Full wwPDB EM Validation Report

Mar 31, 2025 – 08:34 PM JST

PDB ID	:	7CGO / pdb_00007cgo
EMDB ID	:	EMD-30359
Title	:	Cryo-EM structure of the flagellar motor-hook complex from Salmonella
Authors	:	Tan, J.X.; Chang, S.H.; Wang, X.F.; Xu, C.H.; Zhou, Y.; Zhang, X.; Zhu, Y.Q.
Deposited on	:	2020-07-01
Resolution	:	3.90 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:

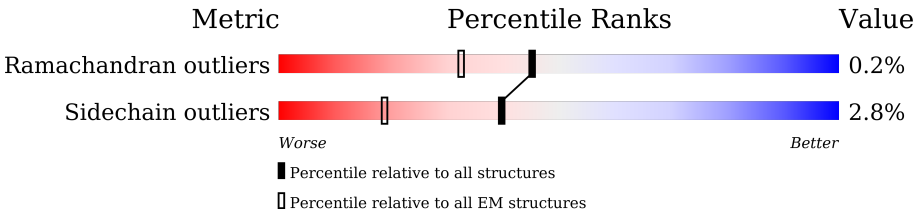
EMDB validation analysis	:	0.0.1.dev117
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

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 3.90 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	207382	16835
Sidechain outliers	206894	16415

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	98%
1	B	260	99%
1	C	260	99%
1	D	260	100%
1	E	260	98%
1	F	260	100%
1	G	260	98%
1	H	260	99%
1	I	260	98%

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Mol	Chain	Length	Quality of chain
1	J	260	99%
1	K	260	98%
1	L	260	98%
1	M	260	99%
1	N	260	96%
1	O	260	97%
1	P	260	95% 5%
1	Q	260	93% 5%
1	R	260	94%
1	S	260	94% 5%
1	T	260	97%
1	U	260	99%
1	V	260	98%
1	W	260	98%
1	X	260	98%
2	a	251	97%
2	b	251	97%
2	c	251	97%
2	d	251	98%
2	e	251	98%
3	0	15	100%
3	1	15	100%
3	2	15	100%
3	3	15	100%
3	4	15	100%

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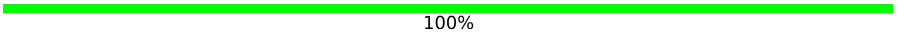
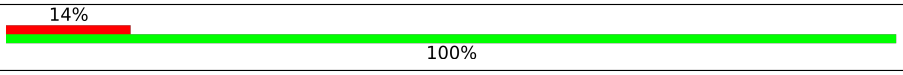
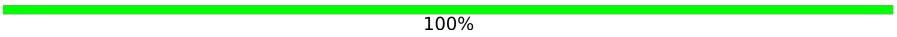
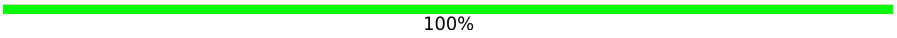
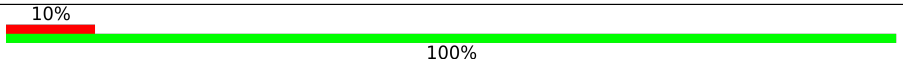
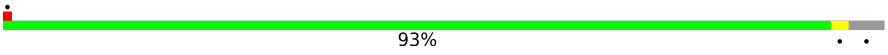
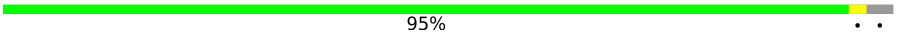
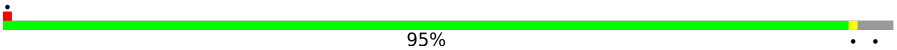
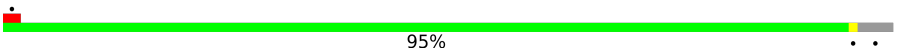
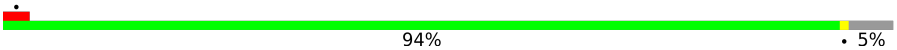
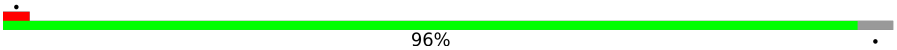
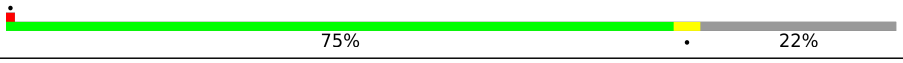
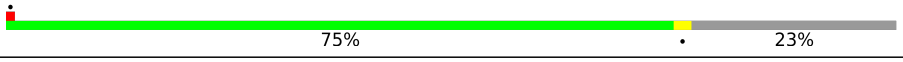
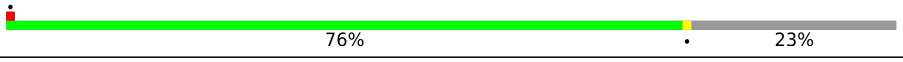
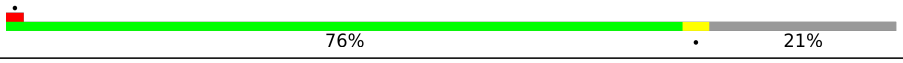
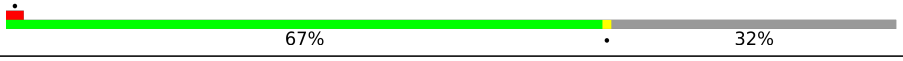
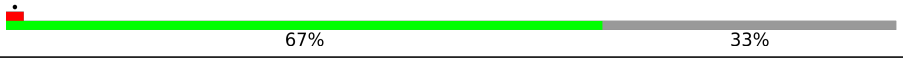
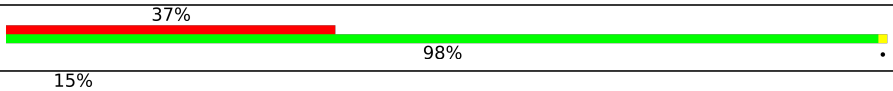
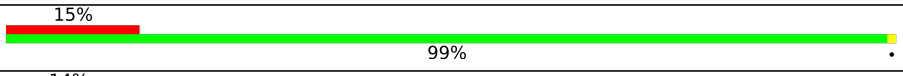
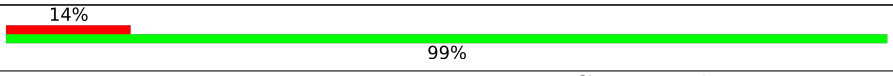
Mol	Chain	Length	Quality of chain
4	5	21	
4	6	21	
4	7	21	
4	8	21	
4	9	21	
5	f	134	
5	g	134	
5	h	134	
5	i	134	
5	j	134	
5	p	134	
6	k	138	
6	l	138	
6	m	138	
6	n	138	
6	o	138	
7	q	104	
7	r	104	
7	s	104	
7	t	104	
7	u	104	
7	v	104	
8	DA	403	
8	DB	403	
8	DC	403	

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Mol	Chain	Length	Quality of chain
8	DD	403	17% 99%
8	DE	403	17% 99%
8	DF	403	19% 99%
8	DG	403	19% 99%
8	DH	403	19% 98%
8	DI	403	24% 98%
8	DJ	403	28% 98%
8	DK	403	33% 99%
8	DL	403	44% 93% 5%
8	DM	403	40% 96%
8	DN	403	46% 96%
8	DO	403	47% 93% 6%
8	DP	403	56% 98%
8	DQ	403	56% 98%
8	DR	403	59% 100%
8	DS	403	63% 98%
8	DT	403	60% 99%
8	DU	403	68% 98%
8	DV	403	69% 99%
8	DW	403	69% 99%
8	DX	403	75% 99%
8	DY	403	75% 99%
8	DZ	403	77% 99%
8	EA	403	84% 100%
8	EB	403	81% 99%

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Mol	Chain	Length	Quality of chain
8	EC	403	86% 99%
8	ED	403	88% 99%
8	EE	403	86% 99%
8	EF	403	93% 99%
8	EG	403	93% 99%
9	CE	264	17% 97%
10	CA	89	99%
10	CB	89	6% 98%
10	CC	89	98%
10	CD	89	20% 100%
11	CF	245	85% 14%
11	w	245	84% 14%
11	x	245	7% 84% 14%
11	y	245	82% 14%
11	z	245	85% 14%
12	Ca	560	9% 26% 73%
12	Cb	560	9% 26% 73%
12	Cc	560	9% 26% 73%
12	Cd	560	12% 26% 73%
12	Ce	560	10% 26% 73%
12	Cf	560	9% 26% 73%
12	Cg	560	11% 26% 73%
12	Ch	560	11% 26% 73%
12	Ci	560	10% 26% 73%
12	Cj	560	11% 26% 73%

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Mol	Chain	Length	Quality of chain
12	Ck	560	12% 26% 73%
12	Cl	560	11% 26% 73%
12	Cm	560	12% 26% 73%
12	Cn	560	11% 26% 73%
12	Co	560	11% 26% 73%
12	Cp	560	11% 26% 73%
12	Cq	560	11% 26% 73%
12	Cr	560	12% 26% 73%
12	Cs	560	10% 26% 73%
12	Ct	560	10% 26% 73%
12	Cu	560	9% 26% 73%
12	Cv	560	10% 26% 73%
12	Cw	560	9% 26% 73%
12	Cx	560	9% 26% 73%
12	Cy	560	9% 26% 73%
12	Cz	560	8% 26% 73%
12	Da	560	19% 81%
12	Db	560	18% 81%
12	Dc	560	18% 81%
12	Dd	560	5% 19% 81%
12	De	560	17% 82%
12	Df	560	17% 83%
12	Dg	560	5% 15% 84%
12	Dh	560	6% 15% 84%
12	Di	560	7% 15% 84%

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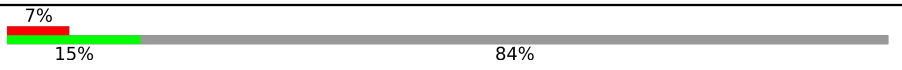
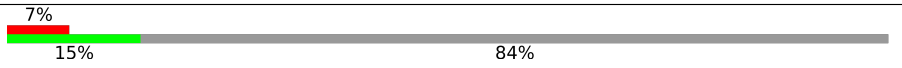
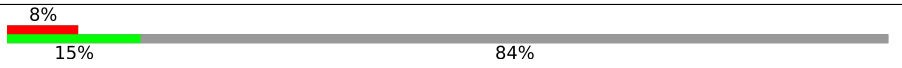
Mol	Chain	Length	Quality of chain
12	Dj	560	
12	Dk	560	
12	Dl	560	
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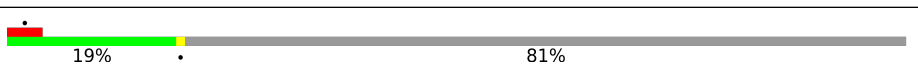
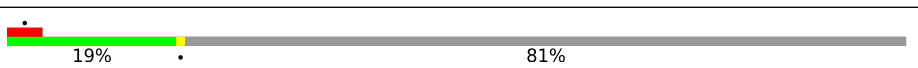
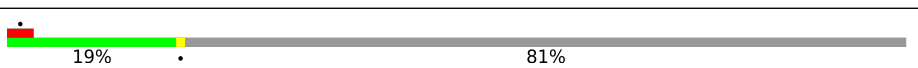
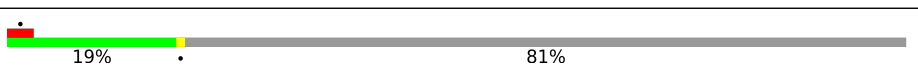
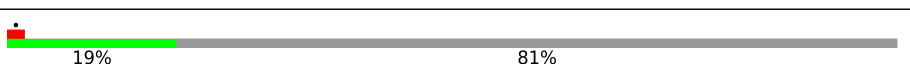
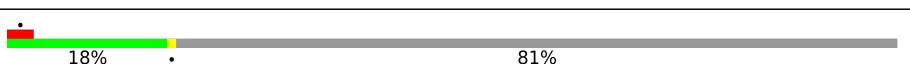
12	Dn	560	
12	Do	560	
12	Dp	560	
12	Dq	560	
12	Dr	560	
12	Ds	560	
12	Dt	560	
12	Du	560	
12	Dv	560	
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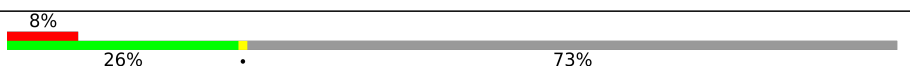
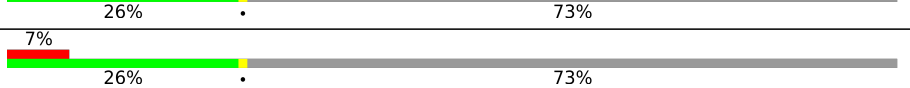
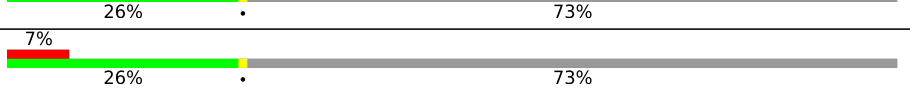
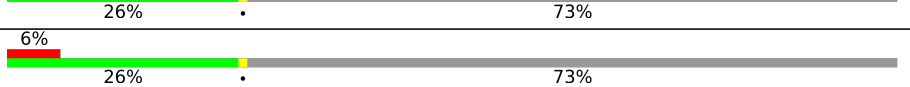
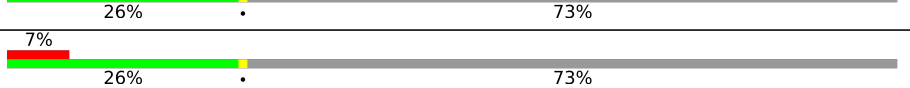
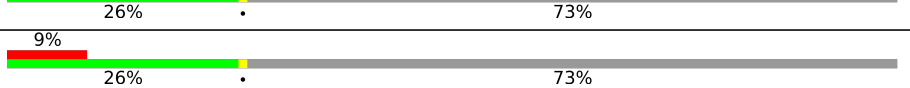
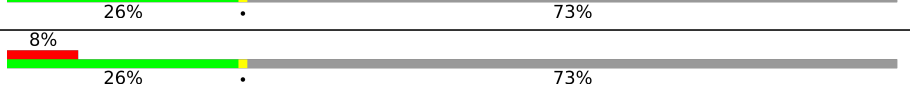
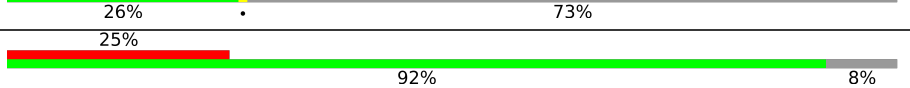
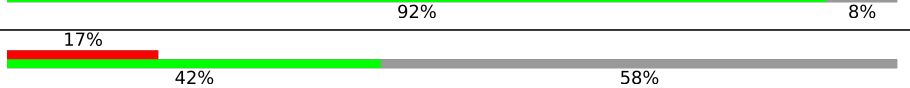
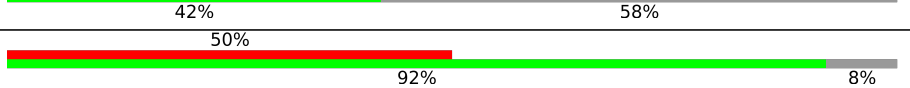
12	Ea	560	
12	Eb	560	
12	Ec	560	
12	Ed	560	
12	Ee	560	
12	Ef	560	
12	Eg	560	
12	Eh	560	
13	GA	12	
13	GB	12	
13	GC	12	

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Mol	Chain	Length	Quality of chain
13	GD	12	8% 83% 17%
13	GE	12	42% 100%
14	GF	18	39% 100%
14	GG	18	56% 100%
14	GH	18	89% 100%
14	GI	18	78% 83% 17%
14	GJ	18	61% 100%
14	GK	18	67% 100%
15	AA	232	8% 86% 5% 9%
15	AB	232	11% 86% 5% 9%
15	AC	232	11% 86% 5% 9%
15	AD	232	12% 86% 5% 9%
15	AE	232	11% 86% 5% 9%
15	AF	232	15% 86% 5% 9%
15	AG	232	14% 86% 5% 9%
15	AH	232	14% 86% 5% 9%
15	AI	232	13% 86% 5% 9%
15	AJ	232	16% 86% 5% 9%
15	AK	232	14% 86% 5% 9%
15	AL	232	13% 86% 5% 9%
15	AM	232	15% 86% 5% 9%
15	AN	232	17% 86% 5% 9%
15	AO	232	15% 86% 5% 9%
15	AP	232	17% 86% 5% 9%
15	AQ	232	18% 86% 5% 9%

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Mol	Chain	Length	Quality of chain
15	AR	232	15% 86% 5% 9%
15	AS	232	15% 86% 5% 9%
15	AT	232	14% 86% 5% 9%
15	AU	232	16% 86% 5% 9%
15	AV	232	12% 86% 5% 9%
15	AW	232	11% 86% 5% 9%
15	AX	232	13% 86% 5% 9%
15	AY	232	13% 86% 5% 9%
15	AZ	232	11% 86% 5% 9%
16	BA	365	7% 79% 17%
16	BB	365	6% 80% 17%
16	BC	365	8% 79% 17%
16	BD	365	8% 80% 17%
16	BE	365	6% 79% 17%
16	BF	365	8% 80% 17%
16	BG	365	8% 79% 17%
16	BH	365	8% 79% 17%
16	BI	365	7% 80% 17%
16	BJ	365	9% 80% 17%
16	BK	365	10% 79% 17%
16	BL	365	10% 80% 17%
16	BM	365	10% 79% 17%
16	BN	365	10% 79% 17%
16	BO	365	10% 79% 17%
16	BP	365	11% 79% 17%

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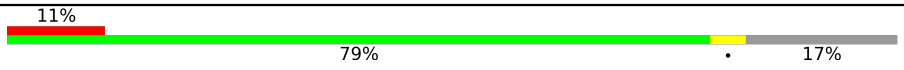
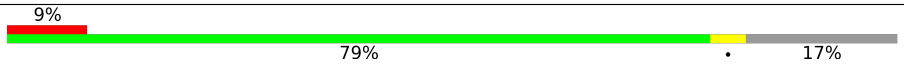
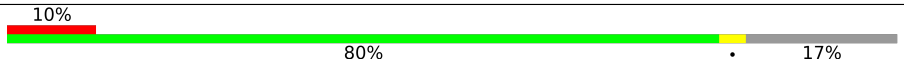
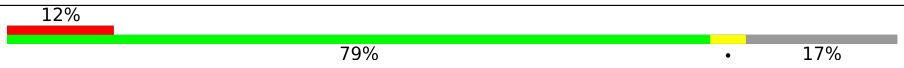
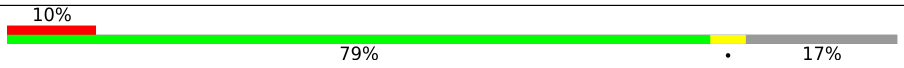
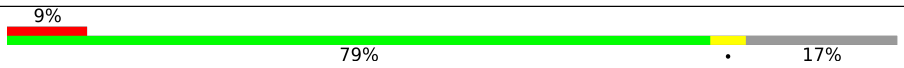
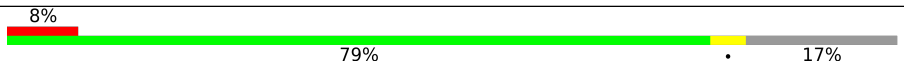
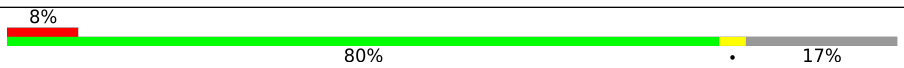
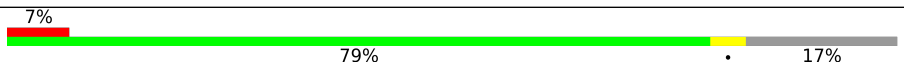
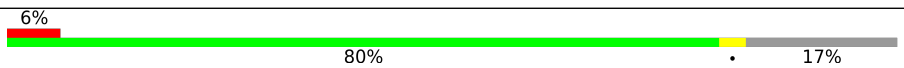
Mol	Chain	Length	Quality of chain
16	BQ	365	
16	BR	365	
16	BS	365	
16	BT	365	
16	BU	365	
16	BV	365	
16	BW	365	
16	BX	365	
16	BY	365	
16	BZ	365	

2 Entry composition (i)

There are 16 unique types of molecules in this entry. The entry contains 335722 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 MS ring L2.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	0	15	Total	C	N	O	0	0
			75	45	15	15		
3	1	15	Total	C	N	O	0	0
			75	45	15	15		
3	2	15	Total	C	N	O	0	0
			75	45	15	15		
3	3	15	Total	C	N	O	0	0
			75	45	15	15		
3	4	15	Total	C	N	O	0	0
			75	45	15	15		

- Molecule 4 is a protein called Flagellar MS ring L1.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	5	21	Total	C	N	O	0	0
			140	88	24	28		
4	6	21	Total	C	N	O	0	0
			140	88	24	28		
4	7	21	Total	C	N	O	0	0
			140	88	24	28		
4	9	21	Total	C	N	O	0	0
			140	88	24	28		
4	8	21	Total	C	N	O	0	0
			140	88	24	28		

- Molecule 5 is a protein called Flagellar basal-body rod protein FlgC.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	f	128	Total	C	N	O	S	0	0
			936	585	160	186	5		
5	g	130	Total	C	N	O	S	0	0
			949	592	163	189	5		
5	h	128	Total	C	N	O	S	0	0
			935	584	160	186	5		
5	j	127	Total	C	N	O	S	0	0
			931	582	159	185	5		
5	p	129	Total	C	N	O	S	0	0
			940	587	161	187	5		
5	i	129	Total	C	N	O	S	0	0
			944	589	162	188	5		

- Molecule 6 is a protein called Flagellar basal body rod protein FlgB.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	l	106	Total	C	N	O	S	0	0
			833	515	150	163	5		
6	m	106	Total	C	N	O	S	0	0
			833	515	150	163	5		
6	o	109	Total	C	N	O	S	0	0
			856	529	156	166	5		
6	k	108	Total	C	N	O	S	0	0
			852	527	155	165	5		
6	n	107	Total	C	N	O	S	0	0
			844	521	154	164	5		

- Molecule 7 is a protein called Flagellar hook-basal body complex protein FliE.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	q	71	Total	C	N	O	S	0	0
			536	330	98	102	6		
7	r	70	Total	C	N	O	S	0	0
			526	323	97	100	6		
7	s	72	Total	C	N	O	S	0	0
			543	335	99	103	6		
7	t	72	Total	C	N	O	S	0	0
			543	335	99	103	6		
7	u	72	Total	C	N	O	S	0	0
			543	335	99	103	6		
7	v	38	Total	C	N	O	S	0	0
			289	178	50	55	6		

- Molecule 8 is a protein called Flagellar hook protein FlgE.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	DA	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DB	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DC	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DD	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DE	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DF	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DG	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DH	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DI	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DJ	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DK	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DL	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DM	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DN	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		

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Mol	Chain	Residues	Atoms					AltConf	Trace
8	DO	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DP	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DQ	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DR	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DS	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DT	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DU	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DV	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DW	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DX	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DY	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	DZ	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EA	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EB	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EC	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	ED	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EE	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EF	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		
8	EG	401	Total	C	N	O	S	0	0
			2947	1814	507	618	8		

- Molecule 9 is a protein called Flagellar biosynthetic protein FliR.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	CE	260	Total	C	N	O	S	0	0
			2002	1339	317	330	16		

- Molecule 10 is a protein called Flagellar biosynthetic protein FliQ.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	CA	89	Total	C	N	O	S	0	0
			670	449	100	114	7		
10	CB	89	Total	C	N	O	S	0	0
			670	449	100	114	7		
10	CC	89	Total	C	N	O	S	0	0
			670	449	100	114	7		
10	CD	89	Total	C	N	O	S	0	0
			670	449	100	114	7		

- Molecule 11 is a protein called Flagellar biosynthetic protein FliP.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	w	211	Total	C	N	O	S	0	0
			1636	1091	254	279	12		
11	x	211	Total	C	N	O	S	0	0
			1636	1091	254	279	12		
11	y	211	Total	C	N	O	S	0	0
			1636	1091	254	279	12		
11	z	211	Total	C	N	O	S	0	0
			1636	1091	254	279	12		
11	CF	211	Total	C	N	O	S	0	0
			1636	1091	254	279	12		

- Molecule 12 is a protein called Flagellar M-ring protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	Da	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Db	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dc	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dd	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	De	99	Total	C	N	O	S	0	0
			696	432	125	138	1		

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Mol	Chain	Residues	Atoms					AltConf	Trace
12	Df	97	Total	C	N	O	S	0	0
			687	427	123	136	1		
12	Dg	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dh	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Di	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dj	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dk	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dl	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dm	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Dn	87	Total	C	N	O	S	0	0
			637	397	113	126	1		
12	Do	97	Total	C	N	O	S	0	0
			687	427	123	136	1		
12	Dp	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dq	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dr	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Ds	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dt	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Du	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dv	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Dw	109	Total	C	N	O	S	0	0
			746	462	135	148	1		
12	Ca	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cb	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cc	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		

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Mol	Chain	Residues	Atoms					AltConf	Trace
12	Cd	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ce	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cf	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cg	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ch	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ci	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cj	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ck	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cl	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cm	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cn	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Co	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cp	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cq	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cr	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cs	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ct	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cu	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cv	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cw	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cx	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		

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Mol	Chain	Residues	Atoms					AltConf	Trace
12	Cy	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Cz	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ea	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Eb	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ec	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ed	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ee	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Ef	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Eg	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		
12	Eh	150	Total	C	N	O	S	0	0
			1185	722	221	239	3		

- Molecule 13 is a protein called FlgB-Dc loop.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	GA	11	Total	C	N	O	0	0
			55	33	11	11		
13	GC	11	Total	C	N	O	0	0
			55	33	11	11		
13	GE	12	Total	C	N	O	0	0
			60	36	12	12		
13	GD	10	Total	C	N	O	0	0
			50	30	10	10		
13	GB	5	Total	C	N	O	0	0
			25	15	5	5		

- Molecule 14 is a protein called FliE helix 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	GF	18	Total	C	N	O	0	0
			90	54	18	18		
14	GG	18	Total	C	N	O	0	0
			90	54	18	18		

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Mol	Chain	Residues	Atoms				AltConf	Trace
14	GH	18	Total	C	N	O	0	0
			90	54	18	18		
14	GI	15	Total	C	N	O	0	0
			75	45	15	15		
14	GJ	18	Total	C	N	O	0	0
			90	54	18	18		
14	GK	18	Total	C	N	O	0	0
			90	54	18	18		

- Molecule 15 is a protein called Flagellar L-ring protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	AA	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AB	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AC	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AD	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AE	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AF	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AG	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AH	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AI	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AJ	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AK	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AL	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AM	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AN	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AO	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
15	AP	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AQ	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AR	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AS	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AT	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AU	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AV	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AW	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AX	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AY	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		
15	AZ	211	Total	C	N	O	S	0	0
			1589	993	282	310	4		

- Molecule 16 is a protein called Flagellar P-ring protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	BA	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BB	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BC	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BD	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BE	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BF	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BG	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BH	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		

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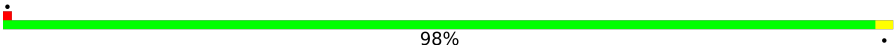
Mol	Chain	Residues	Atoms					AltConf	Trace
16	BI	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BJ	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BK	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BL	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BM	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BN	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BO	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BP	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BQ	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BR	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BS	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BT	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BU	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BV	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BW	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BX	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BY	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		
16	BZ	303	Total	C	N	O	S	0	0
			2228	1364	405	446	13		

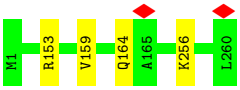
3 Residue-property plots (i)

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

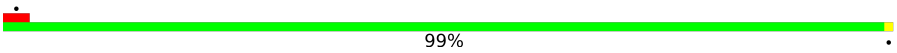
Chain A:

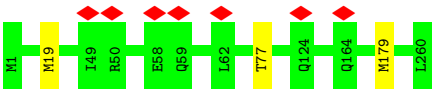




• Molecule 1: Flagellar basal-body rod protein FlgG

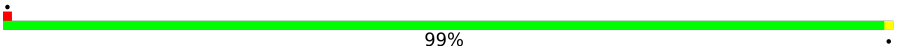
Chain B:

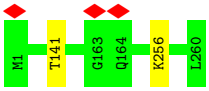




• Molecule 1: Flagellar basal-body rod protein FlgG

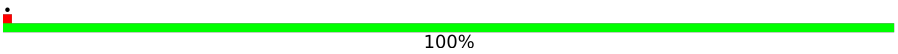
Chain C:

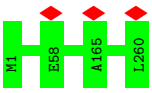




• Molecule 1: Flagellar basal-body rod protein FlgG

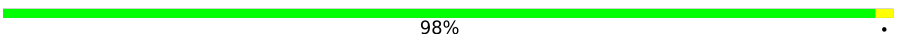
Chain D:





• Molecule 1: Flagellar basal-body rod protein FlgG

Chain E:

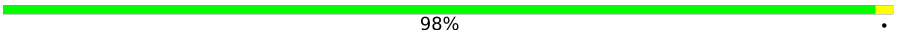


• Molecule 1: Flagellar basal-body rod protein FlgG

Chain F:

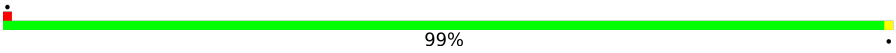
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain G:



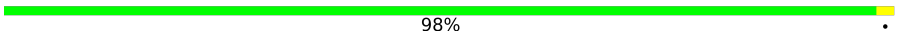
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain H:



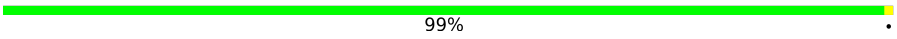
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain I:



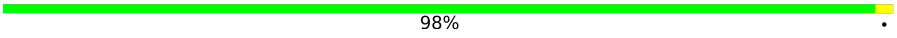
• Molecule 1: Flagellar basal-body rod protein FlgG

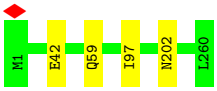
Chain J:



• Molecule 1: Flagellar basal-body rod protein FlgG

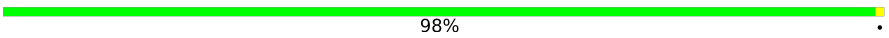
Chain K:





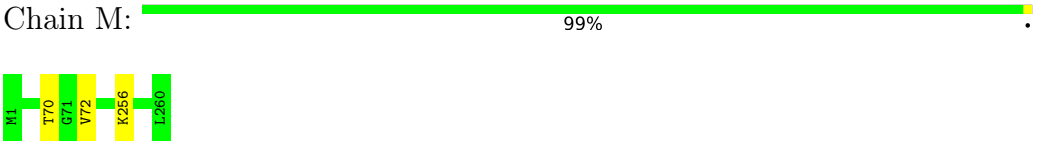
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain L:



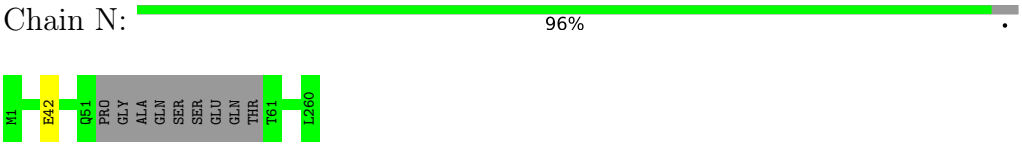
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain M:



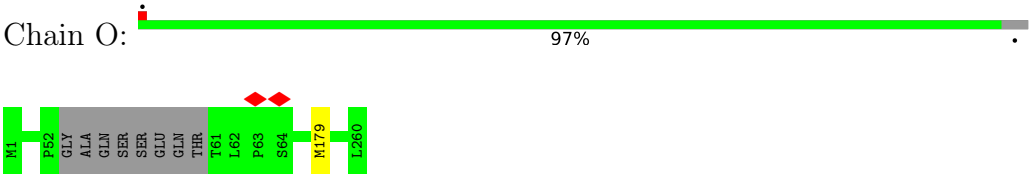
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain N:



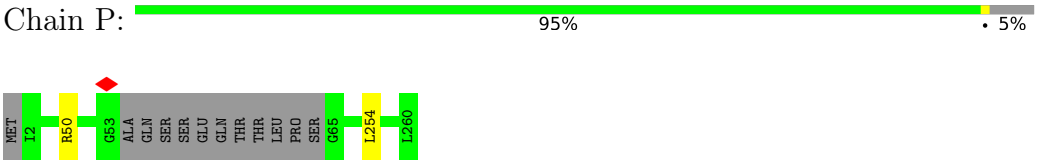
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain O:



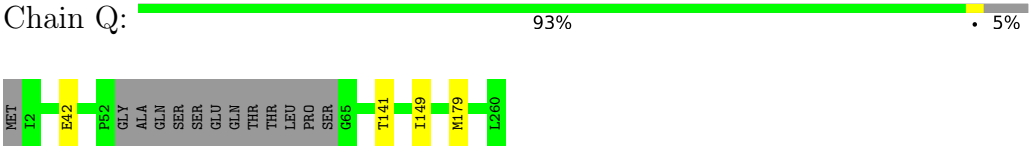
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain P:



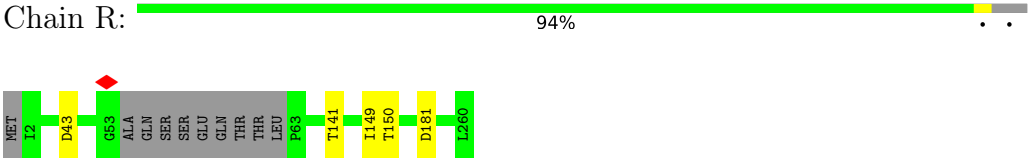
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain Q:



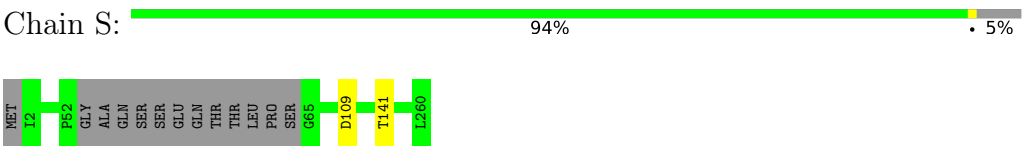
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain R:



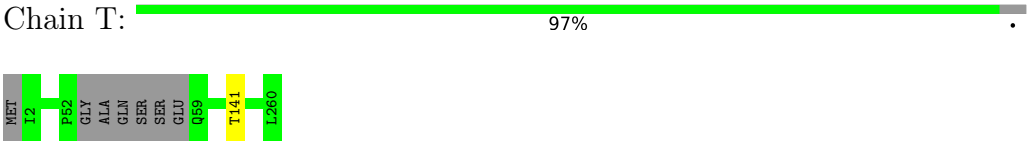
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain S:



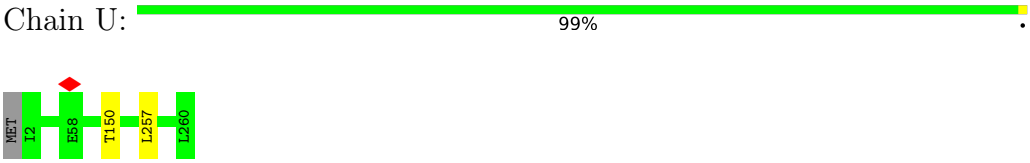
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain T:



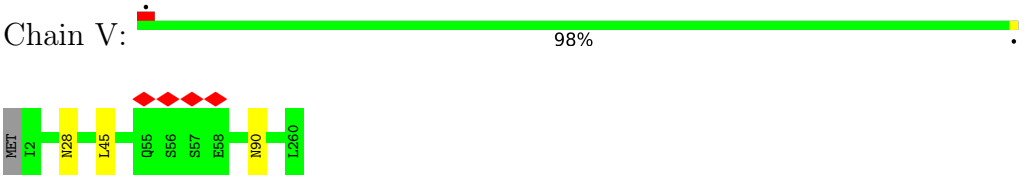
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain U:



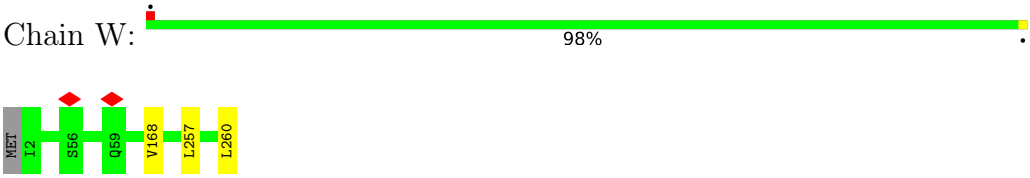
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain V:



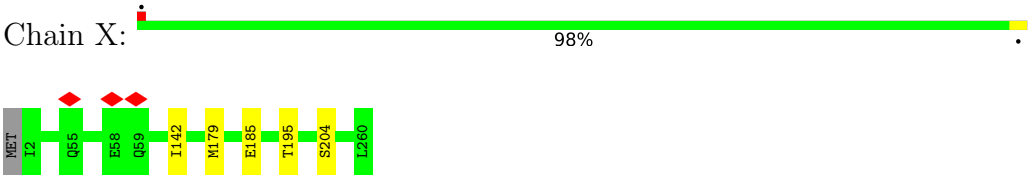
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain W:



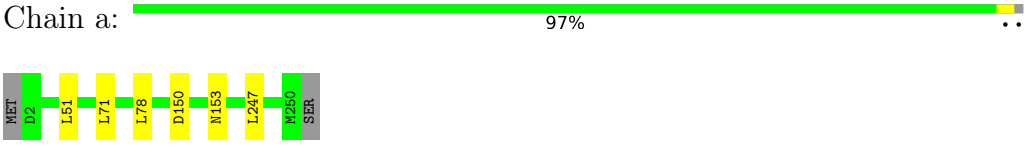
• Molecule 1: Flagellar basal-body rod protein FlgG

Chain X:



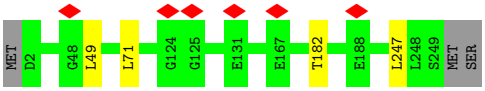
• Molecule 2: Flagellar basal-body rod protein FlgF

Chain a:



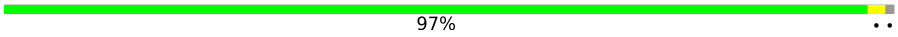
• Molecule 2: Flagellar basal-body rod protein FlgF

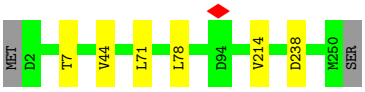
Chain b:



• Molecule 2: Flagellar basal-body rod protein FlgF

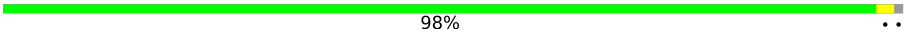
Chain c:

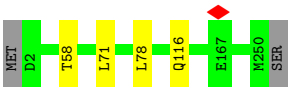




• Molecule 2: Flagellar basal-body rod protein FlgF

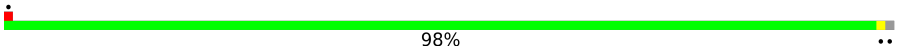
Chain d:

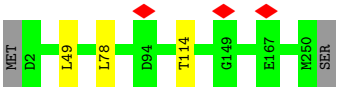




• Molecule 2: Flagellar basal-body rod protein FlgF

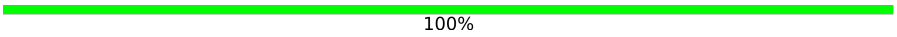
Chain e:





• Molecule 3: Flagellar MS ring L2

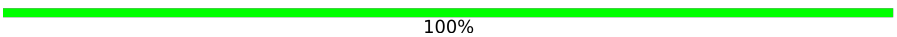
Chain 0:



There are no outlier residues recorded for this chain.

• Molecule 3: Flagellar MS ring L2

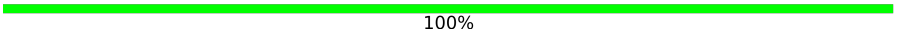
Chain 1:



There are no outlier residues recorded for this chain.

• Molecule 3: Flagellar MS ring L2

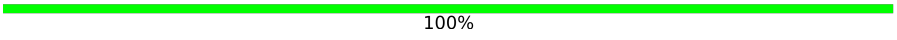
Chain 2:



There are no outlier residues recorded for this chain.

• Molecule 3: Flagellar MS ring L2

Chain 3:



There are no outlier residues recorded for this chain.

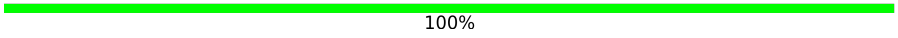
• Molecule 3: Flagellar MS ring L2

Chain 4:

There are no outlier residues recorded for this chain.

• Molecule 4: Flagellar MS ring L1

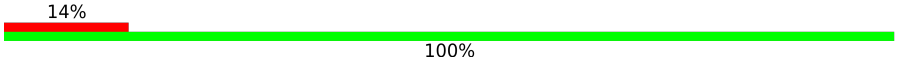
Chain 5:

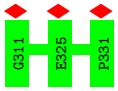


There are no outlier residues recorded for this chain.

• Molecule 4: Flagellar MS ring L1

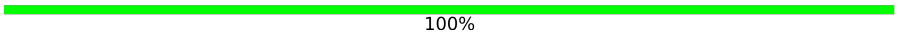
Chain 6:





• Molecule 4: Flagellar MS ring L1

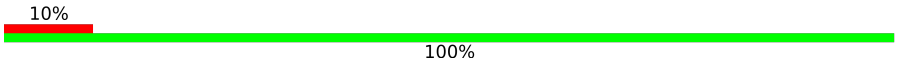
Chain 7:

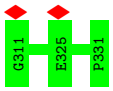


There are no outlier residues recorded for this chain.

• Molecule 4: Flagellar MS ring L1

Chain 9:





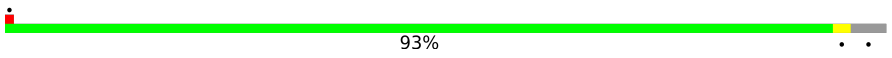
• Molecule 4: Flagellar MS ring L1

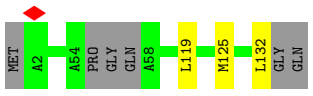
Chain 8:

There are no outlier residues recorded for this chain.

• Molecule 5: Flagellar basal-body rod protein FlgC

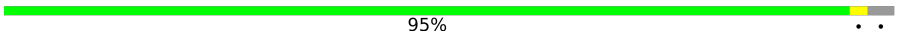
Chain f:

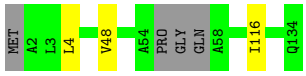




• Molecule 5: Flagellar basal-body rod protein FlgC

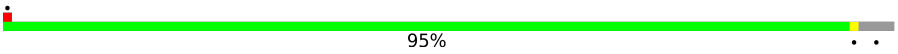
Chain g:

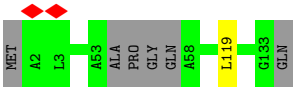




• Molecule 5: Flagellar basal-body rod protein FlgC

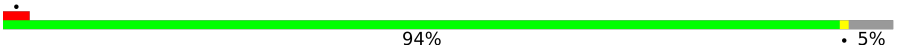
Chain h:

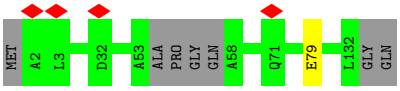




• Molecule 5: Flagellar basal-body rod protein FlgC

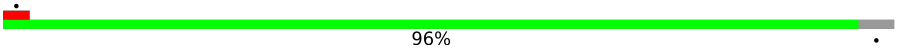
Chain j:

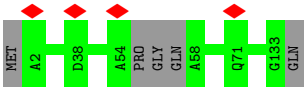




• Molecule 5: Flagellar basal-body rod protein FlgC

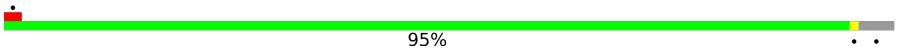
Chain p:

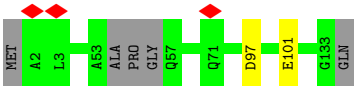




• Molecule 5: Flagellar basal-body rod protein FlgC

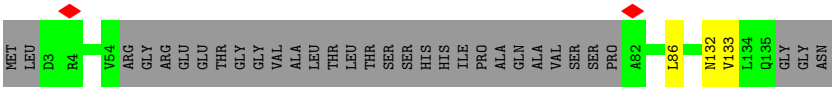
Chain i:





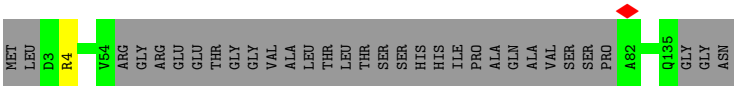
• Molecule 6: Flagellar basal body rod protein FlgB

Chain l:



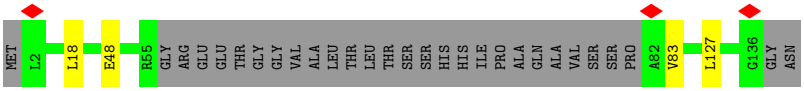
• Molecule 6: Flagellar basal body rod protein FlgB

Chain m:



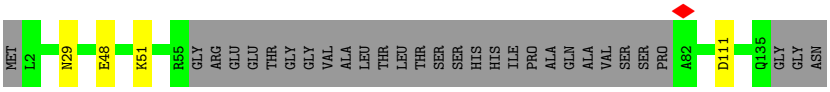
• Molecule 6: Flagellar basal body rod protein FlgB

Chain o:



• Molecule 6: Flagellar basal body rod protein FlgB

Chain k:

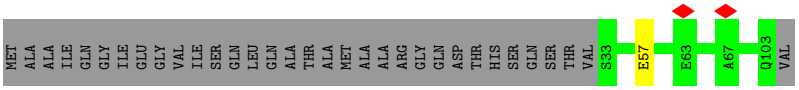


• Molecule 6: Flagellar basal body rod protein FlgB

Chain n:

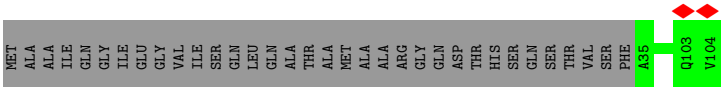
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain q:



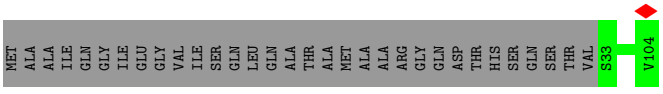
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain r:



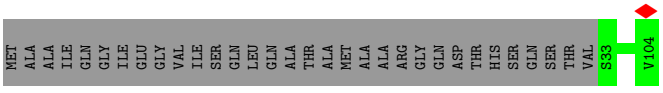
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain s:



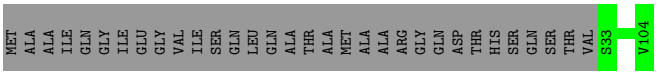
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain t:



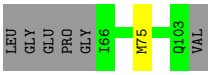
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain u:



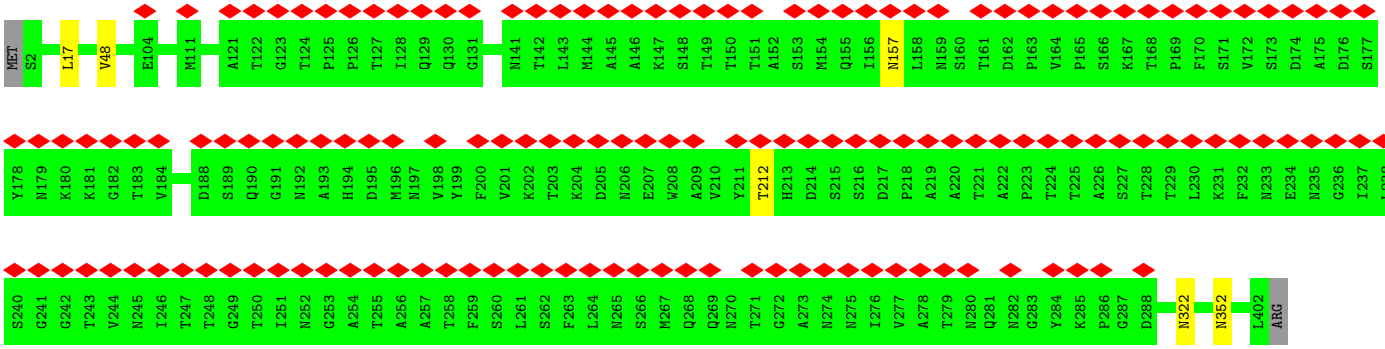
• Molecule 7: Flagellar hook-basal body complex protein FliE

Chain v:



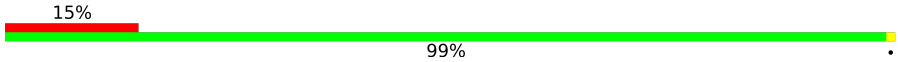
• Molecule 8: Flagellar hook protein FlgE

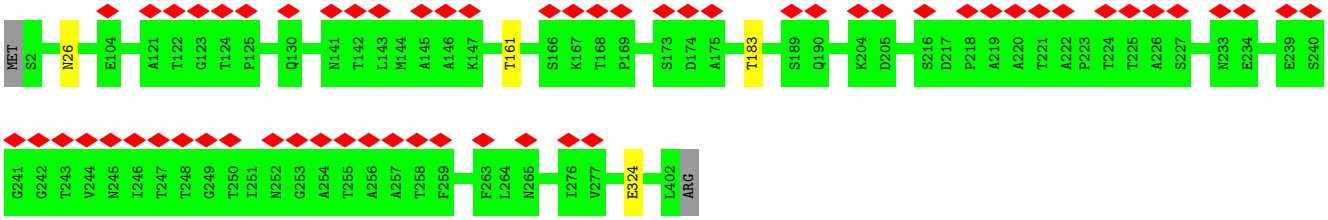
Chain DA:



• Molecule 8: Flagellar hook protein FlgE

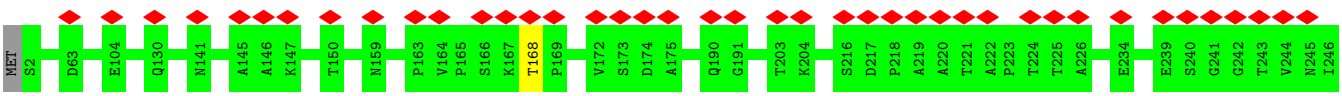
Chain DB:

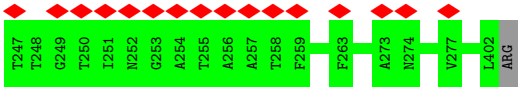




• Molecule 8: Flagellar hook protein FlgE

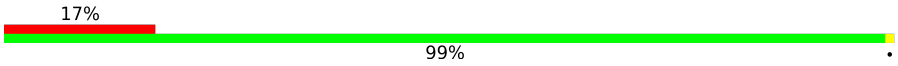
Chain DC:

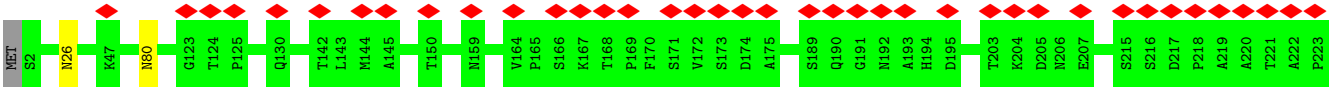


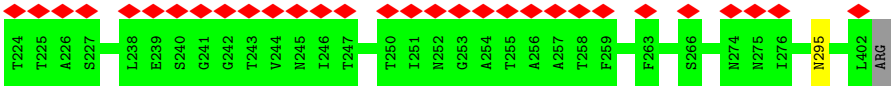


• Molecule 8: Flagellar hook protein FlgE

Chain DD:







• Molecule 8: Flagellar hook protein FlgE

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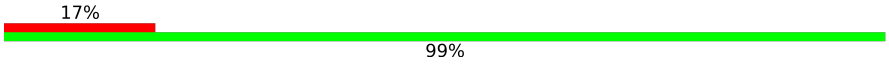

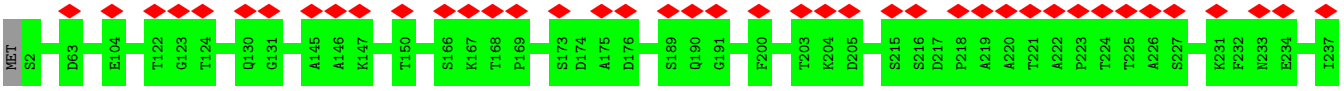

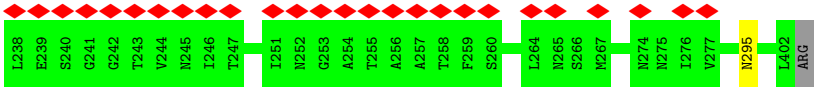

• Molecule 8: Flagellar hook protein FlgE

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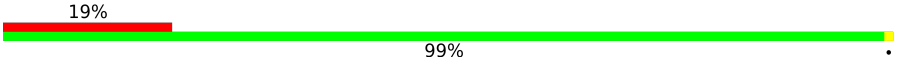

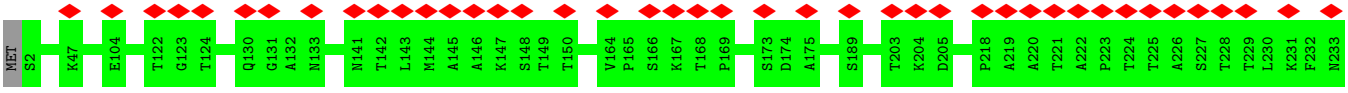

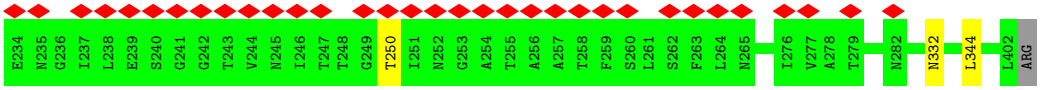

• Molecule 8: Flagellar hook protein FlgE

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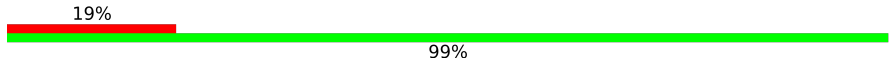

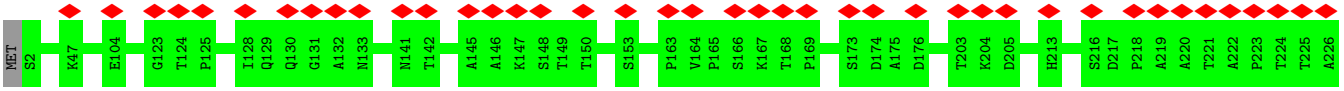

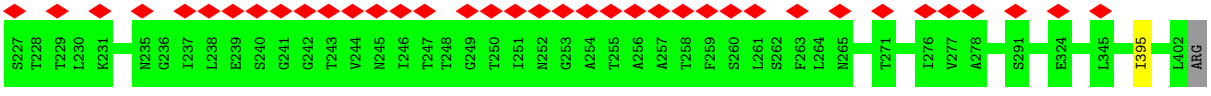

• Molecule 8: Flagellar hook protein FlgE

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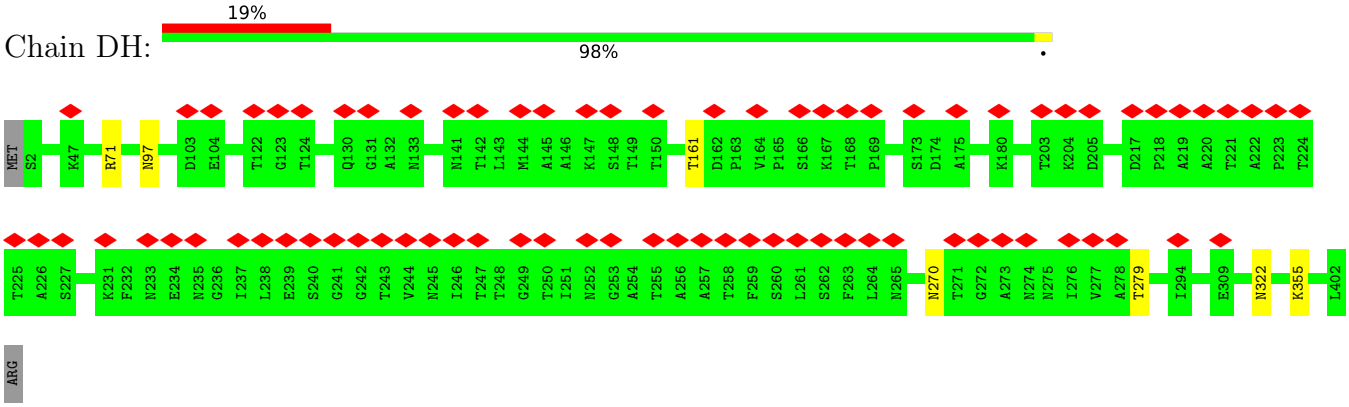

• Molecule 8: Flagellar hook protein FlgE

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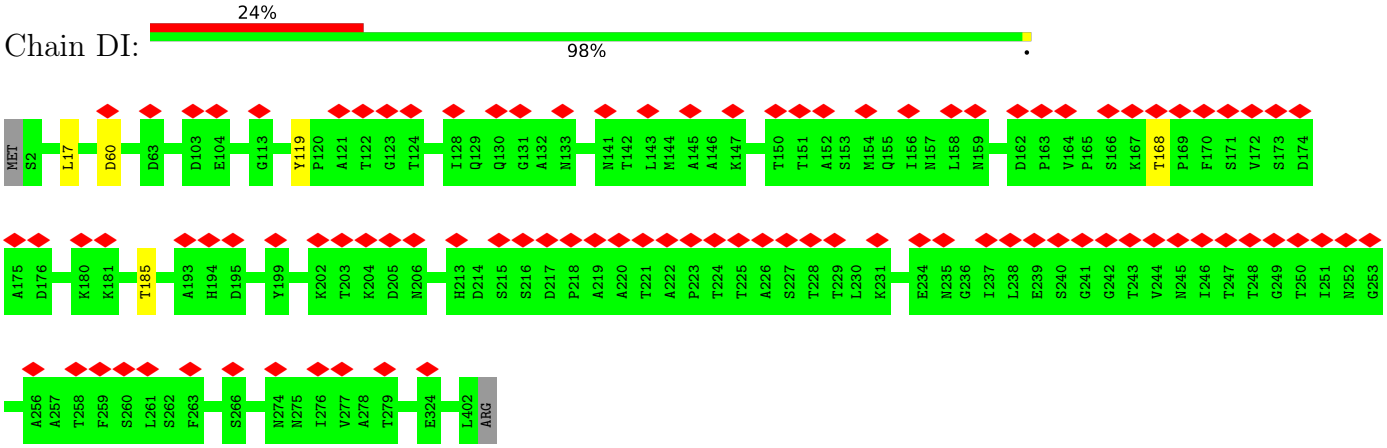

• Molecule 8: Flagellar hook protein FlgE

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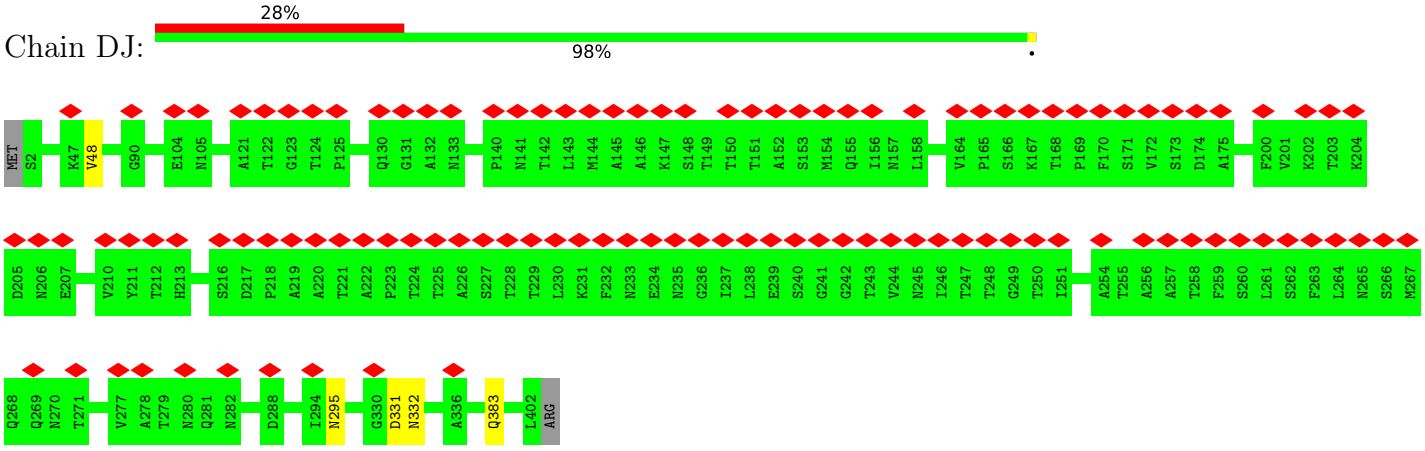

• Molecule 8: Flagellar hook protein FlgE

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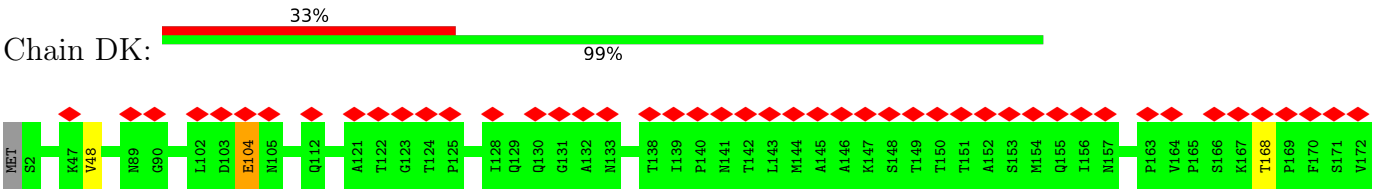

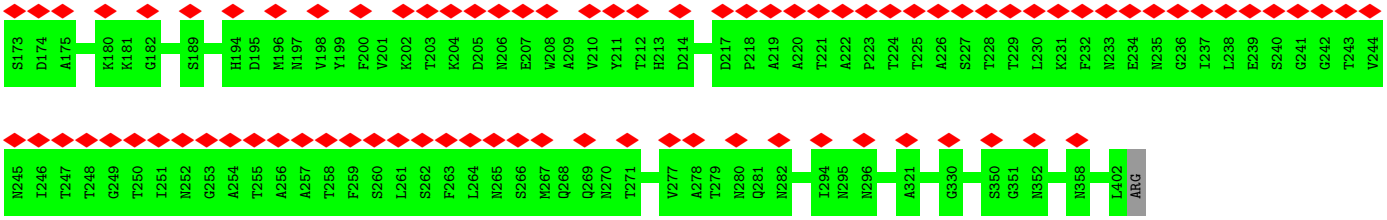

• Molecule 8: Flagellar hook protein FlgE

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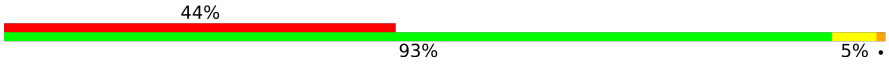
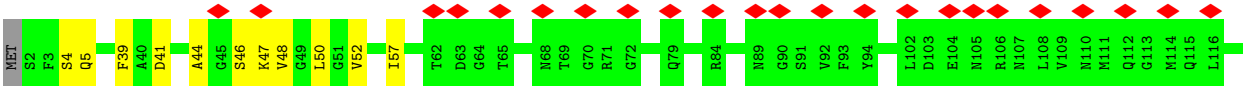
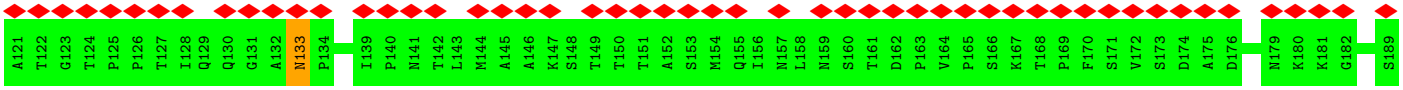
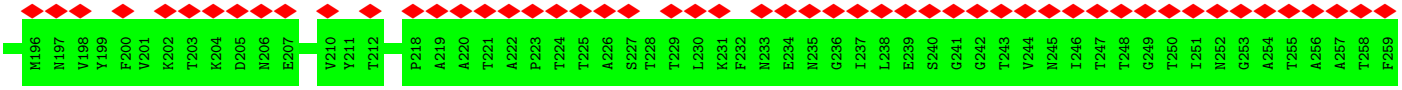
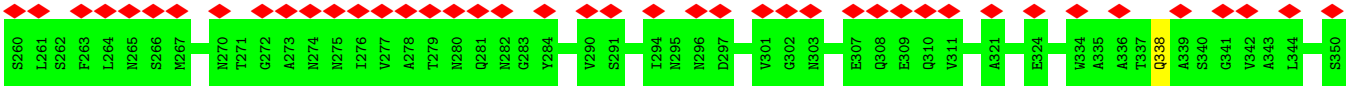
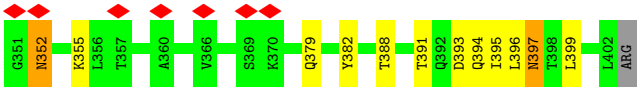






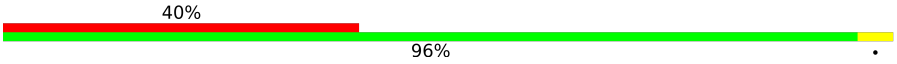


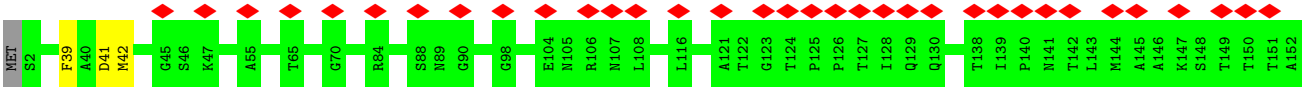


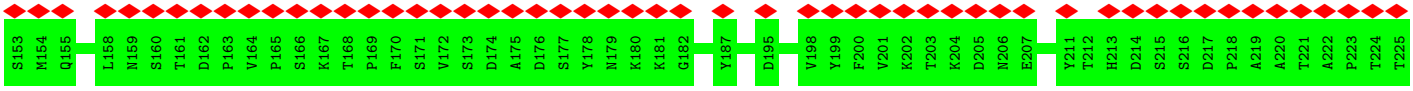


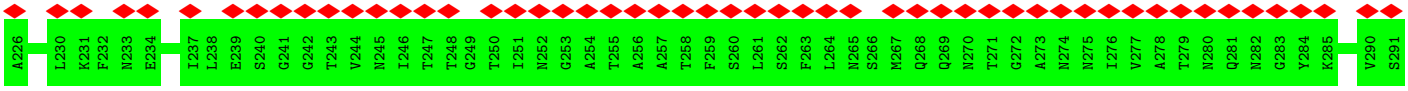
• Molecule 8: Flagellar hook protein FlgE

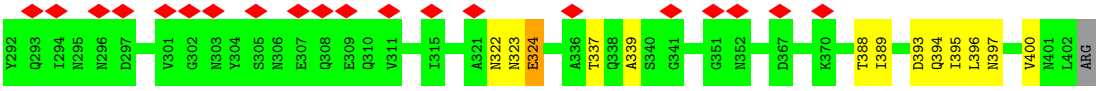
Chain DM:









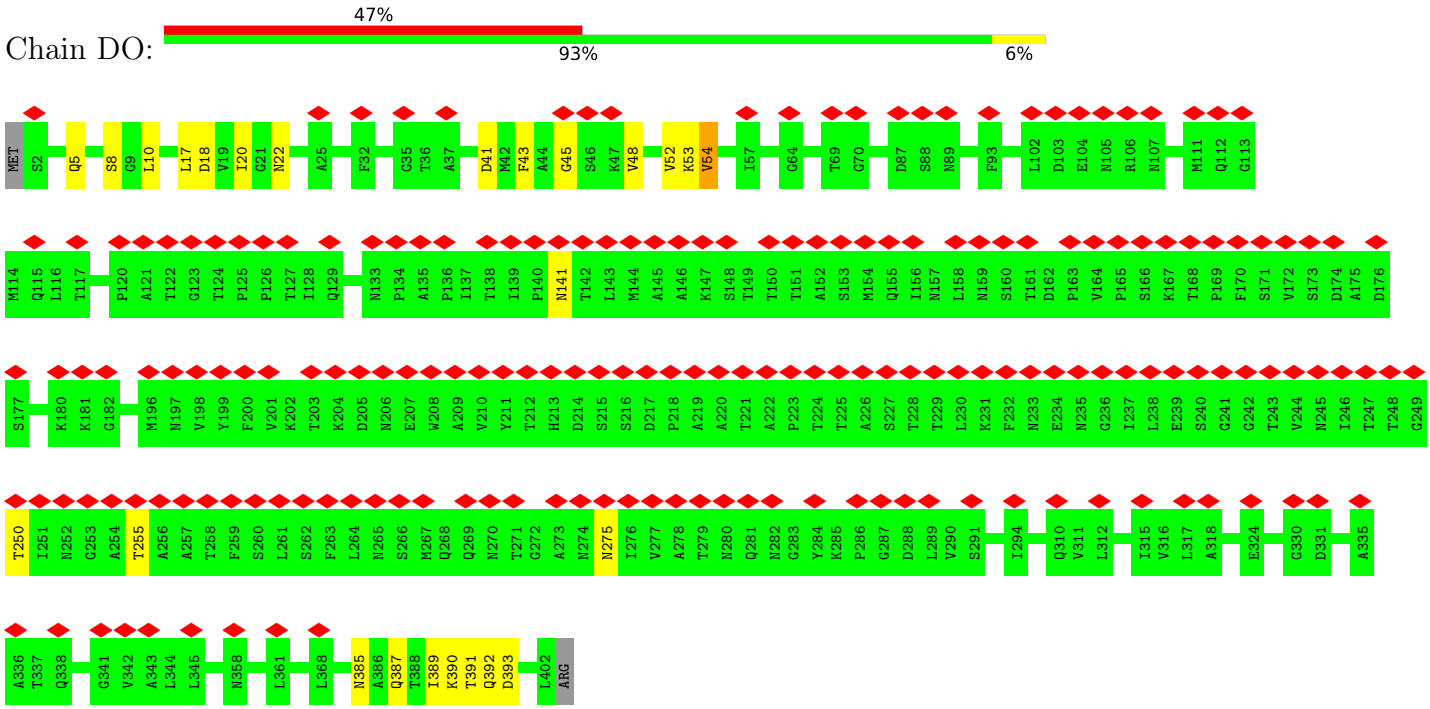


• Molecule 8: Flagellar hook protein FlgE

Chain DN:

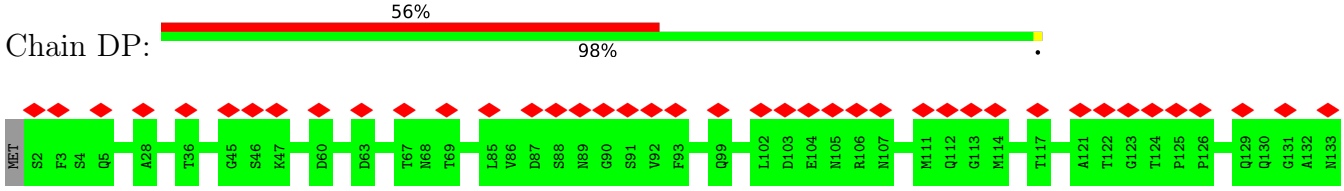
• Molecule 8: Flagellar hook protein FlgE

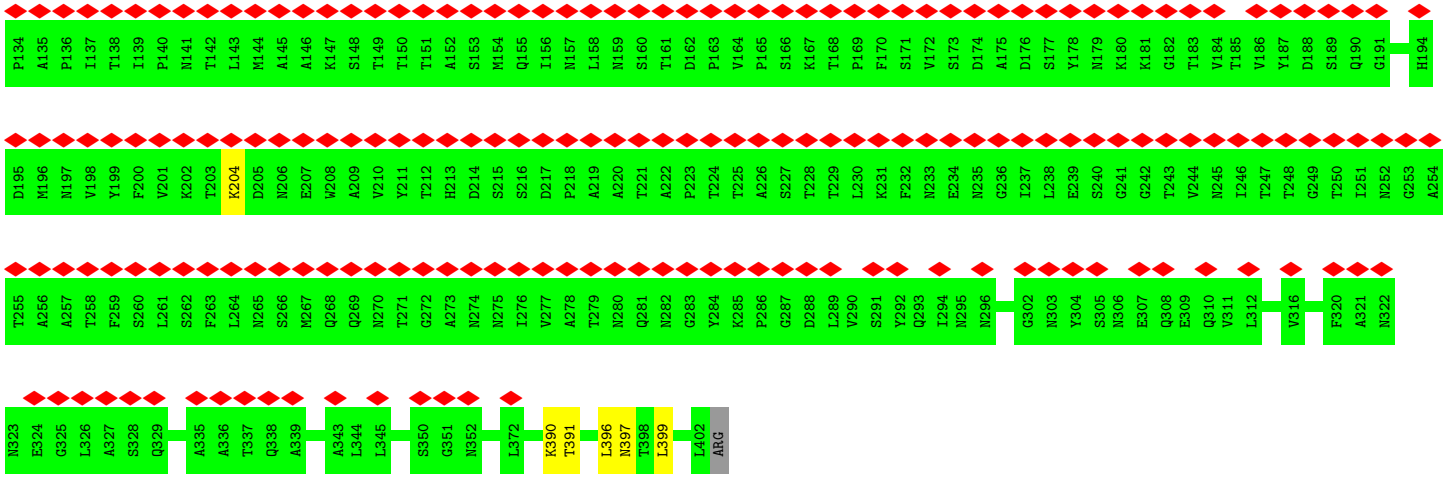
Chain DO:



• Molecule 8: Flagellar hook protein FlgE

Chain DP:





• Molecule 8: Flagellar hook protein FlgE

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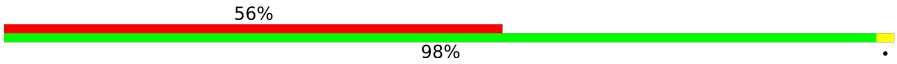

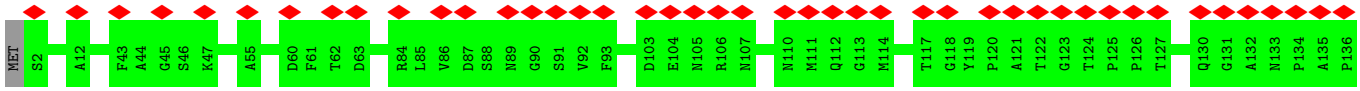

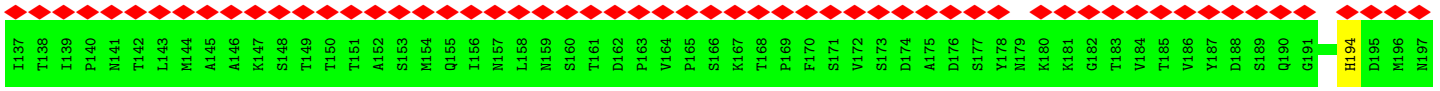

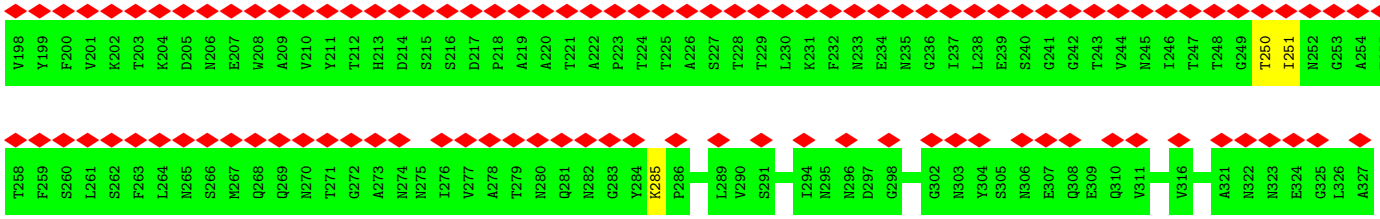

• Molecule 8: Flagellar hook protein FlgE

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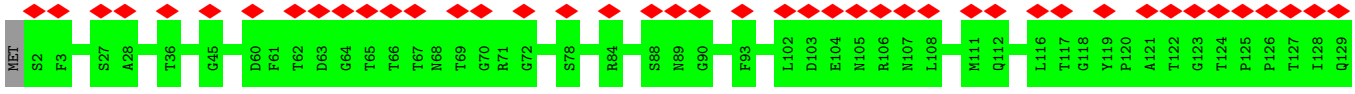

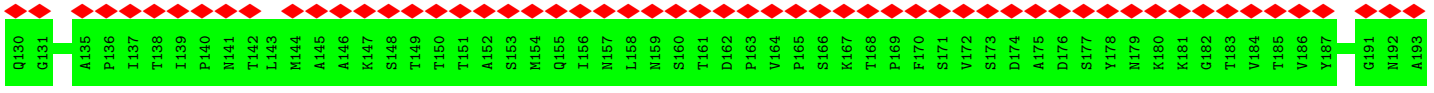

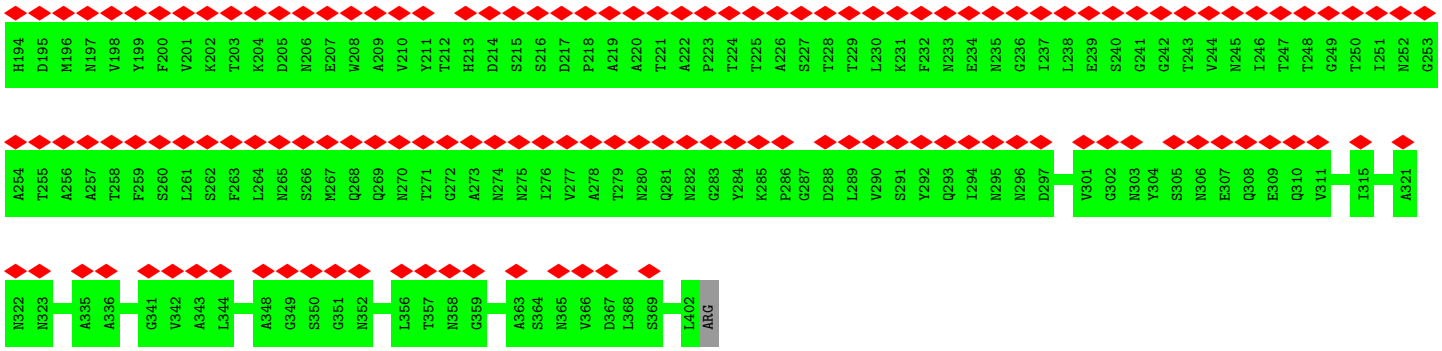

• Molecule 8: Flagellar hook protein FlgE

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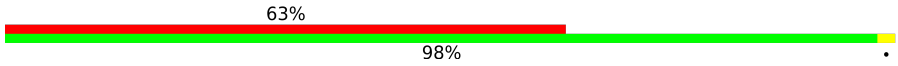
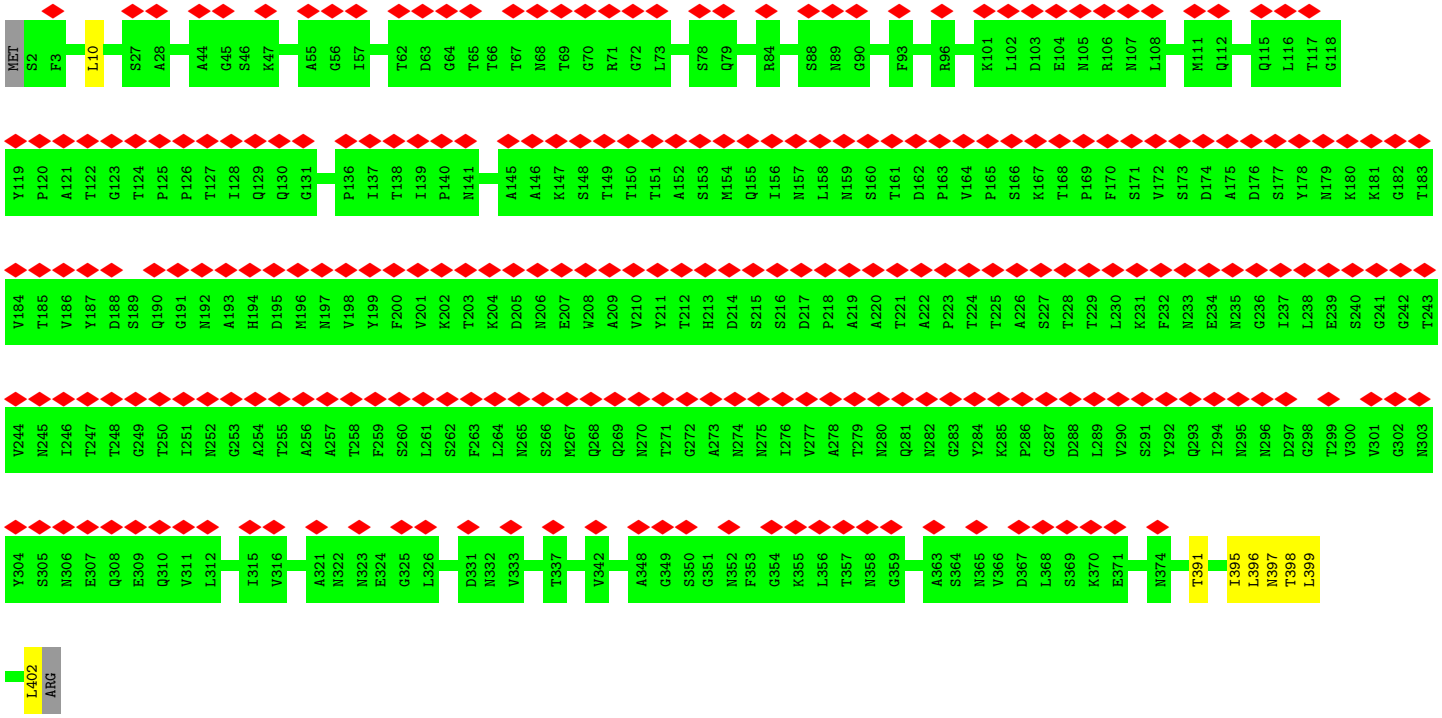
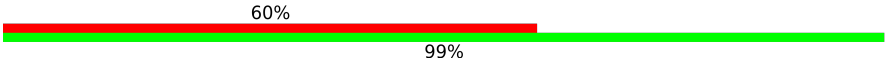
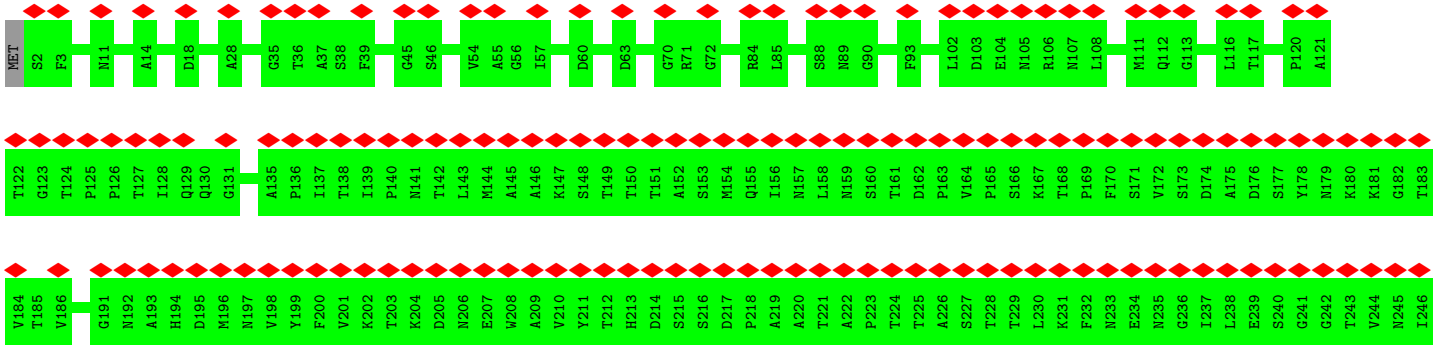


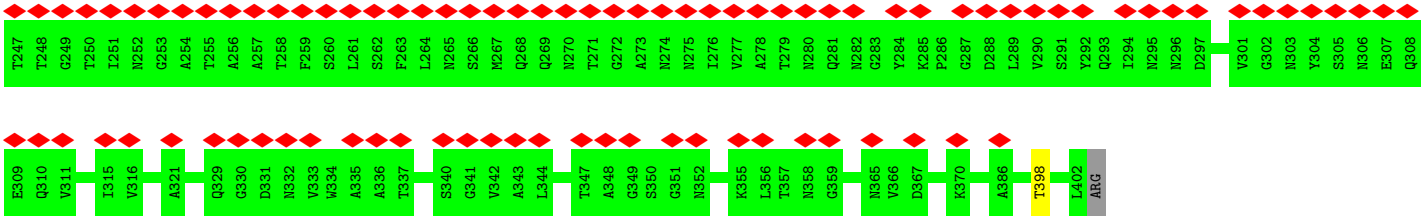


• Molecule 8: Flagellar hook protein FlgE

Chain DT:







• Molecule 8: Flagellar hook protein FlgE

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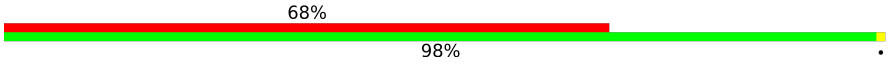

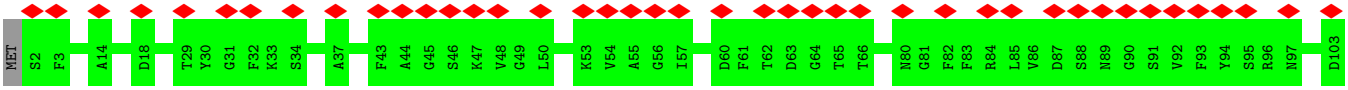

• Molecule 8: Flagellar hook protein FlgE

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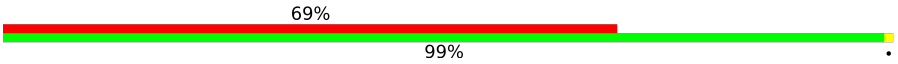

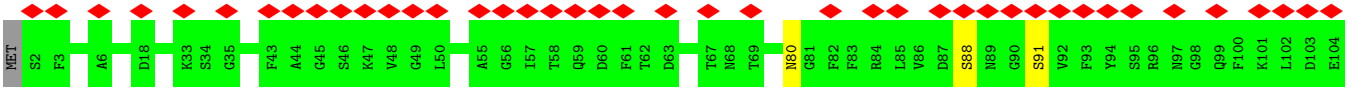

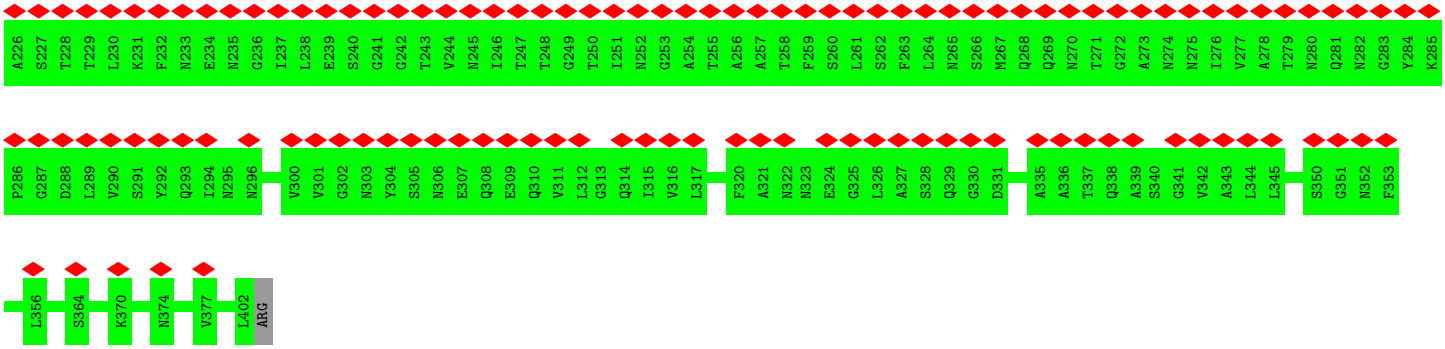

• Molecule 8: Flagellar hook protein FlgE

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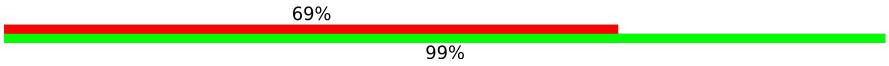

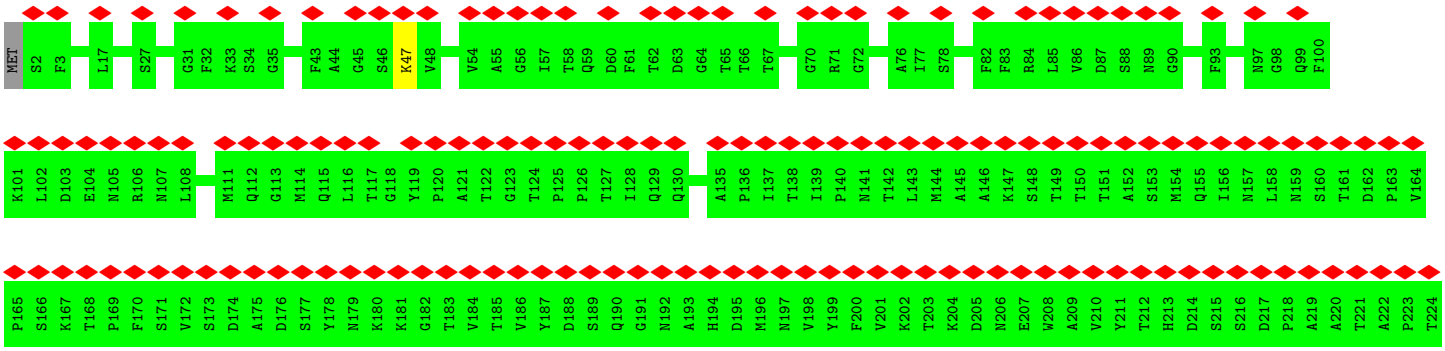

• Molecule 8: Flagellar hook protein FlgE

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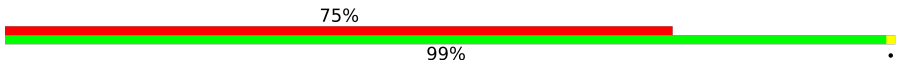
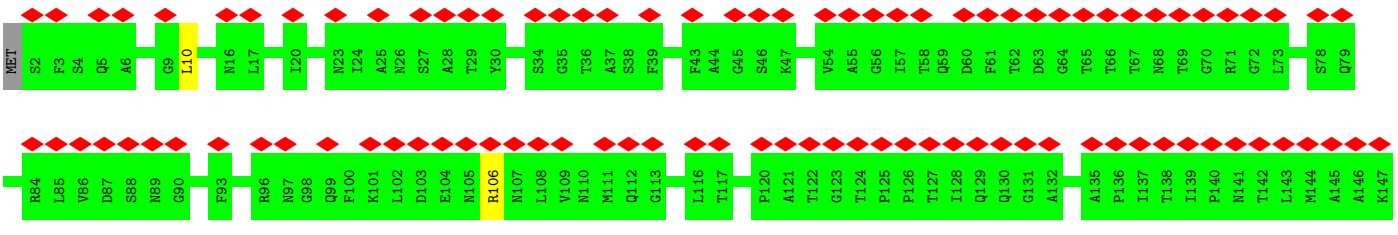
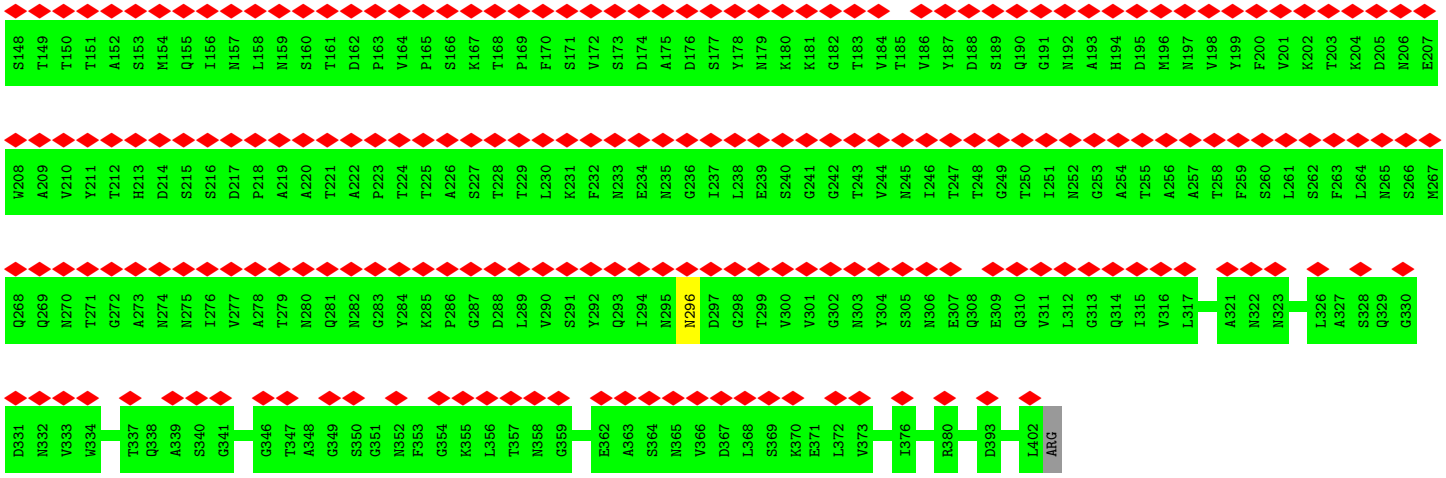
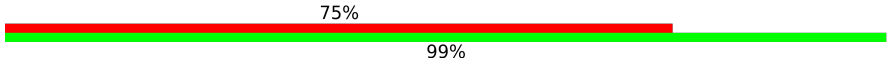


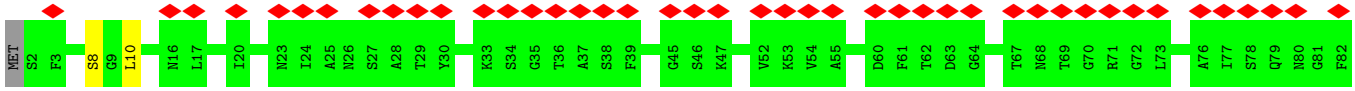




• Molecule 8: Flagellar hook protein FlgE

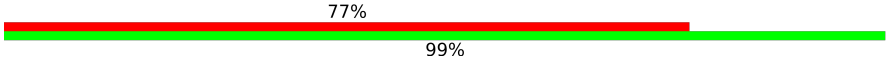
Chain DY:

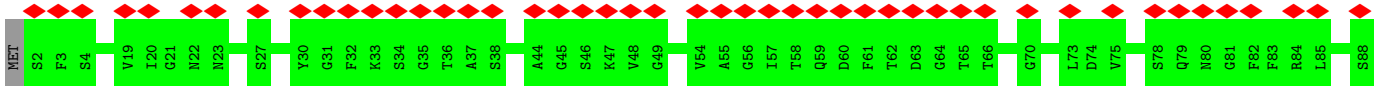


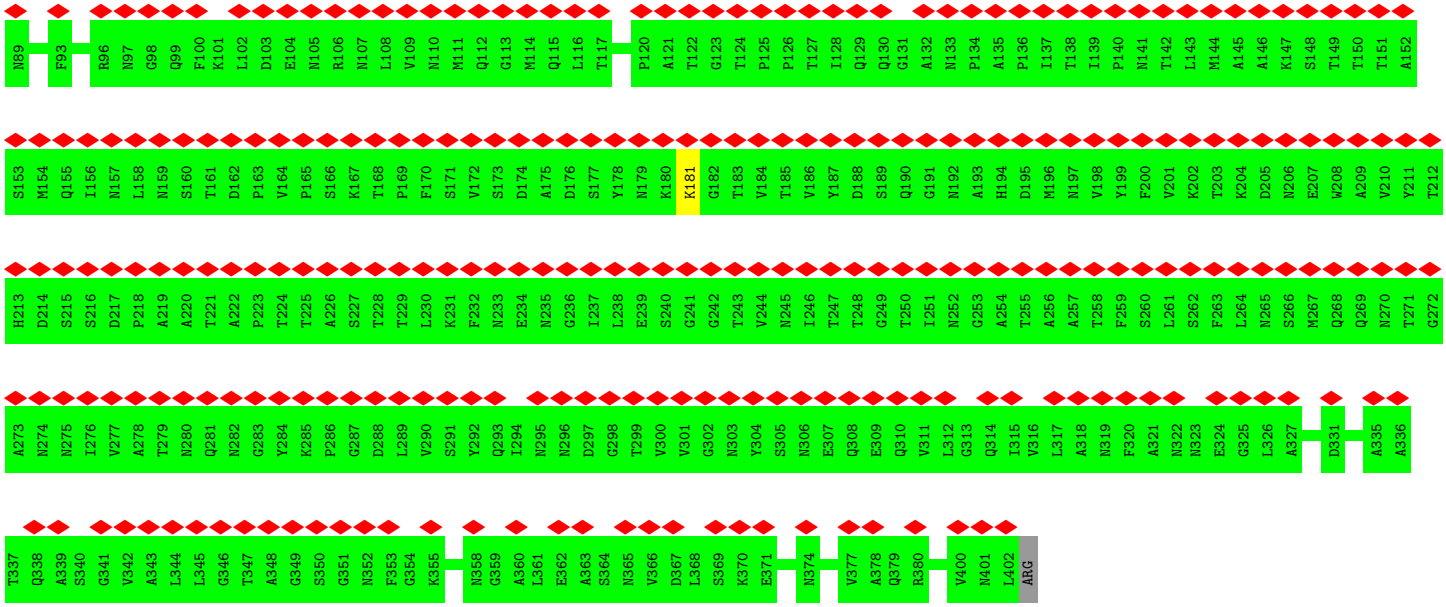


• Molecule 8: Flagellar hook protein FlgE

Chain DZ:

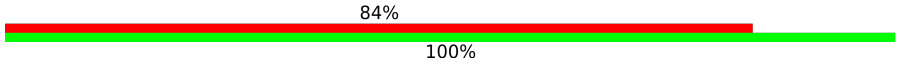


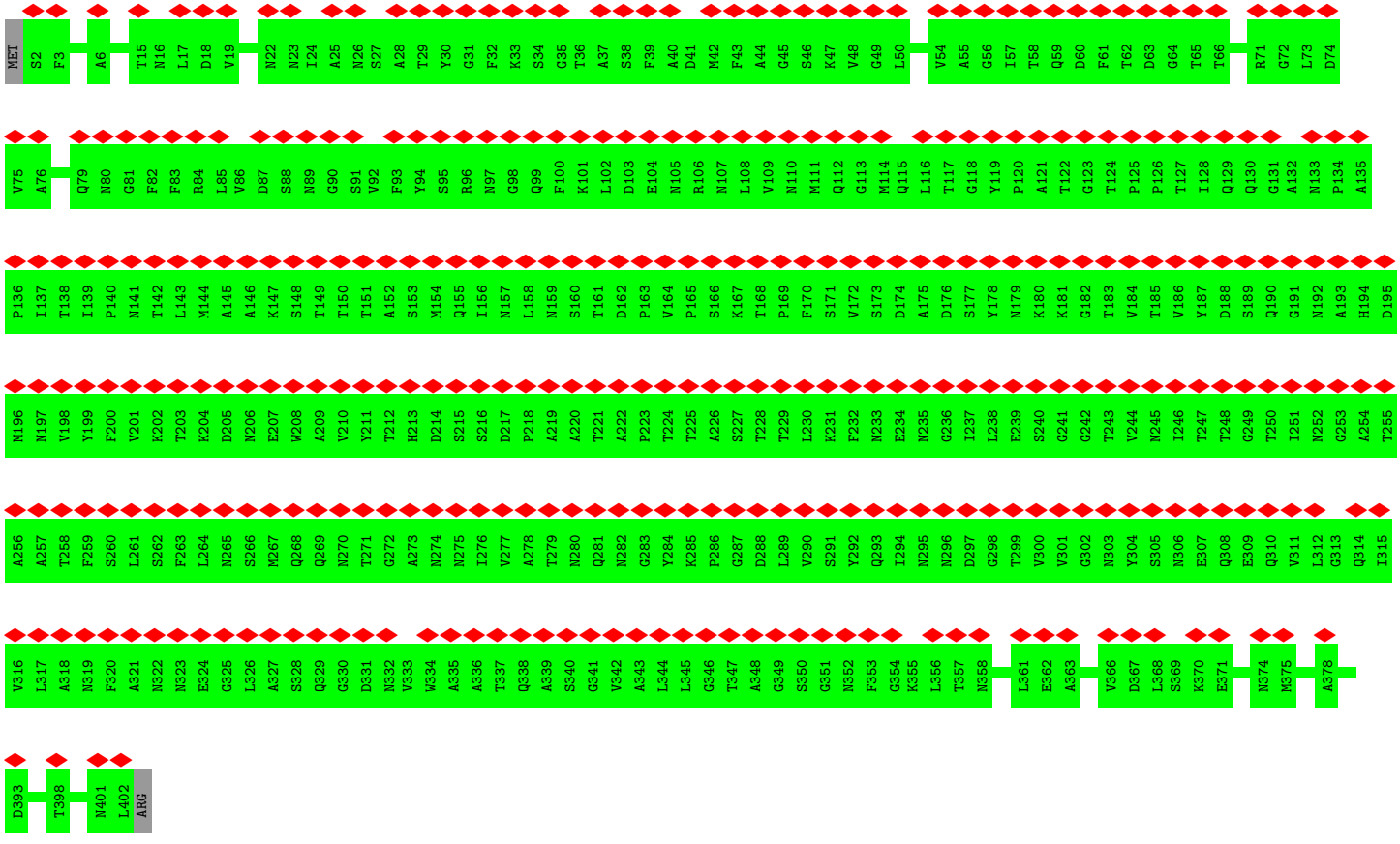




• Molecule 8: Flagellar hook protein FlgE

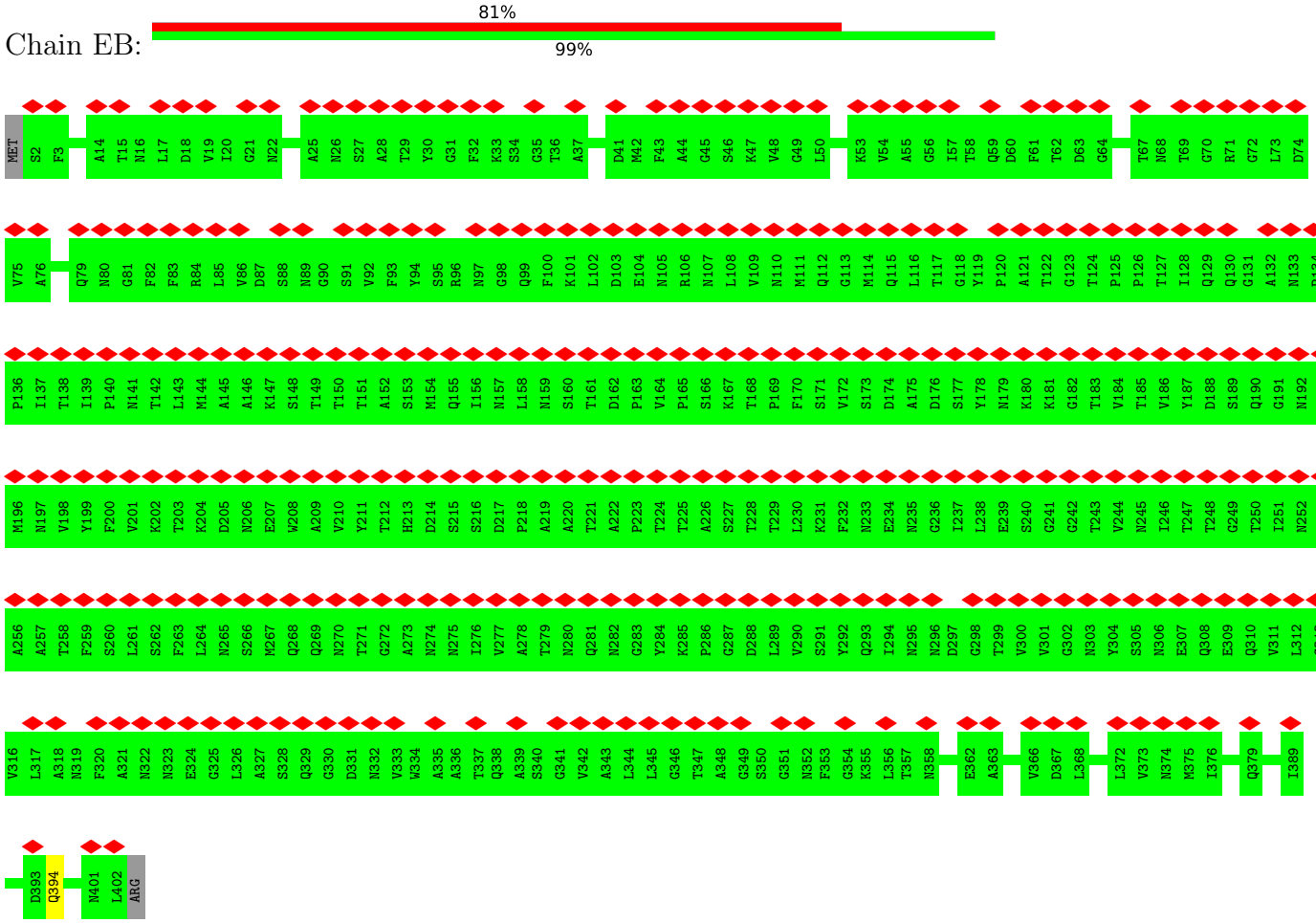
Chain EA:





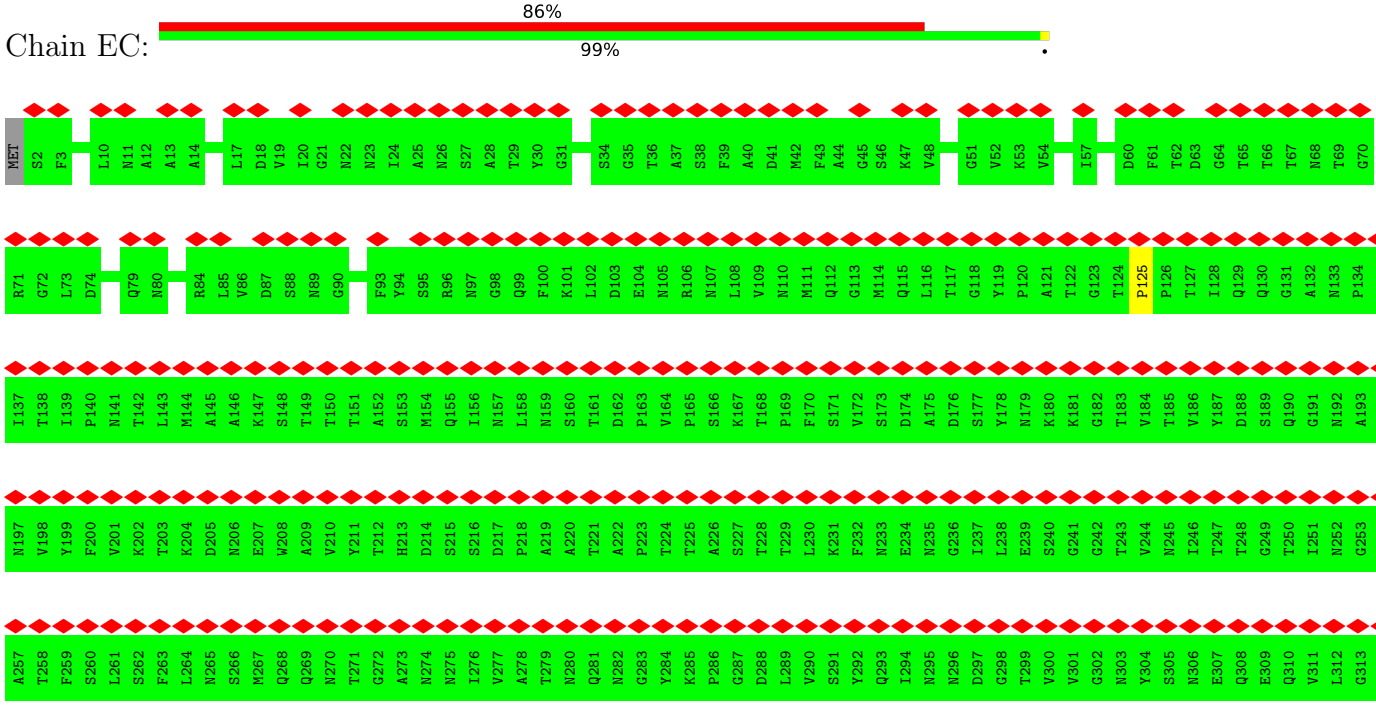
• Molecule 8: Flagellar hook protein FlgE

Chain EB:



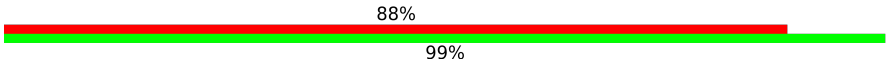
• Molecule 8: Flagellar hook protein FlgE

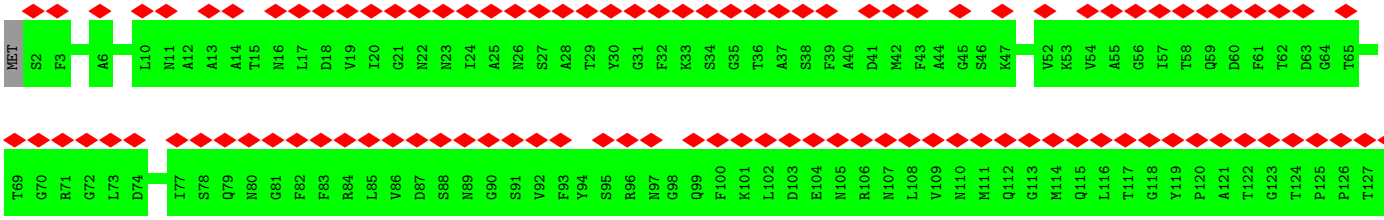
Chain EC:



• Molecule 8: Flagellar hook protein FlgE

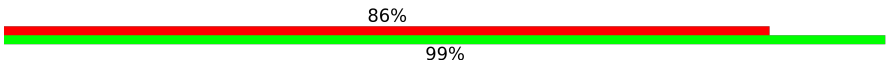
Chain ED:

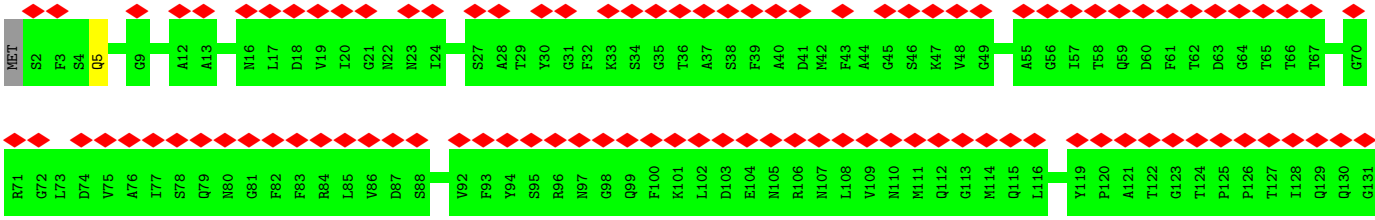


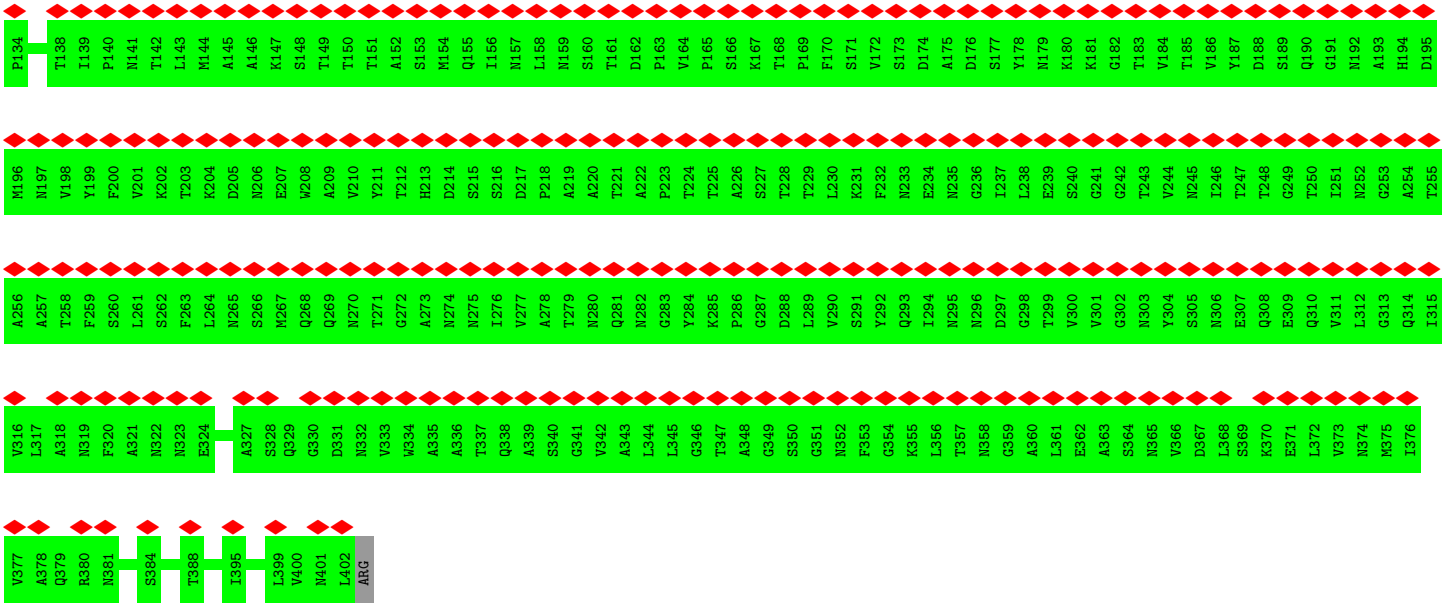


• Molecule 8: Flagellar hook protein FlgE

Chain EE:

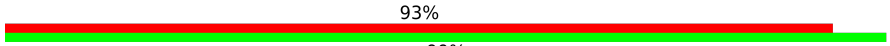


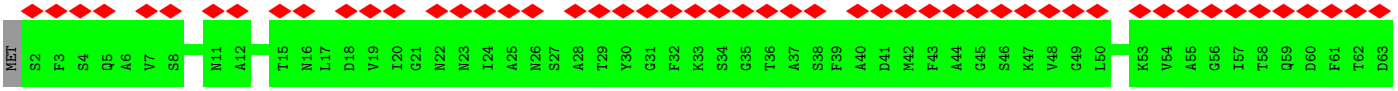




• Molecule 8: Flagellar hook protein FlgE

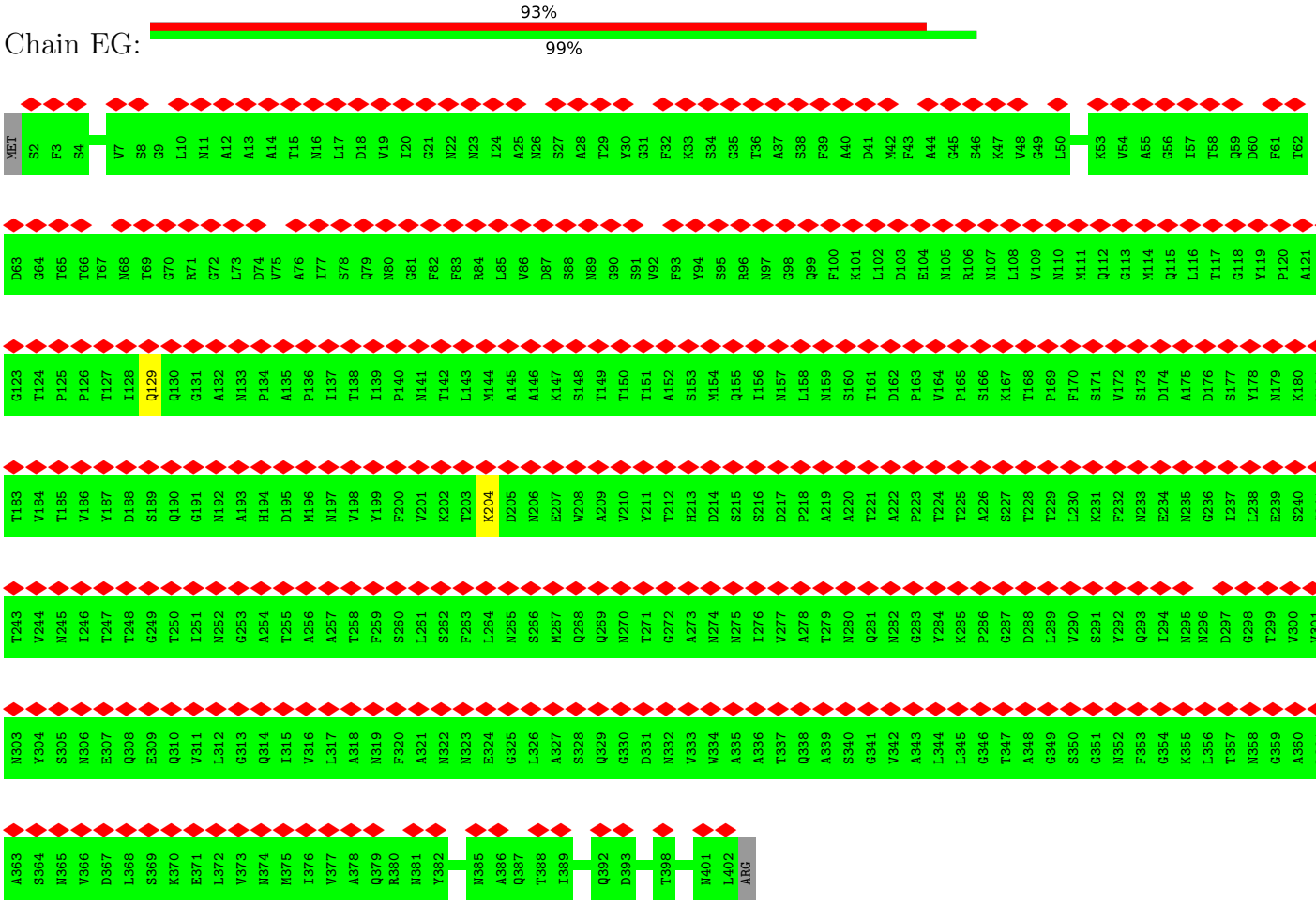
Chain EF:





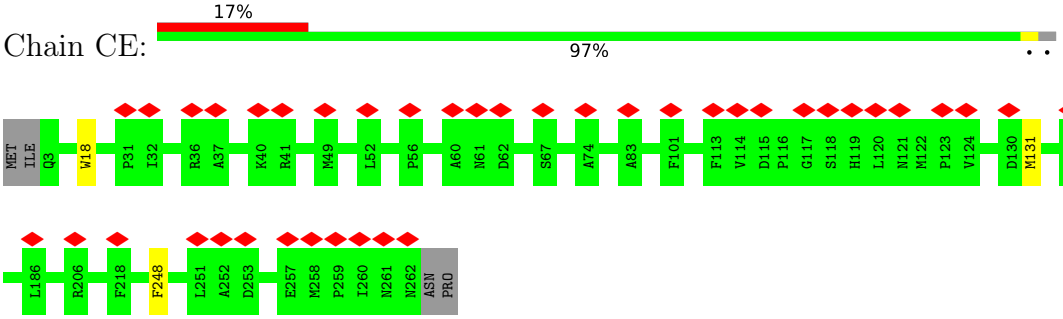
• Molecule 8: Flagellar hook protein FlgE

Chain EG:



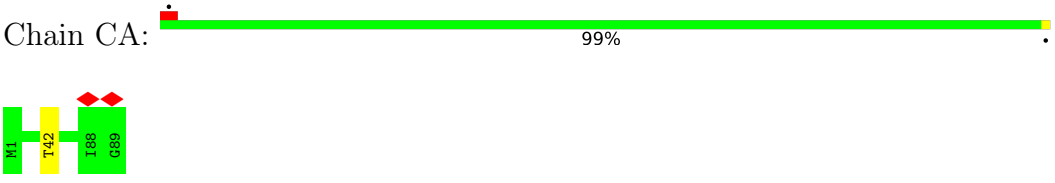
• Molecule 9: Flagellar biosynthetic protein FliR

Chain CE:



• Molecule 10: Flagellar biosynthetic protein FliQ

Chain CA:



• Molecule 10: Flagellar biosynthetic protein FliQ

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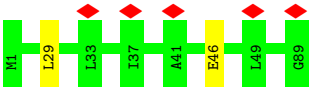

• Molecule 10: Flagellar biosynthetic protein FliQ

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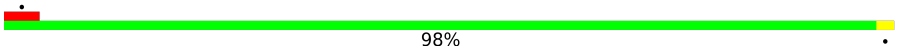

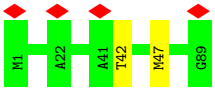

• Molecule 10: Flagellar biosynthetic protein FliQ

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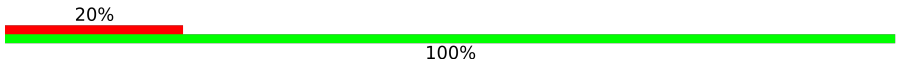
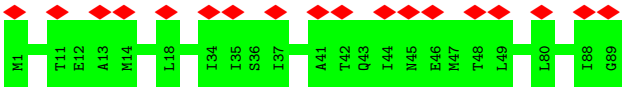
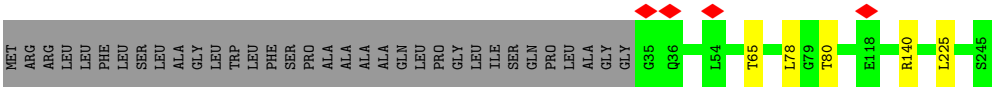




• Molecule 11: Flagellar biosynthetic protein FliP

Chain w:



• Molecule 11: Flagellar biosynthetic protein FliP

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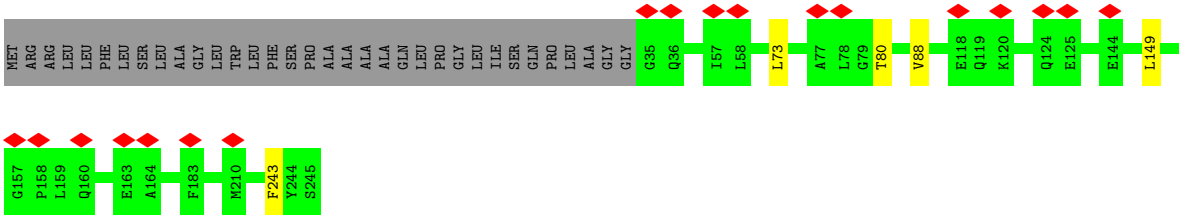
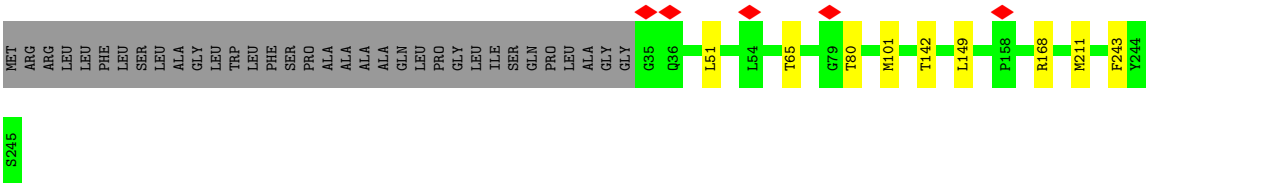


• Molecule 11: Flagellar biosynthetic protein FliP

Chain y:



• Molecule 11: Flagellar biosynthetic protein FliP

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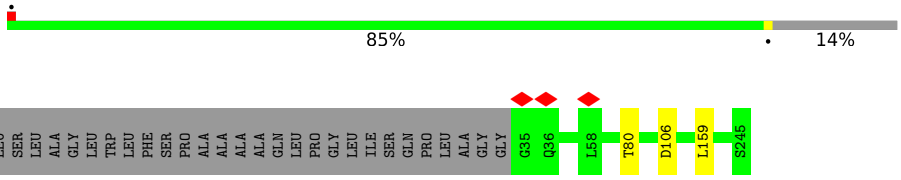

• Molecule 11: Flagellar biosynthetic protein FliP

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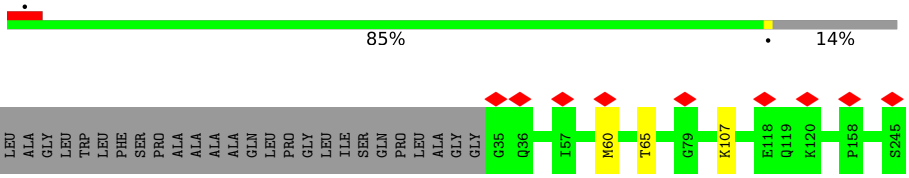

• Molecule 12: Flagellar M-ring protein

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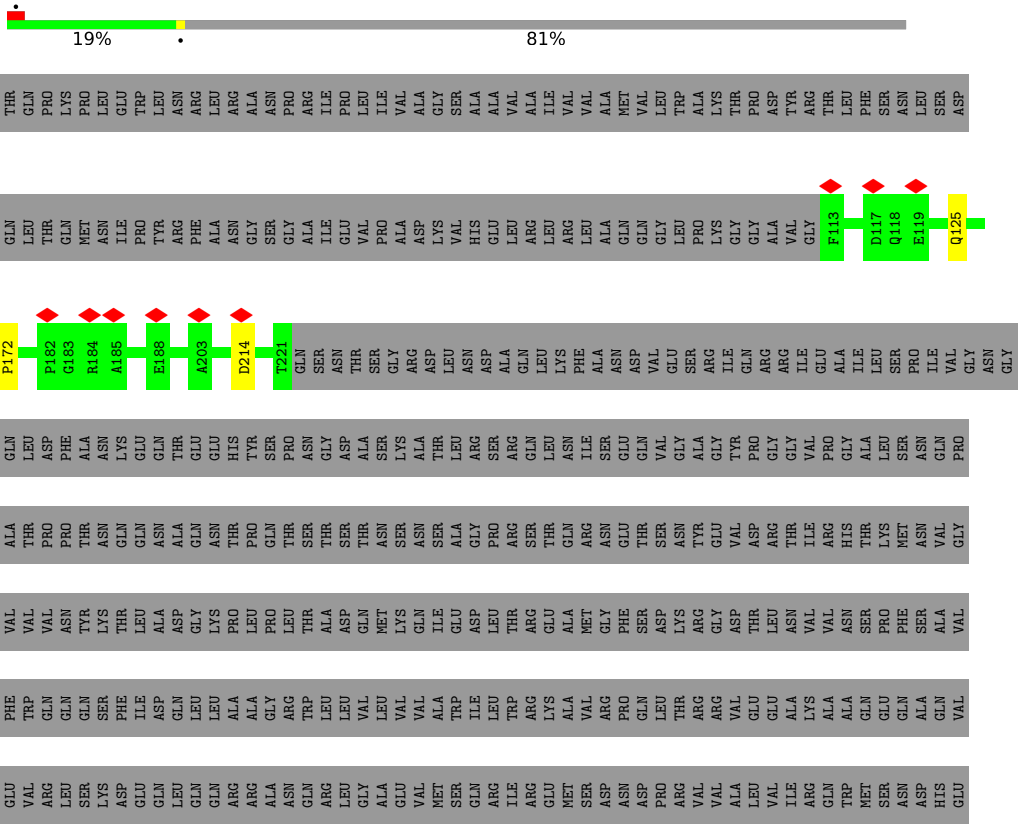

• Molecule 12: Flagellar M-ring protein

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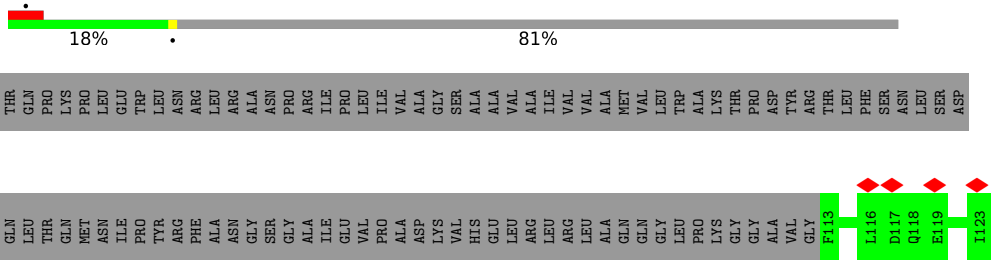
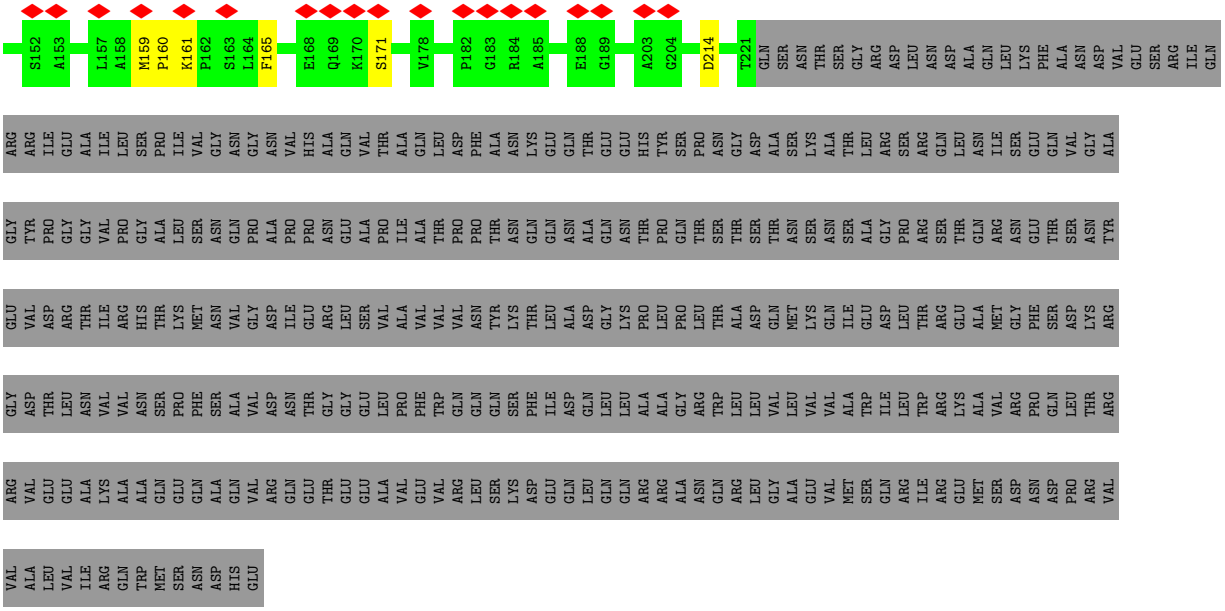
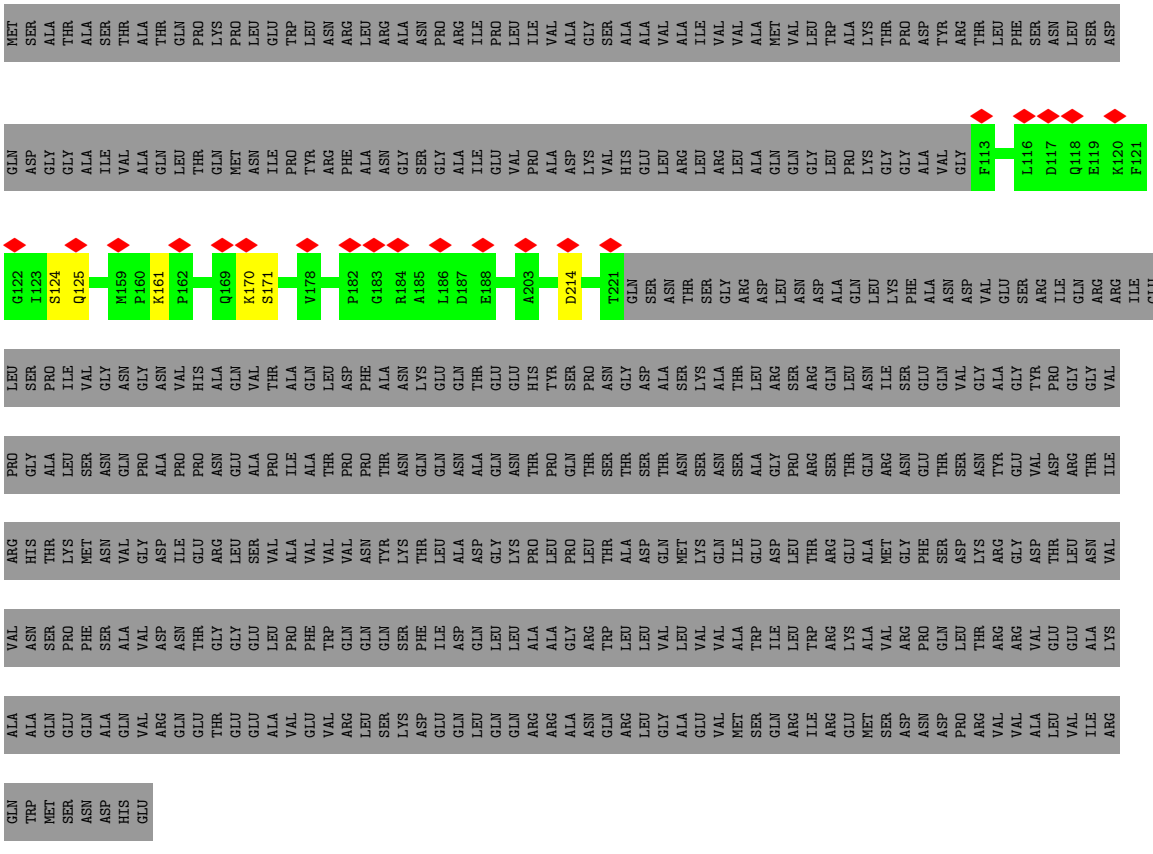
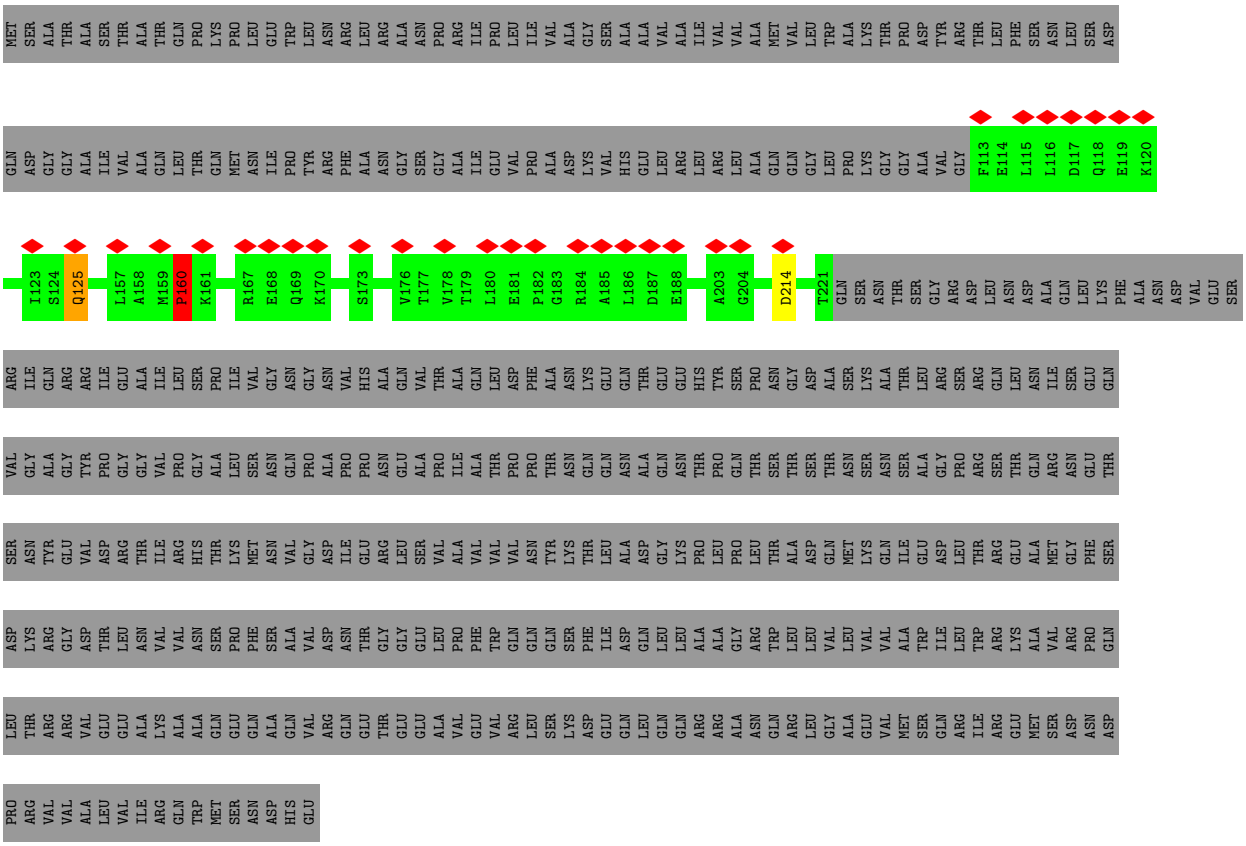




• Molecule 12: Flagellar M-ring protein

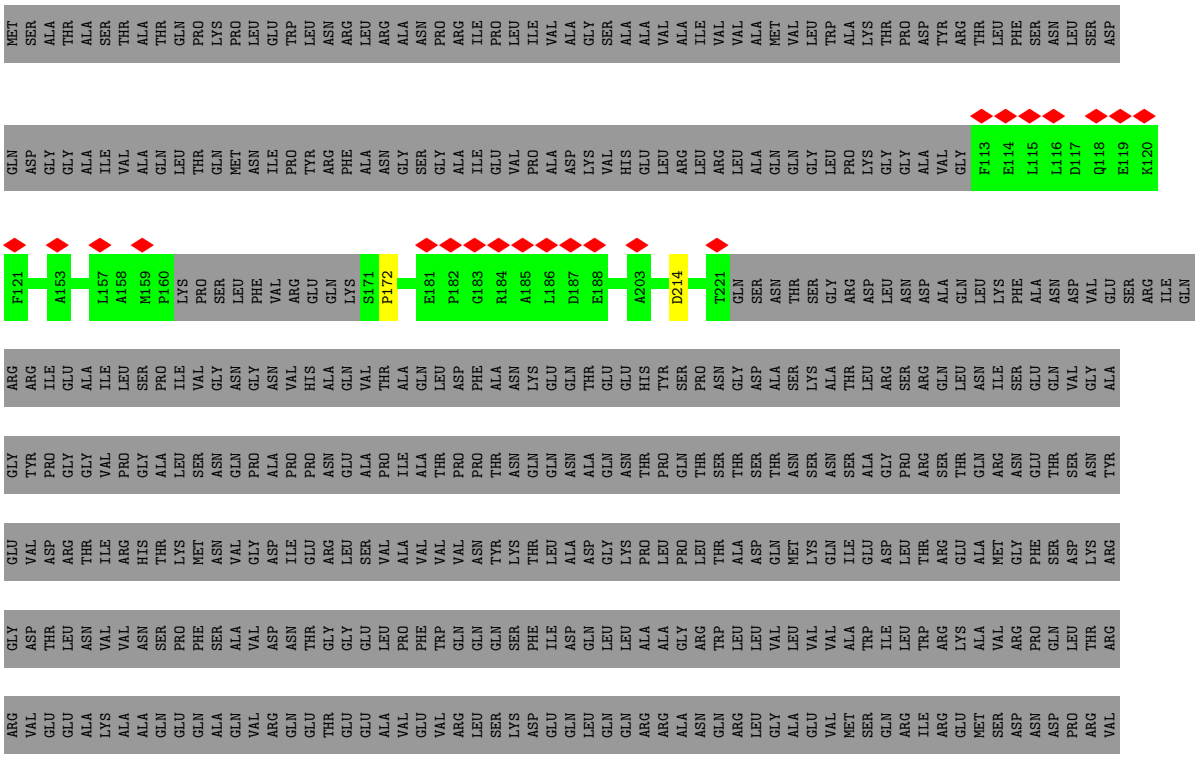


• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein

Chain De:



• Molecule 12: Flagellar M-ring protein

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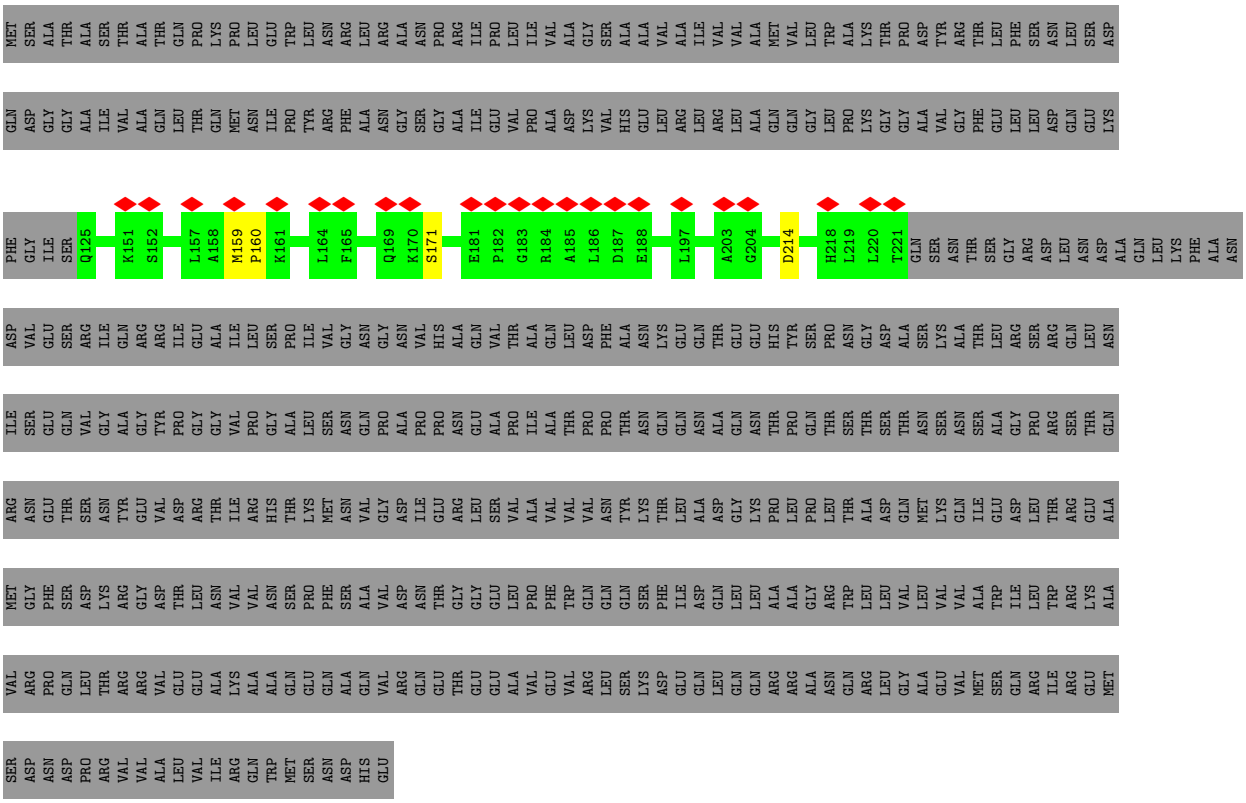

• Molecule 12: Flagellar M-ring protein

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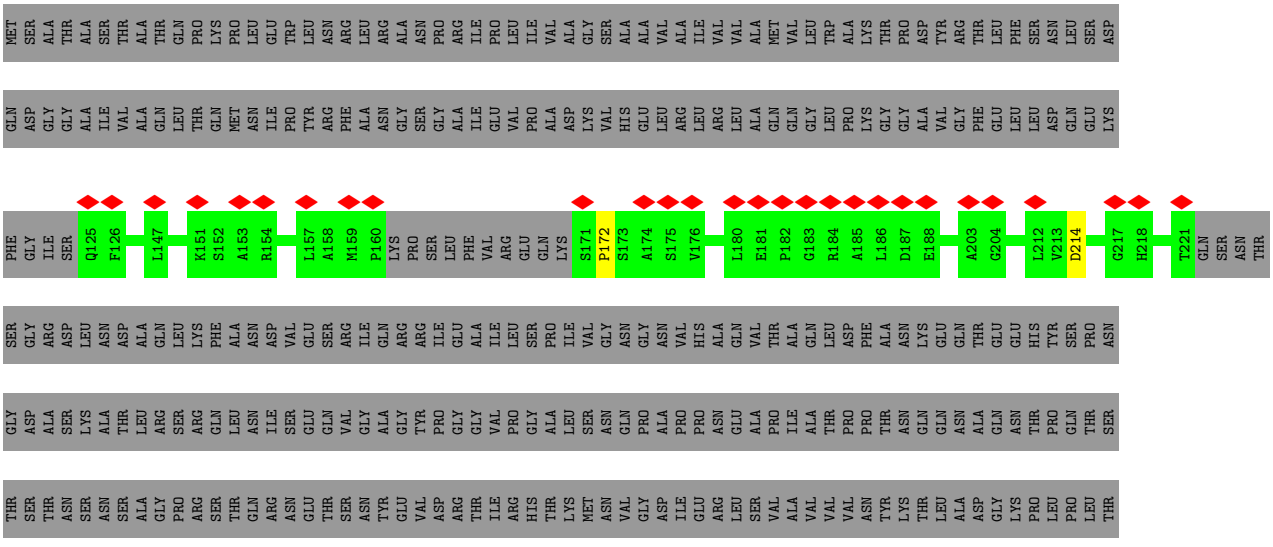

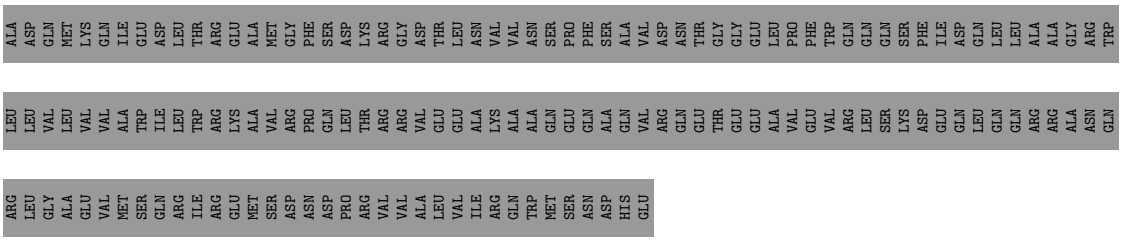

• Molecule 12: Flagellar M-ring protein

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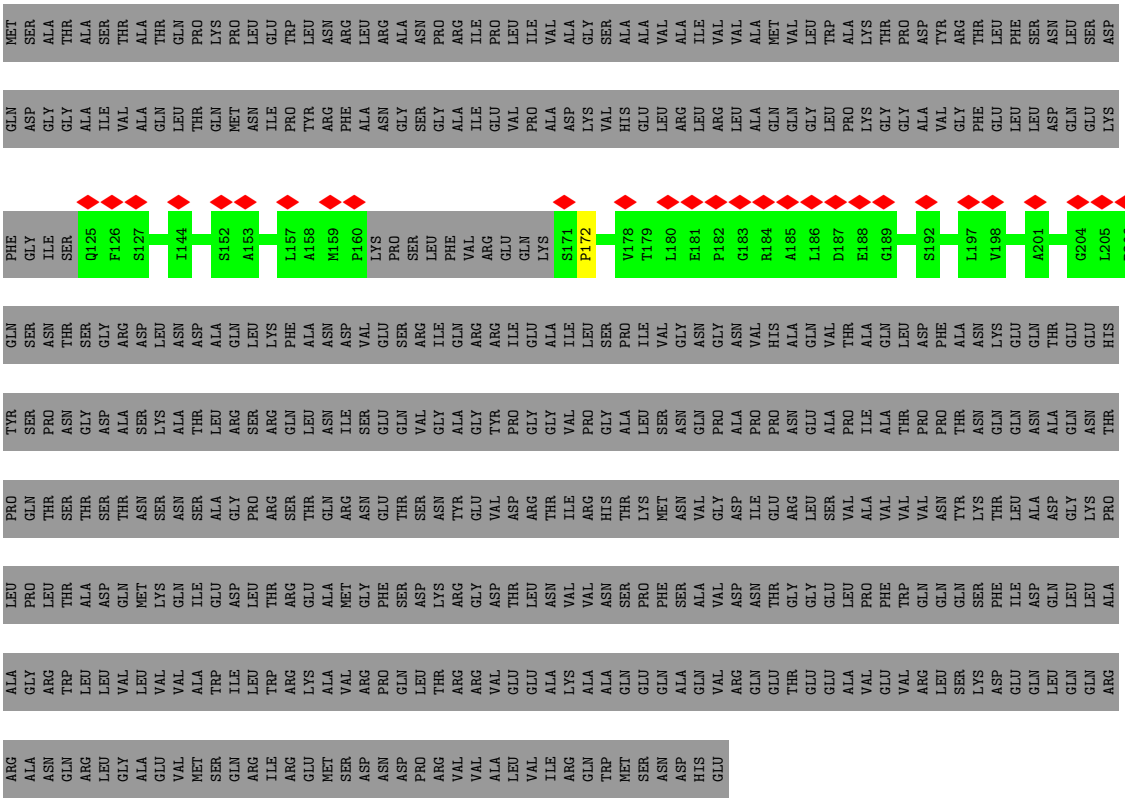

• Molecule 12: Flagellar M-ring protein

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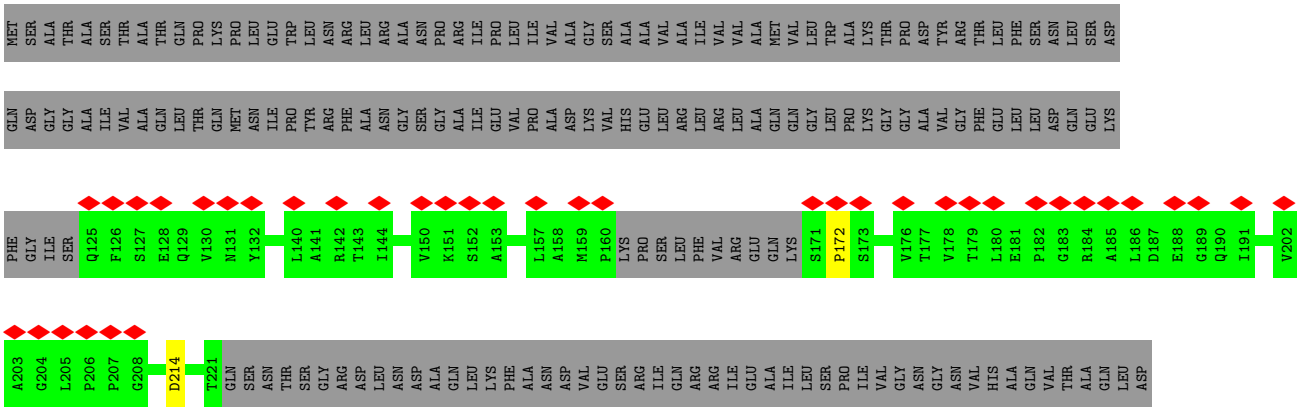
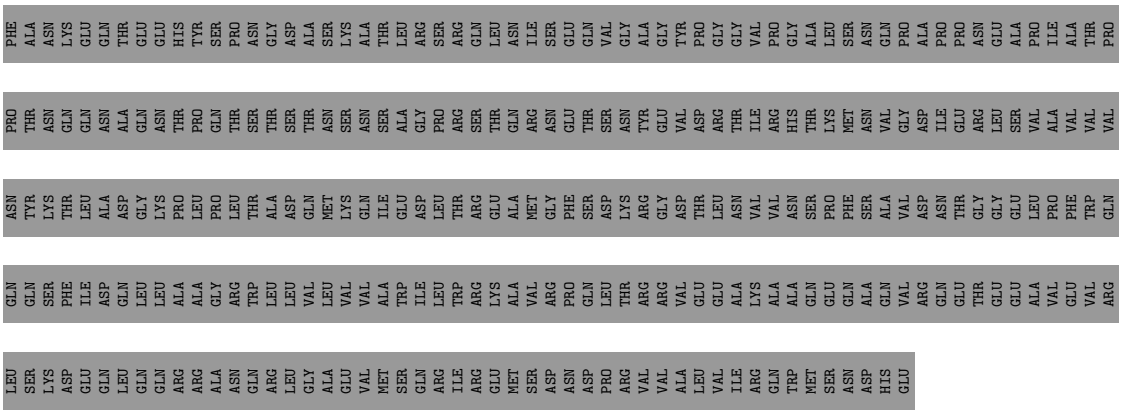
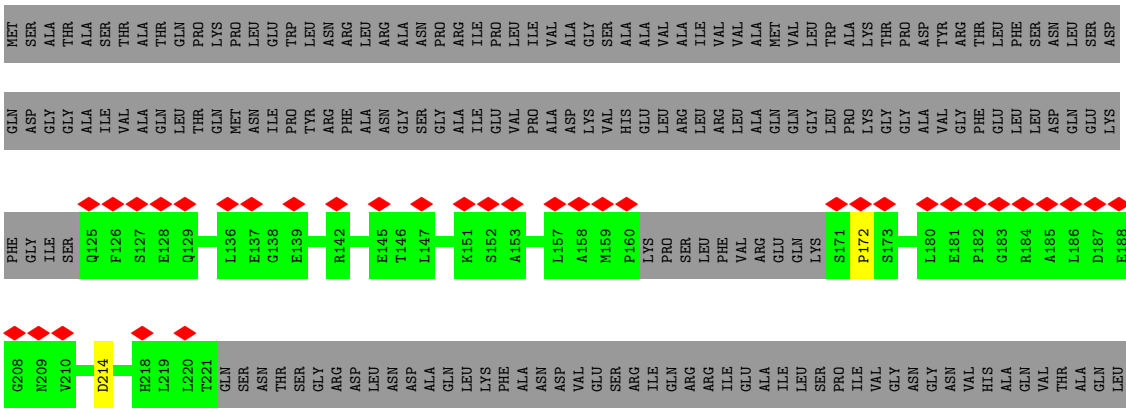
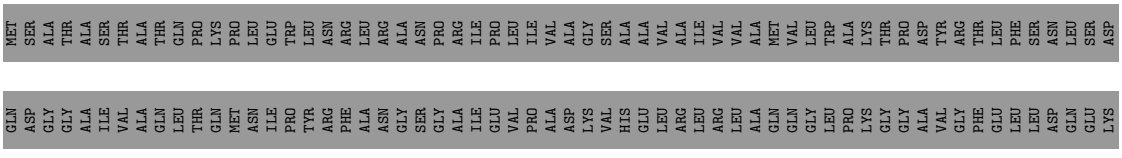


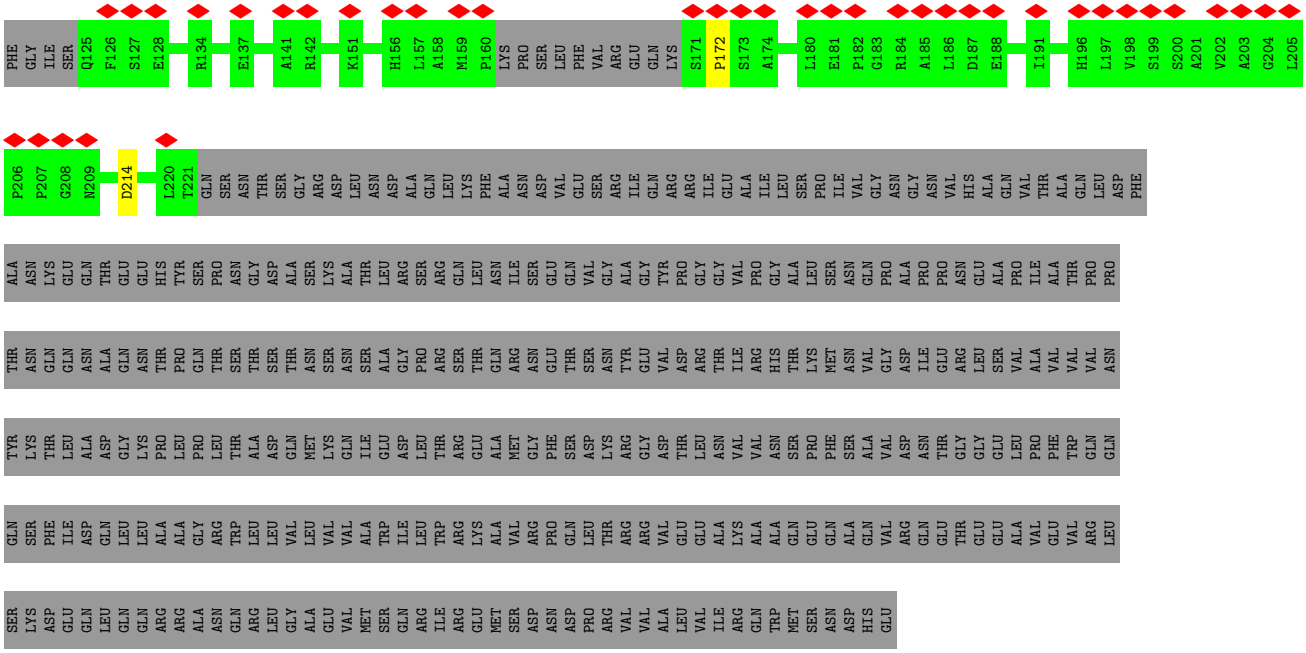


• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein





• Molecule 12: Flagellar M-ring protein

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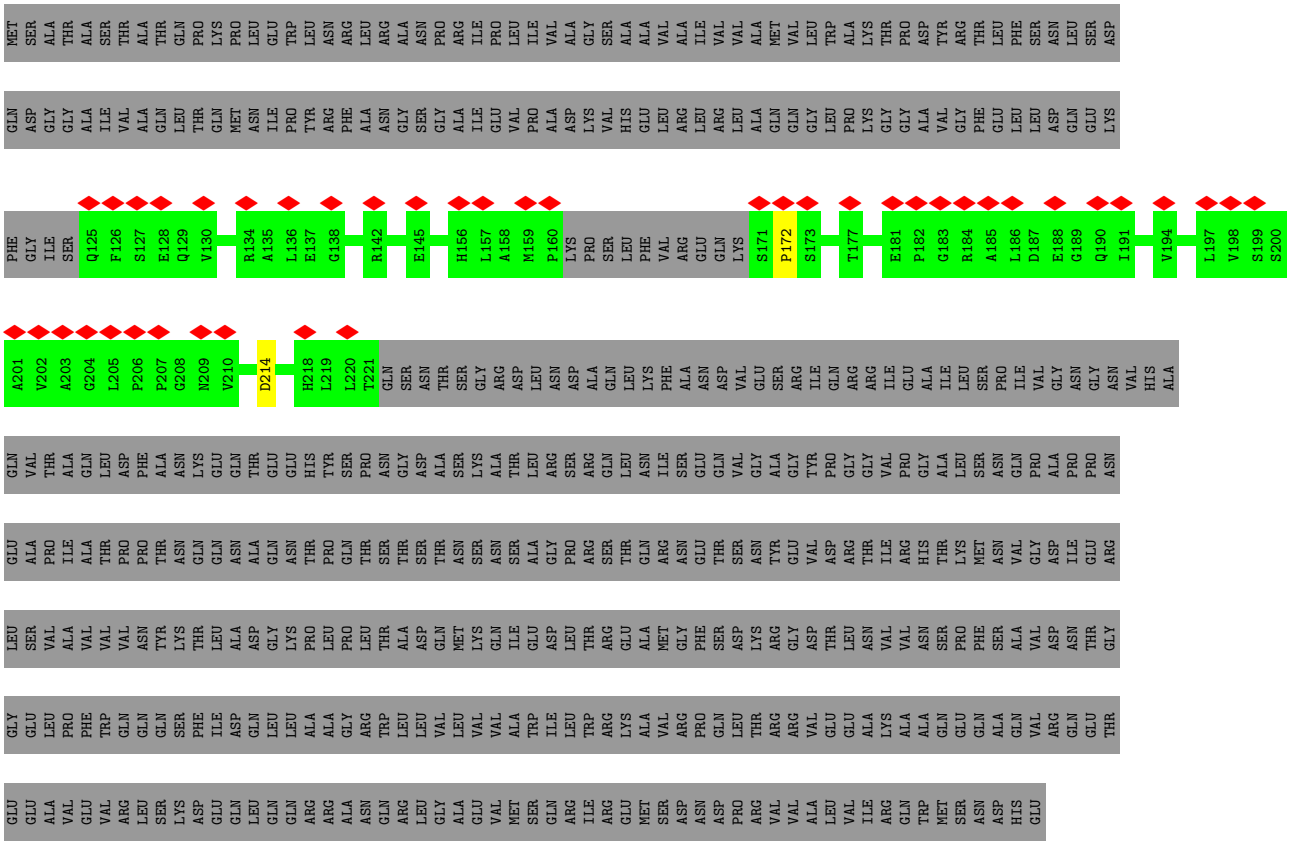

• Molecule 12: Flagellar M-ring protein

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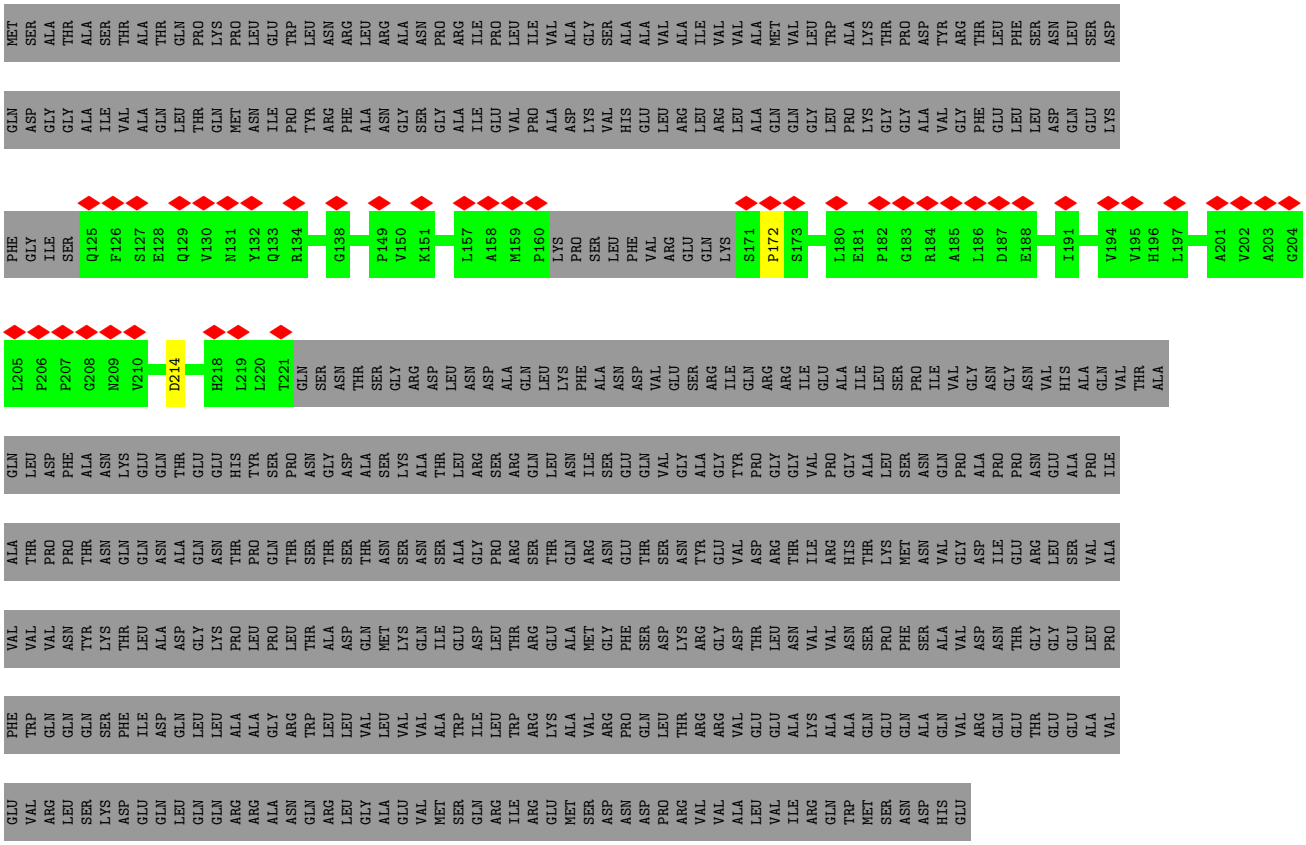
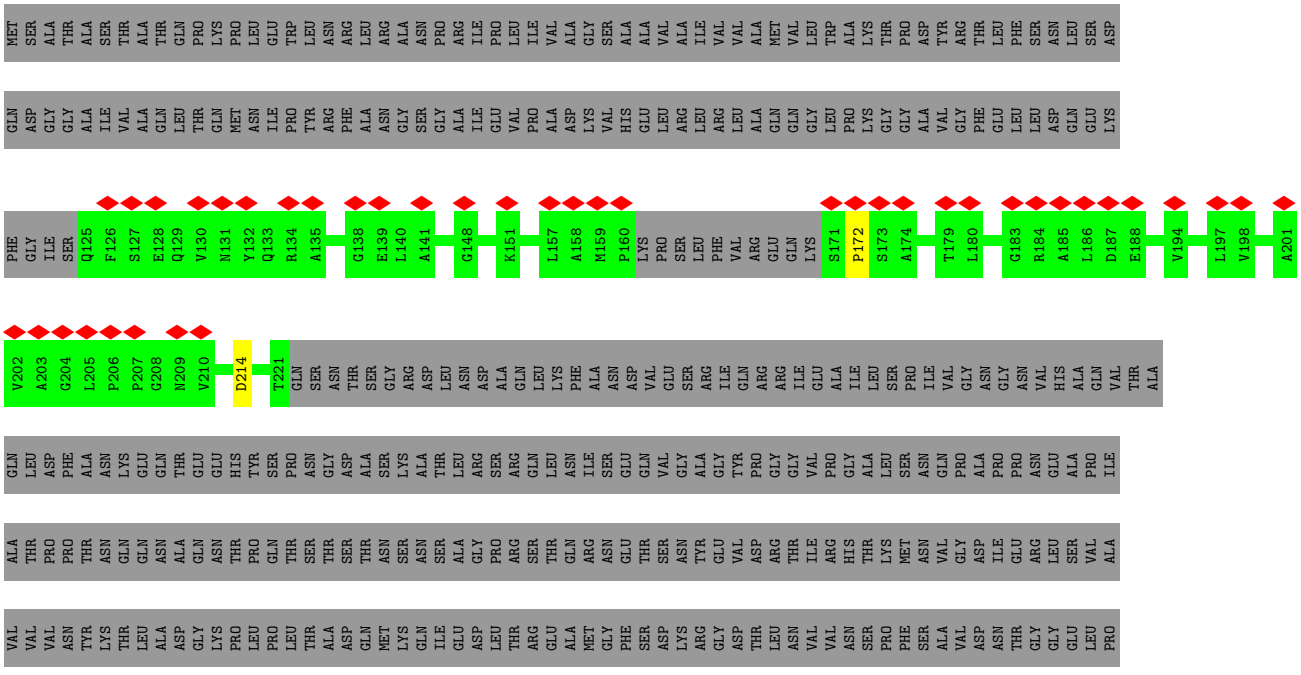
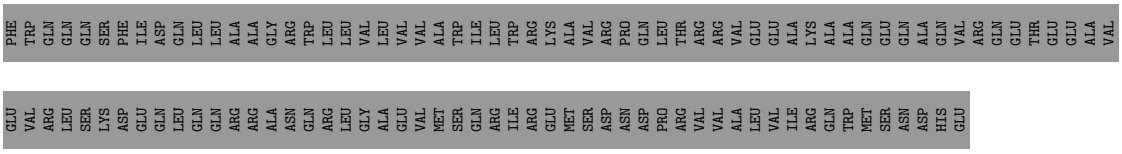


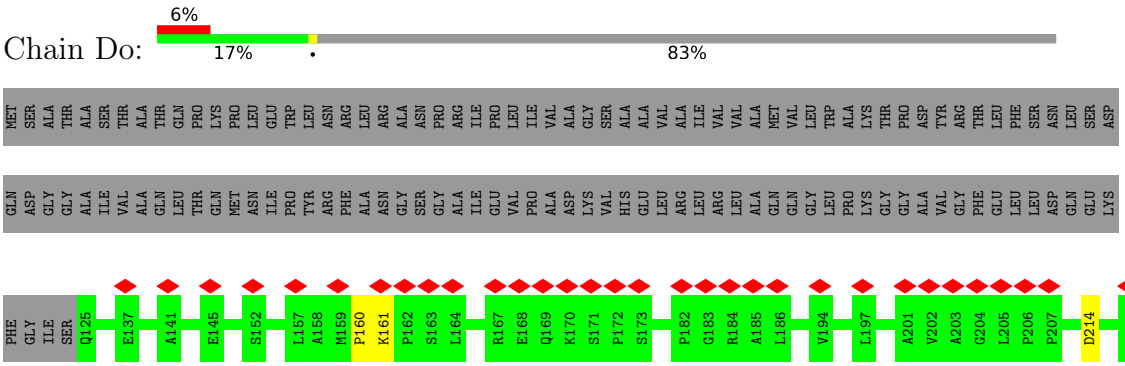
• Molecule 12: Flagellar M-ring protein

Chain Dn:

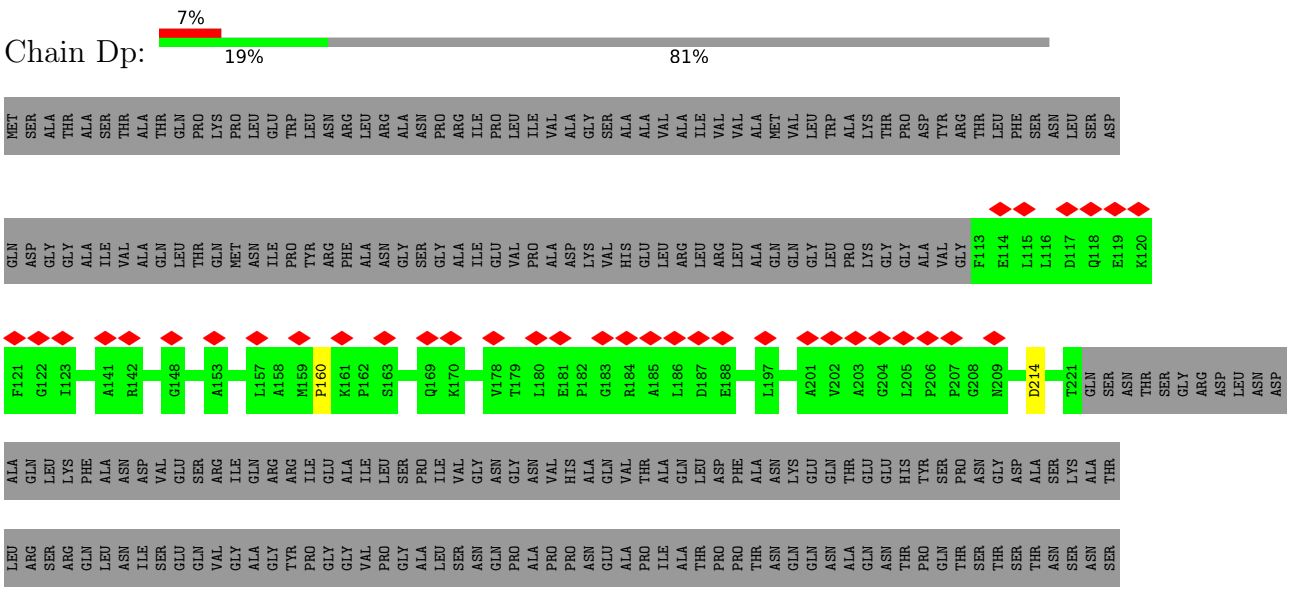


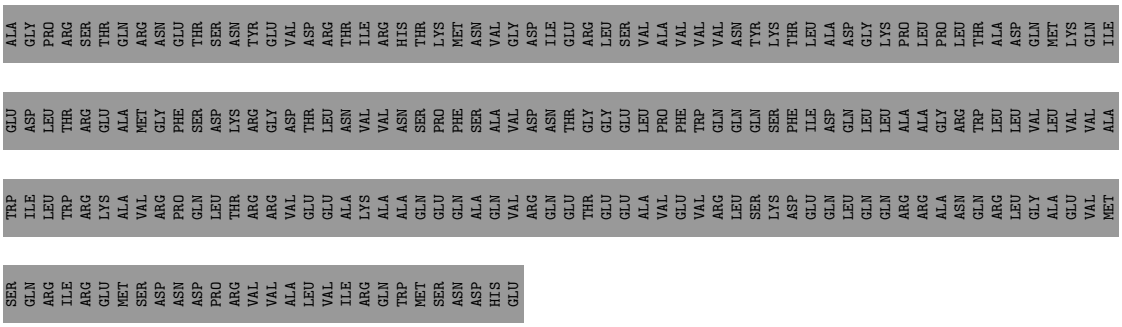


• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein





• Molecule 12: Flagellar M-ring protein

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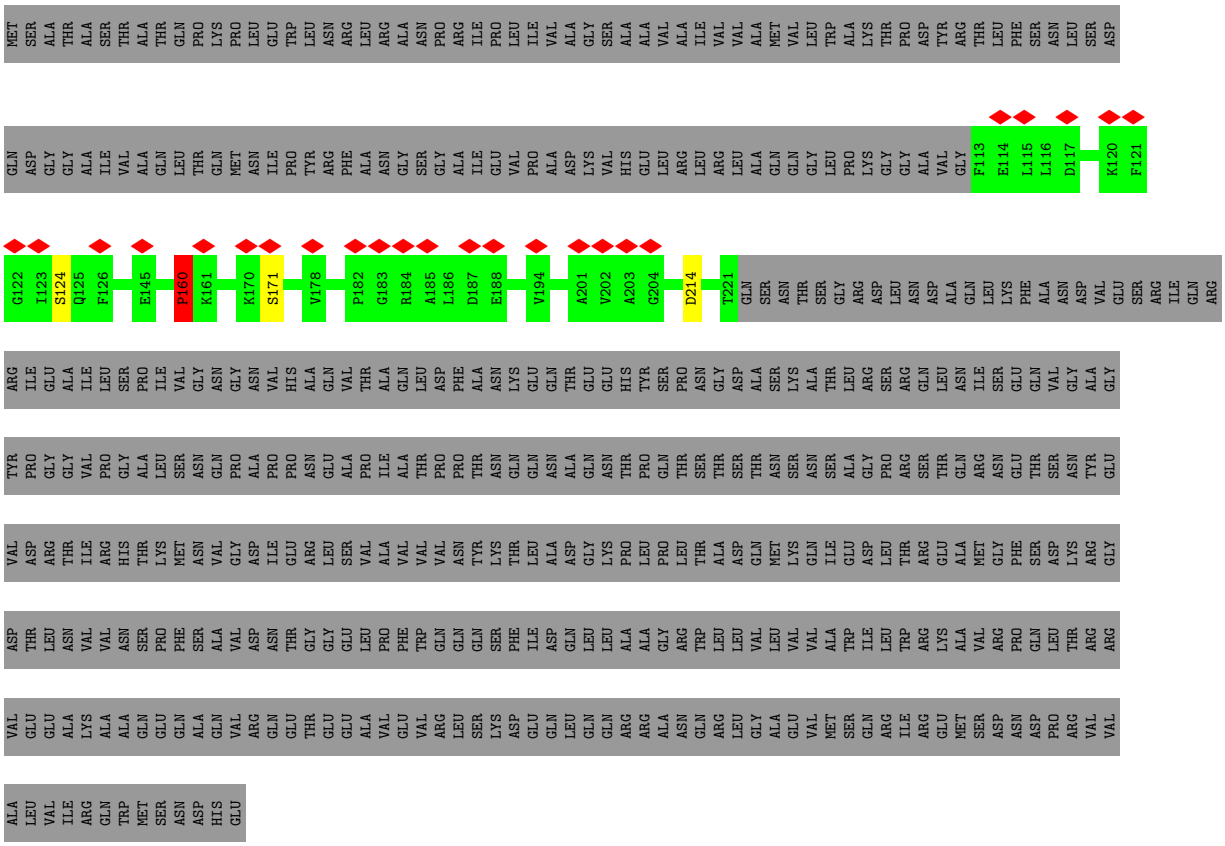

• Molecule 12: Flagellar M-ring protein

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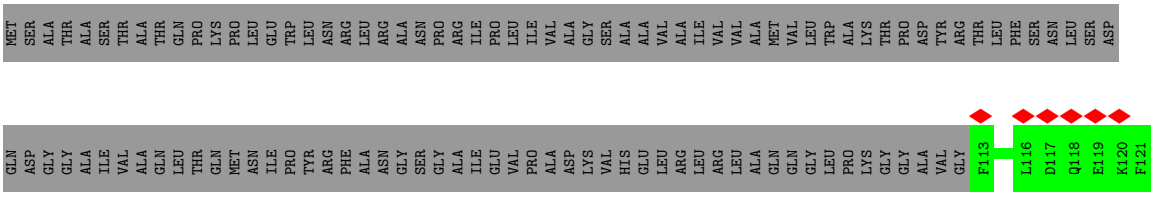
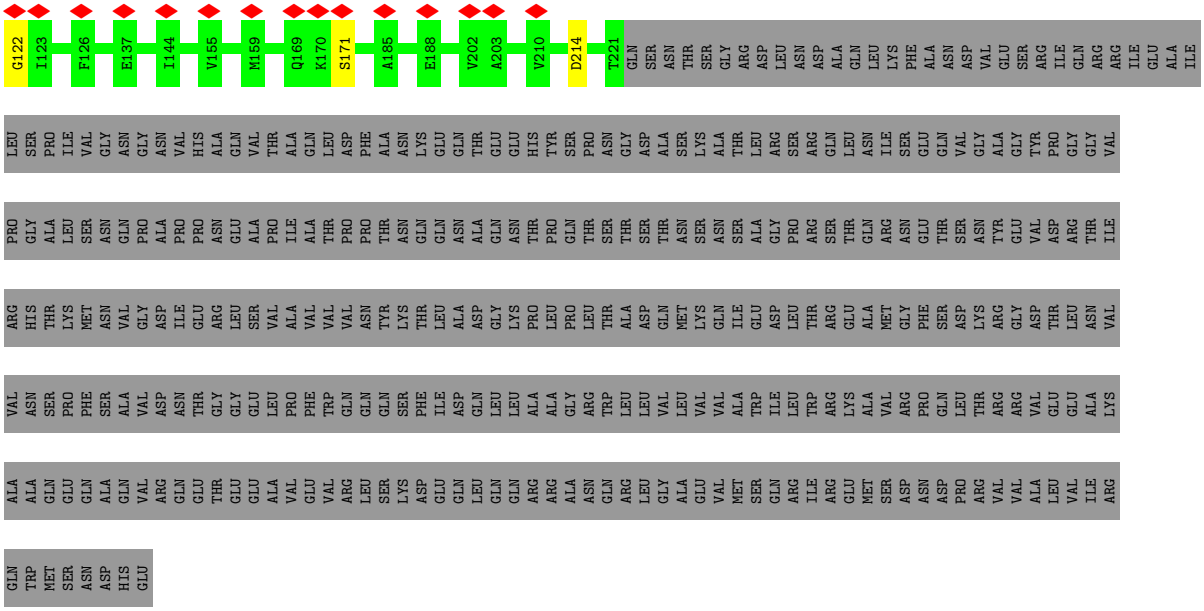
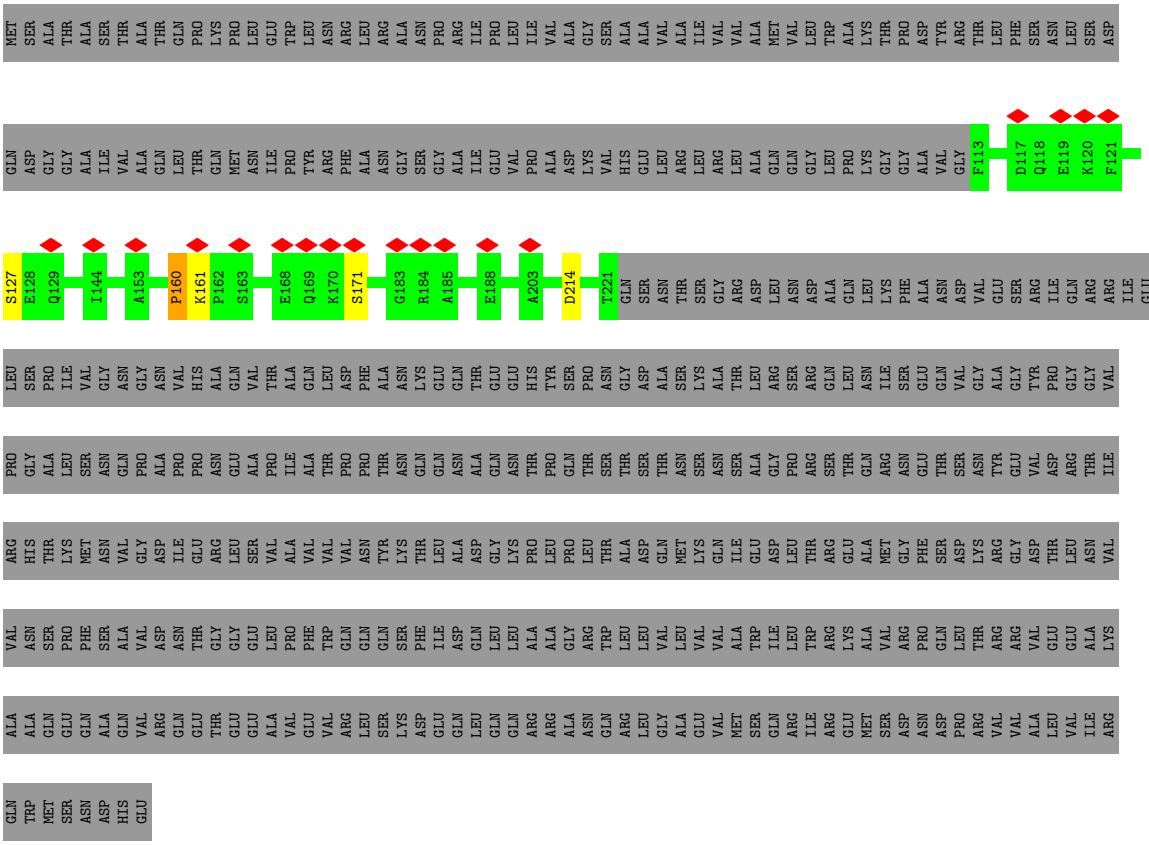
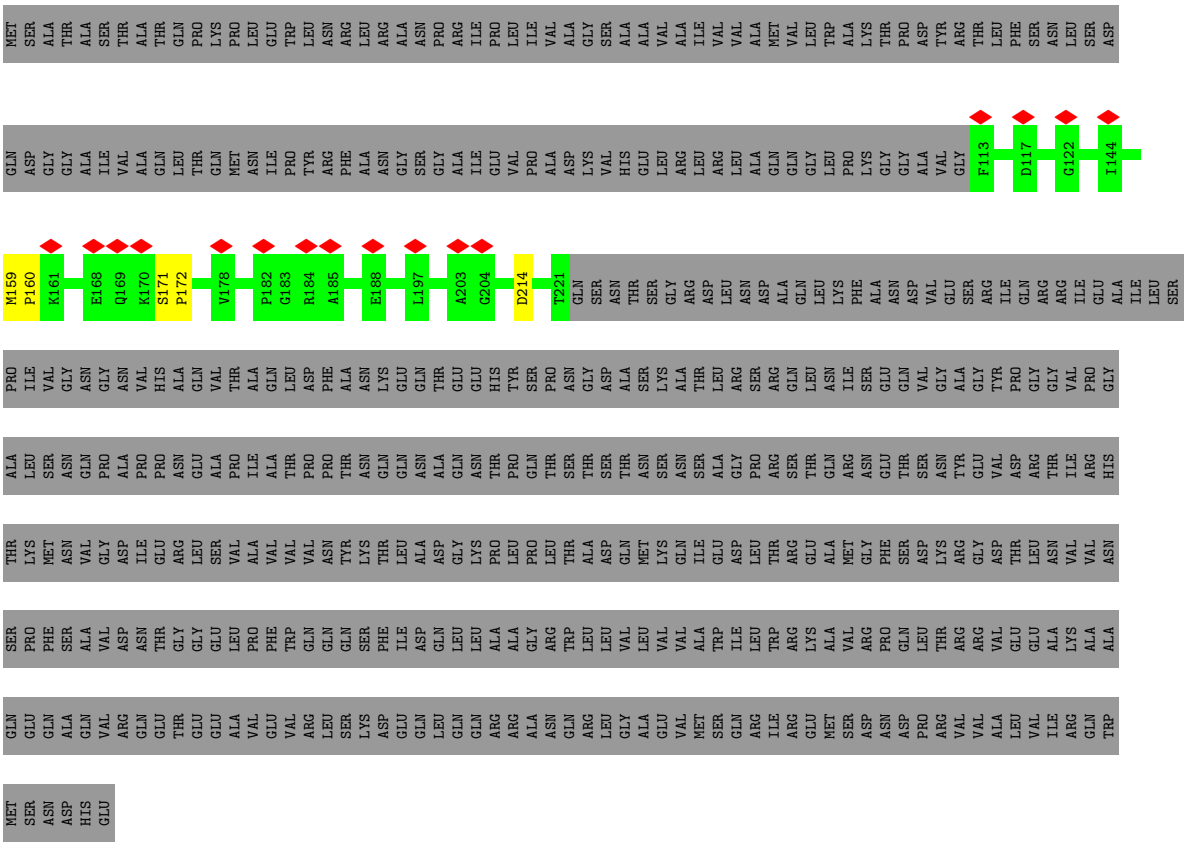




• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein

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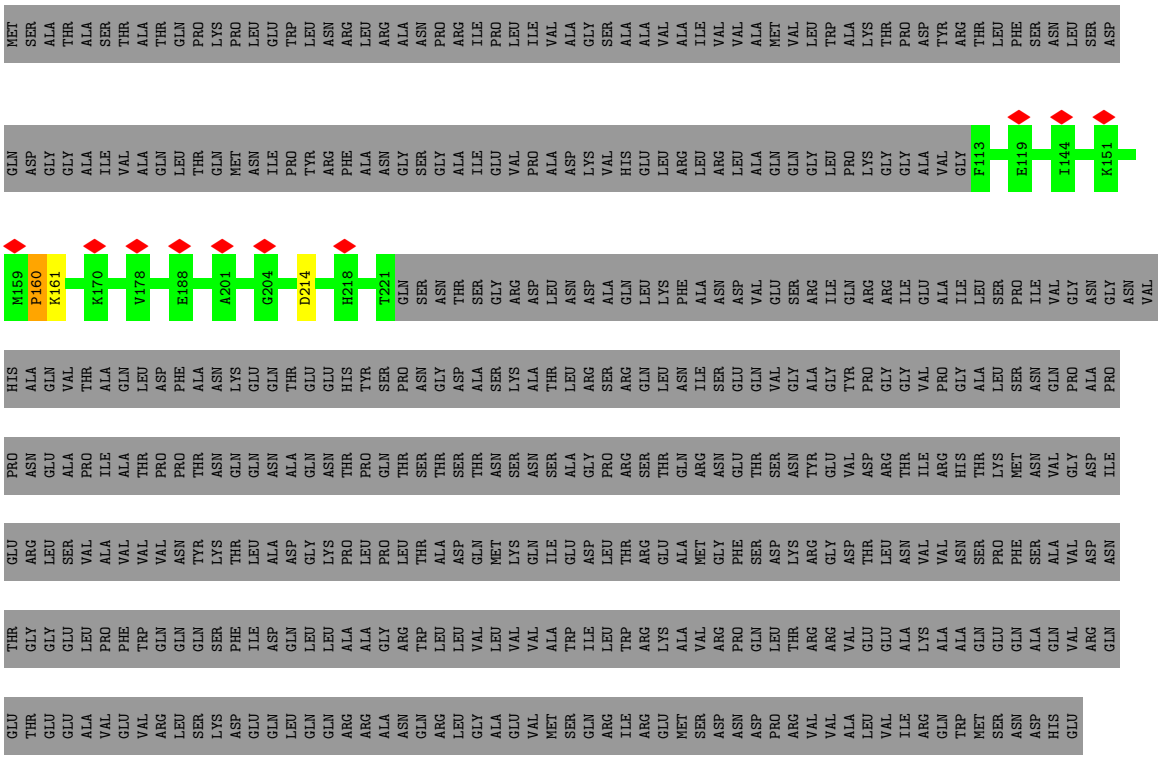

• Molecule 12: Flagellar M-ring protein

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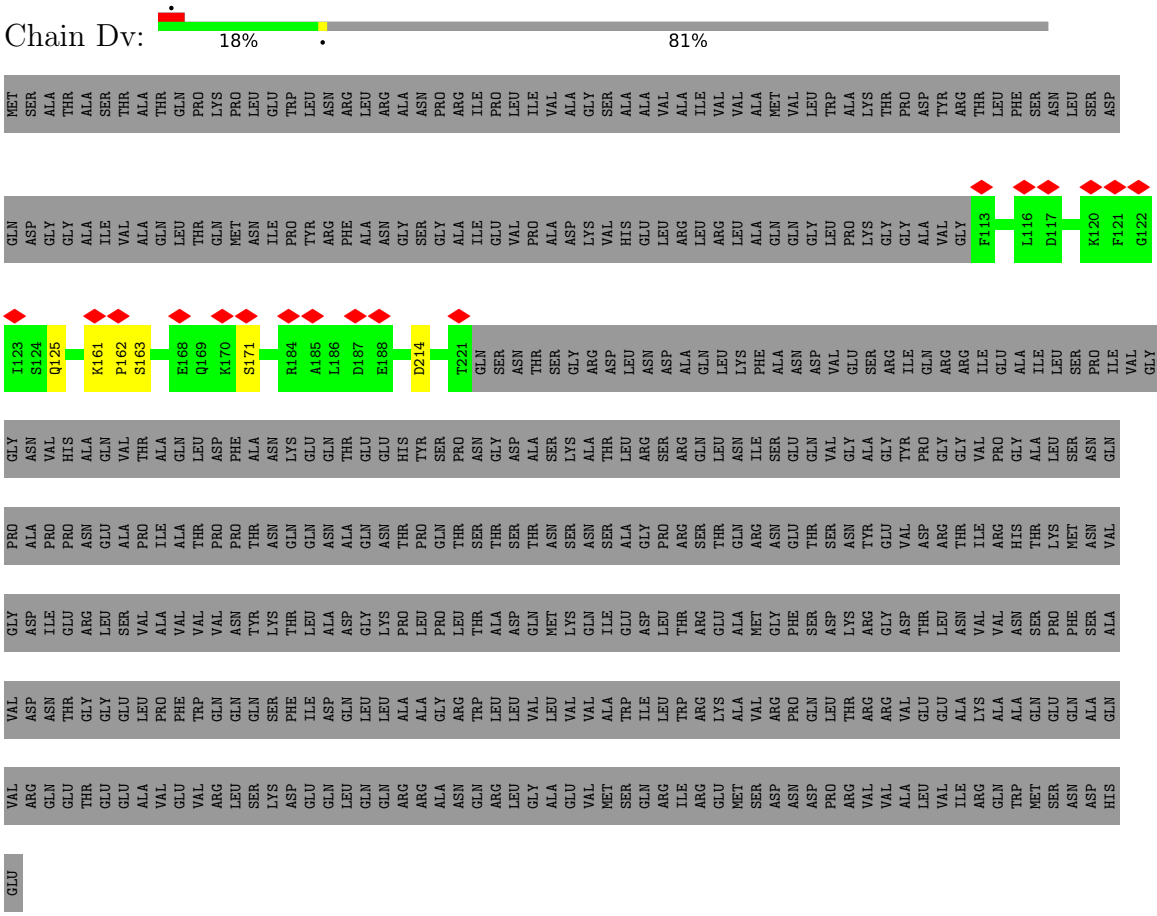

• Molecule 12: Flagellar M-ring protein

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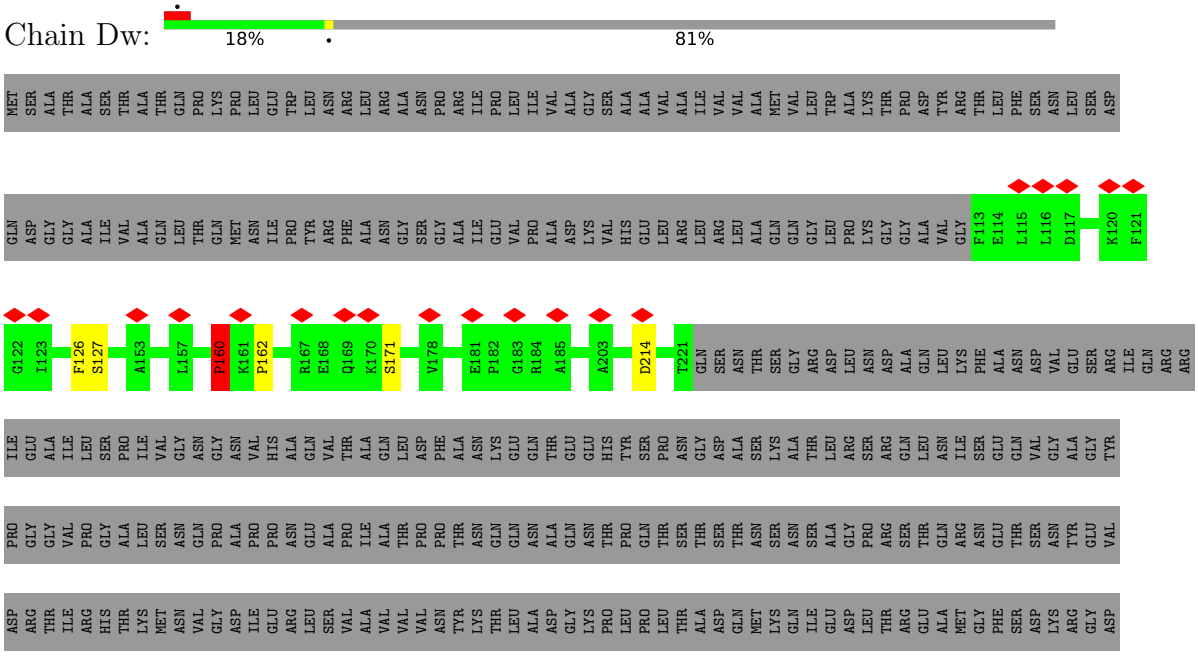

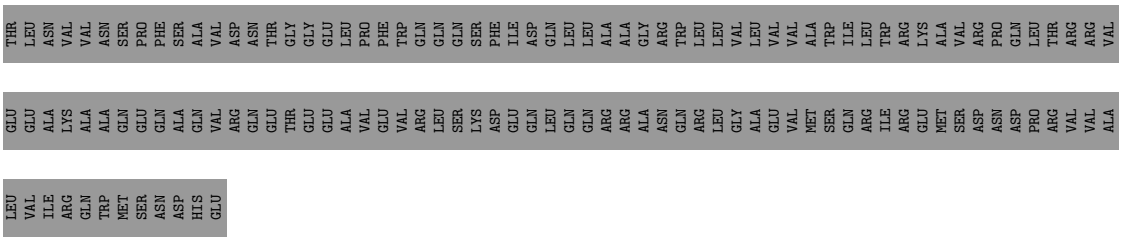

• Molecule 12: Flagellar M-ring protein

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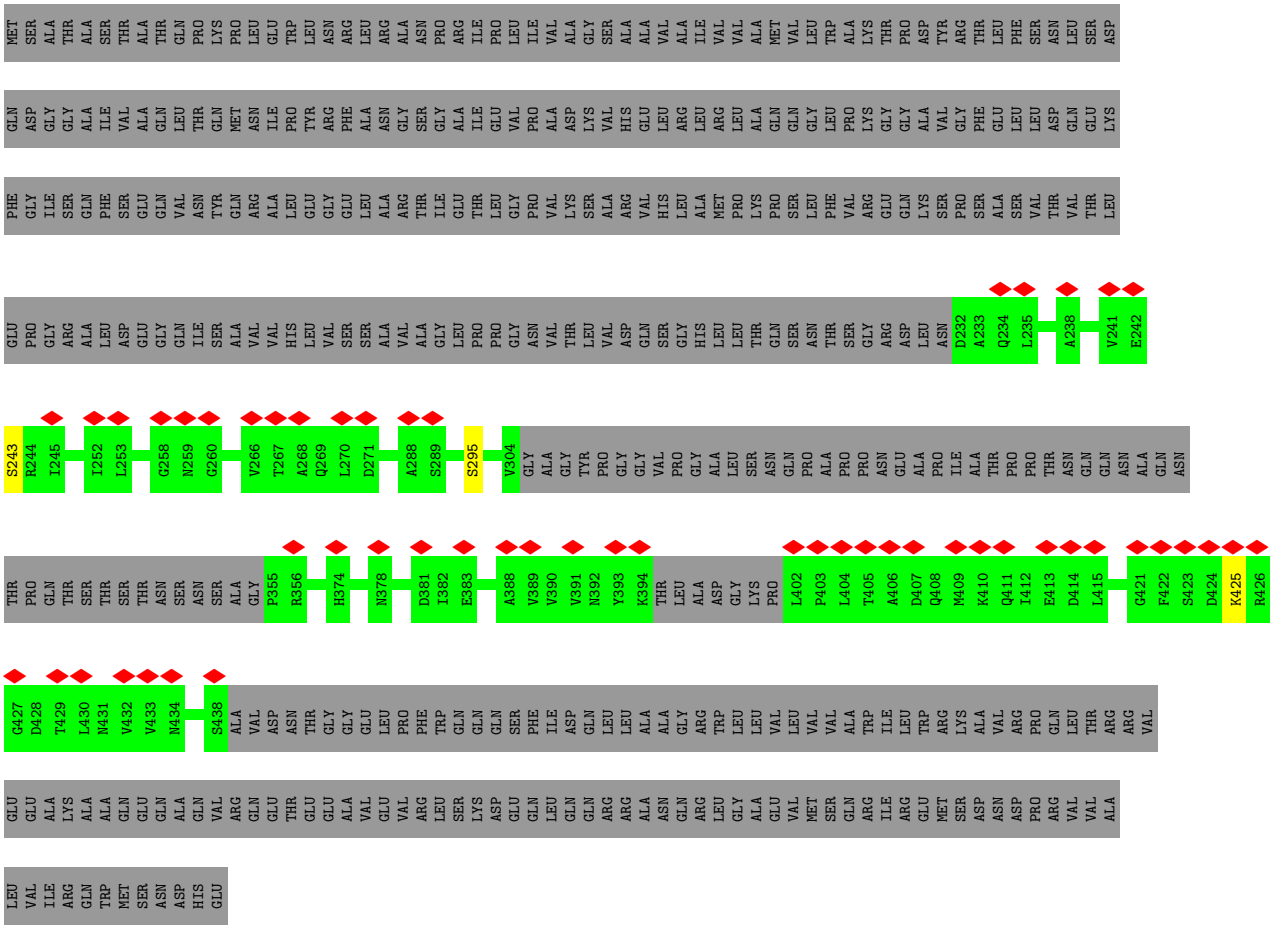

• Molecule 12: Flagellar M-ring protein

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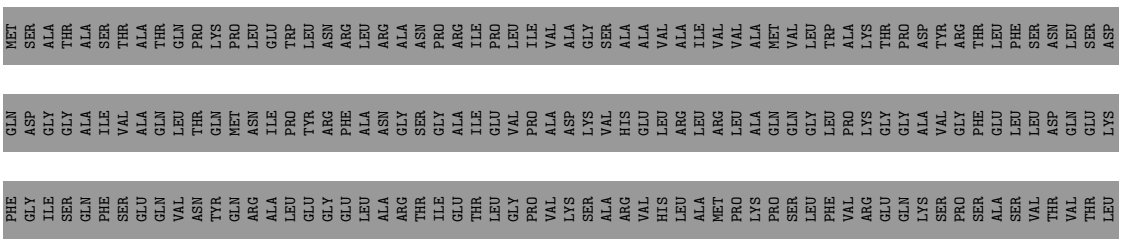
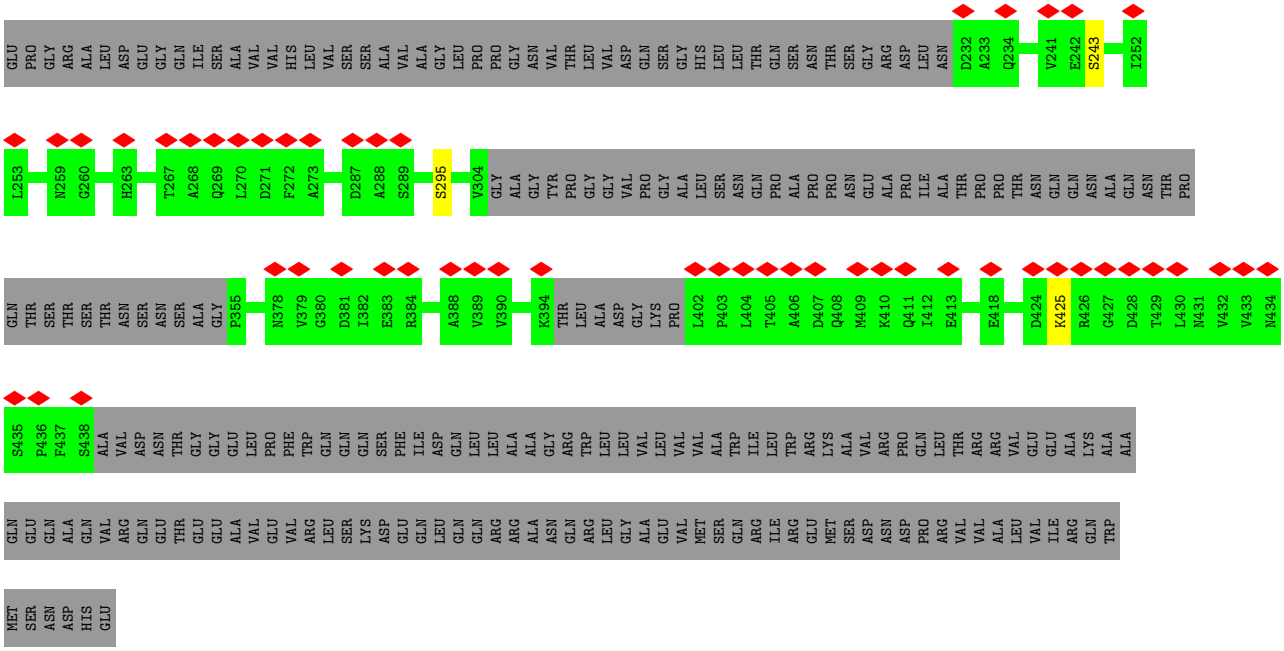
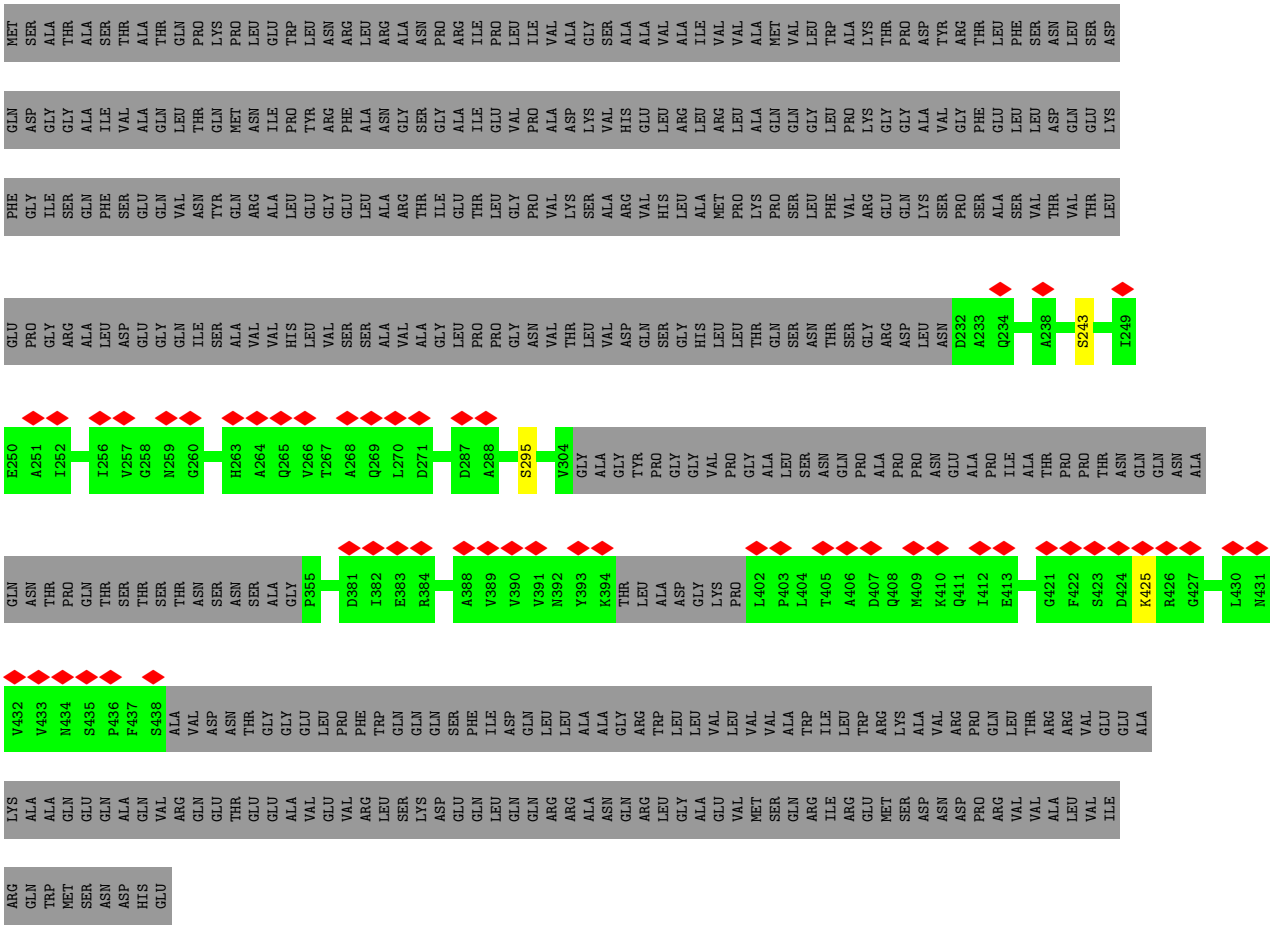




• Molecule 12: Flagellar M-ring protein

Chain Cc:



• Molecule 12: Flagellar M-ring protein

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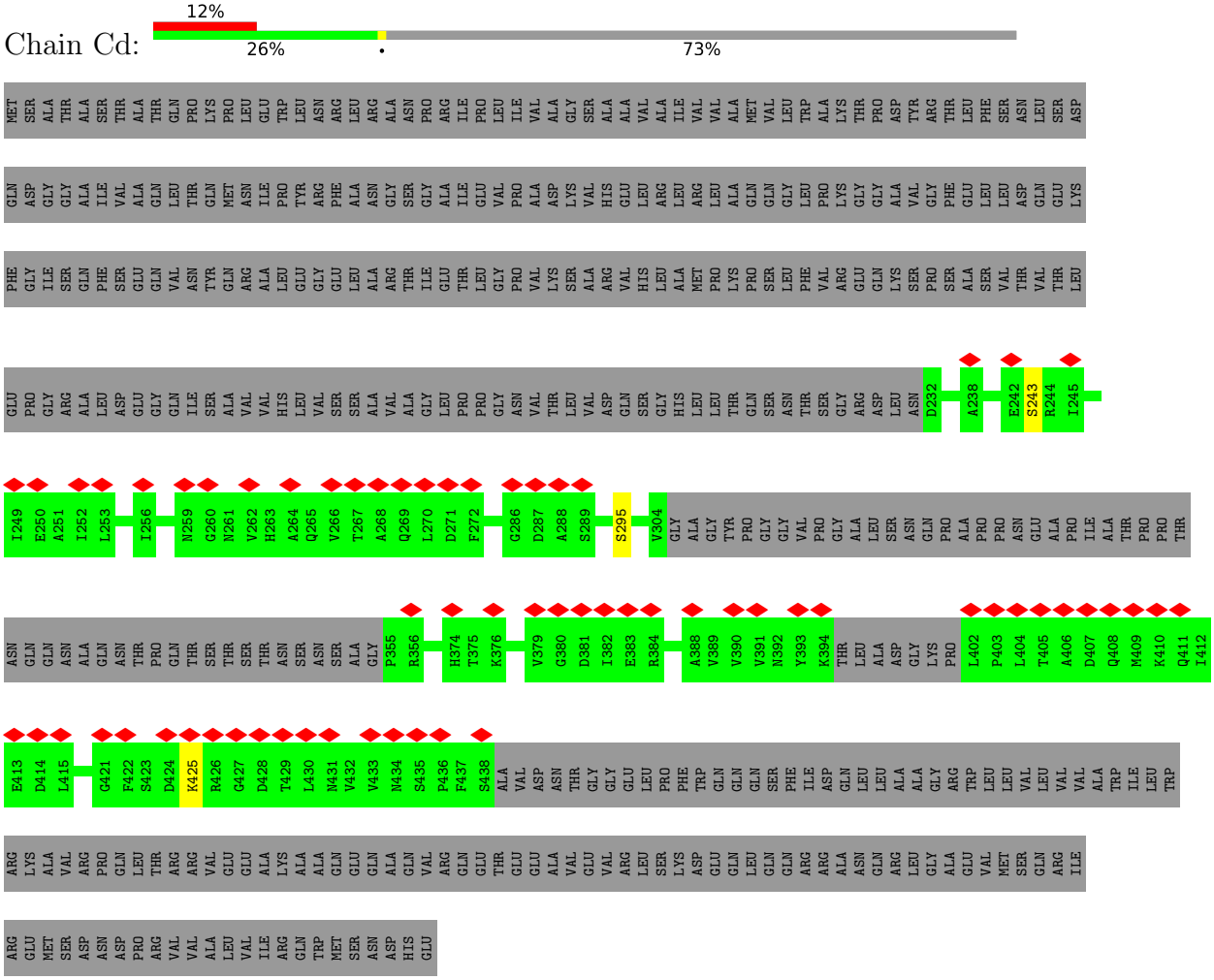
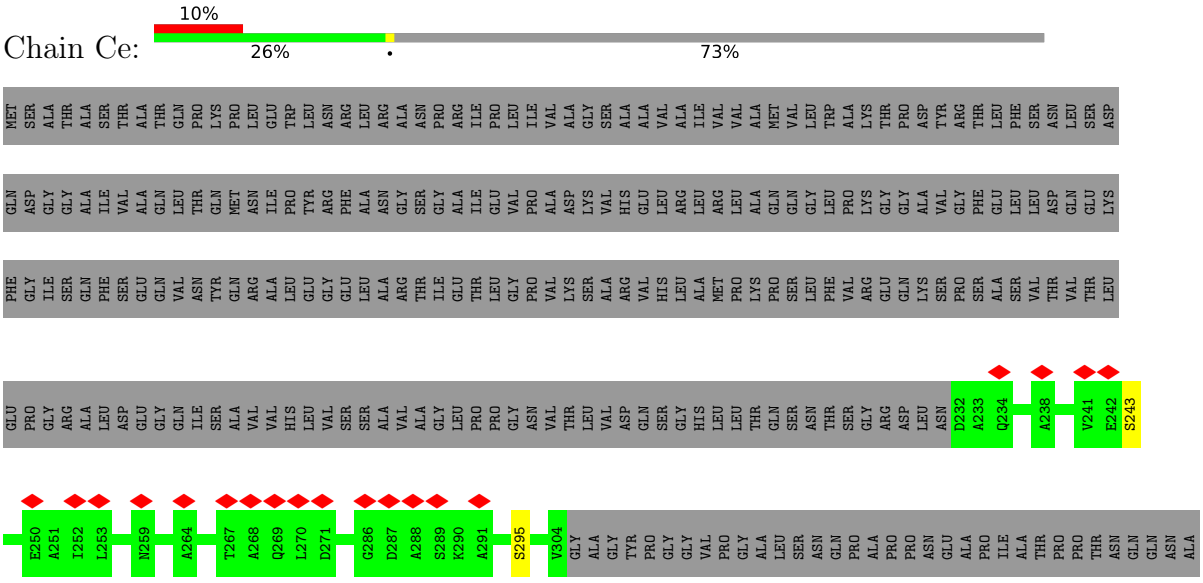
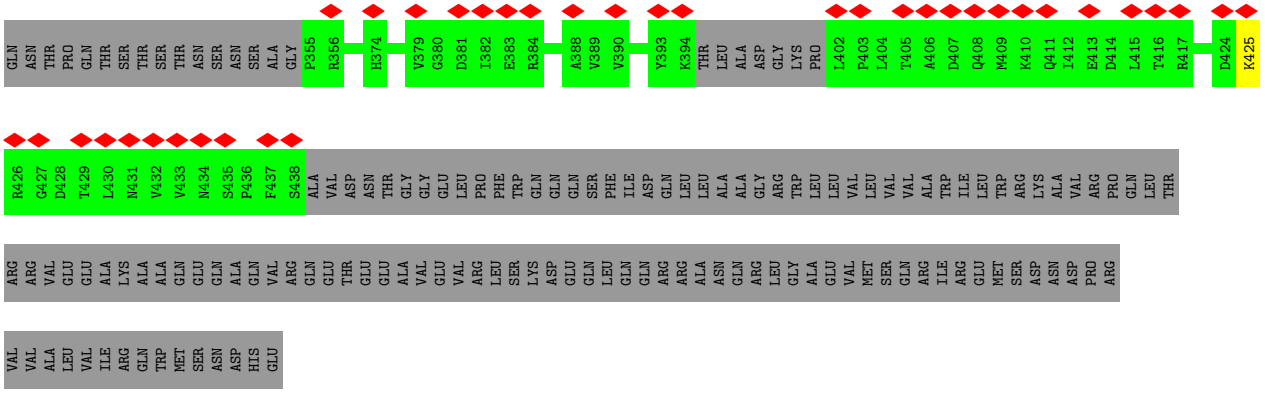


• Molecule 12: Flagellar M-ring protein

Chain Ce:





• Molecule 12: Flagellar M-ring protein

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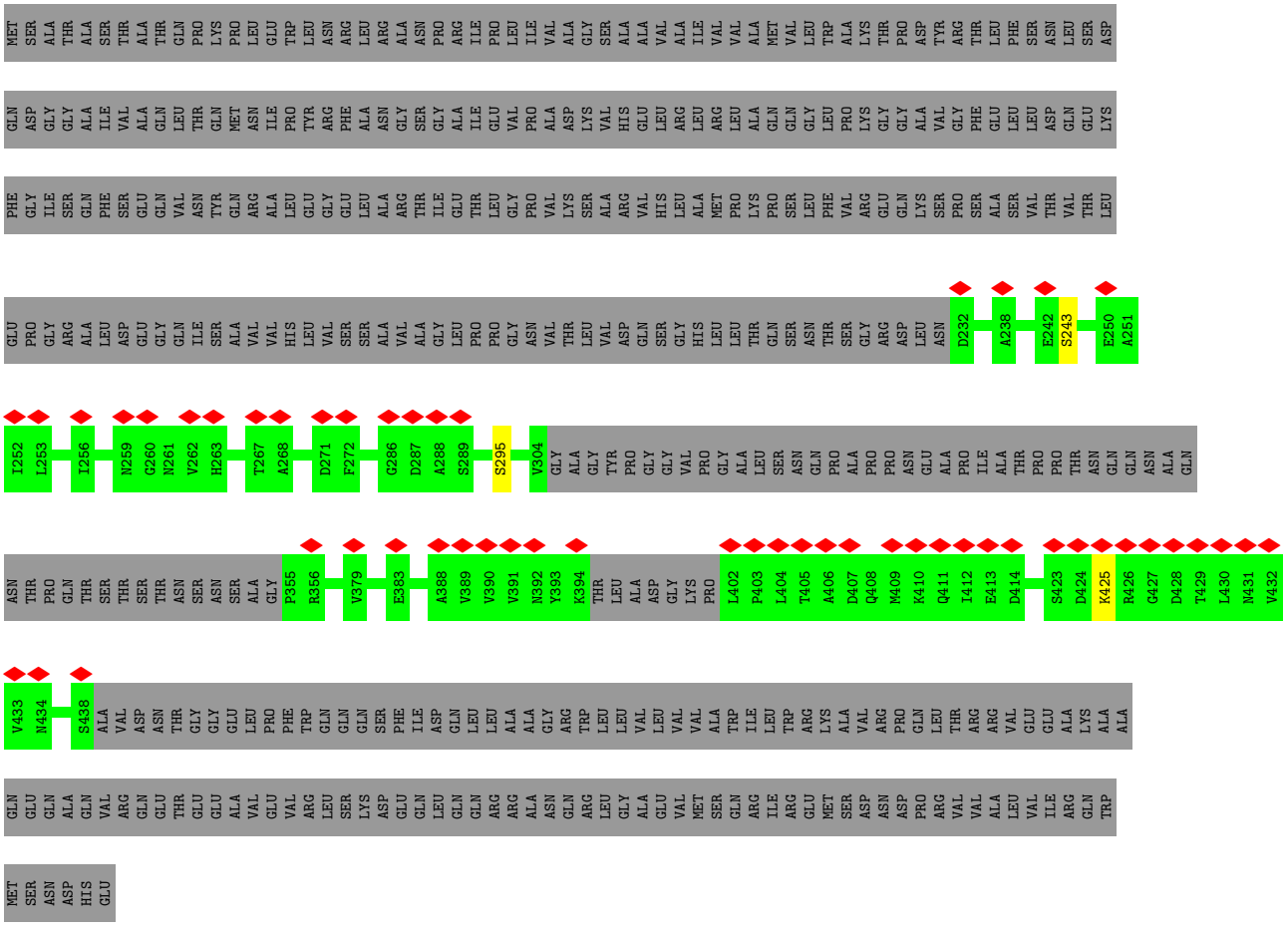

• Molecule 12: Flagellar M-ring protein

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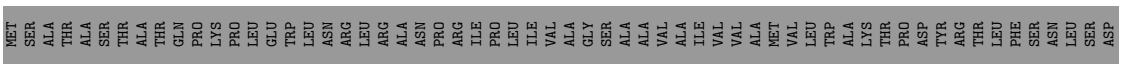

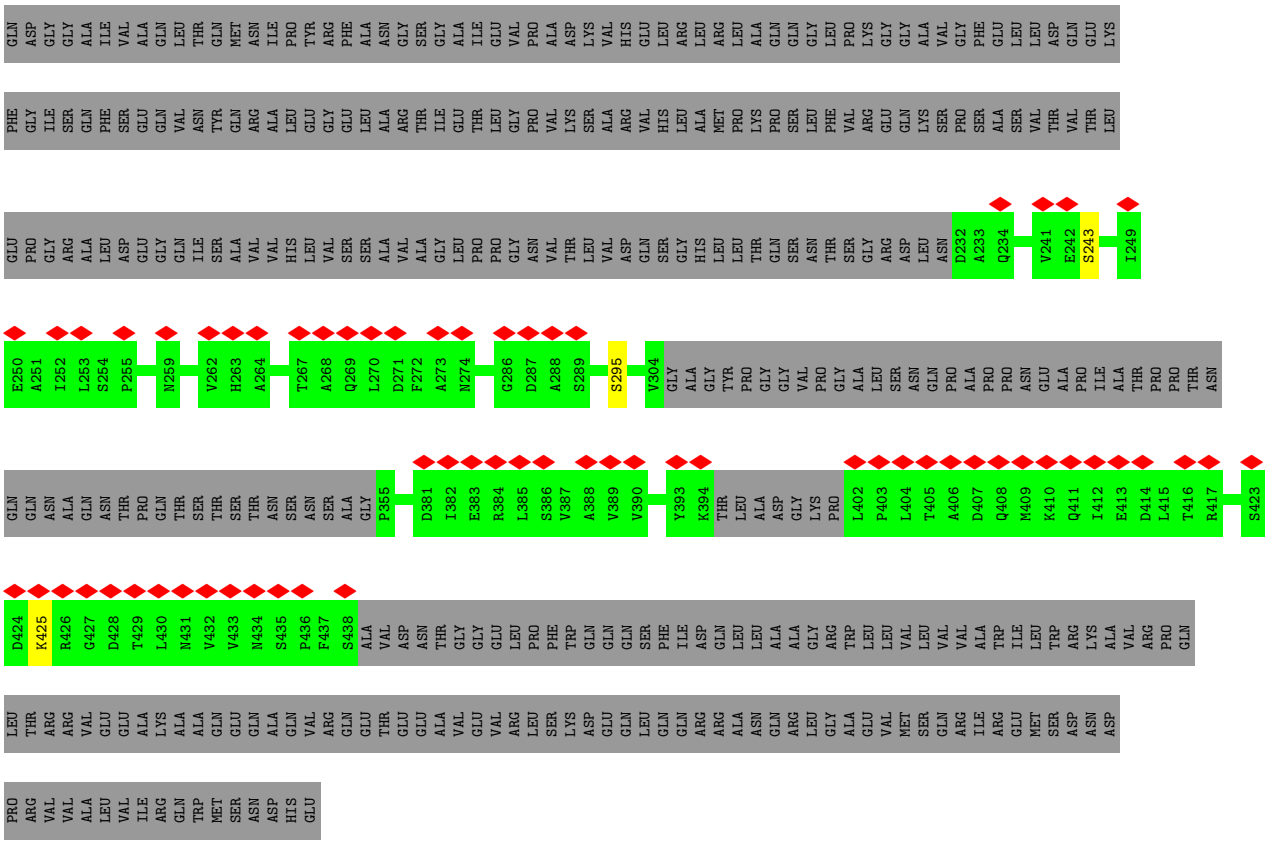

• Molecule 12: Flagellar M-ring protein

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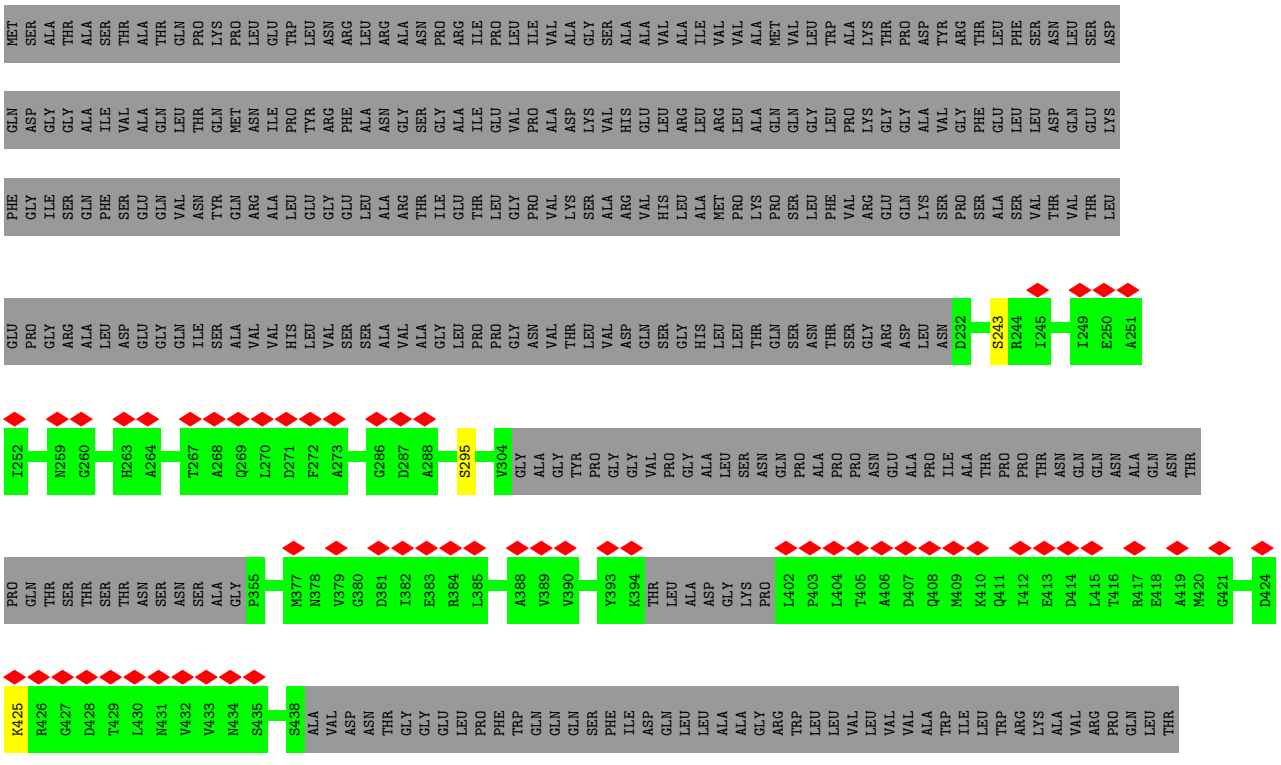

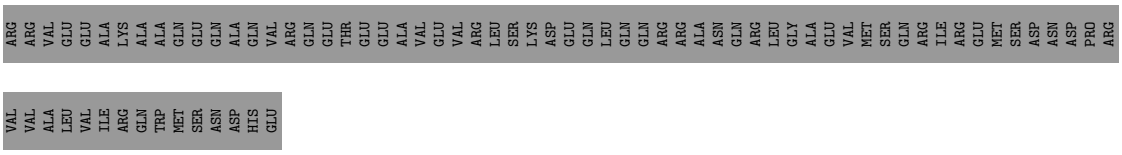

• Molecule 12: Flagellar M-ring protein

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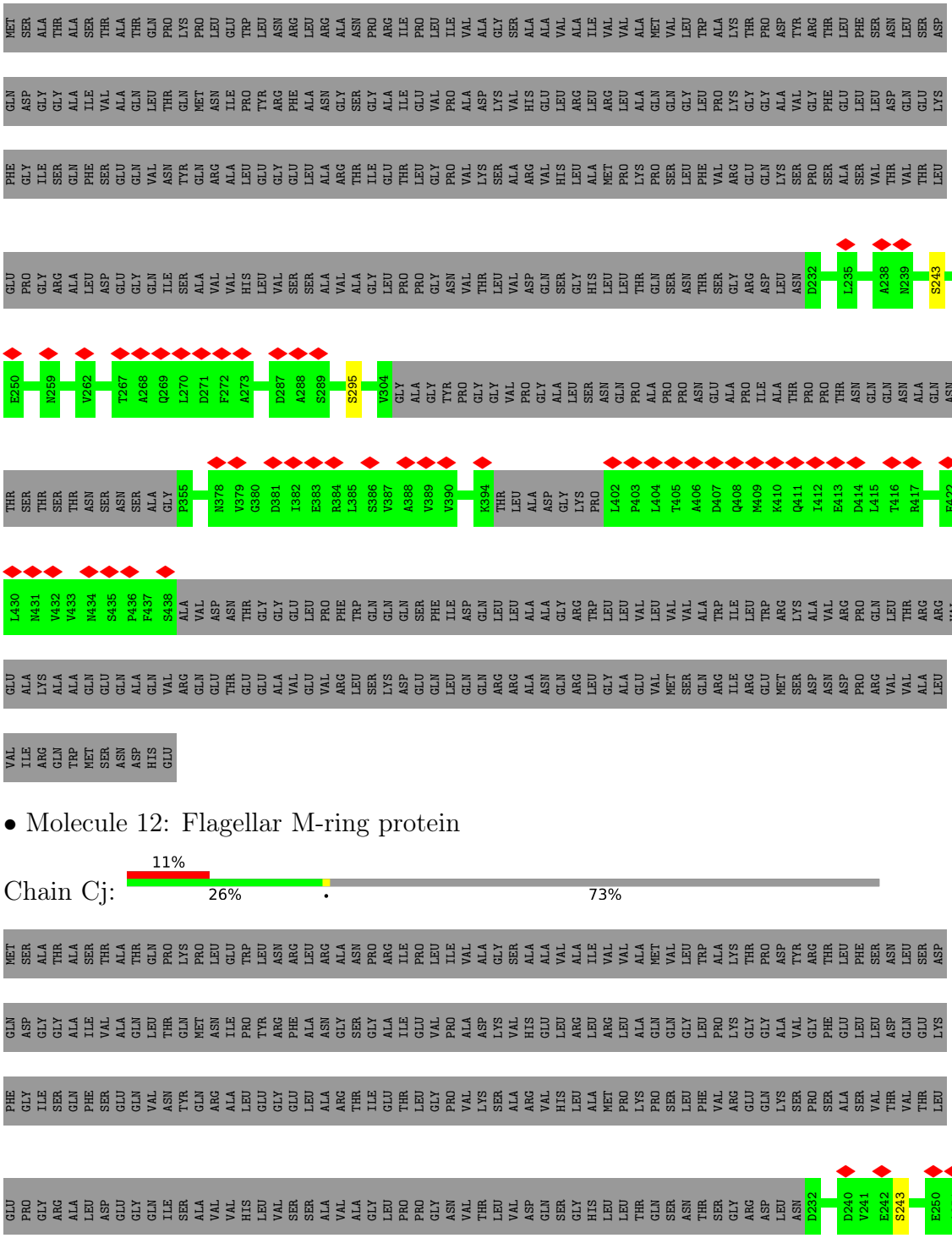

• Molecule 12: Flagellar M-ring protein

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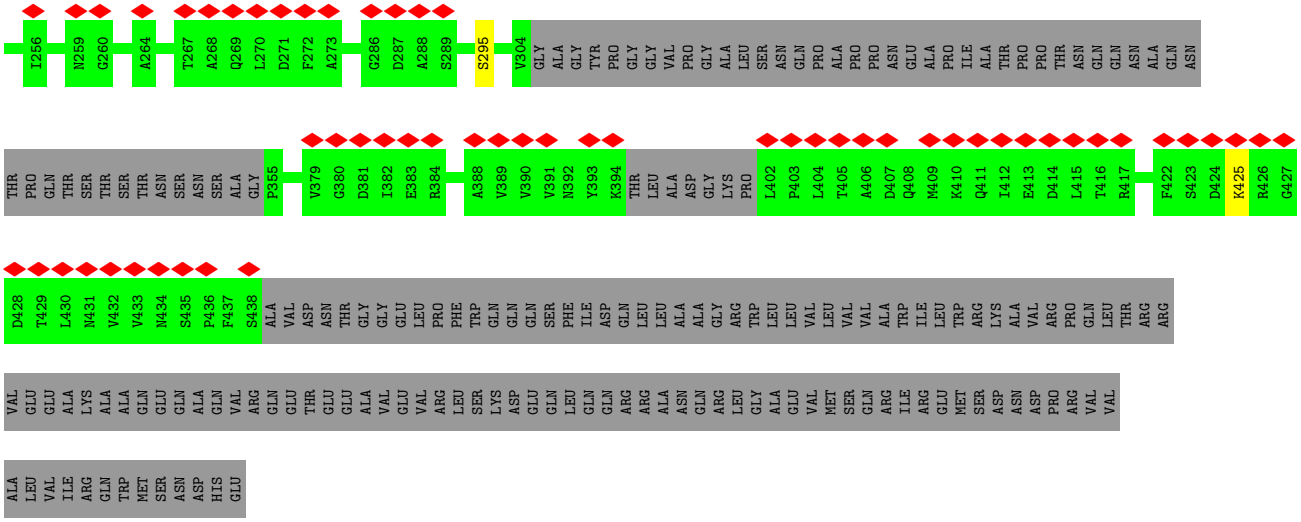
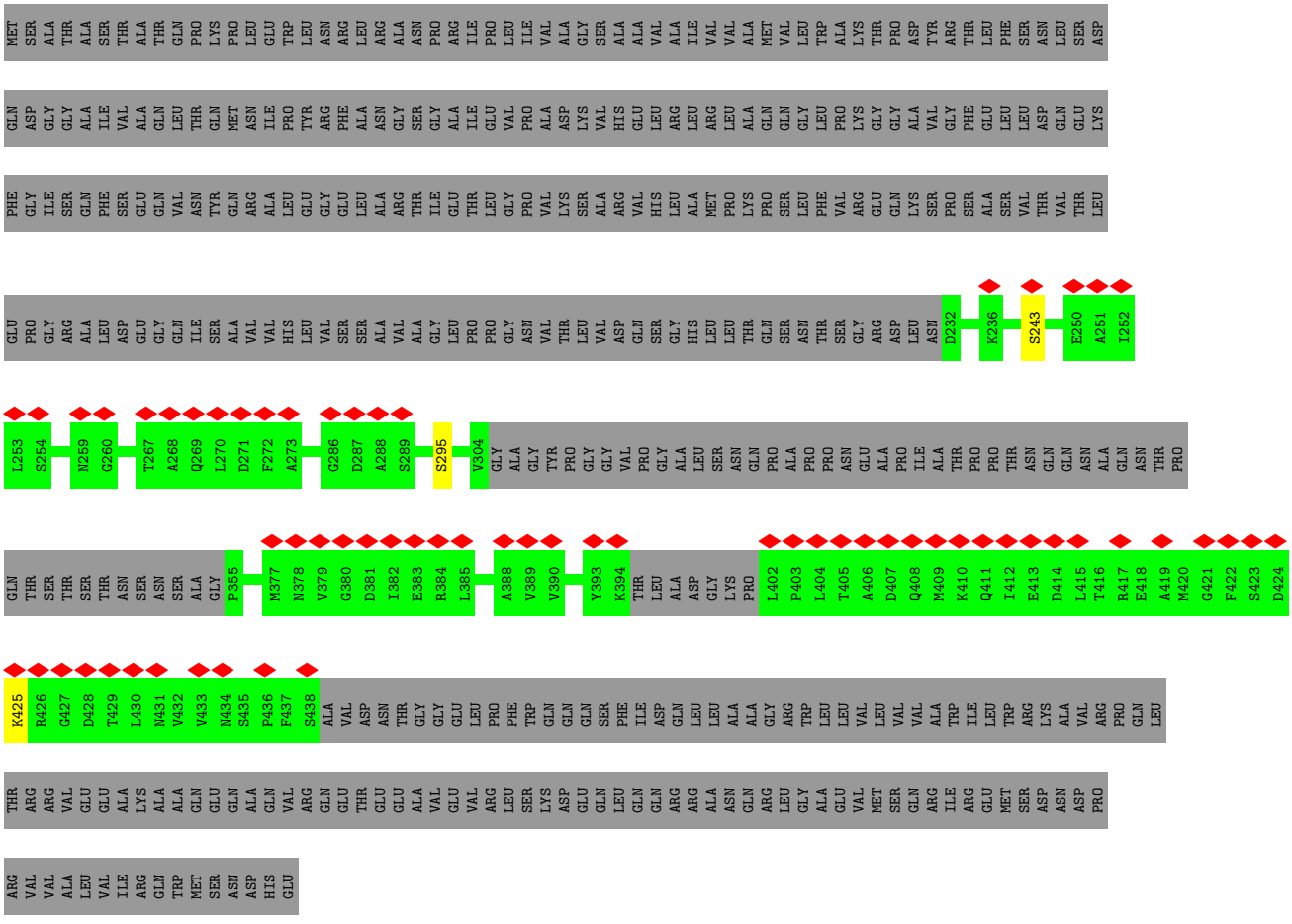


• Molecule 12: Flagellar M-ring protein

Chain Ck:



• Molecule 12: Flagellar M-ring protein

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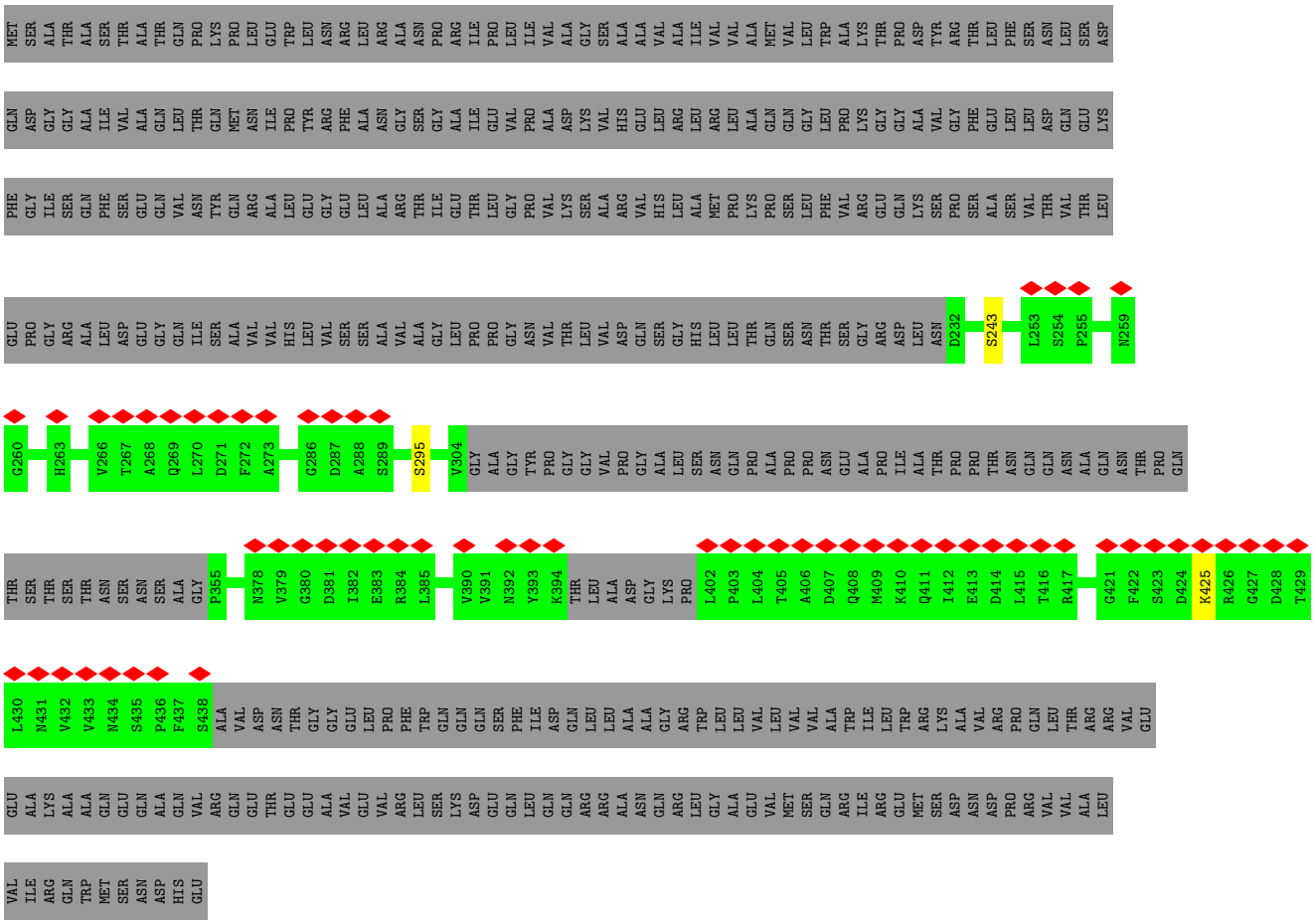
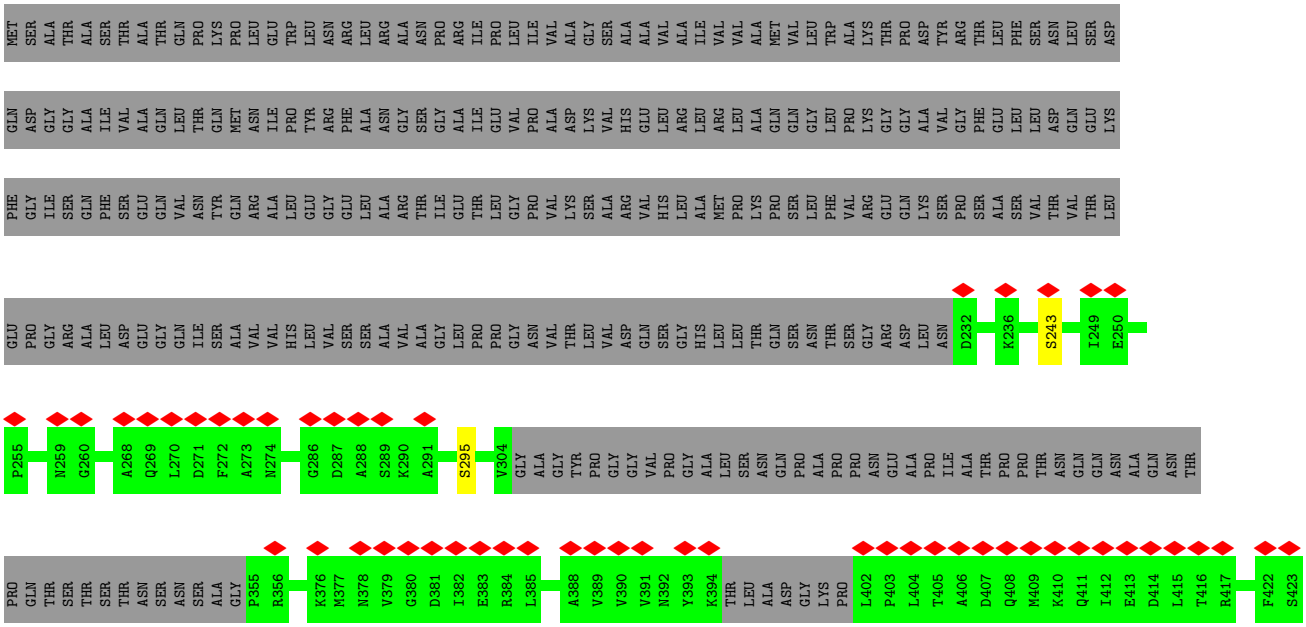
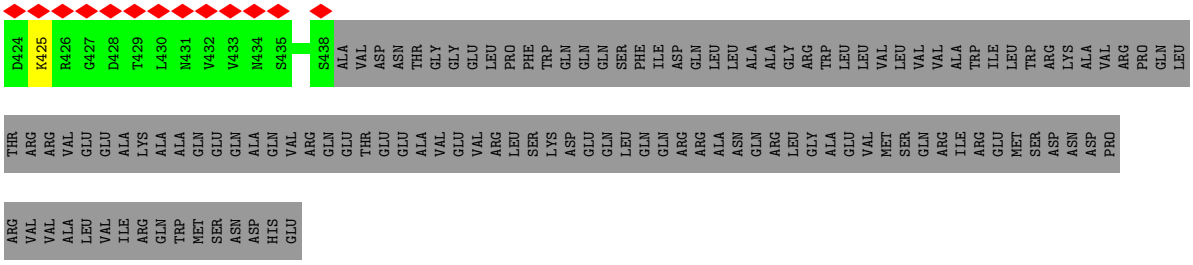


• Molecule 12: Flagellar M-ring protein

Chain Cm:





• Molecule 12: Flagellar M-ring protein

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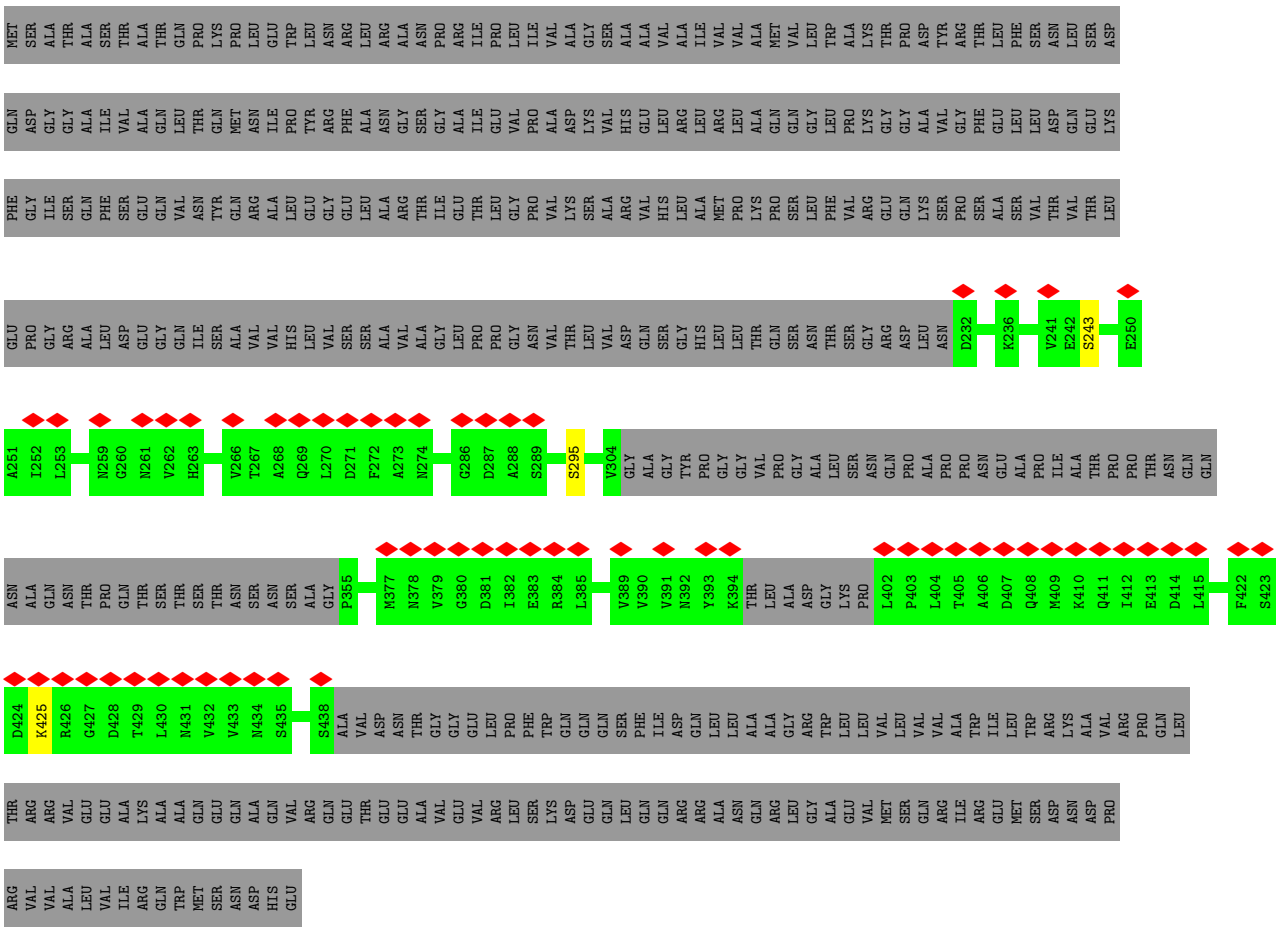
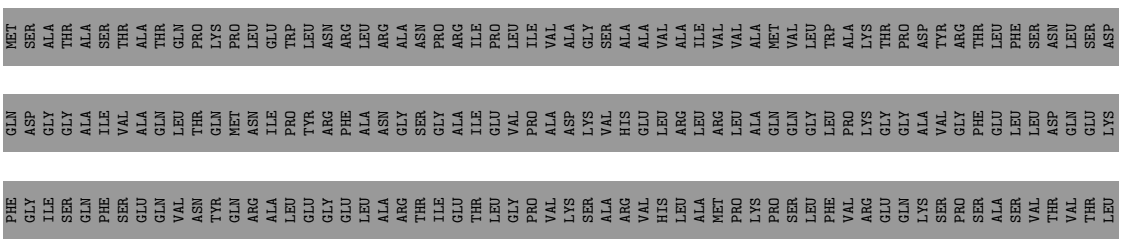
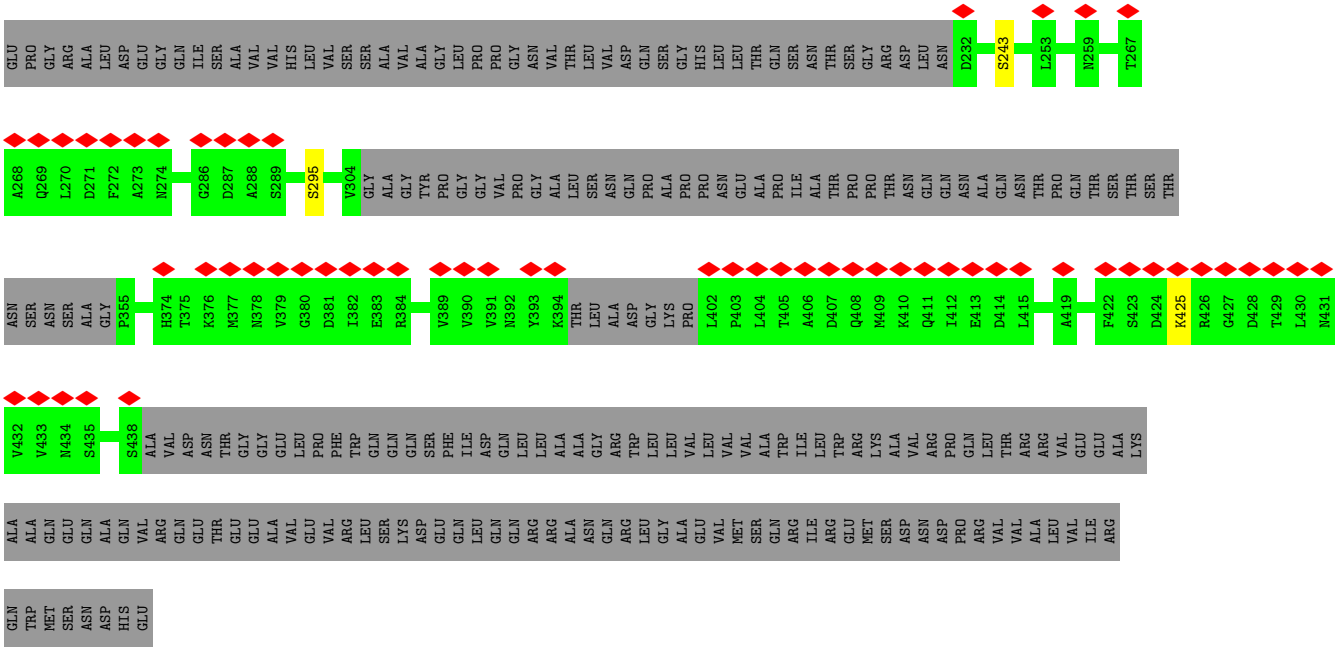


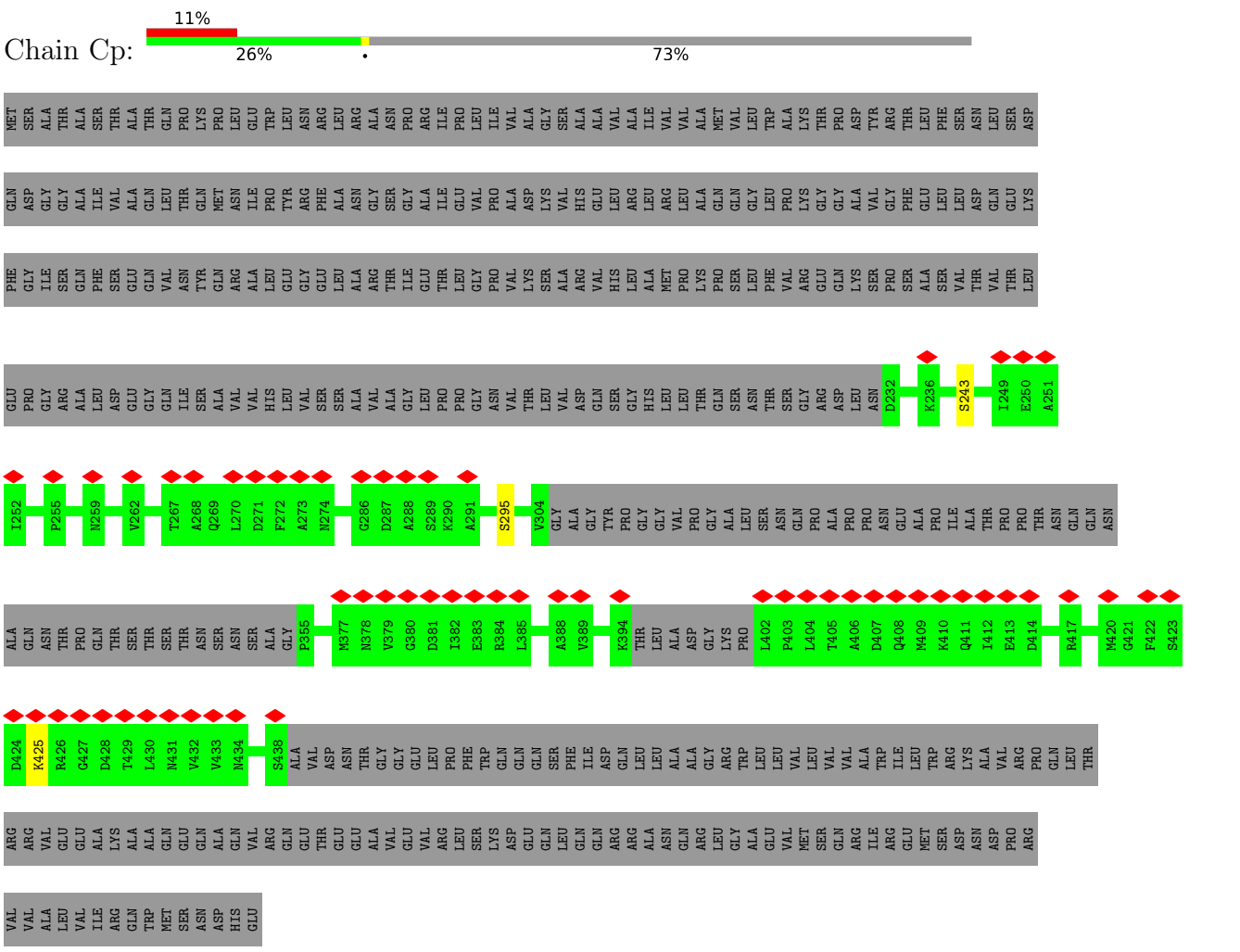
• Molecule 12: Flagellar M-ring protein

Chain Co:



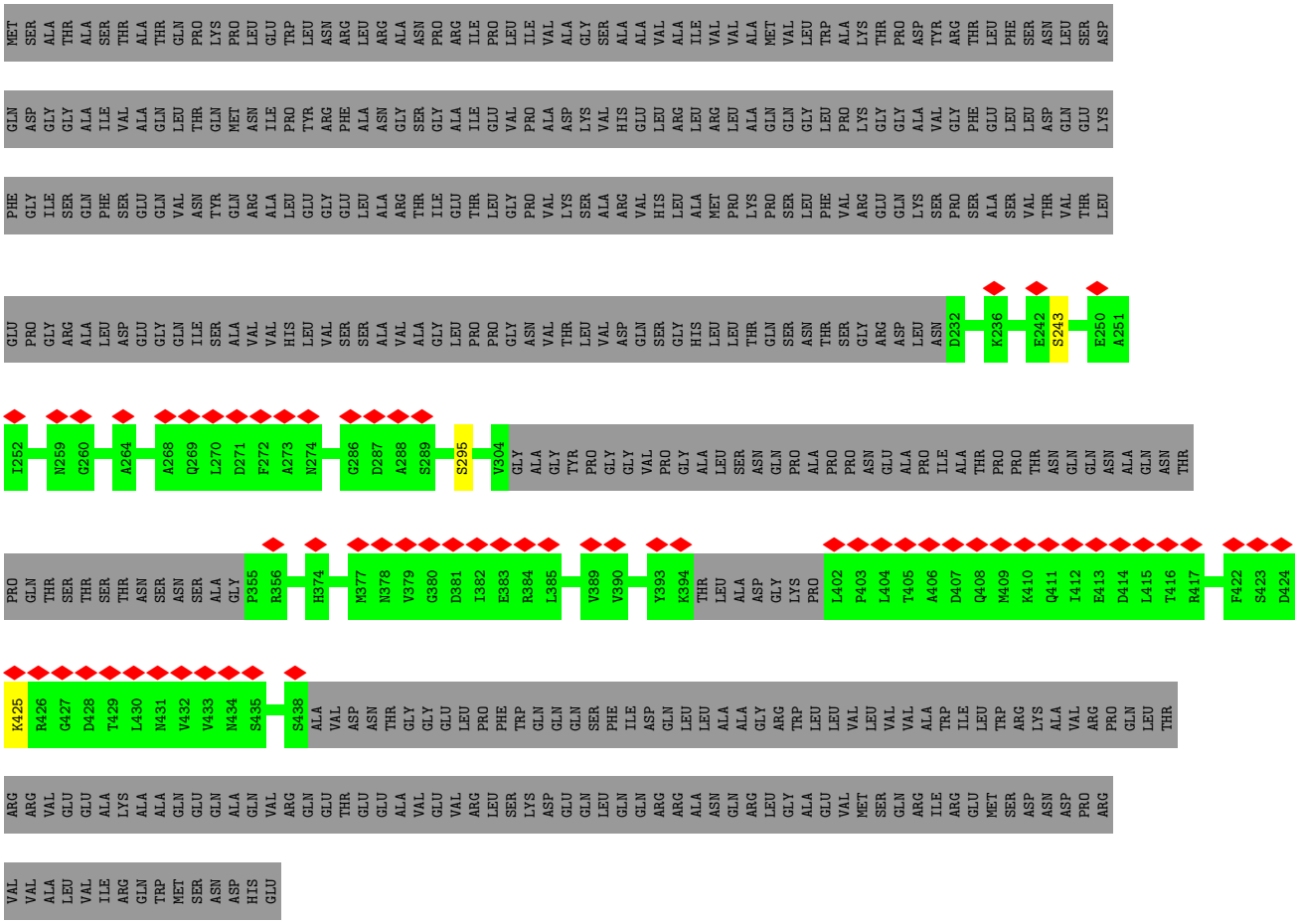


• Molecule 12: Flagellar M-ring protein



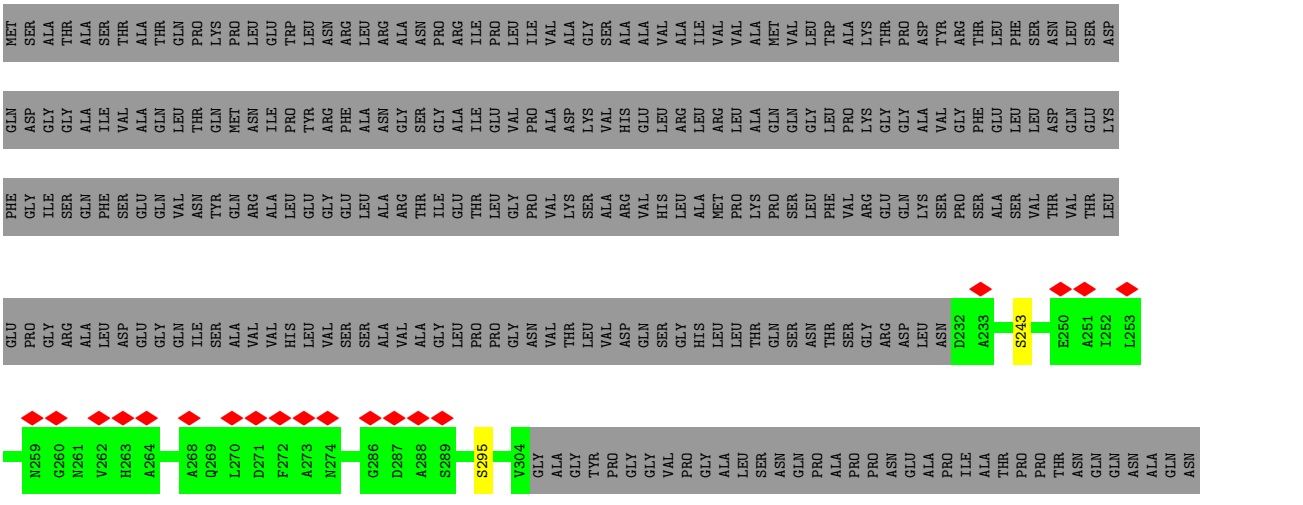
• Molecule 12: Flagellar M-ring protein

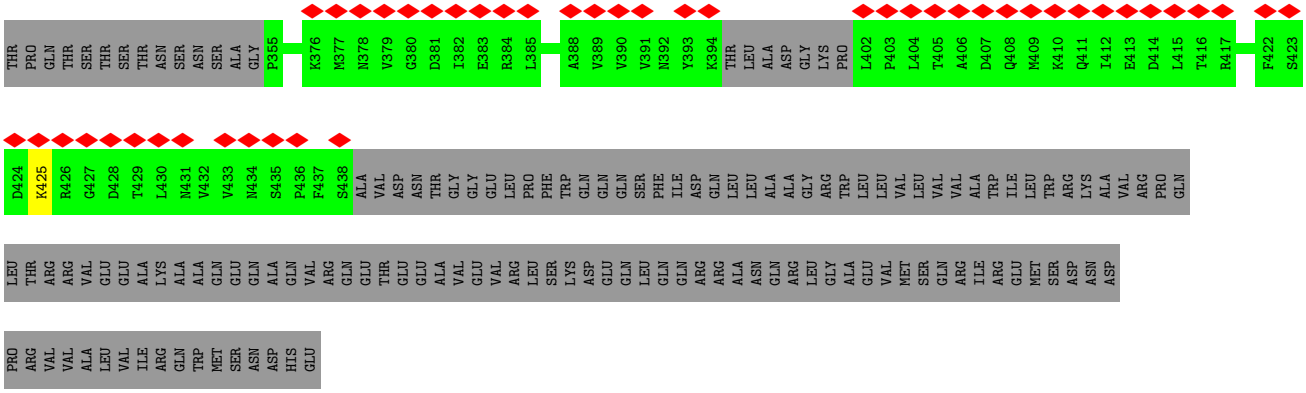
Chain Cq:



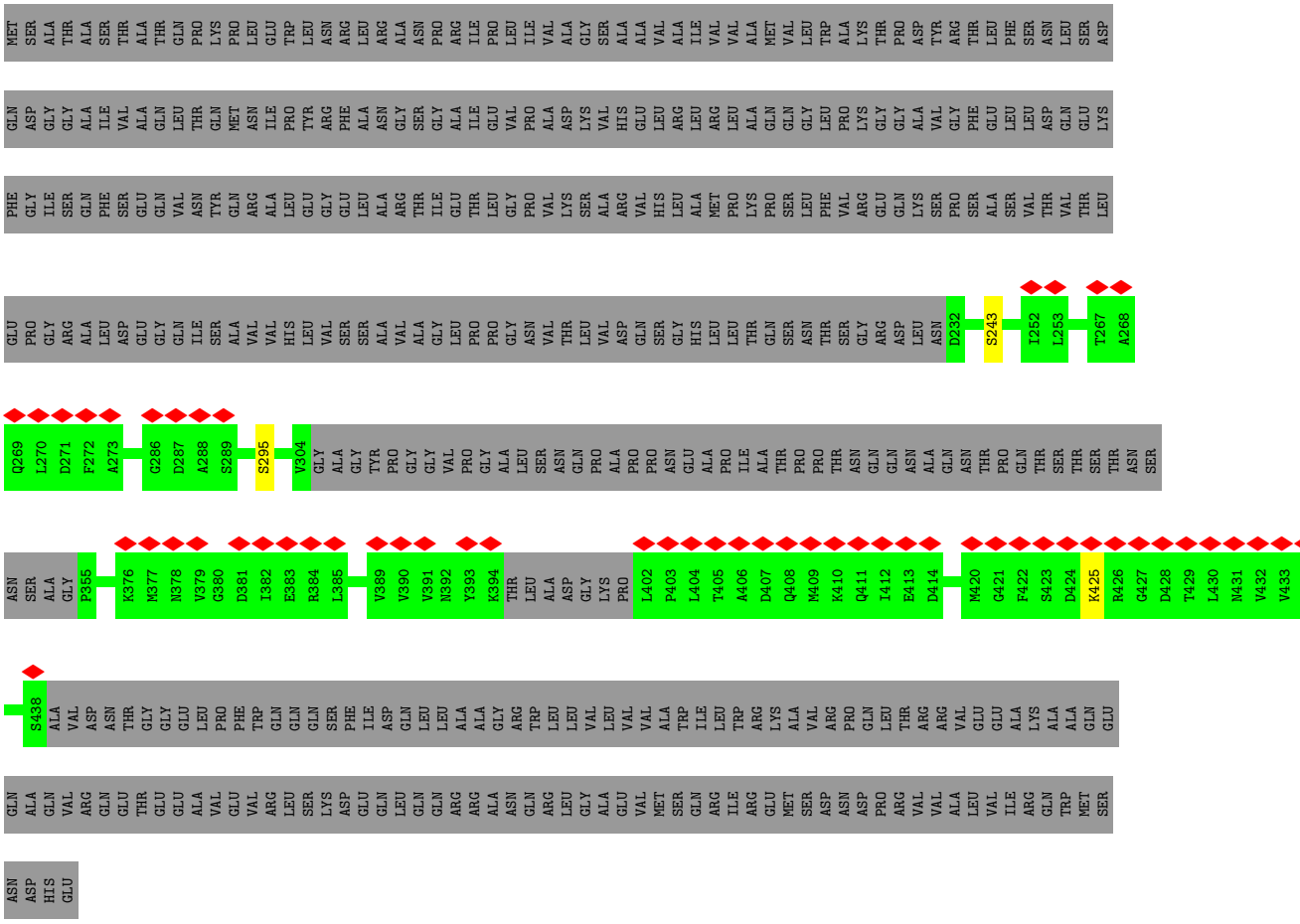
• Molecule 12: Flagellar M-ring protein

Chain Cr:

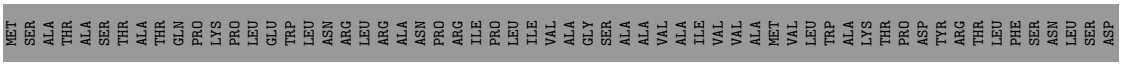


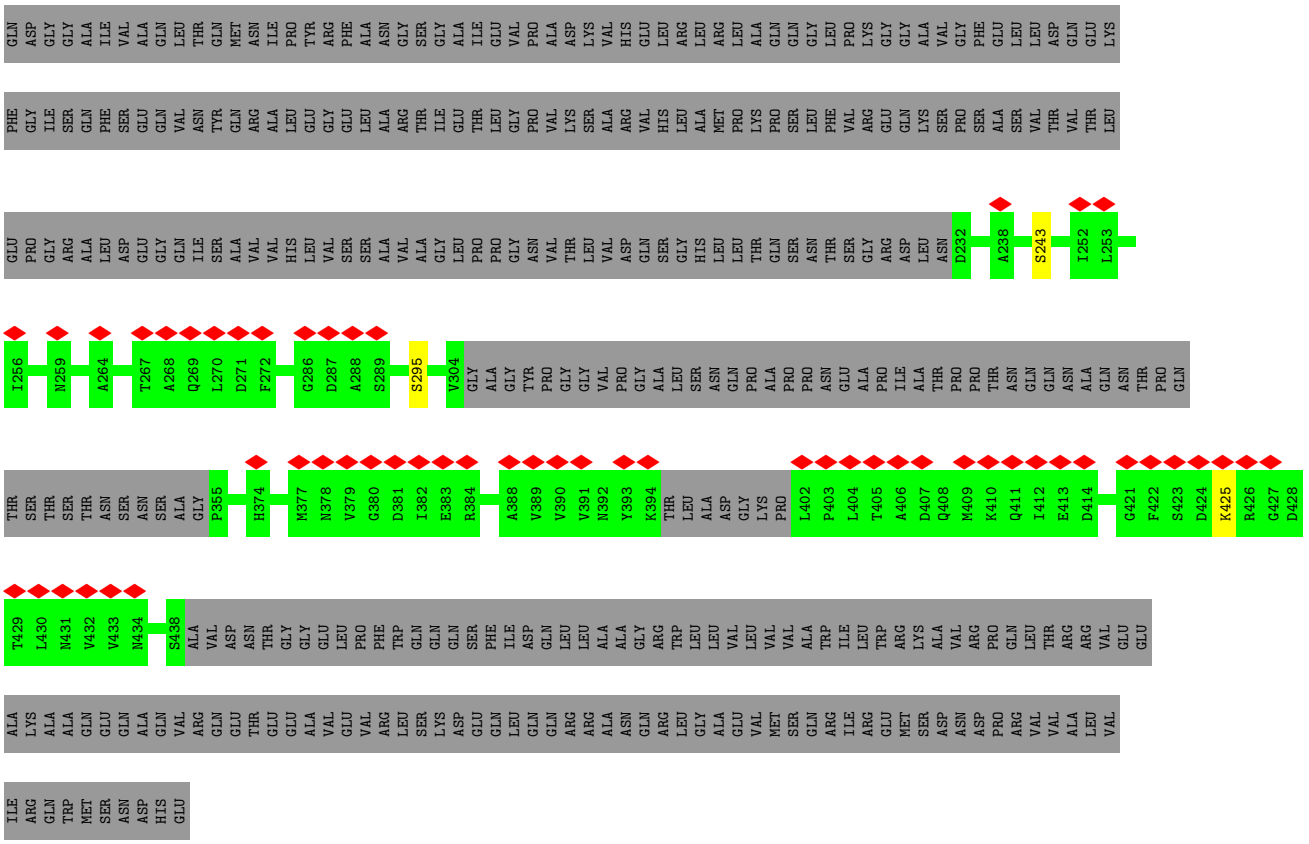


• Molecule 12: Flagellar M-ring protein



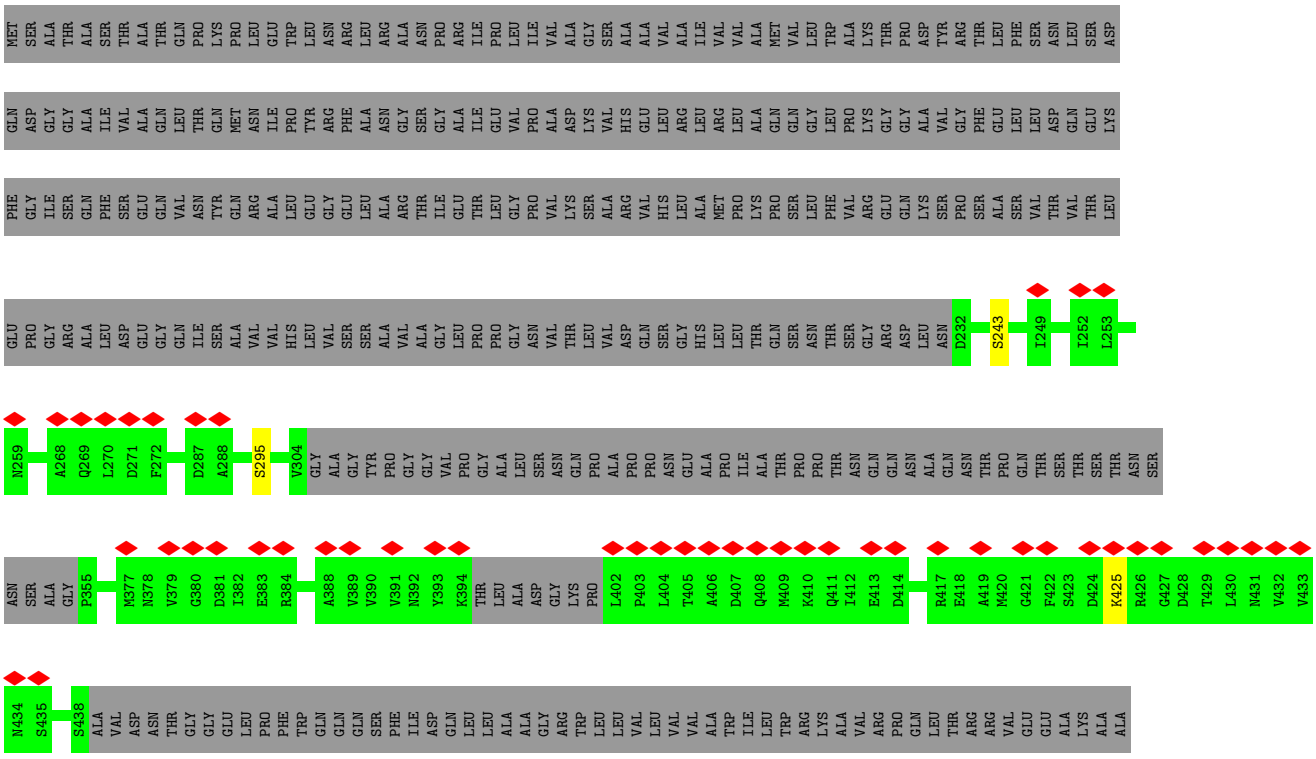
• Molecule 12: Flagellar M-ring protein

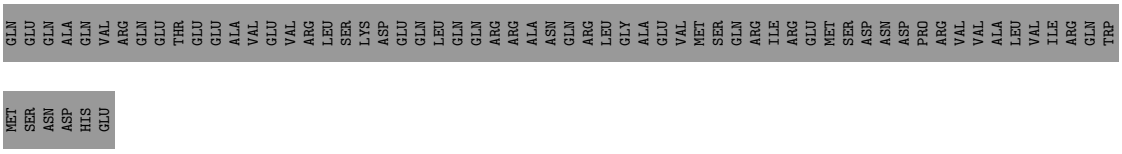




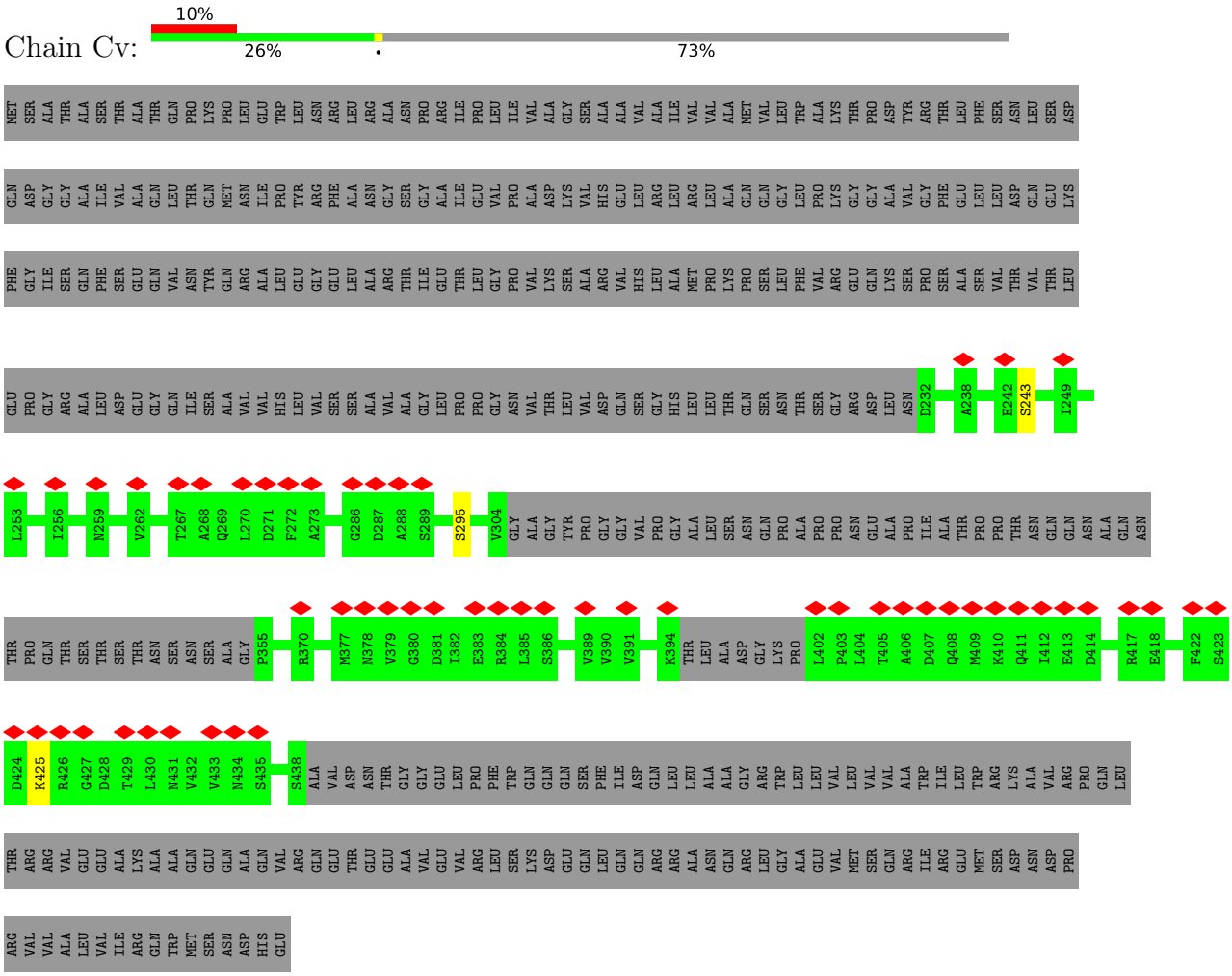
• Molecule 12: Flagellar M-ring protein

Chain Cu:

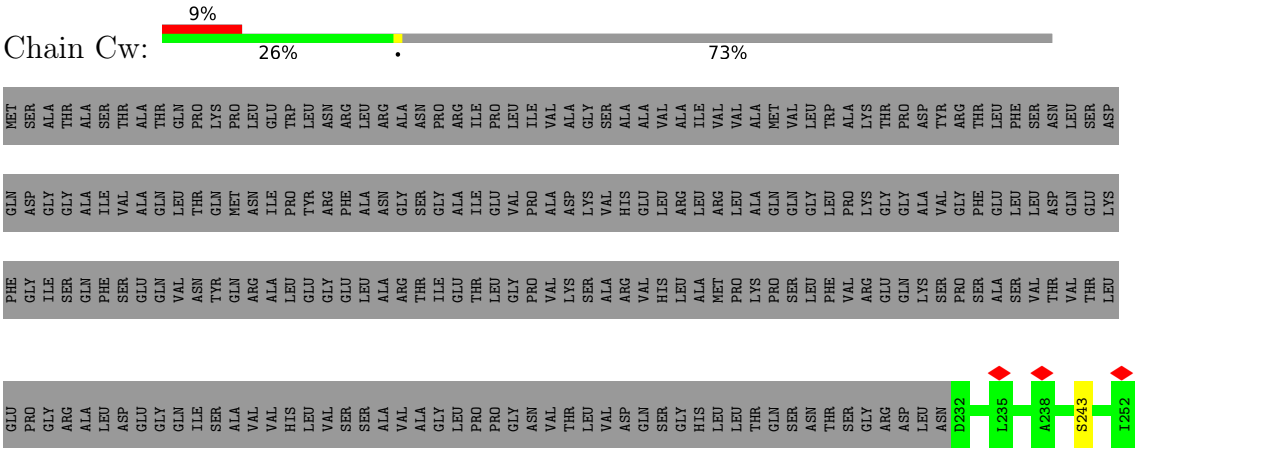


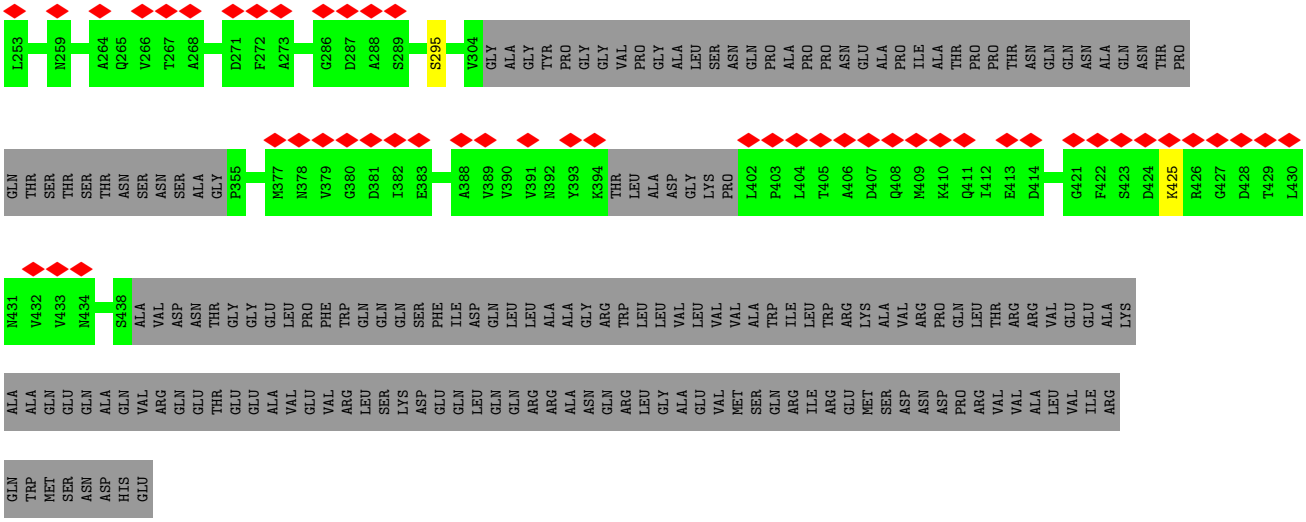


• Molecule 12: Flagellar M-ring protein



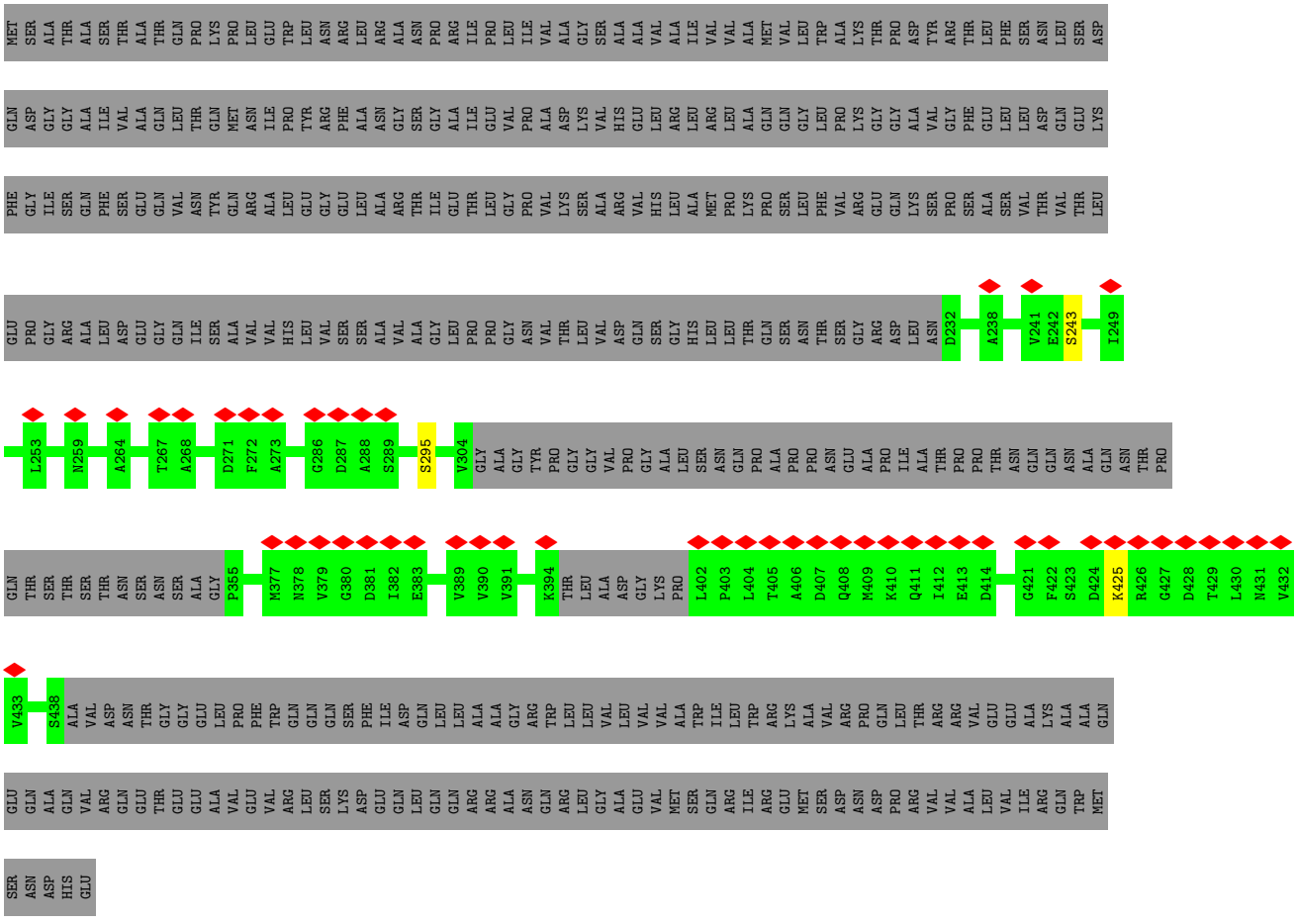
• Molecule 12: Flagellar M-ring protein





• Molecule 12: Flagellar M-ring protein

Chain Cx:



• Molecule 12: Flagellar M-ring protein

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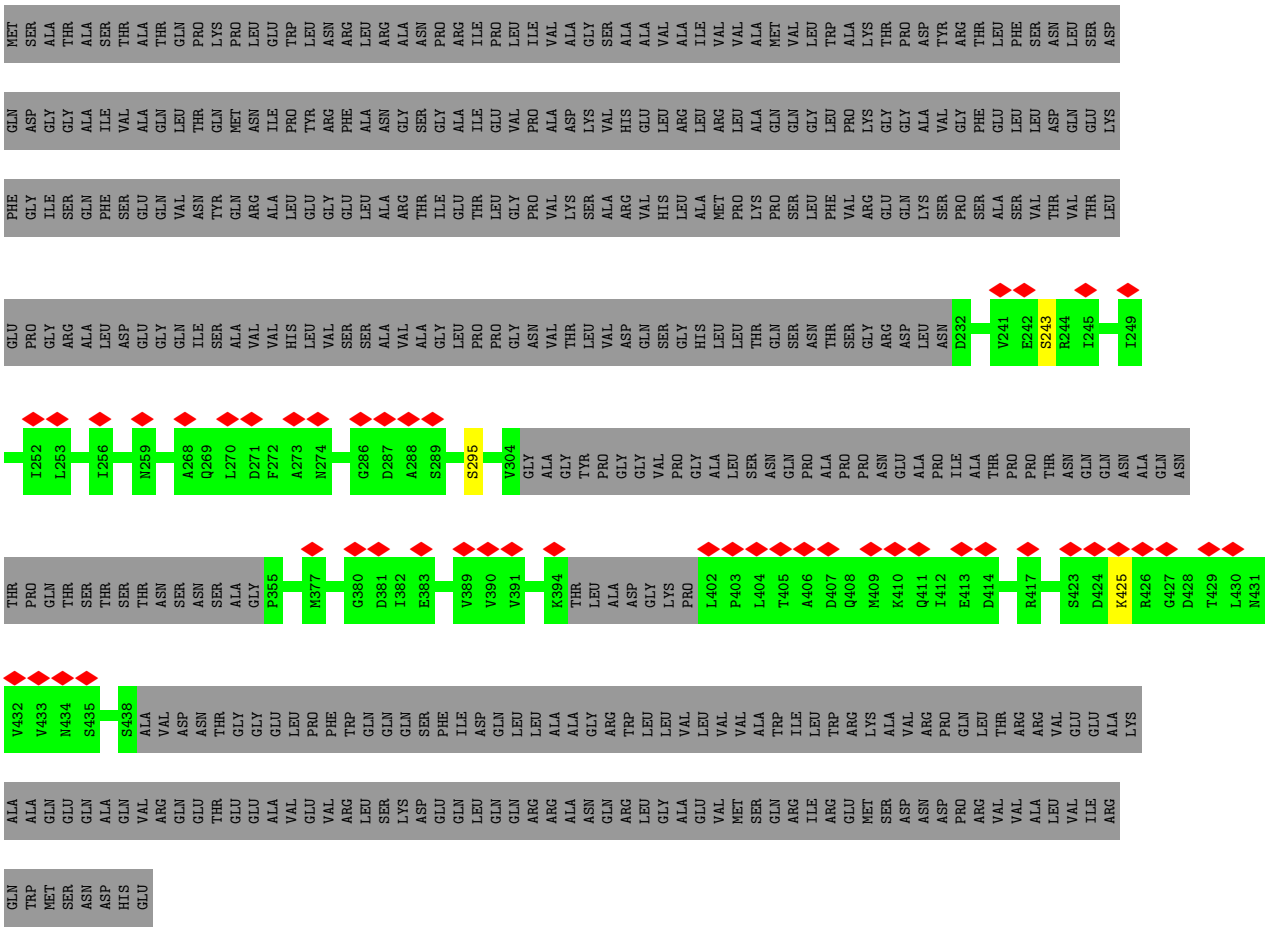

• Molecule 12: Flagellar M-ring protein

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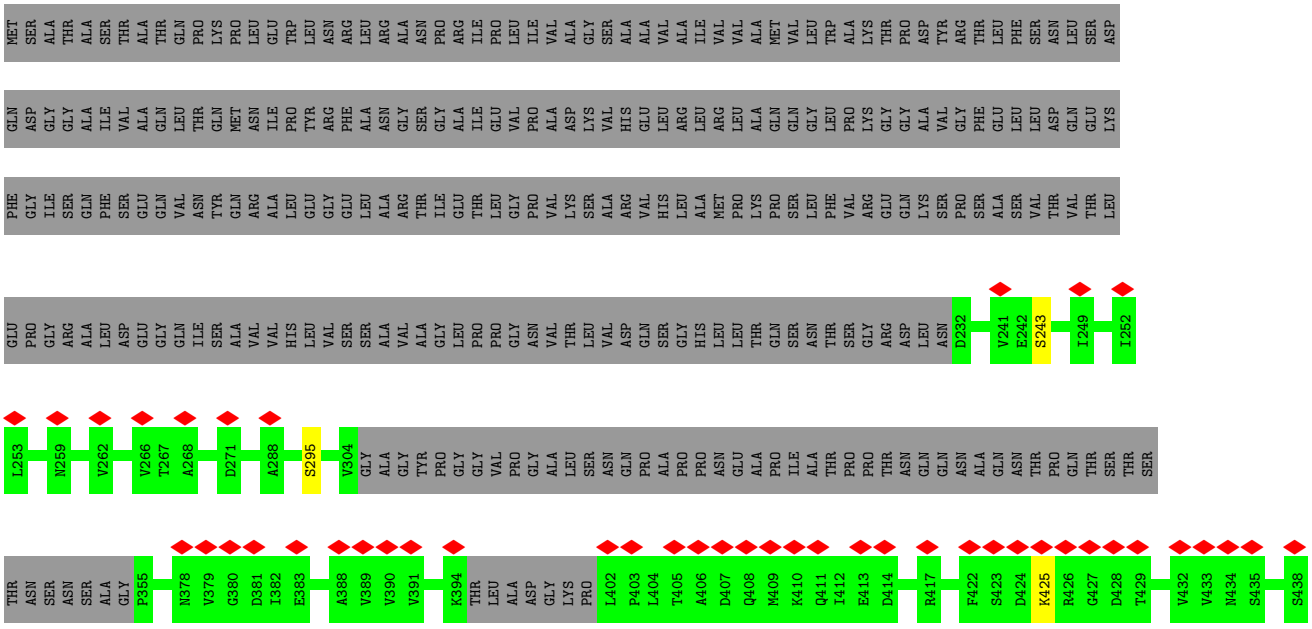
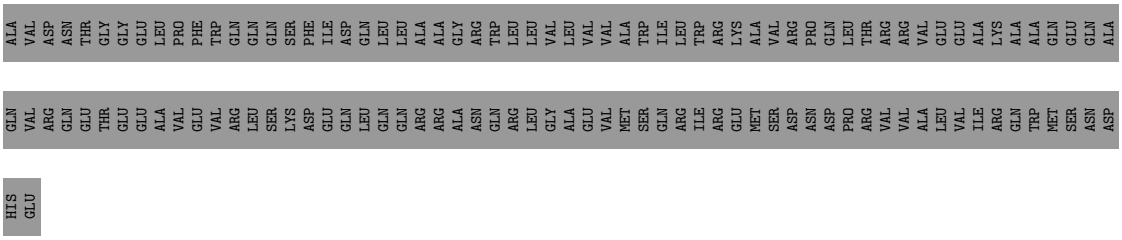
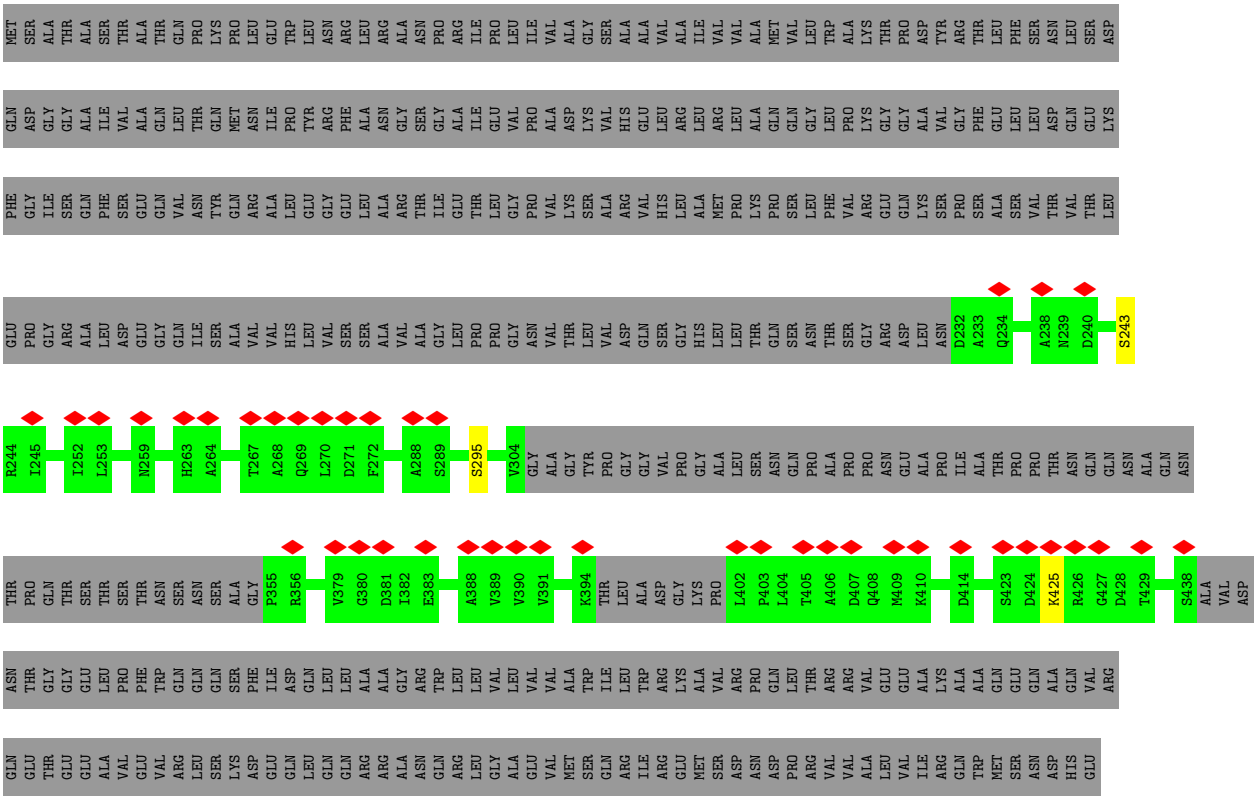




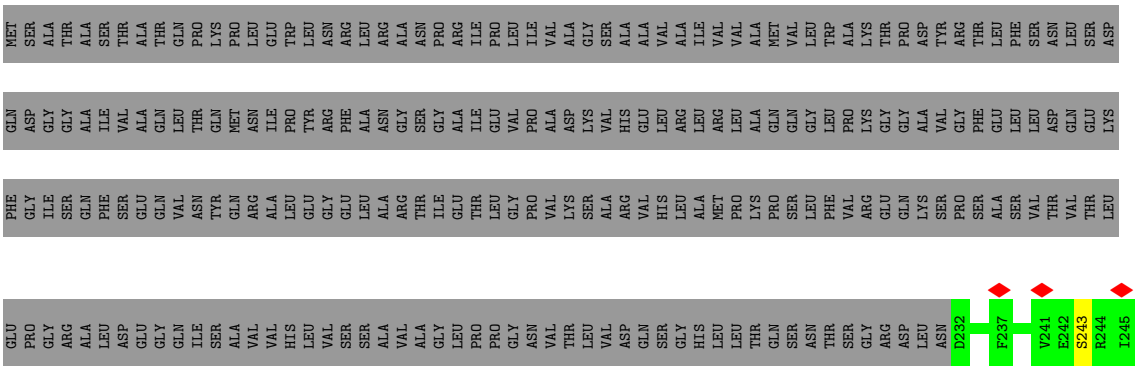
• Molecule 12: Flagellar M-ring protein

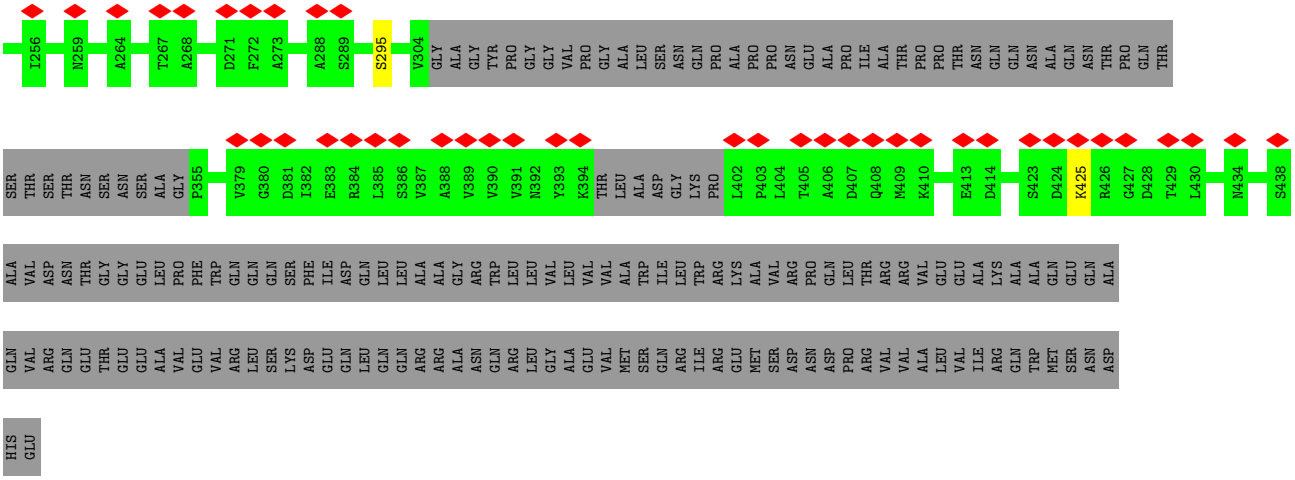
Chain Ea:



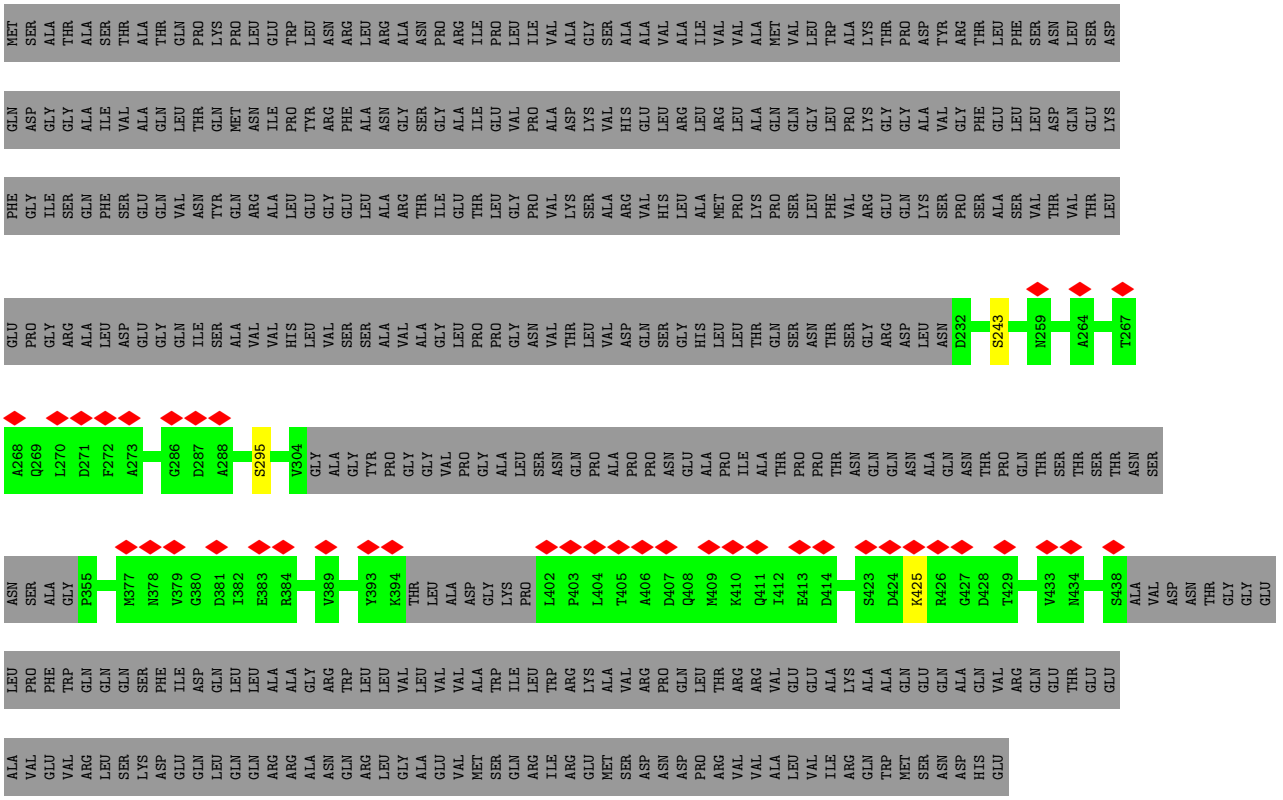
• Molecule 12: Flagellar M-ring protein

Chain Eb:

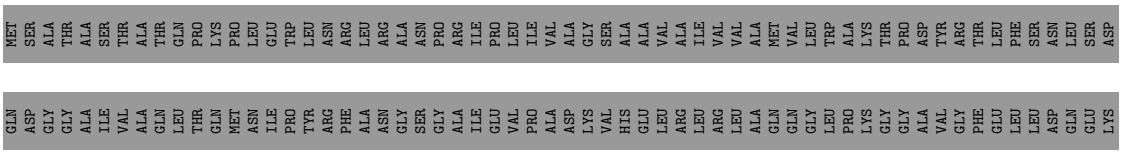


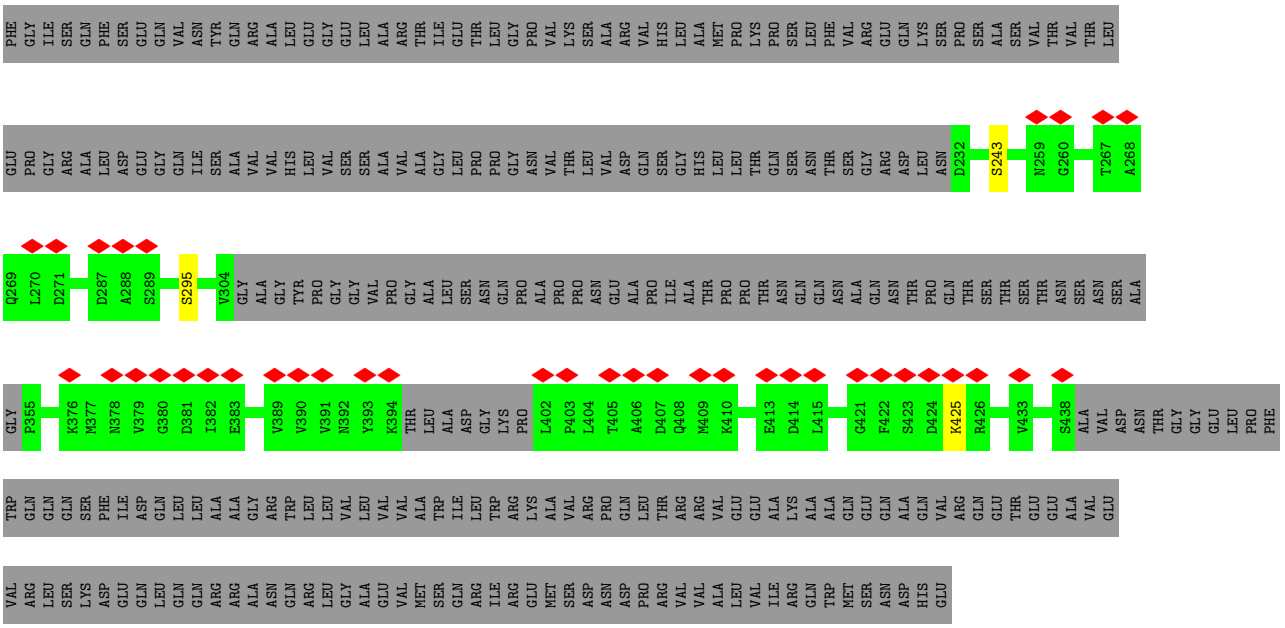


• Molecule 12: Flagellar M-ring protein



• Molecule 12: Flagellar M-ring protein





• Molecule 12: Flagellar M-ring protein

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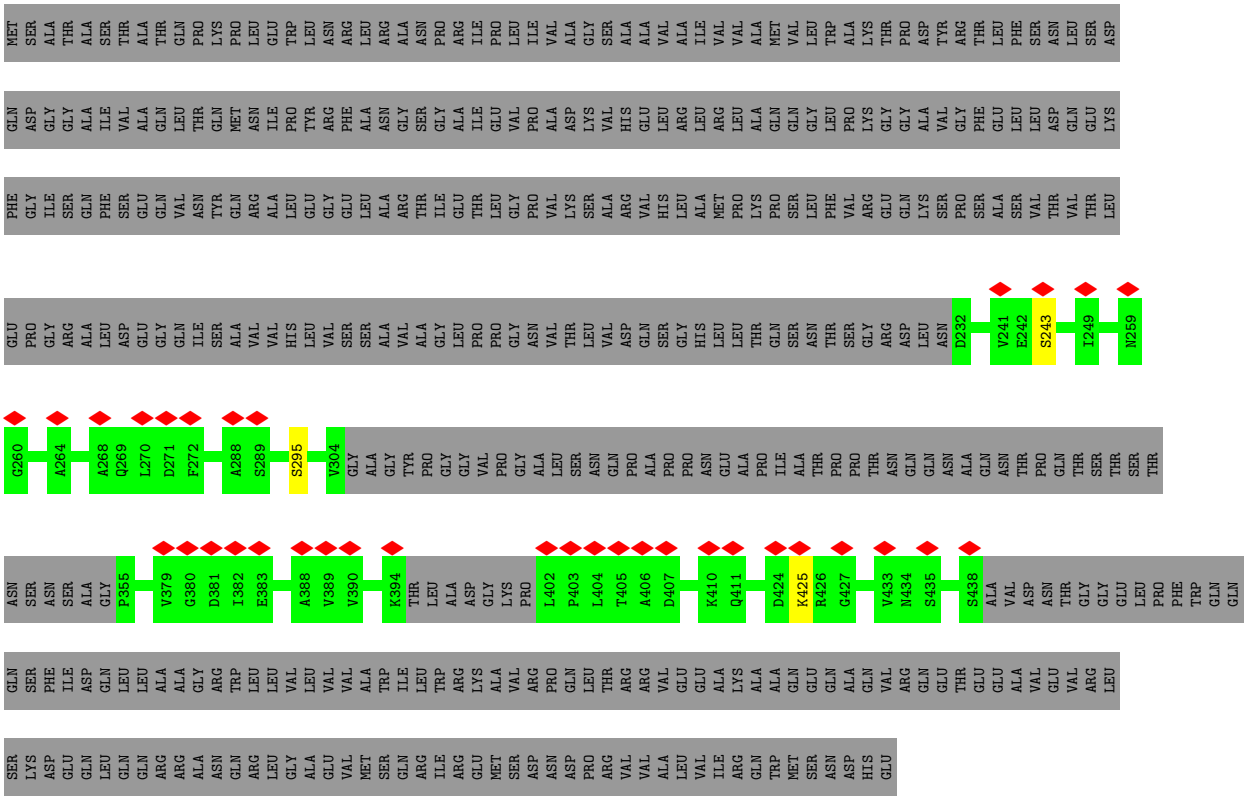

• Molecule 12: Flagellar M-ring protein

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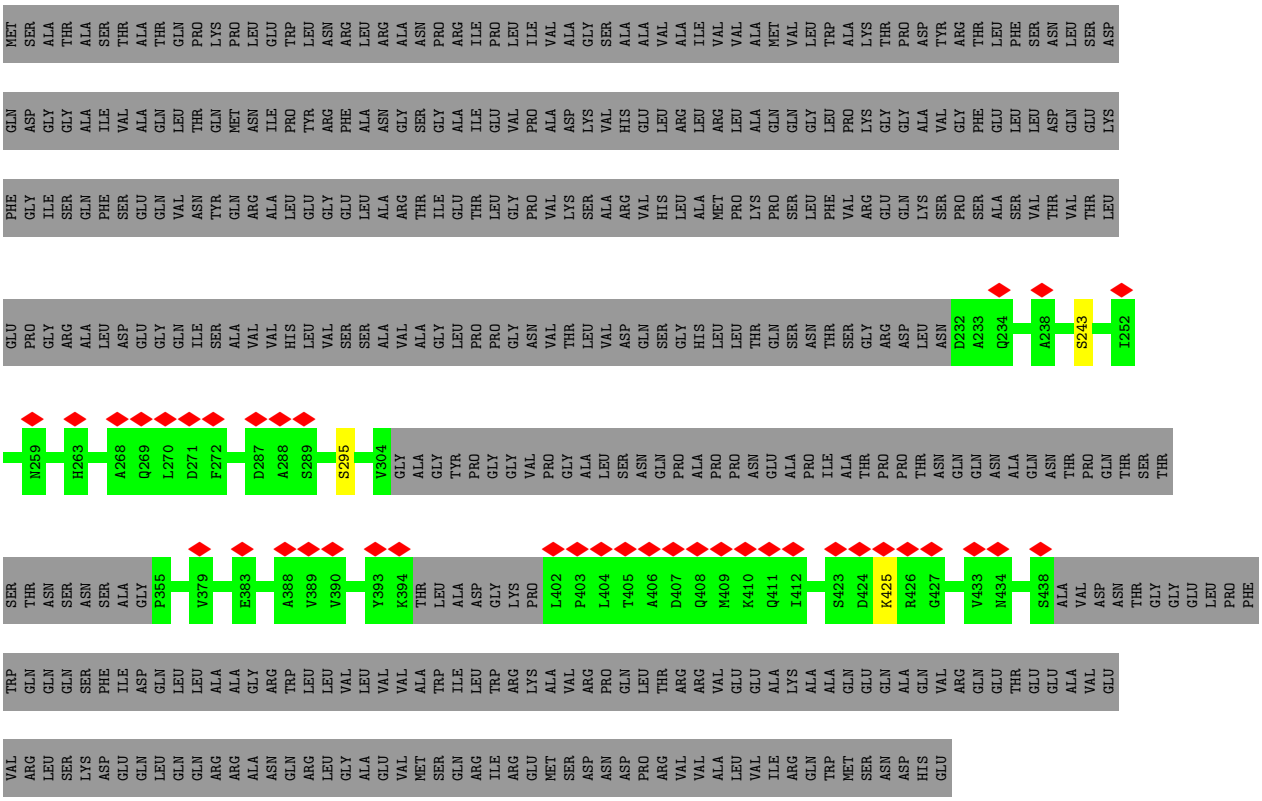
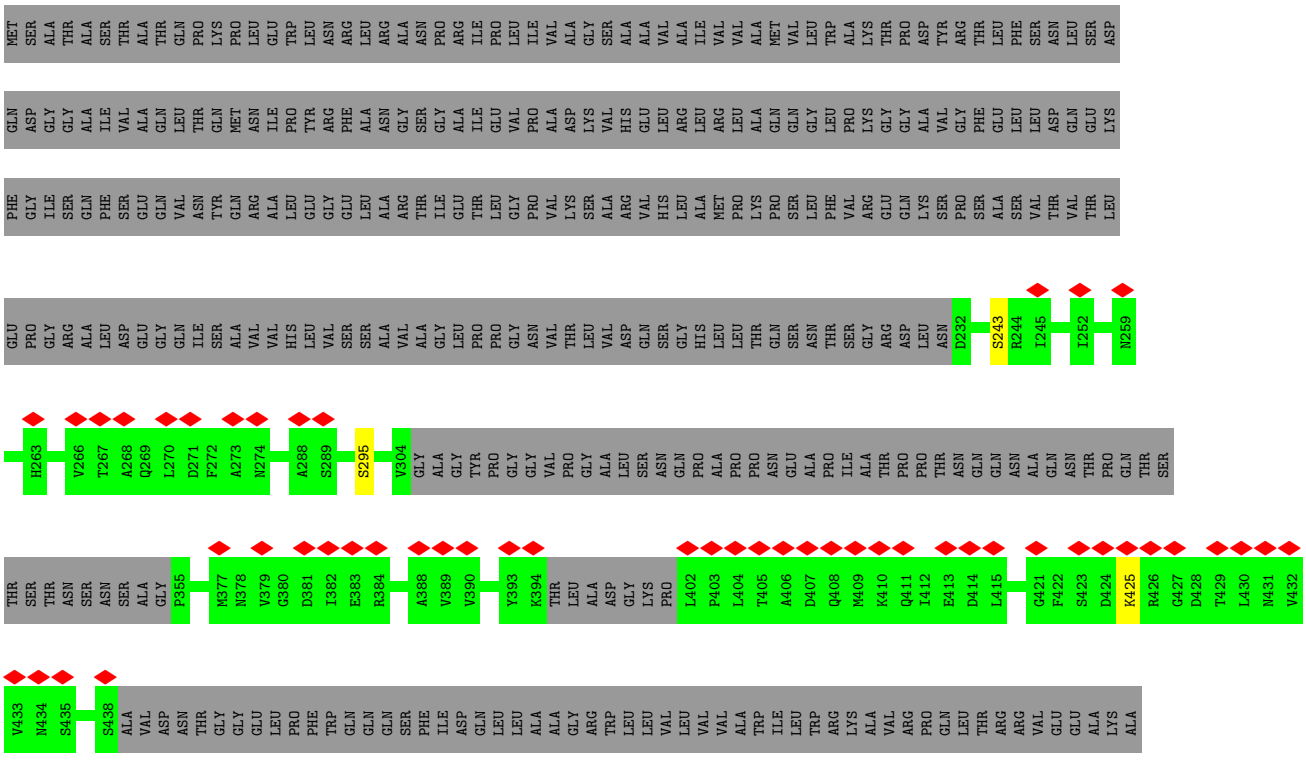
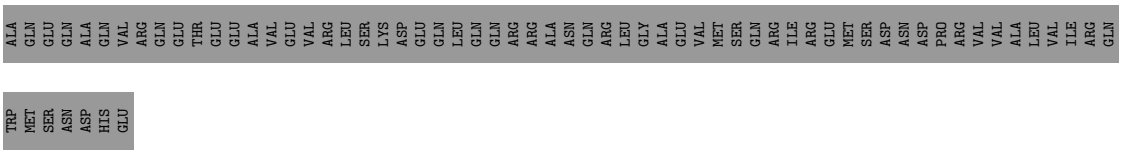


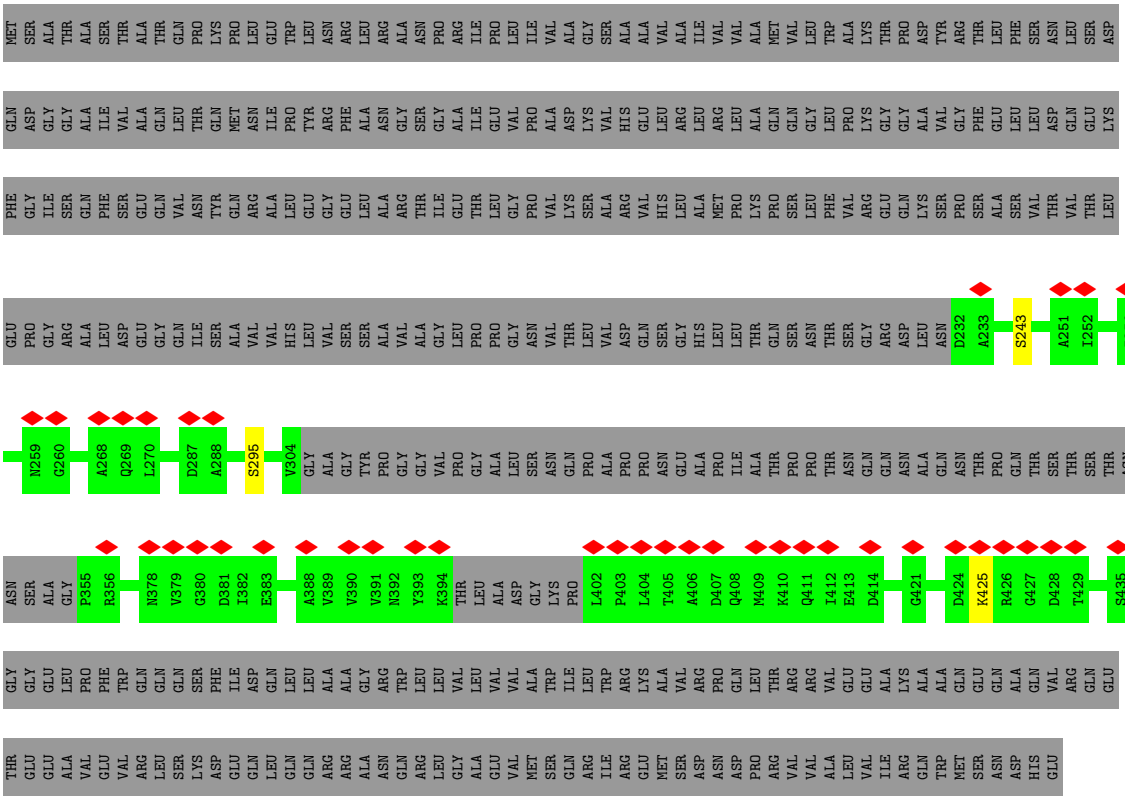
• Molecule 12: Flagellar M-ring protein

Chain Eg:

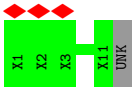




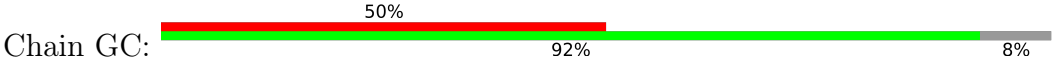
• Molecule 12: Flagellar M-ring protein

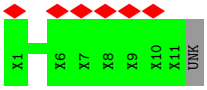


• Molecule 13: FlgB-Dc loop

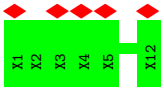


• Molecule 13: FlgB-Dc loop



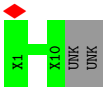


• Molecule 13: FlgB-Dc loop



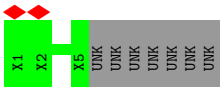
• Molecule 13: FlgB-Dc loop

Chain GD:



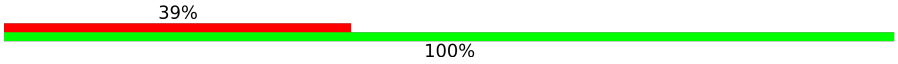
• Molecule 13: FlgB-Dc loop

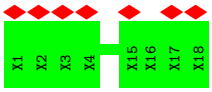
Chain GB:



• Molecule 14: FliE helix 1

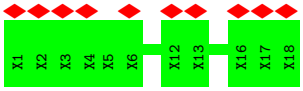
Chain GF:





• Molecule 14: FliE helix 1

Chain GG:



• Molecule 14: FliE helix 1

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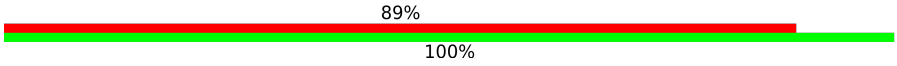
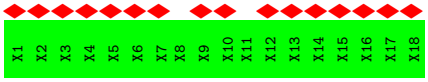
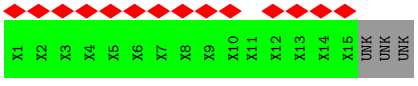




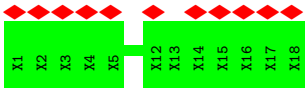
• Molecule 14: FliE helix 1

Chain GI:



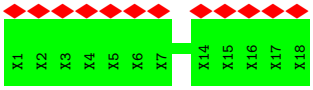
• Molecule 14: FliE helix 1

Chain GJ:



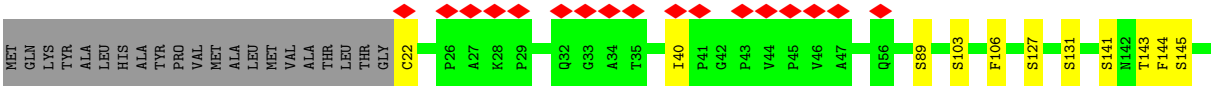
• Molecule 14: FliE helix 1

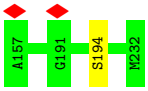
Chain GK:



• Molecule 15: Flagellar L-ring protein

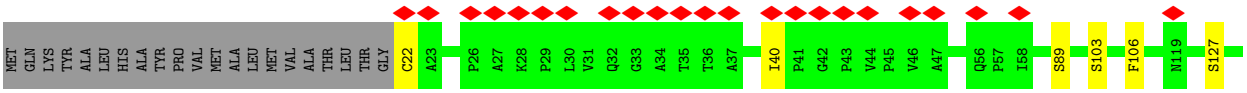
Chain AA:

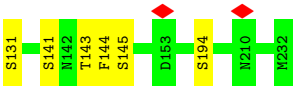




• Molecule 15: Flagellar L-ring protein

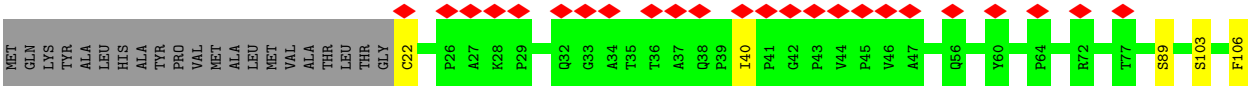
Chain AB:

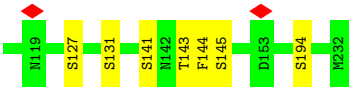




• Molecule 15: Flagellar L-ring protein

Chain AC:

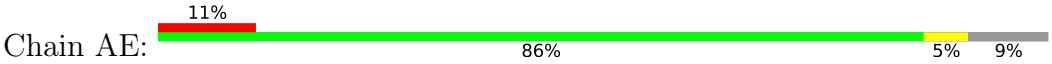


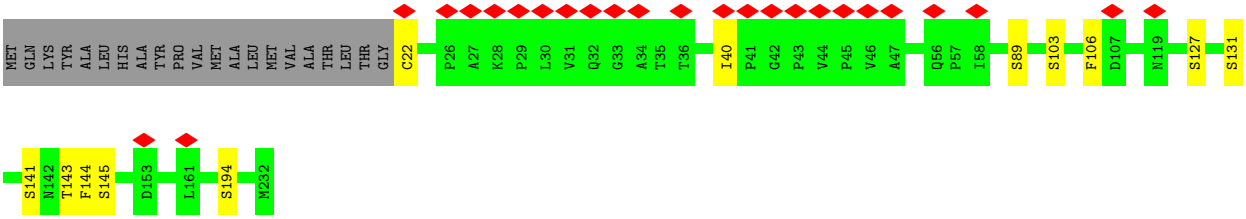


• Molecule 15: Flagellar L-ring protein

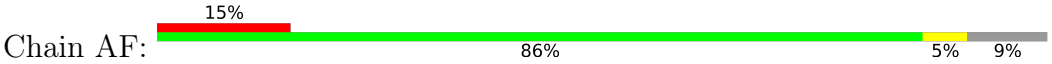
Chain AD:

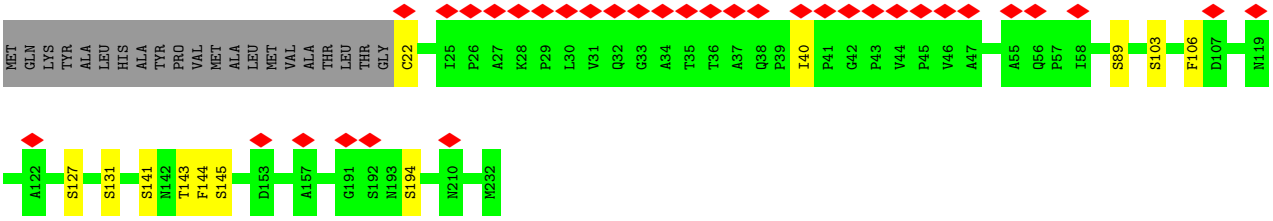
• Molecule 15: Flagellar L-ring protein



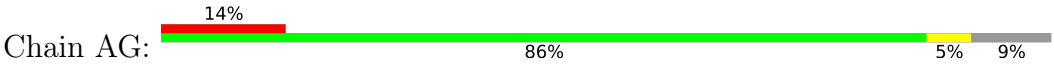


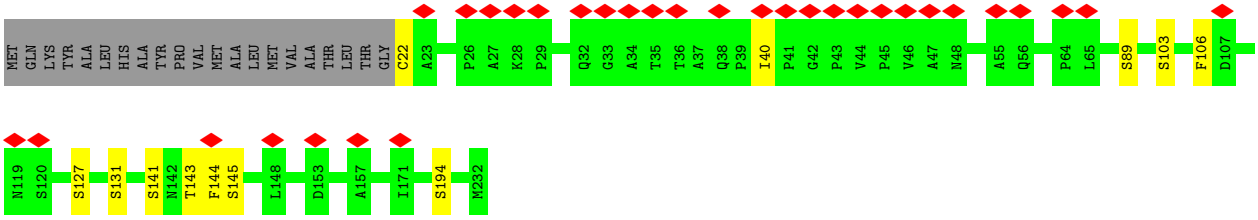
• Molecule 15: Flagellar L-ring protein



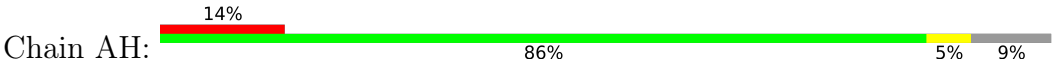


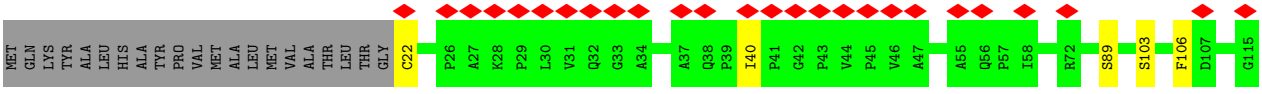
• Molecule 15: Flagellar L-ring protein

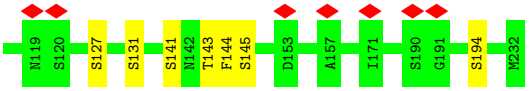




• Molecule 15: Flagellar L-ring protein

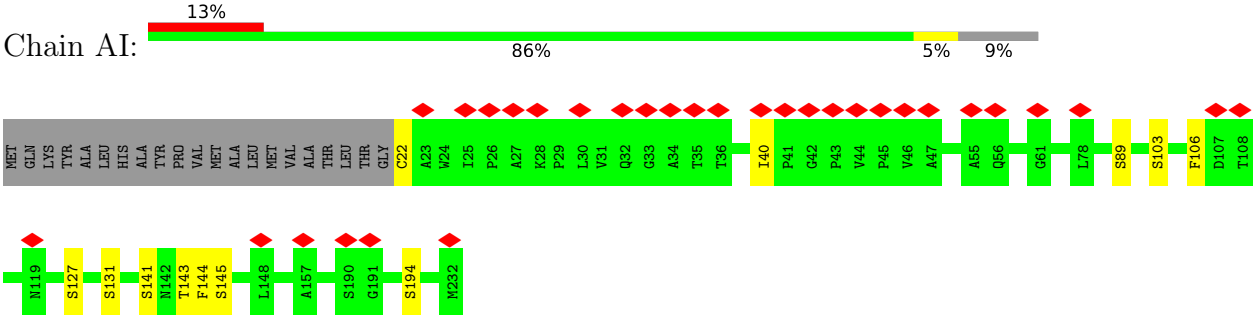






• Molecule 15: Flagellar L-ring protein

Chain AI:



• Molecule 15: Flagellar L-ring protein

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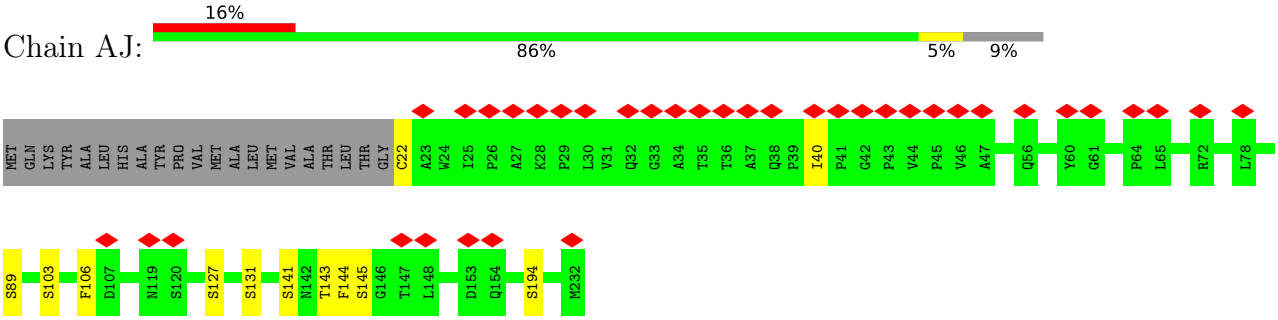

• Molecule 15: Flagellar L-ring protein

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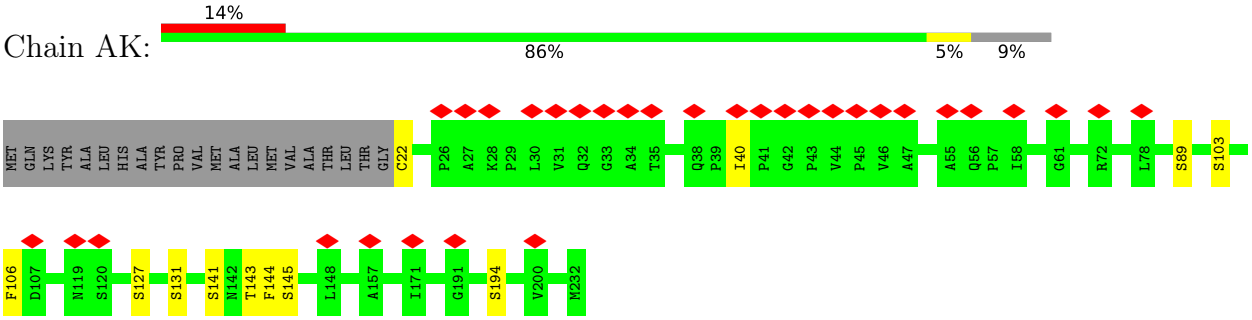

• Molecule 15: Flagellar L-ring protein

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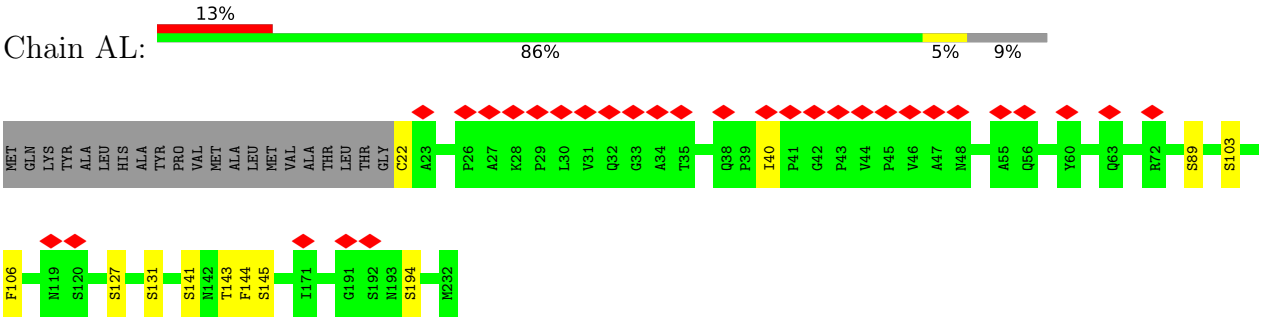
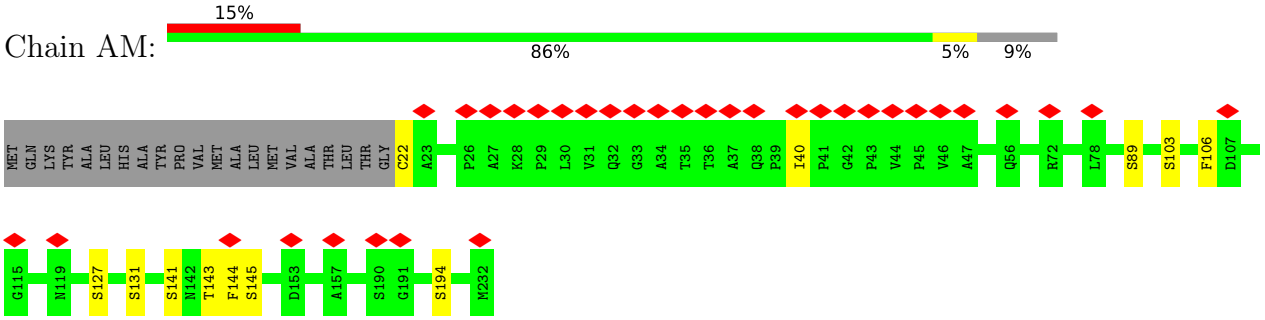


• Molecule 15: Flagellar L-ring protein

Chain AM:



• Molecule 15: Flagellar L-ring protein

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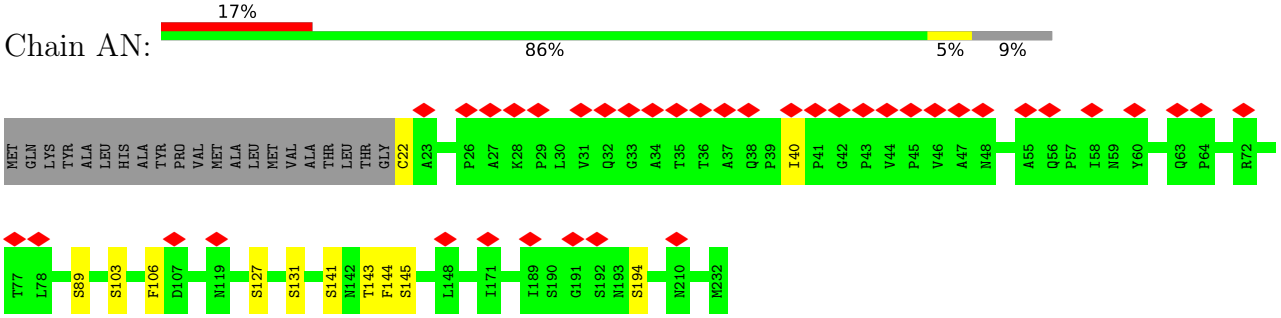

• Molecule 15: Flagellar L-ring protein

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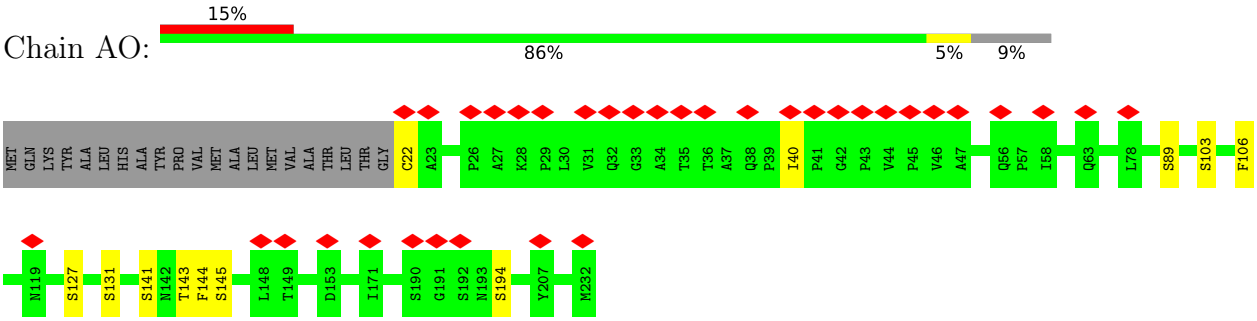

• Molecule 15: Flagellar L-ring protein

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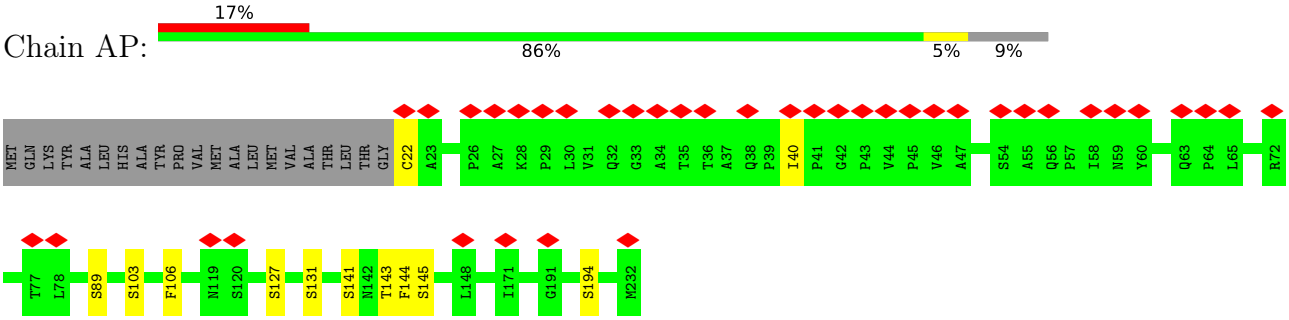
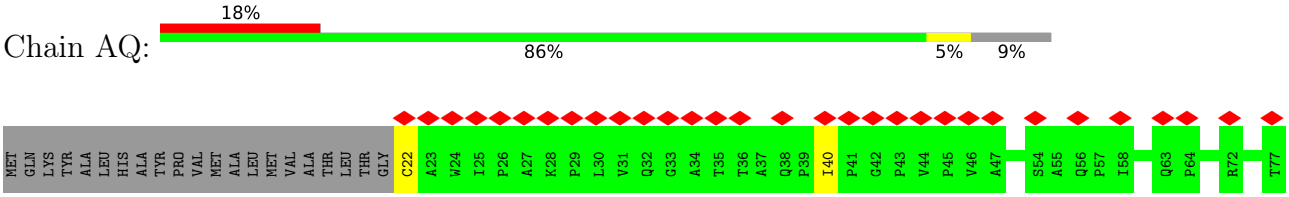


• Molecule 15: Flagellar L-ring protein

Chain AQ:



• Molecule 15: Flagellar L-ring protein

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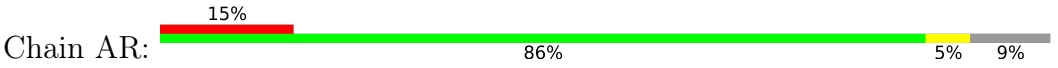

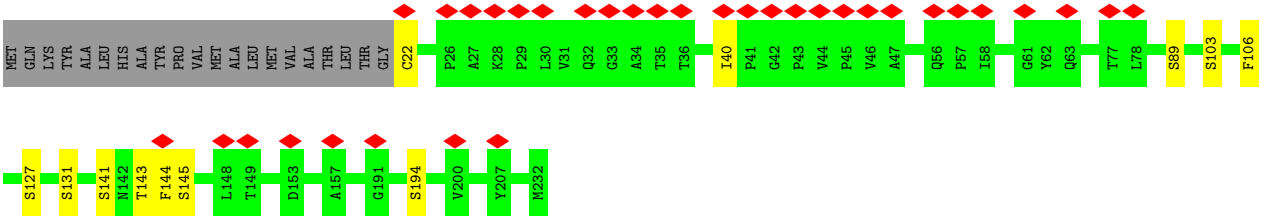

• Molecule 15: Flagellar L-ring protein

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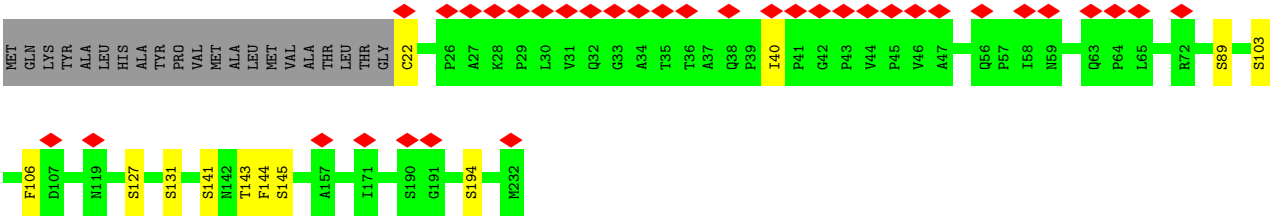
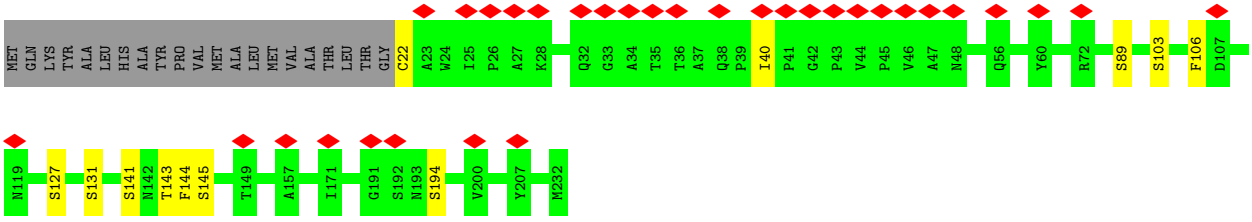


• Molecule 15: Flagellar L-ring protein

Chain AT:



• Molecule 15: Flagellar L-ring protein

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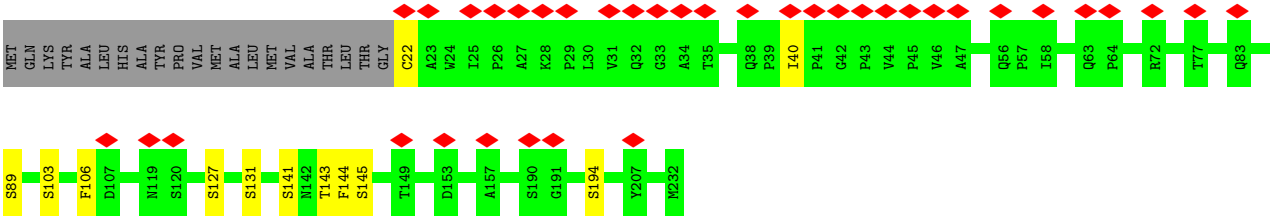

• Molecule 15: Flagellar L-ring protein

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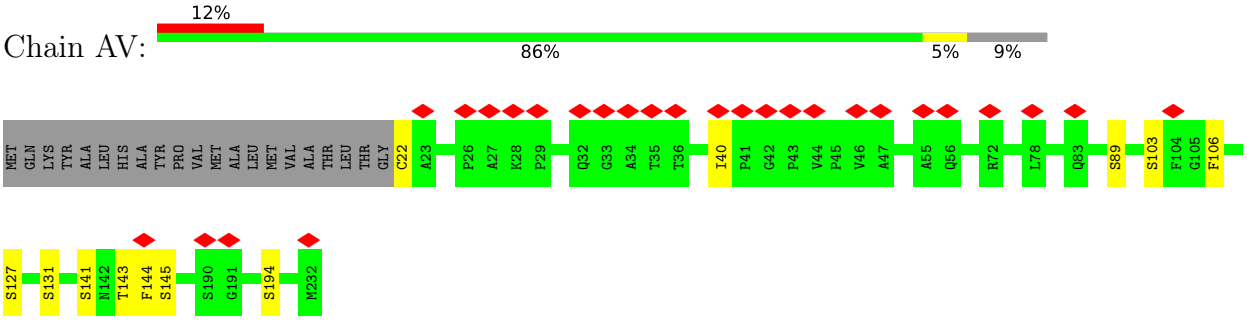
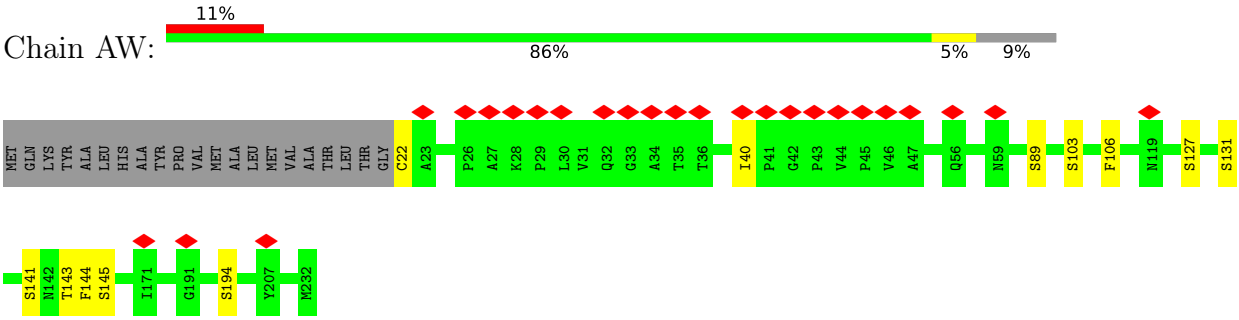


• Molecule 15: Flagellar L-ring protein

Chain AW:



• Molecule 15: Flagellar L-ring protein

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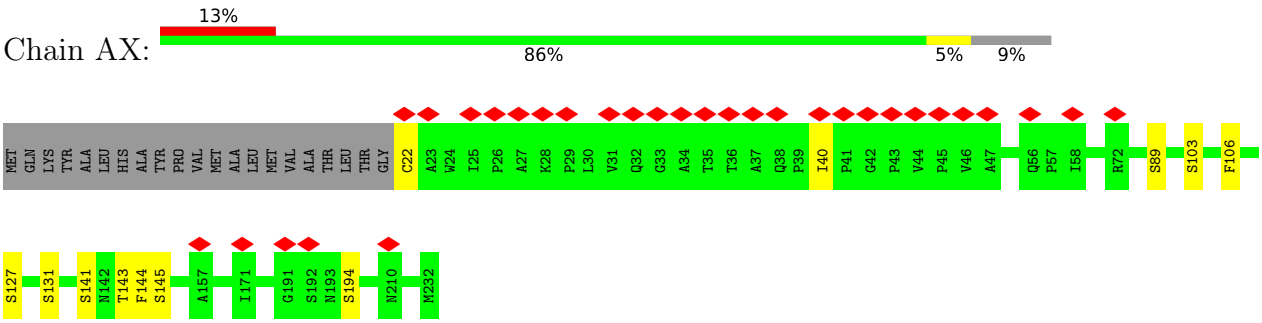
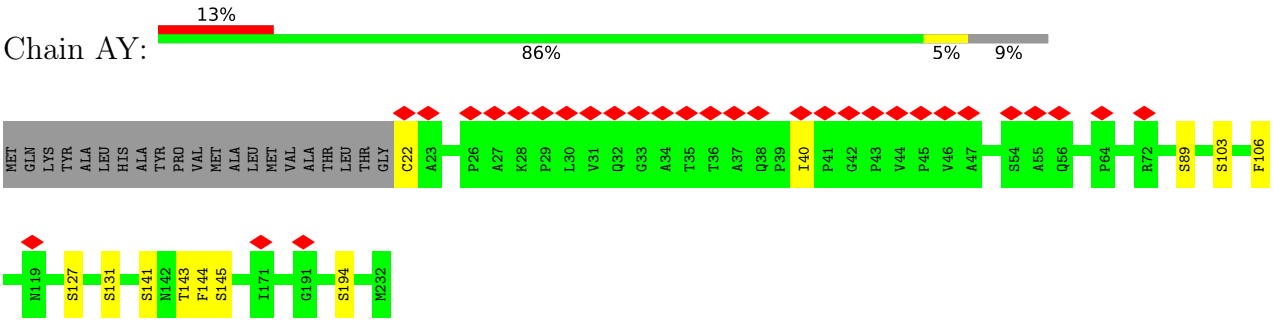


• Molecule 15: Flagellar L-ring protein

Chain AY:



• Molecule 15: Flagellar L-ring protein

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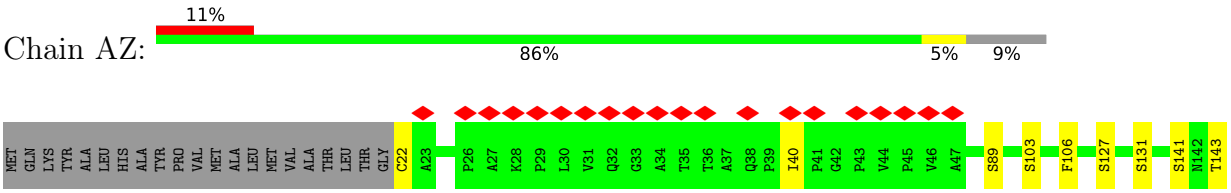
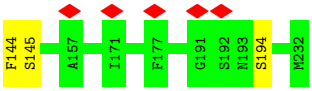
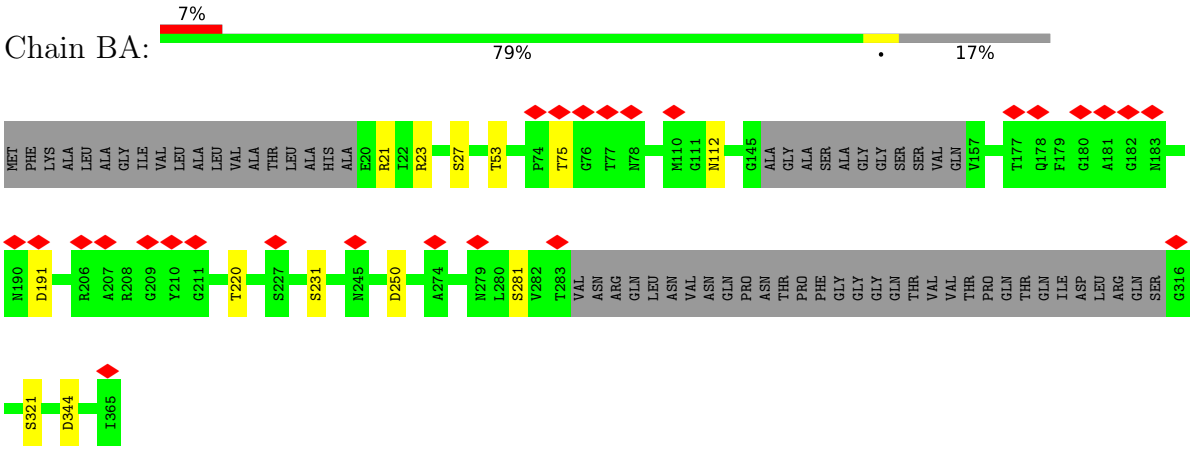




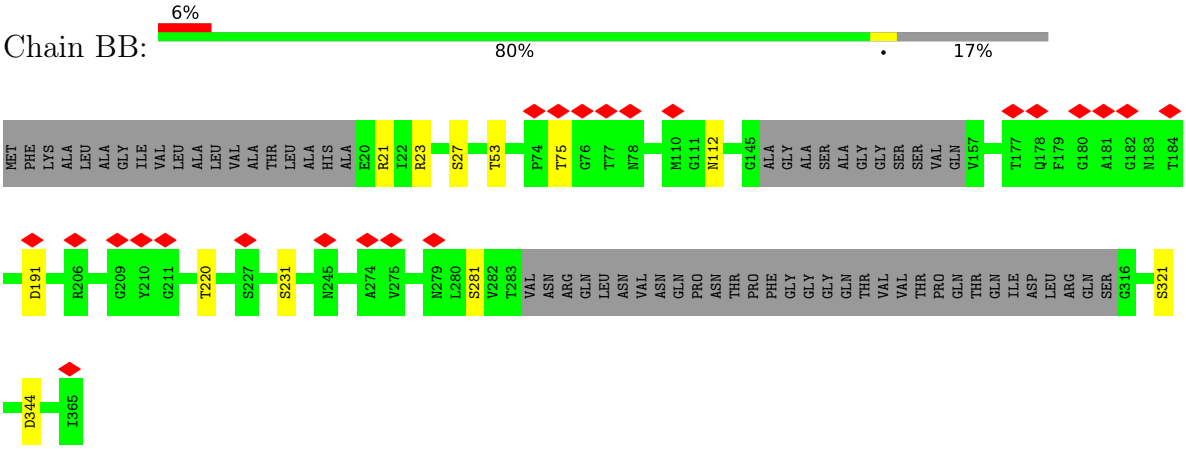
• Molecule 16: Flagellar P-ring protein

Chain BA:



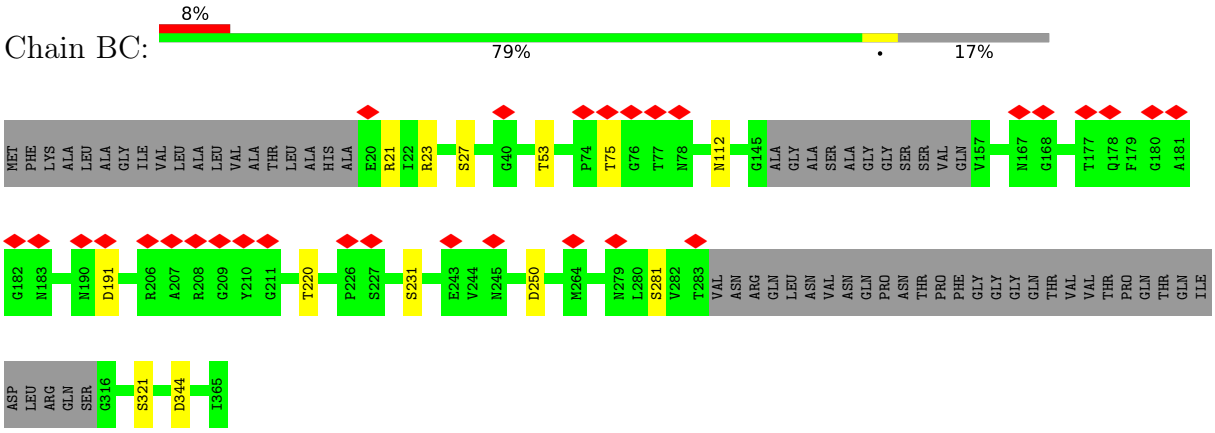
• Molecule 16: Flagellar P-ring protein

Chain BB:



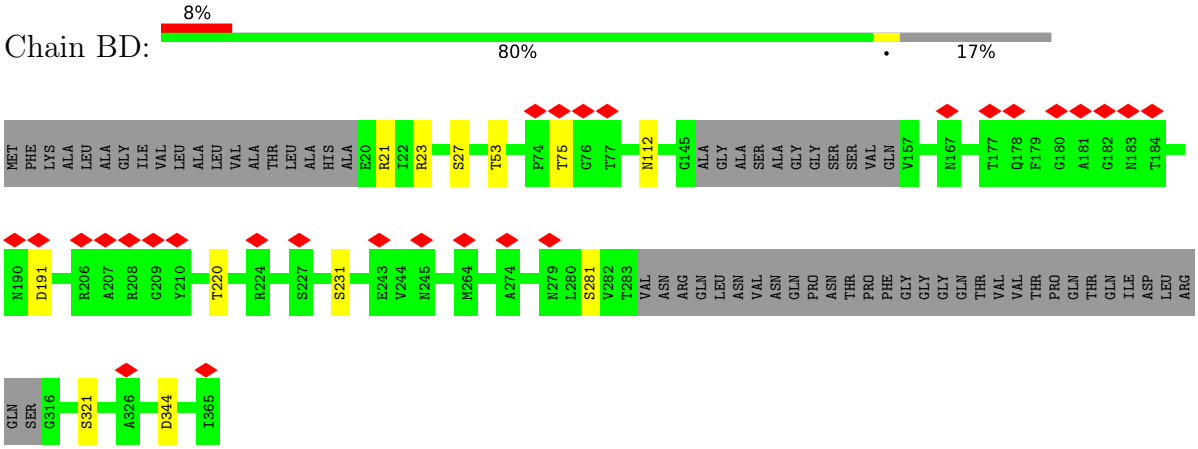
• Molecule 16: Flagellar P-ring protein

Chain BC:



• Molecule 16: Flagellar P-ring protein

Chain BD:



• Molecule 16: Flagellar P-ring protein

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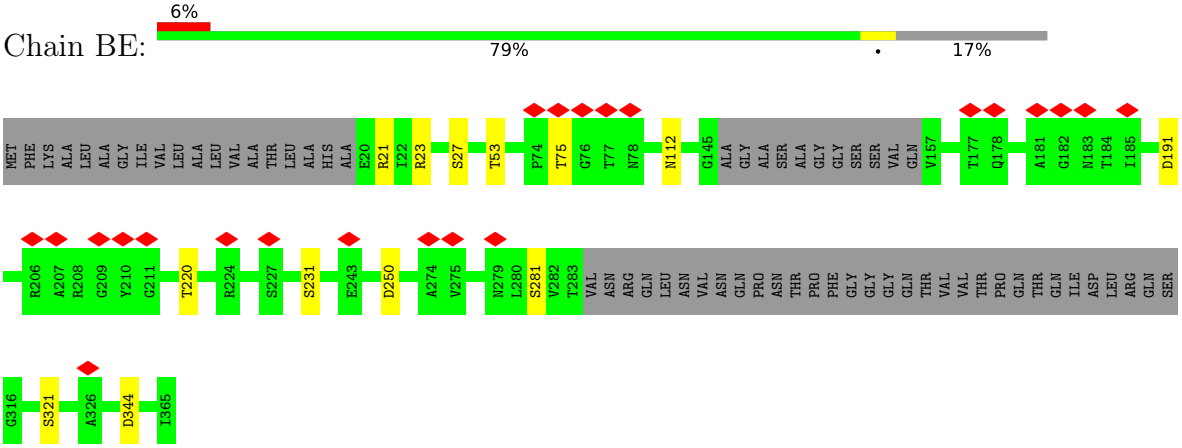
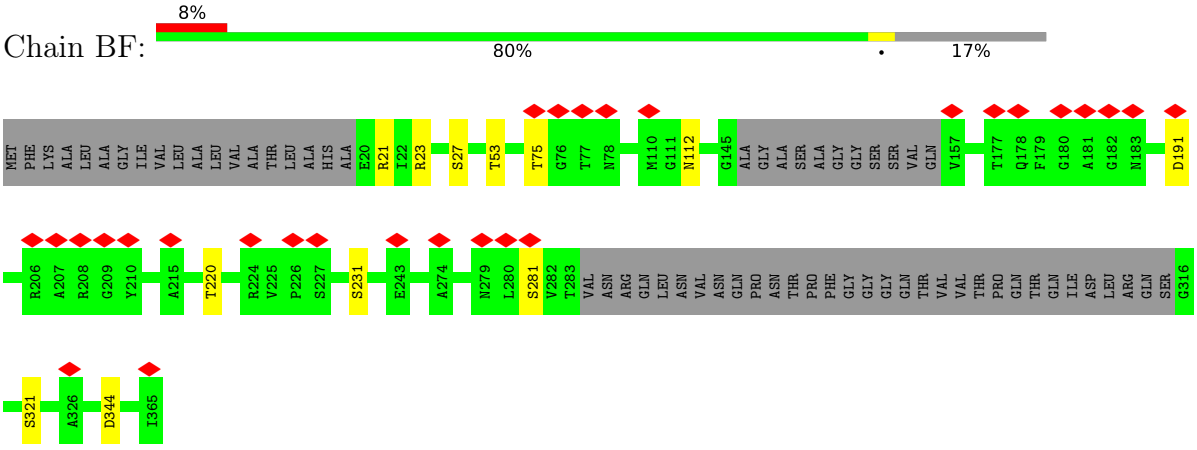


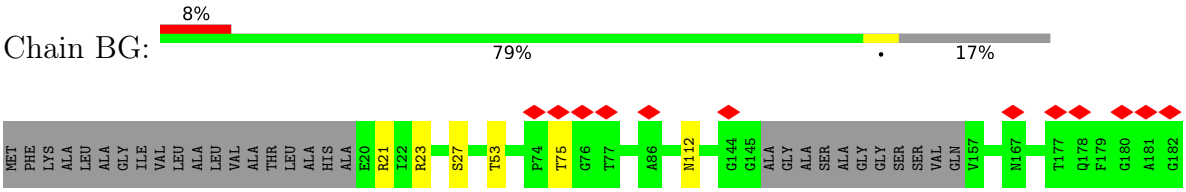
• Molecule 16: Flagellar P-ring protein

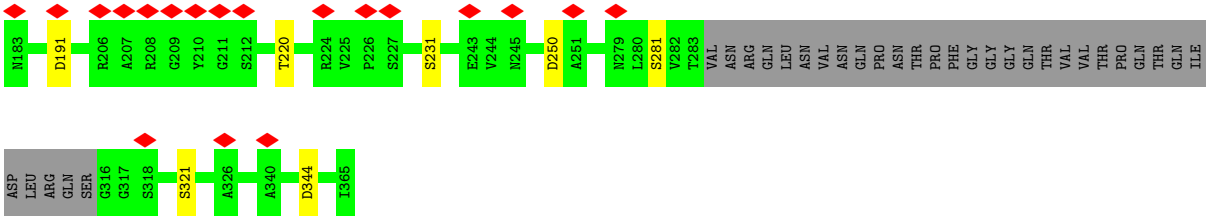
Chain BF:



• Molecule 16: Flagellar P-ring protein

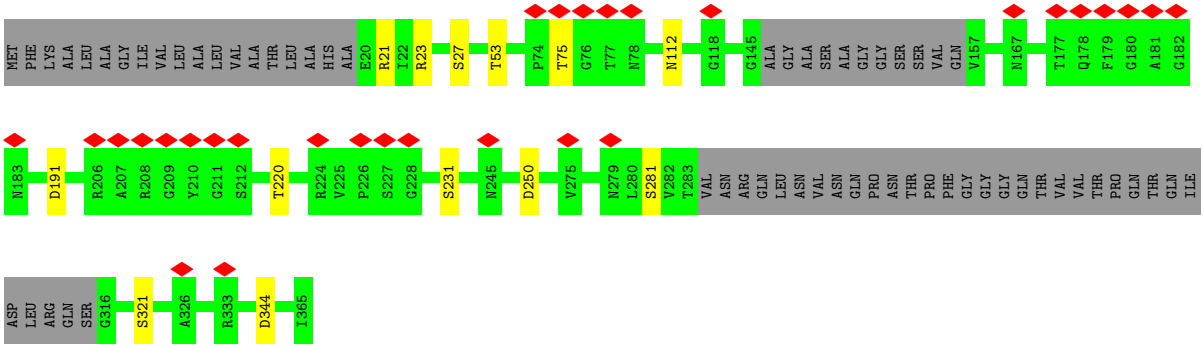
Chain BG:





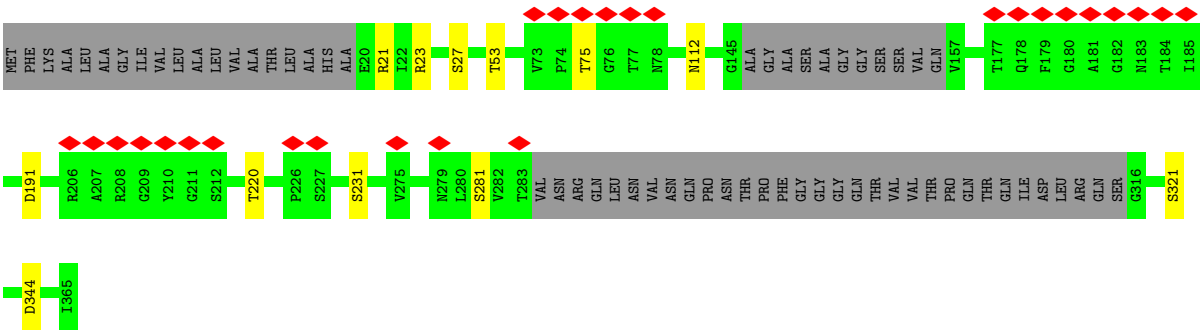
• Molecule 16: Flagellar P-ring protein

Chain BH:



• Molecule 16: Flagellar P-ring protein

Chain BI:



• Molecule 16: Flagellar P-ring protein

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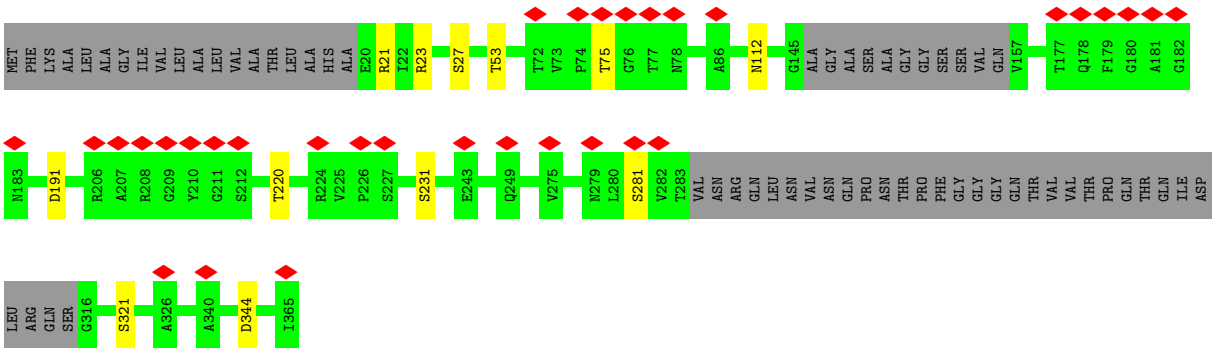

• Molecule 16: Flagellar P-ring protein

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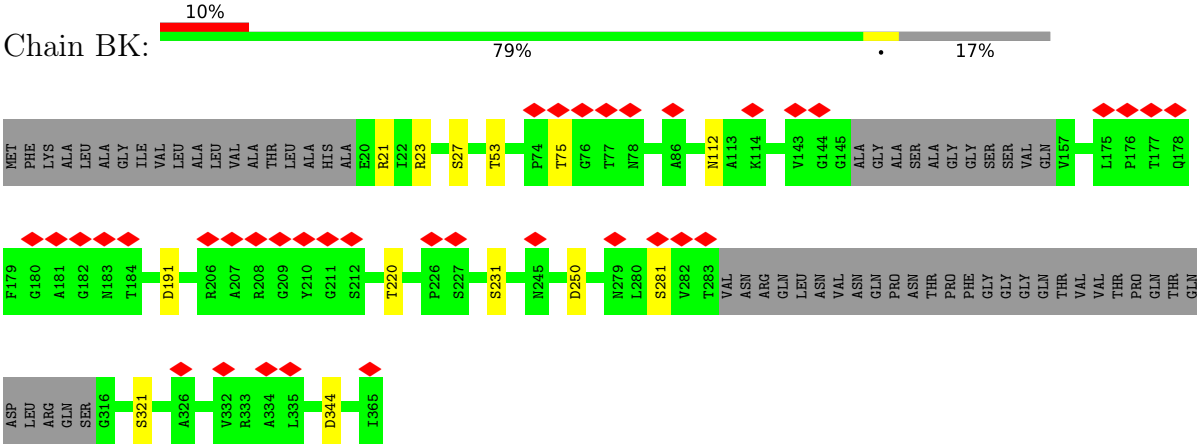
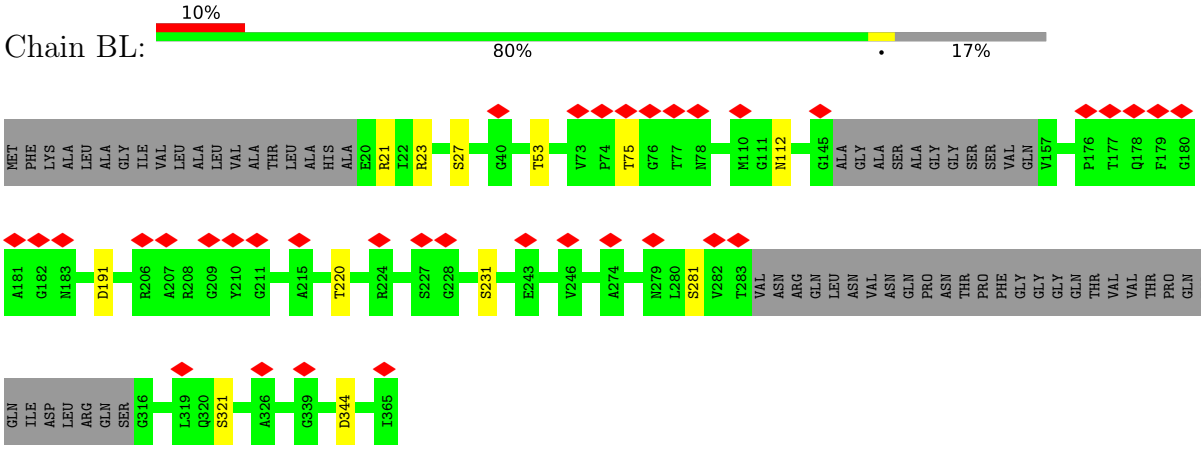


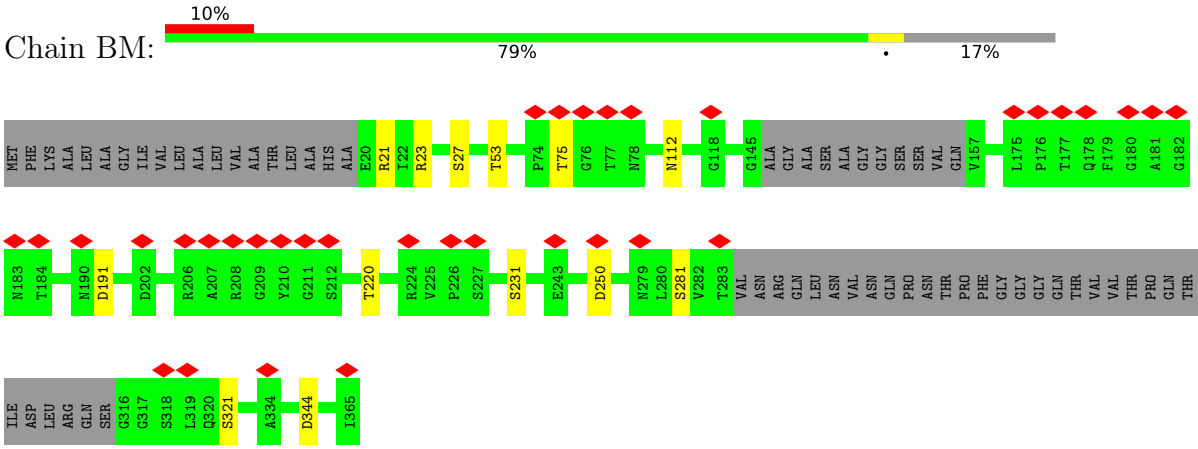
• Molecule 16: Flagellar P-ring protein

Chain BL:



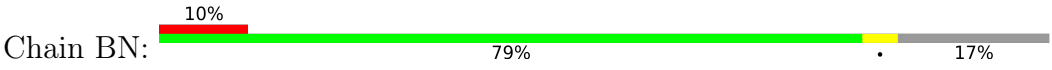
• Molecule 16: Flagellar P-ring protein

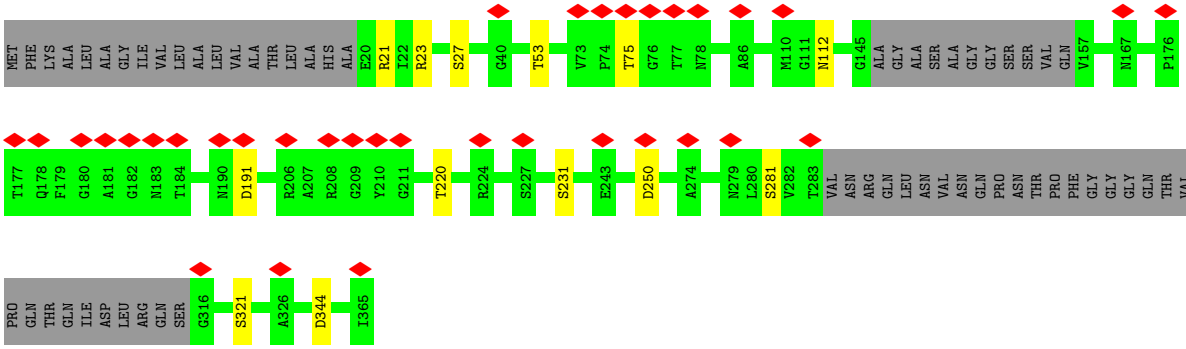
Chain BM:



• Molecule 16: Flagellar P-ring protein

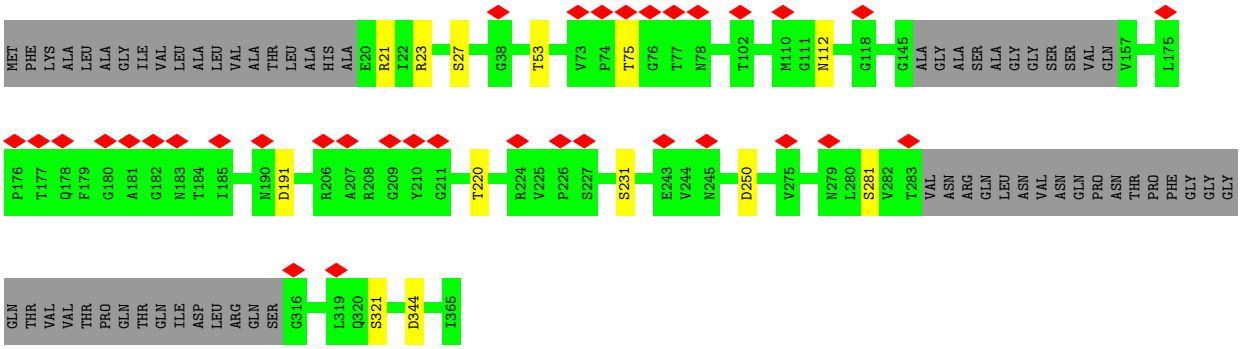
Chain BN:





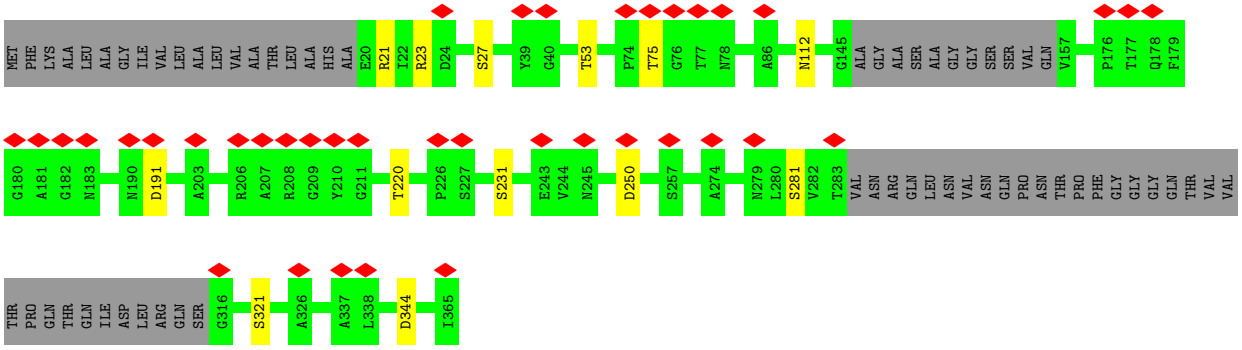
• Molecule 16: Flagellar P-ring protein

Chain BO:



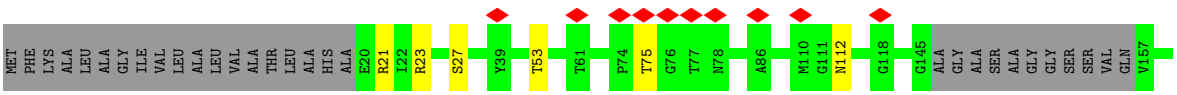
• Molecule 16: Flagellar P-ring protein

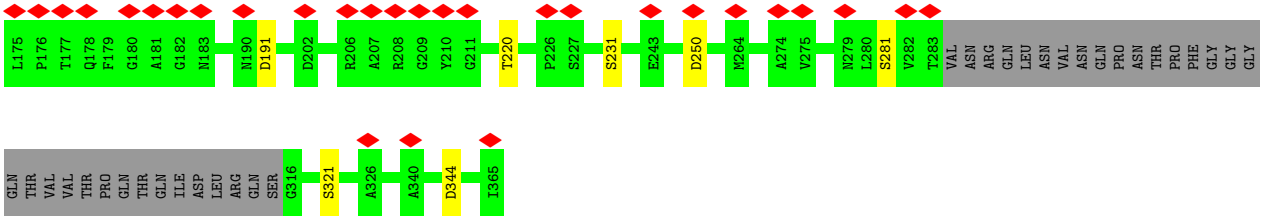
Chain BP:



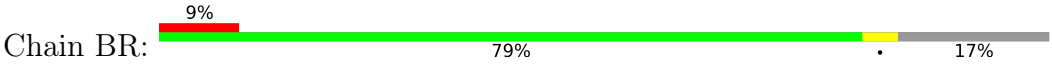
• Molecule 16: Flagellar P-ring protein

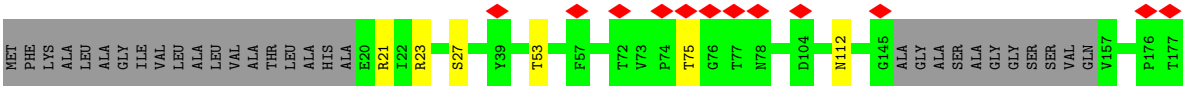
Chain BQ:

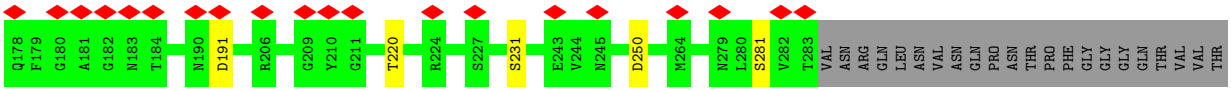


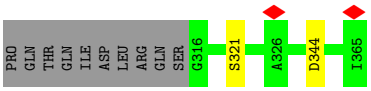


• Molecule 16: Flagellar P-ring protein

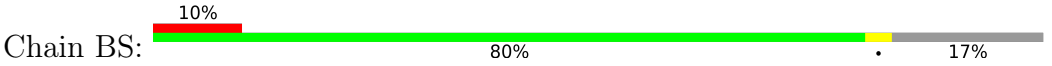


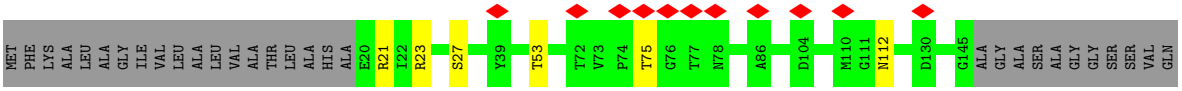


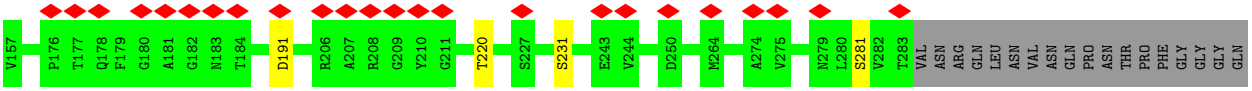


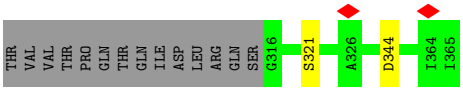


• Molecule 16: Flagellar P-ring protein

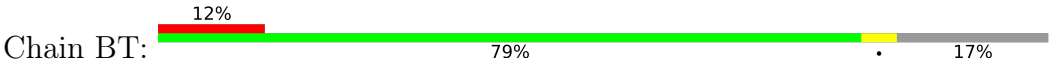


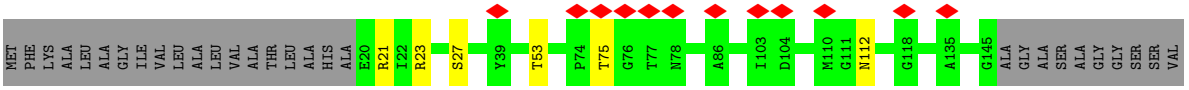


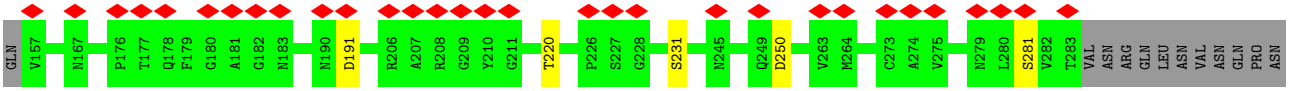


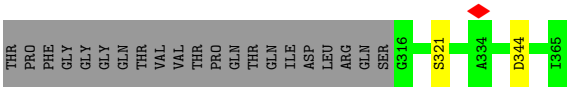


• Molecule 16: Flagellar P-ring protein



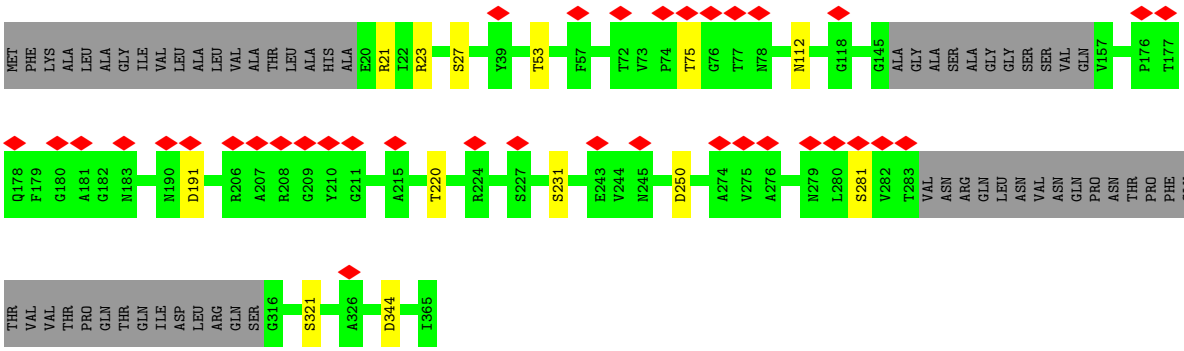






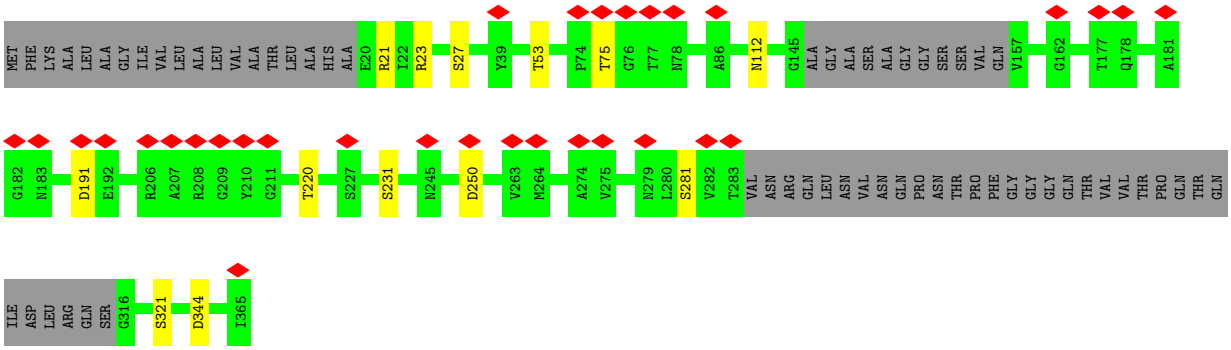
• Molecule 16: Flagellar P-ring protein

Chain BU:



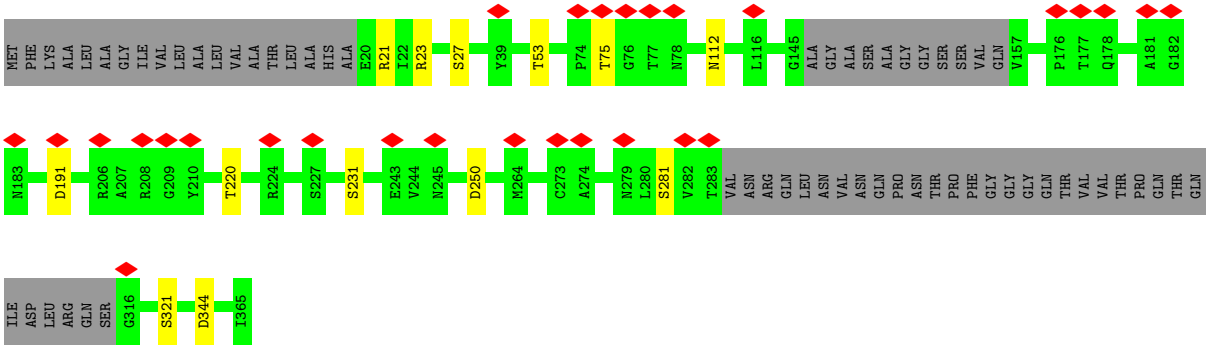
• Molecule 16: Flagellar P-ring protein

Chain BV:



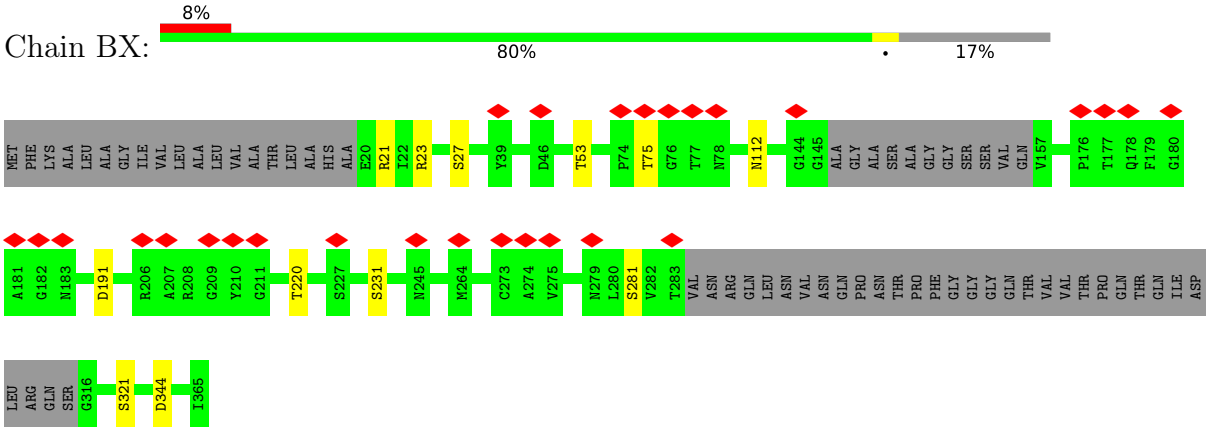
• Molecule 16: Flagellar P-ring protein

Chain BW:



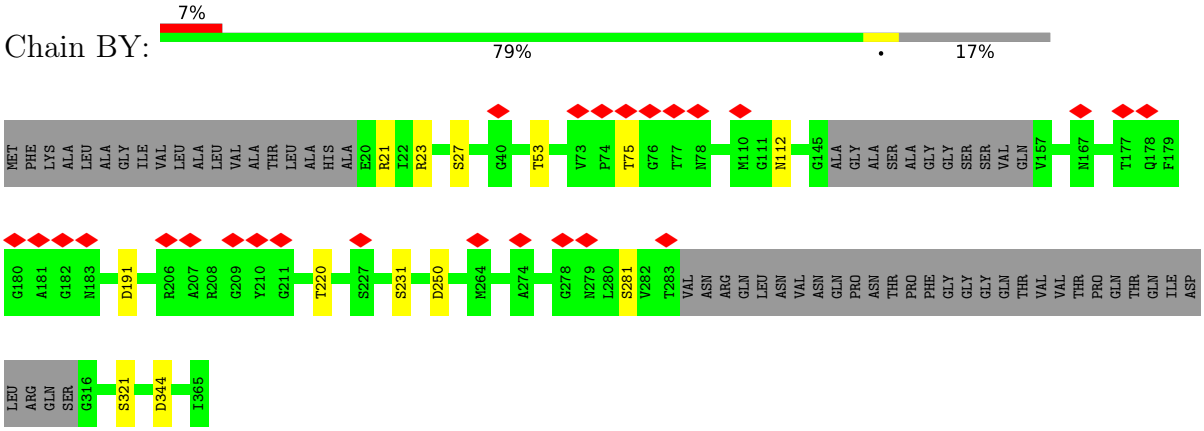
• Molecule 16: Flagellar P-ring protein

Chain BX:



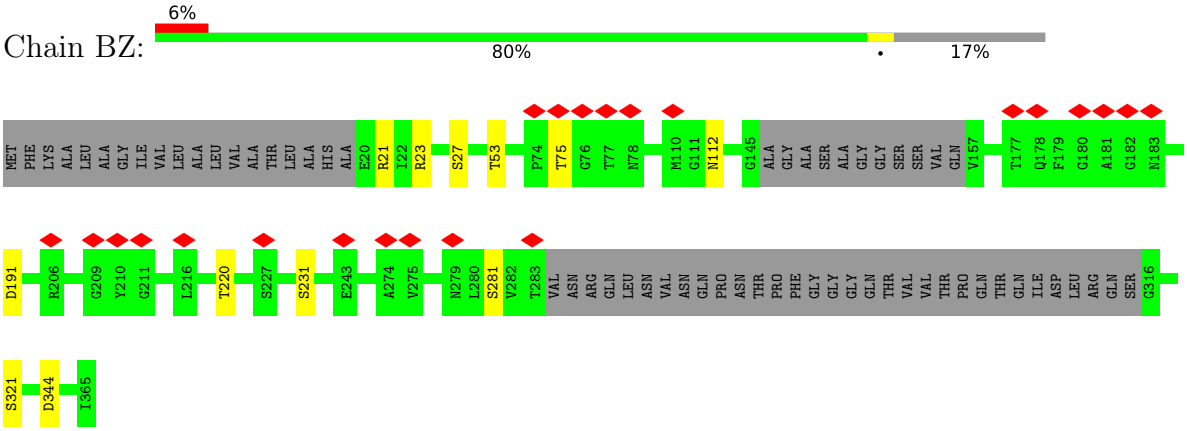
• Molecule 16: Flagellar P-ring protein

Chain BY:



• Molecule 16: Flagellar P-ring protein

Chain BZ:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	52714	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	1.383	Depositor
Minimum map value	-0.418	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.079	Depositor
Recommended contour level	0.38	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

Bond lengths and bond angles in the following residue types are not validated in this section: P1L

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	0.27	0/1973	0.48	0/2682
1	B	0.27	0/1973	0.48	0/2682
1	C	0.27	0/1973	0.48	0/2682
1	D	0.28	0/1973	0.48	0/2682
1	E	0.27	0/1973	0.49	0/2682
1	F	0.28	0/1973	0.48	0/2682
1	G	0.28	0/1973	0.49	0/2682
1	H	0.27	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	0.28	0/1973	0.50	0/2682
1	L	0.28	0/1965	0.47	0/2672
1	M	0.28	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	0.28	0/1898	0.48	0/2578
1	S	0.29	0/1880	0.50	0/2554
1	T	0.28	0/1925	0.47	0/2617
1	U	0.28	0/1965	0.48	0/2672
1	V	0.28	0/1965	0.47	0/2672
1	W	0.29	0/1965	0.49	0/2672
1	X	0.27	0/1965	0.49	1/2672 (0.0%)
2	a	0.27	0/1836	0.50	0/2502
2	b	0.26	0/1828	0.49	0/2492
2	c	0.27	0/1836	0.49	0/2502
2	d	0.27	0/1836	0.50	0/2502
2	e	0.26	0/1836	0.50	0/2502
4	5	0.28	0/145	0.42	0/203
4	6	0.26	0/145	0.43	0/203
4	7	0.40	0/145	0.55	0/203

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
4	8	0.27	0/145	0.41	0/203
4	9	0.26	0/145	0.44	0/203
5	f	0.27	0/946	0.44	0/1285
5	g	0.27	0/959	0.45	0/1302
5	h	0.28	0/945	0.45	0/1283
5	i	0.28	0/954	0.46	0/1295
5	j	0.28	0/941	0.46	0/1278
5	p	0.27	0/950	0.43	0/1290
6	k	0.26	0/859	0.48	0/1156
6	l	0.26	0/840	0.48	0/1131
6	m	0.26	0/840	0.47	0/1131
6	n	0.26	0/851	0.49	0/1145
6	o	0.25	0/863	0.50	0/1161
7	q	0.26	0/540	0.44	0/723
7	r	0.26	0/529	0.46	0/709
7	s	0.26	0/547	0.44	0/733
7	t	0.25	0/547	0.44	0/733
7	u	0.25	0/547	0.46	0/733
7	v	0.24	0/289	0.39	0/385
8	DA	0.26	0/2991	0.45	0/4076
8	DB	0.26	0/2991	0.45	0/4076
8	DC	0.26	0/2991	0.45	0/4076
8	DD	0.26	0/2991	0.45	0/4076
8	DE	0.26	0/2991	0.45	0/4076
8	DF	0.25	0/2991	0.45	0/4076
8	DG	0.25	0/2991	0.45	0/4076
8	DH	0.26	0/2991	0.45	0/4076
8	DI	0.26	0/2991	0.46	0/4076
8	DJ	0.28	0/2991	0.48	1/4076 (0.0%)
8	DK	0.26	0/2991	0.47	1/4076 (0.0%)
8	DL	0.45	1/2991 (0.0%)	0.67	3/4076 (0.1%)
8	DM	0.34	0/2991	0.60	1/4076 (0.0%)
8	DN	0.41	1/2991 (0.0%)	0.65	1/4076 (0.0%)
8	DO	0.39	0/2991	0.65	0/4076
8	DP	0.29	0/2991	0.55	1/4076 (0.0%)
8	DQ	0.33	1/2991 (0.0%)	0.55	0/4076
8	DR	0.26	0/2991	0.51	0/4076
8	DS	0.28	0/2991	0.53	1/4076 (0.0%)
8	DT	0.27	0/2991	0.49	0/4076
8	DU	0.28	0/2991	0.54	1/4076 (0.0%)
8	DV	0.27	0/2991	0.52	0/4076
8	DW	0.26	0/2991	0.51	1/4076 (0.0%)
8	DX	0.26	0/2991	0.49	1/4076 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
8	DY	0.27	0/2991	0.51	1/4076 (0.0%)
8	DZ	0.27	0/2991	0.50	0/4076
8	EA	0.26	0/2991	0.50	0/4076
8	EB	0.26	0/2991	0.50	0/4076
8	EC	0.27	0/2991	0.51	1/4076 (0.0%)
8	ED	0.26	0/2991	0.49	0/4076
8	EE	0.26	0/2991	0.49	0/4076
8	EF	0.26	0/2991	0.49	0/4076
8	EG	0.26	0/2991	0.50	0/4076
9	CE	0.25	0/2052	0.44	0/2803
10	CA	0.24	0/681	0.45	1/930 (0.1%)
10	CB	0.25	0/681	0.44	0/930
10	CC	0.24	0/681	0.46	1/930 (0.1%)
10	CD	0.24	0/681	0.46	0/930
11	CF	0.25	0/1675	0.44	0/2280
11	w	0.27	0/1675	0.44	0/2280
11	x	0.26	0/1675	0.44	0/2280
11	y	0.26	0/1675	0.46	0/2280
11	z	0.26	0/1675	0.44	0/2280
12	Ca	0.31	0/1197	0.45	0/1613
12	Cb	0.31	0/1197	0.45	0/1613
12	Cc	0.31	0/1197	0.45	0/1613
12	Cd	0.31	0/1197	0.45	0/1613
12	Ce	0.31	0/1197	0.45	0/1613
12	Cf	0.32	0/1197	0.45	0/1613
12	Cg	0.31	0/1197	0.45	0/1613
12	Ch	0.32	0/1197	0.45	0/1613
12	Ci	0.31	0/1197	0.45	0/1613
12	Cj	0.31	0/1197	0.45	0/1613
12	Ck	0.31	0/1197	0.45	0/1613
12	Cl	0.32	0/1197	0.45	0/1613
12	Cm	0.31	0/1197	0.45	0/1613
12	Cn	0.31	0/1197	0.45	0/1613
12	Co	0.31	0/1197	0.45	0/1613
12	Cp	0.31	0/1197	0.45	0/1613
12	Cq	0.31	0/1197	0.45	0/1613
12	Cr	0.32	0/1197	0.45	0/1613
12	Cs	0.31	0/1197	0.45	0/1613
12	Ct	0.32	0/1197	0.45	0/1613
12	Cu	0.31	0/1197	0.45	0/1613
12	Cv	0.31	0/1197	0.45	0/1613
12	Cw	0.31	0/1197	0.45	0/1613
12	Cx	0.31	0/1197	0.45	0/1613

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
12	Cy	0.31	0/1197	0.45	0/1613
12	Cz	0.31	0/1197	0.45	0/1613
12	Da	0.45	0/756	0.59	0/1036
12	Db	0.76	3/756 (0.4%)	0.67	1/1036 (0.1%)
12	Dc	0.46	0/756	0.56	0/1036
12	Dd	0.45	0/756	0.66	1/1036 (0.1%)
12	De	0.40	0/705	0.53	0/963
12	Df	0.76	3/697 (0.4%)	0.68	1/954 (0.1%)
12	Dg	0.37	0/646	0.52	0/881
12	Dh	0.37	0/646	0.52	0/881
12	Di	0.37	0/646	0.52	0/881
12	Dj	0.37	0/646	0.52	0/881
12	Dk	0.37	0/646	0.52	0/881
12	Dl	0.37	0/646	0.52	0/881
12	Dm	0.37	0/646	0.52	0/881
12	Dn	0.37	0/646	0.52	0/881
12	Do	0.38	0/697	0.53	0/954
12	Dp	0.44	0/756	0.58	0/1036
12	Dq	0.46	0/756	0.73	3/1036 (0.3%)
12	Dr	0.55	1/756 (0.1%)	0.59	0/1036
12	Ds	0.55	1/756 (0.1%)	0.66	2/1036 (0.2%)
12	Dt	0.45	0/756	0.59	0/1036
12	Du	0.45	0/756	0.62	1/1036 (0.1%)
12	Dv	0.44	0/756	0.58	0/1036
12	Dw	0.45	0/756	0.66	1/1036 (0.1%)
12	Ea	0.31	0/1197	0.45	0/1613
12	Eb	0.31	0/1197	0.45	0/1613
12	Ec	0.32	0/1197	0.45	0/1613
12	Ed	0.31	0/1197	0.45	0/1613
12	Ee	0.31	0/1197	0.45	0/1613
12	Ef	0.31	0/1197	0.45	0/1613
12	Eg	0.31	0/1197	0.45	0/1613
12	Eh	0.31	0/1197	0.45	0/1613
15	AA	0.36	0/1607	0.48	0/2186
15	AB	0.36	0/1607	0.47	0/2186
15	AC	0.36	0/1607	0.47	0/2186
15	AD	0.36	0/1607	0.47	0/2186
15	AE	0.36	0/1607	0.47	0/2186
15	AF	0.36	0/1607	0.47	0/2186
15	AG	0.36	0/1607	0.47	0/2186
15	AH	0.36	0/1607	0.47	0/2186
15	AI	0.36	0/1607	0.47	0/2186
15	AJ	0.36	0/1607	0.47	0/2186

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
15	AK	0.36	0/1607	0.47	0/2186
15	AL	0.36	0/1607	0.47	0/2186
15	AM	0.36	0/1607	0.47	0/2186
15	AN	0.36	0/1607	0.47	0/2186
15	AO	0.36	0/1607	0.47	0/2186
15	AP	0.36	0/1607	0.47	0/2186
15	AQ	0.36	0/1607	0.47	0/2186
15	AR	0.36	0/1607	0.47	0/2186
15	AS	0.36	0/1607	0.47	0/2186
15	AT	0.36	0/1607	0.47	0/2186
15	AU	0.36	0/1607	0.47	0/2186
15	AV	0.36	0/1607	0.47	0/2186
15	AW	0.36	0/1607	0.47	0/2186
15	AX	0.36	0/1607	0.48	0/2186
15	AY	0.36	0/1607	0.47	0/2186
15	AZ	0.36	0/1607	0.47	0/2186
16	BA	0.33	0/2243	0.47	0/3041
16	BB	0.33	0/2243	0.47	0/3041
16	BC	0.33	0/2243	0.47	0/3041
16	BD	0.33	0/2243	0.47	0/3041
16	BE	0.33	0/2243	0.47	0/3041
16	BF	0.33	0/2243	0.47	0/3041
16	BG	0.33	0/2243	0.47	0/3041
16	BH	0.33	0/2243	0.47	0/3041
16	BI	0.33	0/2243	0.47	0/3041
16	BJ	0.33	0/2243	0.47	0/3041
16	BK	0.33	0/2243	0.47	0/3041
16	BL	0.33	0/2243	0.47	0/3041
16	BM	0.33	0/2243	0.47	0/3041
16	BN	0.33	0/2243	0.47	0/3041
16	BO	0.33	0/2243	0.47	0/3041
16	BP	0.33	0/2243	0.47	0/3041
16	BQ	0.33	0/2243	0.47	0/3041
16	BR	0.33	0/2243	0.47	0/3041
16	BS	0.33	0/2243	0.47	0/3041
16	BT	0.33	0/2243	0.47	0/3041
16	BU	0.33	0/2243	0.47	0/3041
16	BV	0.33	0/2243	0.47	0/3041
16	BW	0.33	0/2243	0.47	0/3041
16	BX	0.33	0/2243	0.47	0/3041
16	BY	0.33	0/2243	0.47	0/3041
16	BZ	0.33	0/2243	0.47	0/3041
All	All	0.31	11/338629 (0.0%)	0.49	27/460118 (0.0%)

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	Db	160	PRO	N-CA	13.20	1.69	1.47
12	Df	160	PRO	N-CA	13.19	1.69	1.47
12	Df	171	SER	C-N	8.88	1.51	1.34
8	DL	133	ASN	C-N	8.75	1.50	1.34
8	DQ	285	LYS	C-N	8.73	1.50	1.34
12	Dr	171	SER	C-N	8.68	1.50	1.34
12	Ds	171	SER	C-N	8.50	1.50	1.34
12	Db	171	SER	C-N	8.42	1.50	1.34
12	Db	159	MET	C-N	6.09	1.45	1.34
12	Df	159	MET	C-N	6.07	1.45	1.34
8	DN	384	SER	CA-CB	-5.38	1.44	1.52

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	Df	160	PRO	CA-N-CD	-10.68	96.54	111.50
12	Dq	160	PRO	N-CA-CB	-10.52	90.67	103.30
12	Db	160	PRO	CA-N-CD	-10.51	96.78	111.50
12	Dd	160	PRO	N-CA-CB	-9.96	91.34	103.30
12	Dw	160	PRO	N-CA-CB	-8.37	93.25	103.30
8	DS	10	LEU	CA-CB-CG	8.05	133.81	115.30
12	Ds	160	PRO	N-CA-CB	-7.78	93.97	103.30
8	DW	284	TYR	C-N-CA	6.99	139.17	121.70
8	DY	10	LEU	CA-CB-CG	6.84	131.03	115.30
8	DU	401	ASN	CB-CA-C	6.83	124.06	110.40
8	DM	323	ASN	C-N-CA	6.58	138.15	121.70
8	DN	50	LEU	CA-C-N	6.08	128.37	116.20
8	DP	390	LYS	CB-CA-C	-5.87	98.66	110.40
1	X	204	SER	C-N-CA	5.85	136.33	121.70
12	Dq	160	PRO	CB-CA-C	-5.74	97.64	112.00
8	DJ	383	GLN	CB-CA-C	-5.64	99.12	110.40
8	DL	5	GLN	C-N-CA	-5.61	107.67	121.70
8	DL	388	THR	CA-CB-OG1	-5.47	97.51	109.00
8	DK	104	GLU	CB-CA-C	5.37	121.14	110.40
12	Du	160	PRO	N-CA-CB	-5.35	96.72	102.60
8	DL	397	ASN	CB-CA-C	-5.29	99.82	110.40
12	Dq	160	PRO	N-CA-C	5.20	125.62	112.10
8	EC	125	PRO	CA-N-CD	-5.09	104.38	111.50
12	Ds	160	PRO	CA-N-CD	-5.06	104.41	111.50
8	DX	10	LEU	CA-CB-CG	5.05	126.93	115.30
10	CC	42	THR	C-N-CA	5.04	134.30	121.70
10	CA	42	THR	C-N-CA	5.03	134.28	121.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	258/260 (99%)	249 (96%)	9 (4%)	0	100	100
1	B	258/260 (99%)	247 (96%)	11 (4%)	0	100	100
1	C	258/260 (99%)	247 (96%)	11 (4%)	0	100	100
1	D	258/260 (99%)	248 (96%)	10 (4%)	0	100	100
1	E	258/260 (99%)	246 (95%)	12 (5%)	0	100	100
1	F	258/260 (99%)	248 (96%)	10 (4%)	0	100	100
1	G	258/260 (99%)	247 (96%)	11 (4%)	0	100	100
1	H	258/260 (99%)	245 (95%)	13 (5%)	0	100	100
1	I	258/260 (99%)	248 (96%)	10 (4%)	0	100	100
1	J	258/260 (99%)	251 (97%)	7 (3%)	0	100	100
1	K	258/260 (99%)	248 (96%)	10 (4%)	0	100	100
1	L	257/260 (99%)	250 (97%)	7 (3%)	0	100	100
1	M	258/260 (99%)	247 (96%)	11 (4%)	0	100	100
1	N	247/260 (95%)	240 (97%)	7 (3%)	0	100	100
1	O	248/260 (95%)	240 (97%)	8 (3%)	0	100	100
1	P	244/260 (94%)	236 (97%)	8 (3%)	0	100	100
1	Q	243/260 (94%)	237 (98%)	6 (2%)	0	100	100
1	R	246/260 (95%)	238 (97%)	8 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	S	243/260 (94%)	235 (97%)	8 (3%)	0	100	100
1	T	249/260 (96%)	241 (97%)	8 (3%)	0	100	100
1	U	257/260 (99%)	243 (95%)	14 (5%)	0	100	100
1	V	257/260 (99%)	249 (97%)	8 (3%)	0	100	100
1	W	257/260 (99%)	242 (94%)	15 (6%)	0	100	100
1	X	257/260 (99%)	244 (95%)	13 (5%)	0	100	100
2	a	247/251 (98%)	235 (95%)	12 (5%)	0	100	100
2	b	246/251 (98%)	236 (96%)	10 (4%)	0	100	100
2	c	247/251 (98%)	237 (96%)	10 (4%)	0	100	100
2	d	247/251 (98%)	232 (94%)	15 (6%)	0	100	100
2	e	247/251 (98%)	231 (94%)	16 (6%)	0	100	100
4	5	19/21 (90%)	19 (100%)	0	0	100	100
4	6	19/21 (90%)	19 (100%)	0	0	100	100
4	7	19/21 (90%)	19 (100%)	0	0	100	100
4	8	19/21 (90%)	18 (95%)	1 (5%)	0	100	100
4	9	19/21 (90%)	19 (100%)	0	0	100	100
5	f	124/134 (92%)	121 (98%)	3 (2%)	0	100	100
5	g	126/134 (94%)	121 (96%)	5 (4%)	0	100	100
5	h	124/134 (92%)	120 (97%)	4 (3%)	0	100	100
5	i	125/134 (93%)	121 (97%)	4 (3%)	0	100	100
5	j	123/134 (92%)	119 (97%)	4 (3%)	0	100	100
5	p	125/134 (93%)	120 (96%)	5 (4%)	0	100	100
6	k	104/138 (75%)	99 (95%)	5 (5%)	0	100	100
6	l	102/138 (74%)	101 (99%)	1 (1%)	0	100	100
6	m	102/138 (74%)	99 (97%)	3 (3%)	0	100	100
6	n	103/138 (75%)	99 (96%)	4 (4%)	0	100	100
6	o	105/138 (76%)	103 (98%)	2 (2%)	0	100	100
7	q	69/104 (66%)	68 (99%)	1 (1%)	0	100	100
7	r	68/104 (65%)	64 (94%)	4 (6%)	0	100	100
7	s	70/104 (67%)	70 (100%)	0	0	100	100
7	t	70/104 (67%)	69 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	u	70/104 (67%)	70 (100%)	0	0	100	100
7	v	36/104 (35%)	36 (100%)	0	0	100	100
8	DA	399/403 (99%)	377 (94%)	22 (6%)	0	100	100
8	DB	399/403 (99%)	377 (94%)	22 (6%)	0	100	100
8	DC	399/403 (99%)	375 (94%)	24 (6%)	0	100	100
8	DD	399/403 (99%)	378 (95%)	21 (5%)	0	100	100
8	DE	399/403 (99%)	380 (95%)	19 (5%)	0	100	100
8	DF	399/403 (99%)	376 (94%)	23 (6%)	0	100	100
8	DG	399/403 (99%)	382 (96%)	17 (4%)	0	100	100
8	DH	399/403 (99%)	378 (95%)	19 (5%)	2 (0%)	25	60
8	DI	399/403 (99%)	381 (96%)	18 (4%)	0	100	100
8	DJ	399/403 (99%)	375 (94%)	23 (6%)	1 (0%)	37	70
8	DK	399/403 (99%)	386 (97%)	13 (3%)	0	100	100
8	DL	399/403 (99%)	369 (92%)	27 (7%)	3 (1%)	16	51
8	DM	399/403 (99%)	383 (96%)	14 (4%)	2 (0%)	25	60
8	DN	399/403 (99%)	366 (92%)	31 (8%)	2 (0%)	25	60
8	DO	399/403 (99%)	373 (94%)	23 (6%)	3 (1%)	16	51
8	DP	399/403 (99%)	375 (94%)	24 (6%)	0	100	100
8	DQ	399/403 (99%)	379 (95%)	20 (5%)	0	100	100
8	DR	399/403 (99%)	382 (96%)	17 (4%)	0	100	100
8	DS	399/403 (99%)	381 (96%)	18 (4%)	0	100	100
8	DT	399/403 (99%)	377 (94%)	22 (6%)	0	100	100
8	DU	399/403 (99%)	381 (96%)	18 (4%)	0	100	100
8	DV	399/403 (99%)	374 (94%)	23 (6%)	2 (0%)	25	60
8	DW	399/403 (99%)	381 (96%)	18 (4%)	0	100	100
8	DX	399/403 (99%)	380 (95%)	19 (5%)	0	100	100
8	DY	399/403 (99%)	378 (95%)	21 (5%)	0	100	100
8	DZ	399/403 (99%)	377 (94%)	22 (6%)	0	100	100
8	EA	399/403 (99%)	378 (95%)	21 (5%)	0	100	100
8	EB	399/403 (99%)	373 (94%)	26 (6%)	0	100	100
8	EC	399/403 (99%)	385 (96%)	14 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	ED	399/403 (99%)	380 (95%)	19 (5%)	0	100	100
8	EE	399/403 (99%)	379 (95%)	20 (5%)	0	100	100
8	EF	399/403 (99%)	379 (95%)	20 (5%)	0	100	100
8	EG	399/403 (99%)	376 (94%)	23 (6%)	0	100	100
9	CE	258/264 (98%)	239 (93%)	18 (7%)	1 (0%)	30	65
10	CA	87/89 (98%)	77 (88%)	10 (12%)	0	100	100
10	CB	87/89 (98%)	78 (90%)	9 (10%)	0	100	100
10	CC	87/89 (98%)	77 (88%)	10 (12%)	0	100	100
10	CD	87/89 (98%)	77 (88%)	10 (12%)	0	100	100
11	CF	209/245 (85%)	203 (97%)	6 (3%)	0	100	100
11	w	209/245 (85%)	203 (97%)	6 (3%)	0	100	100
11	x	209/245 (85%)	197 (94%)	12 (6%)	0	100	100
11	y	209/245 (85%)	201 (96%)	8 (4%)	0	100	100
11	z	209/245 (85%)	204 (98%)	5 (2%)	0	100	100
12	Ca	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cb	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cc	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cd	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ce	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cf	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cg	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ch	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ci	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cj	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ck	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cl	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cm	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cn	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Co	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cp	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cq	144/560 (26%)	136 (94%)	8 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
12	Cr	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cs	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ct	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cu	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cv	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cw	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cx	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cy	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Cz	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Da	107/560 (19%)	94 (88%)	10 (9%)	3 (3%)	4	28
12	Db	107/560 (19%)	95 (89%)	10 (9%)	2 (2%)	6	34
12	Dc	107/560 (19%)	93 (87%)	10 (9%)	4 (4%)	2	23
12	Dd	107/560 (19%)	93 (87%)	12 (11%)	2 (2%)	6	34
12	De	95/560 (17%)	86 (90%)	8 (8%)	1 (1%)	12	45
12	Df	95/560 (17%)	83 (87%)	12 (13%)	0	100	100
12	Dg	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Dh	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Di	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Dj	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Dk	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Dl	83/560 (15%)	76 (92%)	6 (7%)	1 (1%)	11	43
12	Dm	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Dn	83/560 (15%)	75 (90%)	7 (8%)	1 (1%)	11	43
12	Do	95/560 (17%)	86 (90%)	7 (7%)	2 (2%)	5	33
12	Dp	107/560 (19%)	94 (88%)	12 (11%)	1 (1%)	14	48
12	Dq	107/560 (19%)	96 (90%)	8 (8%)	3 (3%)	4	28
12	Dr	107/560 (19%)	96 (90%)	10 (9%)	1 (1%)	14	48
12	Ds	107/560 (19%)	93 (87%)	11 (10%)	3 (3%)	4	28
12	Dt	107/560 (19%)	93 (87%)	11 (10%)	3 (3%)	4	28
12	Du	107/560 (19%)	94 (88%)	11 (10%)	2 (2%)	6	34
12	Dv	107/560 (19%)	96 (90%)	8 (8%)	3 (3%)	4	28

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
12	Dw	107/560 (19%)	90 (84%)	13 (12%)	4 (4%)	2	23
12	Ea	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Eb	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ec	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ed	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ee	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Ef	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Eg	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
12	Eh	144/560 (26%)	136 (94%)	8 (6%)	0	100	100
15	AA	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AB	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AC	209/232 (90%)	198 (95%)	11 (5%)	0	100	100
15	AD	209/232 (90%)	198 (95%)	11 (5%)	0	100	100
15	AE	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AF	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AG	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AH	209/232 (90%)	198 (95%)	11 (5%)	0	100	100
15	AI	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AJ	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AK	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AL	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AM	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AN	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AO	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AP	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AQ	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AR	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AS	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AT	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AU	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AV	209/232 (90%)	199 (95%)	10 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
15	AW	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AX	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
15	AY	209/232 (90%)	198 (95%)	11 (5%)	0	100	100
15	AZ	209/232 (90%)	199 (95%)	10 (5%)	0	100	100
16	BA	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BB	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BC	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BD	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BE	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BF	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BG	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BH	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BI	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BJ	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BK	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BL	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BM	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BN	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BO	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BP	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BQ	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BR	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BS	297/365 (81%)	290 (98%)	6 (2%)	1 (0%)	37	70
16	BT	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BU	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BV	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BW	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BX	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BY	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
16	BZ	297/365 (81%)	291 (98%)	5 (2%)	1 (0%)	37	70
All	All	44179/72304 (61%)	42089 (95%)	2006 (4%)	84 (0%)	45	75

All (84) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	DJ	332	ASN
12	Dc	124	SER
12	Dc	125	GLN
12	Dd	160	PRO
12	Dq	124	SER
12	Dq	160	PRO
12	Ds	160	PRO
12	Du	160	PRO
12	Dw	127	SER
12	Dw	160	PRO
8	DN	22	ASN
12	Da	160	PRO
12	Da	171	SER
12	Db	165	PHE
12	Dd	125	GLN
12	Dr	122	GLY
12	Ds	127	SER
12	Dv	162	PRO
8	DM	324	GLU
8	DO	52	VAL
8	DH	270	ASN
12	Do	160	PRO
12	Dp	160	PRO
12	Dt	171	SER
12	Dv	163	SER
12	Da	172	PRO
12	Dc	170	LYS
12	Dw	126	PHE
16	BA	112	ASN
16	BB	112	ASN
16	BC	112	ASN
16	BD	112	ASN
16	BE	112	ASN
16	BF	112	ASN
16	BG	112	ASN
16	BH	112	ASN
16	BI	112	ASN
16	BJ	112	ASN
16	BK	112	ASN
16	BL	112	ASN
16	BM	112	ASN
16	BN	112	ASN

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Mol	Chain	Res	Type
16	BO	112	ASN
16	BP	112	ASN
16	BQ	112	ASN
16	BR	112	ASN
16	BS	112	ASN
16	BT	112	ASN
16	BU	112	ASN
16	BV	112	ASN
16	BW	112	ASN
16	BX	112	ASN
16	BY	112	ASN
16	BZ	112	ASN
8	DL	39	PHE
8	DL	352	ASN
8	DN	50	LEU
8	DO	45	GLY
8	DO	54	VAL
8	DV	88	SER
9	CE	159	ILE
12	Dt	160	PRO
12	Dt	172	PRO
12	Dv	161	LYS
8	DL	44	ALA
8	DM	339	ALA
8	DH	71	ARG
12	Dc	161	LYS
8	DV	91	SER
12	Do	161	LYS
12	Dw	162	PRO
12	De	172	PRO
12	Dg	172	PRO
12	Dh	172	PRO
12	Di	172	PRO
12	Dj	172	PRO
12	Dk	172	PRO
12	Dl	172	PRO
12	Dm	172	PRO
12	Dn	172	PRO
12	Du	161	LYS
12	Db	161	LYS
12	Ds	161	LYS
12	Dq	171	SER

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%)	211 (98%)	4 (2%)	52 70
1	B	215/215 (100%)	212 (99%)	3 (1%)	62 75
1	C	215/215 (100%)	213 (99%)	2 (1%)	75 83
1	D	215/215 (100%)	215 (100%)	0	100 100
1	E	215/215 (100%)	210 (98%)	5 (2%)	45 64
1	F	215/215 (100%)	214 (100%)	1 (0%)	86 90
1	G	215/215 (100%)	209 (97%)	6 (3%)	38 59
1	H	215/215 (100%)	213 (99%)	2 (1%)	75 83
1	I	215/215 (100%)	211 (98%)	4 (2%)	52 70
1	J	215/215 (100%)	213 (99%)	2 (1%)	75 83
1	K	215/215 (100%)	211 (98%)	4 (2%)	52 70
1	L	214/215 (100%)	211 (99%)	3 (1%)	62 75
1	M	215/215 (100%)	212 (99%)	3 (1%)	62 75
1	N	208/215 (97%)	207 (100%)	1 (0%)	86 90
1	O	209/215 (97%)	208 (100%)	1 (0%)	86 90
1	P	204/215 (95%)	202 (99%)	2 (1%)	73 81
1	Q	204/215 (95%)	200 (98%)	4 (2%)	50 68
1	R	206/215 (96%)	201 (98%)	5 (2%)	44 63
1	S	204/215 (95%)	202 (99%)	2 (1%)	73 81
1	T	210/215 (98%)	209 (100%)	1 (0%)	86 90
1	U	214/215 (100%)	212 (99%)	2 (1%)	75 83
1	V	214/215 (100%)	211 (99%)	3 (1%)	62 75
1	W	214/215 (100%)	211 (99%)	3 (1%)	62 75
1	X	214/215 (100%)	210 (98%)	4 (2%)	52 70
2	a	191/193 (99%)	185 (97%)	6 (3%)	35 56
2	b	190/193 (98%)	186 (98%)	4 (2%)	48 67

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	c	191/193 (99%)	185 (97%)	6 (3%)	35 56
2	d	191/193 (99%)	187 (98%)	4 (2%)	48 67
2	e	191/193 (99%)	188 (98%)	3 (2%)	58 73
4	5	15/15 (100%)	15 (100%)	0	100 100
4	6	15/15 (100%)	15 (100%)	0	100 100
4	7	15/15 (100%)	15 (100%)	0	100 100
4	8	15/15 (100%)	15 (100%)	0	100 100
4	9	15/15 (100%)	15 (100%)	0	100 100
5	f	101/105 (96%)	98 (97%)	3 (3%)	36 58
5	g	102/105 (97%)	99 (97%)	3 (3%)	37 59
5	h	101/105 (96%)	100 (99%)	1 (1%)	73 81
5	i	102/105 (97%)	100 (98%)	2 (2%)	50 68
5	j	101/105 (96%)	100 (99%)	1 (1%)	73 81
5	p	101/105 (96%)	101 (100%)	0	100 100
6	k	91/113 (80%)	87 (96%)	4 (4%)	24 48
6	l	89/113 (79%)	86 (97%)	3 (3%)	32 55
6	m	89/113 (79%)	88 (99%)	1 (1%)	70 79
6	n	90/113 (80%)	87 (97%)	3 (3%)	33 56
6	o	91/113 (80%)	87 (96%)	4 (4%)	24 48
7	q	55/79 (70%)	54 (98%)	1 (2%)	54 71
7	r	54/79 (68%)	54 (100%)	0	100 100
7	s	56/79 (71%)	56 (100%)	0	100 100
7	t	56/79 (71%)	56 (100%)	0	100 100
7	u	56/79 (71%)	56 (100%)	0	100 100
7	v	32/79 (40%)	31 (97%)	1 (3%)	35 56
8	DA	321/323 (99%)	315 (98%)	6 (2%)	52 70
8	DB	321/323 (99%)	317 (99%)	4 (1%)	67 78
8	DC	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DD	321/323 (99%)	318 (99%)	3 (1%)	75 83
8	DE	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DF	321/323 (99%)	318 (99%)	3 (1%)	75 83

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
8	DG	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DH	321/323 (99%)	316 (98%)	5 (2%)	58 73
8	DI	321/323 (99%)	316 (98%)	5 (2%)	58 73
8	DJ	321/323 (99%)	318 (99%)	3 (1%)	75 83
8	DK	321/323 (99%)	318 (99%)	3 (1%)	75 83
8	DL	321/323 (99%)	300 (94%)	21 (6%)	14 39
8	DM	321/323 (99%)	307 (96%)	14 (4%)	24 48
8	DN	321/323 (99%)	308 (96%)	13 (4%)	27 51
8	DO	321/323 (99%)	298 (93%)	23 (7%)	12 36
8	DP	321/323 (99%)	316 (98%)	5 (2%)	58 73
8	DQ	321/323 (99%)	315 (98%)	6 (2%)	52 70
8	DR	321/323 (99%)	321 (100%)	0	100 100
8	DS	321/323 (99%)	314 (98%)	7 (2%)	47 65
8	DT	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DU	321/323 (99%)	317 (99%)	4 (1%)	67 78
8	DV	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DW	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DX	321/323 (99%)	319 (99%)	2 (1%)	84 88
8	DY	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	DZ	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	EA	321/323 (99%)	321 (100%)	0	100 100
8	EB	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	EC	321/323 (99%)	319 (99%)	2 (1%)	84 88
8	ED	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	EE	321/323 (99%)	320 (100%)	1 (0%)	91 92
8	EF	321/323 (99%)	319 (99%)	2 (1%)	84 88
8	EG	321/323 (99%)	319 (99%)	2 (1%)	84 88
9	CE	217/221 (98%)	214 (99%)	3 (1%)	62 75
10	CA	74/74 (100%)	74 (100%)	0	100 100
10	CB	74/74 (100%)	72 (97%)	2 (3%)	40 60
10	CC	74/74 (100%)	73 (99%)	1 (1%)	62 75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	CD	74/74 (100%)	74 (100%)	0	100	100
11	CF	180/204 (88%)	177 (98%)	3 (2%)	56	72
11	w	180/204 (88%)	175 (97%)	5 (3%)	38	59
11	x	180/204 (88%)	175 (97%)	5 (3%)	38	59
11	y	180/204 (88%)	171 (95%)	9 (5%)	20	45
11	z	180/204 (88%)	177 (98%)	3 (2%)	56	72
12	Ca	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cb	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cc	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cd	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ce	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cf	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cg	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ch	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ci	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cj	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ck	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cl	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cm	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cn	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Co	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cp	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cq	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cr	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cs	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ct	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cu	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cv	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cw	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cx	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Cy	133/467 (28%)	130 (98%)	3 (2%)	45	64

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	Cz	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Da	71/467 (15%)	69 (97%)	2 (3%)	38	59
12	Db	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dc	71/467 (15%)	69 (97%)	2 (3%)	38	59
12	Dd	71/467 (15%)	68 (96%)	3 (4%)	25	49
12	De	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Df	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dg	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dh	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Di	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dj	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dk	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dl	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dm	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dn	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Do	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dp	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dq	71/467 (15%)	69 (97%)	2 (3%)	38	59
12	Dr	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Ds	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dt	71/467 (15%)	69 (97%)	2 (3%)	38	59
12	Du	71/467 (15%)	70 (99%)	1 (1%)	62	75
12	Dv	71/467 (15%)	68 (96%)	3 (4%)	25	49
12	Dw	71/467 (15%)	68 (96%)	3 (4%)	25	49
12	Ea	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Eb	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ec	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ed	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ee	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Ef	133/467 (28%)	130 (98%)	3 (2%)	45	64
12	Eg	133/467 (28%)	130 (98%)	3 (2%)	45	64

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	Eh	133/467 (28%)	130 (98%)	3 (2%)	45	64
15	AA	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AB	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AC	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AD	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AE	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AF	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AG	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AH	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AI	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AJ	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AK	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AL	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AM	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AN	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AO	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AP	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AQ	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AR	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AS	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AT	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AU	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AV	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AW	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AX	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AY	169/185 (91%)	158 (94%)	11 (6%)	14	39
15	AZ	169/185 (91%)	158 (94%)	11 (6%)	14	39
16	BA	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BB	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BC	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BD	248/294 (84%)	237 (96%)	11 (4%)	24	48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	BE	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BF	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BG	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BH	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BI	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BJ	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BK	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BL	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BM	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BN	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BO	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BP	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BQ	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BR	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BS	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BT	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BU	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BV	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BW	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BX	248/294 (84%)	237 (96%)	11 (4%)	24	48
16	BY	248/294 (84%)	236 (95%)	12 (5%)	21	46
16	BZ	248/294 (84%)	237 (96%)	11 (4%)	24	48
All	All	36494/59138 (62%)	35478 (97%)	1016 (3%)	40	59

All (1016) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	153	ARG
1	A	159	VAL
1	A	164	GLN
1	A	256	LYS
1	B	19	MET
1	B	77	THR
1	B	179	MET

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Mol	Chain	Res	Type
1	C	141	THR
1	C	256	LYS
1	E	28	ASN
1	E	42	GLU
1	E	97	ILE
1	E	164	GLN
1	E	259	GLN
1	F	177	THR
1	G	117	ASP
1	G	141	THR
1	G	168	VAL
1	G	195	THR
1	G	241	GLU
1	G	255	GLN
1	H	105	VAL
1	H	226	VAL
1	I	42	GLU
1	I	58	GLU
1	I	150	THR
1	I	256	LYS
1	J	70	THR
1	J	97	ILE
1	K	42	GLU
1	K	59	GLN
1	K	97	ILE
1	K	202	ASN
1	L	42	GLU
1	L	117	ASP
1	L	175	LEU
1	M	70	THR
1	M	72	VAL
1	M	256	LYS
1	N	42	GLU
1	O	179	MET
1	P	50	ARG
1	P	254	LEU
1	Q	42	GLU
1	Q	141	THR
1	Q	149	ILE
1	Q	179	MET
1	R	43	ASP
1	R	141	THR

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Mol	Chain	Res	Type
1	R	149	ILE
1	R	150	THR
1	R	181	ASP
1	S	109	ASP
1	S	141	THR
1	T	141	THR
1	U	150	THR
1	U	257	LEU
2	a	51	LEU
2	a	71	LEU
2	a	78	LEU
2	a	150	ASP
2	a	153	ASN
2	a	247	LEU
2	b	49	LEU
2	b	71	LEU
2	b	182	THR
2	b	247	LEU
2	c	7	THR
2	c	44	VAL
2	c	71	LEU
2	c	78	LEU
2	c	214	VAL
2	c	238	ASP
2	d	58	THR
2	d	71	LEU
2	d	78	LEU
2	d	116	GLN
2	e	49	LEU
2	e	78	LEU
2	e	114	THR
5	f	119	LEU
5	f	125	MET
5	f	132	LEU
5	g	4	LEU
5	g	48	VAL
5	g	116	ILE
5	h	119	LEU
5	j	79	GLU
6	l	86	LEU
6	l	132	ASN
6	l	133	VAL

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Mol	Chain	Res	Type
6	m	4	ARG
6	o	18	LEU
6	o	48	GLU
6	o	83	VAL
6	o	127	LEU
5	i	97	ASP
5	i	101	GLU
6	k	29	ASN
6	k	48	GLU
6	k	51	LYS
6	k	111	ASP
6	n	29	ASN
6	n	100	VAL
6	n	132	ASN
1	V	28	ASN
1	V	45	LEU
1	V	90	ASN
1	W	168	VAL
1	W	257	LEU
1	W	260	LEU
1	X	142	ILE
1	X	179	MET
1	X	185	GLU
1	X	195	THR
7	q	57	GLU
7	v	75	MET
8	DA	17	LEU
8	DA	48	VAL
8	DA	157	ASN
8	DA	212	THR
8	DA	322	ASN
8	DA	352	ASN
8	DB	26	ASN
8	DB	161	THR
8	DB	183	THR
8	DB	324	GLU
8	DC	168	THR
8	DD	26	ASN
8	DD	80	ASN
8	DD	295	ASN
8	DE	295	ASN
8	DF	250	THR

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Mol	Chain	Res	Type
8	DF	332	ASN
8	DF	344	LEU
8	DG	395	ILE
8	DH	97	ASN
8	DH	161	THR
8	DH	279	THR
8	DH	322	ASN
8	DH	355	LYS
8	DI	17	LEU
8	DI	60	ASP
8	DI	119	TYR
8	DI	168	THR
8	DI	185	THR
8	DJ	48	VAL
8	DJ	295	ASN
8	DJ	331	ASP
8	DK	48	VAL
8	DK	104	GLU
8	DK	168	THR
9	CE	18	TRP
9	CE	131	MET
9	CE	248	PHE
10	CB	29	LEU
10	CB	46	GLU
10	CC	47	MET
11	w	65	THR
11	w	78	LEU
11	w	80	THR
11	w	140	ARG
11	w	225	LEU
11	x	73	LEU
11	x	80	THR
11	x	88	VAL
11	x	149	LEU
11	x	243	PHE
11	y	51	LEU
11	y	65	THR
11	y	80	THR
11	y	101	MET
11	y	142	THR
11	y	149	LEU
11	y	168	ARG

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Mol	Chain	Res	Type
11	y	211	MET
11	y	243	PHE
11	z	80	THR
11	z	106	ASP
11	z	159	LEU
11	CF	60	MET
11	CF	65	THR
11	CF	107	LYS
12	Da	125	GLN
12	Da	214	ASP
12	Db	214	ASP
12	Dc	171	SER
12	Dc	214	ASP
12	Dd	125	GLN
12	Dd	160	PRO
12	Dd	214	ASP
12	De	214	ASP
12	Df	214	ASP
12	Dg	214	ASP
12	Dh	214	ASP
12	Di	214	ASP
12	Dj	214	ASP
12	Dk	214	ASP
12	Dl	214	ASP
12	Dm	214	ASP
12	Dn	214	ASP
12	Do	214	ASP
12	Dp	214	ASP
12	Dq	160	PRO
12	Dq	214	ASP
12	Dr	214	ASP
12	Ds	214	ASP
12	Dt	159	MET
12	Dt	214	ASP
12	Du	214	ASP
12	Dv	125	GLN
12	Dv	171	SER
12	Dv	214	ASP
12	Dw	160	PRO
12	Dw	171	SER
12	Dw	214	ASP
12	Ca	243	SER

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Mol	Chain	Res	Type
12	Ca	295	SER
12	Ca	425	LYS
12	Cb	243	SER
12	Cb	295	SER
12	Cb	425	LYS
12	Cc	243	SER
12	Cc	295	SER
12	Cc	425	LYS
12	Cd	243	SER
12	Cd	295	SER
12	Cd	425	LYS
12	Ce	243	SER
12	Ce	295	SER
12	Ce	425	LYS
12	Cf	243	SER
12	Cf	295	SER
12	Cf	425	LYS
12	Cg	243	SER
12	Cg	295	SER
12	Cg	425	LYS
12	Ch	243	SER
12	Ch	295	SER
12	Ch	425	LYS
12	Ci	243	SER
12	Ci	295	SER
12	Ci	425	LYS
12	Cj	243	SER
12	Cj	295	SER
12	Cj	425	LYS
12	Ck	243	SER
12	Ck	295	SER
12	Ck	425	LYS
12	Cl	243	SER
12	Cl	295	SER
12	Cl	425	LYS
12	Cm	243	SER
12	Cm	295	SER
12	Cm	425	LYS
12	Cn	243	SER
12	Cn	295	SER
12	Cn	425	LYS
12	Co	243	SER

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Mol	Chain	Res	Type
12	Co	295	SER
12	Co	425	LYS
12	Cp	243	SER
12	Cp	295	SER
12	Cp	425	LYS
12	Cq	243	SER
12	Cq	295	SER
12	Cq	425	LYS
12	Cr	243	SER
12	Cr	295	SER
12	Cr	425	LYS
12	Cs	243	SER
12	Cs	295	SER
12	Cs	425	LYS
12	Ct	243	SER
12	Ct	295	SER
12	Ct	425	LYS
12	Cu	243	SER
12	Cu	295	SER
12	Cu	425	LYS
12	Cv	243	SER
12	Cv	295	SER
12	Cv	425	LYS
12	Cw	243	SER
12	Cw	295	SER
12	Cw	425	LYS
12	Cx	243	SER
12	Cx	295	SER
12	Cx	425	LYS
12	Cy	243	SER
12	Cy	295	SER
12	Cy	425	LYS
12	Cz	243	SER
12	Cz	295	SER
12	Cz	425	LYS
12	Ea	243	SER
12	Ea	295	SER
12	Ea	425	LYS
12	Eb	243	SER
12	Eb	295	SER
12	Eb	425	LYS
12	Ec	243	SER

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Mol	Chain	Res	Type
12	Ec	295	SER
12	Ec	425	LYS
12	Ed	243	SER
12	Ed	295	SER
12	Ed	425	LYS
12	Ee	243	SER
12	Ee	295	SER
12	Ee	425	LYS
12	Ef	243	SER
12	Ef	295	SER
12	Ef	425	LYS
12	Eg	243	SER
12	Eg	295	SER
12	Eg	425	LYS
12	Eh	243	SER
12	Eh	295	SER
12	Eh	425	LYS
15	AA	40	ILE
15	AA	89	SER
15	AA	103	SER
15	AA	106	PHE
15	AA	127	SER
15	AA	131	SER
15	AA	141	SER
15	AA	143	THR
15	AA	144	PHE
15	AA	145	SER
15	AA	194	SER
15	AB	40	ILE
15	AB	89	SER
15	AB	103	SER
15	AB	106	PHE
15	AB	127	SER
15	AB	131	SER
15	AB	141	SER
15	AB	143	THR
15	AB	144	PHE
15	AB	145	SER
15	AB	194	SER
15	AC	40	ILE
15	AC	89	SER
15	AC	103	SER

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Mol	Chain	Res	Type
15	AC	106	PHE
15	AC	127	SER
15	AC	131	SER
15	AC	141	SER
15	AC	143	THR
15	AC	144	PHE
15	AC	145	SER
15	AC	194	SER
15	AD	40	ILE
15	AD	89	SER
15	AD	103	SER
15	AD	106	PHE
15	AD	127	SER
15	AD	131	SER
15	AD	141	SER
15	AD	143	THR
15	AD	144	PHE
15	AD	145	SER
15	AD	194	SER
15	AE	40	ILE
15	AE	89	SER
15	AE	103	SER
15	AE	106	PHE
15	AE	127	SER
15	AE	131	SER
15	AE	141	SER
15	AE	143	THR
15	AE	144	PHE
15	AE	145	SER
15	AE	194	SER
15	AF	40	ILE
15	AF	89	SER
15	AF	103	SER
15	AF	106	PHE
15	AF	127	SER
15	AF	131	SER
15	AF	141	SER
15	AF	143	THR
15	AF	144	PHE
15	AF	145	SER
15	AF	194	SER
15	AG	40	ILE

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Mol	Chain	Res	Type
15	AG	89	SER
15	AG	103	SER
15	AG	106	PHE
15	AG	127	SER
15	AG	131	SER
15	AG	141	SER
15	AG	143	THR
15	AG	144	PHE
15	AG	145	SER
15	AG	194	SER
15	AH	40	ILE
15	AH	89	SER
15	AH	103	SER
15	AH	106	PHE
15	AH	127	SER
15	AH	131	SER
15	AH	141	SER
15	AH	143	THR
15	AH	144	PHE
15	AH	145	SER
15	AH	194	SER
15	AI	40	ILE
15	AI	89	SER
15	AI	103	SER
15	AI	106	PHE
15	AI	127	SER
15	AI	131	SER
15	AI	141	SER
15	AI	143	THR
15	AI	144	PHE
15	AI	145	SER
15	AI	194	SER
15	AJ	40	ILE
15	AJ	89	SER
15	AJ	103	SER
15	AJ	106	PHE
15	AJ	127	SER
15	AJ	131	SER
15	AJ	141	SER
15	AJ	143	THR
15	AJ	144	PHE
15	AJ	145	SER

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Mol	Chain	Res	Type
15	AJ	194	SER
15	AK	40	ILE
15	AK	89	SER
15	AK	103	SER
15	AK	106	PHE
15	AK	127	SER
15	AK	131	SER
15	AK	141	SER
15	AK	143	THR
15	AK	144	PHE
15	AK	145	SER
15	AK	194	SER
15	AL	40	ILE
15	AL	89	SER
15	AL	103	SER
15	AL	106	PHE
15	AL	127	SER
15	AL	131	SER
15	AL	141	SER
15	AL	143	THR
15	AL	144	PHE
15	AL	145	SER
15	AL	194	SER
15	AM	40	ILE
15	AM	89	SER
15	AM	103	SER
15	AM	106	PHE
15	AM	127	SER
15	AM	131	SER
15	AM	141	SER
15	AM	143	THR
15	AM	144	PHE
15	AM	145	SER
15	AM	194	SER
15	AN	40	ILE
15	AN	89	SER
15	AN	103	SER
15	AN	106	PHE
15	AN	127	SER
15	AN	131	SER
15	AN	141	SER
15	AN	143	THR

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Mol	Chain	Res	Type
15	AN	144	PHE
15	AN	145	SER
15	AN	194	SER
15	AO	40	ILE
15	AO	89	SER
15	AO	103	SER
15	AO	106	PHE
15	AO	127	SER
15	AO	131	SER
15	AO	141	SER
15	AO	143	THR
15	AO	144	PHE
15	AO	145	SER
15	AO	194	SER
15	AP	40	ILE
15	AP	89	SER
15	AP	103	SER
15	AP	106	PHE
15	AP	127	SER
15	AP	131	SER
15	AP	141	SER
15	AP	143	THR
15	AP	144	PHE
15	AP	145	SER
15	AP	194	SER
15	AQ	40	ILE
15	AQ	89	SER
15	AQ	103	SER
15	AQ	106	PHE
15	AQ	127	SER
15	AQ	131	SER
15	AQ	141	SER
15	AQ	143	THR
15	AQ	144	PHE
15	AQ	145	SER
15	AQ	194	SER
15	AR	40	ILE
15	AR	89	SER
15	AR	103	SER
15	AR	106	PHE
15	AR	127	SER
15	AR	131	SER

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Mol	Chain	Res	Type
15	AR	141	SER
15	AR	143	THR
15	AR	144	PHE
15	AR	145	SER
15	AR	194	SER
15	AS	40	ILE
15	AS	89	SER
15	AS	103	SER
15	AS	106	PHE
15	AS	127	SER
15	AS	131	SER
15	AS	141	SER
15	AS	143	THR
15	AS	144	PHE
15	AS	145	SER
15	AS	194	SER
15	AT	40	ILE
15	AT	89	SER
15	AT	103	SER
15	AT	106	PHE
15	AT	127	SER
15	AT	131	SER
15	AT	141	SER
15	AT	143	THR
15	AT	144	PHE
15	AT	145	SER
15	AT	194	SER
15	AU	40	ILE
15	AU	89	SER
15	AU	103	SER
15	AU	106	PHE
15	AU	127	SER
15	AU	131	SER
15	AU	141	SER
15	AU	143	THR
15	AU	144	PHE
15	AU	145	SER
15	AU	194	SER
15	AV	40	ILE
15	AV	89	SER
15	AV	103	SER
15	AV	106	PHE

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Mol	Chain	Res	Type
15	AV	127	SER
15	AV	131	SER
15	AV	141	SER
15	AV	143	THR
15	AV	144	PHE
15	AV	145	SER
15	AV	194	SER
15	AW	40	ILE
15	AW	89	SER
15	AW	103	SER
15	AW	106	PHE
15	AW	127	SER
15	AW	131	SER
15	AW	141	SER
15	AW	143	THR
15	AW	144	PHE
15	AW	145	SER
15	AW	194	SER
15	AX	40	ILE
15	AX	89	SER
15	AX	103	SER
15	AX	106	PHE
15	AX	127	SER
15	AX	131	SER
15	AX	141	SER
15	AX	143	THR
15	AX	144	PHE
15	AX	145	SER
15	AX	194	SER
15	AY	40	ILE
15	AY	89	SER
15	AY	103	SER
15	AY	106	PHE
15	AY	127	SER
15	AY	131	SER
15	AY	141	SER
15	AY	143	THR
15	AY	144	PHE
15	AY	145	SER
15	AY	194	SER
15	AZ	40	ILE
15	AZ	89	SER

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Mol	Chain	Res	Type
15	AZ	103	SER
15	AZ	106	PHE
15	AZ	127	SER
15	AZ	131	SER
15	AZ	141	SER
15	AZ	143	THR
15	AZ	144	PHE
15	AZ	145	SER
15	AZ	194	SER
16	BA	21	ARG
16	BA	23	ARG
16	BA	27	SER
16	BA	53	THR
16	BA	75	THR
16	BA	191	ASP
16	BA	220	THR
16	BA	231	SER
16	BA	250	ASP
16	BA	281	SER
16	BA	321	SER
16	BA	344	ASP
16	BB	21	ARG
16	BB	23	ARG
16	BB	27	SER
16	BB	53	THR
16	BB	75	THR
16	BB	191	ASP
16	BB	220	THR
16	BB	231	SER
16	BB	281	SER
16	BB	321	SER
16	BB	344	ASP
16	BC	21	ARG
16	BC	23	ARG
16	BC	27	SER
16	BC	53	THR
16	BC	75	THR
16	BC	191	ASP
16	BC	220	THR
16	BC	231	SER
16	BC	250	ASP
16	BC	281	SER

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Mol	Chain	Res	Type
16	BC	321	SER
16	BC	344	ASP
16	BD	21	ARG
16	BD	23	ARG
16	BD	27	SER
16	BD	53	THR
16	BD	75	THR
16	BD	191	ASP
16	BD	220	THR
16	BD	231	SER
16	BD	281	SER
16	BD	321	SER
16	BD	344	ASP
16	BE	21	ARG
16	BE	23	ARG
16	BE	27	SER
16	BE	53	THR
16	BE	75	THR
16	BE	191	ASP
16	BE	220	THR
16	BE	231	SER
16	BE	250	ASP
16	BE	281	SER
16	BE	321	SER
16	BE	344	ASP
16	BF	21	ARG
16	BF	23	ARG
16	BF	27	SER
16	BF	53	THR
16	BF	75	THR
16	BF	191	ASP
16	BF	220	THR
16	BF	231	SER
16	BF	281	SER
16	BF	321	SER
16	BF	344	ASP
16	BG	21	ARG
16	BG	23	ARG
16	BG	27	SER
16	BG	53	THR
16	BG	75	THR
16	BG	191	ASP

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Mol	Chain	Res	Type
16	BG	220	THR
16	BG	231	SER
16	BG	250	ASP
16	BG	281	SER
16	BG	321	SER
16	BG	344	ASP
16	BH	21	ARG
16	BH	23	ARG
16	BH	27	SER
16	BH	53	THR
16	BH	75	THR
16	BH	191	ASP
16	BH	220	THR
16	BH	231	SER
16	BH	250	ASP
16	BH	281	SER
16	BH	321	SER
16	BH	344	ASP
16	BI	21	ARG
16	BI	23	ARG
16	BI	27	SER
16	BI	53	THR
16	BI	75	THR
16	BI	191	ASP
16	BI	220	THR
16	BI	231	SER
16	BI	281	SER
16	BI	321	SER
16	BI	344	ASP
16	BJ	21	ARG
16	BJ	23	ARG
16	BJ	27	SER
16	BJ	53	THR
16	BJ	75	THR
16	BJ	191	ASP
16	BJ	220	THR
16	BJ	231	SER
16	BJ	281	SER
16	BJ	321	SER
16	BJ	344	ASP
16	BK	21	ARG
16	BK	23	ARG

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Mol	Chain	Res	Type
16	BK	27	SER
16	BK	53	THR
16	BK	75	THR
16	BK	191	ASP
16	BK	220	THR
16	BK	231	SER
16	BK	250	ASP
16	BK	281	SER
16	BK	321	SER
16	BK	344	ASP
16	BL	21	ARG
16	BL	23	ARG
16	BL	27	SER
16	BL	53	THR
16	BL	75	THR
16	BL	191	ASP
16	BL	220	THR
16	BL	231	SER
16	BL	281	SER
16	BL	321	SER
16	BL	344	ASP
16	BM	21	ARG
16	BM	23	ARG
16	BM	27	SER
16	BM	53	THR
16	BM	75	THR
16	BM	191	ASP
16	BM	220	THR
16	BM	231	SER
16	BM	250	ASP
16	BM	281	SER
16	BM	321	SER
16	BM	344	ASP
16	BN	21	ARG
16	BN	23	ARG
16	BN	27	SER
16	BN	53	THR
16	BN	75	THR
16	BN	191	ASP
16	BN	220	THR
16	BN	231	SER
16	BN	250	ASP

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Mol	Chain	Res	Type
16	BN	281	SER
16	BN	321	SER
16	BN	344	ASP
16	BO	21	ARG
16	BO	23	ARG
16	BO	27	SER
16	BO	53	THR
16	BO	75	THR
16	BO	191	ASP
16	BO	220	THR
16	BO	231	SER
16	BO	250	ASP
16	BO	281	SER
16	BO	321	SER
16	BO	344	ASP
16	BP	21	ARG
16	BP	23	ARG
16	BP	27	SER
16	BP	53	THR
16	BP	75	THR
16	BP	191	ASP
16	BP	220	THR
16	BP	231	SER
16	BP	250	ASP
16	BP	281	SER
16	BP	321	SER
16	BP	344	ASP
16	BQ	21	ARG
16	BQ	23	ARG
16	BQ	27	SER
16	BQ	53	THR
16	BQ	75	THR
16	BQ	191	ASP
16	BQ	220	THR
16	BQ	231	SER
16	BQ	250	ASP
16	BQ	281	SER
16	BQ	321	SER
16	BQ	344	ASP
16	BR	21	ARG
16	BR	23	ARG
16	BR	27	SER

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Mol	Chain	Res	Type
16	BR	53	THR
16	BR	75	THR
16	BR	191	ASP
16	BR	220	THR
16	BR	231	SER
16	BR	250	ASP
16	BR	281	SER
16	BR	321	SER
16	BR	344	ASP
16	BS	21	ARG
16	BS	23	ARG
16	BS	27	SER
16	BS	53	THR
16	BS	75	THR
16	BS	191	ASP
16	BS	220	THR
16	BS	231	SER
16	BS	281	SER
16	BS	321	SER
16	BS	344	ASP
16	BT	21	ARG
16	BT	23	ARG
16	BT	27	SER
16	BT	53	THR
16	BT	75	THR
16	BT	191	ASP
16	BT	220	THR
16	BT	231	SER
16	BT	250	ASP
16	BT	281	SER
16	BT	321	SER
16	BT	344	ASP
16	BU	21	ARG
16	BU	23	ARG
16	BU	27	SER
16	BU	53	THR
16	BU	75	THR
16	BU	191	ASP
16	BU	220	THR
16	BU	231	SER
16	BU	250	ASP
16	BU	281	SER

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Mol	Chain	Res	Type
16	BU	321	SER
16	BU	344	ASP
16	BV	21	ARG
16	BV	23	ARG
16	BV	27	SER
16	BV	53	THR
16	BV	75	THR
16	BV	191	ASP
16	BV	220	THR
16	BV	231	SER
16	BV	250	ASP
16	BV	281	SER
16	BV	321	SER
16	BV	344	ASP
16	BW	21	ARG
16	BW	23	ARG
16	BW	27	SER
16	BW	53	THR
16	BW	75	THR
16	BW	191	ASP
16	BW	220	THR
16	BW	231	SER
16	BW	250	ASP
16	BW	281	SER
16	BW	321	SER
16	BW	344	ASP
16	BX	21	ARG
16	BX	23	ARG
16	BX	27	SER
16	BX	53	THR
16	BX	75	THR
16	BX	191	ASP
16	BX	220	THR
16	BX	231	SER
16	BX	281	SER
16	BX	321	SER
16	BX	344	ASP
16	BY	21	ARG
16	BY	23	ARG
16	BY	27	SER
16	BY	53	THR
16	BY	75	THR

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Mol	Chain	Res	Type
16	BY	191	ASP
16	BY	220	THR
16	BY	231	SER
16	BY	250	ASP
16	BY	281	SER
16	BY	321	SER
16	BY	344	ASP
16	BZ	21	ARG
16	BZ	23	ARG
16	BZ	27	SER
16	BZ	53	THR
16	BZ	75	THR
16	BZ	191	ASP
16	BZ	220	THR
16	BZ	231	SER
16	BZ	281	SER
16	BZ	321	SER
16	BZ	344	ASP
8	DL	4	SER
8	DL	41	ASP
8	DL	46	SER
8	DL	47	LYS
8	DL	48	VAL
8	DL	50	LEU
8	DL	52	VAL
8	DL	57	ILE
8	DL	133	ASN
8	DL	338	GLN
8	DL	352	ASN
8	DL	355	LYS
8	DL	379	GLN
8	DL	382	TYR
8	DL	391	THR
8	DL	393	ASP
8	DL	394	GLN
8	DL	395	ILE
8	DL	396	LEU
8	DL	397	ASN
8	DL	399	LEU
8	DM	39	PHE
8	DM	41	ASP
8	DM	42	MET

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Mol	Chain	Res	Type
8	DM	322	ASN
8	DM	324	GLU
8	DM	337	THR
8	DM	388	THR
8	DM	389	ILE
8	DM	393	ASP
8	DM	394	GLN
8	DM	395	ILE
8	DM	396	LEU
8	DM	397	ASN
8	DM	400	VAL
8	DN	5	GLN
8	DN	39	PHE
8	DN	41	ASP
8	DN	50	LEU
8	DN	143	LEU
8	DN	383	GLN
8	DN	389	ILE
8	DN	391	THR
8	DN	392	GLN
8	DN	394	GLN
8	DN	396	LEU
8	DN	399	LEU
8	DN	402	LEU
8	DO	5	GLN
8	DO	8	SER
8	DO	10	LEU
8	DO	17	LEU
8	DO	18	ASP
8	DO	20	ILE
8	DO	22	ASN
8	DO	41	ASP
8	DO	43	PHE
8	DO	48	VAL
8	DO	53	LYS
8	DO	54	VAL
8	DO	141	ASN
8	DO	250	THR
8	DO	255	THR
8	DO	275	ASN
8	DO	385	ASN
8	DO	387	GLN

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Mol	Chain	Res	Type
8	DO	389	ILE
8	DO	390	LYS
8	DO	391	THR
8	DO	392	GLN
8	DO	393	ASP
8	DP	204	LYS
8	DP	391	THR
8	DP	396	LEU
8	DP	397	ASN
8	DP	399	LEU
8	DQ	194	HIS
8	DQ	250	THR
8	DQ	251	ILE
8	DQ	370	LYS
8	DQ	399	LEU
8	DQ	402	LEU
8	DS	391	THR
8	DS	395	ILE
8	DS	396	LEU
8	DS	397	ASN
8	DS	398	THR
8	DS	399	LEU
8	DS	402	LEU
8	DT	398	THR
8	DU	392	GLN
8	DU	393	ASP
8	DU	395	ILE
8	DU	399	LEU
8	DV	80	ASN
8	DW	47	LYS
8	DX	106	ARG
8	DX	296	ASN
8	DY	8	SER
8	DZ	181	LYS
8	EB	394	GLN
8	EC	397	ASN
8	EC	401	ASN
8	ED	204	LYS
8	EE	5	GLN
8	EF	204	LYS
8	EF	380	ARG
8	EG	129	GLN

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Mol	Chain	Res	Type
8	EG	204	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (518) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	255	GLN
1	C	259	GLN
1	E	164	GLN
1	F	145	ASN
1	F	161	GLN
1	F	259	GLN
1	I	59	GLN
1	J	255	GLN
1	J	259	GLN
1	K	25	ASN
1	K	59	GLN
1	S	174	ASN
1	T	135	GLN
1	T	172	GLN
1	U	125	ASN
2	a	153	ASN
4	5	319	GLN
4	9	319	GLN
5	g	82	ASN
5	h	30	ASN
6	m	29	ASN
6	o	29	ASN
4	8	319	GLN
5	i	120	ASN
1	V	209	ASN
1	W	169	GLN
7	v	76	GLN
8	DA	97	ASN
8	DA	295	ASN
8	DB	107	ASN
8	DB	129	GLN
8	DD	22	ASN
8	DD	26	ASN
8	DD	107	ASN
8	DE	107	ASN
8	DF	22	ASN
8	DF	26	ASN

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Mol	Chain	Res	Type
8	DF	365	ASN
8	DG	129	GLN
8	DH	22	ASN
8	DH	80	ASN
8	DH	197	ASN
8	DH	213	HIS
8	DH	310	GLN
8	DH	319	ASN
8	DH	365	ASN
8	DI	22	ASN
8	DI	26	ASN
8	DI	129	GLN
8	DJ	206	ASN
8	DJ	310	GLN
8	DJ	352	ASN
8	DJ	387	GLN
8	DK	26	ASN
8	DK	97	ASN
8	DK	105	ASN
8	DK	332	ASN
8	DK	383	GLN
10	CA	71	ASN
10	CB	39	GLN
10	CB	45	ASN
11	y	184	GLN
11	z	87	GLN
12	Da	125	GLN
12	Dd	125	GLN
12	Dq	125	GLN
12	Cc	374	HIS
12	Cd	374	HIS
12	Cf	365	ASN
12	Ci	303	GLN
12	Ci	361	ASN
12	Cv	365	ASN
12	Cy	303	GLN
12	Ea	365	ASN
12	Ed	374	HIS
15	AA	63	GLN
15	AA	83	GLN
15	AA	114	GLN
15	AA	119	ASN

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Mol	Chain	Res	Type
15	AA	133	ASN
15	AA	172	ASN
15	AA	217	GLN
15	AB	63	GLN
15	AB	114	GLN
15	AB	119	ASN
15	AB	133	ASN
15	AB	172	ASN
15	AB	217	GLN
15	AC	63	GLN
15	AC	83	GLN
15	AC	114	GLN
15	AC	119	ASN
15	AC	133	ASN
15	AC	172	ASN
15	AC	217	GLN
15	AD	63	GLN
15	AD	83	GLN
15	AD	114	GLN
15	AD	119	ASN
15	AD	133	ASN
15	AD	172	ASN
15	AD	217	GLN
15	AE	63	GLN
15	AE	114	GLN
15	AE	119	ASN
15	AE	133	ASN
15	AE	172	ASN
15	AE	217	GLN
15	AF	63	GLN
15	AF	114	GLN
15	AF	119	ASN
15	AF	133	ASN
15	AF	172	ASN
15	AF	217	GLN
15	AG	63	GLN
15	AG	114	GLN
15	AG	119	ASN
15	AG	133	ASN
15	AG	172	ASN
15	AG	217	GLN
15	AH	63	GLN

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Mol	Chain	Res	Type
15	AH	114	GLN
15	AH	119	ASN
15	AH	133	ASN
15	AH	172	ASN
15	AH	217	GLN
15	AI	63	GLN
15	AI	83	GLN
15	AI	114	GLN
15	AI	119	ASN
15	AI	133	ASN
15	AI	172	ASN
15	AI	217	GLN
15	AJ	63	GLN
15	AJ	83	GLN
15	AJ	114	GLN
15	AJ	119	ASN
15	AJ	133	ASN
15	AJ	172	ASN
15	AJ	217	GLN
15	AK	63	GLN
15	AK	83	GLN
15	AK	114	GLN
15	AK	119	ASN
15	AK	133	ASN
15	AK	172	ASN
15	AK	217	GLN
15	AL	63	GLN
15	AL	83	GLN
15	AL	114	GLN
15	AL	119	ASN
15	AL	133	ASN
15	AL	172	ASN
15	AL	217	GLN
15	AM	63	GLN
15	AM	83	GLN
15	AM	114	GLN
15	AM	119	ASN
15	AM	133	ASN
15	AM	172	ASN
15	AM	217	GLN
15	AN	63	GLN
15	AN	114	GLN

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Mol	Chain	Res	Type
15	AN	119	ASN
15	AN	133	ASN
15	AN	172	ASN
15	AN	217	GLN
15	AO	63	GLN
15	AO	114	GLN
15	AO	119	ASN
15	AO	133	ASN
15	AO	172	ASN
15	AO	217	GLN
15	AP	63	GLN
15	AP	83	GLN
15	AP	114	GLN
15	AP	119	ASN
15	AP	133	ASN
15	AP	172	ASN
15	AP	217	GLN
15	AQ	63	GLN
15	AQ	114	GLN
15	AQ	119	ASN
15	AQ	133	ASN
15	AQ	172	ASN
15	AQ	217	GLN
15	AR	63	GLN
15	AR	114	GLN
15	AR	119	ASN
15	AR	133	ASN
15	AR	172	ASN
15	AR	217	GLN
15	AS	63	GLN
15	AS	114	GLN
15	AS	119	ASN
15	AS	133	ASN
15	AS	172	ASN
15	AS	217	GLN
15	AT	63	GLN
15	AT	114	GLN
15	AT	119	ASN
15	AT	133	ASN
15	AT	172	ASN
15	AT	217	GLN
15	AU	63	GLN

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Mol	Chain	Res	Type
15	AU	114	GLN
15	AU	119	ASN
15	AU	133	ASN
15	AU	172	ASN
15	AU	217	GLN
15	AV	63	GLN
15	AV	83	GLN
15	AV	114	GLN
15	AV	119	ASN
15	AV	133	ASN
15	AV	172	ASN
15	AV	217	GLN
15	AW	63	GLN
15	AW	114	GLN
15	AW	119	ASN
15	AW	133	ASN
15	AW	172	ASN
15	AW	217	GLN
15	AX	63	GLN
15	AX	114	GLN
15	AX	119	ASN
15	AX	133	ASN
15	AX	172	ASN
15	AX	217	GLN
15	AY	63	GLN
15	AY	83	GLN
15	AY	114	GLN
15	AY	119	ASN
15	AY	133	ASN
15	AY	172	ASN
15	AY	217	GLN
15	AZ	63	GLN
15	AZ	114	GLN
15	AZ	119	ASN
15	AZ	133	ASN
15	AZ	172	ASN
15	AZ	217	GLN
16	BA	54	GLN
16	BA	159	GLN
16	BA	161	ASN
16	BA	188	GLN
16	BA	198	GLN

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Mol	Chain	Res	Type
16	BA	277	GLN
16	BB	54	GLN
16	BB	68	GLN
16	BB	80	GLN
16	BB	159	GLN
16	BB	161	ASN
16	BB	188	GLN
16	BB	198	GLN
16	BB	277	GLN
16	BC	54	GLN
16	BC	68	GLN
16	BC	80	GLN
16	BC	159	GLN
16	BC	161	ASN
16	BC	188	GLN
16	BC	198	GLN
16	BC	277	GLN
16	BD	54	GLN
16	BD	68	GLN
16	BD	80	GLN
16	BD	159	GLN
16	BD	161	ASN
16	BD	188	GLN
16	BD	198	GLN
16	BD	277	GLN
16	BE	68	GLN
16	BE	80	GLN
16	BE	159	GLN
16	BE	161	ASN
16	BE	188	GLN
16	BE	198	GLN
16	BE	277	GLN
16	BF	68	GLN
16	BF	80	GLN
16	BF	159	GLN
16	BF	161	ASN
16	BF	188	GLN
16	BF	198	GLN
16	BF	277	GLN
16	BG	54	GLN
16	BG	68	GLN
16	BG	159	GLN

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Mol	Chain	Res	Type
16	BG	161	ASN
16	BG	188	GLN
16	BG	198	GLN
16	BG	277	GLN
16	BH	54	GLN
16	BH	68	GLN
16	BH	80	GLN
16	BH	159	GLN
16	BH	161	ASN
16	BH	188	GLN
16	BH	198	GLN
16	BH	277	GLN
16	BI	54	GLN
16	BI	68	GLN
16	BI	159	GLN
16	BI	161	ASN
16	BI	188	GLN
16	BI	198	GLN
16	BI	277	GLN
16	BJ	54	GLN
16	BJ	68	GLN
16	BJ	80	GLN
16	BJ	159	GLN
16	BJ	161	ASN
16	BJ	188	GLN
16	BJ	198	GLN
16	BJ	277	GLN
16	BK	54	GLN
16	BK	68	GLN
16	BK	80	GLN
16	BK	159	GLN
16	BK	161	ASN
16	BK	188	GLN
16	BK	198	GLN
16	BK	277	GLN
16	BL	54	GLN
16	BL	68	GLN
16	BL	80	GLN
16	BL	159	GLN
16	BL	161	ASN
16	BL	188	GLN
16	BL	198	GLN

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Mol	Chain	Res	Type
16	BL	277	GLN
16	BM	68	GLN
16	BM	80	GLN
16	BM	159	GLN
16	BM	161	ASN
16	BM	188	GLN
16	BM	198	GLN
16	BM	277	GLN
16	BN	68	GLN
16	BN	80	GLN
16	BN	159	GLN
16	BN	188	GLN
16	BN	198	GLN
16	BN	277	GLN
16	BO	54	GLN
16	BO	68	GLN
16	BO	80	GLN
16	BO	159	GLN
16	BO	161	ASN
16	BO	188	GLN
16	BO	198	GLN
16	BO	277	GLN
16	BP	68	GLN
16	BP	159	GLN
16	BP	161	ASN
16	BP	188	GLN
16	BP	198	GLN
16	BP	277	GLN
16	BQ	54	GLN
16	BQ	68	GLN
16	BQ	80	GLN
16	BQ	159	GLN
16	BQ	161	ASN
16	BQ	188	GLN
16	BQ	198	GLN
16	BQ	277	GLN
16	BR	54	GLN
16	BR	68	GLN
16	BR	80	GLN
16	BR	159	GLN
16	BR	161	ASN
16	BR	188	GLN

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Mol	Chain	Res	Type
16	BR	198	GLN
16	BR	277	GLN
16	BS	54	GLN
16	BS	68	GLN
16	BS	80	GLN
16	BS	159	GLN
16	BS	161	ASN
16	BS	188	GLN
16	BS	198	GLN
16	BS	241	ASN
16	BS	277	GLN
16	BT	54	GLN
16	BT	68	GLN
16	BT	80	GLN
16	BT	159	GLN
16	BT	161	ASN
16	BT	188	GLN
16	BT	198	GLN
16	BT	241	ASN
16	BT	277	GLN
16	BU	54	GLN
16	BU	68	GLN
16	BU	78	ASN
16	BU	159	GLN
16	BU	161	ASN
16	BU	188	GLN
16	BU	198	GLN
16	BU	241	ASN
16	BU	277	GLN
16	BV	54	GLN
16	BV	68	GLN
16	BV	80	GLN
16	BV	159	GLN
16	BV	161	ASN
16	BV	188	GLN
16	BV	198	GLN
16	BV	277	GLN
16	BW	54	GLN
16	BW	68	GLN
16	BW	80	GLN
16	BW	159	GLN
16	BW	161	ASN

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Mol	Chain	Res	Type
16	BW	188	GLN
16	BW	198	GLN
16	BW	277	GLN
16	BX	54	GLN
16	BX	68	GLN
16	BX	80	GLN
16	BX	159	GLN
16	BX	161	ASN
16	BX	188	GLN
16	BX	198	GLN
16	BX	277	GLN
16	BY	54	GLN
16	BY	68	GLN
16	BY	80	GLN
16	BY	159	GLN
16	BY	161	ASN
16	BY	188	GLN
16	BY	198	GLN
16	BY	277	GLN
16	BZ	54	GLN
16	BZ	68	GLN
16	BZ	80	GLN
16	BZ	159	GLN
16	BZ	161	ASN
16	BZ	188	GLN
16	BZ	198	GLN
16	BZ	277	GLN
8	DL	99	GLN
8	DL	133	ASN
8	DL	338	GLN
8	DL	365	ASN
8	DL	397	ASN
8	DM	11	ASN
8	DM	79	GLN
8	DM	268	GLN
8	DM	379	GLN
8	DM	383	GLN
8	DN	5	GLN
8	DN	11	ASN
8	DN	80	ASN
8	DN	252	ASN
8	DN	306	ASN

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Mol	Chain	Res	Type
8	DN	381	ASN
8	DN	392	GLN
8	DO	97	ASN
8	DO	192	ASN
8	DO	194	HIS
8	DO	252	ASN
8	DO	274	ASN
8	DO	275	ASN
8	DO	293	GLN
8	DO	310	GLN
8	DO	365	ASN
8	DO	379	GLN
8	DO	387	GLN
8	DO	392	GLN
8	DP	129	GLN
8	DP	133	ASN
8	DP	379	GLN
8	DP	394	GLN
8	DQ	99	GLN
8	DQ	129	GLN
8	DQ	268	GLN
8	DQ	314	GLN
8	DR	23	ASN
8	DS	26	ASN
8	DS	233	ASN
8	DS	268	GLN
8	DS	269	GLN
8	DS	379	GLN
8	DT	314	GLN
8	DT	358	ASN
8	DT	365	ASN
8	DT	379	GLN
8	DU	26	ASN
8	DU	322	ASN
8	DU	332	ASN
8	DW	80	ASN
8	DW	293	GLN
8	DX	26	ASN
8	DX	155	GLN
8	DX	269	GLN
8	DX	387	GLN
8	DY	319	ASN

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Mol	Chain	Res	Type
8	DZ	332	ASN
8	EA	157	ASN
8	EA	206	ASN
8	EA	379	GLN
8	EA	397	ASN
8	EC	252	ASN
8	EC	268	GLN
8	EC	385	ASN
8	ED	26	ASN
8	ED	268	GLN
8	ED	319	ASN
8	EE	80	ASN
8	EF	11	ASN
8	EF	322	ASN
8	EG	5	GLN
8	EG	97	ASN
8	EG	133	ASN
8	EG	383	GLN
8	EG	387	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

26 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
15	P1L	AT	22	15	13,14,23	0.85	0	10,15,25	1.93	3 (30%)
15	P1L	AV	22	15	13,14,23	0.85	0	10,15,25	1.92	3 (30%)
15	P1L	AU	22	15	13,14,23	0.84	0	10,15,25	1.97	3 (30%)
15	P1L	AA	22	15	13,14,23	0.87	0	10,15,25	1.95	3 (30%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
15	P1L	AP	22	15	13,14,23	0.86	0	10,15,25	1.94	3 (30%)
15	P1L	AY	22	15	13,14,23	0.84	0	10,15,25	1.94	3 (30%)
15	P1L	AF	22	15	13,14,23	0.87	0	10,15,25	1.93	3 (30%)
15	P1L	AW	22	15	13,14,23	0.87	0	10,15,25	1.95	3 (30%)
15	P1L	AJ	22	15	13,14,23	0.84	0	10,15,25	1.95	3 (30%)
15	P1L	AS	22	15	13,14,23	0.86	0	10,15,25	1.96	3 (30%)
15	P1L	AR	22	15	13,14,23	0.86	0	10,15,25	1.92	3 (30%)
15	P1L	AC	22	15	13,14,23	0.84	0	10,15,25	1.95	3 (30%)
15	P1L	AK	22	15	13,14,23	0.86	0	10,15,25	1.92	3 (30%)
15	P1L	AN	22	15	13,14,23	0.88	0	10,15,25	1.95	3 (30%)
15	P1L	AX	22	15	13,14,23	0.84	0	10,15,25	1.97	3 (30%)
15	P1L	AQ	22	15	13,14,23	0.83	0	10,15,25	1.93	3 (30%)
15	P1L	AD	22	15	13,14,23	0.84	0	10,15,25	1.93	3 (30%)
15	P1L	AL	22	15	13,14,23	0.87	0	10,15,25	1.93	3 (30%)
15	P1L	AI	22	15	13,14,23	0.87	0	10,15,25	1.93	3 (30%)
15	P1L	AG	22	15	13,14,23	0.86	0	10,15,25	1.93	3 (30%)
15	P1L	AZ	22	15	13,14,23	0.86	0	10,15,25	1.94	3 (30%)
15	P1L	AH	22	15	13,14,23	0.86	0	10,15,25	1.95	3 (30%)
15	P1L	AO	22	15	13,14,23	0.86	0	10,15,25	1.90	3 (30%)
15	P1L	AE	22	15	13,14,23	0.85	0	10,15,25	1.94	3 (30%)
15	P1L	AB	22	15	13,14,23	0.86	0	10,15,25	1.96	3 (30%)
15	P1L	AM	22	15	13,14,23	0.84	0	10,15,25	1.94	3 (30%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
15	P1L	AT	22	15	-	7/12/14/24	-
15	P1L	AV	22	15	-	7/12/14/24	-
15	P1L	AU	22	15	-	7/12/14/24	-
15	P1L	AA	22	15	-	7/12/14/24	-
15	P1L	AP	22	15	-	7/12/14/24	-
15	P1L	AY	22	15	-	7/12/14/24	-
15	P1L	AF	22	15	-	7/12/14/24	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
15	P1L	AW	22	15	-	7/12/14/24	-
15	P1L	AJ	22	15	-	7/12/14/24	-
15	P1L	AS	22	15	-	7/12/14/24	-
15	P1L	AR	22	15	-	7/12/14/24	-
15	P1L	AC	22	15	-	7/12/14/24	-
15	P1L	AK	22	15	-	7/12/14/24	-
15	P1L	AN	22	15	-	7/12/14/24	-
15	P1L	AX	22	15	-	7/12/14/24	-
15	P1L	AQ	22	15	-	7/12/14/24	-
15	P1L	AD	22	15	-	7/12/14/24	-
15	P1L	AL	22	15	-	7/12/14/24	-
15	P1L	AI	22	15	-	7/12/14/24	-
15	P1L	AG	22	15	-	7/12/14/24	-
15	P1L	AZ	22	15	-	7/12/14/24	-
15	P1L	AH	22	15	-	7/12/14/24	-
15	P1L	AO	22	15	-	7/12/14/24	-
15	P1L	AE	22	15	-	7/12/14/24	-
15	P1L	AB	22	15	-	7/12/14/24	-
15	P1L	AM	22	15	-	7/12/14/24	-

There are no bond length outliers.

All (78) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	AU	22	P1L	C8-C7-SG	-4.29	108.46	113.46
15	AX	22	P1L	C8-C7-SG	-4.25	108.50	113.46
15	AJ	22	P1L	C8-C7-SG	-4.23	108.53	113.46
15	AC	22	P1L	C8-C7-SG	-4.23	108.54	113.46
15	AB	22	P1L	C8-C7-SG	-4.20	108.56	113.46
15	AM	22	P1L	C8-C7-SG	-4.20	108.56	113.46
15	AH	22	P1L	C8-C7-SG	-4.20	108.57	113.46
15	AS	22	P1L	C8-C7-SG	-4.19	108.58	113.46
15	AY	22	P1L	C8-C7-SG	-4.19	108.58	113.46
15	AN	22	P1L	C8-C7-SG	-4.17	108.60	113.46
15	AL	22	P1L	C8-C7-SG	-4.17	108.60	113.46
15	AZ	22	P1L	C8-C7-SG	-4.17	108.60	113.46
15	AW	22	P1L	C8-C7-SG	-4.17	108.61	113.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	AP	22	P1L	C8-C7-SG	-4.16	108.61	113.46
15	AA	22	P1L	C8-C7-SG	-4.16	108.61	113.46
15	AR	22	P1L	C8-C7-SG	-4.16	108.62	113.46
15	AQ	22	P1L	C8-C7-SG	-4.15	108.62	113.46
15	AT	22	P1L	C8-C7-SG	-4.14	108.63	113.46
15	AE	22	P1L	C8-C7-SG	-4.14	108.64	113.46
15	AI	22	P1L	C8-C7-SG	-4.14	108.64	113.46
15	AK	22	P1L	C8-C7-SG	-4.14	108.64	113.46
15	AV	22	P1L	C8-C7-SG	-4.13	108.65	113.46
15	AD	22	P1L	C8-C7-SG	-4.13	108.65	113.46
15	AG	22	P1L	C8-C7-SG	-4.13	108.65	113.46
15	AF	22	P1L	C8-C7-SG	-4.13	108.66	113.46
15	AO	22	P1L	C8-C7-SG	-4.11	108.68	113.46
15	AB	22	P1L	CB-SG-C7	3.57	105.84	100.84
15	AH	22	P1L	CB-SG-C7	3.57	105.83	100.84
15	AN	22	P1L	CB-SG-C7	3.55	105.80	100.84
15	AE	22	P1L	CB-SG-C7	3.54	105.79	100.84
15	AA	22	P1L	CB-SG-C7	3.54	105.78	100.84
15	AX	22	P1L	CB-SG-C7	3.53	105.78	100.84
15	AS	22	P1L	CB-SG-C7	3.53	105.77	100.84
15	AZ	22	P1L	CB-SG-C7	3.52	105.76	100.84
15	AU	22	P1L	CB-SG-C7	3.52	105.76	100.84
15	AJ	22	P1L	CB-SG-C7	3.51	105.75	100.84
15	AM	22	P1L	CB-SG-C7	3.50	105.74	100.84
15	AY	22	P1L	CB-SG-C7	3.50	105.74	100.84
15	AF	22	P1L	CB-SG-C7	3.50	105.73	100.84
15	AG	22	P1L	CB-SG-C7	3.50	105.73	100.84
15	AT	22	P1L	CB-SG-C7	3.50	105.73	100.84
15	AC	22	P1L	CB-SG-C7	3.49	105.72	100.84
15	AW	22	P1L	CB-SG-C7	3.49	105.72	100.84
15	AI	22	P1L	CB-SG-C7	3.49	105.72	100.84
15	AK	22	P1L	CB-SG-C7	3.48	105.70	100.84
15	AD	22	P1L	CB-SG-C7	3.48	105.70	100.84
15	AL	22	P1L	CB-SG-C7	3.47	105.69	100.84
15	AQ	22	P1L	CB-SG-C7	3.46	105.69	100.84
15	AR	22	P1L	CB-SG-C7	3.46	105.68	100.84
15	AP	22	P1L	CB-SG-C7	3.46	105.67	100.84
15	AO	22	P1L	CB-SG-C7	3.45	105.67	100.84
15	AV	22	P1L	CB-SG-C7	3.44	105.65	100.84
15	AW	22	P1L	O7-C7-SG	2.71	126.13	122.61
15	AX	22	P1L	O7-C7-SG	2.67	126.09	122.61
15	AS	22	P1L	O7-C7-SG	2.65	126.06	122.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	AP	22	P1L	O7-C7-SG	2.65	126.05	122.61
15	AD	22	P1L	O7-C7-SG	2.64	126.04	122.61
15	AB	22	P1L	O7-C7-SG	2.63	126.03	122.61
15	AA	22	P1L	O7-C7-SG	2.62	126.02	122.61
15	AV	22	P1L	O7-C7-SG	2.62	126.02	122.61
15	AC	22	P1L	O7-C7-SG	2.62	126.02	122.61
15	AQ	22	P1L	O7-C7-SG	2.62	126.01	122.61
15	AN	22	P1L	O7-C7-SG	2.61	126.01	122.61
15	AF	22	P1L	O7-C7-SG	2.61	126.00	122.61
15	AU	22	P1L	O7-C7-SG	2.61	126.00	122.61
15	AG	22	P1L	O7-C7-SG	2.60	126.00	122.61
15	AY	22	P1L	O7-C7-SG	2.60	125.99	122.61
15	AJ	22	P1L	O7-C7-SG	2.60	125.99	122.61
15	AI	22	P1L	O7-C7-SG	2.59	125.98	122.61
15	AM	22	P1L	O7-C7-SG	2.59	125.97	122.61
15	AE	22	P1L	O7-C7-SG	2.59	125.97	122.61
15	AT	22	P1L	O7-C7-SG	2.58	125.97	122.61
15	AL	22	P1L	O7-C7-SG	2.58	125.96	122.61
15	AR	22	P1L	O7-C7-SG	2.57	125.95	122.61
15	AZ	22	P1L	O7-C7-SG	2.57	125.95	122.61
15	AK	22	P1L	O7-C7-SG	2.55	125.93	122.61
15	AH	22	P1L	O7-C7-SG	2.53	125.90	122.61
15	AO	22	P1L	O7-C7-SG	2.50	125.86	122.61

There are no chirality outliers.

All (182) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
15	AA	22	P1L	CA-CB-SG-C7
15	AA	22	P1L	O7-C7-SG-CB
15	AA	22	P1L	C8-C7-SG-CB
15	AB	22	P1L	CA-CB-SG-C7
15	AB	22	P1L	O7-C7-SG-CB
15	AB	22	P1L	C8-C7-SG-CB
15	AC	22	P1L	CA-CB-SG-C7
15	AC	22	P1L	O7-C7-SG-CB
15	AC	22	P1L	C8-C7-SG-CB
15	AD	22	P1L	CA-CB-SG-C7
15	AD	22	P1L	O7-C7-SG-CB
15	AD	22	P1L	C8-C7-SG-CB
15	AE	22	P1L	CA-CB-SG-C7
15	AE	22	P1L	O7-C7-SG-CB

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Mol	Chain	Res	Type	Atoms
15	AE	22	P1L	C8-C7-SG-CB
15	AF	22	P1L	CA-CB-SG-C7
15	AF	22	P1L	O7-C7-SG-CB
15	AF	22	P1L	C8-C7-SG-CB
15	AG	22	P1L	CA-CB-SG-C7
15	AG	22	P1L	O7-C7-SG-CB
15	AG	22	P1L	C8-C7-SG-CB
15	AH	22	P1L	CA-CB-SG-C7
15	AH	22	P1L	O7-C7-SG-CB
15	AH	22	P1L	C8-C7-SG-CB
15	AI	22	P1L	CA-CB-SG-C7
15	AI	22	P1L	O7-C7-SG-CB
15	AI	22	P1L	C8-C7-SG-CB
15	AJ	22	P1L	CA-CB-SG-C7
15	AJ	22	P1L	O7-C7-SG-CB
15	AJ	22	P1L	C8-C7-SG-CB
15	AK	22	P1L	CA-CB-SG-C7
15	AK	22	P1L	O7-C7-SG-CB
15	AK	22	P1L	C8-C7-SG-CB
15	AL	22	P1L	CA-CB-SG-C7
15	AL	22	P1L	O7-C7-SG-CB
15	AL	22	P1L	C8-C7-SG-CB
15	AM	22	P1L	CA-CB-SG-C7
15	AM	22	P1L	O7-C7-SG-CB
15	AM	22	P1L	C8-C7-SG-CB
15	AN	22	P1L	CA-CB-SG-C7
15	AN	22	P1L	O7-C7-SG-CB
15	AN	22	P1L	C8-C7-SG-CB
15	AO	22	P1L	CA-CB-SG-C7
15	AO	22	P1L	O7-C7-SG-CB
15	AO	22	P1L	C8-C7-SG-CB
15	AP	22	P1L	CA-CB-SG-C7
15	AP	22	P1L	O7-C7-SG-CB
15	AP	22	P1L	C8-C7-SG-CB
15	AQ	22	P1L	CA-CB-SG-C7
15	AQ	22	P1L	O7-C7-SG-CB
15	AQ	22	P1L	C8-C7-SG-CB
15	AR	22	P1L	CA-CB-SG-C7
15	AR	22	P1L	O7-C7-SG-CB
15	AR	22	P1L	C8-C7-SG-CB
15	AS	22	P1L	CA-CB-SG-C7
15	AS	22	P1L	O7-C7-SG-CB

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Mol	Chain	Res	Type	Atoms
15	AS	22	P1L	C8-C7-SG-CB
15	AT	22	P1L	CA-CB-SG-C7
15	AT	22	P1L	O7-C7-SG-CB
15	AT	22	P1L	C8-C7-SG-CB
15	AU	22	P1L	CA-CB-SG-C7
15	AU	22	P1L	O7-C7-SG-CB
15	AU	22	P1L	C8-C7-SG-CB
15	AV	22	P1L	CA-CB-SG-C7
15	AV	22	P1L	O7-C7-SG-CB
15	AV	22	P1L	C8-C7-SG-CB
15	AW	22	P1L	CA-CB-SG-C7
15	AW	22	P1L	O7-C7-SG-CB
15	AW	22	P1L	C8-C7-SG-CB
15	AX	22	P1L	CA-CB-SG-C7
15	AX	22	P1L	O7-C7-SG-CB
15	AX	22	P1L	C8-C7-SG-CB
15	AY	22	P1L	CA-CB-SG-C7
15	AY	22	P1L	O7-C7-SG-CB
15	AY	22	P1L	C8-C7-SG-CB
15	AZ	22	P1L	CA-CB-SG-C7
15	AZ	22	P1L	O7-C7-SG-CB
15	AZ	22	P1L	C8-C7-SG-CB
15	AL	22	P1L	C11-C10-C9-C8
15	AN	22	P1L	C11-C10-C9-C8
15	AA	22	P1L	C11-C10-C9-C8
15	AC	22	P1L	C11-C10-C9-C8
15	AD	22	P1L	C11-C10-C9-C8
15	AE	22	P1L	C11-C10-C9-C8
15	AF	22	P1L	C11-C10-C9-C8
15	AG	22	P1L	C11-C10-C9-C8
15	AH	22	P1L	C11-C10-C9-C8
15	AI	22	P1L	C11-C10-C9-C8
15	AJ	22	P1L	C11-C10-C9-C8
15	AK	22	P1L	C11-C10-C9-C8
15	AM	22	P1L	C11-C10-C9-C8
15	AO	22	P1L	C11-C10-C9-C8
15	AP	22	P1L	C11-C10-C9-C8
15	AQ	22	P1L	C11-C10-C9-C8
15	AR	22	P1L	C11-C10-C9-C8
15	AS	22	P1L	C11-C10-C9-C8
15	AT	22	P1L	C11-C10-C9-C8
15	AU	22	P1L	C11-C10-C9-C8

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Mol	Chain	Res	Type	Atoms
15	AV	22	P1L	C11-C10-C9-C8
15	AX	22	P1L	C11-C10-C9-C8
15	AY	22	P1L	C11-C10-C9-C8
15	AZ	22	P1L	C11-C10-C9-C8
15	AB	22	P1L	C11-C10-C9-C8
15	AW	22	P1L	C11-C10-C9-C8
15	AO	22	P1L	C10-C11-C12-C13
15	AB	22	P1L	C10-C11-C12-C13
15	AD	22	P1L	C10-C11-C12-C13
15	AG	22	P1L	C10-C11-C12-C13
15	AJ	22	P1L	C10-C11-C12-C13
15	AK	22	P1L	C10-C11-C12-C13
15	AL	22	P1L	C10-C11-C12-C13
15	AM	22	P1L	C10-C11-C12-C13
15	AU	22	P1L	C10-C11-C12-C13
15	AV	22	P1L	C10-C11-C12-C13
15	AW	22	P1L	C10-C11-C12-C13
15	AZ	22	P1L	C10-C11-C12-C13
15	AA	22	P1L	C10-C11-C12-C13
15	AC	22	P1L	C10-C11-C12-C13
15	AE	22	P1L	C10-C11-C12-C13
15	AI	22	P1L	C10-C11-C12-C13
15	AP	22	P1L	C10-C11-C12-C13
15	AR	22	P1L	C10-C11-C12-C13
15	AS	22	P1L	C10-C11-C12-C13
15	AX	22	P1L	C10-C11-C12-C13
15	AF	22	P1L	C10-C11-C12-C13
15	AH	22	P1L	C10-C11-C12-C13
15	AQ	22	P1L	C10-C11-C12-C13
15	AT	22	P1L	C10-C11-C12-C13
15	AY	22	P1L	C10-C11-C12-C13
15	AN	22	P1L	C10-C11-C12-C13
15	AN	22	P1L	C9-C10-C11-C12
15	AF	22	P1L	C9-C10-C11-C12
15	AP	22	P1L	C9-C10-C11-C12
15	AR	22	P1L	C9-C10-C11-C12
15	AT	22	P1L	C9-C10-C11-C12
15	AV	22	P1L	C9-C10-C11-C12
15	AA	22	P1L	C9-C10-C11-C12
15	AB	22	P1L	C9-C10-C11-C12
15	AC	22	P1L	C9-C10-C11-C12
15	AD	22	P1L	C9-C10-C11-C12

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Mol	Chain	Res	Type	Atoms
15	AE	22	P1L	C9-C10-C11-C12
15	AG	22	P1L	C9-C10-C11-C12
15	AH	22	P1L	C9-C10-C11-C12
15	AI	22	P1L	C9-C10-C11-C12
15	AJ	22	P1L	C9-C10-C11-C12
15	AL	22	P1L	C9-C10-C11-C12
15	AM	22	P1L	C9-C10-C11-C12
15	AO	22	P1L	C9-C10-C11-C12
15	AQ	22	P1L	C9-C10-C11-C12
15	AS	22	P1L	C9-C10-C11-C12
15	AU	22	P1L	C9-C10-C11-C12
15	AW	22	P1L	C9-C10-C11-C12
15	AX	22	P1L	C9-C10-C11-C12
15	AY	22	P1L	C9-C10-C11-C12
15	AZ	22	P1L	C9-C10-C11-C12
15	AK	22	P1L	C9-C10-C11-C12
15	AA	22	P1L	C7-C8-C9-C10
15	AB	22	P1L	C7-C8-C9-C10
15	AC	22	P1L	C7-C8-C9-C10
15	AD	22	P1L	C7-C8-C9-C10
15	AE	22	P1L	C7-C8-C9-C10
15	AF	22	P1L	C7-C8-C9-C10
15	AG	22	P1L	C7-C8-C9-C10
15	AH	22	P1L	C7-C8-C9-C10
15	AI	22	P1L	C7-C8-C9-C10
15	AJ	22	P1L	C7-C8-C9-C10
15	AK	22	P1L	C7-C8-C9-C10
15	AL	22	P1L	C7-C8-C9-C10
15	AM	22	P1L	C7-C8-C9-C10
15	AN	22	P1L	C7-C8-C9-C10
15	AO	22	P1L	C7-C8-C9-C10
15	AP	22	P1L	C7-C8-C9-C10
15	AQ	22	P1L	C7-C8-C9-C10
15	AR	22	P1L	C7-C8-C9-C10
15	AS	22	P1L	C7-C8-C9-C10
15	AT	22	P1L	C7-C8-C9-C10
15	AU	22	P1L	C7-C8-C9-C10
15	AV	22	P1L	C7-C8-C9-C10
15	AW	22	P1L	C7-C8-C9-C10
15	AX	22	P1L	C7-C8-C9-C10
15	AY	22	P1L	C7-C8-C9-C10
15	AZ	22	P1L	C7-C8-C9-C10

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no oligosaccharides 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.

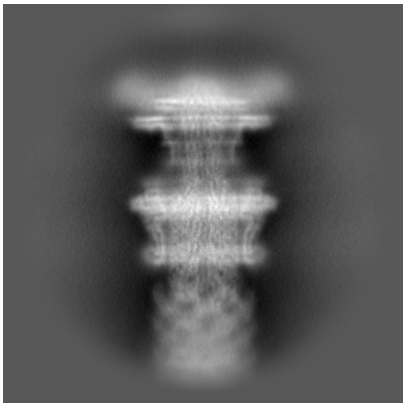
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30359. These allow visual inspection of the internal detail of the map and identification of artifacts.

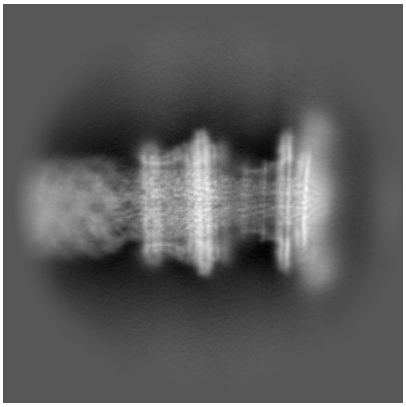
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

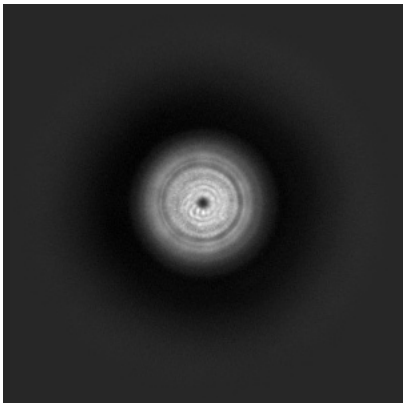
6.1.1 Primary map



X



Y

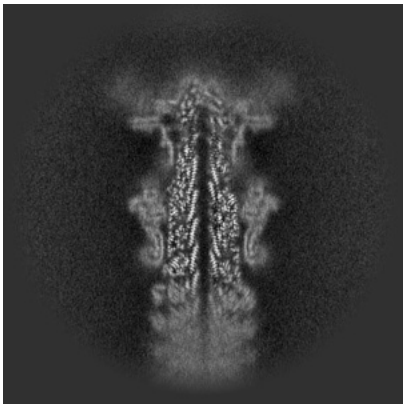


Z

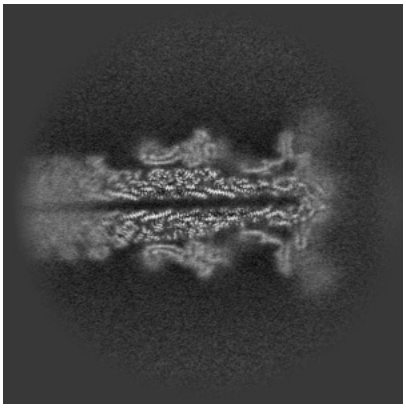
The images above show the map projected in three orthogonal directions.

6.2 Central slices

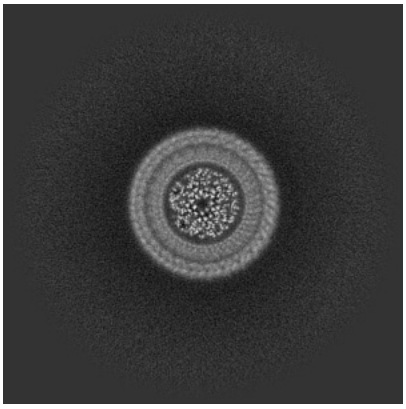
6.2.1 Primary map



X Index: 256



Y Index: 256

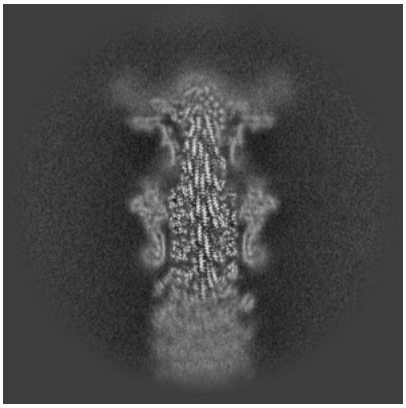


Z Index: 256

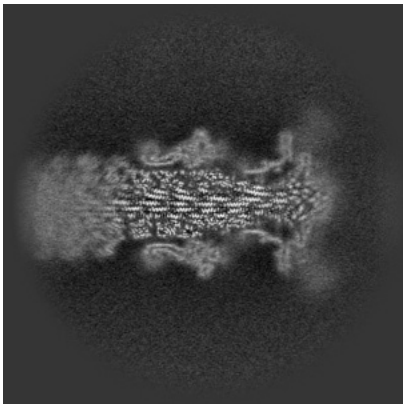
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

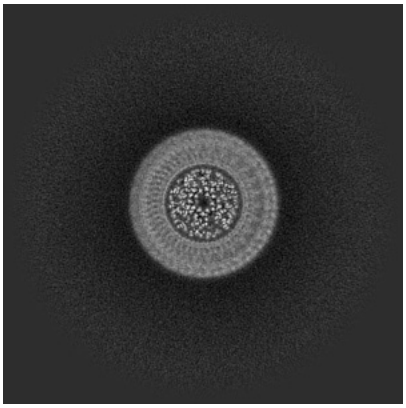
6.3.1 Primary map



X Index: 269



Y Index: 244

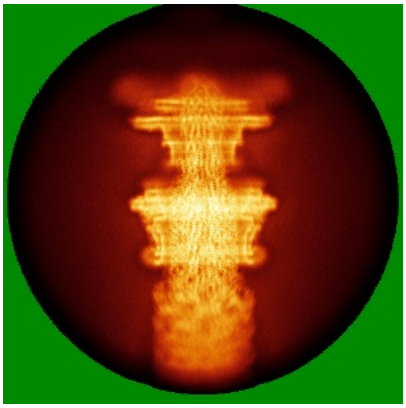


Z Index: 251

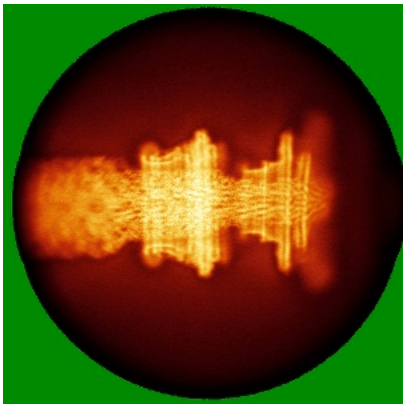
The images above show the largest variance slices of the map in three orthogonal directions.

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

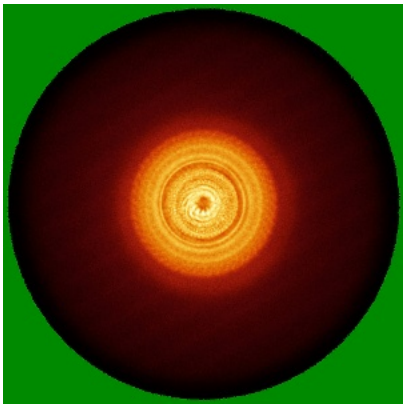
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.38. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

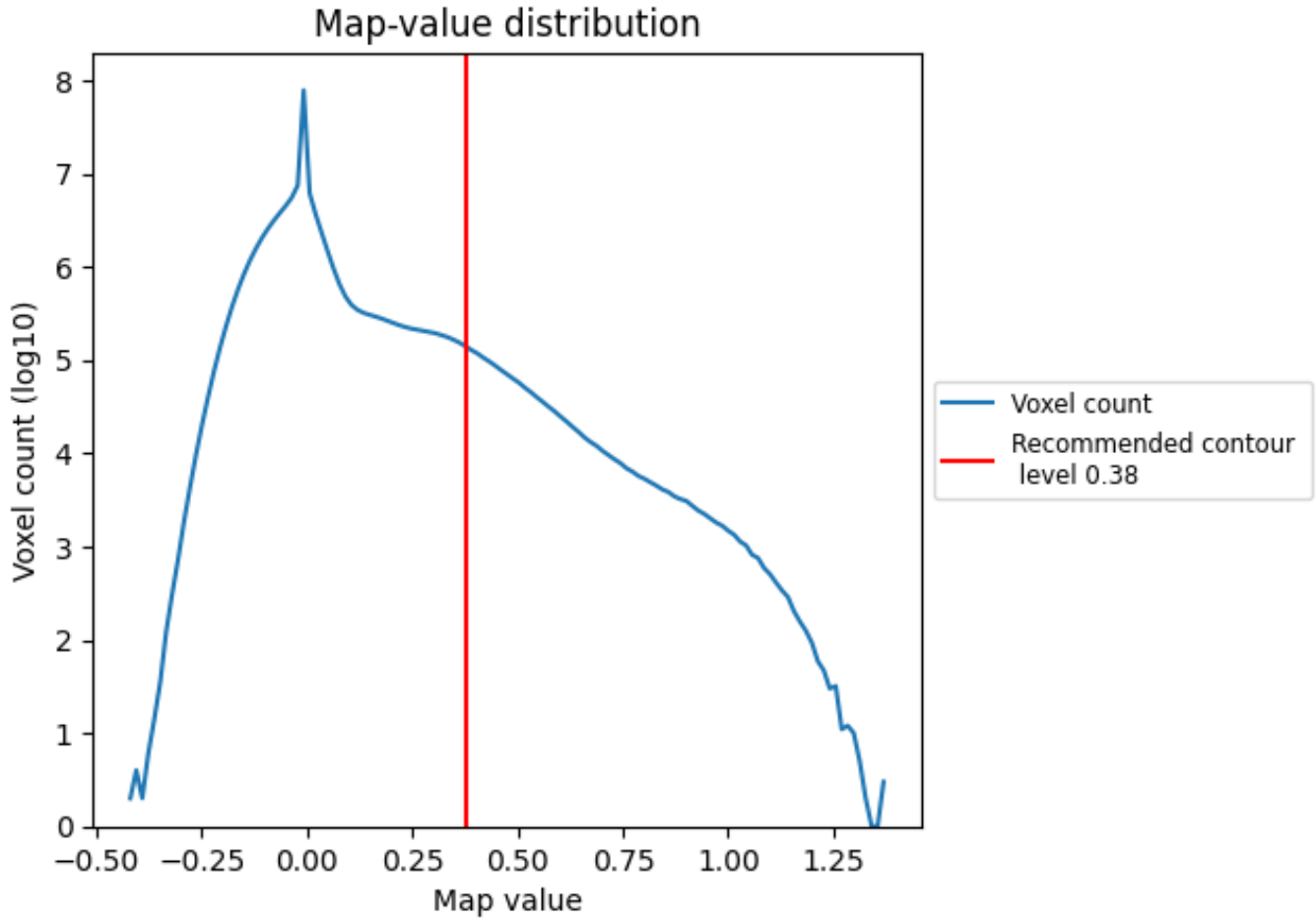
6.6 Mask visualisation (i)

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

7 Map analysis

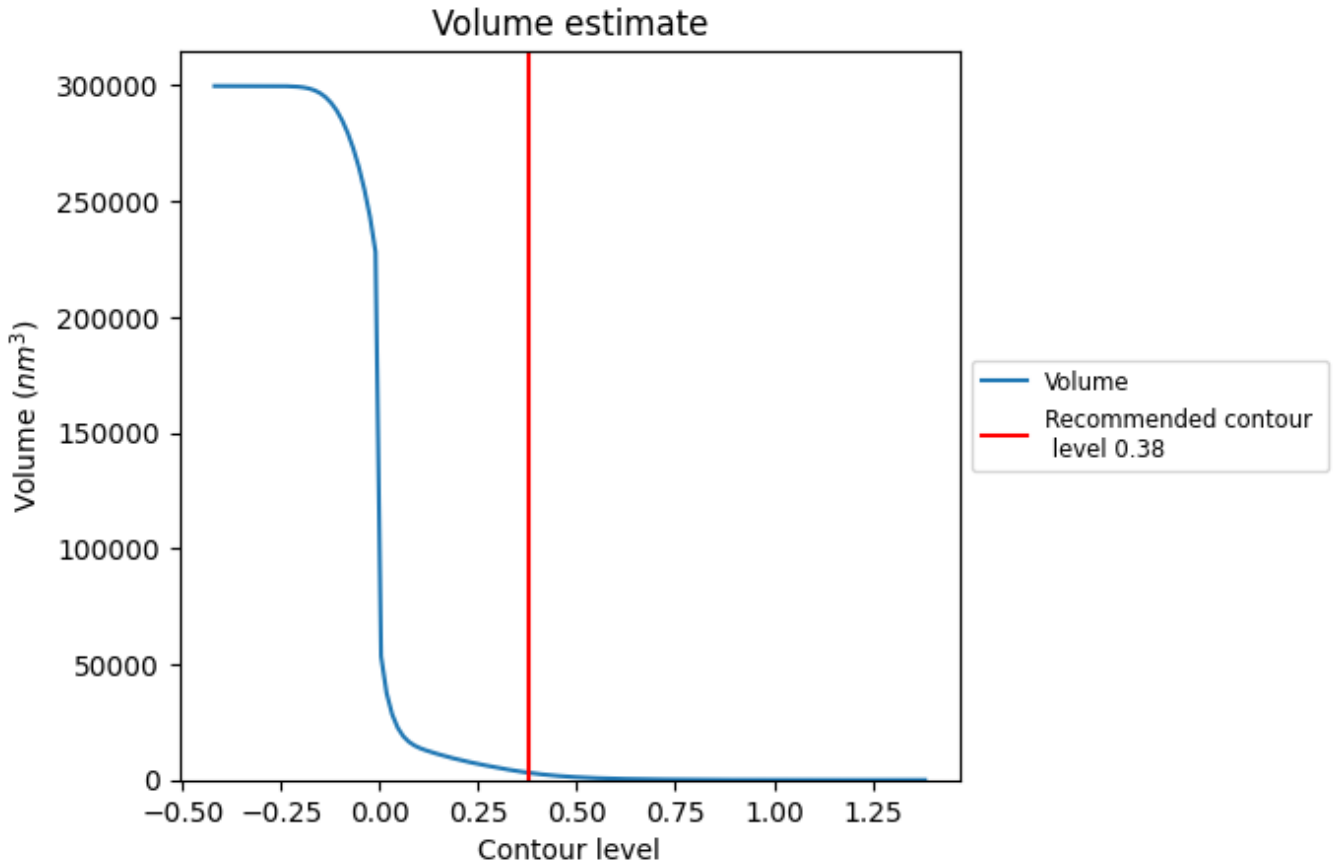
This section contains the results of statistical analysis of the map.

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.

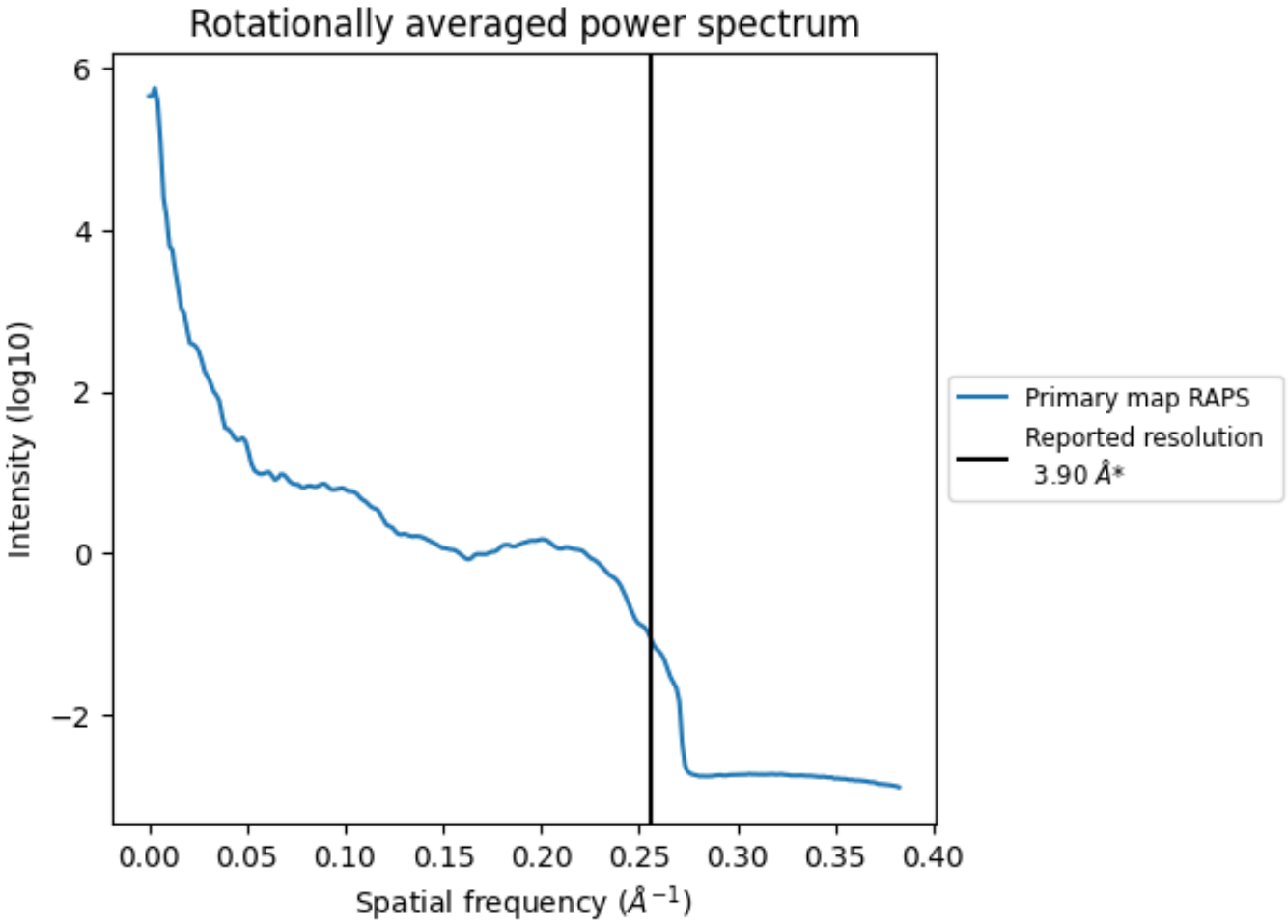
7.2 Volume estimate



The volume at the recommended contour level is 3068 nm^3; this corresponds to an approximate mass of 2771 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 0.256 $Å^{-1}$

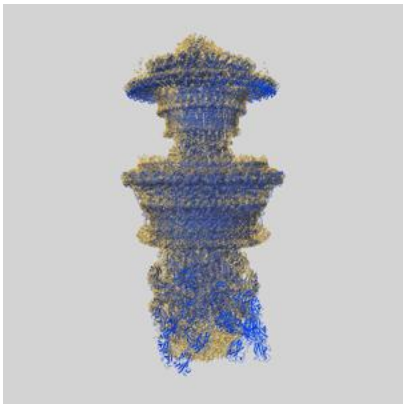
8 Fourier-Shell correlation

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

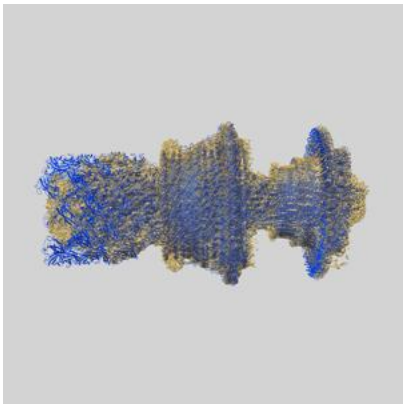
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30359 and PDB model 7CGO. Per-residue inclusion information can be found in section 3 on page 24.

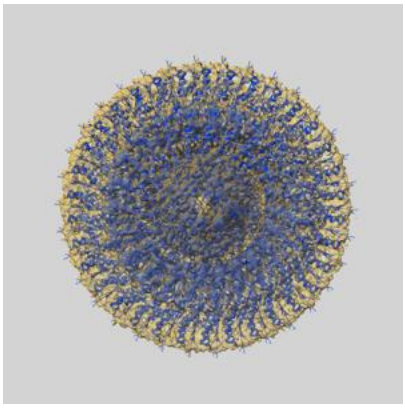
9.1 Map-model overlay



X



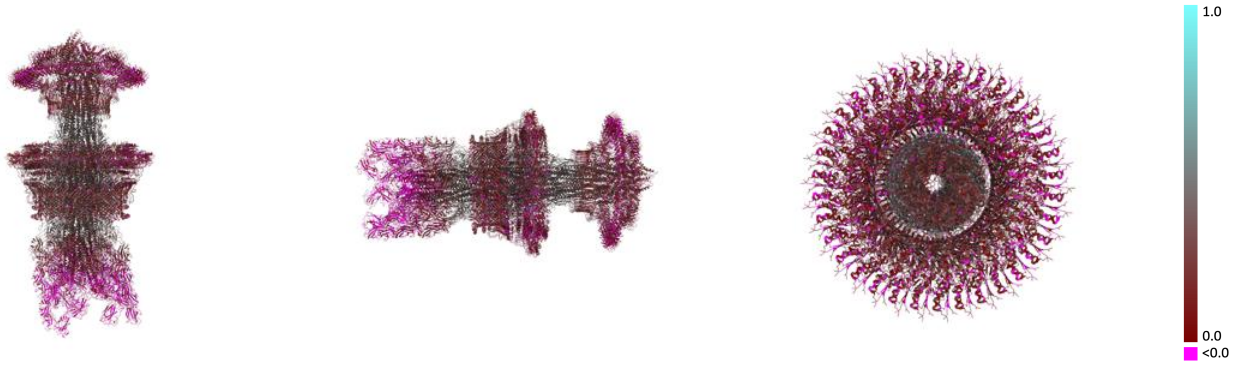
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.38 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

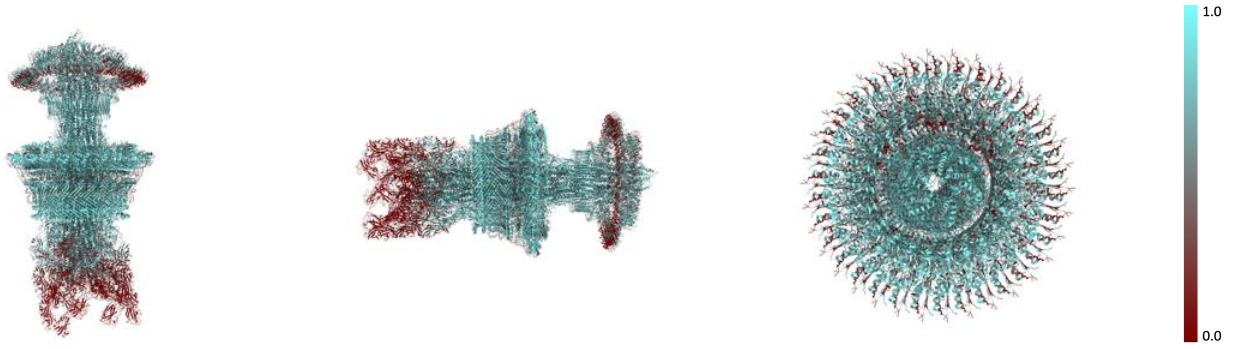
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

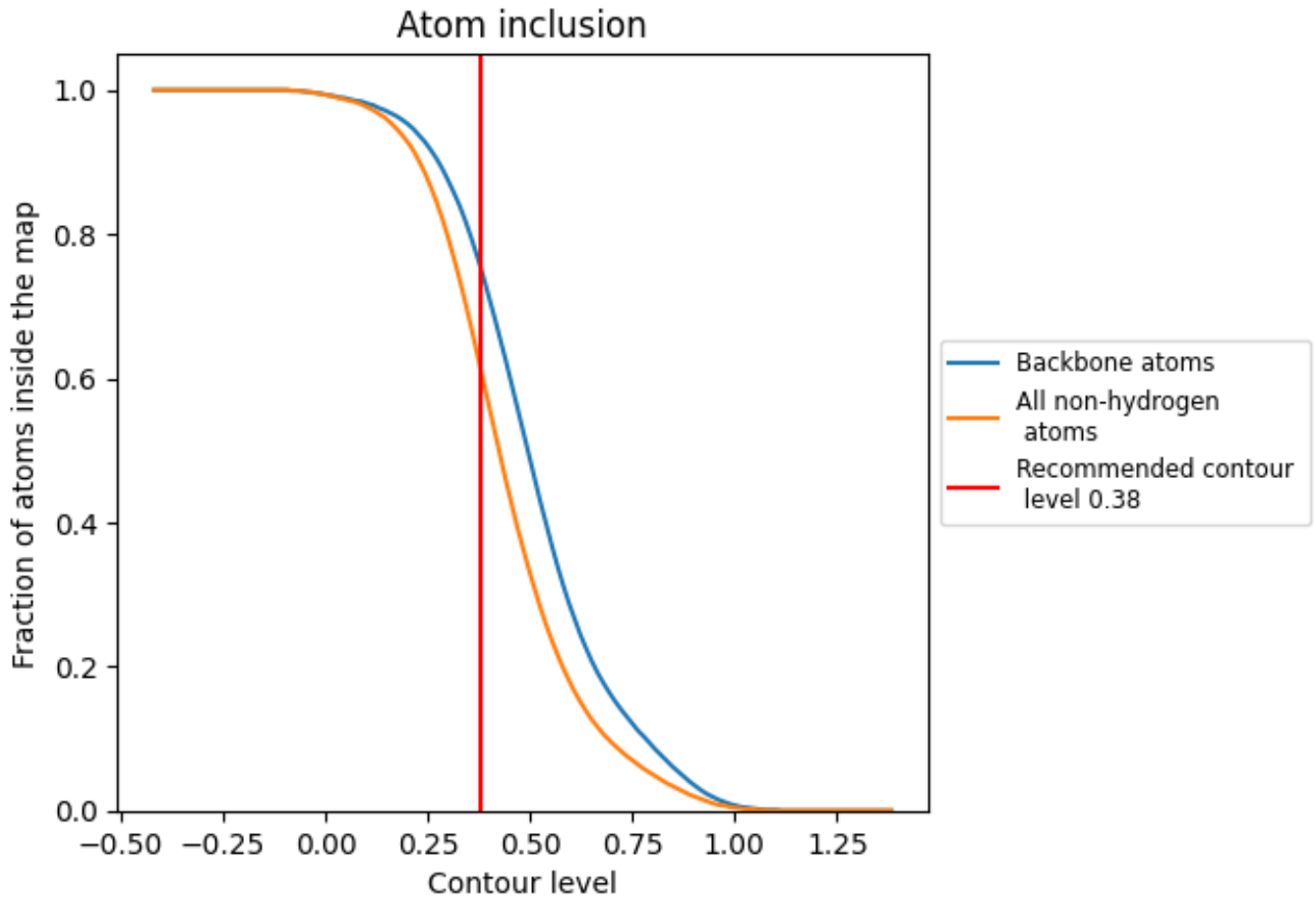
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.38).

9.4 Atom inclusion (i)



At the recommended contour level, 75% of all backbone atoms, 61% 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 (0.38) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6110	0.2210
0	0.8930	0.4500
1	0.9070	0.4270
2	0.9470	0.4930
3	0.8800	0.4400
4	0.9070	0.4600
5	0.8500	0.4640
6	0.6710	0.4240
7	0.8430	0.4520
8	0.8360	0.4430
9	0.7790	0.4420
A	0.8060	0.4250
AA	0.7250	0.2400
AB	0.7370	0.2460
AC	0.7250	0.2380
AD	0.7050	0.2210
AE	0.7160	0.2310
AF	0.7060	0.2190
AG	0.6930	0.2240
AH	0.6950	0.2120
AI	0.6800	0.1990
AJ	0.6700	0.1870
AK	0.6920	0.1890
AL	0.6770	0.1720
AM	0.6600	0.1770
AN	0.6500	0.1490
AO	0.6650	0.1540
AP	0.6580	0.1350
AQ	0.6620	0.1360
AR	0.6750	0.1550
AS	0.6750	0.1610
AT	0.6690	0.1560
AU	0.6770	0.1750
AV	0.7060	0.2050
AW	0.7130	0.2040

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Chain	Atom inclusion	Q-score
AX	0.7150	0.2290
AY	0.7160	0.2250
AZ	0.7220	0.2230
B	0.7740	0.4090
BA	0.7860	0.2310
BB	0.7710	0.2260
BC	0.7680	0.2300
BD	0.7700	0.2210
BE	0.7750	0.2290
BF	0.7640	0.2150
BG	0.7690	0.2040
BH	0.7640	0.1980
BI	0.7720	0.1930
BJ	0.7580	0.1830
BK	0.7580	0.1780
BL	0.7350	0.1660
BM	0.7320	0.1510
BN	0.7410	0.1320
BO	0.7290	0.1340
BP	0.7180	0.1220
BQ	0.7080	0.1270
BR	0.7270	0.1310
BS	0.7380	0.1460
BT	0.7320	0.1390
BU	0.7440	0.1520
BV	0.7600	0.1690
BW	0.7740	0.1900
BX	0.7690	0.2040
BY	0.7830	0.2250
BZ	0.7850	0.2240
C	0.8110	0.4230
CA	0.7230	0.2260
CB	0.7290	0.2420
CC	0.6840	0.2410
CD	0.6140	0.2210
CE	0.6420	0.2360
CF	0.7260	0.2860
Ca	0.5340	0.1090
Cb	0.5340	0.1260
Cc	0.5090	0.1180
Cd	0.4790	0.1030
Ce	0.5060	0.1160

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Chain	Atom inclusion	Q-score
Cf	0.5020	0.1070
Cg	0.4830	0.0970
Ch	0.4930	0.1200
Ci	0.4830	0.1190
Cj	0.4800	0.1320
Ck	0.4660	0.1320
Cl	0.4920	0.1390
Cm	0.4740	0.1490
Cn	0.4560	0.1390
Co	0.4720	0.1570
Cp	0.4670	0.1430
Cq	0.4660	0.1300
Cr	0.4710	0.1280
Cs	0.5010	0.1350
Ct	0.5300	0.1630
Cu	0.5200	0.1290
Cv	0.5220	0.1370
Cw	0.5250	0.1430
Cx	0.5220	0.1370
Cy	0.5470	0.1620
Cz	0.5420	0.1400
D	0.8060	0.4220
DA	0.5190	0.3360
DB	0.6960	0.3470
DC	0.6990	0.3310
DD	0.6760	0.3100
DE	0.6800	0.3230
DF	0.6560	0.3150
DG	0.6630	0.3140
DH	0.6610	0.3080
DI	0.6180	0.2800
DJ	0.5790	0.2670
DK	0.5320	0.2560
DL	0.4750	0.1410
DM	0.4900	0.1570
DN	0.4540	0.1470
DO	0.4430	0.1660
DP	0.3490	0.0950
DQ	0.3590	0.1350
DR	0.3420	0.0940
DS	0.3010	0.0620
DT	0.3400	0.1240

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Chain	Atom inclusion	Q-score
DU	0.2570	0.0660
DV	0.2390	0.0520
DW	0.2520	0.0960
DX	0.2110	0.0180
DY	0.2050	0.0410
DZ	0.1940	0.0600
Da	0.7030	0.2190
Db	0.6490	0.1990
Dc	0.6540	0.1900
Dd	0.6380	0.1770
De	0.6100	0.1800
Df	0.6060	0.1740
Dg	0.5560	0.1100
Dh	0.5060	0.1350
Di	0.4540	0.1110
Dj	0.4310	0.1280
Dk	0.4510	0.1440
Dl	0.4140	0.1010
Dm	0.4240	0.1170
Dn	0.4590	0.1250
Do	0.5000	0.1580
Dp	0.5780	0.1810
Dq	0.6360	0.1880
Dr	0.6280	0.1980
Ds	0.6320	0.2160
Dt	0.6590	0.2010
Du	0.7020	0.2200
Dv	0.6770	0.2320
Dw	0.6570	0.2050
E	0.8200	0.4270
EA	0.1370	0.0090
EB	0.1620	0.0480
EC	0.1270	0.0050
ED	0.1040	-0.0140
EE	0.1200	0.0400
EF	0.0810	0.0100
EG	0.0760	0.0240
Ea	0.5680	0.1500
Eb	0.5590	0.1460
Ec	0.5710	0.1320
Ed	0.5820	0.1580
Ee	0.5950	0.1340

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Chain	Atom inclusion	Q-score
Ef	0.5800	0.1450
Eg	0.5330	0.1300
Eh	0.5560	0.1230
F	0.8110	0.4240
G	0.8110	0.4290
GA	0.6360	0.2900
GB	0.6400	0.2500
GC	0.4730	0.2790
GD	0.7200	0.3160
GE	0.6670	0.2860
GF	0.5330	0.2750
GG	0.4330	0.3040
GH	0.2220	0.2370
GI	0.1330	0.1770
GJ	0.4000	0.2520
GK	0.3330	0.2420
H	0.8130	0.4320
I	0.8190	0.4330
J	0.8120	0.4360
K	0.8040	0.4360
L	0.8070	0.4340
M	0.8140	0.4340
N	0.7950	0.4370
O	0.8110	0.4320
P	0.8100	0.4310
Q	0.8120	0.4300
R	0.8060	0.4290
S	0.8120	0.4270
T	0.8140	0.4330
U	0.8240	0.4380
V	0.8180	0.4300
W	0.8200	0.4360
X	0.8070	0.4230
a	0.8490	0.4350
b	0.8160	0.4130
c	0.8470	0.4370
d	0.8320	0.4260
e	0.8100	0.4220
f	0.8210	0.4150
g	0.8060	0.3760
h	0.8240	0.4170
i	0.8280	0.4180

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Chain	Atom inclusion	Q-score
j	0.8070	0.4120
k	0.8160	0.3950
l	0.7790	0.3840
m	0.8260	0.4000
n	0.8150	0.3870
o	0.7960	0.3830
p	0.8000	0.3950
q	0.7720	0.3570
r	0.7580	0.3120
s	0.7530	0.3550
t	0.7810	0.3660
u	0.7550	0.3500
v	0.6850	0.3130
w	0.7330	0.3110
x	0.6670	0.2840
y	0.7330	0.3080
z	0.7340	0.3040