



Full wwPDB EM Validation Report ⓘ

Nov 6, 2022 – 01:24 AM EST

PDB ID : 5WK6
EMDB ID : EMD-8856
Title : Cryo-EM structure of *P. aeruginosa* flagellar filaments G420A
Authors : Wang, F.; Postel, S.; Sundberg, E.J.; Egelman, E.H.
Deposited on : 2017-07-24
Resolution : 4.30 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

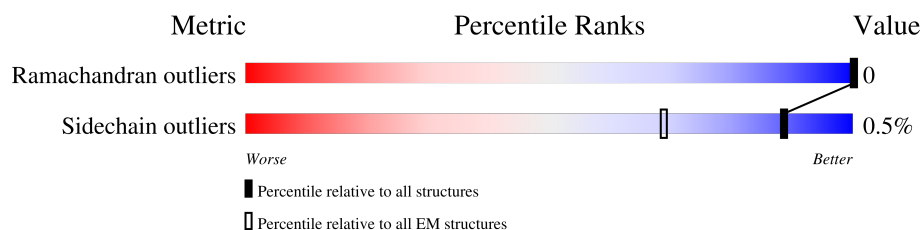
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.30 Å.

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




























Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	488	53% 45%
1	B	488	53% 45%
1	C	488	53% 45%
1	D	488	53% 45%
1	E	488	53% 45%
1	F	488	53% 45%
1	G	488	53% 45%
1	H	488	53% 45%
1	I	488	53% 45%
1	J	488	53% 45%







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Mol	Chain	Length	Quality of chain	
1	K	488		
1	L	488		
1	M	488		
1	N	488		
1	O	488		
1	P	488		
1	Q	488		
1	R	488		
1	S	488		
1	T	488		
1	U	488		
1	V	488		
1	W	488		
1	X	488		
1	Y	488		
1	Z	488		
1	a	488		
1	b	488		
1	c	488		
1	d	488		
1	e	488		
1	f	488		
1	g	488		
1	h	488		
1	i	488		

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Mol	Chain	Length	Quality of chain
1	j	488	 53%45%
1	k	488	 53%45%
1	l	488	 53%45%
1	m	488	 53%45%
1	n	488	 53%45%
1	o	488	 53%45%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 161663 atoms, of which 80524 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 B-type flagellin.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	B	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	C	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	D	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	E	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	F	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	G	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	H	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	I	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	J	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	K	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	L	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	M	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	N	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	O	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	P	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	Q	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	R	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	S	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	T	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	U	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	V	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	W	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	X	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	Y	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	Z	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	a	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	b	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	c	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	d	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	e	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	f	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	g	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	h	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	i	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	j	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	k	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	l	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	m	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	n	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0
1	o	269	Total 3943	C 1187	H 1964	N 371	O 421	0	0

There are 41 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	420	ALA	GLY	engineered mutation	UNP P72151
B	420	ALA	GLY	engineered mutation	UNP P72151
C	420	ALA	GLY	engineered mutation	UNP P72151
D	420	ALA	GLY	engineered mutation	UNP P72151
E	420	ALA	GLY	engineered mutation	UNP P72151
F	420	ALA	GLY	engineered mutation	UNP P72151
G	420	ALA	GLY	engineered mutation	UNP P72151
H	420	ALA	GLY	engineered mutation	UNP P72151
I	420	ALA	GLY	engineered mutation	UNP P72151
J	420	ALA	GLY	engineered mutation	UNP P72151
K	420	ALA	GLY	engineered mutation	UNP P72151
L	420	ALA	GLY	engineered mutation	UNP P72151
M	420	ALA	GLY	engineered mutation	UNP P72151
N	420	ALA	GLY	engineered mutation	UNP P72151
O	420	ALA	GLY	engineered mutation	UNP P72151
P	420	ALA	GLY	engineered mutation	UNP P72151
Q	420	ALA	GLY	engineered mutation	UNP P72151
R	420	ALA	GLY	engineered mutation	UNP P72151
S	420	ALA	GLY	engineered mutation	UNP P72151
T	420	ALA	GLY	engineered mutation	UNP P72151
U	420	ALA	GLY	engineered mutation	UNP P72151
V	420	ALA	GLY	engineered mutation	UNP P72151
W	420	ALA	GLY	engineered mutation	UNP P72151
X	420	ALA	GLY	engineered mutation	UNP P72151
Y	420	ALA	GLY	engineered mutation	UNP P72151
Z	420	ALA	GLY	engineered mutation	UNP P72151
a	420	ALA	GLY	engineered mutation	UNP P72151
b	420	ALA	GLY	engineered mutation	UNP P72151
c	420	ALA	GLY	engineered mutation	UNP P72151
d	420	ALA	GLY	engineered mutation	UNP P72151
e	420	ALA	GLY	engineered mutation	UNP P72151
f	420	ALA	GLY	engineered mutation	UNP P72151

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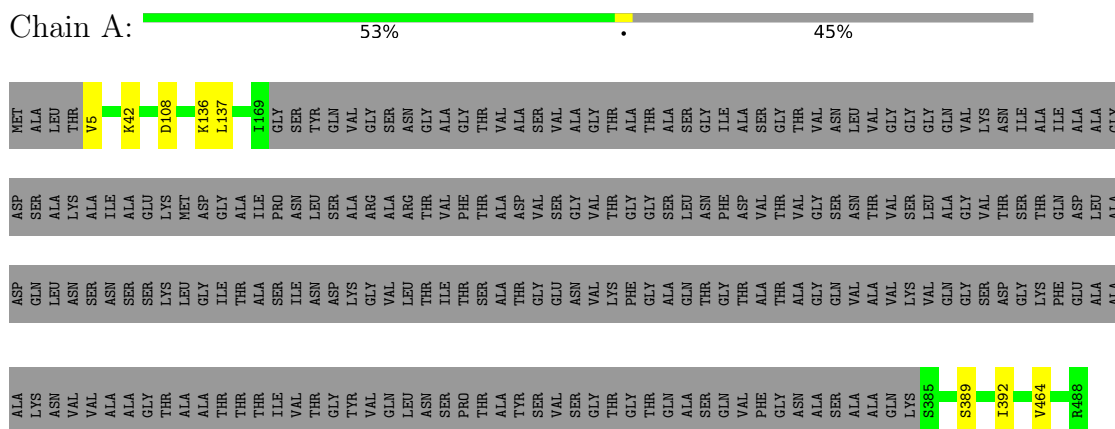
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Chain	Residue	Modelled	Actual	Comment	Reference
g	420	ALA	GLY	engineered mutation	UNP P72151
h	420	ALA	GLY	engineered mutation	UNP P72151
i	420	ALA	GLY	engineered mutation	UNP P72151
j	420	ALA	GLY	engineered mutation	UNP P72151
k	420	ALA	GLY	engineered mutation	UNP P72151
l	420	ALA	GLY	engineered mutation	UNP P72151
m	420	ALA	GLY	engineered mutation	UNP P72151
n	420	ALA	GLY	engineered mutation	UNP P72151
o	420	ALA	GLY	engineered mutation	UNP P72151

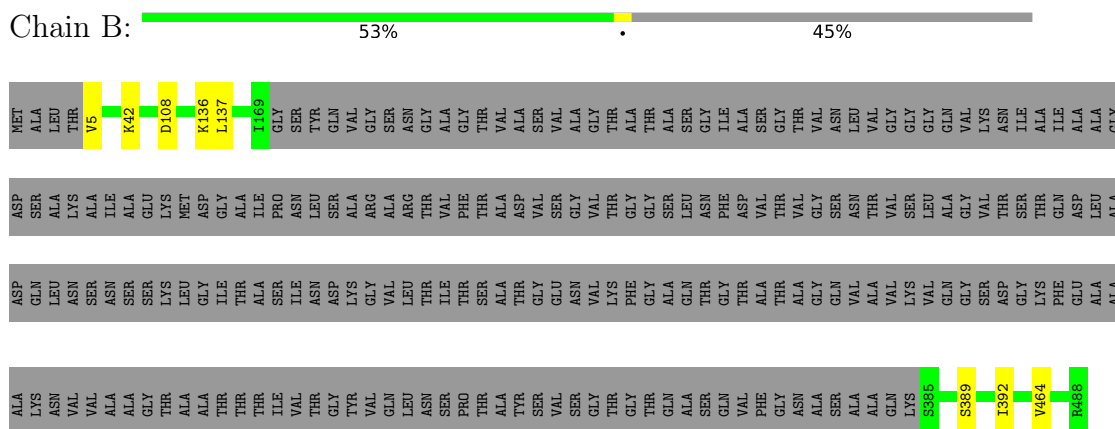
3 Residue-property plots [i](#)

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. 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. 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.

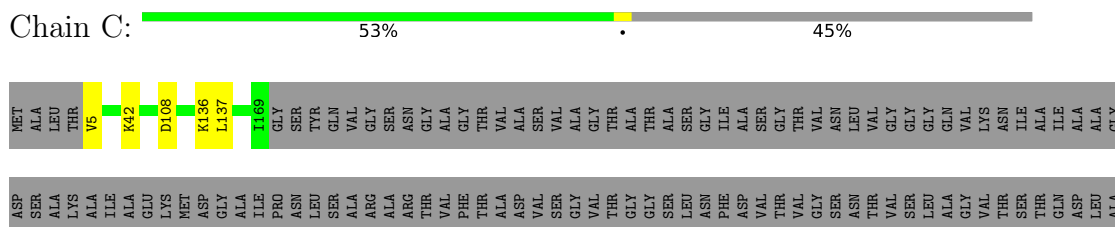
- Molecule 1: B-type flagellin



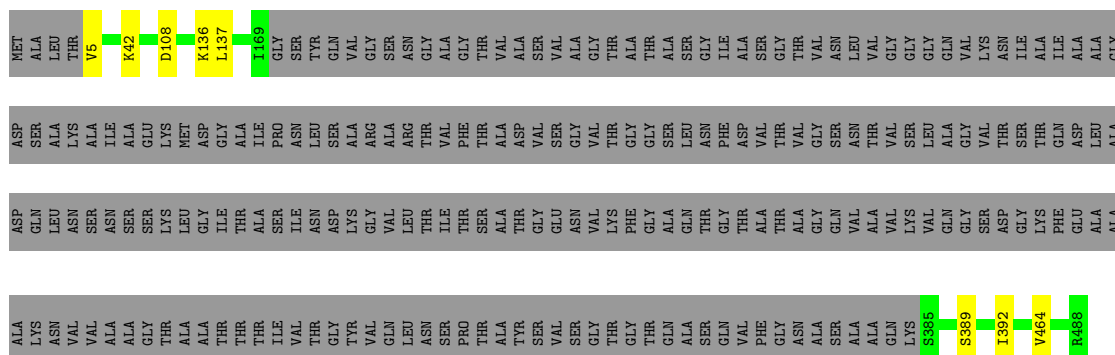
- Molecule 1: B-type flagellin



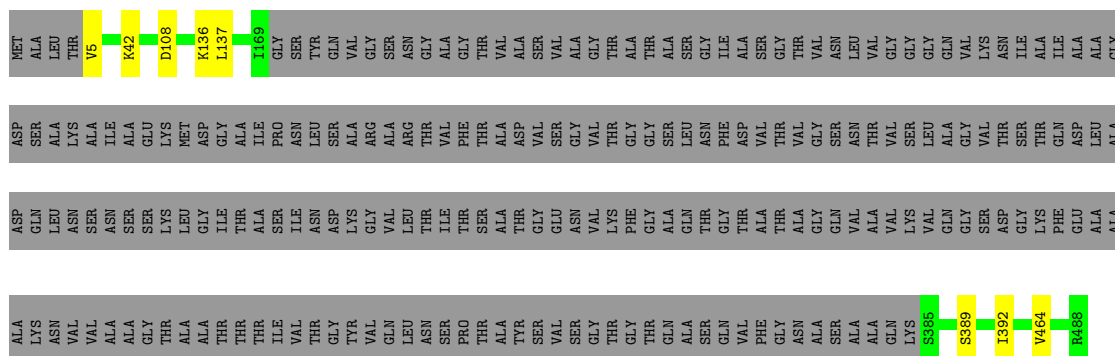
- Molecule 1: B-type flagellin



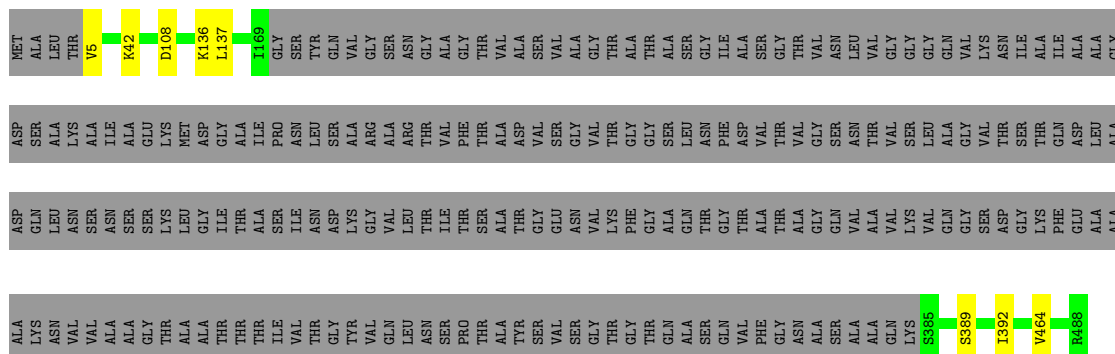
- Molecule 1: B-type flagellin



- Molecule 1: B-type flagellin



- Molecule 1: B-type flagellin



ALA	LYS	ASN	VAL	VAL	ALA	ALA	GLY	THR	ALA	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
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● Molecule 1: B-type flagellin



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● Molecule 1: B-type flagellin

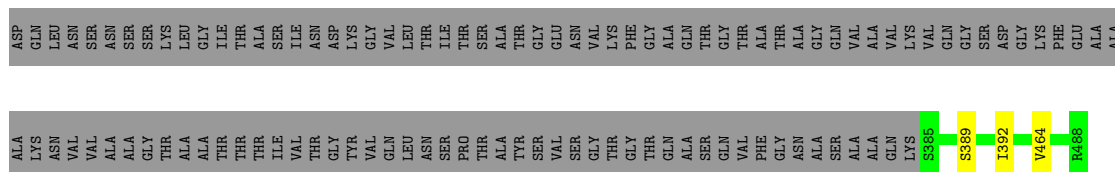


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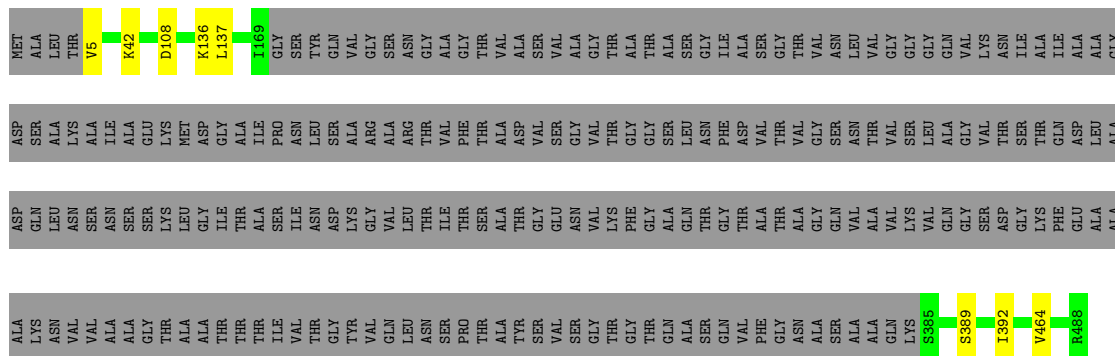
● Molecule 1: B-type flagellin



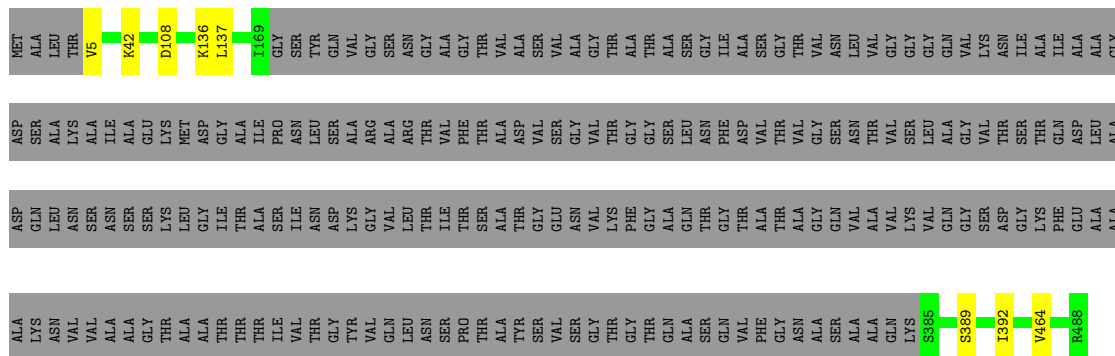
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ASP	SER	ALA	LYS	ILE	ALA	GLU	MET	GLY	ALA	ILE	PRO	ASN	LEU	ALA	ARG	VAL	ALA	ARG	THR	THR	PHE	THR	ALA	ASP	VAL	SER	VAL	GLY	VAL	THR	LEU	ASN	PHE	THR	VAL	GLY	GLN	VAL	LYS	THR	SER	GLN	ASP	LEU	ALA	



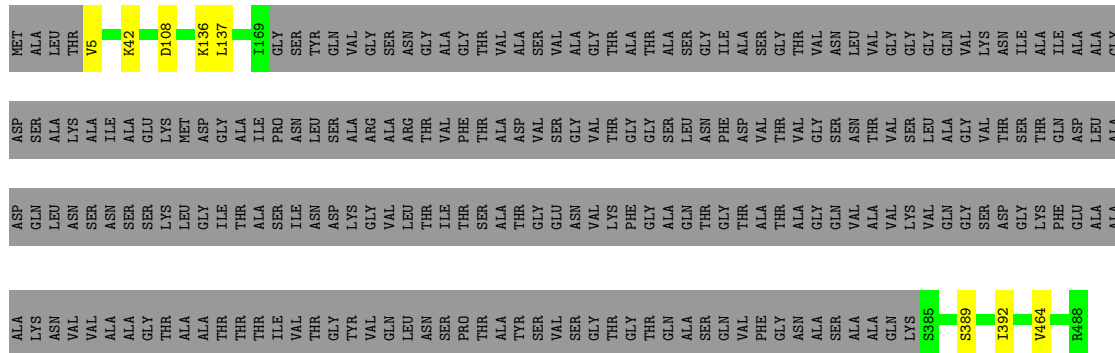
- Molecule 1: B-type flagellin



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- Molecule 1: B-type flagellin



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ALA	LYS	ASN	VAL	ALA	ALA	GLY	THR	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
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• Molecule 1: B-type flagellin



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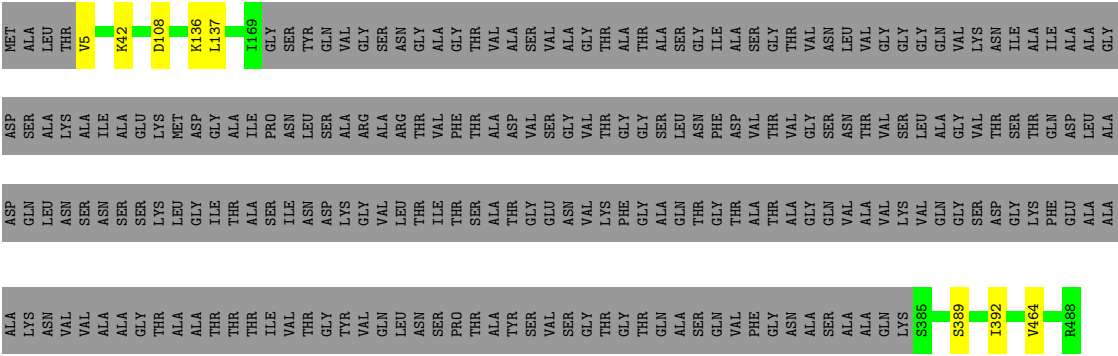
• Molecule 1: B-type flagellin



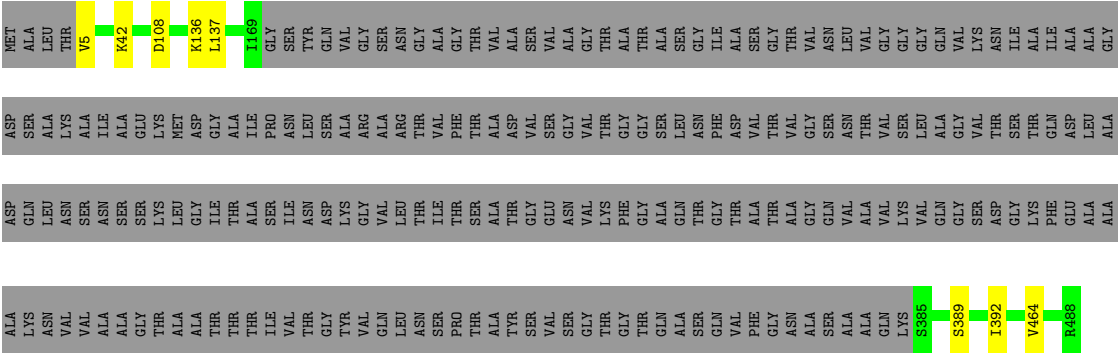
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• Molecule 1: B-type flagellin

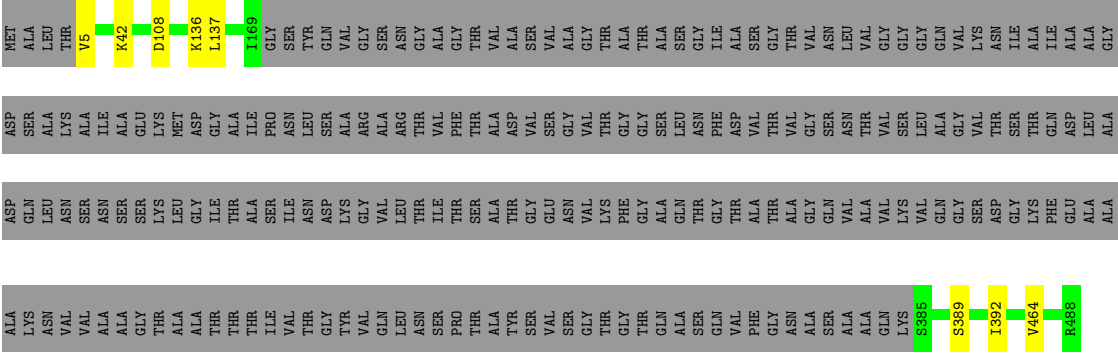




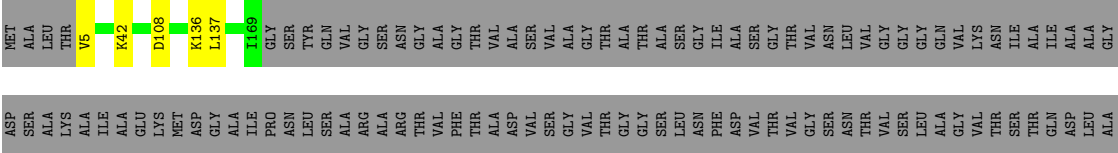
● Molecule 1: B-type flagellin



● Molecule 1: B-type flagellin



● Molecule 1: B-type flagellin



ASP	GLN	LEU	ASN	THR	SER	ASN	SER	SER	LYS	GLY	ILE	THR	ALA	SER	GLY	VAL	GLN	VAL	VAL	GLN	GLY	VAL	VAL	GLN	GLY	ASP	GLY	PHE	GLU	ALA	ALA
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● Molecule 1: B-type flagellin



MET	ALA	LEU	THR	V5	K42	D108	K136	L137	I169	GLY	TYR	GLN	VAL	GLY	VAL	GLN	ARG	VAL	GLY	ASP	ASN	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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ASP	SER	ALA	LYS	ILE	ALA	GLU	GLY	LYS	GLY	ASP	LEU	ASN	SER	GLY	VAL	ARG	VAL	GLY	ASP	ASN	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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ASP	GLN	LEU	ASN	SER	ASN	SER	LYS	GLY	ILE	THR	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	ALA
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ALA	LYS	ASN	VAL	VAL	ALA	ALA	GLY	THR	ALA	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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● Molecule 1: B-type flagellin



MET	ALA	LEU	THR	V5	K42	D108	K136	L137	I169	GLY	SER	TYR	GLN	VAL	GLY	VAL	GLN	ARG	VAL	GLY	ASP	ASN	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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ASP	GLN	LEU	ASN	SER	ASN	SER	LYS	GLY	ILE	THR	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	ALA
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ALA	LYS	ASN	VAL	VAL	ALA	ALA	GLY	THR	ALA	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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● Molecule 1: B-type flagellin

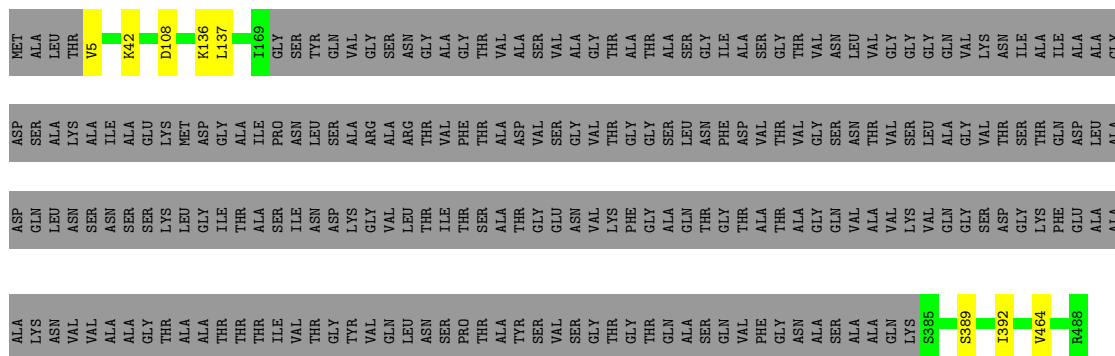


MET	ALA	LEU	THR	V5	K42	D108	K136	L137	I169	GLY	TYR	GLN	VAL	GLY	VAL	GLN	ARG	VAL	GLY	ASP	ASN	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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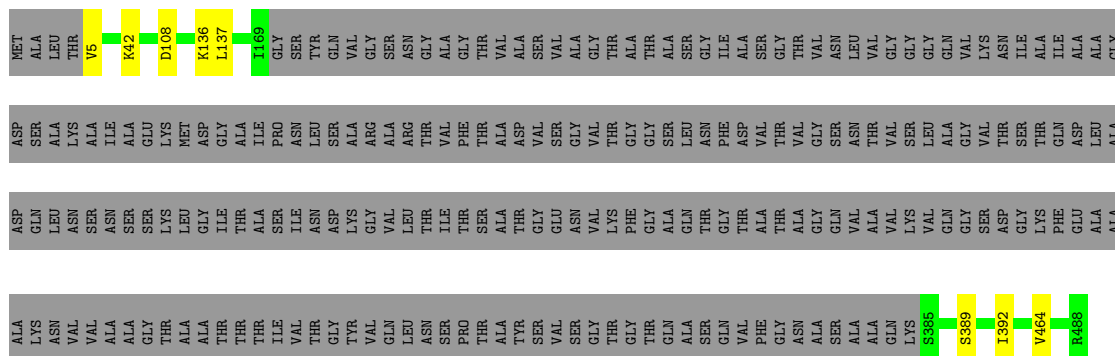
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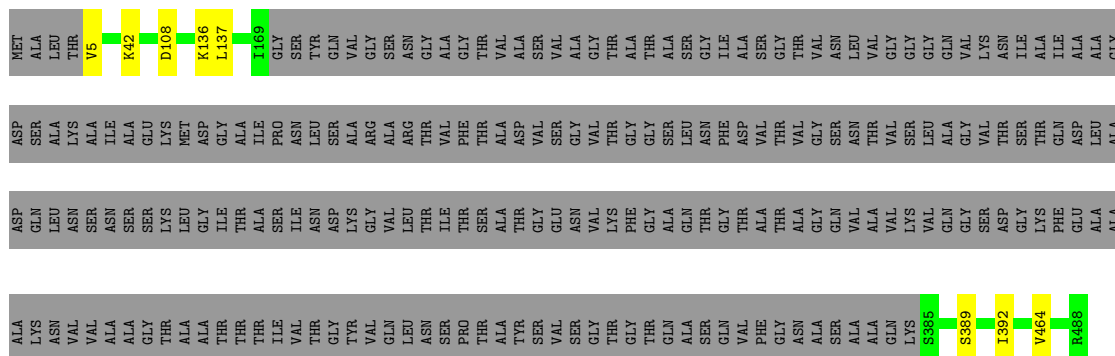
ALA	LYS	ASN	VAL	VAL	ALA	ALA	GLY	THR	ALA	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	GLY
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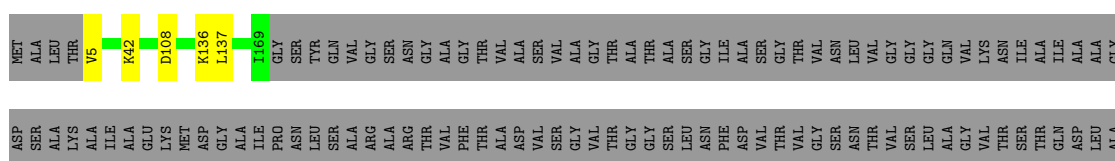
- Molecule 1: B-type flagellin

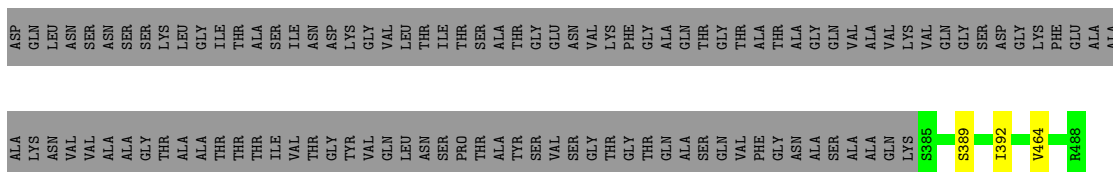


- Molecule 1: B-type flagellin

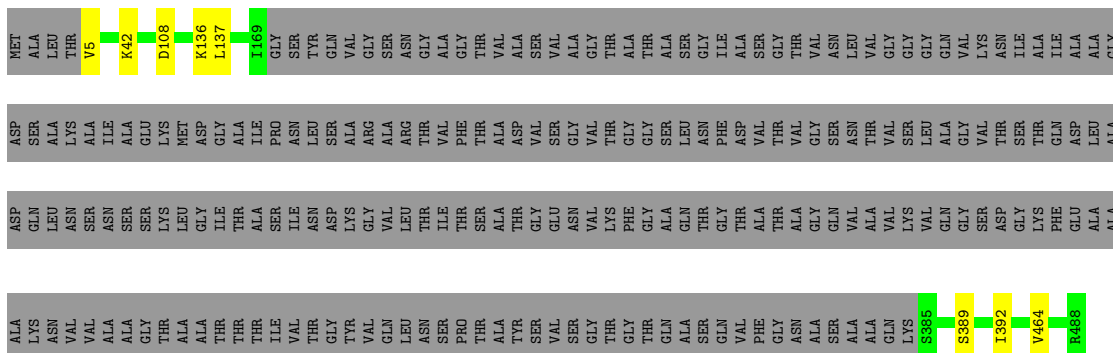


- Molecule 1: B-type flagellin

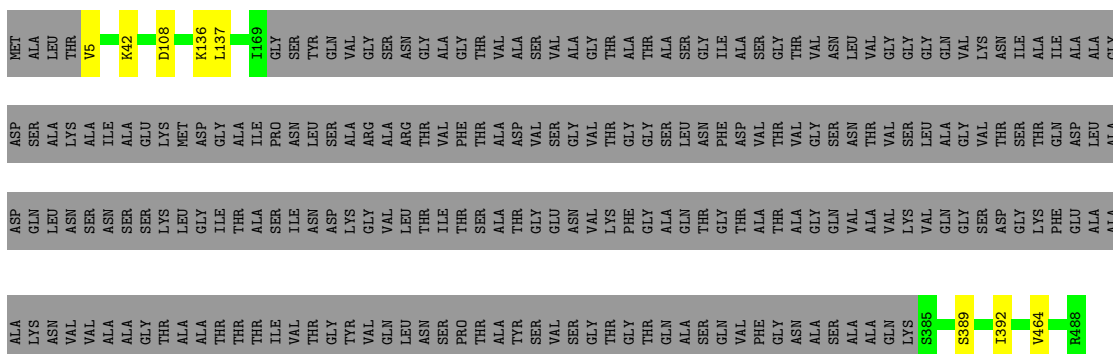




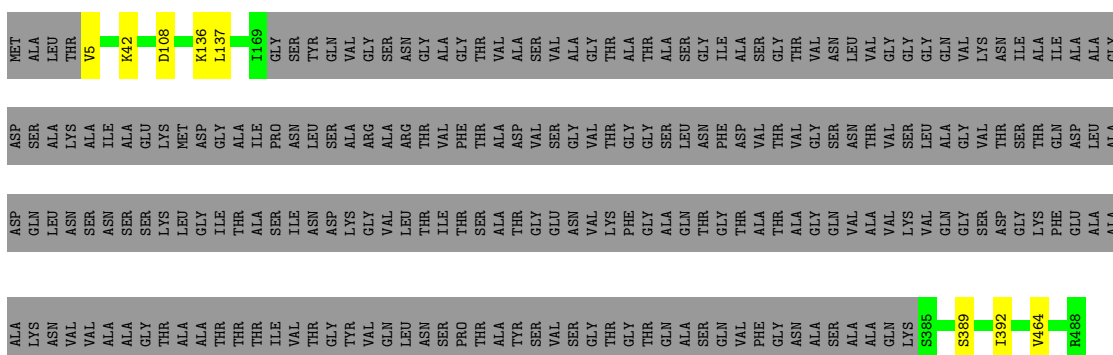
- Molecule 1: B-type flagellin

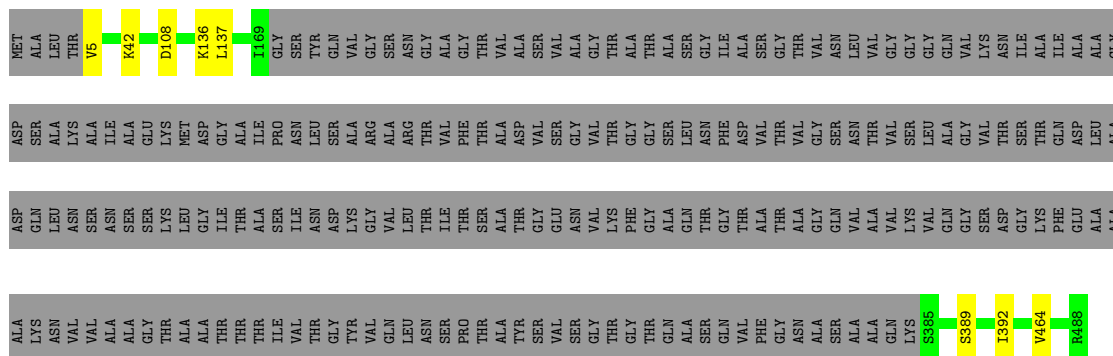


- Molecule 1: B-type flagellin

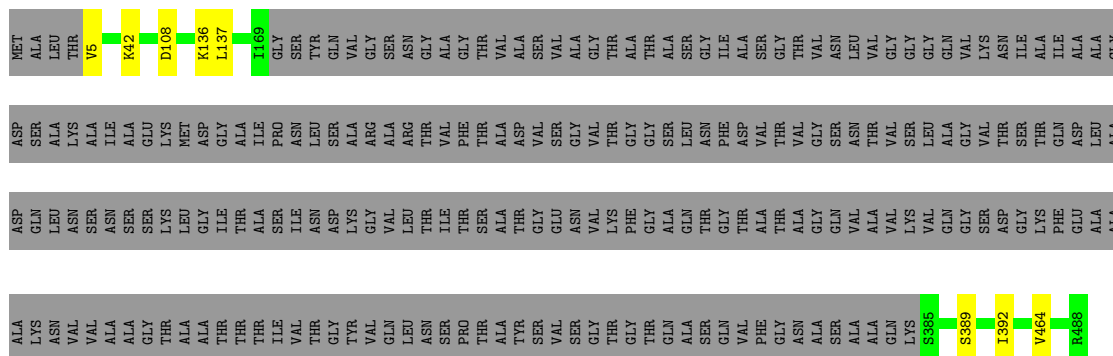


- Molecule 1: B-type flagellin





- Molecule 1: B-type flagellin



4 Experimental information

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=65.27°, rise=4.73 Å, axial sym=C1	Depositor
Number of segments used	17450	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	20	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	B	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	C	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	D	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	E	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	F	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	G	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	H	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	I	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	J	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	K	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	L	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	M	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	N	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	O	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	P	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	Q	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	R	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	S	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	T	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	U	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	V	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	W	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	X	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	Y	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	Z	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	a	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	b	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	c	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	d	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	e	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	f	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	g	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	h	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	i	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	j	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	k	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	l	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	m	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	n	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
1	o	0.57	2/1985 (0.1%)	0.73	1/2692 (0.0%)
All	All	0.57	82/81385 (0.1%)	0.73	41/110372 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
1	B	0	4
1	C	0	4
1	D	0	4
1	E	0	4
1	F	0	4
1	G	0	4
1	H	0	4
1	I	0	4
1	J	0	4
1	K	0	4
1	L	0	4
1	M	0	4
1	N	0	4
1	O	0	4
1	P	0	4
1	Q	0	4
1	R	0	4
1	S	0	4
1	T	0	4
1	U	0	4
1	V	0	4
1	W	0	4
1	X	0	4
1	Y	0	4
1	Z	0	4
1	a	0	4

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	b	0	4
1	c	0	4
1	d	0	4
1	e	0	4
1	f	0	4
1	g	0	4
1	h	0	4
1	i	0	4
1	j	0	4
1	k	0	4
1	l	0	4
1	m	0	4
1	n	0	4
1	o	0	4
All	All	0	164

All (82) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	T	464	VAL	CB-CG1	-6.67	1.38	1.52
1	U	464	VAL	CB-CG1	-6.67	1.38	1.52
1	h	464	VAL	CB-CG1	-6.67	1.38	1.52
1	m	464	VAL	CB-CG1	-6.67	1.38	1.52
1	L	464	VAL	CB-CG1	-6.67	1.38	1.52
1	j	464	VAL	CB-CG1	-6.67	1.38	1.52
1	Y	464	VAL	CB-CG1	-6.66	1.38	1.52
1	K	464	VAL	CB-CG1	-6.66	1.38	1.52
1	Z	464	VAL	CB-CG1	-6.66	1.38	1.52
1	a	464	VAL	CB-CG1	-6.66	1.38	1.52
1	n	464	VAL	CB-CG1	-6.66	1.38	1.52
1	D	464	VAL	CB-CG1	-6.66	1.38	1.52
1	c	464	VAL	CB-CG1	-6.66	1.38	1.52
1	k	464	VAL	CB-CG1	-6.66	1.38	1.52
1	E	464	VAL	CB-CG1	-6.65	1.38	1.52
1	O	464	VAL	CB-CG1	-6.65	1.38	1.52
1	d	464	VAL	CB-CG1	-6.65	1.38	1.52
1	l	464	VAL	CB-CG1	-6.65	1.38	1.52
1	H	464	VAL	CB-CG1	-6.65	1.38	1.52
1	S	464	VAL	CB-CG1	-6.65	1.38	1.52
1	V	464	VAL	CB-CG1	-6.65	1.38	1.52
1	A	464	VAL	CB-CG1	-6.64	1.38	1.52
1	Q	464	VAL	CB-CG1	-6.64	1.38	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	R	464	VAL	CB-CG1	-6.64	1.38	1.52
1	G	464	VAL	CB-CG1	-6.64	1.39	1.52
1	N	464	VAL	CB-CG1	-6.64	1.38	1.52
1	W	464	VAL	CB-CG1	-6.64	1.38	1.52
1	e	464	VAL	CB-CG1	-6.64	1.39	1.52
1	F	464	VAL	CB-CG1	-6.64	1.39	1.52
1	M	464	VAL	CB-CG1	-6.64	1.39	1.52
1	X	464	VAL	CB-CG1	-6.64	1.39	1.52
1	J	464	VAL	CB-CG1	-6.63	1.39	1.52
1	f	464	VAL	CB-CG1	-6.63	1.39	1.52
1	P	464	VAL	CB-CG1	-6.63	1.39	1.52
1	g	464	VAL	CB-CG1	-6.63	1.39	1.52
1	b	464	VAL	CB-CG1	-6.62	1.39	1.52
1	B	464	VAL	CB-CG1	-6.62	1.39	1.52
1	I	464	VAL	CB-CG1	-6.62	1.39	1.52
1	o	464	VAL	CB-CG1	-6.62	1.39	1.52
1	i	464	VAL	CB-CG1	-6.62	1.39	1.52
1	C	464	VAL	CB-CG1	-6.62	1.39	1.52
1	K	5	VAL	CB-CG1	-5.13	1.42	1.52
1	a	5	VAL	CB-CG1	-5.13	1.42	1.52
1	i	5	VAL	CB-CG1	-5.13	1.42	1.52
1	m	5	VAL	CB-CG1	-5.12	1.42	1.52
1	T	5	VAL	CB-CG1	-5.12	1.42	1.52
1	c	5	VAL	CB-CG1	-5.12	1.42	1.52
1	E	5	VAL	CB-CG1	-5.12	1.42	1.52
1	Z	5	VAL	CB-CG1	-5.12	1.42	1.52
1	Q	5	VAL	CB-CG1	-5.11	1.42	1.52
1	X	5	VAL	CB-CG1	-5.11	1.42	1.52
1	h	5	VAL	CB-CG1	-5.11	1.42	1.52
1	L	5	VAL	CB-CG1	-5.11	1.42	1.52
1	n	5	VAL	CB-CG1	-5.11	1.42	1.52
1	A	5	VAL	CB-CG1	-5.11	1.42	1.52
1	V	5	VAL	CB-CG1	-5.11	1.42	1.52
1	G	5	VAL	CB-CG1	-5.10	1.42	1.52
1	H	5	VAL	CB-CG1	-5.10	1.42	1.52
1	U	5	VAL	CB-CG1	-5.10	1.42	1.52
1	l	5	VAL	CB-CG1	-5.10	1.42	1.52
1	B	5	VAL	CB-CG1	-5.10	1.42	1.52
1	R	5	VAL	CB-CG1	-5.10	1.42	1.52
1	I	5	VAL	CB-CG1	-5.10	1.42	1.52
1	e	5	VAL	CB-CG1	-5.10	1.42	1.52
1	g	5	VAL	CB-CG1	-5.10	1.42	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	o	5	VAL	CB-CG1	-5.10	1.42	1.52
1	C	5	VAL	CB-CG1	-5.10	1.42	1.52
1	N	5	VAL	CB-CG1	-5.09	1.42	1.52
1	P	5	VAL	CB-CG1	-5.09	1.42	1.52
1	D	5	VAL	CB-CG1	-5.09	1.42	1.52
1	F	5	VAL	CB-CG1	-5.09	1.42	1.52
1	J	5	VAL	CB-CG1	-5.09	1.42	1.52
1	S	5	VAL	CB-CG1	-5.09	1.42	1.52
1	b	5	VAL	CB-CG1	-5.09	1.42	1.52
1	O	5	VAL	CB-CG1	-5.09	1.42	1.52
1	W	5	VAL	CB-CG1	-5.09	1.42	1.52
1	Y	5	VAL	CB-CG1	-5.09	1.42	1.52
1	j	5	VAL	CB-CG1	-5.09	1.42	1.52
1	M	5	VAL	CB-CG1	-5.08	1.42	1.52
1	f	5	VAL	CB-CG1	-5.08	1.42	1.52
1	k	5	VAL	CB-CG1	-5.08	1.42	1.52
1	d	5	VAL	CB-CG1	-5.07	1.42	1.52

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	b	42	LYS	CD-CE-NZ	-5.48	99.10	111.70
1	f	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	h	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	i	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	B	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	U	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	G	42	LYS	CD-CE-NZ	-5.47	99.12	111.70
1	c	42	LYS	CD-CE-NZ	-5.47	99.13	111.70
1	R	42	LYS	CD-CE-NZ	-5.46	99.13	111.70
1	X	42	LYS	CD-CE-NZ	-5.46	99.13	111.70
1	o	42	LYS	CD-CE-NZ	-5.46	99.13	111.70
1	C	42	LYS	CD-CE-NZ	-5.46	99.14	111.70
1	D	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	J	42	LYS	CD-CE-NZ	-5.46	99.14	111.70
1	P	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	A	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	M	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	N	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	V	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	H	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	L	42	LYS	CD-CE-NZ	-5.46	99.15	111.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	a	42	LYS	CD-CE-NZ	-5.46	99.15	111.70
1	K	42	LYS	CD-CE-NZ	-5.45	99.16	111.70
1	S	42	LYS	CD-CE-NZ	-5.45	99.16	111.70
1	E	42	LYS	CD-CE-NZ	-5.45	99.16	111.70
1	k	42	LYS	CD-CE-NZ	-5.45	99.16	111.70
1	Q	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	j	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	l	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	n	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	F	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	W	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	Z	42	LYS	CD-CE-NZ	-5.45	99.17	111.70
1	T	42	LYS	CD-CE-NZ	-5.45	99.18	111.70
1	g	42	LYS	CD-CE-NZ	-5.45	99.18	111.70
1	m	42	LYS	CD-CE-NZ	-5.45	99.18	111.70
1	I	42	LYS	CD-CE-NZ	-5.44	99.18	111.70
1	O	42	LYS	CD-CE-NZ	-5.44	99.18	111.70
1	Y	42	LYS	CD-CE-NZ	-5.44	99.18	111.70
1	e	42	LYS	CD-CE-NZ	-5.44	99.18	111.70
1	d	42	LYS	CD-CE-NZ	-5.44	99.19	111.70

There are no chirality outliers.

All (164) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	108	ASP	Peptide
1	A	137	LEU	Peptide
1	A	389	SER	Peptide
1	A	392	ILE	Peptide
1	B	108	ASP	Peptide
1	B	137	LEU	Peptide
1	B	389	SER	Peptide
1	B	392	ILE	Peptide
1	C	108	ASP	Peptide
1	C	137	LEU	Peptide
1	C	389	SER	Peptide
1	C	392	ILE	Peptide
1	D	108	ASP	Peptide
1	D	137	LEU	Peptide
1	D	389	SER	Peptide
1	D	392	ILE	Peptide
1	E	108	ASP	Peptide

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Mol	Chain	Res	Type	Group
1	E	137	LEU	Peptide
1	E	389	SER	Peptide
1	E	392	ILE	Peptide
1	F	108	ASP	Peptide
1	F	137	LEU	Peptide
1	F	389	SER	Peptide
1	F	392	ILE	Peptide
1	G	108	ASP	Peptide
1	G	137	LEU	Peptide
1	G	389	SER	Peptide
1	G	392	ILE	Peptide
1	H	108	ASP	Peptide
1	H	137	LEU	Peptide
1	H	389	SER	Peptide
1	H	392	ILE	Peptide
1	I	108	ASP	Peptide
1	I	137	LEU	Peptide
1	I	389	SER	Peptide
1	I	392	ILE	Peptide
1	J	108	ASP	Peptide
1	J	137	LEU	Peptide
1	J	389	SER	Peptide
1	J	392	ILE	Peptide
1	K	108	ASP	Peptide
1	K	137	LEU	Peptide
1	K	389	SER	Peptide
1	K	392	ILE	Peptide
1	L	108	ASP	Peptide
1	L	137	LEU	Peptide
1	L	389	SER	Peptide
1	L	392	ILE	Peptide
1	M	108	ASP	Peptide
1	M	137	LEU	Peptide
1	M	389	SER	Peptide
1	M	392	ILE	Peptide
1	N	108	ASP	Peptide
1	N	137	LEU	Peptide
1	N	389	SER	Peptide
1	N	392	ILE	Peptide
1	O	108	ASP	Peptide
1	O	137	LEU	Peptide
1	O	389	SER	Peptide

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Mol	Chain	Res	Type	Group
1	O	392	ILE	Peptide
1	P	108	ASP	Peptide
1	P	137	LEU	Peptide
1	P	389	SER	Peptide
1	P	392	ILE	Peptide
1	Q	108	ASP	Peptide
1	Q	137	LEU	Peptide
1	Q	389	SER	Peptide
1	Q	392	ILE	Peptide
1	R	108	ASP	Peptide
1	R	137	LEU	Peptide
1	R	389	SER	Peptide
1	R	392	ILE	Peptide
1	S	108	ASP	Peptide
1	S	137	LEU	Peptide
1	S	389	SER	Peptide
1	S	392	ILE	Peptide
1	T	108	ASP	Peptide
1	T	137	LEU	Peptide
1	T	389	SER	Peptide
1	T	392	ILE	Peptide
1	U	108	ASP	Peptide
1	U	137	LEU	Peptide
1	U	389	SER	Peptide
1	U	392	ILE	Peptide
1	V	108	ASP	Peptide
1	V	137	LEU	Peptide
1	V	389	SER	Peptide
1	V	392	ILE	Peptide
1	W	108	ASP	Peptide
1	W	137	LEU	Peptide
1	W	389	SER	Peptide
1	W	392	ILE	Peptide
1	X	108	ASP	Peptide
1	X	137	LEU	Peptide
1	X	389	SER	Peptide
1	X	392	ILE	Peptide
1	Y	108	ASP	Peptide
1	Y	137	LEU	Peptide
1	Y	389	SER	Peptide
1	Y	392	ILE	Peptide
1	Z	108	ASP	Peptide

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Mol	Chain	Res	Type	Group
1	Z	137	LEU	Peptide
1	Z	389	SER	Peptide
1	Z	392	ILE	Peptide
1	a	108	ASP	Peptide
1	a	137	LEU	Peptide
1	a	389	SER	Peptide
1	a	392	ILE	Peptide
1	b	108	ASP	Peptide
1	b	137	LEU	Peptide
1	b	389	SER	Peptide
1	b	392	ILE	Peptide
1	c	108	ASP	Peptide
1	c	137	LEU	Peptide
1	c	389	SER	Peptide
1	c	392	ILE	Peptide
1	d	108	ASP	Peptide
1	d	137	LEU	Peptide
1	d	389	SER	Peptide
1	d	392	ILE	Peptide
1	e	108	ASP	Peptide
1	e	137	LEU	Peptide
1	e	389	SER	Peptide
1	e	392	ILE	Peptide
1	f	108	ASP	Peptide
1	f	137	LEU	Peptide
1	f	389	SER	Peptide
1	f	392	ILE	Peptide
1	g	108	ASP	Peptide
1	g	137	LEU	Peptide
1	g	389	SER	Peptide
1	g	392	ILE	Peptide
1	h	108	ASP	Peptide
1	h	137	LEU	Peptide
1	h	389	SER	Peptide
1	h	392	ILE	Peptide
1	i	108	ASP	Peptide
1	i	137	LEU	Peptide
1	i	389	SER	Peptide
1	i	392	ILE	Peptide
1	j	108	ASP	Peptide
1	j	137	LEU	Peptide
1	j	389	SER	Peptide

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Mol	Chain	Res	Type	Group
1	j	392	ILE	Peptide
1	k	108	ASP	Peptide
1	k	137	LEU	Peptide
1	k	389	SER	Peptide
1	k	392	ILE	Peptide
1	l	108	ASP	Peptide
1	l	137	LEU	Peptide
1	l	389	SER	Peptide
1	l	392	ILE	Peptide
1	m	108	ASP	Peptide
1	m	137	LEU	Peptide
1	m	389	SER	Peptide
1	m	392	ILE	Peptide
1	n	108	ASP	Peptide
1	n	137	LEU	Peptide
1	n	389	SER	Peptide
1	n	392	ILE	Peptide
1	o	108	ASP	Peptide
1	o	137	LEU	Peptide
1	o	389	SER	Peptide
1	o	392	ILE	Peptide

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	B	265/488 (54%)	246 (93%)	19 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	D	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	E	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	F	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	G	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	H	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	I	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	J	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	K	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	L	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	M	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	N	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	O	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	P	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	Q	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	R	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	S	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	T	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	U	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	V	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	W	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	X	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	Y	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	Z	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	a	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	b	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	c	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	d	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	e	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	f	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	g	265/488 (54%)	246 (93%)	19 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	h	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	i	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	j	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	k	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	l	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	m	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	n	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
1	o	265/488 (54%)	246 (93%)	19 (7%)	0	100	100
All	All	10865/20008 (54%)	10086 (93%)	779 (7%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	B	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	C	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	D	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	E	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	F	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	G	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	H	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	I	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	J	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	K	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	L	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	M	211/363 (58%)	210 (100%)	1 (0%)	88	93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	N	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	O	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	P	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	Q	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	R	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	S	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	T	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	U	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	V	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	W	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	X	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	Y	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	Z	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	a	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	b	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	c	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	d	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	e	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	f	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	g	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	h	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	i	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	j	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	k	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	l	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	m	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	n	211/363 (58%)	210 (100%)	1 (0%)	88	93
1	o	211/363 (58%)	210 (100%)	1 (0%)	88	93
All	All	8651/14883 (58%)	8610 (100%)	41 (0%)	89	93

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	136	LYS
1	B	136	LYS
1	C	136	LYS
1	D	136	LYS
1	E	136	LYS
1	F	136	LYS
1	G	136	LYS
1	H	136	LYS
1	I	136	LYS
1	J	136	LYS
1	K	136	LYS
1	L	136	LYS
1	M	136	LYS
1	N	136	LYS
1	O	136	LYS
1	P	136	LYS
1	Q	136	LYS
1	R	136	LYS
1	S	136	LYS
1	T	136	LYS
1	U	136	LYS
1	V	136	LYS
1	W	136	LYS
1	X	136	LYS
1	Y	136	LYS
1	Z	136	LYS
1	a	136	LYS
1	b	136	LYS
1	c	136	LYS
1	d	136	LYS
1	e	136	LYS
1	f	136	LYS
1	g	136	LYS
1	h	136	LYS
1	i	136	LYS
1	j	136	LYS
1	k	136	LYS
1	l	136	LYS
1	m	136	LYS
1	n	136	LYS
1	o	136	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (229) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	GLN
1	A	83	GLN
1	A	148	GLN
1	A	432	ASN
1	A	466	GLN
1	B	30	GLN
1	B	83	GLN
1	B	148	GLN
1	B	432	ASN
1	B	466	GLN
1	C	30	GLN
1	C	83	GLN
1	C	148	GLN
1	C	424	ASN
1	C	432	ASN
1	C	466	GLN
1	D	30	GLN
1	D	83	GLN
1	D	148	GLN
1	D	424	ASN
1	D	432	ASN
1	D	466	GLN
1	E	30	GLN
1	E	83	GLN
1	E	148	GLN
1	E	424	ASN
1	E	432	ASN
1	E	466	GLN
1	F	30	GLN
1	F	83	GLN
1	F	148	GLN
1	F	432	ASN
1	F	466	GLN
1	G	30	GLN
1	G	83	GLN
1	G	148	GLN
1	G	432	ASN
1	G	466	GLN
1	H	30	GLN
1	H	83	GLN
1	H	148	GLN
1	H	424	ASN
1	H	432	ASN

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Mol	Chain	Res	Type
1	H	466	GLN
1	I	30	GLN
1	I	83	GLN
1	I	148	GLN
1	I	424	ASN
1	I	432	ASN
1	I	466	GLN
1	J	30	GLN
1	J	83	GLN
1	J	148	GLN
1	J	424	ASN
1	J	432	ASN
1	J	466	GLN
1	K	30	GLN
1	K	83	GLN
1	K	148	GLN
1	K	424	ASN
1	K	432	ASN
1	K	466	GLN
1	L	30	GLN
1	L	83	GLN
1	L	148	GLN
1	L	424	ASN
1	L	432	ASN
1	L	466	GLN
1	M	30	GLN
1	M	83	GLN
1	M	148	GLN
1	M	432	ASN
1	M	466	GLN
1	N	30	GLN
1	N	83	GLN
1	N	148	GLN
1	N	424	ASN
1	N	432	ASN
1	N	466	GLN
1	O	30	GLN
1	O	83	GLN
1	O	148	GLN
1	O	424	ASN
1	O	432	ASN
1	O	466	GLN

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Mol	Chain	Res	Type
1	P	30	GLN
1	P	83	GLN
1	P	148	GLN
1	P	432	ASN
1	P	466	GLN
1	Q	30	GLN
1	Q	83	GLN
1	Q	148	GLN
1	Q	424	ASN
1	Q	432	ASN
1	Q	466	GLN
1	R	30	GLN
1	R	83	GLN
1	R	148	GLN
1	R	424	ASN
1	R	432	ASN
1	R	466	GLN
1	S	30	GLN
1	S	83	GLN
1	S	148	GLN
1	S	424	ASN
1	S	432	ASN
1	S	466	GLN
1	T	30	GLN
1	T	56	ASN
1	T	83	GLN
1	T	148	GLN
1	T	424	ASN
1	T	432	ASN
1	T	466	GLN
1	U	30	GLN
1	U	148	GLN
1	U	432	ASN
1	U	466	GLN
1	V	30	GLN
1	V	56	ASN
1	V	83	GLN
1	V	148	GLN
1	V	432	ASN
1	V	466	GLN
1	W	30	GLN
1	W	148	GLN

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Mol	Chain	Res	Type
1	W	423	GLN
1	W	424	ASN
1	W	432	ASN
1	W	466	GLN
1	X	30	GLN
1	X	56	ASN
1	X	83	GLN
1	X	148	GLN
1	X	424	ASN
1	X	432	ASN
1	X	466	GLN
1	Y	30	GLN
1	Y	148	GLN
1	Y	424	ASN
1	Y	432	ASN
1	Y	466	GLN
1	Z	30	GLN
1	Z	56	ASN
1	Z	83	GLN
1	Z	148	GLN
1	Z	424	ASN
1	Z	432	ASN
1	Z	466	GLN
1	a	30	GLN
1	a	148	GLN
1	a	424	ASN
1	a	432	ASN
1	a	466	GLN
1	b	30	GLN
1	b	56	ASN
1	b	83	GLN
1	b	148	GLN
1	b	432	ASN
1	b	466	GLN
1	c	30	GLN
1	c	148	GLN
1	c	432	ASN
1	c	466	GLN
1	d	30	GLN
1	d	56	ASN
1	d	83	GLN
1	d	148	GLN

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Mol	Chain	Res	Type
1	d	432	ASN
1	d	466	GLN
1	e	30	GLN
1	e	148	GLN
1	e	424	ASN
1	e	432	ASN
1	e	466	GLN
1	f	30	GLN
1	f	56	ASN
1	f	83	GLN
1	f	148	GLN
1	f	424	ASN
1	f	466	GLN
1	g	30	GLN
1	g	148	GLN
1	g	424	ASN
1	g	432	ASN
1	g	466	GLN
1	h	30	GLN
1	h	56	ASN
1	h	83	GLN
1	h	148	GLN
1	h	424	ASN
1	h	466	GLN
1	i	30	GLN
1	i	148	GLN
1	i	424	ASN
1	i	432	ASN
1	i	466	GLN
1	j	30	GLN
1	j	56	ASN
1	j	83	GLN
1	j	148	GLN
1	j	466	GLN
1	k	30	GLN
1	k	148	GLN
1	k	424	ASN
1	k	432	ASN
1	k	466	GLN
1	l	30	GLN
1	l	56	ASN
1	l	83	GLN

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Mol	Chain	Res	Type
1	l	148	GLN
1	l	424	ASN
1	l	466	GLN
1	m	30	GLN
1	m	148	GLN
1	m	424	ASN
1	m	432	ASN
1	m	466	GLN
1	n	30	GLN
1	n	56	ASN
1	n	83	GLN
1	n	148	GLN
1	n	424	ASN
1	n	466	GLN
1	o	30	GLN
1	o	148	GLN
1	o	432	ASN
1	o	466	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation

This section contains visualisations of the EMDB entry EMD-8856. 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

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal surface views

This section was not generated.

6.5 Mask visualisation

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 ⓘ

This section was not generated.

7.2 Volume estimate versus contour level ⓘ

This section was not generated.

7.3 Rotationally averaged power spectrum ⓘ

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation ⓘ

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

9 Map-model fit

This section was not generated.