



Full wwPDB EM Validation Report ⓘ

Mar 6, 2026 – 08:44 PM UTC

PDB ID : 8PR5 / pdb_00008pr5
EMDB ID : EMD-2855
Title : Structure of the autoinhibited dynactin p150glued projection
Authors : Singh, K.; Lau, C.K.; Manigrasso, G.; Gassmann, R.; Carter, A.P.
Deposited on : 2023-07-12
Resolution : 8.60 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

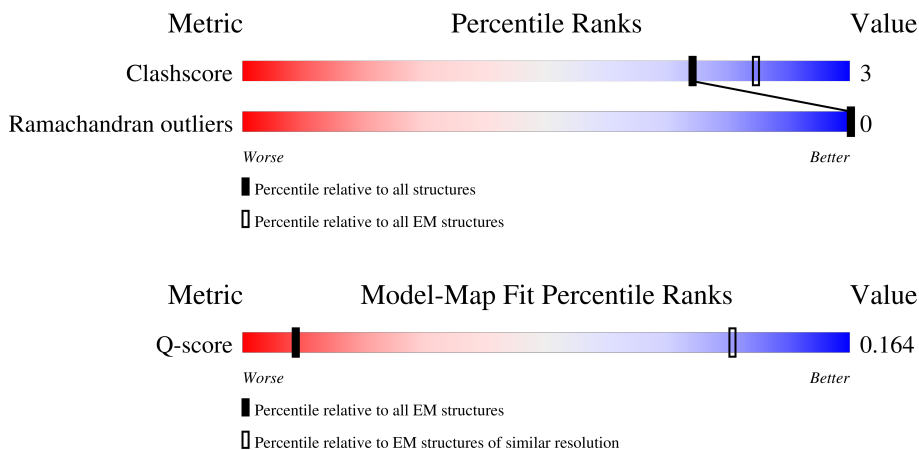
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

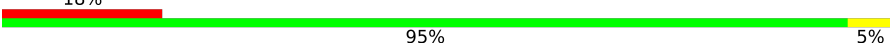
The reported resolution of this entry is 8.60 Å.

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	-
Q-score	-	25397	292 (8.10 - 9.10)

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	A	838	 18% 95% 5%
1	B	838	 23% 93% 6% .

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 8326 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.

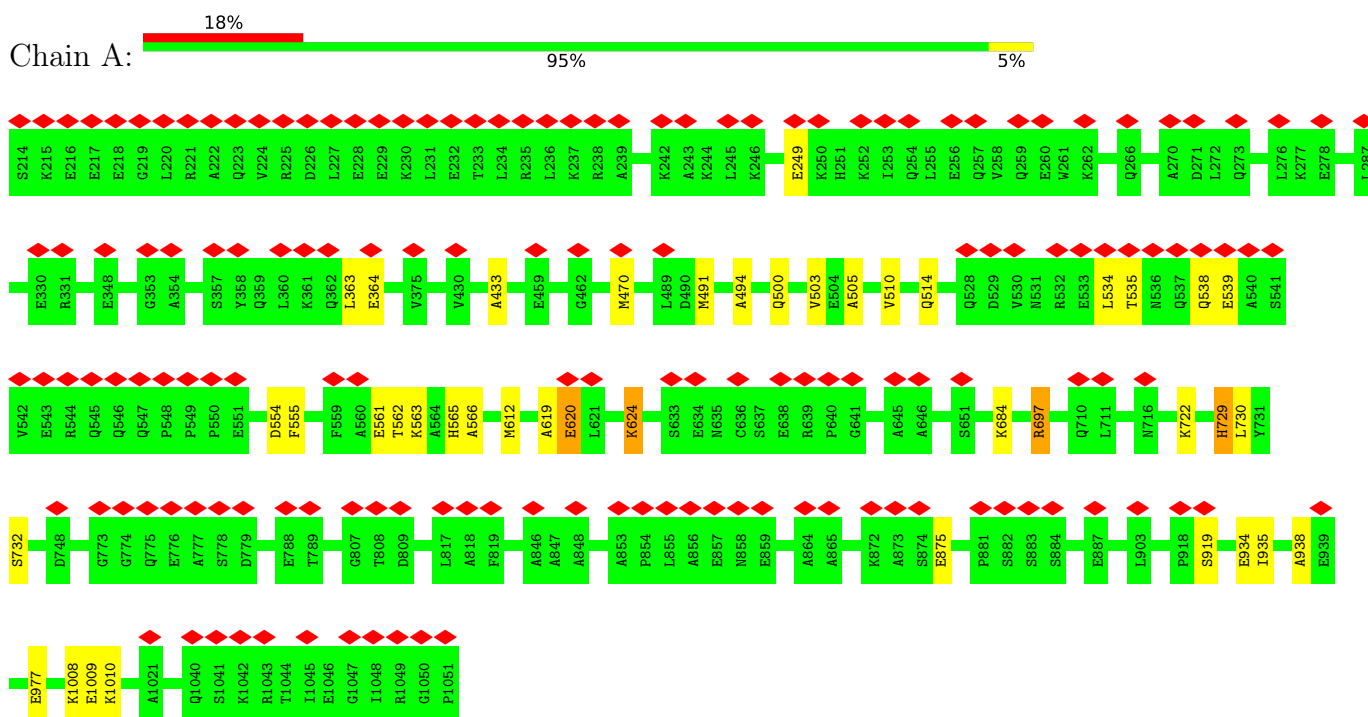
- Molecule 1 is a protein called Dynactin subunit 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	A	838	Total	C	N	O	0	0
			4163	2487	838	838		
1	B	838	Total	C	N	O	0	0
			4163	2487	838	838		

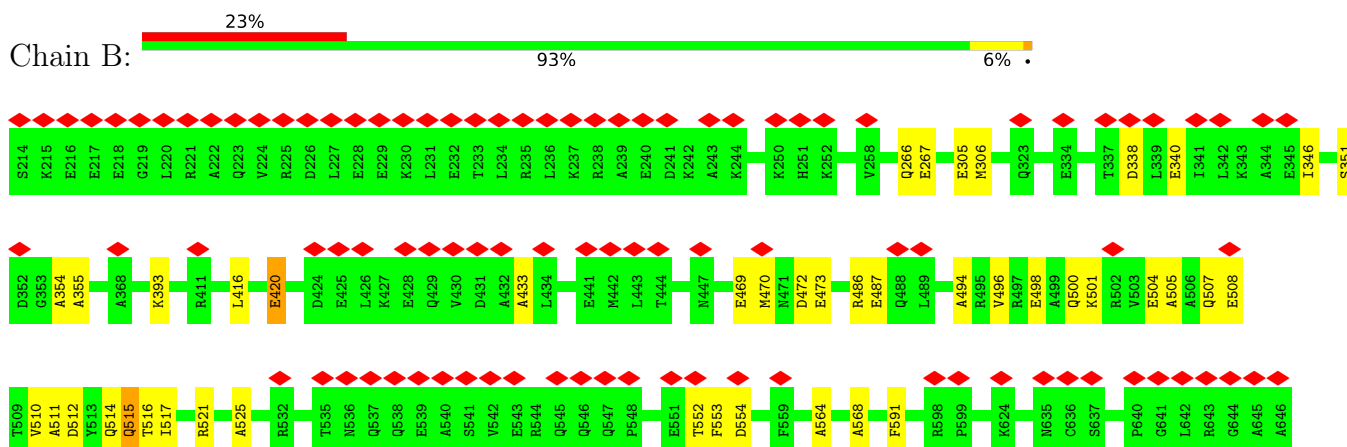
3 Residue-property plots [i](#)

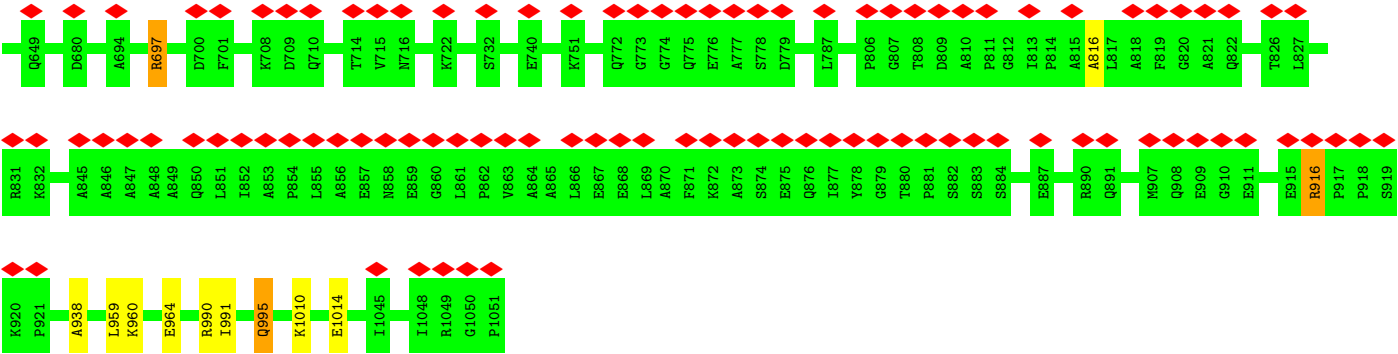
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Dynactin subunit 1



- Molecule 1: Dynactin subunit 1





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	12870	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 ($e^-/\text{\AA}^2$)	51	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	7000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.480	Depositor
Minimum map value	-0.233	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.088	Depositor
Map size (Å)	612.0, 612.0, 612.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.7, 1.7, 1.7	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	0.32	1/4162 (0.0%)	0.86	27/5809 (0.5%)
1	B	0.35	0/4162	0.86	37/5809 (0.6%)
All	All	0.34	1/8324 (0.0%)	0.86	64/11618 (0.6%)

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	A	0	2
1	B	0	2
All	All	0	4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	919	SER	C-N	-5.57	1.25	1.33

All (64) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	697	ARG	CB-CA-C	10.06	128.12	110.01
1	A	1010	LYS	N-CA-CB	9.28	123.46	110.01
1	B	393	LYS	CB-CA-C	9.07	125.80	109.29
1	B	473	GLU	N-CA-CB	8.94	123.26	110.12
1	A	470	MET	N-CA-CB	8.63	122.81	110.12
1	B	990	ARG	N-CA-CB	8.44	123.36	110.28
1	B	306	MET	N-CA-CB	8.21	122.30	109.82
1	A	364	GLU	N-CA-CB	7.98	121.85	110.12
1	B	591	PHE	CA-C-N	-7.85	98.92	122.71
1	B	591	PHE	C-N-CA	-7.85	98.92	122.71
1	B	470	MET	N-CA-CB	7.58	121.01	110.01

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	960	LYS	N-CA-CB	7.54	121.20	110.12
1	B	267	GLU	N-CA-CB	7.32	122.33	110.40
1	A	1010	LYS	CB-CA-C	-7.16	99.65	110.88
1	A	554	ASP	CA-C-N	-6.97	111.04	122.54
1	A	554	ASP	C-N-CA	-6.97	111.04	122.54
1	A	729	HIS	N-CA-CB	6.75	121.90	110.49
1	A	619	ALA	CA-C-N	-6.74	110.19	122.38
1	A	619	ALA	C-N-CA	-6.74	110.19	122.38
1	B	306	MET	CB-CA-C	-6.66	100.33	110.92
1	A	534	LEU	N-CA-C	-6.63	103.88	112.23
1	A	612	MET	CB-CA-C	6.58	123.14	110.17
1	A	624	LYS	N-CA-CB	-6.45	100.59	110.20
1	A	620	GLU	N-CA-CB	6.44	120.29	110.44
1	A	722	LYS	N-CA-CB	-6.40	100.73	110.33
1	B	473	GLU	CB-CA-C	-6.29	100.34	110.79
1	A	684	LYS	N-CA-CB	6.29	119.47	110.16
1	B	266	GLN	CA-C-N	-6.26	110.19	121.14
1	B	266	GLN	C-N-CA	-6.26	110.19	121.14
1	A	470	MET	CB-CA-C	-6.14	100.60	110.79
1	B	420	GLU	N-CA-CB	-6.12	101.15	110.26
1	A	1008	LYS	N-CA-C	-6.10	105.80	113.18
1	B	995	GLN	CB-CA-C	6.00	121.73	109.67
1	A	249	GLU	CB-CA-C	5.90	121.53	109.67
1	B	916	ARG	CB-CA-C	5.88	117.84	109.08
1	A	1009	GLU	CA-C-N	-5.87	112.81	120.44
1	A	1009	GLU	C-N-CA	-5.87	112.81	120.44
1	B	995	GLN	N-CA-CB	-5.73	101.74	110.33
1	A	697	ARG	CB-CA-C	5.72	120.55	110.37
1	B	1010	LYS	N-CA-CB	5.67	118.56	110.16
1	A	722	LYS	CB-CA-C	5.67	121.06	109.67
1	B	420	GLU	CB-CA-C	5.65	120.79	110.11
1	B	470	MET	CB-CA-C	-5.64	102.02	110.88
1	B	486	ARG	CA-C-N	-5.63	112.18	122.38
1	B	486	ARG	C-N-CA	-5.63	112.18	122.38
1	B	959	LEU	CA-C-N	-5.62	112.75	120.28
1	B	959	LEU	C-N-CA	-5.62	112.75	120.28
1	B	697	ARG	N-CA-CB	-5.58	101.90	110.44
1	B	515	GLN	N-CA-C	-5.49	106.08	112.89
1	B	990	ARG	CB-CA-C	-5.43	100.23	110.67
1	B	504	GLU	N-CA-CB	5.42	119.87	110.39
1	B	964	GLU	CB-CA-C	5.34	120.57	109.95
1	A	875	GLU	CA-C-N	-5.23	112.92	122.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	875	GLU	C-N-CA	-5.23	112.92	122.38
1	A	555	PHE	N-CA-CB	5.22	118.22	110.49
1	B	393	LYS	N-CA-CB	-5.22	102.86	110.53
1	B	1014	GLU	N-CA-CB	5.22	117.80	110.12
1	B	472	ASP	CA-C-N	-5.21	113.30	120.28
1	B	472	ASP	C-N-CA	-5.21	113.30	120.28
1	B	487	GLU	N-CA-CB	5.21	118.41	110.44
1	B	469	GLU	CA-C-N	-5.11	113.79	120.44
1	B	469	GLU	C-N-CA	-5.11	113.79	120.44
1	A	363	LEU	CA-C-N	-5.05	113.52	120.28
1	A	363	LEU	C-N-CA	-5.05	113.52	120.28

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	697	ARG	Peptide
1	A	977	GLU	Peptide
1	B	305	GLU	Peptide
1	B	697	ARG	Mainchain

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	A	4163	0	1952	18	0
1	B	4163	0	1952	26	0
All	All	8326	0	3904	39	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 (39) 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:B:515:GLN:HA	1:B:553:PHE:H	1.54	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:433:ALA:HB1	1:B:433:ALA:HB1	1.74	0.69
1:A:500:GLN:O	1:A:503:VAL:N	2.26	0.68
1:A:620:GLU:O	1:A:624:LYS:CB	2.42	0.67
1:B:508:GLU:HA	1:B:511:ALA:CB	2.26	0.66
1:A:729:HIS:O	1:A:732:SER:N	2.31	0.64
1:B:508:GLU:HA	1:B:511:ALA:HB3	1.79	0.63
1:A:561:GLU:O	1:A:565:HIS:CB	2.47	0.62
1:A:433:ALA:CB	1:B:433:ALA:HB1	2.30	0.61
1:A:938:ALA:HB1	1:B:938:ALA:HB1	1.87	0.57
1:B:517:ILE:O	1:B:521:ARG:CB	2.53	0.56
1:B:496:VAL:O	1:B:500:GLN:CB	2.55	0.55
1:A:510:VAL:O	1:A:514:GLN:CB	2.55	0.54
1:B:346:ILE:O	1:B:354:ALA:HB1	2.07	0.54
1:A:505:ALA:HB2	1:B:568:ALA:HB2	1.89	0.54
1:B:507:GLN:O	1:B:511:ALA:HB2	2.08	0.53
1:A:535:THR:HA	1:A:538:GLN:CB	2.40	0.52
1:A:491:MET:HA	1:A:494:ALA:HB3	1.91	0.51
1:A:934:GLU:O	1:A:935:ILE:C	2.54	0.50
1:A:505:ALA:HB1	1:B:564:ALA:O	2.11	0.49
1:A:729:HIS:O	1:A:730:LEU:C	2.56	0.48
1:B:512:ASP:O	1:B:516:THR:CB	2.62	0.48
1:B:552:THR:O	1:B:554:ASP:N	2.47	0.47
1:B:508:GLU:O	1:B:511:ALA:HB3	2.15	0.47
1:B:510:VAL:O	1:B:514:GLN:CB	2.63	0.46
1:B:508:GLU:HA	1:B:511:ALA:HB2	1.95	0.46
1:B:494:ALA:O	1:B:498:GLU:CB	2.65	0.45
1:B:991:ILE:O	1:B:995:GLN:CB	2.65	0.44
1:B:508:GLU:CA	1:B:511:ALA:HB3	2.47	0.44
1:A:535:THR:C	1:A:538:GLN:H	2.26	0.43
1:B:416:LEU:O	1:B:420:GLU:CB	2.66	0.43
1:B:816:ALA:HB2	1:B:916:ARG:CB	2.49	0.43
1:A:563:LYS:O	1:A:566:ALA:HB3	2.19	0.42
1:B:351:SER:HA	1:B:355:ALA:HB3	2.00	0.42
1:A:561:GLU:O	1:A:562:THR:C	2.63	0.42
1:B:521:ARG:O	1:B:525:ALA:CB	2.68	0.41
1:A:535:THR:O	1:A:539:GLU:N	2.44	0.40
1:B:501:LYS:O	1:B:505:ALA:HB2	2.21	0.40
1:B:338:ASP:C	1:B:340:GLU:N	2.77	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	836/838 (100%)	815 (98%)	21 (2%)	0	100	100
1	B	836/838 (100%)	817 (98%)	19 (2%)	0	100	100
All	All	1672/1676 (100%)	1632 (98%)	40 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

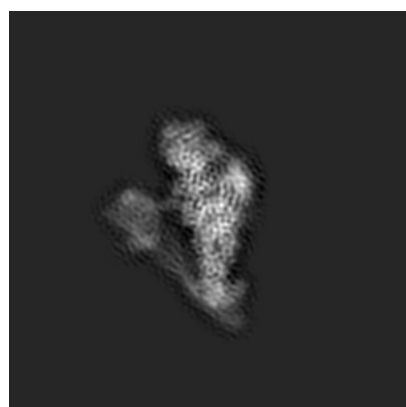
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-2855. These allow visual inspection of the internal detail of the map and identification of artifacts.

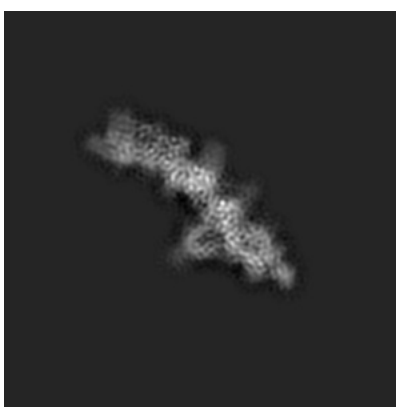
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

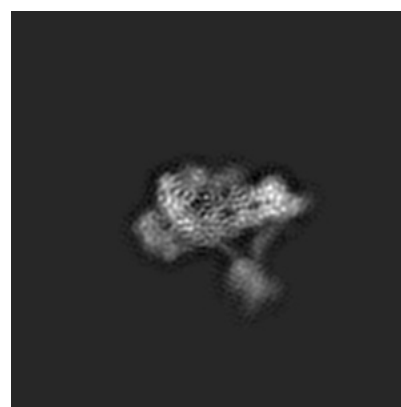
6.1.1 Primary map



X



Y

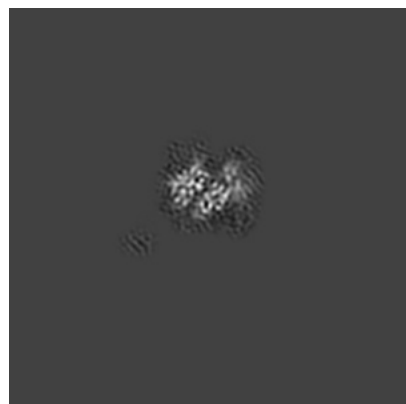


Z

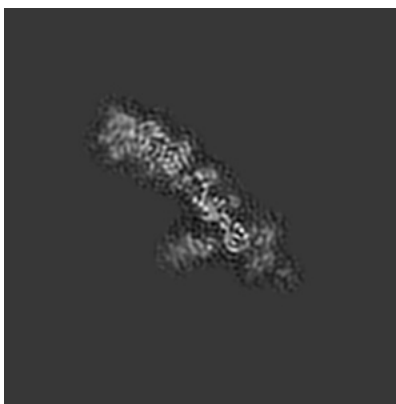
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

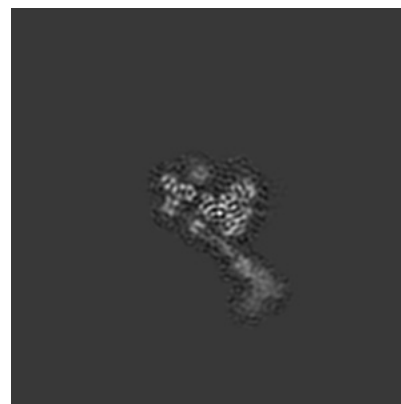
6.2.1 Primary map



X Index: 180



Y Index: 180

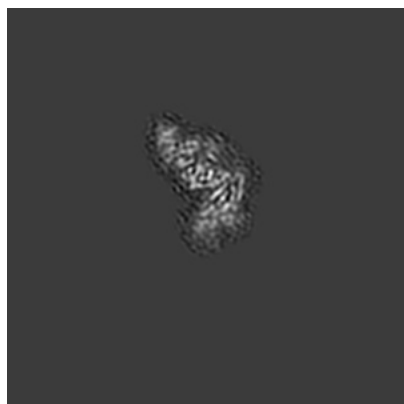


Z Index: 180

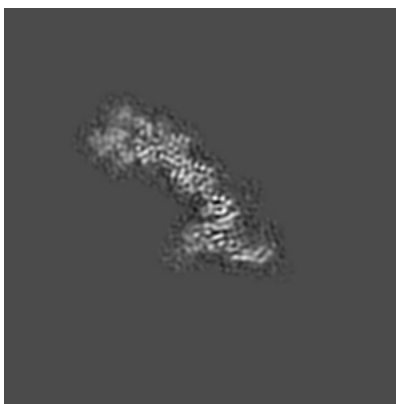
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

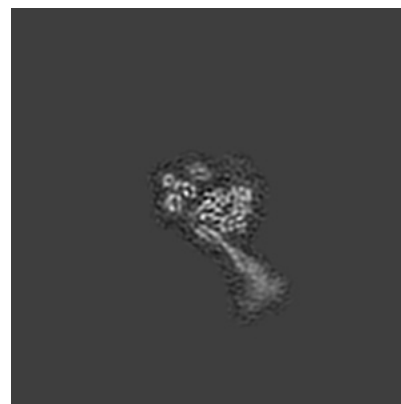
6.3.1 Primary map



X Index: 147



Y Index: 191

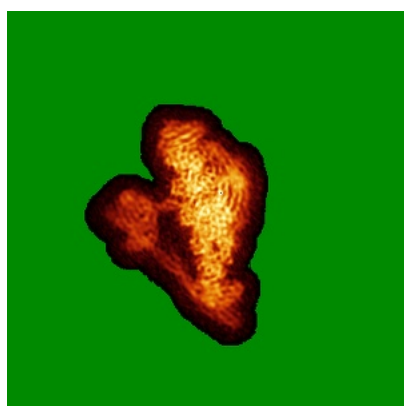


Z Index: 184

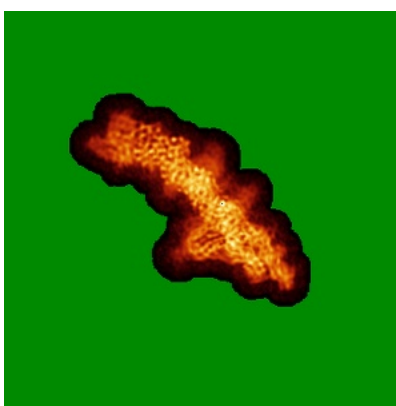
The images above show the largest variance slices of the map in three orthogonal directions.

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

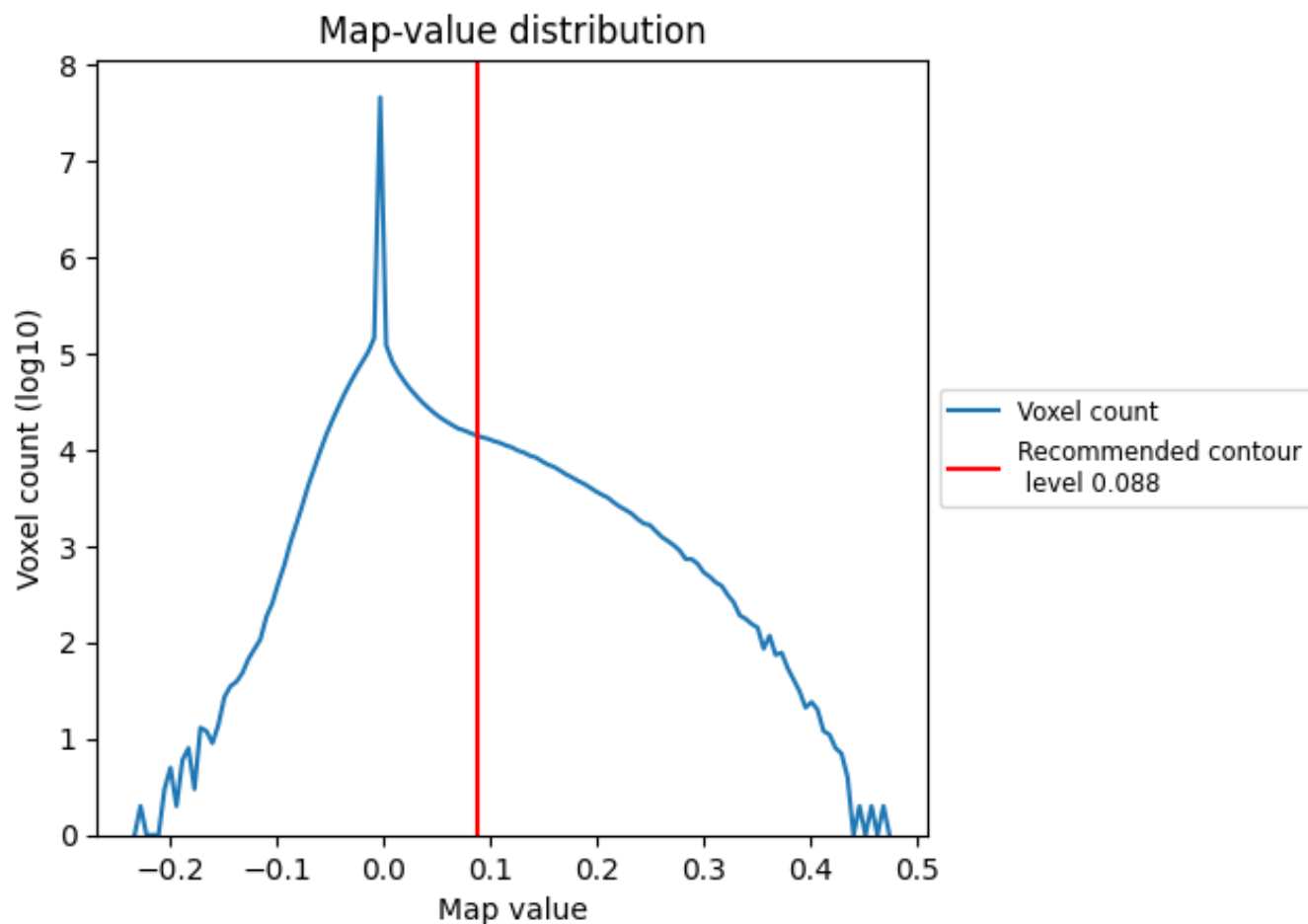
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

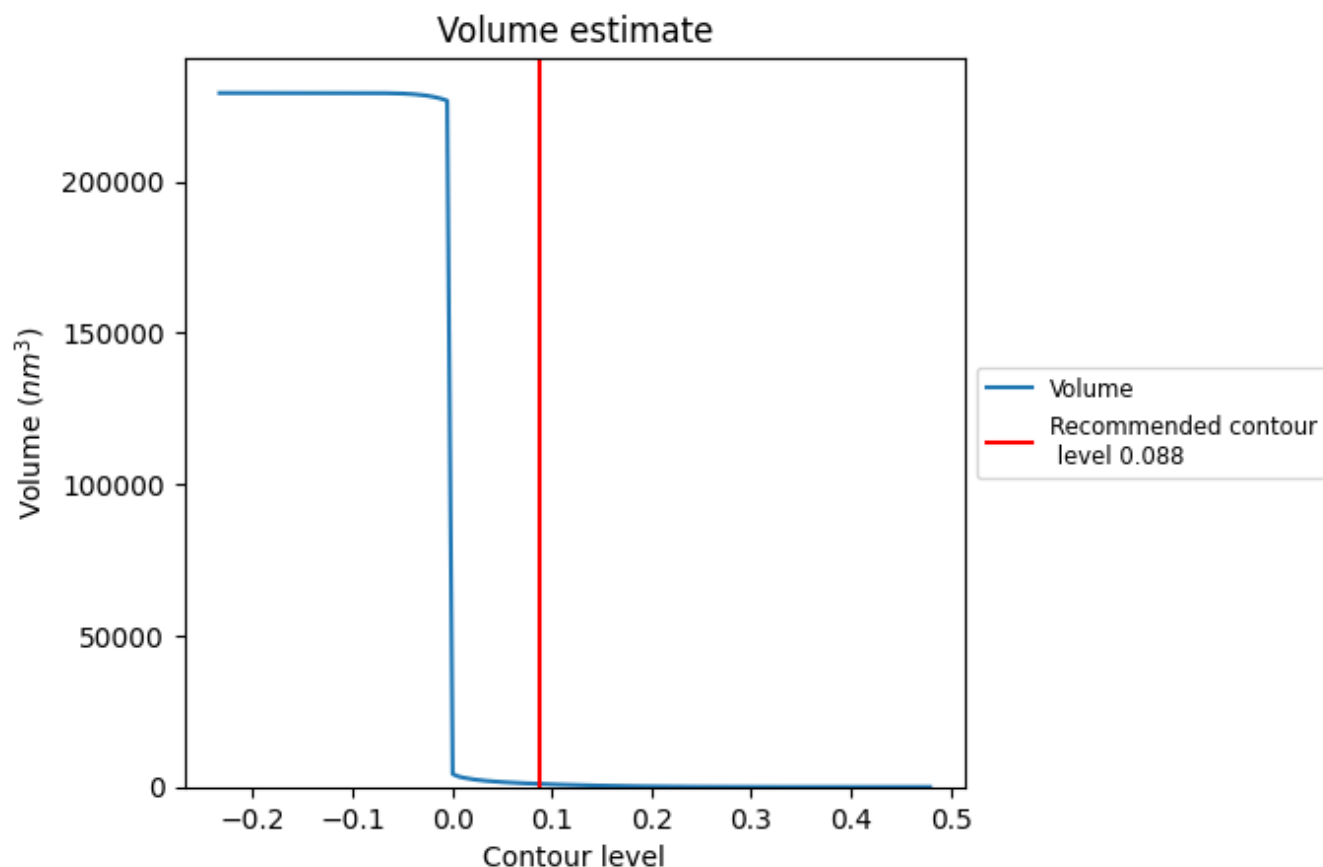
This section contains the results of statistical analysis of the map.

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.

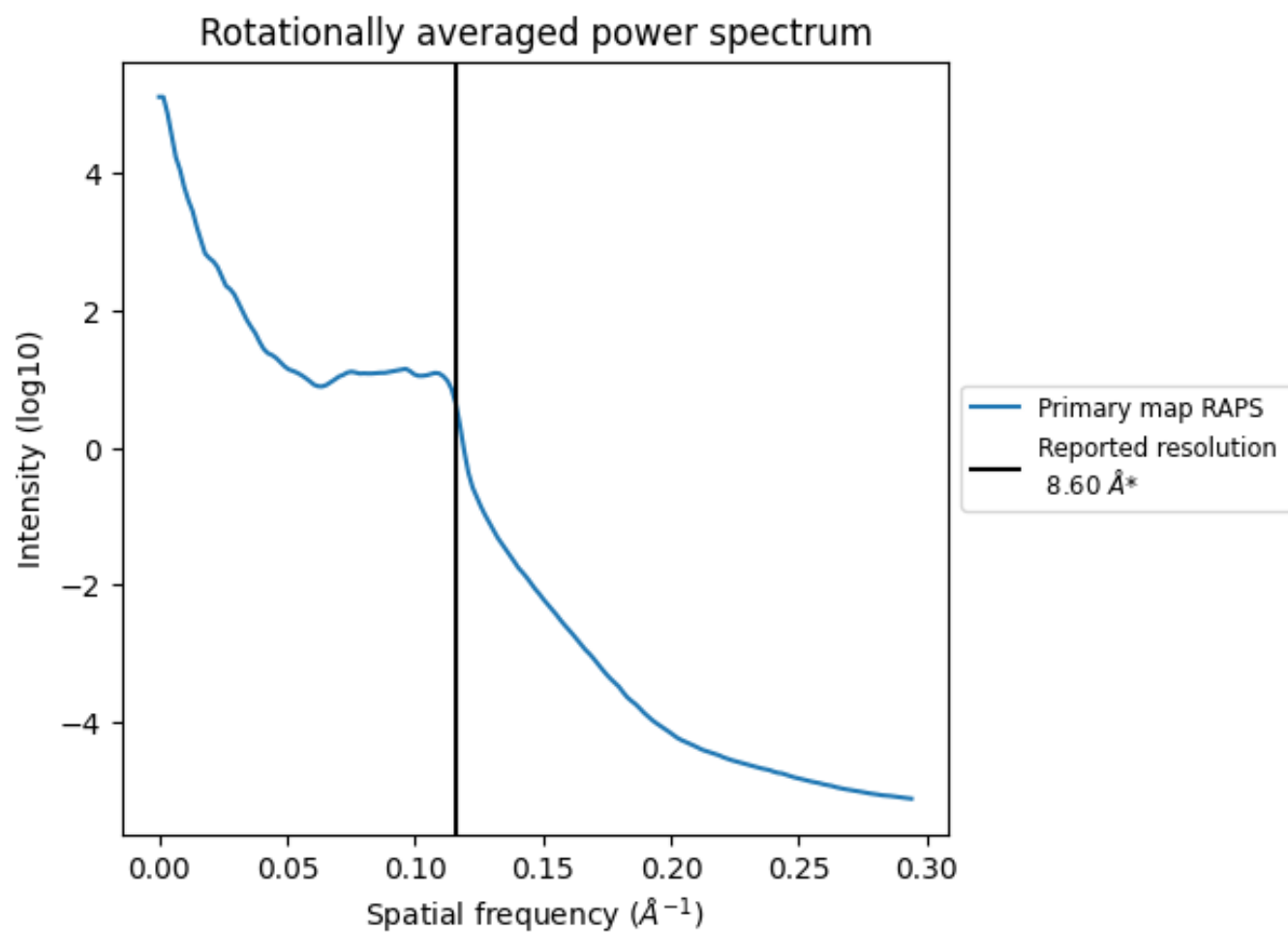
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1014 nm^3 ; this corresponds to an approximate mass of 916 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 0.116 Å⁻¹

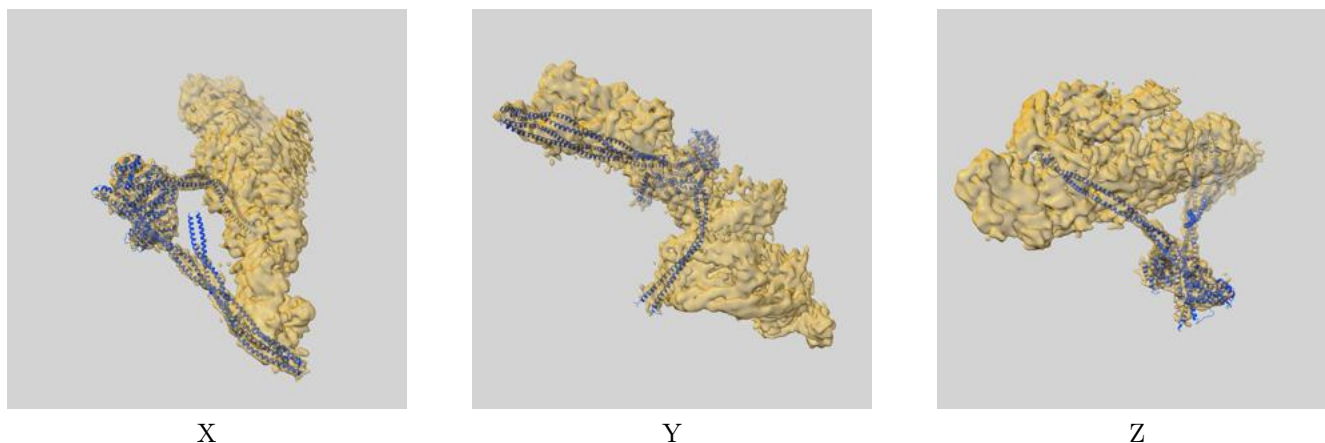
8 Fourier-Shell correlation ⓘ

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

9 Map-model fit [i](#)

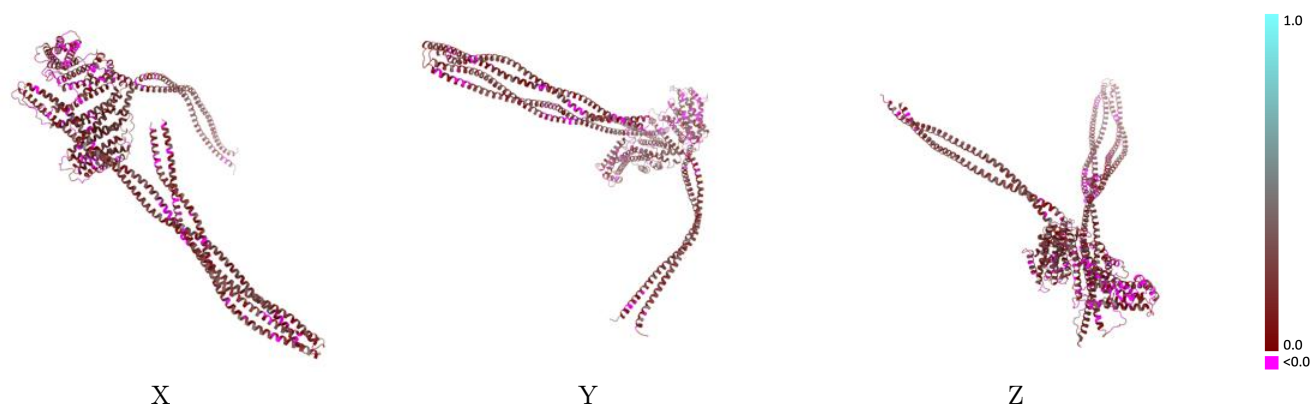
This section contains information regarding the fit between EMDB map EMD-2855 and PDB model 8PR5. Per-residue inclusion information can be found in section [3](#) on page [4](#).

9.1 Map-model overlay [i](#)



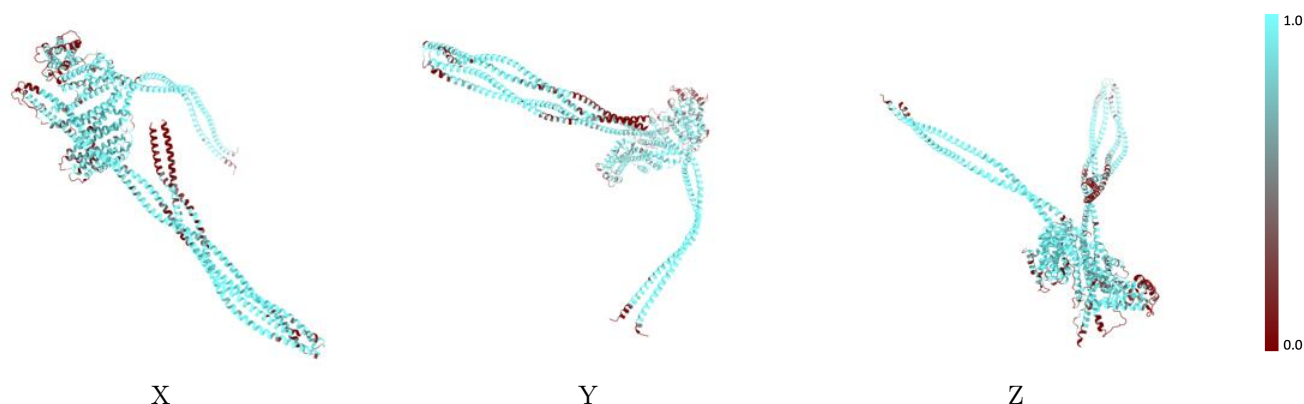
The images above show the 3D surface view of the map at the recommended contour level 0.088 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



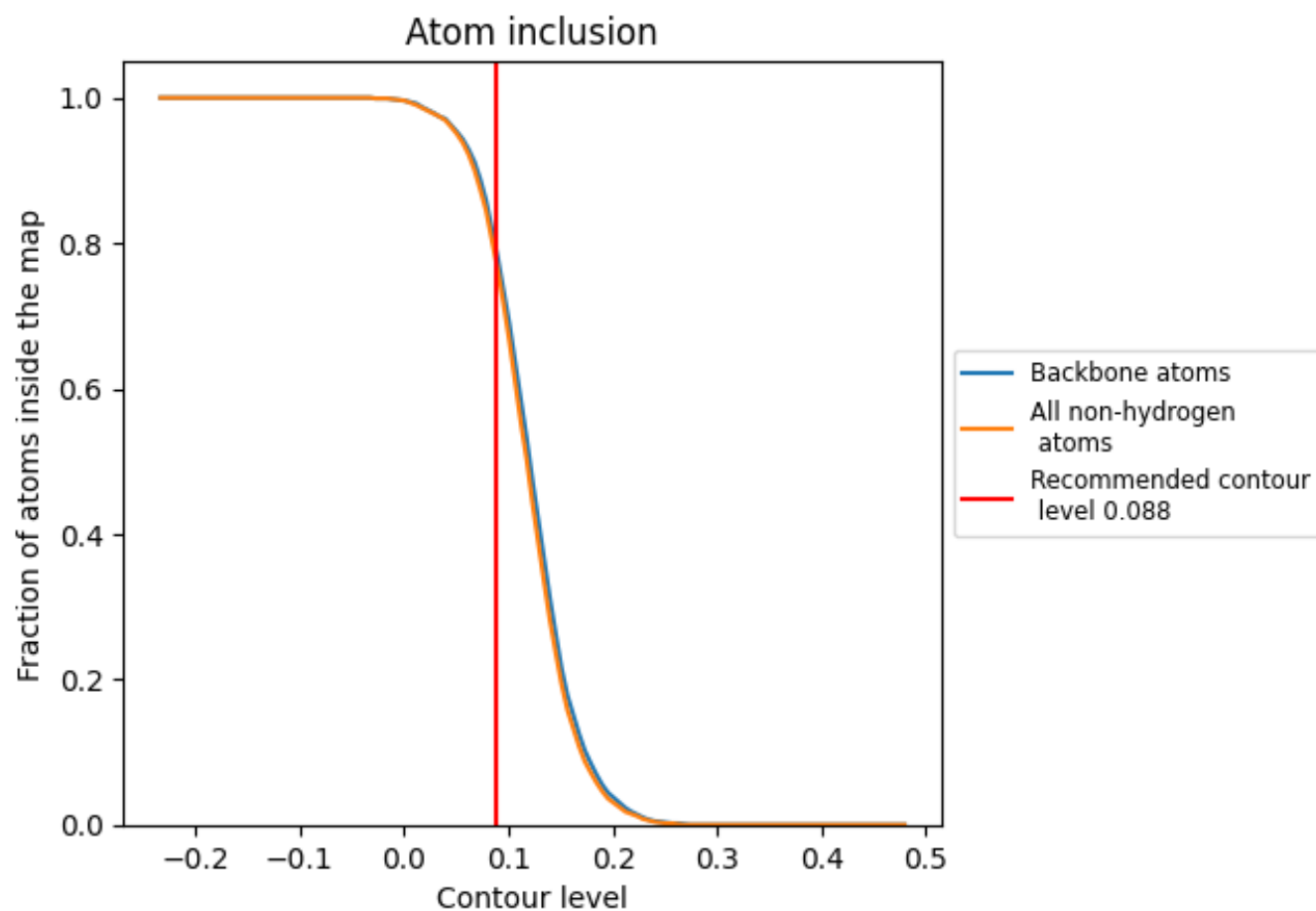
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.088).

9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 78% 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 (0.088) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7770	0.1640
A	0.7970	0.1740
B	0.7570	0.1540

