



## wwPDB EM Validation Summary Report ⓘ

Apr 7, 2025 – 10:43 PM JST

PDB ID : 9LW6 / pdb\_00009lw6  
EMDB ID : EMD-63432  
Title : Top cap of bacteriophage Mycofy1 mature head (C5 symmetry)  
Authors : Li, X.; Shao, Q.; Li, L.; Xie, L.; Ruan, Z.; Fang, Q.  
Deposited on : 2025-02-13  
Resolution : 3.42 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev117  
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

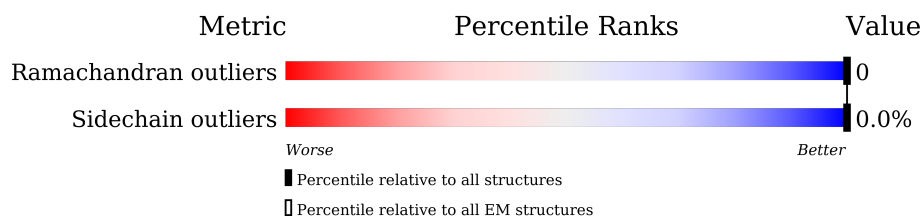
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*





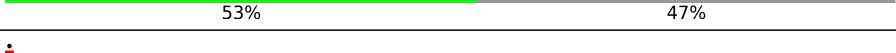
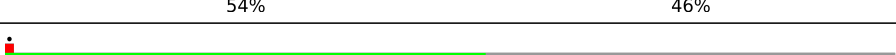

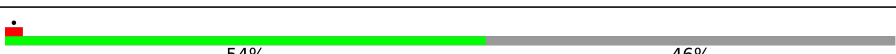

The reported resolution of this entry is 3.42 Å.

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.









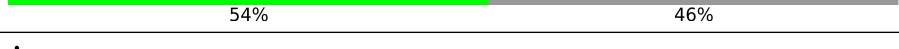
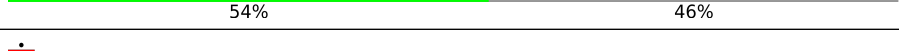
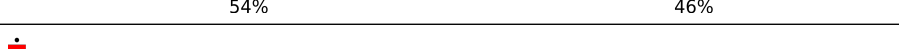
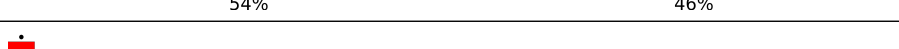
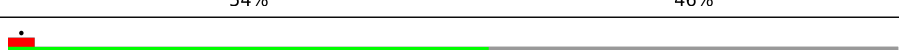

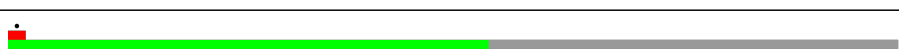

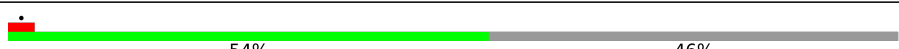





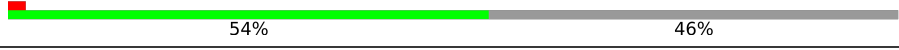
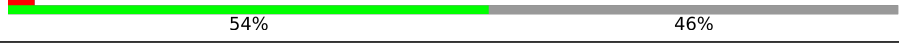



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	1	543	 53% 47%
1	2	543	 53% 47%
1	3	543	 53% 47%
1	4	543	 53% 47%
1	5	543	 53% 47%
1	A	543	 54% 46%
1	B	543	 54% 46%
1	C	543	 54% 46%
1	D	543	 54% 46%



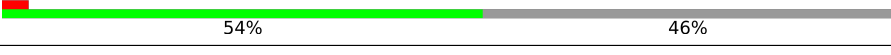

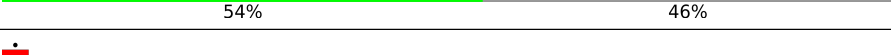
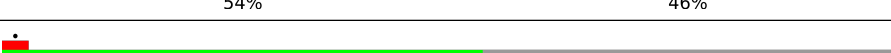
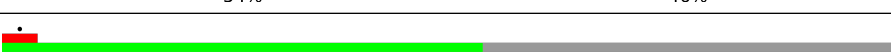
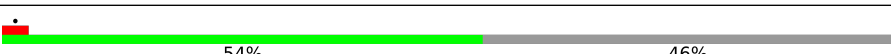


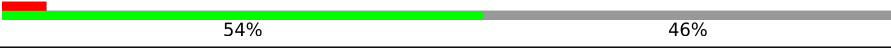




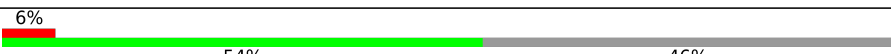




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Mol	Chain	Length	Quality of chain
1	E	543	 54%46%
1	F	543	 54%46%
1	G	543	 54%46%
1	H	543	 54%46%
1	I	543	 54%46%
1	J	543	 54%46%
1	K	543	 54%46%
1	L	543	 54%46%
1	M	543	 54%46%
1	N	543	 54%46%
1	O	543	 54%46%
1	P	543	 54%46%
1	Q	543	 54%46%
1	R	543	 54%46%
1	S	543	 54%46%
1	T	543	 54%46%
1	U	543	 54%46%
1	V	543	 54%46%
1	W	543	 54%46%
1	X	543	 54%46%
1	Y	543	 54%46%
1	Z	543	 54%46%
1	a	543	 54%46%
1	b	543	 54%46%
1	c	543	 54%46%

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Mol	Chain	Length	Quality of chain	
1	d	543		
1	e	543		
1	f	543		
1	g	543		
1	h	543		
1	i	543		
1	j	543		
1	k	543		
1	l	543		
1	m	543		
1	n	543		
1	o	543		
1	p	543		
1	q	543		
1	r	543		
1	s	543		
1	t	543		
1	u	543		
1	v	543		
1	w	543		

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 120816 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 Phage capsid-like C-terminal domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	B	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	C	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	D	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	E	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	F	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	G	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	H	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	I	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	J	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	K	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	L	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	M	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	N	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	O	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	P	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	Q	293	Total 2241	C 1416	N 385	O 436	S 4	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	R	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	S	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	T	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	U	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	V	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	W	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	X	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	Y	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	Z	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	a	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	b	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	c	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	d	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	e	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	f	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	g	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	h	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	i	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	j	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	k	293	Total 2241	C 1416	N 385	O 436	S 4	0	0
1	l	293	Total 2241	C 1416	N 385	O 436	S 4	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	m	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	n	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	o	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	p	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	q	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	r	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	s	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	t	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	u	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	v	293	Total	C	N	O	S	0	0
			2241	1416	385	436	4		
1	w	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		
1	1	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		
1	2	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		
1	3	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		
1	4	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		
1	5	288	Total	C	N	O	S	0	0
			2208	1397	379	428	4		

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	197	HIS	LYS	conflict	UNP Q854Z2
B	197	HIS	LYS	conflict	UNP Q854Z2
C	197	HIS	LYS	conflict	UNP Q854Z2
D	197	HIS	LYS	conflict	UNP Q854Z2
E	197	HIS	LYS	conflict	UNP Q854Z2
F	197	HIS	LYS	conflict	UNP Q854Z2
G	197	HIS	LYS	conflict	UNP Q854Z2

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Chain	Residue	Modelled	Actual	Comment	Reference
H	197	HIS	LYS	conflict	UNP Q854Z2
I	197	HIS	LYS	conflict	UNP Q854Z2
J	197	HIS	LYS	conflict	UNP Q854Z2
K	197	HIS	LYS	conflict	UNP Q854Z2
L	197	HIS	LYS	conflict	UNP Q854Z2
M	197	HIS	LYS	conflict	UNP Q854Z2
N	197	HIS	LYS	conflict	UNP Q854Z2
O	197	HIS	LYS	conflict	UNP Q854Z2
P	197	HIS	LYS	conflict	UNP Q854Z2
Q	197	HIS	LYS	conflict	UNP Q854Z2
R	197	HIS	LYS	conflict	UNP Q854Z2
S	197	HIS	LYS	conflict	UNP Q854Z2
T	197	HIS	LYS	conflict	UNP Q854Z2
U	197	HIS	LYS	conflict	UNP Q854Z2
V	197	HIS	LYS	conflict	UNP Q854Z2
W	197	HIS	LYS	conflict	UNP Q854Z2
X	197	HIS	LYS	conflict	UNP Q854Z2
Y	197	HIS	LYS	conflict	UNP Q854Z2
Z	197	HIS	LYS	conflict	UNP Q854Z2
a	197	HIS	LYS	conflict	UNP Q854Z2
b	197	HIS	LYS	conflict	UNP Q854Z2
c	197	HIS	LYS	conflict	UNP Q854Z2
d	197	HIS	LYS	conflict	UNP Q854Z2
e	197	HIS	LYS	conflict	UNP Q854Z2
f	197	HIS	LYS	conflict	UNP Q854Z2
g	197	HIS	LYS	conflict	UNP Q854Z2
h	197	HIS	LYS	conflict	UNP Q854Z2
i	197	HIS	LYS	conflict	UNP Q854Z2
j	197	HIS	LYS	conflict	UNP Q854Z2
k	197	HIS	LYS	conflict	UNP Q854Z2
l	197	HIS	LYS	conflict	UNP Q854Z2
m	197	HIS	LYS	conflict	UNP Q854Z2
n	197	HIS	LYS	conflict	UNP Q854Z2
o	197	HIS	LYS	conflict	UNP Q854Z2
p	197	HIS	LYS	conflict	UNP Q854Z2
q	197	HIS	LYS	conflict	UNP Q854Z2
r	197	HIS	LYS	conflict	UNP Q854Z2
s	197	HIS	LYS	conflict	UNP Q854Z2
t	197	HIS	LYS	conflict	UNP Q854Z2
u	197	HIS	LYS	conflict	UNP Q854Z2
v	197	HIS	LYS	conflict	UNP Q854Z2
w	197	HIS	LYS	conflict	UNP Q854Z2

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Chain	Residue	Modelled	Actual	Comment	Reference
1	197	HIS	LYS	conflict	UNP Q854Z2
2	197	HIS	LYS	conflict	UNP Q854Z2
3	197	HIS	LYS	conflict	UNP Q854Z2
4	197	HIS	LYS	conflict	UNP Q854Z2
5	197	HIS	LYS	conflict	UNP Q854Z2



46%

Diagram illustrating the structure of the 10S ribosome, showing the arrangement of amino acids (GLU, LYS, ARG, ALA, ILE, ASN, GLU, VAL, ARG, ALA) and specific residues (M251, D361, E451, T472, S473, A474, S475, A476, A542, S543) highlighted in green.

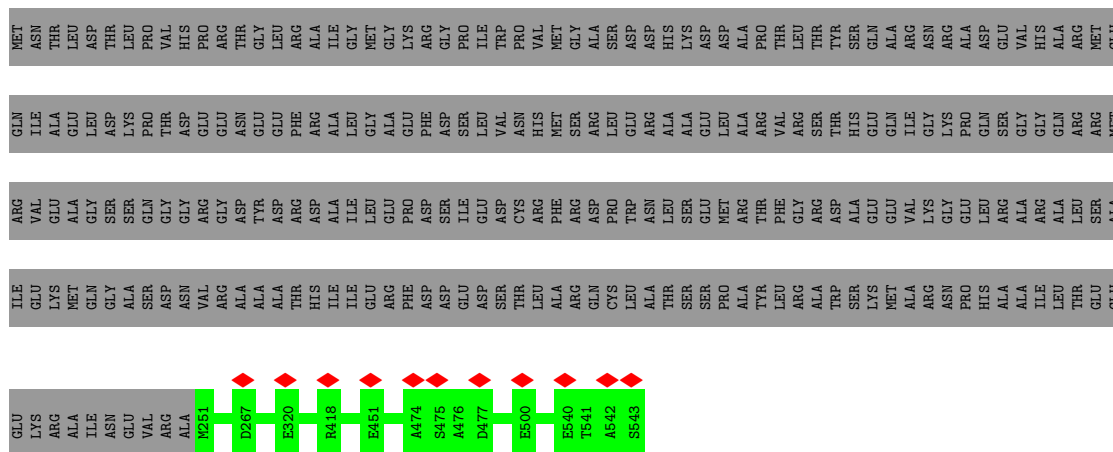
- 46%

Sequence logo for the 10th position. The y-axis represents information content in bits, ranging from 0 to 1.5. The x-axis lists amino acids: GLU, LYS, ARG, ALA, ILE, ASN, GLU, VAL, ARG, ALA. The bars show the relative frequency of each amino acid at this position. Notable peaks are for LYS, ARG, and ALA.

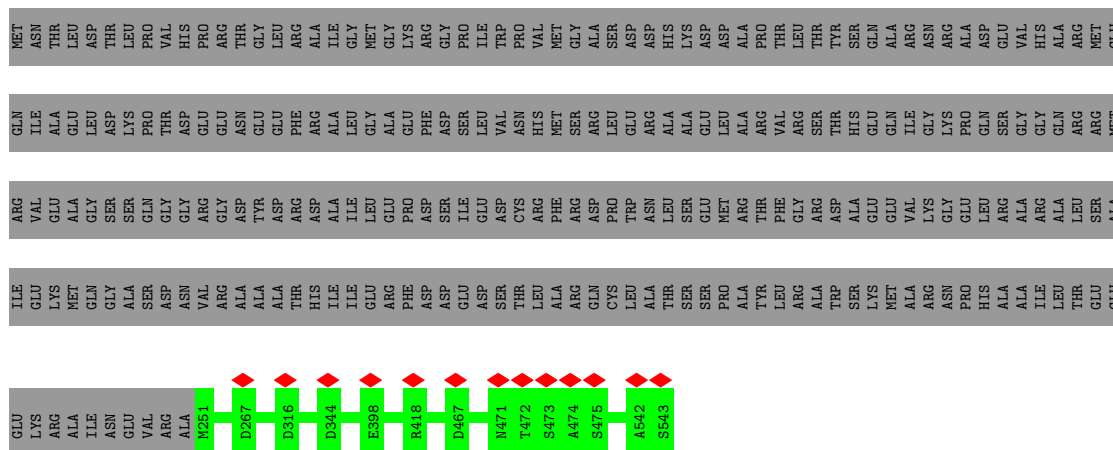
- 46%

Category	Item	Value	Color	Marker
Top 10	GLU	100	Grey	
	LYS	95	Grey	
	ARG	90	Grey	
	ALA	85	Grey	
	IIE	80	Grey	
	ASN	75	Grey	
	GLU	70	Grey	
	VAL	65	Grey	
	ARG	60	Grey	
	ALA	55	Grey	
Bottom 10	W251	50	Green	
	A346	45	Green	Red Diamond
	D361	40	Green	Red Diamond
	E451	35	Green	Red Diamond
	E462	30	Green	Red Diamond
	N471	25	Green	Red Diamond
	T472	20	Green	Red Diamond
	S473	15	Green	Red Diamond
	A474	10	Green	Red Diamond
	S475	5	Green	Red Diamond
Bottom 2	A542	0	Green	Red Diamond
	S543	-5	Green	Red Diamond

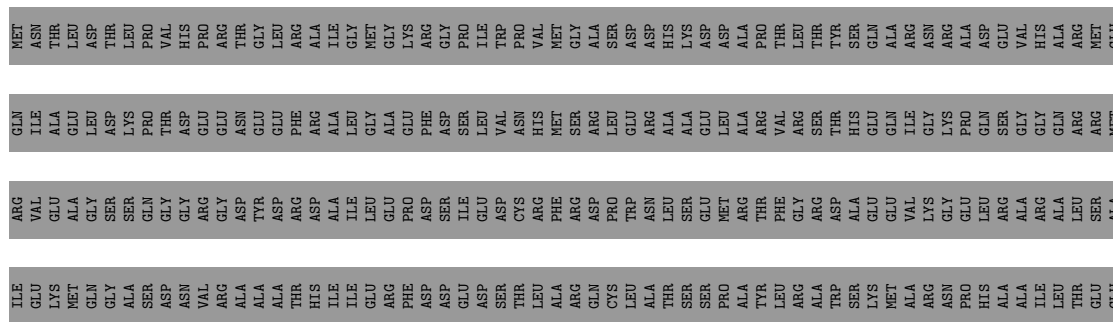
- Chain F:  54% 46%

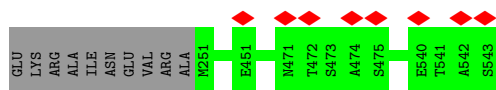


- Chain G:  54% 46%



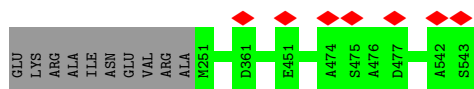
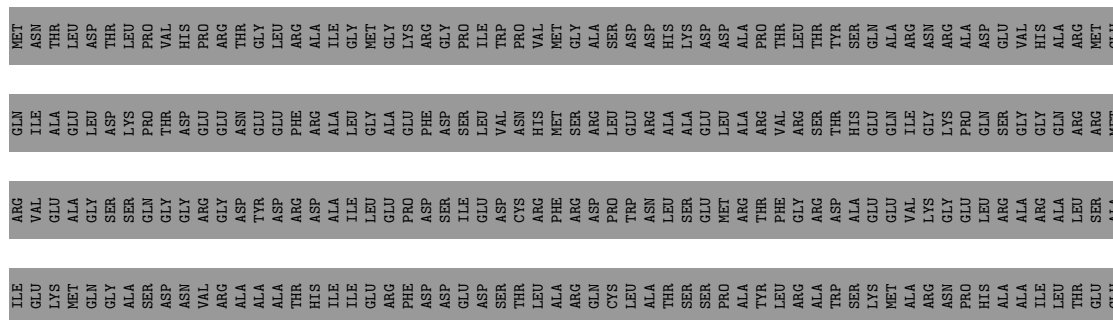
- Chain H:  54% 46%





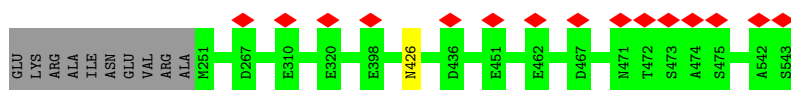
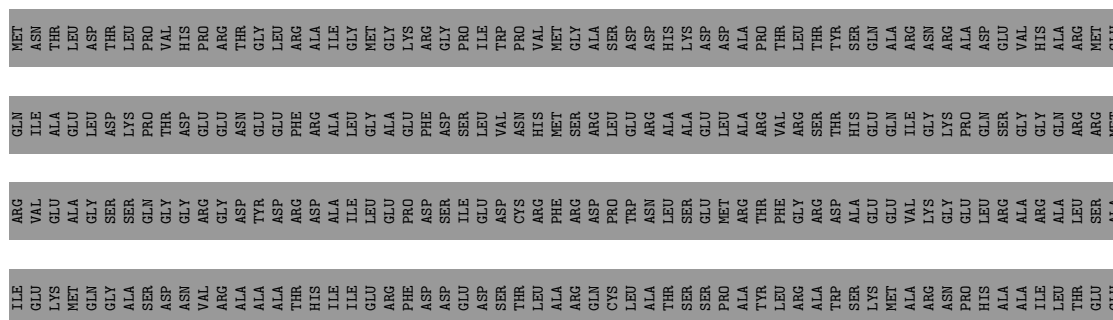
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

Chain I: 54% 46%



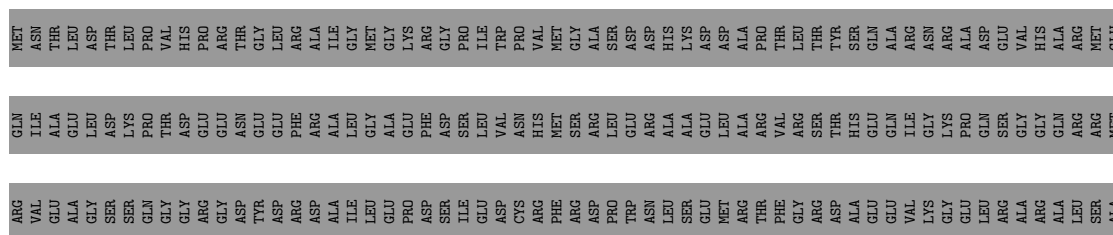
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

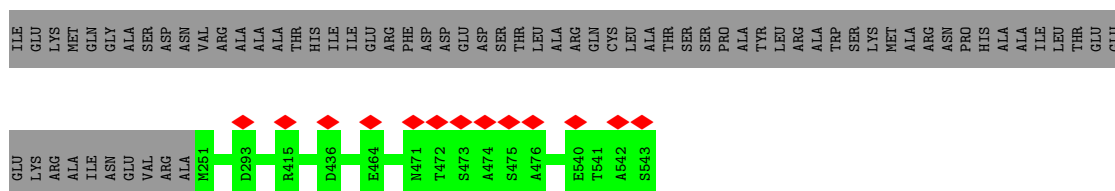
Chain J: 54% 46%



- Molecule 1: Phage capsid-like C-terminal domain-containing protein

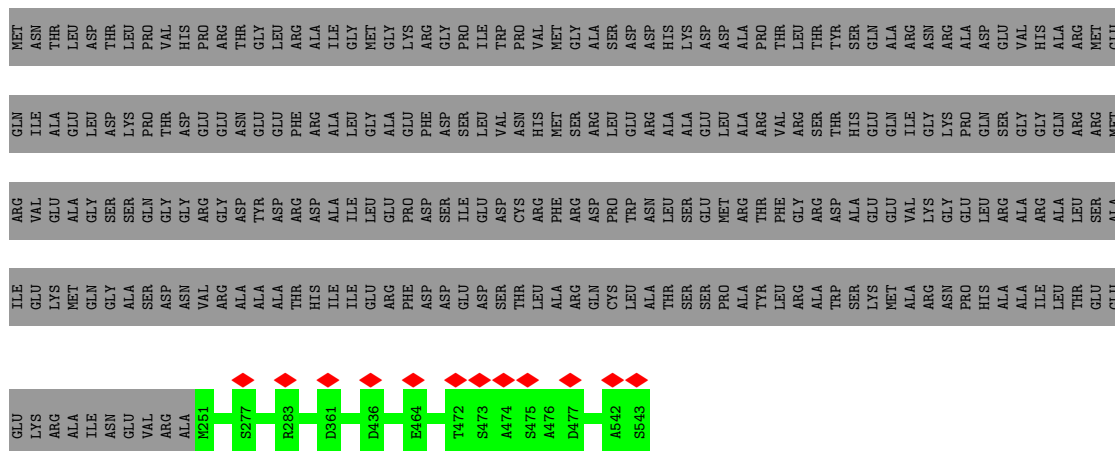
Chain K: 54% 46%





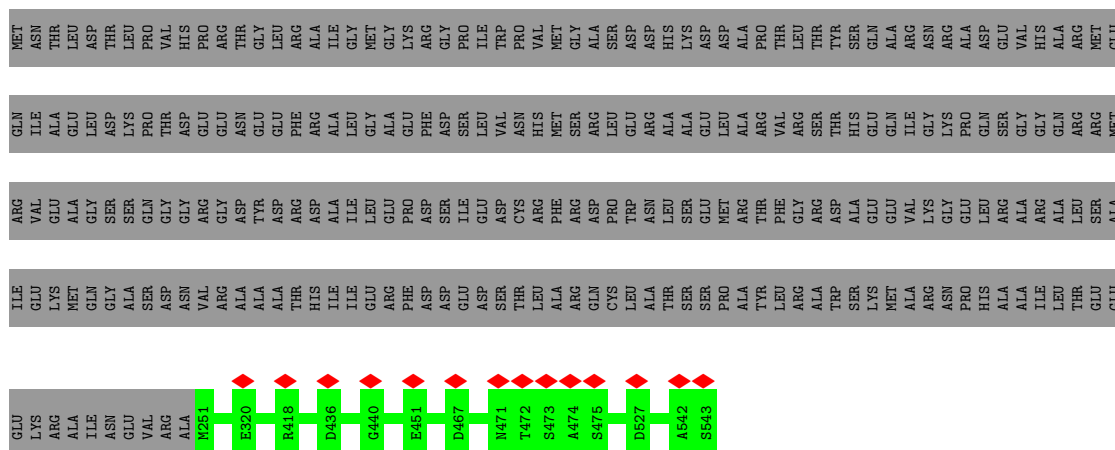
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

Chain L:



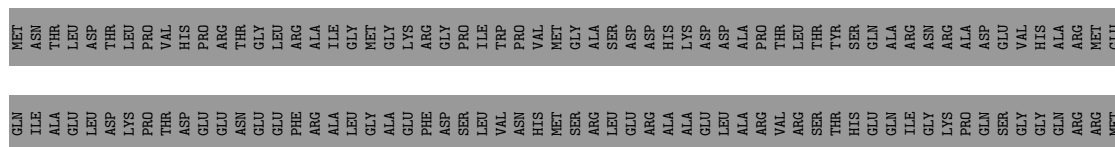
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

Chain M:

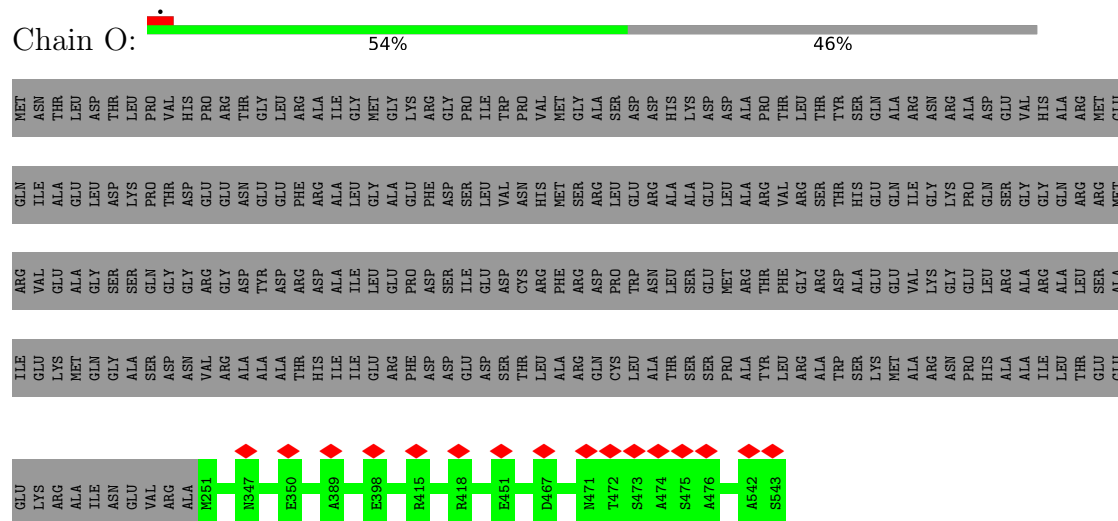


- Molecule 1: Phage capsid-like C-terminal domain-containing protein

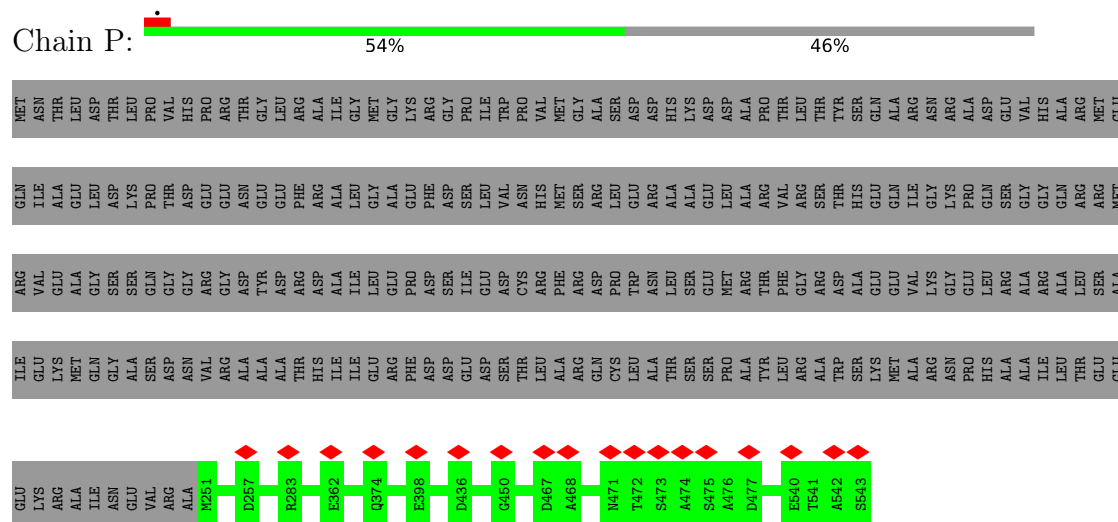
Chain N:



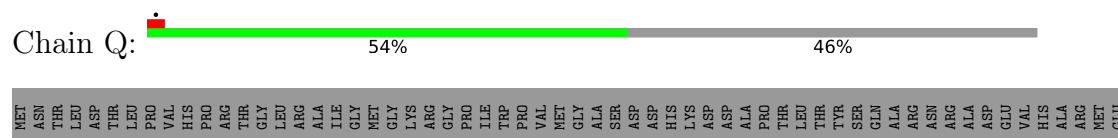
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

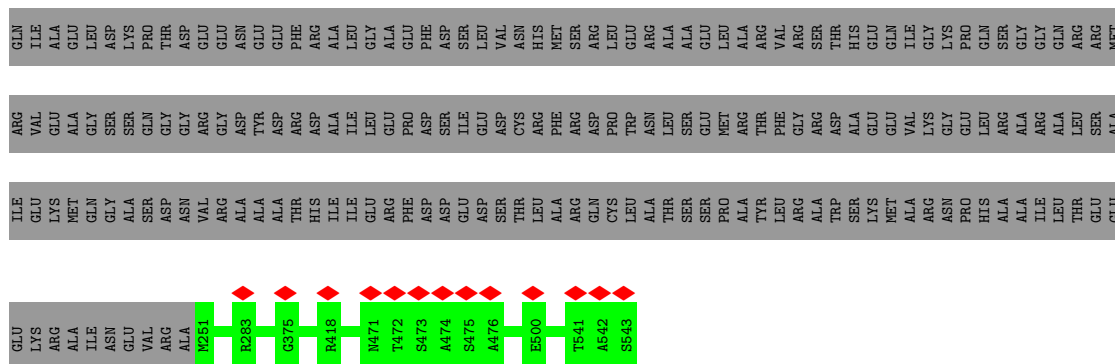


- Molecule 1: Phage capsid-like C-terminal domain-containing protein

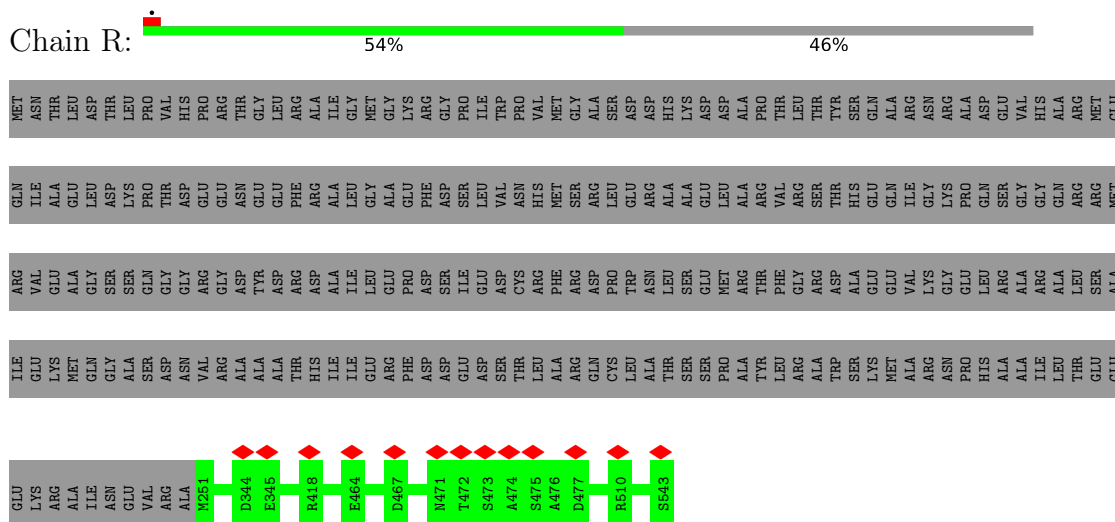


- Molecule 1: Phage capsid-like C-terminal domain-containing protein.

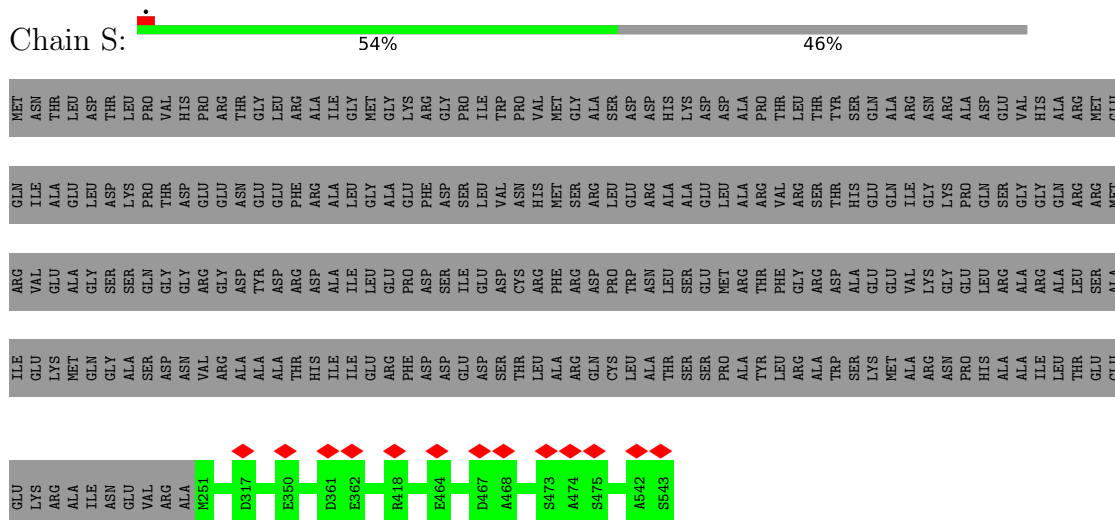




- Molecule 1: Phage capsid-like C-terminal domain-containing protein

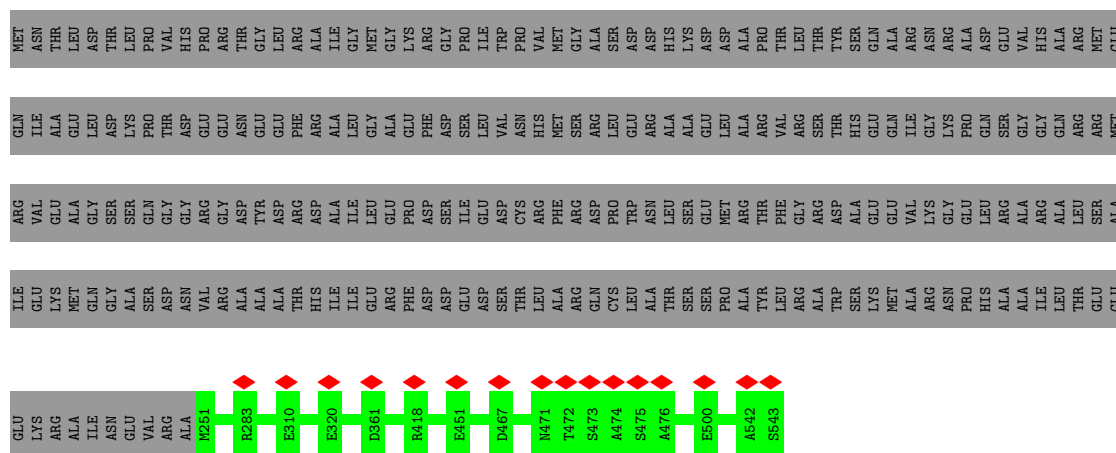


- Molecule 1: Phage capsid-like C-terminal domain-containing protein

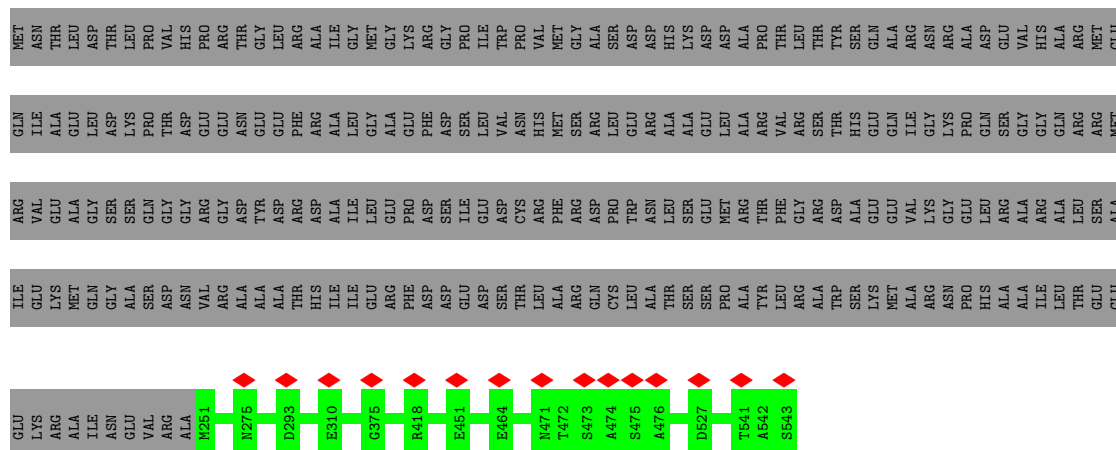


- Molecule 1: Phage capsid-like C-terminal domain-containing protein

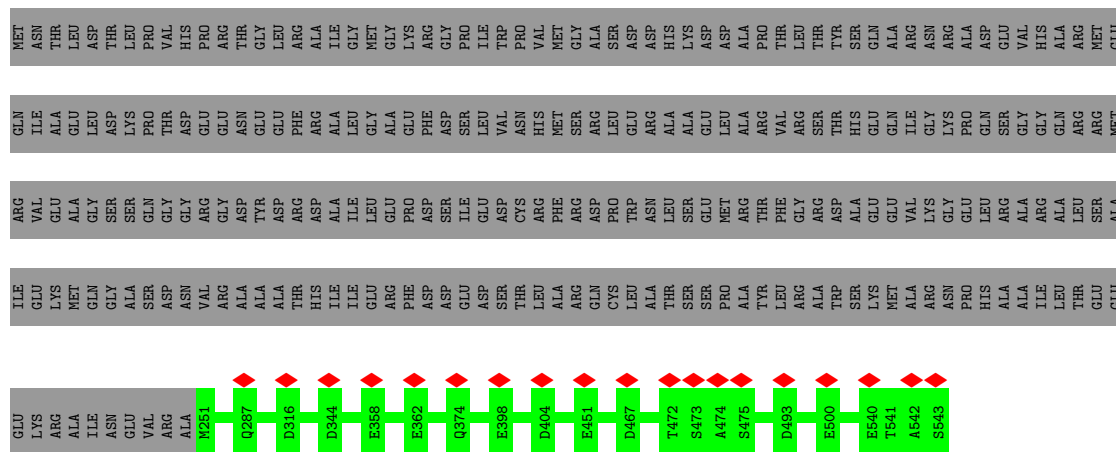




• Molecule 1: Phage capsid-like C-terminal domain-containing protein



• Molecule 1: Phage capsid-like C-terminal domain-containing protein



• Molecule 1: Phage capsid-like C-terminal domain-containing protein

Response	Percentage
Doing a good job	54%
Not doing a good job	46%

Label	Value	Color
GLU	255	Red
LYS	255	Red
ARG	255	Red
ALA	255	Red
ILE	255	Red
ASN	255	Red
GLU	255	Red
VAL	255	Red
ARG	255	Red
ALA	255	Red
M251	255	Green
R283	255	Red
E312	255	Red
D316	255	Green
E340	255	Red
Q343	255	Green
D344	255	Green
E345	255	Green
E362	255	Red
D436	255	Green
E451	255	Red
N471	255	Green
T472	255	Red
S473	255	Red
A474	255	Red
S475	255	Red
A476	255	Red
D477	255	Red
D527	255	Green
A542	255	Red
S543	255	Red

- Chain X:

Response	Percentage
Democracy	54%
Dictatorship	46%

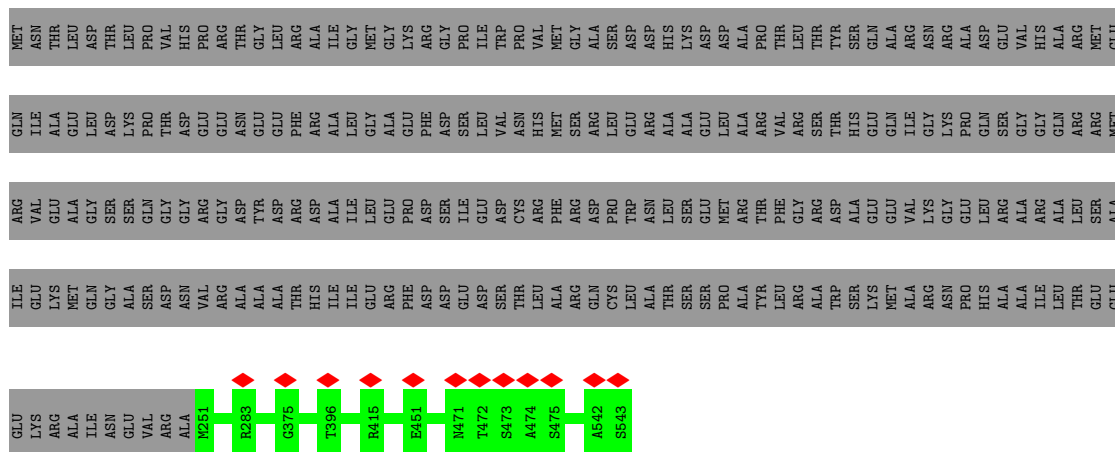
Label	Value	Color
GLU	251	Green
LYS	267	Green
ARG	278	Green
ALA	347	Green
ILE	358	Green
ASN	404	Green
GLU	436	Green
VAL	472	Green
ARG	473	Green
ALA	474	Green
M251	475	Green
D267	527	Red
L278	540	Red
N347	543	Red
E358	544	Red
D404	545	Red
D436	546	Red
T472	547	Red
S473	548	Red
A474	549	Red
S475	550	Red
D527	551	Red
E540	552	Red
S543	553	Red

- Chain Y:

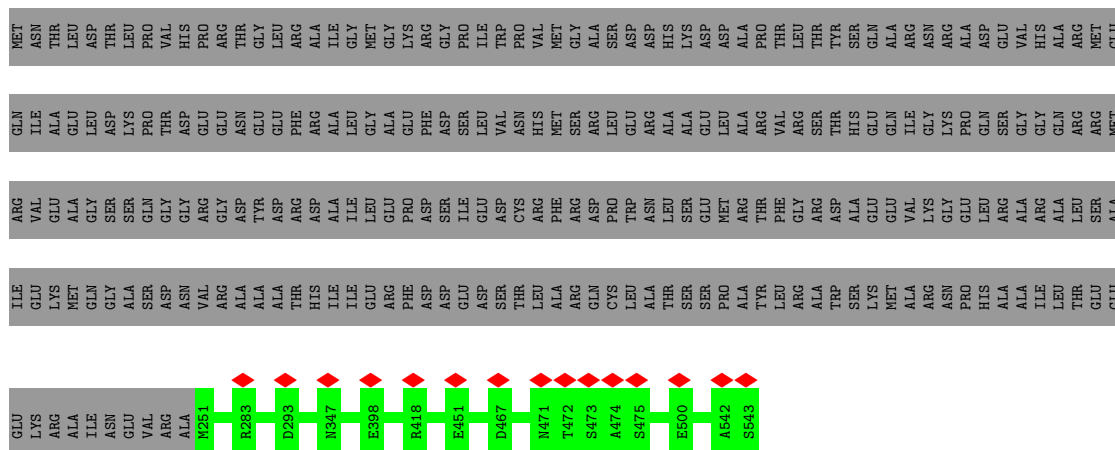
Response	Percentage
Democracy	54%
Dictatorship	46%

[illegible]

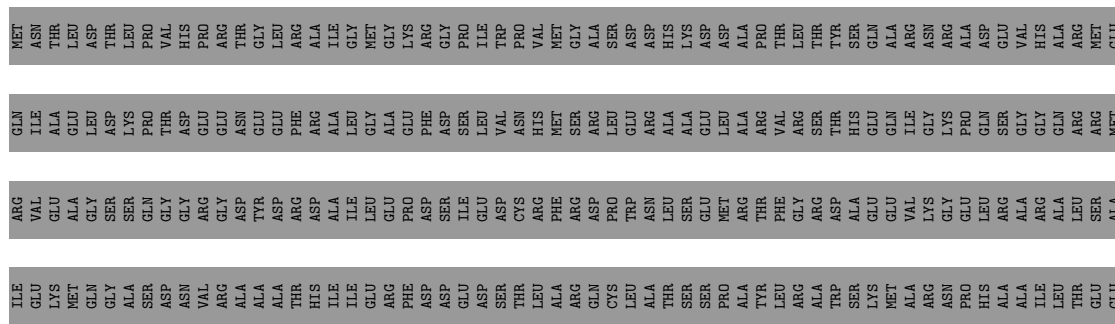
- Chain Z:  54% 46%

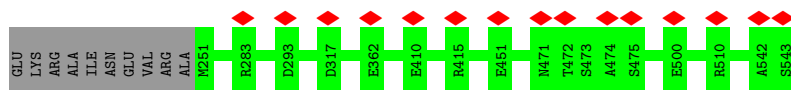


- Chain a:  54% 46%



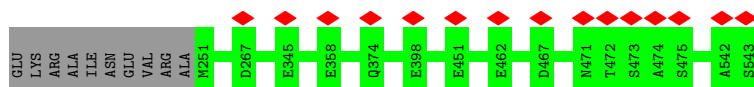
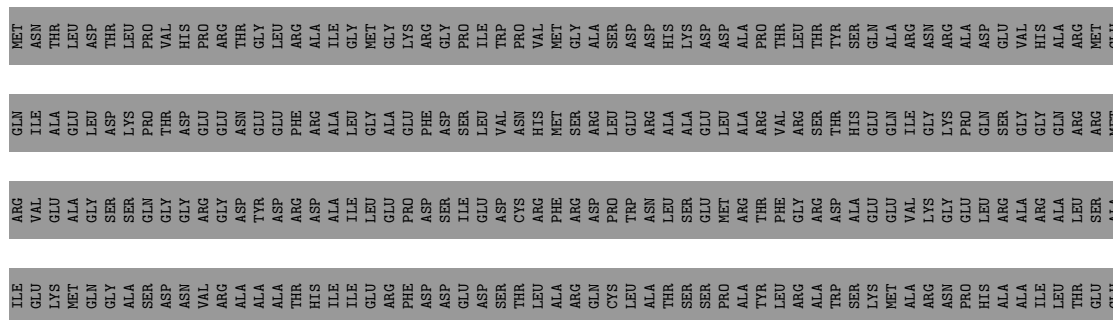
- Chain b:  54% 46%





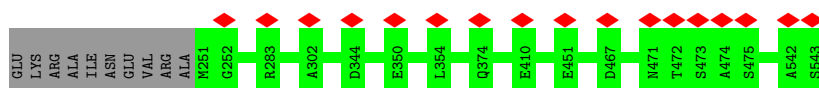
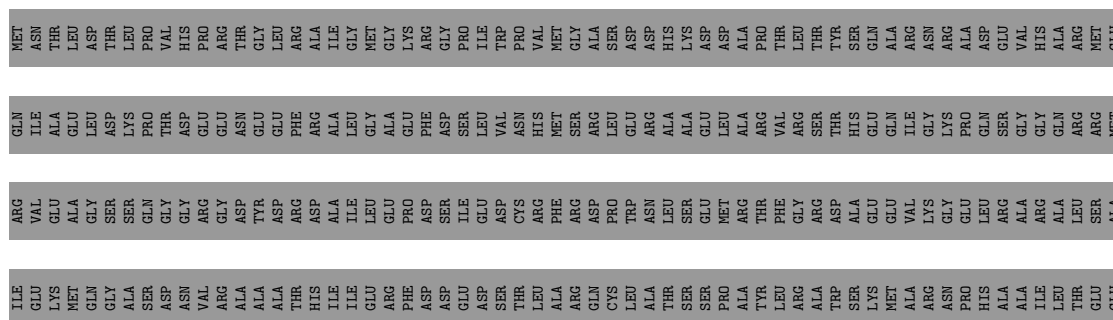
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

Chain c: 54% 46%



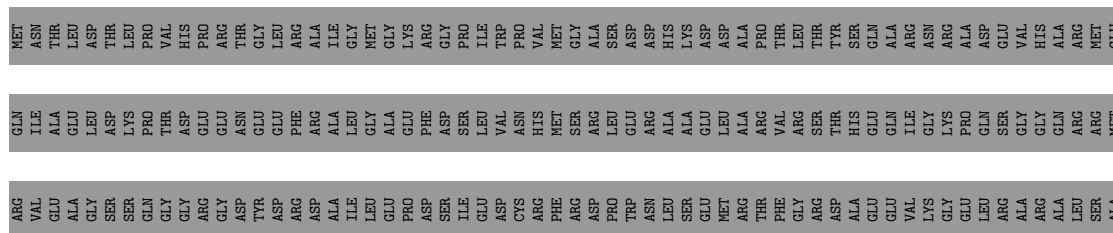
- Molecule 1: Phage capsid-like C-terminal domain-containing protein

Chain d: 54% 46%



- Molecule 1: Phage capsid-like C-terminal domain-containing protein

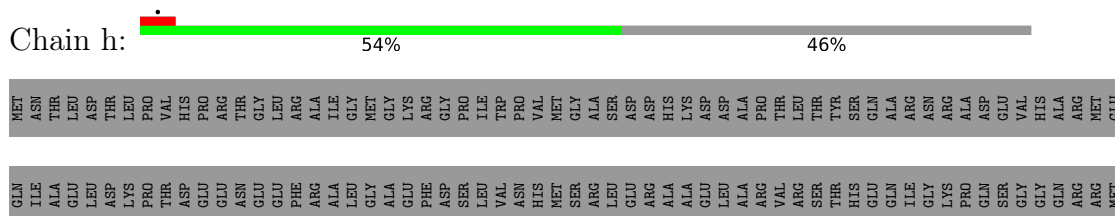
Chain e: 54% 46%



- Molecule 1: Phage capsid-like C-terminal domain-containing protein

- Molecule 1: Phage capsid-like C-terminal domain-containing protein

- Molecule 1: Phage capsid-like C-terminal domain-containing protein



- Molecule 1: Phage capsid-like C-terminal domain-containing protein

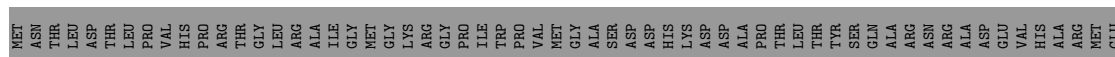
Chain i:  54% 46%

- Molecule 1: Phage capsid-like C-terminal domain-containing protein

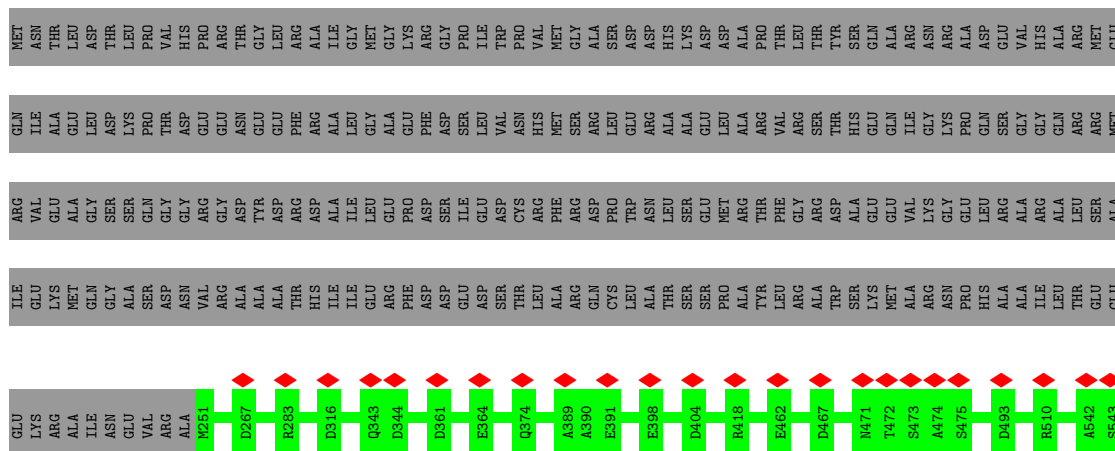
Chain j:  54% 46%

- Molecule 1: Phage capsid-like C-terminal domain-containing protein

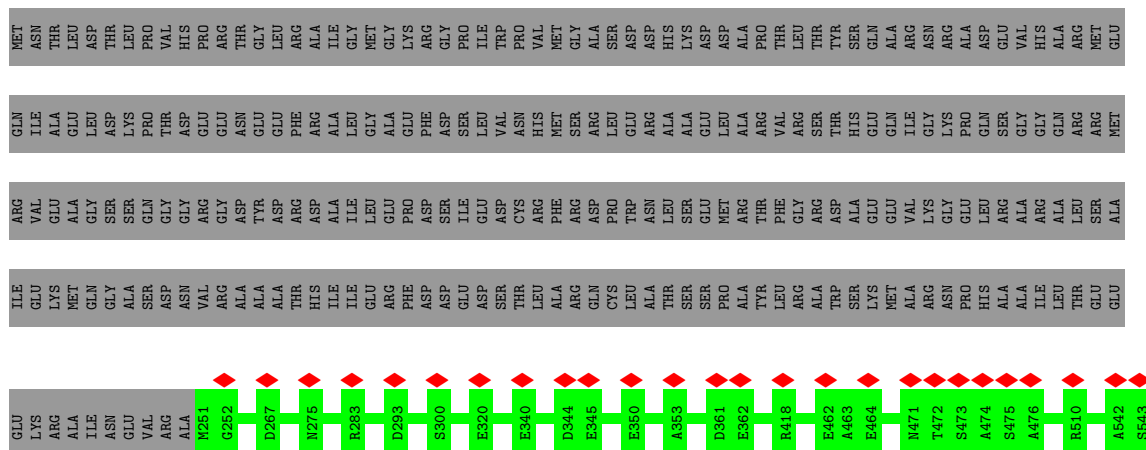
Chain k:  54% 46%



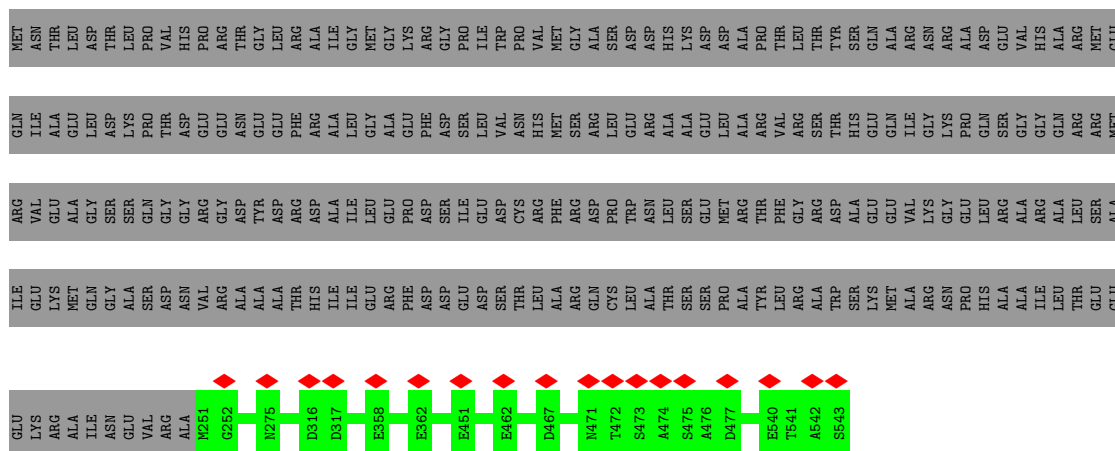




- Molecule 1: Phage capsid-like C-terminal domain-containing protein



- Molecule 1: Phage capsid-like C-terminal domain-containing protein



- Molecule 1: Phage capsid-like C-terminal domain-containing protein

46%

GLU	LYS	GLU	ILE	ARG	GLN	MET
ARG	ARG	GLY	LYS	VAL	ILE	ASN
ALA	ALA	MET	ALA	ALA	ALA	THR
ILE	ILE	GLN	GLY	GLY	LEU	ASP
ASN	ASN	GLY	SER	SER	ASP	THR
GLU	GLU	ALA	SER	SER	LYS	LEU
VAL	VAL	SER	GLN	GLN	PRO	PRO
ARG	ARG	ASN	GLY	GLY	THR	HIS
ALA	ALA	ASP	GLY	GLY	ASP	VAL
M251		VAL	ARG	GLY	GLU	ARG
E350		ALA	ASP	ASP	ASN	THR
D361		ALA	THR	ARG	GLU	GLY
Q374		HIS	ILE	ALA	ALA	ILE
R418		ILE	ILE	ILE	LEU	GLY
D436		GLU	ARG	GLU	GLY	MET
G450		PHE	GLU	GLU	ALA	GLY
E451		ASP	ASP	PRO	PHE	LYS
D452		ASP	ASP	SER	ASP	ARG
D467		GLU	ILE	SER	ASP	GLY
A468		ASP	ILE	ILE	SER	PRO
T472		GLU	GLU	GLU	SER	PRO
S473		ASP	GLU	VAL	ILE	ILE
A474		SER	ASP	ASP	VAL	TRP
E540		THR	LEU	ARG	ASN	PRO
T541		SER	SER	GLY	ALA	VAL
A542		THR	THR	THR	ARG	MET
S543		ARG	PHE	GLY	VAL	GLU
		ALA	ARG	ALA	SER	THR
		TRP	ASP	ALA	THR	TYR
		LYS	GLU	GLU	GLN	GLN
		ARG	VAL	VAL	ILE	ALA
		ASN	LYS	LYS	GLY	ARG
		PRO	GLU	GLU	PRO	ALA
		HIS	LEU	LEU	GLN	ASP
		ALA	ARG	ARG	SER	GLU
		ILE	ALA	ALA	GLY	VAL
		THR	LEU	ALA	GLN	HIS
		THR	SER	LEU	ARG	ARG
		GLU	ALA	SER	MET	GLU
		ILE	ALA	ALA	ARG	THR

- Molecule 1: Phage capsid-like C-terminal domain-containing protein

46%

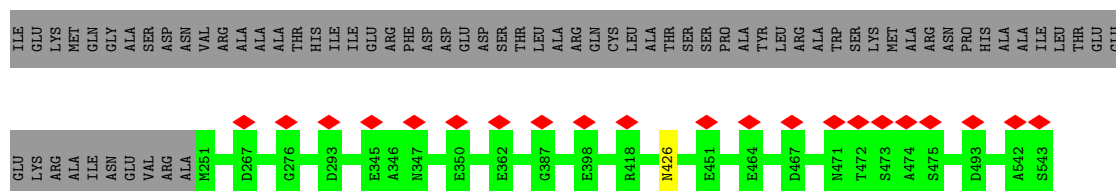
[illegible]

- Molecule 1: Phage capsid-like C-terminal domain-containing protein

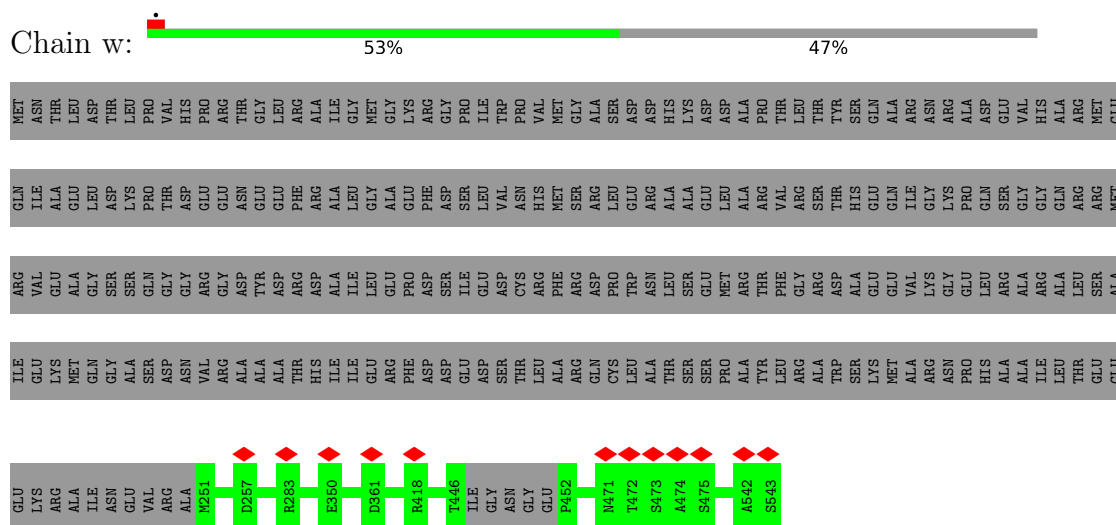
46%

[illegible]

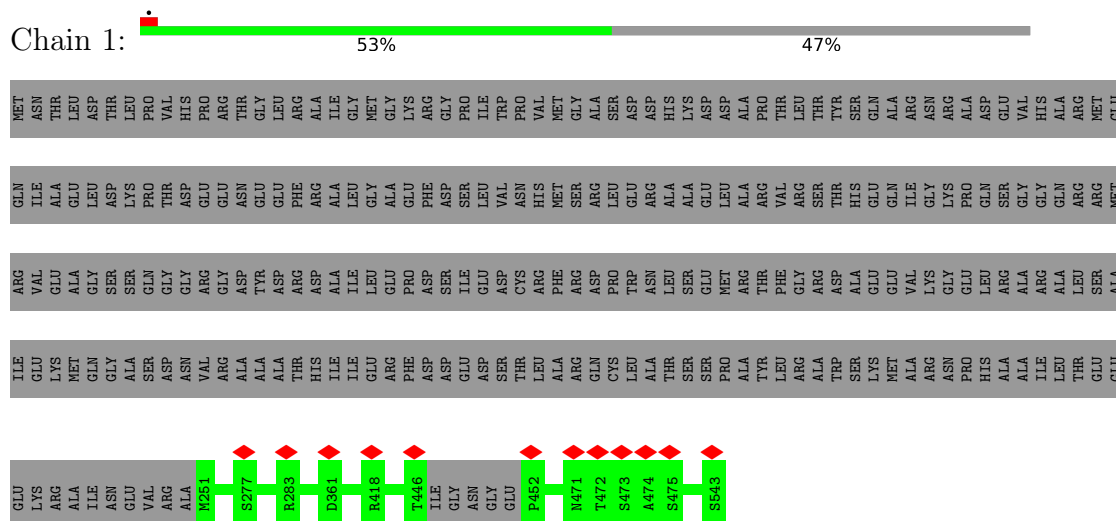
- [illegible]



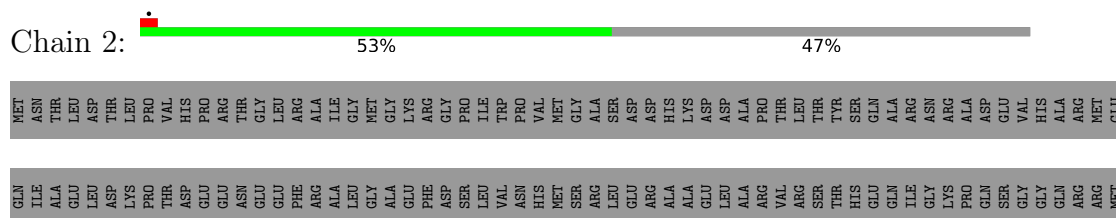
• Molecule 1: Phage capsid-like C-terminal domain-containing protein



• Molecule 1: Phage capsid-like C-terminal domain-containing protein



• Molecule 1: Phage capsid-like C-terminal domain-containing protein





[illegible]

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C5	Depositor
Number of particles used	19765	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	25.7	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	59000	Depositor
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.098	Depositor
Minimum map value	-0.051	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.0203	Depositor
Map size (Å)	823.2, 823.2, 823.2	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.6464, 1.6464, 1.6464	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	1	0.28	0/2258	0.49	0/3081
1	2	0.28	0/2258	0.50	0/3081
1	3	0.28	0/2258	0.49	0/3081
1	4	0.28	0/2258	0.50	0/3081
1	5	0.28	0/2258	0.49	0/3081
1	A	0.29	0/2292	0.49	0/3129
1	B	0.28	0/2292	0.50	0/3129
1	C	0.29	0/2292	0.48	0/3129
1	D	0.29	0/2292	0.50	0/3129
1	E	0.29	0/2292	0.50	0/3129
1	F	0.29	0/2292	0.51	0/3129
1	G	0.28	0/2292	0.50	0/3129
1	H	0.29	0/2292	0.50	0/3129
1	I	0.29	0/2292	0.51	0/3129
1	J	0.29	0/2292	0.50	0/3129
1	K	0.28	0/2292	0.49	0/3129
1	L	0.28	0/2292	0.49	0/3129
1	M	0.29	0/2292	0.50	0/3129
1	N	0.28	0/2292	0.50	0/3129
1	O	0.28	0/2292	0.50	0/3129
1	P	0.28	0/2292	0.49	0/3129
1	Q	0.28	0/2292	0.49	0/3129
1	R	0.28	0/2292	0.49	0/3129
1	S	0.28	0/2292	0.49	0/3129
1	T	0.29	0/2292	0.51	0/3129
1	U	0.28	0/2292	0.48	0/3129
1	V	0.29	0/2292	0.50	0/3129
1	W	0.27	0/2292	0.49	0/3129
1	X	0.28	0/2292	0.50	0/3129
1	Y	0.29	0/2292	0.50	0/3129
1	Z	0.28	0/2292	0.50	0/3129
1	a	0.28	0/2292	0.50	0/3129
1	b	0.28	0/2292	0.50	0/3129
1	c	0.27	0/2292	0.49	0/3129

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	d	0.27	0/2292	0.50	0/3129
1	e	0.28	0/2292	0.51	0/3129
1	f	0.28	0/2292	0.49	0/3129
1	g	0.28	0/2292	0.49	0/3129
1	h	0.28	0/2292	0.50	0/3129
1	i	0.28	0/2292	0.50	0/3129
1	j	0.28	0/2292	0.49	0/3129
1	k	0.28	0/2292	0.50	0/3129
1	l	0.28	0/2292	0.50	0/3129
1	m	0.28	0/2292	0.50	0/3129
1	n	0.27	0/2292	0.48	0/3129
1	o	0.27	0/2292	0.49	0/3129
1	p	0.28	0/2292	0.49	0/3129
1	q	0.28	0/2292	0.49	0/3129
1	r	0.27	0/2292	0.48	0/3129
1	s	0.27	0/2292	0.49	0/3129
1	t	0.27	0/2292	0.49	0/3129
1	u	0.27	0/2292	0.48	0/3129
1	v	0.27	0/2292	0.47	0/3129
1	w	0.28	0/2258	0.49	0/3081
All	All	0.28	0/123564	0.49	0/168678

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

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

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	1	284/543 (52%)	278 (98%)	6 (2%)	0	100	100
1	2	284/543 (52%)	274 (96%)	10 (4%)	0	100	100
1	3	284/543 (52%)	277 (98%)	7 (2%)	0	100	100
1	4	284/543 (52%)	278 (98%)	6 (2%)	0	100	100
1	5	284/543 (52%)	278 (98%)	6 (2%)	0	100	100
1	A	291/543 (54%)	282 (97%)	9 (3%)	0	100	100
1	B	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	C	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	D	291/543 (54%)	285 (98%)	6 (2%)	0	100	100
1	E	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	F	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	G	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	H	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	I	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	J	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	K	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	L	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	M	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	N	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	O	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	P	291/543 (54%)	286 (98%)	5 (2%)	0	100	100
1	Q	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	R	291/543 (54%)	284 (98%)	7 (2%)	0	100	100
1	S	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	T	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	U	291/543 (54%)	286 (98%)	5 (2%)	0	100	100
1	V	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	W	291/543 (54%)	284 (98%)	7 (2%)	0	100	100
1	X	291/543 (54%)	286 (98%)	5 (2%)	0	100	100
1	Y	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	Z	291/543 (54%)	285 (98%)	6 (2%)	0	100	100
1	a	291/543 (54%)	289 (99%)	2 (1%)	0	100	100

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	b	291/543 (54%)	285 (98%)	6 (2%)	0	100	100
1	c	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	d	291/543 (54%)	283 (97%)	8 (3%)	0	100	100
1	e	291/543 (54%)	282 (97%)	9 (3%)	0	100	100
1	f	291/543 (54%)	290 (100%)	1 (0%)	0	100	100
1	g	291/543 (54%)	283 (97%)	8 (3%)	0	100	100
1	h	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	i	291/543 (54%)	282 (97%)	9 (3%)	0	100	100
1	j	291/543 (54%)	286 (98%)	5 (2%)	0	100	100
1	k	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	l	291/543 (54%)	288 (99%)	3 (1%)	0	100	100
1	m	291/543 (54%)	290 (100%)	1 (0%)	0	100	100
1	n	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	o	291/543 (54%)	287 (99%)	4 (1%)	0	100	100
1	p	291/543 (54%)	284 (98%)	7 (2%)	0	100	100
1	q	291/543 (54%)	285 (98%)	6 (2%)	0	100	100
1	r	291/543 (54%)	286 (98%)	5 (2%)	0	100	100
1	s	291/543 (54%)	281 (97%)	10 (3%)	0	100	100
1	t	291/543 (54%)	290 (100%)	1 (0%)	0	100	100
1	u	291/543 (54%)	281 (97%)	10 (3%)	0	100	100
1	v	291/543 (54%)	289 (99%)	2 (1%)	0	100	100
1	w	284/543 (52%)	278 (98%)	6 (2%)	0	100	100
All	All	15672/29322 (53%)	15415 (98%)	257 (2%)	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	1	226/432 (52%)	226 (100%)	0	100	100
1	2	226/432 (52%)	226 (100%)	0	100	100
1	3	226/432 (52%)	226 (100%)	0	100	100
1	4	226/432 (52%)	226 (100%)	0	100	100
1	5	226/432 (52%)	226 (100%)	0	100	100
1	A	229/432 (53%)	229 (100%)	0	100	100
1	B	229/432 (53%)	229 (100%)	0	100	100
1	C	229/432 (53%)	229 (100%)	0	100	100
1	D	229/432 (53%)	229 (100%)	0	100	100
1	E	229/432 (53%)	229 (100%)	0	100	100
1	F	229/432 (53%)	229 (100%)	0	100	100
1	G	229/432 (53%)	229 (100%)	0	100	100
1	H	229/432 (53%)	229 (100%)	0	100	100
1	I	229/432 (53%)	229 (100%)	0	100	100
1	J	229/432 (53%)	228 (100%)	1 (0%)	89	93
1	K	229/432 (53%)	229 (100%)	0	100	100
1	L	229/432 (53%)	229 (100%)	0	100	100
1	M	229/432 (53%)	229 (100%)	0	100	100
1	N	229/432 (53%)	229 (100%)	0	100	100
1	O	229/432 (53%)	229 (100%)	0	100	100
1	P	229/432 (53%)	229 (100%)	0	100	100
1	Q	229/432 (53%)	229 (100%)	0	100	100
1	R	229/432 (53%)	229 (100%)	0	100	100
1	S	229/432 (53%)	229 (100%)	0	100	100
1	T	229/432 (53%)	229 (100%)	0	100	100
1	U	229/432 (53%)	229 (100%)	0	100	100
1	V	229/432 (53%)	229 (100%)	0	100	100
1	W	229/432 (53%)	229 (100%)	0	100	100
1	X	229/432 (53%)	229 (100%)	0	100	100
1	Y	229/432 (53%)	229 (100%)	0	100	100
1	Z	229/432 (53%)	229 (100%)	0	100	100
1	a	229/432 (53%)	229 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	b	229/432 (53%)	229 (100%)	0	100	100
1	c	229/432 (53%)	229 (100%)	0	100	100
1	d	229/432 (53%)	229 (100%)	0	100	100
1	e	229/432 (53%)	228 (100%)	1 (0%)	89	93
1	f	229/432 (53%)	229 (100%)	0	100	100
1	g	229/432 (53%)	229 (100%)	0	100	100
1	h	229/432 (53%)	229 (100%)	0	100	100
1	i	229/432 (53%)	229 (100%)	0	100	100
1	j	229/432 (53%)	229 (100%)	0	100	100
1	k	229/432 (53%)	229 (100%)	0	100	100
1	l	229/432 (53%)	229 (100%)	0	100	100
1	m	229/432 (53%)	229 (100%)	0	100	100
1	n	229/432 (53%)	229 (100%)	0	100	100
1	o	229/432 (53%)	229 (100%)	0	100	100
1	p	229/432 (53%)	229 (100%)	0	100	100
1	q	229/432 (53%)	229 (100%)	0	100	100
1	r	229/432 (53%)	229 (100%)	0	100	100
1	s	229/432 (53%)	228 (100%)	1 (0%)	89	93
1	t	229/432 (53%)	229 (100%)	0	100	100
1	u	229/432 (53%)	229 (100%)	0	100	100
1	v	229/432 (53%)	228 (100%)	1 (0%)	89	93
1	w	226/432 (52%)	226 (100%)	0	100	100
All	All	12348/23328 (53%)	12344 (100%)	4 (0%)	100	100

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

Mol	Chain	Res	Type
1	J	426	ASN
1	e	426	ASN
1	s	418	ARG
1	v	426	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	t	279	ASN
1	q	275	ASN
1	U	376	ASN
1	g	376	ASN
1	U	296	HIS

### 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 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.

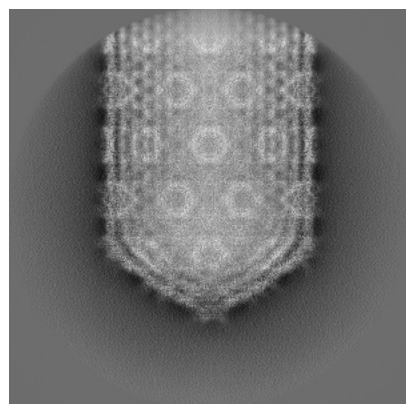
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-63432. These allow visual inspection of the internal detail of the map and identification of artifacts.

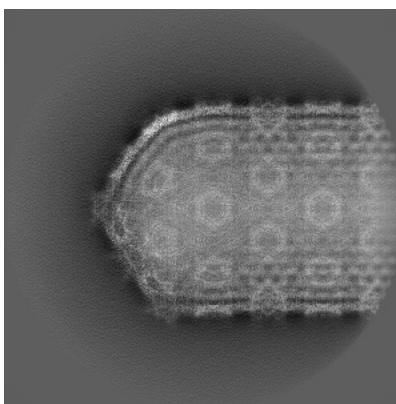
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

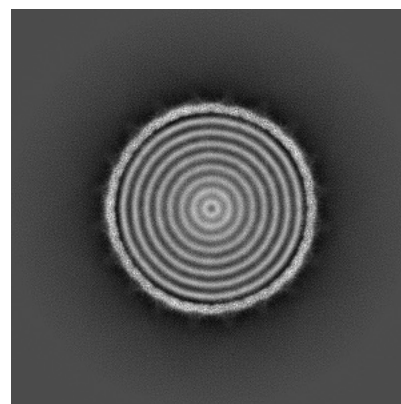
#### 6.1.1 Primary map



X

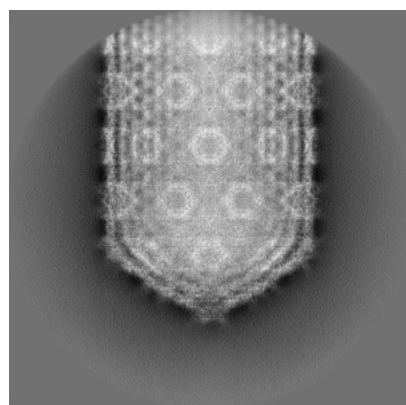


Y

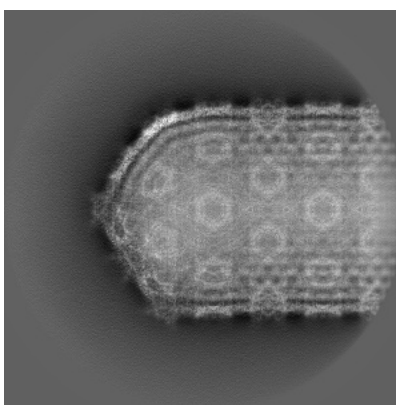


Z

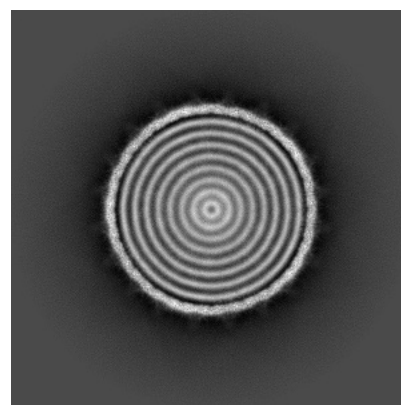
#### 6.1.2 Raw map



X



Y

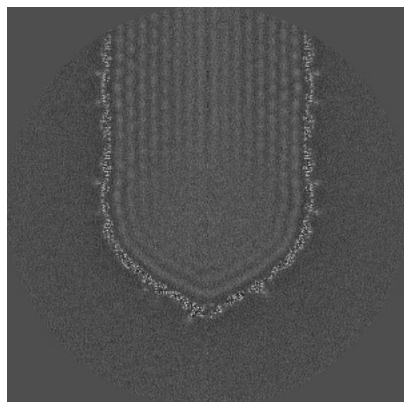


Z

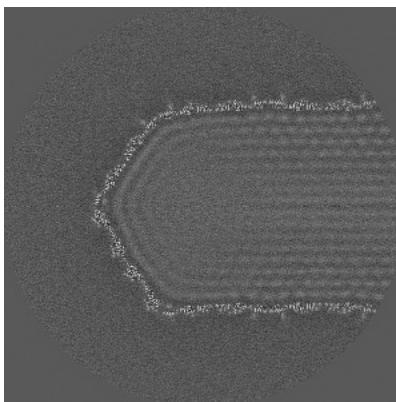
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

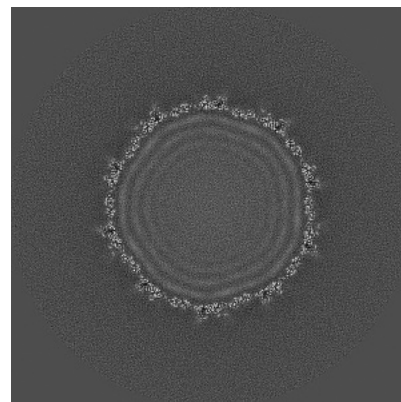
### 6.2.1 Primary map



X Index: 250

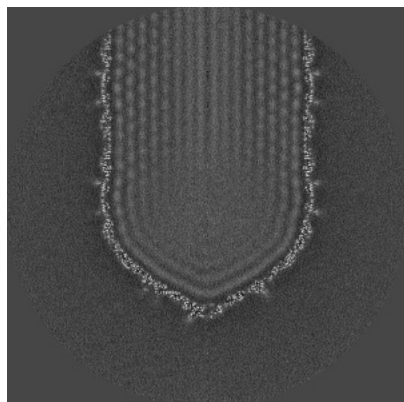


Y Index: 250

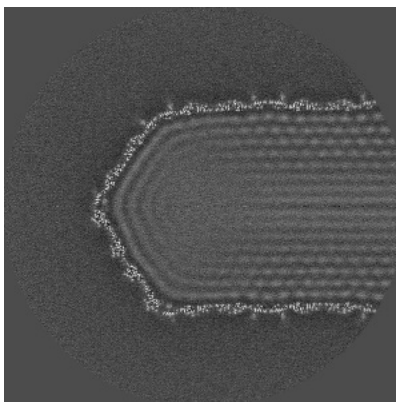


Z Index: 250

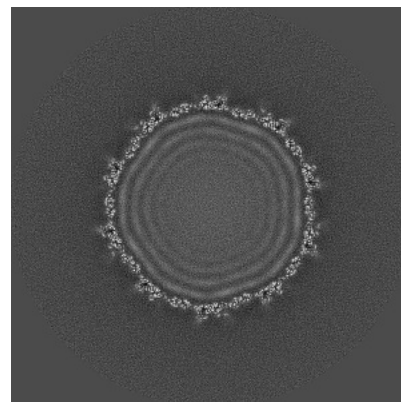
### 6.2.2 Raw map



X Index: 250



Y Index: 250

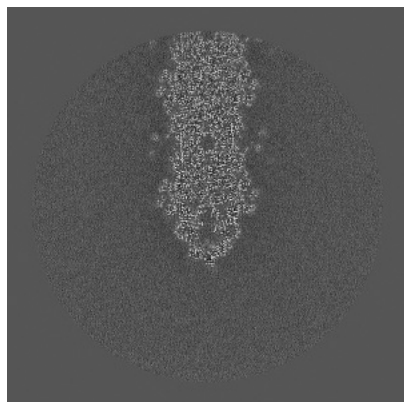


Z Index: 250

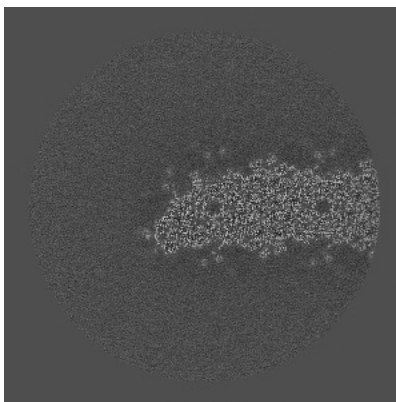
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

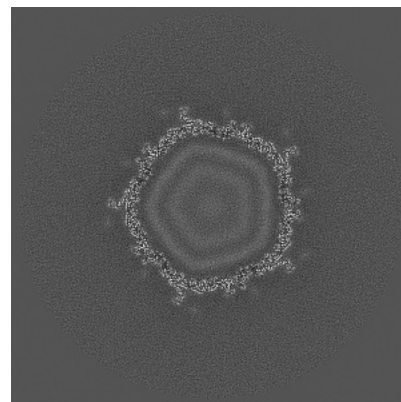
### 6.3.1 Primary map



X Index: 127

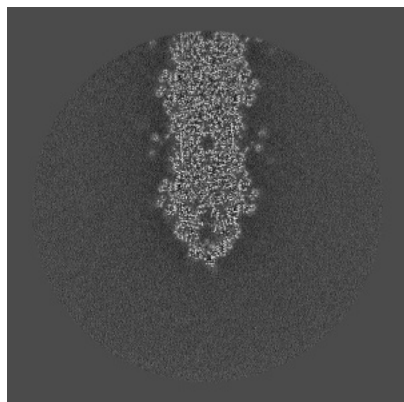


Y Index: 373

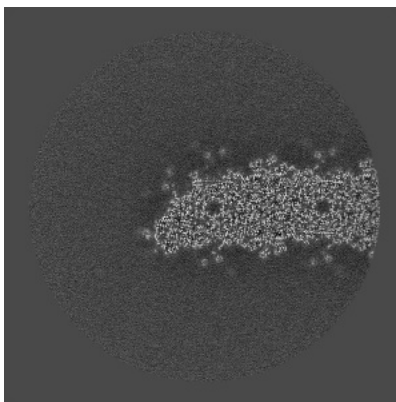


Z Index: 178

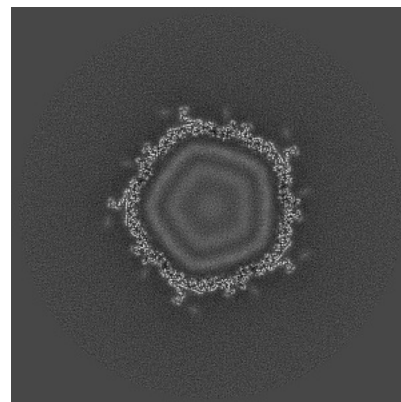
### 6.3.2 Raw map



X Index: 127



Y Index: 373

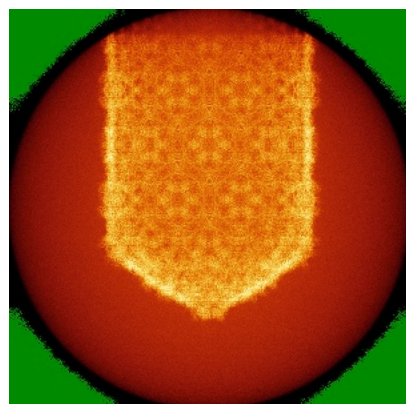


Z Index: 178

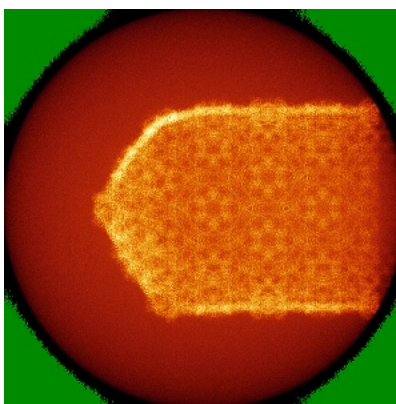
The images above show the largest variance slices of the map in three orthogonal directions.

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

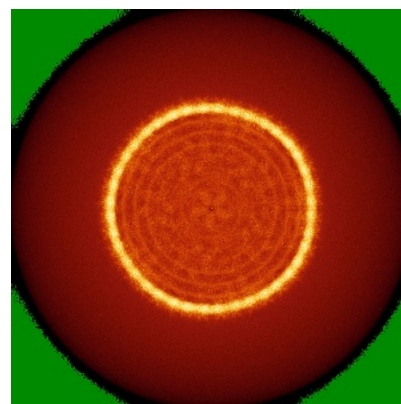
### 6.4.1 Primary map



X

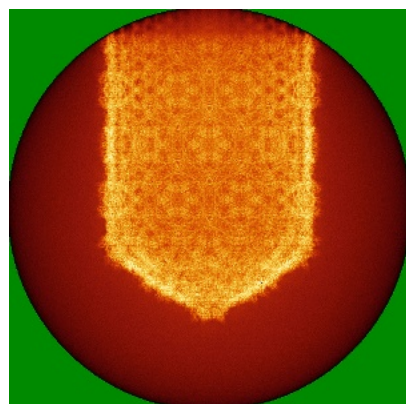


Y

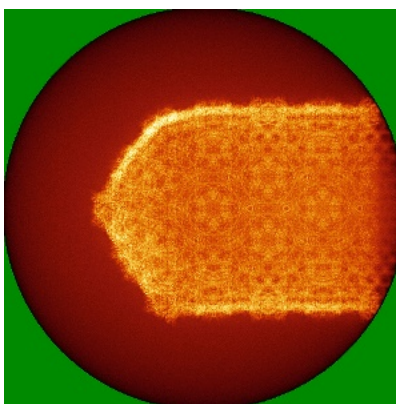


Z

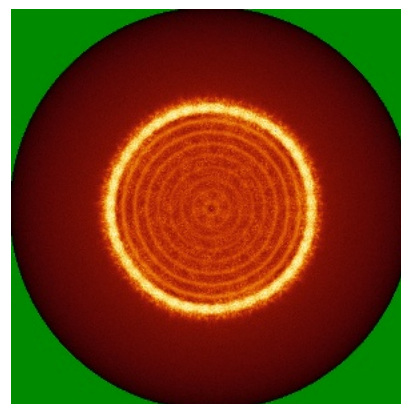
### 6.4.2 Raw map



X



Y

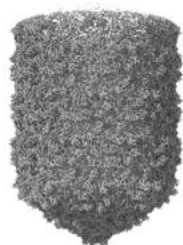


Z

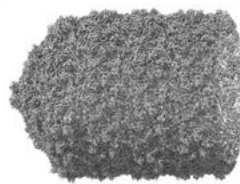
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views [i](#)

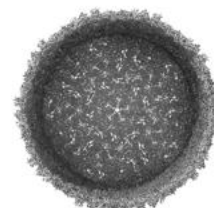
### 6.5.1 Primary map



X



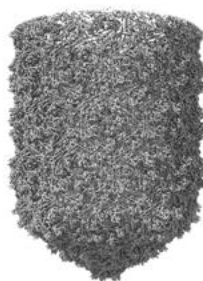
Y



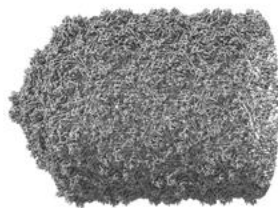
Z

The images above show the 3D surface view of the map at the recommended contour level 0.0203. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

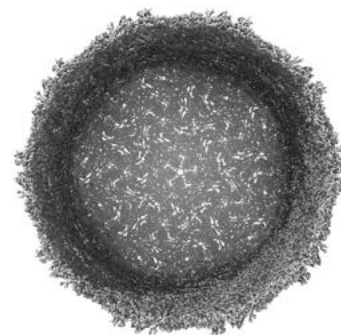
### 6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

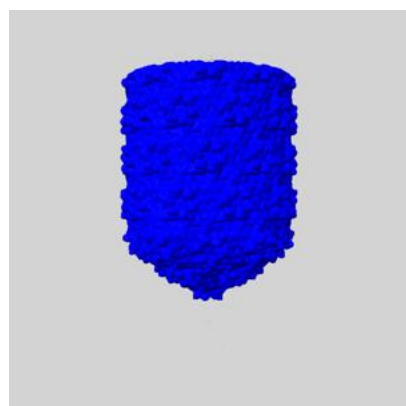
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

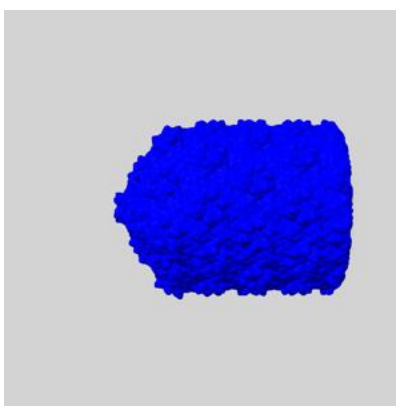
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

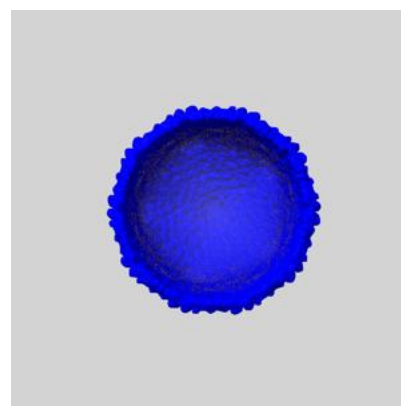
### 6.6.1 emd\_63432\_msk\_1.map [i](#)



X



Y

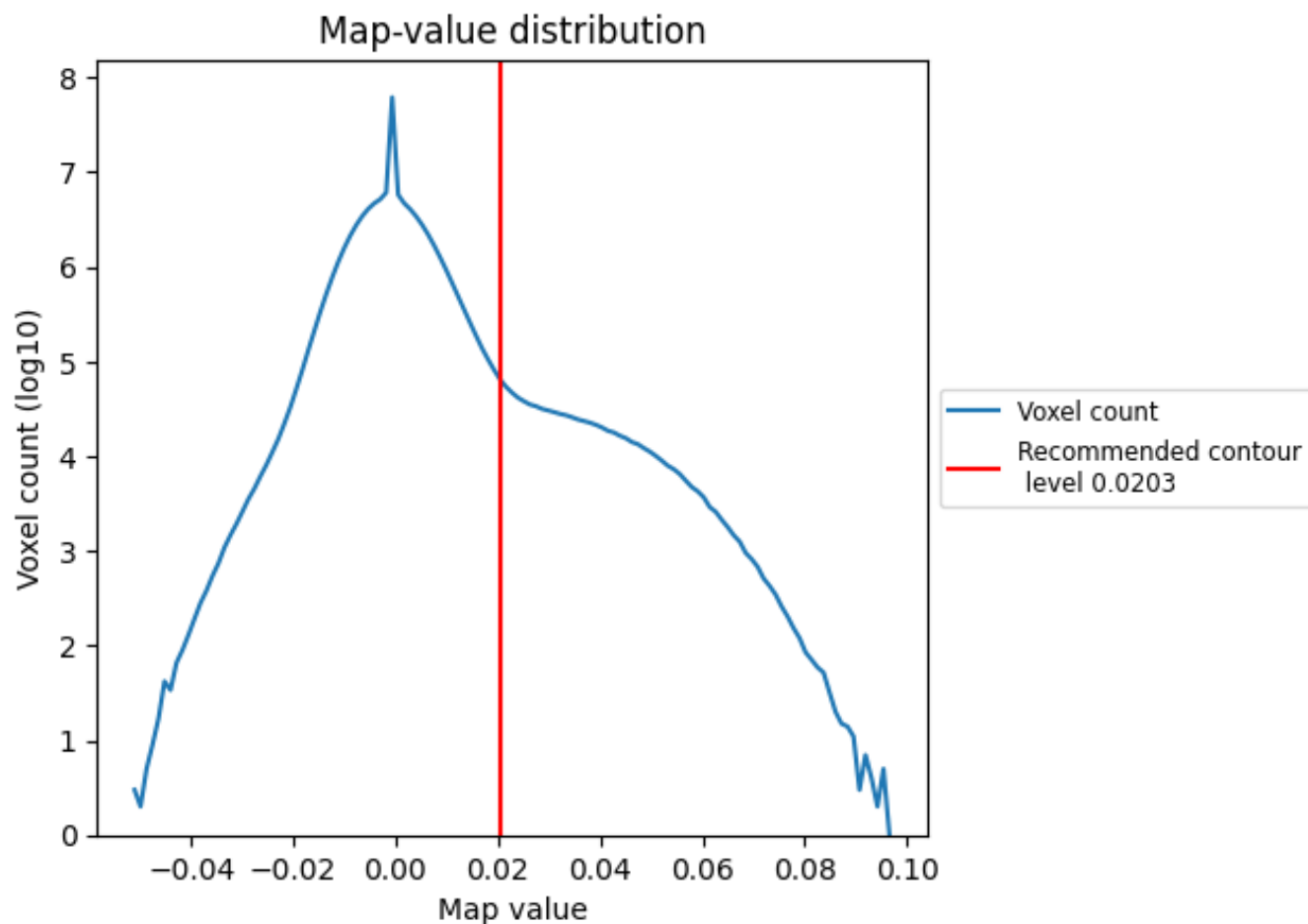


Z

## 7 Map analysis [i](#)

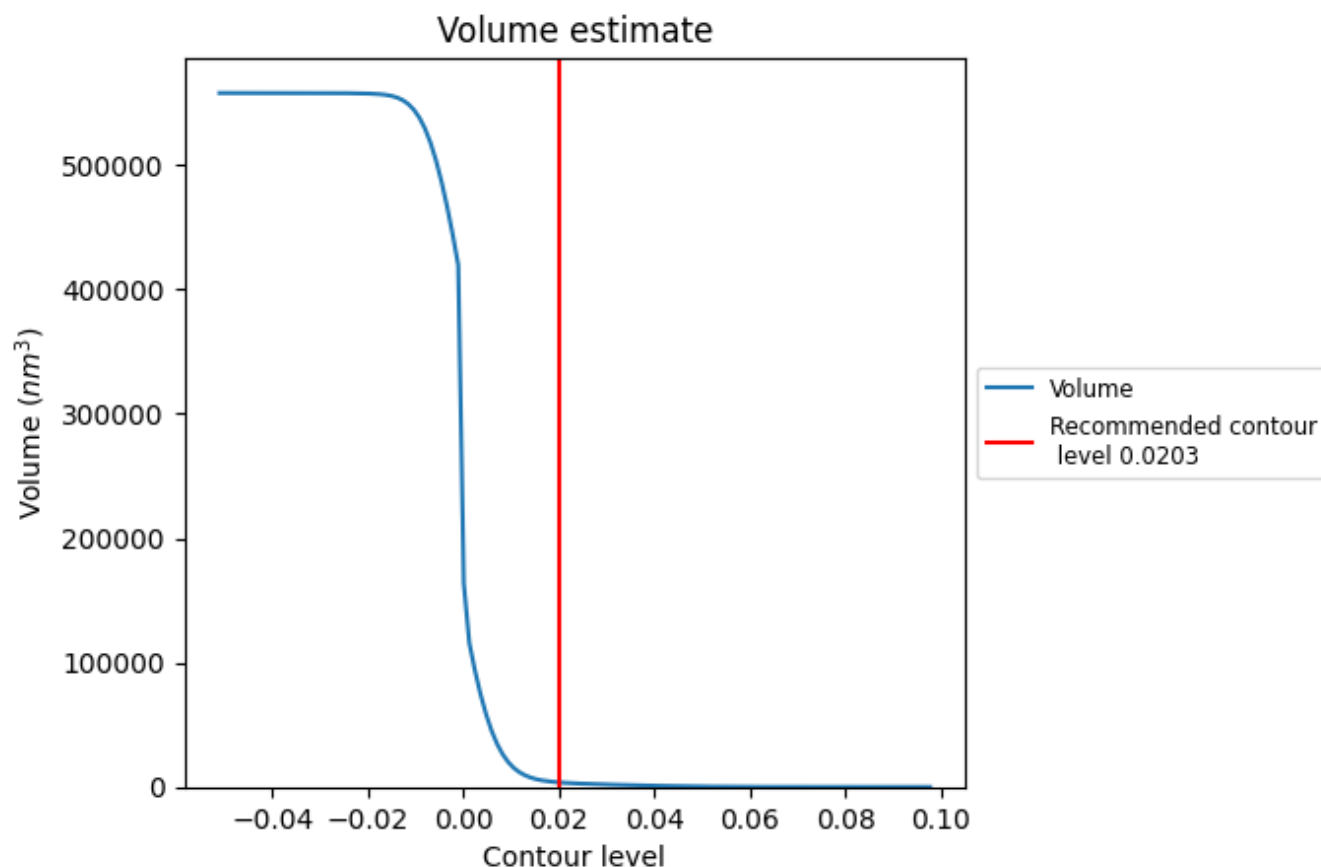
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

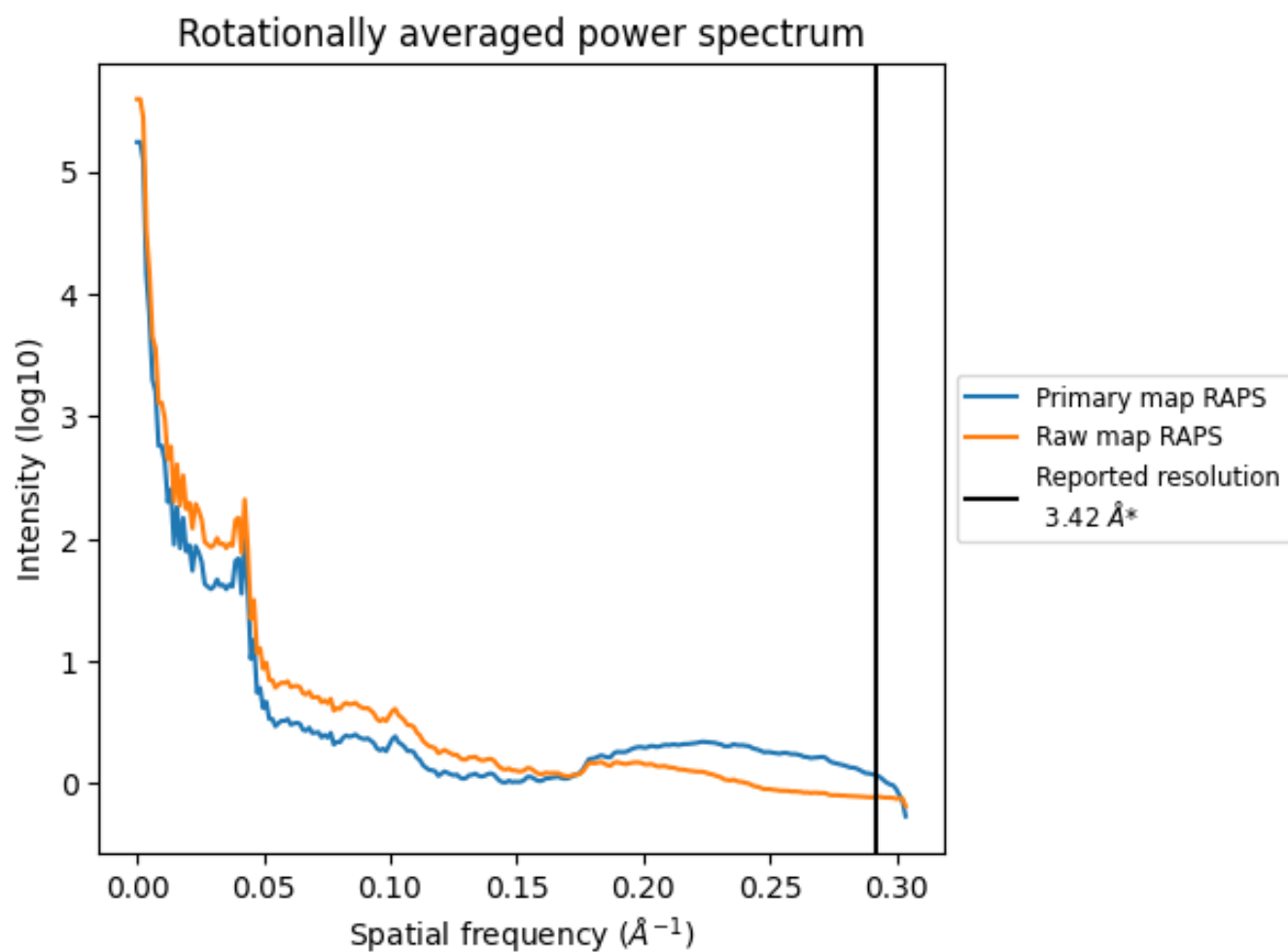
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 3591  $\text{nm}^3$ ; this corresponds to an approximate mass of 3244 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 ⓘ

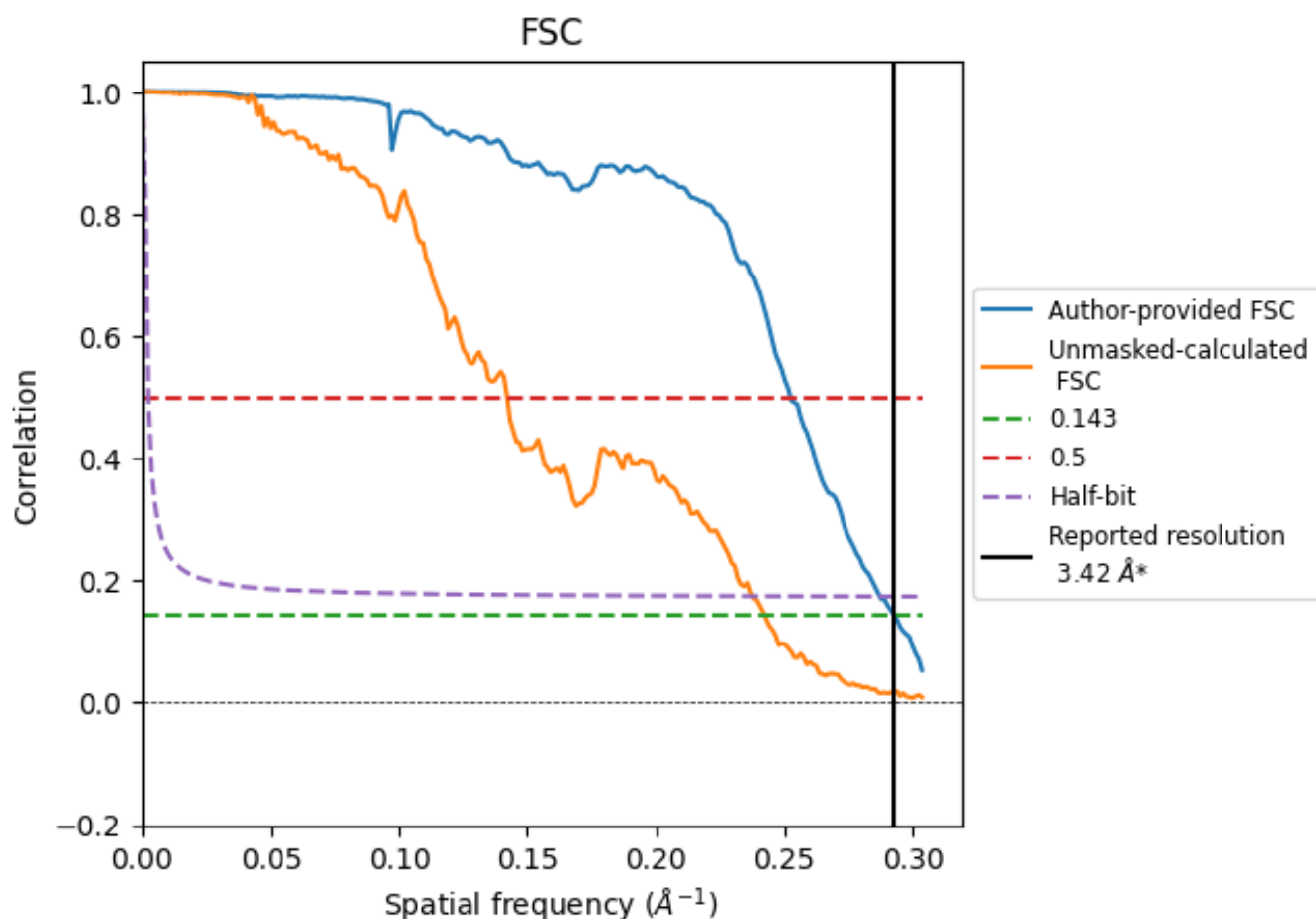


\*Reported resolution corresponds to spatial frequency of 0.292 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.292  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.42	-	-
Author-provided FSC curve	3.42	3.96	3.48
Unmasked-calculated*	4.13	7.03	4.21

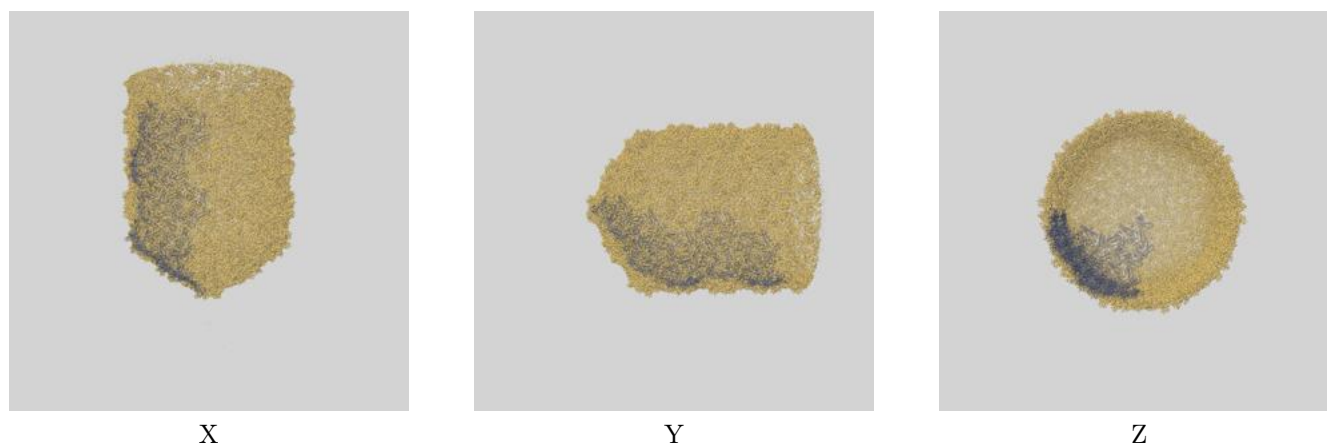
\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.13 differs from the reported value 3.42 by more than 10 %

## 9 Map-model fit [i](#)

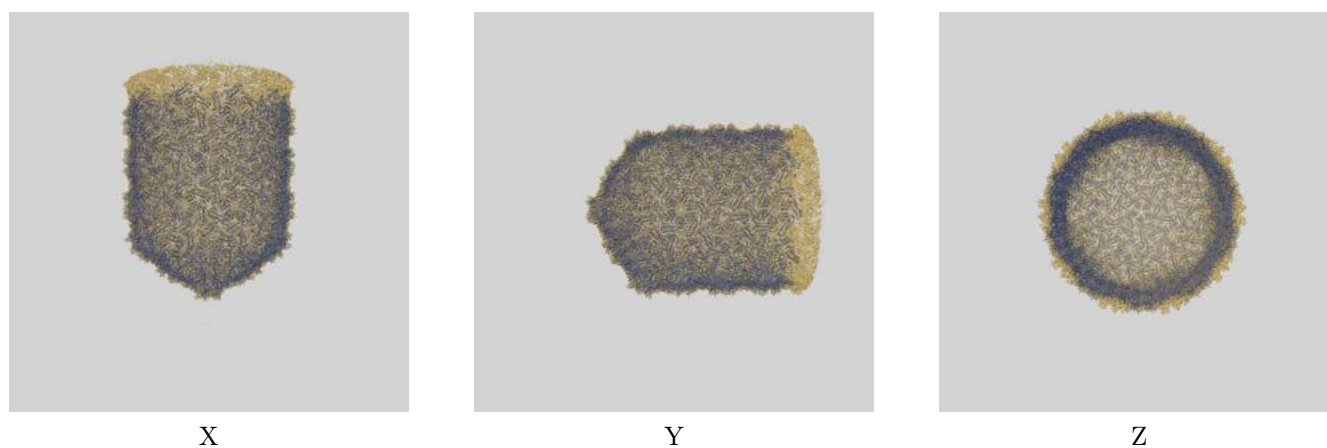
This section contains information regarding the fit between EMDB map EMD-63432 and PDB model 9LW6. Per-residue inclusion information can be found in section 3 on page 10.

### 9.1 Map-model overlays

#### 9.1.1 Map-model overlay [i](#)

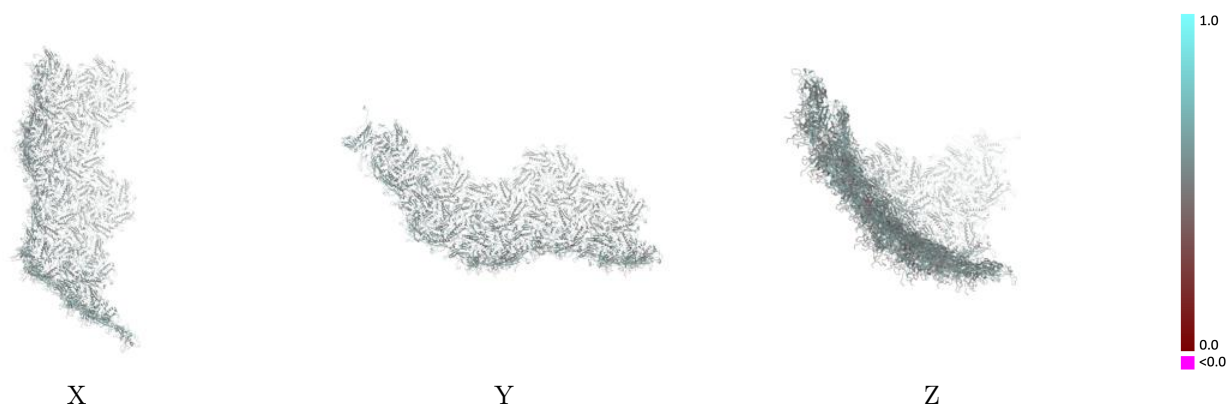


#### 9.1.2 Map-model assembly overlay [i](#)



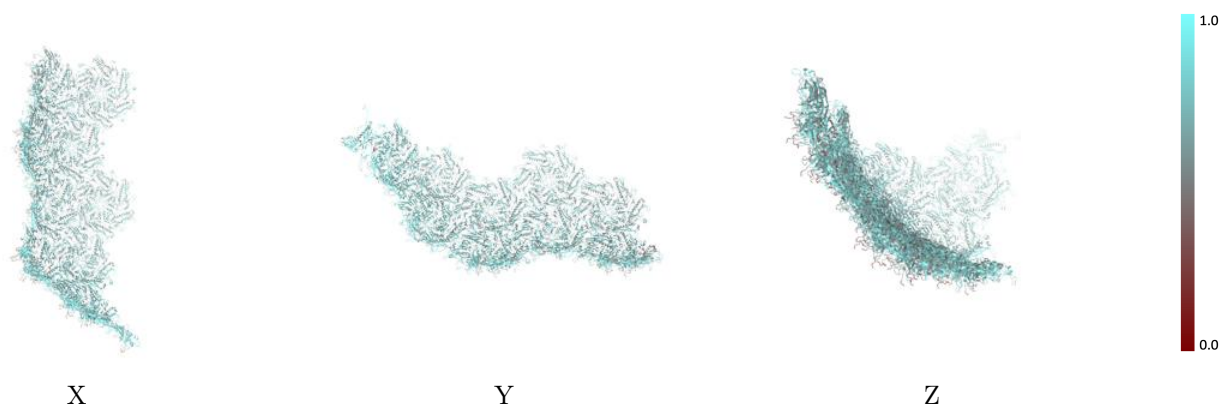
The images above show the 3D surface view of the map at the recommended contour level 0.0203 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



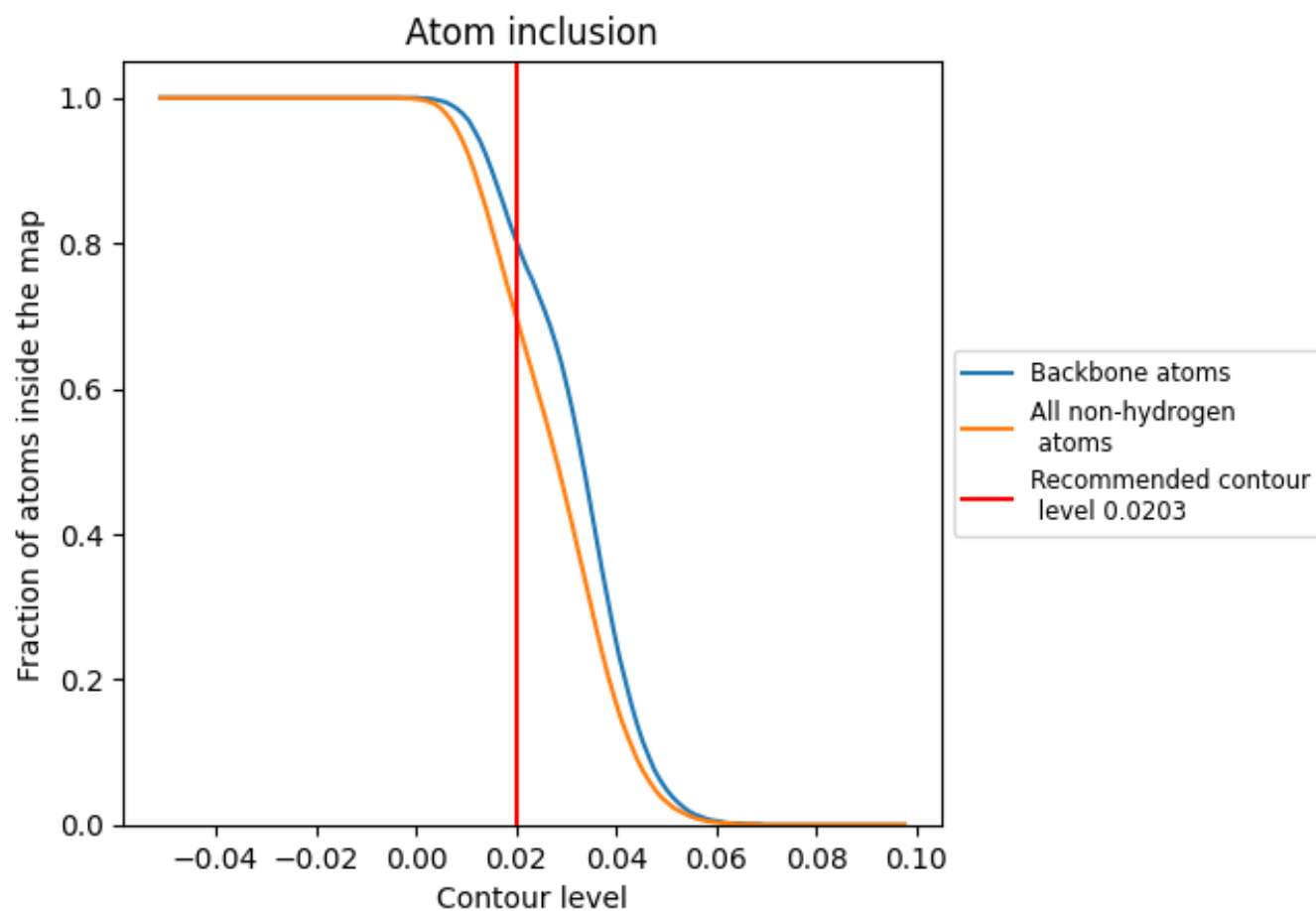
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0203).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 80% of all backbone atoms, 69% 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 (0.0203) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6940	 0.5300
1	 0.7180	 0.5340
2	 0.7100	 0.5310
3	 0.7090	 0.5290
4	 0.7000	 0.5270
5	 0.6990	 0.5260
A	 0.7480	 0.5470
B	 0.7450	 0.5410
C	 0.7410	 0.5480
D	 0.7370	 0.5370
E	 0.7380	 0.5440
F	 0.7360	 0.5430
G	 0.7330	 0.5370
H	 0.7300	 0.5370
I	 0.7250	 0.5330
J	 0.7140	 0.5350
K	 0.6900	 0.5340
L	 0.7100	 0.5320
M	 0.6950	 0.5330
N	 0.7100	 0.5340
O	 0.7040	 0.5320
P	 0.6910	 0.5350
Q	 0.6870	 0.5260
R	 0.7000	 0.5360
S	 0.7060	 0.5340
T	 0.7050	 0.5340
U	 0.6900	 0.5320
V	 0.6930	 0.5350
W	 0.6830	 0.5310
X	 0.6930	 0.5290
Y	 0.6940	 0.5300
Z	 0.6880	 0.5290
a	 0.6880	 0.5230
b	 0.6840	 0.5230
c	 0.6840	 0.5240



*Continued on next page...*

*Continued from previous page...*

Chain	Atom inclusion	Q-score
d	 0.6760	 0.5280
e	 0.6840	 0.5280
f	 0.6880	 0.5320
g	 0.6890	 0.5280
h	 0.6830	 0.5300
i	 0.6940	 0.5250
j	 0.6860	 0.5300
k	 0.6710	 0.5280
l	 0.6700	 0.5210
m	 0.6590	 0.5160
n	 0.6440	 0.5190
o	 0.6310	 0.5110
p	 0.6500	 0.5190
q	 0.6710	 0.5270
r	 0.6700	 0.5200
s	 0.6560	 0.5200
t	 0.6430	 0.5230
u	 0.6140	 0.5120
v	 0.6540	 0.5190
w	 0.7520	 0.5470