

Integrative Structure Validation Report

October 09, 2025 - 04:51 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	9A9W pdb_00009a9w
Structure Title	USP7 bound to a nucleosome/p53 complex
Structure Authors	Chakraborty, D.; Kempf, G.; Kater, L.; Cavadini, S.; Thoma, N.H.
Deposited on	2025-04-29

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

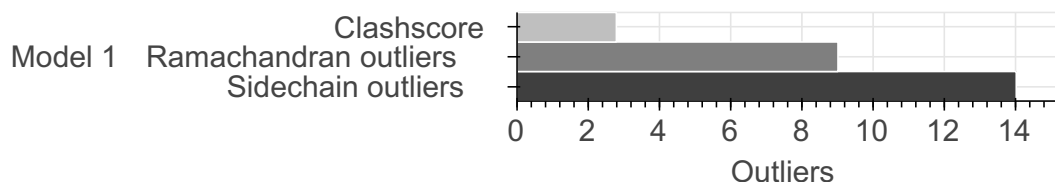
This entry consists of 1 model(s). A total of 5 dataset(s) were used to build this entry.

Name	Type	Count
3DEM volume	Experimental data	1
Crosslinking-MS data	Experimental data	1
Experimental model	Starting model	1
De Novo model	Starting model	2

1.2. Overall quality ?

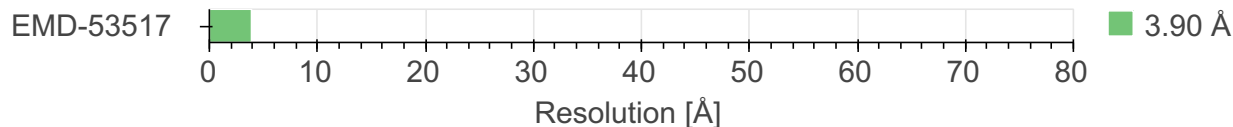
This validation report contains model quality assessments for all structures, data quality and fit to model assessments for SAS and crosslinking-MS datasets. Data quality and fit to model assessments for other datasets and model uncertainty are under development. Number of plots is limited to 256.

Model Quality: MolProbity Analysis ?



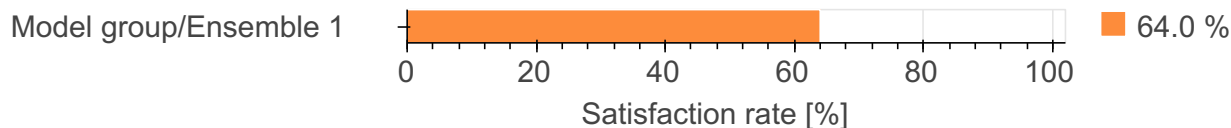
Data Quality ?

3DEM resolution



Fit to Data Used for Modeling ?

Crosslink satisfaction



Q-score



2. Model Details ?

2.1. Ensemble information ?

This entry consists of 0 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	Histone H3.1	A	139	-	1-139	100.00 / 100.00	Atomic
				E					
		2	Histone H4	B	106	-	1-106	100.00 / 100.00	Atomic
				F					
		3	Histone H2A	C	133	-	1-133	100.00 / 100.00	Atomic
				G					
		4	Histone H2B	D	128	-	1-128	100.00 / 100.00	Atomic
				H					
		5	DNA 153-mer	I	153	-	1-153	100.00 / 100.00	Atomic
		6	DNA 153-mer	J	153	-	1-153	100.00 / 100.00	Atomic
		7	Cellular tumor antigen p53	K	417	-	1-350, 351-417	100.00 / 100.00	Atomic
				L					
				M					
				N					
8	Ubiquitin carboxyl-terminal hydrolase 7	O	1126	-	1-200, 201-1126	100.00 / 100.00	Atomic		
9	ZINC ION	P	Non-polymeric	-	-	Not available / Not available	Atomic		
		Q							
		R							
		S							

2.3. Datasets used for modeling

There are 5 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Crosslinking-MS data	PRIDE	PXD054141
2	3DEM volume	EMDB	EMD-53517
3	De Novo model	AlphaFoldDB	AF-Q93009-F1-v4
4	Experimental model	PDB	pdb_00009r04
5	De Novo model	Not available	Not available

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	Structure prediction	Not available	Structure prediction	Not available	False	False
2	1	Rigid body fitting	Not available	Rigid body fitting of subunits into 3DEM map	Not available	False	False
3	1	Model editing	Not available	Manual editing of model	Not available	False	False
4	1	Flexible fitting	Molecular dynamics flexible fitting	Molecular dynamics flexible fitting with 3DEM potentials, self-restraints, and cross-linking restraints	Not available	False	False
5	1	Refinement	Maximum-likelihood refinement	Constrained refinement	Not available	False	False

There are 5 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	AlphaFold Multimer	2.30	structure prediction	https://cosmic-cryoem.org/tools/alphafoldmultimer/
2	ChimeraX	1.80	model building	https://www.rbvi.ucsf.edu/chimerax/
3	Coot	0.9.8.1	model building	https://www2.mrc-lmb.cam.ac.uk/personal/pemsley/coot/
4	Isolde	1.70	model building	https://tristanic.github.io/isolde/
5	Phenix	1.20.1	refinement	https://phenix-online.org/

3. Data quality ?

3.2. Crosslinking-MS

At the moment, data validation is only available for crosslinking-MS data deposited as a fully compliant dataset in the *PRIDE Crosslinking* database. Correspondence between crosslinking-MS and entry entities is established using *pyHMMER*. Only residue pairs that passed the reported threshold are used for the analysis. The values in the report have to be interpreted in the context of the experiment (i.e. only a minor fraction of in-situ or in-vivo dataset can be used for modeling).

Crosslinking-MS dataset is not available in the *PRIDE Crosslinking* database.

3.3. 3DEM ?

This section describes quality of the 3DEM datasets

[EMD-53517](#)

3.3.1. Experimental information ?

EM reconstruction method: SINGLE PARTICLE

Resolution: 3.90 Å

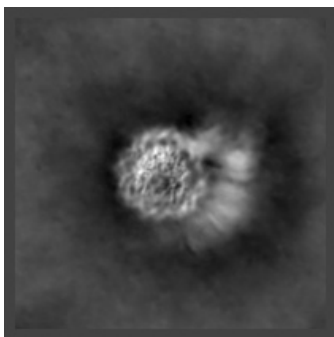
Recommended level:	0.197
Estimated volume:	236.43 nm ³
Specimen preparation:	Preparation ID 1 Vitrification
Map-only validation report:	wwPDB validation report

3.3.2. Map visualisation ?

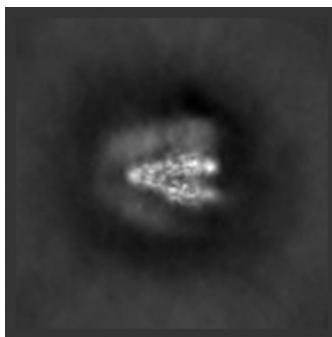
This section contains visualisations of the EMDB entry EMD-53517. These allow visual inspection of the internal detail of the map and identification of artifacts. Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

3.3.2.1. Orthogonal projections ?

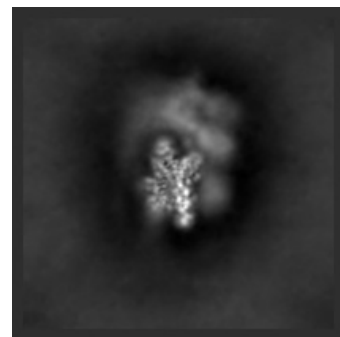
Primary map



X



Y

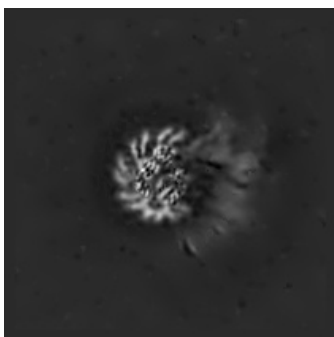


Z

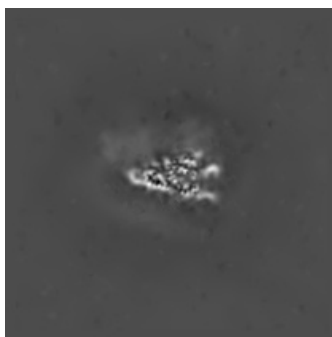
The images above show the map projected in three orthogonal directions.

3.3.2.2. Central slices ?

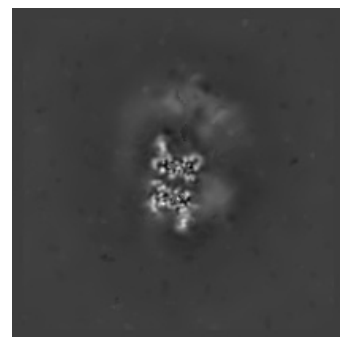
Primary map



X Index: 105



Y Index: 105

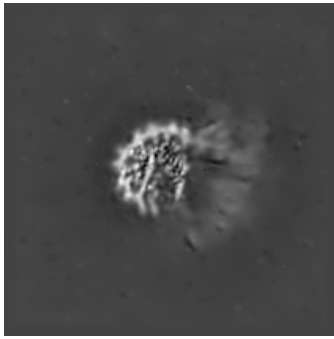
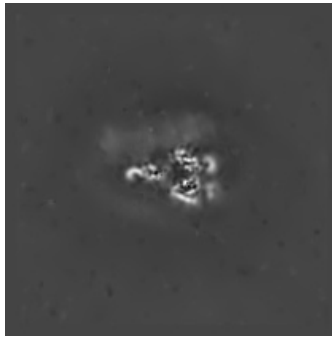
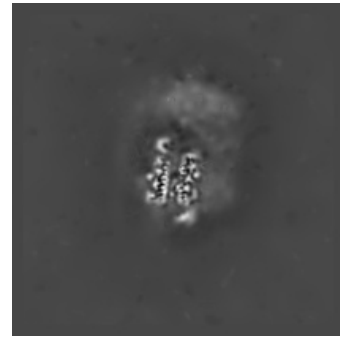


Z Index: 105

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

3.3.2.3. Largest variance slices ?

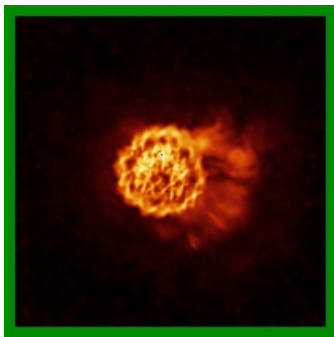
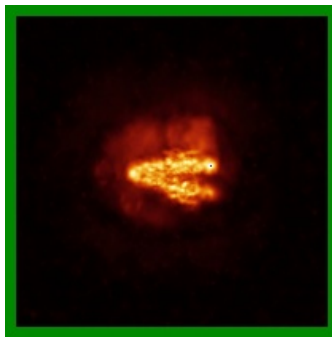
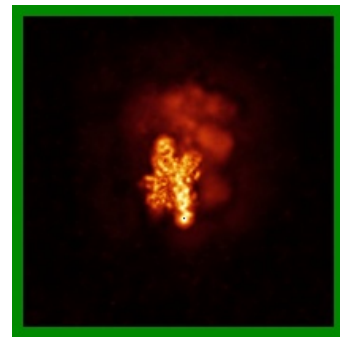
Primary map

**X Index: 109****Y Index: 100****Z Index: 112**

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) ?

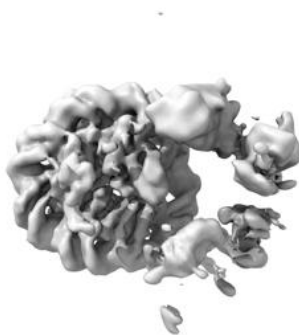
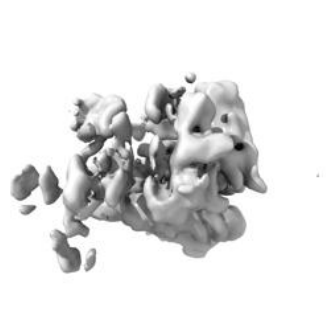
Primary map

**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

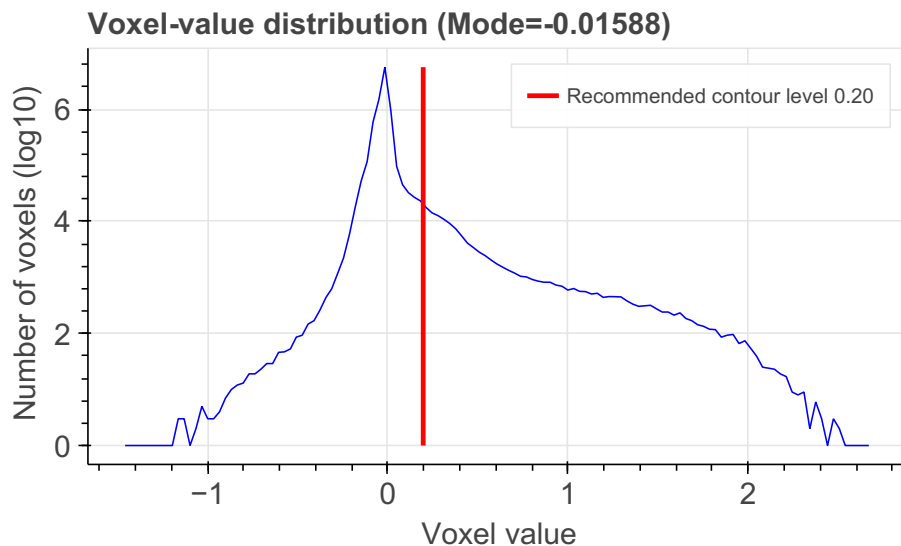
**X****Y****Z**

The images above show the 3D surface view of the map at the recommended contour level 0.197 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

3.3.3. Map analysis ?

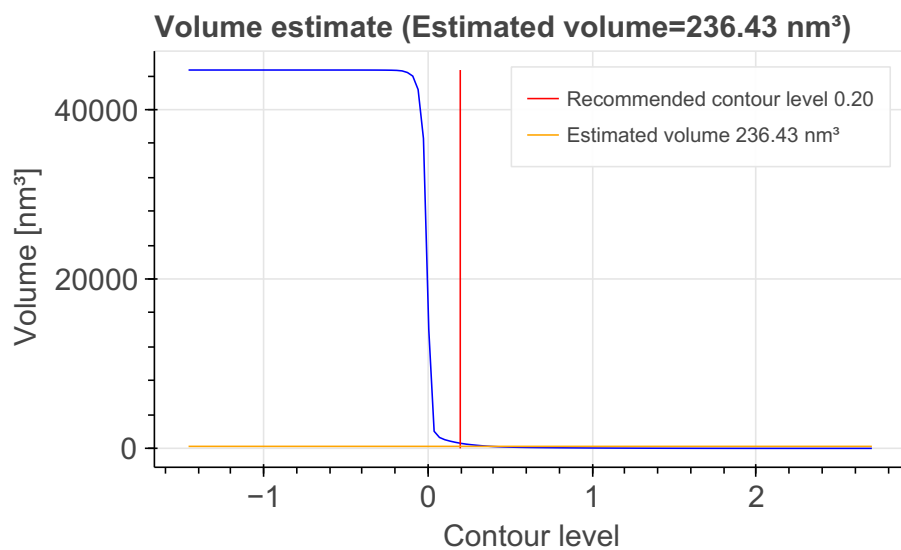
This section contains the results of statistical analysis of the map.

3.3.3.1. 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.

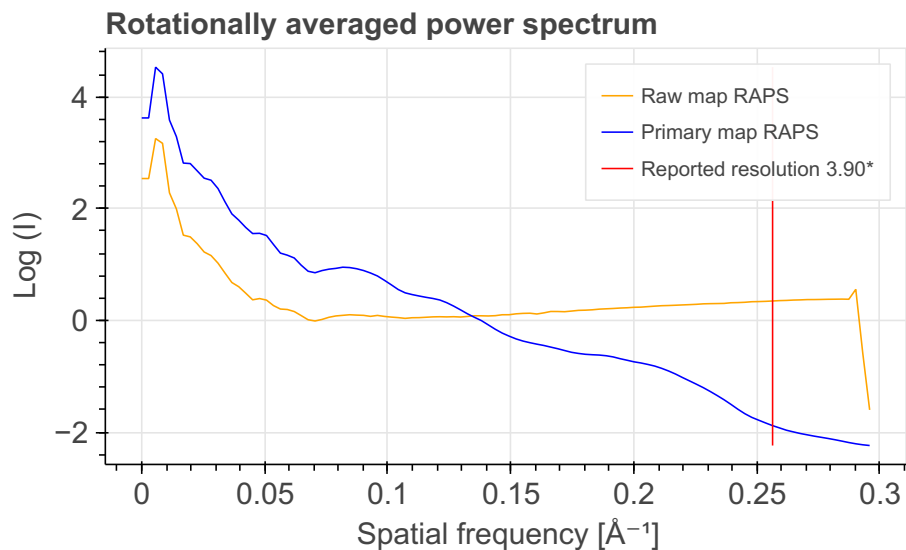
3.3.3.2. Volume estimate



The volume at the recommended contour level is 236.43 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

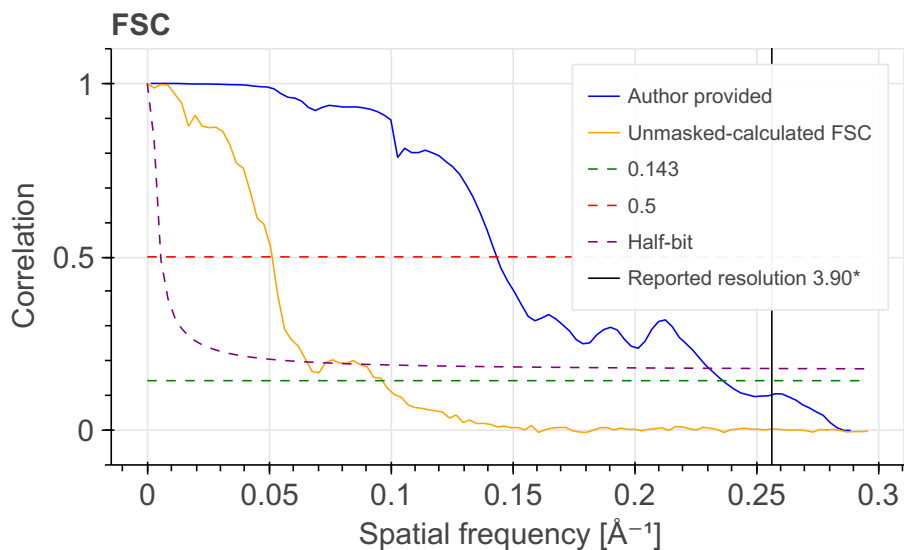


*Reported resolution corresponds to spatial frequency of 0.256 \AA^{-1}

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.



*Reported resolution corresponds to spatial frequency of 0.256 \AA^{-1}

3.3.4.2. Resolution estimates ?

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	4.23	6.97	4.34
Unmasked-calculated*	10.36	19.49	15.24

*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 10.36 differs from the reported value 3.90 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-particle or particle-atom pairs for which excluded volume was analysed.

Standard geometry: bond outliers ?

There are 2 bond length outliers in this entry (0.01% of 28119 assessed bonds). A summary is provided below.

Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
O	912	PHE	CB-CG	8.67	1.30	1.50	1	1
O	912	PHE	CD1-CE1	4.61	1.24	1.38	1	1

Standard geometry: angle outliers ?

There are 12 bond angle outliers in this entry (0.03% of 39021 assessed bonds). A summary is provided below.

Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
O	811	PHE	C-N-CA	12.35	143.92	121.70	1	1
O	912	PHE	CA-CB-CG	10.39	103.41	113.80	1	1
O	1071	ARG	CB-CG-CD	7.90	129.47	111.30	1	1
O	1071	ARG	CA-CB-CG	6.30	101.51	114.10	1	1
O	1071	ARG	CG-CD-NE	5.91	99.00	112.00	1	1
O	1054	ILE	CG1-CB-CG2	5.06	125.88	110.70	1	1
O	912	PHE	N-CA-CB	5.00	119.00	110.50	1	1
O	810	TYR	CA-CB-CG	4.99	104.91	113.90	1	1
O	475	HIS	CA-CB-CG	4.75	109.05	113.80	1	1
J	128	DC	C5'-C4'-C3'	4.49	108.17	114.90	1	1
A	86	LEU	N-CA-CB	4.34	103.12	110.50	1	1
O	808	LYS	C-CA-CB	4.04	117.78	110.10	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	2.78	144

There are 144 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)
O:560:ILE:HB	O:565:VAL:HG22	0.93	1	1
O:561:PRO:C	O:565:VAL:HG23	0.90	1	1
O:912:PHE:CZ	O:935:TYR:CD1	0.82	1	1
O:1123:LYS:O	O:1125:HIS:N	0.76	1	1
O:126:MET:HE2	O:142:PHE:CE1	0.73	1	1
A:82:PHE:O	A:84:THR:N	0.72	1	1
E:46:ARG:NH1	J:72:DG:OP1	0.71	1	1
O:560:ILE:HG21	O:565:VAL:HA	0.70	1	1
O:560:ILE:CB	O:565:VAL:HG22	0.69	1	1
A:81:ASP:N	A:81:ASP:OD1	0.68	1	1
O:232:LYS:O	O:236:GLY:N	0.68	1	1
O:912:PHE:HZ	O:935:TYR:CD1	0.68	1	1
O:232:LYS:O	O:236:GLY:HA2	0.67	1	1
O:232:LYS:O	O:236:GLY:CA	0.67	1	1
K:357:ARG:HA	O:131:PRO:HB2	0.67	1	1
O:912:PHE:C	O:912:PHE:CD2	0.66	1	1
O:226:GLY:N	O:584:GLU:OE2	0.64	1	1
O:319:ASP:OD1	O:538:TYR:OH	0.64	1	1
O:223:ALA:CB	O:229:TRP:CD2	0.62	1	1
O:561:PRO:O	O:565:VAL:HG23	0.62	1	1
O:268:MET:SD	O:560:ILE:HG23	0.61	1	1
O:223:ALA:HB2	O:229:TRP:CE3	0.61	1	1
O:268:MET:CE	O:560:ILE:HG23	0.61	1	1
O:560:ILE:C	O:565:VAL:HG22	0.60	1	1
J:131:DG:OP1	M:263:ASN:HB3	0.59	1	1
D:91:SER:N	I:43:DG:OP1	0.58	1	1
D:117:GLU:O	D:120:LYS:N	0.58	1	1
O:232:LYS:HA	O:236:GLY:CA	0.57	1	1
O:560:ILE:CG2	O:565:VAL:HA	0.57	1	1
O:117:ARG:HG3	O:222:ASP:O	0.53	1	1
O:227:VAL:HG12	O:228:ALA:N	0.52	1	1
O:767:THR:OG1	O:809:GLU:O	0.52	1	1
O:225:HIS:HB2	O:584:GLU:OE2	0.51	1	1
C:24:ARG:HG3	D:128:ALA:HB1	0.51	1	1
E:46:ARG:HH22	J:71:DG:H4'	0.51	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
O:232:LYS:HG3	O:236:GLY:O	0.51	1	1
K:357:ARG:CA	O:131:PRO:HB2	0.51	1	1
O:227:VAL:HG12	O:228:ALA:H	0.51	1	1
O:261:GLN:HA	O:264:LYS:HD3	0.51	1	1
E:121:VAL:N	J:74:DA:OP1	0.50	1	1
J:92:DT:H4'	J:93:DA:OP1	0.50	1	1
O:232:LYS:HA	O:236:GLY:HA2	0.50	1	1
O:268:MET:HA	O:564:LEU:HD21	0.50	1	1
G:49:ALA:O	G:52:PRO:HD2	0.49	1	1
K:356:ILE:HG22	K:357:ARG:O	0.49	1	1
O:237:TYR:CE2	O:495:PRO:HG2	0.49	1	1
O:232:LYS:CA	O:236:GLY:HA2	0.49	1	1
G:49:ALA:H	I:115:DT:P	0.49	1	1
A:71:PHE:CZ	A:97:GLN:HA	0.49	1	1
O:912:PHE:CZ	O:935:TYR:CG	0.48	1	1
H:42:SER:HA	H:63:MET:SD	0.48	1	1
O:912:PHE:CE1	O:935:TYR:HB3	0.48	1	1
I:55:DA:N1	J:99:DT:N3	0.48	1	1
H:43:ILE:H	H:43:ILE:HD12	0.48	1	1
O:1068:MET:HE2	O:1099:PRO:HG3	0.48	1	1
M:297:ARG:HE	M:299:CYS:HB3	0.47	1	1
O:475:HIS:CE1	O:494:ASN:O	0.47	1	1
A:94:MET:HA	A:94:MET:HE2	0.47	1	1
O:264:LYS:HE3	O:559:ASP:HB3	0.47	1	1
D:117:GLU:O	D:118:GLY:C	0.47	1	1
O:232:LYS:C	O:236:GLY:HA2	0.47	1	1
L:361:ARG:HG3	L:361:ARG:HH11	0.47	1	1
F:35:LYS:HG3	F:55:TYR:CE1	0.47	1	1
O:1020:HIS:O	O:1022:GLU:N	0.47	1	1
O:723:LEU:HD11	O:810:TYR:CE2	0.47	1	1
N:125:LYS:NZ	N:126:THR:O	0.46	1	1
F:94:LEU:O	F:95:LYS:C	0.46	1	1
O:528:ASP:CG	O:529:LEU:HD22	0.46	1	1
L:352:PHE:CZ	N:359:ARG:HA	0.46	1	1
D:123:THR:HG22	O:1071:ARG:NE	0.46	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
I:57:DC:N3	J:97:DG:N1	0.46	1	1
O:223:ALA:CB	O:229:TRP:CE3	0.46	1	1
A:121:VAL:N	I:74:DG:OP1	0.46	1	1
O:810:TYR:H	O:812:ARG:H	0.46	1	1
C:21:ARG:HA	I:34:DT:OP1	0.46	1	1
O:810:TYR:HB3	O:814:LEU:HB3	0.46	1	1
O:543:ILE:HD13	O:551:VAL:HG11	0.45	1	1
C:45:GLU:N	C:45:GLU:OE1	0.45	1	1
N:352:PHE:CE2	O:448:ARG:HB2	0.45	1	1
I:73:DC:O2	J:81:DG:N2	0.45	1	1
I:25:DT:P	N:297:ARG:HH22	0.45	1	1
G:47:VAL:O	I:115:DT:H3'	0.45	1	1
O:605:ASN:HA	O:810:TYR:HE1	0.45	1	1
O:810:TYR:CB	O:814:LEU:HB3	0.45	1	1
D:124:LYS:HA	O:1071:ARG:NH1	0.45	1	1
A:58:TYR:O	B:44:ARG:CZ	0.44	1	1
I:123:DA:N6	J:30:DC:N4	0.44	1	1
O:808:LYS:O	O:810:TYR:O	0.44	1	1
O:236:GLY:HA3	O:237:TYR:CD2	0.44	1	1
O:810:TYR:CD2	O:814:LEU:HD22	0.44	1	1
E:44:ARG:HH22	J:69:DG:N2	0.44	1	1
O:344:ILE:HB	O:345:PRO:HD3	0.44	1	1
O:767:THR:OG1	O:808:LYS:O	0.44	1	1
O:118:ASN:HB3	O:225:HIS:CE1	0.43	1	1
A:68:LYS:N	J:95:DG:OP1	0.43	1	1
O:807:ALA:O	O:810:TYR:O	0.43	1	1
D:97:GLU:CD	D:97:GLU:N	0.43	1	1
J:142:DT:C7	K:300:ALA:HB1	0.43	1	1
N:301:CYS:HB2	N:304:ARG:CZ	0.43	1	1
J:130:DT:OP1	M:297:ARG:NH1	0.43	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	2696	2621	66	9

There are 9 unique backbone outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	83	LYS	1
K	358	GLY	1
O	222	ASP	1
O	523	GLY	1
O	531	VAL	1
O	808	LYS	1
O	812	ARG	1
O	1021	LYS	1
O	1124	ILE	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	2411	2327	70	14

There are 14 unique sidechain outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	81	ASP	1
D	117	GLU	1
E	49	THR	1
G	83	ILE	1
K	307	ARG	1
M	297	ARG	1
N	125	LYS	1
N	288	LEU	1
O	334	LYS	1
O	529	LEU	1
O	532	ARG	1
O	538	TYR	1
O	1117	TYR	1
O	1126	ASN	1

5. Fit to Data Used for Modeling Assessment ?

5.2. Crosslinking-MS ?

5.2.1. Restraint types ?

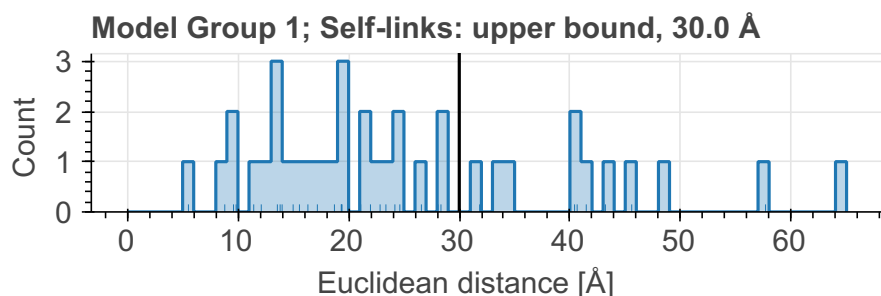
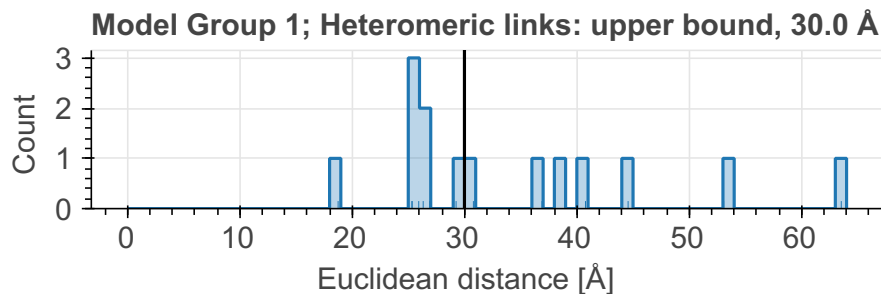
This table summarizes information about crosslinker(s) used for data generation, and how crosslinking information was translated into actual modeling restraints. Restraints assigned "by-residue" are interpreted as between CA atoms. Restraints between coarse-grained beads are indicated as "coarse-grained". Restraint group represents a set of crosslinking restraints applied collectively in the modeling.

There are 51 crosslinking restraints combined in 50 restraint groups.

Linker	Residue 1	Atom 1	Residue 2	Atom 2	Restraint type	Distance, Å	Count
DSSO	LYS	CA	LYS	CA	upper bound	30.00	51

Distograms of individual restraints

Distograms (i.e., histogram plots of distances) provide an overview of distributions of distances between residues for which chemical crosslinks were identified. The shift of the distogram relative to the threshold value may indicate a poor model. Restraints with identical thresholds are grouped into one plot. Only the best distance per restraint per model group/ensemble is plotted. Inter- and intramolecular (including self-links) restraints are also grouped into one plot. Distance for a restraint between coarse-grained beads is calculated as a minimal distance between shells; if beads intersect, the distance will be reported as 0.0. A bead with the highest available resolution for a given residue is used for the assessment.



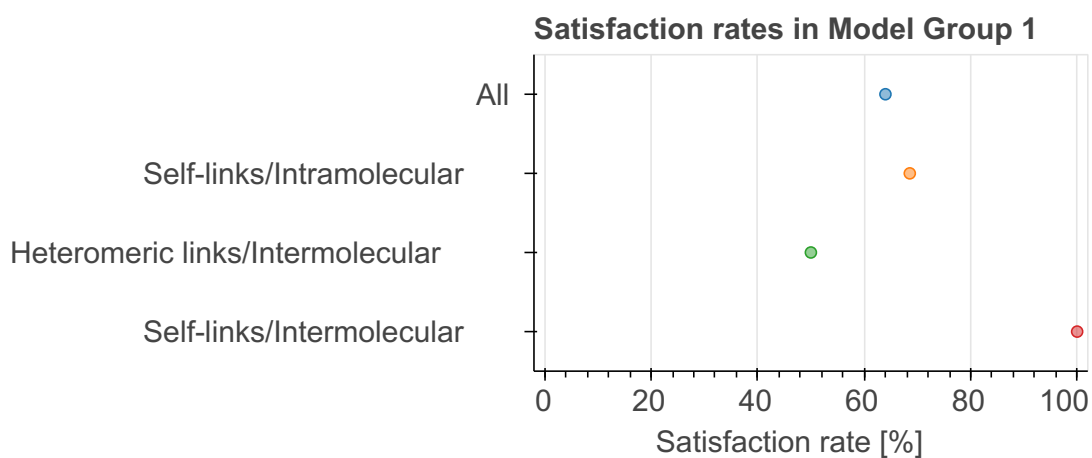
5.2.2. Satisfaction of restraints ?

Satisfaction of restraints is calculated on a *restraint group* (a set of crosslinking restraints applied collectively in the modeling) level. Satisfaction of a restraint group depends on satisfaction of individual restraints in the group and the conditionality (all/any). A restraint group is considered satisfied, if the condition was met in at least one model of the model group/ensemble. The number of measured restraints can be smaller than the total number of restraint groups if crosslinks involve non-modeled residues. Only deposited models are used for validation right now.

State group	State	Model group	# of Deposited models/Total	Restraint group type	Satisfied (%)	Violated (%)	Count (Total=50)
1	1	1	1/1	All	64.00	36.00	50
				Self-links/ Intramolecular	68.57	31.43	35
				Heteromeric links/ Intermolecular	50.00	50.00	14
				Self-links/ Intermolecular	100.00	0.00	1

Per-model satisfaction rates in ensembles

Every point represents one model in a model group/ensemble. Where possible, boxplots with quartile marks are also plotted.



5.3. 3DEM

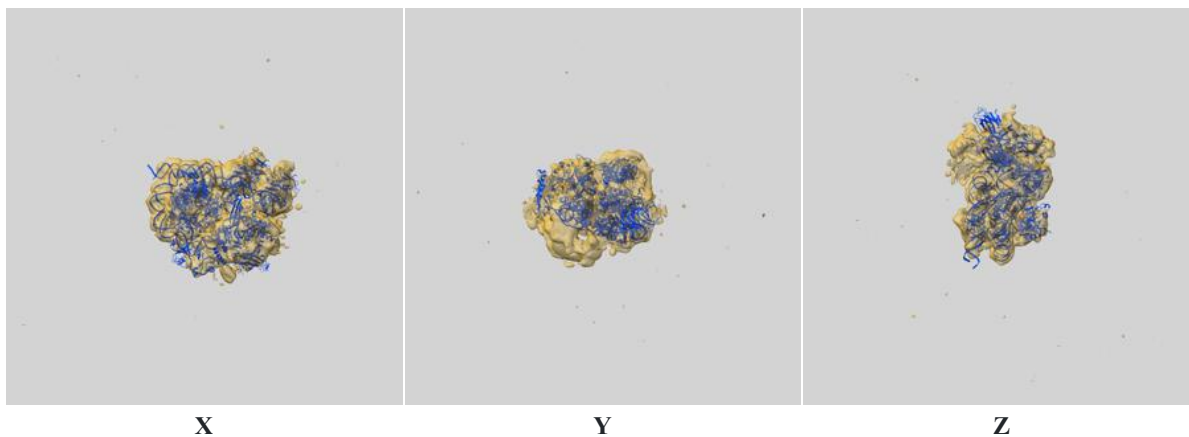
This section describes fit of models to the 3DEM data. Only results for the representative model, selected as a first model with the largest number of asymmetric units.

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5.3.1. Map-model fit ?

Only results for the representative Model 1 are shown.

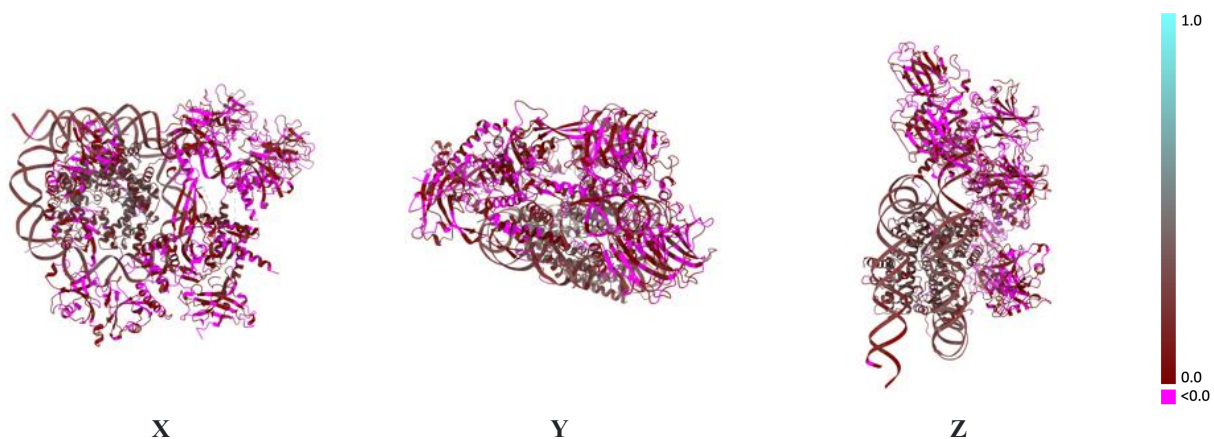
5.3.1.1 Map-model overlay ?



The images above show the 3D surface view of the map at the recommended contour level 0.197 at 50% transparency in yellow

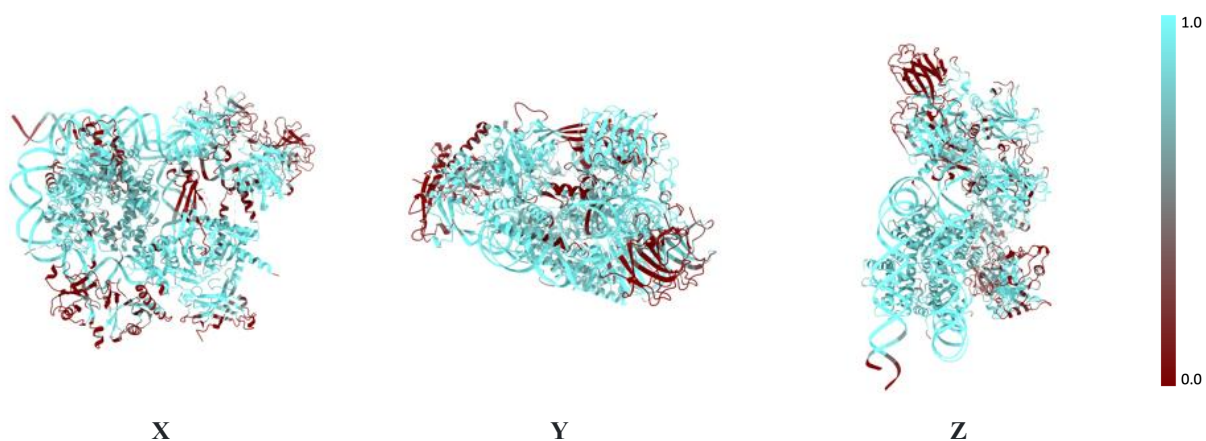
overlaid with a ribbon representation of the model colored in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

5.3.1.2. Q-score mapped to coordinate model ?



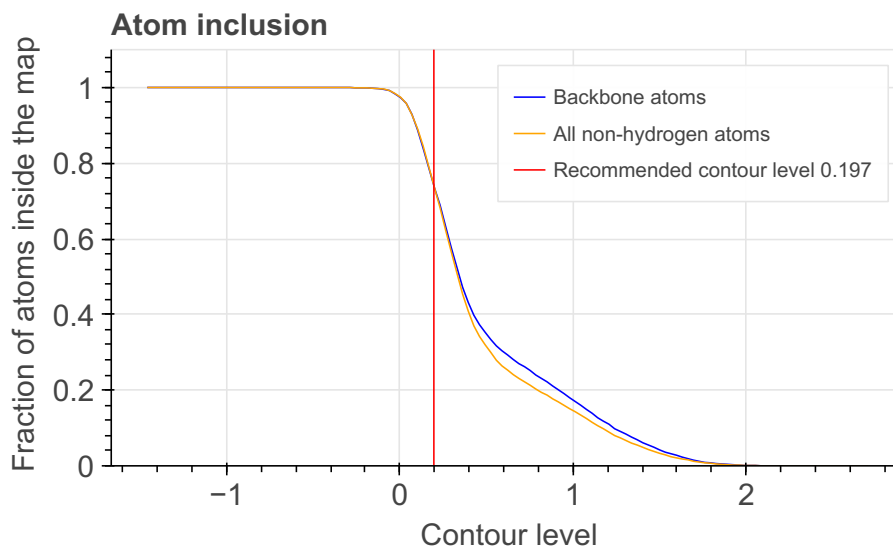
The images above show the model with each residue colored according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 0.197.

5.3.1.4. Atom inclusion ?



At the recommended contour level, 74% of all backbone atoms, 74% 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 (0.197) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.741	0.115
A	0.938	0.216
B	0.958	0.273
C	0.906	0.264
D	0.922	0.267
E	0.903	0.232
F	0.916	0.289
G	0.943	0.267
H	0.962	0.254
I	0.939	0.221
J	0.938	0.209
K	0.418	0.027
L	0.776	0.018
M	0.681	0.044
N	0.778	0.041
O	0.572	0.030
P	1.000	-0.161
Q	1.000	-0.078
R	1.000	0.511
S	1.000	0.034

6. Fit to Data Used for Validation Assessment ?

Validation for this section is under development.

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