



Full wwPDB EM Validation Report ⓘ

Oct 14, 2024 – 04:56 PM JST

PDB ID : 7FGF
EMDB ID : EMD-31579
Title : Cryo-EM structure of CCHFV envelope protein Gc in postfusion conformation
Authors : Li, N.; Rao, G.; Fu, Y.; Cao, S.
Deposited on : 2021-07-26
Resolution : 2.80 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

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>.

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

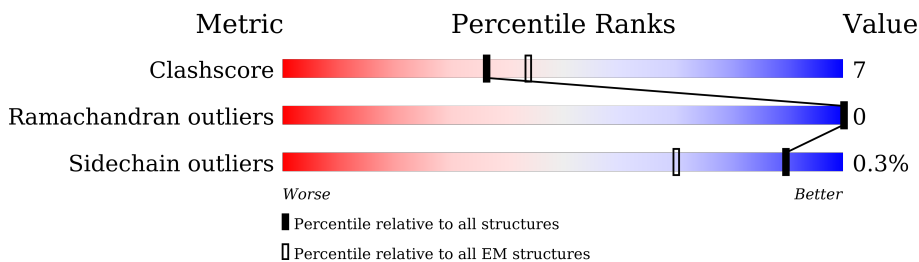
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 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 2.80 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 ≥ 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	591	 59% 14% 27%
1	B	591	 59% 14% 27%
1	C	591	 59% 14% 27%

2 Entry composition i

There is only 1 type of molecule in this entry. The entry contains 10143 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 Glycoprotein C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	432	3381	2125	571	651	34	0	0
1	B	432	3381	2125	571	651	34	0	0
1	C	432	3381	2125	571	651	34	0	0

There are 210 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1570	SER	-	expression tag	UNP Q8JSZ3
A	1571	ARG	-	expression tag	UNP Q8JSZ3
A	1572	GLY	-	expression tag	UNP Q8JSZ3
A	1573	SER	-	expression tag	UNP Q8JSZ3
A	1574	GLY	-	expression tag	UNP Q8JSZ3
A	1575	GLY	-	expression tag	UNP Q8JSZ3
A	1576	MET	-	expression tag	UNP Q8JSZ3
A	1577	LYS	-	expression tag	UNP Q8JSZ3
A	1578	GLN	-	expression tag	UNP Q8JSZ3
A	1579	ILE	-	expression tag	UNP Q8JSZ3
A	1580	GLU	-	expression tag	UNP Q8JSZ3
A	1581	ASP	-	expression tag	UNP Q8JSZ3
A	1582	LYS	-	expression tag	UNP Q8JSZ3
A	1583	ILE	-	expression tag	UNP Q8JSZ3
A	1584	GLU	-	expression tag	UNP Q8JSZ3
A	1585	GLU	-	expression tag	UNP Q8JSZ3
A	1586	ILE	-	expression tag	UNP Q8JSZ3
A	1587	LEU	-	expression tag	UNP Q8JSZ3
A	1588	SER	-	expression tag	UNP Q8JSZ3
A	1589	LYS	-	expression tag	UNP Q8JSZ3
A	1590	ILE	-	expression tag	UNP Q8JSZ3
A	1591	TYR	-	expression tag	UNP Q8JSZ3
A	1592	HIS	-	expression tag	UNP Q8JSZ3
A	1593	ILE	-	expression tag	UNP Q8JSZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1594	GLU	-	expression tag	UNP Q8JSZ3
A	1595	ASN	-	expression tag	UNP Q8JSZ3
A	1596	GLU	-	expression tag	UNP Q8JSZ3
A	1597	ILE	-	expression tag	UNP Q8JSZ3
A	1598	ALA	-	expression tag	UNP Q8JSZ3
A	1599	ARG	-	expression tag	UNP Q8JSZ3
A	1600	ILE	-	expression tag	UNP Q8JSZ3
A	1601	LYS	-	expression tag	UNP Q8JSZ3
A	1602	LYS	-	expression tag	UNP Q8JSZ3
A	1603	LEU	-	expression tag	UNP Q8JSZ3
A	1604	ILE	-	expression tag	UNP Q8JSZ3
A	1605	GLY	-	expression tag	UNP Q8JSZ3
A	1606	GLU	-	expression tag	UNP Q8JSZ3
A	1607	GLY	-	expression tag	UNP Q8JSZ3
A	1608	SER	-	expression tag	UNP Q8JSZ3
A	1609	GLY	-	expression tag	UNP Q8JSZ3
A	1610	GLY	-	expression tag	UNP Q8JSZ3
A	1611	SER	-	expression tag	UNP Q8JSZ3
A	1612	ARG	-	expression tag	UNP Q8JSZ3
A	1613	GLY	-	expression tag	UNP Q8JSZ3
A	1614	PRO	-	expression tag	UNP Q8JSZ3
A	1615	PHE	-	expression tag	UNP Q8JSZ3
A	1616	GLU	-	expression tag	UNP Q8JSZ3
A	1617	GLY	-	expression tag	UNP Q8JSZ3
A	1618	LYS	-	expression tag	UNP Q8JSZ3
A	1619	PRO	-	expression tag	UNP Q8JSZ3
A	1620	ILE	-	expression tag	UNP Q8JSZ3
A	1621	PRO	-	expression tag	UNP Q8JSZ3
A	1622	ASN	-	expression tag	UNP Q8JSZ3
A	1623	PRO	-	expression tag	UNP Q8JSZ3
A	1624	LEU	-	expression tag	UNP Q8JSZ3
A	1625	LEU	-	expression tag	UNP Q8JSZ3
A	1626	GLY	-	expression tag	UNP Q8JSZ3
A	1627	LEU	-	expression tag	UNP Q8JSZ3
A	1628	ASP	-	expression tag	UNP Q8JSZ3
A	1629	SER	-	expression tag	UNP Q8JSZ3
A	1630	THR	-	expression tag	UNP Q8JSZ3
A	1631	ARG	-	expression tag	UNP Q8JSZ3
A	1632	THR	-	expression tag	UNP Q8JSZ3
A	1633	GLY	-	expression tag	UNP Q8JSZ3
A	1634	HIS	-	expression tag	UNP Q8JSZ3
A	1635	HIS	-	expression tag	UNP Q8JSZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1636	HIS	-	expression tag	UNP Q8JSZ3
A	1637	HIS	-	expression tag	UNP Q8JSZ3
A	1638	HIS	-	expression tag	UNP Q8JSZ3
A	1639	HIS	-	expression tag	UNP Q8JSZ3
B	1570	SER	-	expression tag	UNP Q8JSZ3
B	1571	ARG	-	expression tag	UNP Q8JSZ3
B	1572	GLY	-	expression tag	UNP Q8JSZ3
B	1573	SER	-	expression tag	UNP Q8JSZ3
B	1574	GLY	-	expression tag	UNP Q8JSZ3
B	1575	GLY	-	expression tag	UNP Q8JSZ3
B	1576	MET	-	expression tag	UNP Q8JSZ3
B	1577	LYS	-	expression tag	UNP Q8JSZ3
B	1578	GLN	-	expression tag	UNP Q8JSZ3
B	1579	ILE	-	expression tag	UNP Q8JSZ3
B	1580	GLU	-	expression tag	UNP Q8JSZ3
B	1581	ASP	-	expression tag	UNP Q8JSZ3
B	1582	LYS	-	expression tag	UNP Q8JSZ3
B	1583	ILE	-	expression tag	UNP Q8JSZ3
B	1584	GLU	-	expression tag	UNP Q8JSZ3
B	1585	GLU	-	expression tag	UNP Q8JSZ3
B	1586	ILE	-	expression tag	UNP Q8JSZ3
B	1587	LEU	-	expression tag	UNP Q8JSZ3
B	1588	SER	-	expression tag	UNP Q8JSZ3
B	1589	LYS	-	expression tag	UNP Q8JSZ3
B	1590	ILE	-	expression tag	UNP Q8JSZ3
B	1591	TYR	-	expression tag	UNP Q8JSZ3
B	1592	HIS	-	expression tag	UNP Q8JSZ3
B	1593	ILE	-	expression tag	UNP Q8JSZ3
B	1594	GLU	-	expression tag	UNP Q8JSZ3
B	1595	ASN	-	expression tag	UNP Q8JSZ3
B	1596	GLU	-	expression tag	UNP Q8JSZ3
B	1597	ILE	-	expression tag	UNP Q8JSZ3
B	1598	ALA	-	expression tag	UNP Q8JSZ3
B	1599	ARG	-	expression tag	UNP Q8JSZ3
B	1600	ILE	-	expression tag	UNP Q8JSZ3
B	1601	LYS	-	expression tag	UNP Q8JSZ3
B	1602	LYS	-	expression tag	UNP Q8JSZ3
B	1603	LEU	-	expression tag	UNP Q8JSZ3
B	1604	ILE	-	expression tag	UNP Q8JSZ3
B	1605	GLY	-	expression tag	UNP Q8JSZ3
B	1606	GLU	-	expression tag	UNP Q8JSZ3
B	1607	GLY	-	expression tag	UNP Q8JSZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1608	SER	-	expression tag	UNP Q8JSZ3
B	1609	GLY	-	expression tag	UNP Q8JSZ3
B	1610	GLY	-	expression tag	UNP Q8JSZ3
B	1611	SER	-	expression tag	UNP Q8JSZ3
B	1612	ARG	-	expression tag	UNP Q8JSZ3
B	1613	GLY	-	expression tag	UNP Q8JSZ3
B	1614	PRO	-	expression tag	UNP Q8JSZ3
B	1615	PHE	-	expression tag	UNP Q8JSZ3
B	1616	GLU	-	expression tag	UNP Q8JSZ3
B	1617	GLY	-	expression tag	UNP Q8JSZ3
B	1618	LYS	-	expression tag	UNP Q8JSZ3
B	1619	PRO	-	expression tag	UNP Q8JSZ3
B	1620	ILE	-	expression tag	UNP Q8JSZ3
B	1621	PRO	-	expression tag	UNP Q8JSZ3
B	1622	ASN	-	expression tag	UNP Q8JSZ3
B	1623	PRO	-	expression tag	UNP Q8JSZ3
B	1624	LEU	-	expression tag	UNP Q8JSZ3
B	1625	LEU	-	expression tag	UNP Q8JSZ3
B	1626	GLY	-	expression tag	UNP Q8JSZ3
B	1627	LEU	-	expression tag	UNP Q8JSZ3
B	1628	ASP	-	expression tag	UNP Q8JSZ3
B	1629	SER	-	expression tag	UNP Q8JSZ3
B	1630	THR	-	expression tag	UNP Q8JSZ3
B	1631	ARG	-	expression tag	UNP Q8JSZ3
B	1632	THR	-	expression tag	UNP Q8JSZ3
B	1633	GLY	-	expression tag	UNP Q8JSZ3
B	1634	HIS	-	expression tag	UNP Q8JSZ3
B	1635	HIS	-	expression tag	UNP Q8JSZ3
B	1636	HIS	-	expression tag	UNP Q8JSZ3
B	1637	HIS	-	expression tag	UNP Q8JSZ3
B	1638	HIS	-	expression tag	UNP Q8JSZ3
B	1639	HIS	-	expression tag	UNP Q8JSZ3
C	1570	SER	-	expression tag	UNP Q8JSZ3
C	1571	ARG	-	expression tag	UNP Q8JSZ3
C	1572	GLY	-	expression tag	UNP Q8JSZ3
C	1573	SER	-	expression tag	UNP Q8JSZ3
C	1574	GLY	-	expression tag	UNP Q8JSZ3
C	1575	GLY	-	expression tag	UNP Q8JSZ3
C	1576	MET	-	expression tag	UNP Q8JSZ3
C	1577	LYS	-	expression tag	UNP Q8JSZ3
C	1578	GLN	-	expression tag	UNP Q8JSZ3
C	1579	ILE	-	expression tag	UNP Q8JSZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1580	GLU	-	expression tag	UNP Q8JSZ3
C	1581	ASP	-	expression tag	UNP Q8JSZ3
C	1582	LYS	-	expression tag	UNP Q8JSZ3
C	1583	ILE	-	expression tag	UNP Q8JSZ3
C	1584	GLU	-	expression tag	UNP Q8JSZ3
C	1585	GLU	-	expression tag	UNP Q8JSZ3
C	1586	ILE	-	expression tag	UNP Q8JSZ3
C	1587	LEU	-	expression tag	UNP Q8JSZ3
C	1588	SER	-	expression tag	UNP Q8JSZ3
C	1589	LYS	-	expression tag	UNP Q8JSZ3
C	1590	ILE	-	expression tag	UNP Q8JSZ3
C	1591	TYR	-	expression tag	UNP Q8JSZ3
C	1592	HIS	-	expression tag	UNP Q8JSZ3
C	1593	ILE	-	expression tag	UNP Q8JSZ3
C	1594	GLU	-	expression tag	UNP Q8JSZ3
C	1595	ASN	-	expression tag	UNP Q8JSZ3
C	1596	GLU	-	expression tag	UNP Q8JSZ3
C	1597	ILE	-	expression tag	UNP Q8JSZ3
C	1598	ALA	-	expression tag	UNP Q8JSZ3
C	1599	ARG	-	expression tag	UNP Q8JSZ3
C	1600	ILE	-	expression tag	UNP Q8JSZ3
C	1601	LYS	-	expression tag	UNP Q8JSZ3
C	1602	LYS	-	expression tag	UNP Q8JSZ3
C	1603	LEU	-	expression tag	UNP Q8JSZ3
C	1604	ILE	-	expression tag	UNP Q8JSZ3
C	1605	GLY	-	expression tag	UNP Q8JSZ3
C	1606	GLU	-	expression tag	UNP Q8JSZ3
C	1607	GLY	-	expression tag	UNP Q8JSZ3
C	1608	SER	-	expression tag	UNP Q8JSZ3
C	1609	GLY	-	expression tag	UNP Q8JSZ3
C	1610	GLY	-	expression tag	UNP Q8JSZ3
C	1611	SER	-	expression tag	UNP Q8JSZ3
C	1612	ARG	-	expression tag	UNP Q8JSZ3
C	1613	GLY	-	expression tag	UNP Q8JSZ3
C	1614	PRO	-	expression tag	UNP Q8JSZ3
C	1615	PHE	-	expression tag	UNP Q8JSZ3
C	1616	GLU	-	expression tag	UNP Q8JSZ3
C	1617	GLY	-	expression tag	UNP Q8JSZ3
C	1618	LYS	-	expression tag	UNP Q8JSZ3
C	1619	PRO	-	expression tag	UNP Q8JSZ3
C	1620	ILE	-	expression tag	UNP Q8JSZ3
C	1621	PRO	-	expression tag	UNP Q8JSZ3

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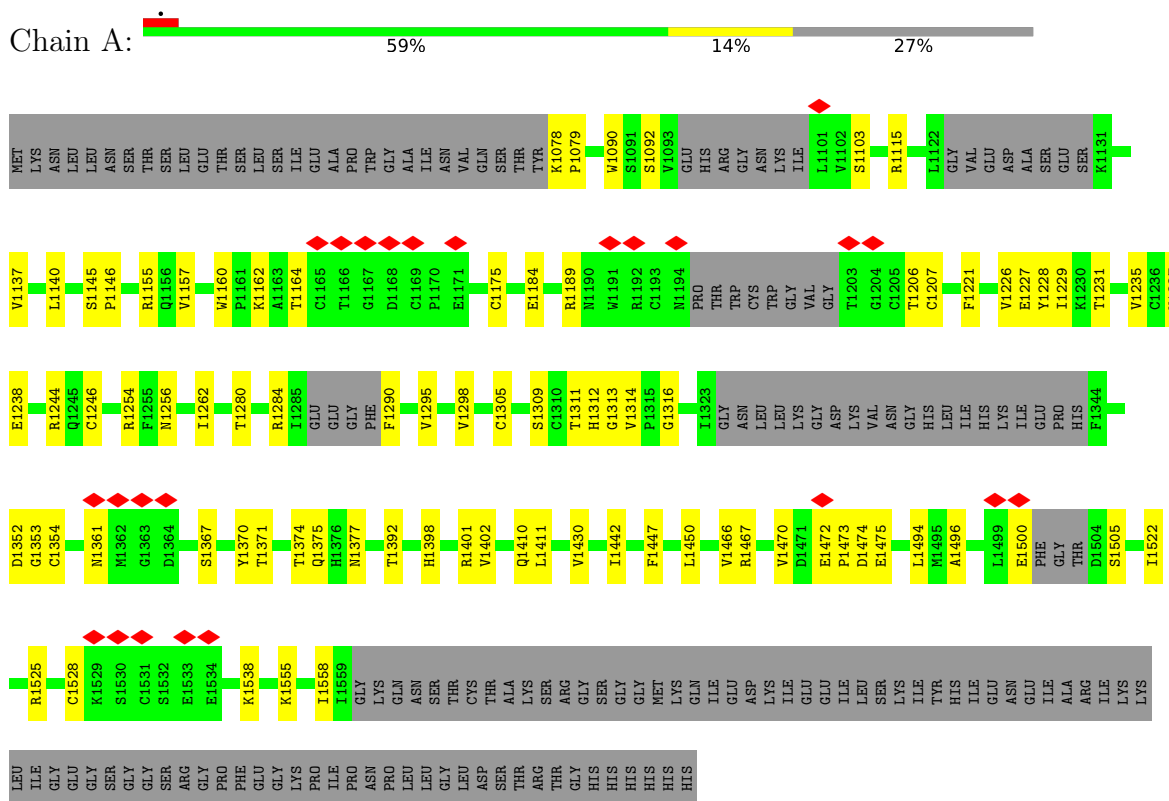
Chain	Residue	Modelled	Actual	Comment	Reference
C	1622	ASN	-	expression tag	UNP Q8JSZ3
C	1623	PRO	-	expression tag	UNP Q8JSZ3
C	1624	LEU	-	expression tag	UNP Q8JSZ3
C	1625	LEU	-	expression tag	UNP Q8JSZ3
C	1626	GLY	-	expression tag	UNP Q8JSZ3
C	1627	LEU	-	expression tag	UNP Q8JSZ3
C	1628	ASP	-	expression tag	UNP Q8JSZ3
C	1629	SER	-	expression tag	UNP Q8JSZ3
C	1630	THR	-	expression tag	UNP Q8JSZ3
C	1631	ARG	-	expression tag	UNP Q8JSZ3
C	1632	THR	-	expression tag	UNP Q8JSZ3
C	1633	GLY	-	expression tag	UNP Q8JSZ3
C	1634	HIS	-	expression tag	UNP Q8JSZ3
C	1635	HIS	-	expression tag	UNP Q8JSZ3
C	1636	HIS	-	expression tag	UNP Q8JSZ3
C	1637	HIS	-	expression tag	UNP Q8JSZ3
C	1638	HIS	-	expression tag	UNP Q8JSZ3
C	1639	HIS	-	expression tag	UNP Q8JSZ3

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

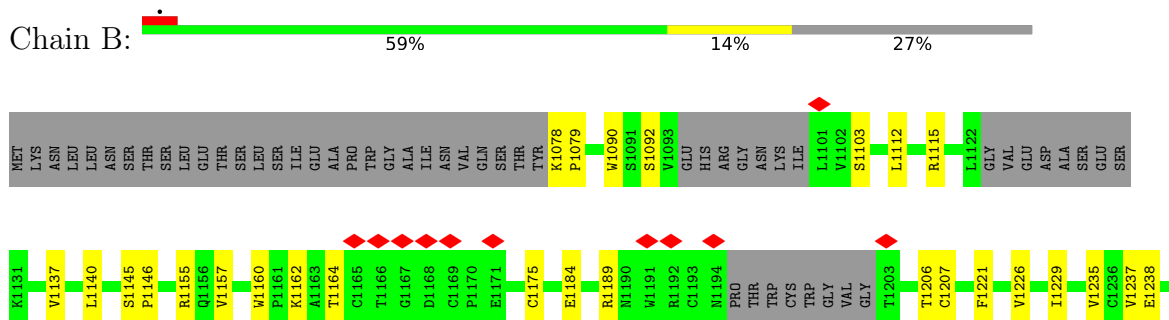
• Molecule 1: Glycoprotein C

Chain A:



• Molecule 1: Glycoprotein C

Chain B:



R1244	Q1245	C1246	M1361	M1362	F1254	M1256	I1262	T1280	R1284	I1285	GLU	GLY	PHE	F1290	V1295	V1298	C1305	S1309	C1310	H1312	G1313	V1314	F1315	G1316	I1323	GLY	ASN	LEU	LEU	LYS	GLY	ASP	LYS	VAL	ASN	GLY	HIS	HIS	LYS	ILE	GLU	PRO	HIS	F1344	D1352	G1353					
C1354	M1361	M1362	M1363	D1364	S1367	Y1370	T1371	T1374	Q1375	H1376	M1377	T1392	H1398	R4401	V1402	Q4410	L4411	V4430	I4442	F4447	L4450	V4466	R4467	V4470	D4471	E4472	P4473	D4474	E4475	L4494	M4495	A4496	L4499	E1500	PHE	GLY	THR	D1504	S1505	I1522	R1525										
C1528	K1529	S1530	C1531	S1532	E1533	E1534	K1538	K1555	I1558	I1559	GLY	LYS	ASN	LEU	LEU	LEU	THR	CYS	THR	THR	ALA	LYS	ARG	SER	THR	ARG	GLY	HIS	HIS	HIS	HIS	LYS	GLN	ILE	GLU	ASP	LYS	ILE	GLU	ASN	VAL	GLY	ASP	ILE	ALA	ALA	ARG	ILE	LYS	LEU	LEU
GLU	GLU	GLY	SER	GLY	GLY	GLY	PRO	PHE	GLU	GLY	GLY	LYS	PRO	ILE	PRO	PRO	GLN	LYS	SER	THR	ALA	LYS	ARG	SER	THR	ARG	GLY	HIS	HIS	HIS	LYS	GLN	ILE	GLU	ASP	LYS	ILE	GLU	ASN	VAL	GLY	ASP	ILE	ALA	ALA	ARG	ILE	LYS	LEU	LEU	

• Molecule 1: Glycoprotein C



MET	LYS	ASN	LEU	LEU	ASN	THR	SER	LEU	GLU	THR	SER	LEU	SER	ILE	GLU	ALA	PRO	TRP	GLY	ALA	ILE	ASN	VAL	GLN	THR	TYR	K1078	P1079	W1090	S1091	S1092	V1093	GLU	HIS	ARG	GLY	ASN	LYS	ILE	L1101	V1102	S1103	R1115	L1122	GLY	VAL	GLU	ASP	ALA	SER	GLU	SER	K1131
V1137	L1140	S1145	P1146	R1155	Q1156	V1157	M1160	F1161	K1162	A1163	T1164	C1165	T1166	G1167	D1168	C1169	P1170	E1171	C1175	T1176	S1177	E1184	R1189	M1190	W1191	R1192	C1193	M1194	PRO	THR	TRP	CYS	TRP	GLY	VAL	GLY	T1203	T1206	C1207	D1211	F1221	V1226	I1229	V1235	C1236	V1237							
E1238	R1244	Q1245	C1246	R1254	M1256	I1262	T1280	R1284	I1285	GLU	GLY	PHE	F1290	V1295	V1298	C1305	S1309	T1311	H1312	G1313	V1314	F1315	G1316	I1323	GLY	ASN	LEU	LEU	LYS	GLY	ASP	LYS	VAL	ASN	GLY	HIS	HIS	LEU	ILE	GLU	HIS	LYS	ILE	GLU	PRO	HIS	F1344						
D1352	G1353	C1354	M1361	M1362	G1363	D1364	S1367	Y1370	T1371	T1374	Q1375	H1376	M1377	T1392	H1398	R4401	V1402	Q4410	L4411	V4430	I4442	F4447	L4450	V4466	R4467	V4470	D4471	E4472	P4473	D4474	E4475	L4494	M4495	A4496	L4499	E1500	PHE	GLY	THR	D1504	S1505	I1522											
R1525	C1528	K1529	S1530	C1531	S1532	E1533	E1534	K1538	K1555	I1558	I1559	GLY	LYS	ASN	LEU	LEU	LEU	THR	CYS	THR	THR	ALA	LYS	ARG	SER	THR	ARG	GLY	HIS	HIS	HIS	LYS	GLN	ILE	GLU	ASP	LYS	ILE	GLU	ASN	VAL	GLY	ASP	ILE	ALA	ALA	ARG	ILE	LYS	LEU	LEU		
LEU	ILE	GLY	GLU	GLY	SER	GLY	GLY	PRO	PHE	GLU	GLU	LYS	PRO	ILE	PRO	PRO	GLN	LYS	SER	THR	ALA	LYS	ARG	SER	THR	ARG	GLY	HIS	HIS	HIS	LYS	GLN	ILE	GLU	ASP	LYS	ILE	GLU	ASN	VAL	GLY	ASP	ILE	ALA	ALA	ARG	ILE	LYS	LEU	LEU			

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	187292	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	48	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.465	Depositor
Minimum map value	-2.404	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.096	Depositor
Recommended contour level	0.44	Depositor
Map size (Å)	219.6, 219.6, 219.6	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.61, 0.61, 0.61	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.33	0/3451	0.53	0/4674
1	B	0.33	0/3451	0.53	0/4674
1	C	0.33	0/3451	0.53	0/4674
All	All	0.33	0/10353	0.53	0/14022

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	3381	0	3295	52	0
1	B	3381	0	3295	52	0
1	C	3381	0	3295	52	0
All	All	10143	0	9885	150	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 7.

All (150) 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:A:1078:LYS:HZ2	1:A:1115:ARG:HH11	1.39	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1078:LYS:HZ2	1:B:1115:ARG:HH11	1.41	0.68
1:A:1238:GLU:HG2	1:A:1244:ARG:HG3	1.79	0.65
1:C:1238:GLU:HG2	1:C:1244:ARG:HG3	1.79	0.65
1:B:1238:GLU:HG2	1:B:1244:ARG:HG3	1.79	0.64
1:B:1189:ARG:NH2	1:B:1206:THR:OG1	2.33	0.62
1:C:1078:LYS:HZ2	1:C:1115:ARG:HH11	1.48	0.61
1:C:1189:ARG:NH2	1:C:1206:THR:OG1	2.33	0.61
1:B:1309:SER:HB2	1:C:1314:VAL:HG21	1.83	0.60
1:A:1189:ARG:NH2	1:A:1206:THR:OG1	2.33	0.60
1:A:1314:VAL:HG21	1:C:1309:SER:HB2	1.83	0.60
1:B:1466:VAL:HG21	1:B:1494:LEU:HD13	1.84	0.60
1:A:1309:SER:HB2	1:B:1314:VAL:HG21	1.84	0.59
1:A:1466:VAL:HG21	1:A:1494:LEU:HD13	1.84	0.59
1:C:1466:VAL:HG21	1:C:1494:LEU:HD13	1.84	0.59
1:B:1470:VAL:HG22	1:B:1473:PRO:HD2	1.85	0.58
1:A:1470:VAL:HG22	1:A:1473:PRO:HD2	1.85	0.57
1:C:1470:VAL:HG22	1:C:1473:PRO:HD2	1.85	0.57
1:B:1157:VAL:HG22	1:B:1375:GLN:HA	1.88	0.56
1:B:1160:TRP:HZ2	1:B:1175:CYS:HB2	1.70	0.56
1:A:1160:TRP:HZ2	1:A:1175:CYS:HB2	1.70	0.56
1:C:1157:VAL:HG22	1:C:1375:GLN:HA	1.88	0.56
1:C:1447:PHE:CD2	1:C:1538:LYS:HB2	2.41	0.56
1:A:1157:VAL:HG22	1:A:1375:GLN:HA	1.88	0.55
1:A:1447:PHE:CD2	1:A:1538:LYS:HB2	2.41	0.55
1:C:1447:PHE:HE2	1:C:1450:LEU:HB2	1.72	0.55
1:B:1447:PHE:CD2	1:B:1538:LYS:HB2	2.41	0.55
1:C:1078:LYS:NZ	1:C:1115:ARG:HH11	2.05	0.55
1:A:1447:PHE:HE2	1:A:1450:LEU:HB2	1.72	0.55
1:B:1447:PHE:HE2	1:B:1450:LEU:HB2	1.72	0.54
1:C:1160:TRP:HZ2	1:C:1175:CYS:HB2	1.70	0.54
1:A:1078:LYS:NZ	1:A:1115:ARG:HH11	2.05	0.54
1:C:1146:PRO:HB3	1:C:1226:VAL:HG12	1.89	0.54
1:B:1078:LYS:NZ	1:B:1115:ARG:HH11	2.05	0.54
1:B:1078:LYS:HB3	1:B:1079:PRO:HD3	1.91	0.53
1:A:1146:PRO:HB3	1:A:1226:VAL:HG12	1.89	0.53
1:B:1146:PRO:HB3	1:B:1226:VAL:HG12	1.89	0.53
1:A:1078:LYS:HB3	1:A:1079:PRO:HD3	1.91	0.53
1:A:1254:ARG:NH1	1:A:1256:ASN:OD1	2.42	0.53
1:B:1254:ARG:NH1	1:B:1256:ASN:OD1	2.42	0.53
1:C:1254:ARG:NH1	1:C:1256:ASN:OD1	2.42	0.53
1:C:1522:ILE:O	1:C:1525:ARG:HG3	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1522:ILE:O	1:A:1525:ARG:HG3	2.09	0.53
1:C:1078:LYS:HB3	1:C:1079:PRO:HD3	1.91	0.53
1:B:1522:ILE:O	1:B:1525:ARG:HG3	2.09	0.52
1:A:1280:THR:HB	1:A:1295:VAL:HG13	1.92	0.52
1:C:1140:LEU:O	1:C:1398:HIS:NE2	2.41	0.51
1:A:1228:TYR:HH	1:A:1231:THR:HG1	1.56	0.51
1:B:1280:THR:HB	1:B:1295:VAL:HG13	1.92	0.51
1:A:1140:LEU:O	1:A:1398:HIS:NE2	2.41	0.50
1:C:1280:THR:HB	1:C:1295:VAL:HG13	1.92	0.50
1:B:1137:VAL:HG12	1:B:1235:VAL:HG22	1.93	0.50
1:A:1137:VAL:HG12	1:A:1235:VAL:HG22	1.93	0.49
1:C:1137:VAL:HG12	1:C:1235:VAL:HG22	1.93	0.49
1:B:1244:ARG:HD2	1:B:1246:CYS:SG	2.52	0.49
1:C:1244:ARG:HD2	1:C:1246:CYS:SG	2.52	0.49
1:A:1311:THR:HG22	1:A:1312:HIS:H	1.79	0.48
1:B:1311:THR:HG22	1:B:1312:HIS:H	1.79	0.48
1:A:1244:ARG:HD2	1:A:1246:CYS:SG	2.52	0.48
1:B:1361:ASN:OD1	1:B:1367:SER:OG	2.31	0.48
1:B:1442:ILE:HB	1:B:1528:CYS:HA	1.95	0.48
1:A:1442:ILE:HB	1:A:1528:CYS:HA	1.95	0.48
1:A:1474:ASP:O	1:A:1475:GLU:HB3	2.14	0.48
1:C:1467:ARG:NH2	1:C:1500:GLU:O	2.47	0.48
1:C:1311:THR:HG22	1:C:1312:HIS:H	1.79	0.47
1:C:1442:ILE:HB	1:C:1528:CYS:HA	1.95	0.47
1:A:1374:THR:OG1	1:A:1555:LYS:HE2	2.15	0.47
1:B:1374:THR:OG1	1:B:1555:LYS:HE2	2.15	0.47
1:C:1474:ASP:O	1:C:1475:GLU:HB3	2.14	0.47
1:B:1474:ASP:O	1:B:1475:GLU:HB3	2.14	0.47
1:A:1361:ASN:OD1	1:A:1367:SER:OG	2.31	0.47
1:C:1361:ASN:OD1	1:C:1367:SER:OG	2.31	0.47
1:B:1401:ARG:O	1:B:1411:LEU:HA	2.15	0.47
1:A:1305:CYS:HB3	1:A:1316:GLY:HA3	1.98	0.46
1:A:1401:ARG:O	1:A:1411:LEU:HA	2.15	0.46
1:C:1401:ARG:O	1:C:1411:LEU:HA	2.16	0.46
1:B:1140:LEU:O	1:B:1398:HIS:NE2	2.41	0.46
1:C:1374:THR:OG1	1:C:1555:LYS:HE2	2.15	0.46
1:B:1305:CYS:HB3	1:B:1316:GLY:HA3	1.98	0.46
1:C:1472:GLU:HB3	1:C:1473:PRO:HD3	1.97	0.46
1:B:1472:GLU:HB3	1:B:1473:PRO:HD3	1.97	0.46
1:A:1475:GLU:HA	1:A:1496:ALA:O	2.16	0.46
1:C:1305:CYS:HB3	1:C:1316:GLY:HA3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1475:GLU:HA	1:C:1496:ALA:O	2.17	0.45
1:A:1472:GLU:HB3	1:A:1473:PRO:HD3	1.97	0.45
1:B:1103:SER:OG	1:B:1430:VAL:O	2.30	0.45
1:B:1312:HIS:O	1:B:1312:HIS:CG	2.70	0.45
1:B:1475:GLU:HA	1:B:1496:ALA:O	2.17	0.45
1:C:1352:ASP:OD1	1:C:1353:GLY:N	2.50	0.45
1:A:1103:SER:OG	1:A:1430:VAL:O	2.30	0.45
1:B:1164:THR:O	1:B:1189:ARG:NH1	2.50	0.45
1:A:1352:ASP:OD1	1:A:1353:GLY:N	2.50	0.45
1:C:1354:CYS:HA	1:C:1371:THR:O	2.17	0.45
1:A:1354:CYS:HA	1:A:1371:THR:O	2.17	0.44
1:B:1352:ASP:OD1	1:B:1353:GLY:N	2.50	0.44
1:C:1164:THR:O	1:C:1189:ARG:NH1	2.49	0.44
1:C:1494:LEU:HD22	1:C:1505:SER:HB3	2.00	0.44
1:B:1494:LEU:HD22	1:B:1505:SER:HB3	2.00	0.44
1:C:1312:HIS:CG	1:C:1312:HIS:O	2.70	0.44
1:B:1145:SER:HB3	1:B:1229:ILE:HD11	2.00	0.44
1:A:1467:ARG:NH2	1:A:1500:GLU:O	2.47	0.44
1:A:1164:THR:O	1:A:1189:ARG:NH1	2.50	0.44
1:C:1237:VAL:HG11	1:C:1262:ILE:HD12	1.99	0.44
1:A:1312:HIS:O	1:A:1312:HIS:CG	2.70	0.43
1:A:1370:TYR:HD1	1:A:1558:ILE:HB	1.83	0.43
1:A:1494:LEU:HD22	1:A:1505:SER:HB3	2.00	0.43
1:A:1500:GLU:N	1:A:1500:GLU:OE1	2.51	0.43
1:B:1500:GLU:N	1:B:1500:GLU:OE1	2.51	0.43
1:A:1298:VAL:H	1:A:1392:THR:HG23	1.83	0.43
1:C:1145:SER:HB3	1:C:1229:ILE:HD11	2.00	0.43
1:A:1090:TRP:HB2	1:C:1092:SER:HB3	2.00	0.43
1:B:1354:CYS:HA	1:B:1371:THR:O	2.17	0.43
1:B:1237:VAL:HG11	1:B:1262:ILE:HD12	1.99	0.43
1:B:1467:ARG:NH2	1:B:1500:GLU:O	2.47	0.43
1:C:1298:VAL:H	1:C:1392:THR:HG23	1.83	0.43
1:A:1237:VAL:HG11	1:A:1262:ILE:HD12	1.99	0.43
1:B:1370:TYR:HD1	1:B:1558:ILE:HB	1.83	0.43
1:C:1500:GLU:OE1	1:C:1500:GLU:N	2.51	0.43
1:C:1313:GLY:O	1:C:1377:ASN:ND2	2.52	0.43
1:C:1370:TYR:HD1	1:C:1558:ILE:HB	1.83	0.43
1:A:1145:SER:HB3	1:A:1229:ILE:HD11	2.00	0.42
1:B:1313:GLY:O	1:B:1377:ASN:ND2	2.52	0.42
1:A:1284:ARG:HG2	1:A:1290:PHE:CE1	2.55	0.42
1:A:1313:GLY:O	1:A:1377:ASN:ND2	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1402:VAL:HA	1:A:1410:GLN:O	2.19	0.42
1:B:1298:VAL:H	1:B:1392:THR:HG23	1.83	0.42
1:B:1221:PHE:HA	1:B:1280:THR:O	2.20	0.42
1:B:1402:VAL:HA	1:B:1410:GLN:O	2.19	0.42
1:C:1402:VAL:HA	1:C:1410:GLN:O	2.19	0.42
1:C:1284:ARG:HG2	1:C:1290:PHE:CE1	2.55	0.42
1:A:1145:SER:HG	1:A:1227:GLU:HG2	1.84	0.42
1:A:1162:LYS:HB2	1:A:1207:CYS:SG	2.60	0.42
1:C:1254:ARG:HA	1:C:1262:ILE:O	2.20	0.42
1:B:1092:SER:HB3	1:C:1090:TRP:HB2	2.02	0.42
1:C:1221:PHE:HA	1:C:1280:THR:O	2.20	0.42
1:A:1092:SER:HB3	1:B:1090:TRP:HB2	2.01	0.41
1:B:1162:LYS:HB2	1:B:1207:CYS:SG	2.60	0.41
1:B:1284:ARG:HG2	1:B:1290:PHE:CE1	2.55	0.41
1:C:1177:SER:OG	1:C:1211:ASP:OD2	2.30	0.41
1:A:1221:PHE:HA	1:A:1280:THR:O	2.20	0.41
1:A:1254:ARG:HA	1:A:1262:ILE:O	2.20	0.41
1:B:1254:ARG:HA	1:B:1262:ILE:O	2.20	0.41
1:C:1103:SER:OG	1:C:1430:VAL:O	2.30	0.41
1:C:1162:LYS:HB2	1:C:1207:CYS:SG	2.60	0.41
1:B:1447:PHE:HD2	1:B:1538:LYS:HB2	1.86	0.41
1:C:1184:GLU:HG3	1:C:1207:CYS:HB3	2.03	0.40
1:A:1184:GLU:HG3	1:A:1207:CYS:HB3	2.03	0.40
1:B:1112:LEU:HB3	1:B:1140:LEU:HD22	2.03	0.40
1:C:1447:PHE:HD2	1:C:1538:LYS:HB2	1.86	0.40
1:B:1184:GLU:HG3	1:B:1207:CYS:HB3	2.03	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	418/591 (71%)	389 (93%)	29 (7%)	0	100	100
1	B	418/591 (71%)	389 (93%)	29 (7%)	0	100	100
1	C	418/591 (71%)	389 (93%)	29 (7%)	0	100	100
All	All	1254/1773 (71%)	1167 (93%)	87 (7%)	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	391/523 (75%)	390 (100%)	1 (0%)	91	97
1	B	391/523 (75%)	390 (100%)	1 (0%)	91	97
1	C	391/523 (75%)	390 (100%)	1 (0%)	91	97
All	All	1173/1569 (75%)	1170 (100%)	3 (0%)	90	97

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1155	ARG
1	B	1155	ARG
1	C	1155	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1396	HIS
1	B	1396	HIS
1	C	1396	HIS

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 [i](#)

There are no ligands in this entry.

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.

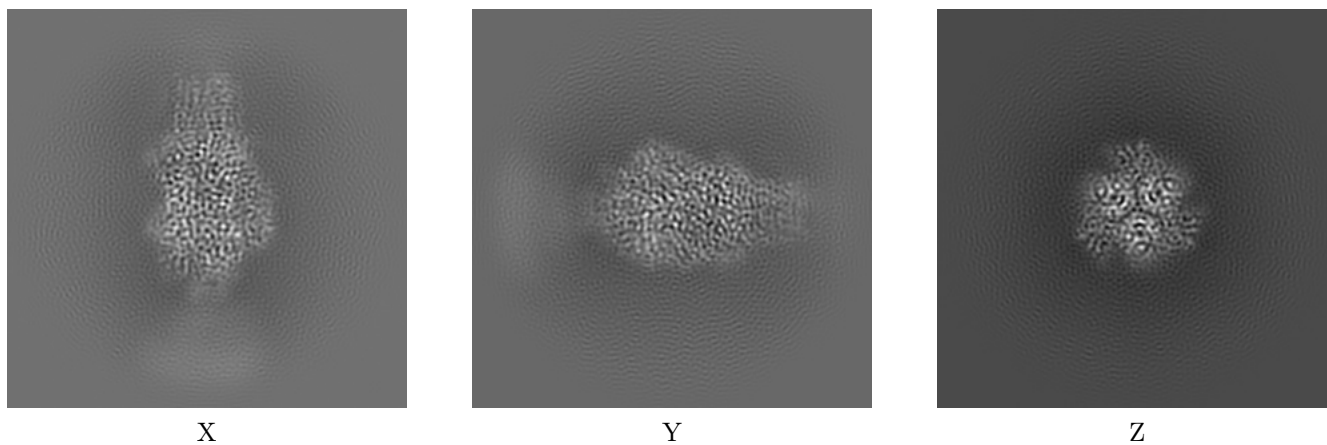
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-31579. 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](#)

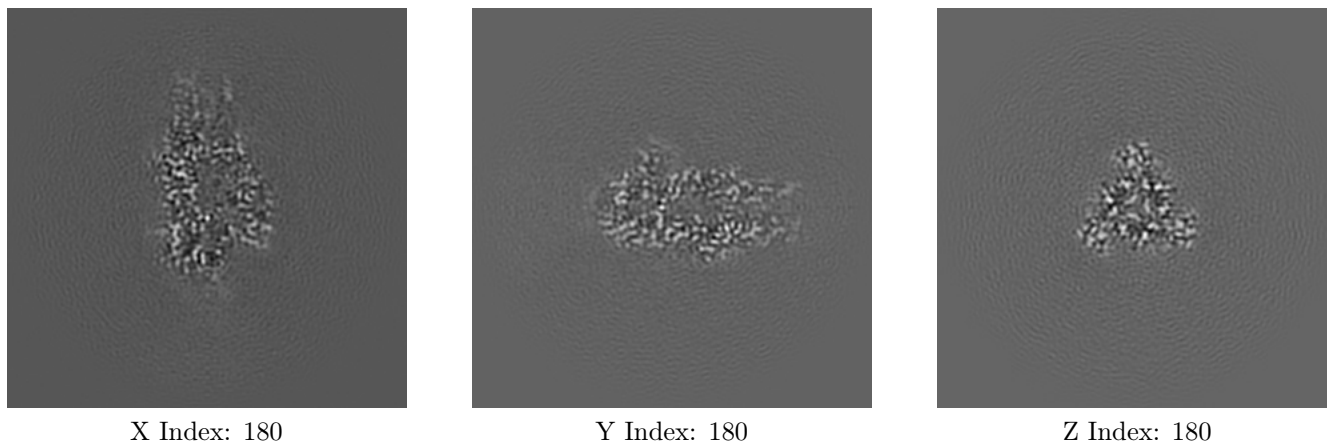
6.1.1 Primary map



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

6.2 Central slices [i](#)

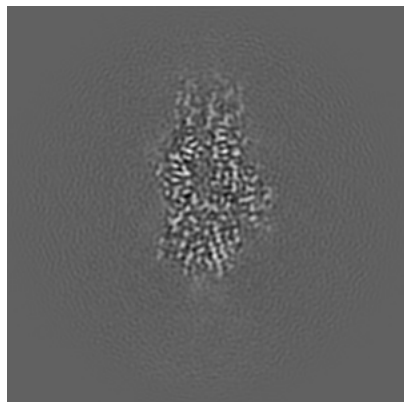
6.2.1 Primary map



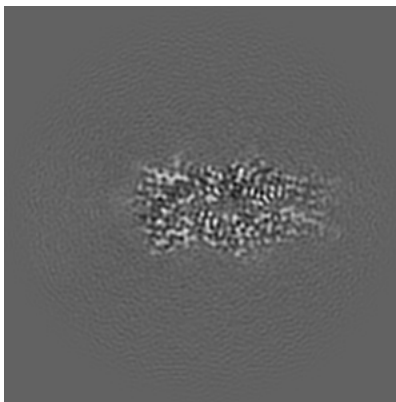
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

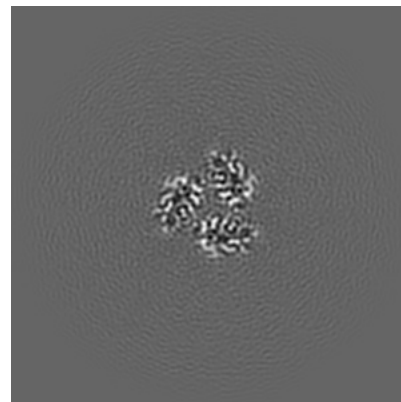
6.3.1 Primary map



X Index: 189



Y Index: 194

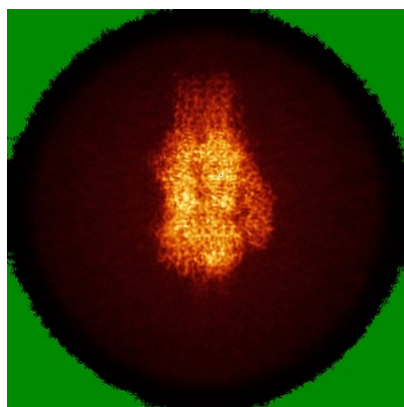


Z Index: 207

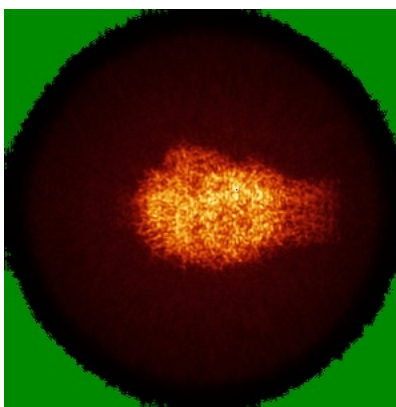
The images above show the largest variance slices of the map in three orthogonal directions.

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

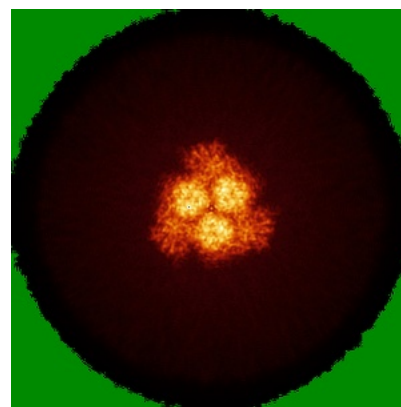
6.4.1 Primary map



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 0.44. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

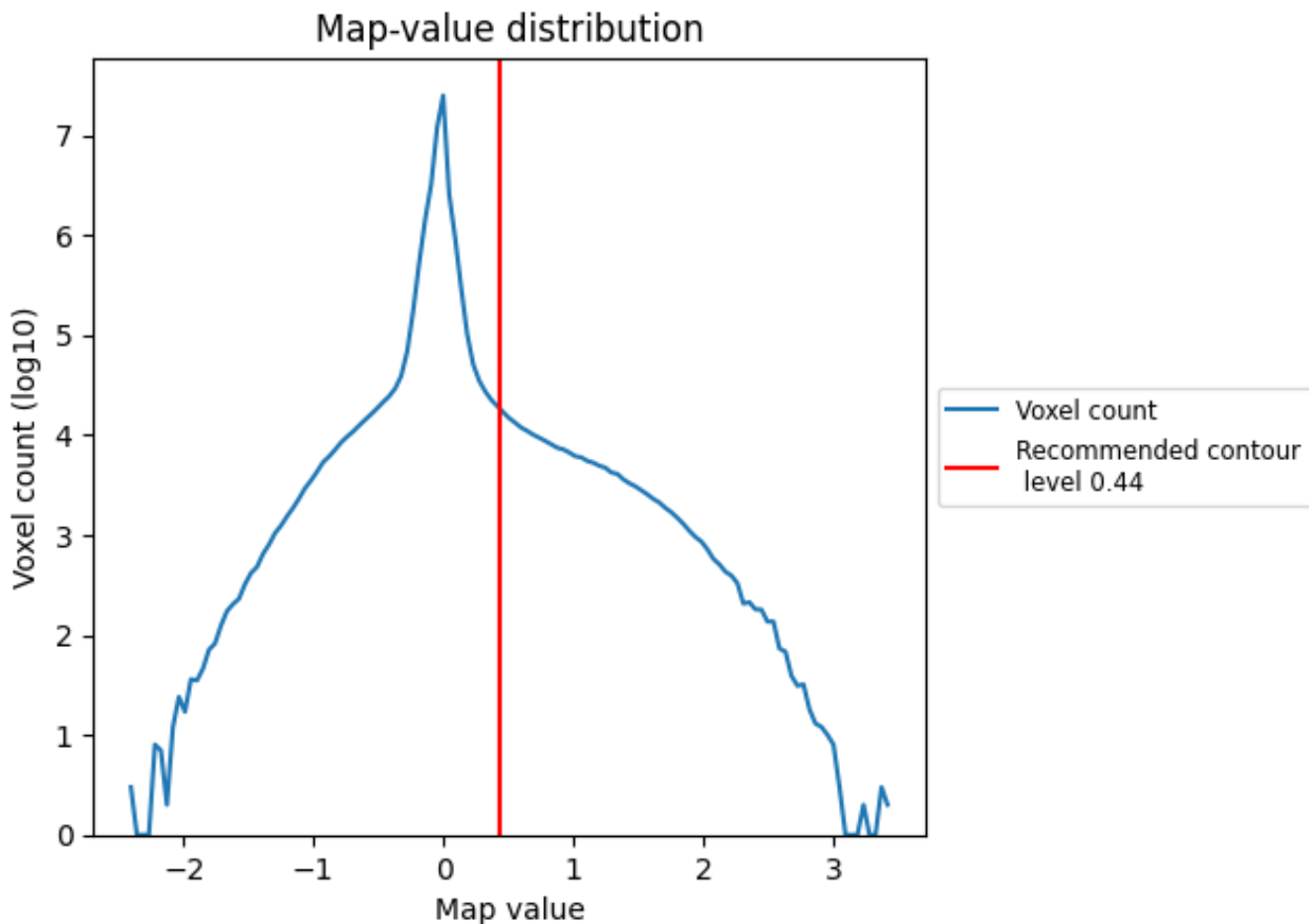
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

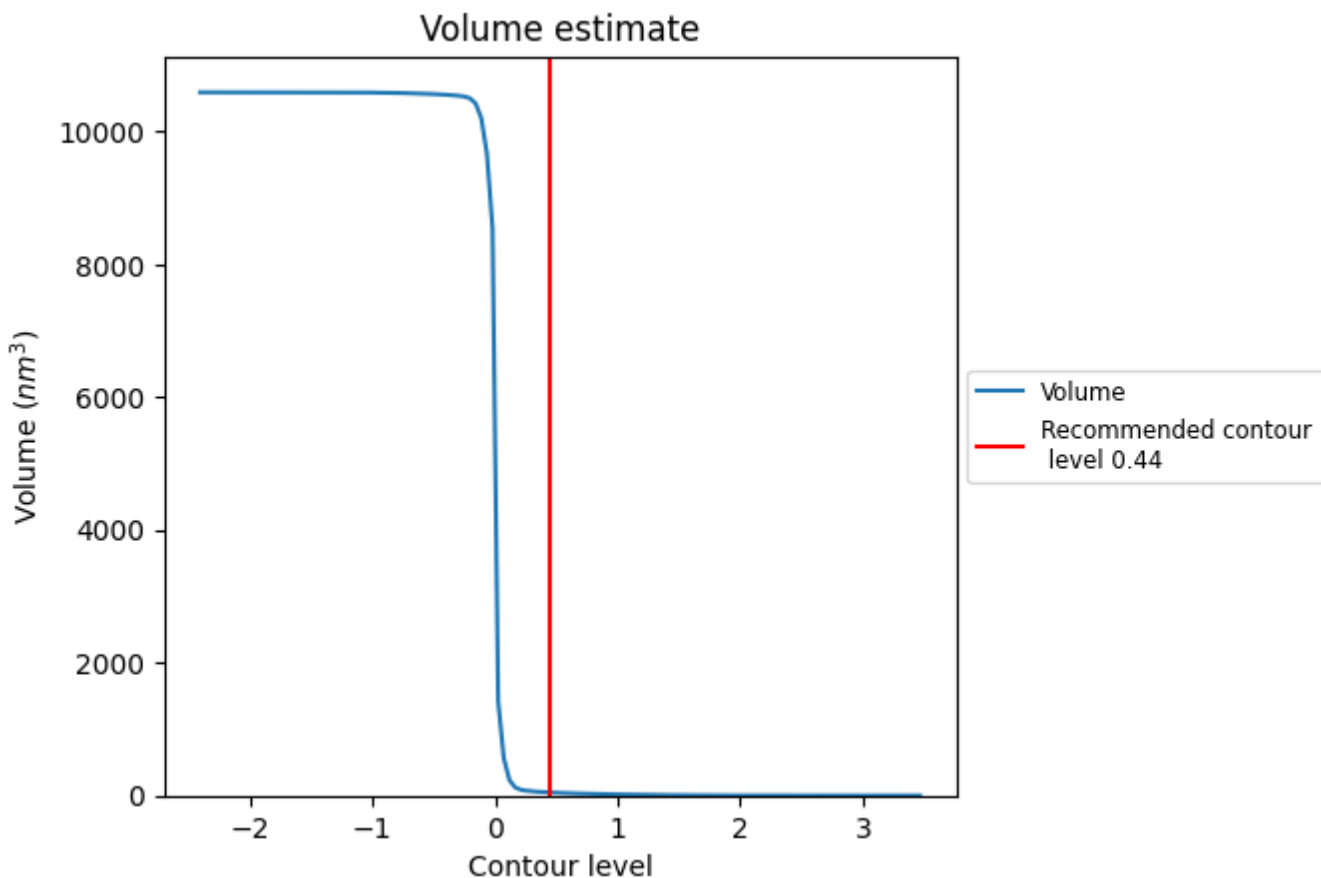
This section contains the results of statistical analysis of the map.

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.

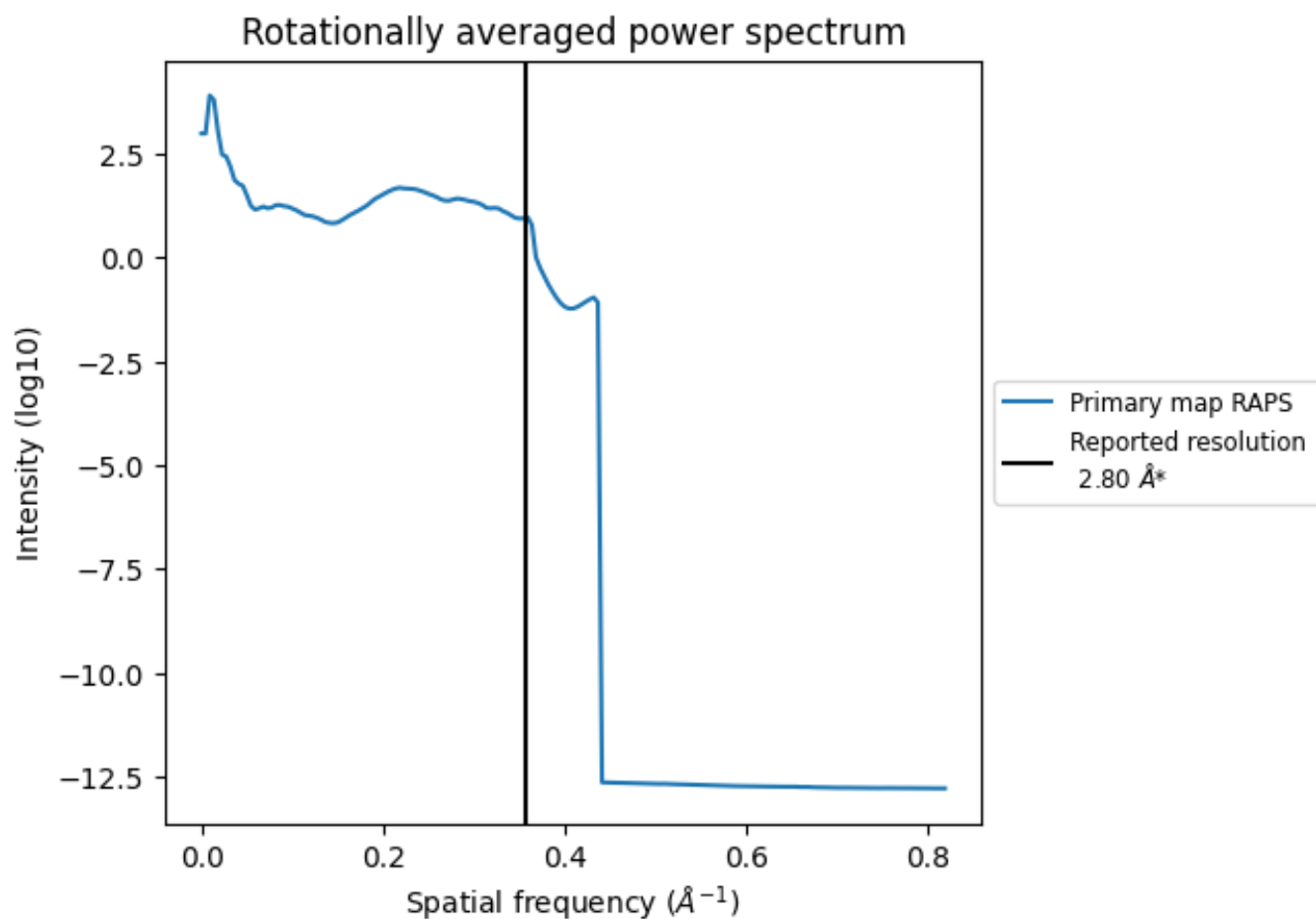
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 47 nm³; this corresponds to an approximate mass of 43 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 0.357 \AA^{-1}

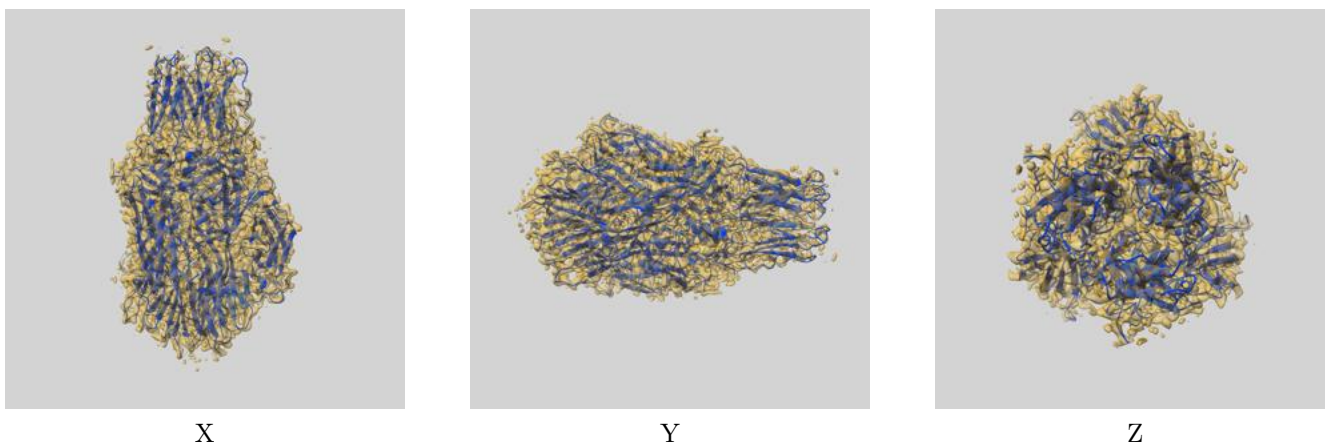
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

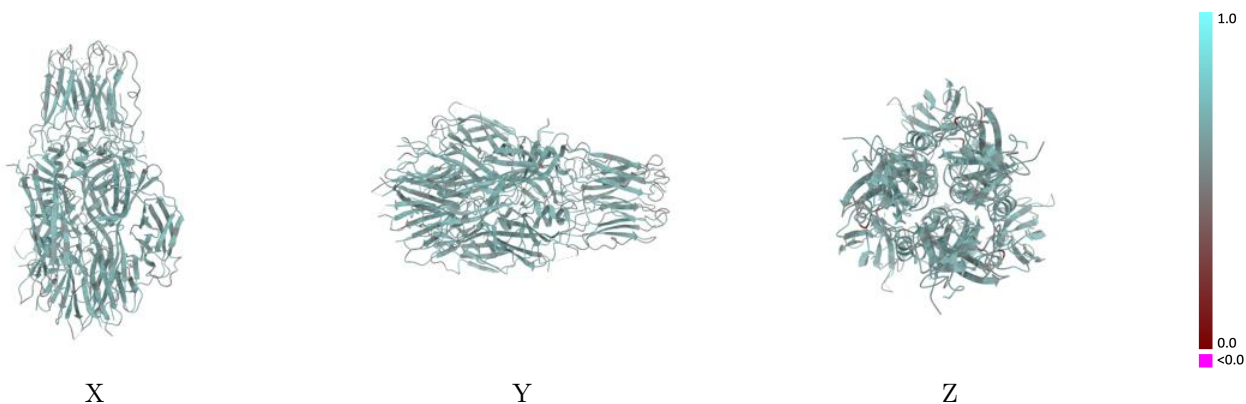
This section contains information regarding the fit between EMDB map EMD-31579 and PDB model 7FGF. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



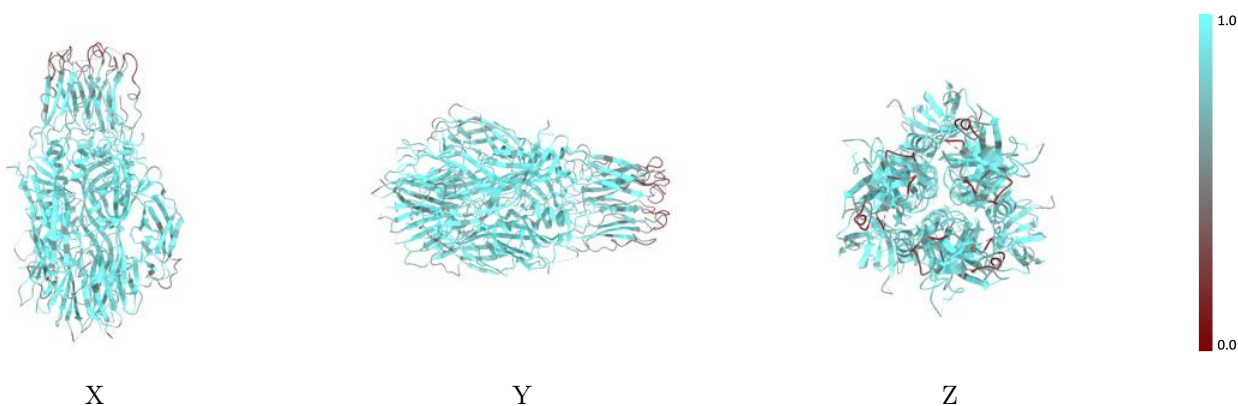
The images above show the 3D surface view of the map at the recommended contour level 0.44 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



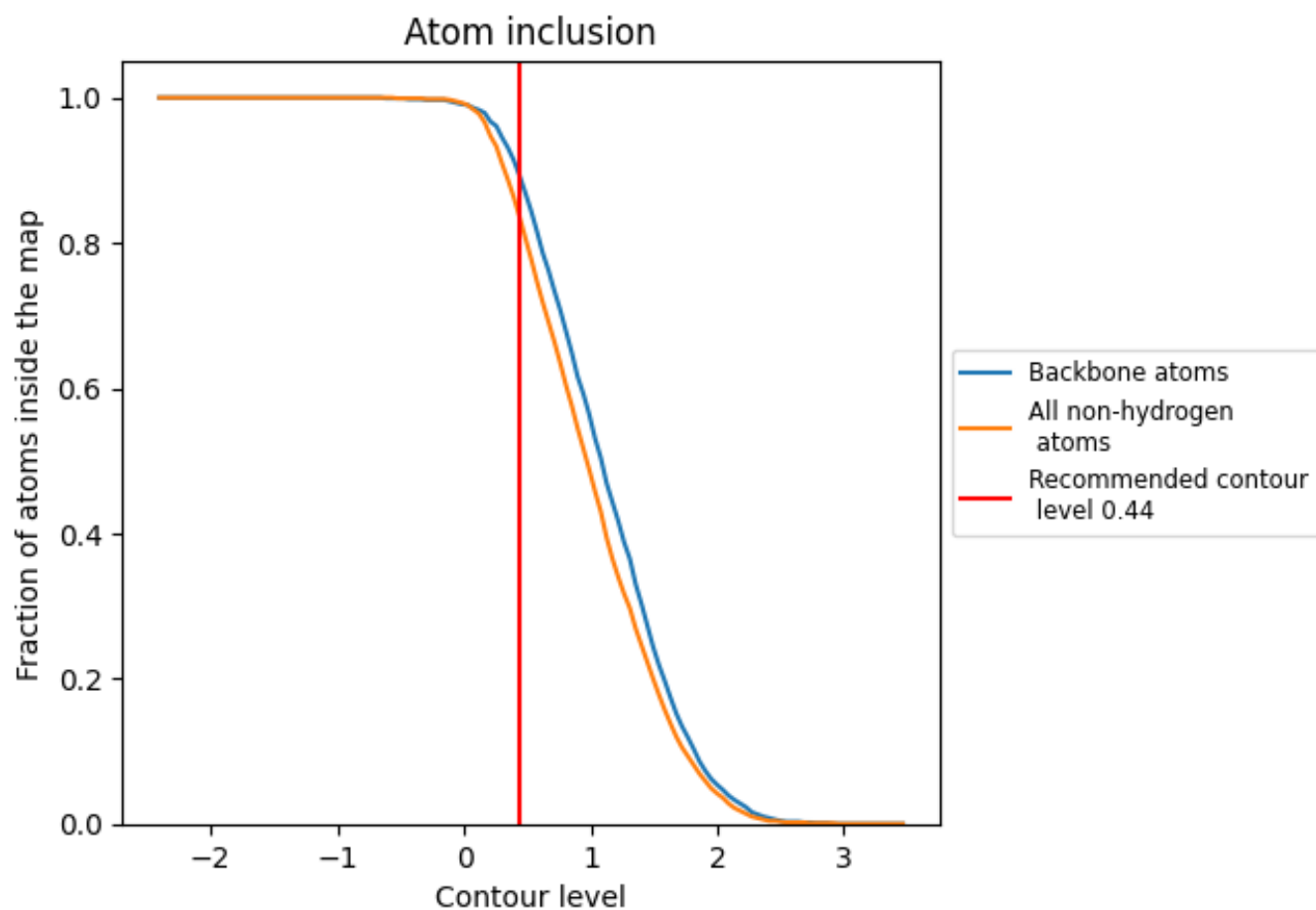
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.44).









9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 84% 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 (0.44) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8350	 0.6080
A	 0.8340	 0.6080
B	 0.8380	 0.6080
C	 0.8350	 0.6090

