



Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 10:23 PM UTC

PDB ID : 6Y5Q / pdb_00006y5q
EMDB ID : EMD-10689
Title : human 17S U2 snRNP
Authors : Zhang, Z.; Will, C.L.; Bertram, K.; Luehrmann, R.; Stark, H.
Deposited on : 2020-02-25
Resolution : 7.10 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

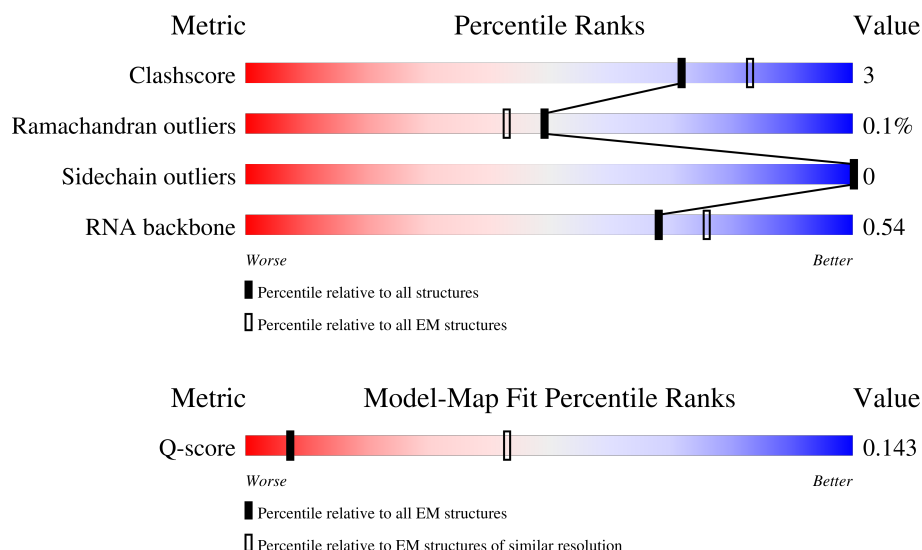
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 7.10 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.



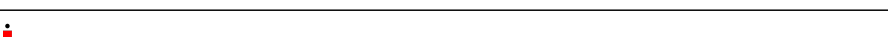
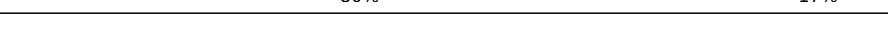
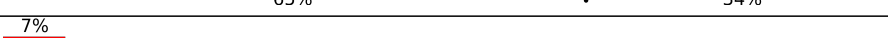
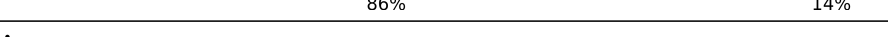
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	464 (6.60 - 7.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	y	110	
2	x	86	
3	8	895	

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Mol	Chain	Length	Quality of chain
4	v	1217	
5	u	1304	
6	p	1031	
7	a	255	
8	b	225	
9	z	125	
10	6	793	
11	7	464	
12	9	501	
13	o	424	
14	m	240	
15	k	76	
16	n	119	
17	h	118	
18	l	126	
19	j	92	
20	i	86	
21	q	755	
22	2	188	

2 Entry composition

There are 22 unique types of molecules in this entry. The entry contains 22867 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 PHD finger-like domain-containing protein 5A.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	y	93	Total	C	N	O	0	0
			384	198	93	93		

- Molecule 2 is a protein called Splicing factor 3B subunit 5.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	x	66	Total	C	N	O	0	0
			273	141	66	66		

- Molecule 3 is a protein called Splicing factor 3B subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	8	172	Total	C	N	O	0	0
			751	407	172	172		

- Molecule 4 is a protein called Splicing factor 3B subunit 3.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	v	1177	Total	C	N	O	0	0
			4888	2534	1177	1177		

- Molecule 5 is a protein called Splicing factor 3B subunit 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	u	863	Total	C	N	O	0	0
			3575	1849	863	863		

- Molecule 6 is a protein called Probable ATP-dependent RNA helicase DDX46.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	p	445	Total	C	N	O	0	0
			1825	935	445	445		

- Molecule 7 is a protein called U2 small nuclear ribonucleoprotein A'.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	a	162	Total	C	N	O	0	0
			666	342	162	162		

- Molecule 8 is a protein called U2 small nuclear ribonucleoprotein B''.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	b	166	Total	C	N	O	0	0
			685	353	166	166		

- Molecule 9 is a protein called Splicing factor 3B subunit 6.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	z	77	Total	C	N	O	0	0
			317	163	77	77		

- Molecule 10 is a protein called Splicing factor 3A subunit 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	6	123	Total	C	N	O	0	0
			504	258	123	123		

- Molecule 11 is a protein called Splicing factor 3A subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	7	100	Total	C	N	O	0	0
			421	221	100	100		

- Molecule 12 is a protein called Splicing factor 3A subunit 3.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	9	420	Total	C	N	O	0	0
			1716	876	420	420		

- Molecule 13 is a protein called Splicing factor 3B subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	o	160	Total	C	N	O	0	0
			664	344	160	160		

- Molecule 14 is a protein called Small nuclear ribonucleoprotein-associated proteins B and B'.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	m	71	Total	C	N	O	0	0
			293	151	71	71		

- Molecule 15 is a protein called Small nuclear ribonucleoprotein G.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	k	74	Total	C	N	O	0	0
			305	157	74	74		

- Molecule 16 is a protein called Small nuclear ribonucleoprotein Sm D1.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	n	82	Total	C	N	O	0	0
			337	173	82	82		

- Molecule 17 is a protein called Small nuclear ribonucleoprotein Sm D2.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	h	98	Total	C	N	O	0	0
			404	208	98	98		

- Molecule 18 is a protein called Small nuclear ribonucleoprotein Sm D3.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	l	83	Total	C	N	O	0	0
			341	175	83	83		

- Molecule 19 is a protein called Small nuclear ribonucleoprotein E.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	j	79	Total	C	N	O	0	0
			319	161	79	79		

- Molecule 20 is a protein called Small nuclear ribonucleoprotein F.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	i	74	Total	C	N	O	0	0
			308	160	74	74		

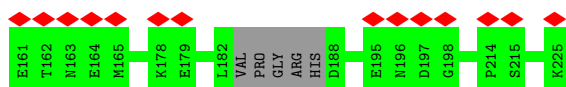
- Molecule 21 is a protein called HIV Tat-specific factor 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	q	178	Total	C	N	O	3	0
			749	385	182	182		

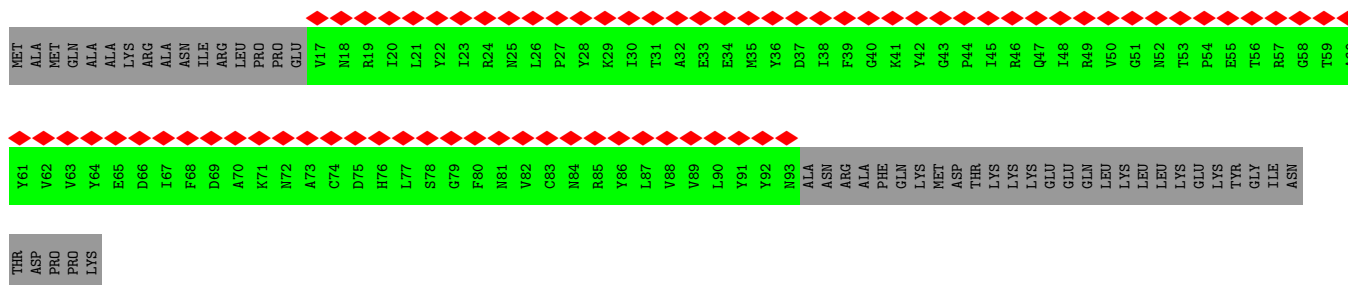
- Molecule 22 is a RNA chain called U2snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	2	148	Total	C	N	O	P	0	0
			3142	1406	551	1039	146		

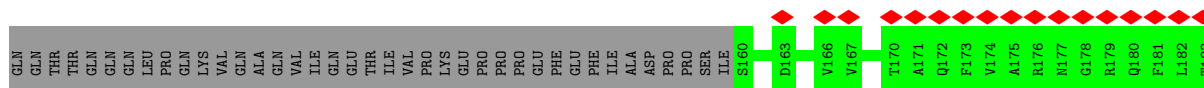
Chain a: 64% 36%



Chain z: 62% 38%



Chain 6: 12% 16% 84%



Chain m:

ALA
GLY
LEU
LEU
ALA
ALA
GLY
PRO
VAL
ARG
ARG
GLY
GLY
VAL
GLY
GLY
GLY
PRO
SER
GLN
GLN
VAL
VAL
MET
THR
THR
PRO
GLN
GLN
GLY
ARG
GLY
THR
VAL
ALA
ALA
ALA
ALA
ALA
ALA
ALA
ALA
SER
SER
ILE
ALA
ALA
GLY
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GLY
GLY
PRO
PRO
PRO
PRO
MET
GLY
ARG
GLY
PRO
ALA

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	120070	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 ($e^-/\text{\AA}^2$)	72	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.054	Depositor
Minimum map value	-0.012	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	348.0, 348.0, 348.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.16, 1.16, 1.16	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	y	0.07	0/387	0.24	0/489
2	x	0.12	0/275	0.37	0/348
3	8	0.11	0/768	0.33	0/994
4	v	0.13	0/4942	0.29	0/6287
5	u	0.09	0/3614	0.25	0/4596
6	p	0.39	0/1838	0.56	0/2324
7	a	0.16	0/671	0.44	0/849
8	b	0.12	0/689	0.32	0/869
9	z	0.11	0/319	0.31	0/403
10	6	0.15	0/507	0.37	0/640
11	7	0.15	0/426	0.47	0/543
12	9	0.27	0/1725	0.41	0/2175
13	o	0.13	0/670	0.36	0/850
14	m	0.13	0/294	0.36	0/370
15	k	0.13	0/307	0.37	0/388
16	n	0.12	0/339	0.36	0/428
17	h	0.23	0/407	0.54	0/515
18	l	0.16	0/343	0.37	0/433
19	j	0.14	0/319	0.41	0/399
20	i	0.16	0/311	0.41	0/395
21	q	0.16	0/754	0.31	0/953
22	2	0.20	1/3507 (0.0%)	0.29	1/5454 (0.0%)
All	All	0.19	1/23412 (0.0%)	0.35	1/30702 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
17	h	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	2	45	C	O3'-P	-9.22	1.47	1.61

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
22	2	24	A	O3'-P-O5'	7.05	114.57	104.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
17	h	84	LYS	Peptide

5.2 Too-close contacts

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	y	384	0	137	4	0
2	x	273	0	91	0	0
3	8	751	0	317	2	0
4	v	4888	0	1692	40	0
5	u	3575	0	1199	28	0
6	p	1825	0	607	13	0
7	a	666	0	209	0	0
8	b	685	0	226	0	0
9	z	317	0	104	0	0
10	6	504	0	150	0	0
11	7	421	0	148	0	0
12	9	1716	0	528	1	0
13	o	664	0	230	0	0
14	m	293	0	99	0	0
15	k	305	0	105	0	0
16	n	337	0	110	0	0
17	h	404	0	131	2	0
18	l	341	0	112	1	0
19	j	319	0	92	0	0
20	i	308	0	115	0	0
21	q	749	0	241	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
22	2	3142	0	1594	29	0
All	All	22867	0	8237	104	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 3.

All (104) 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)
5:u:780:PRO:CB	6:p:189:ILE:O	1.74	1.32
4:v:1067:ASP:C	4:v:1086:SER:CA	2.11	1.23
5:u:780:PRO:HB3	6:p:189:ILE:O	0.92	1.08
5:u:780:PRO:HG2	6:p:192:MET:CA	1.98	0.93
22:2:150:U:H3	22:2:181:G:H1	1.31	0.78
4:v:1067:ASP:O	4:v:1086:SER:CA	2.31	0.76
5:u:780:PRO:CA	6:p:189:ILE:O	2.33	0.76
5:u:780:PRO:HG2	6:p:192:MET:C	2.11	0.74
21:q:322:PRO:HD2	22:2:35:A:H5''	1.69	0.73
1:y:16:GLY:HA2	4:v:157:PRO:HD2	1.69	0.73
22:2:47:U:H3'	22:2:48:A:H5'	1.70	0.73
5:u:975:GLY:HA3	5:u:1011:PRO:HD3	1.69	0.73
4:v:471:ASP:N	4:v:746:ALA:O	2.25	0.69
5:u:502:LEU:O	5:u:506:ASN:N	2.25	0.69
4:v:791:HIS:O	4:v:795:ASN:N	2.26	0.67
5:u:780:PRO:HG2	6:p:193:LYS:N	2.09	0.67
4:v:827:ALA:O	4:v:833:GLU:N	2.27	0.67
21:q:203:GLU:CA	21:q:211:LEU:O	2.43	0.66
4:v:552:ARG:O	4:v:568:MET:N	2.29	0.63
4:v:1015:LYS:O	4:v:1019:ASN:N	2.31	0.63
5:u:780:PRO:CG	6:p:192:MET:CA	2.77	0.62
4:v:663:LEU:O	4:v:679:LEU:N	2.34	0.61
22:2:54:U:H2'	22:2:55:U:C6	2.37	0.59
22:2:20:G:H2'	22:2:21:C:C6	2.38	0.59
4:v:1067:ASP:C	4:v:1086:SER:N	2.62	0.58
3:8:495:ARG:O	4:v:1083:ASN:O	2.21	0.58
5:u:806:ILE:O	5:u:811:LEU:N	2.37	0.57
4:v:785:PRO:HA	4:v:800:ILE:O	2.03	0.56
5:u:1118:ILE:O	5:u:1122:THR:N	2.39	0.55
4:v:478:PHE:N	4:v:481:ALA:O	2.36	0.54
4:v:457:ASN:N	4:v:477:SER:O	2.31	0.54
4:v:458:ALA:O	4:v:477:SER:N	2.31	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:v:790:ILE:O	4:v:792:PRO:HD3	2.08	0.54
22:2:45:C:H5''	22:2:46:U:H5'	1.89	0.54
5:u:1214:TYR:O	5:u:1217:PRO:HD2	2.08	0.53
4:v:5:ASN:O	4:v:1176:GLY:HA3	2.08	0.53
22:2:151:C:H2'	22:2:152:G:H8	1.74	0.53
4:v:1201:PRO:HB2	4:v:1202:PRO:HD3	1.89	0.53
4:v:441:GLY:HA2	4:v:733:PRO:HD2	1.90	0.53
12:9:405:ASN:CA	12:9:417:ARG:O	2.56	0.53
22:2:46:U:O5'	22:2:47:U:H4'	2.10	0.52
5:u:812:PRO:HB2	5:u:813:PRO:HD3	1.90	0.52
4:v:236:ILE:O	4:v:249:LEU:N	2.44	0.51
5:u:465:PRO:CD	5:u:507:GLY:HA2	2.41	0.51
5:u:545:GLU:O	5:u:549:ARG:N	2.40	0.51
22:2:120:A:N1	22:2:137:U:O4	2.43	0.51
1:y:16:GLY:HA2	4:v:157:PRO:CD	2.40	0.51
22:2:60:U:H2'	22:2:61:C:C6	2.46	0.50
4:v:637:PRO:HA	4:v:669:LEU:CA	2.41	0.50
5:u:1257:PRO:O	22:2:56:A:H5'	2.11	0.50
6:p:178:ALA:C	6:p:180:GLU:H	2.20	0.49
4:v:954:PRO:HA	4:v:958:ARG:O	2.13	0.49
5:u:924:ARG:O	5:u:927:PRO:HD2	2.12	0.49
4:v:85:GLY:HA3	4:v:108:GLY:H	1.77	0.49
4:v:670:GLN:O	4:v:698:PRO:HA	2.14	0.48
6:p:178:ALA:C	6:p:180:GLU:N	2.71	0.48
3:8:466:LYS:O	3:8:472:PRO:HB3	2.14	0.48
5:u:1259:ARG:N	22:2:56:A:OP1	2.26	0.48
17:h:88:LYS:H	22:2:136:G:N2	2.12	0.47
4:v:148:ALA:O	5:u:718:PRO:HD3	2.13	0.47
4:v:308:GLY:O	4:v:333:VAL:N	2.47	0.47
22:2:120:A:N1	22:2:137:U:C4	2.82	0.47
22:2:124:G:H2'	22:2:125:G:C8	2.49	0.47
22:2:47:U:H3'	22:2:48:A:C5'	2.43	0.46
5:u:566:LEU:O	5:u:569:PRO:HD2	2.16	0.46
5:u:1005:GLY:O	5:u:1008:LYS:N	2.49	0.46
22:2:30:A:H61	22:2:40:C:H42	1.63	0.46
22:2:54:U:H2'	22:2:55:U:H6	1.77	0.46
4:v:588:VAL:N	4:v:608:GLY:O	2.49	0.45
4:v:719:SER:O	4:v:734:LEU:N	2.25	0.45
22:2:166:G:OP2	22:2:166:G:N2	2.50	0.45
4:v:512:GLY:N	4:v:515:ALA:O	2.40	0.45
22:2:53:U:H2'	22:2:54:U:O4'	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:2:120:A:C6	22:2:137:U:O4	2.69	0.44
6:p:357:MET:C	6:p:359:GLY:N	2.76	0.44
4:v:561:GLY:HA3	4:v:583:MET:H	1.83	0.44
4:v:428:GLY:HA3	4:v:433:SER:CA	2.48	0.44
4:v:612:ASN:O	4:v:633:LEU:N	2.26	0.44
1:y:22:LEU:O	1:y:65:GLY:HA2	2.18	0.44
5:u:1048:GLU:O	5:u:1050:VAL:N	2.51	0.44
22:2:144:C:H2'	22:2:145:A:H2'	2.00	0.43
22:2:46:U:H3'	22:2:47:U:O3'	2.18	0.43
4:v:360:GLN:N	4:v:396:VAL:O	2.42	0.43
1:y:43:VAL:N	1:y:69:ALA:O	2.26	0.43
4:v:24:GLY:HA2	4:v:74:THR:C	2.44	0.43
22:2:13:C:H2'	22:2:14:C:C6	2.54	0.43
22:2:49:U:H2'	22:2:50:C:C6	2.53	0.43
4:v:828:GLY:O	4:v:833:GLU:N	2.52	0.42
4:v:456:PRO:HA	4:v:477:SER:O	2.18	0.42
5:u:509:PRO:HD2	5:u:510:PRO:HD2	2.01	0.42
4:v:849:GLU:O	4:v:853:GLY:N	2.53	0.42
6:p:357:MET:C	6:p:359:GLY:H	2.28	0.41
4:v:1015:LYS:O	4:v:1019:ASN:CA	2.68	0.41
5:u:780:PRO:HG3	6:p:192:MET:H	1.86	0.41
18:l:53:GLY:O	22:2:151:C:O2'	2.31	0.41
5:u:780:PRO:HA	6:p:189:ILE:O	2.14	0.41
5:u:809:GLU:O	5:u:813:PRO:HG2	2.20	0.41
5:u:1119:VAL:O	5:u:1123:CYS:N	2.46	0.41
5:u:1105:GLU:O	5:u:1107:GLN:N	2.48	0.41
22:2:51:A:H2'	22:2:52:G:H8	1.86	0.41
22:2:151:C:H2'	22:2:152:G:C8	2.53	0.41
4:v:603:ARG:C	4:v:619:LEU:H	2.29	0.40
22:2:152:G:H2'	22:2:153:A:H8	1.86	0.40
17:h:78:PRO:HD3	17:h:89:PRO:HA	2.04	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	y	91/110 (83%)	83 (91%)	8 (9%)	0	100	100
2	x	64/86 (74%)	58 (91%)	6 (9%)	0	100	100
3	8	164/895 (18%)	151 (92%)	13 (8%)	0	100	100
4	v	1165/1217 (96%)	1096 (94%)	69 (6%)	0	100	100
5	u	859/1304 (66%)	834 (97%)	24 (3%)	1 (0%)	48	83
6	p	441/1031 (43%)	418 (95%)	20 (4%)	3 (1%)	18	56
7	a	160/255 (63%)	160 (100%)	0	0	100	100
8	b	160/225 (71%)	158 (99%)	2 (1%)	0	100	100
9	z	75/125 (60%)	75 (100%)	0	0	100	100
10	6	121/793 (15%)	121 (100%)	0	0	100	100
11	7	96/464 (21%)	94 (98%)	2 (2%)	0	100	100
12	9	414/501 (83%)	393 (95%)	21 (5%)	0	100	100
13	o	156/424 (37%)	153 (98%)	3 (2%)	0	100	100
14	m	67/240 (28%)	67 (100%)	0	0	100	100
15	k	72/76 (95%)	72 (100%)	0	0	100	100
16	n	80/119 (67%)	79 (99%)	1 (1%)	0	100	100
17	h	96/118 (81%)	91 (95%)	5 (5%)	0	100	100
18	l	81/126 (64%)	79 (98%)	2 (2%)	0	100	100
19	j	77/92 (84%)	77 (100%)	0	0	100	100
20	i	72/86 (84%)	71 (99%)	1 (1%)	0	100	100
21	q	178/755 (24%)	170 (96%)	7 (4%)	1 (1%)	21	59
All	All	4689/9042 (52%)	4500 (96%)	184 (4%)	5 (0%)	49	83

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	p	185	LEU
5	u	1049	TYR
6	p	184	GLU
6	p	585	GLY
21	q	163	PRO

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	y	4/95 (4%)	4 (100%)	0	100	100
2	x	3/77 (4%)	3 (100%)	0	100	100
3	8	21/776 (3%)	21 (100%)	0	100	100
4	v	60/1051 (6%)	60 (100%)	0	100	100
5	u	41/1104 (4%)	41 (100%)	0	100	100
6	p	15/892 (2%)	15 (100%)	0	100	100
7	a	6/218 (3%)	6 (100%)	0	100	100
8	b	7/195 (4%)	7 (100%)	0	100	100
9	z	3/109 (3%)	3 (100%)	0	100	100
10	6	4/709 (1%)	4 (100%)	0	100	100
11	7	7/382 (2%)	7 (100%)	0	100	100
12	9	12/446 (3%)	12 (100%)	0	100	100
13	o	8/336 (2%)	8 (100%)	0	100	100
14	m	3/177 (2%)	3 (100%)	0	100	100
15	k	3/66 (4%)	3 (100%)	0	100	100
16	n	3/101 (3%)	3 (100%)	0	100	100
17	h	4/110 (4%)	4 (100%)	0	100	100
18	l	3/101 (3%)	3 (100%)	0	100	100
19	j	1/84 (1%)	1 (100%)	0	100	100
20	i	4/74 (5%)	4 (100%)	0	100	100
21	q	7/661 (1%)	7 (100%)	0	100	100
All	All	219/7764 (3%)	219 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

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

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
22	2	143/188 (76%)	27 (18%)	0

All (27) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
22	2	22	U
22	2	23	A
22	2	24	A
22	2	43	U
22	2	47	U
22	2	48	A
22	2	101	U
22	2	102	U
22	2	103	U
22	2	111	G
22	2	116	A
22	2	117	U
22	2	121	A
22	2	122	U
22	2	123	A
22	2	124	G
22	2	128	C
22	2	129	U
22	2	130	U
22	2	131	G
22	2	136	G
22	2	138	C
22	2	146	C
22	2	147	G
22	2	157	G
22	2	164	C
22	2	177	A

There are no RNA pucker outliers to report.

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

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.

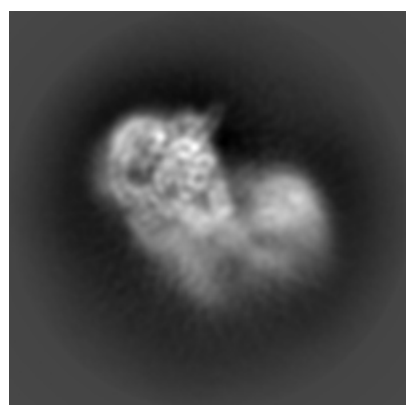
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10689. These allow visual inspection of the internal detail of the map and identification of artifacts.

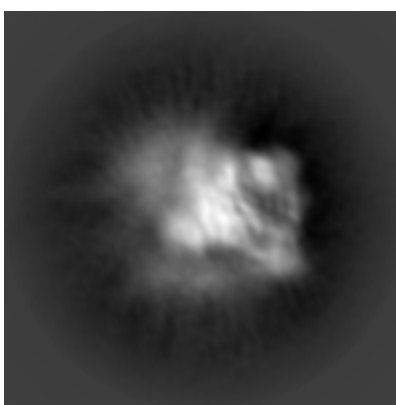
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

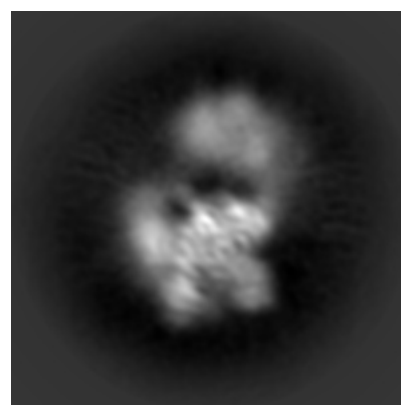
6.1.1 Primary map



X



Y

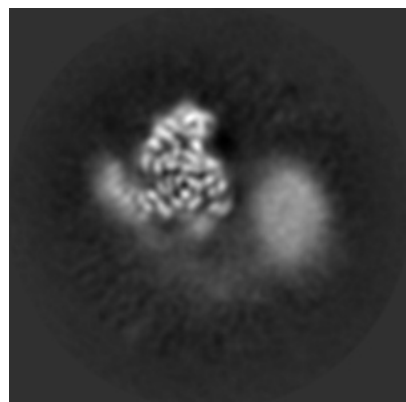


Z

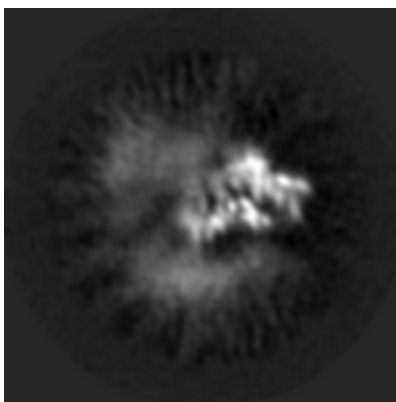
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

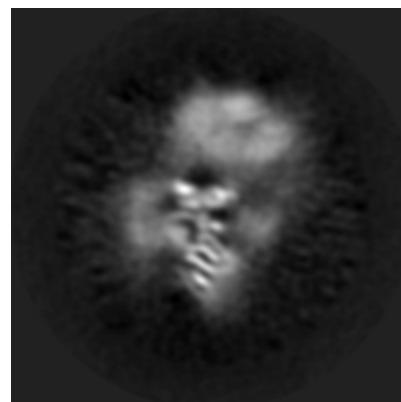
6.2.1 Primary map



X Index: 150



Y Index: 150

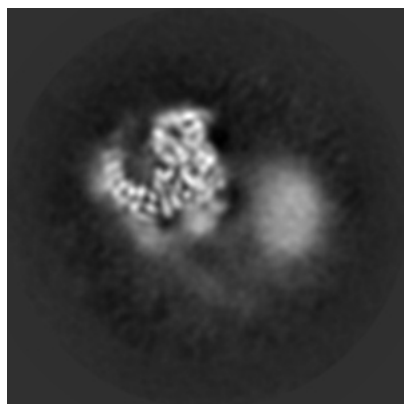


Z Index: 150

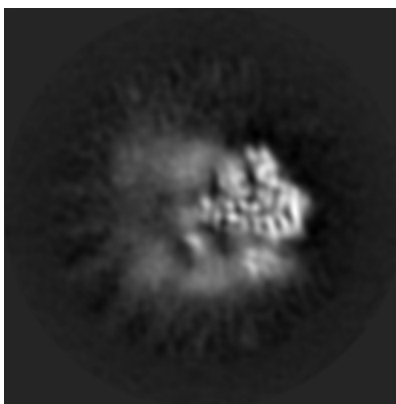
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

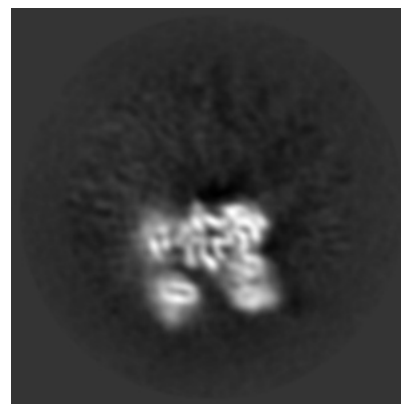
6.3.1 Primary map



X Index: 143



Y Index: 136

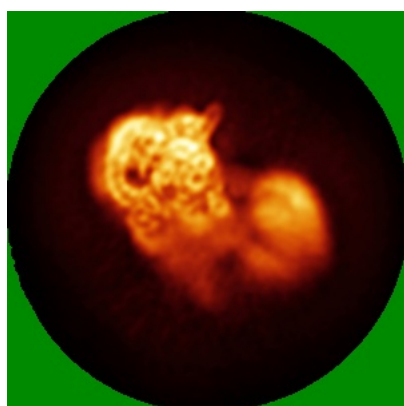


Z Index: 198

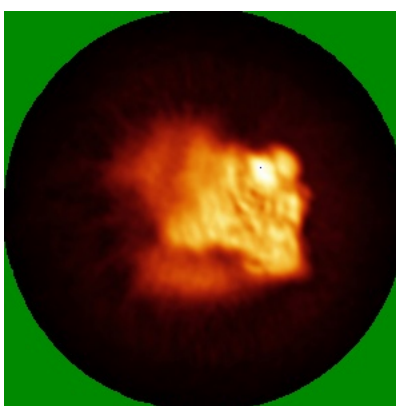
The images above show the largest variance slices of the map in three orthogonal directions.

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

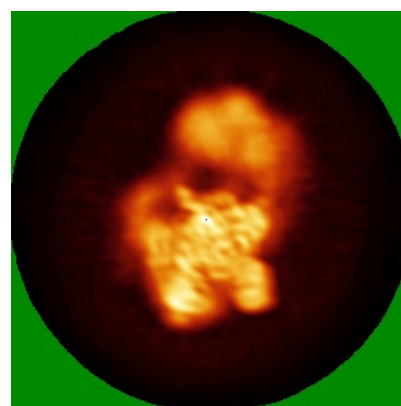
6.4.1 Primary map



X



Y

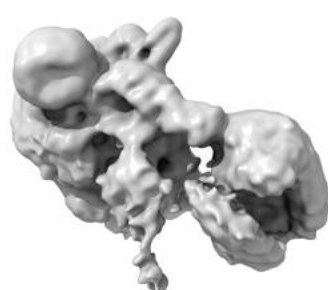


Z

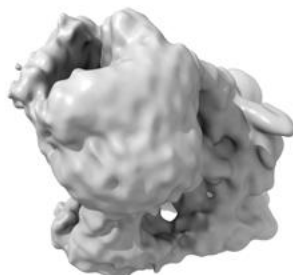
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

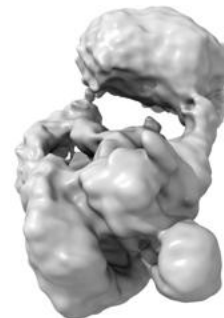
6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

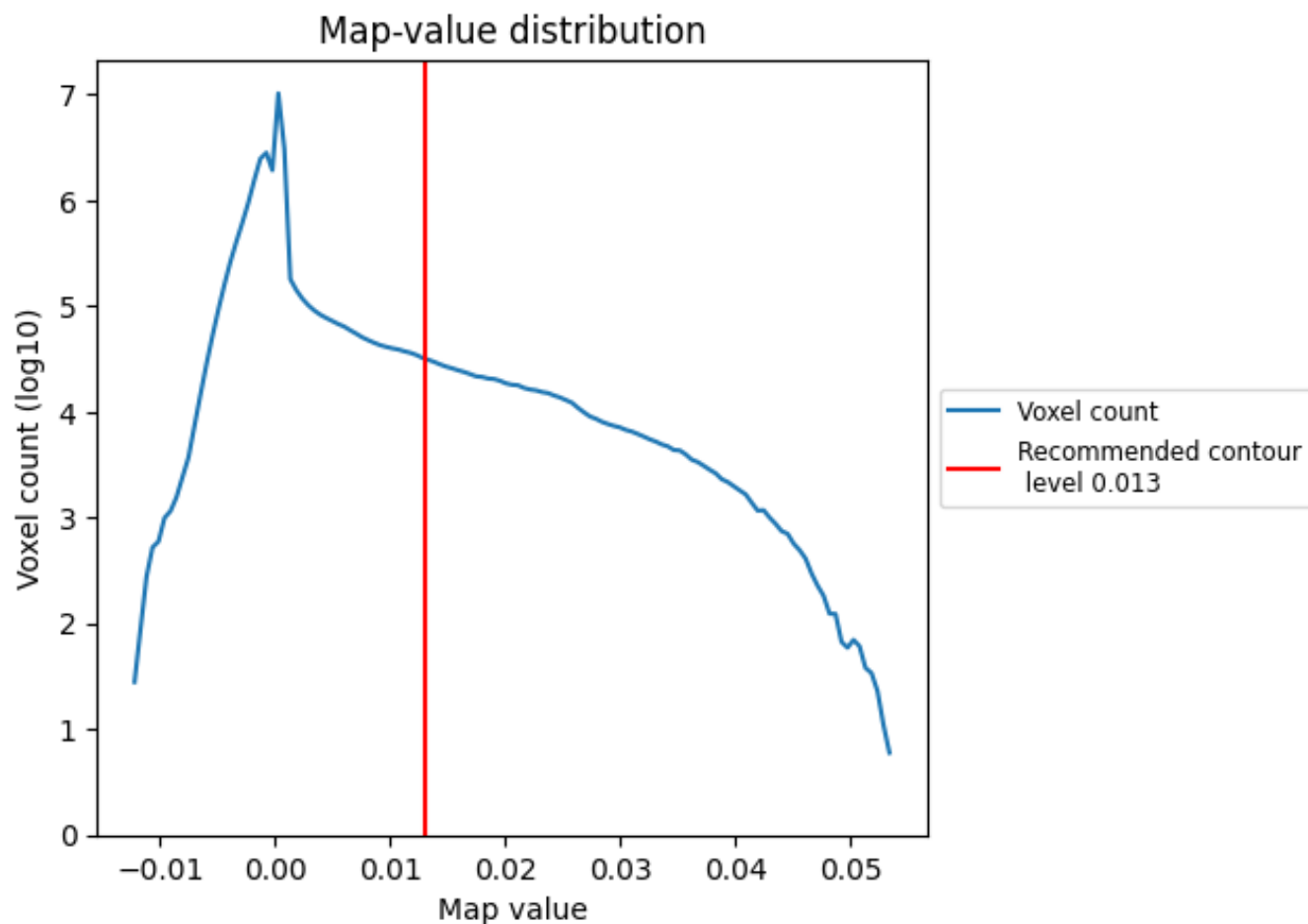
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

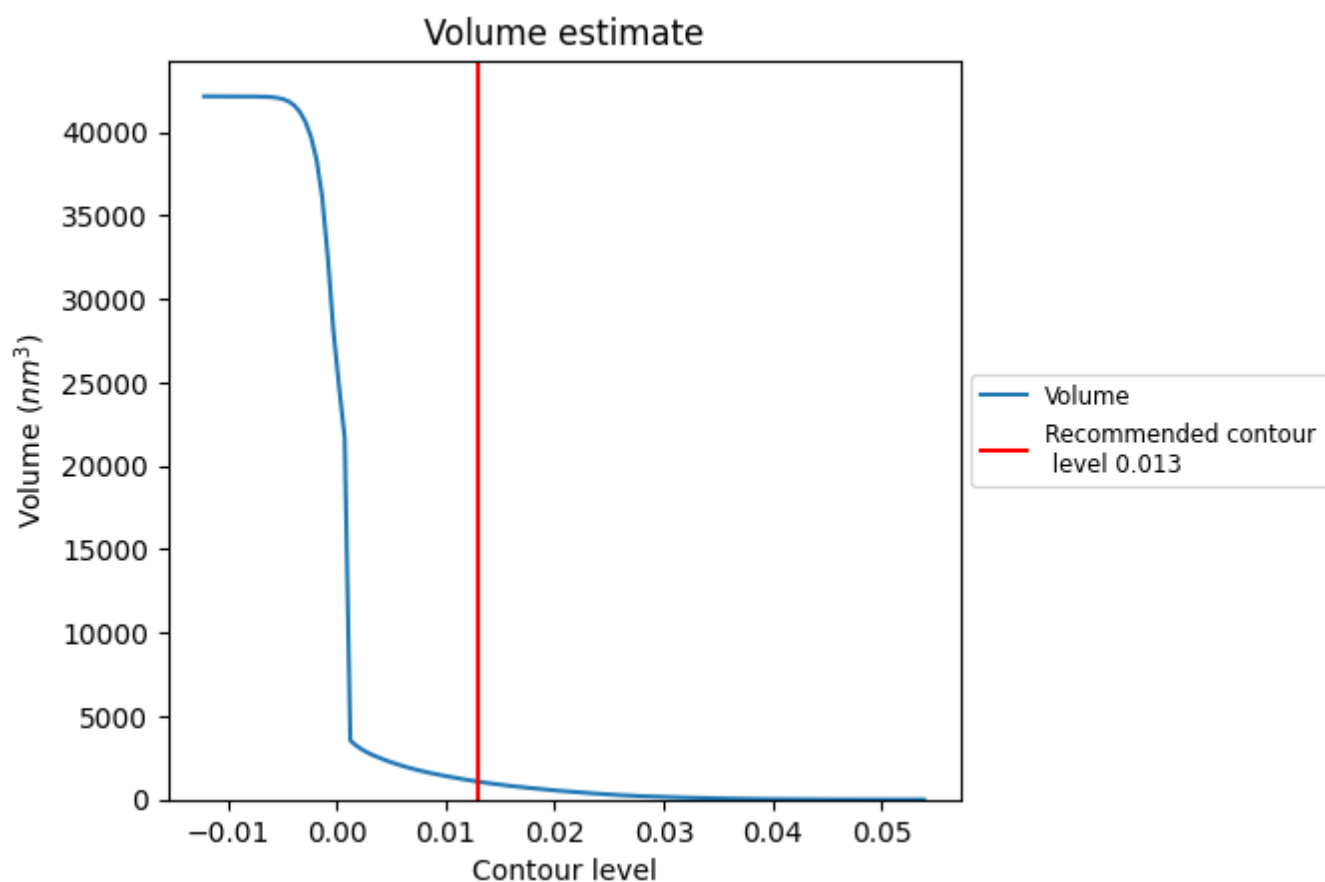
This section contains the results of statistical analysis of the map.

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.

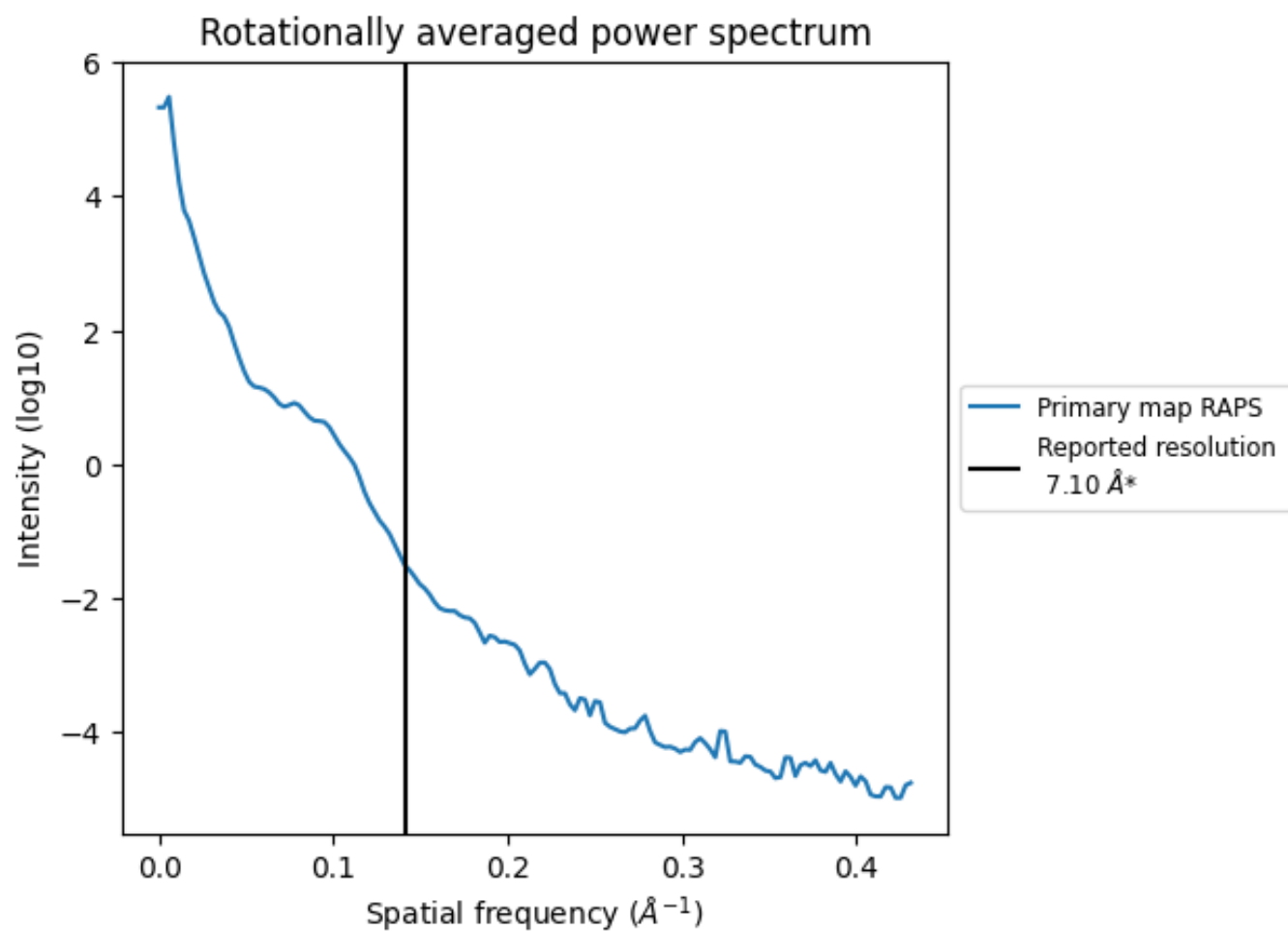
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1071 nm³; this corresponds to an approximate mass of 967 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 0.141 Å⁻¹

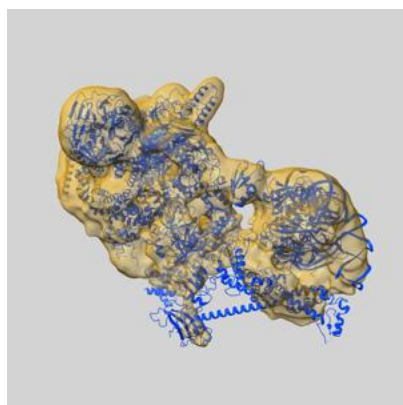
8 Fourier-Shell correlation ⓘ

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

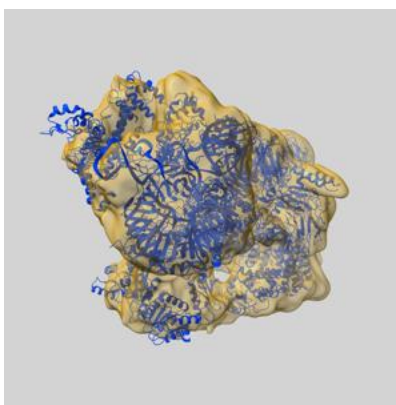
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-10689 and PDB model 6Y5Q. Per-residue inclusion information can be found in section [3](#) on page [8](#).

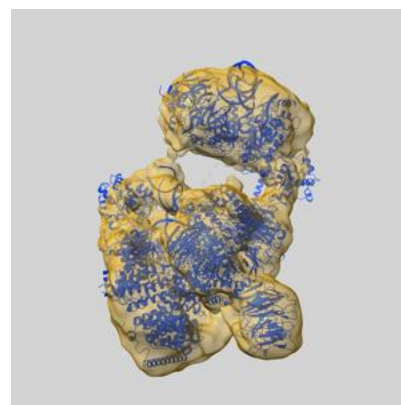
9.1 Map-model overlay [i](#)



X



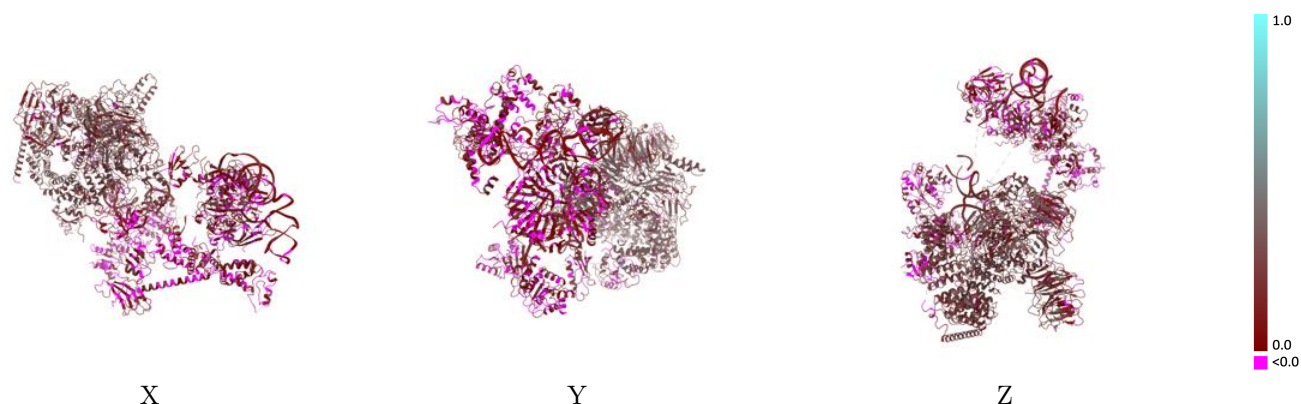
Y



Z

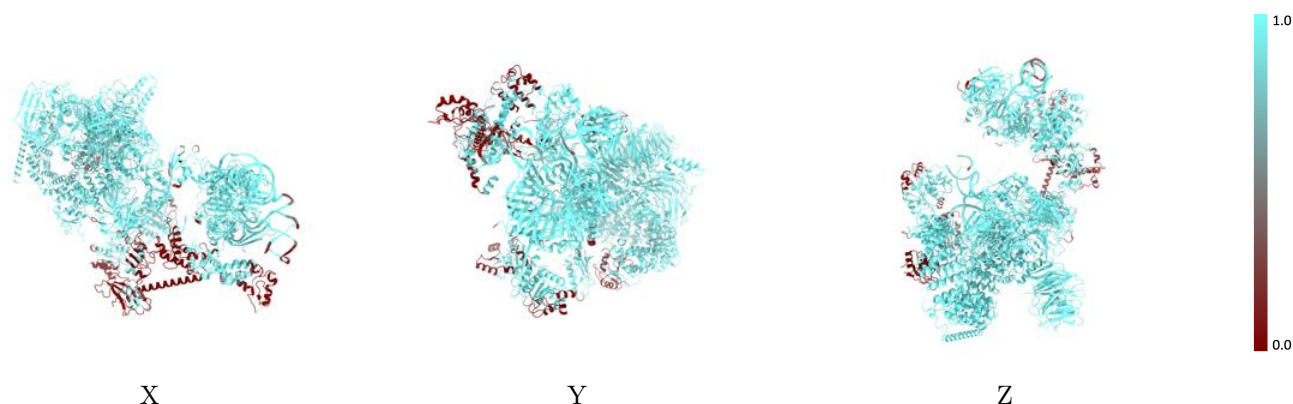
The images above show the 3D surface view of the map at the recommended contour level 0.013 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



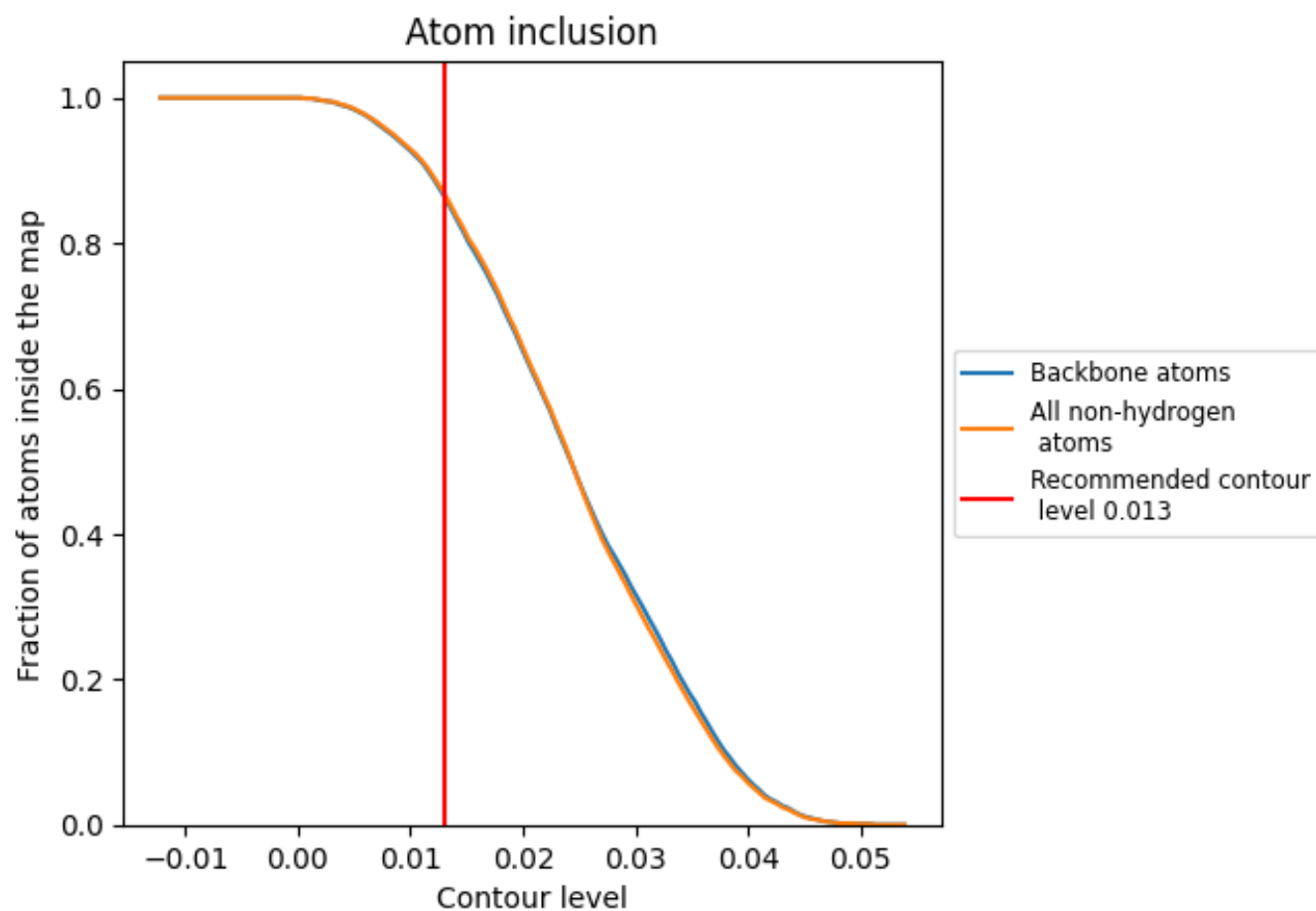
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.013).

9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 87% 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 (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8690	 0.1430
2	 0.9090	 0.0960
6	 0.1980	 0.0030
7	 0.1950	 0.0480
8	 0.9290	 0.1630
9	 0.6950	 0.0890
a	 0.9850	 0.1140
b	 0.9150	 0.1170
h	 0.9830	 0.0630
i	 0.9090	 0.0510
j	 0.9220	 0.0350
k	 1.0000	 0.0770
l	 1.0000	 0.0660
m	 0.9760	 0.1140
n	 0.9530	 0.0180
o	 0.6280	 0.0290
p	 0.7060	 0.0530
q	 0.9630	 0.1370
u	 0.9720	 0.2440
v	 1.0000	 0.2320
x	 1.0000	 0.2670
y	 0.9610	 0.1970
z	 0.0030	 0.0310

