wwPDB EM Validation Summary Report (i)

Aug 18, 2026 – 06:27 PM JST

PDB ID	:	23FE / pdb_000023fe
EMDB ID	:	EMD-68921
Title	:	Cryo-EM structure of human ATR-ATRIP complex with ATPgammaS, Chk1 and ETAA1
Authors	:	Wang, M.; Wang, L.; Cheng, J.; Qiao, S.
Deposited on	:	2026-02-04
Resolution	:	2.90 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

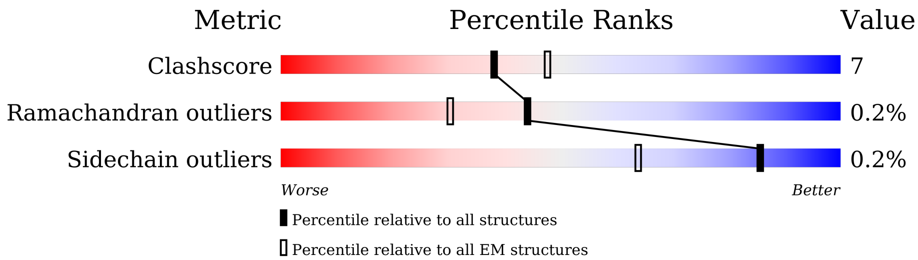
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using 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)	:	2.50

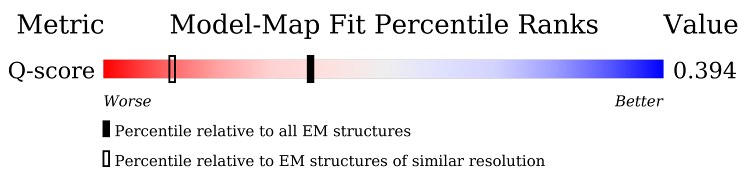
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 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	-
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 <=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	2644	77% 17% 5%
1	B	2644	74% 20% 6%
2	E	14	7% / 43% 14% 43%
2	F	14	57% 43%

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Mol	Chain	Length	Quality of chain
3	G	250	• 20% • 78%
3	H	250	6% 19% 80%
4	C	791	38% 7% 54%
4	D	791	39% 7% 54%

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 46261 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 Serine/threonine-protein kinase ATR.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	2499	Total 20025	C 12849	N 3397	O 3639	S 140	0	0
1	B	2485	Total 19926	C 12790	N 3380	O 3616	S 140	0	0

- Molecule 2 is a protein called Serine/threonine-protein kinase Chk1.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	E	8	Total 56	C 34	N 9	O 13	0	0
2	F	8	Total 49	C 28	N 9	O 12	0	0

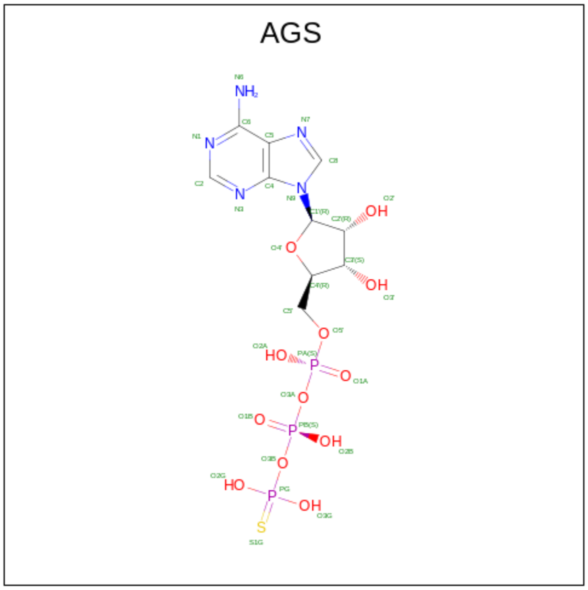
- Molecule 3 is a protein called Ewing's tumor-associated antigen 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	G	55	Total 315	C 190	N 60	O 65	0	0
3	H	49	Total 262	C 163	N 50	O 49	0	0

- Molecule 4 is a protein called ATR-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	C	361	Total 2779	C 1776	N 484	O 494	S 25	0	0
4	D	361	Total 2779	C 1776	N 484	O 494	S 25	0	0

- Molecule 5 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (CCD ID: AGS) (formula: $C_{10}H_{16}N_5O_{12}P_3S$).



Mol	Chain	Residues	Atoms						AltConf
5	A	1	Total 31	C 10	N 5	O 12	P 3	S 1	0
5	B	1	Total 31	C 10	N 5	O 12	P 3	S 1	0

- Molecule 6 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
6	A	2	Total 2	Mg 2	0
6	B	2	Total 2	Mg 2	0

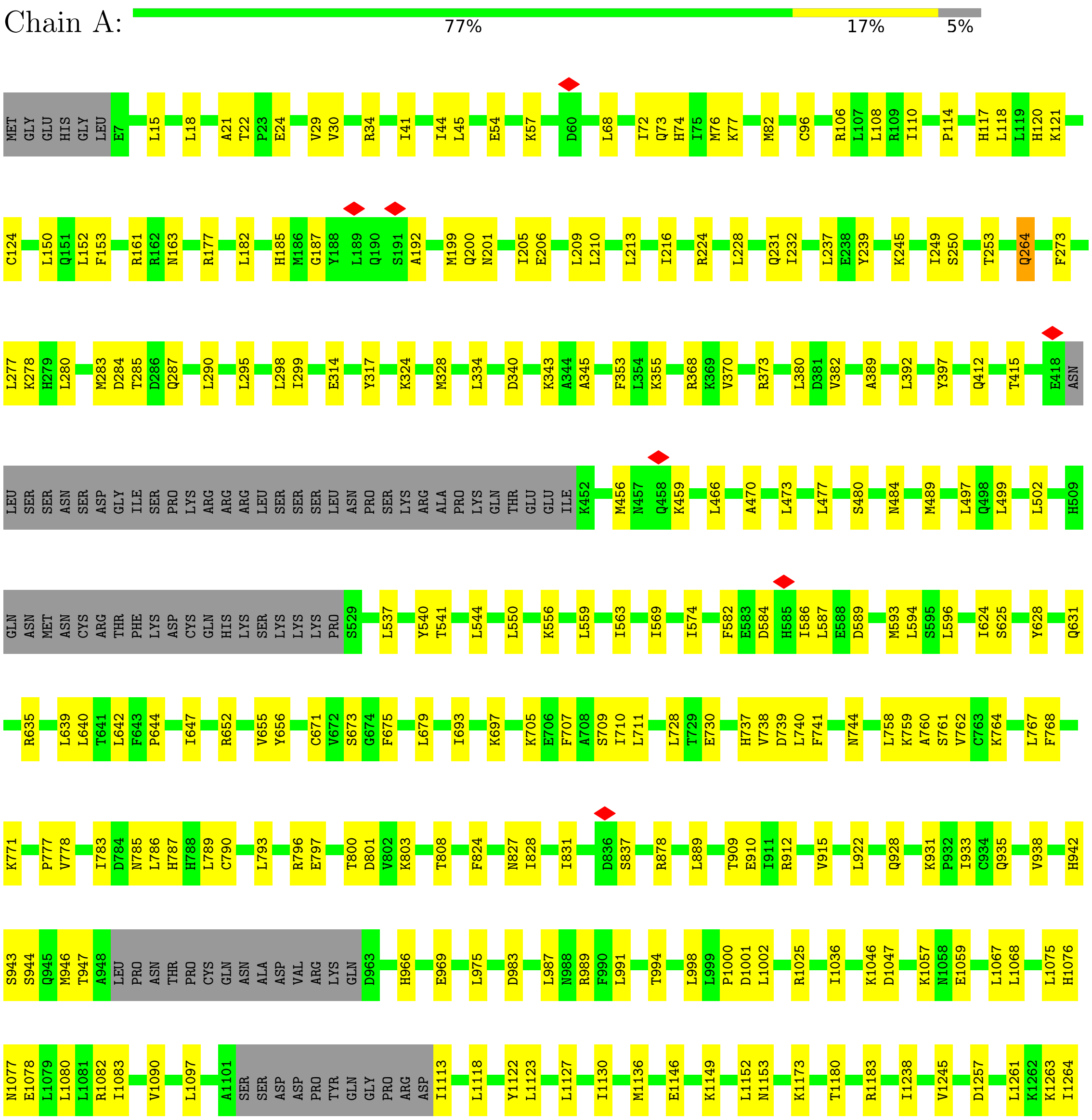
- Molecule 7 is ZINC ION (CCD ID: ZN) (formula: Zn).

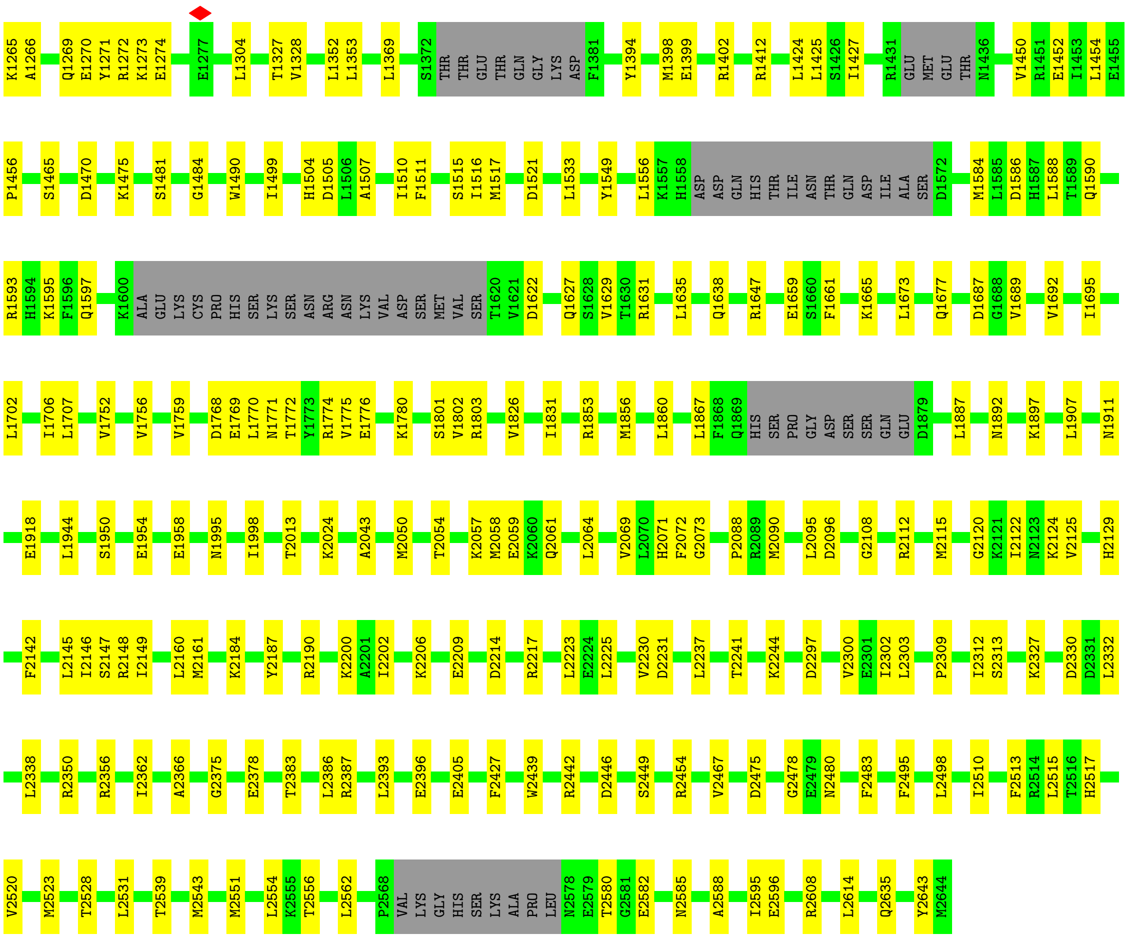
Mol	Chain	Residues	Atoms		AltConf
7	A	1	Total 1	Zn 1	0
7	B	1	Total 1	Zn 1	0
7	C	1	Total 1	Zn 1	0
7	D	1	Total 1	Zn 1	0

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.

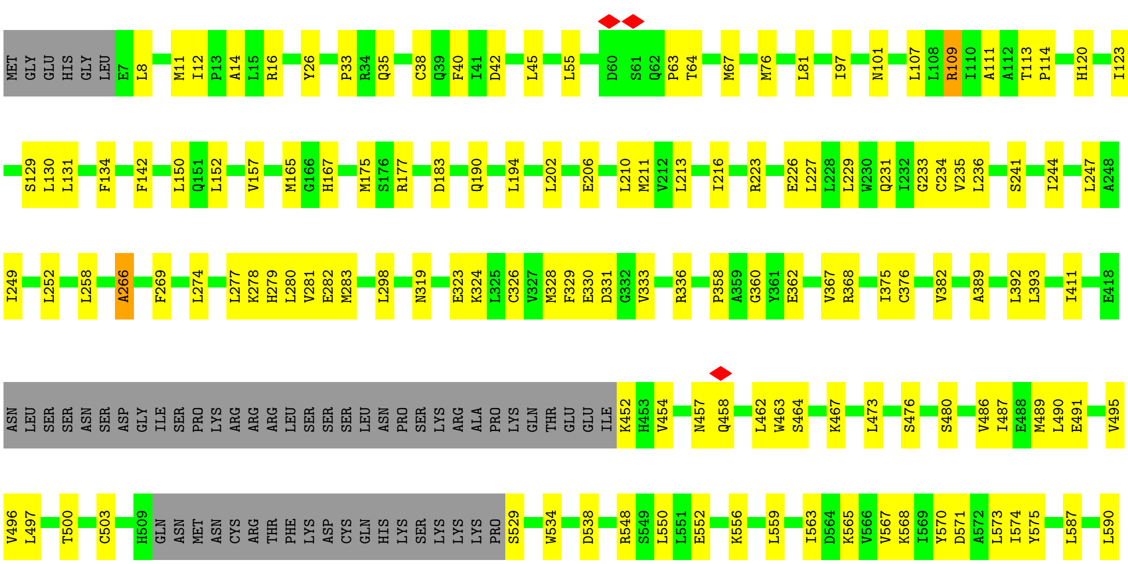
- Molecule 1: Serine/threonine-protein kinase ATR

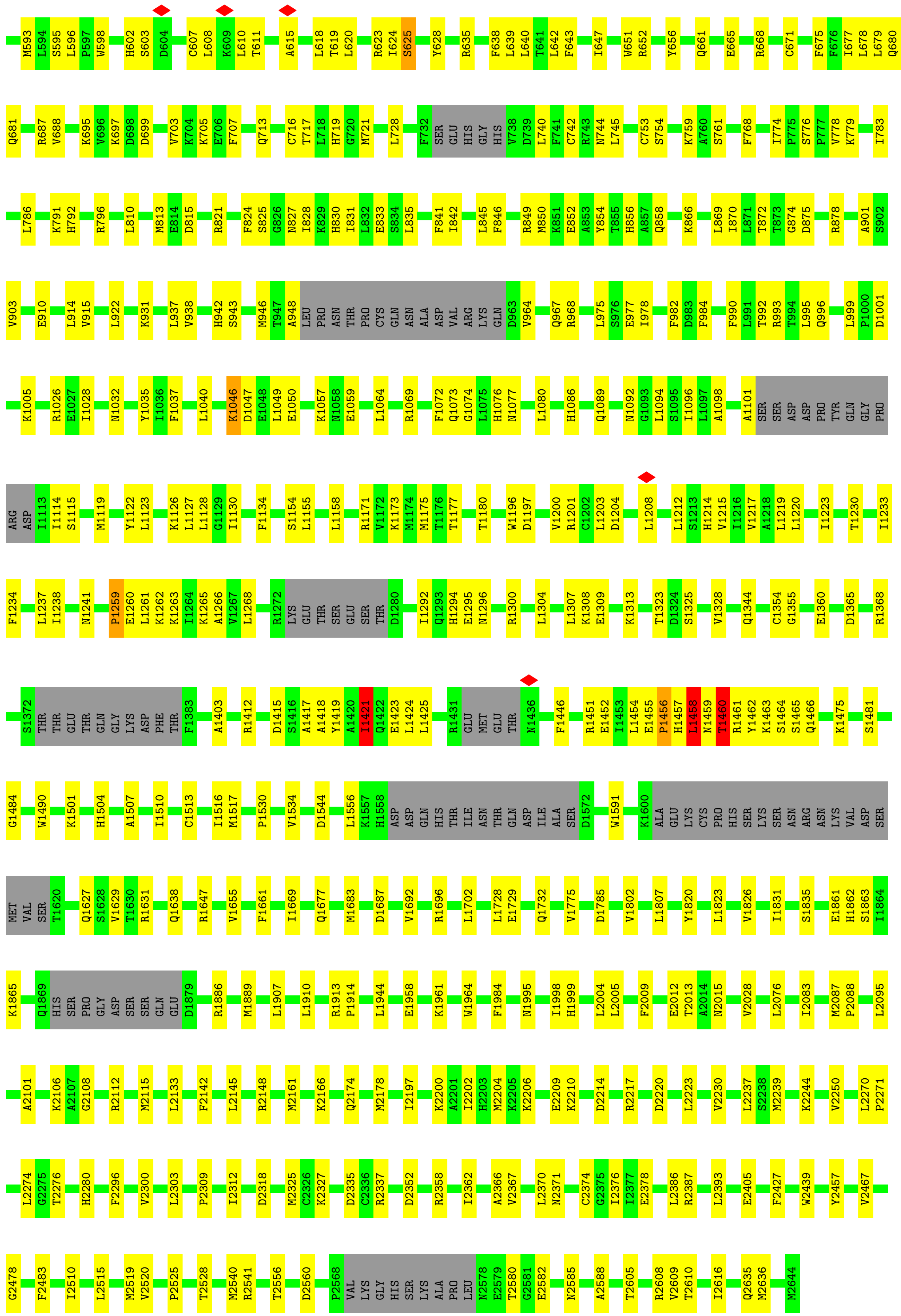




• Molecule 1: Serine/threonine-protein kinase ATR

Chain B:





• Molecule 2: Serine/threonine-protein kinase Chk1

Chain E: 7% 43% 14% 43%

VAL K313 Q318 P319 E320 PRO ARG THR GLY LEU

• Molecule 2: Serine/threonine-protein kinase Chk1

Chain F: 57% 43%

VAL K313 E320 PRO ARG THR GLY LEU

• Molecule 3: Ewing's tumor-associated antigen 1

Chain G: • 20% • 78%

MET SER ARG ARG ARG LYS HIS ASP ASP SER PRO SER PRO LYS LYS THR PRO HIS LYS THR VAL ALA ALA GLU GLU CYS GLY SER VAL VAL GLU PRO GLY ARG ARG ARG LEU ARG SER ALA ARG GLY SER TRP PRO CYS GLY ALA ARG GLU GLY PRO PRO GLY PRO VAL ARG GLN ARG GLU

GLN PRO PRO THR ALA ALA LEU CYS SER LYS SER ASN PRO GLU GLU ARG TYR GLU THR PRO LYS ARG ALA LEU LYS MET ASP SER LEU SER SER SER PHE SER SER PRO ASN ASP PRO ASP GLY Q102 N103 D104 I105 F106 S111 PRO LEU THR LYS GLN LEU GLY LYS GLY ARG LYS LYS

GLN ILE TYR THR T128 I133 V137 ASN ARG ILE ALA PRO GLN ASP GLU LYS PRO THR THR ASN SER M152 G158 GLU THR ALA ILE PRO CYS THR PRO SER VAL ALA LYS GLY LYS SER ARG ALA LYS ILE SER CYS THR K181 V207 I208 GLN GLU GLN ASN LYS ARG ASN TYR

ASP PHE THR GLN MET ILE SER GLU THR GLU ILE LEU SER ASN TYR LYS ASP ASN ILE GLN MET TRP SER LEU HIS ASN ILE VAL PRO GLU ILE ASP ASN ALA

• Molecule 3: Ewing's tumor-associated antigen 1

Chain H: 6% 19% 80%

MET SER ARG ARG ARG LYS HIS ASP ASP SER PRO SER PRO LYS LYS THR PRO HIS LYS THR VAL ALA ALA GLU GLU CYS GLY SER VAL VAL GLU PRO GLY ARG ARG ARG LEU ARG SER ALA ARG GLY SER TRP PRO CYS GLY ALA ARG GLU GLY PRO PRO GLY PRO VAL ARG GLN ARG GLU

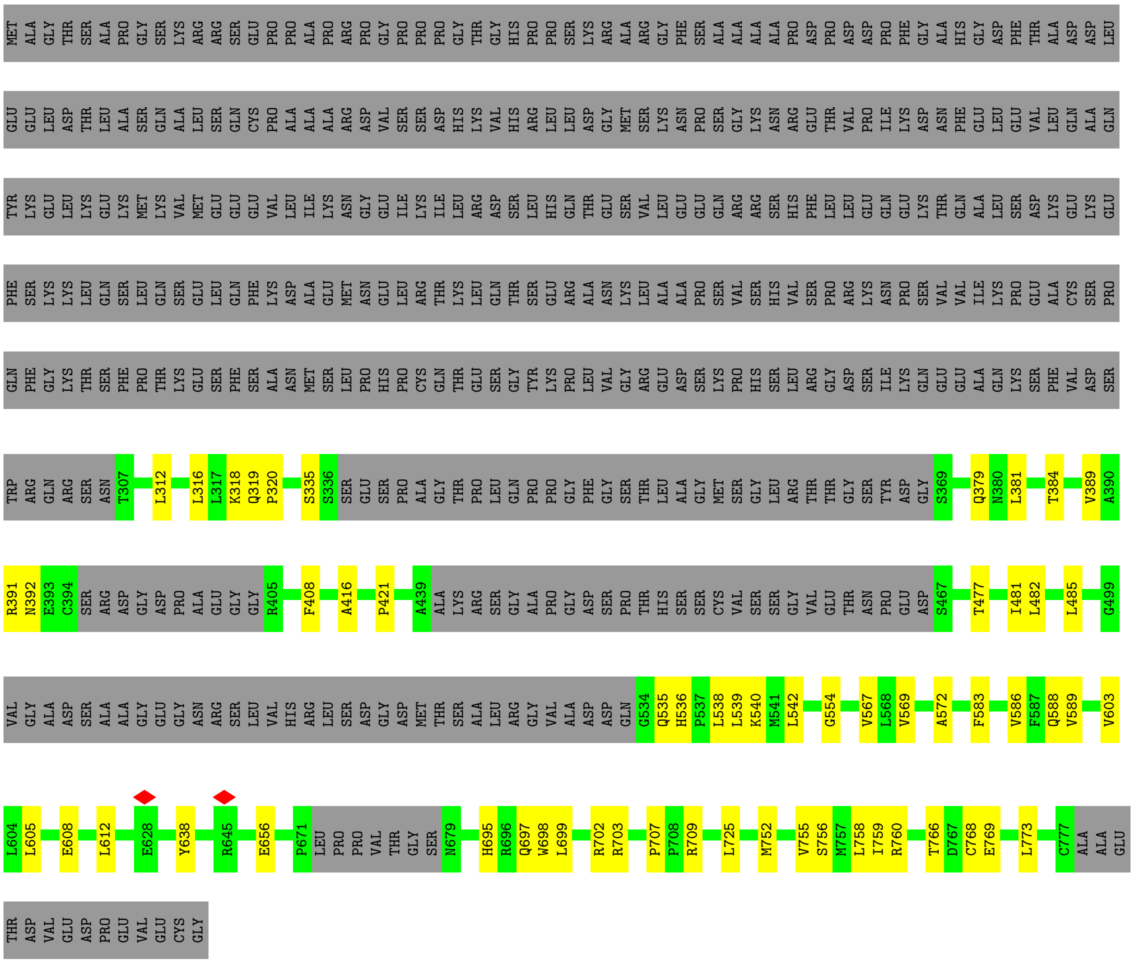
GLN PRO PRO THR ALA ALA LEU CYS SER LYS SER ASN PRO GLU GLU ARG TYR GLU THR PRO LYS ARG ALA LEU LYS MET ASP SER LEU SER SER SER PHE SER SER PRO ASN ASP PRO ASP GLY GLN ASN D104 I105 D108 GLN ASN SER PRO LEU THR LYS GLN LEU GLY LYS GLY ARG

LYS LYS GLN ILE TYR THR THR D129 S134 V137 ASN ARG ILE ALA PRO GLN ASP GLU LYS PRO THR THR ASN SER M152 L153 D154 M155 G158 GLU THR ALA ILE PRO CYS THR PRO SER VAL ALA LYS GLY LYS SER ARG ALA LYS ILE SER CYS THR K181 L182 K183 S186

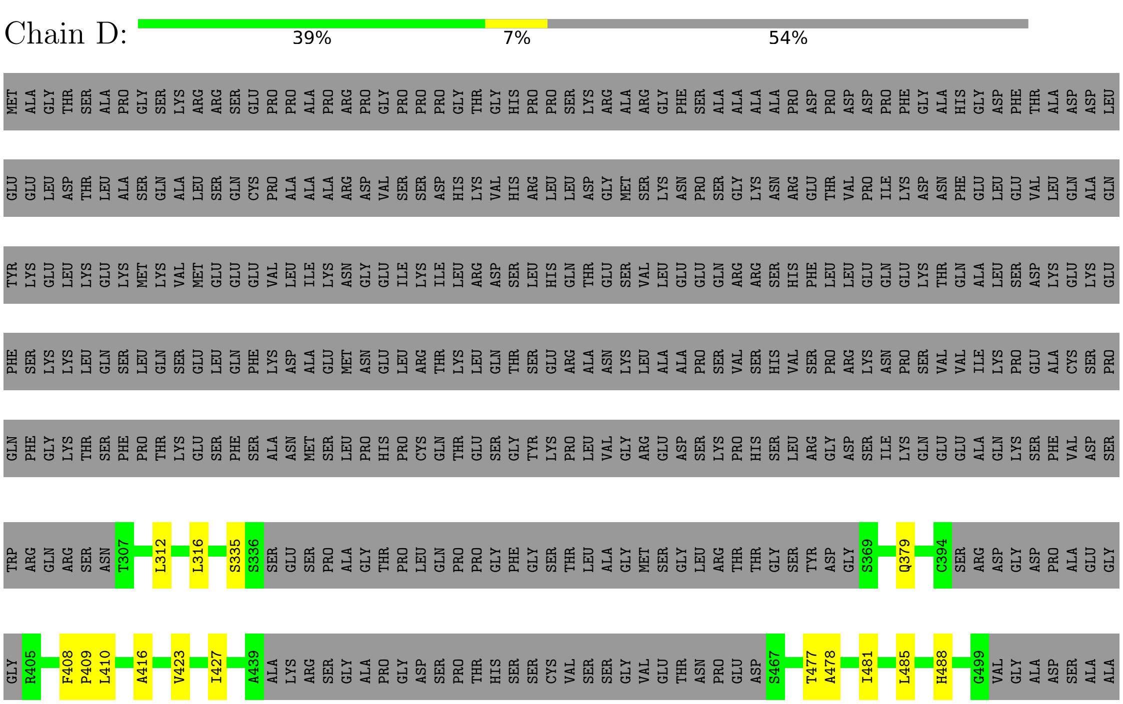
E203 E204 L205 D206 V207 I208 GLN GLU GLN ASN LYS ARG ASN TYR ASP PHE THR GLN MET ILE SER GLU THR GLU ILE LEU SER ASN TYR LYS ASP ASN ILE GLN MET TRP SER LEU HIS ASN ILE VAL PRO GLU ILE ASP ASN ALA

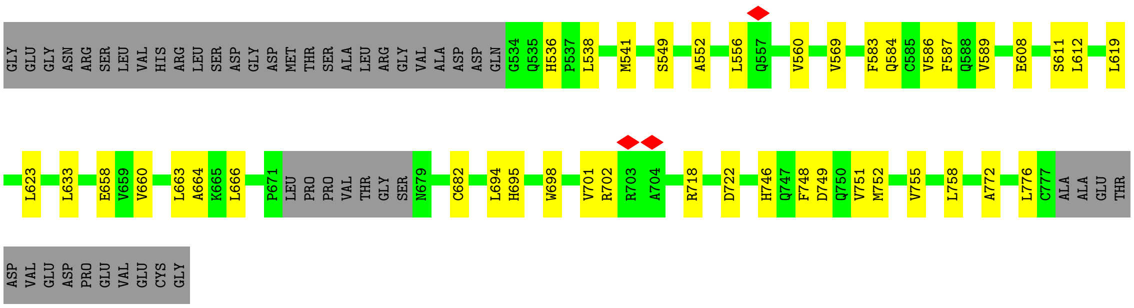
• Molecule 4: ATR-interacting protein

Chain C: 38% 7% 54%



• Molecule 4: ATR-interacting protein




GLY GLU GLY ASN ARG SER LEU VAL HIS ARG LEU SER ASP GLY ASP MET THR SER ALA LEU ARG GLY VAL ALA ASP ASP GLN G534 Q535 H536 P537 L538 M541 S549 A552 L556 Q557 V560 V569 F583 Q584 C585 V586 F587 Q588 V589 E608 S611 L612 L619
L623 L633 E658 V659 V660 L663 A664 K665 L666 P671 LEU PRO PRO VAL THR GLY SER N679 C682 L694 H695 W698 V701 R702 R703 A704 R718 D722 H746 Q747 F748 D749 Q750 V751 M752 V755 L758 A772 L776 C777 ALA ALA GLU THR
ASP VAL GLU ASP PRO GLU VAL GLU CYS GLY

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	254757	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\mathring{A}^2)$	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	1.765	Depositor
Minimum map value	-1.081	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.024	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	401.76, 401.76, 401.76	wwPDB
Map dimensions	432, 432, 432	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.93, 0.93, 0.93	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: AGS, ZN, MG

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	0.23	0/20441	0.56	3/27628 (0.0%)
1	B	0.25	0/20336	0.62	8/27479 (0.0%)
2	E	0.16	0/57	0.61	0/77
2	F	0.23	0/49	0.63	0/66
3	G	0.14	0/314	0.55	0/430
3	H	0.36	0/261	0.58	0/358
4	C	0.24	0/2826	0.61	1/3837 (0.0%)
4	D	0.29	0/2826	0.66	0/3837
All	All	0.25	0/47110	0.59	12/63712 (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
1	A	0	1
1	B	0	3
All	All	0	4

There are no bond length outliers.

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	285	THR	N-CA-C	7.97	119.88	111.03
1	A	187	GLY	N-CA-C	6.19	119.64	110.60
1	B	1421	ILE	N-CA-C	-5.52	104.99	110.62
4	C	554	GLY	N-CA-C	5.47	116.89	111.21
1	A	489	MET	CA-CB-CG	5.38	124.86	114.10

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	284	ASP	Peptide
1	B	109	ARG	Sidechain
1	B	1203	LEU	Peptide
1	B	16	ARG	Sidechain

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	20025	0	20298	283	0
1	B	19926	0	20225	336	0
2	E	56	0	42	1	0
2	F	49	0	35	0	0
3	G	315	0	166	7	0
3	H	262	0	122	5	0
4	C	2779	0	2873	40	0
4	D	2779	0	2872	44	0
5	A	31	0	12	1	0
5	B	31	0	12	0	0
6	A	2	0	0	0	0
6	B	2	0	0	0	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
All	All	46261	0	46657	688	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 7.

The worst 5 of 688 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:1208:LEU:O	1:B:1212:LEU:HB2	1.56	1.04

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1046:LYS:O	1:B:1049:LEU:HB3	1.67	0.93
1:A:117:HIS:O	1:A:120:HIS:HB2	1.74	0.86
1:A:707:PHE:O	1:A:711:LEU:HB2	1.79	0.81
3:G:102:GLN:N	3:G:102:GLN:HE21	1.83	0.76

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	2477/2644 (94%)	2393 (97%)	82 (3%)	2 (0%)	48	77
1	B	2459/2644 (93%)	2349 (96%)	99 (4%)	11 (0%)	30	59
2	E	6/14 (43%)	6 (100%)	0	0	100	100
2	F	6/14 (43%)	6 (100%)	0	0	100	100
3	G	47/250 (19%)	46 (98%)	1 (2%)	0	100	100
3	H	41/250 (16%)	41 (100%)	0	0	100	100
4	C	349/791 (44%)	328 (94%)	20 (6%)	1 (0%)	36	65
4	D	349/791 (44%)	337 (97%)	12 (3%)	0	100	100
All	All	5734/7398 (78%)	5506 (96%)	214 (4%)	14 (0%)	44	72

5 of 14 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	266	ALA
1	B	1046	LYS
1	B	1259	PRO
1	B	1260	GLU
1	B	625	SER

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	2227/2363 (94%)	2226 (100%)	1 (0%)	100	100
1	B	2216/2363 (94%)	2209 (100%)	7 (0%)	86	96
2	E	6/13 (46%)	6 (100%)	0	100	100
2	F	5/13 (38%)	5 (100%)	0	100	100
3	G	11/226 (5%)	10 (91%)	1 (9%)	9	28
3	H	3/226 (1%)	2 (67%)	1 (33%)	0	0
4	C	319/678 (47%)	319 (100%)	0	100	100
4	D	319/678 (47%)	319 (100%)	0	100	100
All	All	5106/6560 (78%)	5096 (100%)	10 (0%)	85	96

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	1466	GLN
3	G	102	GLN
3	H	105	ILE
1	B	1458	LEU
1	B	1460	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 49 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	1241	ASN
1	B	1970	HIS
1	B	1296	ASN
1	B	1587	HIS
1	B	1999	HIS

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)

Of 10 ligands modelled in this entry, 8 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	AGS	A	5001	6	29,33,33	0.46	1 (3%)	39,52,52	0.73	1 (2%)
5	AGS	B	5001	6	29,33,33	0.50	1 (3%)	39,52,52	0.73	1 (2%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	AGS	A	5001	6	-	0/21/38/38	0/3/3/3
5	AGS	B	5001	6	-	7/21/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	5001	AGS	PG-S1G	2.04	1.95	1.90
5	A	5001	AGS	PG-S1G	2.00	1.95	1.90

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	5001	AGS	PA-O3A-PB	-3.68	120.19	132.83
5	B	5001	AGS	PA-O3A-PB	-3.49	120.83	132.83

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

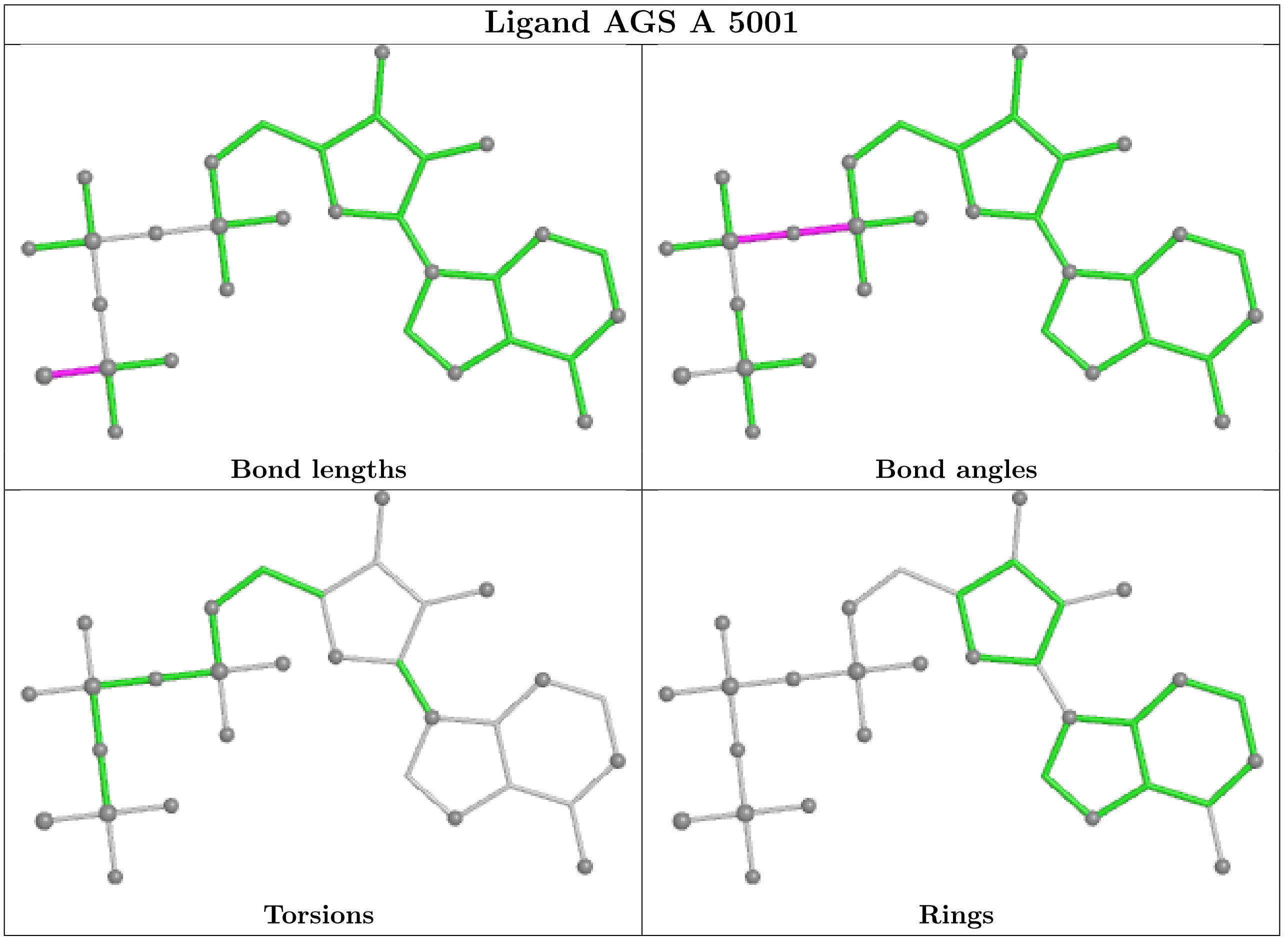
Mol	Chain	Res	Type	Atoms
5	B	5001	AGS	PB-O3B-PG-O2G
5	B	5001	AGS	C5'-O5'-PA-O1A
5	B	5001	AGS	C5'-O5'-PA-O2A
5	B	5001	AGS	O4'-C4'-C5'-O5'
5	B	5001	AGS	C3'-C4'-C5'-O5'

There are no ring outliers.

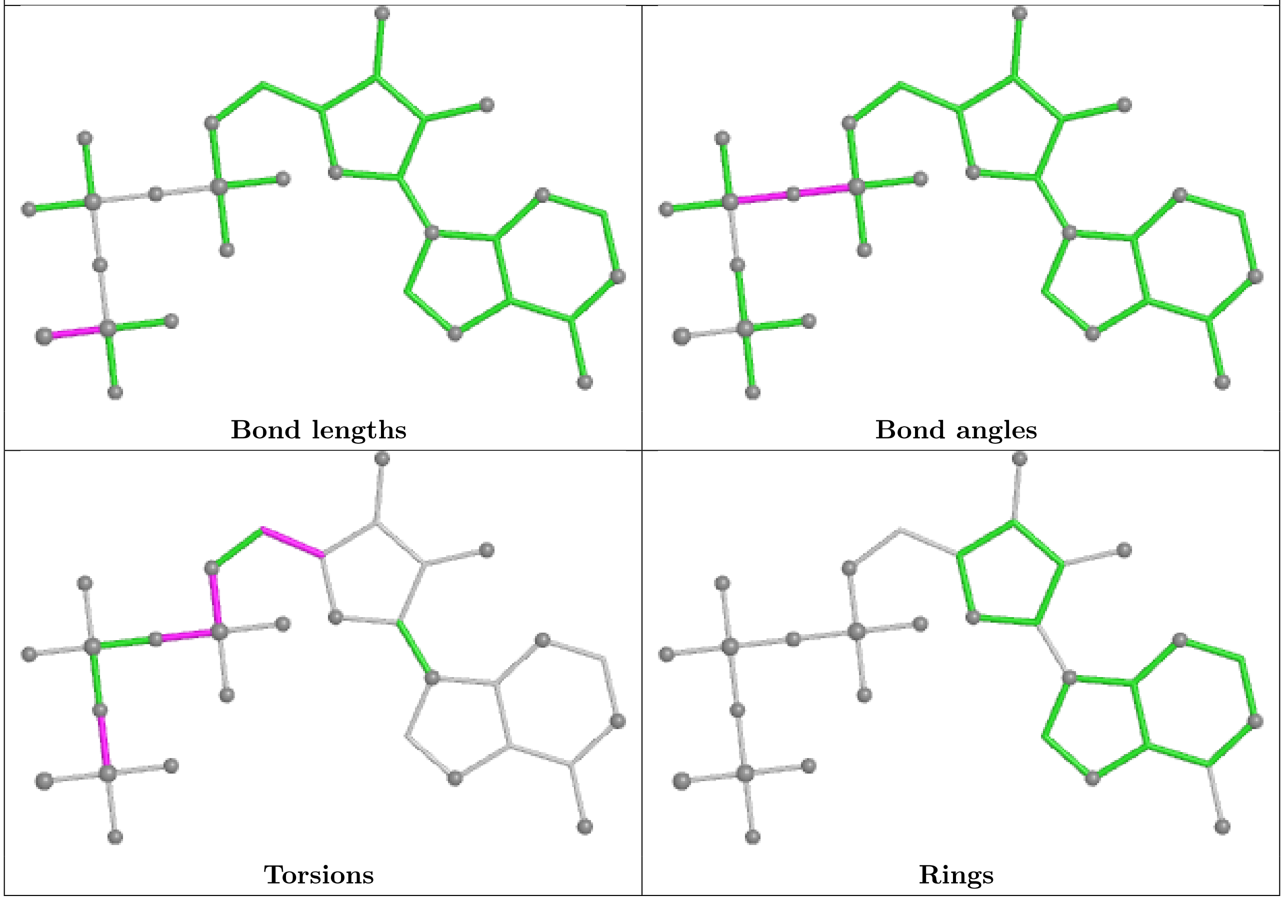
1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	5001	AGS	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.


Ligand AGS A 5001
Bond lengths
Bond angles
Torsions
Rings

Ligand AGS B 5001



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.

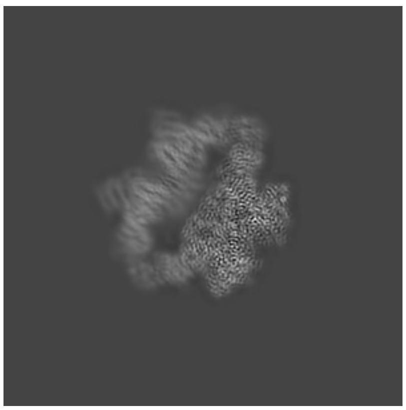
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-68921. These allow visual inspection of the internal detail of the map and identification of artifacts.

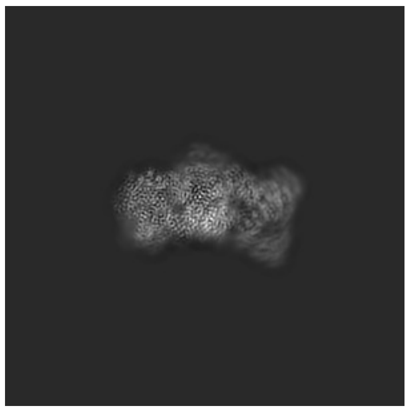
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

6.1.1 Primary map



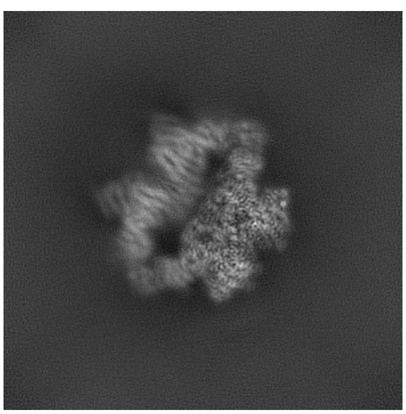
X



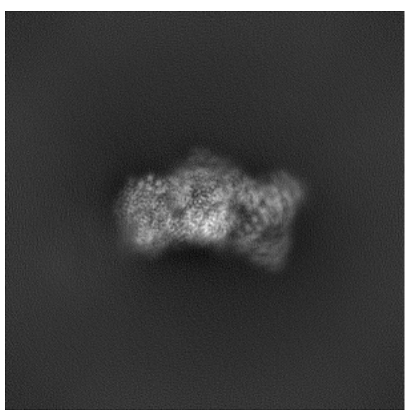
Y

Z

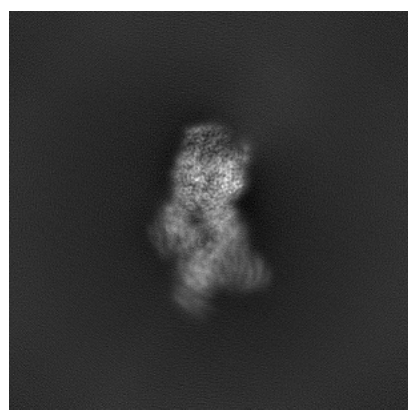
6.1.2 Raw map



X



Y

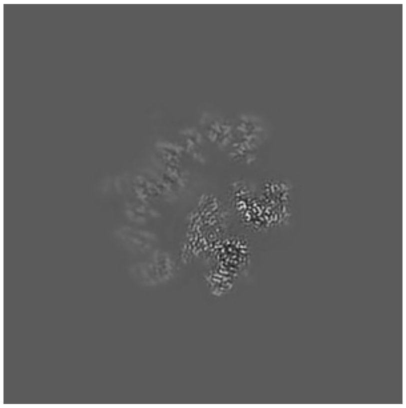


Z

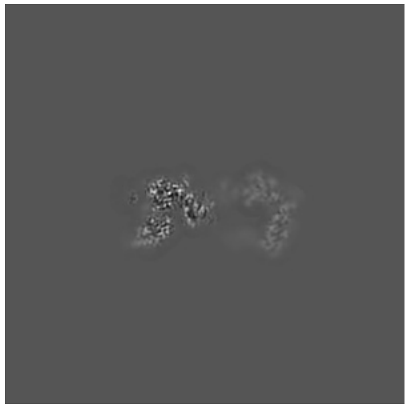
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map



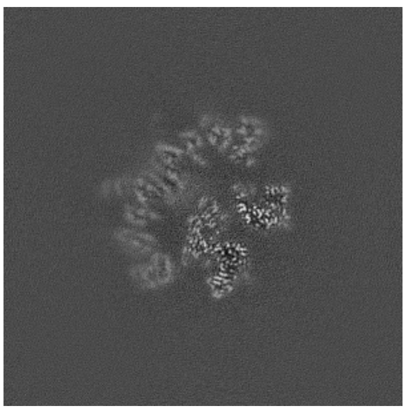
X Index: 216



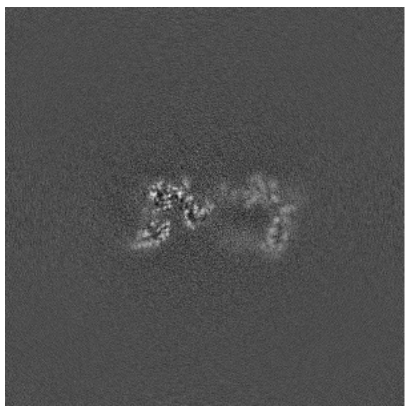
Y Index: 216

Z Index: 216

6.2.2 Raw map



X Index: 216



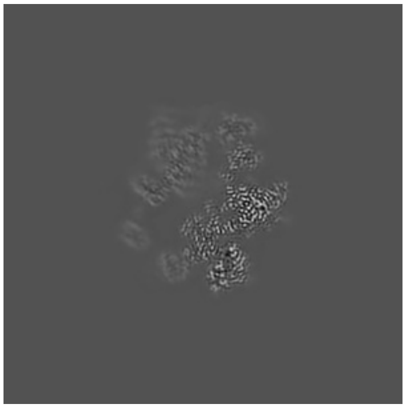
Y Index: 216

Z Index: 216

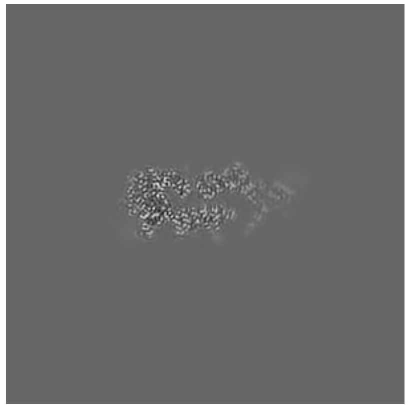
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



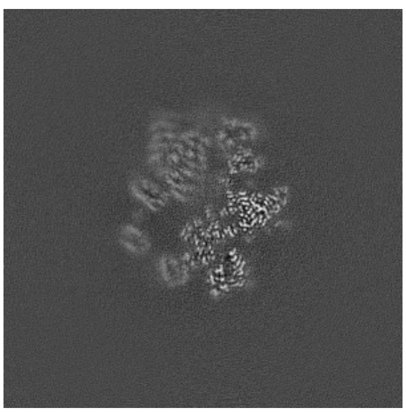
X Index: 228



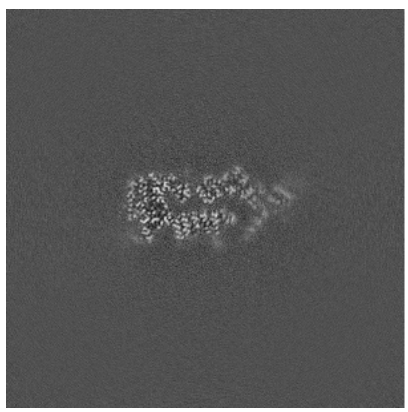
Y Index: 248

Z Index: 217

6.3.2 Raw map



X Index: 228



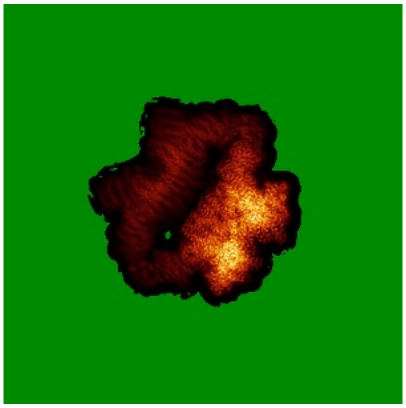
Y Index: 248

Z Index: 217

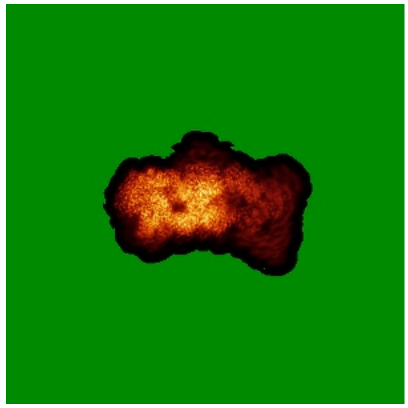
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

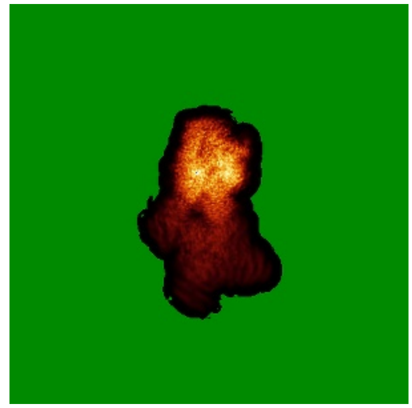
6.4.1 Primary map



X

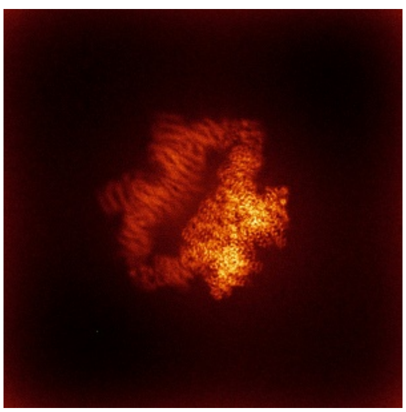


Y

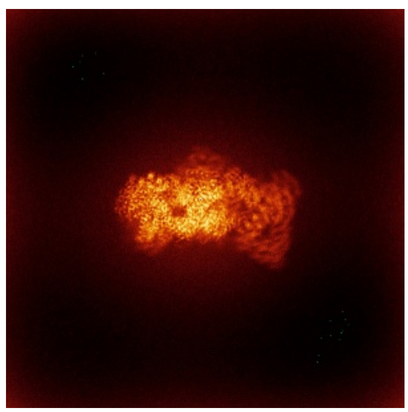


Z

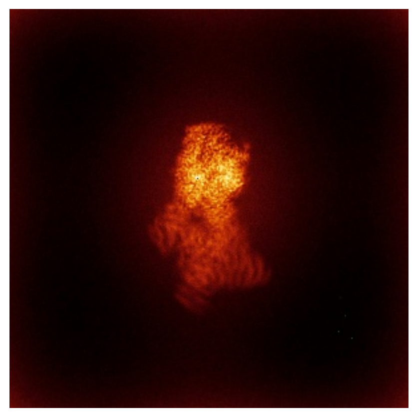
6.4.2 Raw map



X



Y

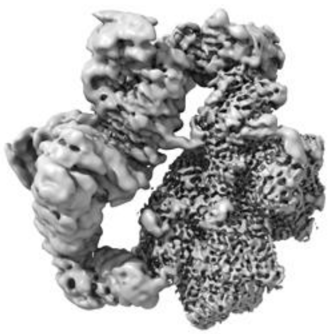


Z

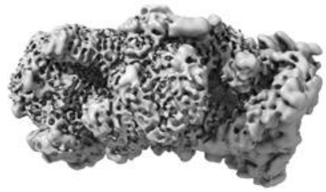
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views

6.5.1 Primary map



X

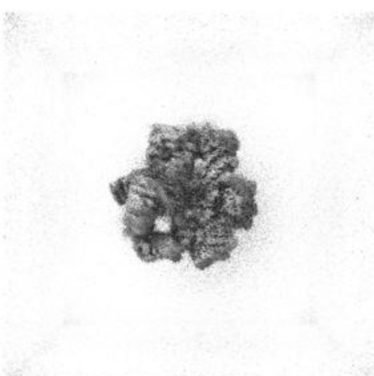


Y

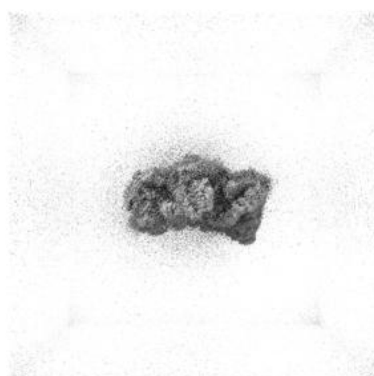
Z

The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X



Y

Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

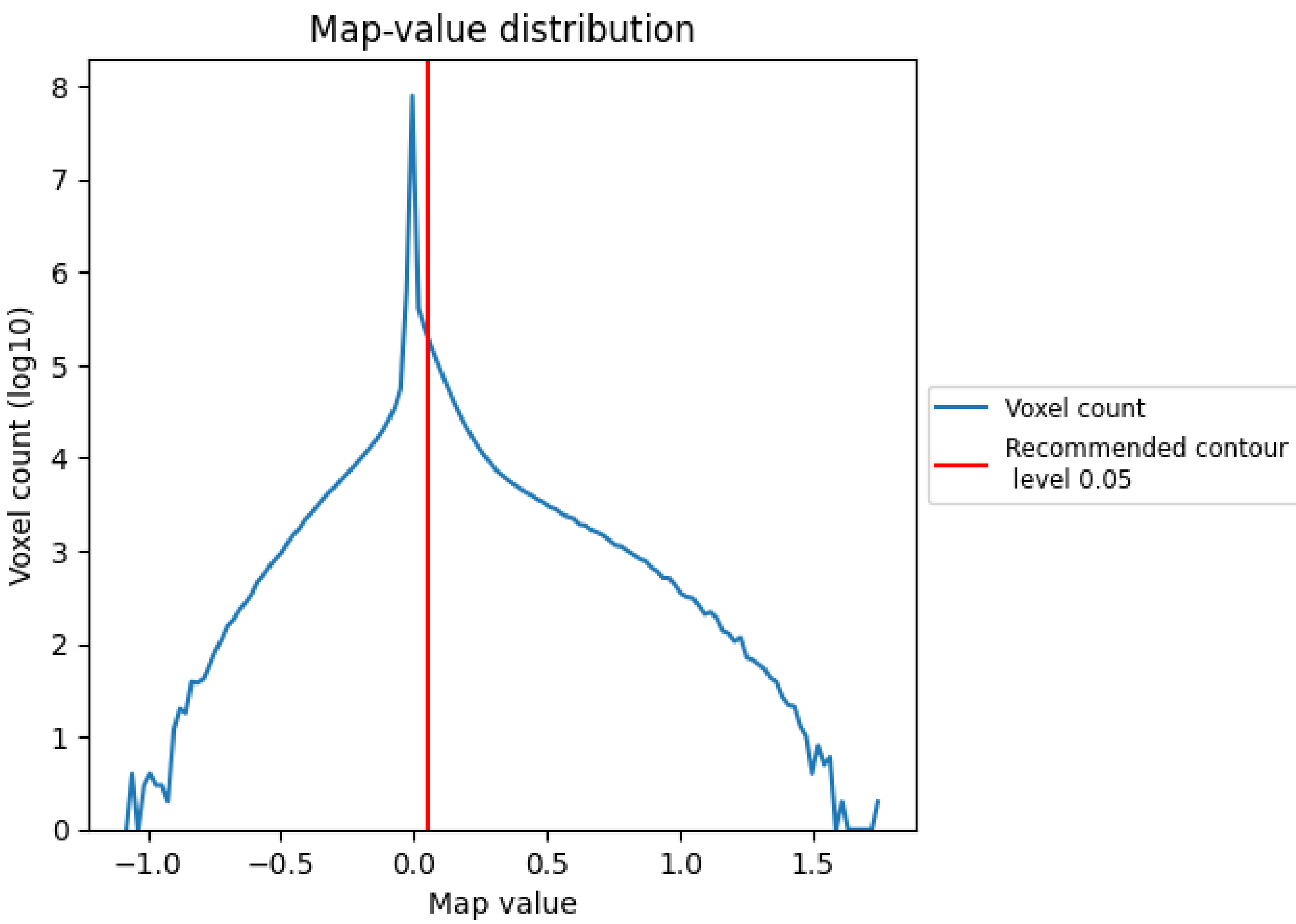
6.6 Mask visualisation

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

7 Map analysis (i)

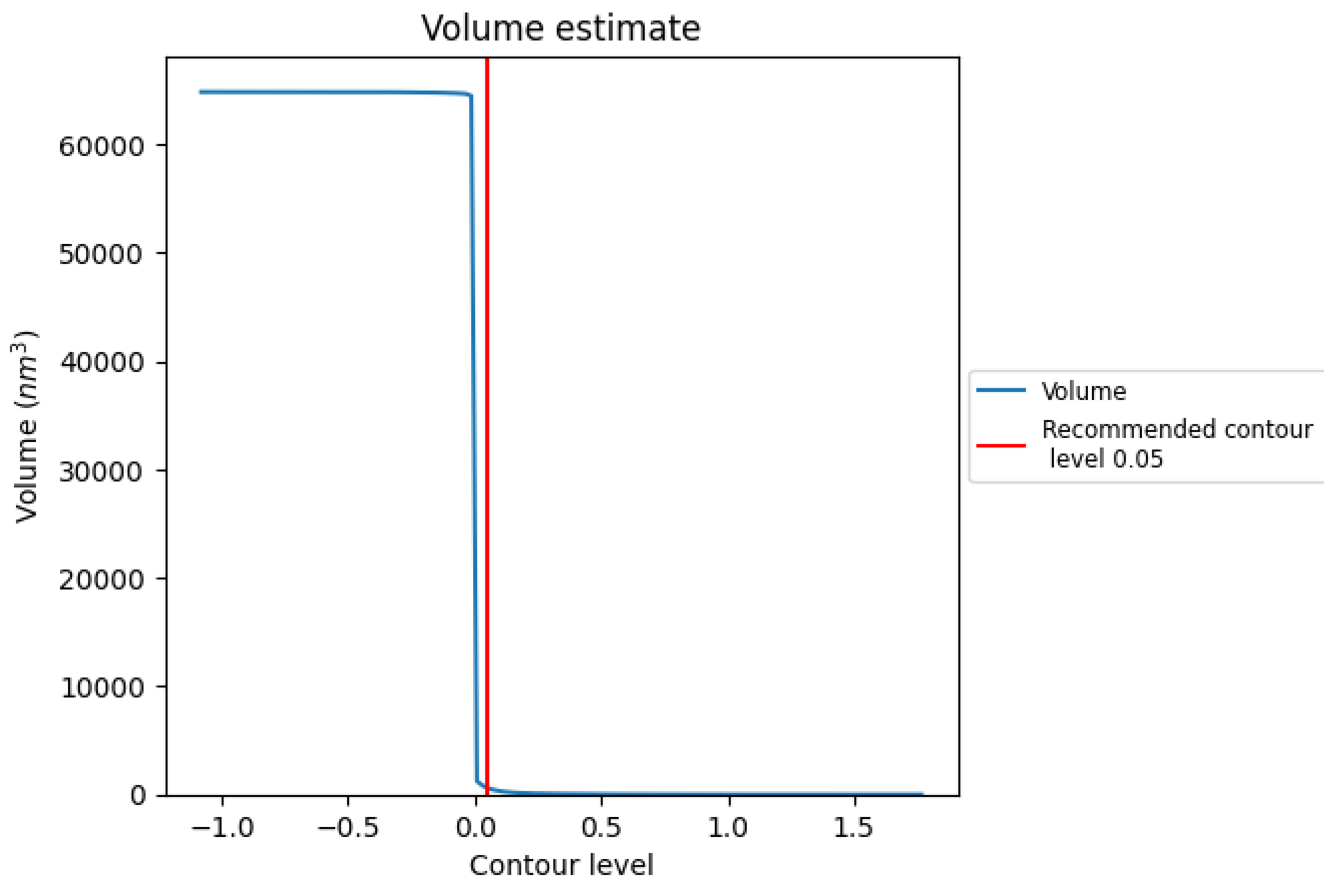
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution (i)



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

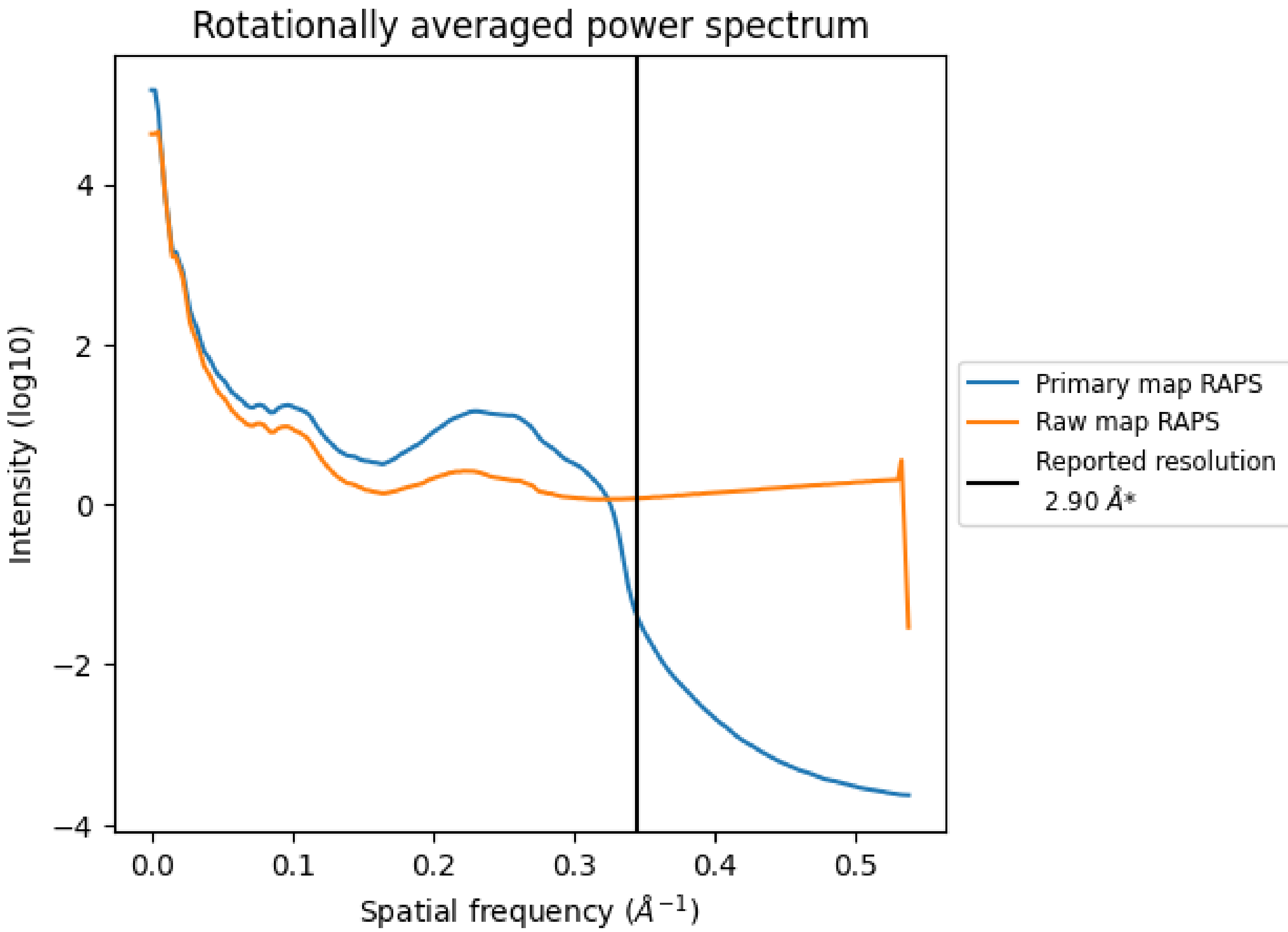
7.2 Volume estimate (i)



The volume at the recommended contour level is 610 nm^3; this corresponds to an approximate mass of 551 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)

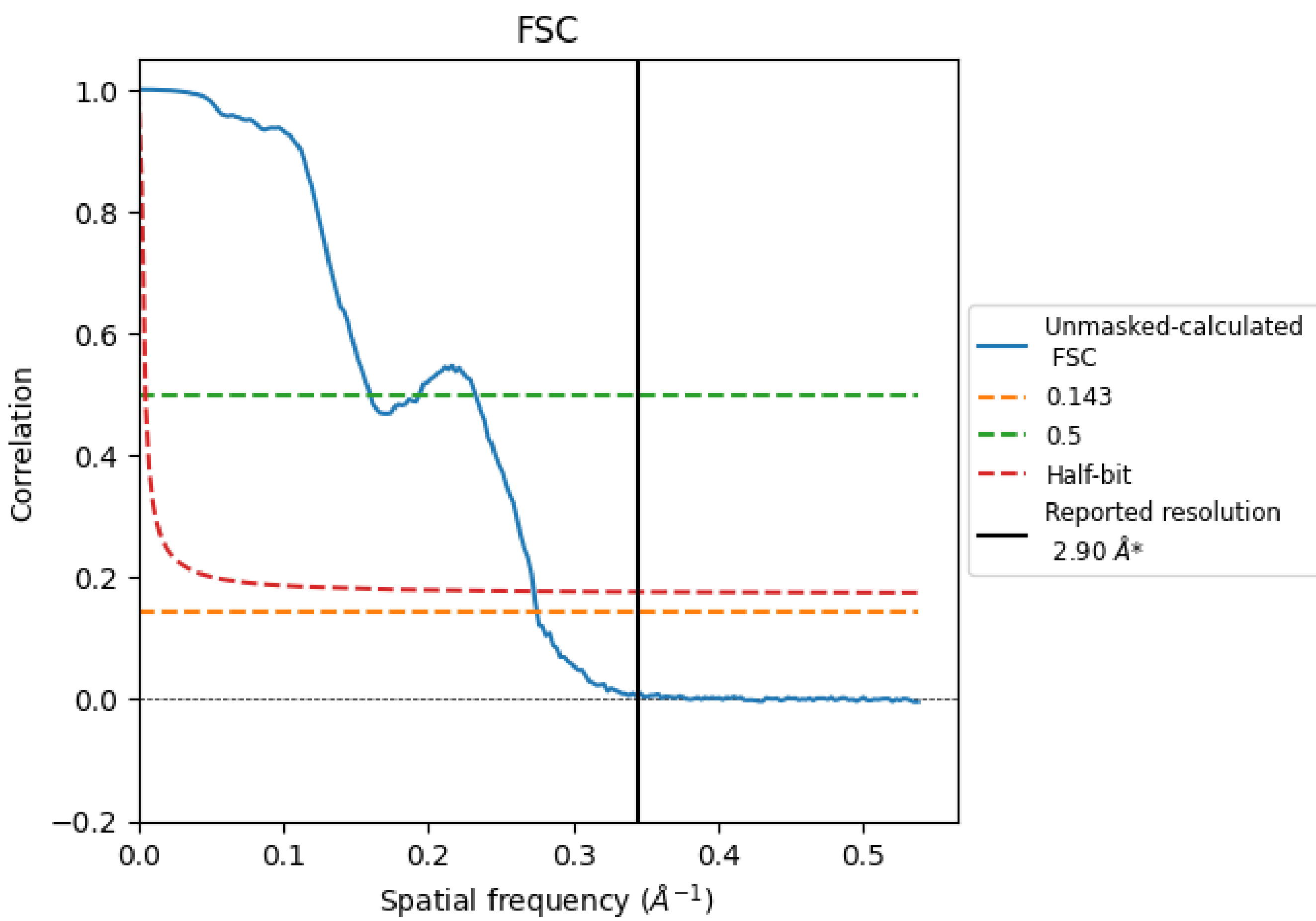


*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

8 Fourier-Shell correlation (i)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC (i)



*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

8.2 Resolution estimates (i)

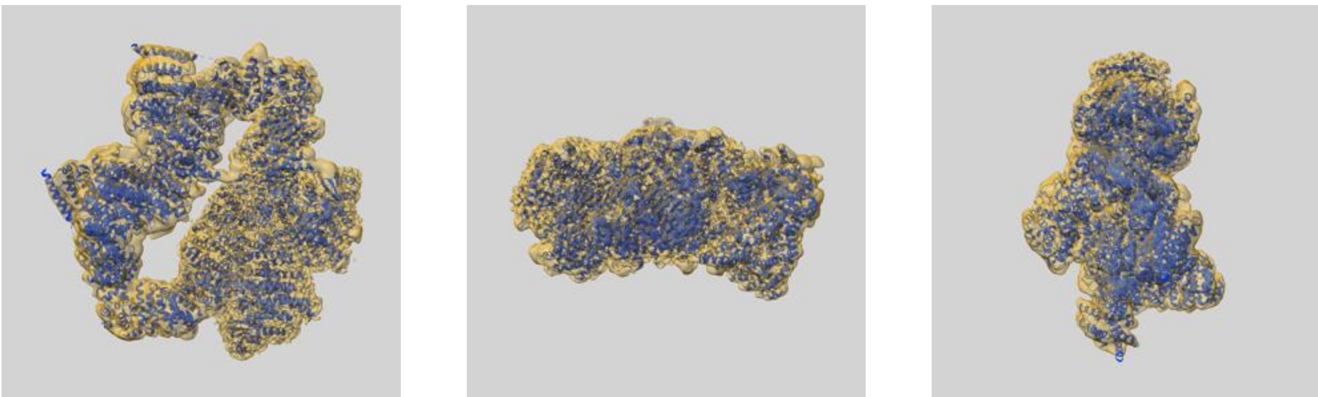
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.64	6.25	3.66

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.64 differs from the reported value 2.9 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-68921 and PDB model 23FE. Per-residue inclusion information can be found in section 3 on page 6.

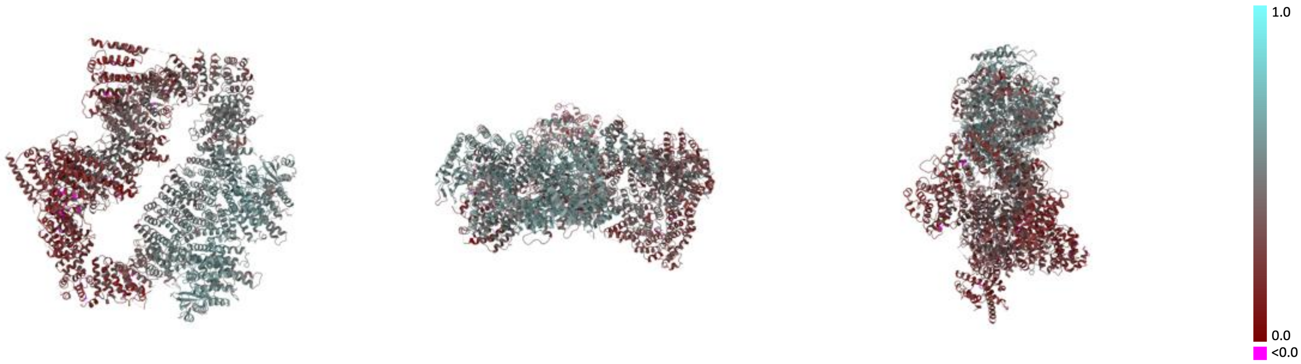
9.1 Map-model overlay (i)



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.05 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.

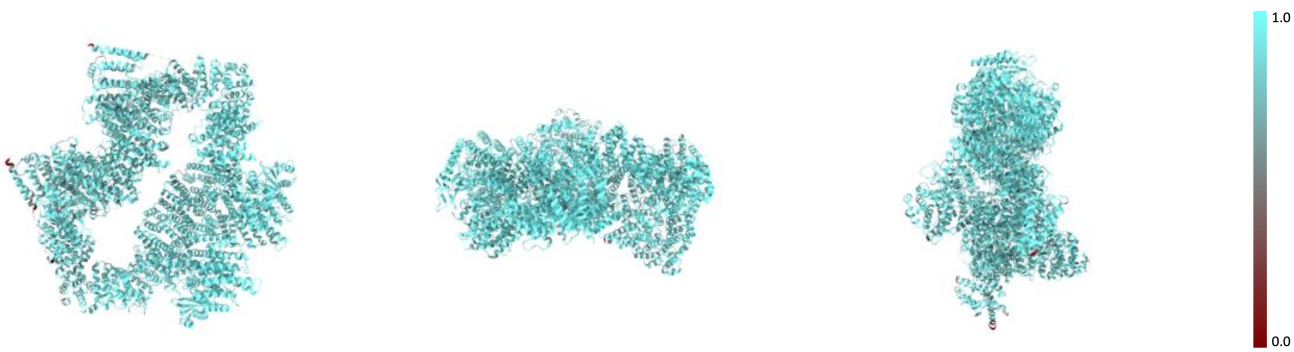
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

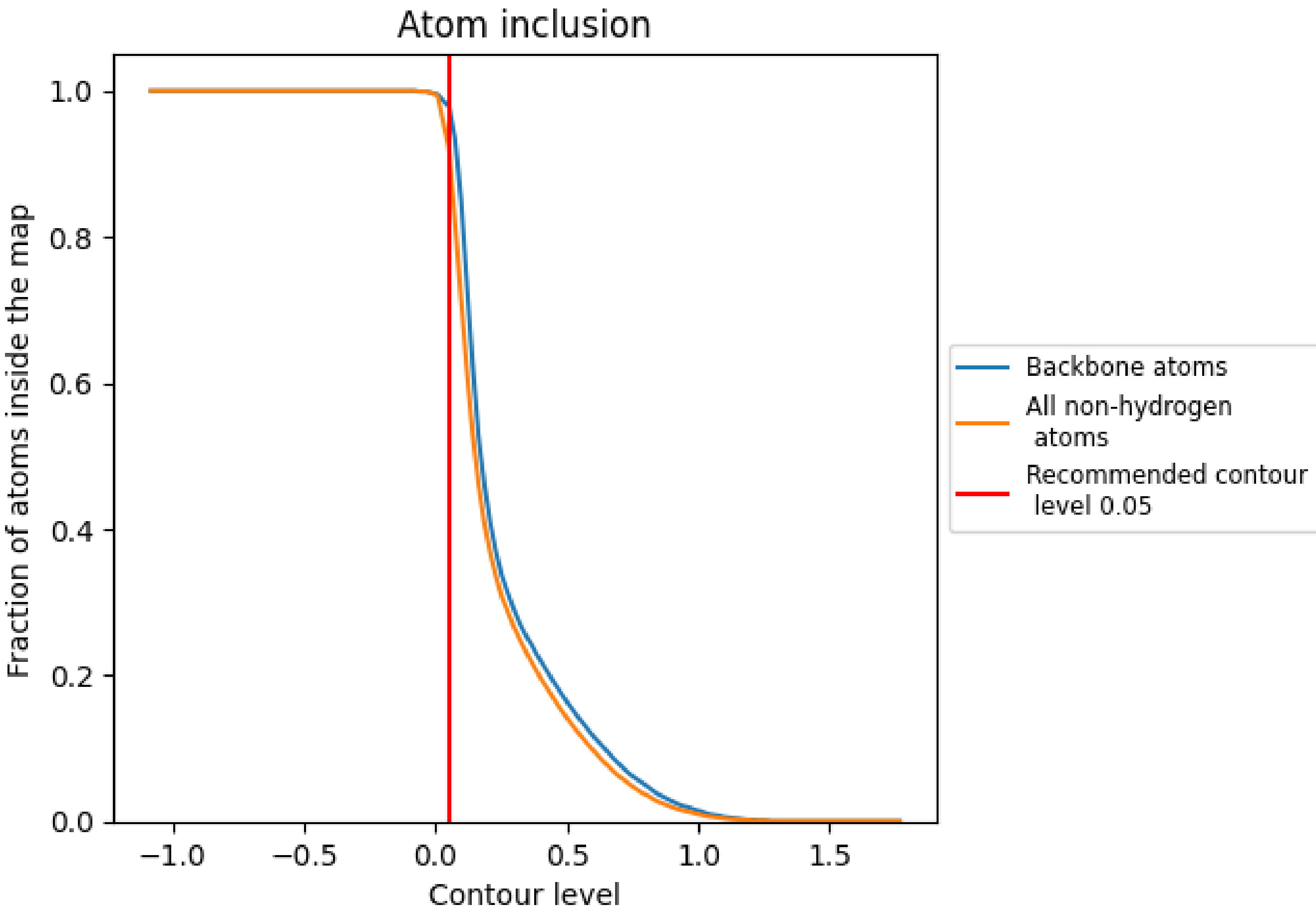
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.05).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 92% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9250	0.3940
A	0.9370	0.4350
B	0.9220	0.3780
C	0.9200	0.3410
D	0.8990	0.3010
E	0.6730	0.3340
F	0.7750	0.3770
G	0.9200	0.3190
H	0.6510	0.1850