



wwPDB EM Validation Summary Report ⓘ

Jul 27, 2026 – 03:29 PM EDT

PDB ID : 9ZD1 / pdb_00009zd1
EMDB ID : EMD-74048
Title : Cryo-EM structure of ATR-ATRIP-TOPBP1 AAD
Authors : Li, B.; Pavletich, N.P.
Deposited on : 2025-11-24
Resolution : 3.20 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:

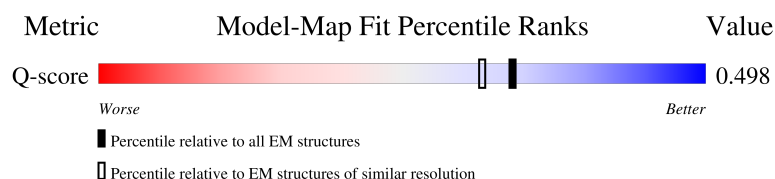
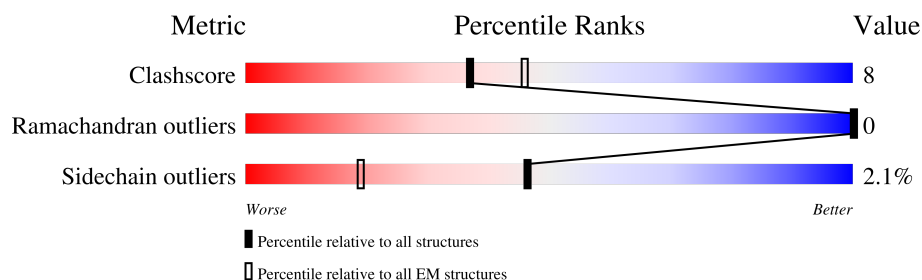
EMDB validation analysis : 0.0.1.dev133
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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

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

The reported resolution of this entry is 3.20 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	15020 (2.70 - 3.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	2663	
1	B	2663	
2	C	810	
2	D	810	

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Mol	Chain	Length	Quality of chain
3	I	219	
3	J	219	

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 47314 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	2516	Total 20168	C 12936	N 3419	O 3672	S 141	0	0
1	B	2516	Total 20168	C 12936	N 3419	O 3672	S 141	0	0

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-18	MET	-	initiating methionine	UNP Q13535
A	-17	ASP	-	expression tag	UNP Q13535
A	-16	TYR	-	expression tag	UNP Q13535
A	-15	LYS	-	expression tag	UNP Q13535
A	-14	ASP	-	expression tag	UNP Q13535
A	-13	ASP	-	expression tag	UNP Q13535
A	-12	ASP	-	expression tag	UNP Q13535
A	-11	ASP	-	expression tag	UNP Q13535
A	-10	LYS	-	expression tag	UNP Q13535
A	-9	GLU	-	expression tag	UNP Q13535
A	-8	ASN	-	expression tag	UNP Q13535
A	-7	LEU	-	expression tag	UNP Q13535
A	-6	TYR	-	expression tag	UNP Q13535
A	-5	PHE	-	expression tag	UNP Q13535
A	-4	GLN	-	expression tag	UNP Q13535
A	-3	GLY	-	expression tag	UNP Q13535
A	-2	GLY	-	expression tag	UNP Q13535
A	-1	GLY	-	expression tag	UNP Q13535
A	0	ARG	-	expression tag	UNP Q13535
B	-18	MET	-	initiating methionine	UNP Q13535
B	-17	ASP	-	expression tag	UNP Q13535
B	-16	TYR	-	expression tag	UNP Q13535
B	-15	LYS	-	expression tag	UNP Q13535
B	-14	ASP	-	expression tag	UNP Q13535
B	-13	ASP	-	expression tag	UNP Q13535
B	-12	ASP	-	expression tag	UNP Q13535

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	ASP	-	expression tag	UNP Q13535
B	-10	LYS	-	expression tag	UNP Q13535
B	-9	GLU	-	expression tag	UNP Q13535
B	-8	ASN	-	expression tag	UNP Q13535
B	-7	LEU	-	expression tag	UNP Q13535
B	-6	TYR	-	expression tag	UNP Q13535
B	-5	PHE	-	expression tag	UNP Q13535
B	-4	GLN	-	expression tag	UNP Q13535
B	-3	GLY	-	expression tag	UNP Q13535
B	-2	GLY	-	expression tag	UNP Q13535
B	-1	GLY	-	expression tag	UNP Q13535
B	0	ARG	-	expression tag	UNP Q13535

- Molecule 2 is a protein called ATR-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	389	Total	C	N	O	S	0	0
			2976	1891	523	537	25		
2	D	389	Total	C	N	O	S	0	0
			2976	1891	523	537	25		

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-18	MET	-	initiating methionine	UNP Q8WXE1
C	-17	ASP	-	expression tag	UNP Q8WXE1
C	-16	TYR	-	expression tag	UNP Q8WXE1
C	-15	LYS	-	expression tag	UNP Q8WXE1
C	-14	ASP	-	expression tag	UNP Q8WXE1
C	-13	ASP	-	expression tag	UNP Q8WXE1
C	-12	ASP	-	expression tag	UNP Q8WXE1
C	-11	ASP	-	expression tag	UNP Q8WXE1
C	-10	LYS	-	expression tag	UNP Q8WXE1
C	-9	GLU	-	expression tag	UNP Q8WXE1
C	-8	ASN	-	expression tag	UNP Q8WXE1
C	-7	LEU	-	expression tag	UNP Q8WXE1
C	-6	TYR	-	expression tag	UNP Q8WXE1
C	-5	PHE	-	expression tag	UNP Q8WXE1
C	-4	GLN	-	expression tag	UNP Q8WXE1
C	-3	GLY	-	expression tag	UNP Q8WXE1
C	-2	GLY	-	expression tag	UNP Q8WXE1
C	-1	GLY	-	expression tag	UNP Q8WXE1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	0	ARG	-	expression tag	UNP Q8WXE1
D	-18	MET	-	initiating methionine	UNP Q8WXE1
D	-17	ASP	-	expression tag	UNP Q8WXE1
D	-16	TYR	-	expression tag	UNP Q8WXE1
D	-15	LYS	-	expression tag	UNP Q8WXE1
D	-14	ASP	-	expression tag	UNP Q8WXE1
D	-13	ASP	-	expression tag	UNP Q8WXE1
D	-12	ASP	-	expression tag	UNP Q8WXE1
D	-11	ASP	-	expression tag	UNP Q8WXE1
D	-10	LYS	-	expression tag	UNP Q8WXE1
D	-9	GLU	-	expression tag	UNP Q8WXE1
D	-8	ASN	-	expression tag	UNP Q8WXE1
D	-7	LEU	-	expression tag	UNP Q8WXE1
D	-6	TYR	-	expression tag	UNP Q8WXE1
D	-5	PHE	-	expression tag	UNP Q8WXE1
D	-4	GLN	-	expression tag	UNP Q8WXE1
D	-3	GLY	-	expression tag	UNP Q8WXE1
D	-2	GLY	-	expression tag	UNP Q8WXE1
D	-1	GLY	-	expression tag	UNP Q8WXE1
D	0	ARG	-	expression tag	UNP Q8WXE1

- Molecule 3 is a protein called DNA topoisomerase 2-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	I	57	Total	C	N	O	S	0	0
			478	291	93	92	2		
3	J	57	Total	C	N	O	S	0	0
			478	291	93	92	2		

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	974	GLY	-	expression tag	UNP Q92547
I	975	SER	-	expression tag	UNP Q92547
I	976	GLY	-	expression tag	UNP Q92547
I	977	ARG	-	expression tag	UNP Q92547
J	974	GLY	-	expression tag	UNP Q92547
J	975	SER	-	expression tag	UNP Q92547
J	976	GLY	-	expression tag	UNP Q92547
J	977	ARG	-	expression tag	UNP Q92547

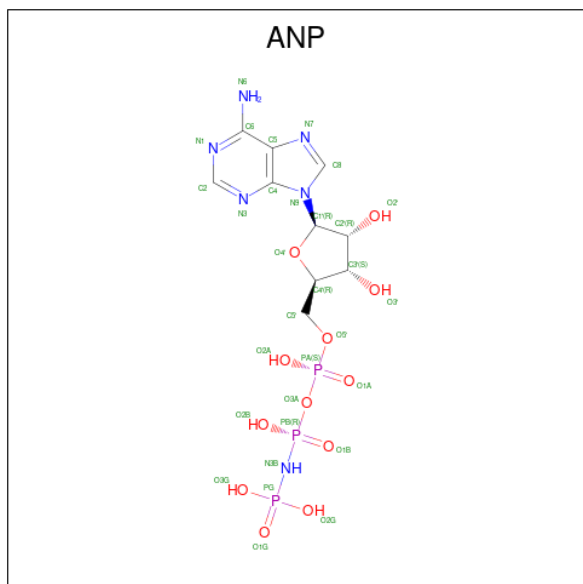
- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

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

- Molecule 6 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: C₁₀H₁₇N₆O₁₂P₃).

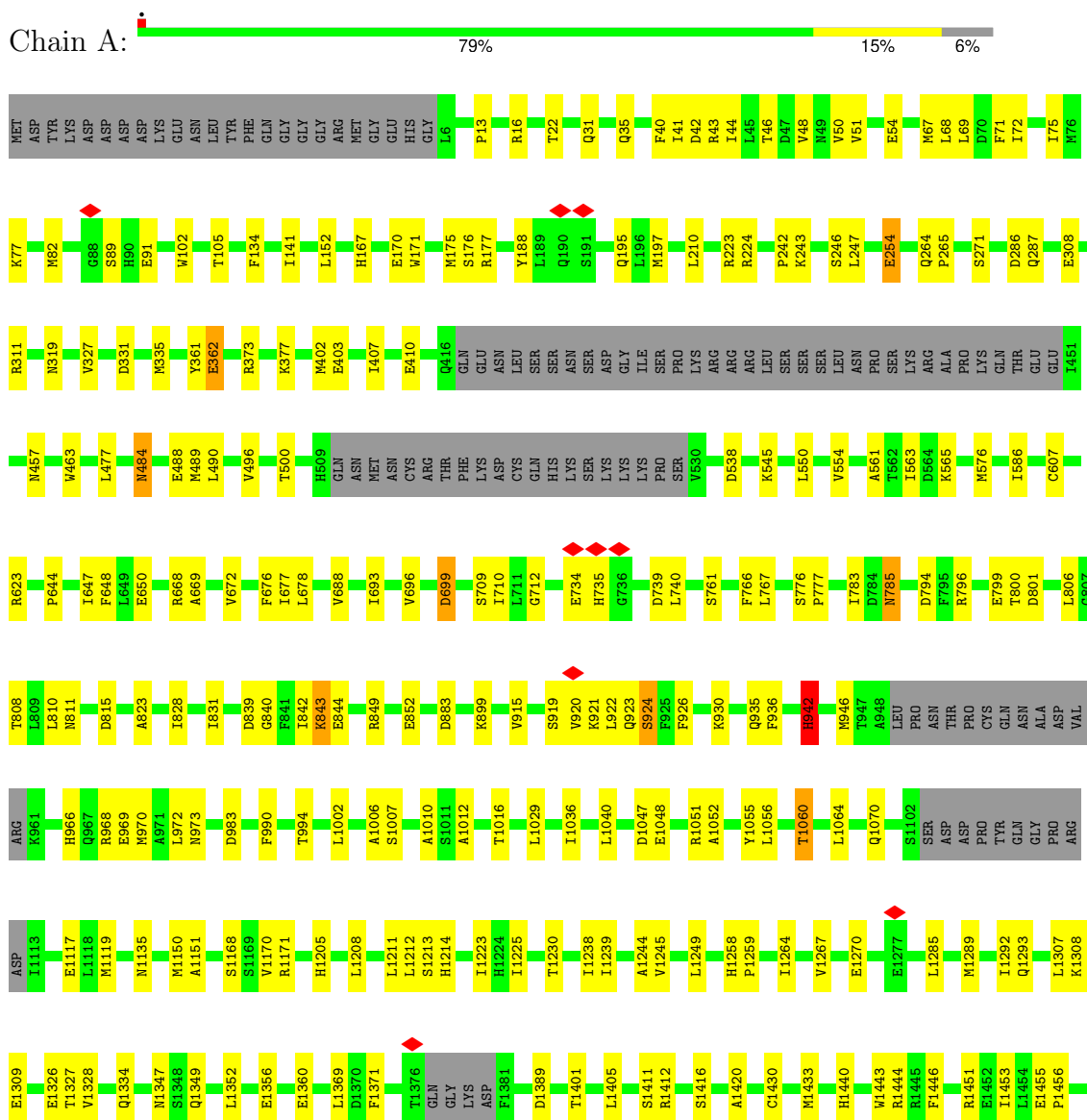


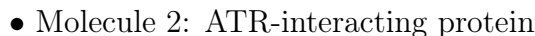
Mol	Chain	Residues	Atoms					AltConf
6	A	1	Total	C	N	O	P	0
			31	10	6	12	3	
6	B	1	Total	C	N	O	P	0
			31	10	6	12	3	

3 Residue-property plots

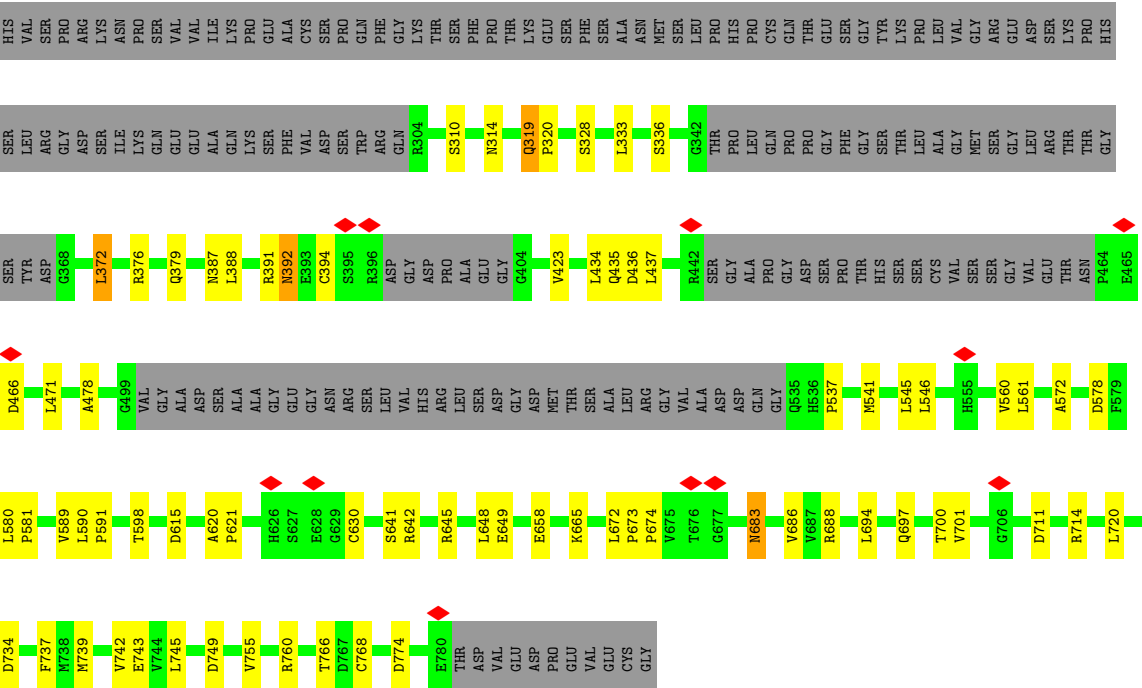
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

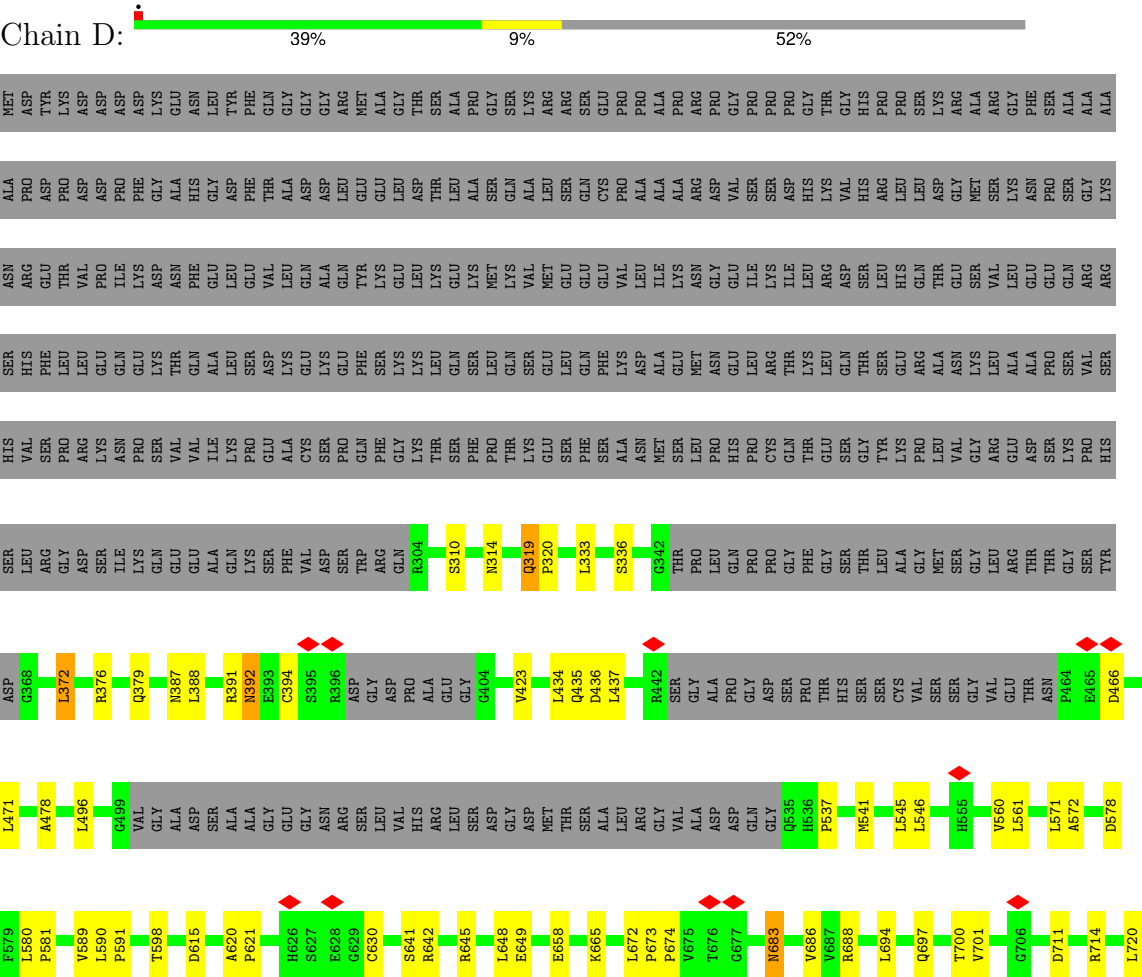


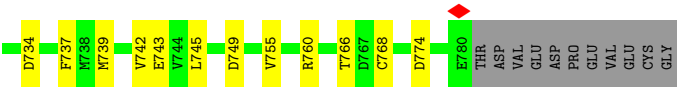


ser	his	asn	met
phe	glu	arg	pro
leu	thr	thr	asp
leu	val	asp	pro
glu	pro	asp	asp
gln	ile	pro	asp
glu	lys	phe	asp
lys	asn	glu	lys
thr	asn	ala	glu
gln	phe	his	asn
ala	glu	gly	leu
leu	leu	asp	tyr
ser	ser	thr	phe
asp	val	thr	gln
lys	leu	ala	gly
gln	gln	asp	gly
lys	ala	asp	gly
glu	gln	leu	arg
phe	tyr	glu	met
ser	lys	leu	ala
ser	glu	leu	gly
lys	leu	asp	thr
leu	leu	thr	ser
gln	glu	leu	ala
ser	lys	ala	pro
leu	met	ser	gly
gln	lys	gln	ser
ser	val	ala	lys
glu	met	leu	arg
leu	glu	ser	arg
gln	glu	gln	ser
phe	glu	cys	glu
lys	val	pro	pro
asp	leu	ala	pro
ala	ile	ala	ala
glu	lys	ala	pro
met	asn	arg	arg
asn	gly	asp	pro
glu	glu	val	gly
leu	ile	ser	pro
arg	lys	ser	pro
thr	ile	asp	pro
lys	leu	his	gly
leu	arg	lys	thr
gln	asn	val	gly
thr	ser	his	his
ser	leu	arg	pro
glu	his	leu	pro
arg	gln	leu	ser
ala	thr	asp	lys
asn	glu	gly	arg
lys	ser	met	ala
leu	val	ser	arg
ala	leu	lys	gly
ala	glu	asn	phe
pro	glu	pro	ser
ser	gln	ser	ala
val	arg	gly	ala
ser	arg	lys	ala

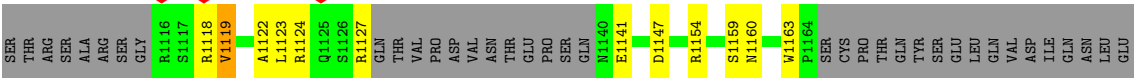
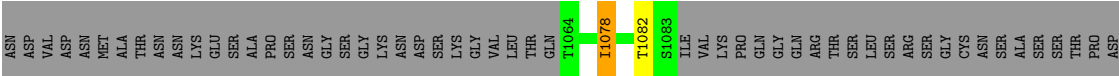
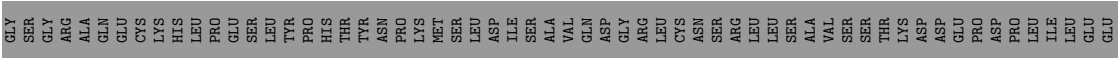


● Molecule 2: ATR-interacting protein

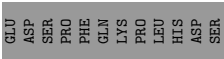
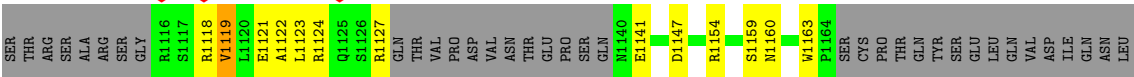
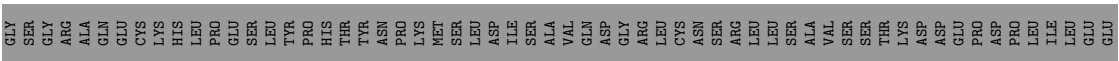




• Molecule 3: DNA topoisomerase 2-binding protein 1



• Molecule 3: DNA topoisomerase 2-binding protein 1



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	479450	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 ($e^-/\text{\AA}^2$)	53	Depositor
Minimum defocus (nm)	300	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.125	Depositor
Minimum map value	-0.080	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.008	Depositor
Map size ($\text{\AA}$)	340.48, 340.48, 340.48	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.064, 1.064, 1.064	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: MG, ANP, ZN

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	0.18	1/20586 (0.0%)	0.38	2/27825 (0.0%)
1	B	0.18	1/20586 (0.0%)	0.38	2/27825 (0.0%)
2	C	0.19	0/3028	0.38	0/4112
2	D	0.19	0/3028	0.38	0/4112
3	I	0.12	0/482	0.32	0/645
3	J	0.12	0/482	0.32	0/645
All	All	0.18	2/48192 (0.0%)	0.38	4/65164 (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	3
1	B	0	3
2	C	0	1
2	D	0	1
All	All	0	8

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	942	HIS	CE1-NE2	-5.10	1.27	1.32
1	B	942	HIS	CE1-NE2	-5.09	1.27	1.32

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	942	HIS	ND1-CG-CD2	-6.43	99.67	106.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	942	HIS	ND1-CG-CD2	-6.42	99.68	106.10
1	A	942	HIS	CE1-NE2-CD2	-5.31	103.69	109.00
1	B	942	HIS	CE1-NE2-CD2	-5.30	103.70	109.00

There are no chirality outliers.

5 of 8 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	171	TRP	Peptide
1	A	2604	LYS	Peptide
1	A	942	HIS	Sidechain
1	B	171	TRP	Peptide
1	B	942	HIS	Sidechain

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	20168	0	20448	306	0
1	B	20168	0	20448	319	0
2	C	2976	0	3063	52	0
2	D	2976	0	3063	54	0
3	I	478	0	470	14	0
3	J	478	0	470	15	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
6	A	31	0	13	2	0
6	B	31	0	13	2	0
All	All	47314	0	47988	728	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 8.

The worst 5 of 728 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:A:1070:GLN:OE1	3:I:1154:ARG:NH1	1.91	1.04
1:B:1070:GLN:OE1	3:J:1154:ARG:NH1	1.91	1.03
1:A:973:ASN:OD1	3:I:1124:ARG:NH2	2.04	0.91
1:B:973:ASN:OD1	3:J:1124:ARG:NH2	2.06	0.88
1:A:1006:ALA:O	1:A:1051:ARG:NH2	2.07	0.87

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	2496/2663 (94%)	2400 (96%)	96 (4%)	0	100	100
1	B	2496/2663 (94%)	2400 (96%)	96 (4%)	0	100	100
2	C	379/810 (47%)	356 (94%)	23 (6%)	0	100	100
2	D	379/810 (47%)	356 (94%)	23 (6%)	0	100	100
3	I	51/219 (23%)	51 (100%)	0	0	100	100
3	J	51/219 (23%)	51 (100%)	0	0	100	100
All	All	5852/7384 (79%)	5614 (96%)	238 (4%)	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	A	2245/2379 (94%)	2206 (98%)	39 (2%)	53	75
1	B	2245/2379 (94%)	2206 (98%)	39 (2%)	53	75
2	C	340/694 (49%)	327 (96%)	13 (4%)	29	62
2	D	340/694 (49%)	328 (96%)	12 (4%)	32	64
3	I	52/198 (26%)	48 (92%)	4 (8%)	12	41
3	J	52/198 (26%)	48 (92%)	4 (8%)	12	41
All	All	5274/6542 (81%)	5163 (98%)	111 (2%)	46	71

5 of 111 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	815	ASP
3	J	1163	TRP
1	B	2075	SER
3	J	1119	VAL
2	D	648	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 86 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	1760	HIS
2	C	622	GLN
1	B	1946	ASN
1	B	2381	ASN
2	D	584	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

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	$\# Z > 2$
6	ANP	A	2703	5	33,33,33	0.90	4 (12%)	45,52,52	0.62	0
6	ANP	B	2703	5	33,33,33	0.89	4 (12%)	45,52,52	0.62	0

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
6	ANP	A	2703	5	-	3/18/38/38	0/3/3/3
6	ANP	B	2703	5	-	4/18/38/38	0/3/3/3

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	2703	ANP	PG-O1G	2.57	1.50	1.46
6	B	2703	ANP	PG-O1G	2.53	1.50	1.46
6	A	2703	ANP	PG-N3B	2.35	1.69	1.63
6	B	2703	ANP	PG-N3B	2.32	1.69	1.63
6	B	2703	ANP	PB-O3A	-2.30	1.56	1.59

There are no bond angle outliers.

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	2703	ANP	PG-N3B-PB-O1B
6	A	2703	ANP	PA-O3A-PB-O1B
6	A	2703	ANP	PA-O3A-PB-O2B

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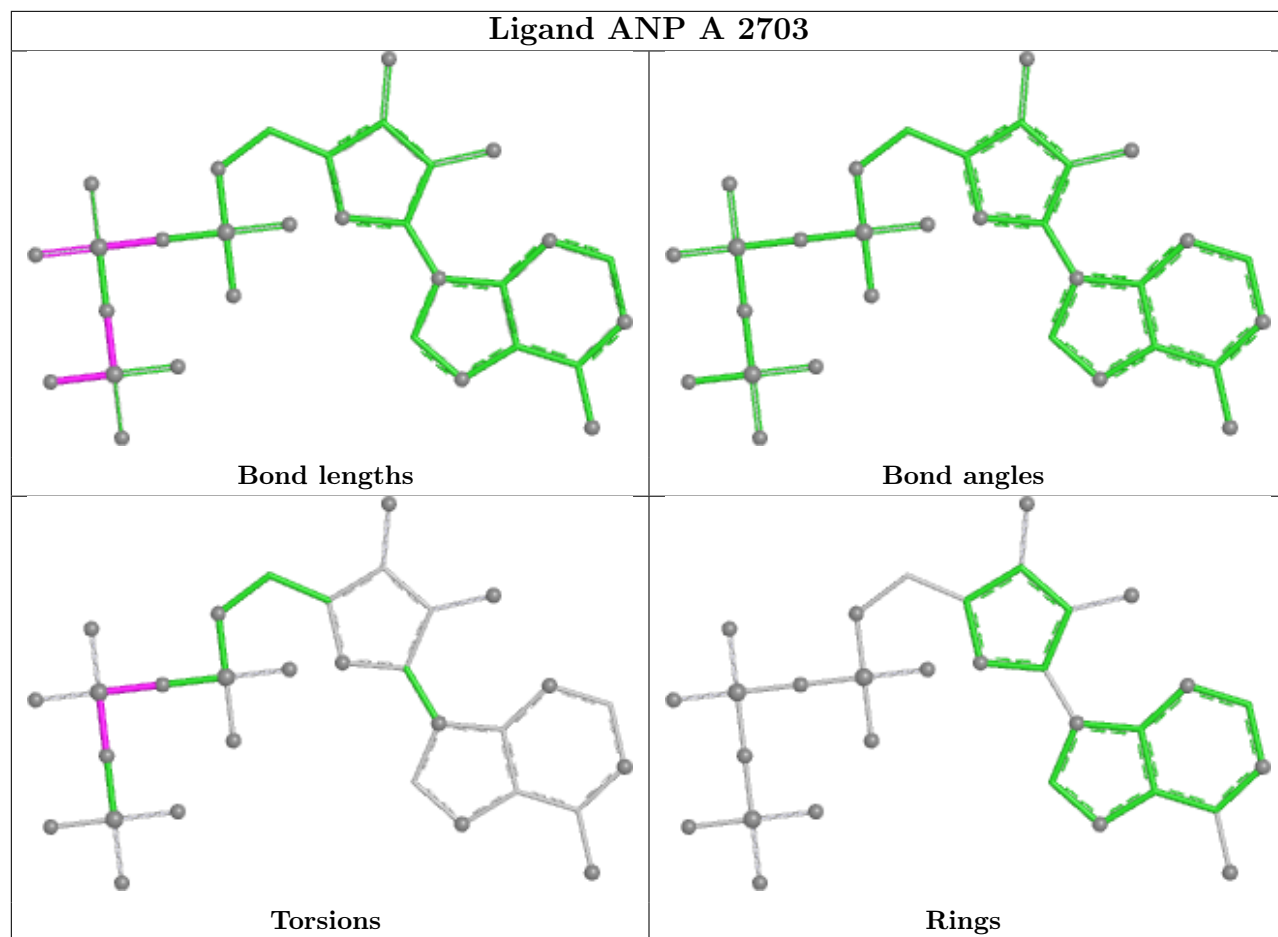
Mol	Chain	Res	Type	Atoms
6	B	2703	ANP	PG-N3B-PB-O1B
6	B	2703	ANP	PA-O3A-PB-O1B

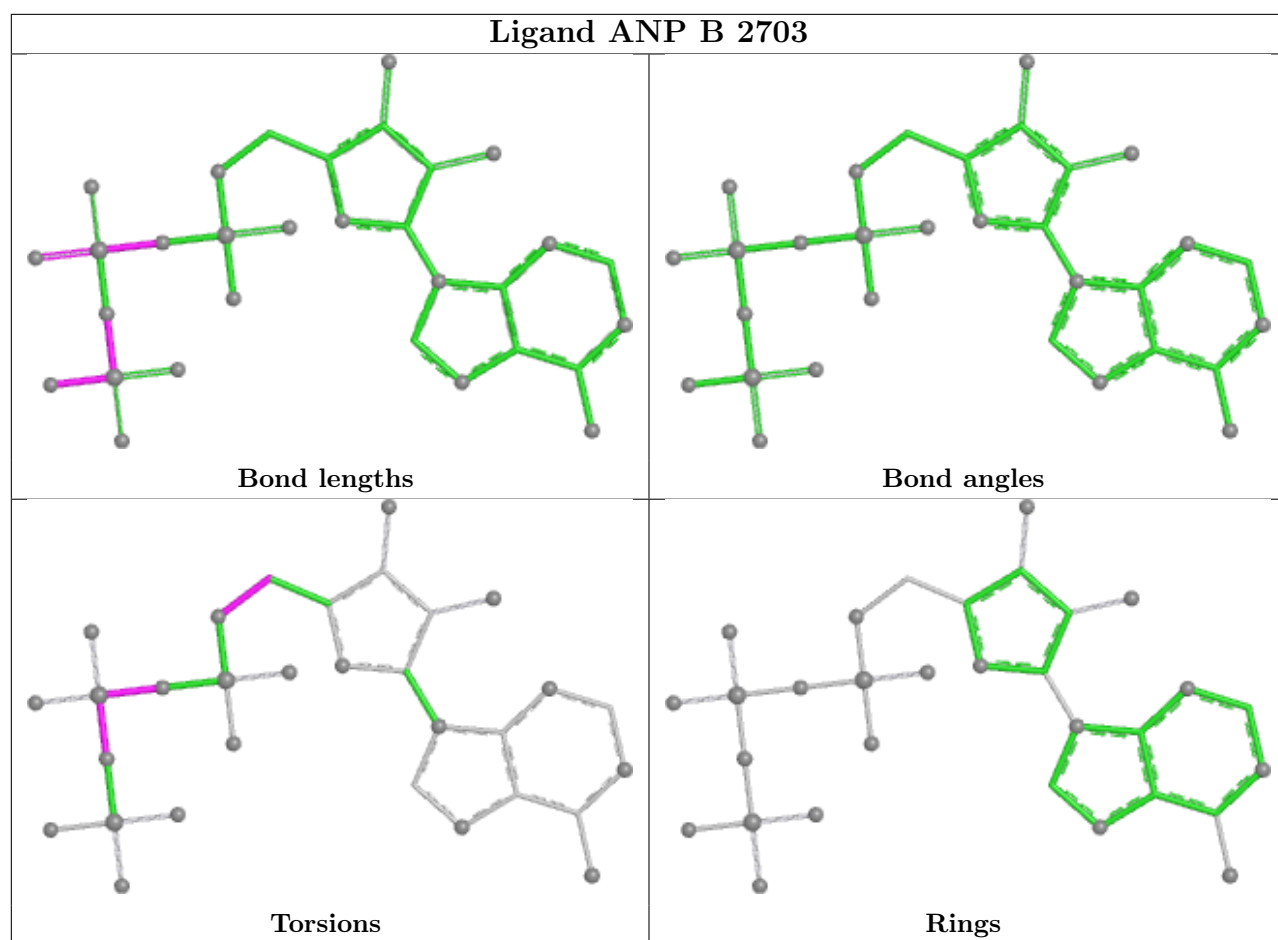
There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	2703	ANP	2	0
6	B	2703	ANP	2	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 than 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.





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.

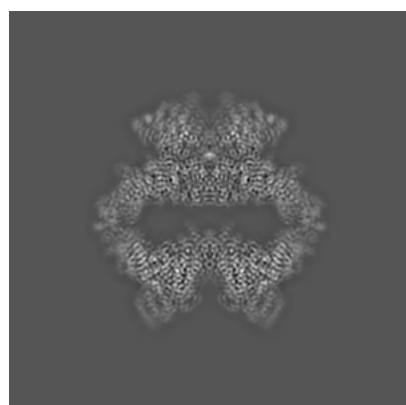
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-74048. These allow visual inspection of the internal detail of the map and identification of artifacts.

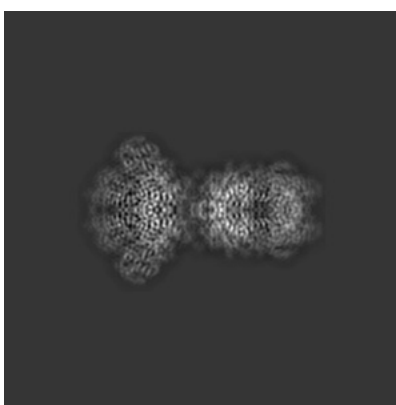
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

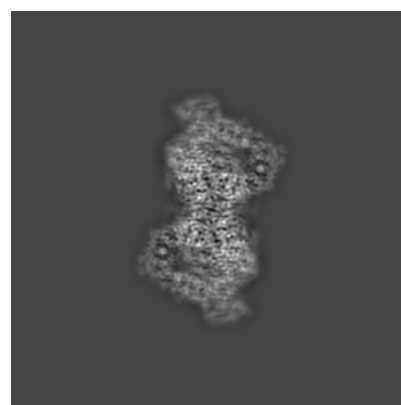
6.1.1 Primary map



X



Y

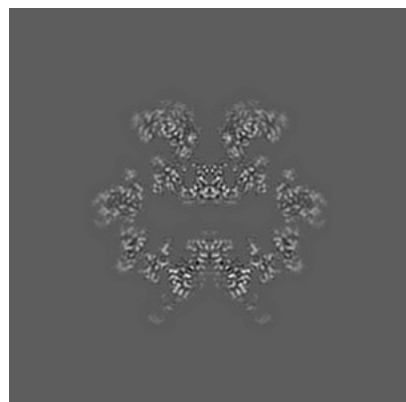


Z

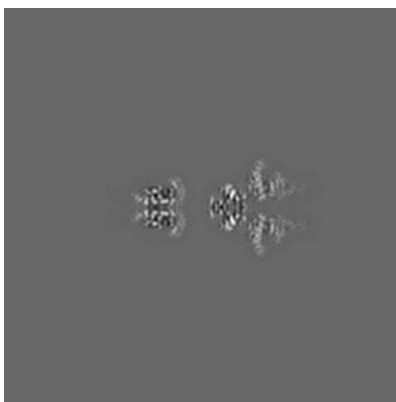
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

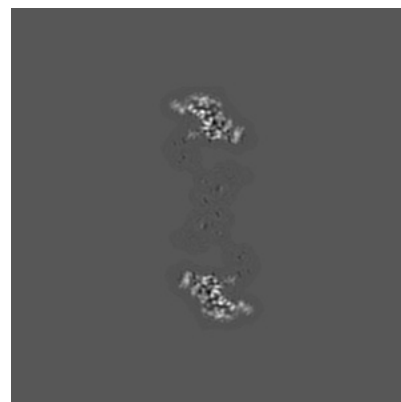
6.2.1 Primary map



X Index: 160



Y Index: 160

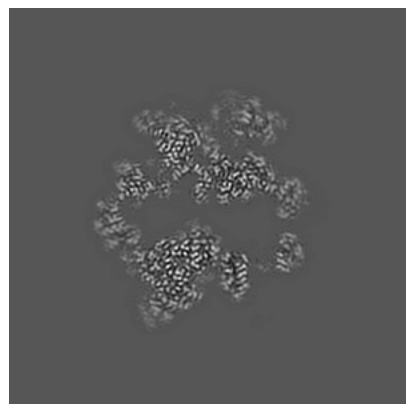


Z Index: 160

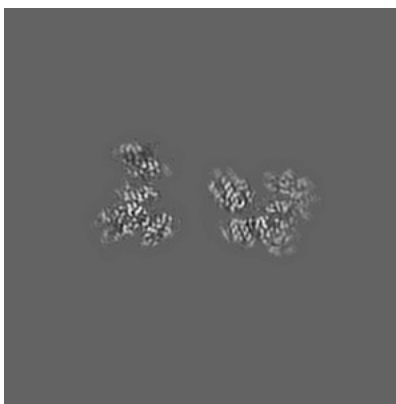
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 170



Y Index: 188

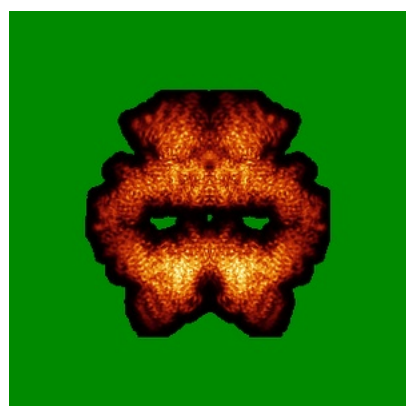


Z Index: 117

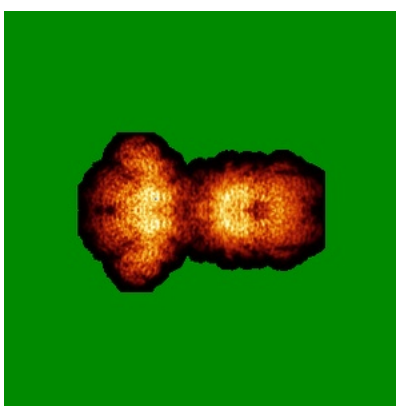
The images above show the largest variance slices of the map in three orthogonal directions.

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

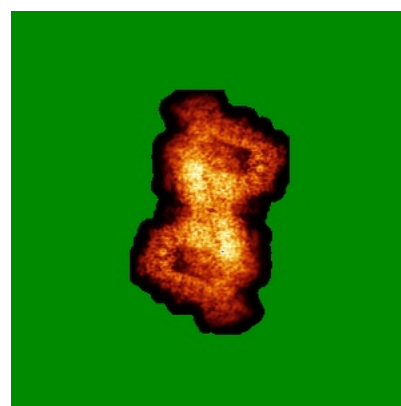
6.4.1 Primary map



X



Y

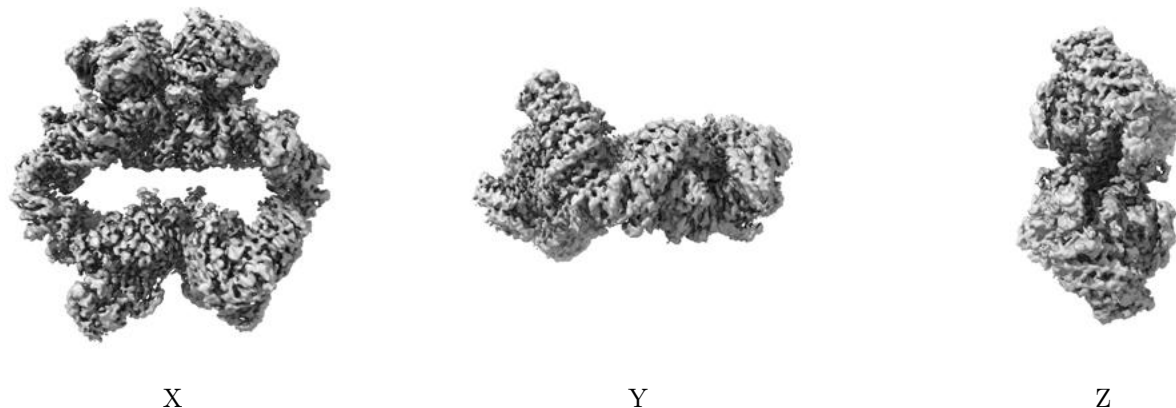


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.008. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

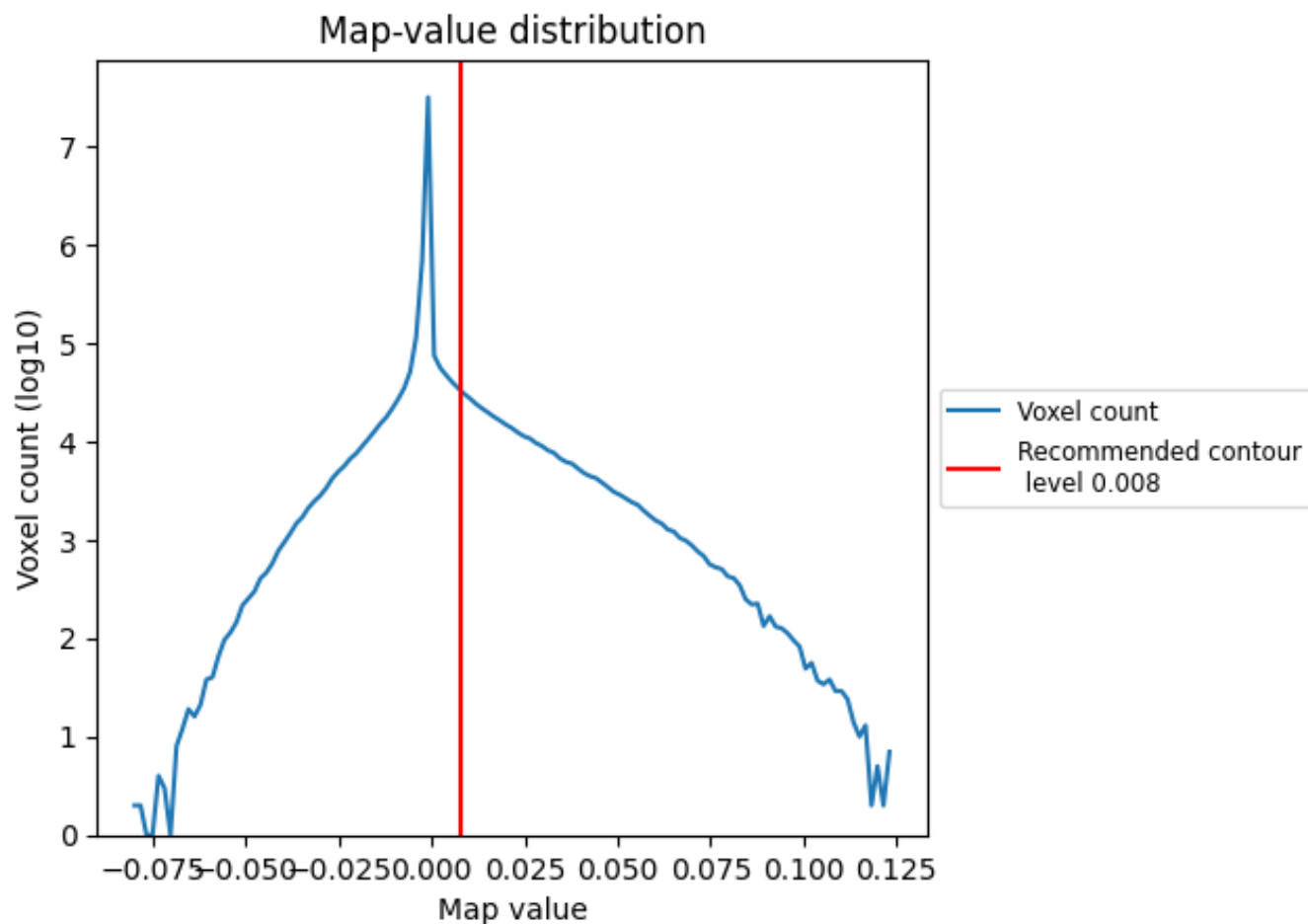
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

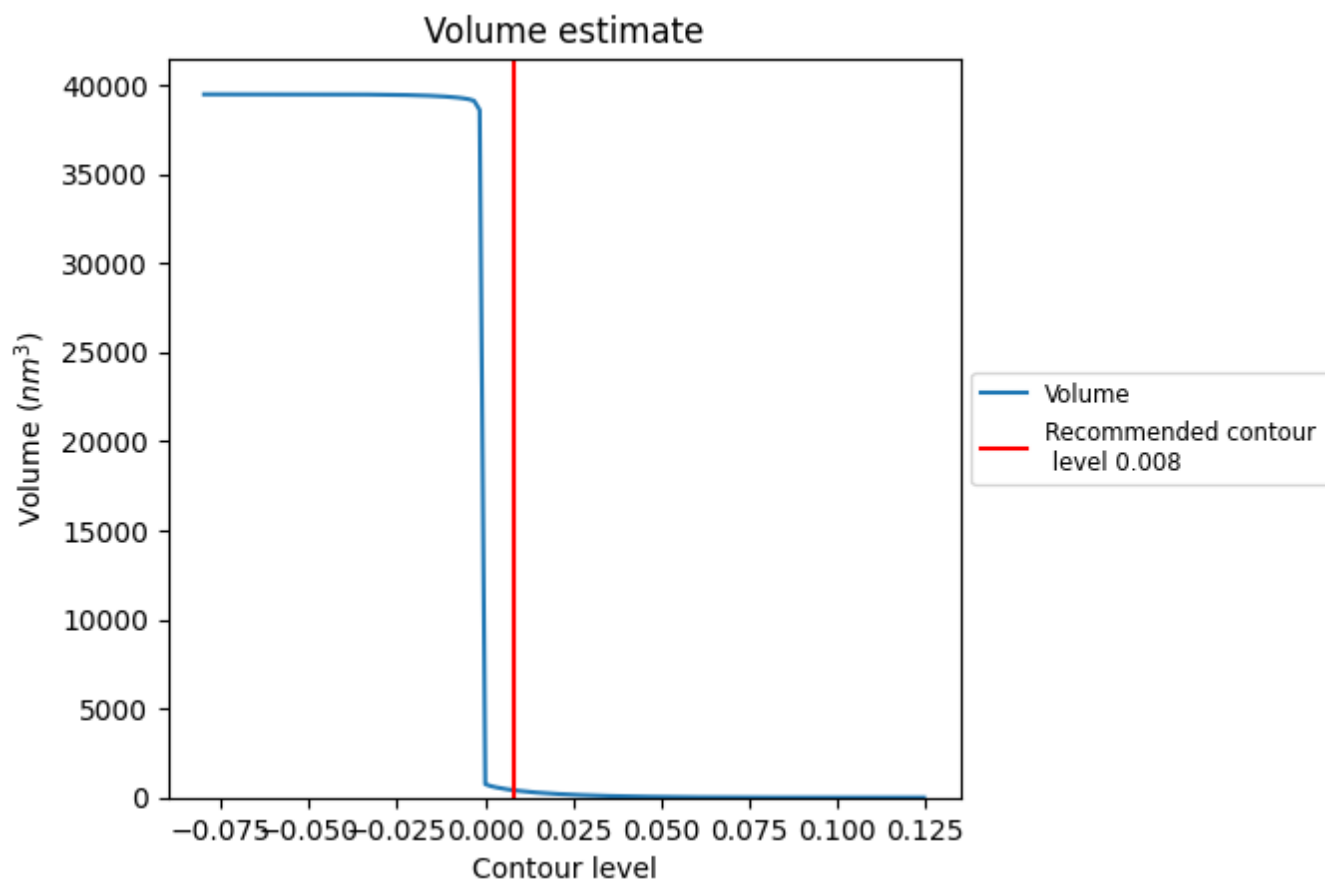
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

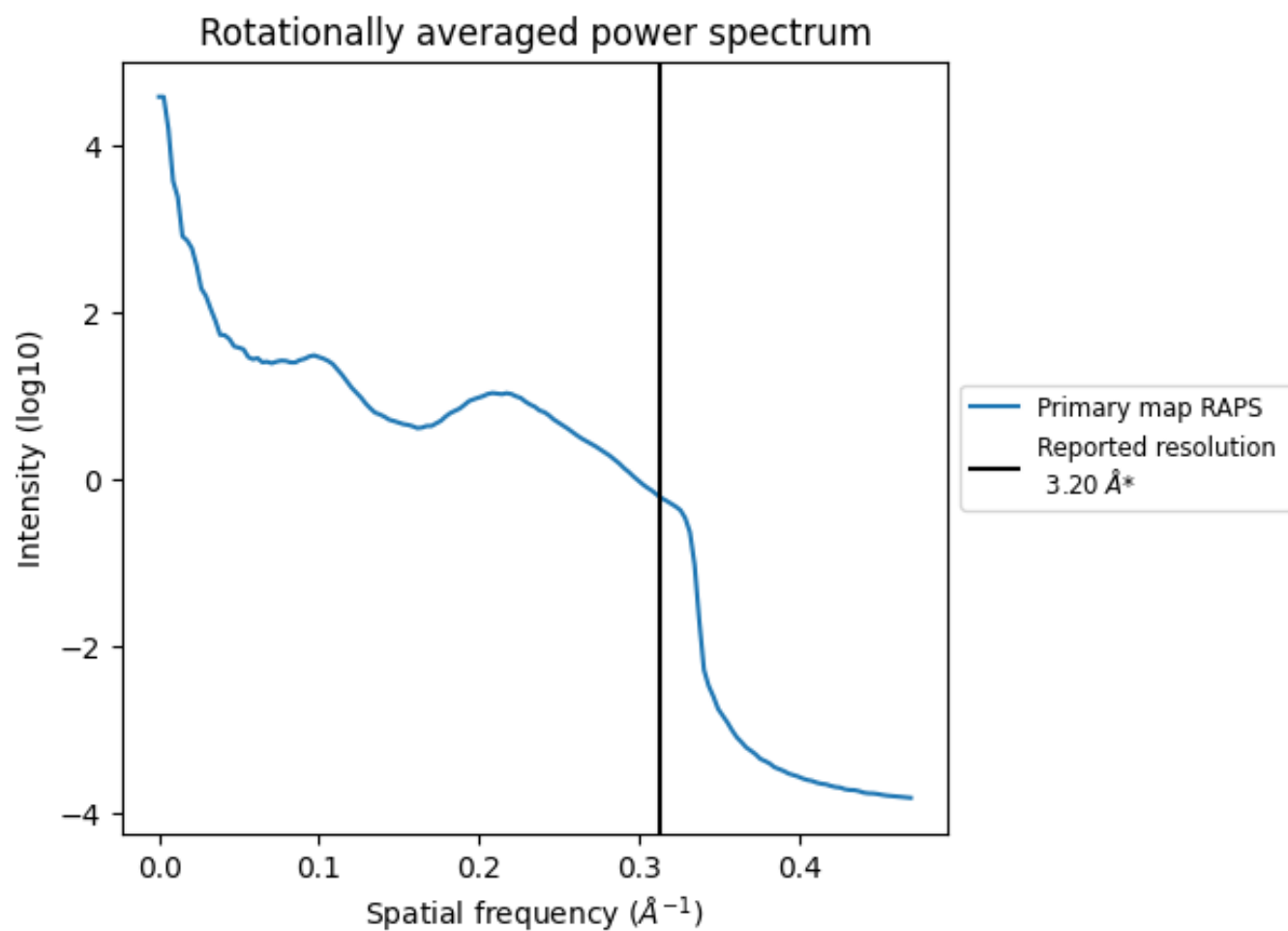
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 416 nm^3 ; this corresponds to an approximate mass of 376 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 0.312 Å⁻¹

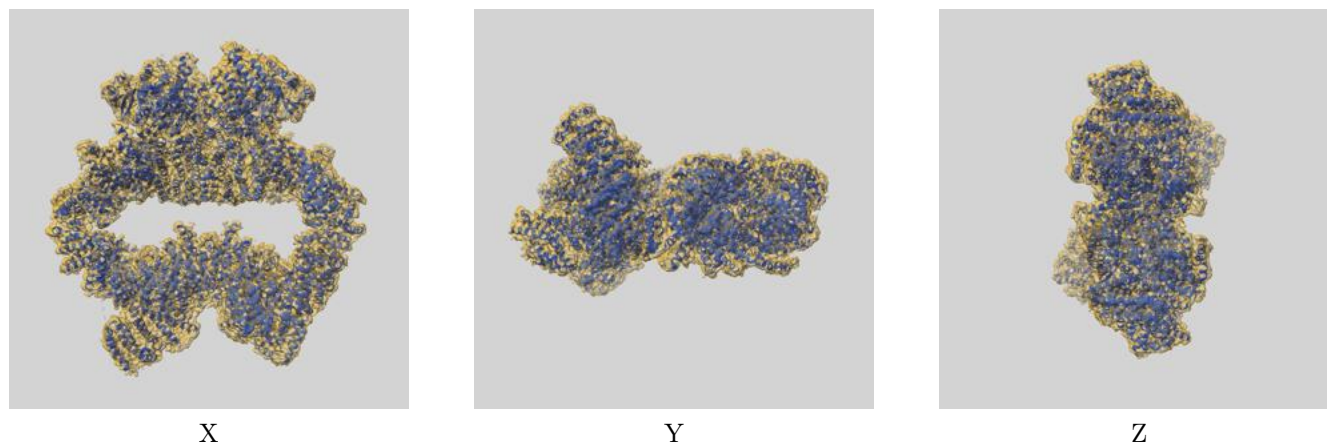
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

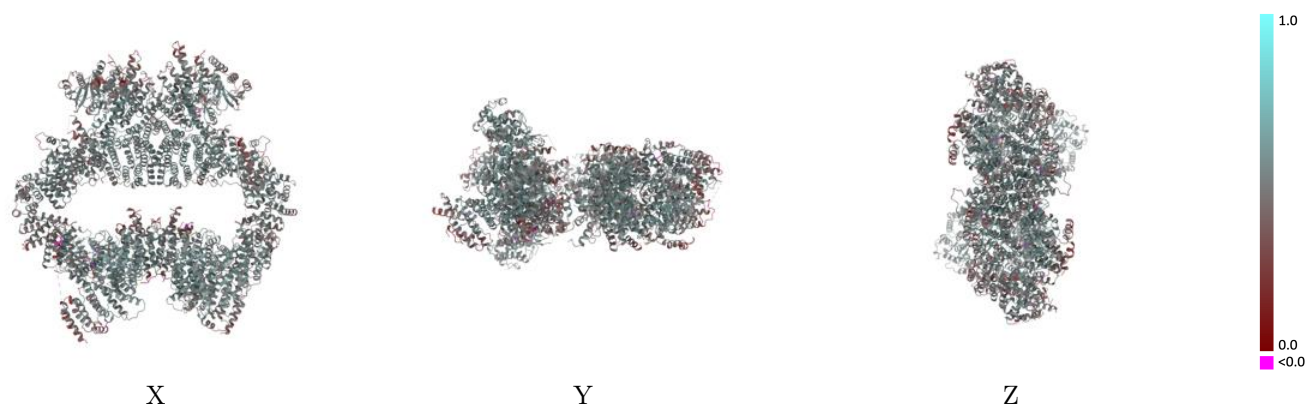
This section contains information regarding the fit between EMDB map EMD-74048 and PDB model 9ZD1. Per-residue inclusion information can be found in section [3](#) on page [8](#).

9.1 Map-model overlay [i](#)



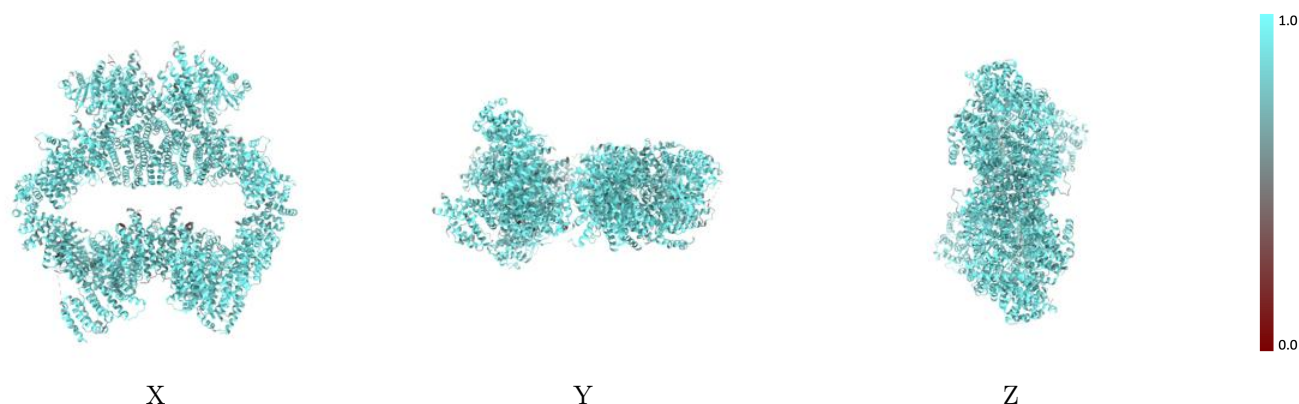
The images above show the 3D surface view of the map at the recommended contour level 0.008 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



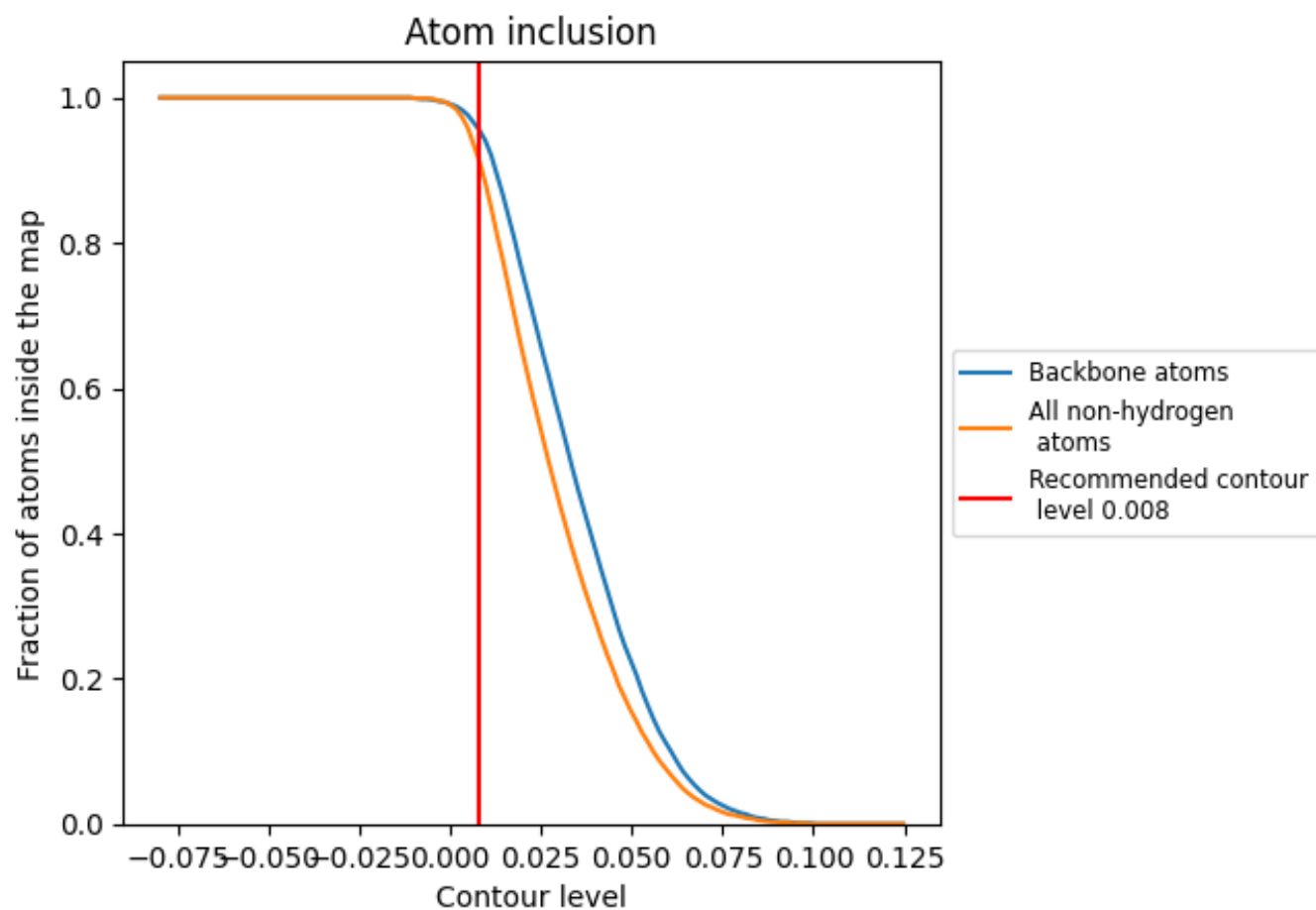
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.008).

9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 91% 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 (0.008) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9130	0.4980
A	0.9160	0.5000
B	0.9160	0.5000
C	0.9030	0.4990
D	0.9040	0.5020
I	0.8330	0.3920
J	0.8280	0.3890

1.0

0.0

<0.0