



# Full wwPDB EM Validation Report ⓘ

Oct 14, 2024 – 04:10 PM JST

PDB ID : 7DSD  
EMDB ID : EMD-30831  
Title : CALHM1 close state with disordered CTH  
Authors : Ren, Y.; Yang, X.; Shen, Y.Q.  
Deposited on : 2020-12-30  
Resolution : 2.90 Å (reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

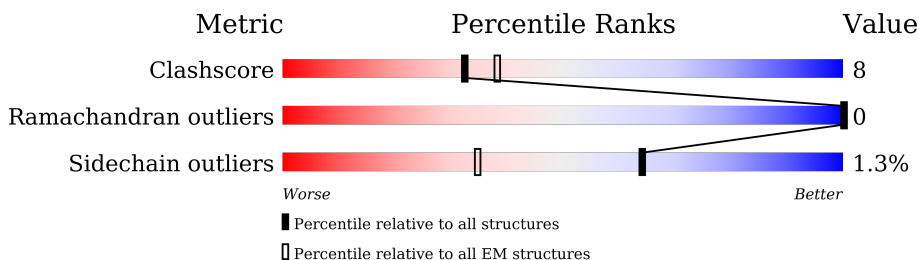
EMDB validation analysis : 0.0.1.dev113  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

# 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 2.90 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	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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  $\geq 3$ , 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  $\leq 5\%$ . 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	346	
1	B	346	
1	C	346	
1	D	346	
1	E	346	
1	F	346	
1	G	346	

## 2 Entry composition [i](#)

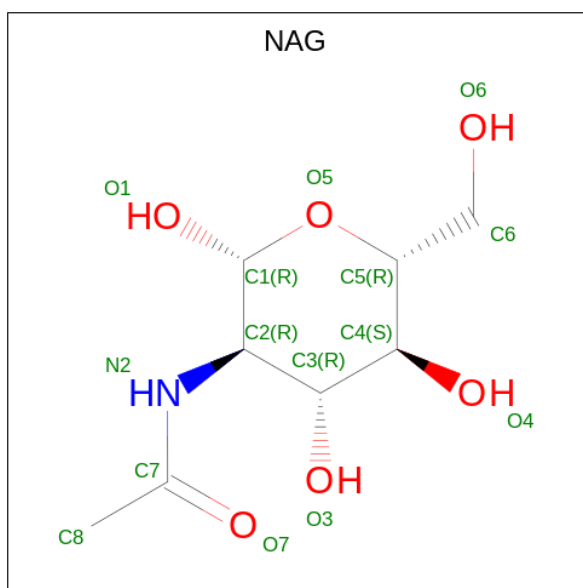
There are 2 unique types of molecules in this entry. The entry contains 10542 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Calcium homeostasis modulator 1.

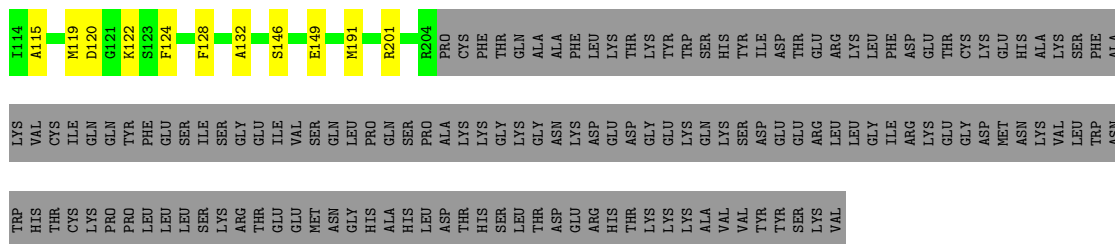
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	B	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	C	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	D	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	E	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	F	193	Total 1492	C 974	N 241	O 264	S 13	0	0
1	G	193	Total 1492	C 974	N 241	O 264	S 13	0	0

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



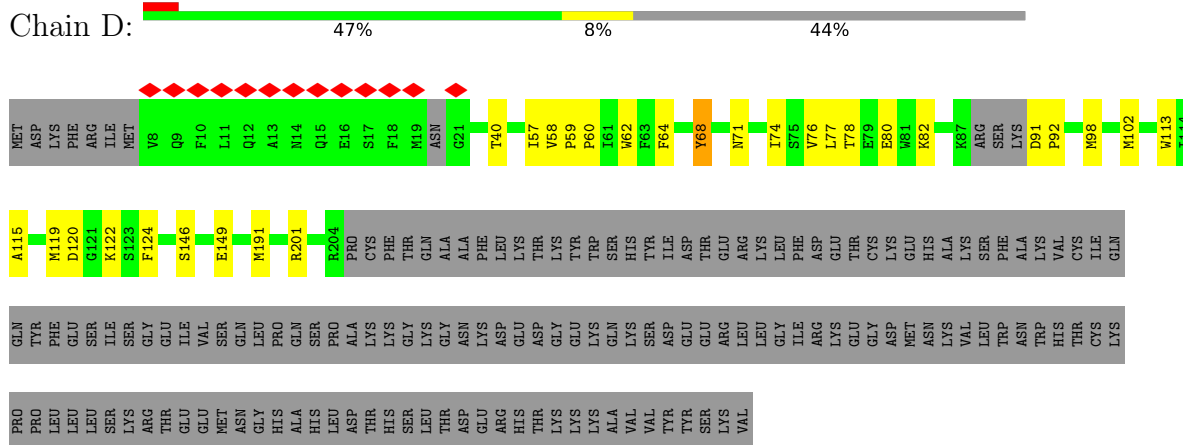
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
2	A	1	Total 14	8	1	5	0
2	B	1	Total 14	8	1	5	0
2	C	1	Total 14	8	1	5	0
2	D	1	Total 14	8	1	5	0
2	E	1	Total 14	8	1	5	0
2	F	1	Total 14	8	1	5	0
2	G	1	Total 14	8	1	5	0





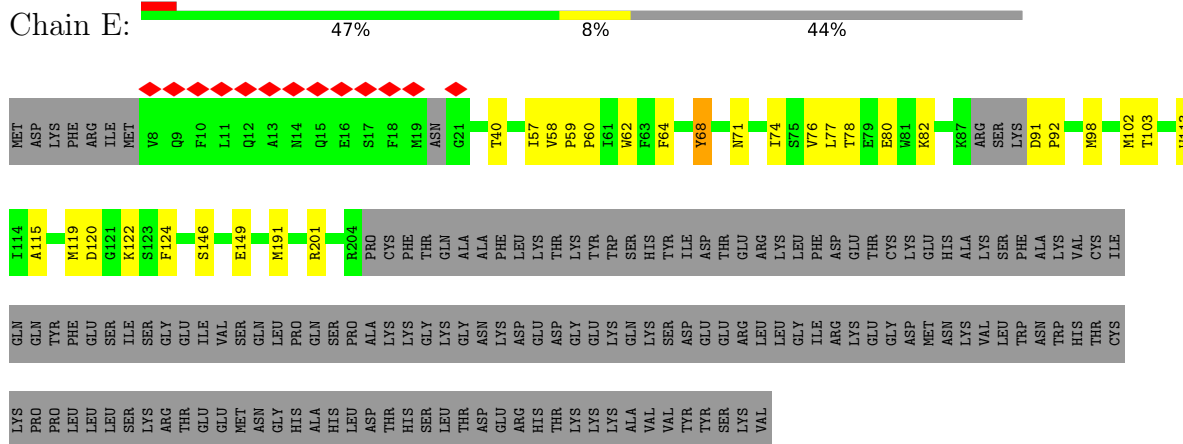
• Molecule 1: Calcium homeostasis modulator 1

Chain D:



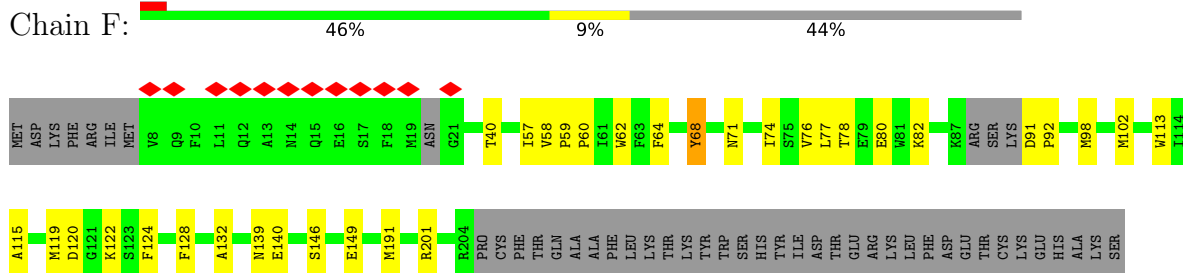
• Molecule 1: Calcium homeostasis modulator 1

Chain E:



• Molecule 1: Calcium homeostasis modulator 1

Chain F:



PHE  
ALA  
TRP  
ASN  
LYS  
VAL  
HIS  
THR  
CYS  
ILE  
GLN  
GLN  
TYR  
PRO  
LEU  
PHE  
LEU  
SER  
LEU  
SER  
ILE  
SER  
GLY  
THR  
GLU  
ILE  
VAL  
SER  
GLN  
LEU  
PRO  
GLY  
HIS  
ALA  
GLN  
SER  
PRO  
ALA  
PHE

TRP  
ASN  
TRP  
HIS  
PHE  
THR  
CYS  
LYS  
PRO  
PRO  
LEU  
LEU  
LEU  
SER  
SER  
LYS  
ARG  
THR  
GLU  
GLU  
VAL  
MET  
SER  
ASN  
GLY  
HIS  
ALA  
HIS  
LEU  
ASP  
THR  
HIS  
SER  
LEU  
LEU  
THR  
ASP  
GLU  
ARG  
HIS  
THR  
LYS  
LYS  
LYS  
ALA  
VAL  
VAL  
TYR  
TYR  
SER  
LYS  
VAL

● Molecule 1: Calcium homeostasis modulator 1



MET  
ASP  
LYS  
PHE  
ARG  
ILE  
MET  
V8  
Q9  
F10  
L11  
Q12  
A13  
N14  
Q15  
E16  
S17  
F18  
M19  
ASN  
G21  
T40  
I57  
V58  
P59  
P60  
I61  
W62  
F63  
F64  
Y68  
N71  
I74  
S75  
W76  
L77  
T78  
E79  
E80  
W81  
K82  
K87  
ARG  
SER  
LYS  
D91  
P92  
M98  
M102  
T103  
W113

I114  
A115  
M119  
D120  
G121  
K122  
S123  
F124  
N139  
E140  
S146  
E149  
M191  
T194  
R201  
R204  
PRO  
CYS  
PHE  
THR  
GLN  
GLY  
ALA  
ALA  
PHE  
LEU  
LYS  
THR  
LYS  
TYR  
TRP  
SER  
HIS  
TYR  
ILE  
ASP  
THR  
THR  
GLU  
ARG  
LEU  
LEU  
GLY  
PHE  
ASP  
GLU  
THR  
CYS  
SER  
LYS  
GLU  
HIS  
HIS  
ALA  
SER  
PHE

ALA  
LYS  
VAL  
CYS  
ILE  
GLN  
GLN  
TYR  
PHE  
LEU  
GLU  
SER  
LEU  
SER  
ILE  
SER  
LYS  
ARG  
THR  
GLU  
ILE  
GLU  
VAL  
SER  
MET  
SER  
GLN  
LEU  
PRO  
GLN  
ALA  
SER  
PRO  
ALA  
PHE  
LYS  
LYS  
PHE  
THR  
GLY  
LYS  
GLY  
GLY  
THR  
THR  
ASP  
GLU  
GLY  
LYS  
GLY  
LYS  
GLN  
VAL  
VAL  
TYR  
TYR  
SER  
SER  
LYS  
VAL  
TRP

ASN  
TRP  
HIS  
THR  
CYS  
LYS  
PRO  
PRO  
LEU  
LEU  
LEU  
SER  
SER  
LYS  
ARG  
THR  
GLU  
GLU  
VAL  
MET  
SER  
ASN  
GLY  
HIS  
HIS  
HIS  
LEU  
LEU  
ASP  
THR  
HIS  
LYS  
LYS  
LYS  
ALA  
VAL  
VAL  
TYR  
TYR  
SER  
SER  
LYS  
VAL

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	56801	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.390	Depositor
Minimum map value	-0.580	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.045	Depositor
Recommended contour level	0.154	Depositor
Map size ( $\text{\AA}$ )	263.64, 263.64, 263.64	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.014, 1.014, 1.014	Depositor



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0/1526	0.41	0/2072
1	B	0.28	0/1526	0.41	0/2072
1	C	0.28	0/1526	0.41	0/2072
1	D	0.28	0/1526	0.41	0/2072
1	E	0.29	0/1526	0.41	0/2072
1	F	0.28	0/1526	0.41	0/2072
1	G	0.28	0/1526	0.41	0/2072
All	All	0.28	0/10682	0.41	0/14504

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 [i](#)

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	1492	0	1467	28	0
1	B	1492	0	1467	26	0
1	C	1492	0	1467	27	0
1	D	1492	0	1467	25	0
1	E	1492	0	1467	26	0
1	F	1492	0	1467	27	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	G	1492	0	1467	29	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
2	E	14	0	13	0	0
2	F	14	0	13	0	0
2	G	14	0	13	0	0
All	All	10542	0	10360	173	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 8.

All (173) 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:91:ASP:HB3	1:C:92:PRO:CD	1.83	1.09
1:B:91:ASP:HB3	1:B:92:PRO:CD	1.83	1.09
1:D:91:ASP:HB3	1:D:92:PRO:CD	1.83	1.09
1:E:91:ASP:HB3	1:E:92:PRO:CD	1.82	1.08
1:A:91:ASP:HB3	1:A:92:PRO:CD	1.83	1.08
1:F:91:ASP:HB3	1:F:92:PRO:CD	1.83	1.07
1:G:91:ASP:HB3	1:G:92:PRO:CD	1.82	1.06
1:C:91:ASP:HB3	1:C:92:PRO:HD2	1.01	1.01
1:D:91:ASP:HB3	1:D:92:PRO:HD2	1.01	1.01
1:A:91:ASP:HB3	1:A:92:PRO:HD2	1.01	1.00
1:B:91:ASP:HB3	1:B:92:PRO:HD2	1.01	1.00
1:E:91:ASP:CB	1:E:92:PRO:HD2	1.91	1.00
1:D:91:ASP:CB	1:D:92:PRO:HD2	1.92	1.00
1:F:91:ASP:CB	1:F:92:PRO:HD2	1.92	1.00
1:C:91:ASP:CB	1:C:92:PRO:HD2	1.92	0.99
1:G:91:ASP:HB3	1:G:92:PRO:HD2	1.01	0.99
1:G:91:ASP:CB	1:G:92:PRO:HD2	1.91	0.99
1:E:91:ASP:HB3	1:E:92:PRO:HD2	1.01	0.99
1:B:91:ASP:CB	1:B:92:PRO:HD2	1.92	0.99
1:A:91:ASP:CB	1:A:92:PRO:HD2	1.92	0.98
1:F:91:ASP:HB3	1:F:92:PRO:HD2	1.01	0.98
1:A:74:ILE:HD11	1:G:201:ARG:HB3	1.67	0.76
1:A:201:ARG:HB3	1:B:74:ILE:HD11	1.68	0.76
1:D:40:THR:HG23	1:D:40:THR:O	1.86	0.75
1:F:201:ARG:HB3	1:G:74:ILE:HD11	1.68	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:40:THR:HG23	1:G:40:THR:O	1.86	0.75
1:B:201:ARG:HB3	1:C:74:ILE:HD11	1.68	0.74
1:F:40:THR:O	1:F:40:THR:HG23	1.86	0.74
1:E:40:THR:O	1:E:40:THR:HG23	1.86	0.74
1:C:40:THR:HG23	1:C:40:THR:O	1.86	0.74
1:D:201:ARG:HB3	1:E:74:ILE:HD11	1.68	0.74
1:E:201:ARG:HB3	1:F:74:ILE:HD11	1.69	0.73
1:A:40:THR:O	1:A:40:THR:HG23	1.86	0.73
1:B:40:THR:O	1:B:40:THR:HG23	1.86	0.73
1:C:201:ARG:HB3	1:D:74:ILE:HD11	1.69	0.72
1:G:64:PHE:CZ	1:G:68:TYR:HE1	2.13	0.67
1:B:64:PHE:CZ	1:B:68:TYR:HE1	2.13	0.67
1:C:64:PHE:CZ	1:C:68:TYR:HE1	2.13	0.67
1:A:64:PHE:CZ	1:A:68:TYR:HE1	2.13	0.66
1:F:64:PHE:CZ	1:F:68:TYR:HE1	2.13	0.66
1:D:64:PHE:CZ	1:D:68:TYR:HE1	2.13	0.66
1:E:64:PHE:CZ	1:E:68:TYR:HE1	2.13	0.66
1:A:71:ASN:HD22	1:A:102:MET:HG3	1.63	0.64
1:E:71:ASN:HD22	1:E:102:MET:HG3	1.63	0.63
1:F:71:ASN:HD22	1:F:102:MET:HG3	1.63	0.63
1:C:71:ASN:HD22	1:C:102:MET:HG3	1.63	0.63
1:G:71:ASN:HD22	1:G:102:MET:HG3	1.63	0.63
1:B:71:ASN:HD22	1:B:102:MET:HG3	1.64	0.62
1:D:71:ASN:HD22	1:D:102:MET:HG3	1.64	0.62
1:G:64:PHE:CE1	1:G:68:TYR:HE1	2.21	0.59
1:A:64:PHE:CE1	1:A:68:TYR:HE1	2.21	0.58
1:E:64:PHE:CE1	1:E:68:TYR:HE1	2.21	0.58
1:C:64:PHE:CE1	1:C:68:TYR:HE1	2.21	0.58
1:B:191:MET:SD	1:C:62:TRP:HB2	2.44	0.58
1:A:191:MET:SD	1:B:62:TRP:HB2	2.44	0.58
1:F:64:PHE:CE1	1:F:68:TYR:HE1	2.21	0.58
1:B:64:PHE:CE1	1:B:68:TYR:HE1	2.21	0.58
1:D:64:PHE:CE1	1:D:68:TYR:HE1	2.21	0.58
1:D:191:MET:SD	1:E:62:TRP:HB2	2.44	0.58
1:C:191:MET:SD	1:D:62:TRP:HB2	2.44	0.57
1:A:62:TRP:HB2	1:G:191:MET:SD	2.44	0.56
1:F:191:MET:SD	1:G:62:TRP:HB2	2.44	0.56
1:E:191:MET:SD	1:F:62:TRP:HB2	2.45	0.56
1:D:64:PHE:CE1	1:D:68:TYR:CE1	2.94	0.56
1:B:91:ASP:CB	1:B:92:PRO:CD	2.62	0.56
1:A:64:PHE:CE1	1:A:68:TYR:CE1	2.94	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:64:PHE:CE1	1:C:68:TYR:CE1	2.94	0.56
1:E:68:TYR:HH	1:E:103:THR:HG1	1.52	0.56
1:G:64:PHE:CE1	1:G:68:TYR:CE1	2.94	0.56
1:F:64:PHE:CE1	1:F:68:TYR:CE1	2.94	0.55
1:E:64:PHE:CE1	1:E:68:TYR:CE1	2.94	0.55
1:B:64:PHE:CE1	1:B:68:TYR:CE1	2.94	0.55
1:G:68:TYR:HH	1:G:103:THR:HG1	1.52	0.55
1:E:120:ASP:OD2	1:E:122:LYS:NZ	2.36	0.55
1:F:120:ASP:OD2	1:F:122:LYS:NZ	2.36	0.54
1:A:40:THR:O	1:A:40:THR:CG2	2.55	0.54
1:D:120:ASP:OD2	1:D:122:LYS:NZ	2.36	0.54
1:B:120:ASP:OD2	1:B:122:LYS:NZ	2.36	0.54
1:A:120:ASP:OD2	1:A:122:LYS:NZ	2.36	0.53
1:F:40:THR:O	1:F:40:THR:CG2	2.56	0.53
1:G:120:ASP:OD2	1:G:122:LYS:NZ	2.36	0.53
1:D:40:THR:O	1:D:40:THR:CG2	2.56	0.53
1:C:40:THR:O	1:C:40:THR:CG2	2.56	0.53
1:A:91:ASP:CB	1:A:92:PRO:CD	2.62	0.52
1:E:40:THR:O	1:E:40:THR:CG2	2.55	0.51
1:D:91:ASP:CB	1:D:92:PRO:CD	2.62	0.51
1:G:40:THR:O	1:G:40:THR:CG2	2.55	0.51
1:C:91:ASP:CB	1:C:92:PRO:CD	2.62	0.51
1:C:120:ASP:OD2	1:C:122:LYS:NZ	2.36	0.51
1:B:40:THR:O	1:B:40:THR:CG2	2.55	0.50
1:E:91:ASP:CB	1:E:92:PRO:CD	2.62	0.49
1:A:60:PRO:HD3	1:A:113:TRP:CD1	2.48	0.49
1:B:60:PRO:HD3	1:B:113:TRP:CD1	2.48	0.49
1:F:91:ASP:CB	1:F:92:PRO:CD	2.62	0.49
1:A:146:SER:HB2	1:A:149:GLU:HG2	1.96	0.48
1:B:146:SER:HB2	1:B:149:GLU:HG2	1.96	0.48
1:G:60:PRO:HD3	1:G:113:TRP:CD1	2.48	0.48
1:G:91:ASP:CB	1:G:92:PRO:CD	2.62	0.48
1:F:60:PRO:HD3	1:F:113:TRP:CD1	2.48	0.48
1:G:146:SER:HB2	1:G:149:GLU:HG2	1.96	0.48
1:C:60:PRO:HD3	1:C:113:TRP:CD1	2.48	0.48
1:C:146:SER:HB2	1:C:149:GLU:HG2	1.96	0.48
1:D:60:PRO:HD3	1:D:113:TRP:CD1	2.48	0.48
1:D:146:SER:HB2	1:D:149:GLU:HG2	1.96	0.48
1:E:146:SER:HB2	1:E:149:GLU:HG2	1.96	0.47
1:E:60:PRO:HD3	1:E:113:TRP:CD1	2.48	0.47
1:F:146:SER:HB2	1:F:149:GLU:HG2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:115:ALA:O	1:D:119:MET:HG2	2.15	0.47
1:C:115:ALA:O	1:C:119:MET:HG2	2.15	0.46
1:A:115:ALA:O	1:A:119:MET:HG2	2.15	0.46
1:E:115:ALA:O	1:E:119:MET:HG2	2.15	0.46
1:G:115:ALA:O	1:G:119:MET:HG2	2.15	0.46
1:E:64:PHE:CZ	1:E:68:TYR:CE1	3.00	0.45
1:F:115:ALA:O	1:F:119:MET:HG2	2.15	0.45
1:B:115:ALA:O	1:B:119:MET:HG2	2.15	0.45
1:A:64:PHE:CZ	1:A:68:TYR:CE1	3.00	0.45
1:A:58:VAL:HB	1:A:59:PRO:HD3	1.99	0.45
1:B:64:PHE:CZ	1:B:68:TYR:CE1	3.00	0.45
1:G:71:ASN:ND2	1:G:102:MET:HG3	2.31	0.45
1:G:58:VAL:HB	1:G:59:PRO:HD3	1.99	0.44
1:F:58:VAL:HB	1:F:59:PRO:HD3	1.99	0.44
1:B:58:VAL:HB	1:B:59:PRO:HD3	1.99	0.44
1:E:58:VAL:HB	1:E:59:PRO:HD3	1.99	0.44
1:F:76:VAL:O	1:F:80:GLU:HG2	2.18	0.44
1:B:76:VAL:O	1:B:80:GLU:HG2	2.18	0.44
1:E:76:VAL:O	1:E:80:GLU:HG2	2.18	0.43
1:E:71:ASN:ND2	1:E:102:MET:HG3	2.31	0.43
1:F:71:ASN:ND2	1:F:102:MET:HG3	2.31	0.43
1:D:58:VAL:HB	1:D:59:PRO:HD3	1.99	0.43
1:G:76:VAL:O	1:G:80:GLU:HG2	2.18	0.43
1:A:76:VAL:O	1:A:80:GLU:HG2	2.18	0.43
1:D:76:VAL:O	1:D:80:GLU:HG2	2.18	0.43
1:E:77:LEU:HD21	1:E:98:MET:HG3	2.01	0.43
1:F:77:LEU:HD21	1:F:98:MET:HG3	2.01	0.43
1:G:64:PHE:CZ	1:G:68:TYR:CE1	3.00	0.43
1:A:71:ASN:ND2	1:A:102:MET:HG3	2.31	0.43
1:C:58:VAL:HB	1:C:59:PRO:HD3	1.99	0.43
1:C:64:PHE:CZ	1:C:68:TYR:CE1	3.00	0.43
1:C:76:VAL:O	1:C:80:GLU:HG2	2.18	0.43
1:D:77:LEU:HD21	1:D:98:MET:HG3	2.01	0.43
1:G:77:LEU:HD21	1:G:98:MET:HG3	2.01	0.43
1:C:77:LEU:HD21	1:C:98:MET:HG3	2.01	0.43
1:B:57:ILE:O	1:B:60:PRO:HG2	2.19	0.42
1:A:57:ILE:O	1:A:60:PRO:HG2	2.20	0.42
1:B:77:LEU:HD21	1:B:98:MET:HG3	2.01	0.42
1:A:77:LEU:HD21	1:A:98:MET:HG3	2.01	0.42
1:E:57:ILE:O	1:E:60:PRO:HG2	2.19	0.42
1:G:57:ILE:O	1:G:60:PRO:HG2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:57:ILE:O	1:F:60:PRO:HG2	2.19	0.42
1:A:62:TRP:NE1	1:G:194:THR:OG1	2.50	0.42
1:D:57:ILE:O	1:D:60:PRO:HG2	2.20	0.42
1:B:71:ASN:ND2	1:B:102:MET:HG3	2.31	0.42
1:C:78:THR:O	1:C:82:LYS:HB2	2.20	0.42
1:D:71:ASN:ND2	1:D:102:MET:HG3	2.31	0.42
1:B:78:THR:O	1:B:82:LYS:HB2	2.20	0.41
1:D:78:THR:O	1:D:82:LYS:HB2	2.20	0.41
1:E:78:THR:O	1:E:82:LYS:HB2	2.20	0.41
1:F:78:THR:O	1:F:82:LYS:HB2	2.20	0.41
1:C:71:ASN:ND2	1:C:102:MET:HG3	2.31	0.41
1:G:57:ILE:HD13	1:G:57:ILE:HA	1.94	0.41
1:C:57:ILE:O	1:C:60:PRO:HG2	2.19	0.41
1:G:139:ASN:OD1	1:G:140:GLU:N	2.54	0.41
1:G:78:THR:O	1:G:82:LYS:HB2	2.20	0.41
1:A:78:THR:O	1:A:82:LYS:HB2	2.20	0.41
1:F:139:ASN:OD1	1:F:140:GLU:N	2.54	0.41
1:C:65:LEU:HD23	1:C:65:LEU:HA	1.95	0.40
1:C:128:PHE:O	1:C:132:ALA:HB2	2.22	0.40
1:A:139:ASN:OD1	1:A:140:GLU:N	2.54	0.40
1:F:128:PHE:O	1:F:132:ALA:HB2	2.22	0.40
1:A:128:PHE:O	1:A:132:ALA:HB2	2.22	0.40
1:B:128:PHE:O	1:B:132:ALA:HB2	2.22	0.40
1:D:64:PHE:CZ	1:D:68:TYR:CE1	3.00	0.40
1:F:64:PHE:CZ	1:F:68:TYR:CE1	3.00	0.40

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	187/346 (54%)	182 (97%)	5 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
1	C	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
1	D	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
1	E	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
1	F	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
1	G	187/346 (54%)	182 (97%)	5 (3%)	0	100	100
All	All	1309/2422 (54%)	1274 (97%)	35 (3%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	B	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	C	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	D	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	E	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	F	155/306 (51%)	153 (99%)	2 (1%)	65	88
1	G	155/306 (51%)	153 (99%)	2 (1%)	65	88
All	All	1085/2142 (51%)	1071 (99%)	14 (1%)	64	88

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	68	TYR
1	A	124	PHE
1	B	68	TYR
1	B	124	PHE
1	C	68	TYR

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Mol	Chain	Res	Type
1	C	124	PHE
1	D	68	TYR
1	D	124	PHE
1	E	68	TYR
1	E	124	PHE
1	F	68	TYR
1	F	124	PHE
1	G	68	TYR
1	G	124	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	ASN
1	A	154	GLN
1	B	71	ASN
1	B	154	GLN
1	C	71	ASN
1	C	154	GLN
1	D	71	ASN
1	D	154	GLN
1	E	71	ASN
1	E	154	GLN
1	F	71	ASN
1	F	154	GLN
1	G	71	ASN
1	G	154	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.



## 5.6 Ligand geometry

7 ligands are modelled in this entry.

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	C	1001	1	14,14,15	0.28	0	17,19,21	0.50	0
2	NAG	F	1001	1	14,14,15	0.29	0	17,19,21	0.51	0
2	NAG	B	1001	1	14,14,15	0.28	0	17,19,21	0.51	0
2	NAG	D	1001	1	14,14,15	0.27	0	17,19,21	0.52	0
2	NAG	E	1001	1	14,14,15	0.28	0	17,19,21	0.51	0
2	NAG	A	1001	1	14,14,15	0.27	0	17,19,21	0.50	0
2	NAG	G	1001	1	14,14,15	0.27	0	17,19,21	0.50	0

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	C	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	F	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	D	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	E	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	G	1001	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

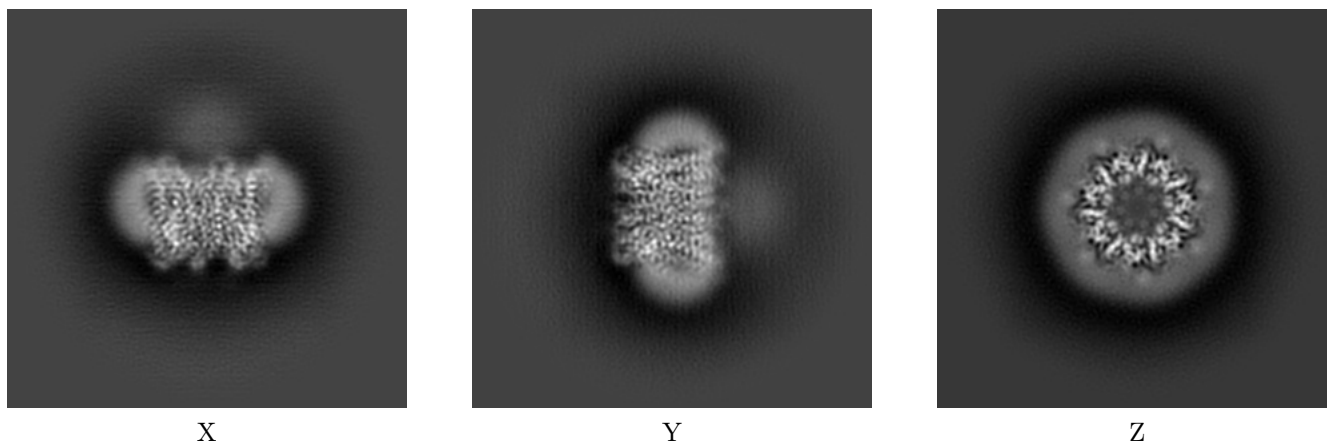
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30831. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

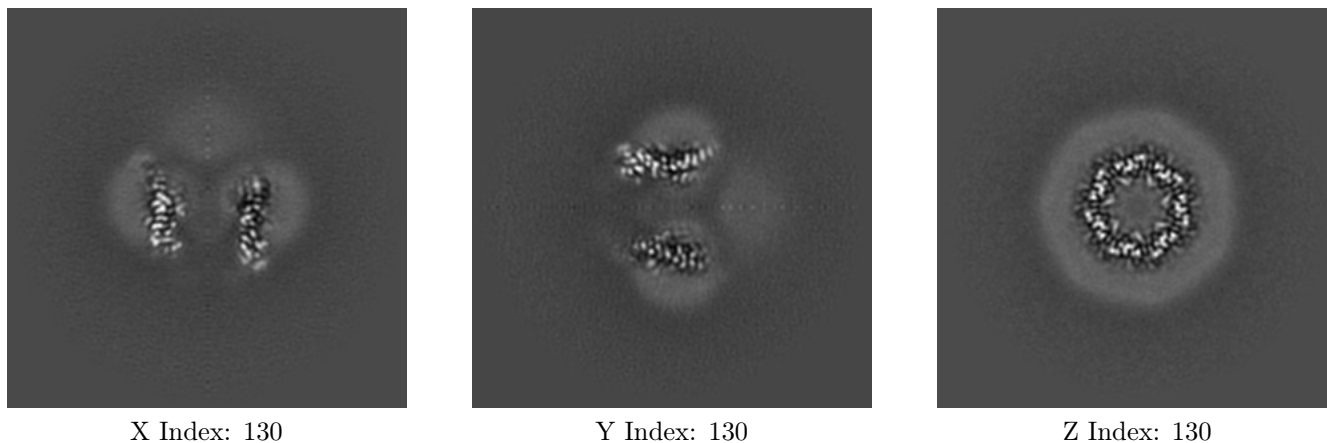
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

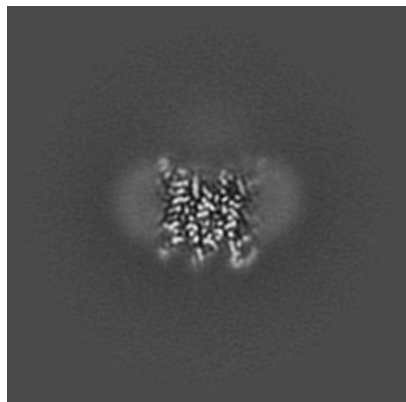
#### 6.2.1 Primary map



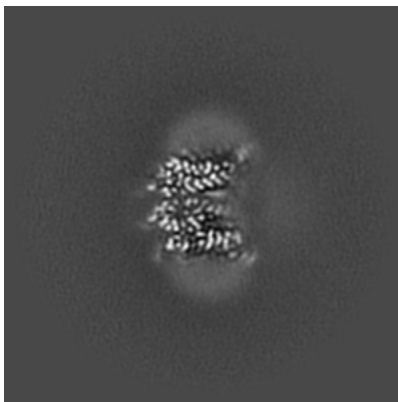
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [\(i\)](#)

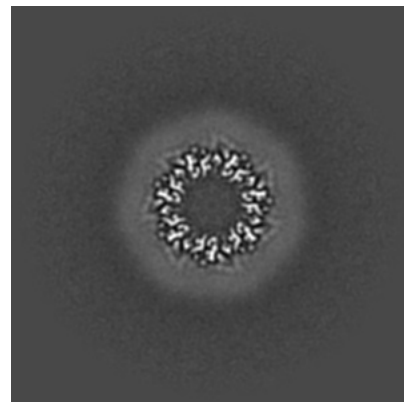
### 6.3.1 Primary map



X Index: 156



Y Index: 109

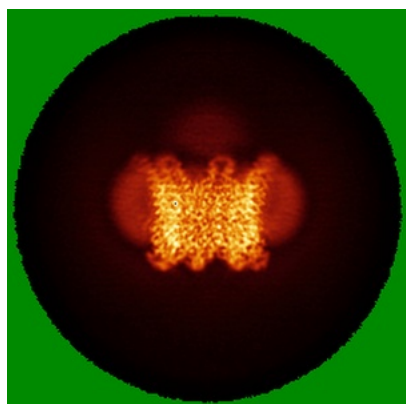


Z Index: 118

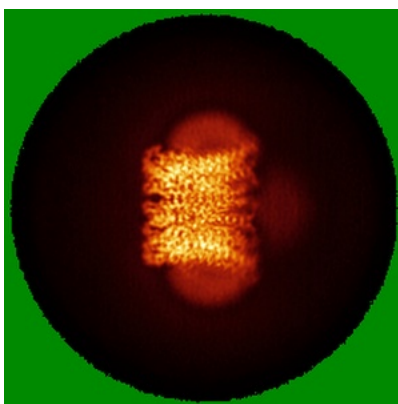
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [\(i\)](#)

### 6.4.1 Primary map



X



Y

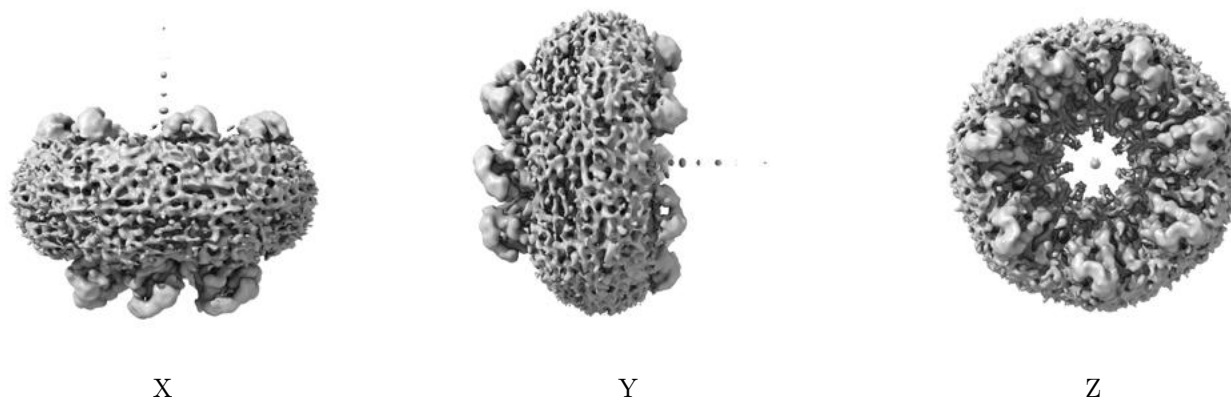


Z

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.

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.154. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

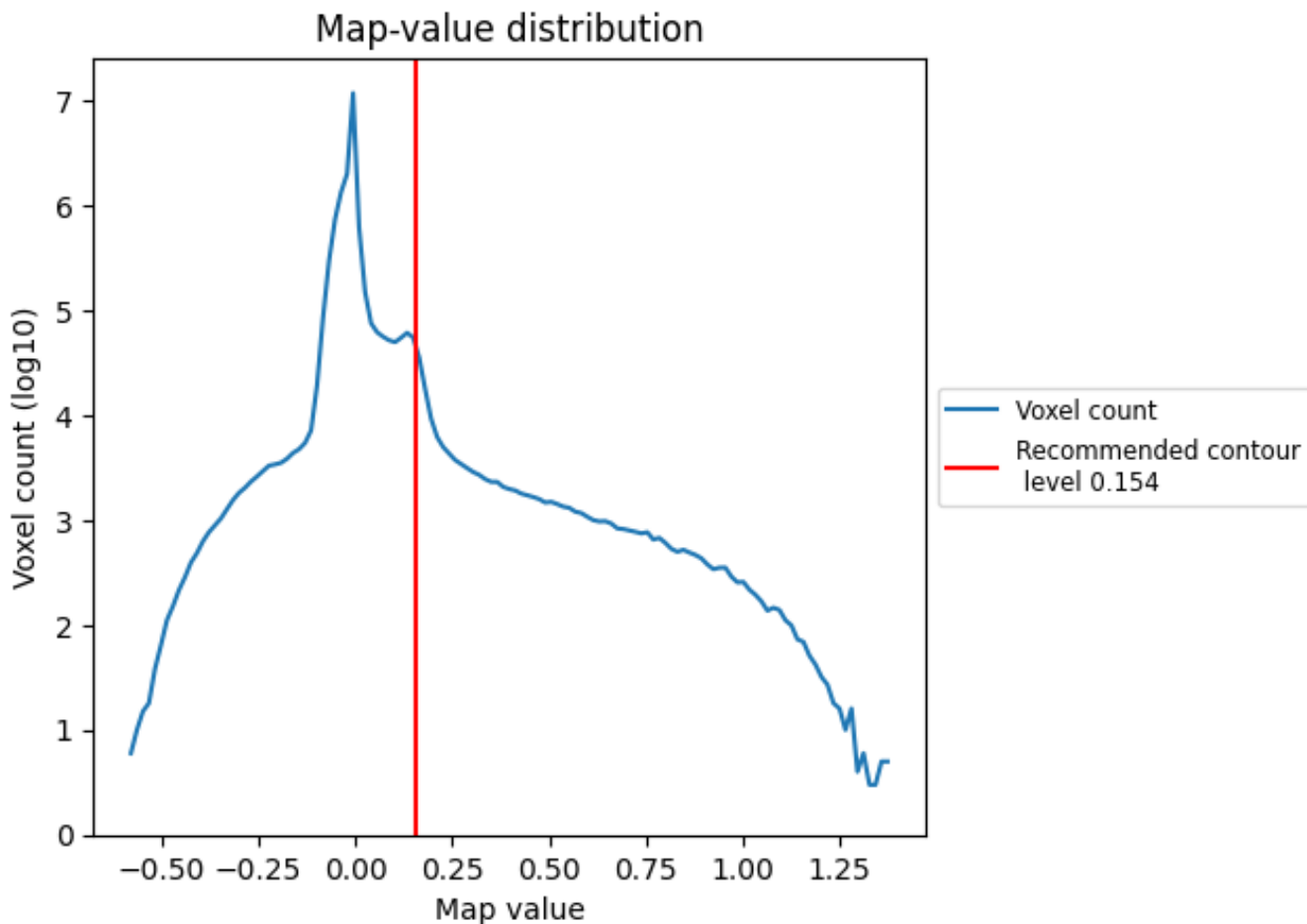
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

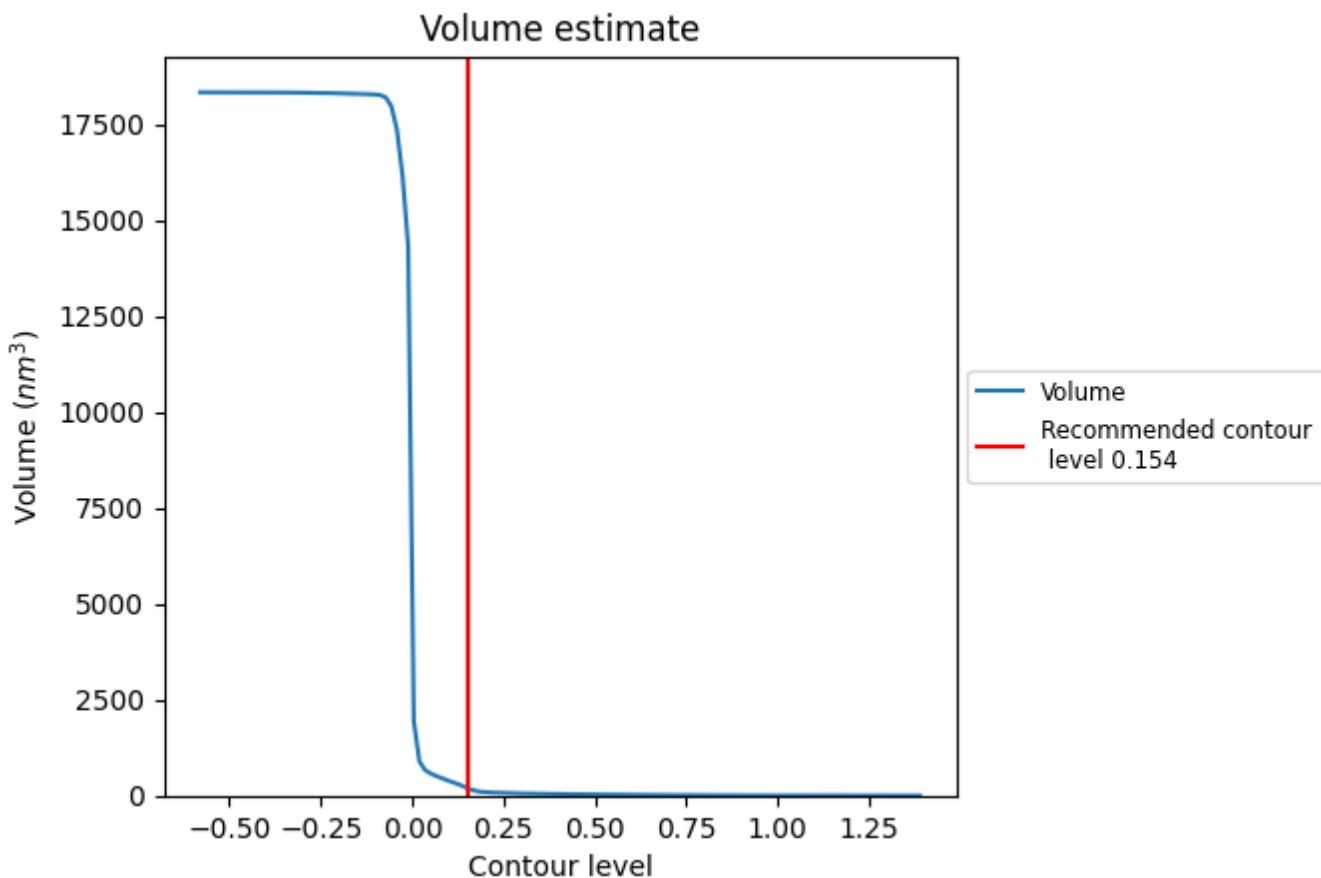
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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.

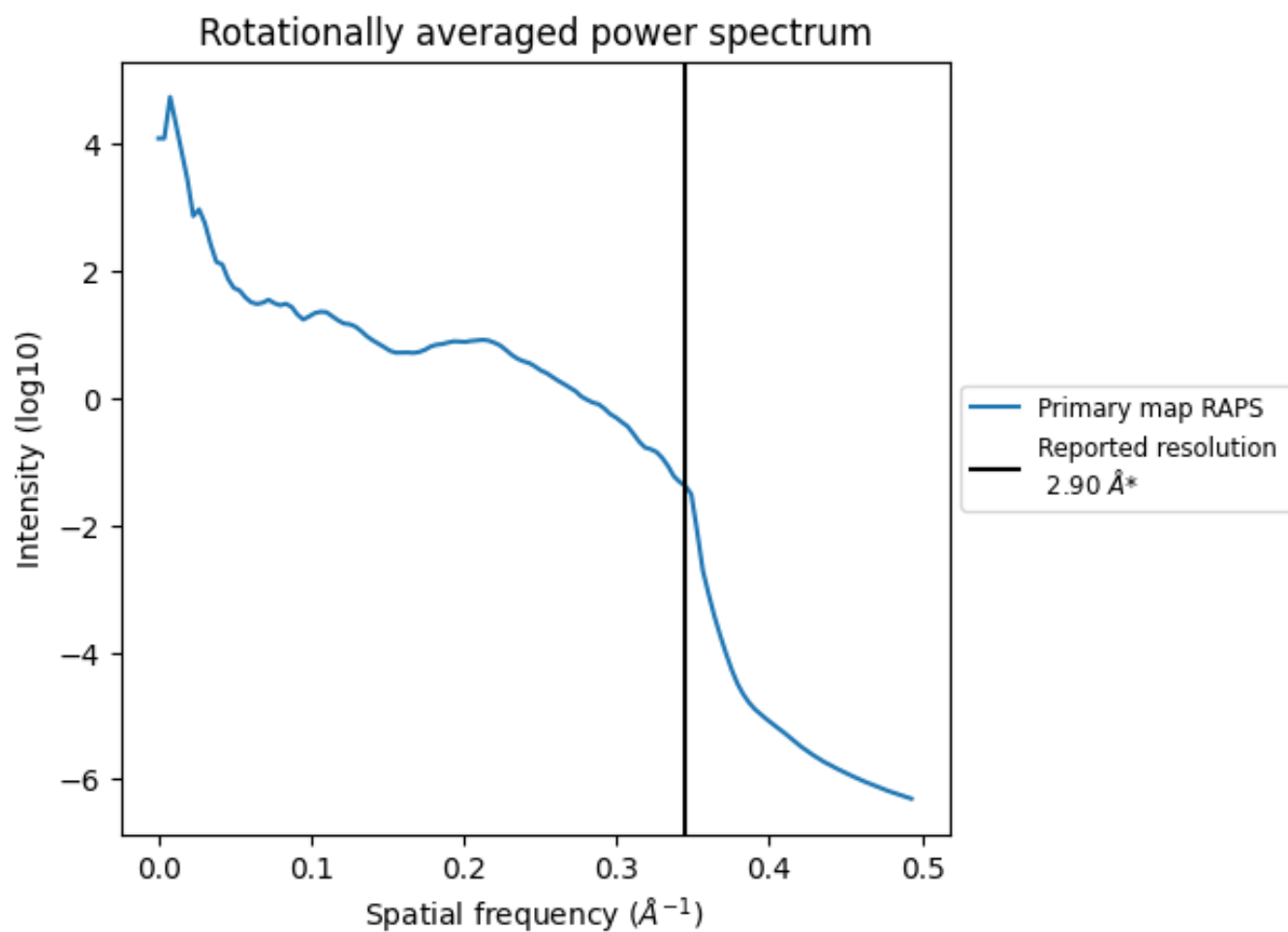
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 185 nm<sup>3</sup>; this corresponds to an approximate mass of 167 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 [i](#)



\*Reported resolution corresponds to spatial frequency of  $0.345 \text{\AA}^{-1}$



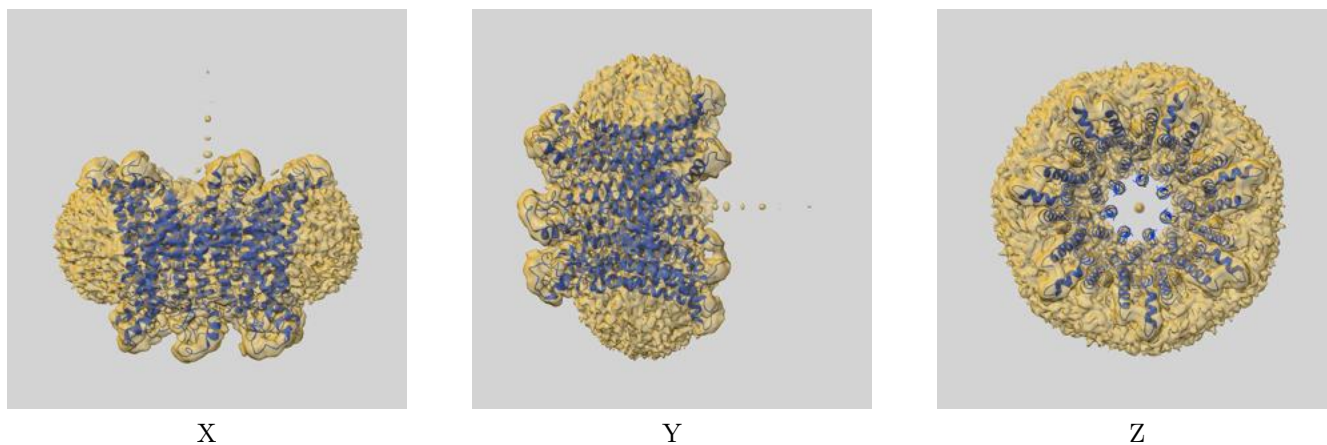
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

## 9 Map-model fit [i](#)

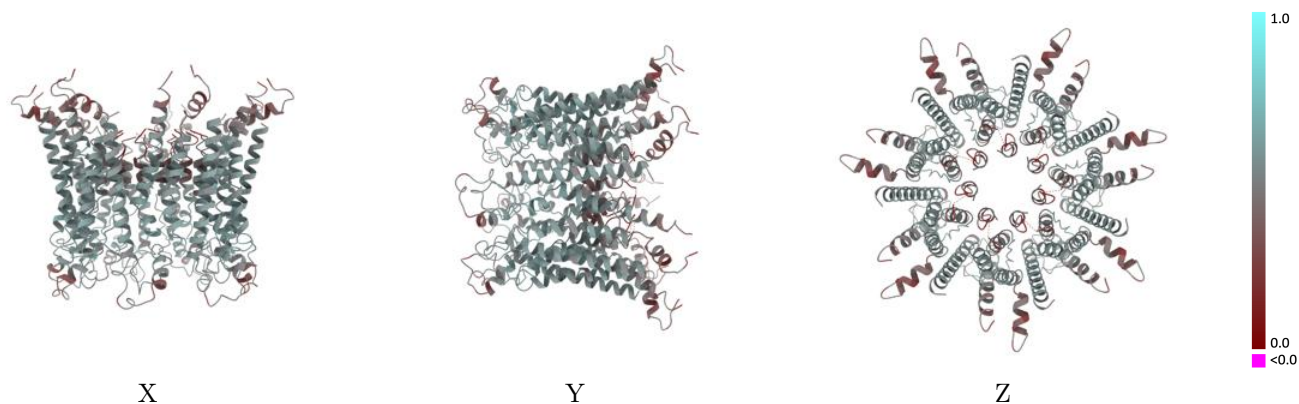
This section contains information regarding the fit between EMDB map EMD-30831 and PDB model 7DSD. Per-residue inclusion information can be found in section 3 on page 5.

### 9.1 Map-model overlay [i](#)



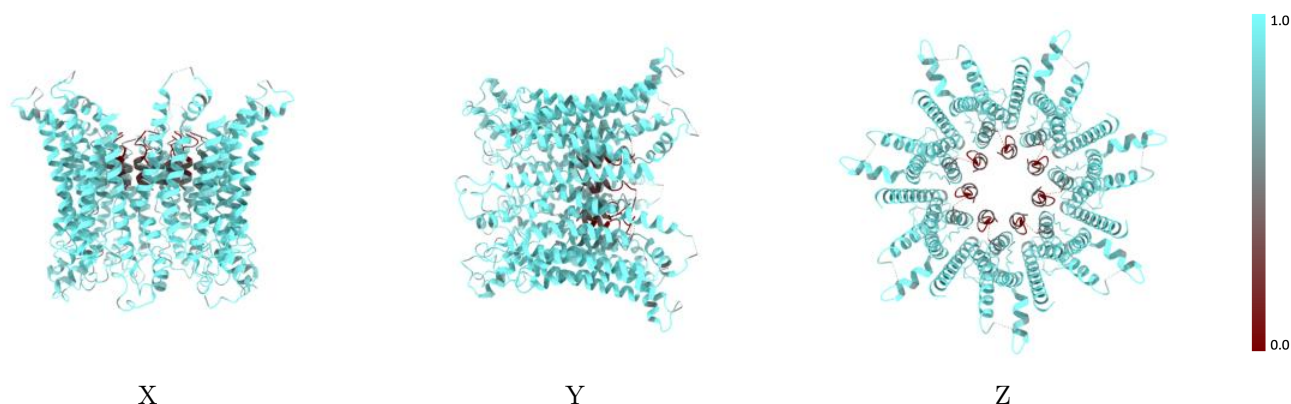
The images above show the 3D surface view of the map at the recommended contour level 0.154 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [\(i\)](#)



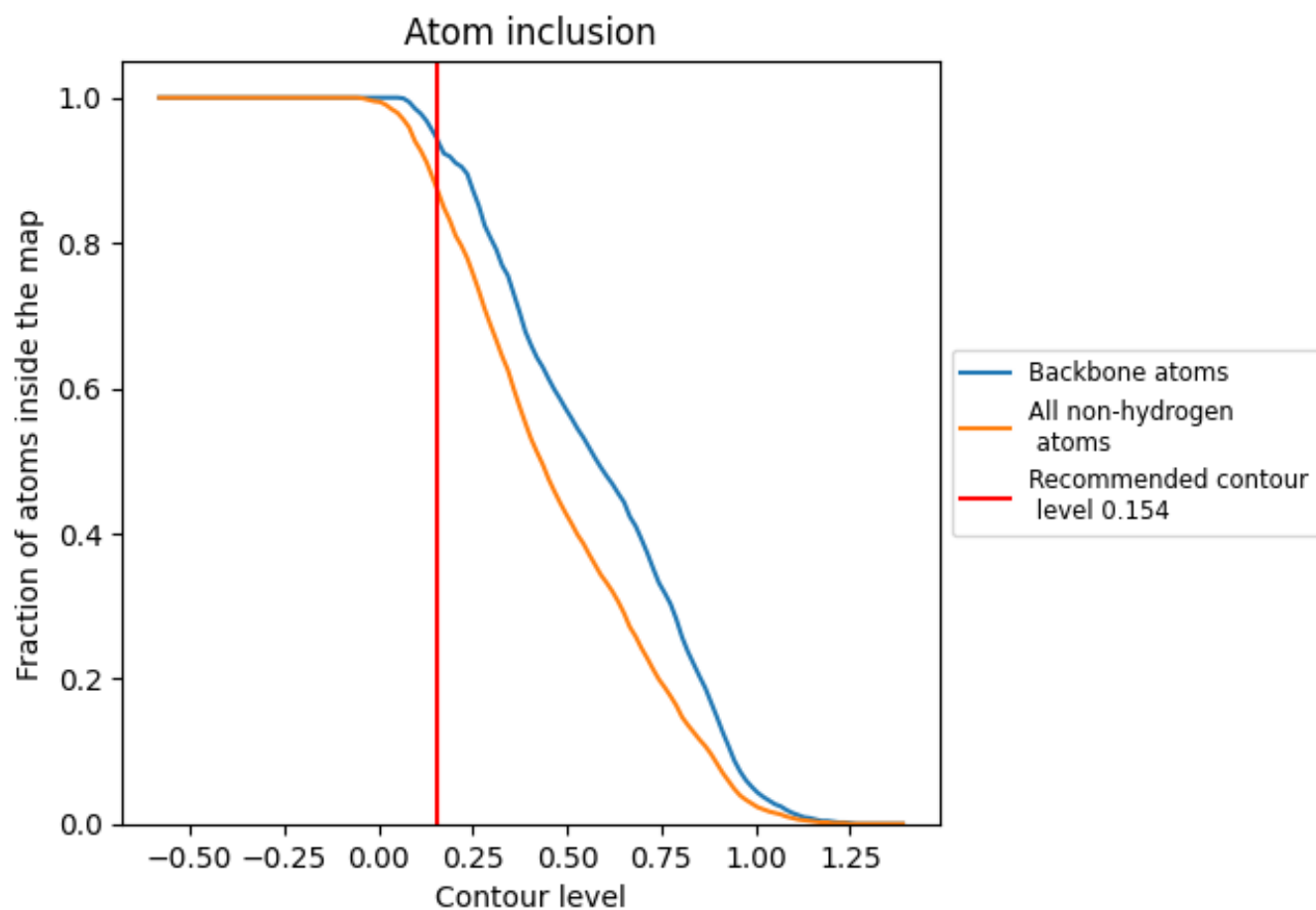
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [\(i\)](#)



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 (0.154).

















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 88% 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 (0.154) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8760	 0.4920
A	 0.8750	 0.4920
B	 0.8760	 0.4920
C	 0.8760	 0.4910
D	 0.8750	 0.4920
E	 0.8760	 0.4920
F	 0.8750	 0.4920
G	 0.8780	 0.4930

