



## Full wwPDB EM Validation Report ⓘ

Jan 31, 2024 – 02:30 PM JST

PDB ID : 8WZB  
EMDB ID : EMD-37949  
Title : RS head-neck monomer  
Authors : Meng, X.; Cong, Y.  
Deposited on : 2023-11-01  
Resolution : 3.28 Å (reported)

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

We welcome your comments at [validation@mail.wwpdb.org](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.dev70  
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) : 2.36

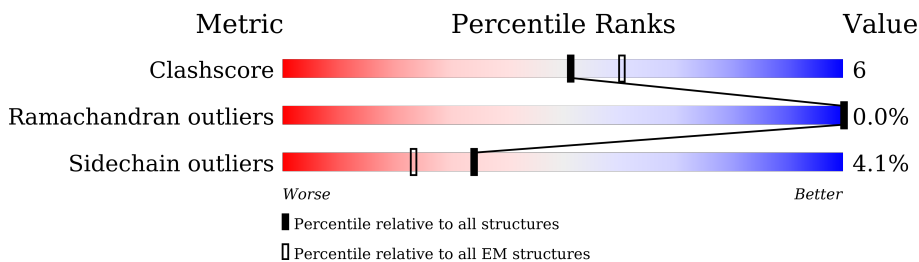
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.28 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.



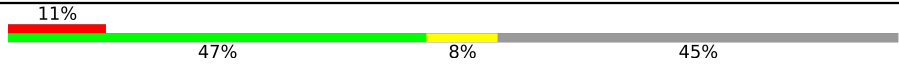

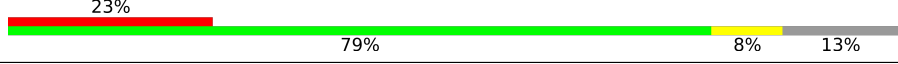
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	A	159	
2	B	349	
2	C	349	
3	D	389	
4	E	225	
5	F	313	
5	I	313	
6	G	716	

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Mol	Chain	Length	Quality of chain
6	S	716	
7	H	276	
7	c	276	

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 17594 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 DPY30 domain containing 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	46	369	238	63	66	2	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP Q9D3X8
A	-18	TYR	-	expression tag	UNP Q9D3X8
A	-17	PRO	-	expression tag	UNP Q9D3X8
A	-16	TYR	-	expression tag	UNP Q9D3X8
A	-15	ASP	-	expression tag	UNP Q9D3X8
A	-14	VAL	-	expression tag	UNP Q9D3X8
A	-13	PRO	-	expression tag	UNP Q9D3X8
A	-12	ASP	-	expression tag	UNP Q9D3X8
A	-11	TYR	-	expression tag	UNP Q9D3X8
A	-10	ALA	-	expression tag	UNP Q9D3X8
A	-9	GLU	-	expression tag	UNP Q9D3X8
A	-8	ASN	-	expression tag	UNP Q9D3X8
A	-7	LEU	-	expression tag	UNP Q9D3X8
A	-6	TYR	-	expression tag	UNP Q9D3X8
A	-5	PHE	-	expression tag	UNP Q9D3X8
A	-4	GLN	-	expression tag	UNP Q9D3X8
A	-3	GLY	-	expression tag	UNP Q9D3X8
A	-2	ALA	-	expression tag	UNP Q9D3X8
A	-1	ALA	-	expression tag	UNP Q9D3X8
A	0	ALA	-	expression tag	UNP Q9D3X8

- Molecule 2 is a protein called DnaJ homolog subfamily B member 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	181	1489	965	256	263	5	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	78	633	420	102	108	3	0	0

There are 66 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-32	MET	-	initiating methionine	UNP Q80Y75
B	-31	ASP	-	expression tag	UNP Q80Y75
B	-30	TYR	-	expression tag	UNP Q80Y75
B	-29	LYS	-	expression tag	UNP Q80Y75
B	-28	ASP	-	expression tag	UNP Q80Y75
B	-27	HIS	-	expression tag	UNP Q80Y75
B	-26	ASP	-	expression tag	UNP Q80Y75
B	-25	GLY	-	expression tag	UNP Q80Y75
B	-24	ASP	-	expression tag	UNP Q80Y75
B	-23	TYR	-	expression tag	UNP Q80Y75
B	-22	LYS	-	expression tag	UNP Q80Y75
B	-21	ASP	-	expression tag	UNP Q80Y75
B	-20	HIS	-	expression tag	UNP Q80Y75
B	-19	ASP	-	expression tag	UNP Q80Y75
B	-18	ILE	-	expression tag	UNP Q80Y75
B	-17	ASP	-	expression tag	UNP Q80Y75
B	-16	TYR	-	expression tag	UNP Q80Y75
B	-15	LYS	-	expression tag	UNP Q80Y75
B	-14	ASP	-	expression tag	UNP Q80Y75
B	-13	ASP	-	expression tag	UNP Q80Y75
B	-12	ASP	-	expression tag	UNP Q80Y75
B	-11	ASP	-	expression tag	UNP Q80Y75
B	-10	LYS	-	expression tag	UNP Q80Y75
B	-9	GLU	-	expression tag	UNP Q80Y75
B	-8	ASN	-	expression tag	UNP Q80Y75
B	-7	LEU	-	expression tag	UNP Q80Y75
B	-6	TYR	-	expression tag	UNP Q80Y75
B	-5	PHE	-	expression tag	UNP Q80Y75
B	-4	GLN	-	expression tag	UNP Q80Y75
B	-3	GLY	-	expression tag	UNP Q80Y75
B	-2	ALA	-	expression tag	UNP Q80Y75
B	-1	ALA	-	expression tag	UNP Q80Y75
B	0	ALA	-	expression tag	UNP Q80Y75
C	-32	MET	-	initiating methionine	UNP Q80Y75
C	-31	ASP	-	expression tag	UNP Q80Y75
C	-30	TYR	-	expression tag	UNP Q80Y75

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-29	LYS	-	expression tag	UNP Q80Y75
C	-28	ASP	-	expression tag	UNP Q80Y75
C	-27	HIS	-	expression tag	UNP Q80Y75
C	-26	ASP	-	expression tag	UNP Q80Y75
C	-25	GLY	-	expression tag	UNP Q80Y75
C	-24	ASP	-	expression tag	UNP Q80Y75
C	-23	TYR	-	expression tag	UNP Q80Y75
C	-22	LYS	-	expression tag	UNP Q80Y75
C	-21	ASP	-	expression tag	UNP Q80Y75
C	-20	HIS	-	expression tag	UNP Q80Y75
C	-19	ASP	-	expression tag	UNP Q80Y75
C	-18	ILE	-	expression tag	UNP Q80Y75
C	-17	ASP	-	expression tag	UNP Q80Y75
C	-16	TYR	-	expression tag	UNP Q80Y75
C	-15	LYS	-	expression tag	UNP Q80Y75
C	-14	ASP	-	expression tag	UNP Q80Y75
C	-13	ASP	-	expression tag	UNP Q80Y75
C	-12	ASP	-	expression tag	UNP Q80Y75
C	-11	ASP	-	expression tag	UNP Q80Y75
C	-10	LYS	-	expression tag	UNP Q80Y75
C	-9	GLU	-	expression tag	UNP Q80Y75
C	-8	ASN	-	expression tag	UNP Q80Y75
C	-7	LEU	-	expression tag	UNP Q80Y75
C	-6	TYR	-	expression tag	UNP Q80Y75
C	-5	PHE	-	expression tag	UNP Q80Y75
C	-4	GLN	-	expression tag	UNP Q80Y75
C	-3	GLY	-	expression tag	UNP Q80Y75
C	-2	ALA	-	expression tag	UNP Q80Y75
C	-1	ALA	-	expression tag	UNP Q80Y75
C	0	ALA	-	expression tag	UNP Q80Y75

- Molecule 3 is a protein called Radial spoke head protein 3 homolog B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	46	387	242	69	72	4	0	0

- Molecule 4 is a protein called Nucleoside diphosphate kinase homolog 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	201	1612	1047	266	289	10	0	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	-13	MET	-	initiating methionine	UNP Q99MH5
E	-12	GLU	-	expression tag	UNP Q99MH5
E	-11	GLN	-	expression tag	UNP Q99MH5
E	-10	LYS	-	expression tag	UNP Q99MH5
E	-9	LEU	-	expression tag	UNP Q99MH5
E	-8	ILE	-	expression tag	UNP Q99MH5
E	-7	SER	-	expression tag	UNP Q99MH5
E	-6	GLU	-	expression tag	UNP Q99MH5
E	-5	GLU	-	expression tag	UNP Q99MH5
E	-4	ASP	-	expression tag	UNP Q99MH5
E	-3	LEU	-	expression tag	UNP Q99MH5
E	-2	GLY	-	expression tag	UNP Q99MH5
E	-1	SER	-	expression tag	UNP Q99MH5
E	0	GLY	-	expression tag	UNP Q99MH5

- Molecule 5 is a protein called Radial spoke head 1 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	185	Total	C	N	O	S	0	0
			1514	939	274	299	2		
5	I	185	Total	C	N	O	S	0	0
			1514	939	274	299	2		

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-11	MET	-	initiating methionine	UNP Q8VIG3
F	-10	TRP	-	expression tag	UNP Q8VIG3
F	-9	SER	-	expression tag	UNP Q8VIG3
F	-8	HIS	-	expression tag	UNP Q8VIG3
F	-7	PRO	-	expression tag	UNP Q8VIG3
F	-6	GLN	-	expression tag	UNP Q8VIG3
F	-5	PHE	-	expression tag	UNP Q8VIG3
F	-4	GLU	-	expression tag	UNP Q8VIG3
F	-3	LYS	-	expression tag	UNP Q8VIG3
F	-2	GLY	-	expression tag	UNP Q8VIG3
F	-1	SER	-	expression tag	UNP Q8VIG3
F	0	GLY	-	expression tag	UNP Q8VIG3
I	-11	MET	-	initiating methionine	UNP Q8VIG3
I	-10	TRP	-	expression tag	UNP Q8VIG3
I	-9	SER	-	expression tag	UNP Q8VIG3

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-8	HIS	-	expression tag	UNP Q8VIG3
I	-7	PRO	-	expression tag	UNP Q8VIG3
I	-6	GLN	-	expression tag	UNP Q8VIG3
I	-5	PHE	-	expression tag	UNP Q8VIG3
I	-4	GLU	-	expression tag	UNP Q8VIG3
I	-3	LYS	-	expression tag	UNP Q8VIG3
I	-2	GLY	-	expression tag	UNP Q8VIG3
I	-1	SER	-	expression tag	UNP Q8VIG3
I	0	GLY	-	expression tag	UNP Q8VIG3

- Molecule 6 is a protein called Radial spoke head protein 4 homolog A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	G	387	3099	1997	506	586	10	0	0
6	S	392	3139	2021	515	592	11	0	0

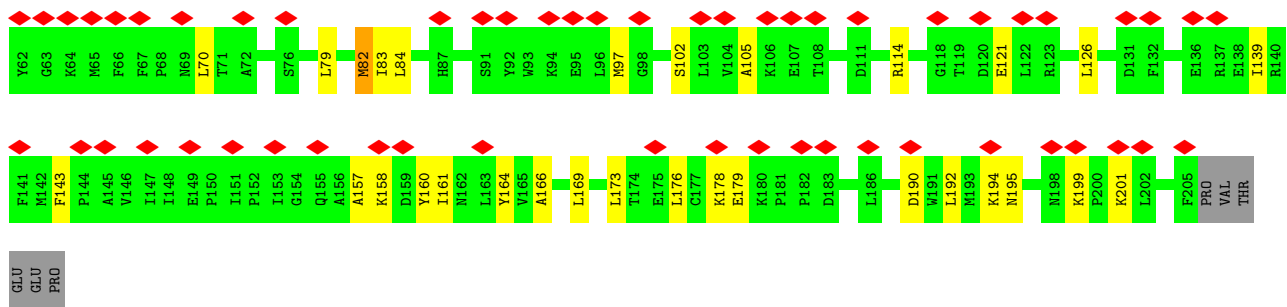
- Molecule 7 is a protein called Radial spoke head protein 9 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	H	239	1912	1228	324	351	9	0	0
7	c	241	1926	1238	326	353	9	0	0

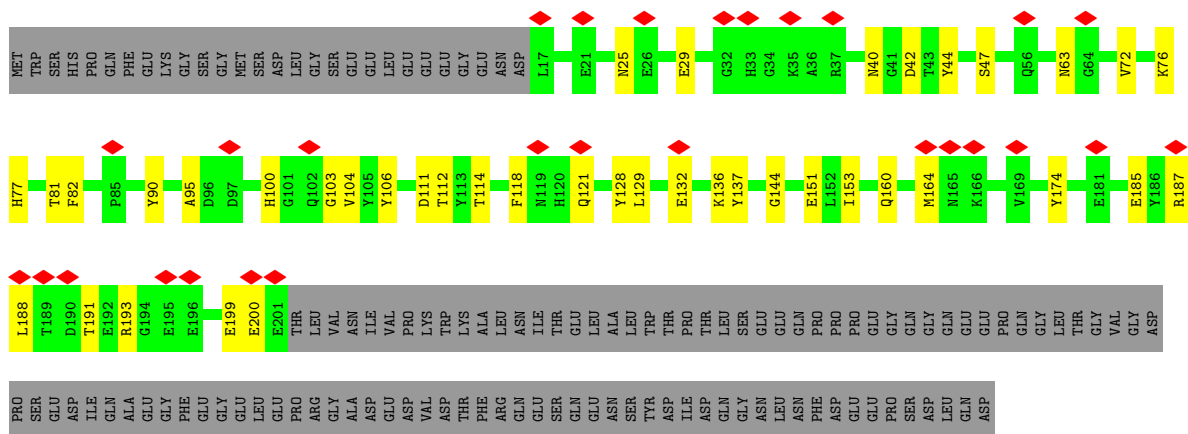




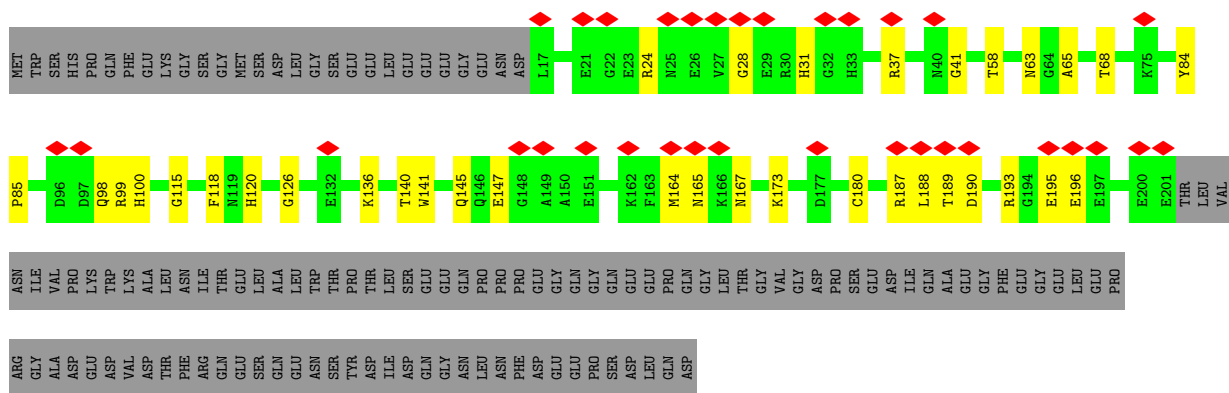




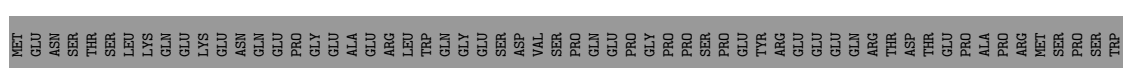
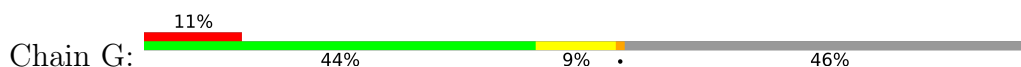
• Molecule 5: Radial spoke head 1 homolog

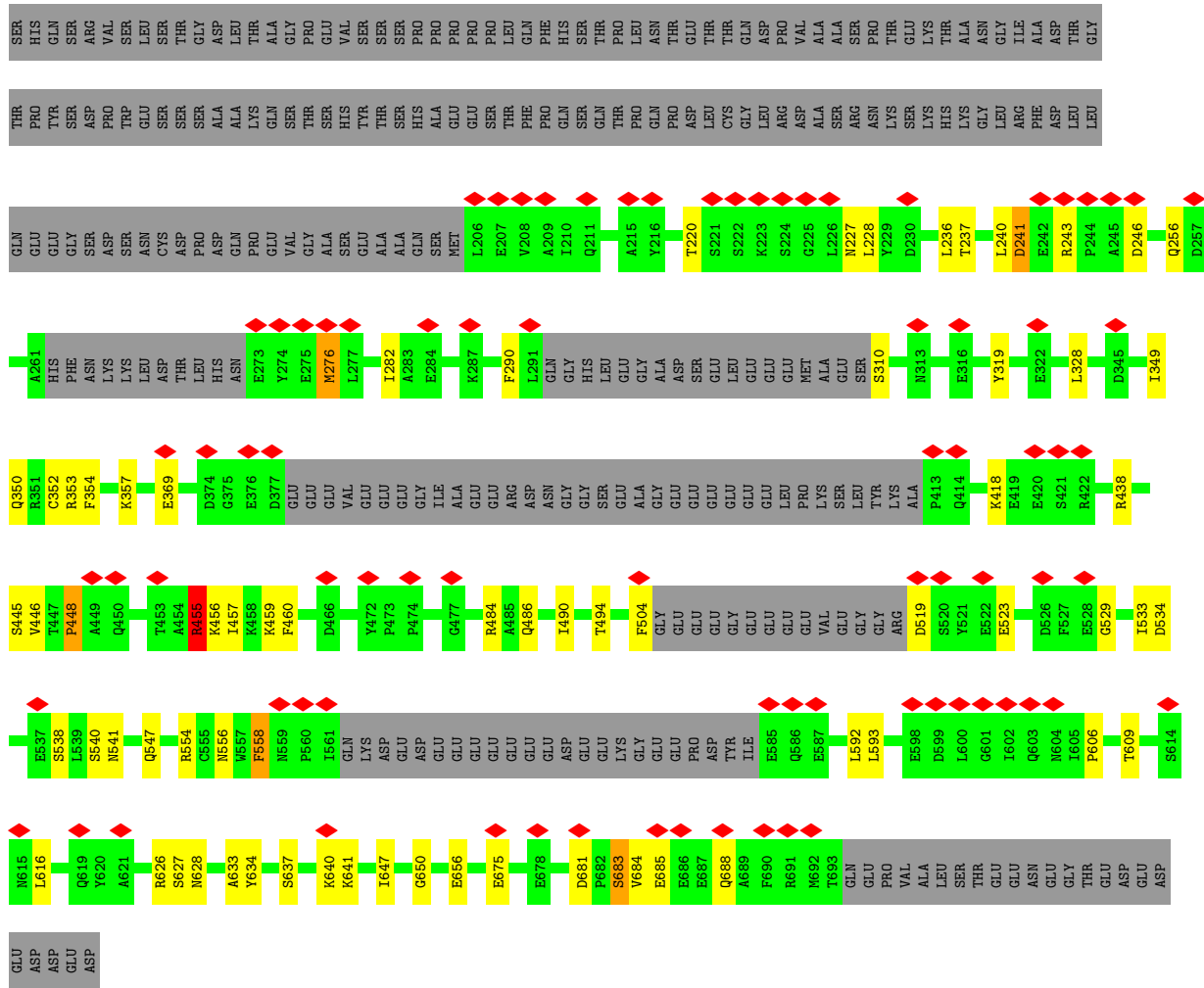


• Molecule 5: Radial spoke head 1 homolog

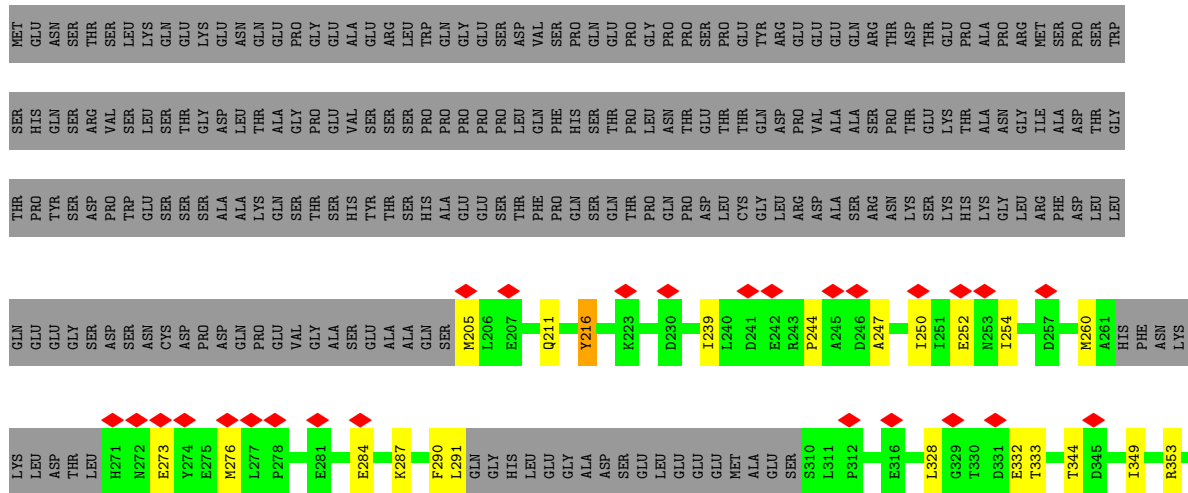


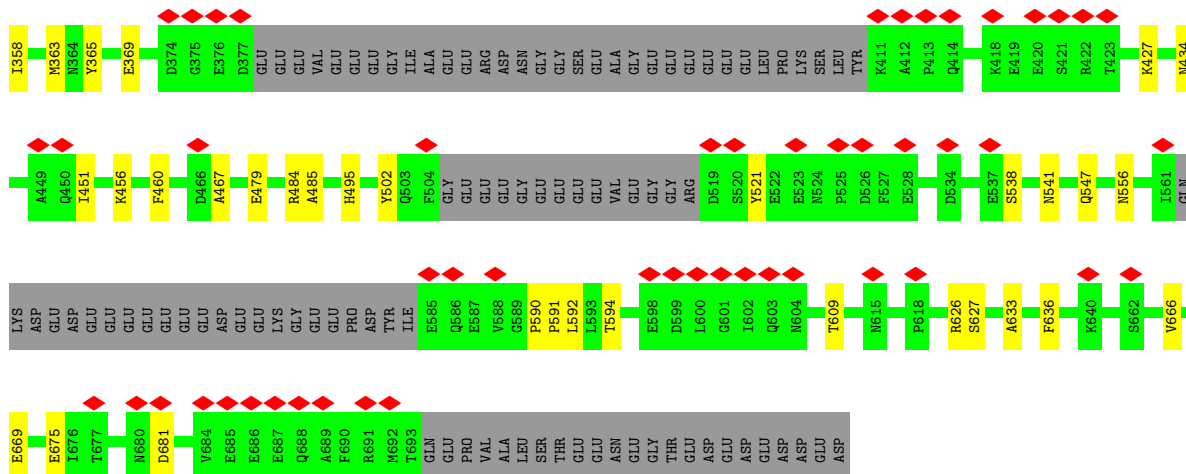
• Molecule 6: Radial spoke head protein 4 homolog A



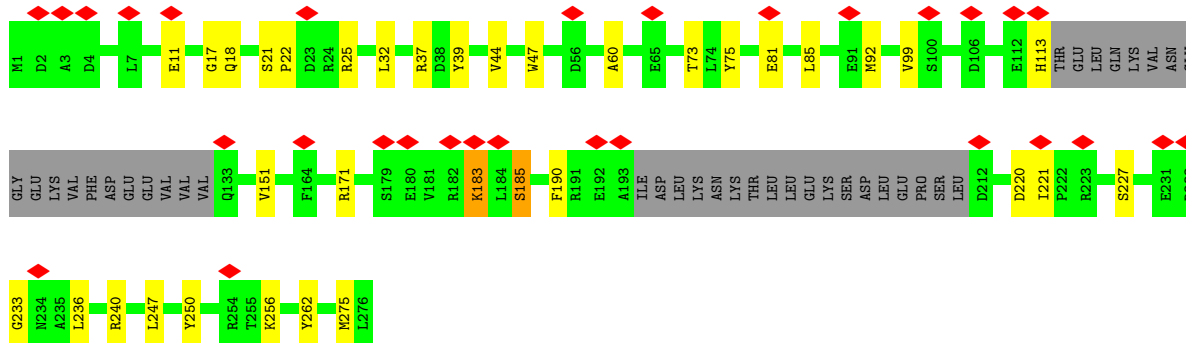
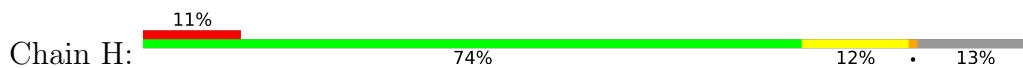


● Molecule 6: Radial spoke head protein 4 homolog A

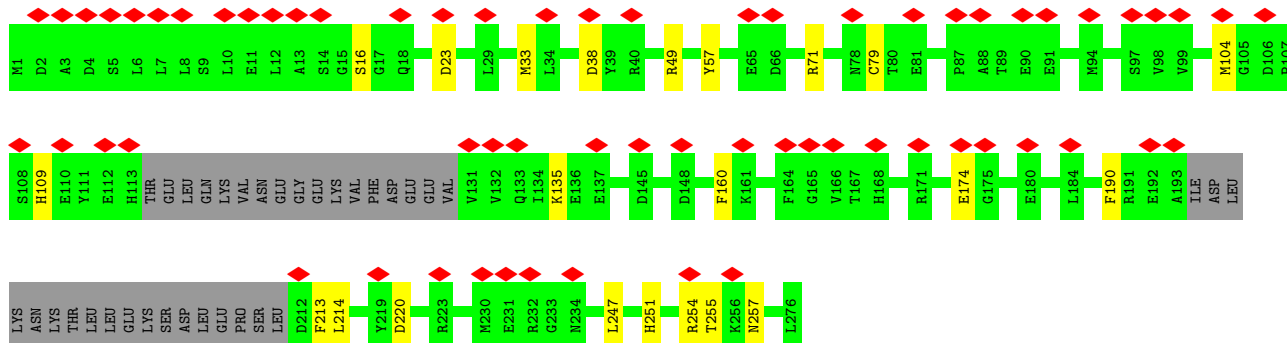
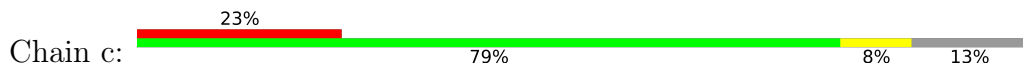




• Molecule 7: Radial spoke head protein 9 homolog



• Molecule 7: Radial spoke head protein 9 homolog



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	433940	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 ( $e^-/\text{\AA}^2$ )	54	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2700	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.080	Depositor
Minimum map value	0.000	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.18	Depositor
Map size ( $\text{\AA}$ )	478.24, 478.24, 478.24	wwPDB
Map dimensions	560, 560, 560	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.854, 0.854, 0.854	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z  > 5$	RMSZ	# $ Z  > 5$
1	A	0.25	0/379	0.49	0/517
2	B	0.32	0/1525	0.72	3/2061 (0.1%)
2	C	0.31	0/648	0.81	5/877 (0.6%)
3	D	0.30	0/393	0.74	1/528 (0.2%)
4	E	0.31	0/1657	0.61	2/2251 (0.1%)
5	F	0.30	0/1558	0.61	0/2096
5	I	0.27	0/1558	0.58	0/2096
6	G	0.34	1/3183 (0.0%)	0.75	6/4335 (0.1%)
6	S	0.29	0/3224	0.56	2/4390 (0.0%)
7	H	0.32	0/1956	0.70	1/2645 (0.0%)
7	c	0.32	0/1970	0.83	6/2665 (0.2%)
All	All	0.31	1/18051 (0.0%)	0.68	26/24461 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	G	448	PRO	CG-CD	-6.98	1.27	1.50

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	G	448	PRO	CA-N-CD	-19.57	84.11	111.50
7	c	255	THR	C-N-CA	11.95	151.57	121.70
7	c	251	HIS	C-N-CA	11.44	150.29	121.70
6	G	637	SER	C-N-CA	10.70	148.46	121.70
6	G	448	PRO	N-CD-CG	-8.75	90.08	103.20
7	c	174	GLU	C-N-CA	8.54	140.23	122.30
7	H	183	LYS	C-N-CA	8.15	142.09	121.70
7	c	257	ASN	C-N-CA	8.11	141.97	121.70
2	B	210	ASP	CB-CG-OD1	7.80	125.32	118.30
3	D	314	ASP	CB-CG-OD1	7.40	124.96	118.30
2	C	257	LEU	CA-CB-CG	6.78	130.90	115.30
6	G	455	ARG	CA-CB-CG	6.58	127.88	113.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	c	33	MET	CB-CG-SD	6.47	131.80	112.40
2	C	256	LEU	CA-CB-CG	6.41	130.05	115.30
2	B	309	MET	CA-CB-CG	6.21	123.85	113.30
6	G	448	PRO	CA-CB-CG	-6.20	92.23	104.00
2	B	224	ARG	CB-CG-CD	6.15	127.60	111.60
2	C	302	LEU	C-N-CA	5.95	136.58	121.70
2	C	309	MET	CA-CB-CG	5.86	123.26	113.30
6	G	276	MET	CA-CB-CG	5.85	123.24	113.30
2	C	256	LEU	C-N-CA	5.37	135.12	121.70
4	E	34	ILE	CG1-CB-CG2	-5.24	99.86	111.40
7	c	33	MET	CG-SD-CE	5.23	108.57	100.20
6	S	276	MET	CG-SD-CE	5.13	108.40	100.20
6	S	276	MET	CA-CB-CG	5.11	121.99	113.30
4	E	70	LEU	CA-CB-CG	5.08	126.98	115.30

There are no chirality outliers.

There are no planarity outliers.

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

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	369	0	363	5	0
2	B	1489	0	1538	28	0
2	C	633	0	660	9	0
3	D	387	0	380	5	0
4	E	1612	0	1623	28	0
5	F	1514	0	1346	18	0
5	I	1514	0	1346	19	0
6	G	3099	0	3009	40	0
6	S	3139	0	3048	34	0
7	H	1912	0	1907	21	0
7	c	1926	0	1923	0	0
All	All	17594	0	17143	175	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.



All (175) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:490:ILE:O	6:G:494:THR:HB	1.81	0.79
2:B:225:ARG:HD3	2:B:278:MET:HE2	1.72	0.71
4:E:190:ASP:O	4:E:194:LYS:HB2	1.93	0.68
4:E:160:TYR:O	4:E:164:TYR:HB2	1.93	0.68
2:B:225:ARG:HD2	2:B:226:GLU:O	1.97	0.64
2:B:306:LYS:O	2:B:310:LEU:HB2	1.98	0.63
7:H:151:VAL:HG23	7:H:247:LEU:HD13	1.82	0.60
2:B:273:VAL:HB	2:B:290:LEU:HB3	1.85	0.59
7:H:236:LEU:HD11	7:H:250:TYR:HB2	1.83	0.59
6:G:609:THR:HB	6:G:626:ARG:HB3	1.85	0.58
3:D:320:VAL:HG13	3:D:323:ARG:HH21	1.69	0.58
6:G:647:ILE:HD13	7:H:17:GLY:HA3	1.87	0.57
5:F:151:GLU:HG3	5:F:160:GLN:HG2	1.86	0.57
6:S:547:GLN:HG3	6:S:592:LEU:HD13	1.86	0.57
6:G:228:LEU:HD12	6:S:247:ALA:HB1	1.87	0.57
2:B:194:ILE:HB	2:B:213:PHE:HB2	1.87	0.56
5:F:104:VAL:HG13	5:F:114:THR:HG22	1.88	0.56
7:H:227:SER:HB3	7:H:240:ARG:HB2	1.88	0.56
6:G:683:SER:OG	6:G:684:VAL:N	2.37	0.56
6:S:609:THR:HB	6:S:626:ARG:HB3	1.89	0.55
5:I:193:ARG:NH1	5:I:195:GLU:OE1	2.40	0.55
5:I:98:GLN:HG2	5:I:120:HIS:HB2	1.88	0.55
4:E:42:ILE:HB	4:E:83:ILE:HB	1.88	0.55
2:B:191:GLY:H	2:B:215:VAL:HB	1.72	0.54
4:E:18:LEU:HD22	4:E:79:LEU:HD11	1.88	0.54
7:H:11:GLU:OE1	7:H:25:ARG:NH2	2.41	0.54
7:H:47:TRP:H	7:H:60:ALA:HA	1.72	0.54
2:B:310:LEU:HD23	2:B:313:ALA:HB3	1.90	0.53
5:I:84:TYR:OH	5:I:99:ARG:NH1	2.41	0.53
5:I:100:HIS:ND1	5:I:118:PHE:O	2.40	0.53
5:I:58:THR:HG23	5:I:68:THR:HG22	1.90	0.53
6:G:627:SER:HB3	6:G:633:ALA:HB3	1.89	0.53
4:E:16:LEU:HD13	4:E:139:ILE:HG12	1.90	0.53
4:E:173:LEU:HD23	4:E:176:LEU:HD23	1.90	0.53
5:F:188:LEU:HB2	5:F:191:THR:HG22	1.90	0.53
6:S:590:PRO:HB2	6:S:594:THR:HG21	1.91	0.53
4:E:102:SER:HA	4:E:105:ALA:HB3	1.91	0.52
5:F:72:VAL:HB	5:F:77:HIS:HB3	1.91	0.52
7:H:22:PRO:HA	7:H:25:ARG:HB2	1.90	0.52
6:S:675:GLU:OE2	5:I:63:ASN:ND2	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:486:GLN:NE2	6:G:650:GLY:O	2.43	0.52
6:S:287:LYS:HE3	6:S:291:LEU:HD11	1.92	0.52
4:E:50:SER:HB3	4:E:53:HIS:HB2	1.92	0.51
6:G:228:LEU:HD11	6:S:239:ILE:HD13	1.90	0.51
1:A:39:HIS:NE2	6:S:260:MET:O	2.42	0.51
6:S:451:ILE:HG22	6:S:485:ALA:HB2	1.93	0.51
2:B:311:ARG:NH2	2:C:244:CYS:O	2.44	0.51
2:B:234:TYR:OH	2:B:240:LYS:NZ	2.42	0.51
2:C:254:ASP:OD1	2:C:254:ASP:N	2.43	0.51
2:B:245:CYS:HB2	2:B:261:ILE:HB	1.93	0.51
5:F:63:ASN:ND2	6:G:675:GLU:OE1	2.42	0.50
7:H:171:ARG:O	7:H:256:LYS:NZ	2.45	0.50
4:E:46:LYS:HG3	6:S:273:GLU:HB2	1.94	0.50
5:F:187:ARG:HD3	5:F:193:ARG:HD2	1.94	0.49
6:G:310:SER:N	6:G:350:GLN:O	2.45	0.49
6:G:282:ILE:HD13	7:H:233:GLY:H	1.77	0.49
6:G:353:ARG:NH1	6:G:354:PHE:O	2.45	0.49
6:S:627:SER:HB3	6:S:633:ALA:HB3	1.95	0.49
2:B:312:GLN:O	2:C:306:LYS:NZ	2.45	0.49
5:F:40:ASN:ND2	5:F:42:ASP:OD1	2.45	0.49
6:G:446:VAL:HG23	6:G:484:ARG:HG3	1.94	0.49
2:B:225:ARG:HG2	2:B:229:ASN:O	2.12	0.49
6:S:669:GLU:OE2	5:I:99:ARG:NH2	2.45	0.49
2:B:225:ARG:CZ	2:B:278:MET:HE1	2.42	0.49
4:E:17:ALA:HB3	4:E:82:MET:HG3	1.94	0.49
5:I:167:ASN:ND2	5:I:189:THR:O	2.44	0.49
6:G:616:LEU:HD21	6:S:290:PHE:HA	1.95	0.49
2:B:310:LEU:HA	2:B:313:ALA:HB3	1.95	0.48
6:G:519:ASP:N	6:G:519:ASP:OD1	2.45	0.48
2:B:225:ARG:HG2	2:B:230:LEU:HD12	1.94	0.48
3:D:318:ARG:HH22	4:E:10:ILE:HG23	1.78	0.48
7:H:247:LEU:HA	7:H:262:TYR:HA	1.95	0.48
7:H:99:VAL:HG22	7:H:113:HIS:HB2	1.93	0.48
1:A:22:ALA:HB2	4:E:161:ILE:HD11	1.95	0.48
6:G:547:GLN:HG3	6:G:592:LEU:HD13	1.96	0.48
4:E:6:PRO:HD2	4:E:9:GLN:HB2	1.96	0.48
4:E:97:MET:HG3	4:E:114:ARG:HE	1.79	0.48
5:F:187:ARG:HH22	6:G:656:GLU:HG3	1.78	0.48
6:G:459:LYS:HA	7:H:275:MET:HA	1.94	0.48
6:G:606:PRO:O	6:G:628:ASN:ND2	2.44	0.48
2:C:246:THR:HA	2:C:260:PRO:HA	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:S:358:ILE:HB	6:S:365:TYR:HB2	1.96	0.48
5:I:167:ASN:ND2	5:I:190:ASP:OD1	2.47	0.47
2:B:249:VAL:HB	2:B:257:LEU:HB2	1.96	0.47
6:S:467:ALA:HB3	6:S:479:GLU:HB2	1.95	0.47
1:A:30:ILE:HG23	4:E:192:LEU:HD22	1.97	0.47
4:E:166:ALA:HA	4:E:169:LEU:HB2	1.96	0.47
4:E:27:GLU:O	4:E:31:GLN:HB2	2.15	0.47
4:E:30:ILE:HD11	4:E:126:LEU:HD21	1.95	0.47
6:S:666:VAL:HG11	5:I:141:TRP:HH2	1.80	0.47
2:C:233:VAL:HG22	2:C:293:PHE:HB2	1.97	0.47
6:S:681:ASP:N	6:S:681:ASP:OD1	2.47	0.47
2:B:250:LYS:NZ	2:B:254:ASP:OD1	2.47	0.47
6:S:591:PRO:HD2	6:S:594:THR:HB	1.95	0.47
6:G:634:TYR:OH	7:H:18:GLN:NE2	2.48	0.47
2:B:148:LEU:HD23	2:B:220:HIS:HB2	1.97	0.46
4:E:12:VAL:HG22	6:S:211:GLN:HG2	1.96	0.46
2:C:246:THR:HG22	2:C:260:PRO:HB3	1.98	0.46
3:D:296:MET:HB3	4:E:158:LYS:HE3	1.97	0.46
1:A:22:ALA:HB1	4:E:157:ALA:HB1	1.97	0.46
6:S:328:LEU:HB2	6:S:333:THR:HB	1.98	0.46
6:S:538:SER:OG	6:S:541:ASN:OD1	2.33	0.46
6:G:353:ARG:NE	6:G:369:GLU:OE1	2.45	0.46
6:S:344:THR:HA	6:S:349:ILE:HD12	1.98	0.45
6:S:363:MET:SD	6:S:434:ASN:ND2	2.85	0.45
5:I:187:ARG:HG3	5:I:188:LEU:HG	1.98	0.45
2:B:158:LYS:HG2	4:E:52:GLU:HB3	1.96	0.45
2:B:224:ARG:HH21	2:B:226:GLU:HB2	1.79	0.45
2:B:246:THR:OG1	7:H:81:GLU:OE2	2.29	0.45
5:F:25:ASN:HD21	5:F:29:GLU:HB2	1.82	0.45
6:S:244:PRO:HG2	6:S:250:ILE:HD13	1.98	0.45
3:D:308:VAL:HA	3:D:311:THR:HG22	1.99	0.45
6:S:502:TYR:HB3	6:S:521:TYR:HB2	1.98	0.45
4:E:15:THR:HG22	4:E:84:LEU:HB2	1.99	0.45
6:G:538:SER:OG	6:G:541:ASN:OD1	2.34	0.45
5:F:121:GLN:O	5:F:144:GLY:N	2.50	0.45
2:B:230:LEU:HD11	2:B:278:MET:HG3	1.98	0.44
5:F:44:TYR:OH	5:F:47:SER:O	2.29	0.44
6:G:418:LYS:HD2	6:G:445:SER:HB2	1.98	0.44
6:G:455:ARG:O	6:G:457:ILE:N	2.49	0.44
5:F:90:TYR:HE1	5:F:103:GLY:HA3	1.83	0.44
5:I:24:ARG:NH1	5:I:28:GLY:O	2.43	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:222:ARG:HB3	2:B:232:PHE:HE1	1.82	0.44
4:E:43:GLN:HG2	4:E:143:PHE:HE2	1.83	0.44
1:A:20:GLU:HA	1:A:23:ARG:HB3	2.00	0.43
2:B:197:GLU:OE1	4:E:201:LYS:NZ	2.46	0.43
3:D:323:ARG:NH2	6:G:237:THR:OG1	2.50	0.43
7:H:37:ARG:HH12	6:S:284:GLU:HG2	1.83	0.43
5:F:95:ALA:HB3	5:F:100:HIS:HB3	1.99	0.43
2:B:276:GLU:HA	2:B:287:LYS:HD2	1.99	0.43
6:G:349:ILE:HG21	6:G:352:CYS:HB2	1.99	0.43
6:G:243:ARG:N	6:S:216:TYR:OH	2.52	0.43
6:G:456:LYS:H	6:G:456:LYS:HG2	1.66	0.43
6:G:490:ILE:O	6:G:494:THR:CB	2.59	0.43
4:E:178:LYS:HA	4:E:179:GLU:HA	1.88	0.43
5:F:112:THR:HB	5:F:129:LEU:HB3	1.99	0.43
6:S:456:LYS:H	6:S:456:LYS:HG3	1.56	0.43
4:E:199:LYS:HA	4:E:199:LYS:HD3	1.89	0.42
5:I:145:GLN:NE2	5:I:165:ASN:OD1	2.47	0.42
6:G:220:THR:HG22	6:G:227:ASN:HB3	2.01	0.42
2:C:250:LYS:HA	2:C:250:LYS:HD3	1.83	0.42
6:G:683:SER:OG	6:G:685:GLU:OE2	2.32	0.42
5:F:128:TYR:HB3	5:F:137:TYR:HB3	2.01	0.42
5:F:200:GLU:HB2	7:H:221:ILE:HD12	2.01	0.42
6:G:504:PHE:HB2	6:G:593:LEU:HD12	2.02	0.42
5:I:115:GLY:HA3	5:I:126:GLY:HA2	2.02	0.42
2:B:224:ARG:NE	2:B:225:ARG:O	2.36	0.42
6:G:240:LEU:HD23	6:G:240:LEU:HA	1.90	0.42
6:S:328:LEU:HB3	6:S:332:GLU:HG3	2.01	0.42
5:F:136:LYS:O	5:F:153:ILE:N	2.52	0.42
6:G:554:ARG:HH11	6:G:558:PHE:HB2	1.84	0.42
5:F:76:LYS:HB2	5:F:76:LYS:HE2	1.93	0.42
6:G:241:ASP:O	6:S:216:TYR:OH	2.32	0.42
2:B:138:PRO:HA	2:B:139:PRO:HD3	1.95	0.41
6:G:529:GLY:HA3	6:G:640:LYS:HD3	2.02	0.41
6:S:353:ARG:NE	6:S:369:GLU:OE1	2.53	0.41
2:B:137:ASP:H	2:B:206:ILE:HG23	1.86	0.41
5:I:136:LYS:HB2	5:I:136:LYS:HE2	1.74	0.41
6:G:246:ASP:O	7:H:171:ARG:NH2	2.52	0.41
6:G:256:GLN:HE22	6:S:252:GLU:HG2	1.85	0.41
5:I:65:ALA:HB2	5:I:85:PRO:HG3	2.02	0.41
6:G:328:LEU:HD22	6:G:357:LYS:HE2	2.03	0.41
6:S:484:ARG:HD2	6:S:484:ARG:HA	1.87	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:73:THR:HG23	7:H:85:LEU:HB2	2.03	0.41
5:I:195:GLU:HA	5:I:196:GLU:HA	1.85	0.41
6:G:533:ILE:HD12	6:G:533:ILE:HA	1.94	0.41
5:I:140:THR:OG1	5:I:147:GLU:O	2.38	0.41
2:C:307:LYS:HE3	2:C:307:LYS:HB2	1.93	0.40
5:I:37:ARG:HH22	5:I:41:GLY:HA2	1.85	0.40
2:C:234:TYR:HA	2:C:235:PRO:HD3	1.97	0.40
4:E:195:ASN:OD1	4:E:195:ASN:N	2.55	0.40
7:H:21:SER:O	7:H:25:ARG:N	2.51	0.40
7:H:183:LYS:HB2	7:H:185:SER:H	1.86	0.40
6:S:254:ILE:HD13	6:S:254:ILE:HA	1.93	0.40
7:H:32:LEU:HD13	7:H:44:VAL:HG12	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	44/159 (28%)	41 (93%)	3 (7%)	0	100	100
2	B	179/349 (51%)	171 (96%)	8 (4%)	0	100	100
2	C	74/349 (21%)	71 (96%)	3 (4%)	0	100	100
3	D	44/389 (11%)	44 (100%)	0	0	100	100
4	E	199/225 (88%)	191 (96%)	8 (4%)	0	100	100
5	F	183/313 (58%)	172 (94%)	11 (6%)	0	100	100
5	I	183/313 (58%)	179 (98%)	4 (2%)	0	100	100
6	G	375/716 (52%)	353 (94%)	21 (6%)	1 (0%)	41	72
6	S	380/716 (53%)	367 (97%)	13 (3%)	0	100	100
7	H	233/276 (84%)	226 (97%)	7 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	c	235/276 (85%)	223 (95%)	12 (5%)	0	100	100
All	All	2129/4081 (52%)	2038 (96%)	90 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	G	448	PRO

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	38/137 (28%)	37 (97%)	1 (3%)	46	71
2	B	169/307 (55%)	160 (95%)	9 (5%)	22	53
2	C	72/307 (24%)	69 (96%)	3 (4%)	30	60
3	D	44/349 (13%)	44 (100%)	0	100	100
4	E	177/199 (89%)	174 (98%)	3 (2%)	60	78
5	F	148/259 (57%)	138 (93%)	10 (7%)	16	44
5	I	148/259 (57%)	144 (97%)	4 (3%)	44	71
6	G	339/625 (54%)	322 (95%)	17 (5%)	24	55
6	S	343/625 (55%)	336 (98%)	7 (2%)	55	76
7	H	207/243 (85%)	201 (97%)	6 (3%)	42	68
7	c	209/243 (86%)	192 (92%)	17 (8%)	11	36
All	All	1894/3553 (53%)	1817 (96%)	77 (4%)	34	61

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	25	ARG
2	B	224	ARG
2	B	225	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	228	ASP
2	B	234	TYR
2	B	256	LEU
2	B	266	HIS
2	B	276	GLU
2	B	287	LYS
2	B	309	MET
2	C	231	PHE
2	C	269	TYR
2	C	309	MET
4	E	22	ASP
4	E	82	MET
4	E	121	GLU
5	F	81	THR
5	F	82	PHE
5	F	106	TYR
5	F	111	ASP
5	F	118	PHE
5	F	132	GLU
5	F	164	MET
5	F	174	TYR
5	F	185	GLU
5	F	199	GLU
6	G	236	LEU
6	G	241	ASP
6	G	276	MET
6	G	290	PHE
6	G	319	TYR
6	G	438	ARG
6	G	455	ARG
6	G	460	PHE
6	G	523	GLU
6	G	534	ASP
6	G	540	SER
6	G	556	ASN
6	G	558	PHE
6	G	641	LYS
6	G	681	ASP
6	G	683	SER
6	G	688	GLN
7	H	39	TYR
7	H	75	TYR

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Mol	Chain	Res	Type
7	H	92	MET
7	H	185	SER
7	H	190	PHE
7	H	220	ASP
6	S	205	MET
6	S	216	TYR
6	S	427	LYS
6	S	460	PHE
6	S	495	HIS
6	S	556	ASN
6	S	636	PHE
7	c	16	SER
7	c	23	ASP
7	c	38	ASP
7	c	49	ARG
7	c	57	TYR
7	c	71	ARG
7	c	79	CYS
7	c	104	MET
7	c	109	HIS
7	c	135	LYS
7	c	160	PHE
7	c	190	PHE
7	c	213	PHE
7	c	214	LEU
7	c	220	ASP
7	c	247	LEU
7	c	254	ARG
5	I	31	HIS
5	I	164	MET
5	I	173	LYS
5	I	180	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA

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.

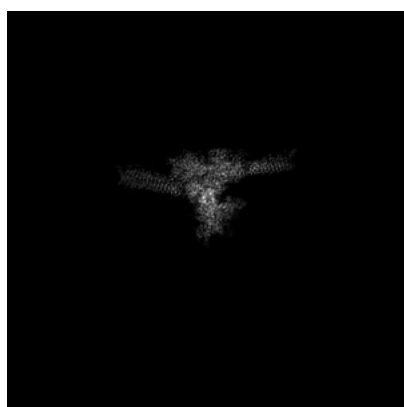
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37949. These allow visual inspection of the internal detail of the map and identification of artifacts.

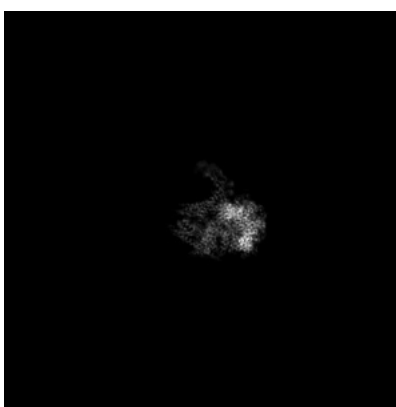
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

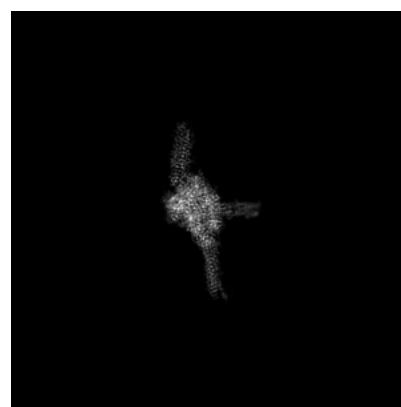
#### 6.1.1 Primary map



X



Y

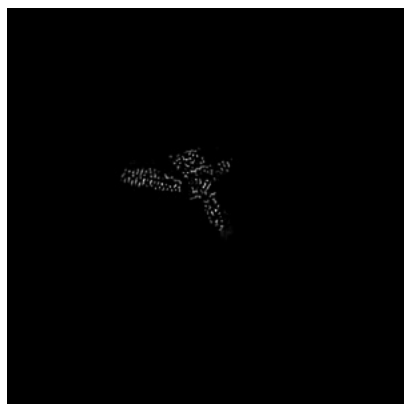


Z

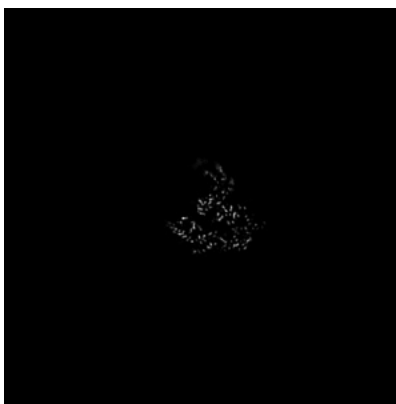
The images above show the map projected in three orthogonal directions.

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

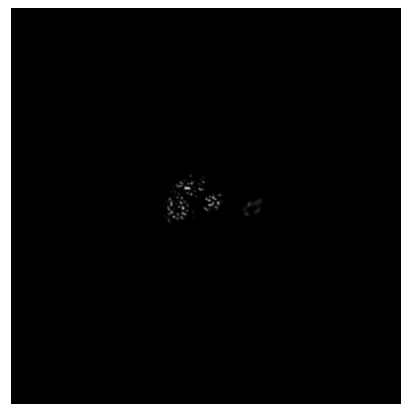
#### 6.2.1 Primary map



X Index: 280



Y Index: 280

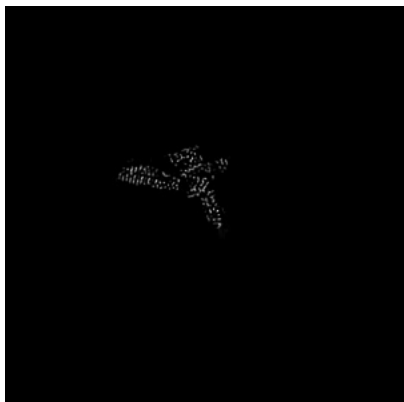


Z Index: 280

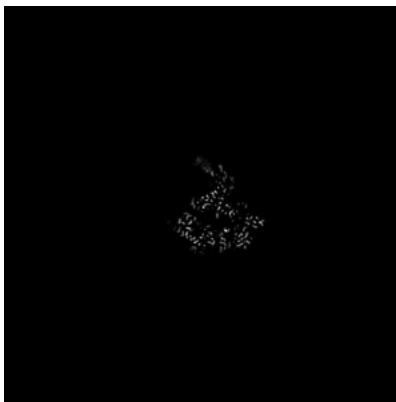
The images above show central slices of the map in three orthogonal directions.

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

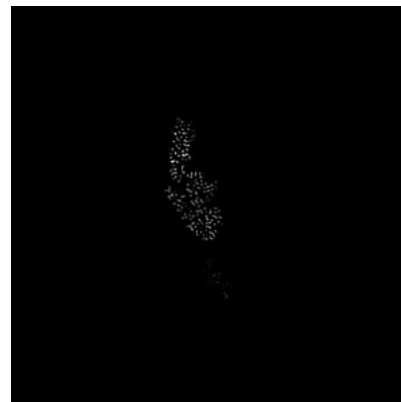
### 6.3.1 Primary map



X Index: 281



Y Index: 283

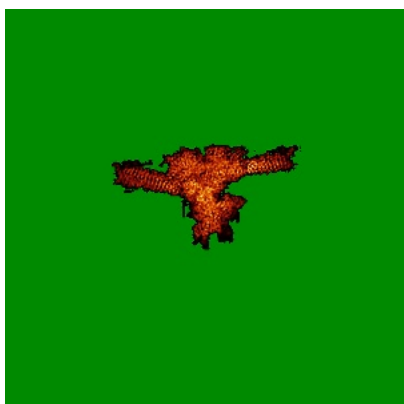


Z Index: 342

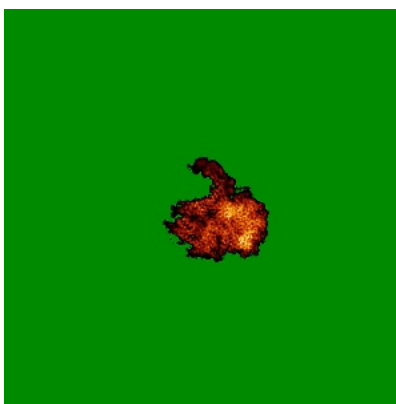
The images above show the largest variance slices of the map in three orthogonal directions.

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

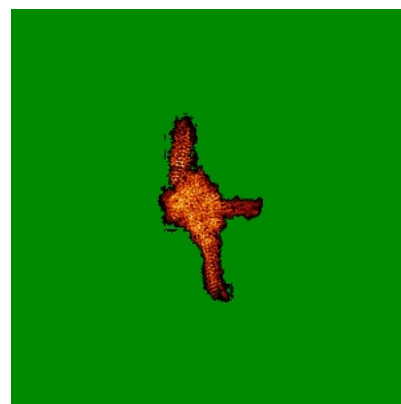
### 6.4.1 Primary map



X



Y

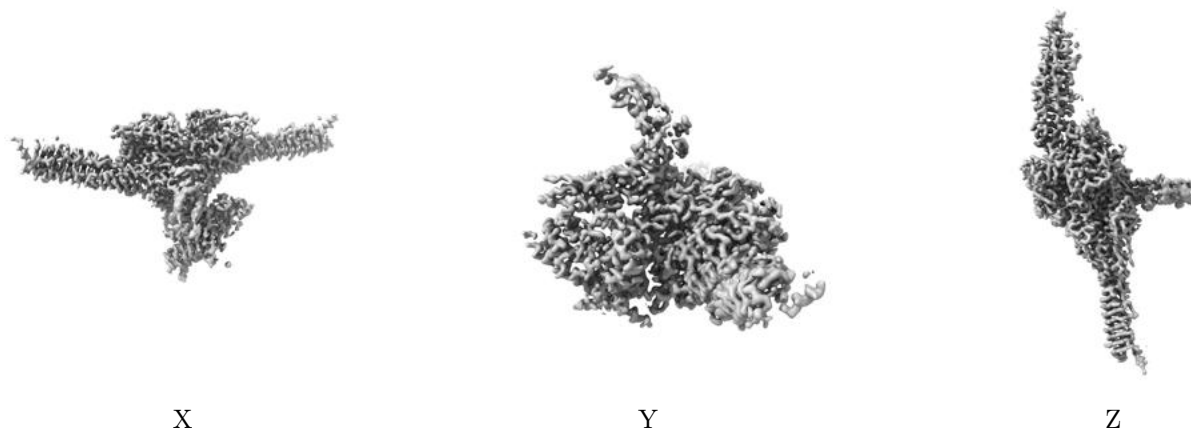


Z

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

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

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.18. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

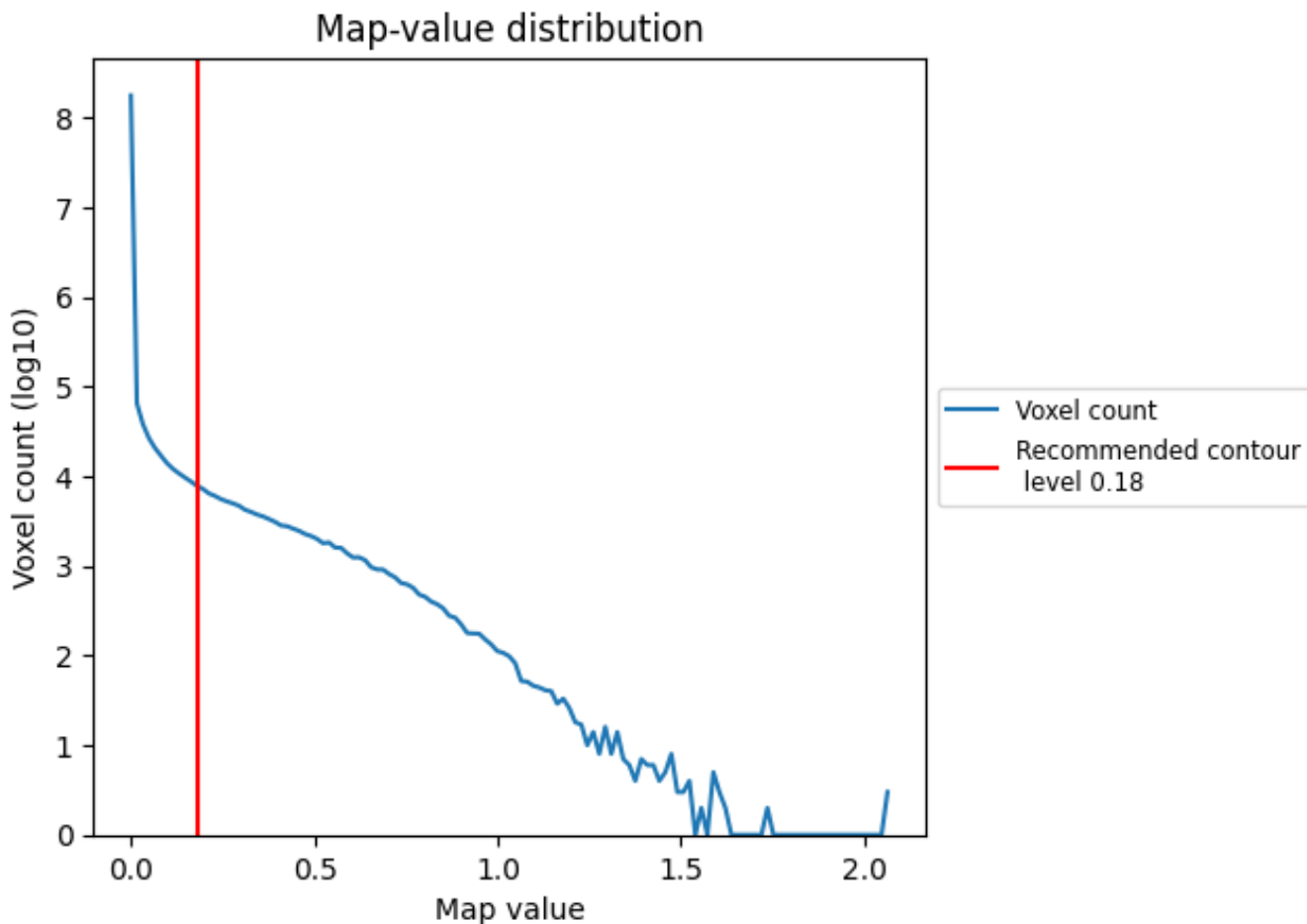
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

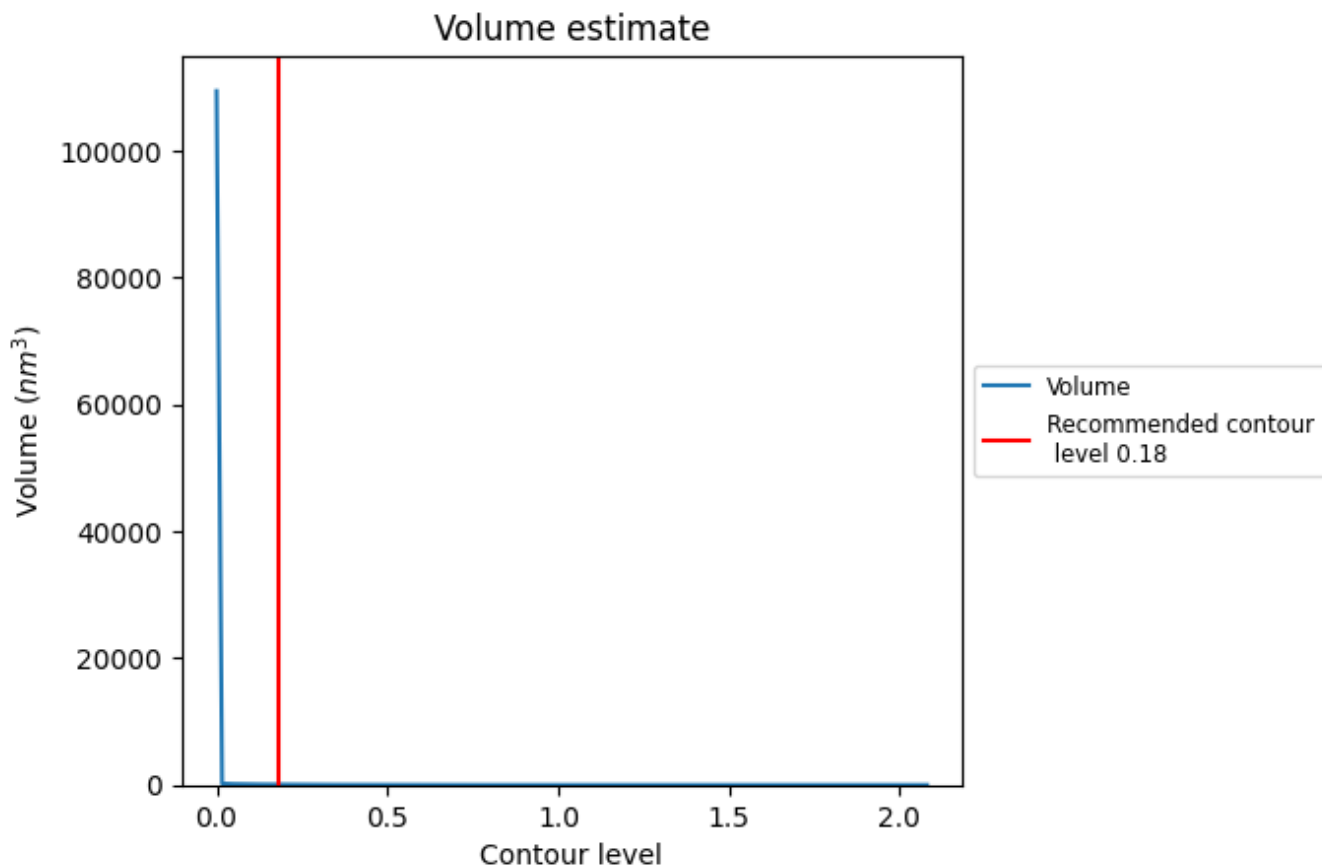
This section contains the results of statistical analysis of the map.

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



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

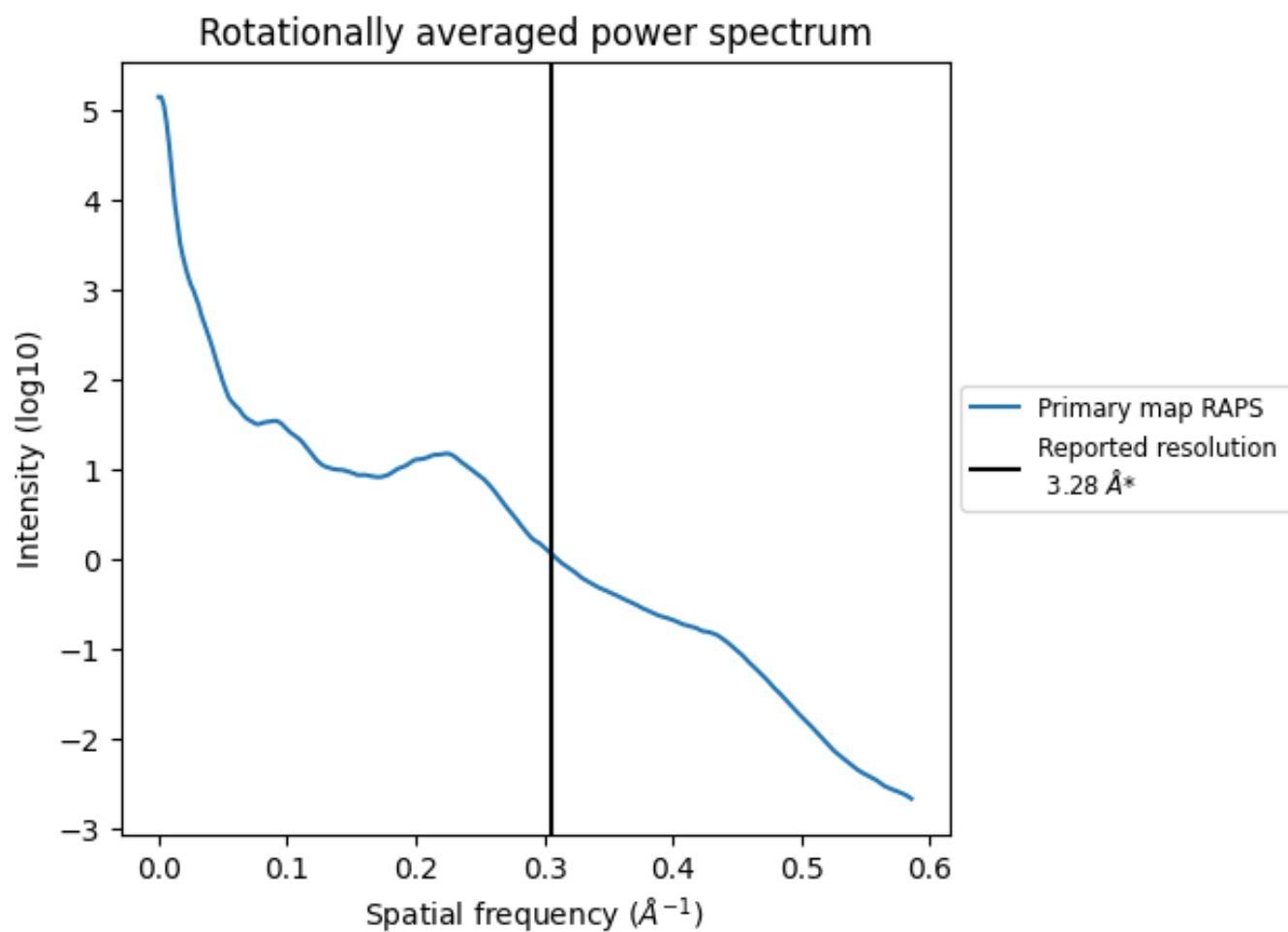
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 68 nm<sup>3</sup>; this corresponds to an approximate mass of 62 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum [i](#)



\*Reported resolution corresponds to spatial frequency of 0.305 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

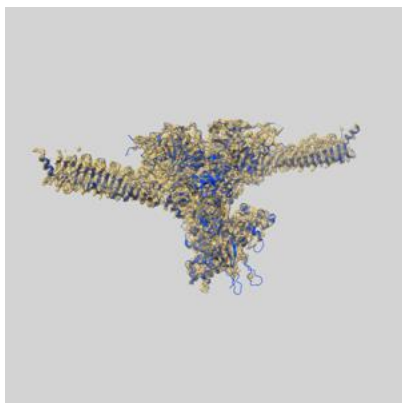
This section was not generated. No FSC curve or half-maps provided.



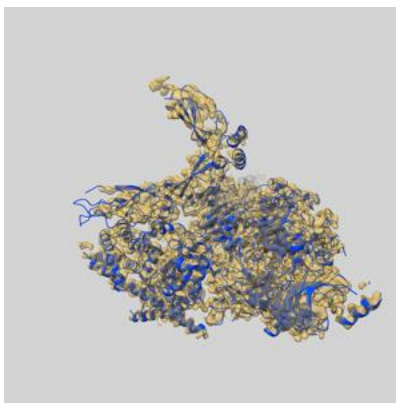
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-37949 and PDB model 8WZB. Per-residue inclusion information can be found in section [3](#) on page [9](#).

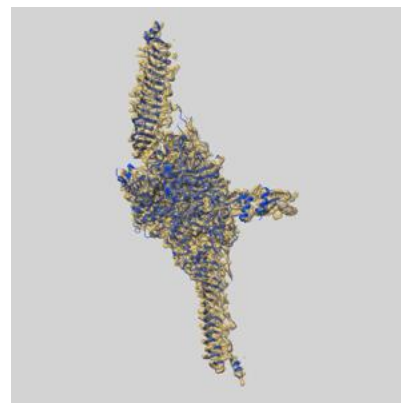
### 9.1 Map-model overlay [i](#)



X



Y



Z

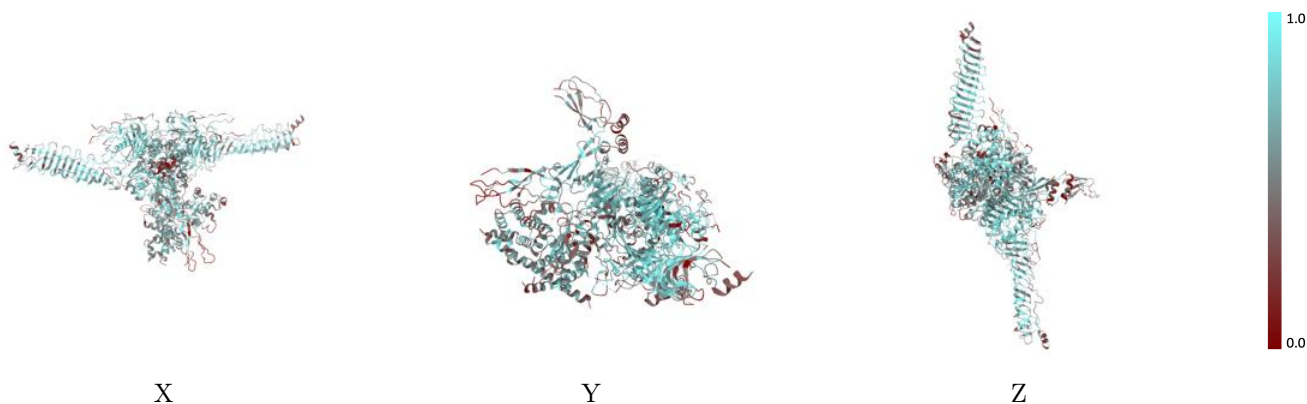
The images above show the 3D surface view of the map at the recommended contour level 0.18 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



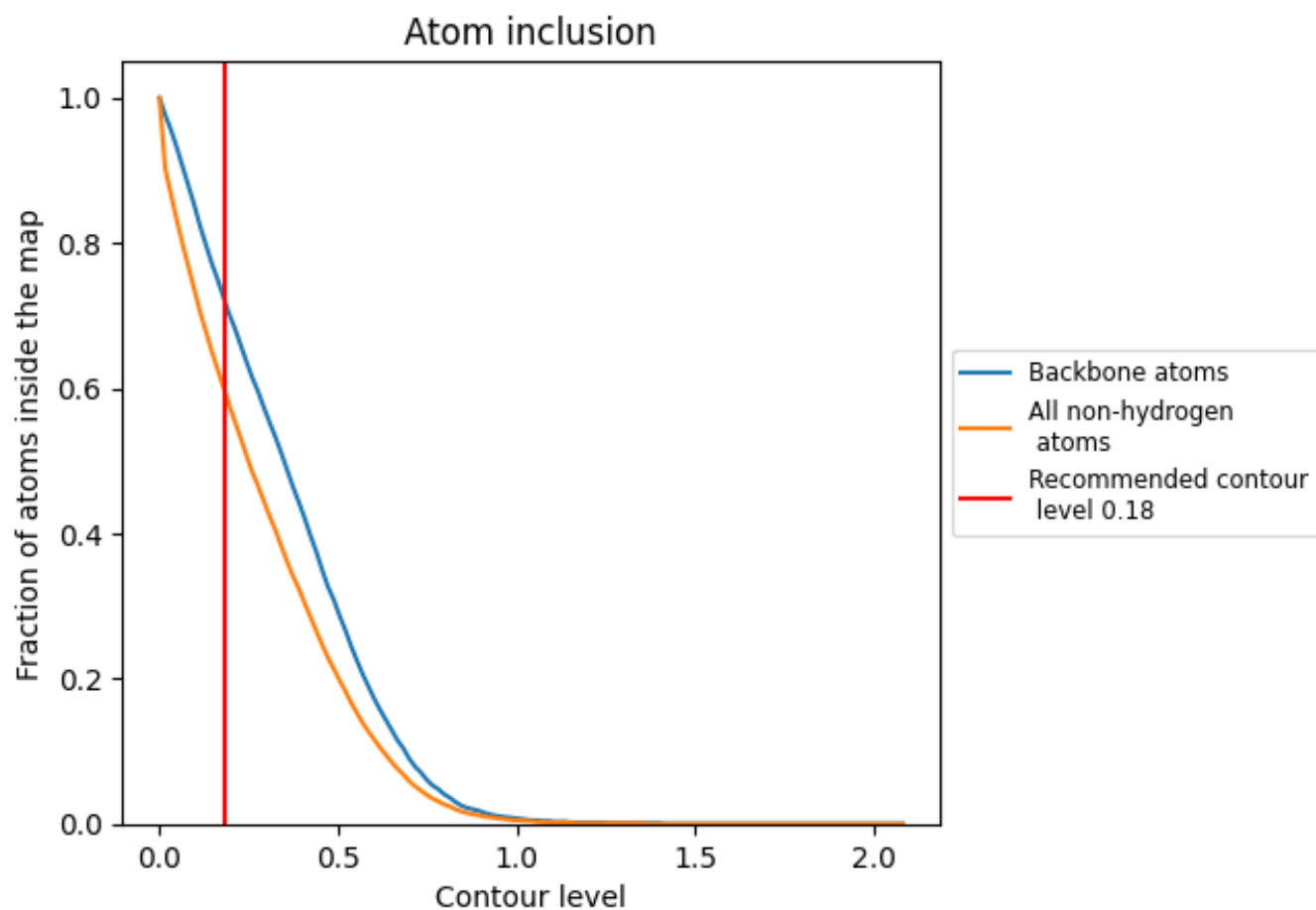
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.18).

























## 9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 60% 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 (0.18) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5990	 0.3950
A	 0.5920	 0.3850
B	 0.4890	 0.2800
C	 0.4080	 0.2400
D	 0.5520	 0.3550
E	 0.5020	 0.3260
F	 0.6440	 0.4250
G	 0.6210	 0.4090
H	 0.7020	 0.4590
I	 0.6380	 0.4400
S	 0.6270	 0.4330
c	 0.5940	 0.3950

