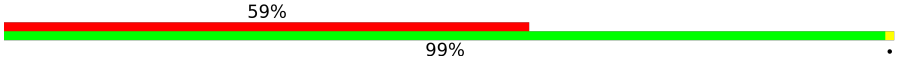
Chain DD:

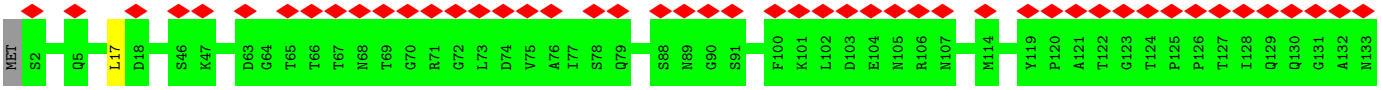


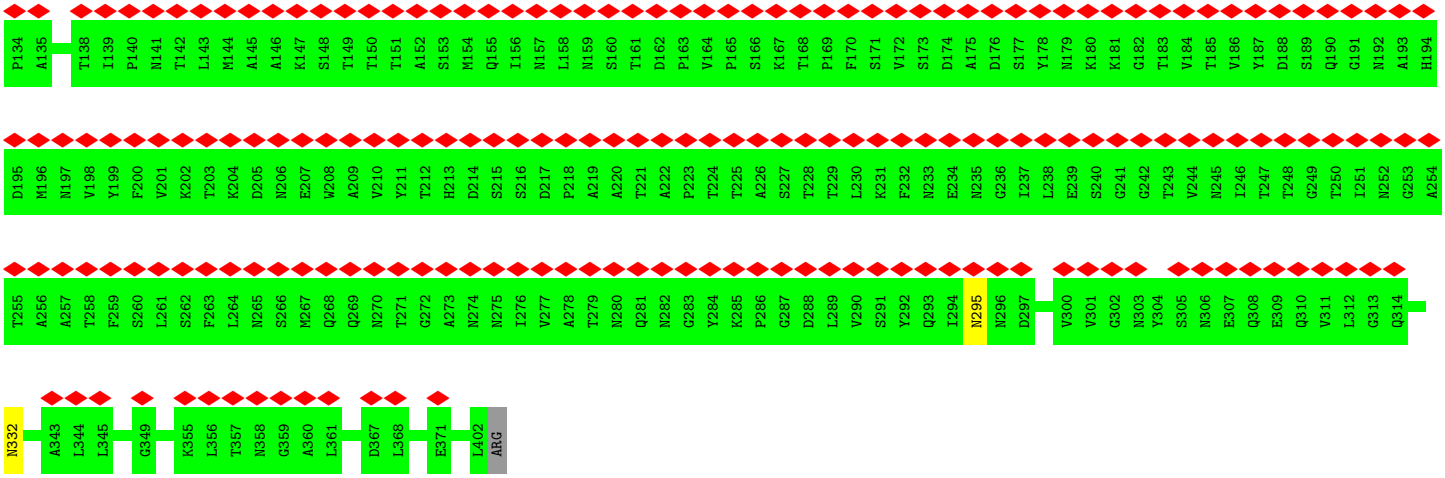


• Molecule 3: Flagellar hook protein FlgE

Chain DE:







• Molecule 3: Flagellar hook protein FlgE

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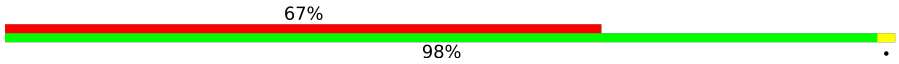
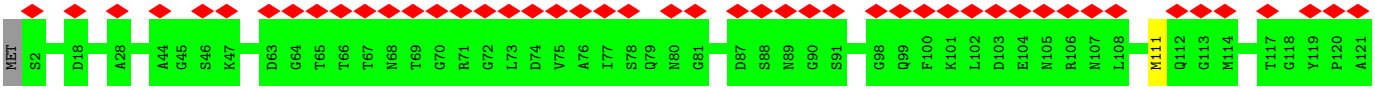
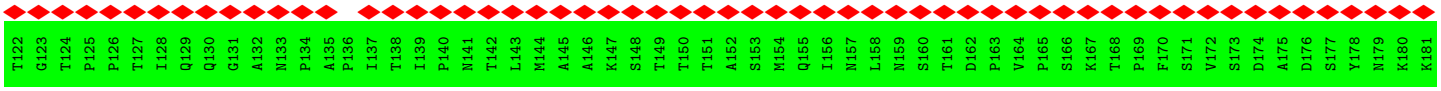
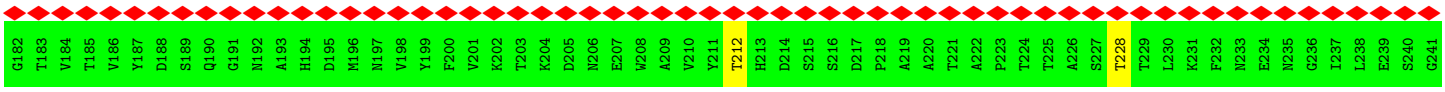
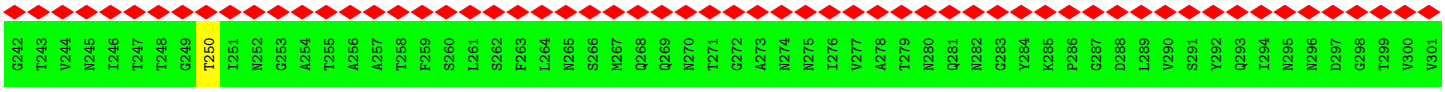
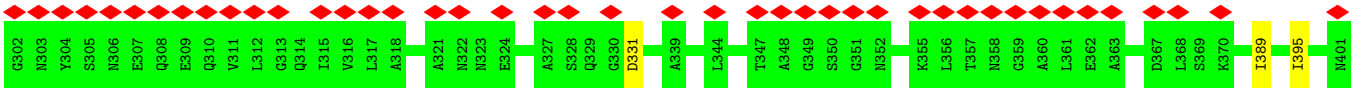






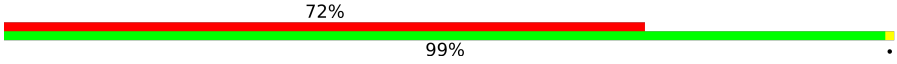


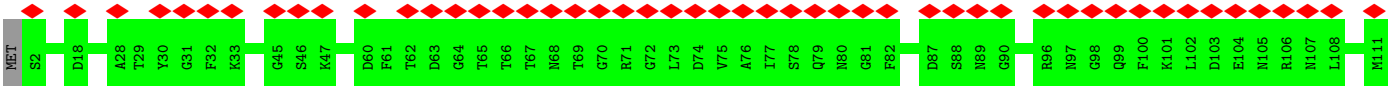


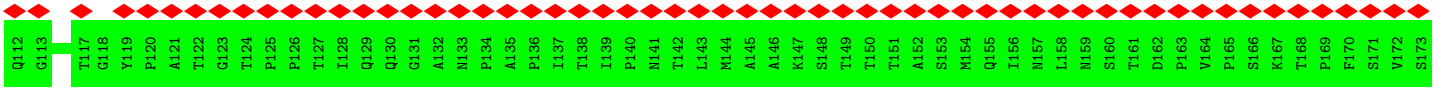


• Molecule 3: Flagellar hook protein FlgE

Chain DG:

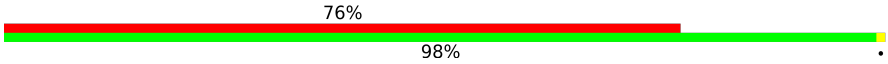


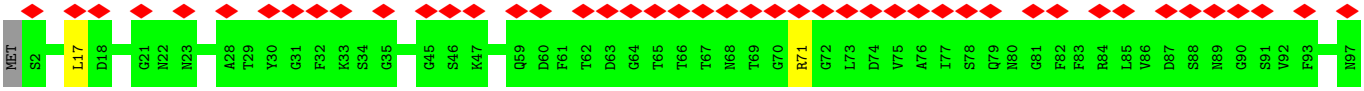


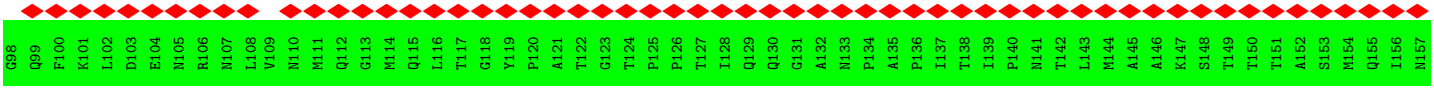


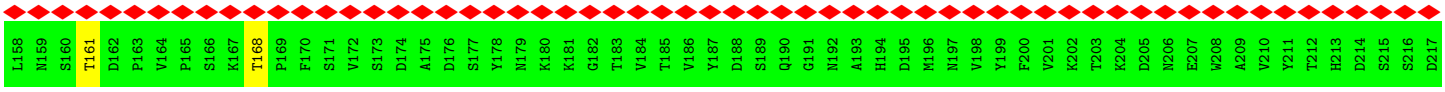
• Molecule 3: Flagellar hook protein FlgE

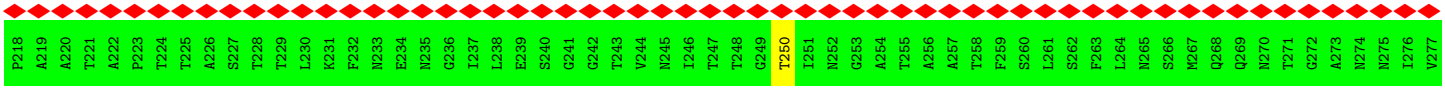
Chain DH:

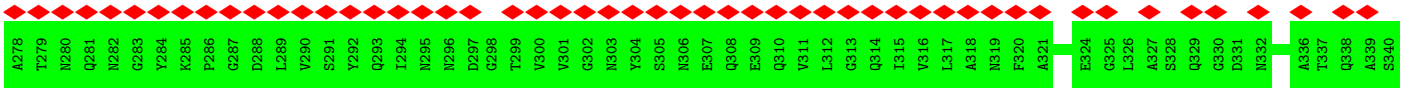


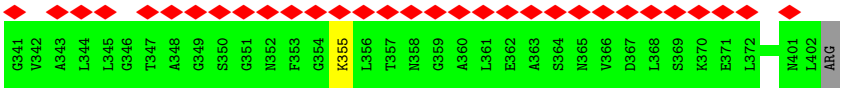






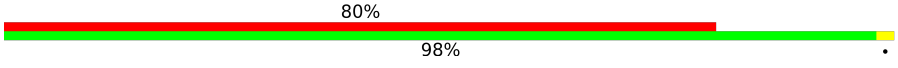


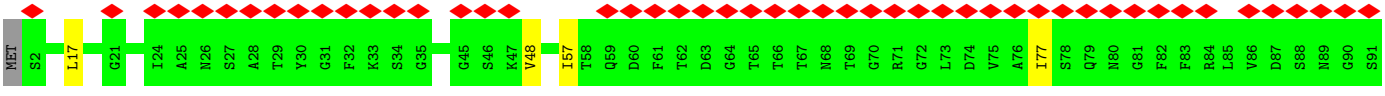


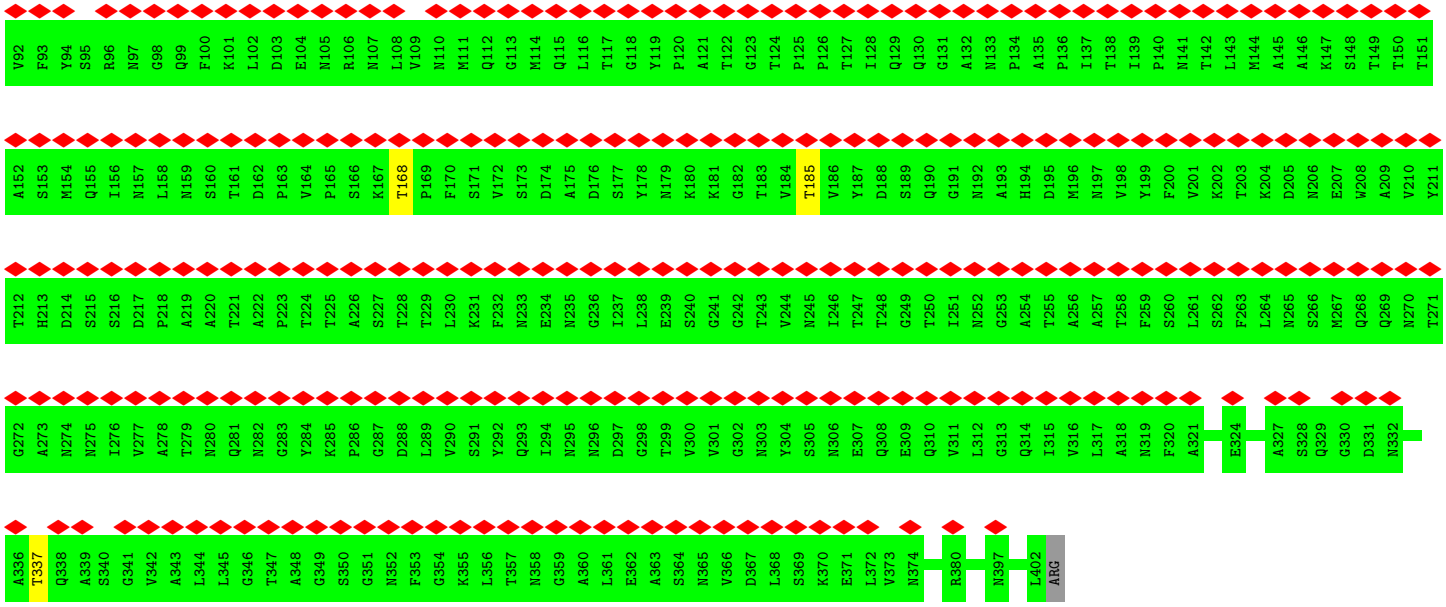


• Molecule 3: Flagellar hook protein FlgE

Chain DI:

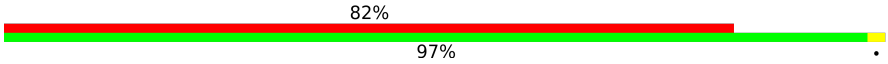


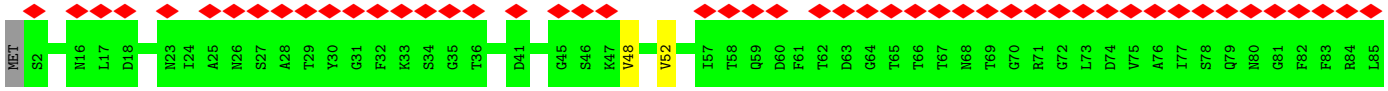


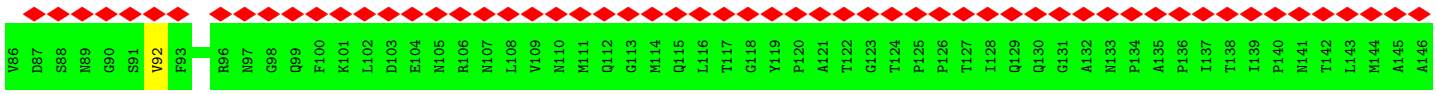


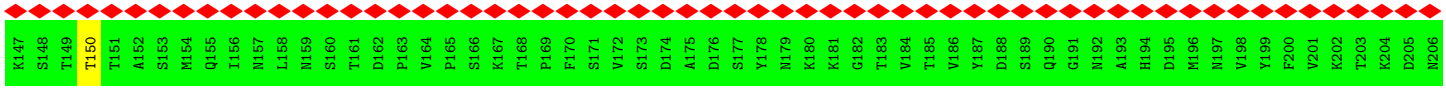
• Molecule 3: Flagellar hook protein FlgE

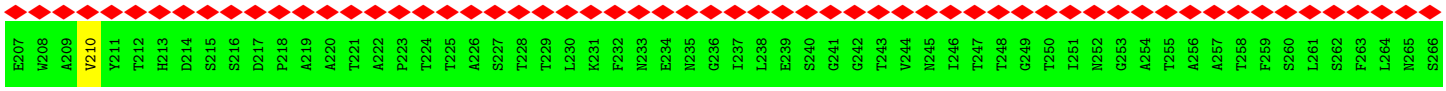
Chain DJ:

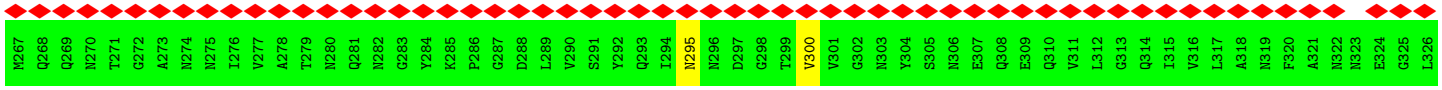


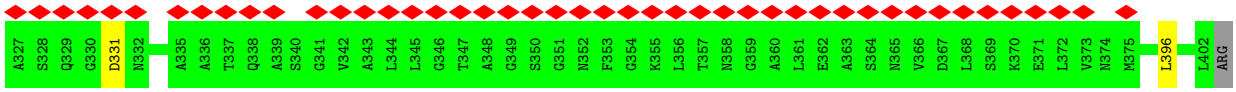






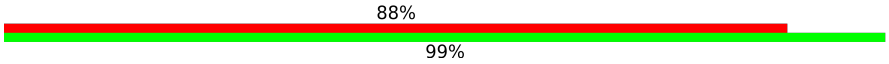


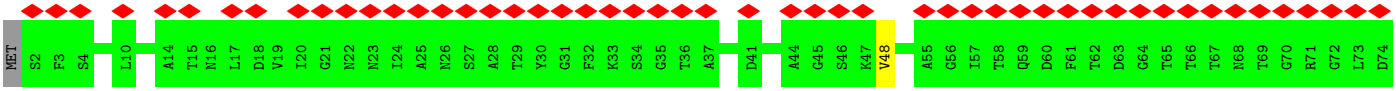


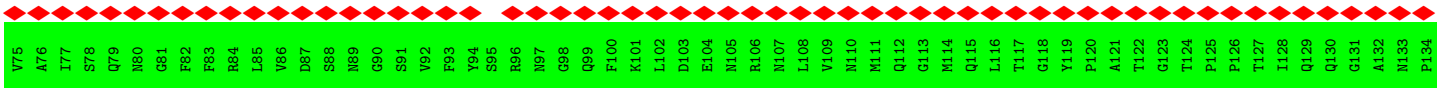


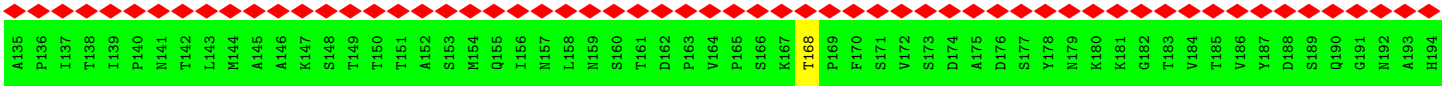
• Molecule 3: Flagellar hook protein FlgE

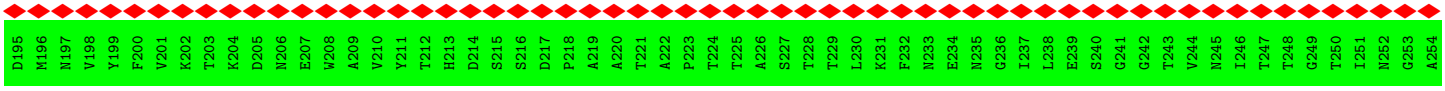
Chain DK:

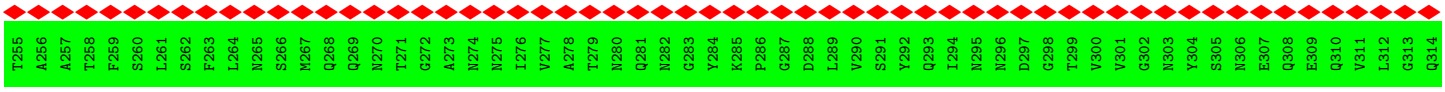


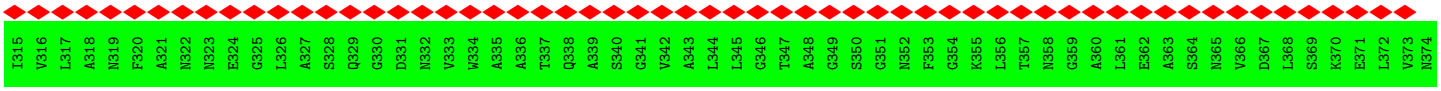

MET S2 F3 S4 L10 A14 T15 N16 L17 D18 V19 I20 G21 N22 N23 I24 A25 N26 S27 A28 T29 Y30 G31 F32 K33 S34 G35 T36 A37 D41 A44 G45 S46 K47 V48 A55 G56 I57 T58 Q59 D60 F61 T62 D63 G64 T65 T66 T67 N68 T69 G70 R71 G72 L73 D74

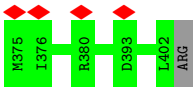

V75 A76 I77 S78 Q79 N80 G81 F82 F83 R84 L85 V86 D87 S88 N89 G90 S91 V92 F93 Y94 S95 R96 N97 G98 Q99 F100 K101 L102 D103 E104 N105 R106 N107 L108 V109 N110 M111 Q112 G113 M114 Q115 L116 T117 G118 Y119 P120 A121 T122 G123 T124 P125 P126 T127 I128 Q129 Q130 G131 A132 N133 P134


A135 P136 I137 T138 I139 P140 N141 T142 L143 M144 A145 A146 K147 S148 T149 T150 T151 A152 S153 M154 Q155 I156 N157 L158 N159 S160 T161 D162 P163 V164 P165 S166 K167 T168 P169 F170 S171 V172 S173 D174 A175 D176 S177 Y178 N179 K180 K181 G182 T183 V184 T185 V186 Y187 D188 S189 Q190 G191 N192 A193 H194


D195 M196 N197 V198 Y199 F200 V201 K202 T203 K204 D205 N206 E207 W208 A209 V210 Y211 T212 H213 D214 S215 S216 D217 P218 A219 A220 T221 A222 P223 T224 T225 A226 S227 T228 T229 L230 K231 F232 N233 E234 N235 G236 I237 L238 E239 S240 G241 G242 T243 V244 N245 I246 T247 T248 G249 T250 I251 N252 G253 A254


T255 A256 A257 T258 F259 S260 L261 S262 F263 L264 N265 S266 M267 Q268 Q269 N270 T271 G272 A273 N274 N275 I276 V277 A278 T279 N280 Q281 N282 G283 Y284 K285 P286 G287 D288 L289 V290 S291 Y292 Q293 I294 N295 N296 D297 G298 T299 V300 V301 G302 N303 Y304 S305 N306 E307 Q308 E309 Q310 V311 L312 G313 Q314


I315 V316 L317 A318 N319 F320 A321 N322 N323 E324 G325 L326 A327 S328 Q329 G330 D331 N332 V333 W334 A335 A336 T337 Q338 A339 S340 G341 V342 A343 L344 L345 G346 T347 A348 G349 S350 G351 N352 F353 G354 K355 L356 T357 N358 G359 A360 L361 E362 A363 S364 N365 V366 D367 L368 S369 K370 E371 L372 V373 N374


M375 I376 R380 D393 L402 ARG

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	118962	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 ($e^-/Å^2$)	47	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	2.880	Depositor
Minimum map value	-1.506	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.059	Depositor
Recommended contour level	0.592	Depositor
Map size (Å)	669.184, 669.184, 669.184	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.307, 1.307, 1.307	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	0.28	0/1973	0.47	0/2682
1	B	0.27	0/1973	0.48	0/2682
1	C	0.28	0/1973	0.48	0/2682
1	D	0.28	0/1973	0.48	0/2682
1	E	0.28	0/1973	0.48	0/2682
1	F	0.29	0/1973	0.49	0/2682
1	G	0.28	0/1973	0.48	0/2682
1	H	0.28	0/1973	0.48	0/2682
1	I	0.28	0/1973	0.49	0/2682
1	J	0.28	0/1973	0.48	0/2682
1	K	0.29	0/1973	0.47	0/2682
1	L	0.28	0/1965	0.48	0/2672
1	M	0.29	0/1973	0.48	0/2682
1	N	0.28	0/1909	0.47	0/2593
1	O	0.28	0/1917	0.48	0/2605
1	P	0.28	0/1884	0.48	0/2559
1	Q	0.28	0/1880	0.48	0/2554
1	R	0.29	0/1898	0.49	0/2578
1	S	0.28	0/1880	0.48	0/2554
1	T	0.28	0/1925	0.47	0/2617
1	U	0.27	0/1965	0.48	0/2672
1	V	0.28	0/1965	0.47	0/2672
1	W	0.28	0/1965	0.48	0/2672
1	X	0.27	0/1965	0.48	0/2672
2	a	0.26	0/1836	0.49	0/2502
2	b	0.26	0/1828	0.48	0/2492
2	c	0.27	0/1836	0.49	0/2502
2	d	0.27	0/1836	0.49	0/2502
2	e	0.26	0/1836	0.49	0/2502
3	DA	0.26	0/2991	0.45	0/4076
3	DB	0.26	0/2991	0.46	0/4076
3	DC	0.26	0/2991	0.45	0/4076
3	DD	0.26	0/2991	0.46	0/4076
3	DE	0.26	0/2991	0.45	0/4076

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
3	DF	0.26	0/2991	0.46	0/4076
3	DG	0.25	0/2991	0.45	0/4076
3	DH	0.25	0/2991	0.45	0/4076
3	DI	0.25	0/2991	0.44	0/4076
3	DJ	0.25	0/2991	0.45	0/4076
3	DK	0.25	0/2991	0.45	0/4076
All	All	0.27	0/88867	0.47	0/120940

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	258/260 (99%)	247 (96%)	11 (4%)	0	100	100
1	B	258/260 (99%)	248 (96%)	10 (4%)	0	100	100
1	C	258/260 (99%)	246 (95%)	12 (5%)	0	100	100
1	D	258/260 (99%)	244 (95%)	14 (5%)	0	100	100
1	E	258/260 (99%)	246 (95%)	12 (5%)	0	100	100
1	F	258/260 (99%)	250 (97%)	8 (3%)	0	100	100
1	G	258/260 (99%)	250 (97%)	8 (3%)	0	100	100
1	H	258/260 (99%)	244 (95%)	14 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	I	258/260 (99%)	249 (96%)	9 (4%)	0	100	100
1	J	258/260 (99%)	246 (95%)	12 (5%)	0	100	100
1	K	258/260 (99%)	246 (95%)	12 (5%)	0	100	100
1	L	257/260 (99%)	249 (97%)	8 (3%)	0	100	100
1	M	258/260 (99%)	243 (94%)	15 (6%)	0	100	100
1	N	247/260 (95%)	240 (97%)	7 (3%)	0	100	100
1	O	248/260 (95%)	242 (98%)	6 (2%)	0	100	100
1	P	244/260 (94%)	233 (96%)	11 (4%)	0	100	100
1	Q	243/260 (94%)	237 (98%)	6 (2%)	0	100	100
1	R	246/260 (95%)	232 (94%)	14 (6%)	0	100	100
1	S	243/260 (94%)	234 (96%)	9 (4%)	0	100	100
1	T	249/260 (96%)	242 (97%)	7 (3%)	0	100	100
1	U	257/260 (99%)	243 (95%)	14 (5%)	0	100	100
1	V	257/260 (99%)	247 (96%)	10 (4%)	0	100	100
1	W	257/260 (99%)	245 (95%)	12 (5%)	0	100	100
1	X	257/260 (99%)	244 (95%)	13 (5%)	0	100	100
2	a	247/251 (98%)	240 (97%)	7 (3%)	0	100	100
2	b	246/251 (98%)	236 (96%)	10 (4%)	0	100	100
2	c	247/251 (98%)	240 (97%)	7 (3%)	0	100	100
2	d	247/251 (98%)	230 (93%)	17 (7%)	0	100	100
2	e	247/251 (98%)	235 (95%)	12 (5%)	0	100	100
3	DA	399/403 (99%)	377 (94%)	22 (6%)	0	100	100
3	DB	399/403 (99%)	376 (94%)	23 (6%)	0	100	100
3	DC	399/403 (99%)	378 (95%)	21 (5%)	0	100	100
3	DD	399/403 (99%)	370 (93%)	29 (7%)	0	100	100
3	DE	399/403 (99%)	381 (96%)	18 (4%)	0	100	100
3	DF	399/403 (99%)	383 (96%)	16 (4%)	0	100	100
3	DG	399/403 (99%)	385 (96%)	14 (4%)	0	100	100
3	DH	399/403 (99%)	384 (96%)	14 (4%)	1 (0%)	41	74
3	DI	399/403 (99%)	385 (96%)	14 (4%)	0	100	100
3	DJ	399/403 (99%)	379 (95%)	20 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	DK	399/403 (99%)	387 (97%)	12 (3%)	0	100 100
All	All	11724/11928 (98%)	11213 (96%)	510 (4%)	1 (0%)	100 100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	DH	71	ARG

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	215/215 (100%)	209 (97%)	6 (3%)	43 74
1	B	215/215 (100%)	209 (97%)	6 (3%)	43 74
1	C	215/215 (100%)	207 (96%)	8 (4%)	34 68
1	D	215/215 (100%)	212 (99%)	3 (1%)	67 86
1	E	215/215 (100%)	208 (97%)	7 (3%)	38 71
1	F	215/215 (100%)	212 (99%)	3 (1%)	67 86
1	G	215/215 (100%)	213 (99%)	2 (1%)	78 91
1	H	215/215 (100%)	213 (99%)	2 (1%)	78 91
1	I	215/215 (100%)	211 (98%)	4 (2%)	57 81
1	J	215/215 (100%)	208 (97%)	7 (3%)	38 71
1	K	215/215 (100%)	210 (98%)	5 (2%)	50 78
1	L	214/215 (100%)	211 (99%)	3 (1%)	67 86
1	M	215/215 (100%)	209 (97%)	6 (3%)	43 74
1	N	208/215 (97%)	206 (99%)	2 (1%)	76 90
1	O	209/215 (97%)	204 (98%)	5 (2%)	49 77
1	P	204/215 (95%)	198 (97%)	6 (3%)	42 74
1	Q	204/215 (95%)	201 (98%)	3 (2%)	65 85

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	R	206/215 (96%)	197 (96%)	9 (4%)	28	64
1	S	204/215 (95%)	200 (98%)	4 (2%)	55	80
1	T	210/215 (98%)	208 (99%)	2 (1%)	76	90
1	U	214/215 (100%)	209 (98%)	5 (2%)	50	78
1	V	214/215 (100%)	210 (98%)	4 (2%)	57	81
1	W	214/215 (100%)	211 (99%)	3 (1%)	67	86
1	X	214/215 (100%)	209 (98%)	5 (2%)	50	78
2	a	191/193 (99%)	188 (98%)	3 (2%)	62	84
2	b	190/193 (98%)	187 (98%)	3 (2%)	62	84
2	c	191/193 (99%)	189 (99%)	2 (1%)	76	90
2	d	191/193 (99%)	186 (97%)	5 (3%)	46	76
2	e	191/193 (99%)	186 (97%)	5 (3%)	46	76
3	DA	321/323 (99%)	318 (99%)	3 (1%)	78	91
3	DB	321/323 (99%)	313 (98%)	8 (2%)	47	77
3	DC	321/323 (99%)	315 (98%)	6 (2%)	57	81
3	DD	321/323 (99%)	311 (97%)	10 (3%)	40	72
3	DE	321/323 (99%)	318 (99%)	3 (1%)	78	91
3	DF	321/323 (99%)	314 (98%)	7 (2%)	52	79
3	DG	321/323 (99%)	318 (99%)	3 (1%)	78	91
3	DH	321/323 (99%)	316 (98%)	5 (2%)	62	84
3	DI	321/323 (99%)	314 (98%)	7 (2%)	52	79
3	DJ	321/323 (99%)	312 (97%)	9 (3%)	43	74
3	DK	321/323 (99%)	319 (99%)	2 (1%)	86	94
All	All	9580/9678 (99%)	9389 (98%)	191 (2%)	57	80

All (191) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	ASP
1	A	115	THR
1	A	153	ARG
1	A	164	GLN
1	A	205	THR
1	A	256	LYS

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Mol	Chain	Res	Type
1	B	42	GLU
1	B	77	THR
1	B	97	ILE
1	B	179	MET
1	B	185	GLU
1	B	258	THR
1	C	1	MET
1	C	26	LEU
1	C	45	LEU
1	C	77	THR
1	C	97	ILE
1	C	105	VAL
1	C	159	VAL
1	C	194	GLU
1	D	1	MET
1	D	97	ILE
1	D	150	THR
1	E	26	LEU
1	E	28	ASN
1	E	42	GLU
1	E	97	ILE
1	E	141	THR
1	E	164	GLN
1	E	255	GLN
1	F	141	THR
1	F	175	LEU
1	F	177	THR
1	G	117	ASP
1	G	141	THR
1	H	175	LEU
1	H	226	VAL
1	I	43	ASP
1	I	97	ILE
1	I	150	THR
1	I	164	GLN
1	J	1	MET
1	J	20	ASP
1	J	72	VAL
1	J	97	ILE
1	J	157	VAL
1	J	159	VAL
1	J	255	GLN

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Mol	Chain	Res	Type
1	K	1	MET
1	K	42	GLU
1	K	80	LEU
1	K	97	ILE
1	K	156	VAL
1	L	28	ASN
1	L	42	GLU
1	L	245	LYS
1	M	72	VAL
1	M	97	ILE
1	M	98	LYS
1	M	175	LEU
1	M	181	ASP
1	M	195	THR
1	N	117	ASP
1	N	202	ASN
1	O	61	THR
1	O	156	VAL
1	O	157	VAL
1	O	179	MET
1	O	241	GLU
1	P	28	ASN
1	P	50	ARG
1	P	107	LEU
1	P	150	THR
1	P	179	MET
1	P	254	LEU
1	Q	44	LEU
1	Q	141	THR
1	Q	179	MET
1	R	43	ASP
1	R	66	LEU
1	R	77	THR
1	R	105	VAL
1	R	141	THR
1	R	149	ILE
1	R	150	THR
1	R	156	VAL
1	R	170	VAL
1	S	72	VAL
1	S	109	ASP
1	S	141	THR

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Mol	Chain	Res	Type
1	S	175	LEU
1	T	43	ASP
1	T	141	THR
1	U	141	THR
1	U	150	THR
1	U	160	THR
1	U	205	THR
1	U	257	LEU
2	a	46	VAL
2	a	51	LEU
2	a	71	LEU
2	b	71	LEU
2	b	78	LEU
2	b	182	THR
2	c	7	THR
2	c	71	LEU
2	d	31	THR
2	d	44	VAL
2	d	71	LEU
2	d	78	LEU
2	d	114	THR
2	e	44	VAL
2	e	78	LEU
2	e	114	THR
2	e	116	GLN
2	e	163	LEU
1	V	90	ASN
1	V	159	VAL
1	V	168	VAL
1	V	205	THR
1	W	109	ASP
1	W	242	ILE
1	W	260	LEU
1	X	66	LEU
1	X	142	ILE
1	X	179	MET
1	X	185	GLU
1	X	195	THR
3	DA	292	TYR
3	DA	332	ASN
3	DA	371	GLU
3	DB	3	PHE

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Mol	Chain	Res	Type
3	DB	17	LEU
3	DB	26	ASN
3	DB	161	THR
3	DB	228	THR
3	DB	261	LEU
3	DB	332	ASN
3	DB	395	ILE
3	DC	17	LEU
3	DC	168	THR
3	DC	201	VAL
3	DC	217	ASP
3	DC	229	THR
3	DC	288	ASP
3	DD	52	VAL
3	DD	60	ASP
3	DD	168	THR
3	DD	201	VAL
3	DD	217	ASP
3	DD	295	ASN
3	DD	331	ASP
3	DD	332	ASN
3	DD	347	THR
3	DD	395	ILE
3	DE	17	LEU
3	DE	295	ASN
3	DE	332	ASN
3	DF	111	MET
3	DF	212	THR
3	DF	228	THR
3	DF	250	THR
3	DF	331	ASP
3	DF	389	ILE
3	DF	395	ILE
3	DG	250	THR
3	DG	322	ASN
3	DG	391	THR
3	DH	17	LEU
3	DH	161	THR
3	DH	168	THR
3	DH	250	THR
3	DH	355	LYS
3	DI	17	LEU

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Mol	Chain	Res	Type
3	DI	48	VAL
3	DI	57	ILE
3	DI	77	ILE
3	DI	168	THR
3	DI	185	THR
3	DI	337	THR
3	DJ	48	VAL
3	DJ	52	VAL
3	DJ	92	VAL
3	DJ	150	THR
3	DJ	210	VAL
3	DJ	295	ASN
3	DJ	300	VAL
3	DJ	331	ASP
3	DJ	396	LEU
3	DK	48	VAL
3	DK	168	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	145	ASN
1	A	161	GLN
1	C	37	GLN
1	G	259	GLN
1	Q	51	GLN
1	Q	164	GLN
1	U	137	GLN
3	DB	89	ASN
3	DB	107	ASN
3	DB	129	GLN
3	DB	310	GLN
3	DC	322	ASN
3	DC	365	ASN
3	DD	397	ASN
3	DD	401	ASN
3	DE	99	GLN
3	DE	107	ASN
3	DE	129	GLN
3	DF	129	GLN
3	DF	206	ASN
3	DF	268	GLN

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Mol	Chain	Res	Type
3	DF	310	GLN
3	DG	26	ASN
3	DG	129	GLN
3	DH	295	ASN
3	DH	310	GLN
3	DH	365	ASN
3	DI	129	GLN
3	DI	379	GLN
3	DK	89	ASN
3	DK	97	ASN
3	DK	332	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.

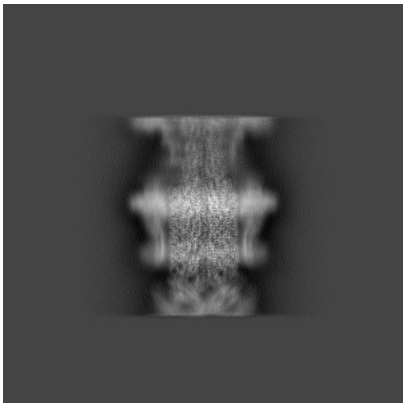
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30336. These allow visual inspection of the internal detail of the map and identification of artifacts.

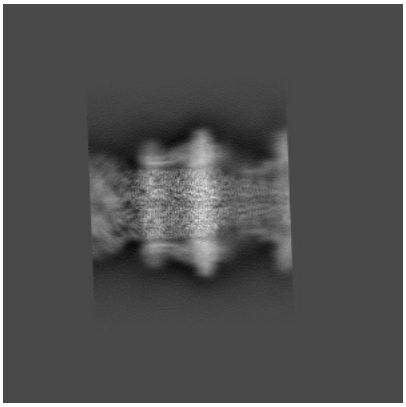
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

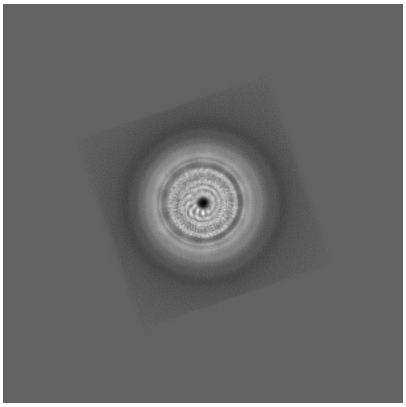
6.1.1 Primary map



X



Y

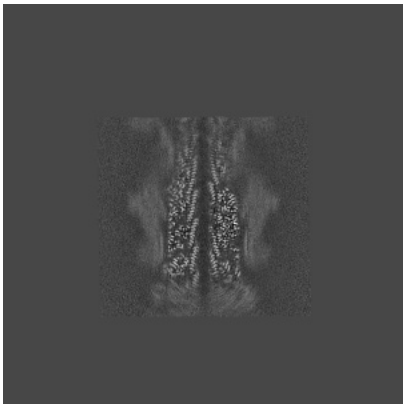


Z

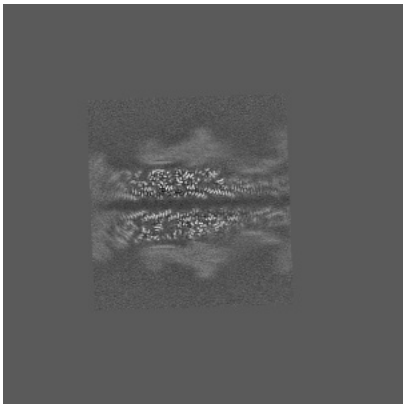
The images above show the map projected in three orthogonal directions.

6.2 Central slices

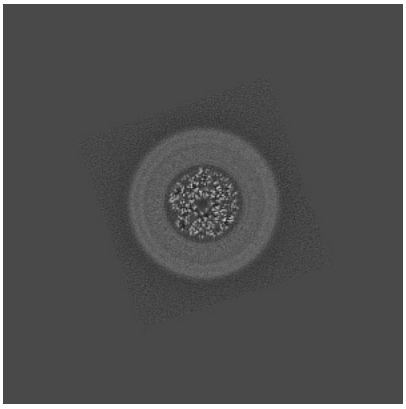
6.2.1 Primary map



X Index: 256



Y Index: 256

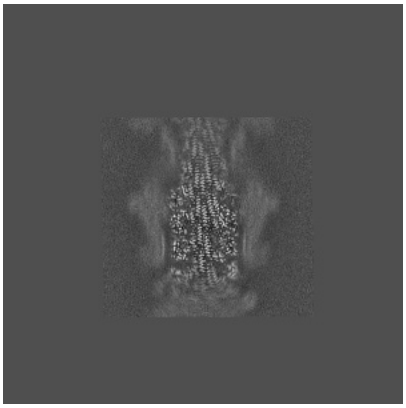


Z Index: 256

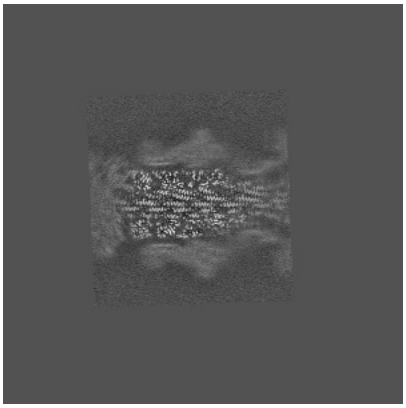
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

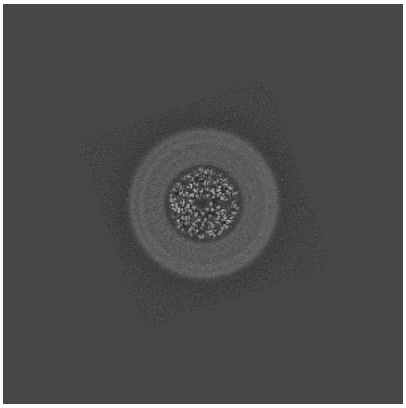
6.3.1 Primary map



X Index: 269



Y Index: 243



Z Index: 255

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.592. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

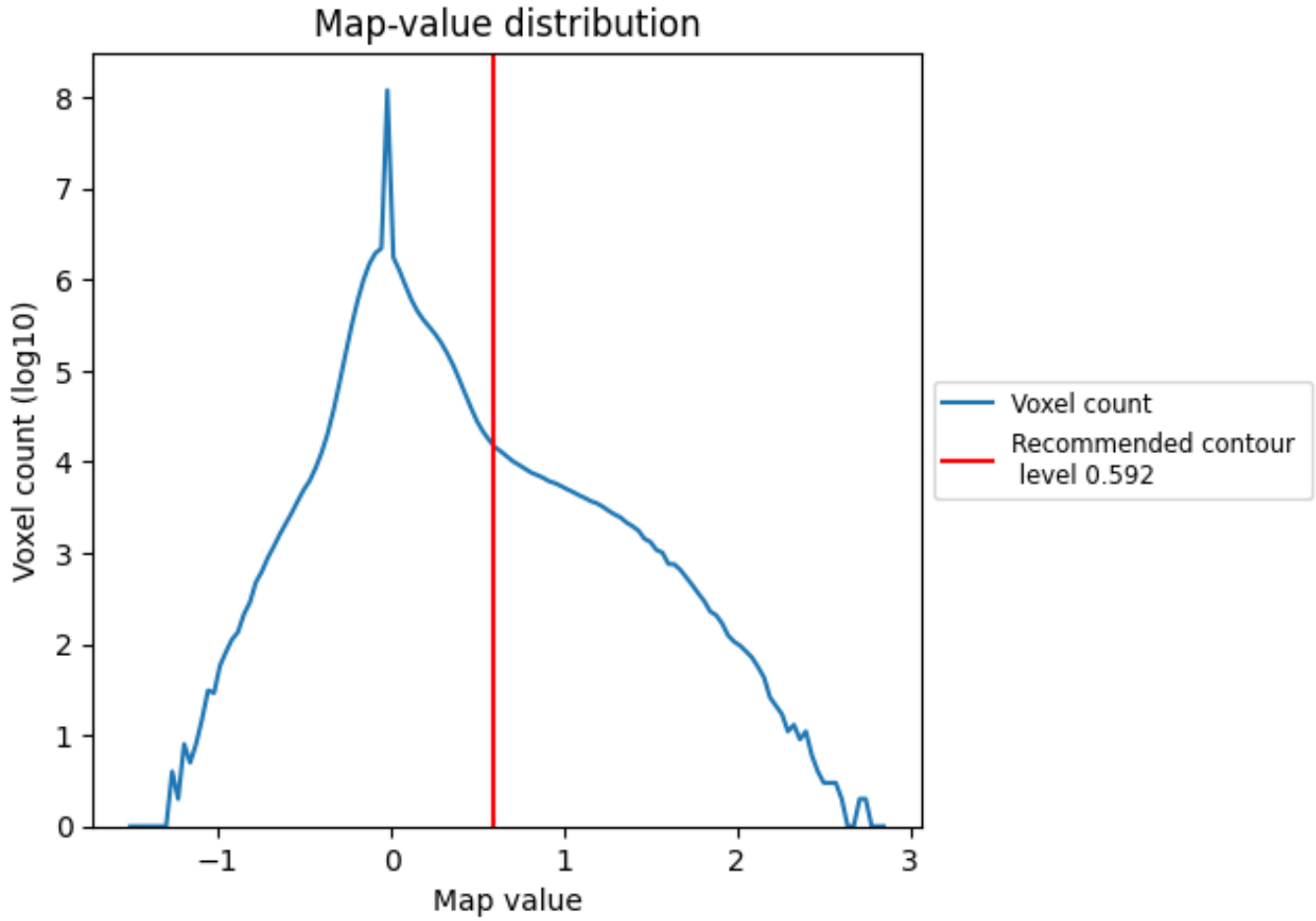
6.5 Mask visualisation (i)

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

7 Map analysis

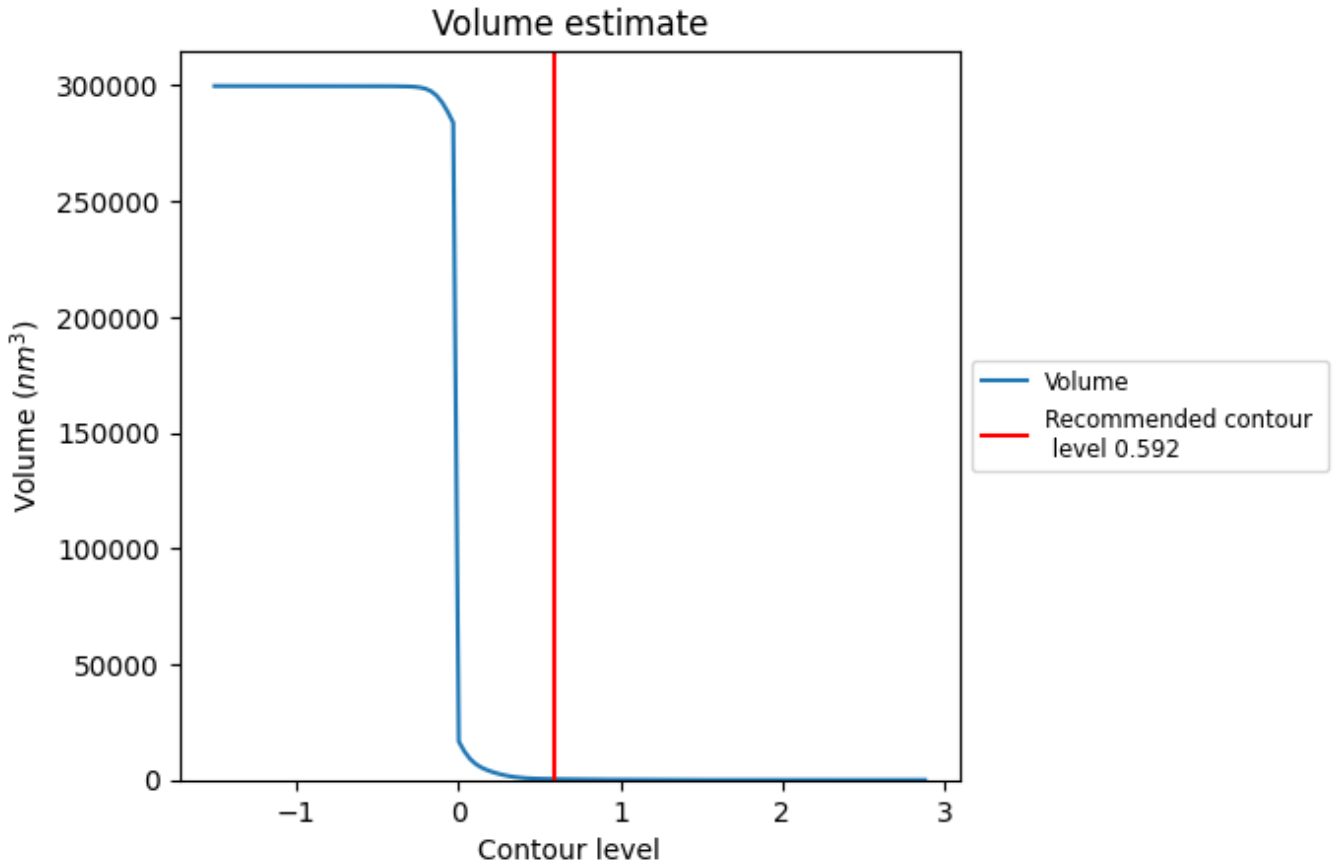
This section contains the results of statistical analysis of the map.

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.

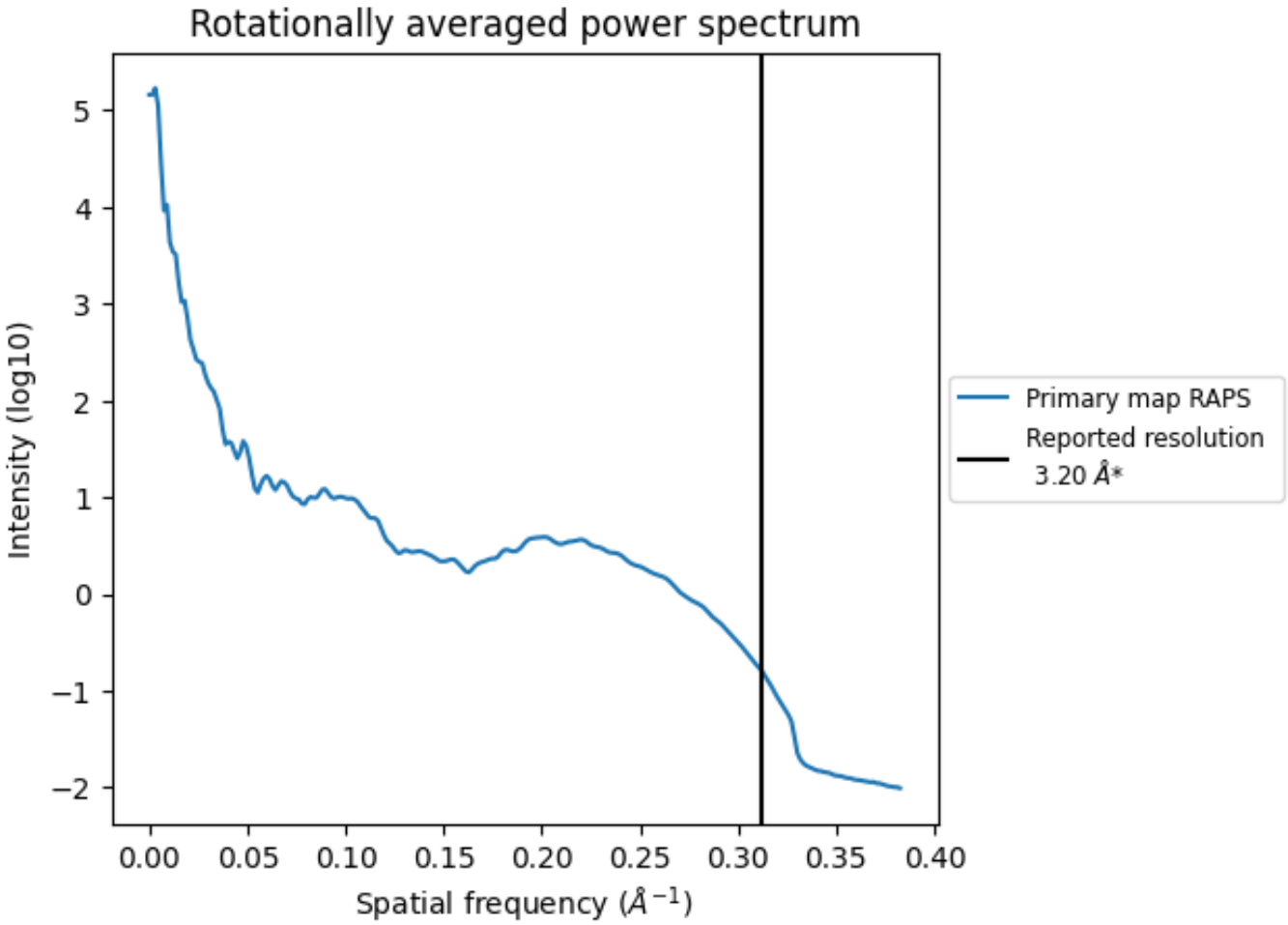
7.2 Volume estimate



The volume at the recommended contour level is 363 nm^3; this corresponds to an approximate mass of 327 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 0.312 Å^{-1}

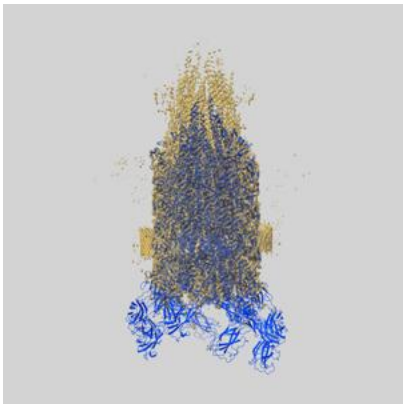
8 Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

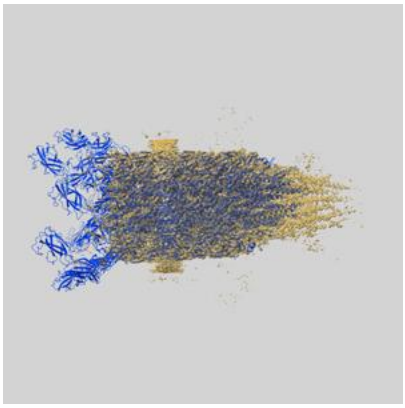
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30336 and PDB model 7CBM. Per-residue inclusion information can be found in section 3 on page 8.

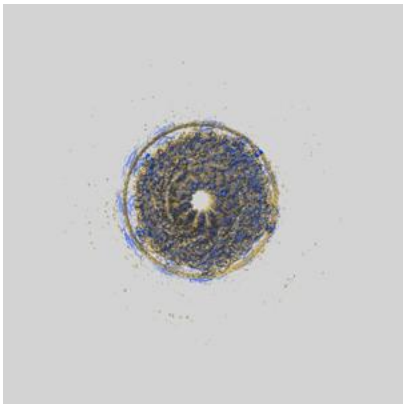
9.1 Map-model overlay



X



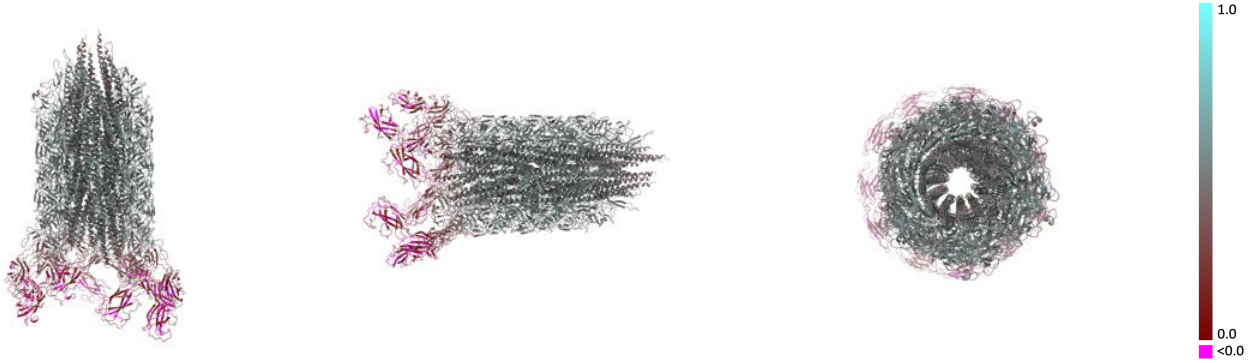
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.592 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.

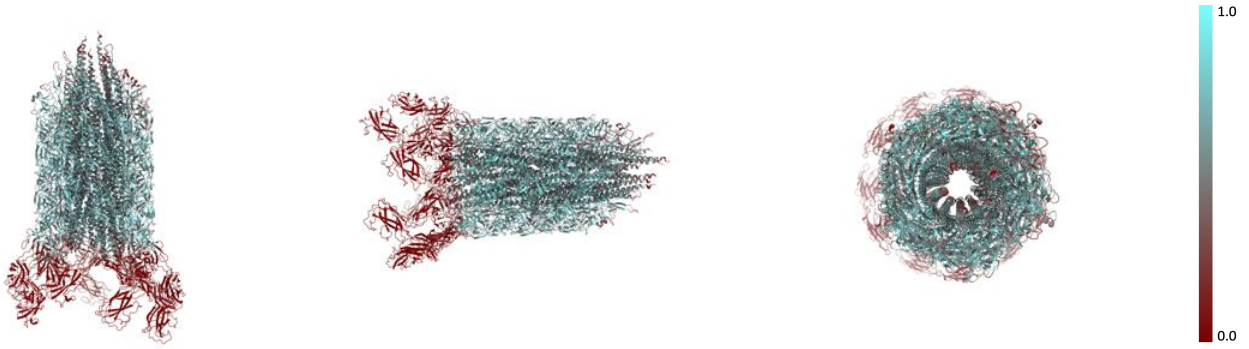
9.2 Q-score mapped to coordinate model



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.

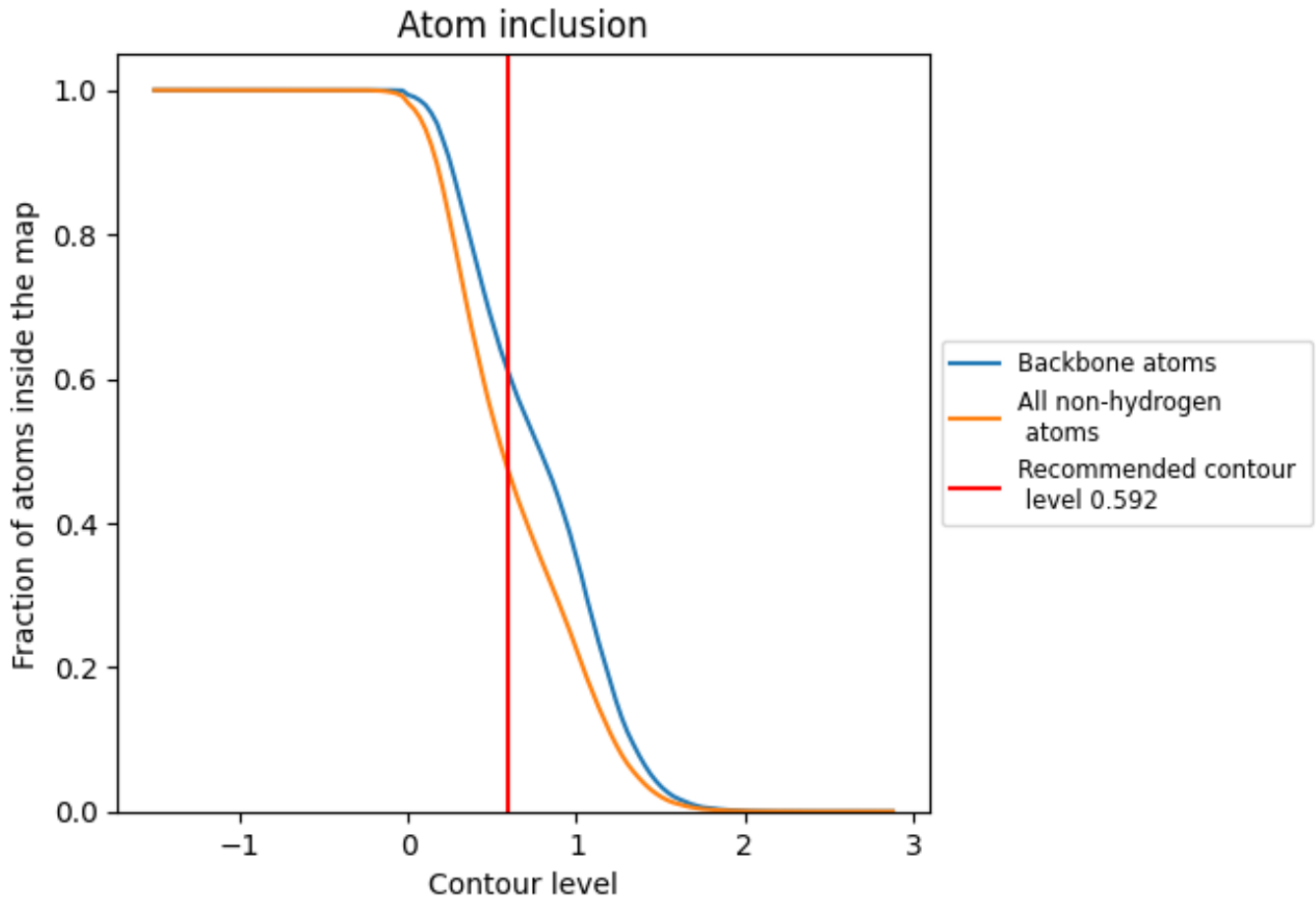
9.3 Atom inclusion mapped to coordinate model



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 (0.592).

9.4 Atom inclusion (i)



At the recommended contour level, 61% of all backbone atoms, 48% 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 (0.592) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4753	0.4250
A	0.6345	0.5010
B	0.5898	0.4870
C	0.6345	0.4940
D	0.6111	0.4920
DA	0.3369	0.3380
DB	0.3413	0.3600
DC	0.3256	0.3530
DD	0.3293	0.3260
DE	0.2986	0.3280
DF	0.2401	0.3140
DG	0.2120	0.2970
DH	0.1843	0.2910
DI	0.1512	0.2550
DJ	0.1406	0.2460
DK	0.0930	0.2160
E	0.6090	0.4930
F	0.6412	0.5000
G	0.6391	0.5030
H	0.6511	0.5060
I	0.6298	0.5050
J	0.6277	0.5060
K	0.6584	0.5090
L	0.6361	0.5140
M	0.6615	0.5140
N	0.6153	0.5090
O	0.6152	0.5000
P	0.6378	0.5040
Q	0.6343	0.5080
R	0.6517	0.5100
S	0.6599	0.5070
T	0.6312	0.5090
U	0.6079	0.4970
V	0.6137	0.4960
W	0.6084	0.4980

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Chain	Atom inclusion	Q-score
X	0.5641	0.4770
a	0.5640	0.4810
b	0.5462	0.4600
c	0.5808	0.4830
d	0.5572	0.4870
e	0.4506	0.4710