Integrative Structure Validation Report ?

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

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

PDB ID	9A8U | pdb_00009a8u
Structure Title	Integrative structure of the epithelial desmosomal outer plaque
Structure Authors	Pasani, S,; Menon, K.S.; Shruthi, V.; Saltzberg, D.; Greenberg, C.H.; Viswanath, S.; Chemmama, I.; Webb, B.; Pellarin, R.; Echeverria, I.; Sali, A.; Russel, D.; Lasker, K.; Velzquez-Muriel, J.; Tjioe, E.; Schneidman-Duhovny, D.; Peterson, B.
Deposited on	2024-08-24

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 9 dataset(s) were used to build this entry.
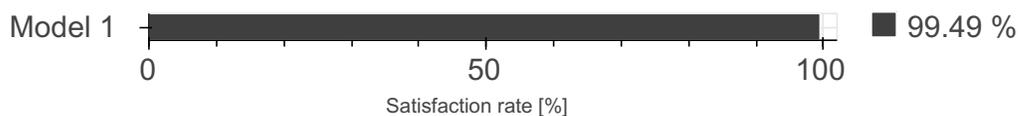
Name	Type	Count
3DEM volume	Experimental data	1

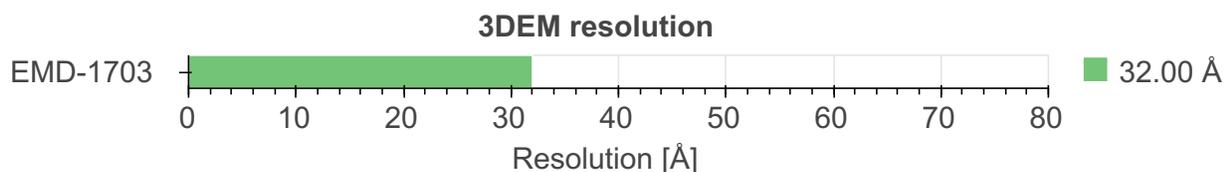| Name	Type	Count
Other	Experimental data	2
Yeast two-hybrid screening data	Experimental data	1
Experimental model	Starting model	3
Comparative model	Starting model	2

1.2. Overall quality ?

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: Excluded Volume Analysis ?

Model 1 — 99.49 %

Satisfaction rate [%]

Data Quality ?

3DEM resolution

EMD-1703 — 32.00 Å

Resolution [Å]

2. Model Details ?

2.1. Ensemble information ?

This entry consists of 1 distinct ensemble(s).

2.2. Representation ?

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	Plakophilin-1	A	726	-	1-726	100.00 / 100.00	Multiscale: Coarse-grained: 3 - 30 residue(s) per bead
				B					
				C					
				D					

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
		1	Plakophilin-1	E	726	244-387, 397-480, 509-700	-	57.85 / 100.00	Multiscale: Coarse-grained: 12 - 30 residue(s) per bead
				F					
				G					
		2	Junction plakoglobin	H	745	-	1-745	100.00 / 100.00	Multiscale: Coarse-grained: 2 - 30 residue(s) per bead
				I					
				J					
				K					
		3	Desmoplakin	L	584	-	1-584	100.00 / 100.00	Multiscale: Coarse-grained: 17 - 30 residue(s) per bead
				M					
				N					
				O					
		4	Desmocollin-1	P	180	-	1-180	100.00 / 100.00	Multiscale: Coarse-grained: 1 - 30 residue(s) per bead
				Q					
		5	Desmoglein-1	R	273	-	1-273	100.00 / 100.00	Multiscale: Coarse-grained: 8 - 30 residue(s) per bead
				S					

2.3. Datasets used for modeling ?

There are 9 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	3DEM volume	EMDB	EMD-1703
2	Other	Not available	10.1242/jcs.112.23.4325
3	Experimental model	PDB	pdb_00003ifq
4	Comparative model	Zenodo	10.5281/zenodo.8035862
5	Comparative model	Zenodo	10.5281/zenodo.8035862
6	Yeast two-hybrid screening data	Not available	10.1242/jcs.112.23.4325
7	Other	Not available	10.1242/jcs.112.23.4325
8	Experimental model	PDB	pdb_00001xm9
9	Experimental model	PDB	pdb_00003r6n

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	Sampling	Replica exchange monte carlo	Not available	2250000	False	True

There are 2 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	IMP PMI module	2.17.0	integrative model building	https://integrativemodeling.org
2	Integrative Modeling Platform (IMP)	2.17.0	integrative model building	https://integrativemodeling.org

3. Data quality ?

3.3. 3DEM ?

This section describes quality of the 3DEM datasets

EMD-1703

3.3.1. Experimental information ?

EM reconstruction method:	SUBTOMOGRAM AVERAGING
Resolution:	32.00 Å
Recommended level:	0.006
Estimated volume:	8279.06 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-1703. 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**

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

3.3.2.2. Central slices ?

Primary map

X Index: 23   **Y Index: 32**   **Z Index: 23**

The images above show central slices of the map in three orthogonal directions.
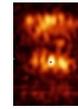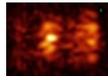
3.3.2.3. Largest variance slices ?

Primary map

X Index: 23   **Y Index: 27**   **Z Index: 24**

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 |

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 |
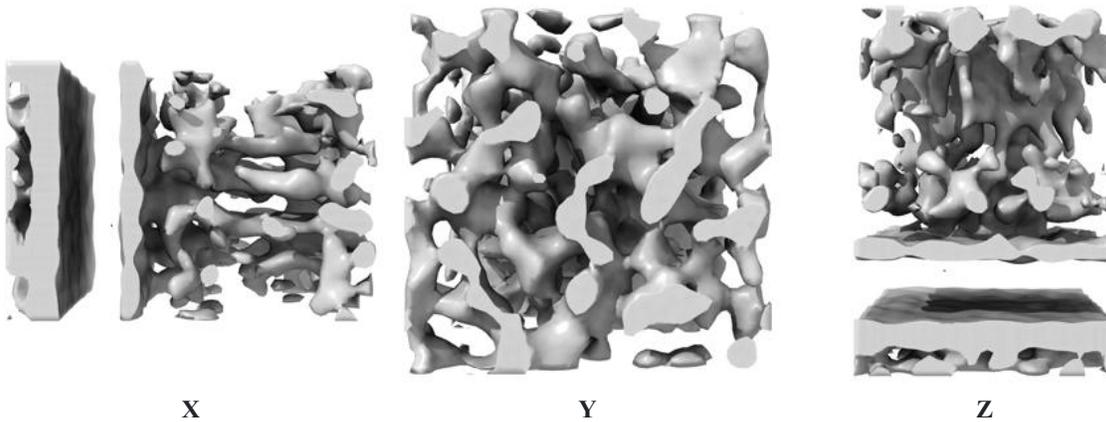
The images above show the 3D surface view of the map at the recommended contour level 0.006 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

3.3.2.6. Mask visualisation ?

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.
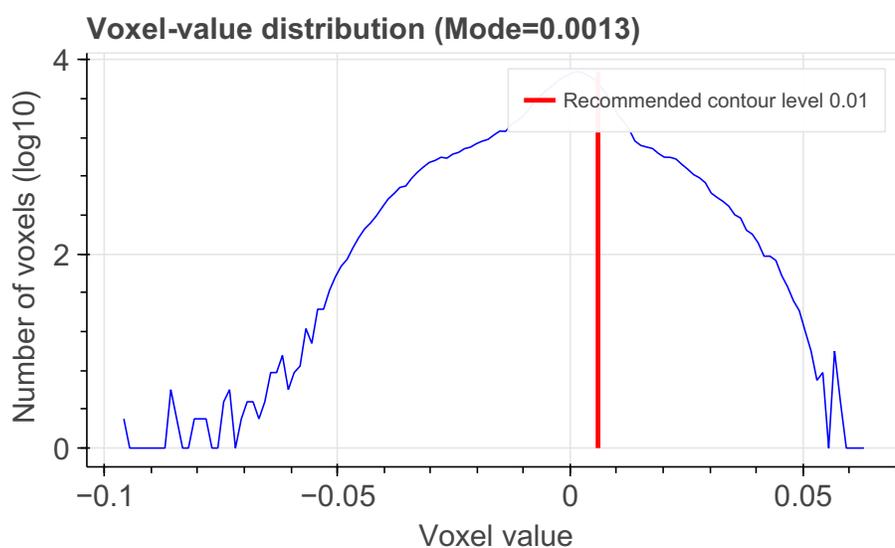
emd_1703_msk_2.map ?
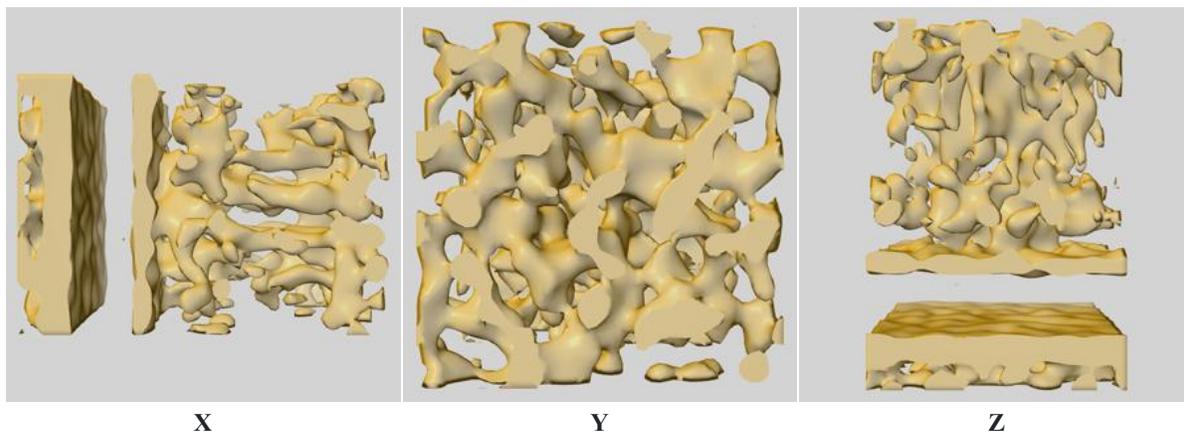
| X | Y | Z |

[emd_1703_msk_1.map](#) ?

| X | Y | Z |
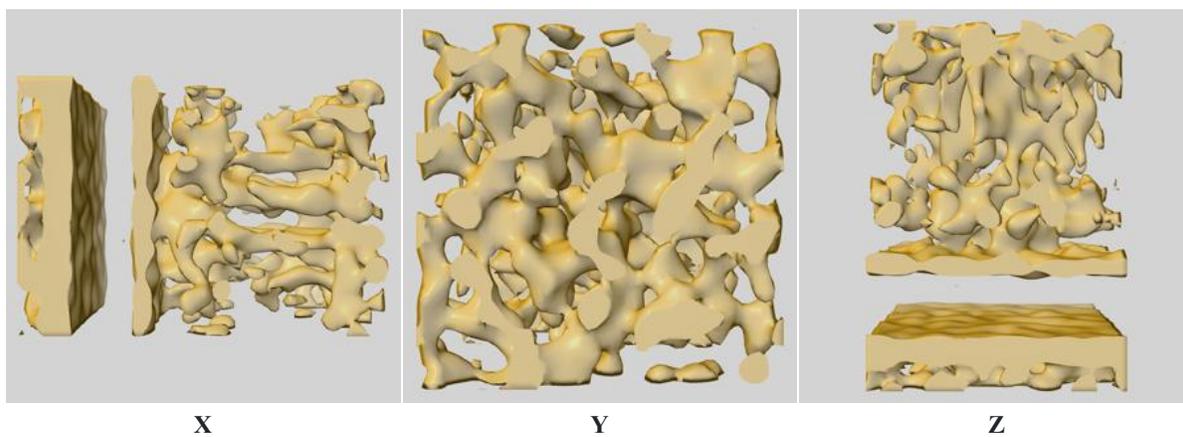
3.3.3. Map analysis ?

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

3.3.3.1. Map-value distribution ?

Voxel-value distribution (Mode=0.0013)

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=8279.06 nm³)
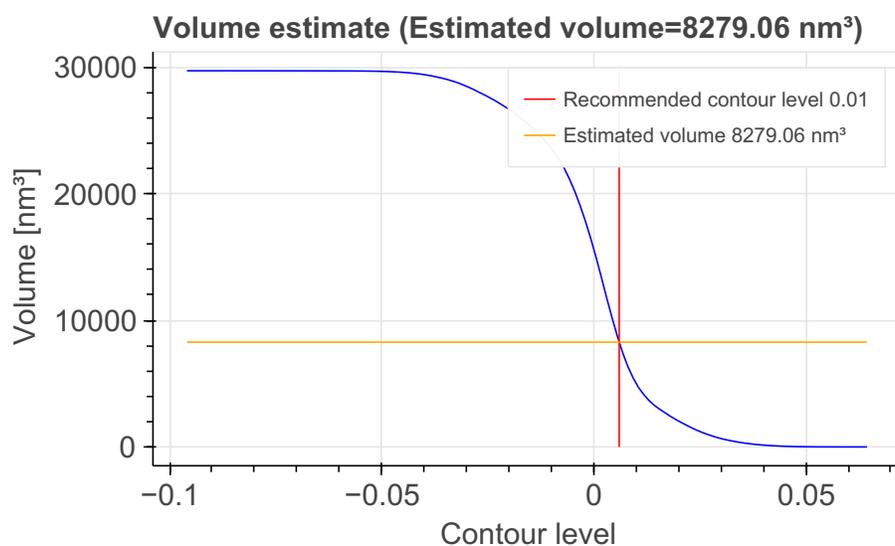
The volume at the recommended contour level is 8279.06 nm³.

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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.

3.3.4. Fourier-Shell correlation ?
3.3.4.2. Resolution estimates ?

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	-	32.00	-

Author-provided FSC curve is not available.

3.4. Yeast two-hybrid screening ?

Validation for this section is under development.

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.

4.1a. Excluded Volume 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.

Model ID	Analysed	Number of violations	Excluded Volume Satisfaction (%)
1	96141	488	99.49

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.

3DEM validation for coarse-grained structures is under development.

5.4. Yeast two-hybrid screening ?

Validation for this section is under development.

6. Fit to Data Used for Validation Assessment ?

Validation for this section is under development.