



## wwPDB EM Validation Summary Report ⓘ

Dec 10, 2022 – 10:11 pm GMT

PDB ID : 6QZ9  
EMDB ID : EMD-4684  
Title : The cryo-EM structure of the collar complex and tail axis in bacteriophage phi29  
Authors : Xu, J.; Wang, D.; Gui, M.; Xiang, Y.  
Deposited on : 2019-03-11  
Resolution : 3.30 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:

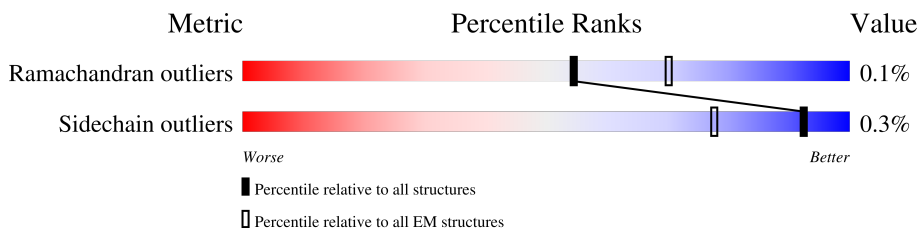
EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP)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

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 3.30 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  $\geq 3$ , 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	0a	309	50% 85% 15%
1	0b	309	50% 85% 15%
1	0c	309	50% 85% 15%
1	0d	309	50% 85% 15%
1	0e	309	50% 85% 15%
1	0f	309	50% 85% 15%
1	0g	309	50% 85% 15%
1	0h	309	50% 85% 15%
1	0i	309	50% 85% 15%

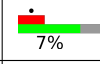
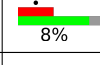
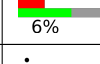

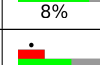
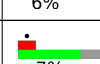
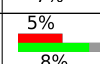
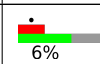
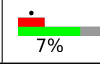
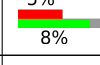
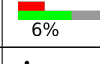
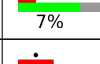
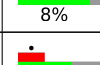
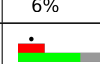
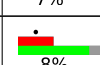
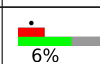
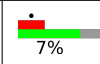
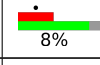
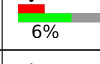
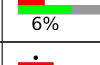
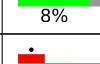
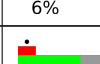
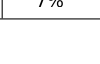


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Mol	Chain	Length	Quality of chain
1	0j	309	50% 85% 15%
1	0k	309	50% 85% 15%
1	0l	309	50% 85% 15%
2	0A	293	99% ..
2	0B	293	99% ..
2	0C	293	5% 99% ..
2	0D	293	99% ..
2	0E	293	5% 99% ..
2	0F	293	99% ..
2	0G	293	99% ..
2	0H	293	99% ..
2	0I	293	5% 99% ..
2	0J	293	5% 99% ..
2	0K	293	5% 99% ..
2	0L	293	5% 99% ..
3	A	854	6% 94%
3	B	854	6% 93%
3	C	854	8% 92%
3	D	854	6% 94%
3	E	854	7% 93%
3	F	854	8% 92%
3	G	854	6% 94%
3	H	854	7% 93%
3	I	854	5% 8% 92%
3	J	854	6% 94%

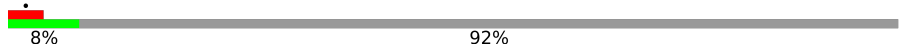
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Mol	Chain	Length	Quality of chain	
3	K	854		93%
3	L	854		92%
3	M	854		94%
3	N	854		93%
3	O	854		92%
3	P	854		94%
3	Q	854		93%
3	R	854		92%
3	S	854		94%
3	T	854		93%
3	U	854		92%
3	V	854		94%
3	W	854		93%
3	X	854		92%
3	Y	854		94%
3	Z	854		93%
3	a	854		92%
3	b	854		94%
3	c	854		93%
3	d	854		92%
3	e	854		94%
3	f	854		93%
3	g	854		92%
3	h	854		94%
3	i	854		93%

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Mol	Chain	Length	Quality of chain
3	j	854	 8% 92%

## 2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 71724 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 Portal protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0a	264	2163	1384	360	412	7	0	0
1	0b	264	2163	1384	360	412	7	0	0
1	0c	264	2163	1384	360	412	7	0	0
1	0d	264	2163	1384	360	412	7	0	0
1	0e	264	2163	1384	360	412	7	0	0
1	0f	264	2163	1384	360	412	7	0	0
1	0g	264	2163	1384	360	412	7	0	0
1	0h	264	2163	1384	360	412	7	0	0
1	0i	264	2163	1384	360	412	7	0	0
1	0j	264	2163	1384	360	412	7	0	0
1	0k	264	2163	1384	360	412	7	0	0
1	0l	264	2163	1384	360	412	7	0	0

- Molecule 2 is a protein called Proximal tail tube connector protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	0A	291	2296	1414	396	478	8	0	0
2	0B	291	2296	1414	396	478	8	0	0
2	0C	291	2296	1414	396	478	8	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	0D	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0E	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0F	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0G	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0H	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0I	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0J	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0K	291	Total 2296	C 1414	N 396	O 478	S 8	0	0
2	0L	291	Total 2296	C 1414	N 396	O 478	S 8	0	0

- Molecule 3 is a protein called Pre-neck appendage protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	51	Total 433	C 281	N 67	O 83	S 2	0	0
3	B	57	Total 482	C 312	N 74	O 92	S 4	0	0
3	C	71	Total 603	C 391	N 94	O 114	S 4	0	0
3	D	51	Total 433	C 281	N 67	O 83	S 2	0	0
3	E	57	Total 482	C 312	N 74	O 92	S 4	0	0
3	F	71	Total 603	C 391	N 94	O 114	S 4	0	0
3	G	51	Total 433	C 281	N 67	O 83	S 2	0	0
3	H	57	Total 482	C 312	N 74	O 92	S 4	0	0
3	I	71	Total 603	C 391	N 94	O 114	S 4	0	0
3	J	51	Total 433	C 281	N 67	O 83	S 2	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	K	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	L	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	M	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	N	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	O	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	P	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	Q	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	R	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	S	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	T	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	U	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	V	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	W	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	X	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	Y	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	Z	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	a	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	b	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	c	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	d	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	e	51	Total	C	N	O	S	0	0
			433	281	67	83	2		

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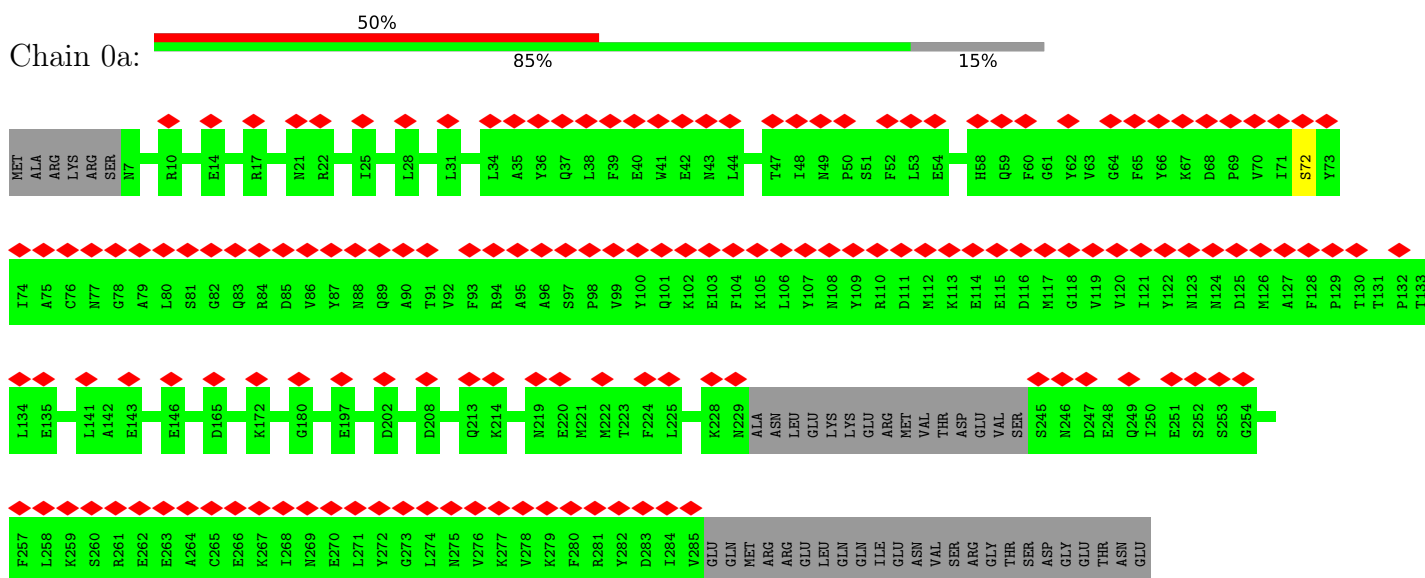
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Mol	Chain	Residues	Atoms					AltConf	Trace
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			482	312	74	92	4		
3	g	71	Total	C	N	O	S	0	0
			603	391	94	114	4		
3	h	51	Total	C	N	O	S	0	0
			433	281	67	83	2		
3	i	57	Total	C	N	O	S	0	0
			482	312	74	92	4		
3	j	71	Total	C	N	O	S	0	0
			603	391	94	114	4		

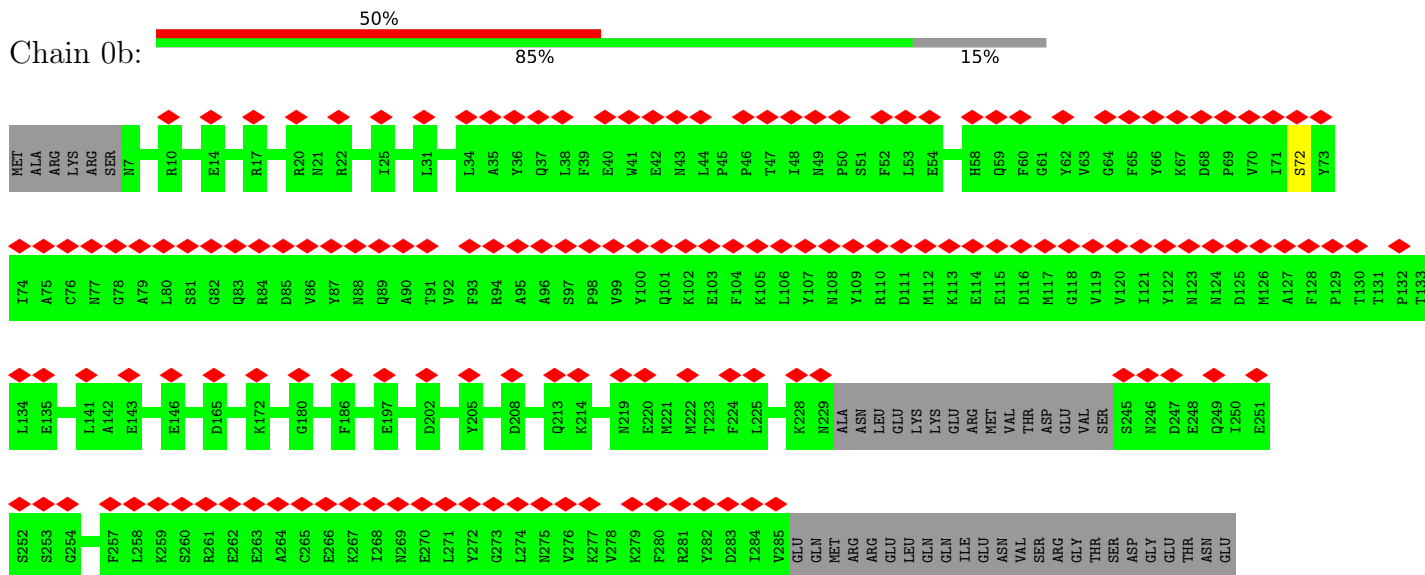
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

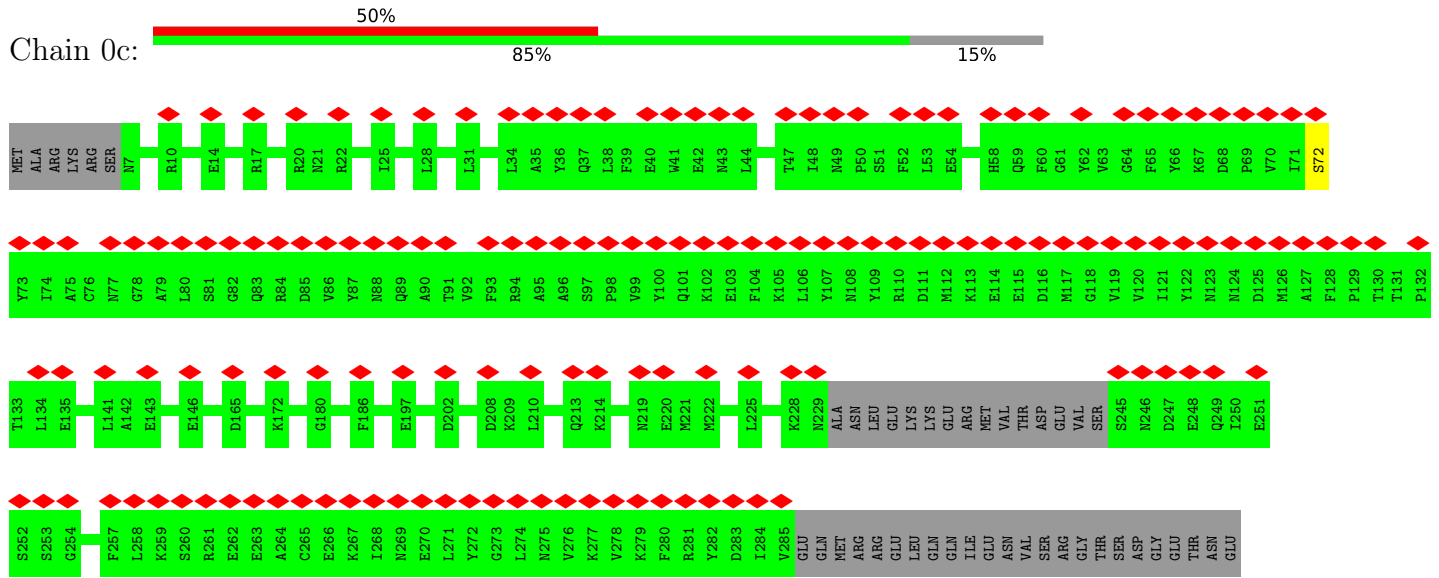
- Molecule 1: Portal protein



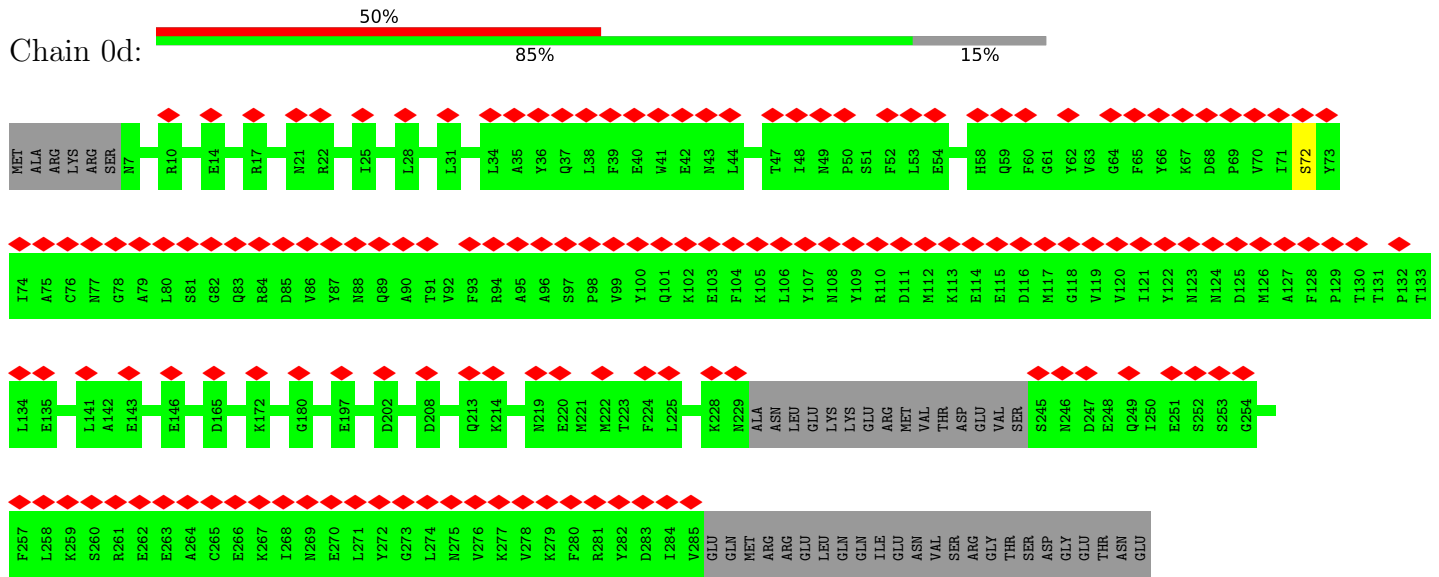
- Molecule 1: Portal protein



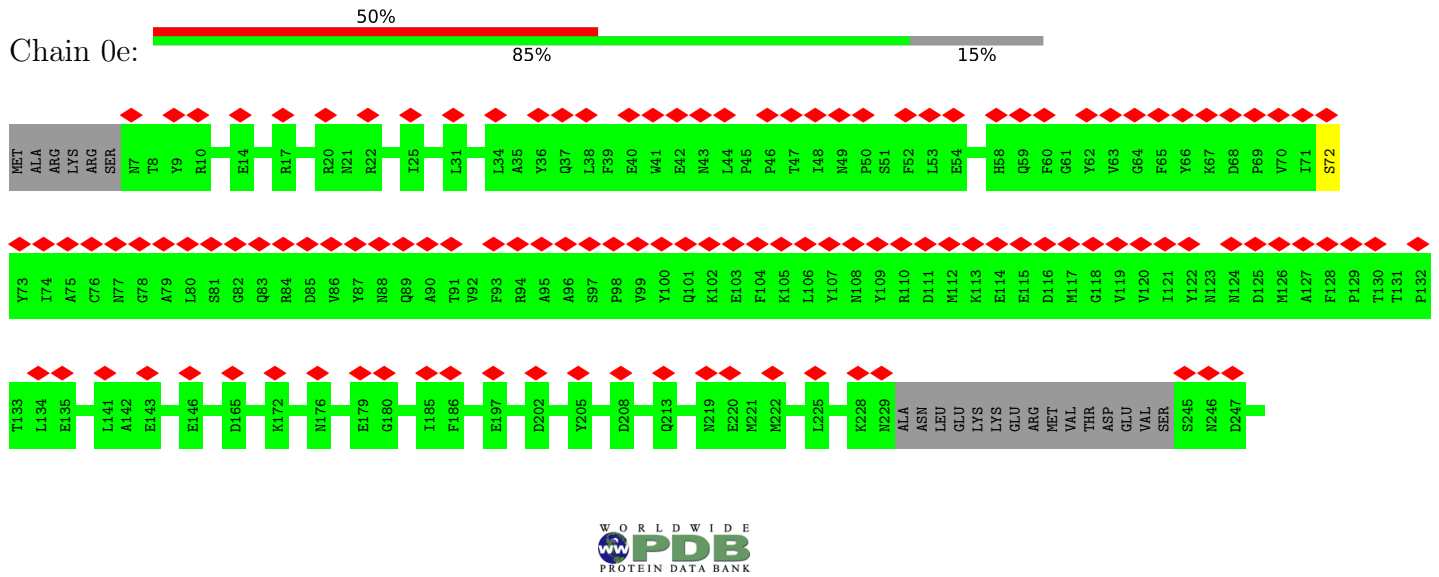
- Molecule 1: Portal protein

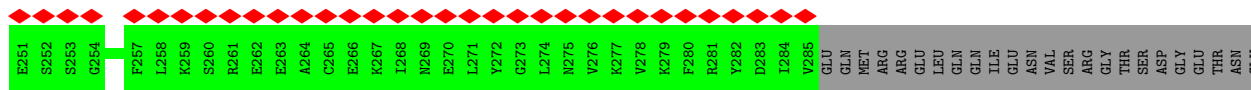


• Molecule 1: Portal protein



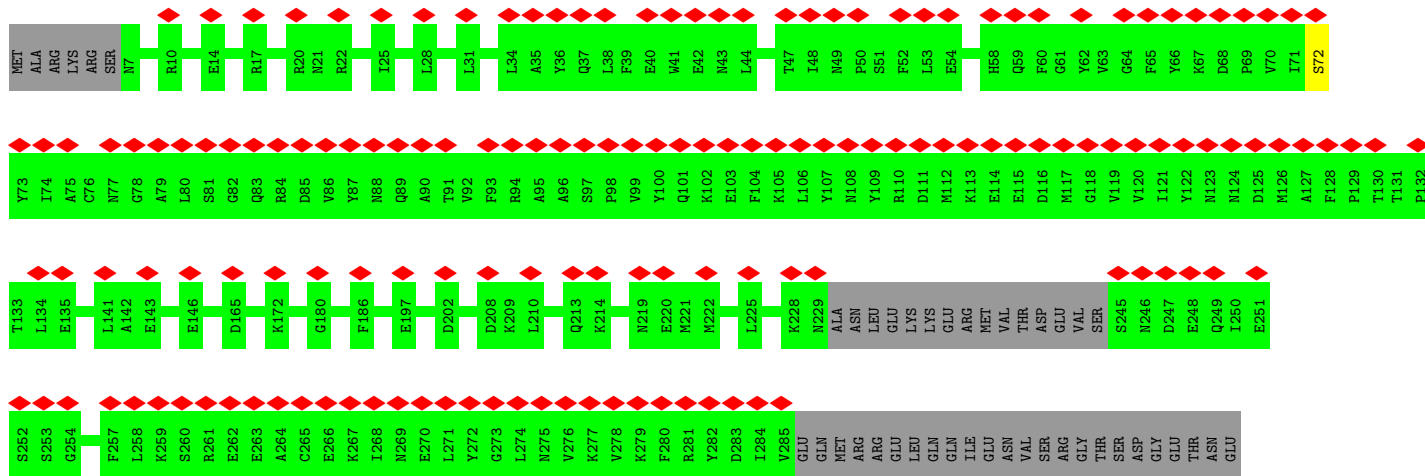
• Molecule 1: Portal protein





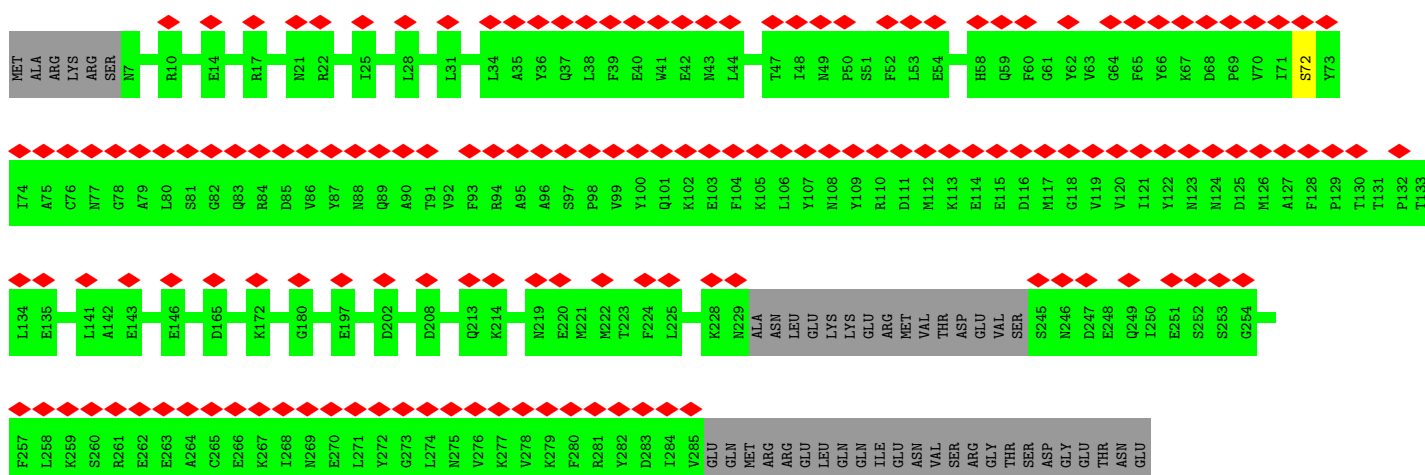
• Molecule 1: Portal protein

Chain 0f:



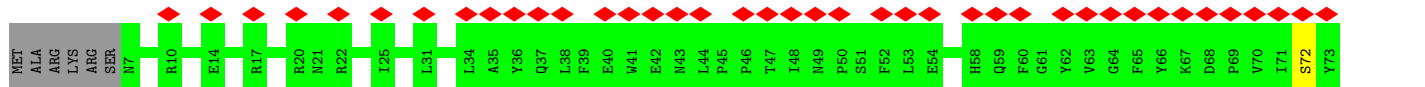
• Molecule 1: Portal protein

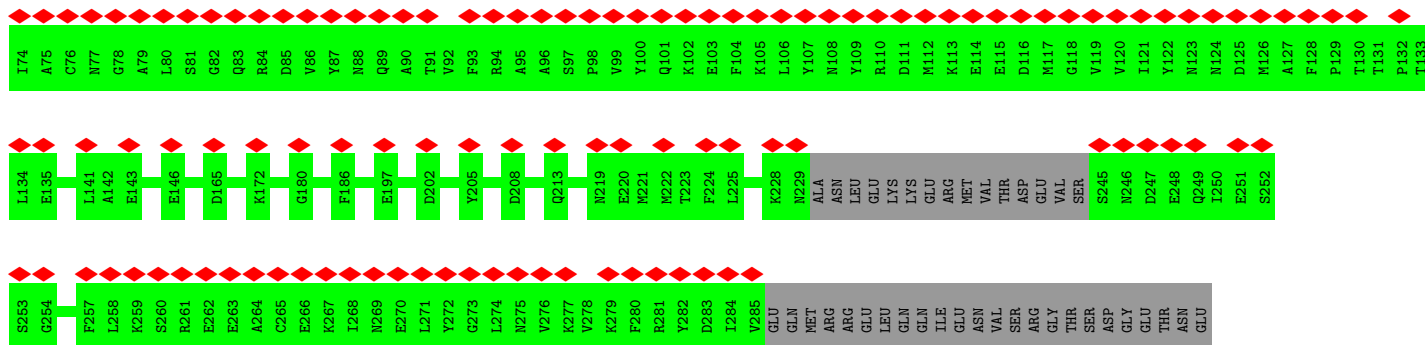
Chain 0g:



• Molecule 1: Portal protein

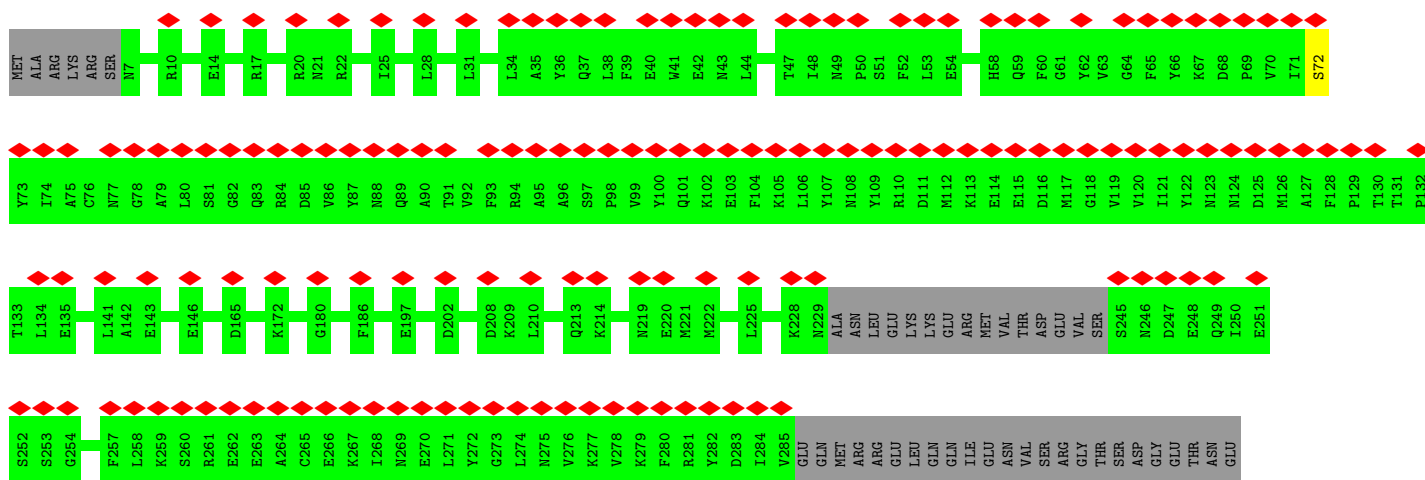
Chain 0h:





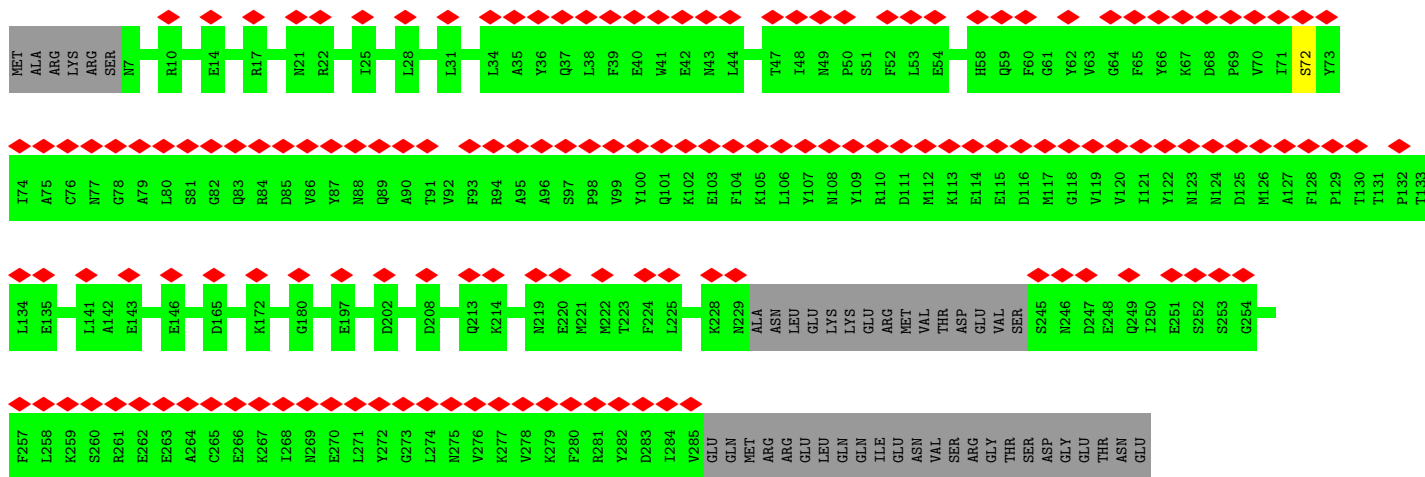
• Molecule 1: Portal protein

Chain 0i:



• Molecule 1: Portal protein

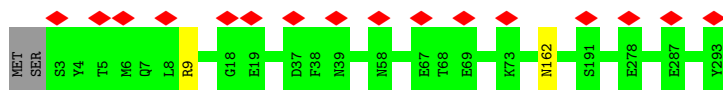
Chain 0j:



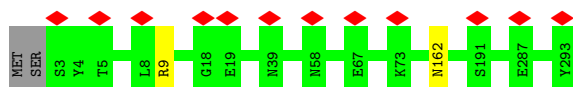
• Molecule 1: Portal protein



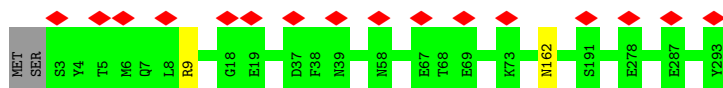
- Molecule 2: Proximal tail tube connector protein



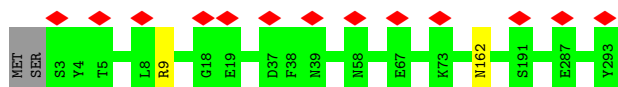
- Molecule 2: Proximal tail tube connector protein



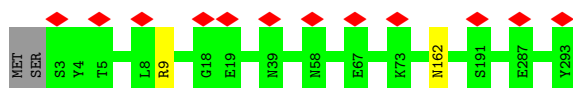
- Molecule 2: Proximal tail tube connector protein



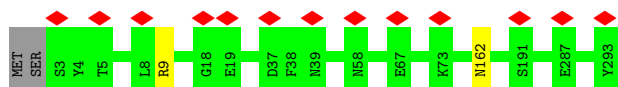
- Molecule 2: Proximal tail tube connector protein



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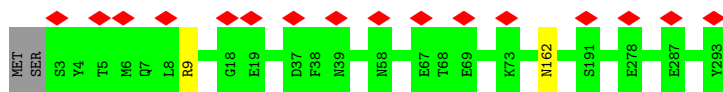


- Molecule 2: Proximal tail tube connector protein

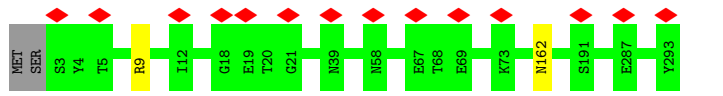


- Molecule 2: Proximal tail tube connector protein

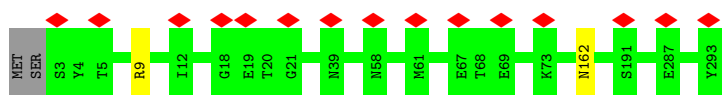




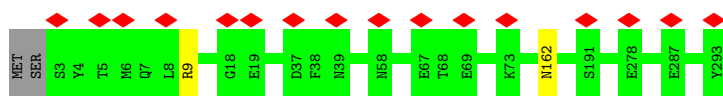
• Molecule 2: Proximal tail tube connector protein



• Molecule 2: Proximal tail tube connector protein



• Molecule 2: Proximal tail tube connector protein



• Molecule 3: Pre-neck appendage protein



MET	SER	S3	Y4	T5	M6	Q7	L8	R9	G18	E19	D37	F38	N39	N58	E67	T68	E69	K73	N162	S191	E278	E287	Y293	
LEU	GLU	ASP	VAL	LEU	VAL	GLU	THR	LYS	THR	LEU	LEU	GLU	ARG	GLU	GLN	PHE	GLY	GLU	GLY	GLU	GLY	GLY	GLY	GLY
PHE	PRO	VAL	TYR	PRO	VAL	GLY	TYR	PRO	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
LEU	SER	PHE	THR	ASP	GLY	ASP	GLY	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
PRO	TYR	LEU	GLY	ASP	THR	THR	THR	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
ASP	ASP	GLY	SER	HIS	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL
ASP	PRO	GLN	SER	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL
THR	VAL	VAL	SER	GLM	PHE	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG









Multiple rows of amino acid sequences, including: MET SER, MET SER T3, MET SER K4, MET SER P5, MET SER E6, MET SER L7, MET SER K8, MET SER R9, MET SER F10, MET SER E11, MET SER Q12, MET SER F13, MET SER G14, MET SER E15, MET SER M16, MET SER L20, MET SER Y21, MET SER E22, MET SER F29, MET SER D30, MET SER E31, MET SER S32, MET SER L33, MET SER T34, MET SER L36, MET SER K51, MET SER N54, MET SER E55, MET SER L56, MET SER I57, MET SER E58, MET SER E59, MET SER W60, MET SER N61, MET SER M64, MET SER E65, MET SER I67, MET SER L68, MET SER N69, MET SER D70, MET SER G71, MET SER L72, MET SER E73, MET SER ASP, MET SER LEU, MET SER VAL, MET SER LYS, MET SER GLU, MET SER THR, MET SER LEU, MET SER ARG.

● Molecule 3: Pre-neck appendage protein

Chain F: 8% 92%

Sequence of Molecule 3: MET SER, MET SER T3, MET SER K4, MET SER P5, MET SER E6, MET SER L7, MET SER K8, MET SER R9, MET SER F10, MET SER E11, MET SER Q12, MET SER F13, MET SER G14, MET SER E15, MET SER M16, MET SER L20, MET SER Y21, MET SER E22, MET SER F29, MET SER D30, MET SER E31, MET SER S32, MET SER L33, MET SER T34, MET SER L36, MET SER K51, MET SER N54, MET SER E55, MET SER L56, MET SER I57, MET SER E58, MET SER E59, MET SER W60, MET SER N61, MET SER M64, MET SER E65, MET SER I67, MET SER L68, MET SER N69, MET SER D70, MET SER G71, MET SER L72, MET SER E73, MET SER ASP, MET SER LEU, MET SER VAL, MET SER LYS, MET SER GLU, MET SER THR, MET SER LEU, MET SER ARG.















MET	GLY	THR	LYS	PRO	GLU	LEU	LYS	ARG	GLN	GLY	G14	E15	H16	Q19	L20	Y21	E22	E31	S32	L33	I43	L46	G50	N54	E59	W60	N61	K62	V63	M64	E65	W66	I67	L68	N69	D70	GLY	LEU	GLU	ASP	LEU	VAL	LYS	PRO	THR	THR	GLU	GLY	TRP	ARG	TYR		
GLU	GLY	LYS	PHE	ALA	ASP	LEU	VAL	THR	GLN	VAL	ASP	GLY	LYS	ARG	LYS	GLY	VAL	LYS	MET	LYS	THR	TYR	GLY	ALA	ILE	ARG	ALA	GLY	LYS	ALA	ILE	GLY	SER	PHE	PRO	VAL	TYR	VAL	VAL	THR	THR	GLY	THR	PHE	MET	VAL	GLY	LEU	TRP	ARG	TYR		
ARG	GLY	ILE	LEU	PRO	SER	ASN	THR	VAL	THR	GLY	ALA	GLY	LYS	ARG	LYS	ILE	ARG	ASN	ALA	VAL	VAL	ILE	VAL	GLY	GLY	ASN	VAL	THR	THR	THR	GLY	ASN	ILE	PHE	LEU	SER	PHE	THR	THR	THR	ASP	GLY	THR	ASP	ASN	LYS	ARG	LEU	LEU	SER			
GLY	GLN	GLY	ILE	SER	ILE	GLY	GLY	GLY	GLY	ASN	ASN	LEU	SER	ILE	ILE	ALA	ALA	ALA	ALA	ALA	VAL	VAL	VAL	VAL	VAL	GLY	LEU	ASN	VAL	THR	THR	GLY	LEU	ASN	GLY	GLY	GLY	GLY	LEU	ASN	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
GLU	ASN	TRP	CYS	ILE	GLY	ASN	CYS	GLY	GLY	ASP	ASP	ASP	GLY	ILE	ILE	THR	THR	HIS	HIS	HIS	HIS	ASN	ASN	ASN	ASN	ASN	ASN	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR		
SER	LYS	GLY	TRP	TYR	GLY	GLY	ILE	GLY	GLY	ASP	ASP	ASP	ASP	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	
ASN	LEU	VAL	ILE	ILE	PRO	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
LEU	ASN	GLY	VAL	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
GLY	ASP	ILE	ASN	SER	PRO	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	
HIS	SER	GLU	GLY	PHE	ILE	GLY	GLY	GLY	GLY	GLY	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
ASP	GLU	GLN	PHE	ALA	LEU	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE
THR	GLY	ASN	THR	TRP	SER	ASP	PHE	ALA	GLY	GLY	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER	SER
GLU	TRP	GLN	GLY	ALA	VAL	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	
ALA	VAL	ARG	ILE	ASP	GLU	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR		

● Molecule 3: Pre-neck appendage protein

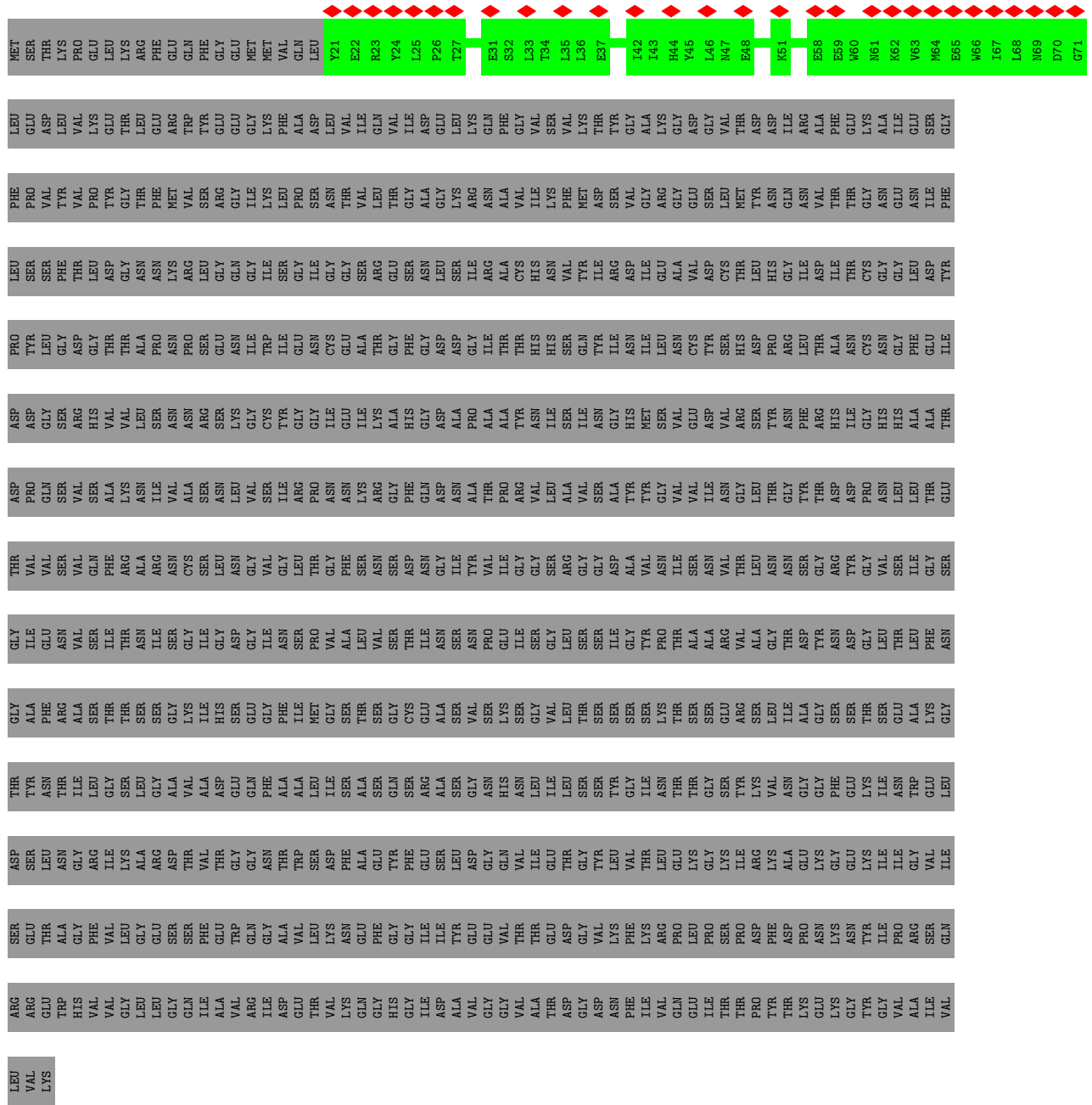


MET	T3	K4	P5	E6	L7	K8	R9	K10	F10	E11	Q12	F13	G14	E15	H16	L20	Y21	E22	F29	D30	E31	S32	L33	T34	L35	L36	R51	N54	E55	L56	I57	E59	W60	N61	M64	E65	W66	I67	L68	N69	D70	L72	L73	ASP	LEU	VAL	LYS	GLU	THR	LEU	ARG					
TRP	TYR	GLU	GLY	LYS	PHE	ALA	ASP	ASN	ILE	VAL	ILE	GLY	GLY	LEU	GLN	PHE	VAL	LYS	THR	THR	GLY	ALA	LYS	GLY	ASP	ASP	ASP	ASP	ARG	ALA	PHE	GLY	LYS	ALA	PHE	PRO	VAL	TYR	VAL	VAL	PRO	TYR	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
VAL	SER	ARG	ILE	LYS	LEU	PRO	SER	ASN	VAL	THR	GLY	GLY	GLY	ARG	ASN	ALA	VAL	ILE	ASN	THR	VAL	ARG	GLY	ALA	VAL	ASP	THR	THR	GLN	VAL	THR	LYS	ALA	ASN	SER	VAL	SER	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
ARG	LEU	GLY	GLN	ILE	GLY	ILE	ILE	ILE	ARG	GLY	SER	ASN	ASN	ILE	ARG	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	

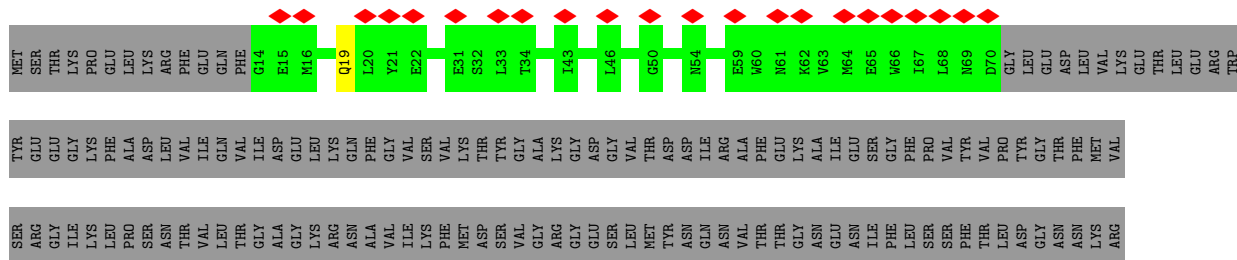








● Molecule 3: Pre-neck appendage protein









ASN GLY SER ARG ILE LYS LEU ALA GLY ARG ASP THR THR VAL THR GLY GLY ASN	ALA PHE VAL LEU GLY SER SER SER PHE GLU TRP GLN TRP GLY ALA THR	THR HIS VAL GLY LEU LEU GLY ASN GLN GLN GLY GLY ILE GLY ILE THR	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU
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• Molecule 3: Pre-neck appendage protein



MET SER THR LYS PRO GLY LEU LEU LYS	GLY THR CYS ALA ASP VAL VAL GLN PHE ASP GLY GLY PHE GLY PHE	<b>G14</b> <b>E15</b> <b>H16</b> <b>Q19</b> <b>L20</b> <b>Y21</b> <b>E22</b> <b>E31</b> <b>S32</b> <b>L33</b> <b>I43</b> <b>L46</b> <b>G50</b> <b>M64</b> <b>E59</b> <b>W60</b> <b>N61</b> <b>K62</b> <b>V63</b> <b>M64</b> <b>E65</b> <b>W66</b> <b>I67</b> <b>L68</b> <b>N69</b> <b>D70</b>	GLY LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	GLY THR CYS ALA ASP VAL VAL GLN PHE ASP GLY GLY PHE GLY PHE	THR HIS VAL GLY LEU LEU GLY ASN GLN GLN GLY GLY PHE GLY PHE	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU LEU
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• Molecule 3: Pre-neck appendage protein



























## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	36370	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	120.855	Depositor
Minimum map value	-0.428	Depositor
Average map value	0.025	Depositor
Map value standard deviation	0.514	Depositor
Recommended contour level	6.0	Depositor
Map size ( $\text{\AA}$ )	740.8544, 740.8544, 740.8544	wwPDB
Map dimensions	572, 572, 572	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.2952, 1.2952, 1.2952	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	0a	0.30	0/2211	0.48	0/2996
1	0b	0.30	0/2211	0.48	0/2996
1	0c	0.30	0/2211	0.48	0/2996
1	0d	0.30	0/2211	0.48	0/2996
1	0e	0.30	0/2211	0.48	0/2996
1	0f	0.30	0/2211	0.49	0/2996
1	0g	0.30	0/2211	0.49	0/2996
1	0h	0.30	0/2211	0.49	0/2996
1	0i	0.30	0/2211	0.49	0/2996
1	0j	0.30	0/2211	0.49	0/2996
1	0k	0.30	0/2211	0.49	0/2996
1	0l	0.30	0/2211	0.48	0/2996
2	0A	0.36	0/2331	0.56	0/3144
2	0B	0.36	0/2331	0.56	0/3144
2	0C	0.36	0/2331	0.56	0/3144
2	0D	0.36	0/2331	0.56	0/3144
2	0E	0.36	0/2331	0.56	0/3144
2	0F	0.36	0/2331	0.56	0/3144
2	0G	0.36	0/2331	0.56	0/3144
2	0H	0.36	0/2331	0.56	0/3144
2	0I	0.36	0/2331	0.56	0/3144
2	0J	0.36	0/2331	0.56	0/3144
2	0K	0.36	0/2331	0.56	0/3144
2	0L	0.36	0/2331	0.56	0/3144
3	A	0.32	0/442	0.59	0/598
3	B	0.38	0/491	0.60	0/663
3	C	0.29	0/615	0.48	0/828
3	D	0.32	0/442	0.58	0/598
3	E	0.35	0/491	0.60	0/663
3	F	0.29	0/615	0.48	0/828
3	G	0.32	0/442	0.58	0/598
3	H	0.37	0/491	0.60	0/663
3	I	0.29	0/615	0.48	0/828
3	J	0.32	0/442	0.59	0/598

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
3	K	0.37	0/491	0.60	0/663
3	L	0.29	0/615	0.48	0/828
3	M	0.32	0/442	0.58	0/598
3	N	0.37	0/491	0.60	0/663
3	O	0.29	0/615	0.48	0/828
3	P	0.32	0/442	0.58	0/598
3	Q	0.37	0/491	0.60	0/663
3	R	0.29	0/615	0.48	0/828
3	S	0.32	0/442	0.59	0/598
3	T	0.36	0/491	0.60	0/663
3	U	0.29	0/615	0.48	0/828
3	V	0.32	0/442	0.59	0/598
3	W	0.35	0/491	0.60	0/663
3	X	0.29	0/615	0.48	0/828
3	Y	0.32	0/442	0.59	0/598
3	Z	0.37	0/491	0.60	0/663
3	a	0.29	0/615	0.48	0/828
3	b	0.32	0/442	0.58	0/598
3	c	0.38	0/491	0.60	0/663
3	d	0.29	0/615	0.48	0/828
3	e	0.33	0/442	0.60	0/598
3	f	0.34	0/491	0.59	0/663
3	g	0.29	0/615	0.48	0/828
3	h	0.32	0/442	0.59	0/598
3	i	0.35	0/491	0.60	0/663
3	j	0.29	0/615	0.48	0/828
All	All	0.33	0/73080	0.53	0/98748

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	0a	0	1
1	0b	0	1
1	0c	0	1
1	0d	0	1
1	0e	0	1
1	0f	0	1
1	0g	0	1
1	0h	0	1

*Continued on next page...*



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Mol	Chain	#Chirality outliers	#Planarity outliers
1	0i	0	1
1	0j	0	1
1	0k	0	1
1	0l	0	1
3	B	0	1
3	f	0	1
All	All	0	14

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 14 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0a	72	SER	Peptide
1	0b	72	SER	Peptide
1	0c	72	SER	Peptide
1	0d	72	SER	Peptide
1	0e	72	SER	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	0a	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0b	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0c	260/309 (84%)	243 (94%)	17 (6%)	0	100	100

Continued on next page...

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0d	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0e	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0f	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0g	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0h	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0i	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0j	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0k	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
1	0l	260/309 (84%)	243 (94%)	17 (6%)	0	100	100
2	0A	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0B	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0C	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0D	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0E	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0F	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0G	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0H	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0I	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0J	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0K	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
2	0L	289/293 (99%)	272 (94%)	17 (6%)	0	100	100
3	A	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	B	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	C	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	D	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	E	55/854 (6%)	51 (93%)	3 (6%)	1 (2%)	8	35
3	F	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	G	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	H	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	I	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	J	49/854 (6%)	42 (86%)	7 (14%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	K	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	L	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	M	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	N	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	O	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	P	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	Q	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	R	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	S	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	T	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	U	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	V	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	W	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	X	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	Y	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	Z	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	a	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	b	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	c	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	d	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	e	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	f	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	g	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
3	h	49/854 (6%)	42 (86%)	7 (14%)	0	100	100
3	i	55/854 (6%)	52 (94%)	2 (4%)	1 (2%)	8	35
3	j	69/854 (8%)	63 (91%)	6 (9%)	0	100	100
All	All	8664/37968 (23%)	8063 (93%)	589 (7%)	12 (0%)	54	81

5 of 12 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	B	19	GLN
3	E	19	GLN

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Mol	Chain	Res	Type
3	H	19	GLN
3	K	19	GLN
3	N	19	GLN

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0a	236/277 (85%)	236 (100%)	0	100	100
1	0b	236/277 (85%)	236 (100%)	0	100	100
1	0c	236/277 (85%)	236 (100%)	0	100	100
1	0d	236/277 (85%)	236 (100%)	0	100	100
1	0e	236/277 (85%)	236 (100%)	0	100	100
1	0f	236/277 (85%)	236 (100%)	0	100	100
1	0g	236/277 (85%)	236 (100%)	0	100	100
1	0h	236/277 (85%)	236 (100%)	0	100	100
1	0i	236/277 (85%)	236 (100%)	0	100	100
1	0j	236/277 (85%)	236 (100%)	0	100	100
1	0k	236/277 (85%)	236 (100%)	0	100	100
1	0l	236/277 (85%)	236 (100%)	0	100	100
2	0A	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0B	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0C	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0D	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0E	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0F	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0G	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0H	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	0I	249/270 (92%)	247 (99%)	2 (1%)	81	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	OJ	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	OK	249/270 (92%)	247 (99%)	2 (1%)	81	89
2	OL	249/270 (92%)	247 (99%)	2 (1%)	81	89
3	A	48/706 (7%)	48 (100%)	0	100	100
3	B	54/706 (8%)	54 (100%)	0	100	100
3	C	67/706 (10%)	67 (100%)	0	100	100
3	D	48/706 (7%)	48 (100%)	0	100	100
3	E	54/706 (8%)	54 (100%)	0	100	100
3	F	67/706 (10%)	67 (100%)	0	100	100
3	G	48/706 (7%)	48 (100%)	0	100	100
3	H	54/706 (8%)	54 (100%)	0	100	100
3	I	67/706 (10%)	67 (100%)	0	100	100
3	J	48/706 (7%)	48 (100%)	0	100	100
3	K	54/706 (8%)	54 (100%)	0	100	100
3	L	67/706 (10%)	67 (100%)	0	100	100
3	M	48/706 (7%)	48 (100%)	0	100	100
3	N	54/706 (8%)	54 (100%)	0	100	100
3	O	67/706 (10%)	67 (100%)	0	100	100
3	P	48/706 (7%)	48 (100%)	0	100	100
3	Q	54/706 (8%)	54 (100%)	0	100	100
3	R	67/706 (10%)	67 (100%)	0	100	100
3	S	48/706 (7%)	48 (100%)	0	100	100
3	T	54/706 (8%)	54 (100%)	0	100	100
3	U	67/706 (10%)	67 (100%)	0	100	100
3	V	48/706 (7%)	48 (100%)	0	100	100
3	W	54/706 (8%)	54 (100%)	0	100	100
3	X	67/706 (10%)	67 (100%)	0	100	100
3	Y	48/706 (7%)	48 (100%)	0	100	100
3	Z	54/706 (8%)	54 (100%)	0	100	100
3	a	67/706 (10%)	67 (100%)	0	100	100
3	b	48/706 (7%)	48 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	c	54/706 (8%)	54 (100%)	0	100	100
3	d	67/706 (10%)	67 (100%)	0	100	100
3	e	48/706 (7%)	48 (100%)	0	100	100
3	f	54/706 (8%)	54 (100%)	0	100	100
3	g	67/706 (10%)	67 (100%)	0	100	100
3	h	48/706 (7%)	48 (100%)	0	100	100
3	i	54/706 (8%)	54 (100%)	0	100	100
3	j	67/706 (10%)	67 (100%)	0	100	100
All	All	7848/31980 (24%)	7824 (100%)	24 (0%)	92	96

5 of 24 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	0H	9	ARG
2	0I	162	ASN
2	0I	9	ARG
2	0J	9	ARG
2	0D	9	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 56 such sidechains are listed below:

Mol	Chain	Res	Type
2	0K	162	ASN
3	i	61	ASN
3	E	61	ASN
3	i	54	ASN
3	Z	61	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

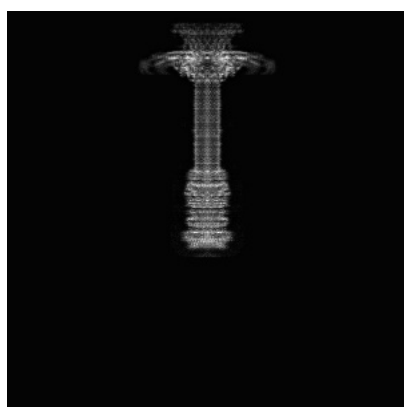
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-4684. These allow visual inspection of the internal detail of the map and identification of artifacts.

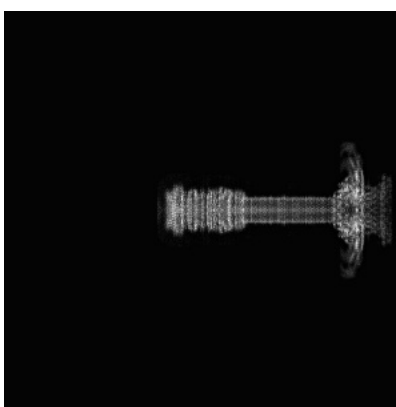
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

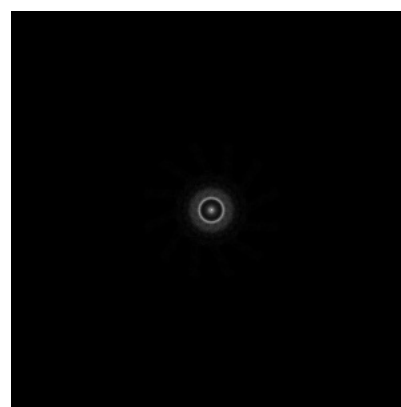
#### 6.1.1 Primary map



X



Y

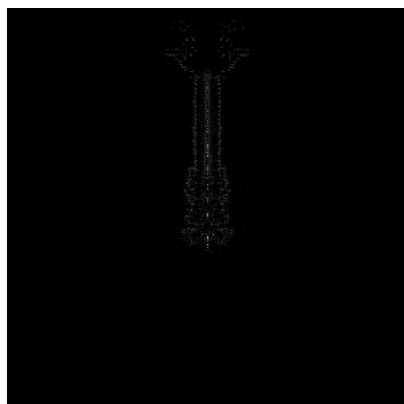


Z

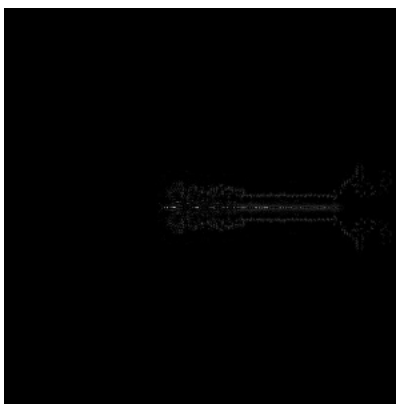
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

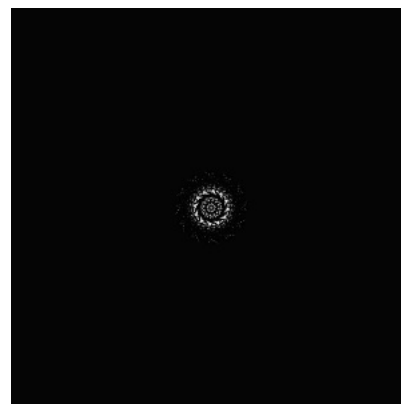
#### 6.2.1 Primary map



X Index: 286



Y Index: 286



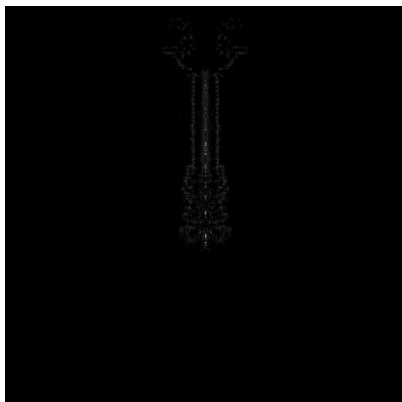
Z Index: 286



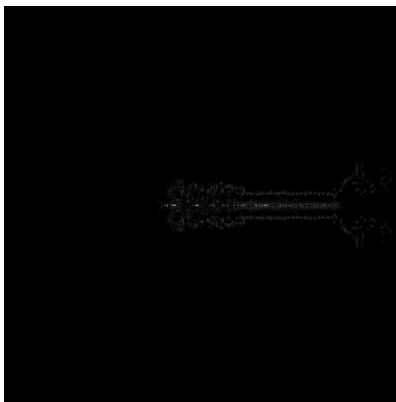
The images above show central slices of the map in three orthogonal directions.

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

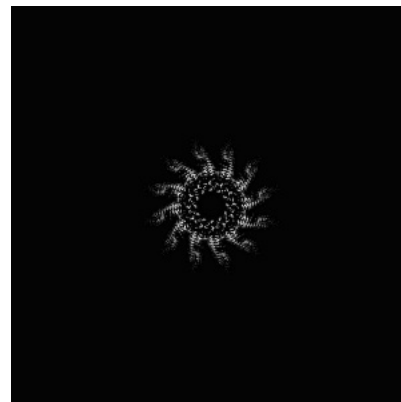
### 6.3.1 Primary map



X Index: 286



Y Index: 286

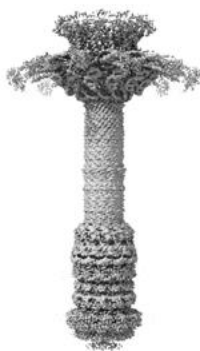


Z Index: 504

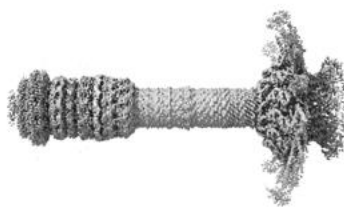
The images above show the largest variance slices of the map in three orthogonal directions.

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

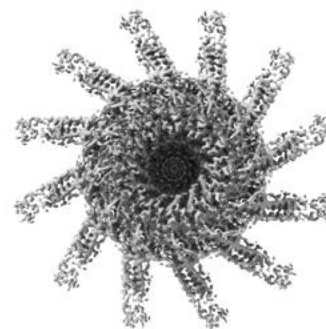
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 6.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

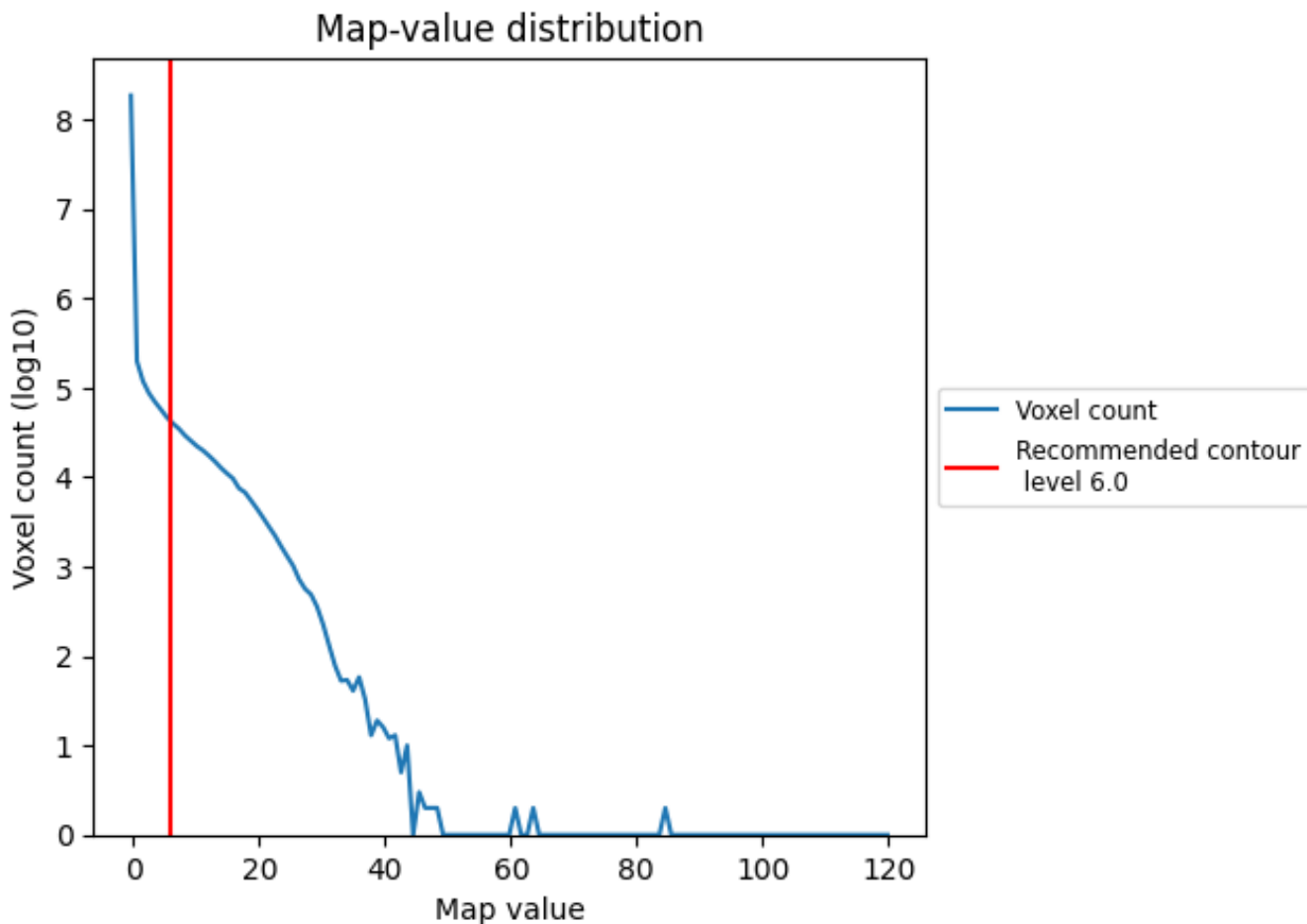
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

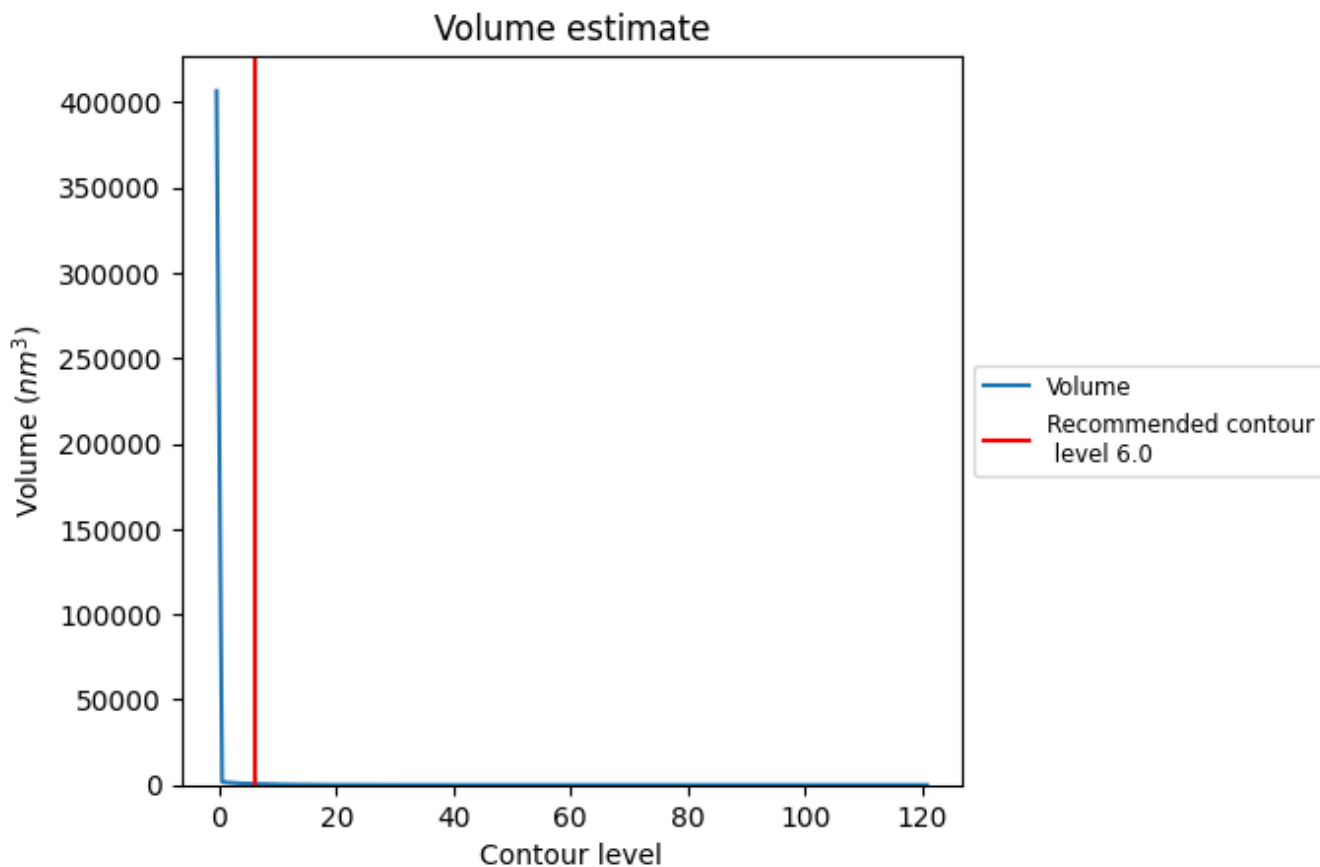
This section contains the results of statistical analysis of the map.

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



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

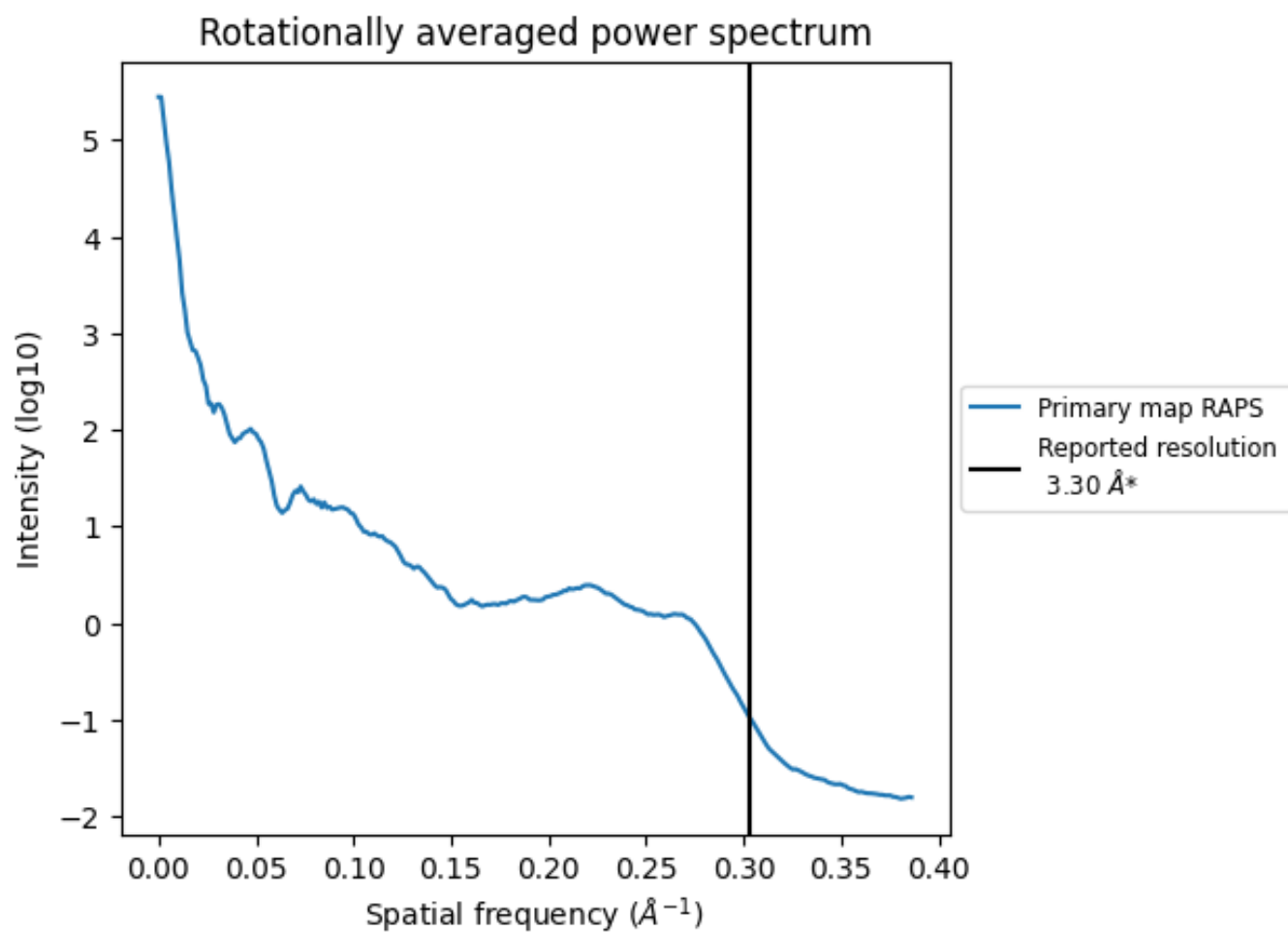
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 630 nm<sup>3</sup>; this corresponds to an approximate mass of 569 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 0.303 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

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

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

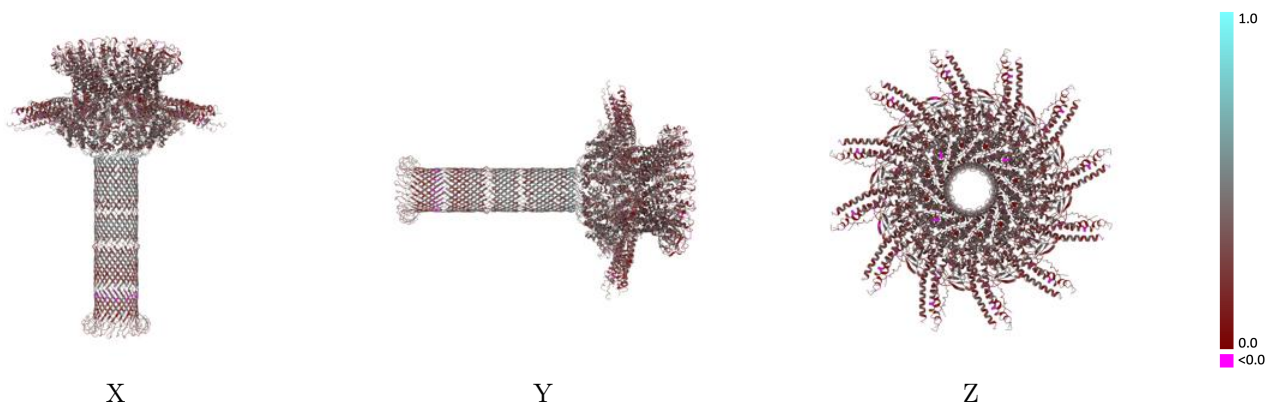
This section contains information regarding the fit between EMDB map EMD-4684 and PDB model 6QZ9. Per-residue inclusion information can be found in section 3 on page 10.

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



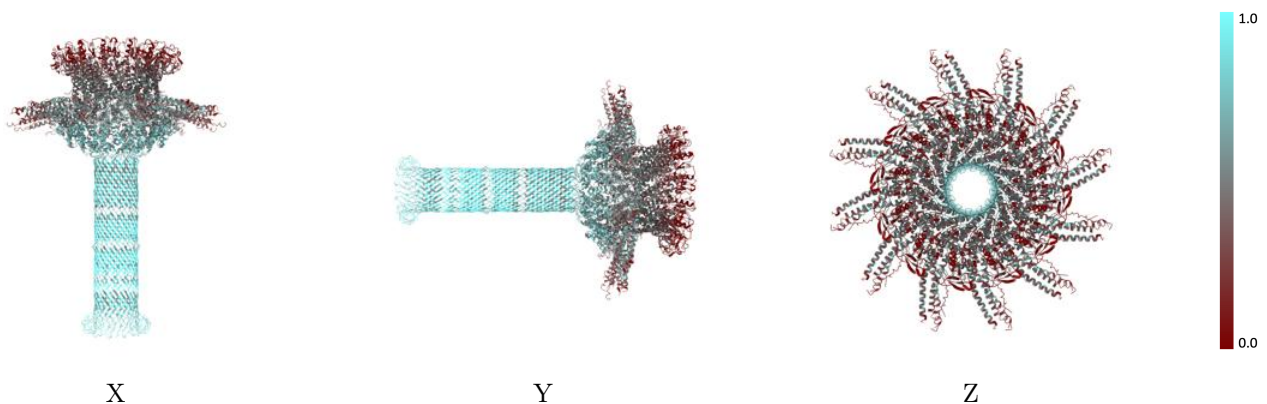
The images above show the 3D surface view of the map at the recommended contour level 6.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

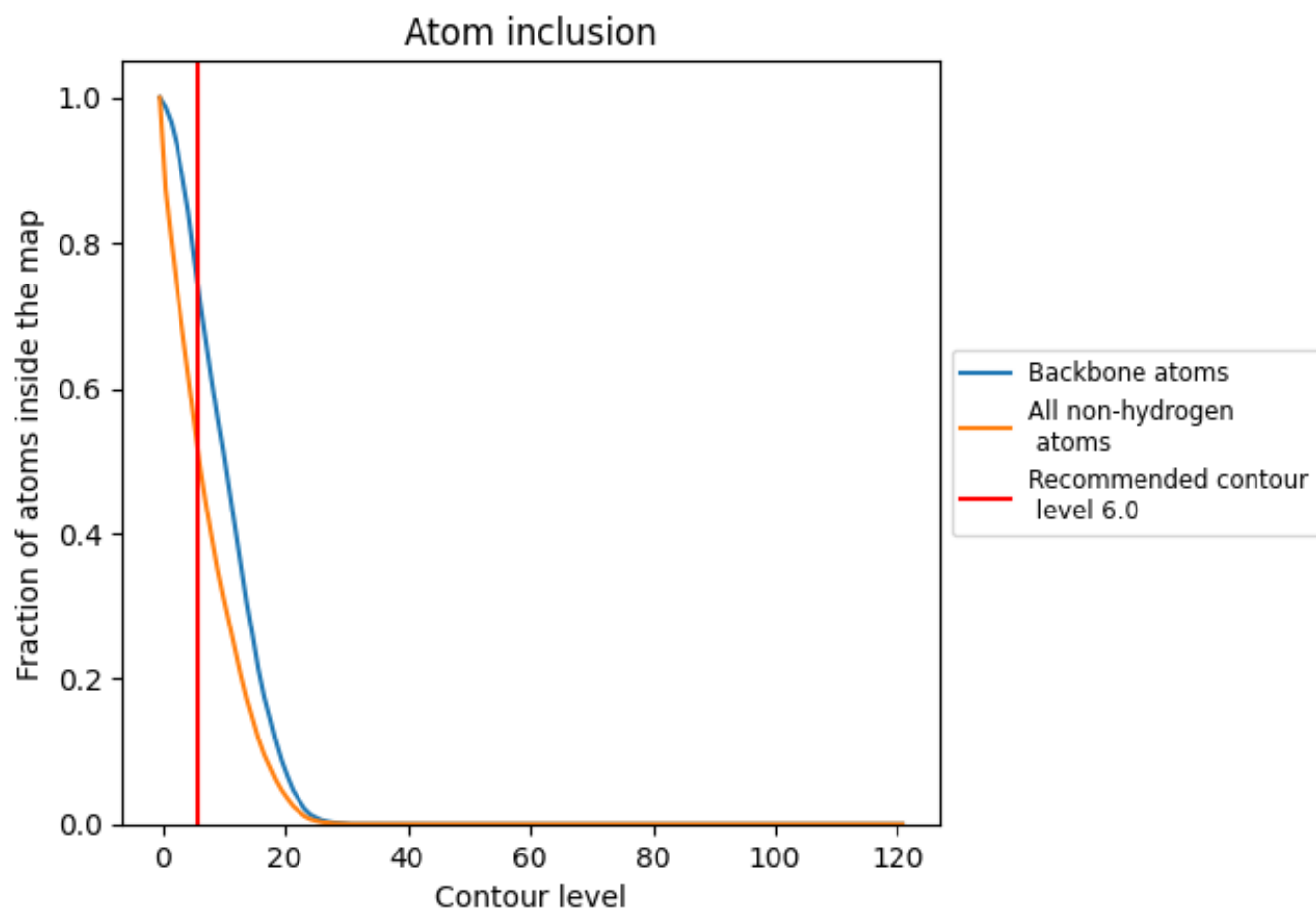
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (6.0).









































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 73% of all backbone atoms, 51% 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 (6.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5070	 0.3310
0A	 0.7324	 0.3750
0B	 0.7266	 0.3720
0C	 0.7332	 0.3750
0D	 0.7319	 0.3750
0E	 0.7328	 0.3750
0F	 0.7341	 0.3740
0G	 0.7319	 0.3730
0H	 0.7332	 0.3730
0I	 0.7324	 0.3730
0J	 0.7297	 0.3730
0K	 0.7253	 0.3710
0L	 0.7328	 0.3740
0a	 0.3373	 0.3190
0b	 0.3363	 0.3170
0c	 0.3377	 0.3160
0d	 0.3368	 0.3180
0e	 0.3373	 0.3170
0f	 0.3377	 0.3160
0g	 0.3368	 0.3180
0h	 0.3358	 0.3180
0i	 0.3373	 0.3170
0j	 0.3373	 0.3190
0k	 0.3358	 0.3180
0l	 0.3373	 0.3180
A	 0.4249	 0.2620
B	 0.4589	 0.2920
C	 0.3620	 0.3070
D	 0.4202	 0.2620
E	 0.4589	 0.2880
F	 0.3653	 0.3080
G	 0.4272	 0.2610
H	 0.4547	 0.2910
I	 0.3586	 0.3070
J	 0.4249	 0.2660



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Chain	Atom inclusion	Q-score
K	█ 0.4611	█ 0.2900
L	█ 0.3620	█ 0.3050
M	█ 0.4225	█ 0.2610
N	█ 0.4611	█ 0.2880
O	█ 0.3653	█ 0.3060
P	█ 0.4296	█ 0.2600
Q	█ 0.4526	█ 0.2880
R	█ 0.3586	█ 0.3040
S	█ 0.4249	█ 0.2640
T	█ 0.4611	█ 0.2910
U	█ 0.3636	█ 0.3030
V	█ 0.4202	█ 0.2600
W	█ 0.4611	█ 0.2870
X	█ 0.3670	█ 0.3060
Y	█ 0.4272	█ 0.2600
Z	█ 0.4484	█ 0.2880
a	█ 0.3636	█ 0.3020
b	█ 0.4202	█ 0.2580
c	█ 0.4611	█ 0.2880
d	█ 0.3620	█ 0.3060
e	█ 0.4155	█ 0.2610
f	█ 0.4547	█ 0.2880
g	█ 0.3721	█ 0.3020
h	█ 0.4272	█ 0.2570
i	█ 0.4526	█ 0.2910
j	█ 0.3620	█ 0.3050