W O R L D W I D E

wwPDB

P R O T E I N D A T A B A N K

wwPDB EM Validation Summary Report ⓘ

Jan 15, 2026 – 02:41 PM EST

PDB ID	:	9P3W / pdb_00009p3w
EMDB ID	:	EMD-71257
Title	:	Zebrafish TRPM5 Q771A mutant with 5mM calcium
Authors	:	Ruan, Z.; Du, J.; Lu, W.
Deposited on	:	2025-06-14
Resolution	:	2.85 Å(reported)

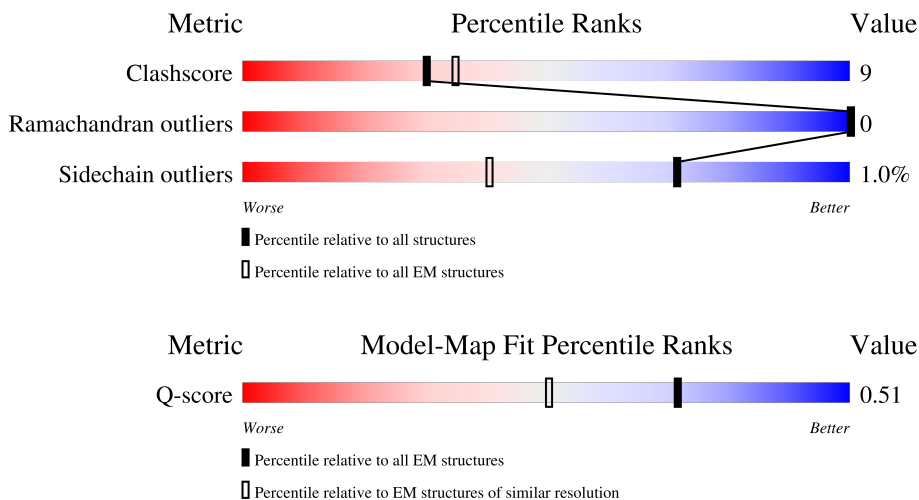The following versions of software and data (see references ⓘ) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
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 2.85 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	Percentile Ranks	Value
Clashscore		9
Ramachandran outliers		0
Sidechain outliers		1.0%

Worse   *Better*

▪ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.51

Worse   *Better*

▪ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution

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	11965 (2.35 - 3.35)

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

Mol	Chain	Length	Quality of chain
1	A	1475	54% 14% 32%
1	B	1475	54% 13% 32%
1	C	1475	54% 14% 32%
1	D	1475	54% 13% 32%

2   Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 30584 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 RNA-directed RNA polymerase L,Transient receptor potential cation channel subfamily M member 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	996	Total	C	N	O	S	0	0
			7541	4948	1288	1261	44		
1	B	996	Total	C	N	O	S	0	0
			7541	4948	1288	1261	44		
1	C	996	Total	C	N	O	S	0	0
			7541	4948	1288	1261	44		
1	D	996	Total	C	N	O	S	0	0
			7541	4948	1288	1261	44		

There are 296 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-307	MET	-	expression tag	UNP A0A5P9VSM8
A	-306	HIS	-	expression tag	UNP A0A5P9VSM8
A	-305	HIS	-	expression tag	UNP A0A5P9VSM8
A	-304	HIS	-	expression tag	UNP A0A5P9VSM8
A	-303	HIS	-	expression tag	UNP A0A5P9VSM8
A	-302	HIS	-	expression tag	UNP A0A5P9VSM8
A	-301	HIS	-	expression tag	UNP A0A5P9VSM8
A	-300	HIS	-	expression tag	UNP A0A5P9VSM8
A	-299	HIS	-	expression tag	UNP A0A5P9VSM8
A	-298	ALA	-	expression tag	UNP A0A5P9VSM8
A	-297	ALA	-	expression tag	UNP A0A5P9VSM8
A	-296	ALA	-	expression tag	UNP A0A5P9VSM8
A	-295	SER	-	expression tag	UNP A0A5P9VSM8
A	-294	ALA	-	expression tag	UNP A0A5P9VSM8
A	-293	TRP	-	expression tag	UNP A0A5P9VSM8
A	-292	SER	-	expression tag	UNP A0A5P9VSM8
A	-291	HIS	-	expression tag	UNP A0A5P9VSM8
A	-290	PRO	-	expression tag	UNP A0A5P9VSM8
A	-289	GLN	-	expression tag	UNP A0A5P9VSM8
A	-288	PHE	-	expression tag	UNP A0A5P9VSM8
A	-287	GLU	-	expression tag	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-286	LYS	-	expression tag	UNP A0A5P9VSM8
A	-285	GLY	-	expression tag	UNP A0A5P9VSM8
A	-284	GLY	-	expression tag	UNP A0A5P9VSM8
A	-283	GLY	-	expression tag	UNP A0A5P9VSM8
A	-282	SER	-	expression tag	UNP A0A5P9VSM8
A	-281	GLY	-	expression tag	UNP A0A5P9VSM8
A	-280	GLY	-	expression tag	UNP A0A5P9VSM8
A	-279	GLY	-	expression tag	UNP A0A5P9VSM8
A	-278	SER	-	expression tag	UNP A0A5P9VSM8
A	-277	GLY	-	expression tag	UNP A0A5P9VSM8
A	-276	GLY	-	expression tag	UNP A0A5P9VSM8
A	-275	SER	-	expression tag	UNP A0A5P9VSM8
A	-274	ALA	-	expression tag	UNP A0A5P9VSM8
A	-273	TRP	-	expression tag	UNP A0A5P9VSM8
A	-272	SER	-	expression tag	UNP A0A5P9VSM8
A	-271	HIS	-	expression tag	UNP A0A5P9VSM8
A	-270	PRO	-	expression tag	UNP A0A5P9VSM8
A	-269	GLN	-	expression tag	UNP A0A5P9VSM8
A	-268	PHE	-	expression tag	UNP A0A5P9VSM8
A	-267	GLU	-	expression tag	UNP A0A5P9VSM8
A	-266	LYS	-	expression tag	UNP A0A5P9VSM8
A	-265	GLY	-	expression tag	UNP A0A5P9VSM8
A	-264	GLY	-	expression tag	UNP A0A5P9VSM8
A	-263	GLY	-	expression tag	UNP A0A5P9VSM8
A	-262	SER	-	expression tag	UNP A0A5P9VSM8
A	-261	GLY	-	expression tag	UNP A0A5P9VSM8
A	-260	GLY	-	expression tag	UNP A0A5P9VSM8
A	-259	GLY	-	expression tag	UNP A0A5P9VSM8
A	-258	SER	-	expression tag	UNP A0A5P9VSM8
A	-257	GLY	-	expression tag	UNP A0A5P9VSM8
A	-256	GLY	-	expression tag	UNP A0A5P9VSM8
A	-255	MET	-	expression tag	UNP A0A5P9VSM8
A	-16	SER	-	linker	UNP A0A5P9VSM8
A	-15	GLY	-	linker	UNP A0A5P9VSM8
A	-14	LEU	-	linker	UNP A0A5P9VSM8
A	-13	ARG	-	linker	UNP A0A5P9VSM8
A	-12	SER	-	linker	UNP A0A5P9VSM8
A	-11	GLY	-	linker	UNP A0A5P9VSM8
A	-10	LEU	-	linker	UNP A0A5P9VSM8
A	-9	VAL	-	linker	UNP A0A5P9VSM8
A	-8	PRO	-	linker	UNP A0A5P9VSM8
A	-7	ARG	-	linker	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	GLY	-	linker	UNP A0A5P9VSM8
A	-5	SER	-	linker	UNP A0A5P9VSM8
A	-4	GLY	-	linker	UNP A0A5P9VSM8
A	-3	GLY	-	linker	UNP A0A5P9VSM8
A	-2	ARG	-	linker	UNP A0A5P9VSM8
A	-1	ALA	-	linker	UNP A0A5P9VSM8
A	0	THR	-	linker	UNP A0A5P9VSM8
A	771	ALA	GLN	engineered mutation	UNP S5UH55
A	1149	GLY	ALA	conflict	UNP S5UH55
A	1166	PHE	-	expression tag	UNP S5UH55
A	1167	GLU	-	expression tag	UNP S5UH55
B	-307	MET	-	expression tag	UNP A0A5P9VSM8
B	-306	HIS	-	expression tag	UNP A0A5P9VSM8
B	-305	HIS	-	expression tag	UNP A0A5P9VSM8
B	-304	HIS	-	expression tag	UNP A0A5P9VSM8
B	-303	HIS	-	expression tag	UNP A0A5P9VSM8
B	-302	HIS	-	expression tag	UNP A0A5P9VSM8
B	-301	HIS	-	expression tag	UNP A0A5P9VSM8
B	-300	HIS	-	expression tag	UNP A0A5P9VSM8
B	-299	HIS	-	expression tag	UNP A0A5P9VSM8
B	-298	ALA	-	expression tag	UNP A0A5P9VSM8
B	-297	ALA	-	expression tag	UNP A0A5P9VSM8
B	-296	ALA	-	expression tag	UNP A0A5P9VSM8
B	-295	SER	-	expression tag	UNP A0A5P9VSM8
B	-294	ALA	-	expression tag	UNP A0A5P9VSM8
B	-293	TRP	-	expression tag	UNP A0A5P9VSM8
B	-292	SER	-	expression tag	UNP A0A5P9VSM8
B	-291	HIS	-	expression tag	UNP A0A5P9VSM8
B	-290	PRO	-	expression tag	UNP A0A5P9VSM8
B	-289	GLN	-	expression tag	UNP A0A5P9VSM8
B	-288	PHE	-	expression tag	UNP A0A5P9VSM8
B	-287	GLU	-	expression tag	UNP A0A5P9VSM8
B	-286	LYS	-	expression tag	UNP A0A5P9VSM8
B	-285	GLY	-	expression tag	UNP A0A5P9VSM8
B	-284	GLY	-	expression tag	UNP A0A5P9VSM8
B	-283	GLY	-	expression tag	UNP A0A5P9VSM8
B	-282	SER	-	expression tag	UNP A0A5P9VSM8
B	-281	GLY	-	expression tag	UNP A0A5P9VSM8
B	-280	GLY	-	expression tag	UNP A0A5P9VSM8
B	-279	GLY	-	expression tag	UNP A0A5P9VSM8
B	-278	SER	-	expression tag	UNP A0A5P9VSM8
B	-277	GLY	-	expression tag	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-276	GLY	-	expression tag	UNP A0A5P9VSM8
B	-275	SER	-	expression tag	UNP A0A5P9VSM8
B	-274	ALA	-	expression tag	UNP A0A5P9VSM8
B	-273	TRP	-	expression tag	UNP A0A5P9VSM8
B	-272	SER	-	expression tag	UNP A0A5P9VSM8
B	-271	HIS	-	expression tag	UNP A0A5P9VSM8
B	-270	PRO	-	expression tag	UNP A0A5P9VSM8
B	-269	GLN	-	expression tag	UNP A0A5P9VSM8
B	-268	PHE	-	expression tag	UNP A0A5P9VSM8
B	-267	GLU	-	expression tag	UNP A0A5P9VSM8
B	-266	LYS	-	expression tag	UNP A0A5P9VSM8
B	-265	GLY	-	expression tag	UNP A0A5P9VSM8
B	-264	GLY	-	expression tag	UNP A0A5P9VSM8
B	-263	GLY	-	expression tag	UNP A0A5P9VSM8
B	-262	SER	-	expression tag	UNP A0A5P9VSM8
B	-261	GLY	-	expression tag	UNP A0A5P9VSM8
B	-260	GLY	-	expression tag	UNP A0A5P9VSM8
B	-259	GLY	-	expression tag	UNP A0A5P9VSM8
B	-258	SER	-	expression tag	UNP A0A5P9VSM8
B	-257	GLY	-	expression tag	UNP A0A5P9VSM8
B	-256	GLY	-	expression tag	UNP A0A5P9VSM8
B	-255	MET	-	expression tag	UNP A0A5P9VSM8
B	-16	SER	-	linker	UNP A0A5P9VSM8
B	-15	GLY	-	linker	UNP A0A5P9VSM8
B	-14	LEU	-	linker	UNP A0A5P9VSM8
B	-13	ARG	-	linker	UNP A0A5P9VSM8
B	-12	SER	-	linker	UNP A0A5P9VSM8
B	-11	GLY	-	linker	UNP A0A5P9VSM8
B	-10	LEU	-	linker	UNP A0A5P9VSM8
B	-9	VAL	-	linker	UNP A0A5P9VSM8
B	-8	PRO	-	linker	UNP A0A5P9VSM8
B	-7	ARG	-	linker	UNP A0A5P9VSM8
B	-6	GLY	-	linker	UNP A0A5P9VSM8
B	-5	SER	-	linker	UNP A0A5P9VSM8
B	-4	GLY	-	linker	UNP A0A5P9VSM8
B	-3	GLY	-	linker	UNP A0A5P9VSM8
B	-2	ARG	-	linker	UNP A0A5P9VSM8
B	-1	ALA	-	linker	UNP A0A5P9VSM8
B	0	THR	-	linker	UNP A0A5P9VSM8
B	771	ALA	GLN	engineered mutation	UNP S5UH55
B	1149	GLY	ALA	conflict	UNP S5UH55
B	1166	PHE	-	expression tag	UNP S5UH55

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1167	GLU	-	expression tag	UNP S5UH55
C	-307	MET	-	expression tag	UNP A0A5P9VSM8
C	-306	HIS	-	expression tag	UNP A0A5P9VSM8
C	-305	HIS	-	expression tag	UNP A0A5P9VSM8
C	-304	HIS	-	expression tag	UNP A0A5P9VSM8
C	-303	HIS	-	expression tag	UNP A0A5P9VSM8
C	-302	HIS	-	expression tag	UNP A0A5P9VSM8
C	-301	HIS	-	expression tag	UNP A0A5P9VSM8
C	-300	HIS	-	expression tag	UNP A0A5P9VSM8
C	-299	HIS	-	expression tag	UNP A0A5P9VSM8
C	-298	ALA	-	expression tag	UNP A0A5P9VSM8
C	-297	ALA	-	expression tag	UNP A0A5P9VSM8
C	-296	ALA	-	expression tag	UNP A0A5P9VSM8
C	-295	SER	-	expression tag	UNP A0A5P9VSM8
C	-294	ALA	-	expression tag	UNP A0A5P9VSM8
C	-293	TRP	-	expression tag	UNP A0A5P9VSM8
C	-292	SER	-	expression tag	UNP A0A5P9VSM8
C	-291	HIS	-	expression tag	UNP A0A5P9VSM8
C	-290	PRO	-	expression tag	UNP A0A5P9VSM8
C	-289	GLN	-	expression tag	UNP A0A5P9VSM8
C	-288	PHE	-	expression tag	UNP A0A5P9VSM8
C	-287	GLU	-	expression tag	UNP A0A5P9VSM8
C	-286	LYS	-	expression tag	UNP A0A5P9VSM8
C	-285	GLY	-	expression tag	UNP A0A5P9VSM8
C	-284	GLY	-	expression tag	UNP A0A5P9VSM8
C	-283	GLY	-	expression tag	UNP A0A5P9VSM8
C	-282	SER	-	expression tag	UNP A0A5P9VSM8
C	-281	GLY	-	expression tag	UNP A0A5P9VSM8
C	-280	GLY	-	expression tag	UNP A0A5P9VSM8
C	-279	GLY	-	expression tag	UNP A0A5P9VSM8
C	-278	SER	-	expression tag	UNP A0A5P9VSM8
C	-277	GLY	-	expression tag	UNP A0A5P9VSM8
C	-276	GLY	-	expression tag	UNP A0A5P9VSM8
C	-275	SER	-	expression tag	UNP A0A5P9VSM8
C	-274	ALA	-	expression tag	UNP A0A5P9VSM8
C	-273	TRP	-	expression tag	UNP A0A5P9VSM8
C	-272	SER	-	expression tag	UNP A0A5P9VSM8
C	-271	HIS	-	expression tag	UNP A0A5P9VSM8
C	-270	PRO	-	expression tag	UNP A0A5P9VSM8
C	-269	GLN	-	expression tag	UNP A0A5P9VSM8
C	-268	PHE	-	expression tag	UNP A0A5P9VSM8
C	-267	GLU	-	expression tag	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-266	LYS	-	expression tag	UNP A0A5P9VSM8
C	-265	GLY	-	expression tag	UNP A0A5P9VSM8
C	-264	GLY	-	expression tag	UNP A0A5P9VSM8
C	-263	GLY	-	expression tag	UNP A0A5P9VSM8
C	-262	SER	-	expression tag	UNP A0A5P9VSM8
C	-261	GLY	-	expression tag	UNP A0A5P9VSM8
C	-260	GLY	-	expression tag	UNP A0A5P9VSM8
C	-259	GLY	-	expression tag	UNP A0A5P9VSM8
C	-258	SER	-	expression tag	UNP A0A5P9VSM8
C	-257	GLY	-	expression tag	UNP A0A5P9VSM8
C	-256	GLY	-	expression tag	UNP A0A5P9VSM8
C	-255	MET	-	expression tag	UNP A0A5P9VSM8
C	-16	SER	-	linker	UNP A0A5P9VSM8
C	-15	GLY	-	linker	UNP A0A5P9VSM8
C	-14	LEU	-	linker	UNP A0A5P9VSM8
C	-13	ARG	-	linker	UNP A0A5P9VSM8
C	-12	SER	-	linker	UNP A0A5P9VSM8
C	-11	GLY	-	linker	UNP A0A5P9VSM8
C	-10	LEU	-	linker	UNP A0A5P9VSM8
C	-9	VAL	-	linker	UNP A0A5P9VSM8
C	-8	PRO	-	linker	UNP A0A5P9VSM8
C	-7	ARG	-	linker	UNP A0A5P9VSM8
C	-6	GLY	-	linker	UNP A0A5P9VSM8
C	-5	SER	-	linker	UNP A0A5P9VSM8
C	-4	GLY	-	linker	UNP A0A5P9VSM8
C	-3	GLY	-	linker	UNP A0A5P9VSM8
C	-2	ARG	-	linker	UNP A0A5P9VSM8
C	-1	ALA	-	linker	UNP A0A5P9VSM8
C	0	THR	-	linker	UNP A0A5P9VSM8
C	771	ALA	GLN	engineered mutation	UNP S5UH55
C	1149	GLY	ALA	conflict	UNP S5UH55
C	1166	PHE	-	expression tag	UNP S5UH55
C	1167	GLU	-	expression tag	UNP S5UH55
D	-307	MET	-	expression tag	UNP A0A5P9VSM8
D	-306	HIS	-	expression tag	UNP A0A5P9VSM8
D	-305	HIS	-	expression tag	UNP A0A5P9VSM8
D	-304	HIS	-	expression tag	UNP A0A5P9VSM8
D	-303	HIS	-	expression tag	UNP A0A5P9VSM8
D	-302	HIS	-	expression tag	UNP A0A5P9VSM8
D	-301	HIS	-	expression tag	UNP A0A5P9VSM8
D	-300	HIS	-	expression tag	UNP A0A5P9VSM8
D	-299	HIS	-	expression tag	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-298	ALA	-	expression tag	UNP A0A5P9VSM8
D	-297	ALA	-	expression tag	UNP A0A5P9VSM8
D	-296	ALA	-	expression tag	UNP A0A5P9VSM8
D	-295	SER	-	expression tag	UNP A0A5P9VSM8
D	-294	ALA	-	expression tag	UNP A0A5P9VSM8
D	-293	TRP	-	expression tag	UNP A0A5P9VSM8
D	-292	SER	-	expression tag	UNP A0A5P9VSM8
D	-291	HIS	-	expression tag	UNP A0A5P9VSM8
D	-290	PRO	-	expression tag	UNP A0A5P9VSM8
D	-289	GLN	-	expression tag	UNP A0A5P9VSM8
D	-288	PHE	-	expression tag	UNP A0A5P9VSM8
D	-287	GLU	-	expression tag	UNP A0A5P9VSM8
D	-286	LYS	-	expression tag	UNP A0A5P9VSM8
D	-285	GLY	-	expression tag	UNP A0A5P9VSM8
D	-284	GLY	-	expression tag	UNP A0A5P9VSM8
D	-283	GLY	-	expression tag	UNP A0A5P9VSM8
D	-282	SER	-	expression tag	UNP A0A5P9VSM8
D	-281	GLY	-	expression tag	UNP A0A5P9VSM8
D	-280	GLY	-	expression tag	UNP A0A5P9VSM8
D	-279	GLY	-	expression tag	UNP A0A5P9VSM8
D	-278	SER	-	expression tag	UNP A0A5P9VSM8
D	-277	GLY	-	expression tag	UNP A0A5P9VSM8
D	-276	GLY	-	expression tag	UNP A0A5P9VSM8
D	-275	SER	-	expression tag	UNP A0A5P9VSM8
D	-274	ALA	-	expression tag	UNP A0A5P9VSM8
D	-273	TRP	-	expression tag	UNP A0A5P9VSM8
D	-272	SER	-	expression tag	UNP A0A5P9VSM8
D	-271	HIS	-	expression tag	UNP A0A5P9VSM8
D	-270	PRO	-	expression tag	UNP A0A5P9VSM8
D	-269	GLN	-	expression tag	UNP A0A5P9VSM8
D	-268	PHE	-	expression tag	UNP A0A5P9VSM8
D	-267	GLU	-	expression tag	UNP A0A5P9VSM8
D	-266	LYS	-	expression tag	UNP A0A5P9VSM8
D	-265	GLY	-	expression tag	UNP A0A5P9VSM8
D	-264	GLY	-	expression tag	UNP A0A5P9VSM8
D	-263	GLY	-	expression tag	UNP A0A5P9VSM8
D	-262	SER	-	expression tag	UNP A0A5P9VSM8
D	-261	GLY	-	expression tag	UNP A0A5P9VSM8
D	-260	GLY	-	expression tag	UNP A0A5P9VSM8
D	-259	GLY	-	expression tag	UNP A0A5P9VSM8
D	-258	SER	-	expression tag	UNP A0A5P9VSM8
D	-257	GLY	-	expression tag	UNP A0A5P9VSM8

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-256	GLY	-	expression tag	UNP A0A5P9VSM8
D	-255	MET	-	expression tag	UNP A0A5P9VSM8
D	-16	SER	-	linker	UNP A0A5P9VSM8
D	-15	GLY	-	linker	UNP A0A5P9VSM8
D	-14	LEU	-	linker	UNP A0A5P9VSM8
D	-13	ARG	-	linker	UNP A0A5P9VSM8
D	-12	SER	-	linker	UNP A0A5P9VSM8
D	-11	GLY	-	linker	UNP A0A5P9VSM8
D	-10	LEU	-	linker	UNP A0A5P9VSM8
D	-9	VAL	-	linker	UNP A0A5P9VSM8
D	-8	PRO	-	linker	UNP A0A5P9VSM8
D	-7	ARG	-	linker	UNP A0A5P9VSM8
D	-6	GLY	-	linker	UNP A0A5P9VSM8
D	-5	SER	-	linker	UNP A0A5P9VSM8
D	-4	GLY	-	linker	UNP A0A5P9VSM8
D	-3	GLY	-	linker	UNP A0A5P9VSM8
D	-2	ARG	-	linker	UNP A0A5P9VSM8
D	-1	ALA	-	linker	UNP A0A5P9VSM8
D	0	THR	-	linker	UNP A0A5P9VSM8
D	771	ALA	GLN	engineered mutation	UNP S5UH55
D	1149	GLY	ALA	conflict	UNP S5UH55
D	1166	PHE	-	expression tag	UNP S5UH55
D	1167	GLU	-	expression tag	UNP S5UH55

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).
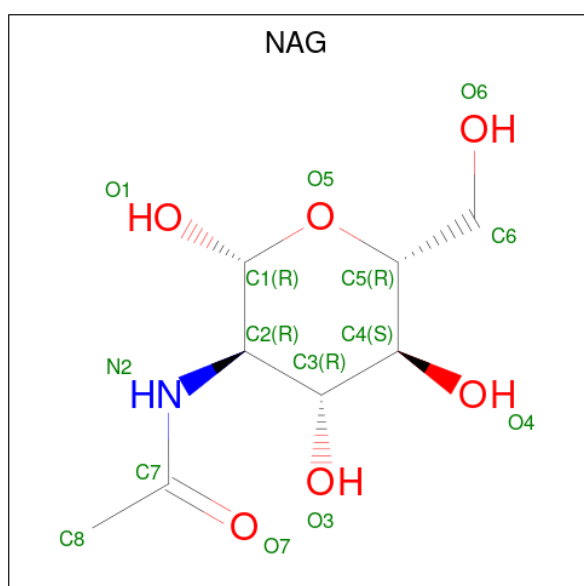
Mol	Chain	Residues	Atoms				AltConf
2	A	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	C	1	Total 14	C 8	N 1	O 5	0
2	D	1	Total 14	C 8	N 1	O 5	0

- Molecule 3 is CALCIUM ION (CCD ID: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
3	A	2	Total 2	Ca 2	0
3	B	2	Total 2	Ca 2	0
3	C	2	Total 2	Ca 2	0
3	D	2	Total 2	Ca 2	0

- Molecule 4 is Tigogenin (CCD ID: A1CGZ) (formula: $C_{27}H_{44}O_3$).
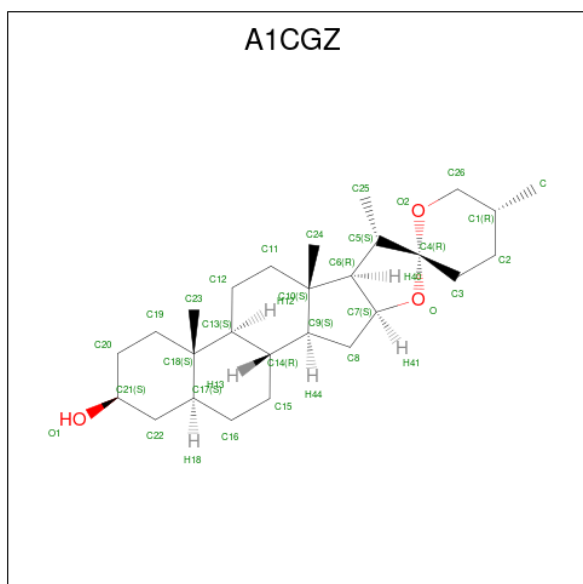
Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total 30	C 27	O 3	0

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Mol	Chain	Residues	Atoms			AltConf
4	B	1	Total	C	O	0
			30	27	3	
4	C	1	Total	C	O	0
			30	27	3	
4	D	1	Total	C	O	0
			30	27	3	

- Molecule 5 is (2R)-2-(hydroxymethyl)-4-{[(10xi,13xi,22xi,25R)-5beta,14beta,17beta-spiro stan-3beta-yl]oxy}butyl 4-O-alpha-D-glucopyranosyl-beta-D-glucopyranoside (CCD ID: A1CG0) (formula: $C_{44}H_{74}O_{15}$).
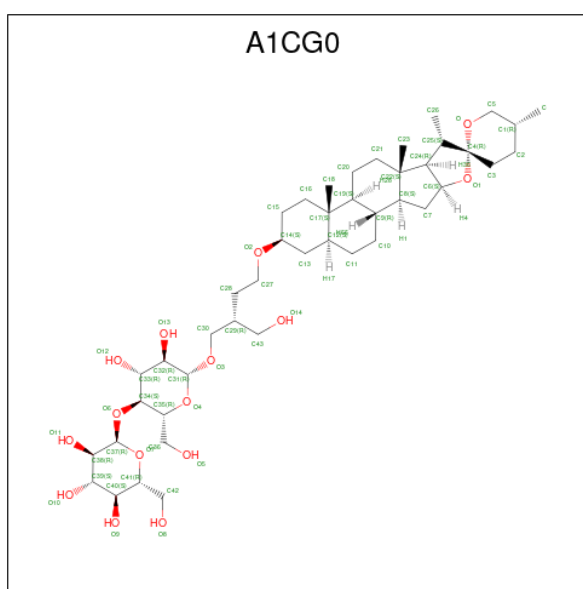
Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			59	44	15	
5	B	1	Total	C	O	0
			59	44	15	
5	C	1	Total	C	O	0
			59	44	15	
5	D	1	Total	C	O	0
			59	44	15	

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: RNA-directed RNA polymerase L,Transient receptor potential cation channel sub-
family M member 5

• Molecule 1: RNA-directed RNA polymerase L,Transient receptor potential cation channel sub-family M member 5

• Molecule 1: RNA-directed RNA polymerase L,Transient receptor potential cation channel subfamily M member 5

• Molecule 1: RNA-directed RNA polymerase L,Transient receptor potential cation channel subfamily M member 5

Chain D:

54% 13% 32%
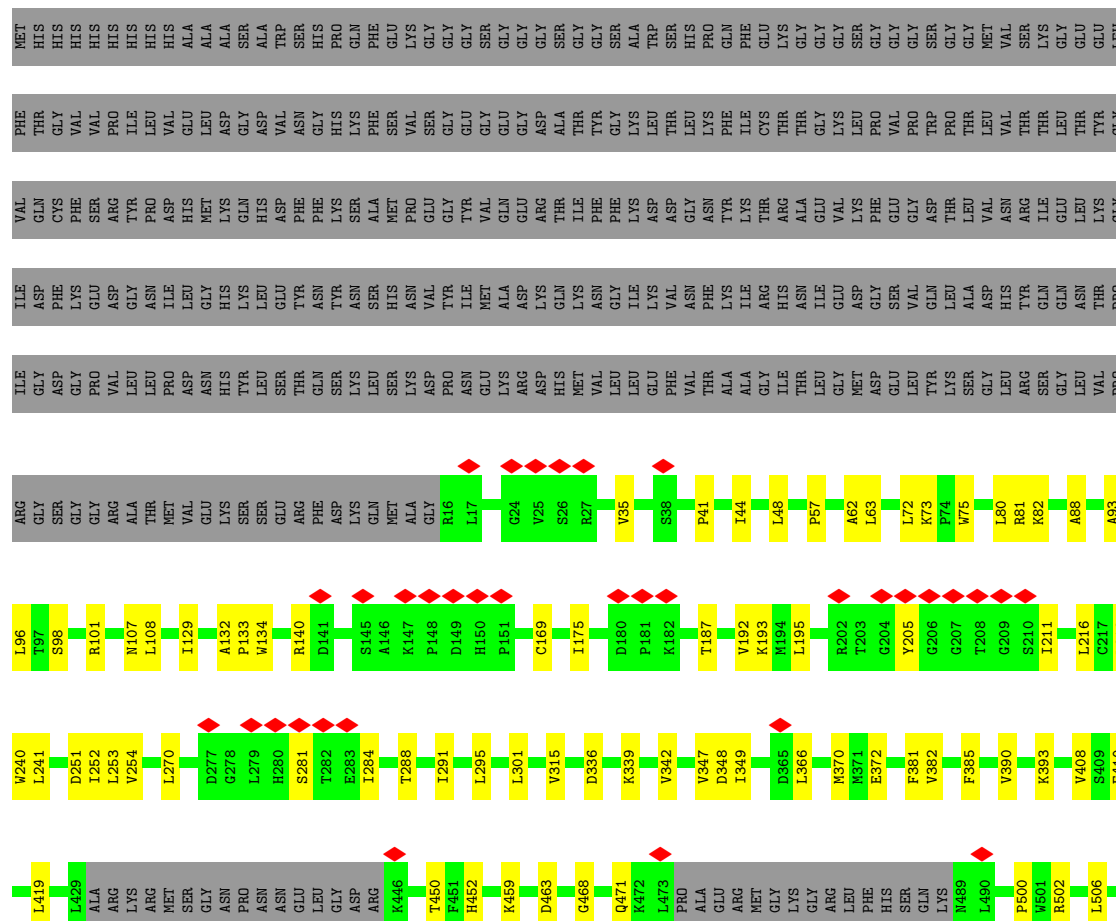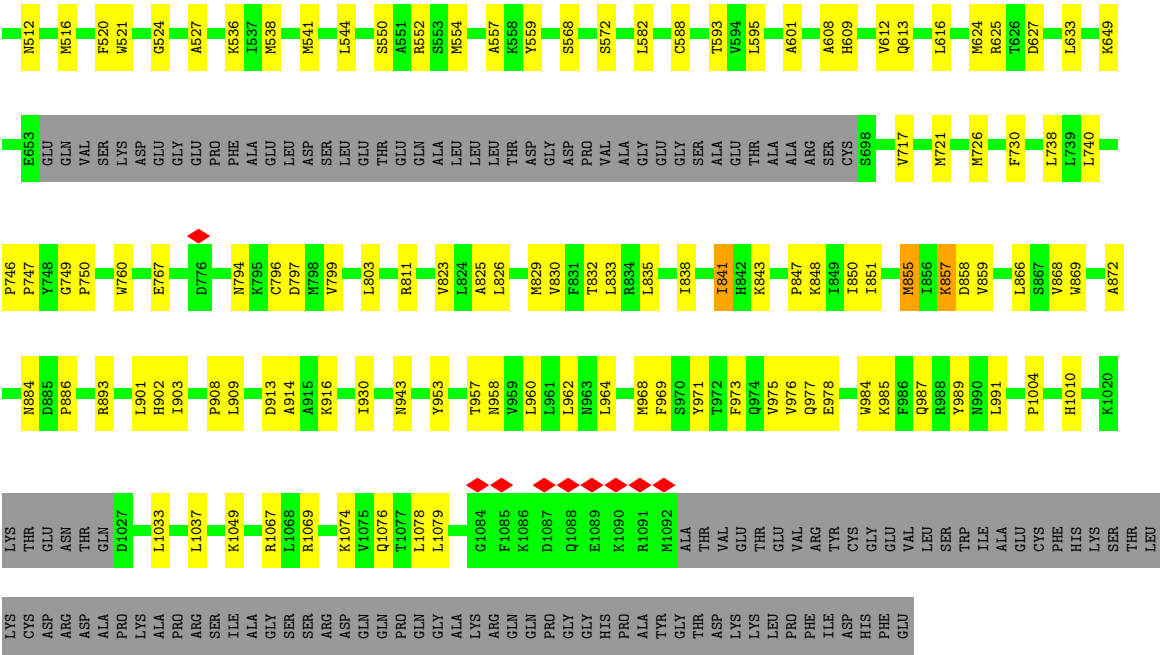
4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	3662754	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 $(e^-/Å^2)$	50	Depositor
Minimum defocus (nm)	1100	Depositor
Maximum defocus (nm)	1900	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.016	Depositor
Minimum map value	-0.004	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0035	Depositor
Map size (Å)	297.36, 297.36, 297.36	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.826, 0.826, 0.826	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: A1CGZ, A1CG0, CA, NAG

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	0.28	0/7730	0.47	0/10548
1	B	0.28	0/7730	0.47	0/10548
1	C	0.28	0/7730	0.47	0/10548
1	D	0.28	0/7730	0.47	0/10548
All	All	0.28	0/30920	0.47	0/42192

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 ⓘ

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	7541	0	7345	150	0
1	B	7541	0	7345	146	0
1	C	7541	0	7345	153	0
1	D	7541	0	7345	148	0
2	A	14	0	13	0	0
2	B	14	0	13	0	0
2	C	14	0	13	0	0
2	D	14	0	13	0	0
3	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
4	A	30	0	0	0	0
4	B	30	0	0	0	0
4	C	30	0	0	0	0
4	D	30	0	0	0	0
5	A	59	0	0	0	0
5	B	59	0	0	0	0
5	C	59	0	0	0	0
5	D	59	0	0	0	0
All	All	30584	0	29432	530	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 9.

The worst 5 of 530 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:C:1079:LEU:HD13	1:D:1074:LYS:HE2	1.44	0.97
1:A:1074:LYS:HE2	1:D:1079:LEU:HD13	1.48	0.95
1:B:1079:LEU:HD13	1:C:1074:LYS:CE	2.00	0.91
1:B:1079:LEU:HD13	1:C:1074:LYS:HE2	1.49	0.90
1:A:1079:LEU:HD13	1:B:1074:LYS:HE2	1.57	0.86

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	986/1475 (67%)	956 (97%)	30 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	986/1475 (67%)	956 (97%)	30 (3%)	0	100	100
1	C	986/1475 (67%)	956 (97%)	30 (3%)	0	100	100
1	D	986/1475 (67%)	956 (97%)	30 (3%)	0	100	100
All	All	3944/5900 (67%)	3824 (97%)	120 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2   Protein sidechains ⓘ

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	734/1271 (58%)	727 (99%)	7 (1%)	73	87
1	B	734/1271 (58%)	727 (99%)	7 (1%)	73	87
1	C	734/1271 (58%)	727 (99%)	7 (1%)	73	87
1	D	734/1271 (58%)	727 (99%)	7 (1%)	73	87
All	All	2936/5084 (58%)	2908 (99%)	28 (1%)	71	87

5 of 28 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	541	MET
1	D	859	VAL
1	C	841	ILE
1	D	841	ILE
1	C	838	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 28 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	107	ASN
1	D	902	HIS
1	C	412	ASN

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Mol	Chain	Res	Type
1	D	412	ASN
1	C	332	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 20 ligands modelled in this entry, 8 are monoatomic - leaving 12 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	$\#|Z| > 2$
2	NAG	A	1501	1	14,14,15	0.33	0	17,19,21	0.81	1 (5%)
2	NAG	C	1501	1	14,14,15	0.33	0	17,19,21	0.81	1 (5%)
4	A1CGZ	A	1504	-	35,35,35	0.19	0	58,58,58	0.77	3 (5%)
4	A1CGZ	D	3005	-	35,35,35	0.19	0	58,58,58	0.77	3 (5%)
4	A1CGZ	C	1504	-	35,35,35	0.20	0	58,58,58	0.76	3 (5%)
2	NAG	B	1501	1	14,14,15	0.32	0	17,19,21	0.80	0
5	A1CG0	C	1505	-	66,66,66	0.24	0	99,102,102	0.48	0
4	A1CGZ	B	1504	-	35,35,35	0.20	0	58,58,58	0.77	3 (5%)
5	A1CG0	B	1505	-	66,66,66	0.24	0	99,102,102	0.48	1 (1%)
5	A1CG0	D	3001	-	66,66,66	0.24	0	99,102,102	0.48	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	NAG	D	3002	1	14,14,15	0.32	0	17,19,21	0.81	1 (5%)
5	A1CG0	A	1505	-	66,66,66	0.24	0	99,102,102	0.49	1 (1%)

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
2	NAG	A	1501	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1501	1	-	0/6/23/26	0/1/1/1
4	A1CGZ	A	1504	-	-	-	0/6/6/6
4	A1CGZ	D	3005	-	-	-	0/6/6/6
4	A1CGZ	C	1504	-	-	-	0/6/6/6
2	NAG	B	1501	1	-	0/6/23/26	0/1/1/1
5	A1CG0	C	1505	-	-	13/21/149/149	0/8/8/8
5	A1CG0	B	1505	-	-	13/21/149/149	0/8/8/8
4	A1CGZ	B	1504	-	-	-	0/6/6/6
5	A1CG0	D	3001	-	-	13/21/149/149	0/8/8/8
5	A1CG0	A	1505	-	-	13/21/149/149	0/8/8/8
2	NAG	D	3002	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 18 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	3005	A1CGZ	C16-C15-C14	-3.31	106.88	112.16
4	B	1504	A1CGZ	C16-C15-C14	-3.30	106.89	112.16
4	C	1504	A1CGZ	C16-C15-C14	-3.29	106.91	112.16
4	A	1504	A1CGZ	C16-C15-C14	-3.28	106.92	112.16
4	D	3005	A1CGZ	C15-C16-C17	-3.09	105.84	111.84

There are no chirality outliers.

5 of 52 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1505	A1CG0	C28-C27-O2-C14
5	A	1505	A1CG0	C28-C29-C43-O14
5	A	1505	A1CG0	C30-C29-C43-O14
5	B	1505	A1CG0	C28-C27-O2-C14

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Mol	Chain	Res	Type	Atoms
5	B	1505	A1CG0	C28-C29-C43-O14

There are no ring outliers.

No monomer is involved in short contacts.

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

Ligand NAG A 1501

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG C 1501

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CGZ A 1504

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CGZ D 3005

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CGZ C 1504

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG B 1501

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CG0 C 1505

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CGZ B 1504

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CG0 B 1505

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CG0 D 3001

Bond lengths

Bond angles

Torsions

Rings

Ligand NAG D 3002

Bond lengths

Bond angles

Torsions

Rings

Ligand A1CG0 A 1505

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-71257. 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
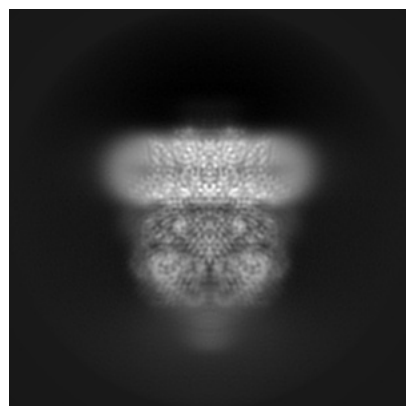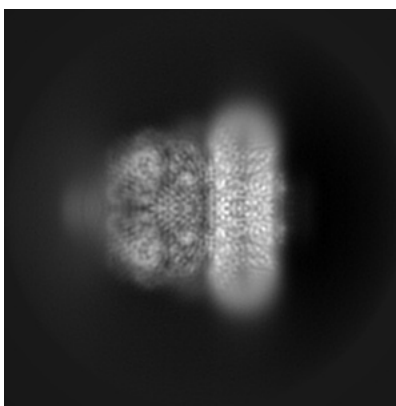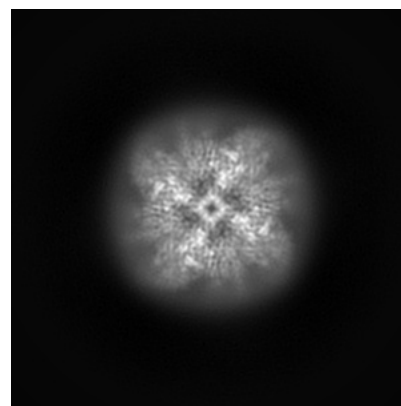
X   Y   Z

6.1.2 Raw map

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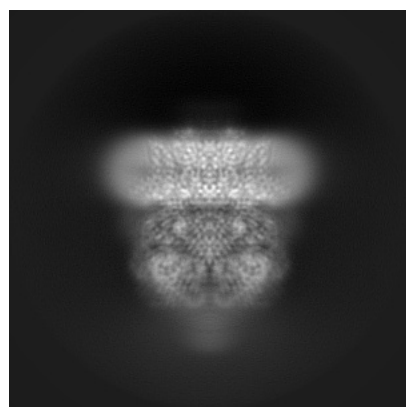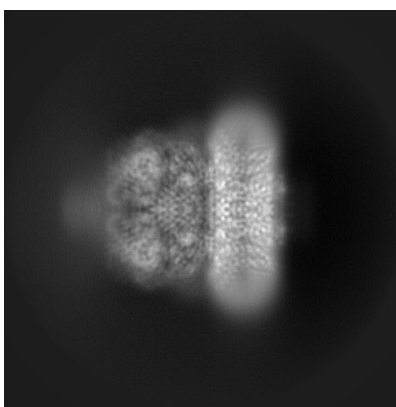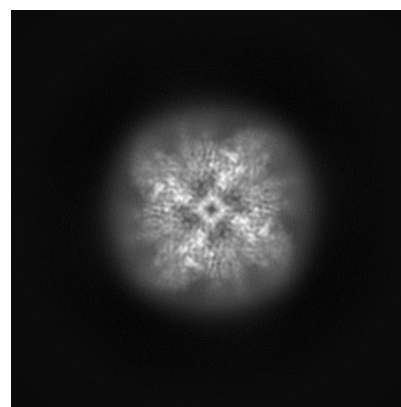
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
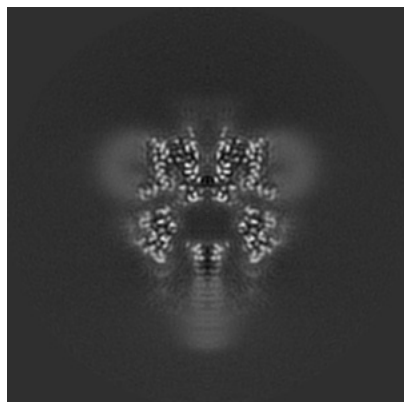
6.2.1 Primary map

X Index: 180
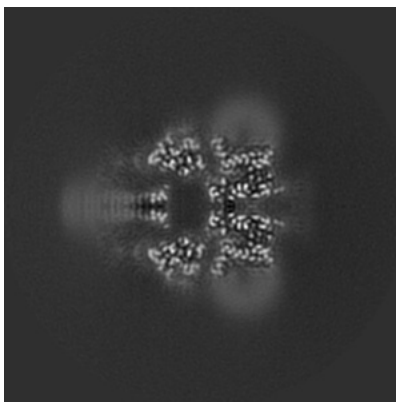
Y Index: 180
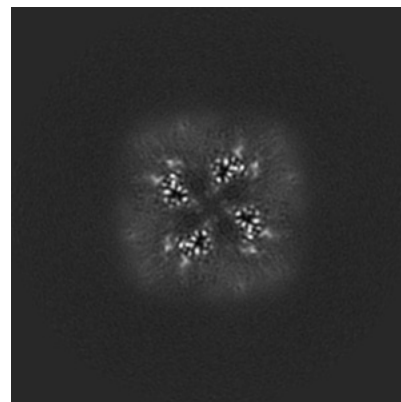
Z Index: 180

6.2.2 Raw map
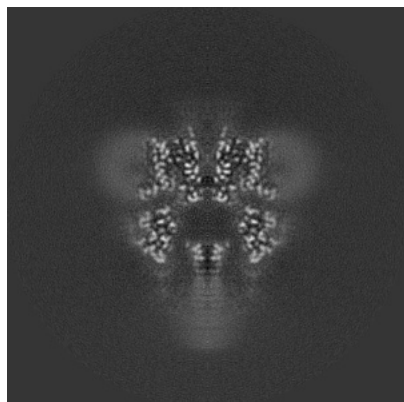
X Index: 180
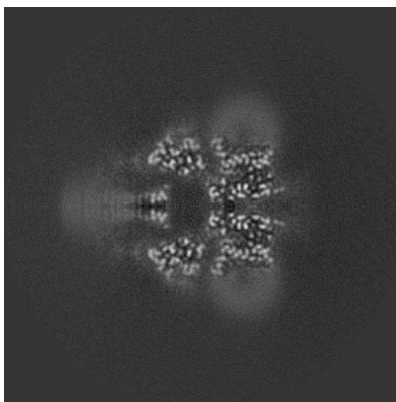
Y Index: 180
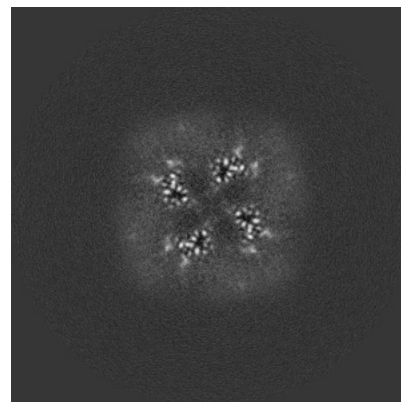
Z Index: 180

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
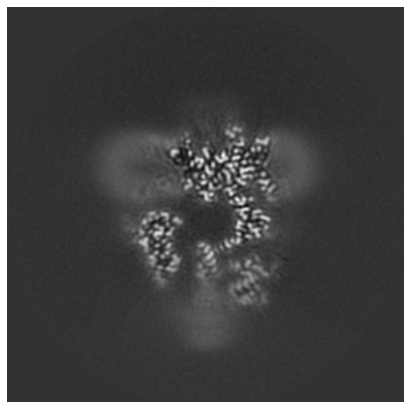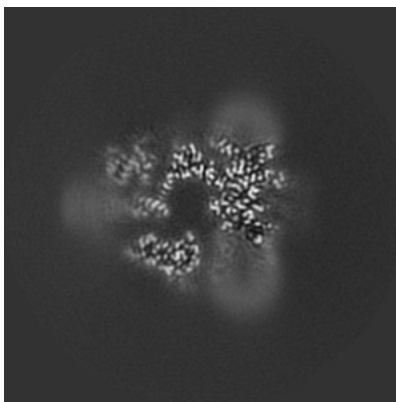
X Index: 190	Y Index: 170	Z Index: 197
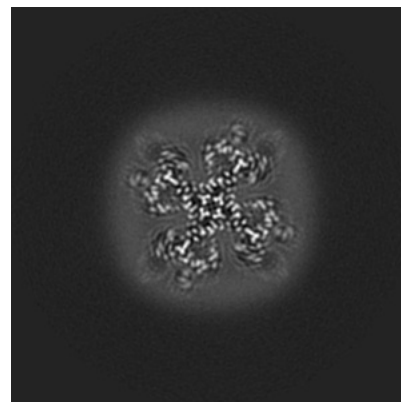
6.3.2 Raw map
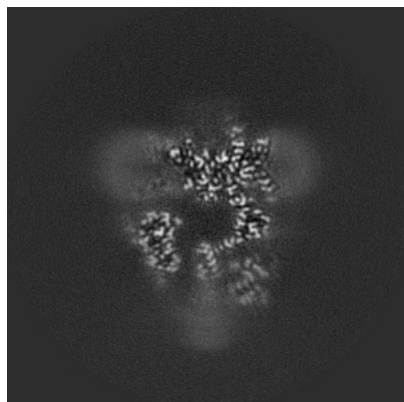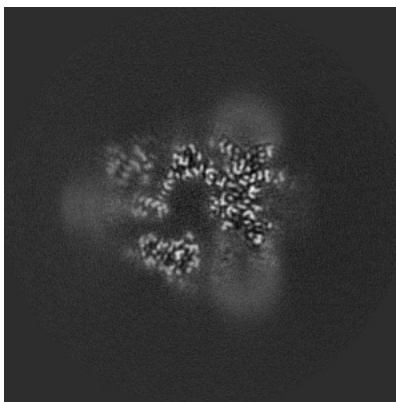
X Index: 189	Y Index: 171	Z Index: 197
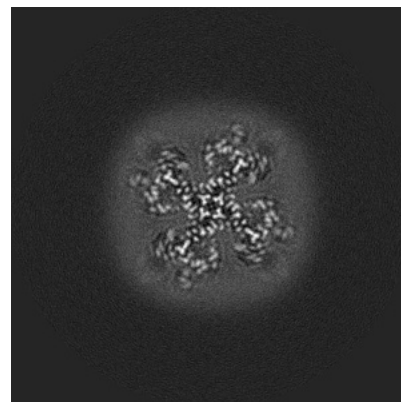
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1   Primary map
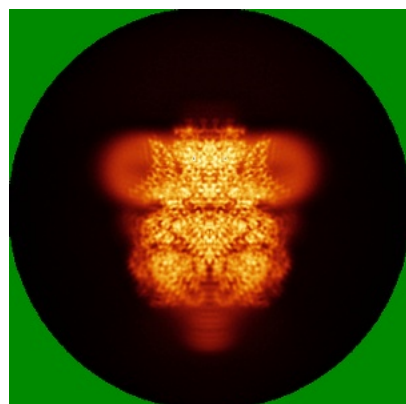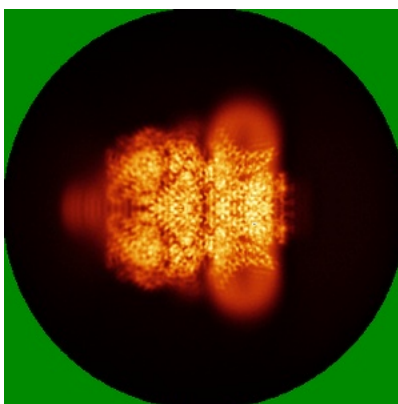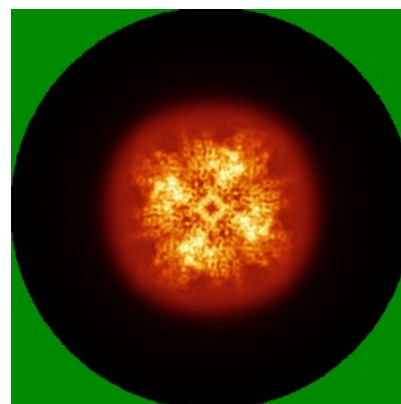
X   Y   Z

6.4.2   Raw map

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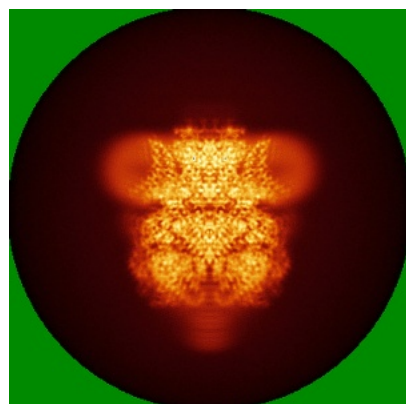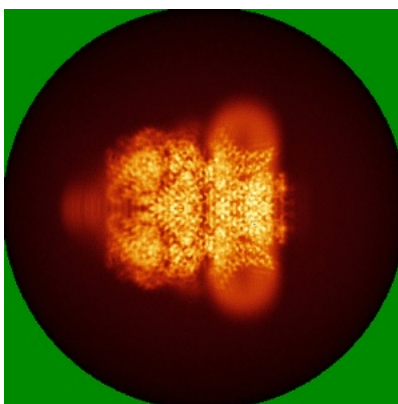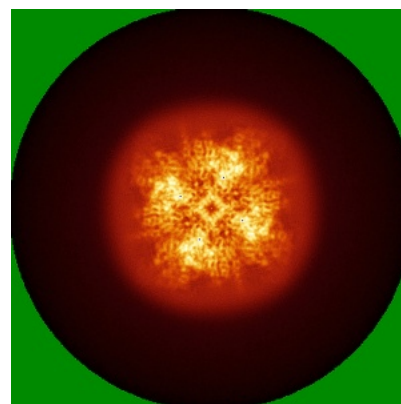
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map
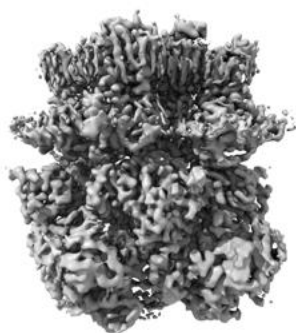
X Y Z
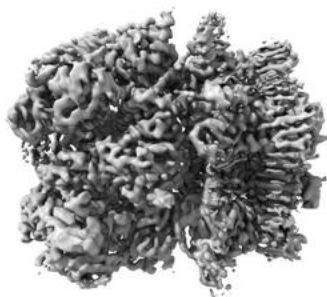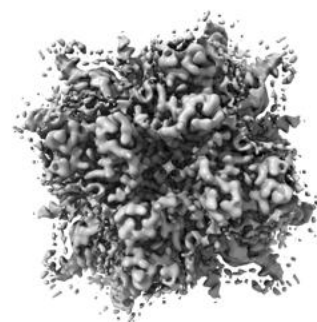
The images above show the 3D surface view of the map at the recommended contour level 0.0035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map
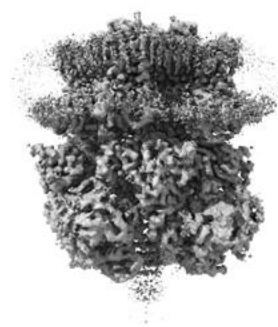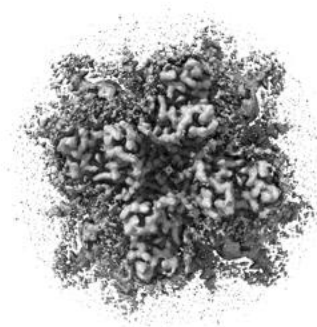
X Y Z

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

6.6 Mask visualisation (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_71257_msk_1.map (i)

X   Y   Z
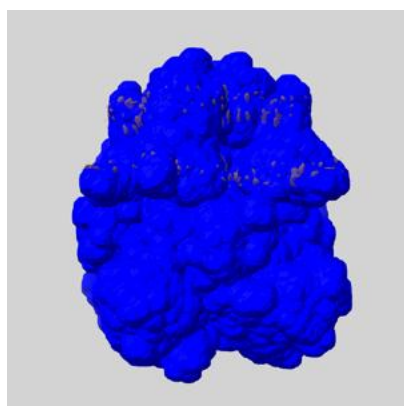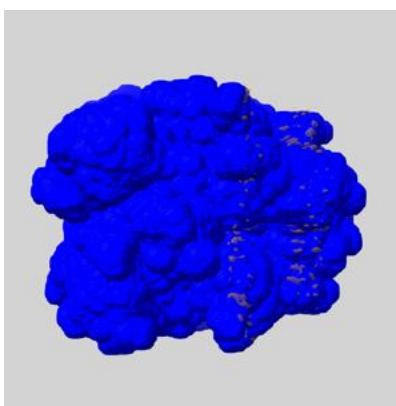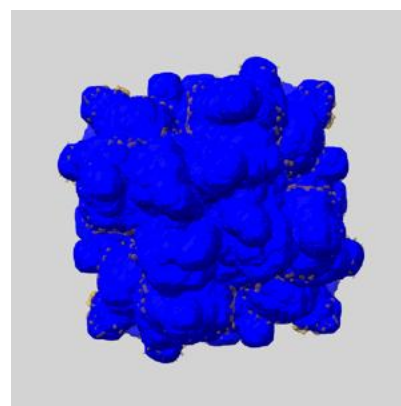
7 Map analysis ⓘ

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

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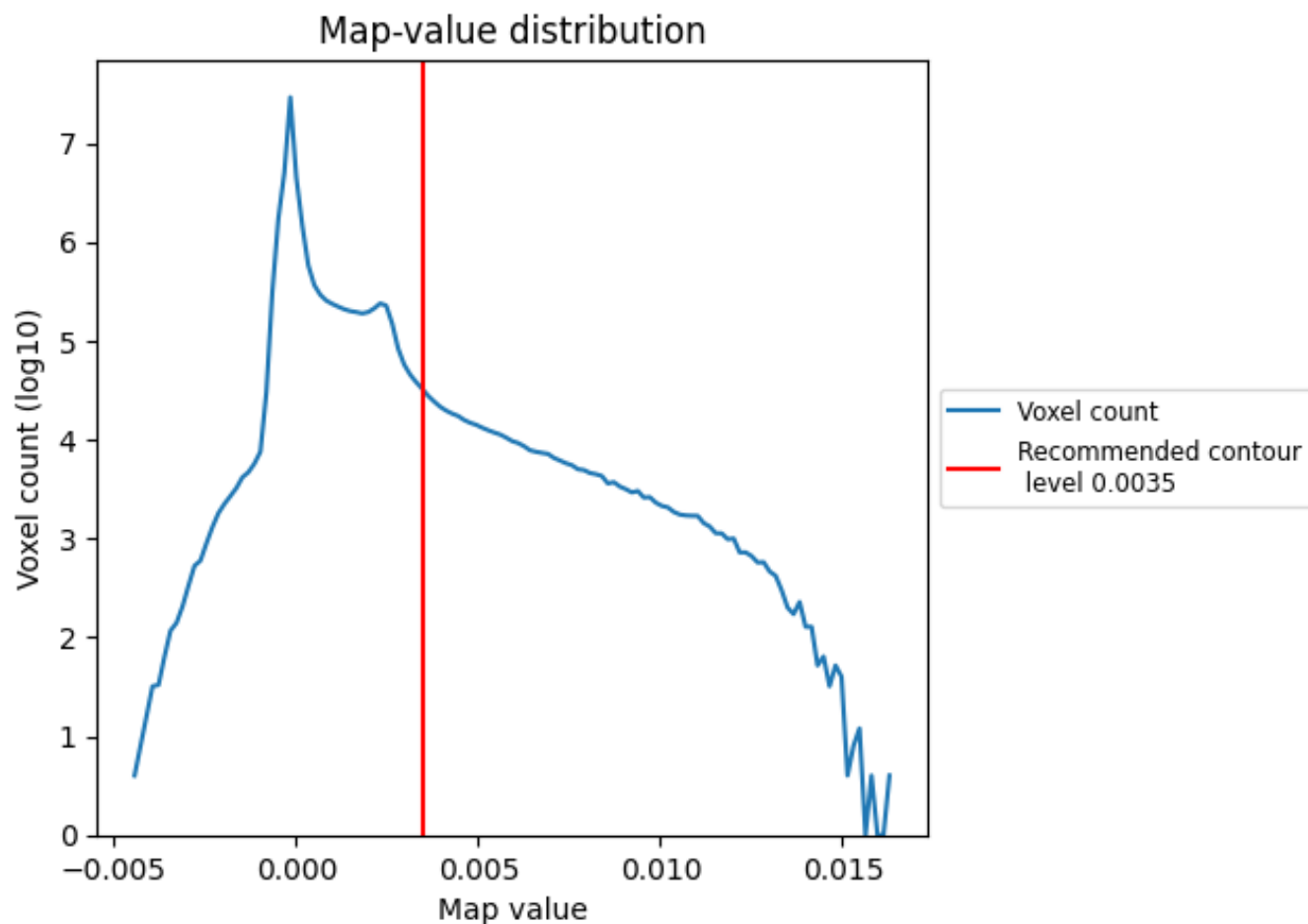
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
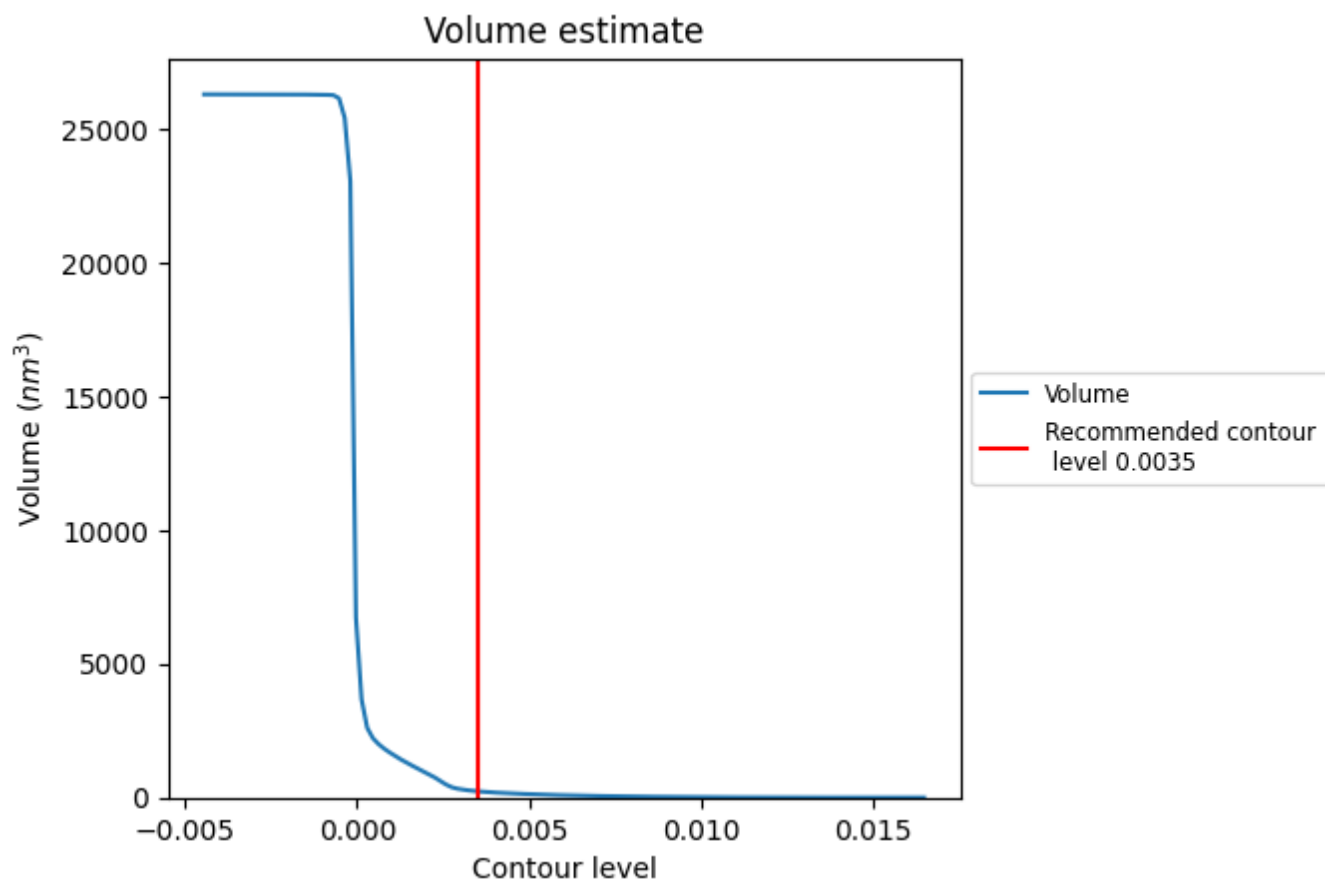
The volume at the recommended contour level is 235 nm³; this corresponds to an approximate mass of 212 kDa.

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 ⓘ
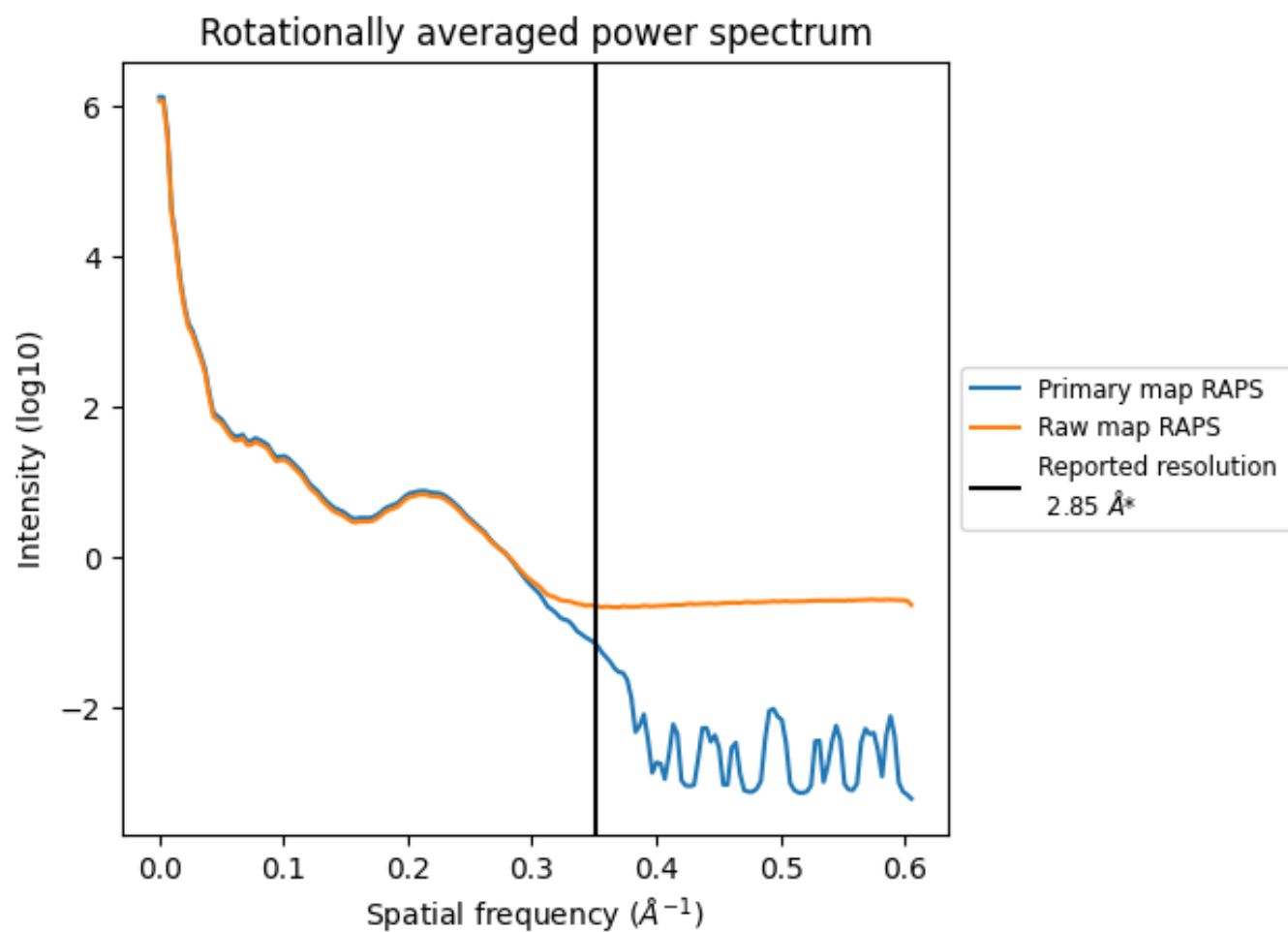
*Reported resolution corresponds to spatial frequency of 0.351 Å^{-1}

8 Fourier-Shell correlation (i)

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

8.1 FSC (i)
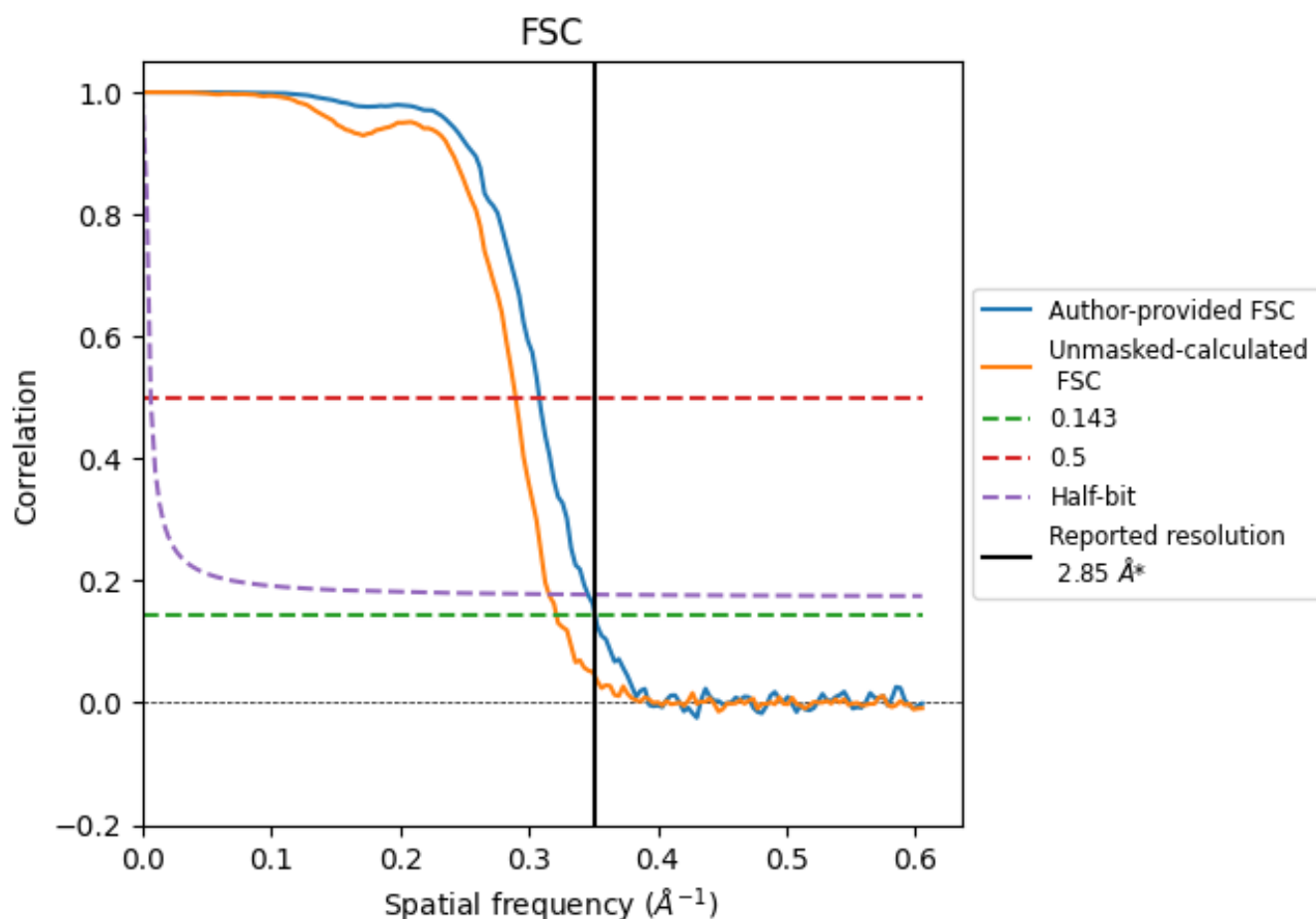
*Reported resolution corresponds to spatial frequency of 0.351 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.85	-	-
Author-provided FSC curve	2.84	3.24	2.89
Unmasked-calculated*	3.11	3.45	3.17

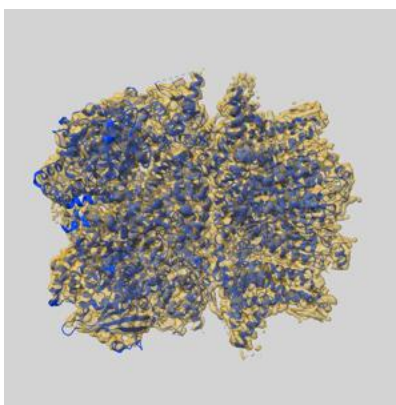*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-71257 and PDB model 9P3W. Per-residue inclusion information can be found in section 3 on page 13.
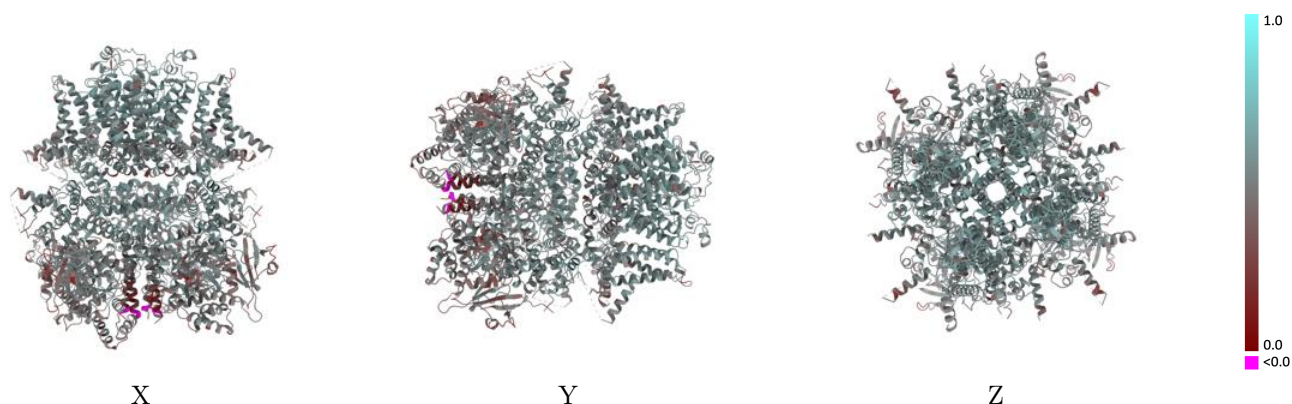
9.1 Map-model overlay ⓘ
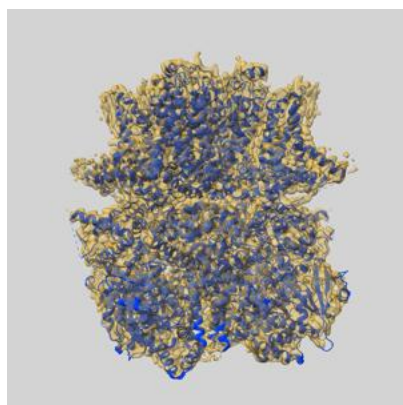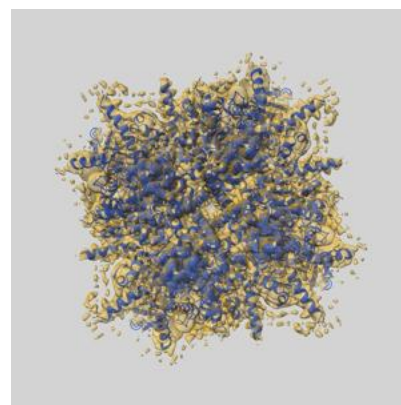
X   Y   Z

The images above show the 3D surface view of the map at the recommended contour level 0.0035 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 ⓘ

X   Y   Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3   Atom inclusion mapped to coordinate model ⓘ

X   Y   Z
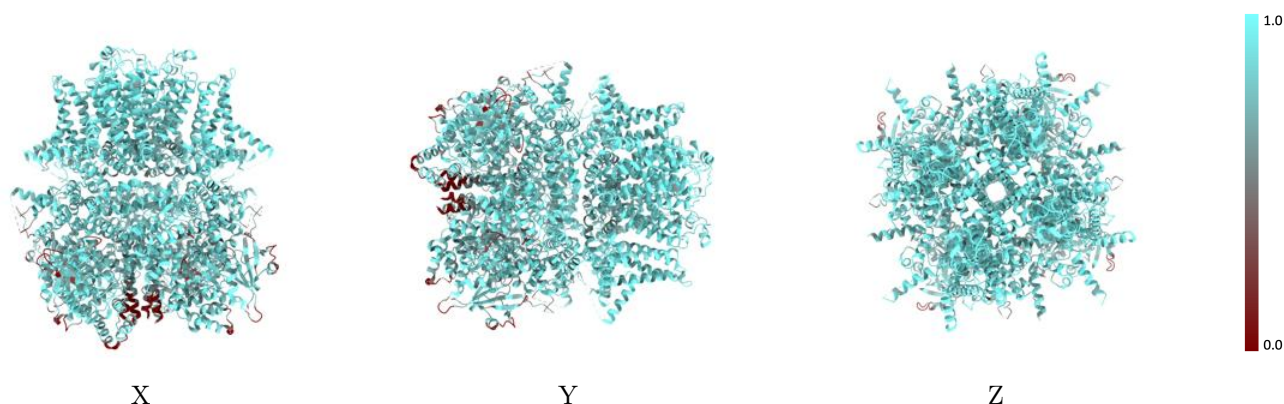
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0035).

WORLDWIDE
wwPDB
PROTEIN DATA BANK
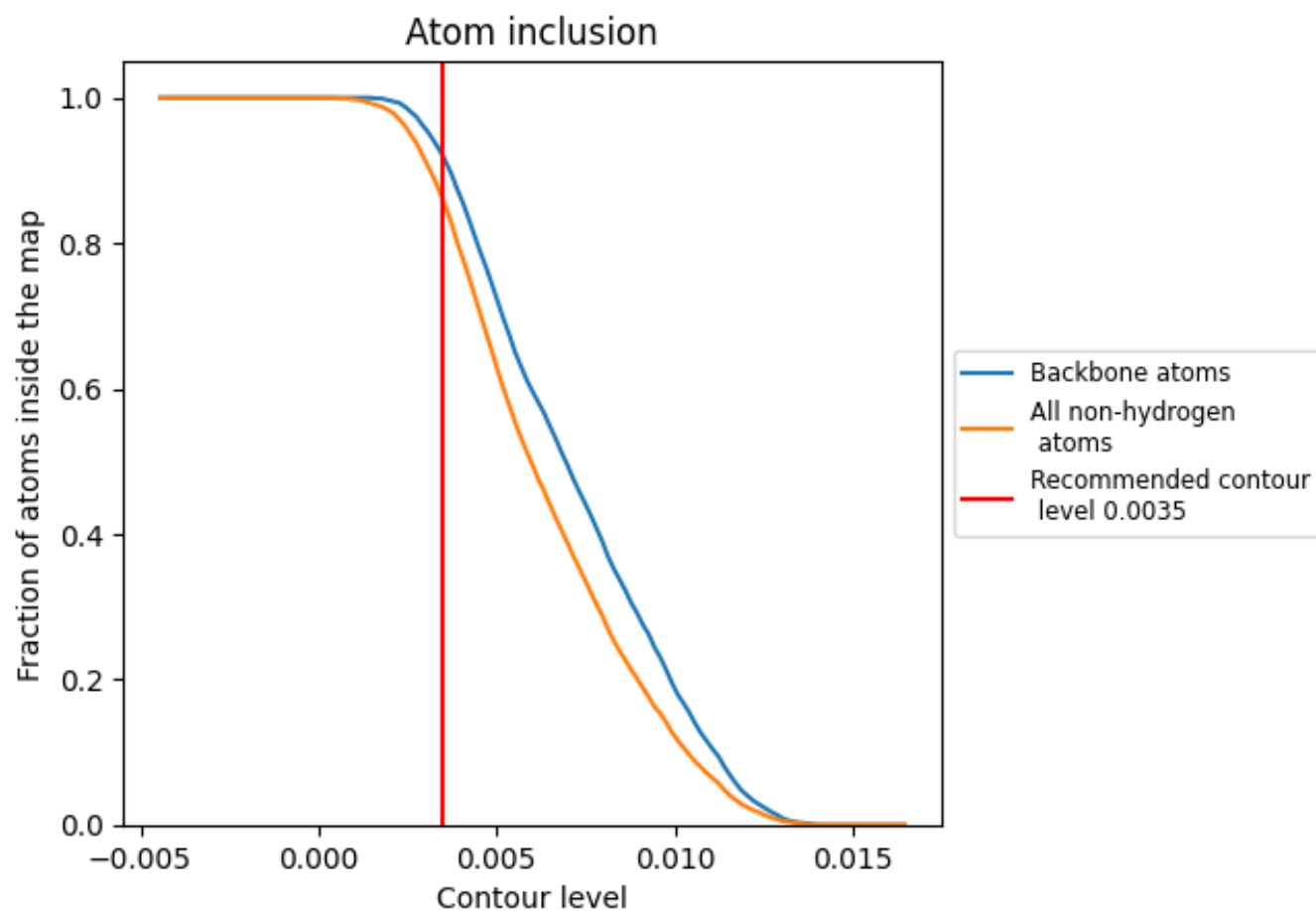
9.4   Atom inclusion ⓘ

At the recommended contour level, 92% of all backbone atoms, 86% 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 (0.0035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8600	0.5100
A	0.8630	0.5120
B	0.8570	0.5070
C	0.8600	0.5100
D	0.8610	0.5100

1.0

0.0

<0.0