



Full wwPDB EM Validation Report ⓘ

May 19, 2024 – 11:19 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:

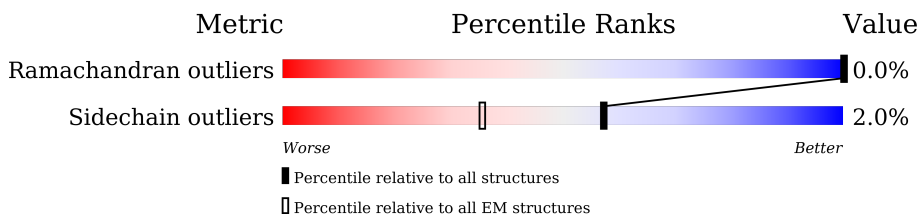
EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

1 Overall quality at a glance

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

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	260	
1	B	260	
1	C	260	
1	D	260	
1	E	260	
1	F	260	
1	G	260	
1	H	260	
1	I	260	

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Mol	Chain	Length	Quality of chain
1	J	260	8% 97%
1	K	260	98%
1	L	260	5% 98%
1	M	260	6% 98%
1	N	260	7% 96%
1	O	260	7% 95%
1	P	260	6% 93% 5%
1	Q	260	7% 94% 5%
1	R	260	5% 93%
1	S	260	6% 93% 5%
1	T	260	5% 97%
1	U	260	10% 98%
1	V	260	10% 98%
1	W	260	12% 98%
1	X	260	18% 98%
2	a	251	17% 98%
2	b	251	23% 98%
2	c	251	16% 98%
2	d	251	20% 97%
2	e	251	38% 97%
3	DA	403	52% 99%
3	DB	403	51% 98%
3	DC	403	53% 98%
3	DD	403	54% 97%
3	DE	403	59% 99%

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

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

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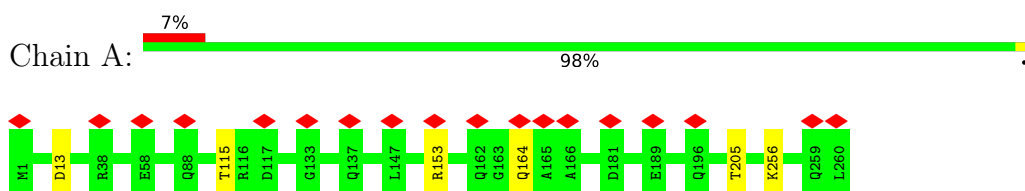
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Mol	Chain	Residues	Atoms					AltConf	Trace
3	DF	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DG	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DH	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
3	DI	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8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

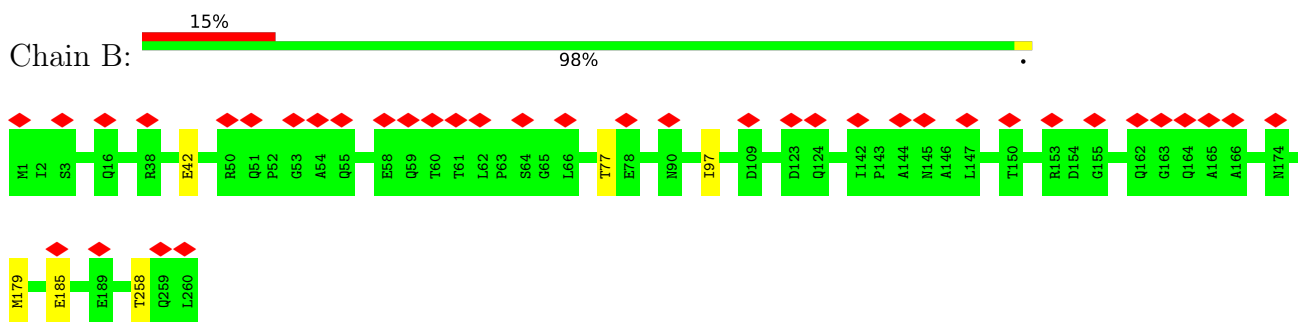
3 Residue-property plots [i](#)

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.

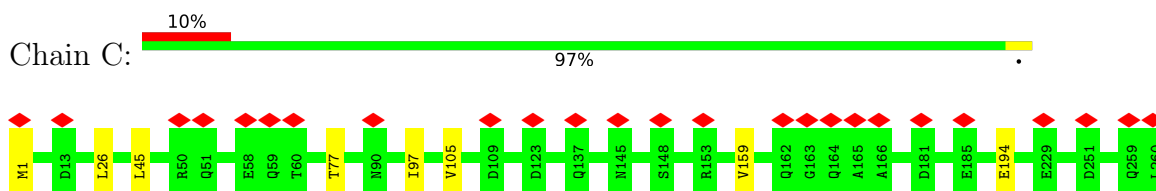
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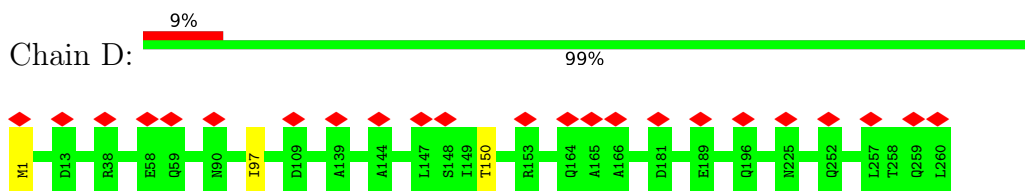
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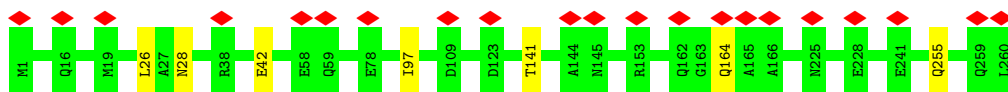


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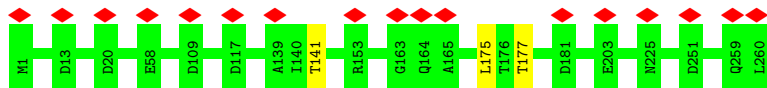


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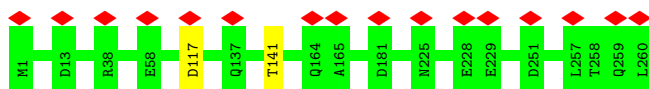




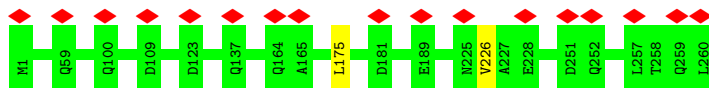
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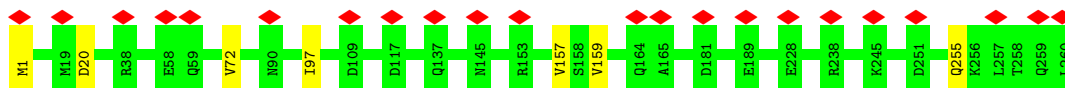
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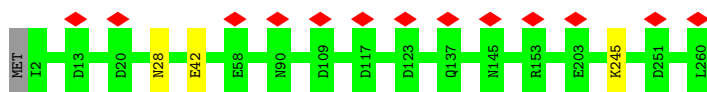
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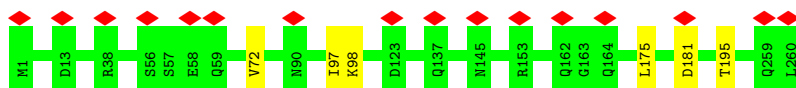
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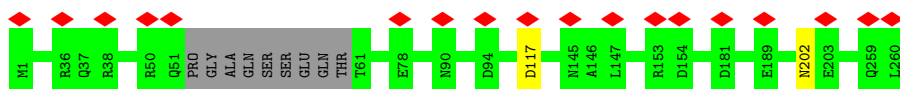
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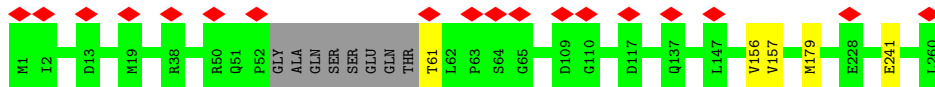
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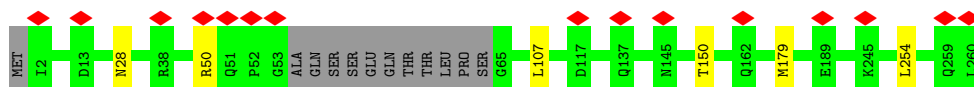
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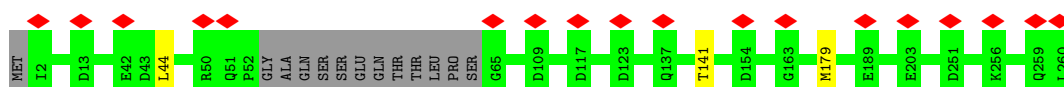
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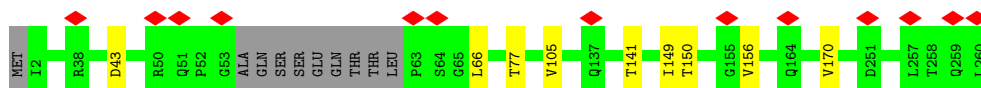
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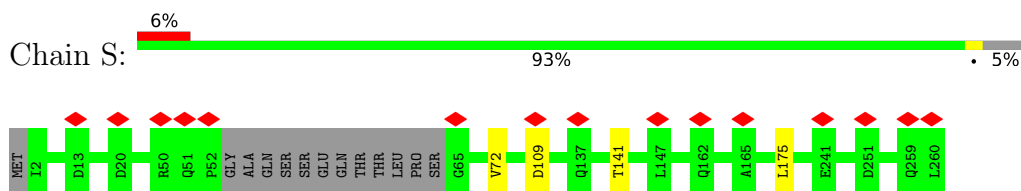
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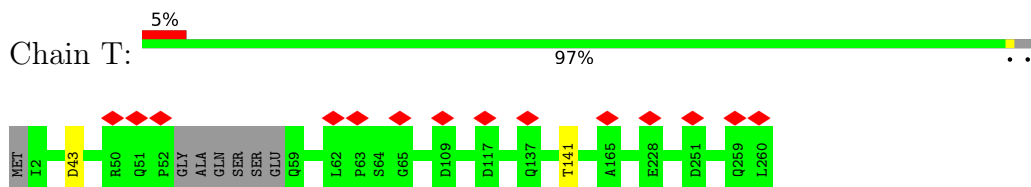
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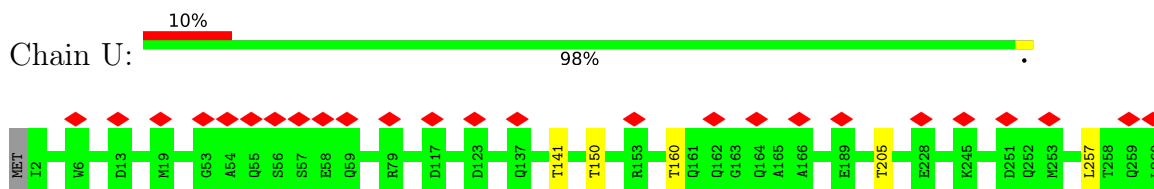
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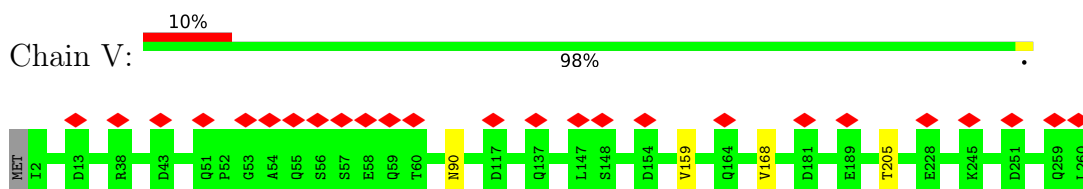
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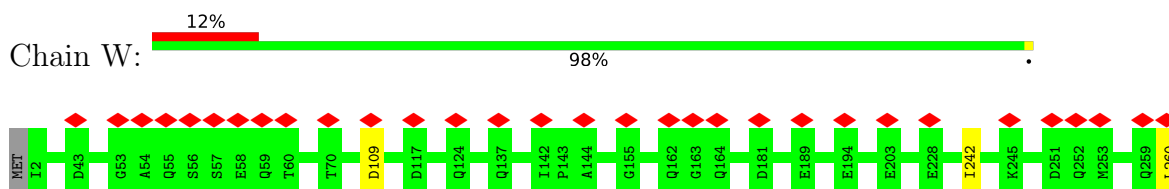
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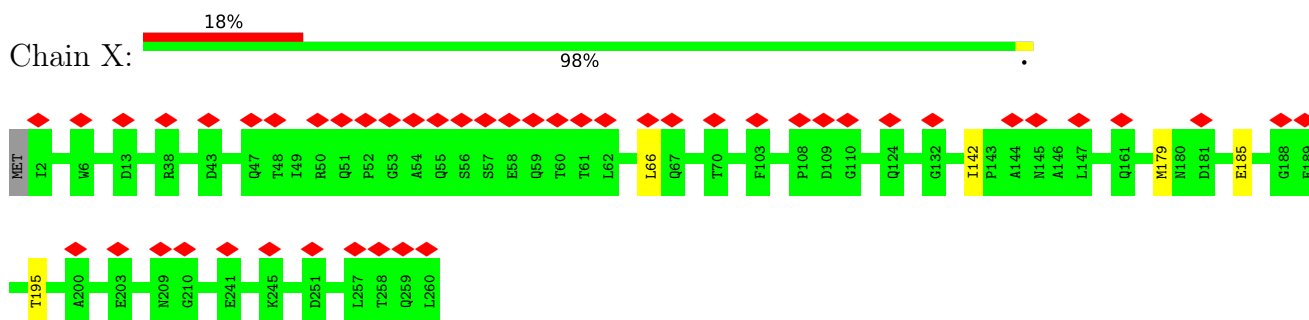
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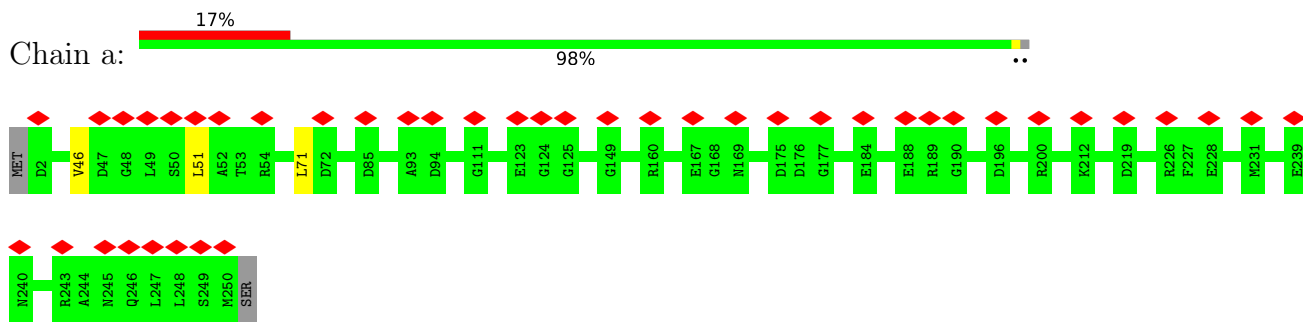
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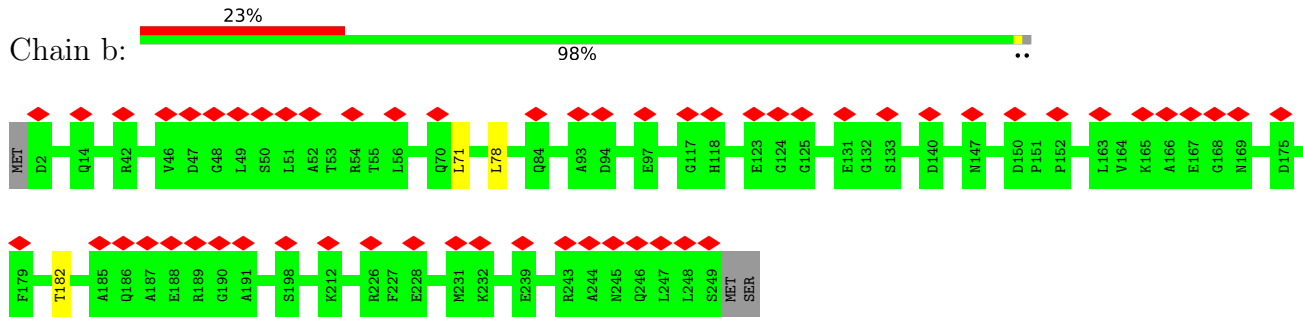
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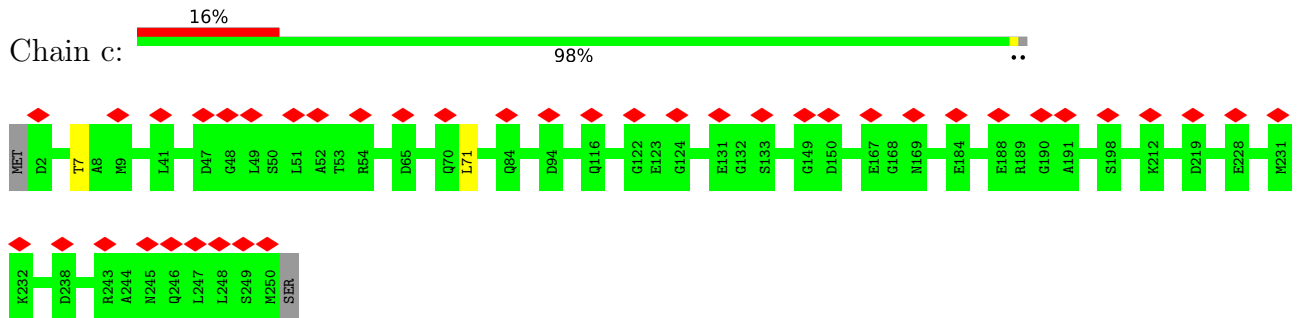
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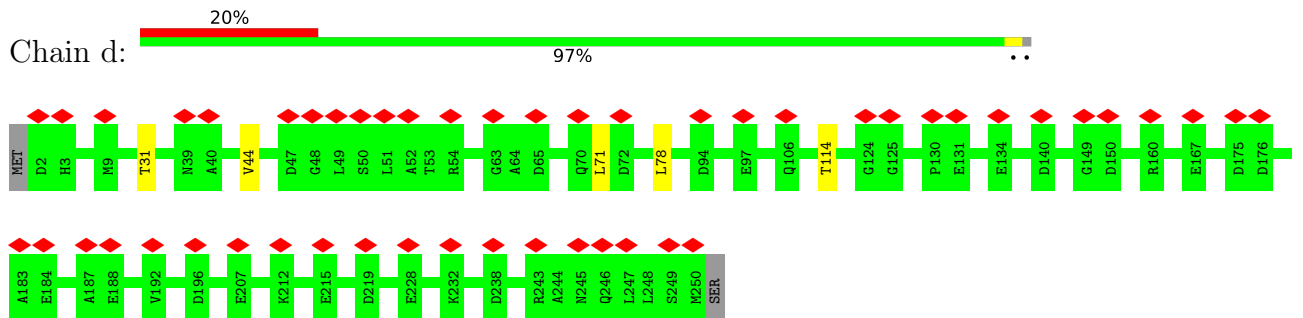
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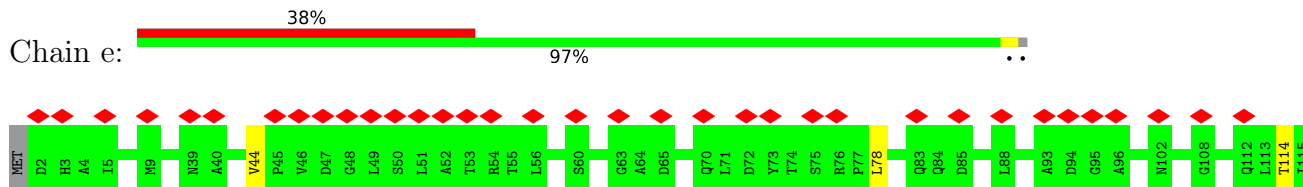
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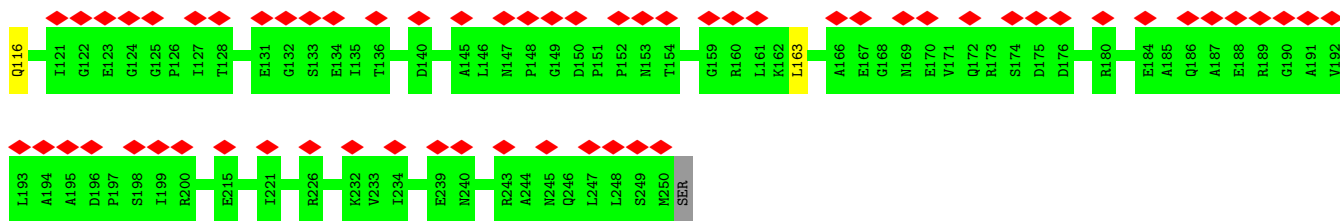


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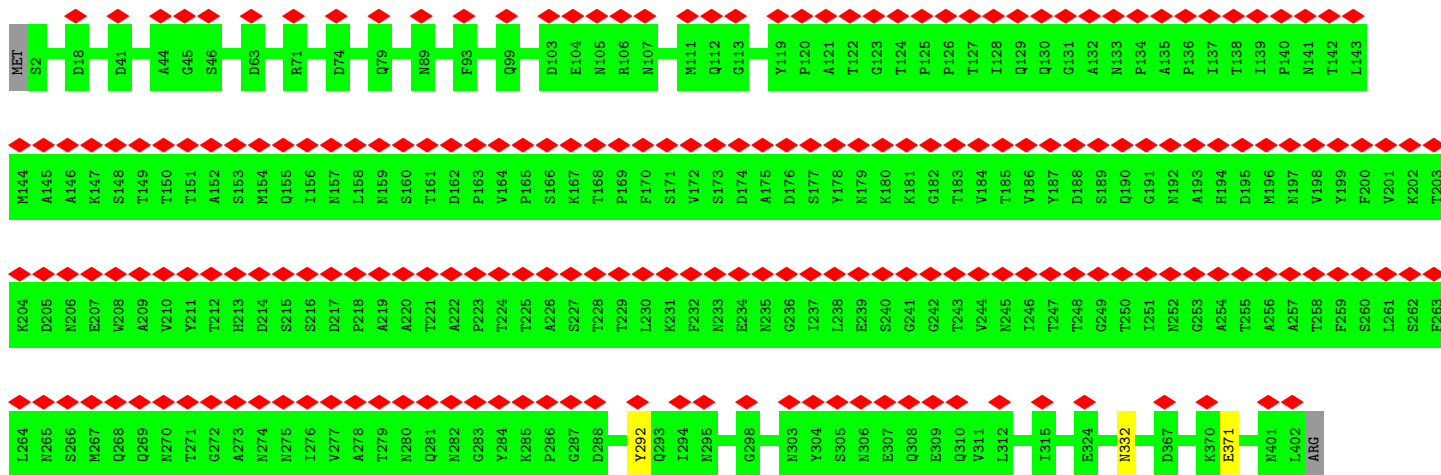


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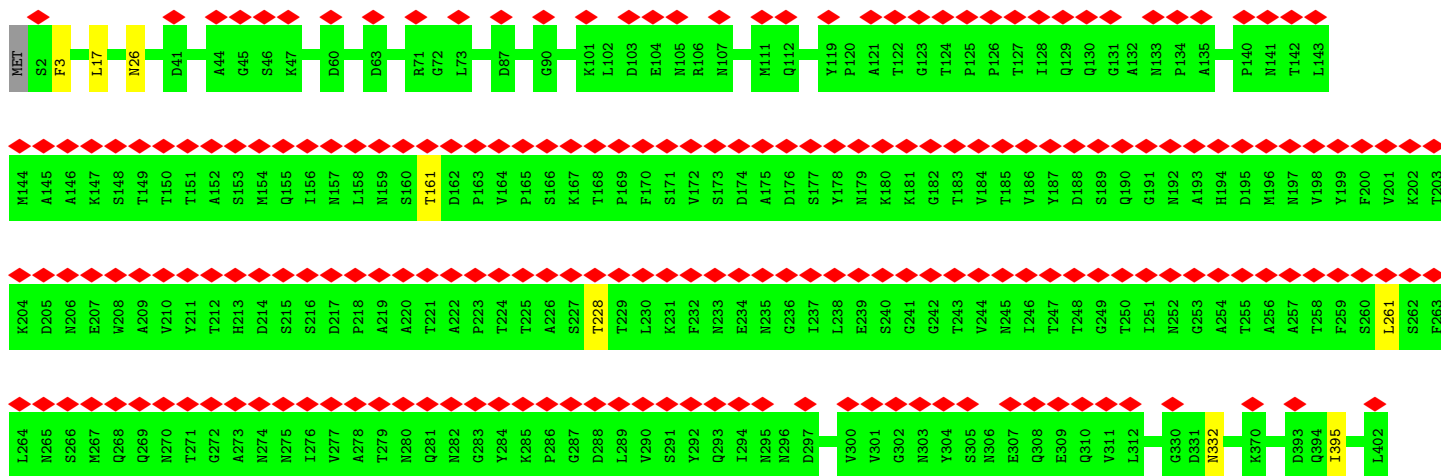




• Molecule 3: Flagellar hook protein FlgE



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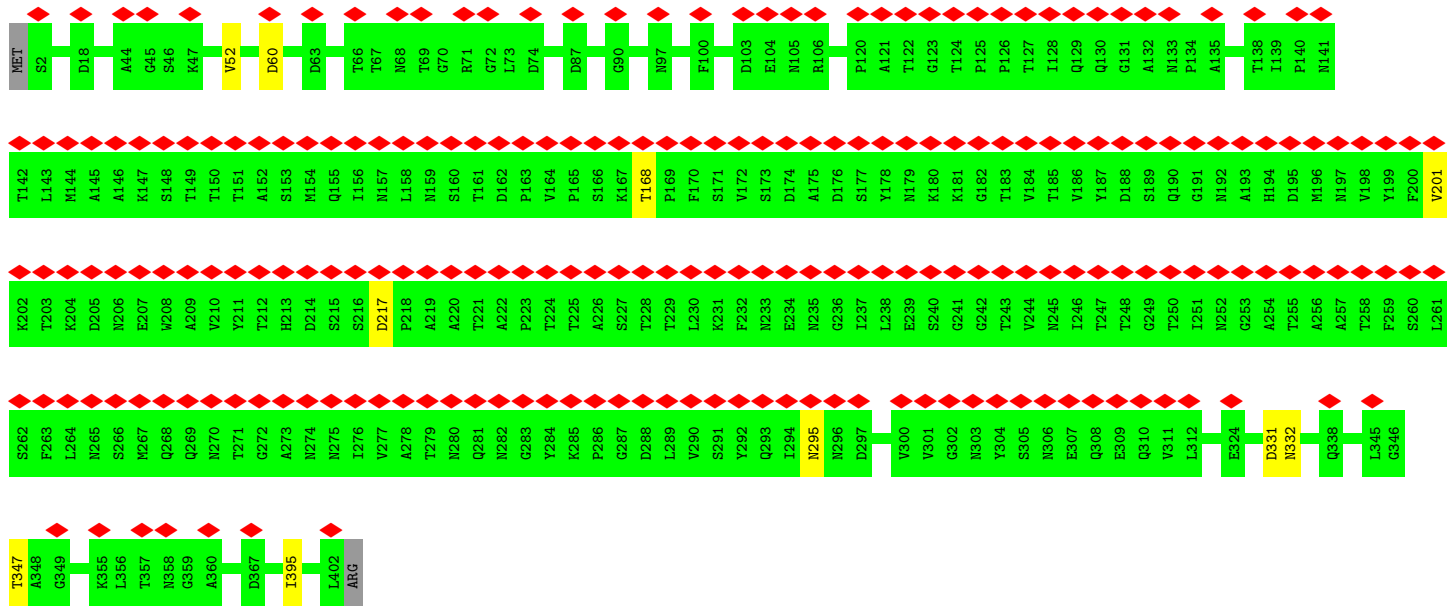


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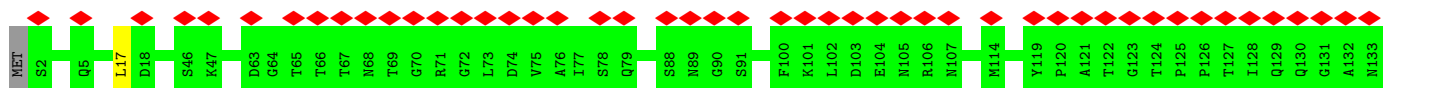


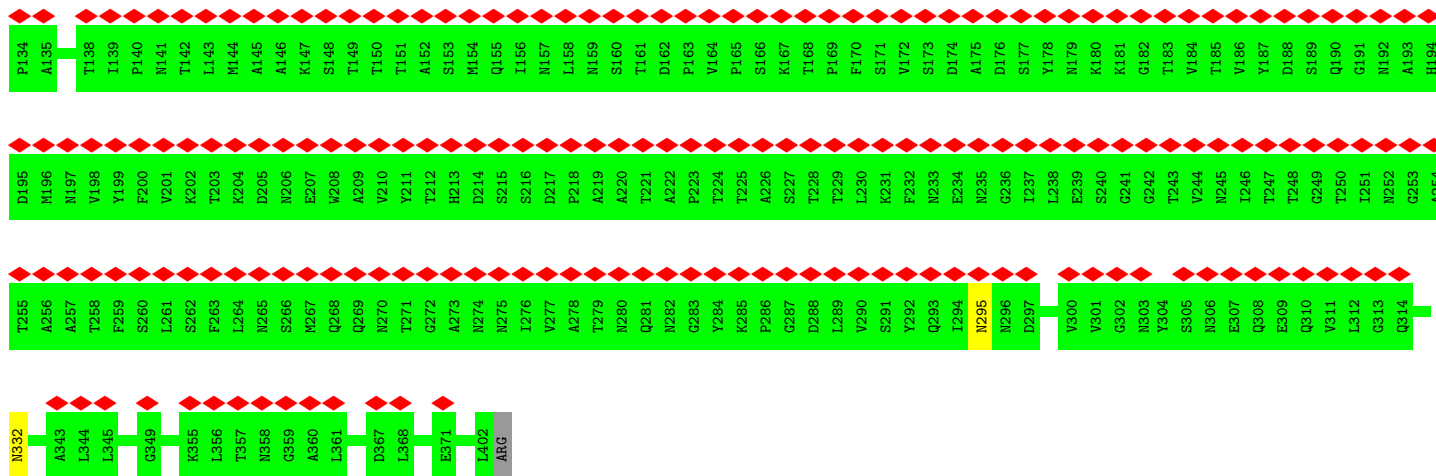


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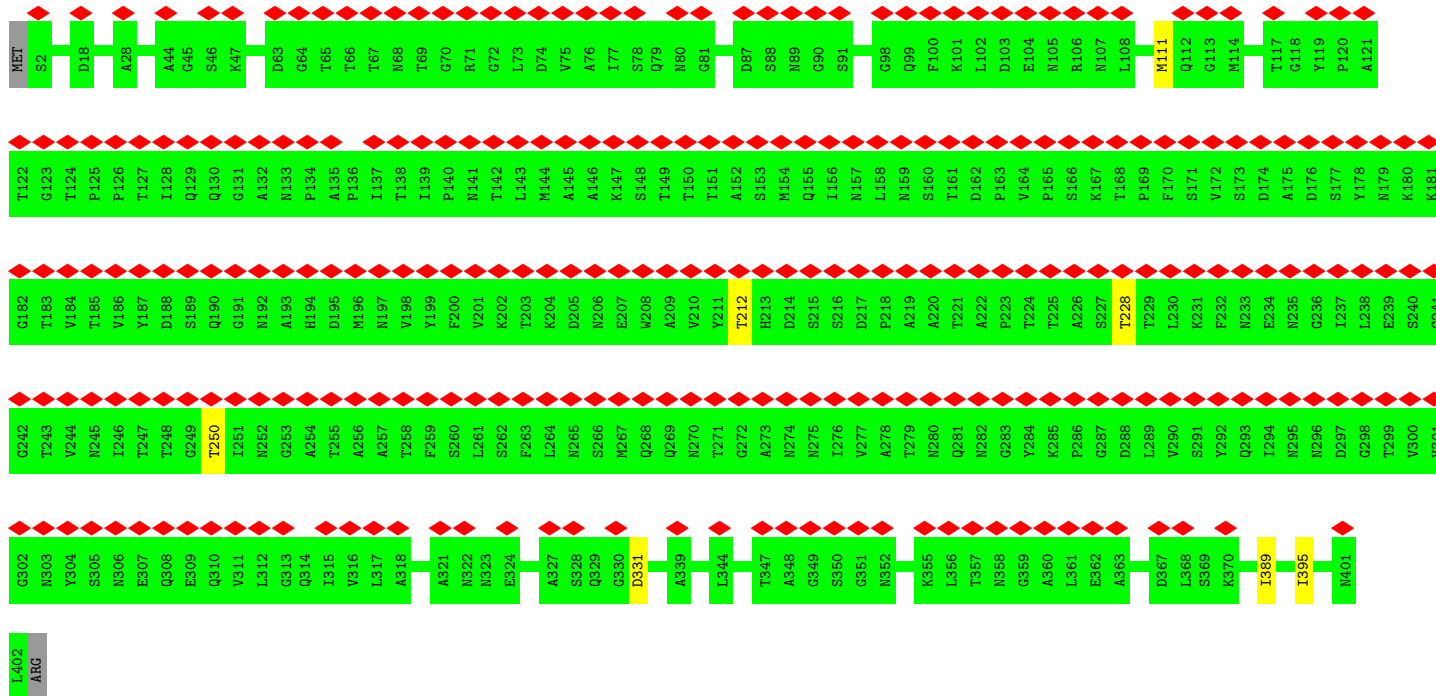


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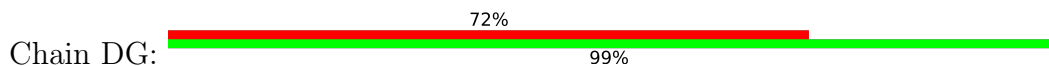


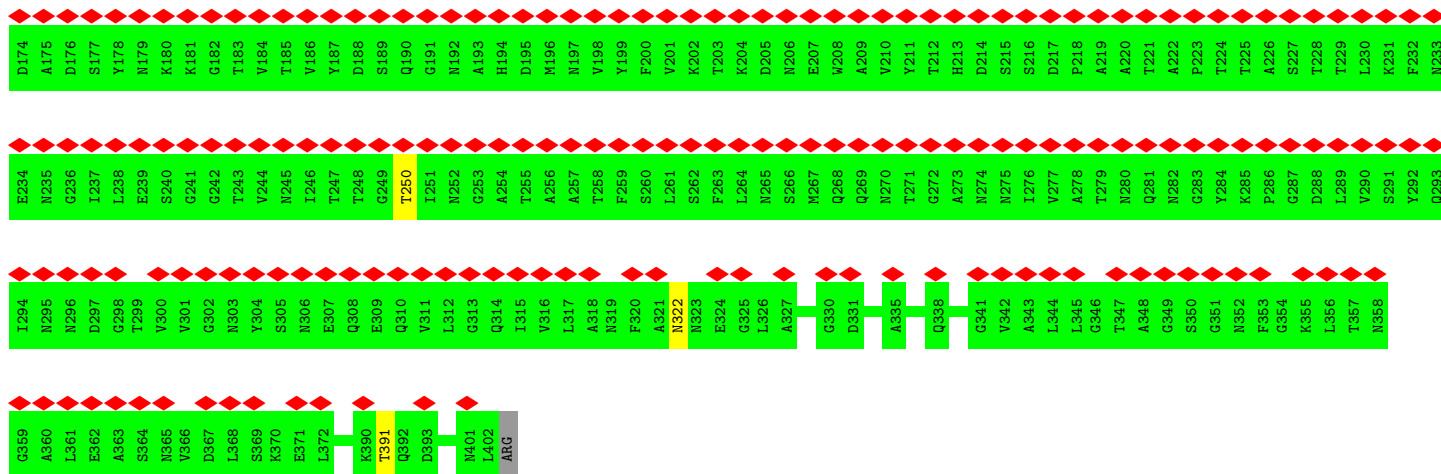


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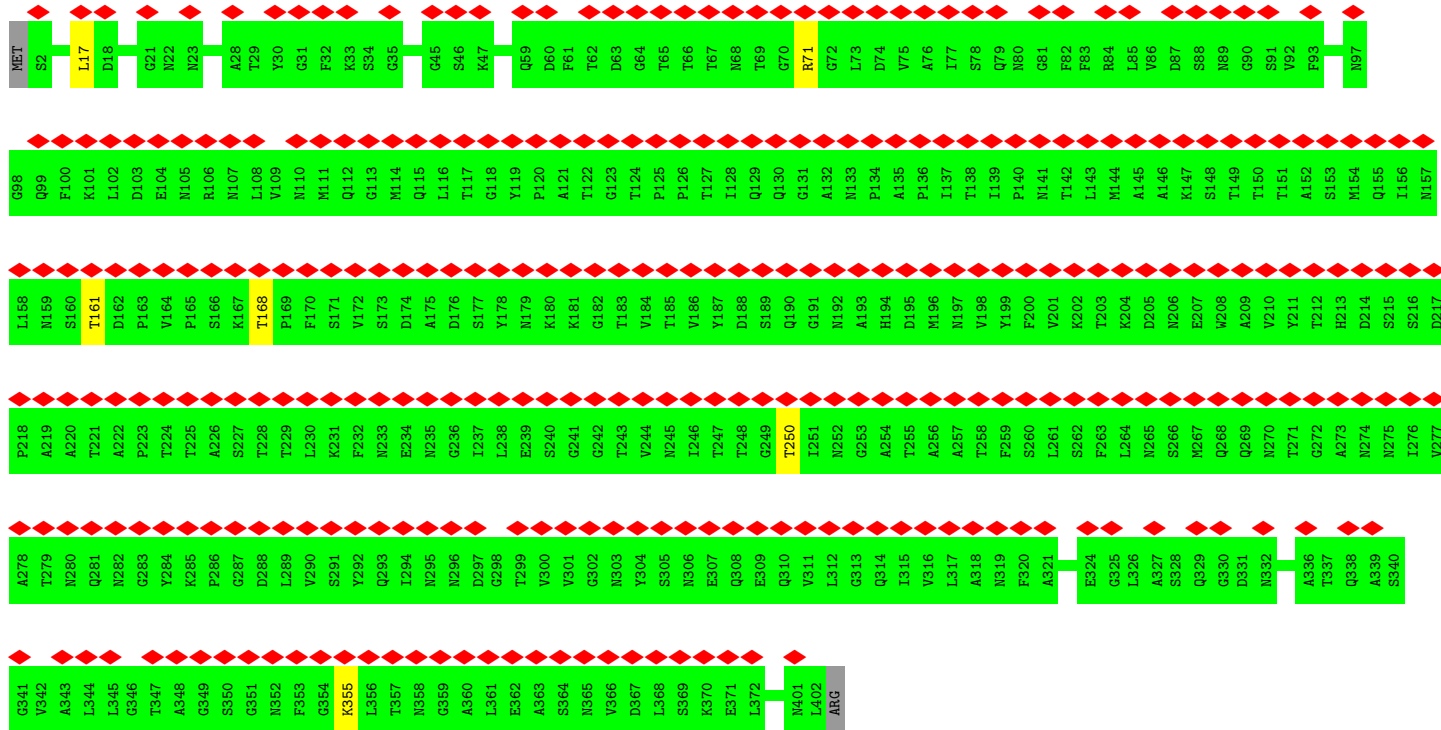
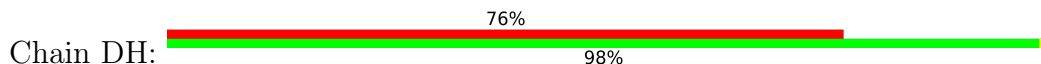


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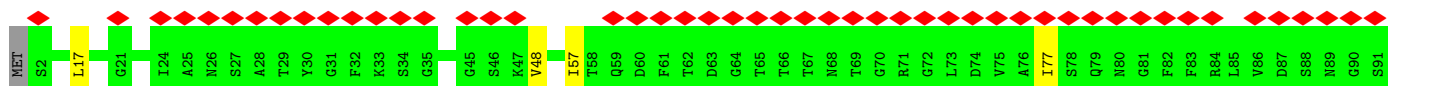
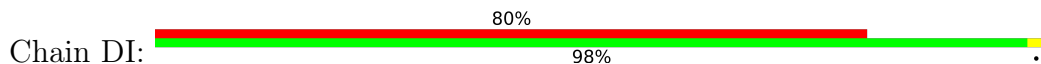


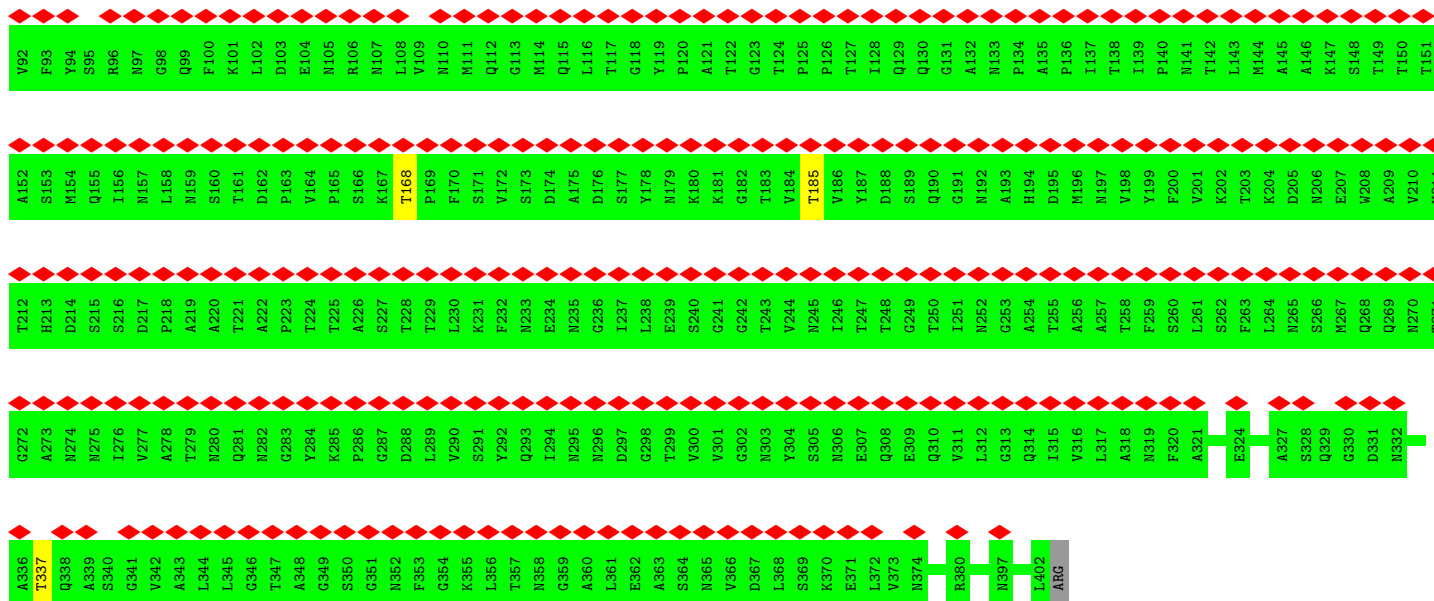


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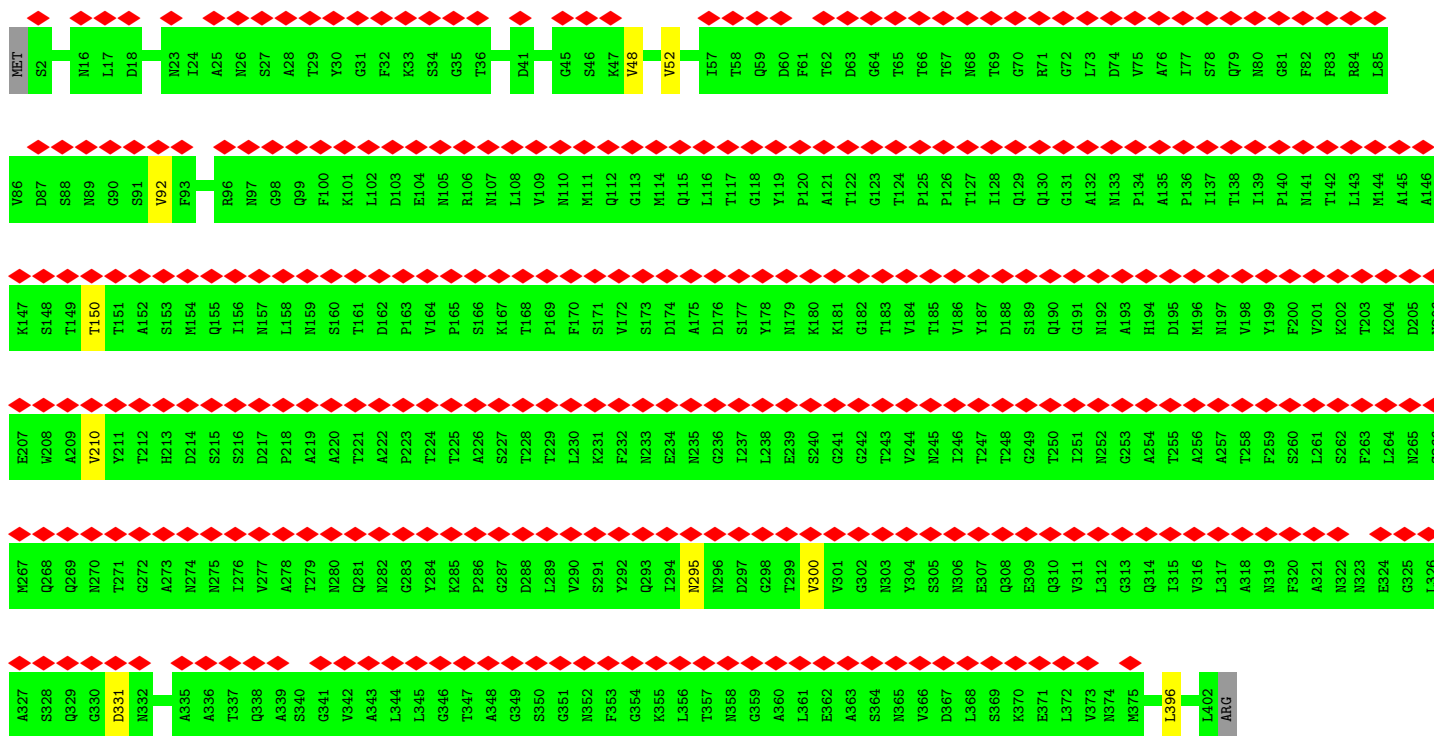
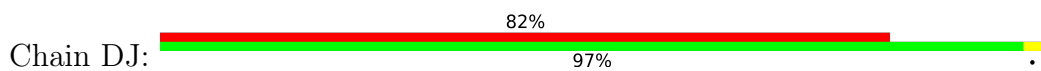


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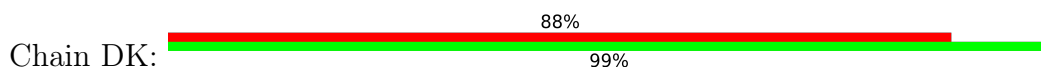




• Molecule 3: Flagellar hook protein FlgE



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MET	S2	F3	S4	L10	A14	T15	M16	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	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	M105	R106	M107	L108	V109	M110	M111	Q112	G113	M114	Q115	L116	T117	G118	Y119	P120	A121	D122	G123	T124	P125	P126	T127	I128	Q129	Q130	G131	A132	M133	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	L276	V277	A278	T279	N280	Q281	N282	G283	Y284	K285	P286	G287	D288	L289	V290	S291	Y292	Q293	L294	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	L376	R380	D393	L402	ARG
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4 Experimental information

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 ($e^-/\text{\AA}^2$)	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 [i](#)

5.1 Standard geometry [i](#)

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 [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](#)

There are no ligands in this entry.

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.

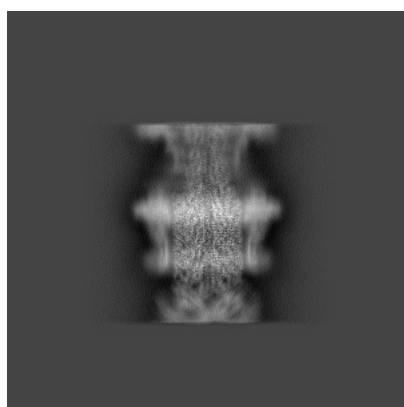
6 Map visualisation [i](#)

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

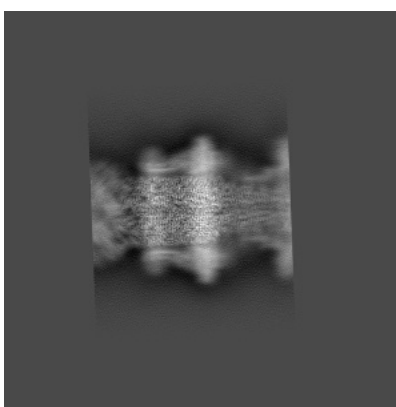
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

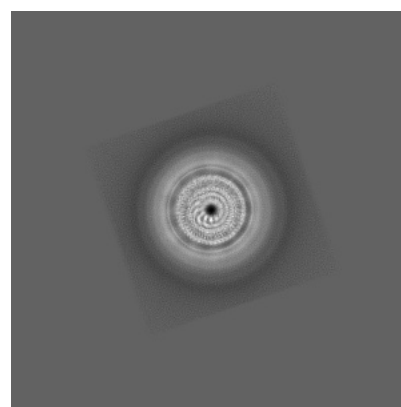
6.1.1 Primary map



X



Y

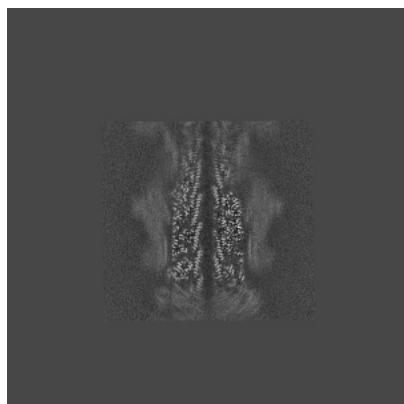


Z

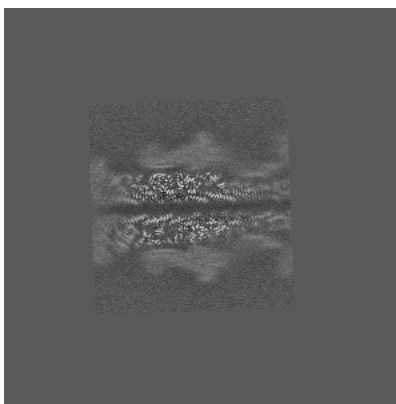
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

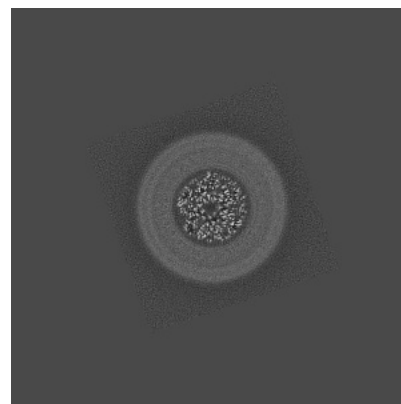
6.2.1 Primary map



X Index: 256



Y Index: 256

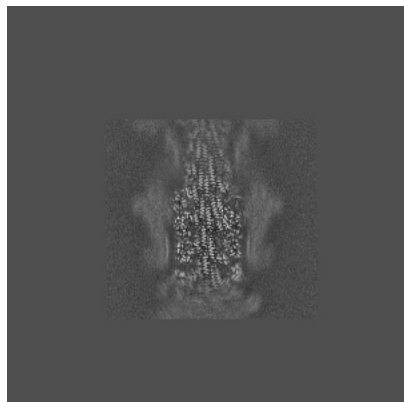


Z Index: 256

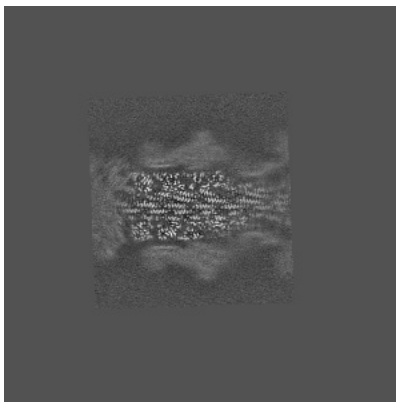
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

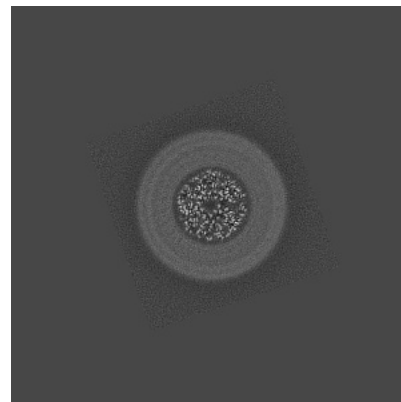
6.3.1 Primary map



X Index: 269



Y Index: 243

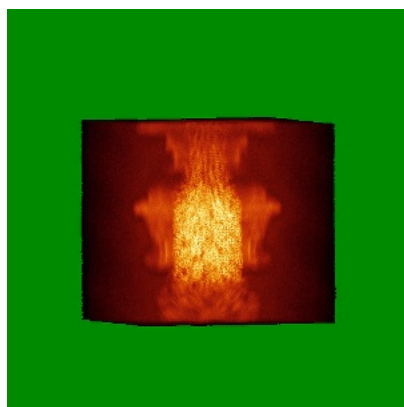


Z Index: 255

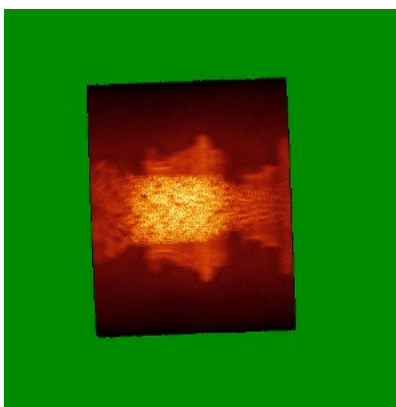
The images above show the largest variance slices of the map in three orthogonal directions.

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

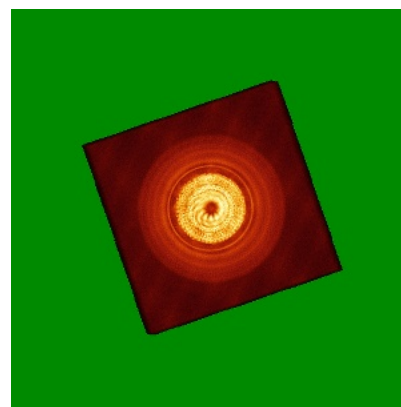
6.4.1 Primary map



X



Y

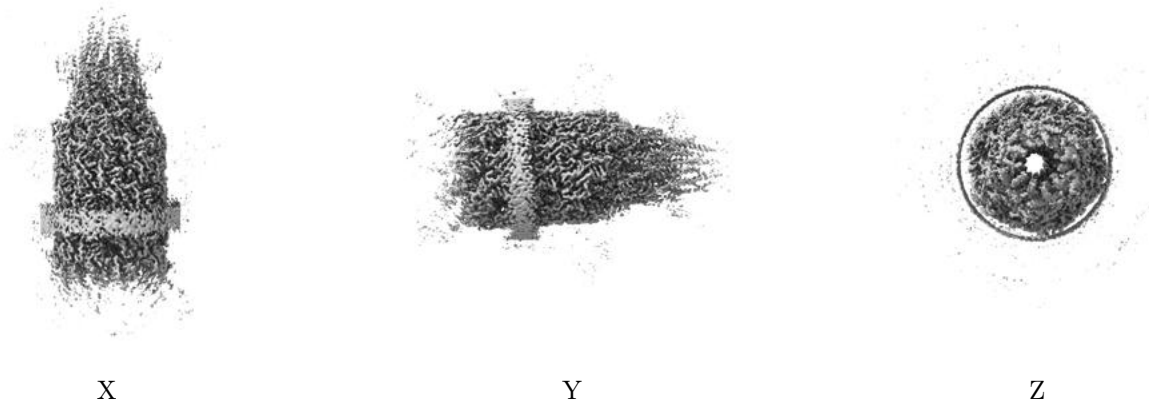


Z

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



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.

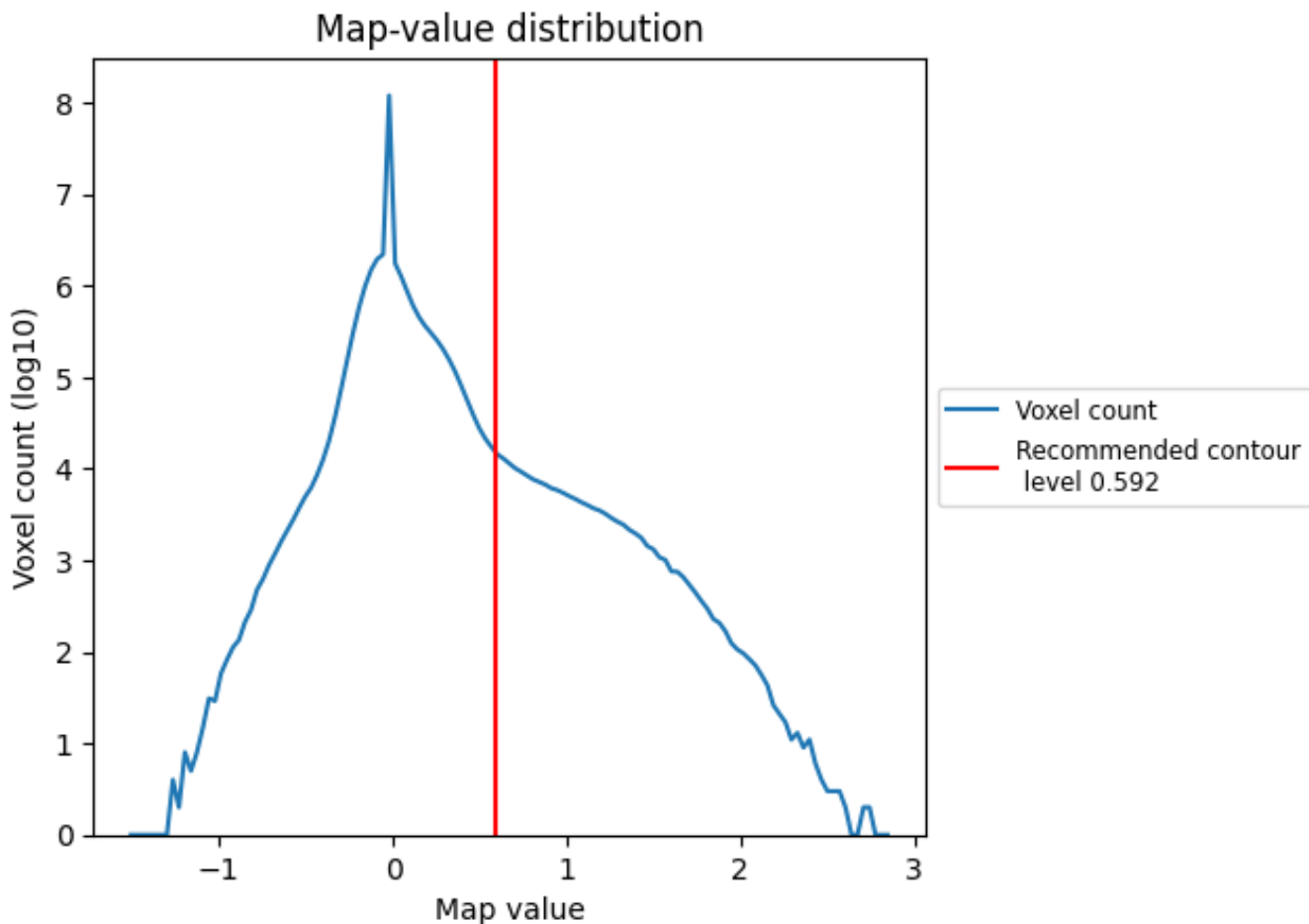
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

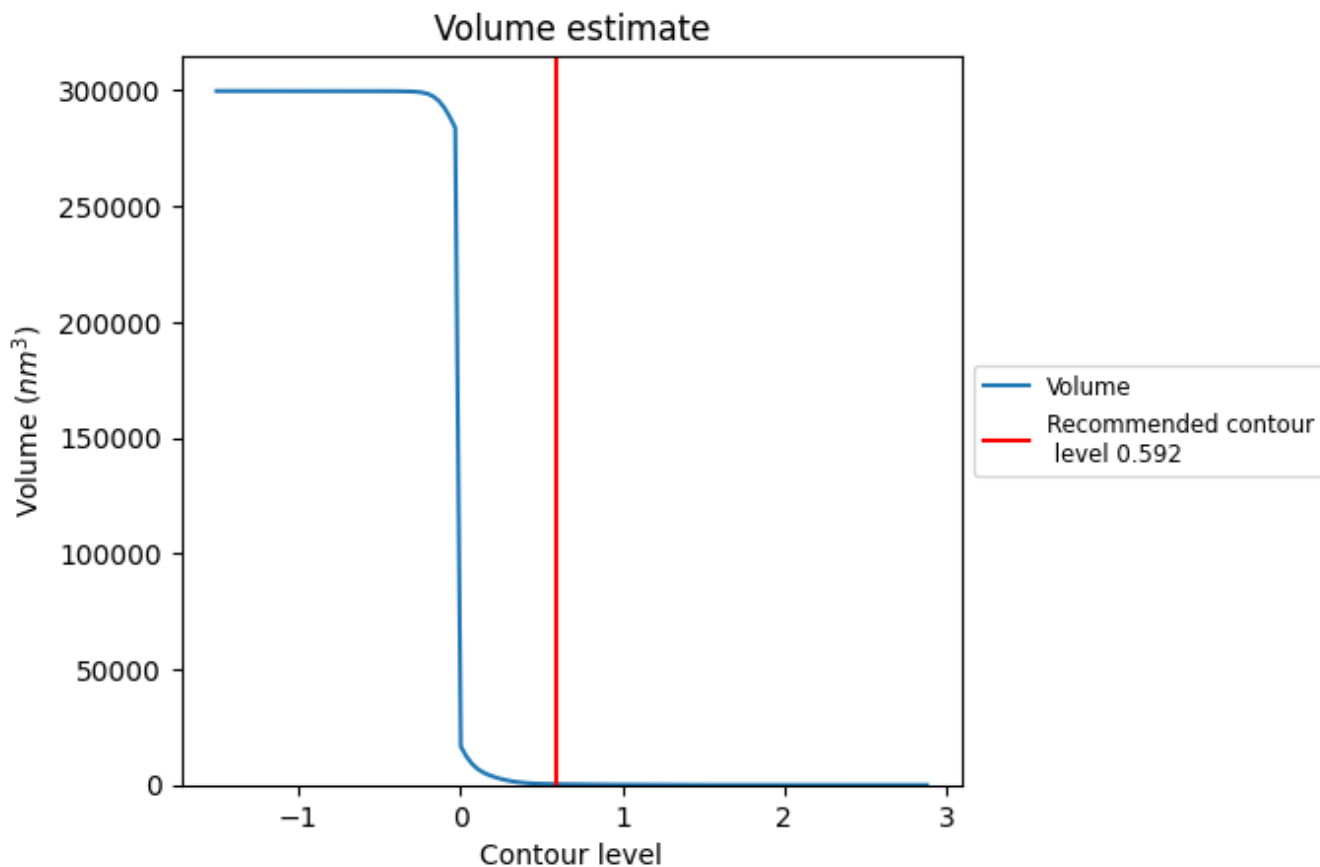
This section contains the results of statistical analysis of the map.

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.

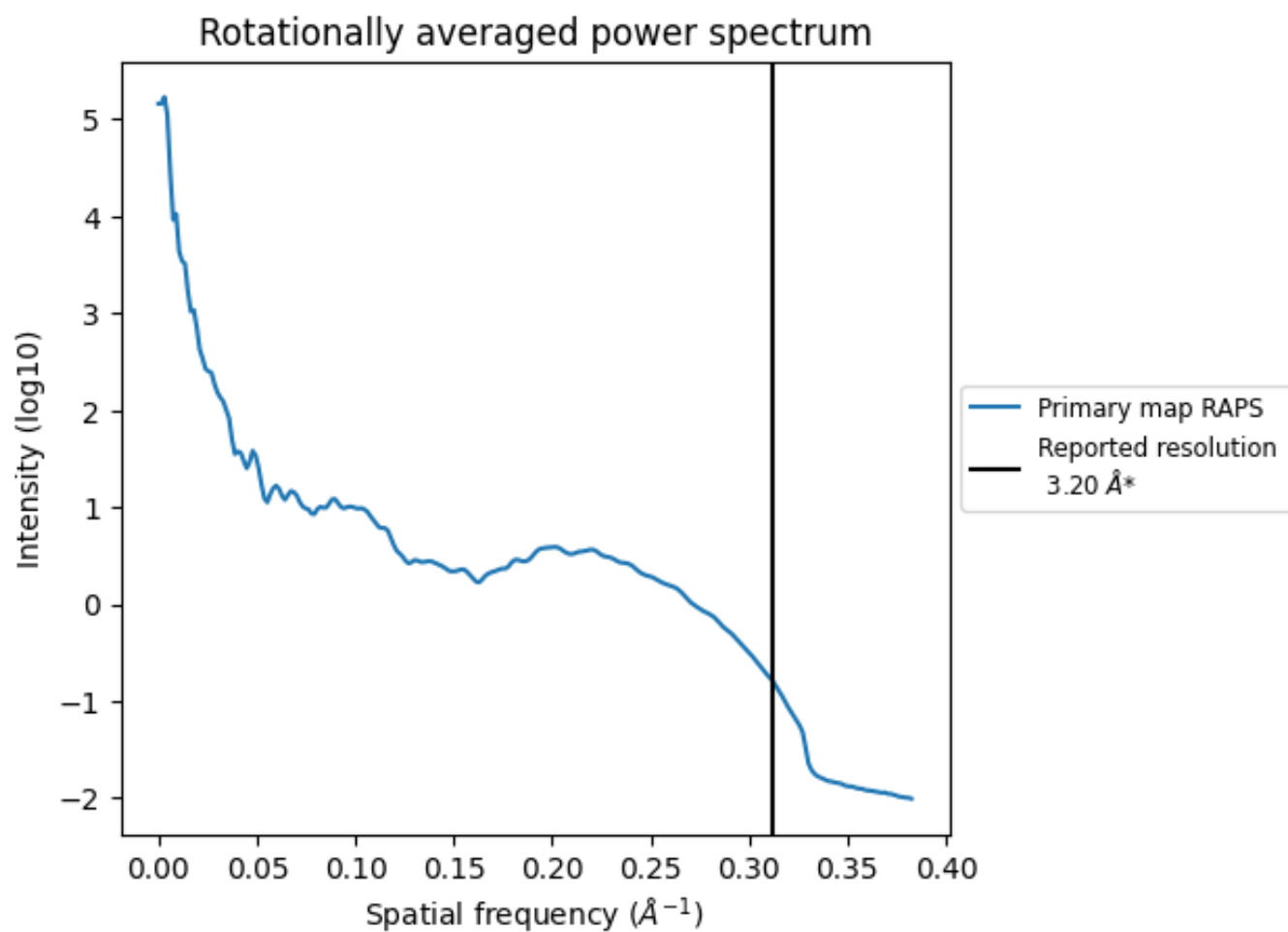
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 363 nm³; 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 \AA^{-1}

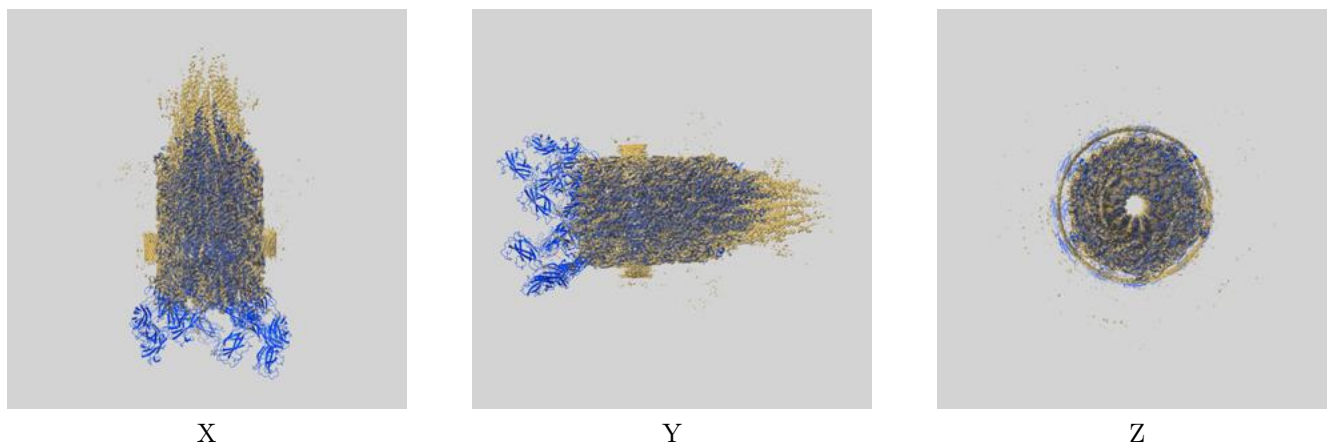
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

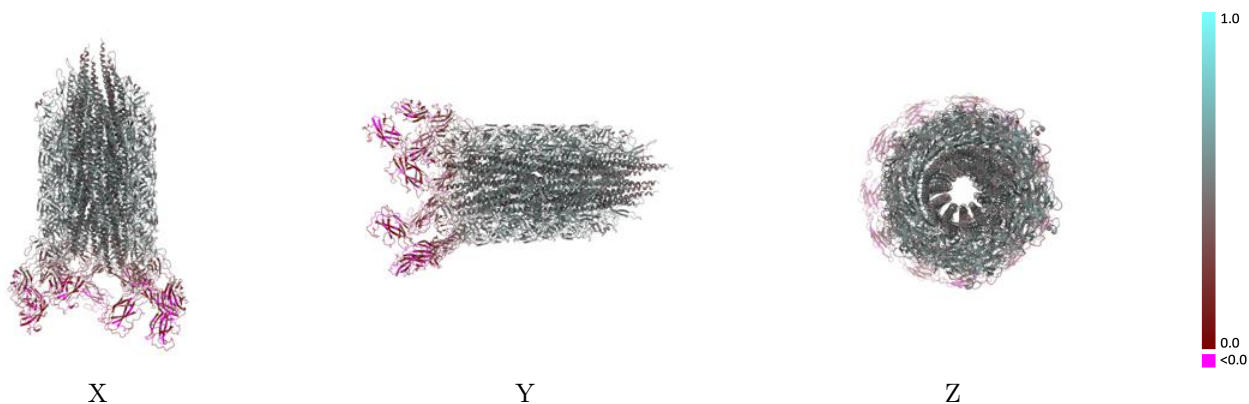
This section contains information regarding the fit between EMDB map EMD-30336 and PDB model 7CBM. Per-residue inclusion information can be found in section [3](#) on page [8](#).

9.1 Map-model overlay [i](#)



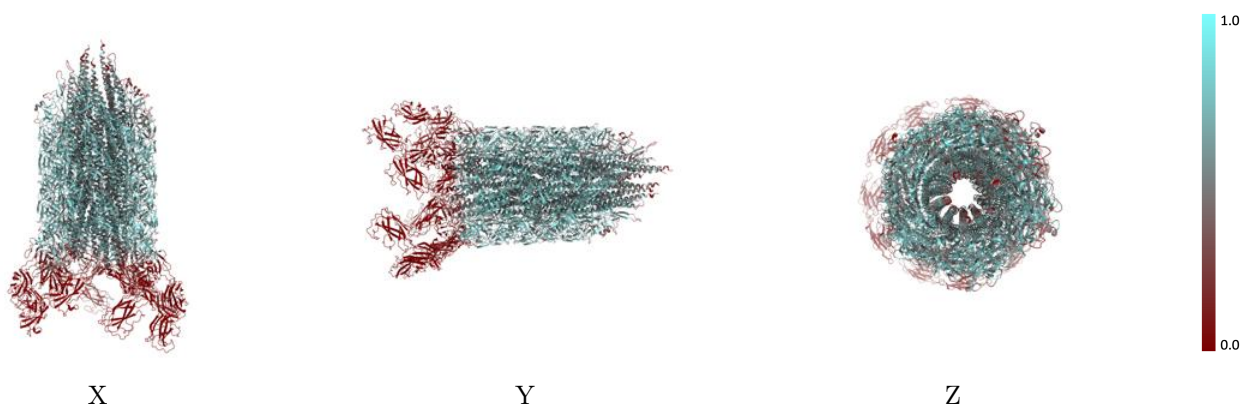
The images above show the 3D surface view of the map at the recommended contour level 0.592 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



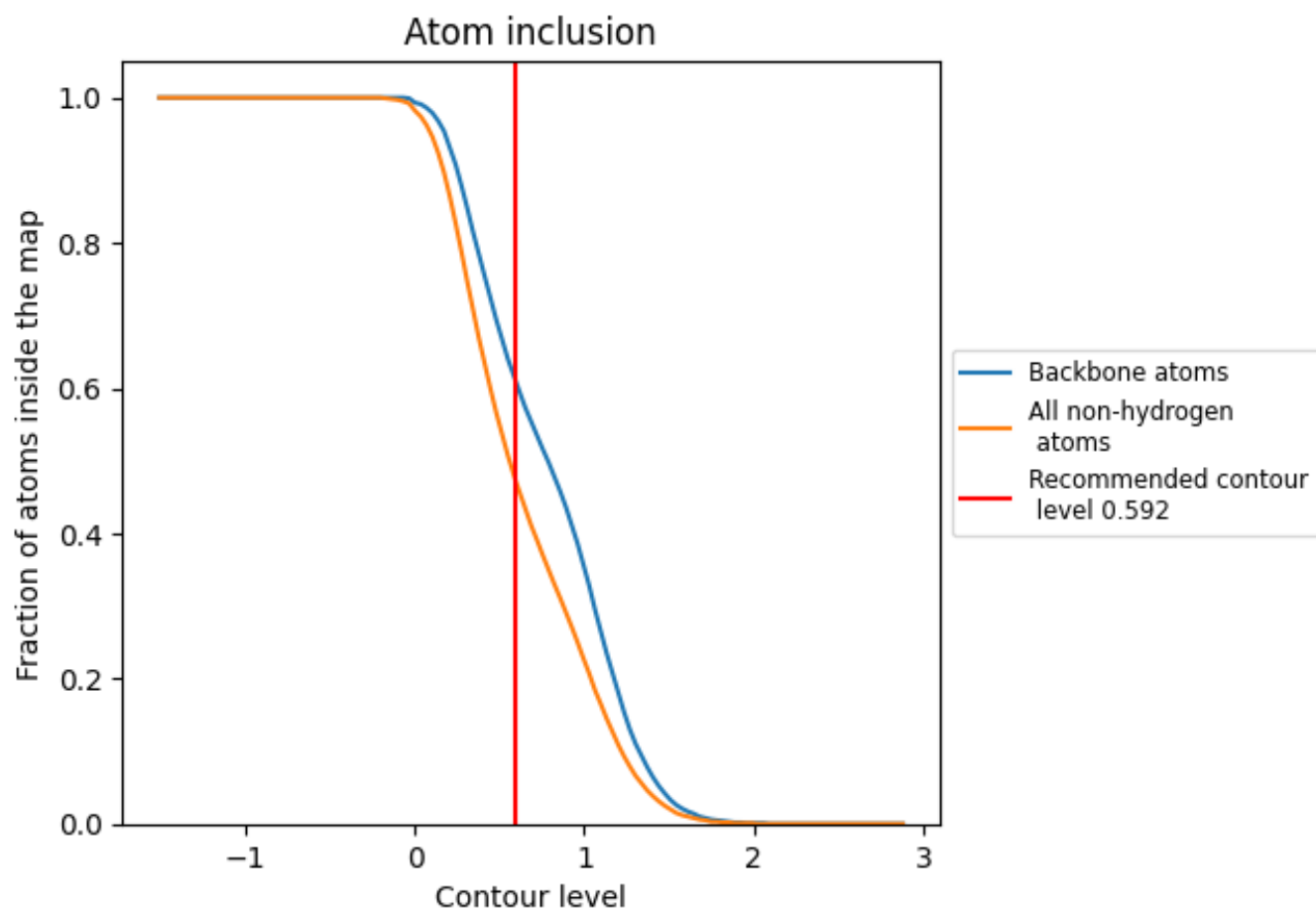
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.592).







































































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	 0.4750	 0.4250
A	 0.6340	 0.5010
B	 0.5900	 0.4870
C	 0.6340	 0.4940
D	 0.6110	 0.4920
DA	 0.3370	 0.3380
DB	 0.3410	 0.3600
DC	 0.3260	 0.3530
DD	 0.3290	 0.3260
DE	 0.2990	 0.3280
DF	 0.2400	 0.3140
DG	 0.2120	 0.2970
DH	 0.1840	 0.2910
DI	 0.1510	 0.2550
DJ	 0.1410	 0.2460
DK	 0.0930	 0.2160
E	 0.6090	 0.4930
F	 0.6410	 0.5000
G	 0.6390	 0.5030
H	 0.6510	 0.5060
I	 0.6300	 0.5050
J	 0.6280	 0.5060
K	 0.6580	 0.5090
L	 0.6360	 0.5140
M	 0.6610	 0.5140
N	 0.6150	 0.5090
O	 0.6150	 0.5000
P	 0.6380	 0.5040
Q	 0.6340	 0.5080
R	 0.6520	 0.5100
S	 0.6600	 0.5070
T	 0.6310	 0.5090
U	 0.6080	 0.4970
V	 0.6140	 0.4960
W	 0.6080	 0.4980



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Chain	Atom inclusion	Q-score
X	 0.5640	 0.4770
a	 0.5640	 0.4810
b	 0.5460	 0.4600
c	 0.5810	 0.4830
d	 0.5570	 0.4870
e	 0.4510	 0.4710