



## Full wwPDB EM Validation Report ⓘ

May 19, 2025 – 05:49 PM EDT

PDB ID : 8TQ2 / pdb\_00008tq2  
EMDB ID : EMD-41499  
Title : Structure of the kinase lobe of human CDK8 kinase module  
Authors : Chen, S.F.; Chao, T.C.; Kim, H.J.; Tang, H.C.; Khadka, S.; Li, T.; Murakami, K.; Boyer, T.G.; Tsai, K.L.  
Deposited on : 2023-08-06  
Resolution : 3.80 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](mailto:validation@mail.wwpdb.org)

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<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>.

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

EMDB validation analysis : 0.0.1.dev118  
MolProbity : 4-5-2 with Phenix2.0rc1  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.43.1

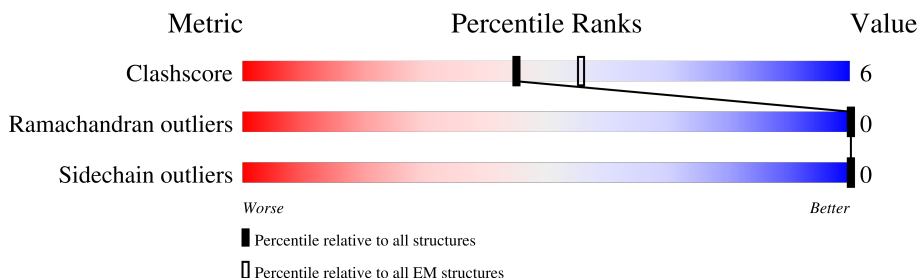
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

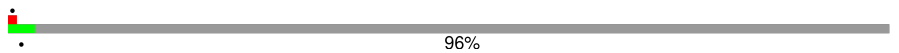
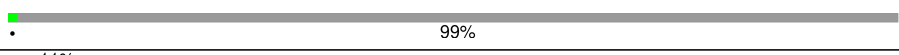


The reported resolution of this entry is 3.80 Å.

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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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  $\geq 3$ , 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	C	2177	 96%
2	D	2174	 99%
3	A	464	 11% 58% 10% 33%
4	B	283	 74% 18% 8%

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5505 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 Mediator of RNA polymerase II transcription subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	82	Total	C	N	O	S	0	0
			639	400	116	122	1		

- Molecule 2 is a protein called Mediator of RNA polymerase II transcription subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	16	Total	C	N	O	S	0	0
			120	70	22	27	1		

- Molecule 3 is a protein called Cyclin-dependent kinase 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	313	Total	C	N	O	S	0	0
			2561	1663	439	442	17		

- Molecule 4 is a protein called Cyclin-C.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	B	261	Total	C	N	O	S	1	0
			2185	1436	354	378	17		





[illegible]

- Molecule 2: Mediator of RNA polymerase II transcription subunit 13

Chain D:  99%

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





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	66391	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 ( $e^-/\text{\AA}^2$ )	64	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.108	Depositor
Minimum map value	-0.049	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.024	Depositor
Map size (Å)	376.67517, 376.67517, 376.67517	wwPDB
Map dimensions	352, 352, 352	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0701, 1.0701, 1.0701	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	C	0.11	0/654	0.30	0/884
2	D	0.13	0/121	0.40	0/162
3	A	0.10	0/2627	0.29	0/3542
4	B	0.10	0/2241	0.28	0/3034
All	All	0.10	0/5643	0.29	0/7622

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 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	C	639	0	629	8	0
2	D	120	0	109	1	0
3	A	2561	0	2578	31	0
4	B	2185	0	2219	33	0
All	All	5505	0	5535	66	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 6.

All (66) 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)
3:A:148:LEU:HD21	3:A:213:LYS:HA	1.76	0.68
3:A:203:GLU:OE2	3:A:323:ARG:NH2	2.28	0.67
4:B:70:LYS:O	4:B:72:PHE:N	2.28	0.67
3:A:27:VAL:HG22	3:A:356:ARG:HD2	1.80	0.64
3:A:186:PRO:HG2	3:A:189:ASP:HB2	1.80	0.63
3:A:159:VAL:HG22	3:A:169:VAL:HG12	1.79	0.63
3:A:59:ILE:O	4:B:96:LYS:NZ	2.30	0.61
1:C:27:GLN:NE2	3:A:143:HIS:O	2.33	0.60
1:C:41:VAL:HG11	3:A:273:MET:HB3	1.85	0.58
3:A:226:GLU:HG2	3:A:232:PRO:HA	1.86	0.58
3:A:275:GLU:HB2	3:A:278:THR:HB	1.87	0.56
3:A:137:ASP:OD1	3:A:138:GLY:N	2.39	0.56
4:B:57:LEU:HD22	4:B:61:VAL:HG21	1.88	0.56
4:B:250:MET:HE3	4:B:250:MET:HA	1.87	0.55
2:D:1618:ASP:HB2	2:D:1621:LYS:HB2	1.90	0.54
4:B:171:MET:O	4:B:209:GLN:NE2	2.40	0.53
4:B:50:ALA:HB1	4:B:119:ARG:HH11	1.73	0.53
1:C:25:TYR:HD2	4:B:3:GLY:HA2	1.75	0.51
3:A:86:LEU:HB3	4:B:140:PHE:CZ	2.46	0.50
1:C:16:ARG:HG3	1:C:16:ARG:HH11	1.77	0.50
4:B:175:LEU:HD13	4:B:178:ARG:HD2	1.94	0.50
4:B:97:VAL:HG21	4:B:150:LEU:HB3	1.94	0.49
4:B:227:ILE:O	4:B:231:ILE:HG12	2.13	0.48
3:A:77:ASN:ND2	3:A:137:ASP:OD1	2.41	0.48
3:A:209:ARG:HG3	3:A:209:ARG:HH11	1.80	0.47
4:B:5:PHE:CZ	4:B:11:TYR:HB2	2.50	0.47
4:B:30:LYS:HD3	4:B:30:LYS:HA	1.63	0.46
4:B:180:VAL:O	4:B:183:THR:HG22	2.14	0.46
3:A:104:LEU:HD21	3:A:227:LEU:HD11	1.96	0.46
4:B:89:THR:OG1	4:B:139:GLU:HB3	2.16	0.46
3:A:129:LYS:HE2	3:A:334:TYR:CZ	2.51	0.45
4:B:35:GLU:HG2	4:B:39:LYS:HE3	1.98	0.45
3:A:351:ILE:HG23	3:A:353:TYR:HD1	1.81	0.45
4:B:52:GLY:HA2	4:B:57:LEU:HD12	1.99	0.45
3:A:98:ASP:OD1	3:A:98:ASP:N	2.46	0.45
4:B:249:GLU:O	4:B:253:ILE:HD12	2.16	0.45
3:A:140:HIS:HB2	3:A:326:SER:HB2	1.98	0.45
1:C:21:PRO:HB2	1:C:24:VAL:HB	1.99	0.45
3:A:129:LYS:HD2	3:A:335:PHE:HA	1.99	0.44
3:A:69:LEU:O	3:A:73:LEU:HD23	2.17	0.44
1:C:51:VAL:HG22	4:B:173:LEU:HG	2.00	0.44
3:A:225:ALA:HB2	3:A:312:LEU:HD11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:226:LYS:HA	4:B:229:GLU:HG3	2.01	0.43
3:A:103:ASP:HB2	3:A:356:ARG:HH12	1.83	0.43
3:A:306:SER:O	3:A:310:HIS:ND1	2.45	0.43
3:A:4:ASP:OD1	3:A:5:PHE:N	2.51	0.43
3:A:129:LYS:HE2	3:A:334:TYR:CE1	2.54	0.43
4:B:170:ASP:OD1	4:B:171:MET:N	2.51	0.43
3:A:307:LYS:HE3	3:A:334:TYR:HA	1.99	0.43
1:C:59:ALA:HB3	4:B:178:ARG:HD3	2.01	0.42
4:B:157:ARG:HB2	4:B:158:PRO:HD3	2.00	0.42
3:A:143:HIS:CD2	3:A:213:LYS:HB2	2.55	0.42
4:B:160:LEU:HA	4:B:163[A]:VAL:HG22	2.01	0.42
4:B:128:PHE:CE2	4:B:130:TYR:HB2	2.55	0.42
4:B:68:TYR:OH	4:B:150:LEU:O	2.37	0.42
4:B:186:THR:HG23	4:B:237:LEU:HD22	2.02	0.41
3:A:104:LEU:HD11	3:A:227:LEU:HD21	2.01	0.41
4:B:72:PHE:CE1	4:B:145:LEU:HD11	2.55	0.41
4:B:188:LEU:HD13	4:B:230:ILE:HG23	2.02	0.41
4:B:160:LEU:HD21	4:B:177:TRP:HZ3	1.86	0.41
4:B:98:GLU:HA	4:B:98:GLU:OE2	2.20	0.41
1:C:16:ARG:HG3	1:C:16:ARG:NH1	2.36	0.41
4:B:43:PHE:O	4:B:47:VAL:HG23	2.20	0.41
4:B:46:ASN:OD1	4:B:185:ARG:NH2	2.53	0.40
3:A:220:ILE:HA	3:A:223:ILE:HG12	2.03	0.40
3:A:319:ASP:N	3:A:319:ASP:OD1	2.55	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	C	80/2177 (4%)	78 (98%)	2 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	D	14/2174 (1%)	13 (93%)	1 (7%)	0	100	100
3	A	301/464 (65%)	294 (98%)	7 (2%)	0	100	100
4	B	258/283 (91%)	255 (99%)	3 (1%)	0	100	100
All	All	653/5098 (13%)	640 (98%)	13 (2%)	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	C	71/1916 (4%)	71 (100%)	0	100	100
2	D	14/1918 (1%)	14 (100%)	0	100	100
3	A	277/412 (67%)	277 (100%)	0	100	100
4	B	240/258 (93%)	240 (100%)	0	100	100
All	All	602/4504 (13%)	602 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
4	B	49	GLN
4	B	59	GLN

### 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 [i](#)

There are no chain breaks in this entry.

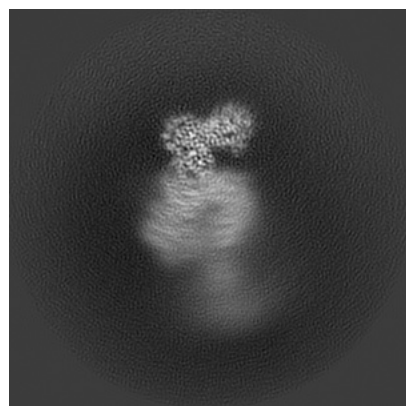
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-41499. These allow visual inspection of the internal detail of the map and identification of artifacts.

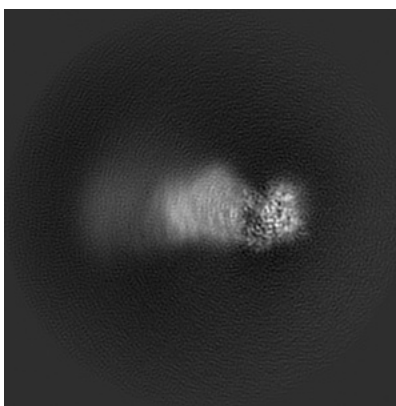
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

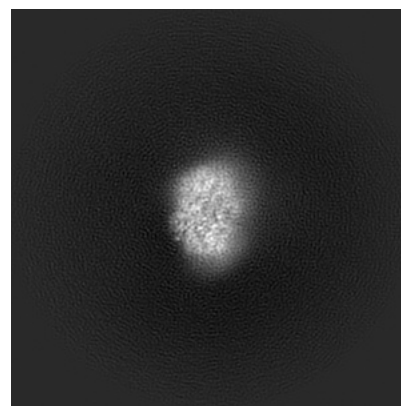
#### 6.1.1 Primary map



X

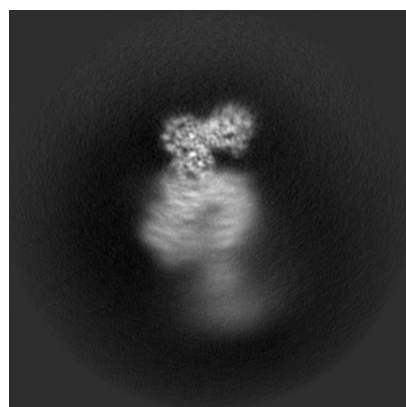


Y

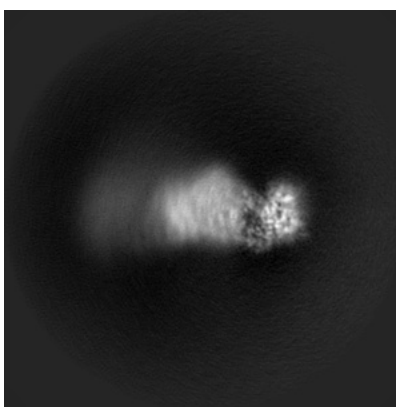


Z

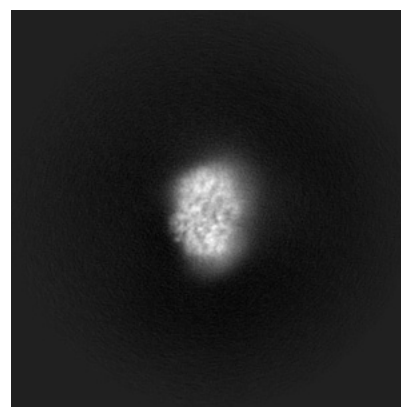
#### 6.1.2 Raw map



X



Y

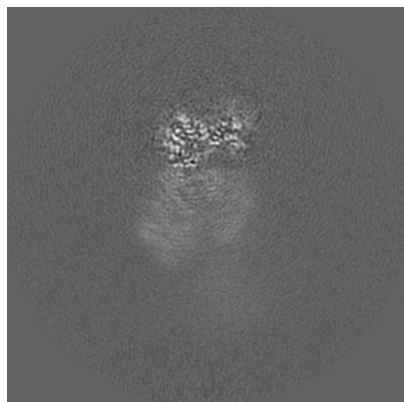


Z

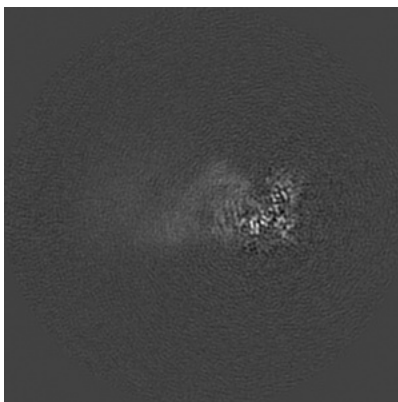
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

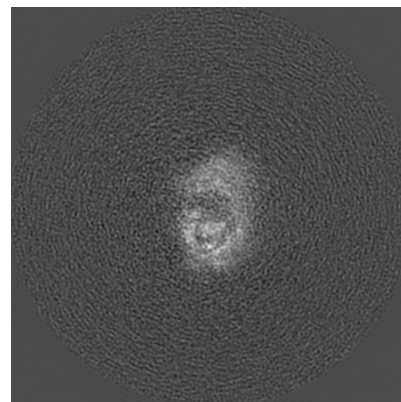
### 6.2.1 Primary map



X Index: 176

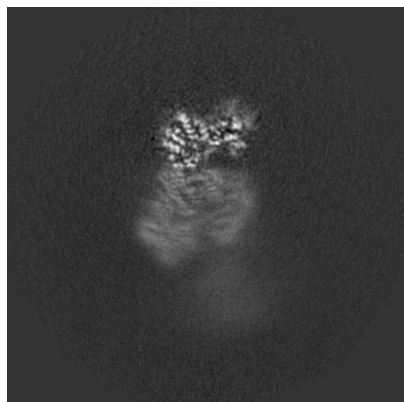


Y Index: 176

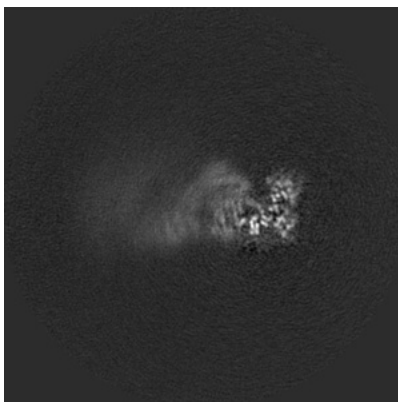


Z Index: 176

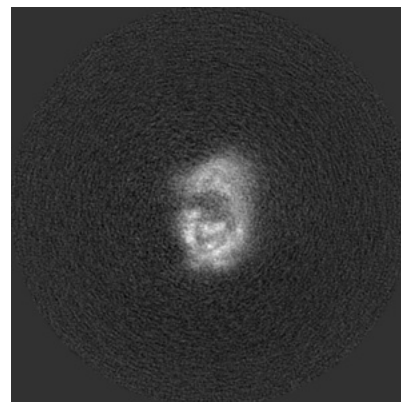
### 6.2.2 Raw map



X Index: 176



Y Index: 176

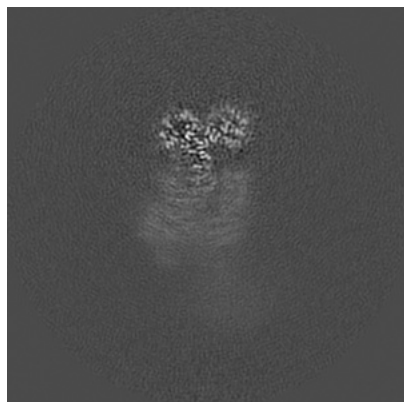


Z Index: 176

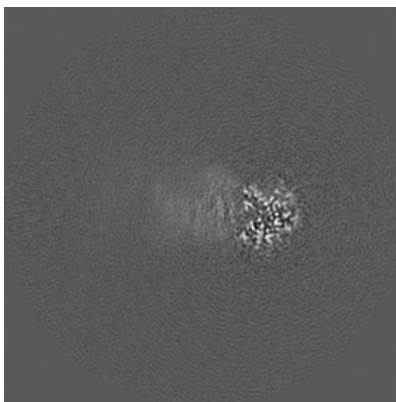
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

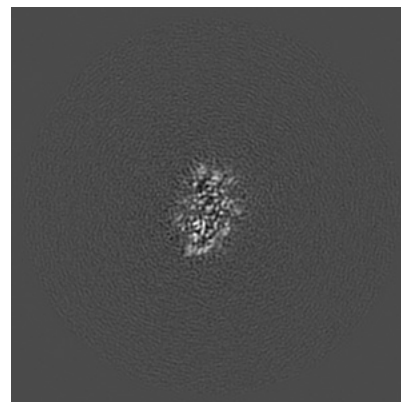
### 6.3.1 Primary map



X Index: 165

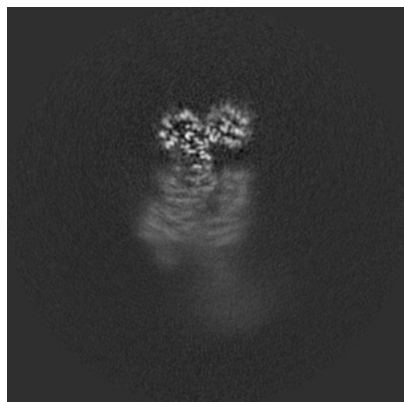


Y Index: 161

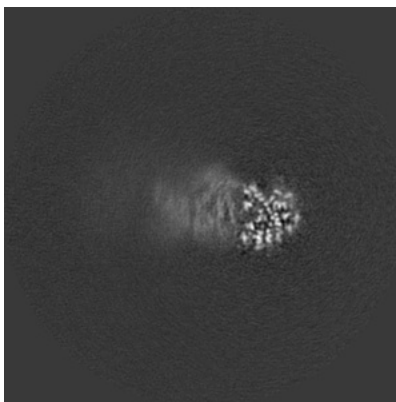


Z Index: 239

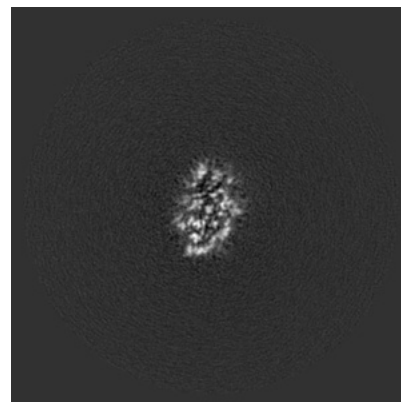
### 6.3.2 Raw map



X Index: 165



Y Index: 160

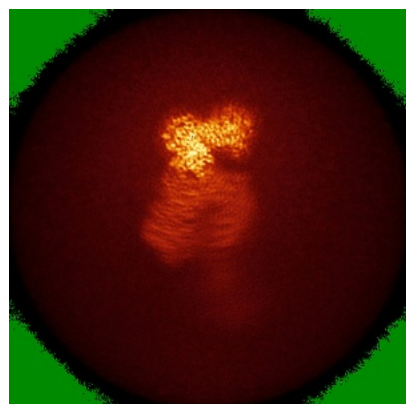


Z Index: 240

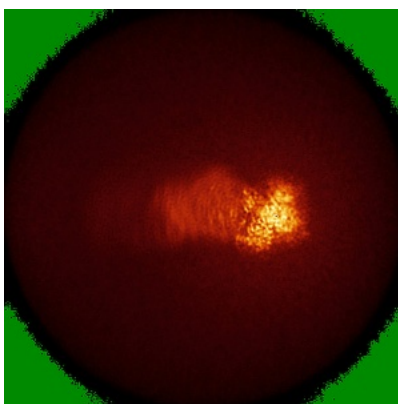
The images above show the largest variance slices of the map in three orthogonal directions.

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

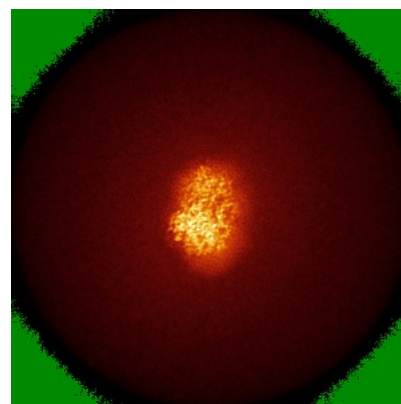
### 6.4.1 Primary map



X

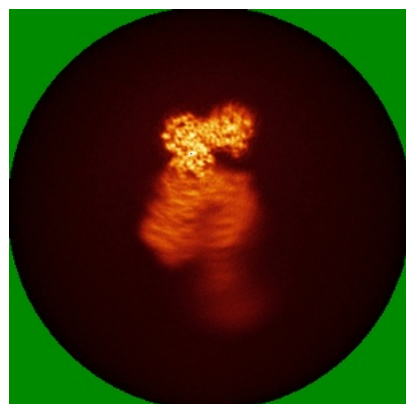


Y

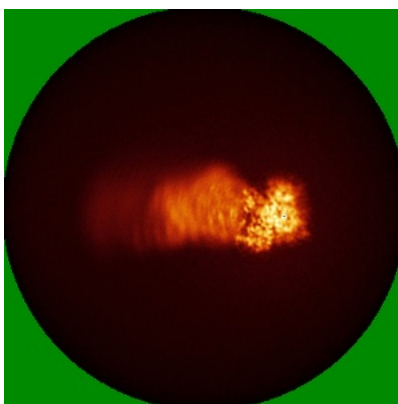


Z

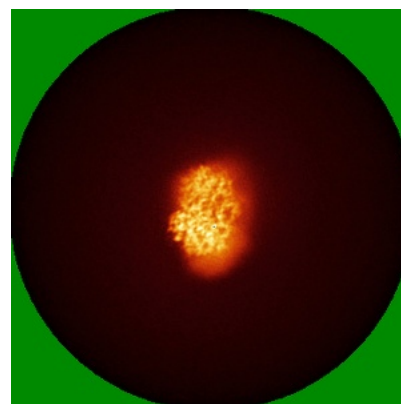
### 6.4.2 Raw map



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.

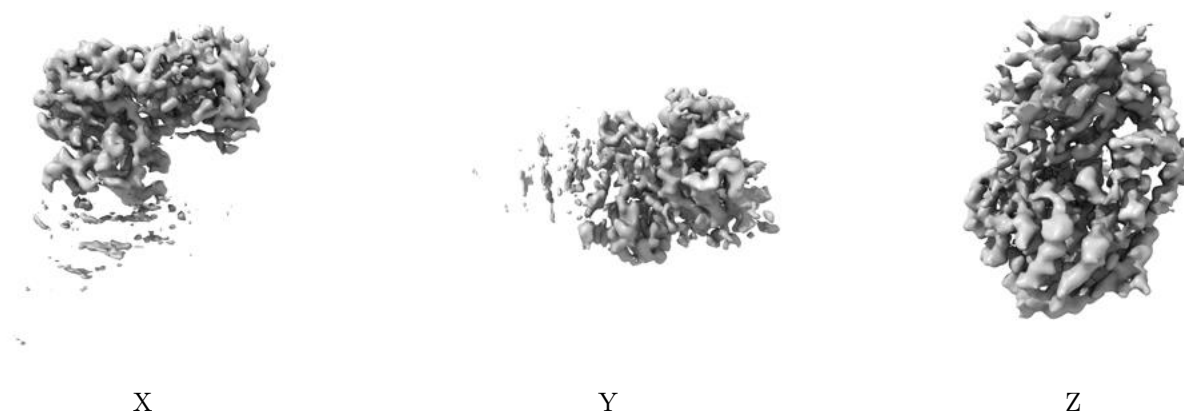
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.024. 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.

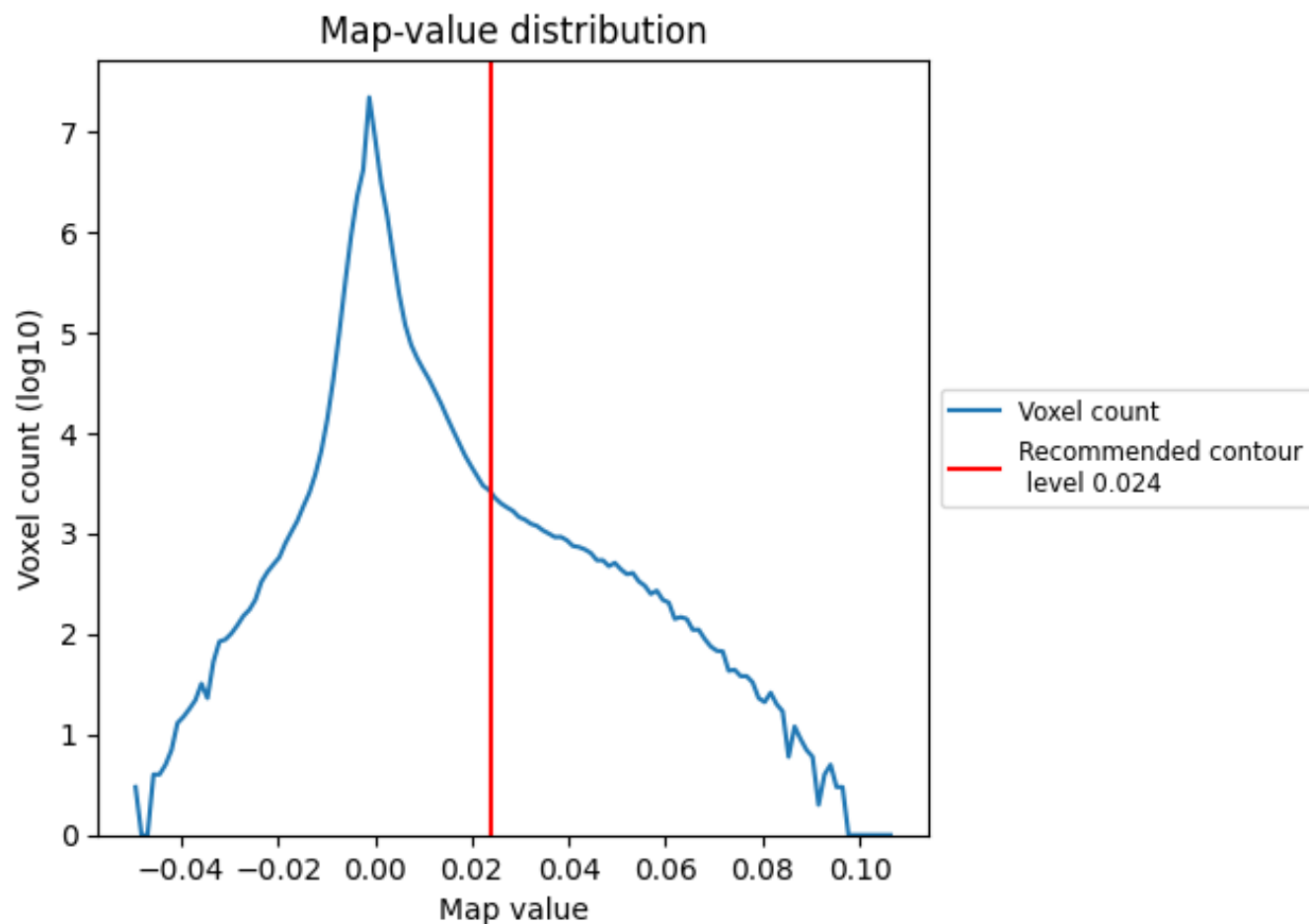
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

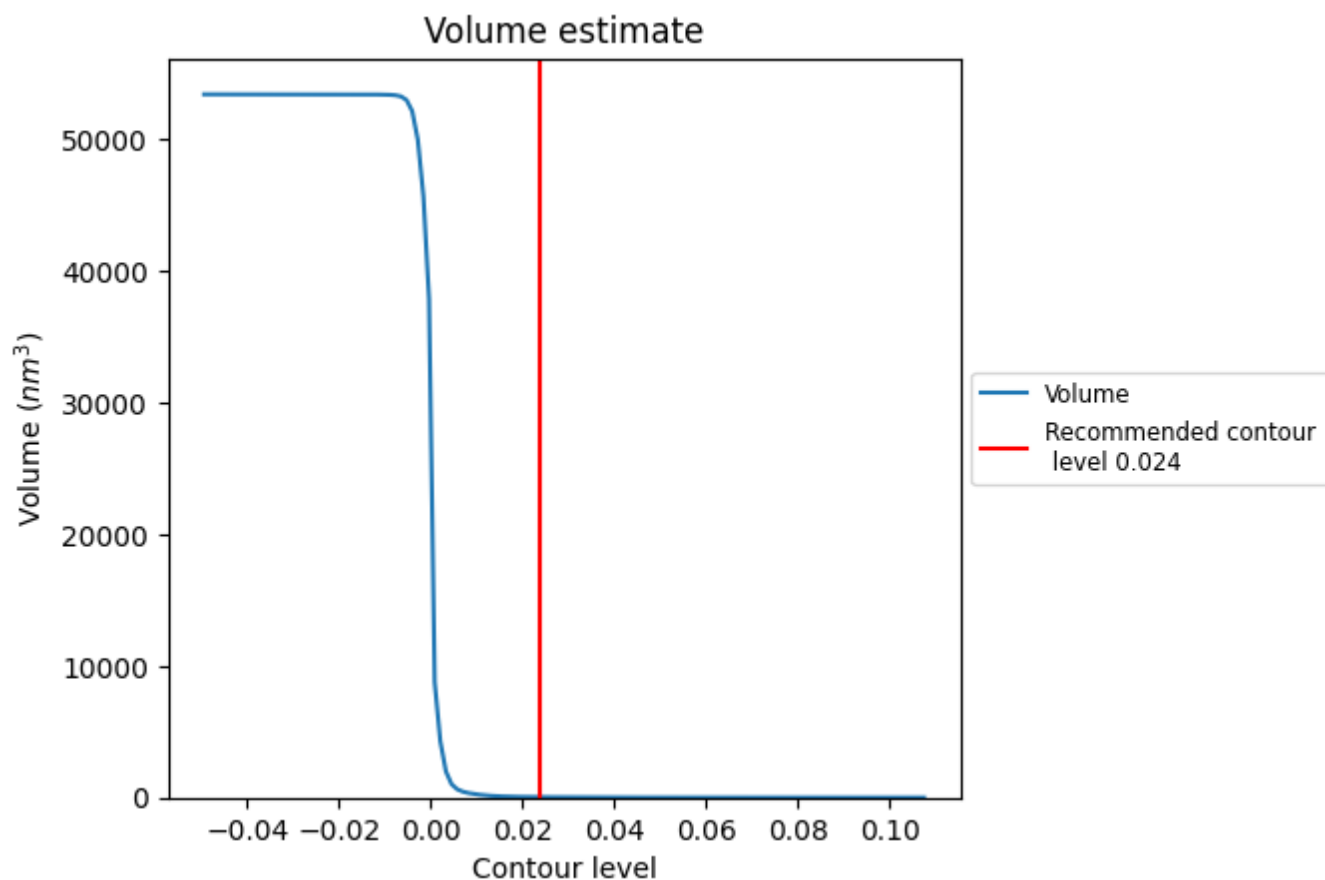
This section contains the results of statistical analysis of the map.

### 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.

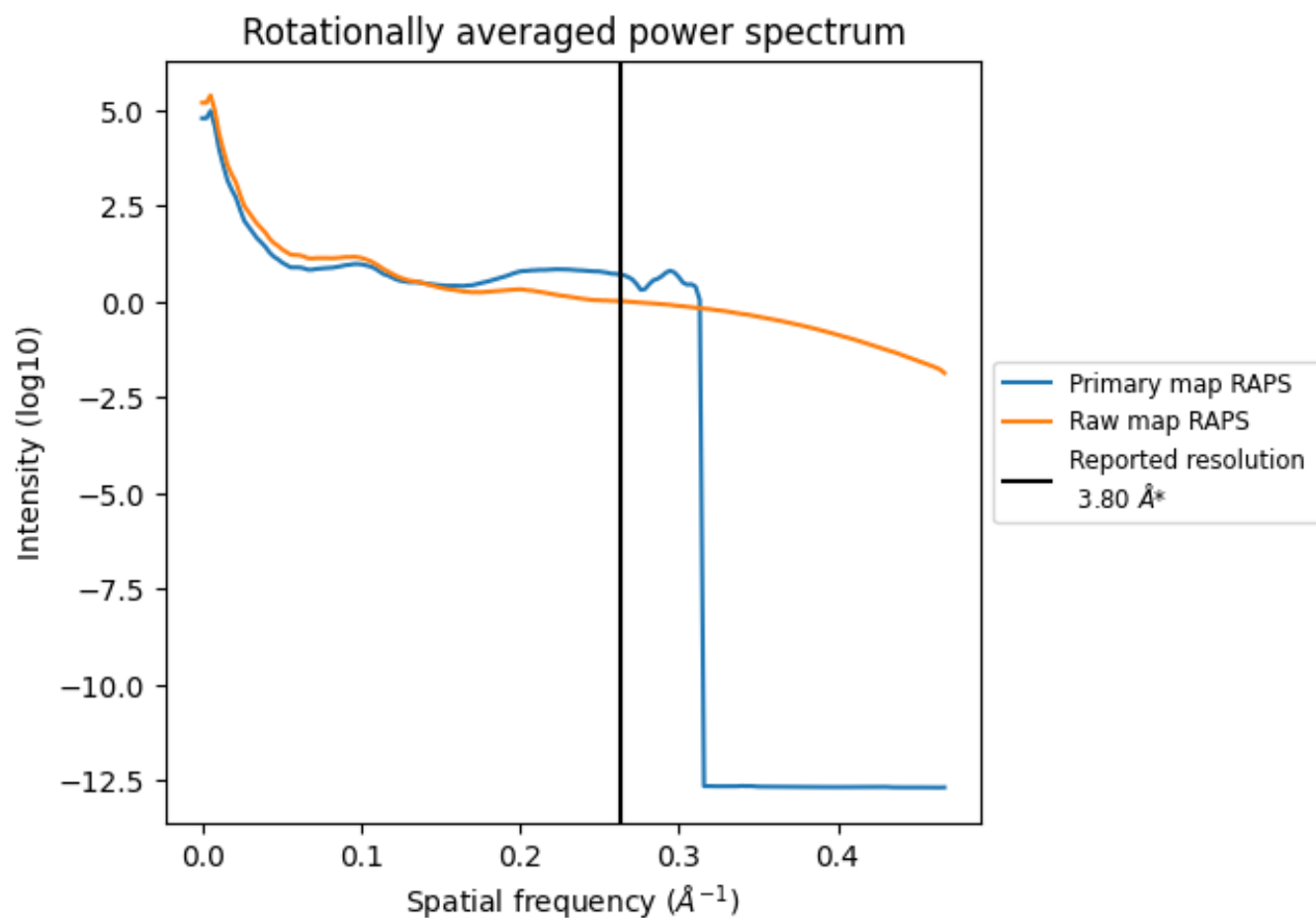
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 35  $\text{nm}^3$ ; this corresponds to an approximate mass of 31 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 ⓘ

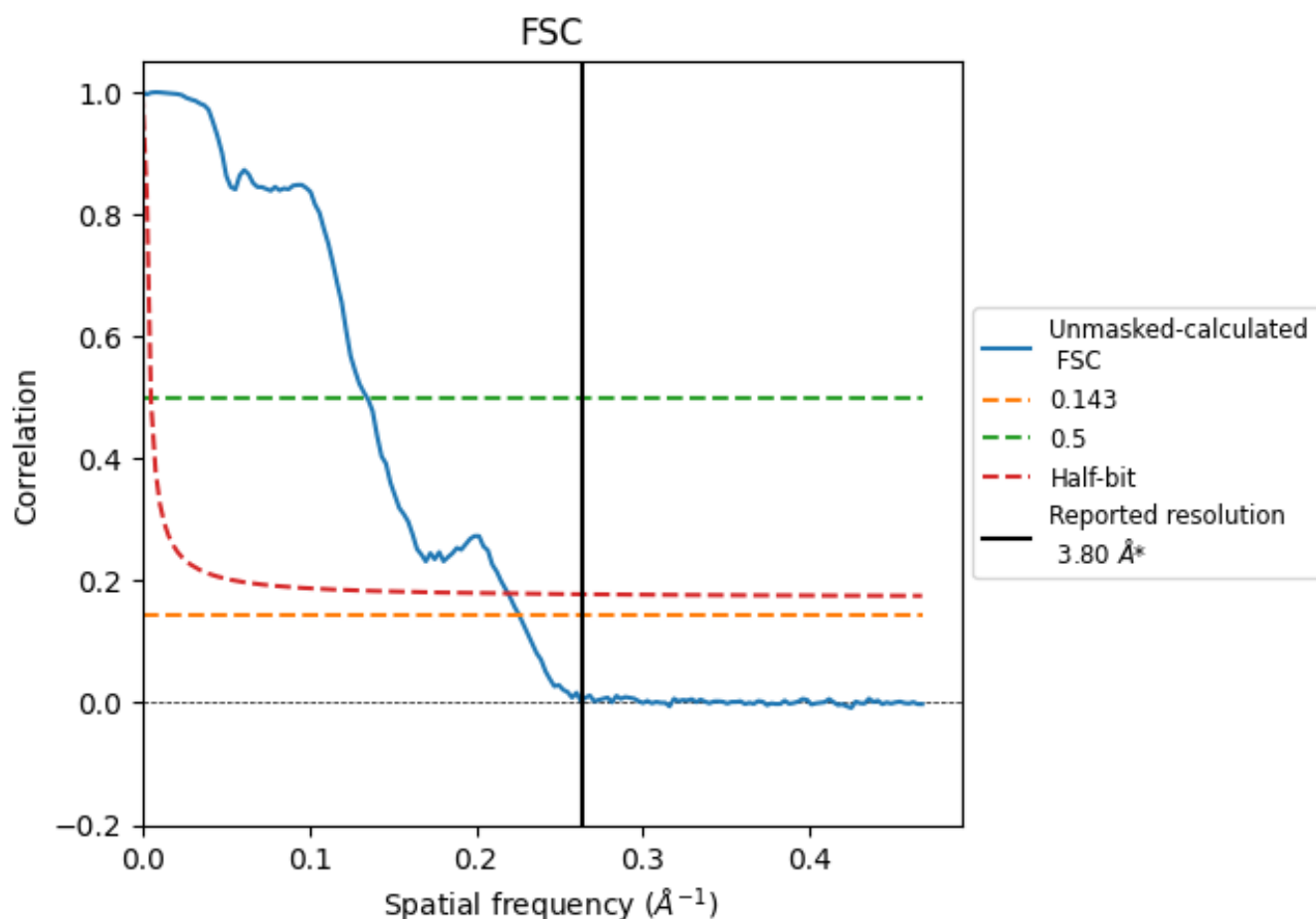


\*Reported resolution corresponds to spatial frequency of 0.263 Å<sup>-1</sup>

## 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 0.263  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

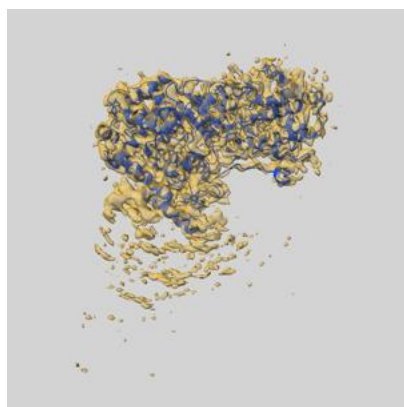
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.43	7.43	4.56

\*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 4.43 differs from the reported value 3.8 by more than 10 %

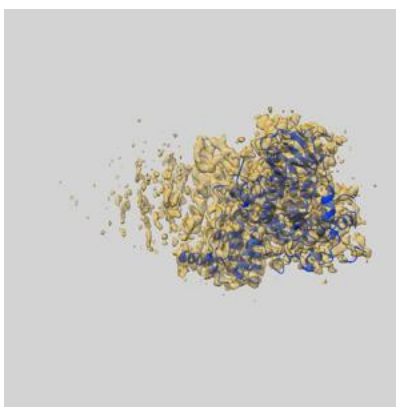
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-41499 and PDB model 8TQ2. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

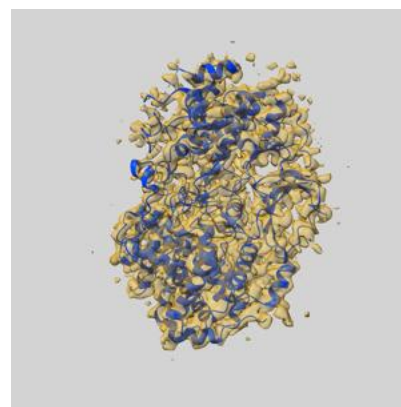
### 9.1 Map-model overlay [i](#)



X



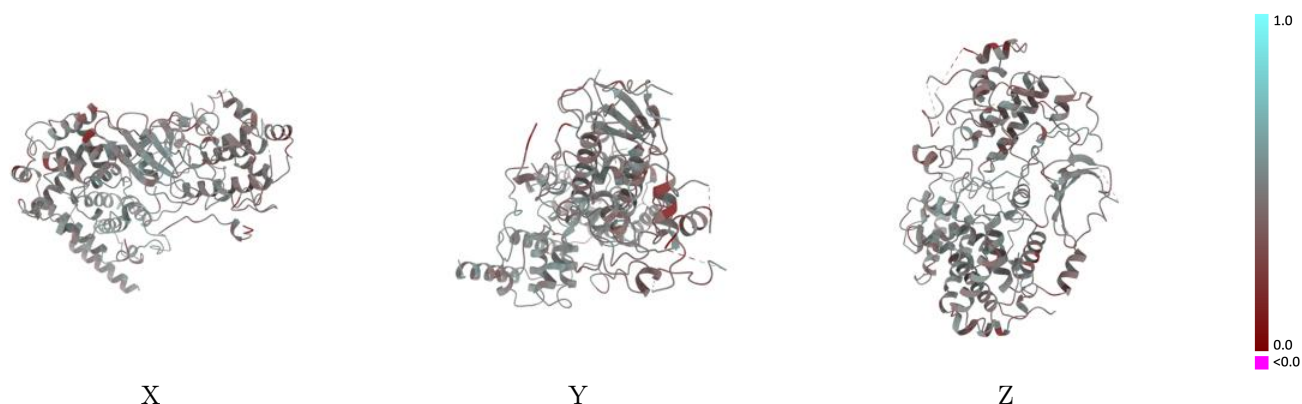
Y



Z

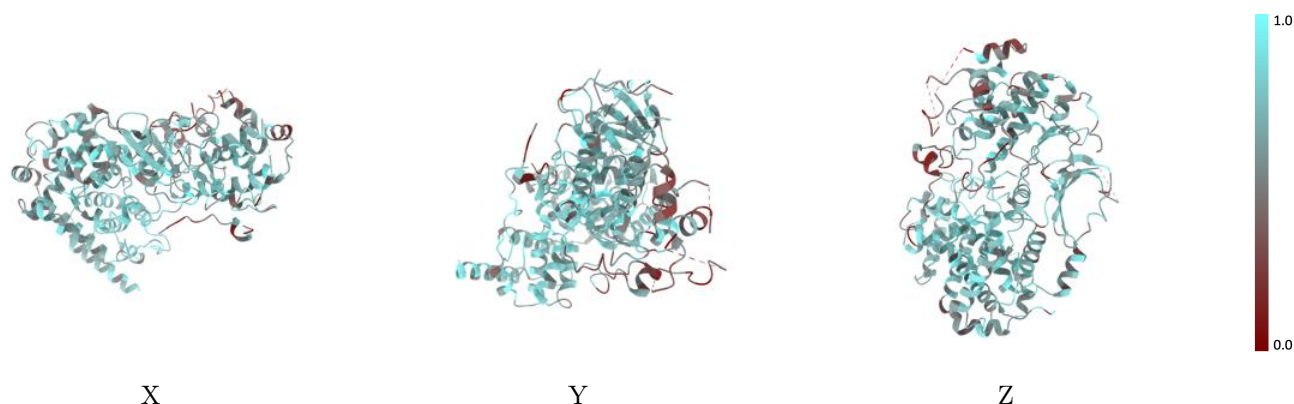
The images above show the 3D surface view of the map at the recommended contour level 0.024 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



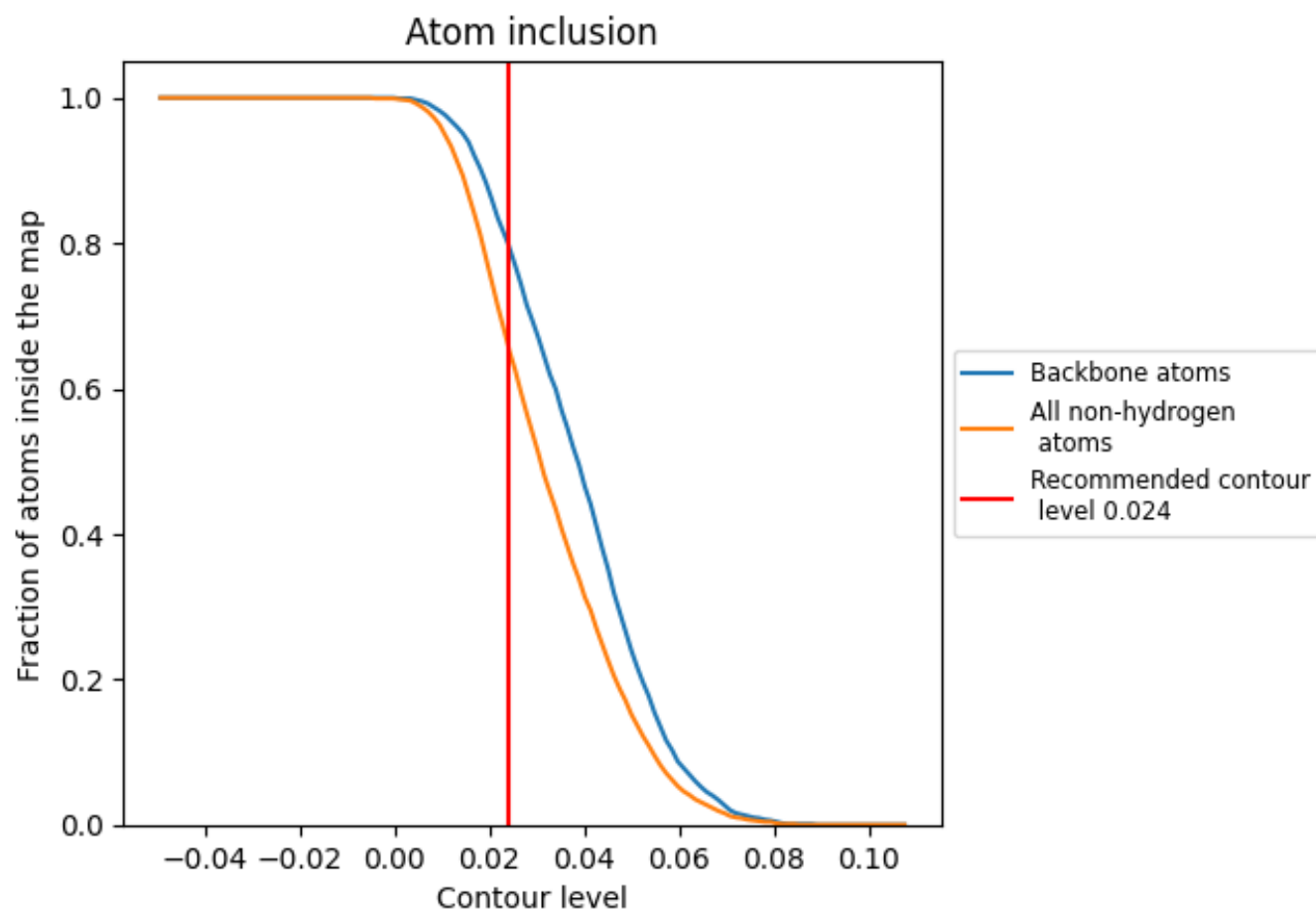
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.024).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 80% of all backbone atoms, 66% 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 (0.024) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.6590	<div></div> 0.4600
A	<div></div> 0.6230	<div></div> 0.4500
B	<div></div> 0.7300	<div></div> 0.4770
C	<div></div> 0.6170	<div></div> 0.4570
D	<div></div> 0.3980	<div></div> 0.3970

