

Integrative Structure Validation Report

October 09, 2025 - 04:40 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	9A24 pdb_00009a24
PDB-Dev ID	PDBDEV_00000141
Structure Title	PTX3 hybrid cryoEM and AlphaFold model
Structure Authors	Dylan P. Noone; Thomas H. Sharp
Deposited on	2022-07-20

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

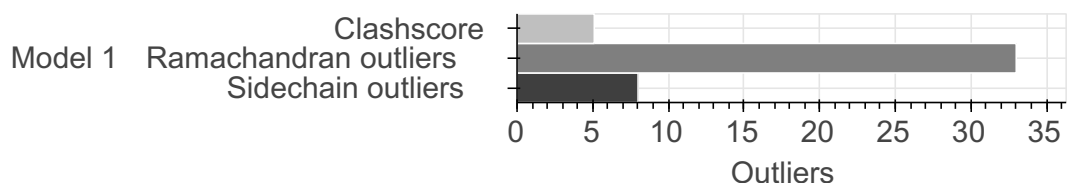
This entry consists of 1 model(s). A total of 6 dataset(s) were used to build this entry.

Name	Type	Count
2DEM class average	Experimental data	1
3DEM volume	Experimental data	1
Mass Spectrometry data	Experimental data	1
Other	Experimental data	1
Experimental model	Starting model	1
De Novo model	Starting model	1

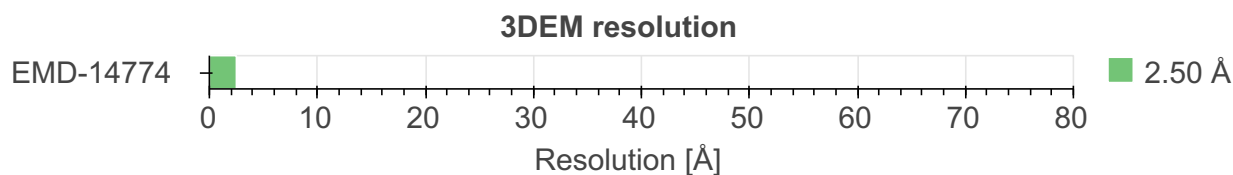
1.2. Overall quality ?

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.

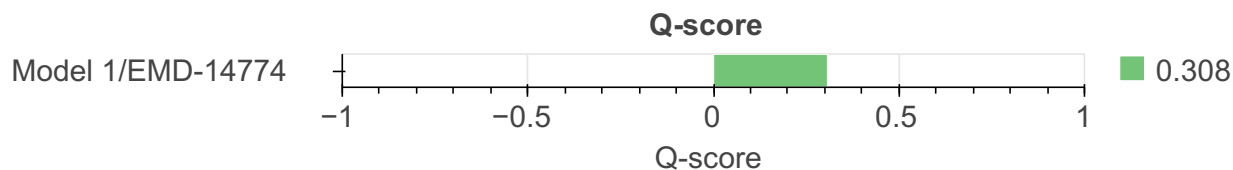
Model Quality: MolProbity Analysis ?



Data Quality ?



Fit to Data Used for Modeling ?



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	PTX3 (protein complex)	A [B]	364	-	1-147, 136-364	100.00 / 100.00	Atomic
				B [A]					
				C [D]					
				D [C]					
				E [F]					
				F [E]					
				G [H]					
				H [G]					
		2	N-ACETYL-D-GLUCOSAMINE	Non-polymeric	-	-	Not available / Not available	Atomic	
									I [B]
									J [B]
									N [A]
									O [A]
									S [D]
									W [D]
									X [C]
									Y [C]
									CA [F]
									DA [F]
									HA [E]
									IA [E]
									MA [H]
		NA [H]							
		RA [G]							
		SA [G]							
		3	BETA-D-MANNOSE	Non-polymeric	-	-	Not available / Not available	Atomic	
K [B]									
P [A]									
T [D]									
Z [C]									
EA [F]									
JA [E]									
OA [H]									
TA [G]									

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
		4	ALPHA-D-MANNOSE	L [B] M [B] Q [A] R [A] U [D] V [D] AA [C] BA [C] FA [F] GA [F] KA [E] LA [E] PA [H] QA [H] UA [G] VA [G]	Non-polymeric	-	-	Not available / Not available	Atomic
		5	water	WA [B] XA [F] YA [I]	Non-polymeric	-	-	Not available / Not available	Atomic

2.3. Datasets used for modeling

There are 6 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	De Novo model	Not available	Not available
2	3DEM volume	EMDB	EMD-14774
3	Mass Spectrometry data	PRIDE	PXD034602
4	2DEM class average	Not available	Not available
5	Other	Not available	Not available
6	Experimental model	PDB	pdb_00007z11

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
4	1	Not available	Not available	Not available	Not available	False	False

There are 4 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
3	EMAN2	Not available	Validation - 2D variability analysis	https://pubmed.ncbi.nlm.nih.gov/27572727/
4	IMOD	Not available	validation	https://bio3d.colorado.edu/imod/
1	Relion	Not available	Single particle analysis	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3690530/
2	AlphaFold	Not available	structural prediction	https://www.deepmind.com/research/highlighted-research/alphafold

3. Data quality

3.3. 3DEM

This section describes quality of the 3DEM datasets

[EMD-14774](#)

3.3.1. Experimental information

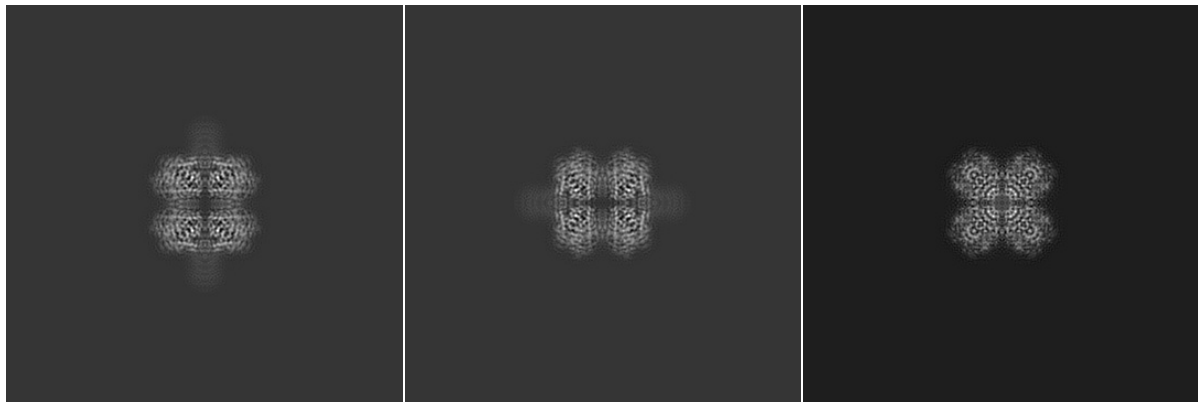
EM reconstruction method:	SINGLE PARTICLE
Resolution:	2.50 Å
Recommended level:	0.017
Estimated volume:	79.40 nm ³
Specimen preparation:	Preparation ID 1 Vitrification
Map-only validation report:	wwPDB validation report

3.3.2. Map visualisation

This section contains visualisations of the EMDB entry EMD-14774. 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](#)

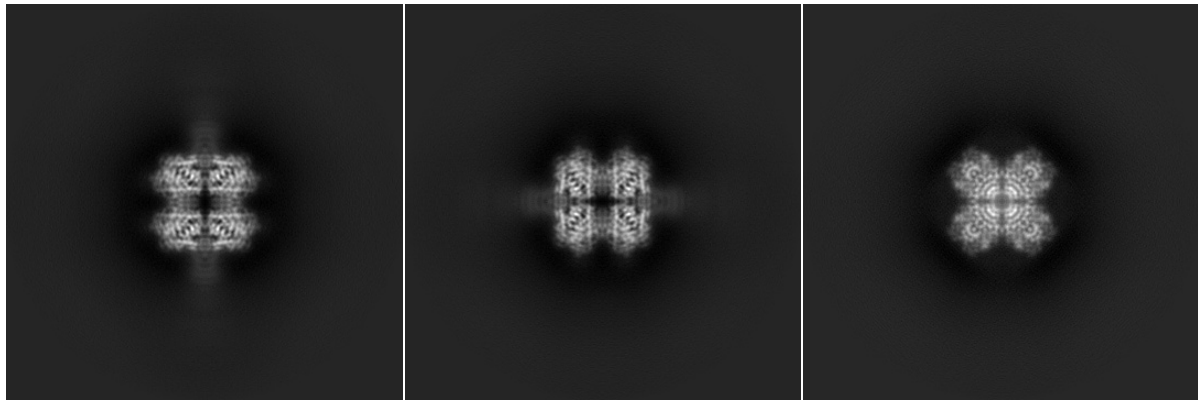


X

Y

Z

Raw map



X

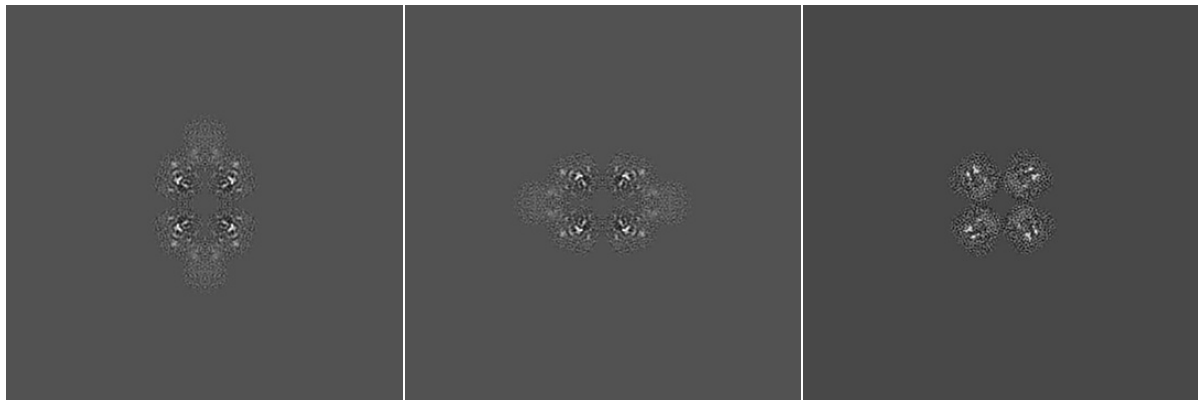
Y

Z

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

3.3.2.2. Central slices ?

Primary map

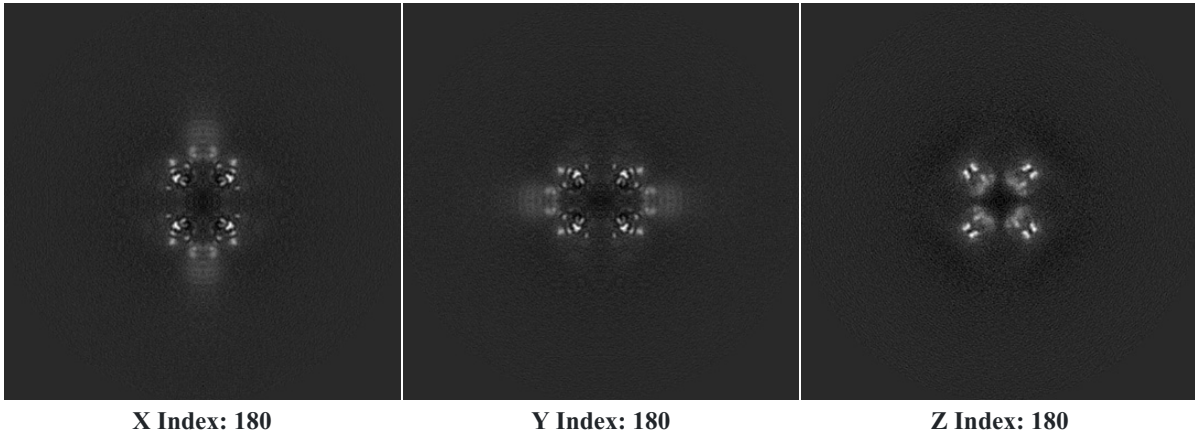


X Index: 180

Y Index: 180

Z Index: 180

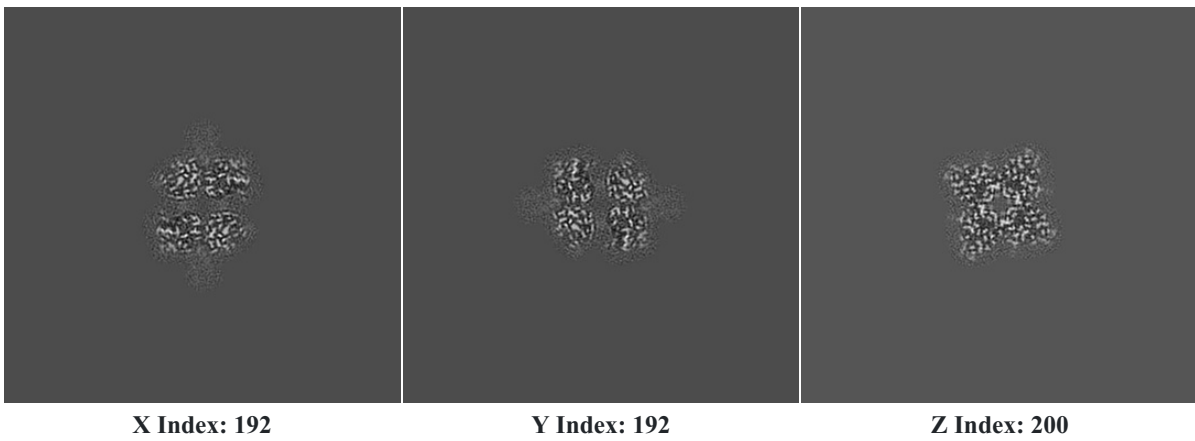
Raw map



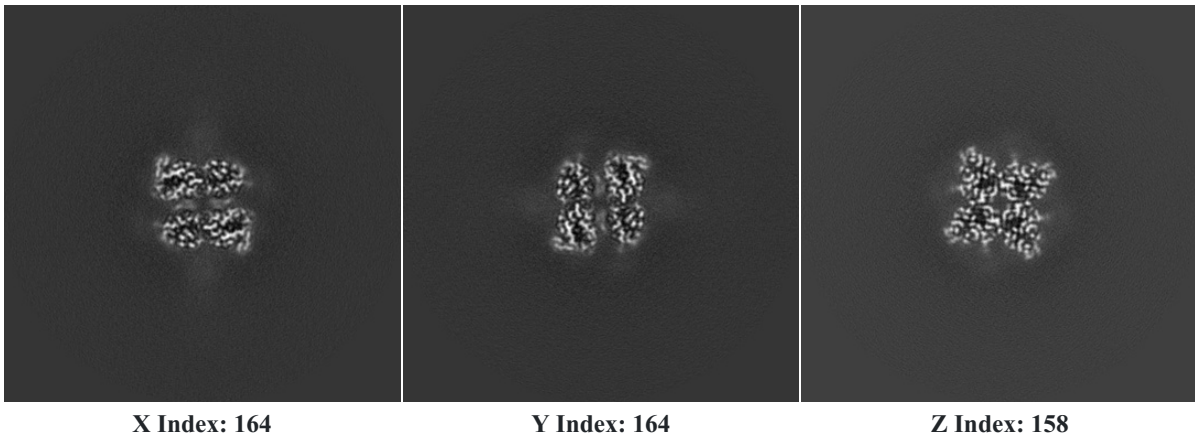
The images above show central slices of the map in three orthogonal directions.

3.3.2.3. Largest variance slices

Primary map



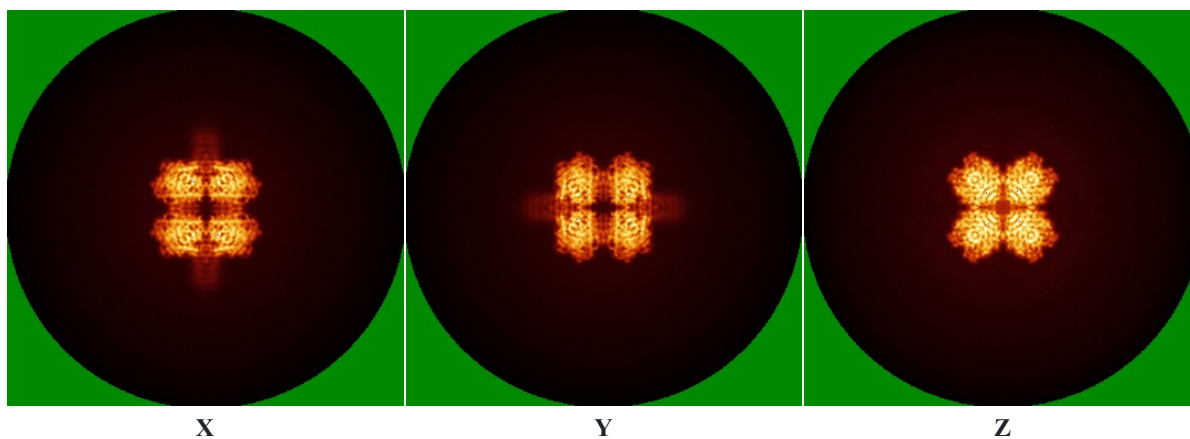
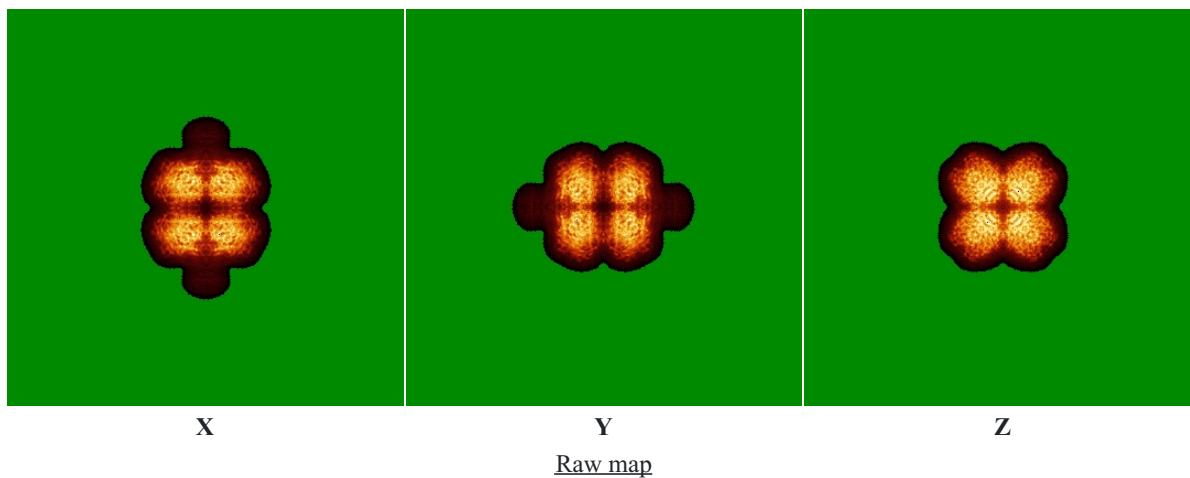
Raw map



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)

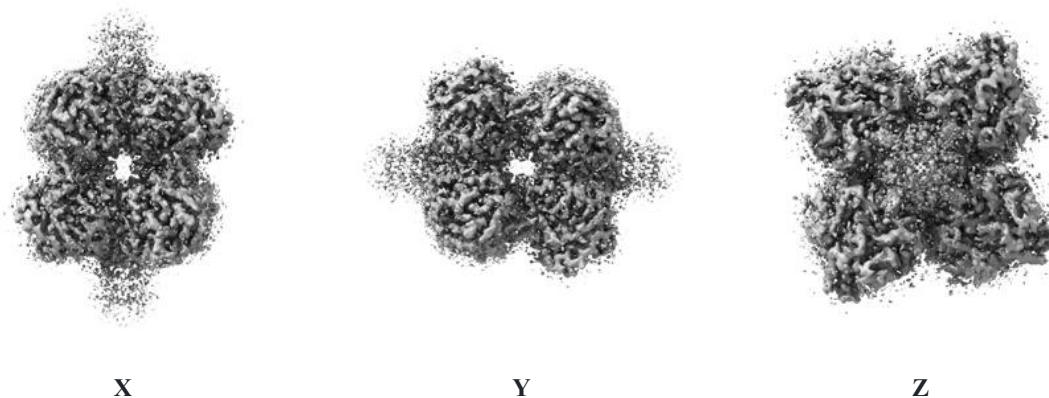
Primary map



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.

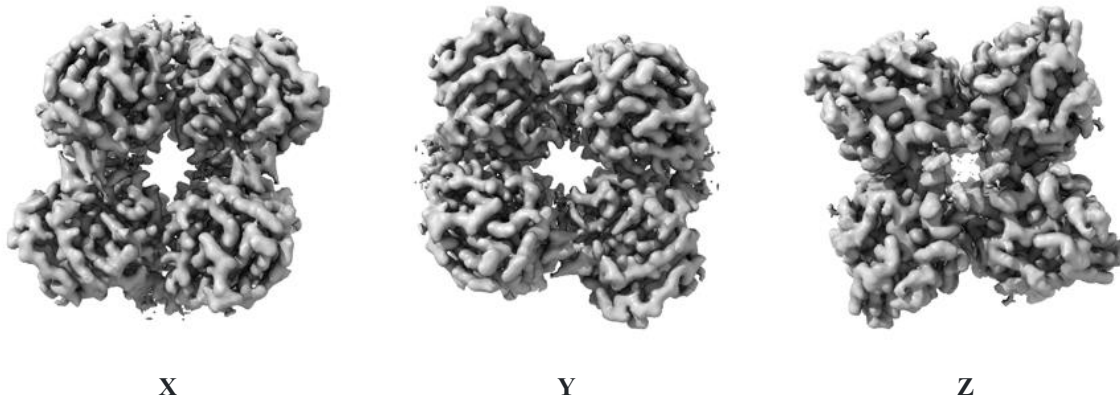
3.3.2.5. Orthogonal surface views

Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.017 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

Raw map



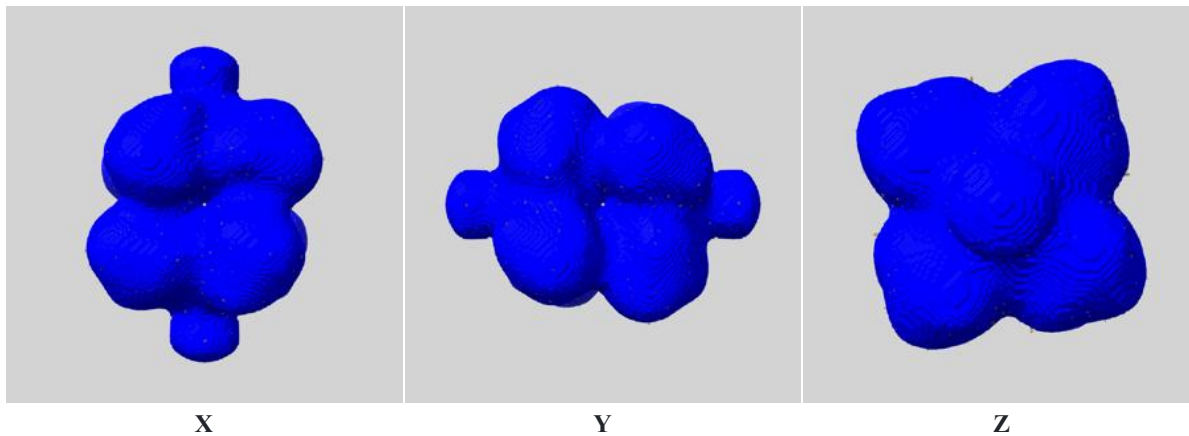
These images show the 3D surface of the raw map. The raw map's contour level 0.020 was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

[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.

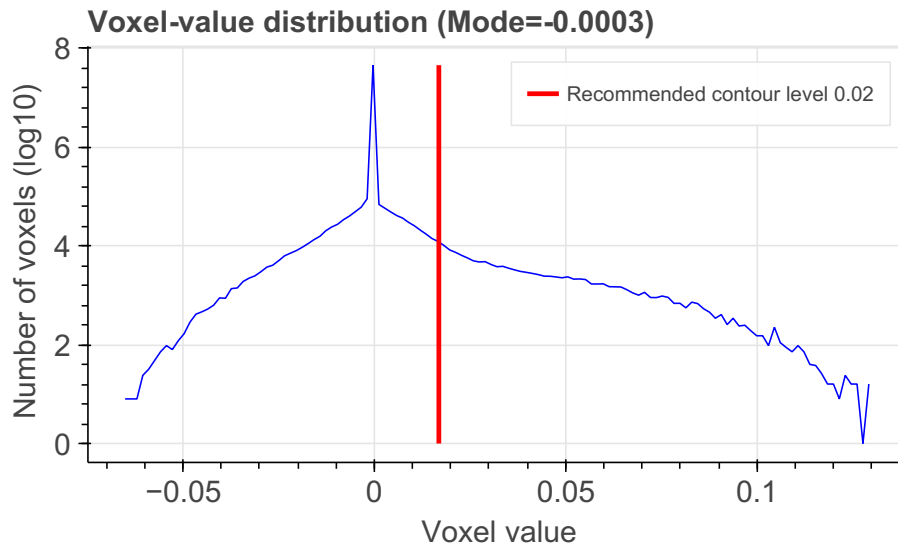
[emd_14774_msk_1.map](#)



[3.3.3. Map analysis](#)

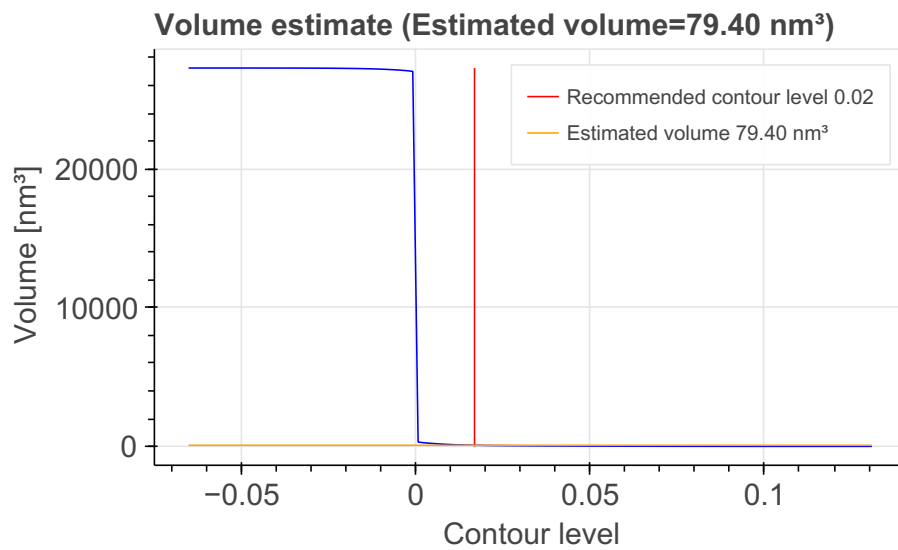
This section contains the results of statistical analysis of the map.

[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.

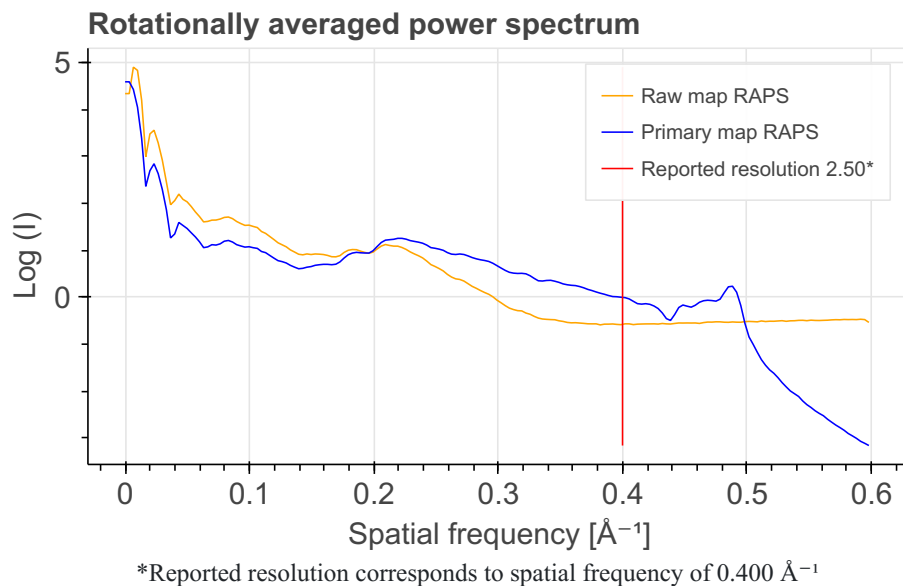
3.3.3.2. Volume estimate



The volume at the recommended contour level is 79.40 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.

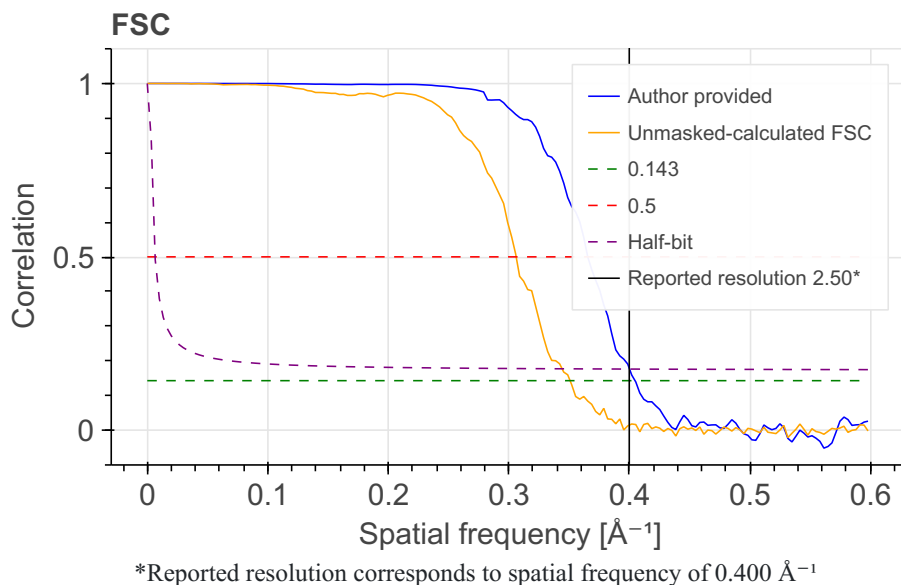
3.3.3.3. Rotationally averaged power spectrum



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.



3.3.4.2. Resolution estimates ?

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.50	-	-
Author-provided FSC curve	2.47	2.74	2.50
Unmasked-calculated*	2.85	3.27	2.91

*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 2.85 differs from the reported value 2.50 by more than 10%.

3.4. Mass Spectrometry ?

Validation for this section is under development.

3.4. 2DEM class average ?

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.

4.1b. 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 no bond length outliers.

Standard geometry: angle outliers ?

There are no bond angle outliers.

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	5.10	231

There are 231 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)
H:61:ASP:OD1	H:65:ARG:NH1	0.79	1	1
G:61:ASP:OD1	G:65:ARG:NH1	0.75	1	1
A:150:GLN:NE2	B:145:ASP:O	0.75	1	1
C:150:GLN:NE2	D:145:ASP:O	0.73	1	1
N:1:NAG:O3	O:1:NAG:O5	0.73	1	1
MA:1:NAG:O4	NA:1:NAG:O7	0.69	1	1
D:226:GLN:N	D:226:GLN:OE1	0.69	1	1
E:163:GLU:OE2	F:315:ARG:NH1	0.68	1	1
B:150:GLN:NE2	C:145:ASP:O	0.68	1	1
F:171:ARG:NH2	F:200:ASP:O	0.67	1	1
A:85:PRO:O	A:87:ALA:N	0.67	1	1
F:121:GLU:O	G:124:ARG:NH2	0.66	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
C:85:PRO:O	C:87:ALA:N	0.66	1	1
B:121:GLU:O	C:124:ARG:NH2	0.65	1	1
E:206:ILE:HD13	E:222:TYR:HB3	0.65	1	1
C:260:GLU:N	C:260:GLU:OE1	0.64	1	1
E:235:GLU:O	E:238:LYS:NZ	0.64	1	1
G:298:ASN:OD1	G:299:GLY:N	0.64	1	1
G:260:GLU:N	G:260:GLU:OE1	0.64	1	1
D:260:GLU:N	D:260:GLU:OE1	0.64	1	1
F:260:GLU:N	F:260:GLU:OE1	0.64	1	1
A:242:GLU:N	A:242:GLU:OE1	0.63	1	1
H:260:GLU:N	H:260:GLU:OE1	0.63	1	1
E:260:GLU:N	E:260:GLU:OE1	0.63	1	1
DA:1:NAG:O3	EA:1:BMA:O5	0.63	1	1
T:1:BMA:O4	U:1:MAN:O5	0.63	1	1
H:242:GLU:N	H:242:GLU:OE1	0.63	1	1
D:61:ASP:OD1	D:65:ARG:NH1	0.62	1	1
E:242:GLU:N	E:242:GLU:OE1	0.62	1	1
F:242:GLU:N	F:242:GLU:OE1	0.62	1	1
C:329:GLU:N	C:329:GLU:OE1	0.62	1	1
A:329:GLU:N	A:329:GLU:OE1	0.62	1	1
B:260:GLU:N	B:260:GLU:OE1	0.62	1	1
A:297:LYS:O	H:213:LYS:NZ	0.62	1	1
C:258:ASN:OD1	C:259:SER:N	0.62	1	1
E:204:LYS:HE2	E:206:ILE:HD11	0.62	1	1
C:242:GLU:N	C:242:GLU:OE1	0.62	1	1
C:109:ASP:OD1	C:112:ARG:NH2	0.61	1	1
E:315:ARG:NH1	H:163:GLU:OE2	0.61	1	1
F:329:GLU:N	F:329:GLU:OE1	0.61	1	1
H:329:GLU:N	H:329:GLU:OE1	0.61	1	1
B:242:GLU:N	B:242:GLU:OE1	0.61	1	1
A:109:ASP:OD1	A:112:ARG:NH2	0.61	1	1
D:242:GLU:N	D:242:GLU:OE1	0.61	1	1
B:4:ASP:OD2	B:70:ARG:NH2	0.61	1	1
G:329:GLU:N	G:329:GLU:OE1	0.61	1	1
E:329:GLU:N	E:329:GLU:OE1	0.61	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
F:258:ASN:OD1	F:259:SER:N	0.61	1	1
G:347:VAL:HG13	G:352:THR:HG21	0.60	1	1
A:12:ASN:OD1	A:13:LEU:N	0.60	1	1
C:61:ASP:OD1	C:65:ARG:NH1	0.60	1	1
A:347:VAL:HG13	A:352:THR:HG21	0.60	1	1
G:38:GLU:N	G:38:GLU:OE1	0.60	1	1
F:170:MET:N	F:170:MET:SD	0.59	1	1
H:170:MET:N	H:170:MET:SD	0.59	1	1
G:258:ASN:OD1	G:259:SER:N	0.59	1	1
G:163:GLU:OE2	H:315:ARG:NH1	0.59	1	1
D:258:ASN:OD1	D:259:SER:N	0.59	1	1
H:38:GLU:N	H:38:GLU:OE1	0.59	1	1
F:347:VAL:HG13	F:352:THR:HG21	0.59	1	1
B:258:ASN:OD1	B:259:SER:N	0.59	1	1
E:258:ASN:OD1	E:259:SER:N	0.58	1	1
D:38:GLU:N	D:38:GLU:OE1	0.58	1	1
H:347:VAL:HG13	H:352:THR:HG21	0.58	1	1
A:315:ARG:NH1	D:163:GLU:OE2	0.57	1	1
B:215:ASN:ND2	B:218:GLU:OE2	0.57	1	1
C:38:GLU:N	C:38:GLU:OE1	0.57	1	1
F:319:PHE:CE2	F:347:VAL:HG11	0.57	1	1
H:79:ALA:O	H:83:ALA:N	0.57	1	1
A:319:PHE:CE2	A:347:VAL:HG11	0.57	1	1
C:213:LYS:NZ	F:297:LYS:O	0.57	1	1
E:145:ASP:O	H:150:GLN:NE2	0.56	1	1
H:319:PHE:CE2	H:347:VAL:HG11	0.56	1	1
C:347:VAL:HG13	C:352:THR:HG21	0.56	1	1
E:121:GLU:O	F:124:ARG:NH2	0.56	1	1
A:236:GLU:N	A:236:GLU:OE1	0.56	1	1
G:215:ASN:ND2	G:218:GLU:OE2	0.55	1	1
B:231:VAL:HG13	B:237:ASN:O	0.55	1	1
B:297:LYS:O	G:213:LYS:NZ	0.55	1	1
H:244:MET:N	H:244:MET:SD	0.55	1	1
A:231:VAL:HG13	A:237:ASN:O	0.55	1	1
C:244:MET:HB3	C:268:VAL:HG11	0.55	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
G:109:ASP:OD1	G:112:ARG:NH2	0.55	1	1
B:244:MET:N	B:244:MET:SD	0.54	1	1
A:163:GLU:OE1	B:315:ARG:NH1	0.54	1	1
B:131:ALA:O	B:135:VAL:HG23	0.54	1	1
C:319:PHE:CE2	C:347:VAL:HG11	0.54	1	1
D:180:HIS:ND1	E:302:VAL:HG13	0.54	1	1
C:236:GLU:N	C:236:GLU:OE1	0.54	1	1
E:231:VAL:HG13	E:237:ASN:O	0.53	1	1
G:79:ALA:O	G:83:ALA:N	0.53	1	1
A:11:VAL:HG11	D:57:LEU:HD13	0.53	1	1
G:319:PHE:CE2	G:347:VAL:HG11	0.53	1	1
D:85:PRO:O	D:87:ALA:N	0.53	1	1
C:143:ARG:NH1	D:138:GLU:OE1	0.53	1	1
DA:1:NAG:C3	EA:1:BMA:O5	0.53	1	1
A:121:GLU:O	B:124:ARG:NH2	0.52	1	1
B:51:MET:SD	B:54:ARG:NH2	0.52	1	1
B:85:PRO:O	B:87:ALA:N	0.52	1	1
F:163:GLU:OE2	G:315:ARG:NH1	0.52	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	2896	2542	321	33

There are 33 unique backbone outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	86	CYS	1
A	89	GLY	1
A	159	PRO	1
A	182	VAL	1
A	302	VAL	1
B	86	CYS	1
B	89	GLY	1
B	182	VAL	1
B	226	GLN	1

Chain	Res	Type	Models (Total)
B	303	GLY	1
C	86	CYS	1
C	89	GLY	1
C	159	PRO	1
C	300	CYS	1
D	86	CYS	1
D	89	GLY	1
D	159	PRO	1
D	182	VAL	1
D	298	ASN	1
D	300	CYS	1
E	86	CYS	1
E	89	GLY	1
E	159	PRO	1
E	297	LYS	1
E	300	CYS	1
F	297	LYS	1
F	304	GLY	1
G	86	CYS	1
G	159	PRO	1
G	303	GLY	1
H	86	CYS	1
H	159	PRO	1
H	300	CYS	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	2360	2336	16	8

There are 8 unique sidechain outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	203	ASN	1
B	213	LYS	1
C	203	ASN	1

Chain	Res	Type	Models (Total)
D	213	LYS	1
F	86	CYS	1
F	170	MET	1
H	170	MET	1
H	301	CYS	1

5. Fit to Data Used for Modeling Assessment ?

5.3. 3DEM

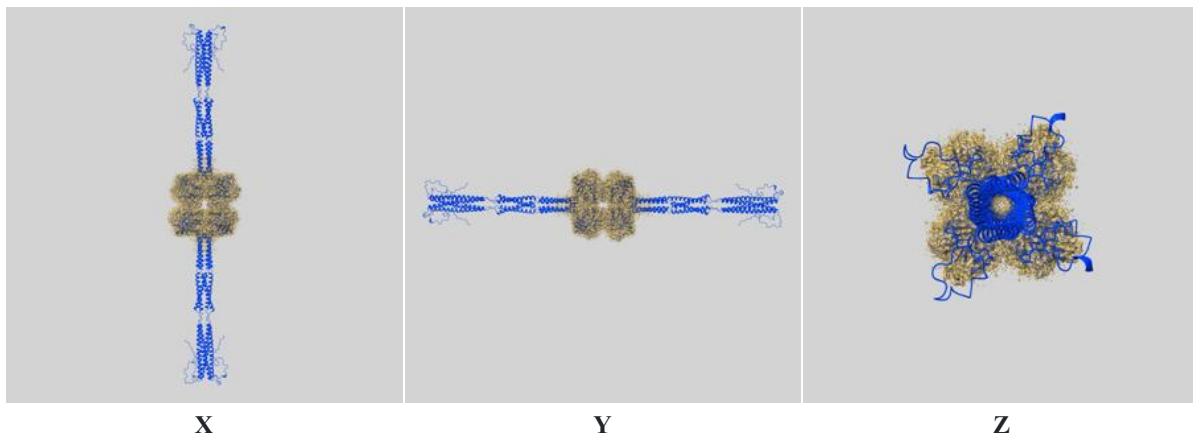
This section describes fit of models to the 3DEM data. Only results for the representative model, selected as a first model with the largest number of asymmetric units.

[EMD-14774](#)

[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 0.017 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 ?](#)

chain.

Chain	Atom inclusion	Q-score
All	█ 0.469	█ 0.308
A	█ 0.486	█ 0.318
B	█ 0.482	█ 0.312
C	█ 0.483	█ 0.313
D	█ 0.484	█ 0.313
E	█ 0.480	█ 0.314
F	█ 0.484	█ 0.314
G	█ 0.489	█ 0.317
H	█ 0.490	█ 0.318
I	█ 0.000	█ -0.005
J	█ 0.000	█ -0.126
K	█ 0.000	█ 0.053
L	█ 0.000	█ -0.020
M	█ 0.000	█ 0.021
N	█ 0.143	█ 0.208
O	█ 0.000	█ -0.207
P	█ 0.000	█ -0.052
Q	█ 0.000	█ 0.086
R	█ 0.000	█ 0.007
S	█ 0.000	█ -0.078
T	█ 0.000	█ 0.084
U	█ 0.000	█ -0.005
V	█ 0.000	█ -0.146
W	█ 0.000	█ -0.011
X	█ 0.000	█ 0.148
Y	█ 0.000	█ 0.017
Z	█ 0.091	█ 0.210
AA	█ 0.000	█ 0.018
BA	█ 0.000	█ -0.033
CA	█ 0.071	█ -0.060
DA	█ 0.000	█ 0.051
EA	█ 0.000	█ 0.305
FA	█ 0.000	█ 0.047
GA	█ 0.000	█ 0.006



Chain	Atom inclusion	Q-score
HA	 0.286	 0.240
IA	 0.000	 -0.090
JA	 0.000	 0.097
KA	 0.000	 -0.081
LA	 0.000	 0.016
MA	 0.000	 0.057
NA	 0.000	 -0.182
OA	 0.091	 0.229
PA	 0.000	 0.000
QA	 0.000	 -0.133
RA	 0.000	 0.077
SA	 0.000	 -0.135
TA	 0.000	 -0.056
UA	 0.000	 -0.071
VA	 0.000	 -0.017

5.4. Mass Spectrometry ?

Validation for this section is under development.

5.4. 2DEM class average ?

Validation for this section is under development.

6. Fit to Data Used for Validation Assessment ?

Validation for this section is under development.

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