



Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 05:57 PM UTC

PDB ID : 5OSG / pdb_00005osg
EMDB ID : EMD-8343
Title : Structure of KSRP in context of Leishmania donovani 80S
Authors : Brito Querido, J.; Mancera-Martinez, E.; Vicens, Q.; Bochler, A.; Chicher, J.; Simonetti, A.; Hashem, Y.
Deposited on : 2017-08-17
Resolution : 2.90 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

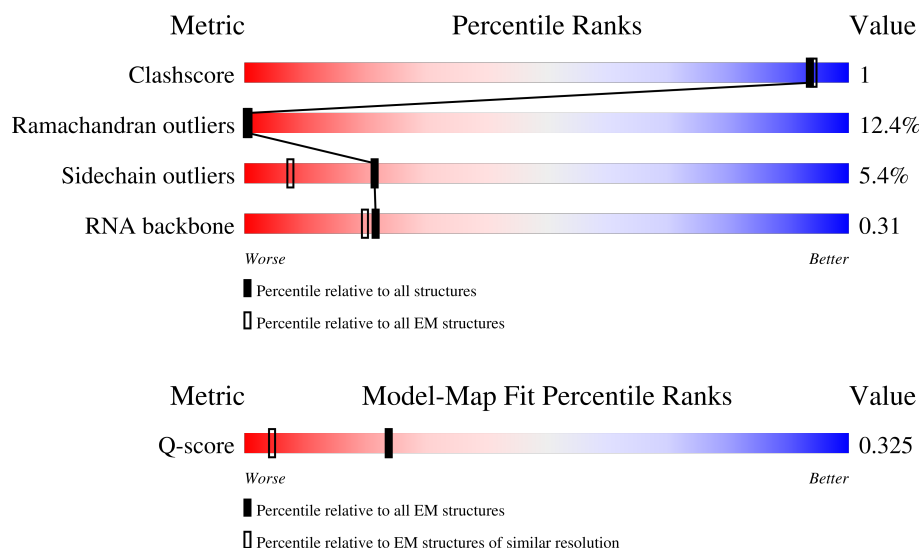
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.90 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	13054 (2.40 - 3.40)

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	h	235	
2	2	2205	
3	P	249	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 3465 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 RNA binding protein, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	h	173	Total	C	N	O	S	0	0
			1348	858	249	238	3		

- Molecule 2 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	2	88	Total	C	N	O	P	0	0
			1841	832	320	607	82		

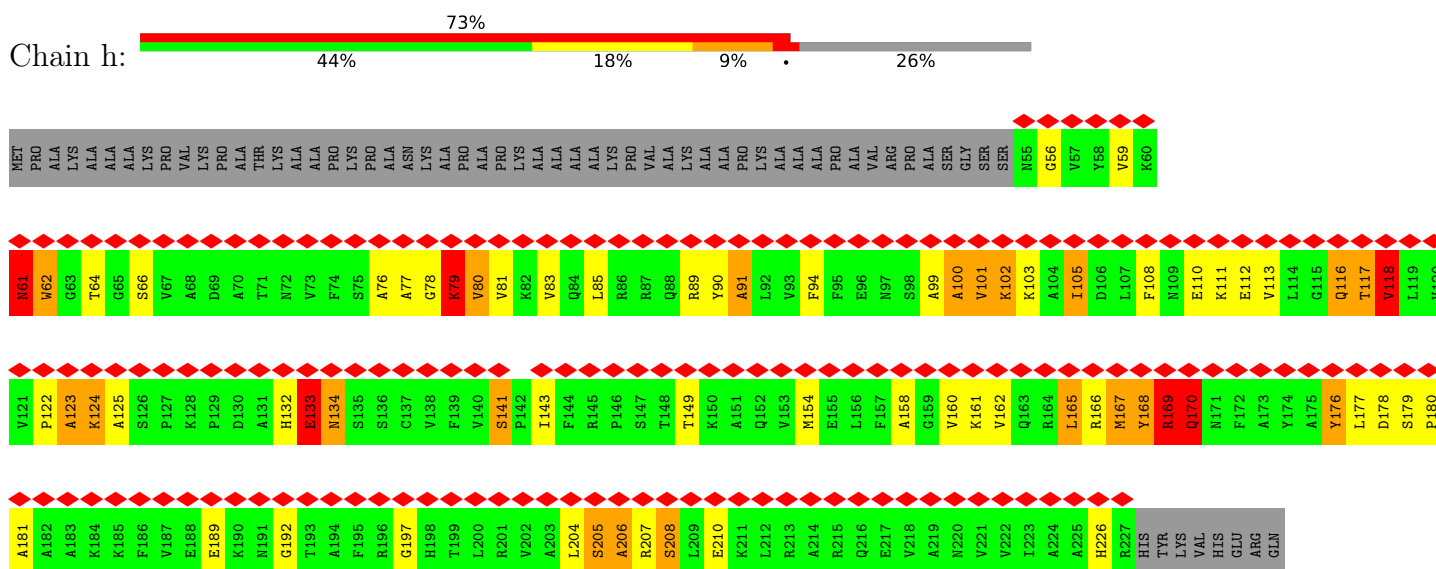
- Molecule 3 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	P	33	Total	C	N	O	0	0
			276	165	66	45		

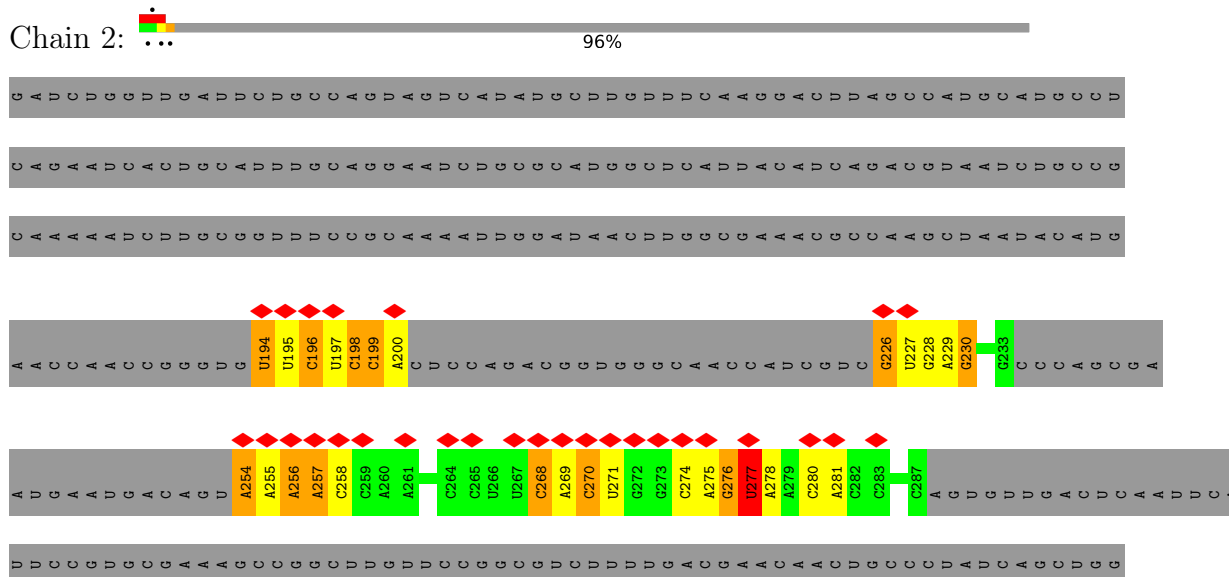
3 Residue-property plots

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.

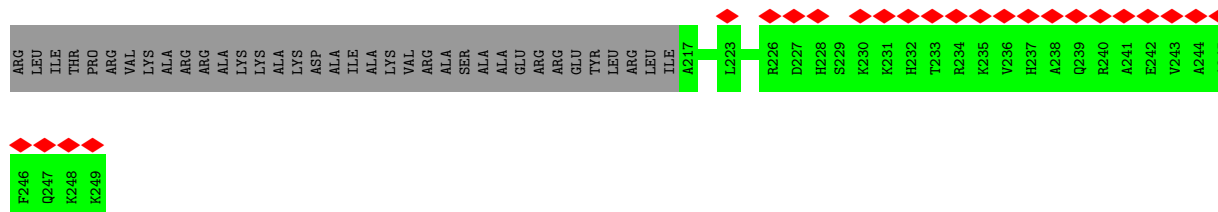
• Molecule 1: RNA binding protein, putative



• Molecule 2: 18S rRNA







4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	213108	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 ($e^-/\text{\AA}^2$)	20	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 BASE (4k x 4k)	Depositor
Maximum map value	0.039	Depositor
Minimum map value	-0.020	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	317.31998, 317.31998, 317.31998	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.7932999, 0.7932999, 0.7932999	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	h	1.27	0/1373	1.88	49/1854 (2.6%)
2	2	0.92	0/2051	1.22	15/3182 (0.5%)
3	P	1.41	0/279	1.62	0/366
All	All	1.10	0/3703	1.50	64/5402 (1.2%)

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	h	0	29
2	2	0	5
All	All	0	34

There are no bond length outliers.

All (64) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	257	A	P-O3'-C3'	11.89	138.04	120.20
2	2	226	G	P-O3'-C3'	9.88	135.02	120.20
2	2	268	C	P-O3'-C3'	9.69	134.73	120.20
2	2	256	A	P-O3'-C3'	9.54	134.51	120.20
2	2	254	A	P-O3'-C3'	9.21	134.02	120.20
2	2	276	G	P-O3'-C3'	9.13	133.90	120.20
1	h	170	GLN	CA-C-N	8.66	137.28	121.70
1	h	170	GLN	C-N-CA	8.66	137.28	121.70
2	2	194	U	P-O3'-C3'	8.37	132.76	120.20
2	2	196	C	P-O3'-C3'	8.25	132.57	120.20
2	2	198	C	P-O3'-C3'	7.95	132.12	120.20
2	2	270	C	P-O3'-C3'	7.92	132.08	120.20
1	h	133	GLU	CA-C-N	7.63	135.43	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	h	133	GLU	C-N-CA	7.63	135.43	121.70
1	h	205	SER	CA-C-N	7.55	135.28	121.70
1	h	205	SER	C-N-CA	7.55	135.28	121.70
1	h	102	LYS	CA-C-N	7.45	130.26	120.28
1	h	102	LYS	C-N-CA	7.45	130.26	120.28
2	2	824	C	P-O3'-C3'	7.02	130.73	120.20
1	h	94	PHE	CA-C-N	6.77	133.88	121.70
1	h	94	PHE	C-N-CA	6.77	133.88	121.70
1	h	116	GLN	CA-C-N	6.52	133.44	121.70
1	h	116	GLN	C-N-CA	6.52	133.44	121.70
1	h	160	VAL	CA-C-N	6.52	133.44	121.70
1	h	160	VAL	C-N-CA	6.52	133.44	121.70
1	h	132	HIS	N-CA-C	6.44	118.38	111.36
1	h	208	SER	CA-C-N	6.41	133.24	121.70
1	h	208	SER	C-N-CA	6.41	133.24	121.70
1	h	141	SER	CA-C-N	6.20	126.21	119.89
1	h	141	SER	C-N-CA	6.20	126.21	119.89
2	2	199	C	P-O3'-C3'	6.19	129.48	120.20
1	h	100	ALA	CA-C-N	6.17	132.80	121.70
1	h	100	ALA	C-N-CA	6.17	132.80	121.70
2	2	198	C	C2'-C3'-O3'	6.15	122.92	113.70
1	h	61	ASN	N-CA-CB	6.12	120.83	110.49
1	h	167	MET	CA-C-N	5.83	132.19	121.70
1	h	167	MET	C-N-CA	5.83	132.19	121.70
1	h	113	VAL	CA-C-N	5.76	132.07	121.70
1	h	113	VAL	C-N-CA	5.76	132.07	121.70
1	h	134	ASN	CA-CB-CG	5.66	118.26	112.60
1	h	105	ILE	CA-C-N	5.65	127.79	120.44
1	h	105	ILE	C-N-CA	5.65	127.79	120.44
1	h	101	VAL	CA-C-N	5.64	128.16	120.54
1	h	101	VAL	C-N-CA	5.64	128.16	120.54
1	h	226	HIS	CA-C-N	5.56	131.72	121.70
1	h	226	HIS	C-N-CA	5.56	131.72	121.70
1	h	169	ARG	CA-C-N	5.54	131.68	121.70
1	h	169	ARG	C-N-CA	5.54	131.68	121.70
1	h	103	LYS	CA-C-N	5.43	127.82	120.38
1	h	103	LYS	C-N-CA	5.43	127.82	120.38
1	h	165	LEU	N-CA-C	5.43	117.74	110.35
2	2	277	U	P-O3'-C3'	5.39	128.28	120.20
1	h	90	TYR	N-CA-C	-5.36	106.67	114.12
1	h	149	THR	N-CA-C	-5.35	101.40	109.85
1	h	143	ILE	N-CA-C	-5.32	100.94	108.65

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	h	62	TRP	CA-C-N	5.20	131.60	121.41
1	h	62	TRP	C-N-CA	5.20	131.60	121.41
1	h	166	ARG	CA-C-N	5.12	130.93	121.70
1	h	166	ARG	C-N-CA	5.12	130.93	121.70
1	h	168	TYR	CA-C-N	5.11	131.31	121.54
1	h	168	TYR	C-N-CA	5.11	131.31	121.54
1	h	176	TYR	CA-C-N	5.08	131.24	121.54
1	h	176	TYR	C-N-CA	5.08	131.24	121.54
2	2	199	C	C2'-C3'-O3'	5.00	117.00	109.50

There are no chirality outliers.

All (34) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	2	229	A	Sidechain
2	2	230	G	Sidechain
2	2	277	U	Sidechain
2	2	812	A	Sidechain
2	2	823	G	Sidechain
1	h	110	GLU	Peptide
1	h	112	GLU	Peptide
1	h	117	THR	Peptide
1	h	118	VAL	Peptide
1	h	123	ALA	Peptide
1	h	124	LYS	Peptide
1	h	125	ALA	Peptide
1	h	133	GLU	Peptide
1	h	141	SER	Peptide
1	h	161	LYS	Peptide
1	h	176	TYR	Sidechain,Peptide
1	h	189	GLU	Peptide
1	h	192	GLY	Peptide
1	h	207	ARG	Peptide
1	h	56	GLY	Peptide
1	h	61	ASN	Peptide
1	h	62	TRP	Peptide
1	h	64	THR	Peptide
1	h	66	SER	Peptide
1	h	76	ALA	Peptide
1	h	78	GLY	Peptide
1	h	79	LYS	Peptide
1	h	80	VAL	Peptide

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Mol	Chain	Res	Type	Group
1	h	81	VAL	Peptide
1	h	83	VAL	Peptide
1	h	89	ARG	Peptide
1	h	91	ALA	Mainchain,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	h	1348	0	1386	6	0
2	2	1841	0	956	2	0
3	P	276	0	288	0	0
All	All	3465	0	2630	8	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 1.

All (8) 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)
1:h:167:MET:H	1:h:168:TYR:HA	1.66	0.61
2:2:812:A:N1	2:2:823:G:N1	2.52	0.58
1:h:169:ARG:H	1:h:170:GLN:HA	1.75	0.51
2:2:812:A:C2	2:2:823:G:C2	2.98	0.51
1:h:205:SER:HA	1:h:206:ALA:HB3	1.99	0.44
1:h:59:VAL:HB	1:h:91:ALA:HB3	1.99	0.43
1:h:116:GLN:HB3	1:h:117:THR:HA	2.01	0.42
1:h:101:VAL:HG22	1:h:102:LYS:H	1.86	0.41

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	h	171/235 (73%)	114 (67%)	32 (19%)	25 (15%)	0	0
3	P	31/249 (12%)	30 (97%)	1 (3%)	0	100	100
All	All	202/484 (42%)	144 (71%)	33 (16%)	25 (12%)	1	0

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	h	61	ASN
1	h	77	ALA
1	h	80	VAL
1	h	108	PHE
1	h	111	LYS
1	h	118	VAL
1	h	158	ALA
1	h	169	ARG
1	h	179	SER
1	h	210	GLU
1	h	100	ALA
1	h	122	PRO
1	h	123	ALA
1	h	178	ASP
1	h	181	ALA
1	h	133	GLU
1	h	134	ASN
1	h	170	GLN
1	h	197	GLY
1	h	79	LYS
1	h	154	MET
1	h	99	ALA
1	h	206	ALA
1	h	105	ILE
1	h	180	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	h	140/179 (78%)	131 (94%)	9 (6%)	16	44
3	P	27/208 (13%)	27 (100%)	0	100	100
All	All	167/387 (43%)	158 (95%)	9 (5%)	21	51

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	h	79	LYS
1	h	85	LEU
1	h	118	VAL
1	h	124	LYS
1	h	162	VAL
1	h	165	LEU
1	h	177	LEU
1	h	204	LEU
1	h	208	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	h	97	ASN
1	h	132	HIS
1	h	226	HIS
3	P	225	GLN
3	P	228	HIS
3	P	232	HIS
3	P	237	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	2	85/2205 (3%)	29 (34%)	12 (14%)

All (29) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	2	195	U
2	2	197	U
2	2	198	C
2	2	199	C
2	2	200	A
2	2	227	U
2	2	228	G
2	2	230	G
2	2	255	A
2	2	256	A
2	2	257	A
2	2	258	C
2	2	269	A
2	2	270	C
2	2	271	U
2	2	275	A
2	2	277	U
2	2	278	A
2	2	280	C
2	2	281	A
2	2	799	U
2	2	819	G
2	2	820	C
2	2	821	A
2	2	822	U
2	2	824	C
2	2	825	C
2	2	826	A
2	2	945	G

All (12) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	2	194	U
2	2	196	C
2	2	198	C
2	2	226	G
2	2	254	A
2	2	256	A
2	2	257	A
2	2	268	C
2	2	270	C

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Mol	Chain	Res	Type
2	2	274	C
2	2	276	G
2	2	824	C

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

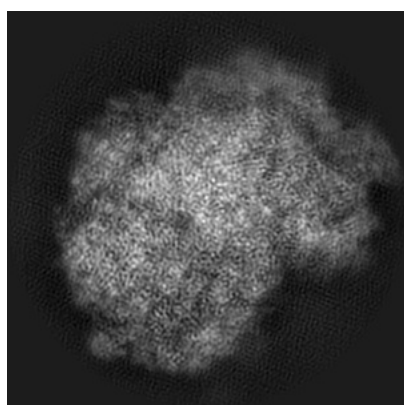
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8343. These allow visual inspection of the internal detail of the map and identification of artifacts.

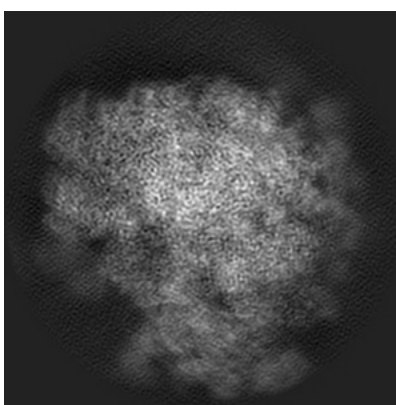
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

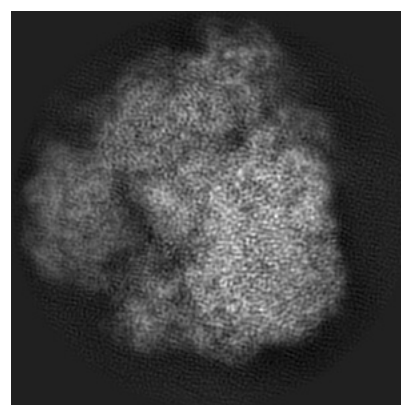
6.1.1 Primary map



X



Y

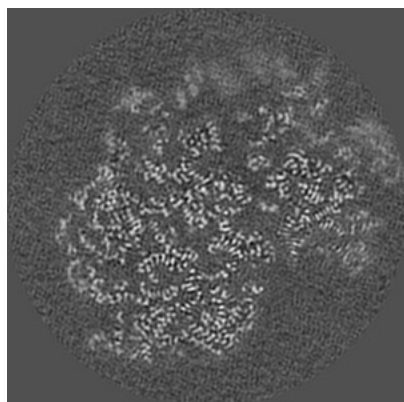


Z

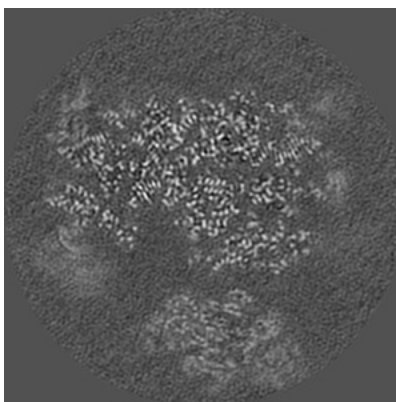
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

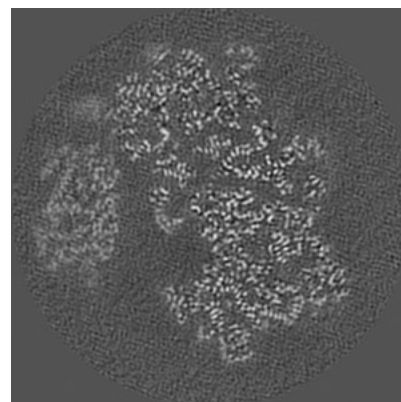
6.2.1 Primary map



X Index: 200



Y Index: 200

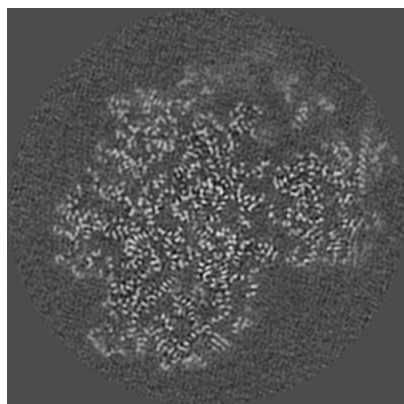


Z Index: 200

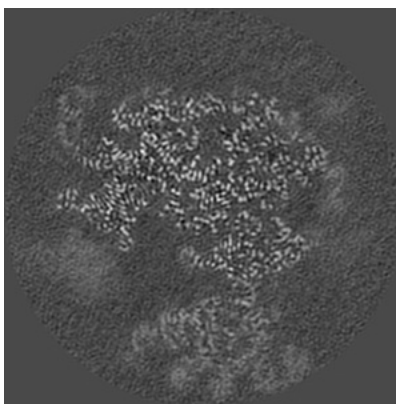
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

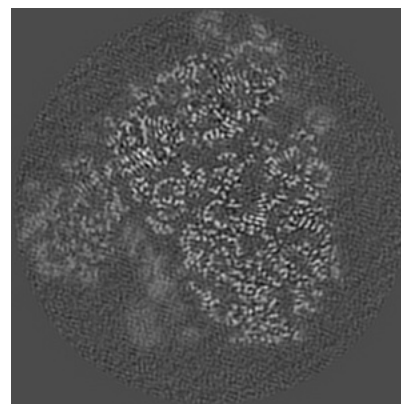
6.3.1 Primary map



X Index: 214



Y Index: 211

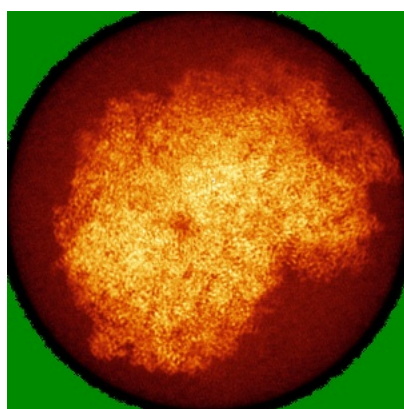


Z Index: 231

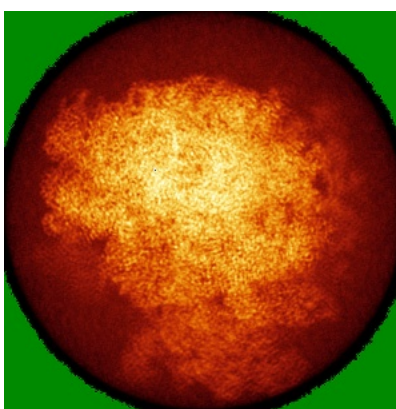
The images above show the largest variance slices of the map in three orthogonal directions.

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

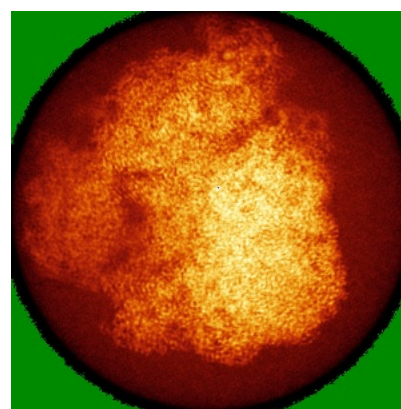
6.4.1 Primary map



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 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

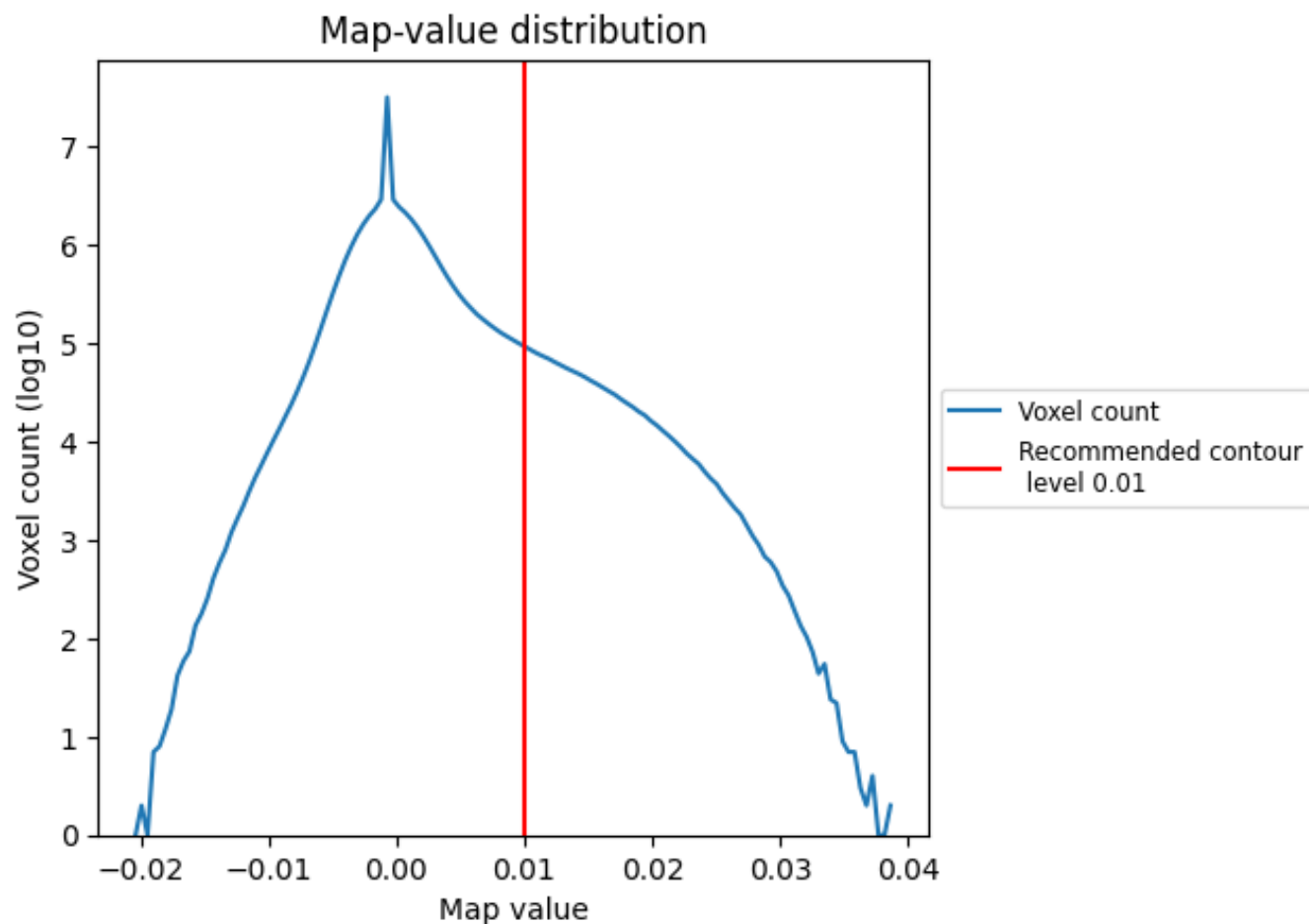
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

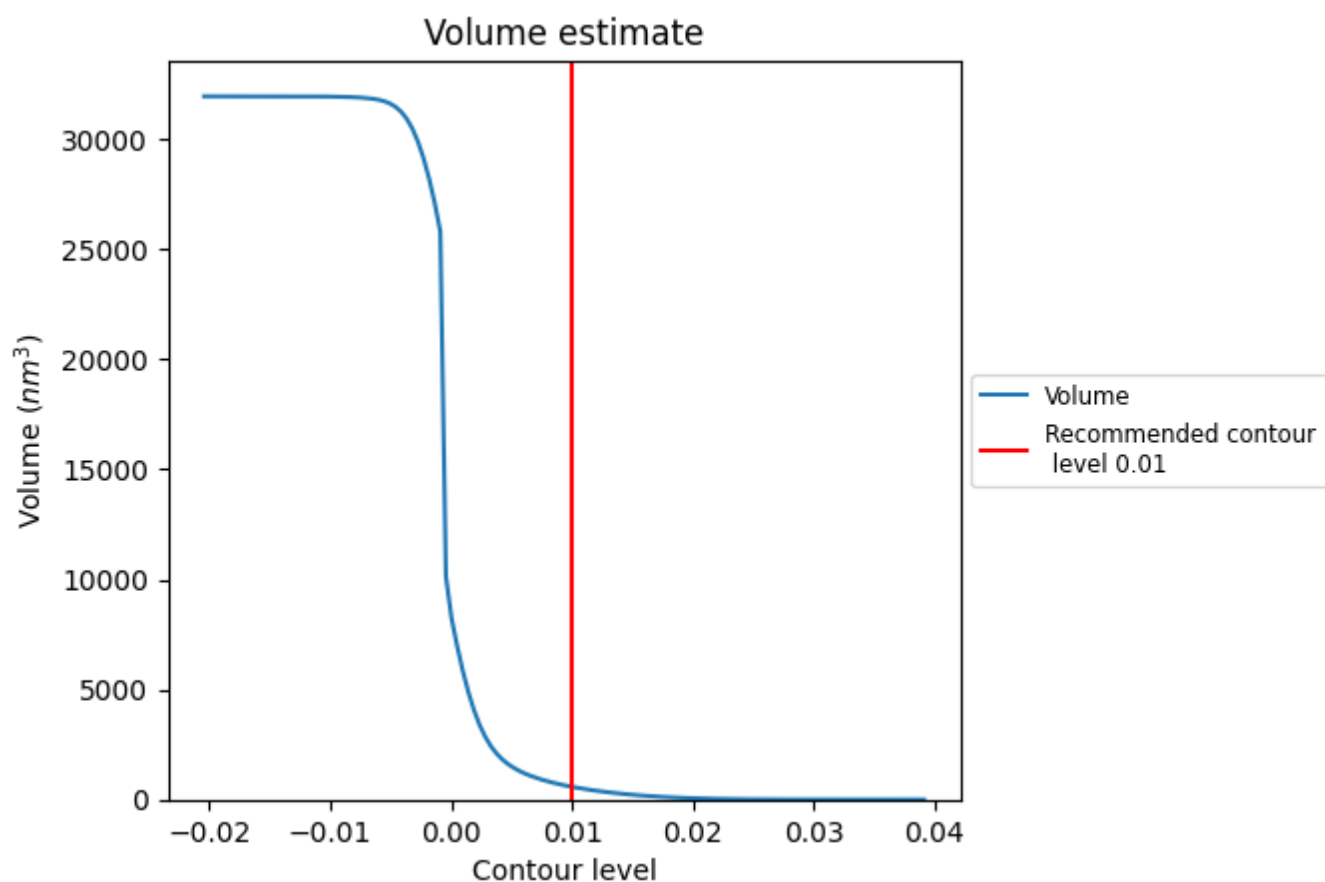
This section contains the results of statistical analysis of the map.

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.

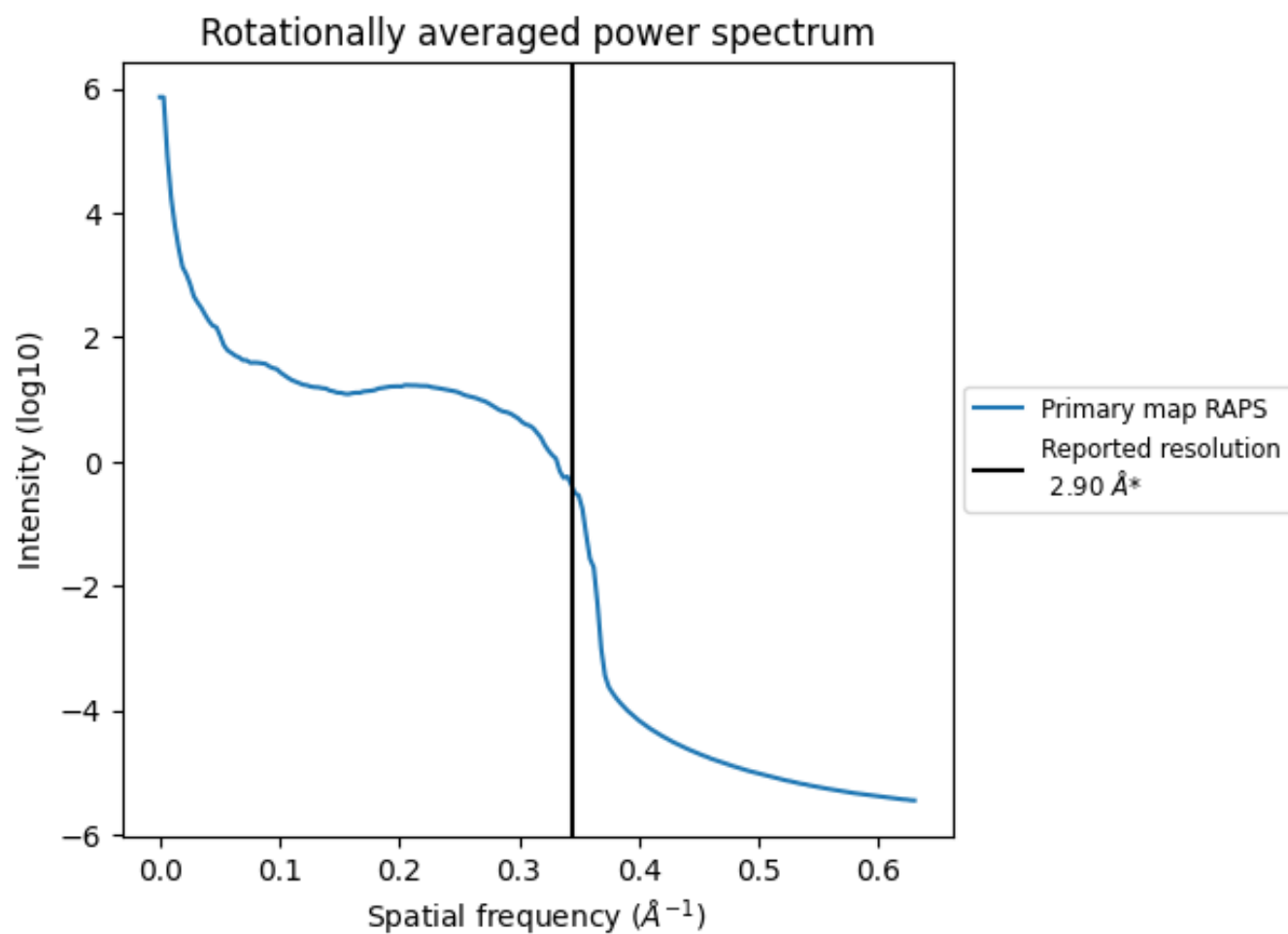
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 580 nm³; this corresponds to an approximate mass of 524 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 0.345 Å⁻¹

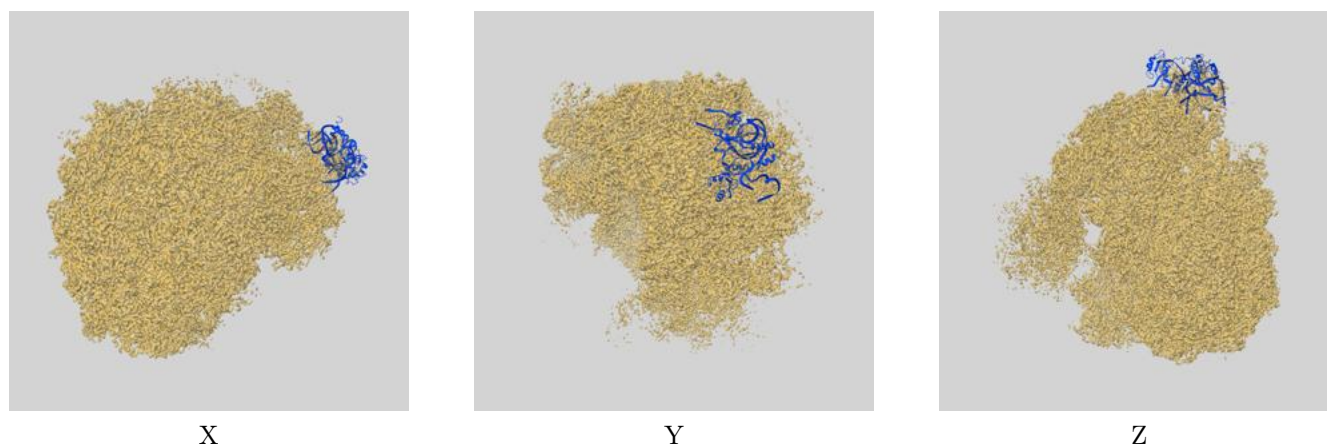
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

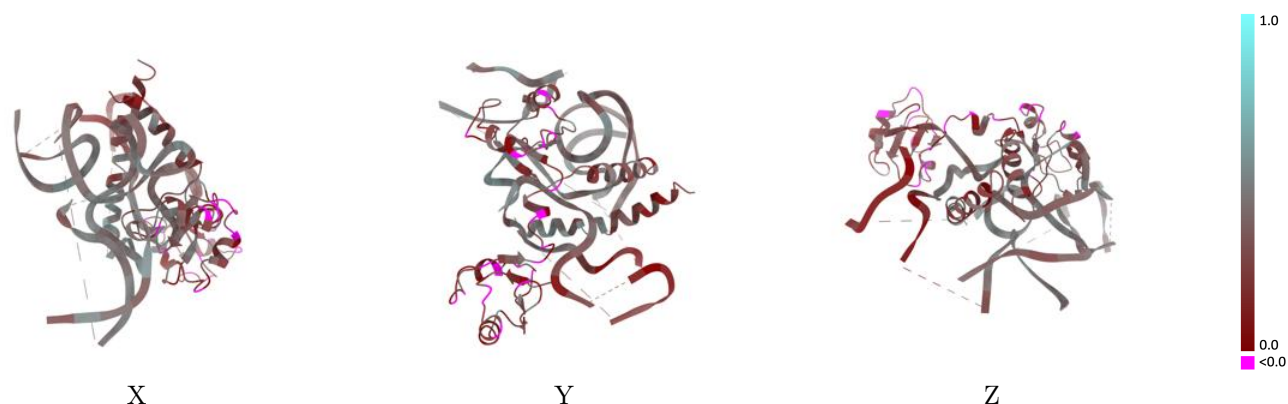
This section contains information regarding the fit between EMDB map EMD-8343 and PDB model 5OSG. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.01 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](#)



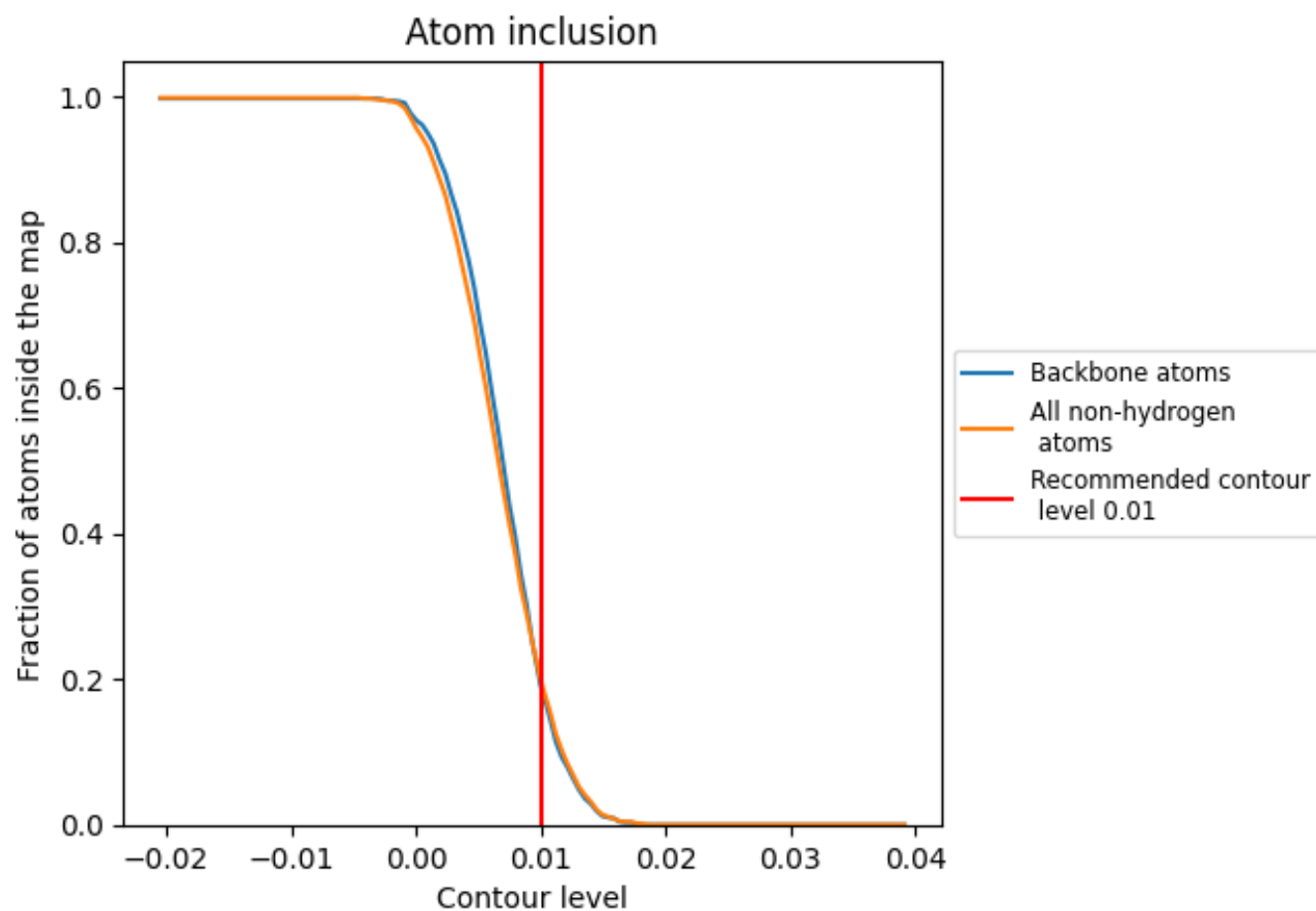
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).

9.4 Atom inclusion [i](#)



At the recommended contour level, 19% of all backbone atoms, 20% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.1990	0.3250
2	0.3060	0.3890
P	0.1970	0.3540
h	0.0490	0.2310

