



wwPDB EM Validation Summary Report ⓘ

Dec 9, 2025 – 08:35 PM EST

PDB ID : 9O5K / pdb_00009o5k
EMDB ID : EMD-70143
Title : Cryo-EM structure of human SWELL1-PSA heterocomplex
Authors : Hagino, T.; Twomey, E.C.; Qiu, Z.
Deposited on : 2025-04-10
Resolution : 3.19 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 ⓘ 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.dev129
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
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) : 2.47

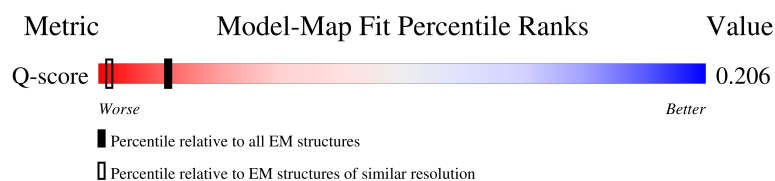
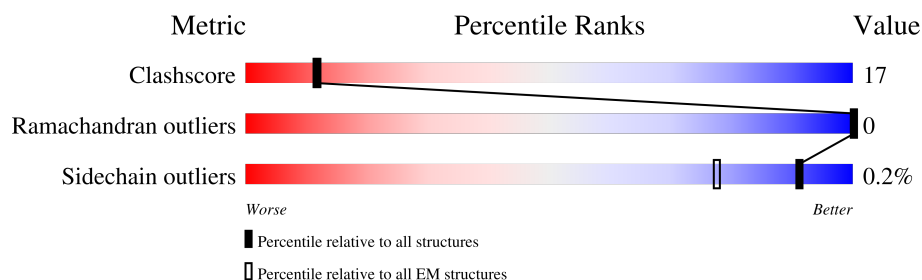
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.19 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	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14455 (2.69 - 3.69)

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	G	884	<div> <div>38%</div> <div>60%</div> <div>38%</div> <div>.</div> </div>
1	H	884	<div> <div>38%</div> <div>61%</div> <div>37%</div> <div>.</div> </div>
1	I	884	<div> <div>38%</div> <div>60%</div> <div>37%</div> <div>.</div> </div>
2	A	817	<div> <div>55%</div> <div>31%</div> <div>13%</div> </div>

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Mol	Chain	Length	Quality of chain
2	B	817	 58% 29% 13%
2	C	817	 56% 31% 13%
2	D	817	 58% 29% 13%
2	E	817	 56% 30% 13%
2	F	817	 57% 30% 13%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 55815 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 Puromycin-sensitive aminopeptidase.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	G	864	Total	C	N	O	S	0	0
			6855	4388	1144	1292	31		
1	I	864	Total	C	N	O	S	0	0
			6855	4388	1144	1292	31		
1	H	864	Total	C	N	O	S	0	0
			6855	4388	1144	1292	31		

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	43	MET	-	initiating methionine	UNP P55786
G	531	ALA	SER	conflict	UNP P55786
G	920	THR	-	expression tag	UNP P55786
G	921	GLY	-	expression tag	UNP P55786
G	922	GLY	-	expression tag	UNP P55786
G	923	LEU	-	expression tag	UNP P55786
G	924	VAL	-	expression tag	UNP P55786
G	925	PRO	-	expression tag	UNP P55786
G	926	ARG	-	expression tag	UNP P55786
I	43	MET	-	initiating methionine	UNP P55786
I	531	ALA	SER	conflict	UNP P55786
I	920	THR	-	expression tag	UNP P55786
I	921	GLY	-	expression tag	UNP P55786
I	922	GLY	-	expression tag	UNP P55786
I	923	LEU	-	expression tag	UNP P55786
I	924	VAL	-	expression tag	UNP P55786
I	925	PRO	-	expression tag	UNP P55786
I	926	ARG	-	expression tag	UNP P55786
H	43	MET	-	initiating methionine	UNP P55786
H	531	ALA	SER	conflict	UNP P55786
H	920	THR	-	expression tag	UNP P55786
H	921	GLY	-	expression tag	UNP P55786
H	922	GLY	-	expression tag	UNP P55786
H	923	LEU	-	expression tag	UNP P55786

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Chain	Residue	Modelled	Actual	Comment	Reference
H	924	VAL	-	expression tag	UNP P55786
H	925	PRO	-	expression tag	UNP P55786
H	926	ARG	-	expression tag	UNP P55786

- Molecule 2 is a protein called Volume-regulated anion channel subunit LRRC8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		
2	B	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		
2	E	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		
2	F	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		
2	C	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		
2	D	711	Total	C	N	O	S	0	0
			5875	3826	990	1034	25		

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	811	THR	-	expression tag	UNP Q8IWT6
A	812	GLY	-	expression tag	UNP Q8IWT6
A	813	GLY	-	expression tag	UNP Q8IWT6
A	814	LEU	-	expression tag	UNP Q8IWT6
A	815	VAL	-	expression tag	UNP Q8IWT6
A	816	PRO	-	expression tag	UNP Q8IWT6
A	817	ARG	-	expression tag	UNP Q8IWT6
B	811	THR	-	expression tag	UNP Q8IWT6
B	812	GLY	-	expression tag	UNP Q8IWT6
B	813	GLY	-	expression tag	UNP Q8IWT6
B	814	LEU	-	expression tag	UNP Q8IWT6
B	815	VAL	-	expression tag	UNP Q8IWT6
B	816	PRO	-	expression tag	UNP Q8IWT6
B	817	ARG	-	expression tag	UNP Q8IWT6
E	811	THR	-	expression tag	UNP Q8IWT6
E	812	GLY	-	expression tag	UNP Q8IWT6
E	813	GLY	-	expression tag	UNP Q8IWT6
E	814	LEU	-	expression tag	UNP Q8IWT6
E	815	VAL	-	expression tag	UNP Q8IWT6

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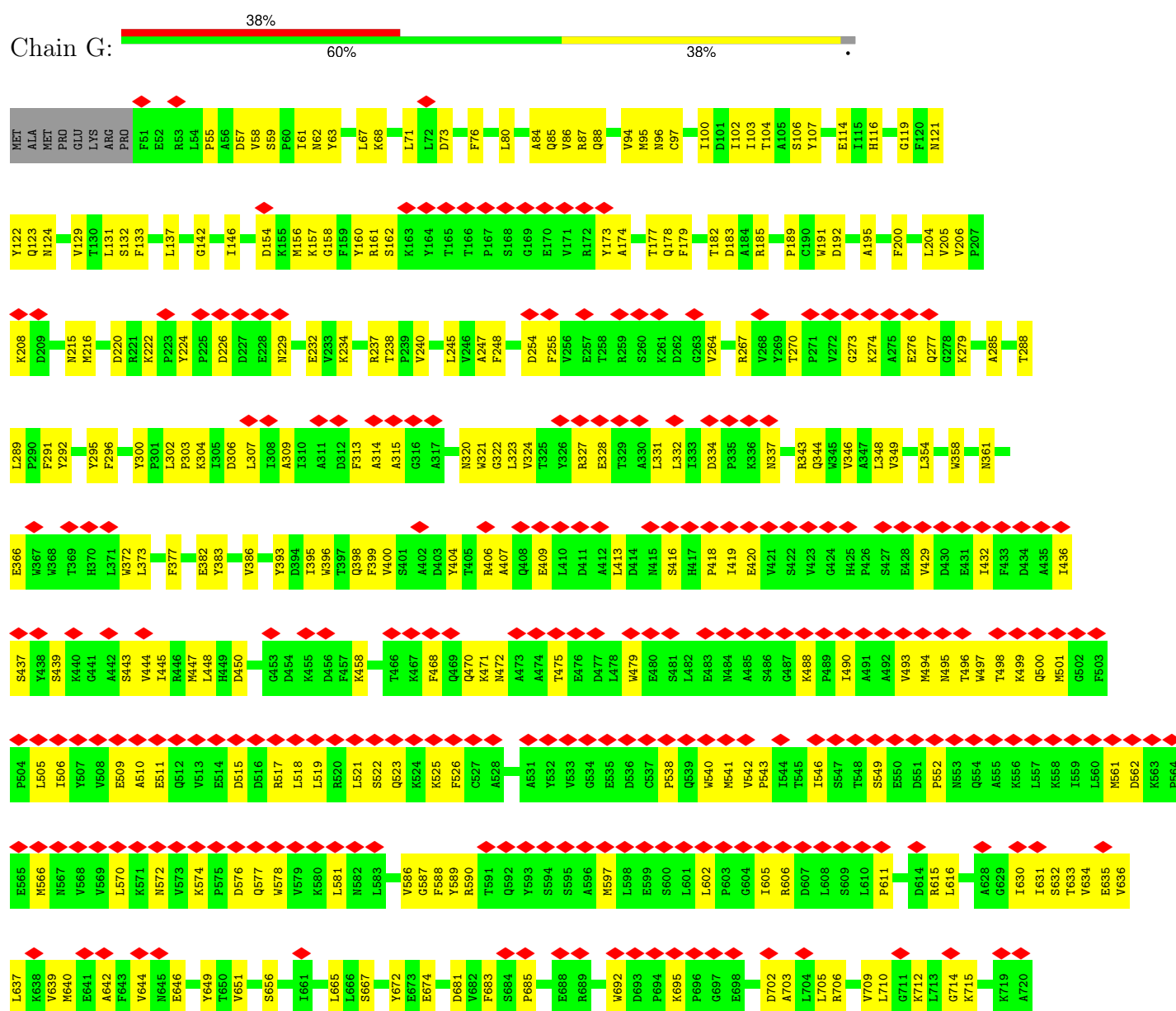
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Chain	Residue	Modelled	Actual	Comment	Reference
E	816	PRO	-	expression tag	UNP Q8IWT6
E	817	ARG	-	expression tag	UNP Q8IWT6
F	811	THR	-	expression tag	UNP Q8IWT6
F	812	GLY	-	expression tag	UNP Q8IWT6
F	813	GLY	-	expression tag	UNP Q8IWT6
F	814	LEU	-	expression tag	UNP Q8IWT6
F	815	VAL	-	expression tag	UNP Q8IWT6
F	816	PRO	-	expression tag	UNP Q8IWT6
F	817	ARG	-	expression tag	UNP Q8IWT6
C	811	THR	-	expression tag	UNP Q8IWT6
C	812	GLY	-	expression tag	UNP Q8IWT6
C	813	GLY	-	expression tag	UNP Q8IWT6
C	814	LEU	-	expression tag	UNP Q8IWT6
C	815	VAL	-	expression tag	UNP Q8IWT6
C	816	PRO	-	expression tag	UNP Q8IWT6
C	817	ARG	-	expression tag	UNP Q8IWT6
D	811	THR	-	expression tag	UNP Q8IWT6
D	812	GLY	-	expression tag	UNP Q8IWT6
D	813	GLY	-	expression tag	UNP Q8IWT6
D	814	LEU	-	expression tag	UNP Q8IWT6
D	815	VAL	-	expression tag	UNP Q8IWT6
D	816	PRO	-	expression tag	UNP Q8IWT6
D	817	ARG	-	expression tag	UNP Q8IWT6

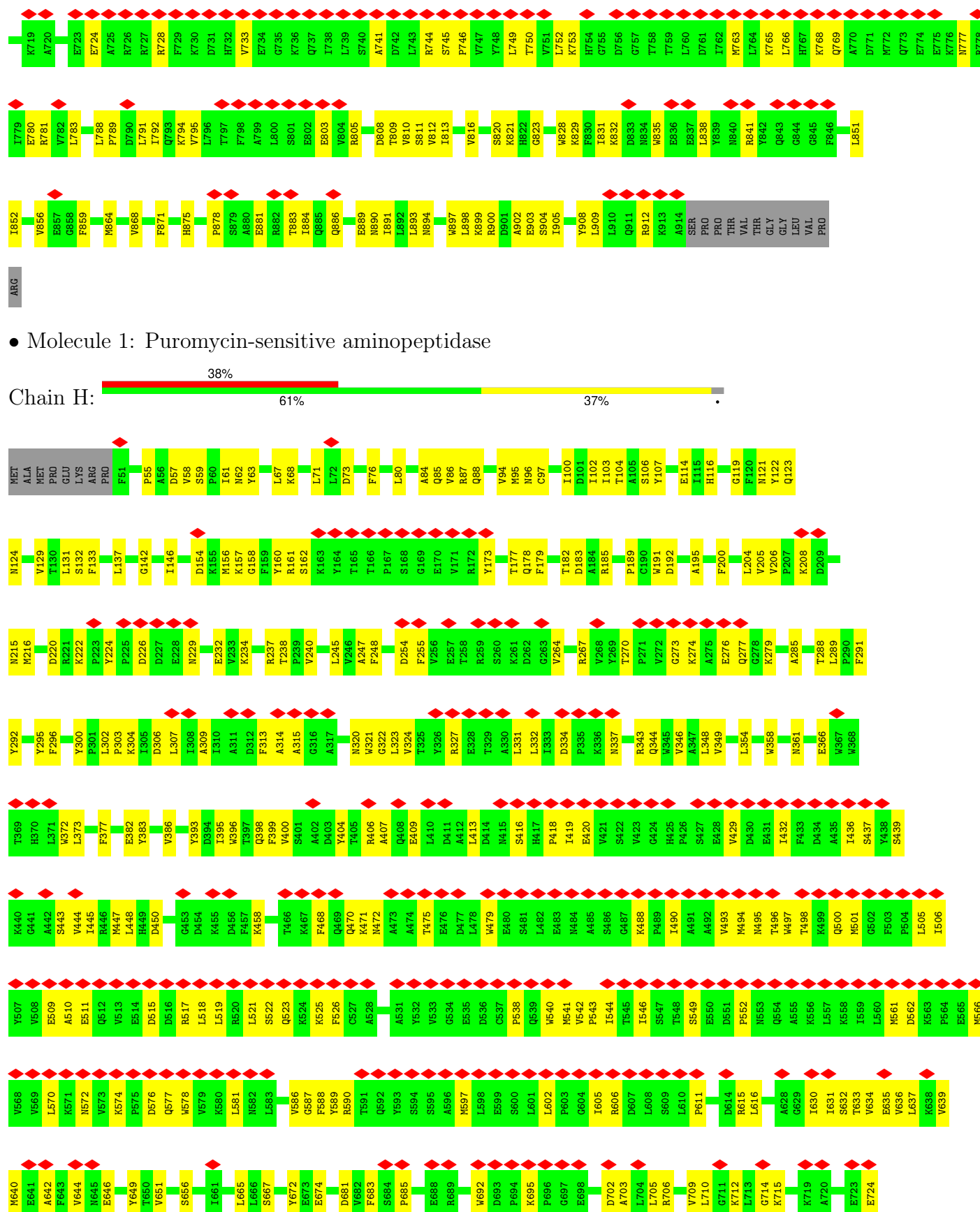
3 Residue-property plots

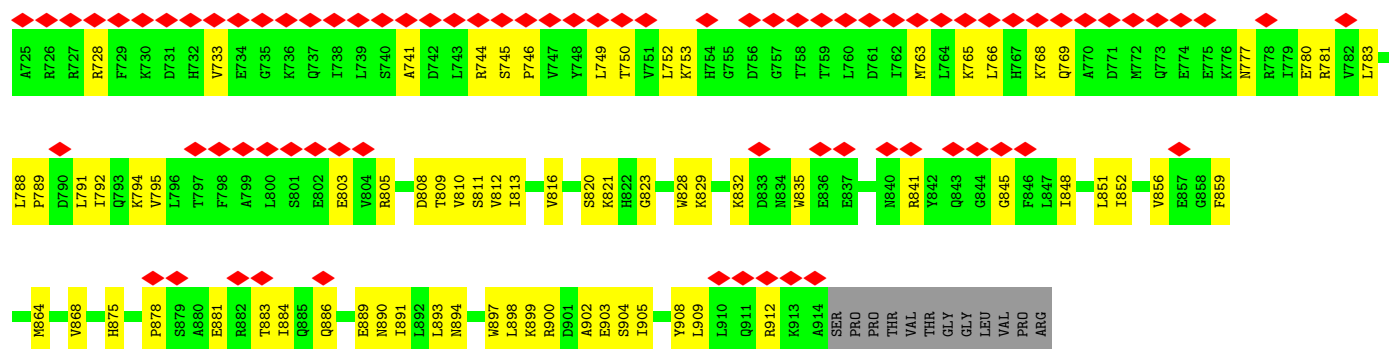
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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



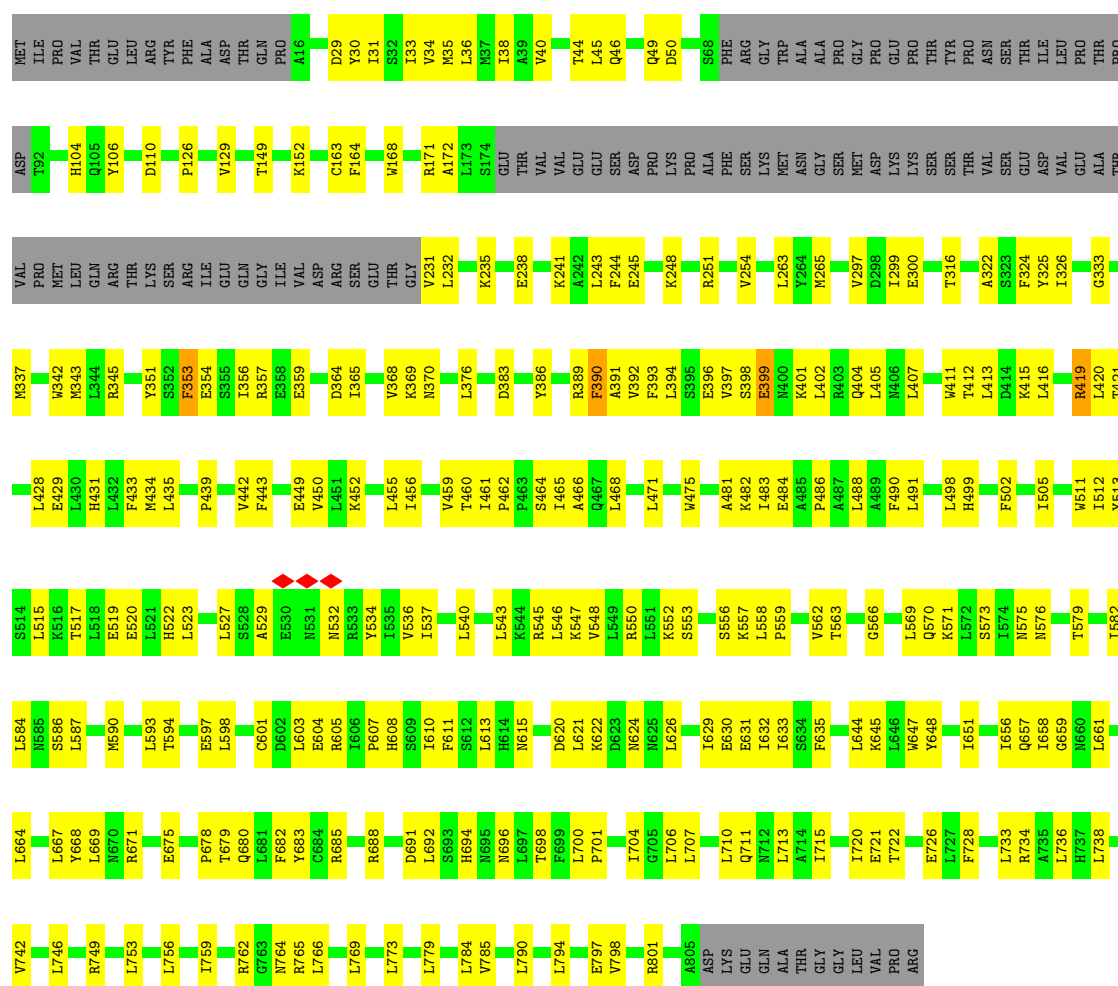






• Molecule 2: Volume-regulated anion channel subunit LRRC8A

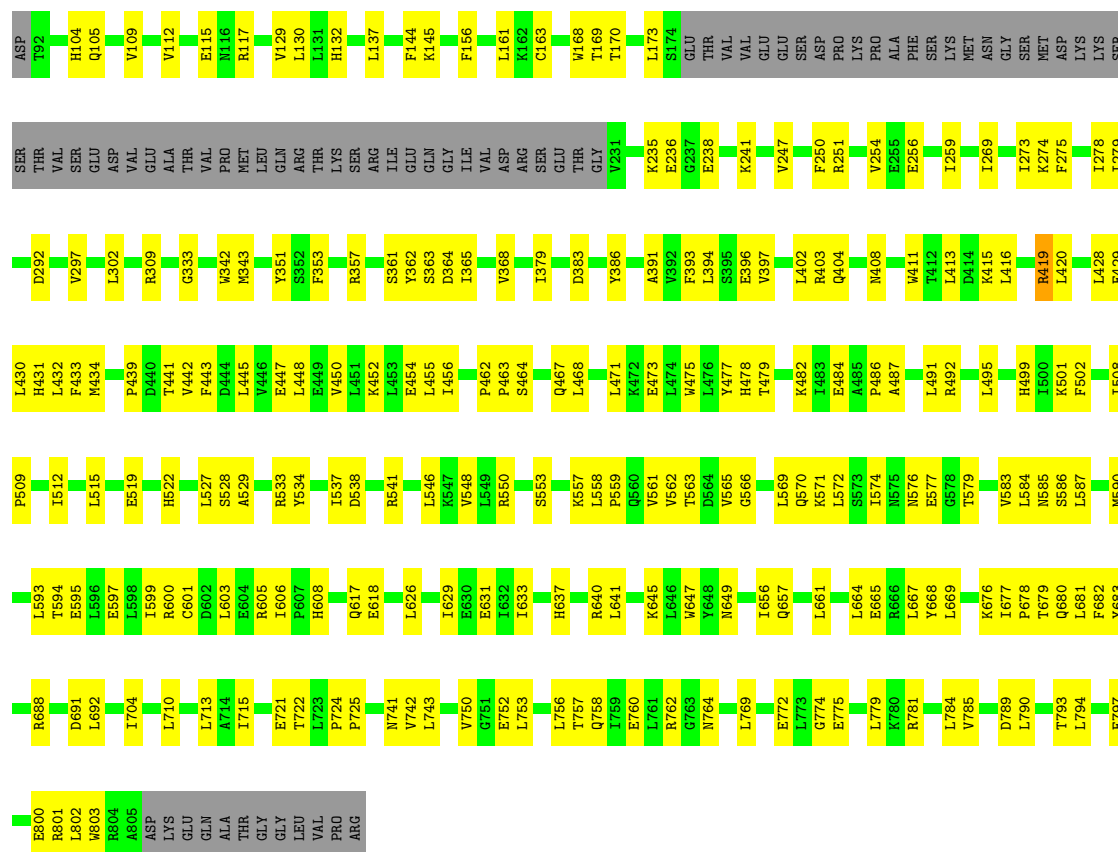
Chain A: 55% 31% 13%



• Molecule 2: Volume-regulated anion channel subunit LRRC8A

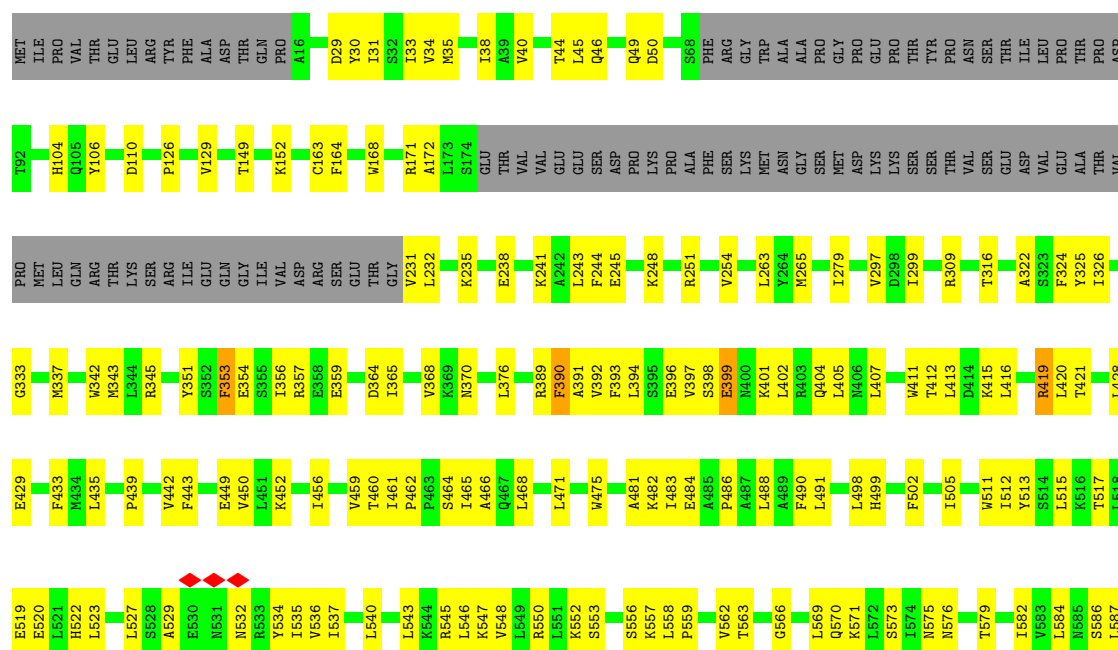
Chain B: 58% 29% 13%

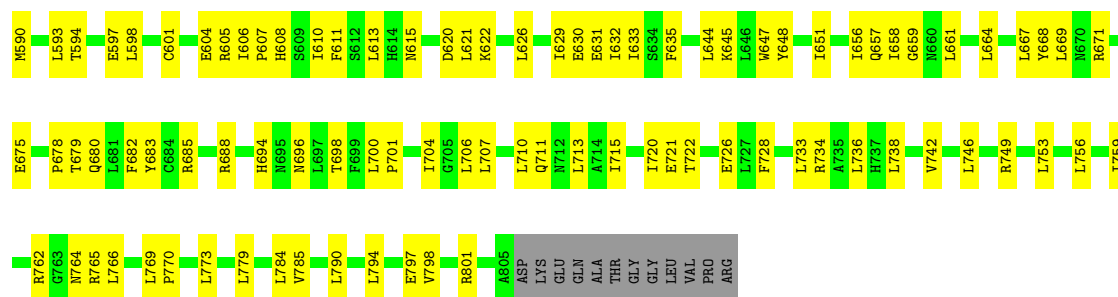




● Molecule 2: Volume-regulated anion channel subunit LRRC8A

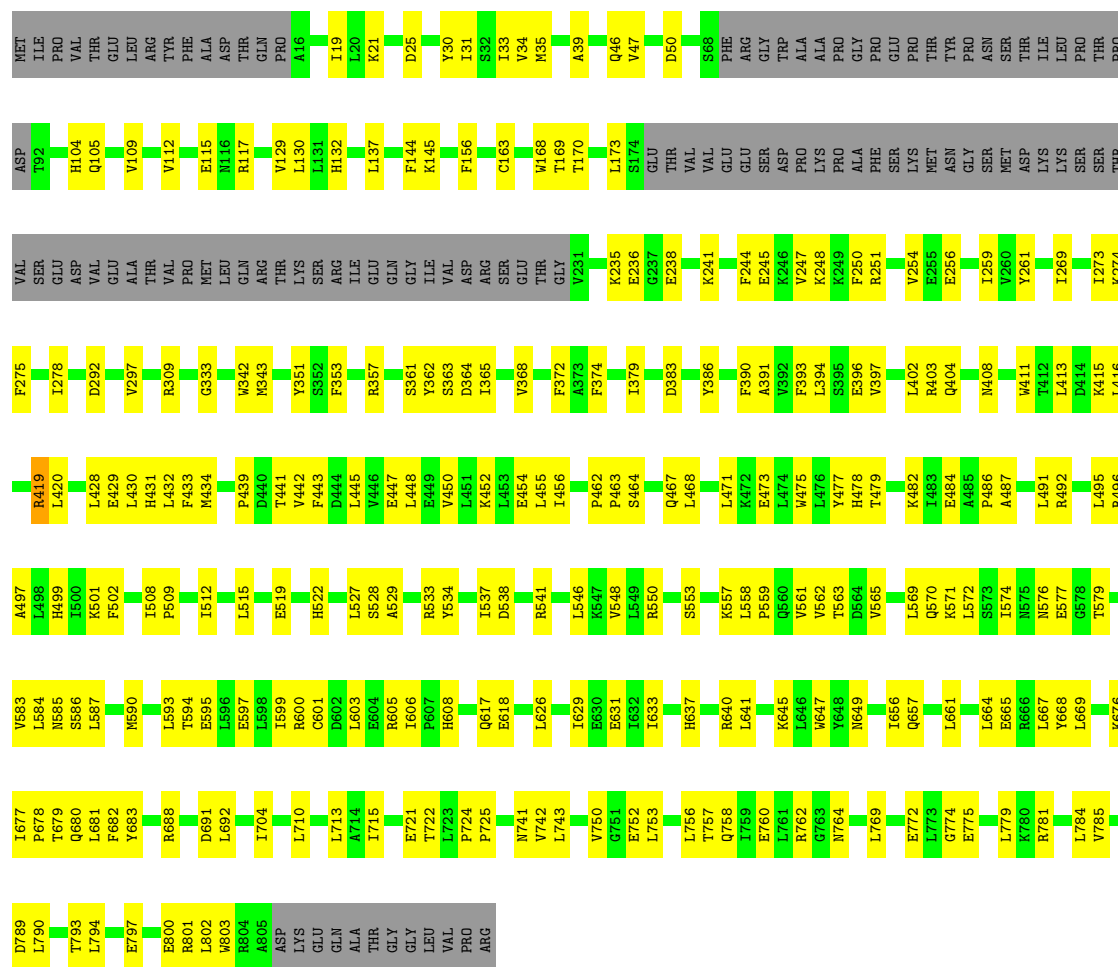
Chain E: 56% 30% 13%





• Molecule 2: Volume-regulated anion channel subunit LRRC8A

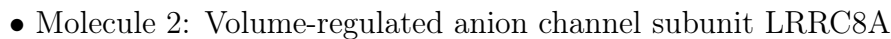
Chain F: 57% 30% 13%



• Molecule 2: Volume-regulated anion channel subunit LRRC8A

Chain C: 56% 31% 13%





R496	K274	VAL	ASP	MET
R499	F275	SER	T92	ILE
I500	L278	GLU	H104	PRO
K501	L428	ASP	Q105	THR
F502	E429	GLU	V109	GLU
I508	L430	ALA	ARG	LEU
P509	H431	THR	V112	ARG
F512	L432	VAL	P115	PHE
I515	F433	PRO	E115	ALA
L516	M434	MET	H116	ASP
L515	P439	LEU	R117	THR
E519	D440	GLN	V129	GLN
I522	T441	THR	L130	PRO
H522	F442	SER	L131	A16
L527	D443	ARG	H132	I19
S528	L445	ILE	L137	L20
A529	V446	GLU	F144	K21
R533	L448	GLY	K145	D25
F534	E449	ILE	F156	Y30
I537	V450	ASP	C163	I31
D538	L451	ARG	S32	I33
R541	L453	SER	V34	V34
L546	E454	GLU	M168	M35
F548	L455	THR	T169	
R550	I456	GLY	T170	A39
S553	V368	Y291	L173	Q46
K557	F374	K234	GLU	V47
P559	L471	K235	THR	D50
F560	P463	E236	VAL	
V561	S464	E237	GLU	S68
V562	Q467	E238	VAL	PHE
T563	L468	Y386	GLU	ARG
D564	L471	L471	SER	GLY
F565	E473	A391	ASP	TRP
L569	L474	F393	PRO	ALA
Q570	L475	L394	PRO	ALA
K571	L476	L395	ALA	GLY
L572	L477	E396	PHE	PRO
I574	Y477	V397	SER	GLU
F575	H478	L402	LYS	PRO
S577	T479	R403	ASN	THR
E577	K482	Q404	MET	THR
G578	I483	F408	GLY	PRO
T579	E484	M408	SER	ASN
	L485		MET	SER
	P486		ASP	SER
	A487		LYS	THR
	L491		THR	ILE
	L492		LYS	LEU
	L493		SER	PRO
	L494		THR	THR
	L495		SER	PRO



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	240320	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40.0	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1600	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.888	Depositor
Minimum map value	-0.323	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.017	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	428.25598, 428.25598, 428.25598	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1896, 1.1896, 1.1896	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	G	0.23	0/7016	0.42	0/9522
1	H	0.23	0/7016	0.42	0/9522
1	I	0.23	0/7016	0.42	0/9522
2	A	0.39	0/6007	0.59	1/8143 (0.0%)
2	B	0.37	0/6007	0.55	1/8143 (0.0%)
2	C	0.39	0/6007	0.59	1/8143 (0.0%)
2	D	0.37	0/6007	0.55	1/8143 (0.0%)
2	E	0.39	0/6007	0.59	1/8143 (0.0%)
2	F	0.37	0/6007	0.55	1/8143 (0.0%)
All	All	0.33	0/57090	0.52	6/77424 (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
2	A	0	1
2	B	0	2
2	C	0	1
2	D	0	2
2	E	0	1
2	F	0	2
All	All	0	9

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	390	PHE	N-CA-C	-6.23	107.51	114.62
2	E	390	PHE	N-CA-C	-6.23	107.51	114.62
2	C	390	PHE	N-CA-C	-6.23	107.52	114.62

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	259	ILE	N-CA-C	-5.42	107.08	113.42
2	B	259	ILE	N-CA-C	-5.41	107.09	113.42

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A	419	ARG	Sidechain
2	B	403	ARG	Sidechain
2	B	419	ARG	Sidechain
2	E	419	ARG	Sidechain
2	F	403	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	G	6855	0	6773	252	0
1	H	6855	0	6773	246	0
1	I	6855	0	6773	247	0
2	A	5875	0	6041	226	0
2	B	5875	0	6041	190	0
2	C	5875	0	6041	228	0
2	D	5875	0	6041	190	0
2	E	5875	0	6041	224	0
2	F	5875	0	6041	190	0
All	All	55815	0	56565	1949	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 17.

The worst 5 of 1949 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)
2:A:171:ARG:HH21	2:A:231:VAL:HG13	0.91	1.05

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:688:ARG:HH12	2:F:800:GLU:HG3	1.22	1.04
2:C:171:ARG:HH21	2:C:231:VAL:HG13	0.90	1.04
2:E:171:ARG:HH21	2:E:231:VAL:HG13	0.91	1.02
2:E:688:ARG:HH12	2:D:800:GLU:HG3	1.22	1.02

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	G	862/884 (98%)	799 (93%)	63 (7%)	0	100	100
1	H	862/884 (98%)	799 (93%)	63 (7%)	0	100	100
1	I	862/884 (98%)	799 (93%)	63 (7%)	0	100	100
2	A	705/817 (86%)	663 (94%)	42 (6%)	0	100	100
2	B	705/817 (86%)	667 (95%)	38 (5%)	0	100	100
2	C	705/817 (86%)	664 (94%)	41 (6%)	0	100	100
2	D	705/817 (86%)	667 (95%)	38 (5%)	0	100	100
2	E	705/817 (86%)	663 (94%)	42 (6%)	0	100	100
2	F	705/817 (86%)	666 (94%)	39 (6%)	0	100	100
All	All	6816/7554 (90%)	6387 (94%)	429 (6%)	0	100	100

There are no Ramachandran outliers to report.

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	G	741/758 (98%)	741 (100%)	0	100	100
1	H	741/758 (98%)	741 (100%)	0	100	100
1	I	741/758 (98%)	741 (100%)	0	100	100
2	A	661/754 (88%)	658 (100%)	3 (0%)	86	93
2	B	661/754 (88%)	659 (100%)	2 (0%)	91	96
2	C	661/754 (88%)	658 (100%)	3 (0%)	86	93
2	D	661/754 (88%)	659 (100%)	2 (0%)	91	96
2	E	661/754 (88%)	658 (100%)	3 (0%)	86	93
2	F	661/754 (88%)	659 (100%)	2 (0%)	91	96
All	All	6189/6798 (91%)	6174 (100%)	15 (0%)	91	97

5 of 15 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	E	399	GLU
2	D	247	VAL
2	F	247	VAL
2	D	353	PHE
2	C	353	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 83 such sidechains are listed below:

Mol	Chain	Res	Type
2	F	406	ASN
2	D	105	GLN
2	F	478	HIS
2	C	467	GLN
2	D	408	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no 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.

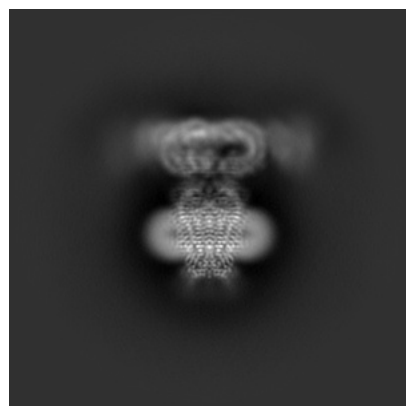
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-70143. These allow visual inspection of the internal detail of the map and identification of artifacts.

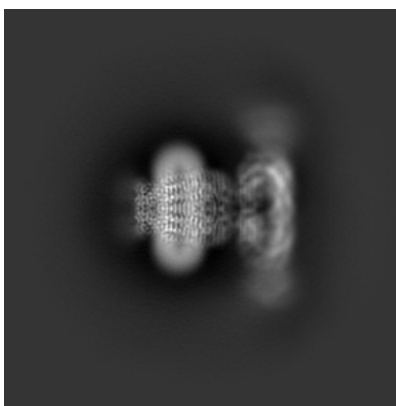
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

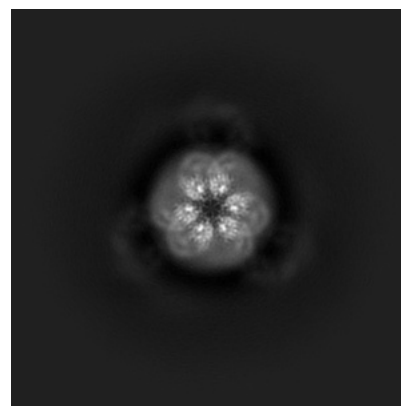
6.1.1 Primary map



X

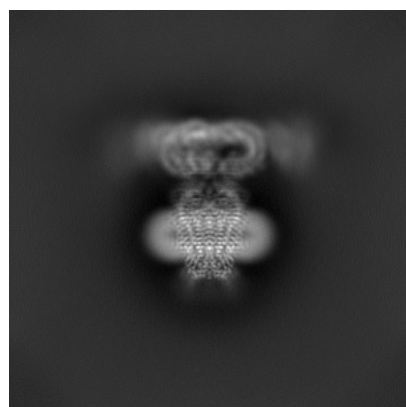


Y

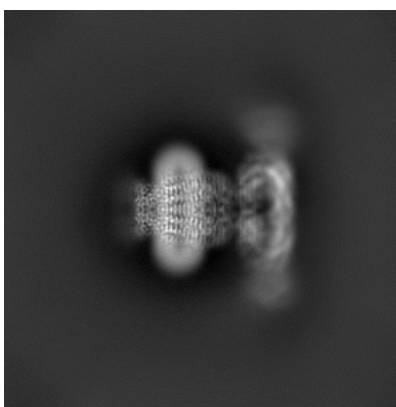


Z

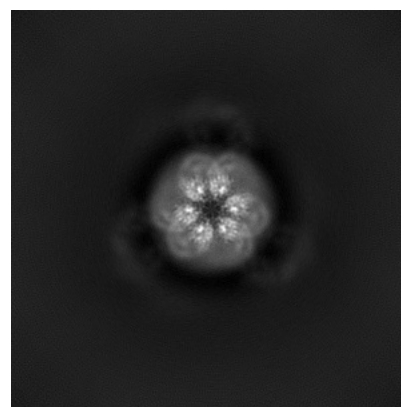
6.1.2 Raw map



X



Y

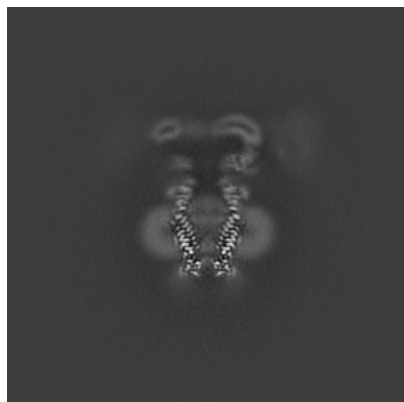


Z

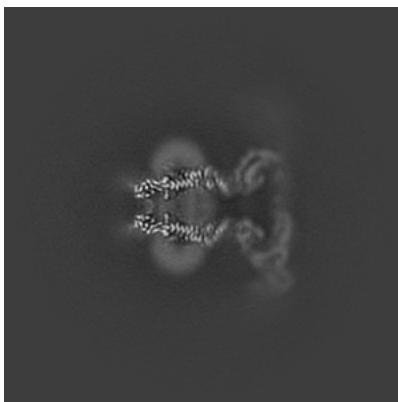
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

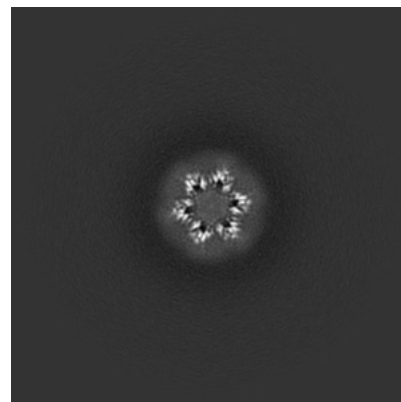
6.2.1 Primary map



X Index: 180

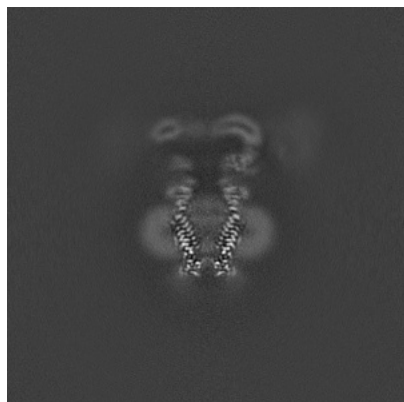


Y Index: 180

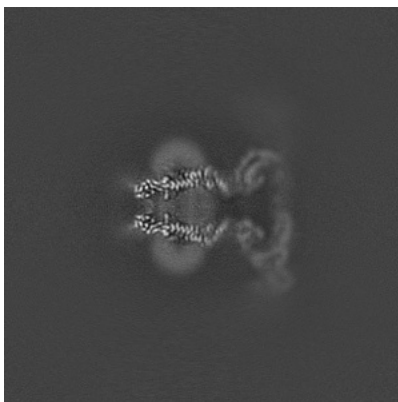


Z Index: 180

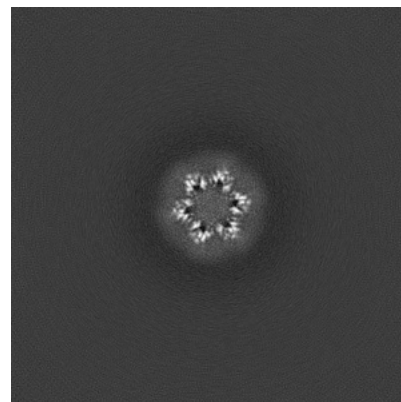
6.2.2 Raw map



X Index: 180



Y Index: 180

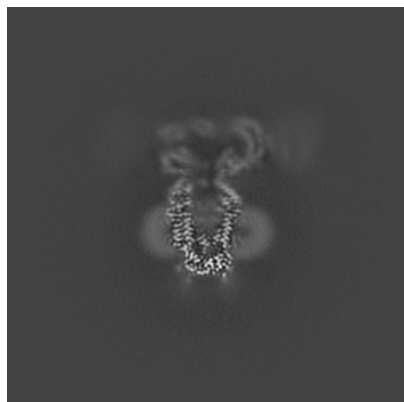


Z Index: 180

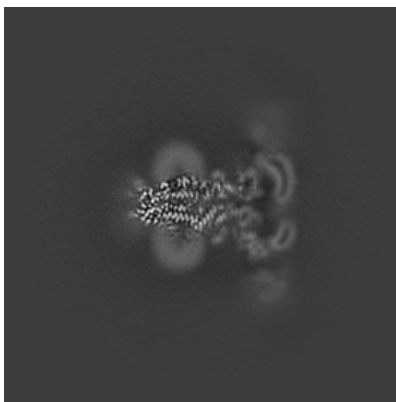
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

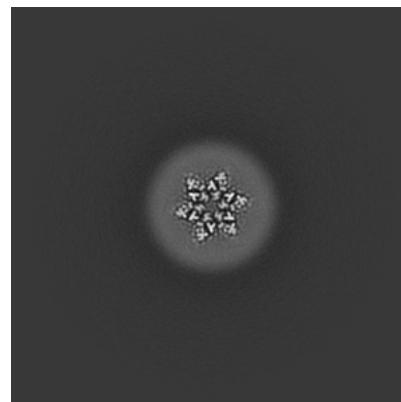
6.3.1 Primary map



X Index: 170



Y Index: 163

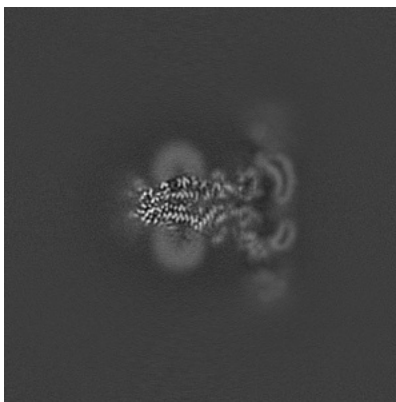


Z Index: 146

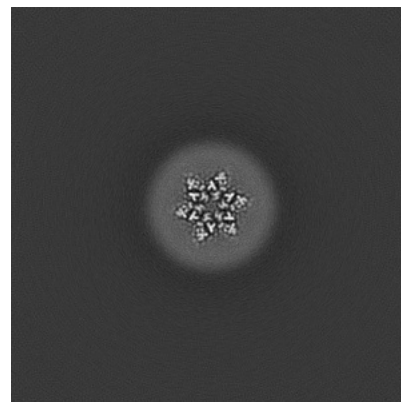
6.3.2 Raw map



X Index: 170



Y Index: 163



Z Index: 146

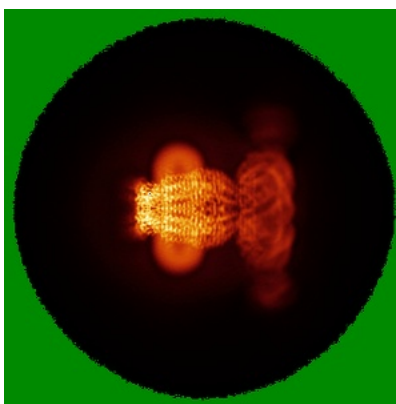
The images above show the largest variance slices of the map in three orthogonal directions.

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

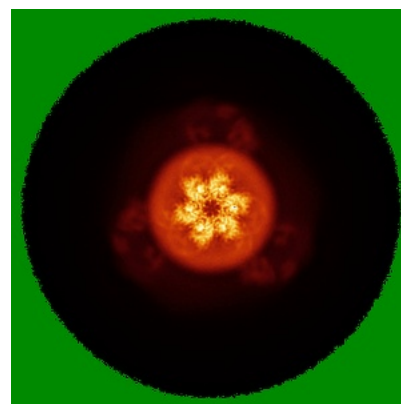
6.4.1 Primary map



X

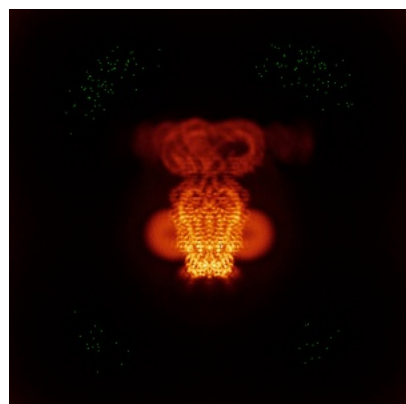


Y

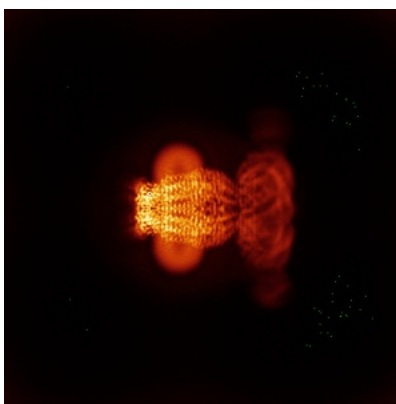


Z

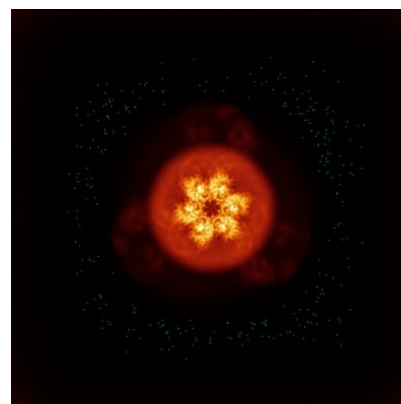
6.4.2 Raw map



X



Y

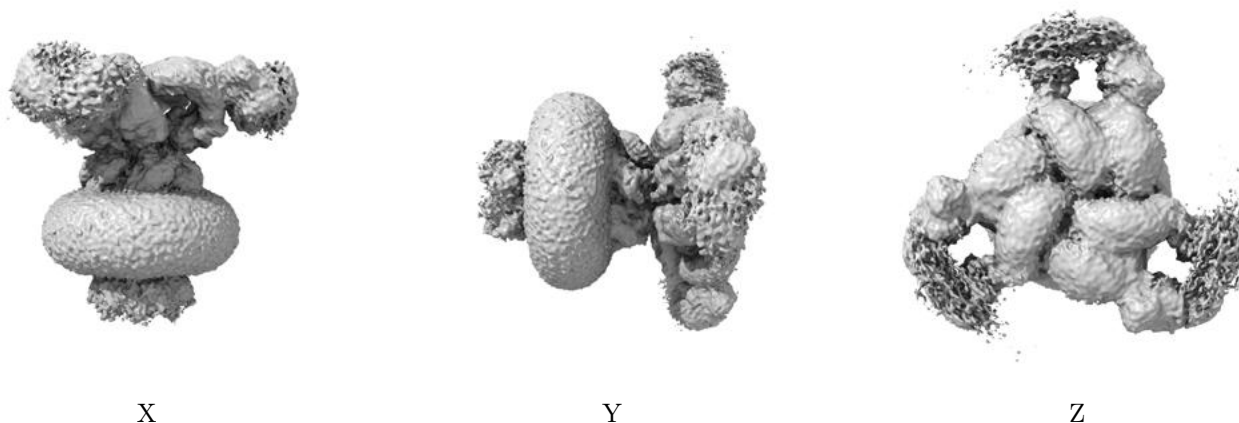


Z

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.

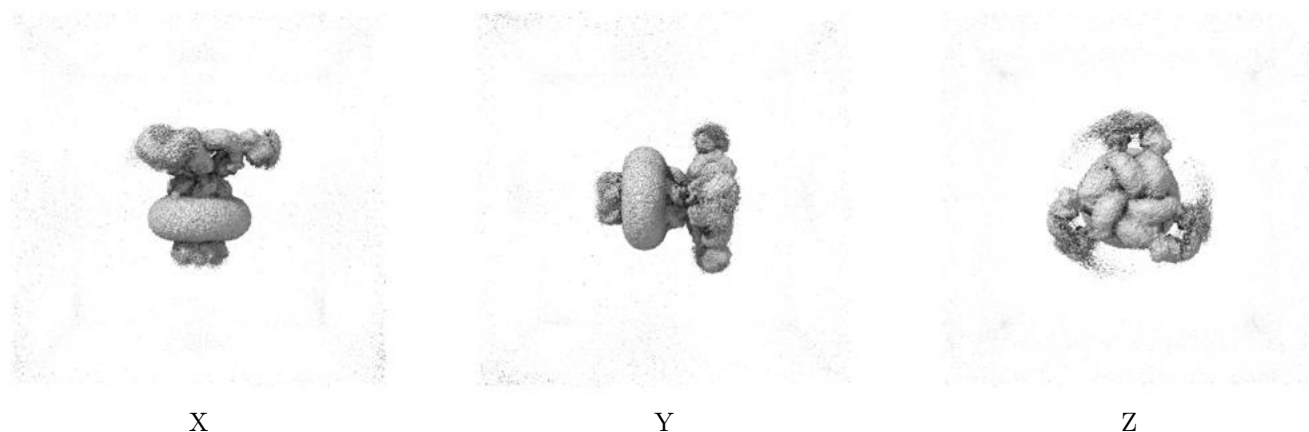
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.03. 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



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.

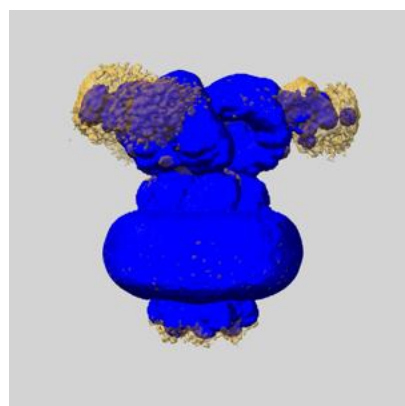
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

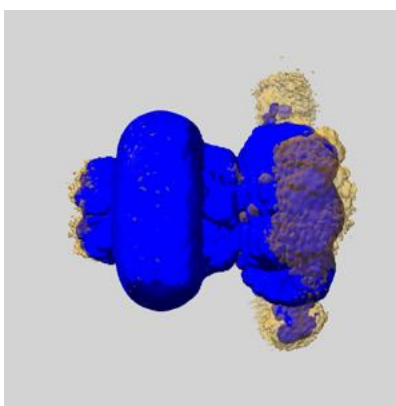
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

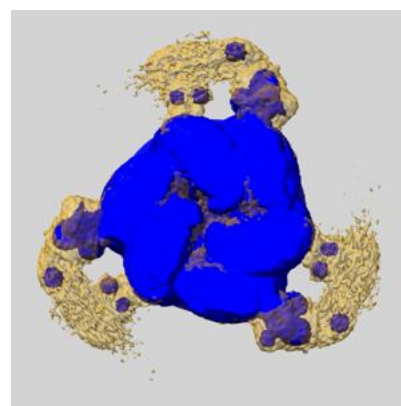
6.6.1 emd_70143_msk_1.map [i](#)



X



Y

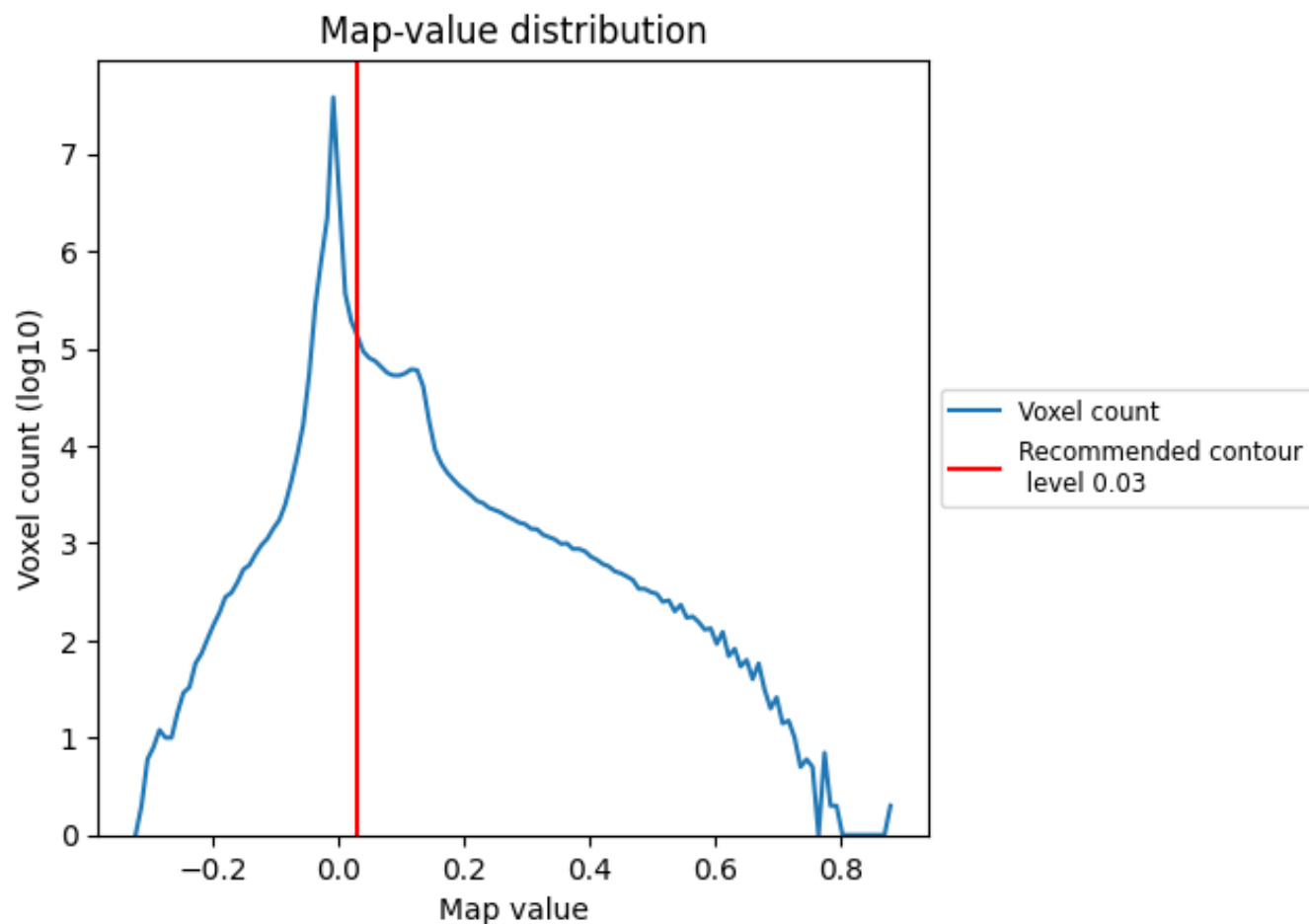


Z

7 Map analysis [i](#)

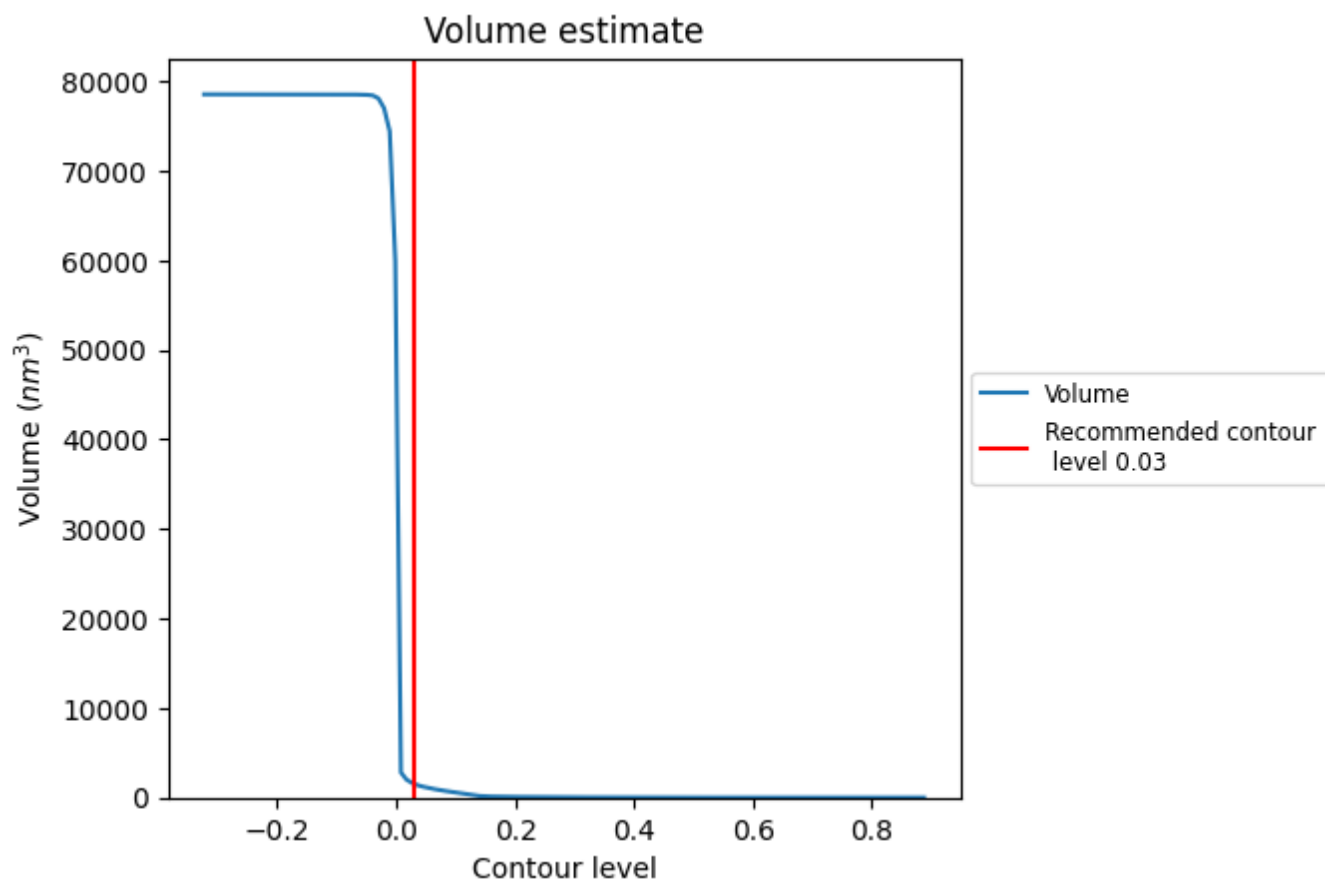
This section contains the results of statistical analysis of the map.

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.

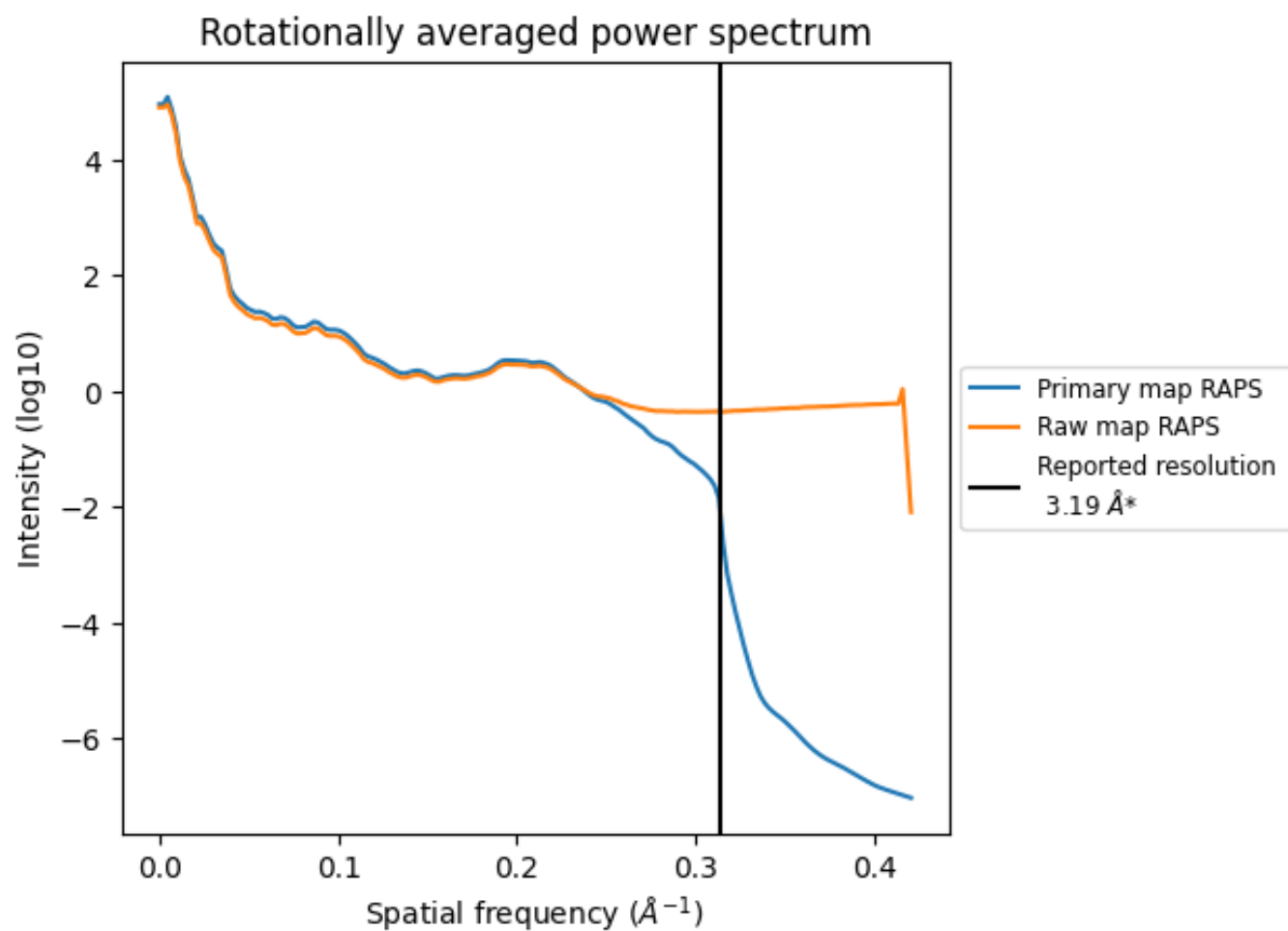
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1546 nm^3 ; this corresponds to an approximate mass of 1397 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 ⓘ

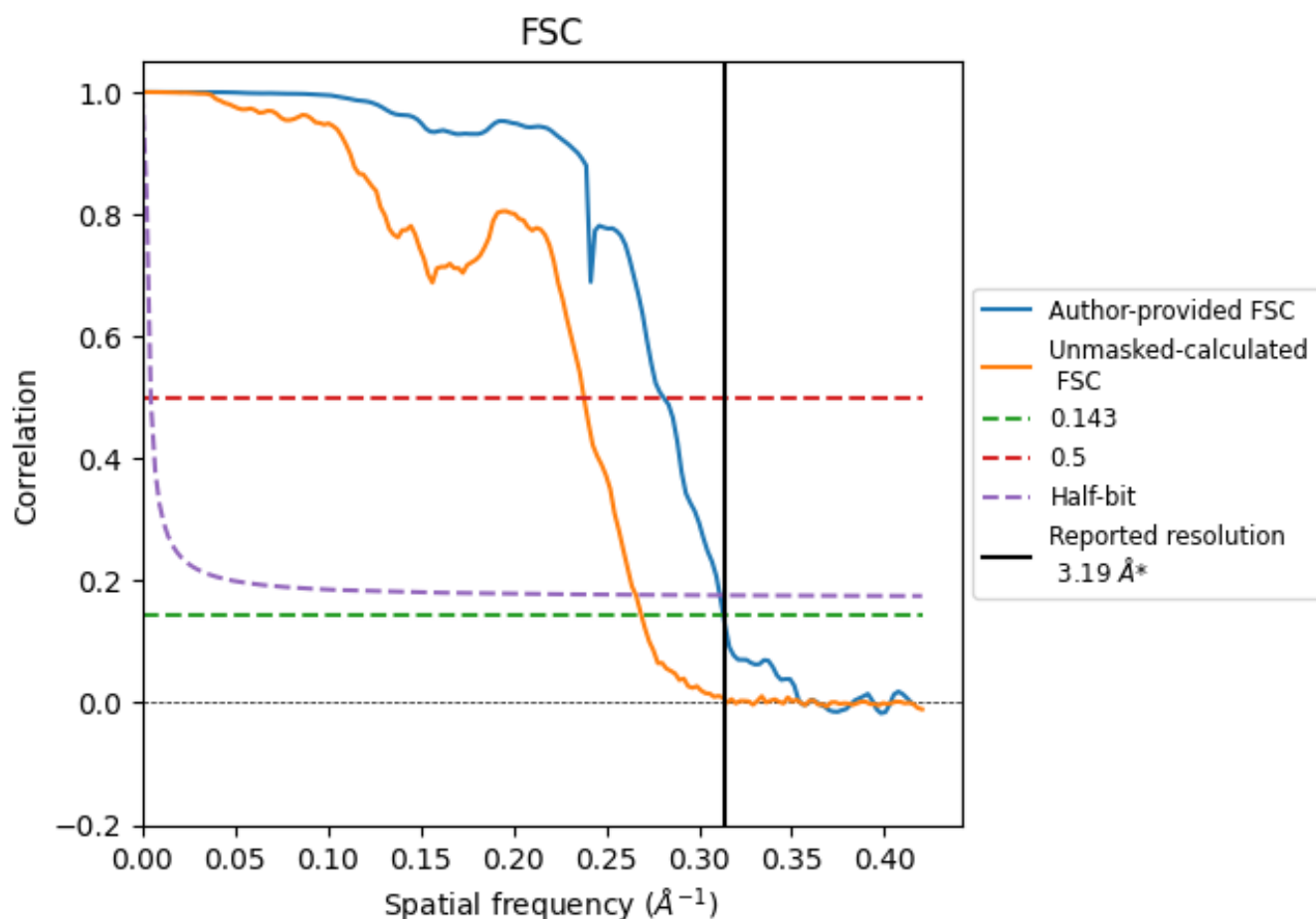


*Reported resolution corresponds to spatial frequency of 0.313 \AA^{-1}

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 0.313\AA^{-1}

8.2 Resolution estimates [i](#)

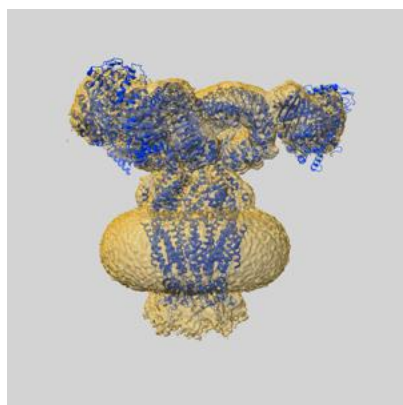
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.19	-	-
Author-provided FSC curve	3.19	3.56	3.21
Unmasked-calculated*	3.72	4.20	3.76

*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 3.72 differs from the reported value 3.19 by more than 10 %

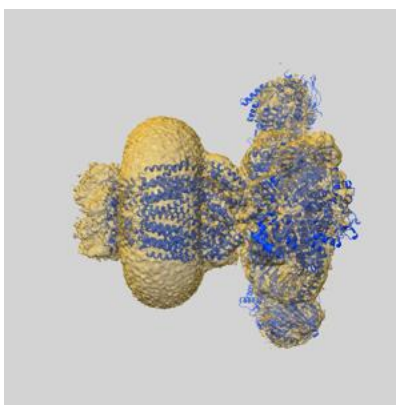
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-70143 and PDB model 9O5K. Per-residue inclusion information can be found in section [3](#) on page [7](#).

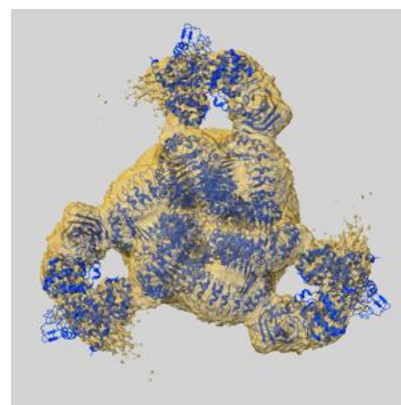
9.1 Map-model overlay [i](#)



X



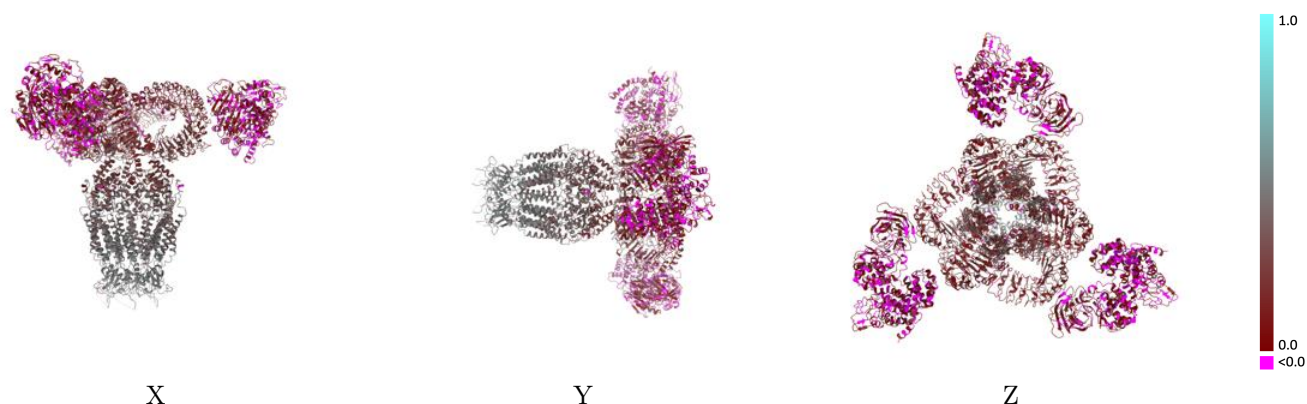
Y



Z

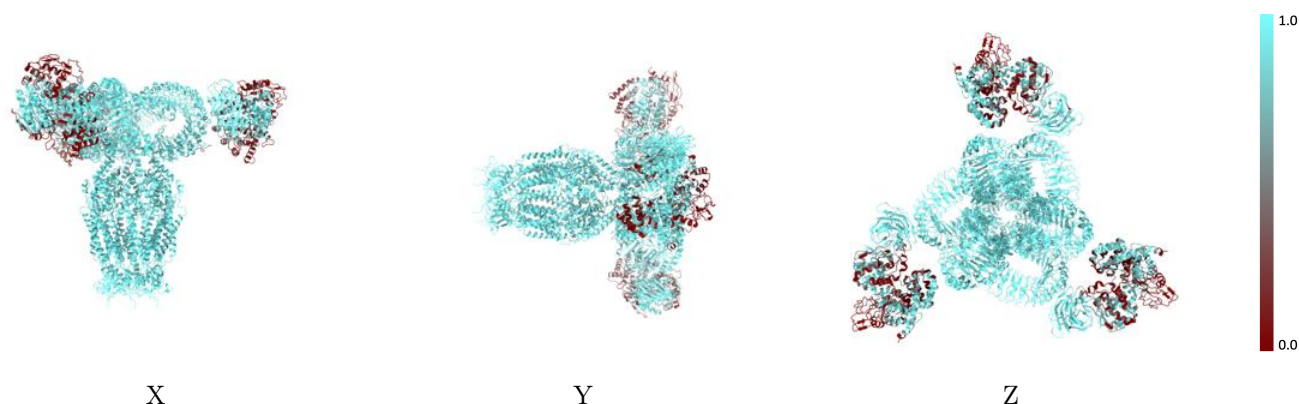
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



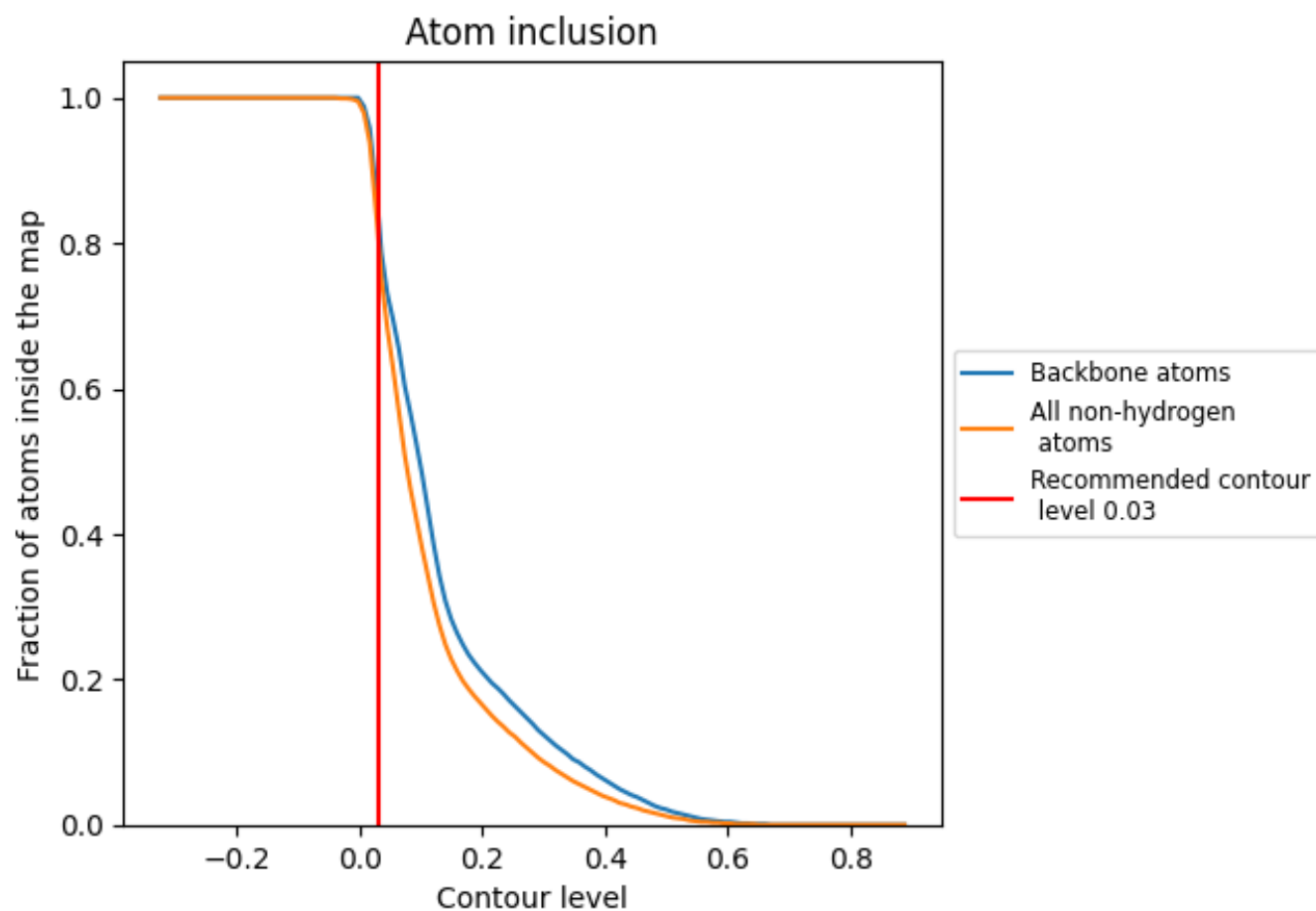
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.03).

9.4 Atom inclusion [i](#)



At the recommended contour level, 85% of all backbone atoms, 82% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.8210	<div></div> 0.2060
A	<div></div> 0.9680	<div></div> 0.2870
B	<div></div> 0.9660	<div></div> 0.2940
C	<div></div> 0.9680	<div></div> 0.2870
D	<div></div> 0.9650	<div></div> 0.2950
E	<div></div> 0.9680	<div></div> 0.2870
F	<div></div> 0.9650	<div></div> 0.2950
G	<div></div> 0.5720	<div></div> 0.0610
H	<div></div> 0.5760	<div></div> 0.0610
I	<div></div> 0.5730	<div></div> 0.0600

1.0

0.0

<0.0