Integrative Structure Validation Report ⊙

October 09, 2025 - 04:44 PM PDT

The following software was used in the production of this report:

IHMValidation Version 3.0
Python-IHM Version 2.5
MolProbity Version 4.5.2
EMDB validation analysis Version 0.0.1.dev127
ChimeraX Version 1.9
Chimera Version 1.19
MapQ Version 1.8.1

PDB ID	9A3W	pdb_00009a3w
PDB-Dev ID	PDBDEV_00000217
Structure Title	Structure of the phage immune evasion protein Gad1 bound to the Gabija GajAB complex
Structure Authors	Antine, S.P.; Johnson, A.G.; Mooney, S.E.; Mayer, M.L.; Kranzusch, P.J.
Deposited on	2023-10-26

This is a PDB-IHM Structure Validation Report.

We welcome your comments at helpdesk@pdb-ihm.org

A user guide is available at https://pdb-ihm.org/validation_help.html with specific help available everywhere you see the ⊙ symbol.

*List of references used to build this report is available here.*

1. Overview ⊙

1.1. Summary ⊙

This entry consists of 1 model(s). A total of 4 dataset(s) were used to build this entry.

| Name	Type	Count
3DEM volume	Experimental data	1
Experimental model	Starting model	2
De Novo model	Starting model	1

1.2. Overall quality ⑦

This validation report contains model quality assessments for all structures, data quality and fit to model assessments for SAS and crosslinking-MS datasets. Data quality and fit to model assessments for other datasets and model uncertainty are under development. Number of plots is limited to 256.

Model Quality: MolProbity Analysis ⑦

Data Quality ⑦

3DEM resolution

Fit to Data Used for Modeling ⑦

Q-score
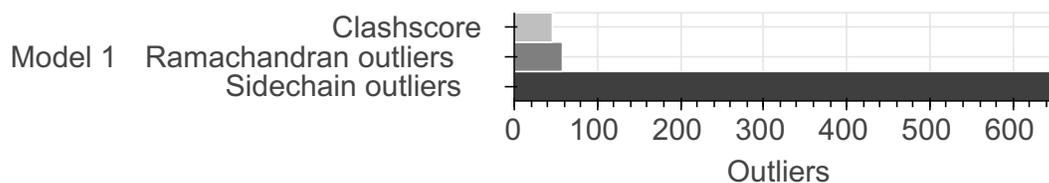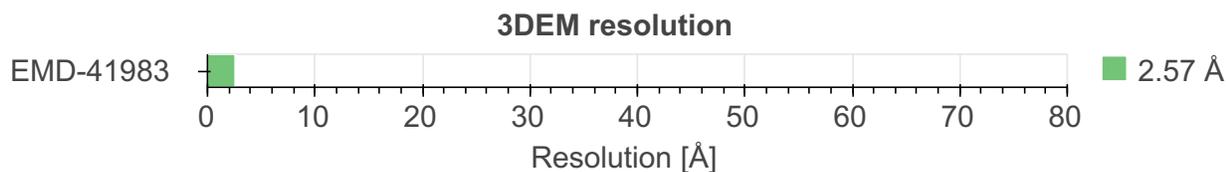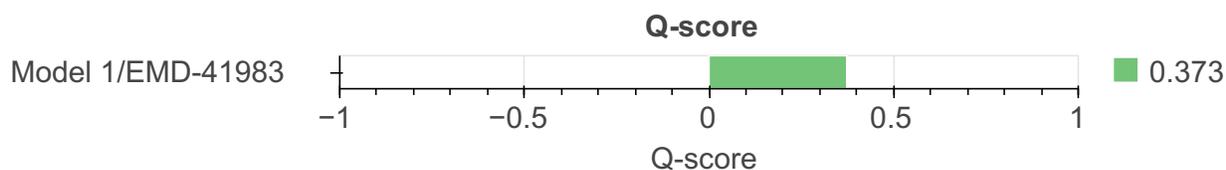
2. Model Details ⑦

2.1. Ensemble information ⑦

This entry consists of 0 distinct ensemble(s).

2.2. Representation ⑦

This entry has 1 representation(s).

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	1	Gabija protein GajA	A	626	-	1-626	100.00 / 100.00	Atomic
				B					
				C					
				D					
		2	Gabija protein GajB	E	493	-	1-493	100.00 / 100.00	Atomic
				F					
				G					
				H					
		3	Gabija anti-defense 1	I	295	-	1-295	100.00 / 100.00	Atomic
				J					
				K					
				L					
				M					
				N					
				O					
				P					

2.3. Datasets used for modeling ?

There are 4 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Experimental model	PDB	pdb_00008u7i
2	Experimental model	PDB	pdb_00008sm3
3	De Novo model	Not available	Not available
4	3DEM volume	EMDB	EMD-41983

2.4. Methodology and software ?

This entry is a result of 1 distinct protocol(s).

Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
1	1	Not available	Not available	Not available	Not available	False	False
2	1	Not available	Not available	Not available	Not available	False	False

There are 3 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
2	Coot	0.8.9.3 EL	model building	https://www2.mrc-lmb.cam.ac.uk/personal/pemsley/coot/
3	AlphaFold2	v2.2.4	model building	https://alphafold.ebi.ac.uk/
1	PHENIX	1.20.1-4487	refinement	https://phenix-online.org/

3. Data quality ?

3.3. 3DEM ?

This section describes quality of the 3DEM datasets

EMD-41983

3.3.1. Experimental information ?

EM reconstruction method:	SINGLE PARTICLE
Resolution:	2.57 Å
Recommended level:	0.028
Estimated volume:	485.92 nm³
Specimen preparation:	Preparation ID 1 Vitrification
Map-only validation report:	wwPDB validation report

3.3.2. Map visualisation ?

This section contains visualisations of the EMDB entry EMD-41983. 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.

3.3.2.1. Orthogonal projections ?

Primary map

| **X** | **Y** | **Z** |

Raw map

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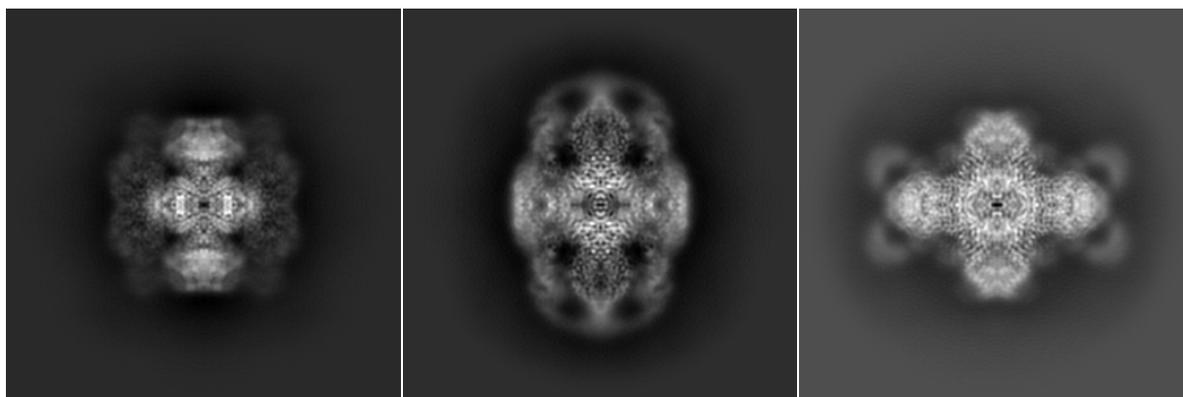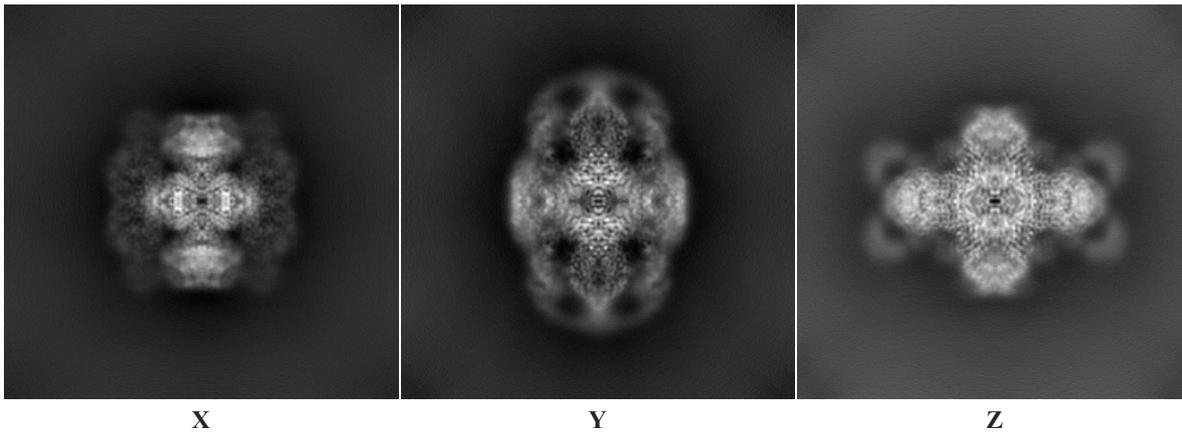
The images above show the map projected in three orthogonal directions.

3.3.2.2. Central slices ?

Primary map

| **X Index: 175** | **Y Index: 175** | **Z Index: 175** |

Raw map

| **X Index: 175** | **Y Index: 175** | **Z Index: 175** |
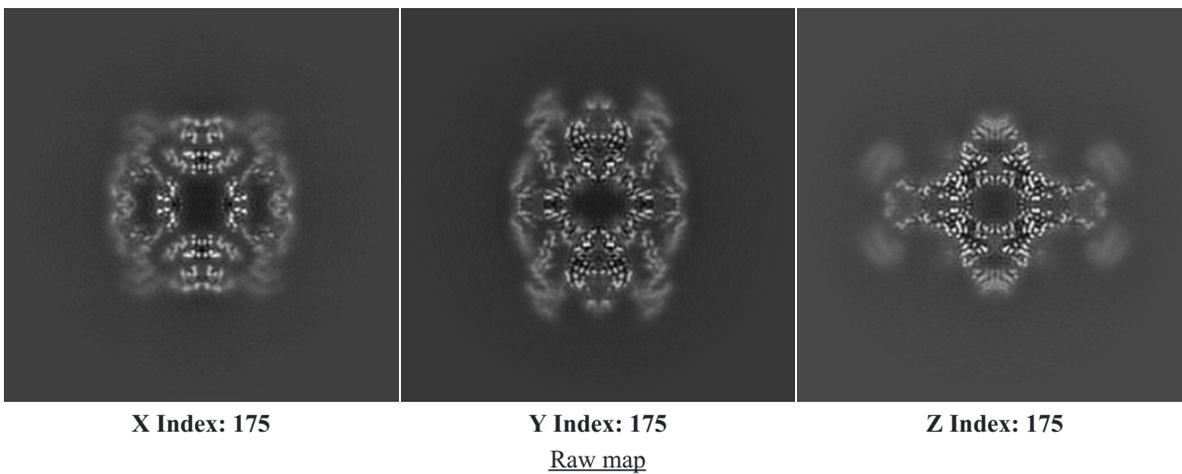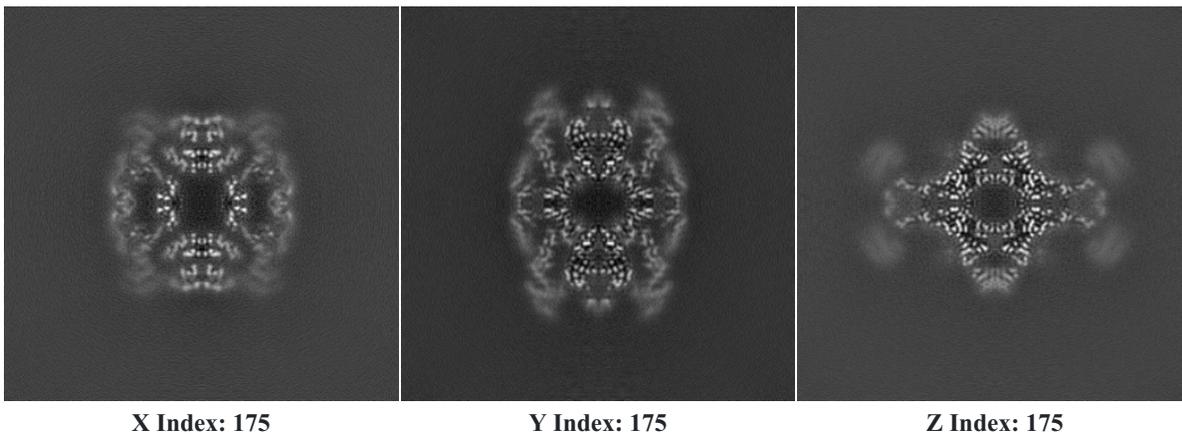
The images above show central slices of the map in three orthogonal directions.

3.3.2.3. Largest variance slices ?

Primary map
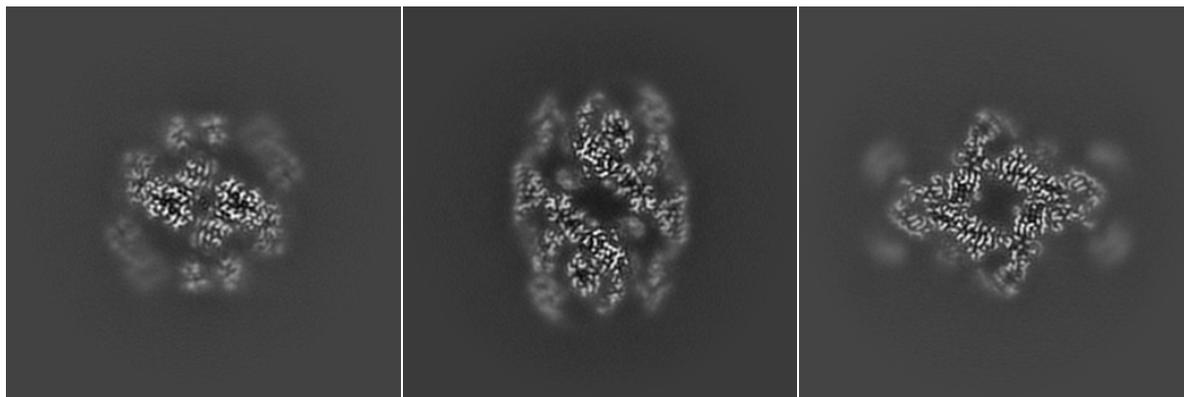
| **X Index: 196** | **Y Index: 167** | **Z Index: 182** |

Raw map
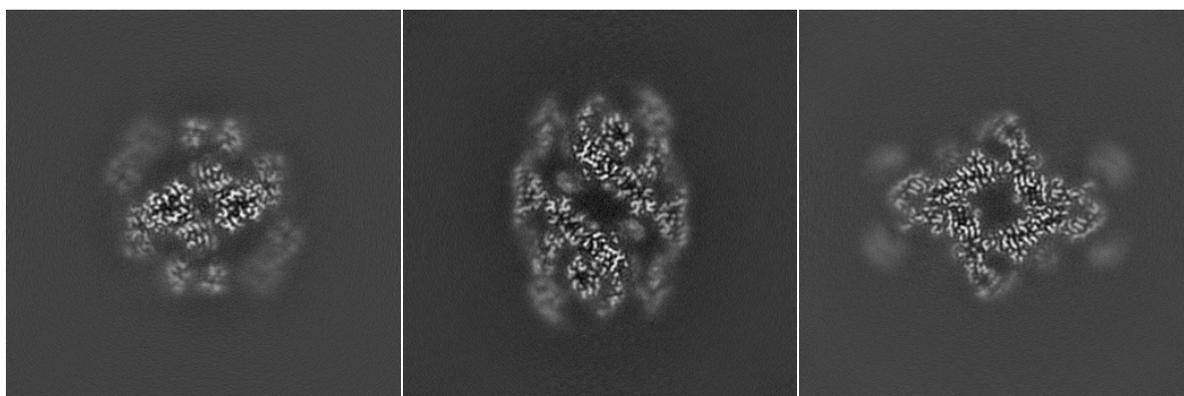
| **X Index: 154** | **Y Index: 167** | **Z Index: 168** |

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

3.3.2.4 Orthogonal standard-deviation projections (false-color) ?

Primary map

| **X** | **Y** | **Z** |

Raw map

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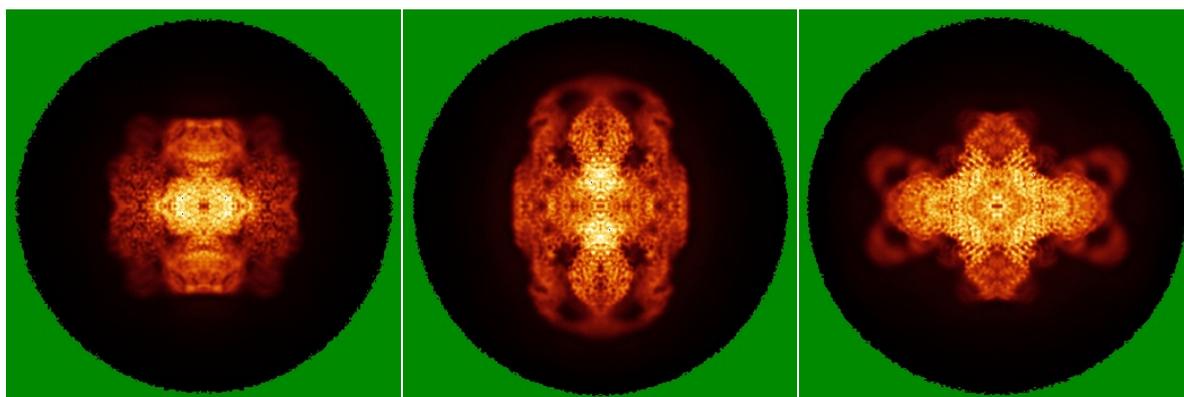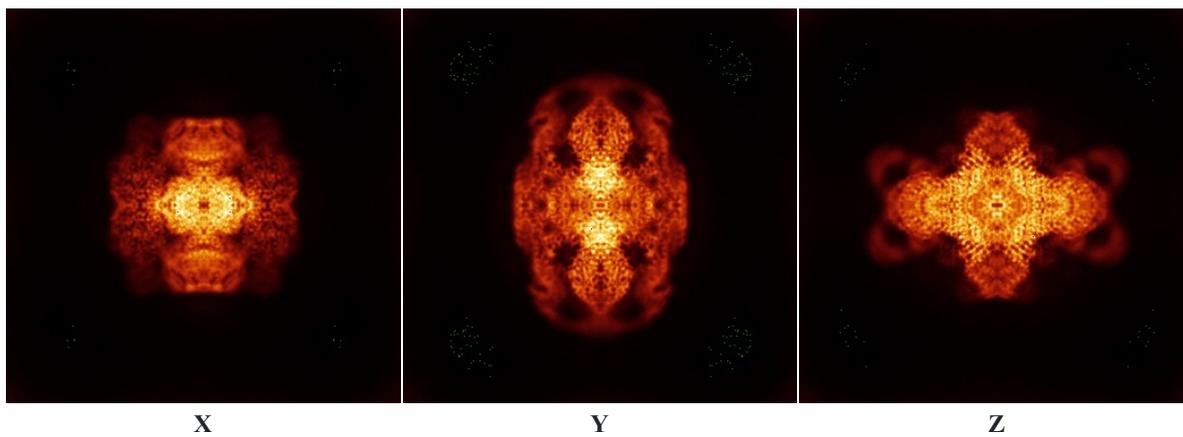
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

3.3.2.5. Orthogonal surface views ?

Primary map

| X | Y | Z |
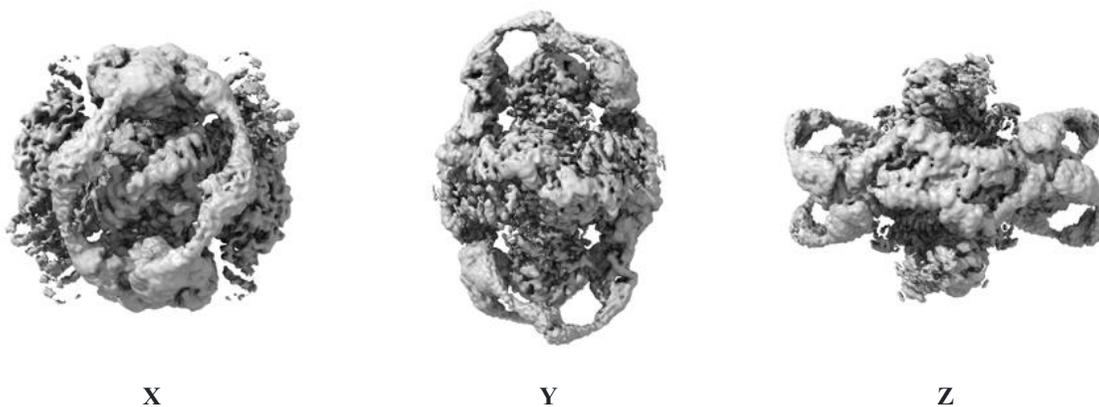
The images above show the 3D surface view of the map at the recommended contour level 0.028 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

Raw map

| X | Y | Z |
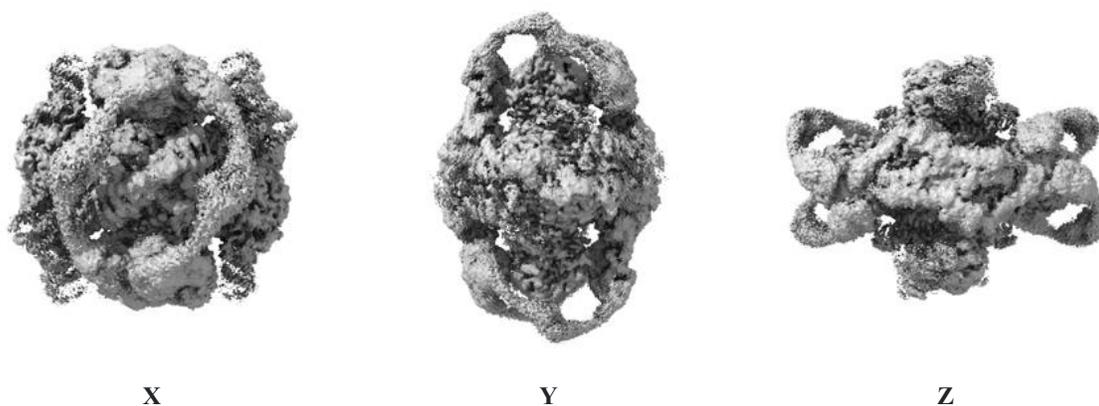
These images show the 3D surface of the raw map. The raw map's contour level 0.030 was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

3.3.3. Map analysis ?

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

3.3.3.1. Map-value distribution ?

Voxel-value distribution (Mode=-0.00079)
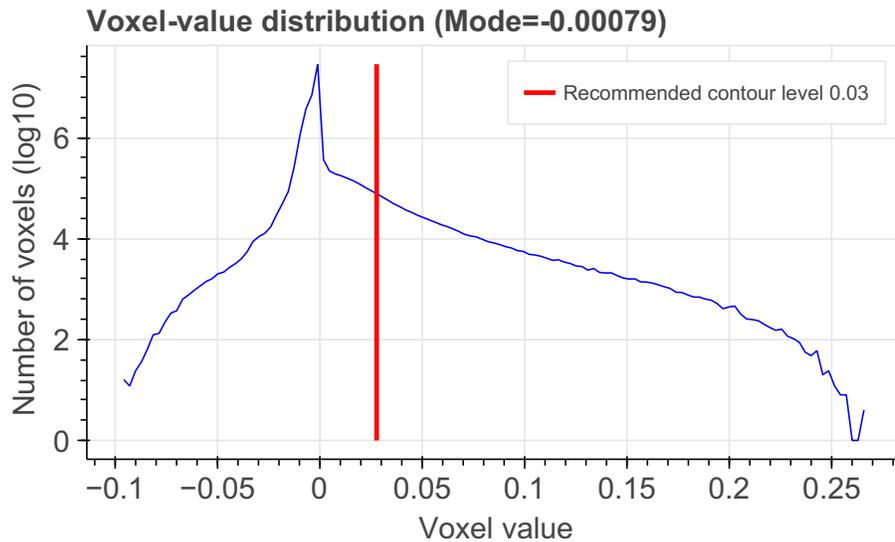
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

3.3.3.2. Volume estimate ?

Volume estimate (Estimated volume=485.92 nm³)
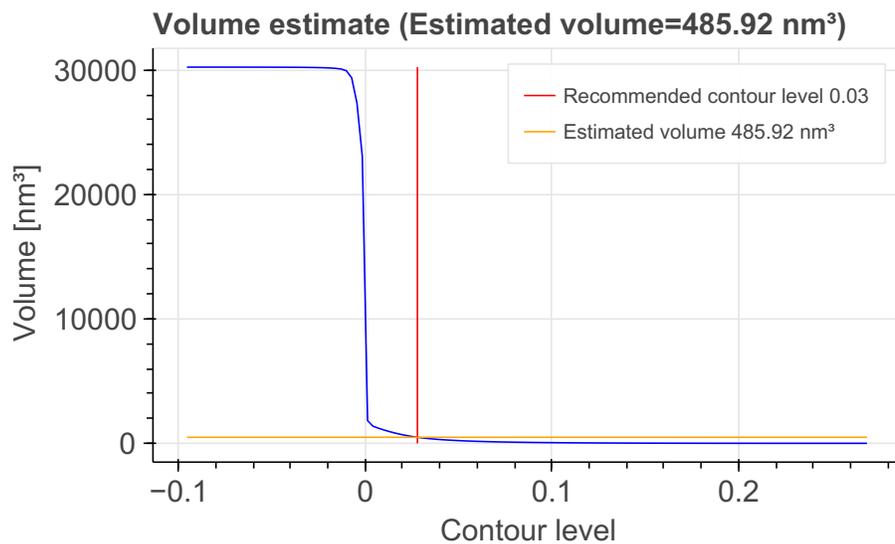
The volume at the recommended contour level is 485.92 nm³.

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.

3.3.3.3. Rotationally averaged power spectrum ?

Rotationally averaged power spectrum
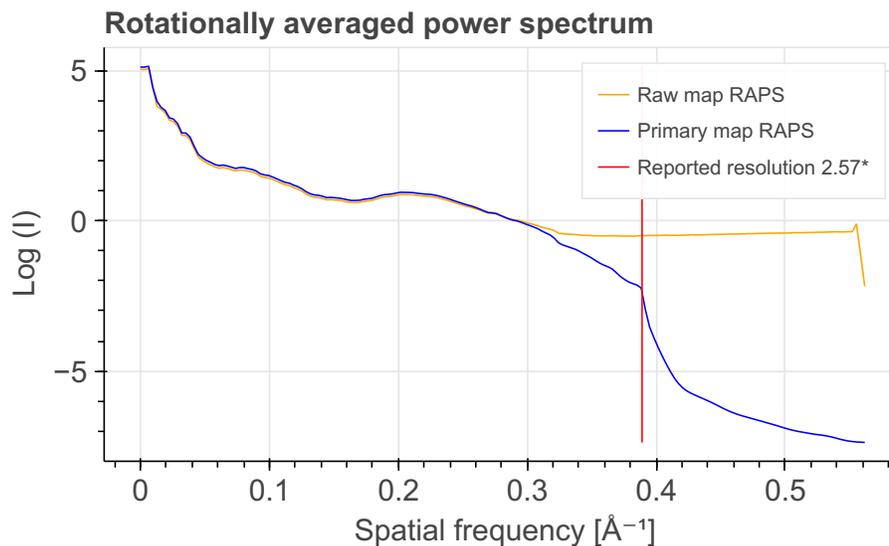
*Reported resolution corresponds to spatial frequency of 0.389 Å⁻¹

3.3.4. Fourier-Shell correlation ?

3.3.4.1. FSC ?

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.

FSC
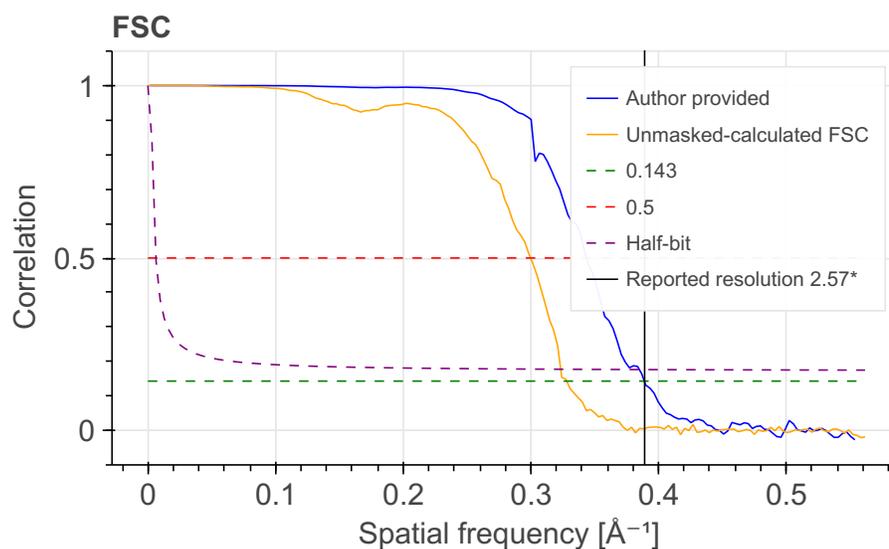
*Reported resolution corresponds to spatial frequency of 0.389 Å⁻¹

3.3.4.2. Resolution estimates ?

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	**0.5**	**Half-bit**
Reported by author	2.57	-	-
Author-provided FSC curve	2.57	2.91	2.60
Unmasked-calculated*	3.05	3.34	3.09

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.05 differs from the reported value 2.57 by more than 10%.

4. Model quality ?

For models with atomic structures, MolProbity analysis is performed. For models with coarse-grained or multi-scale structures, excluded volume analysis is performed.

4.1b. MolProbity Analysis ?

Excluded volume satisfaction for the models in the entry are listed below. The Analysed column shows the number of particle-partice or particle-atom pairs for which excluded volume was analysed.

Standard geometry: bond outliers ?

There are 114 bond length outliers in this entry (0.20% of 56306 assessed bonds). A summary is provided below. The output is limited to 100 rows.

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
J	57	GLU	CB-CG	58.25	3.27	1.52	1	1
L	57	GLU	CB-CG	58.24	3.27	1.52	1	1
I	57	GLU	CB-CG	58.24	3.27	1.52	1	1
K	57	GLU	CB-CG	58.24	3.27	1.52	1	1
L	131	LEU	C-N	38.92	1.87	1.33	1	1
I	131	LEU	C-N	35.90	1.83	1.33	1	1
K	57	GLU	CA-CB	15.96	1.85	1.53	1	1
I	57	GLU	CA-CB	15.95	1.85	1.53	1	1
L	57	GLU	CA-CB	15.95	1.85	1.53	1	1
J	57	GLU	CA-CB	15.92	1.85	1.53	1	1
L	56	ILE	N-CA	15.87	1.76	1.46	1	1
J	56	ILE	N-CA	15.86	1.76	1.46	1	1
I	56	ILE	N-CA	15.85	1.76	1.46	1	1
K	56	ILE	N-CA	15.85	1.76	1.46	1	1
K	56	ILE	CA-C	15.84	1.86	1.52	1	1
L	56	ILE	CA-C	15.84	1.86	1.52	1	1
I	56	ILE	CA-C	15.84	1.86	1.52	1	1
J	56	ILE	CA-C	15.82	1.86	1.52	1	1
I	54	SER	CA-C	15.20	1.84	1.52	1	1
J	54	SER	CA-C	15.19	1.84	1.52	1	1
K	54	SER	CA-C	15.18	1.84	1.52	1	1
L	54	SER	CA-C	15.17	1.84	1.52	1	1
L	127	ILE	C-N	14.60	1.53	1.33	1	1
J	127	ILE	C-N	14.58	1.53	1.33	1	1
I	127	ILE	C-N	14.56	1.53	1.33	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
K	127	ILE	C-N	14.53	1.53	1.33	1	1
J	55	VAL	N-CA	13.59	1.72	1.46	1	1
K	55	VAL	N-CA	13.58	1.72	1.46	1	1
L	55	VAL	N-CA	13.58	1.72	1.46	1	1
I	55	VAL	N-CA	13.57	1.72	1.46	1	1
L	57	GLU	N-CA	12.84	1.70	1.46	1	1
K	57	GLU	N-CA	12.81	1.70	1.46	1	1
I	57	GLU	N-CA	12.81	1.70	1.46	1	1
J	57	GLU	N-CA	12.80	1.70	1.46	1	1
K	55	VAL	CA-C	12.31	1.78	1.52	1	1
L	55	VAL	CA-C	12.29	1.78	1.52	1	1
I	55	VAL	CA-C	12.28	1.78	1.52	1	1
J	55	VAL	CA-C	12.26	1.78	1.52	1	1
N	129	GLY	C-N	10.94	1.48	1.33	1	1
P	129	GLY	C-N	10.91	1.48	1.33	1	1
O	129	GLY	C-N	10.90	1.48	1.33	1	1
M	129	GLY	C-N	10.88	1.48	1.33	1	1
L	53	PRO	C-N	9.60	1.46	1.33	1	1
K	53	PRO	C-N	9.59	1.46	1.33	1	1
I	53	PRO	C-N	9.57	1.46	1.33	1	1
J	53	PRO	C-N	9.56	1.46	1.33	1	1
M	58	LYS	C-N	9.06	1.46	1.33	1	1
O	58	LYS	C-N	9.00	1.46	1.33	1	1
P	58	LYS	C-N	9.00	1.45	1.33	1	1
N	58	LYS	C-N	8.99	1.45	1.33	1	1
J	54	SER	N-CA	8.78	1.62	1.46	1	1
L	54	SER	N-CA	8.78	1.62	1.46	1	1
K	54	SER	N-CA	8.78	1.62	1.46	1	1
I	54	SER	N-CA	8.77	1.62	1.46	1	1
J	55	VAL	C-N	8.70	1.45	1.33	1	1
I	55	VAL	C-N	8.69	1.45	1.33	1	1
L	55	VAL	C-N	8.69	1.45	1.33	1	1
K	55	VAL	C-N	8.65	1.45	1.33	1	1
L	54	SER	C-N	8.56	1.45	1.33	1	1
I	54	SER	C-N	8.53	1.45	1.33	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
K	54	SER	C-N	8.51	1.45	1.33	1	1
J	54	SER	C-N	8.49	1.45	1.33	1	1
J	56	ILE	C-N	8.29	1.45	1.33	1	1
I	56	ILE	C-N	8.24	1.44	1.33	1	1
L	56	ILE	C-N	8.23	1.44	1.33	1	1
K	56	ILE	C-N	8.21	1.44	1.33	1	1
P	40	GLU	C-N	6.30	1.24	1.33	1	1
O	40	GLU	C-N	6.30	1.24	1.33	1	1
M	40	GLU	C-N	6.29	1.24	1.33	1	1
N	40	GLU	C-N	6.25	1.24	1.33	1	1
K	40	GLU	C-N	6.12	1.24	1.33	1	1
I	40	GLU	C-N	6.12	1.24	1.33	1	1
L	40	GLU	C-N	6.11	1.24	1.33	1	1
J	40	GLU	C-N	6.11	1.24	1.33	1	1
P	53	PRO	N-CD	5.59	1.55	1.47	1	1
O	53	PRO	N-CD	5.57	1.55	1.47	1	1
N	53	PRO	N-CD	5.56	1.55	1.47	1	1
M	53	PRO	N-CD	5.53	1.55	1.47	1	1
I	53	PRO	N-CD	5.50	1.55	1.47	1	1
J	53	PRO	N-CD	5.48	1.55	1.47	1	1
K	53	PRO	N-CD	5.47	1.55	1.47	1	1
L	53	PRO	N-CD	5.45	1.55	1.47	1	1
L	109	GLU	C-N	5.33	1.40	1.33	1	1
I	109	GLU	C-N	5.32	1.40	1.33	1	1
N	123	VAL	C-N	5.32	1.25	1.33	1	1
K	109	GLU	C-N	5.31	1.40	1.33	1	1
P	123	VAL	C-N	5.28	1.26	1.33	1	1
J	109	GLU	C-N	5.28	1.40	1.33	1	1
O	123	VAL	C-N	5.25	1.26	1.33	1	1
M	123	VAL	C-N	5.18	1.26	1.33	1	1
L	123	VAL	C-N	5.14	1.26	1.33	1	1
I	123	VAL	C-N	5.11	1.26	1.33	1	1
J	123	VAL	C-N	5.11	1.26	1.33	1	1
K	123	VAL	C-N	5.10	1.26	1.33	1	1
M	130	GLU	C-N	4.88	1.40	1.33	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
P	130	GLU	C-N	4.84	1.40	1.33	1	1
O	130	GLU	C-N	4.82	1.40	1.33	1	1
N	130	GLU	C-N	4.80	1.40	1.33	1	1
P	126	GLU	C-N	4.47	1.27	1.33	1	1
N	126	GLU	C-N	4.46	1.27	1.33	1	1

Standard geometry: angle outliers ?

There are 135 bond angle outliers in this entry (0.18% of 75702 assessed bonds). A summary is provided below. The output is limited to 100 rows.

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
L	131	LEU	C-N-CA	32.75	62.75	121.70	1	1
I	131	LEU	C-N-CA	30.10	67.53	121.70	1	1
K	57	GLU	CA-CB-CG	22.34	158.79	114.10	1	1
I	57	GLU	CA-CB-CG	22.34	158.79	114.10	1	1
J	57	GLU	CA-CB-CG	22.34	158.79	114.10	1	1
L	57	GLU	CA-CB-CG	22.33	158.77	114.10	1	1
I	131	LEU	O-C-N	22.32	87.29	123.00	1	1
L	131	LEU	O-C-N	19.92	91.13	123.00	1	1
K	53	PRO	C-N-CA	17.06	152.40	121.70	1	1
L	53	PRO	C-N-CA	17.05	152.39	121.70	1	1
I	53	PRO	C-N-CA	17.05	152.38	121.70	1	1
J	53	PRO	C-N-CA	17.03	152.35	121.70	1	1
K	57	GLU	CB-CG-CD	16.72	141.03	112.60	1	1
I	57	GLU	CB-CG-CD	16.71	141.01	112.60	1	1
L	57	GLU	CB-CG-CD	16.70	141.00	112.60	1	1
J	57	GLU	CB-CG-CD	16.70	140.98	112.60	1	1
L	131	LEU	CA-C-N	15.25	85.70	116.20	1	1
I	131	LEU	CA-C-N	13.53	89.15	116.20	1	1
M	128	ASP	O-C-N	12.70	102.68	123.00	1	1
N	128	ASP	O-C-N	12.69	102.70	123.00	1	1
O	128	ASP	O-C-N	12.67	102.72	123.00	1	1
P	128	ASP	O-C-N	12.67	102.73	123.00	1	1
J	53	PRO	CA-C-N	11.16	93.88	116.20	1	1
K	53	PRO	CA-C-N	11.16	93.89	116.20	1	1
I	53	PRO	CA-C-N	11.15	93.89	116.20	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
L	53	PRO	CA-C-N	11.15	93.89	116.20	1	1
L	118	GLU	C-N-CA	10.73	141.02	121.70	1	1
I	118	GLU	C-N-CA	10.73	141.01	121.70	1	1
J	118	GLU	C-N-CA	10.72	140.99	121.70	1	1
K	118	GLU	C-N-CA	10.71	140.97	121.70	1	1
L	55	VAL	N-CA-C	9.99	138.97	111.00	1	1
K	55	VAL	N-CA-C	9.99	138.96	111.00	1	1
I	55	VAL	N-CA-C	9.98	138.94	111.00	1	1
J	55	VAL	N-CA-C	9.97	138.92	111.00	1	1
J	54	SER	CA-C-N	8.53	133.26	116.20	1	1
L	54	SER	CA-C-N	8.51	133.23	116.20	1	1
I	54	SER	CA-C-N	8.51	133.23	116.20	1	1
K	54	SER	CA-C-N	8.50	133.20	116.20	1	1
I	109	GLU	C-N-CA	8.35	106.66	121.70	1	1
L	109	GLU	C-N-CA	8.35	106.67	121.70	1	1
K	109	GLU	C-N-CA	8.34	106.68	121.70	1	1
J	109	GLU	C-N-CA	8.32	106.72	121.70	1	1
N	58	LYS	C-N-CA	7.97	136.04	121.70	1	1
P	58	LYS	C-N-CA	7.96	136.03	121.70	1	1
O	58	LYS	C-N-CA	7.95	136.02	121.70	1	1
M	58	LYS	C-N-CA	7.93	135.98	121.70	1	1
J	56	ILE	N-CA-C	7.63	132.35	111.00	1	1
K	56	ILE	N-CA-C	7.62	132.34	111.00	1	1
I	56	ILE	N-CA-C	7.62	132.34	111.00	1	1
L	56	ILE	N-CA-C	7.62	132.33	111.00	1	1
I	54	SER	N-CA-C	7.10	130.89	111.00	1	1
K	54	SER	N-CA-C	7.10	130.89	111.00	1	1
J	54	SER	N-CA-C	7.10	130.88	111.00	1	1
L	54	SER	N-CA-C	7.10	130.88	111.00	1	1
J	55	VAL	CA-C-N	6.56	129.33	116.20	1	1
I	55	VAL	CA-C-N	6.55	129.29	116.20	1	1
L	55	VAL	CA-C-N	6.54	129.27	116.20	1	1
K	55	VAL	CA-C-N	6.54	129.27	116.20	1	1
I	55	VAL	C-N-CA	6.29	133.03	121.70	1	1
J	55	VAL	C-N-CA	6.29	133.03	121.70	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
L	55	VAL	C-N-CA	6.28	133.01	121.70	1	1
K	55	VAL	C-N-CA	6.28	133.00	121.70	1	1
L	58	LYS	N-CA-CB	6.24	121.11	110.50	1	1
J	58	LYS	N-CA-CB	6.21	121.05	110.50	1	1
I	58	LYS	N-CA-CB	6.20	121.05	110.50	1	1
K	58	LYS	N-CA-CB	6.19	121.02	110.50	1	1
K	57	GLU	C-N-CA	6.17	132.80	121.70	1	1
I	57	GLU	C-N-CA	6.15	132.77	121.70	1	1
J	57	GLU	C-N-CA	6.14	132.75	121.70	1	1
L	57	GLU	C-N-CA	6.14	132.74	121.70	1	1
J	109	GLU	CA-C-O	6.02	110.57	120.80	1	1
I	109	GLU	CA-C-O	5.98	110.63	120.80	1	1
L	109	GLU	CA-C-O	5.98	110.63	120.80	1	1
K	109	GLU	CA-C-O	5.98	110.64	120.80	1	1
K	127	ILE	O-C-N	5.53	114.15	123.00	1	1
J	127	ILE	O-C-N	5.51	114.19	123.00	1	1
I	127	ILE	O-C-N	5.49	114.22	123.00	1	1
L	127	ILE	O-C-N	5.49	114.22	123.00	1	1
J	54	SER	CA-C-O	5.27	111.83	120.80	1	1
I	54	SER	CA-C-O	5.25	111.87	120.80	1	1
K	54	SER	CA-C-O	5.24	111.89	120.80	1	1
L	54	SER	CA-C-O	5.24	111.89	120.80	1	1
K	56	ILE	C-N-CA	5.17	131.00	121.70	1	1
L	56	ILE	C-N-CA	5.15	130.97	121.70	1	1
I	56	ILE	C-N-CA	5.15	130.97	121.70	1	1
J	56	ILE	C-N-CA	5.14	130.95	121.70	1	1
L	54	SER	O-C-N	5.08	114.88	123.00	1	1
I	54	SER	O-C-N	5.06	114.90	123.00	1	1
K	54	SER	O-C-N	5.06	114.91	123.00	1	1
J	54	SER	O-C-N	5.06	114.91	123.00	1	1
M	114	ASN	N-CA-C	4.85	124.57	111.00	1	1
O	114	ASN	N-CA-C	4.85	124.57	111.00	1	1
P	114	ASN	N-CA-C	4.85	124.57	111.00	1	1
N	114	ASN	N-CA-C	4.84	124.56	111.00	1	1
N	54	SER	N-CA-C	4.69	97.86	111.00	1	1

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
O	54	SER	N-CA-C	4.69	97.88	111.00	1	1
M	54	SER	N-CA-C	4.68	97.89	111.00	1	1
N	133	LEU	O-C-N	4.68	115.51	123.00	1	1
P	54	SER	N-CA-C	4.68	97.90	111.00	1	1
P	133	LEU	O-C-N	4.67	115.53	123.00	1	1

Too-close contacts ?

The following all-atom clashscore is based on a MolProbity analysis. All-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The table below contains clashscores for all atomic models in this entry.

Model ID	Clash score	Number of clashes
1	45.94	5088

There are 5088 clashes. The table below contains the detailed list of all clashes based on a MolProbity analysis. Bad clashes are >= 0.4 Angstrom. The output is limited to 100 rows.

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
M:33:PHE:HE1	M:53:PRO:CB	1.63	1	1
L:97:TYR:CZ	N:100:LYS:HE2	1.63	1	1
L:97:TYR:CE2	N:100:LYS:CE	1.62	1	1
P:33:PHE:HE1	P:53:PRO:CB	1.60	1	1
O:155:LEU:HG	O:255:LYS:CD	1.59	1	1
J:98:GLU:CA	P:99:VAL:HA	1.58	1	1
O:159:PRO:HG2	O:253:SER:CB	1.58	1	1
D:569:SER:HB3	K:23:TYR:CD2	1.58	1	1
K:42:TYR:CB	K:133:LEU:HD22	1.57	1	1
I:155:LEU:HG	N:136:HIS:CD2	1.57	1	1
M:37:ARG:CA	M:57:GLU:HG3	1.57	1	1
N:37:ARG:CA	N:57:GLU:HG3	1.57	1	1
O:33:PHE:HE1	O:53:PRO:CB	1.57	1	1
I:149:GLN:HB2	N:131:LEU:C	1.57	1	1
I:55:VAL:C	I:55:VAL:CA	1.56	1	1
N:33:PHE:HE1	N:53:PRO:CB	1.56	1	1
O:159:PRO:CD	O:253:SER:HA	1.56	1	1
L:55:VAL:C	L:55:VAL:CA	1.56	1	1
N:33:PHE:CE1	N:53:PRO:CB	1.56	1	1
B:569:SER:HB3	J:23:TYR:CD2	1.55	1	1
N:33:PHE:CE1	N:53:PRO:HB3	1.55	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
O:37:ARG:CA	O:57:GLU:HG3	1.55	1	1
I:57:GLU:CA	I:57:GLU:CB	1.55	1	1
J:57:GLU:CA	J:57:GLU:N	1.54	1	1
P:37:ARG:CA	P:57:GLU:HG3	1.54	1	1
L:57:GLU:CA	L:57:GLU:CB	1.54	1	1
J:97:TYR:CZ	P:100:LYS:HB3	1.54	1	1
O:33:PHE:CE1	O:53:PRO:HB3	1.54	1	1
M:149:GLN:HE21	N:215:MET:CE	1.54	1	1
K:57:GLU:CA	K:57:GLU:N	1.54	1	1
I:155:LEU:CG	N:136:HIS:CG	1.54	1	1
N:155:LEU:HG	N:255:LYS:CD	1.53	1	1
J:98:GLU:HA	P:99:VAL:CA	1.53	1	1
O:159:PRO:CG	O:253:SER:CA	1.53	1	1
P:33:PHE:CE1	P:53:PRO:HB3	1.53	1	1
K:149:GLN:HB2	P:131:LEU:C	1.52	1	1
M:33:PHE:CE1	M:53:PRO:HB3	1.52	1	1
P:37:ARG:N	P:57:GLU:CD	1.52	1	1
K:55:VAL:C	K:55:VAL:CA	1.51	1	1
I:57:GLU:CA	I:57:GLU:N	1.51	1	1
K:54:SER:C	K:54:SER:CA	1.51	1	1
M:37:ARG:N	M:57:GLU:CD	1.51	1	1
J:54:SER:C	J:54:SER:CA	1.50	1	1
J:57:GLU:CA	J:57:GLU:CB	1.50	1	1
J:55:VAL:C	J:55:VAL:CA	1.50	1	1
J:55:VAL:CA	J:55:VAL:N	1.50	1	1
O:155:LEU:HG	O:255:LYS:CE	1.50	1	1
L:142:TYR:CD2	O:138:PHE:O	1.49	1	1
K:57:GLU:CA	K:57:GLU:CB	1.49	1	1
K:92:GLU:CB	M:100:LYS:HZ1	1.49	1	1
L:57:GLU:CA	L:57:GLU:N	1.49	1	1
I:155:LEU:HG	N:136:HIS:CG	1.49	1	1
O:159:PRO:HB2	O:253:SER:C	1.49	1	1
I:155:LEU:CG	N:136:HIS:CB	1.49	1	1
K:92:GLU:HB3	M:100:LYS:NZ	1.49	1	1
L:54:SER:C	L:54:SER:CA	1.48	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
M:33:PHE:CE1	M:53:PRO:CB	1.48	1	1
P:37:ARG:CA	P:57:GLU:C	1.48	1	1
P:153:MET:O	P:161:TYR:CE2	1.48	1	1
M:37:ARG:CA	M:57:GLU:C	1.48	1	1
O:37:ARG:N	O:57:GLU:CD	1.48	1	1
L:55:VAL:CA	L:55:VAL:N	1.47	1	1
K:55:VAL:CA	K:55:VAL:N	1.47	1	1
M:149:GLN:CG	N:215:MET:HE1	1.47	1	1
N:40:GLU:CG	N:59:GLN:HE22	1.47	1	1
A:569:SER:HB3	L:23:TYR:CD2	1.47	1	1
I:55:VAL:CA	I:55:VAL:N	1.47	1	1
J:97:TYR:CE2	P:100:LYS:CB	1.47	1	1
O:40:GLU:CG	O:59:GLN:HE22	1.46	1	1
I:54:SER:C	I:54:SER:CA	1.46	1	1
I:155:LEU:CG	N:136:HIS:CD2	1.46	1	1
O:159:PRO:HG2	O:253:SER:CA	1.46	1	1
P:159:PRO:CD	P:161:TYR:HB3	1.46	1	1
J:98:GLU:HB2	P:102:LEU:CD2	1.46	1	1
O:159:PRO:HB3	O:254:GLY:CA	1.46	1	1
N:37:ARG:N	N:57:GLU:CD	1.46	1	1
M:36:LYS:CA	M:57:GLU:HG2	1.45	1	1
P:33:PHE:CE1	P:53:PRO:CB	1.45	1	1
O:36:LYS:CA	O:57:GLU:HG2	1.45	1	1
I:155:LEU:HD12	N:136:HIS:CA	1.45	1	1
J:98:GLU:CB	P:102:LEU:CB	1.45	1	1
J:98:GLU:CB	P:102:LEU:HB2	1.45	1	1
J:97:TYR:CZ	P:100:LYS:N	1.44	1	1
N:36:LYS:CA	N:57:GLU:HG2	1.44	1	1
O:150:THR:CB	O:160:CYS:SG	1.44	1	1
M:149:GLN:CG	N:215:MET:CE	1.44	1	1
P:154:LEU:HD13	P:160:CYS:CB	1.44	1	1
C:569:SER:HB3	I:23:TYR:CD2	1.43	1	1
J:97:TYR:CE2	P:100:LYS:HB3	1.43	1	1
P:36:LYS:CA	P:57:GLU:HG2	1.43	1	1
J:97:TYR:CE2	P:100:LYS:CA	1.43	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
L:125:GLU:CB	L:154:LEU:HD21	1.43	1	1
L:153:MET:C	O:136:HIS:CE1	1.43	1	1
N:36:LYS:CA	N:57:GLU:CG	1.43	1	1
O:36:LYS:CA	O:57:GLU:CG	1.43	1	1
L:155:LEU:CD1	O:136:HIS:HB2	1.42	1	1
K:98:GLU:OE1	M:102:LEU:CD2	1.42	1	1
L:142:TYR:CD2	O:138:PHE:C	1.42	1	1
L:98:GLU:HG2	N:102:LEU:N	1.42	1	1
I:154:LEU:N	N:136:HIS:CE1	1.42	1	1

Torsion angles: Protein backbone ?

In the following table, Ramachandran outliers are listed. The Analysed column shows the number of residues for which the backbone conformation was analysed.

Model ID	Analysed	Favored	Allowed	Outliers
1	6664	6398	208	58

There are 58 unique backbone outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	393	VAL	1
B	393	VAL	1
C	393	VAL	1
D	393	VAL	1
I	34	ASP	1
I	56	ILE	1
I	58	LYS	1
I	59	GLN	1
I	61	PRO	1
I	66	ASN	1
I	119	PHE	1
I	132	LYS	1
J	34	ASP	1
J	56	ILE	1
J	58	LYS	1
J	59	GLN	1
J	61	PRO	1
J	66	ASN	1

Chain	Res	Type	Models (Total)
J	119	PHE	1
K	34	ASP	1
K	56	ILE	1
K	58	LYS	1
K	59	GLN	1
K	61	PRO	1
K	66	ASN	1
K	119	PHE	1
L	34	ASP	1
L	56	ILE	1
L	58	LYS	1
L	59	GLN	1
L	61	PRO	1
L	66	ASN	1
L	119	PHE	1
L	132	LYS	1
M	28	LEU	1
M	34	ASP	1
M	59	GLN	1
M	135	SER	1
M	151	HIS	1
M	158	LYS	1
N	28	LEU	1
N	34	ASP	1
N	59	GLN	1
N	135	SER	1
N	151	HIS	1
N	158	LYS	1
O	28	LEU	1
O	34	ASP	1
O	59	GLN	1
O	135	SER	1
O	151	HIS	1
O	158	LYS	1
P	28	LEU	1

Chain	Res	Type	Models (Total)
P	34	ASP	1
P	59	GLN	1
P	135	SER	1
P	151	HIS	1
P	158	LYS	1

Torsion angles : Protein sidechains ?

In the following table, sidechain rotameric outliers are listed. The Analysed column shows the number of residues for which the sidechain conformation was analysed.

Model ID	Analysed	Favored	Allowed	Outliers
1	6188	4335	1202	651

There are 651 unique sidechain outliers. Detailed list of outliers are tabulated below. The output is limited to 100 rows.

Chain	Res	Type	Models (Total)
A	1	VAL	1
A	271	SER	1
A	372	SER	1
A	389	SER	1
A	458	GLU	1
A	479	ILE	1
A	503	ARG	1
A	600	VAL	1
B	39	ASP	1
B	66	ASN	1
B	83	MET	1
B	118	THR	1
B	169	LYS	1
B	171	LEU	1
B	210	LEU	1
B	271	SER	1
B	364	LYS	1
B	372	SER	1
B	389	SER	1
B	397	SER	1
B	479	ILE	1
B	506	ASN	1

Chain	Res	Type	Models (Total)
B	600	VAL	1
B	624	VAL	1
C	43	THR	1
C	51	THR	1
C	133	TYR	1
C	266	THR	1
C	271	SER	1
C	288	LYS	1
C	338	ILE	1
C	372	SER	1
C	389	SER	1
C	479	ILE	1
C	503	ARG	1
C	600	VAL	1
D	1	VAL	1
D	5	ASP	1
D	43	THR	1
D	66	ASN	1
D	133	TYR	1
D	210	LEU	1
D	211	VAL	1
D	238	LEU	1
D	271	SER	1
D	277	VAL	1
D	364	LYS	1
D	372	SER	1
D	389	SER	1
D	397	SER	1
D	503	ARG	1
D	600	VAL	1
E	50	ASN	1
E	125	TYR	1
E	195	ILE	1
E	198	TRP	1
E	217	ASN	1

Chain	Res	Type	Models (Total)
E	368	VAL	1
E	372	ASN	1
F	50	ASN	1
F	125	TYR	1
F	195	ILE	1
F	198	TRP	1
F	217	ASN	1
F	368	VAL	1
F	372	ASN	1
G	50	ASN	1
G	125	TYR	1
G	195	ILE	1
G	198	TRP	1
G	217	ASN	1
G	368	VAL	1
G	372	ASN	1
H	50	ASN	1
H	125	TYR	1
H	195	ILE	1
H	198	TRP	1
H	217	ASN	1
H	368	VAL	1
H	372	ASN	1
I	2	LYS	1
I	4	ILE	1
I	6	ILE	1
I	8	THR	1
I	15	SER	1
I	16	ASP	1
I	18	ILE	1
I	19	GLU	1
I	22	ARG	1
I	23	TYR	1
I	26	SER	1
I	27	GLN	1

Chain	Res	Type	Models (Total)
I	29	ASP	1
I	30	GLU	1
I	31	LEU	1
I	54	SER	1
I	55	VAL	1
I	56	ILE	1
I	57	GLU	1
I	58	LYS	1

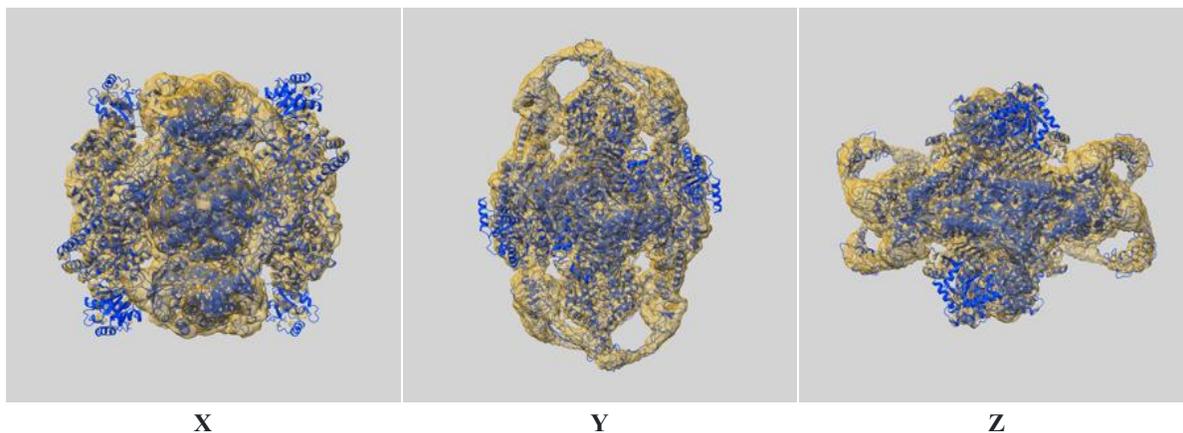# 5. Fit to Data Used for Modeling Assessment ?

5.3. 3DEM

This section describes fit of models to the 3DEM data. Only results for the representative model, selected as a first model with the largest number of asymmetric units.

EMD-41983

5.3.1. Map-model fit ?

Only results for the representative Model 1 are shown.

5.3.1.1 Map-model overlay ?

X	Y	Z

The images above show the 3D surface view of the map at the recommended contour level 0.028 at 50% transparency in yellow overlaid with a ribbon representation of the model colored in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

5.3.1.2. Q-score mapped to coordinate model ?

X   **Y**   **Z**

The images above show the model with each residue colored 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.

5.3.1.3. Atom inclusion mapped to coordinate model ?

X   **Y**   **Z**

The images above show the model with each residue colored according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level 0.028 .

5.3.1.4. Atom inclusion ?

At the recommended contour level, 80% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

5.3.1.5. Map-model fit summary ?

The table lists the average atom inclusion at the recommended contour level (0.028) and Q-score for the entire model and for each

chain.

Chain	Atom inclusion	Q-score
All	0.726	0.373
A	0.910	0.554
B	0.908	0.553
C	0.910	0.554
D	0.910	0.555
E	0.443	0.262
F	0.441	0.261
G	0.440	0.259
H	0.435	0.251
I	0.818	0.306
J	0.817	0.303
K	0.815	0.300
L	0.820	0.300
M	0.714	0.240
N	0.720	0.241
O	0.722	0.245
P	0.721	0.244

1.0

0.0

<0.0

6. Fit to Data Used for Validation Assessment ?

Validation for this section is under development.