



Full wwPDB EM Validation Report ⓘ

Jun 16, 2025 – 10:27 PM JST

PDB ID : 8YXL / pdb_00008yxl
EMDB ID : EMD-37958
Title : Structure of C-terminal domain of L protein from Mumps virus
Authors : Li, T.H.; Shen, Q.T.
Deposited on : 2024-04-02
Resolution : 3.13 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.dev118
MolProbity : 4-5-2 with Phenix2.0rc1
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) : 2.44

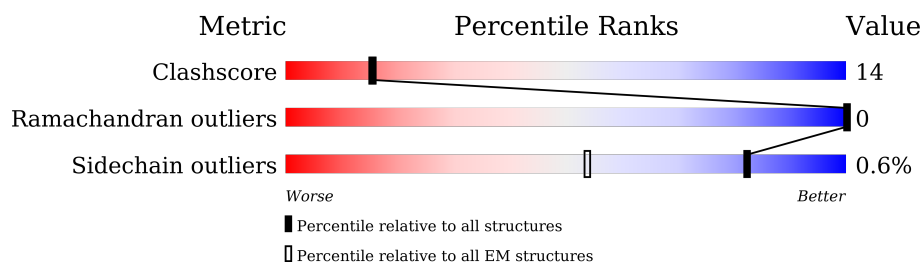
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.13 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	2261	21% 10% 69%

2 Entry composition [i](#)

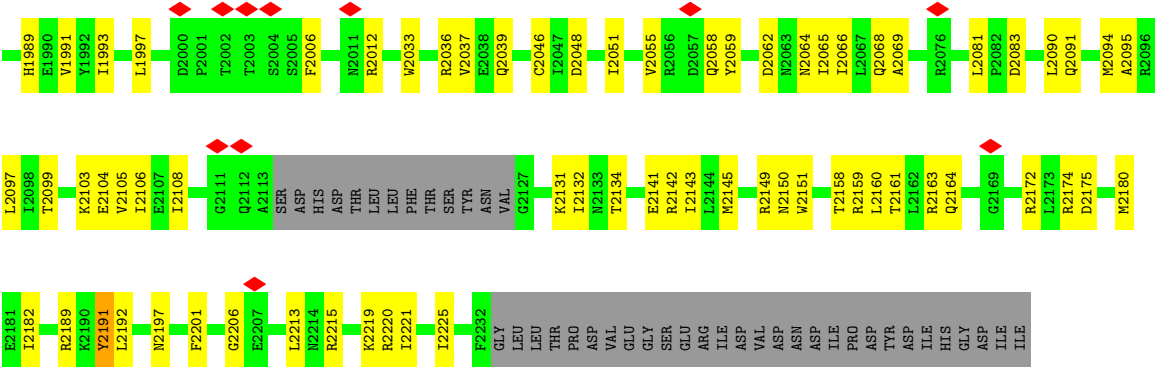
There is only 1 type of molecule in this entry. The entry contains 5588 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 RNA-directed RNA polymerase L.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	699	Total	C	N	O	S	0	0
			5588	3601	941	1023	23		

C1911	A1809	L1736	E1657	G1538	I1443	VAL	ASP	PHE	THR	THR	GLN	LYS	ASP	MET	ARG
A1912	H1810	L1740	TYR	T1542	P1444	HIS	THR	LEU	CYS	PRO	GLN	HIS	PRO	THR	VAL
L1913	L1811	F1741	VAL	T1543	L1449	ILE	GLU	GLY	ILE	ILE	TYR	GLY	LEU	ILE	PHE
V1914	Y1812	F1742	GLU	S1544	T1450	ASN	TRP	TRP	ILE	GLY	ASP	THR	ALA	GLY	LYS
H1915	A1814	L1743	TYR	R1547	Q1453	ASP	GLN	GLN	ARG	ILE	ASP	SER	ILE	LEU	GLY
V1916	E1815	L1744	ILE	R1547	M1454	CYS	ASP	ASP	ARG	ALA	ASP	THR	ALA	CYS	ARG
G1920	A1819	L1745	Q1663	R1550	V1455	VAL	ASP	GLY	LEU	PRO	ASP	THR	ALA	TYR	ILE
VAL	S1820	LEU	E1665	R1550	VAL	ASN	ALA	ASP	ASP	ASP	ASP	GLU	VAL	ASP	LEU
PRO	M1821	ASP	I1669	I1558	T1458	PRO	LEU	LEU	PRO	LYS	VAL	VAL	VAL	GLY	THR
SER	S1822	ALA	R1670	M1562	T1459	ILE	LEU	ALA	ALA	LEU	ARG	ASN	ARG	PHE	ALA
MET	L1823	ASP	R1671	S1563	GLY	ASP	LEU	SER	SER	GLN	THR	PRO	LEU	GLN	LYS
ASN	L1823	ALA	M1672	S1563	LEU	ASP	LEU	LEU	ASN	ASP	THR	ASN	LEU	THR	ASN
SER	T1826	SER	I1673	H1565	ASP	GLN	VAL	VAL	THR	PRO	ARG	MET	LEU	LYS	VAL
MET	F1827	GLU	I1674	H1565	ALA	THR	ALA	THR	LEU	ASP	ASN	GLY	GLY	SER	SER
E1929	L1828	LYS	I1678	Y1571	THR	SER	THR	THR	ILE	ILE	ILE	VAL	VAL	LEU	LYS
E1930	T1833	TYR	T1678	T1572	THR	ASN	LEU	LEU	LEU	ARG	ARG	ARG	ARG	SER	MET
R1931	W1834	SER	T1679	K1573	ILE	ASN	THR	THR	ASN	VAL	ASN	PHE	ASP	GLN	CYS
A1932	W1834	LEU	T1679	K1573	VAL	ASN	THR	THR	ASN	VAL	ASN	PRO	ASP	GLN	LEU
Q1933	W1834	PRO	T1679	L1574	ILE	ASN	THR	THR	ASN	VAL	ASN	PRO	ASP	GLN	CYS
H1934	P1845	SER	L1685	A1578	ASP	ASN	THR	THR	ASN	VAL	ASN	PRO	ASP	GLN	LEU
H1935	P1846	LEU	PHE	A1578	ASP	ASN	THR	THR	ASN	VAL	ASN	PRO	ASP	GLN	LEU
A1936	Q1847	LEU	TYR	A1578	ASP	ASN	THR	THR	ASN	VAL	ASN	PRO	ASP	GLN	LEU
L1937	Q1848	LEU	L1688	I1598	VAL	GLN	GLN	GLN	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1938	N1849	MET	S1688	I1598	VAL	GLN	GLN	GLN	GLY	ILE	LYS	ALA	ALA	ALA	ILE
I1939	N1849	THR	R1690	P1601	VAL	VAL	VAL	VAL	GLY	ILE	LYS	ALA	ALA	ALA	ILE
I1940	P1854	ALA	R1690	P1601	VAL	VAL	VAL	VAL	GLY	ILE	LYS	ALA	ALA	ALA	ILE
V1941	T1855	GLU	K1691	S1604	ASP	ASP	ASP	ASP	GLY	ILE	LYS	ALA	ALA	ALA	ILE
V1942	Q1856	ASN	K1691	S1604	ASP	ASP	ASP	ASP	GLY	ILE	LYS	ALA	ALA	ALA	ILE
V1943	Q1857	MET	L1692	GLN	TYR	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1944	I1858	ASP	L1693	GLN	TYR	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
K1945	E1859	ASN	I1696	THR	THR	ALA	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1949	S1860	PRO	E1700	LEU	GLU	LEU	LEU	LEU	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1950	V1861	PHE	E1700	LEU	GLU	LEU	LEU	LEU	GLY	ILE	LYS	ALA	ALA	ALA	ILE
I1951	P1862	GLY	W1711	D1610	E1484	GLU	ASP	ASP	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1952	Y1863	PHE	W1711	R1611	C1485	THR	VAL	VAL	GLY	ILE	LYS	ALA	ALA	ALA	ILE
E1957	I1866	SER	PHE	N1614	C1486	TRP	VAL	VAL	GLY	ILE	LYS	ALA	ALA	ALA	ILE
H1960	I1870	TYR	TYR	R1618	Y1487	ASN	HIS	HIS	GLY	ILE	LYS	ALA	ALA	ALA	ILE
R1961	N1874	LEU	TYR	R1618	T1488	ASN	ARG	ARG	GLY	ILE	LYS	ALA	ALA	ALA	ILE
F1962	G1875	GLU	LEU	K1619	A1500	PRO	LEU	LEU	GLY	ILE	LYS	ALA	ALA	ALA	ILE
S1963	G1875	PRO	GLU	L1620	L1501	PRO	LEU	LEU	GLY	ILE	LYS	ALA	ALA	ALA	ILE
F1964	I1876	ILE	ILE	S1621	L1502	ASN	GLY	GLY	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1965	V1877	LEU	LEU	L1622	Y1510	PHE	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1966	Q1878	MET	GLU	L1623	R1513	SER	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
T1967	Q1878	SER	SER	I1625	G1516	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
V1968	L1883	LYS	LYS	P1633	G1516	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1969	D1889	ILE	PHE	V1636	I1520	LEU	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
W1970	D1889	ASN	ASN	V1636	I1520	HIS	PRO	PRO	GLY	ILE	LYS	ALA	ALA	ALA	ILE
Q1971	L1893	LEU	LEU	P1641	T1527	LEU	ASP	ASP	GLY	ILE	LYS	ALA	ALA	ALA	ILE
F1972	L1893	SER	SER	P1641	T1527	LEU	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
F1973	V1899	SER	SER	K1644	R1529	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
L1979	V1899	SER	SER	K1644	R1529	THR	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
R1980	I1902	GLU	GLU	A1647	I1531	GLY	THR	THR	GLY	ILE	LYS	ALA	ALA	ALA	ILE
P1986	V1906	ALA	ALA	T1650	I1536	CYS	SER	SER	GLY	ILE	LYS	ALA	ALA	ALA	ILE
				H1651	T1537	CYS	SER	SER	GLY	ILE	LYS	ALA	ALA	ALA	ILE



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	438014	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.732	Depositor
Minimum map value	-0.453	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.0858	Depositor
Map size (Å)	233.19998, 233.19998, 233.19998	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.53, 0.53, 0.53	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	0.30	3/5705 (0.1%)	0.48	5/7754 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1932	ALA	C-N	-7.67	1.23	1.33
1	A	1845	PRO	C-O	-7.39	1.16	1.24
1	A	1933	GLN	C-N	5.49	1.40	1.34

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1636	VAL	N-CA-C	-5.88	107.55	113.20
1	A	2191	TYR	O-C-N	5.61	129.74	122.89
1	A	1932	ALA	O-C-N	-5.22	116.59	122.12
1	A	1678	LEU	CA-C-N	5.20	129.73	121.72
1	A	1678	LEU	C-N-CA	5.20	129.73	121.72

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	5588	0	5695	163	0
All	All	5588	0	5695	163	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 14.

All (163) 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:2090:LEU:HD13	1:A:2150:ASN:HD22	1.20	1.03
1:A:2090:LEU:HD13	1:A:2150:ASN:ND2	1.96	0.80
1:A:1914:VAL:HG11	1:A:1940:THR:HG22	1.66	0.77
1:A:1529:ARG:HH11	1:A:1573:LYS:HZ1	1.32	0.77
1:A:1624:ALA:HB2	1:A:1651:HIS:NE2	2.01	0.74
1:A:1502:LEU:HB3	1:A:1622:LEU:HD11	1.69	0.73
1:A:1558:ILE:HD12	1:A:1574:LEU:HD22	1.70	0.73
1:A:2105:VAL:HG13	1:A:2132:ILE:HD12	1.70	0.72
1:A:1810:HIS:HB2	1:A:1833:ILE:HD13	1.74	0.68
1:A:1902:ILE:O	1:A:1906:VAL:HG22	1.96	0.66
1:A:1811:LEU:HB3	1:A:1914:VAL:HG22	1.77	0.66
1:A:2158:THR:HA	1:A:2161:THR:HG22	1.79	0.65
1:A:2104:GLU:O	1:A:2108:ILE:HG12	1.99	0.63
1:A:1550:ARG:HH22	1:A:1858:ILE:HD12	1.64	0.62
1:A:1866:ILE:HD11	1:A:1878:GLN:HB2	1.81	0.62
1:A:1520:ILE:HD11	1:A:1625:ILE:HG22	1.80	0.62
1:A:1777:HIS:HD2	1:A:1781:ARG:HH21	1.48	0.62
1:A:1785:LEU:H	1:A:1785:LEU:HD23	1.64	0.62
1:A:1790:TRP:HB2	1:A:1823:LEU:HD13	1.83	0.61
1:A:1531:ILE:HD11	1:A:1536:ILE:HD12	1.83	0.61
1:A:2172:ARG:HD2	1:A:2174:ARG:HH22	1.66	0.61
1:A:1813:LEU:HD23	1:A:1916:VAL:HG22	1.83	0.60
1:A:1858:ILE:HA	1:A:1863:TYR:HD2	1.66	0.60
1:A:1481:TRP:H	1:A:1542:THR:HG22	1.66	0.60
1:A:2048:ASP:HA	1:A:2163:ARG:HH12	1.67	0.59
1:A:1870:ILE:H	1:A:1870:ILE:HD12	1.67	0.58
1:A:2180:MET:N	1:A:2180:MET:SD	2.74	0.58
1:A:1790:TRP:O	1:A:1794:ILE:HG12	2.03	0.58
1:A:1558:ILE:HD11	1:A:1578:ALA:HB2	1.85	0.57
1:A:2095:ALA:HA	1:A:2182:ILE:HD13	1.86	0.57
1:A:1663:GLN:HG2	1:A:1664:ILE:HG23	1.86	0.57
1:A:1790:TRP:CD1	1:A:2066:ILE:HD12	2.39	0.57
1:A:2142:ARG:HA	1:A:2145:MET:HE2	1.86	0.57
1:A:1670:ARG:O	1:A:1674:ILE:HG12	2.05	0.57
1:A:2160:LEU:O	1:A:2164:GLN:HG2	2.05	0.57
1:A:1936:ALA:O	1:A:1940:THR:HG23	2.05	0.56
1:A:1439:LEU:HA	1:A:1442:LYS:HD2	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2051:ILE:HG21	1:A:2163:ARG:HD2	1.88	0.56
1:A:1822:SER:O	1:A:1826:THR:HG23	2.06	0.56
1:A:1915:HIS:HA	1:A:1951:ILE:HG23	1.87	0.56
1:A:1484:GLU:HG3	1:A:1693:LEU:HD22	1.87	0.56
1:A:1571:TYR:HA	1:A:1574:LEU:HB2	1.88	0.56
1:A:2090:LEU:HD11	1:A:2094:MET:CE	2.36	0.55
1:A:1598:ILE:HD11	1:A:1619:LYS:HD2	1.88	0.55
1:A:1937:LEU:HD22	1:A:1969:LEU:HD21	1.87	0.55
1:A:1486:CYS:SG	1:A:1547:ARG:NH2	2.79	0.55
1:A:2215:ARG:HD3	1:A:2219:LYS:HZ2	1.72	0.55
1:A:2215:ARG:O	1:A:2219:LYS:HG3	2.08	0.54
1:A:2083:ASP:OD1	1:A:2083:ASP:N	2.36	0.54
1:A:1826:THR:HG21	1:A:2069:ALA:HA	1.89	0.54
1:A:1664:ILE:HG13	1:A:1665:GLU:HG3	1.90	0.54
1:A:1775:PRO:HB2	1:A:1778:HIS:HD2	1.72	0.53
1:A:1620:LEU:HD22	1:A:1644:LYS:HE2	1.89	0.53
1:A:1685:LEU:O	1:A:1690:ARG:NH1	2.42	0.53
1:A:1516:GLY:O	1:A:1520:ILE:HD12	2.08	0.52
1:A:1815:GLU:OE2	1:A:1820:SER:HB2	2.09	0.52
1:A:1854:PRO:HG2	1:A:1857:PHE:HB3	1.91	0.52
1:A:1913:LEU:HD13	1:A:1949:LEU:HD23	1.92	0.52
1:A:1796:VAL:HG11	1:A:1951:ILE:HD12	1.91	0.52
1:A:1678:LEU:HD13	1:A:1679:THR:N	2.24	0.52
1:A:1790:TRP:CE3	1:A:1819:ALA:HB1	2.45	0.52
1:A:2094:MET:HG2	1:A:2143:ILE:HD12	1.92	0.52
1:A:1952:LEU:HB3	1:A:1993:ILE:HB	1.91	0.51
1:A:2090:LEU:HD11	1:A:2094:MET:HE3	1.91	0.51
1:A:2141:GLU:O	1:A:2145:MET:HG3	2.10	0.51
1:A:1455:VAL:HG21	1:A:1500:ALA:HB3	1.93	0.51
1:A:2090:LEU:CD1	1:A:2094:MET:HE3	2.41	0.51
1:A:2099:THR:HG22	1:A:2192:LEU:CD1	2.41	0.51
1:A:1678:LEU:HD13	1:A:1679:THR:H	1.76	0.50
1:A:1823:LEU:HD11	1:A:2065:ILE:HG22	1.93	0.50
1:A:1609:SER:OG	1:A:1610:ASP:N	2.42	0.49
1:A:1742:ILE:HG22	1:A:1979:LEU:HB2	1.93	0.49
1:A:1809:ALA:HB3	1:A:1911:CYS:HB3	1.93	0.49
1:A:2213:LEU:HD13	1:A:2221:ILE:HD12	1.95	0.48
1:A:1563:SER:OG	1:A:1565:HIS:O	2.31	0.48
1:A:1805:ILE:HD11	1:A:1828:LEU:HB3	1.96	0.47
1:A:1449:LEU:HD12	1:A:1685:LEU:HB3	1.96	0.47
1:A:1834:TRP:CG	1:A:1906:VAL:HG12	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1800:ILE:HA	1:A:1803:MET:HE3	1.96	0.46
1:A:2192:LEU:H	1:A:2197:ASN:ND2	2.12	0.46
1:A:1536:ILE:HG21	1:A:1572:THR:HG23	1.97	0.46
1:A:1538:GLY:O	1:A:1542:THR:HG23	2.15	0.46
1:A:2151:TRP:CD2	1:A:2225:ILE:HD12	2.51	0.46
1:A:1647:ALA:HA	1:A:1650:THR:HG22	1.97	0.46
1:A:1899:VAL:HG21	1:A:1935:HIS:CD2	2.51	0.46
1:A:1692:LEU:O	1:A:1696:ILE:HG13	2.16	0.45
1:A:2055:VAL:HB	1:A:2058:GLN:HE21	1.81	0.45
1:A:1744:ASN:N	1:A:1744:ASN:OD1	2.49	0.45
1:A:1779:VAL:HG21	1:A:2051:ILE:HD11	1.98	0.45
1:A:1513:ARG:HH21	1:A:1633:PRO:HG2	1.82	0.45
1:A:1962:PHE:HZ	1:A:1991:VAL:HG11	1.81	0.45
1:A:1449:LEU:O	1:A:1453:GLN:HG3	2.17	0.45
1:A:2033:TRP:O	1:A:2037:VAL:HG22	2.17	0.45
1:A:2192:LEU:H	1:A:2197:ASN:HD22	1.64	0.45
1:A:2097:LEU:HD12	1:A:2143:ILE:HD11	1.98	0.45
1:A:1544:SER:HB2	1:A:1848:ARG:HH11	1.82	0.45
1:A:1847:GLN:O	1:A:1848:ARG:NE	2.49	0.45
1:A:2172:ARG:HB2	1:A:2175:ASP:OD2	2.17	0.45
1:A:1797:LEU:HD13	1:A:1800:ILE:HD11	1.98	0.45
1:A:2174:ARG:HD3	1:A:2206:GLY:HA2	1.97	0.45
1:A:1856:GLN:O	1:A:1860:SER:OG	2.34	0.44
1:A:1937:LEU:O	1:A:1941:VAL:HG23	2.17	0.44
1:A:2189:ARG:HG3	1:A:2191:TYR:O	2.17	0.44
1:A:1935:HIS:HA	1:A:1938:LEU:CD2	2.47	0.44
1:A:1690:ARG:HD3	1:A:1690:ARG:H	1.82	0.44
1:A:1601:PRO:O	1:A:1611:ARG:NH2	2.48	0.44
1:A:1558:ILE:HG23	1:A:1574:LEU:HD22	2.00	0.44
1:A:2182:ILE:HG21	1:A:2201:PHE:HZ	1.83	0.44
1:A:2046:CYS:HG	1:A:2059:TYR:HH	1.60	0.44
1:A:1964:PHE:O	1:A:1968:VAL:HG12	2.18	0.43
1:A:2182:ILE:HG21	1:A:2201:PHE:CZ	2.53	0.43
1:A:2191:TYR:O	1:A:2192:LEU:HB2	2.17	0.43
1:A:1960:ASN:N	1:A:1960:ASN:OD1	2.51	0.43
1:A:1945:LYS:HB2	1:A:1945:LYS:HE2	1.68	0.43
1:A:2062:ASP:O	1:A:2066:ILE:HG12	2.18	0.43
1:A:1443:ILE:HG23	1:A:1488:THR:HA	2.01	0.43
1:A:1774:PRO:HA	1:A:1775:PRO:HD3	1.88	0.43
1:A:1614:ASN:O	1:A:1618:ARG:HG3	2.19	0.43
1:A:1562:ASN:HD21	1:A:2220:ARG:HG2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1529:ARG:NH1	1:A:1573:LYS:HZ1	2.07	0.42
1:A:2064:ASN:O	1:A:2068:GLN:HG3	2.18	0.42
1:A:2090:LEU:O	1:A:2091:GLN:C	2.61	0.42
1:A:1857:PHE:HE1	1:A:1862:PRO:HB2	1.84	0.42
1:A:1931:ARG:HD3	1:A:1935:HIS:HE1	1.84	0.42
1:A:1972:PHE:HD1	1:A:1973:PHE:CD1	2.37	0.42
1:A:2103:LYS:HE3	1:A:2103:LYS:HB2	1.81	0.42
1:A:2221:ILE:O	1:A:2225:ILE:HG12	2.18	0.42
1:A:1502:LEU:HD23	1:A:1502:LEU:HA	1.87	0.42
1:A:1669:ILE:O	1:A:1672:MET:HG2	2.19	0.42
1:A:1796:VAL:O	1:A:1800:ILE:HG12	2.20	0.42
1:A:1598:ILE:HB	1:A:1678:LEU:HD22	2.02	0.42
1:A:1670:ARG:HA	1:A:1673:ILE:HD12	2.00	0.42
1:A:1931:ARG:O	1:A:1935:HIS:ND1	2.53	0.42
1:A:1458:ILE:HG13	1:A:1459:THR:N	2.34	0.42
1:A:1641:PRO:O	1:A:1644:LYS:HG2	2.19	0.42
1:A:1933:GLN:HE21	1:A:1965:LEU:HD11	1.84	0.42
1:A:1939:ILE:O	1:A:1943:VAL:HG22	2.19	0.42
1:A:1485:CYS:HA	1:A:1488:THR:HG22	2.02	0.42
1:A:2081:LEU:HB2	1:A:2149:ARG:HG2	2.02	0.42
1:A:1450:THR:O	1:A:1454:MET:HG3	2.20	0.42
1:A:1933:GLN:O	1:A:1937:LEU:HG	2.19	0.42
1:A:1934:VAL:HG23	1:A:2006:PHE:HE2	1.84	0.41
1:A:2106:ILE:HG13	1:A:2191:TYR:CE1	2.55	0.41
1:A:2131:LYS:HA	1:A:2134:THR:HG22	2.02	0.41
1:A:1443:ILE:HB	1:A:1444:PRO:HD3	2.02	0.41
1:A:1966:LEU:HD23	1:A:1966:LEU:HA	1.84	0.41
1:A:1443:ILE:HG12	1:A:1696:ILE:HD13	2.01	0.41
1:A:1434:LEU:N	1:A:1436:GLN:OE1	2.53	0.41
1:A:1527:THR:O	1:A:1531:ILE:HG23	2.20	0.41
1:A:1573:LYS:HA	1:A:1573:LYS:HD3	1.93	0.41
1:A:1944:LEU:HB2	1:A:1997:LEU:HD22	2.03	0.41
1:A:1574:LEU:HA	1:A:1574:LEU:HD23	1.79	0.40
1:A:1971:GLN:OE1	1:A:2012:ARG:HD3	2.21	0.40
1:A:1980:ARG:HG3	1:A:2039:GLN:HE22	1.87	0.40
1:A:2132:ILE:HD13	1:A:2132:ILE:HA	1.92	0.40
1:A:1883:LEU:HD13	1:A:1902:ILE:HG12	2.03	0.40
1:A:1986:PRO:C	1:A:2036:ARG:HH22	2.29	0.40
1:A:2151:TRP:CZ2	1:A:2159:ARG:HG3	2.56	0.40
1:A:1510:TYR:CA	1:A:1625:ILE:HD11	2.51	0.40
1:A:1529:ARG:HD3	1:A:1573:LYS:NZ	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1813:LEU:HD12	1:A:1893:LEU:HD21	2.03	0.40
1:A:2090:LEU:HG	1:A:2094:MET:HE3	2.04	0.40
1:A:1989:HIS:H	1:A:2036:ARG:HH21	1.69	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	681/2261 (30%)	668 (98%)	13 (2%)	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	629/2037 (31%)	625 (99%)	4 (1%)	84	91

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1669	ILE
1	A	1678	LEU
1	A	1685	LEU

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Mol	Chain	Res	Type
1	A	1855	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1554	ASN
1	A	1778	HIS
1	A	1933	GLN
1	A	2011	ASN
1	A	2039	GLN
1	A	2091	GLN
1	A	2150	ASN
1	A	2198	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 [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.

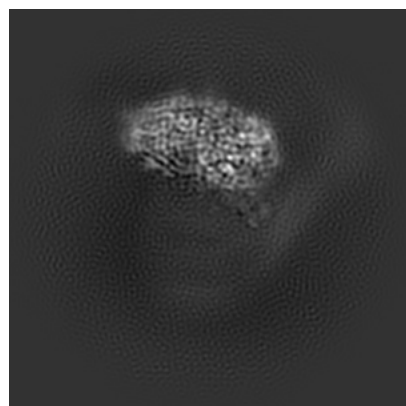
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37958. These allow visual inspection of the internal detail of the map and identification of artifacts.

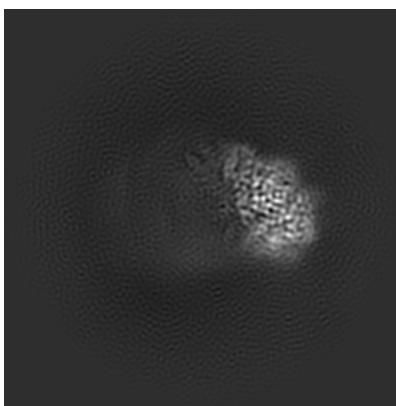
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

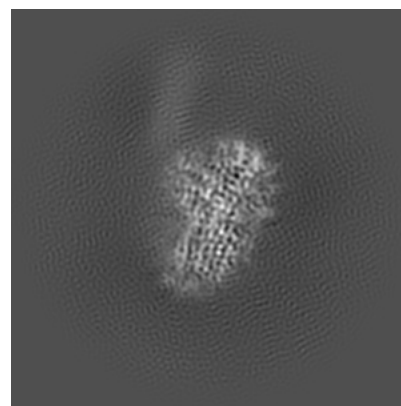
6.1.1 Primary map



X

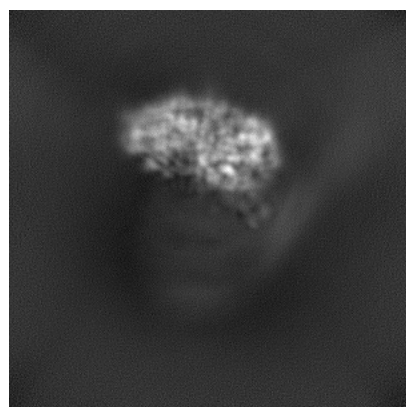


Y

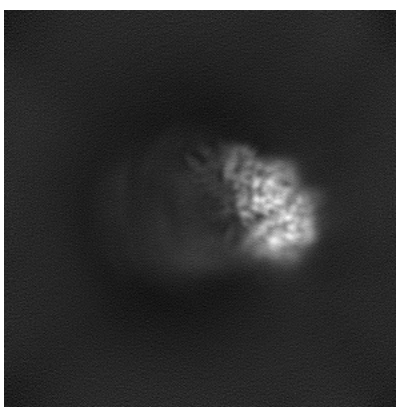


Z

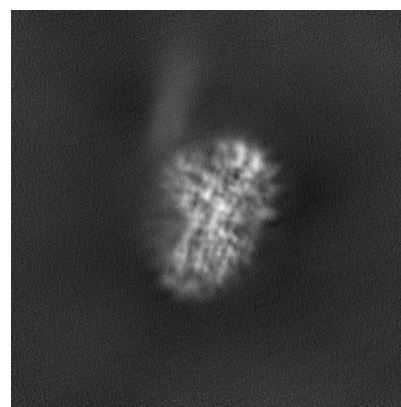
6.1.2 Raw map



X



Y

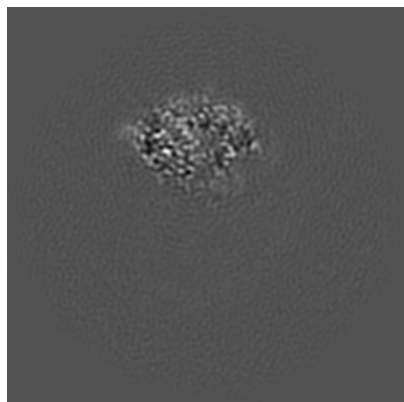


Z

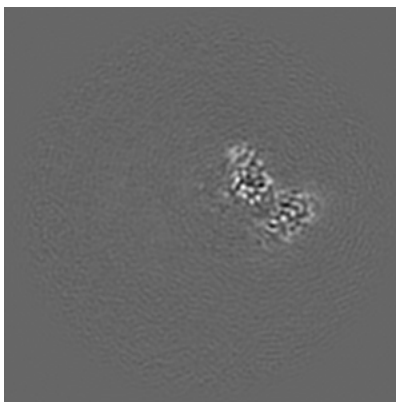
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

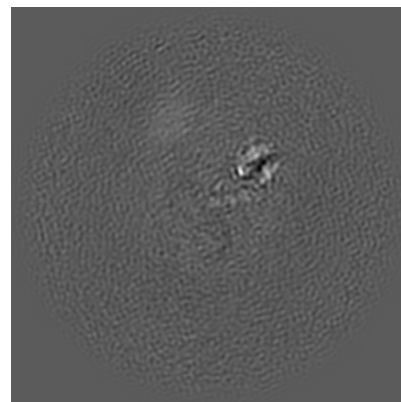
6.2.1 Primary map



X Index: 220

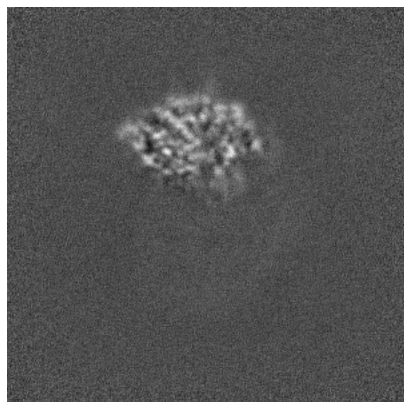


Y Index: 220

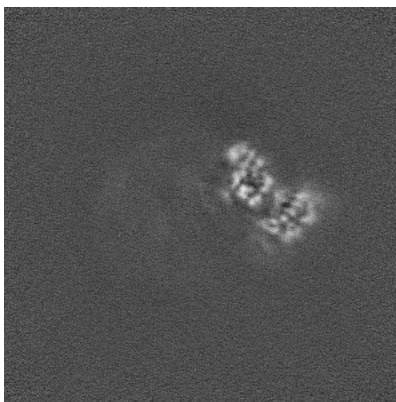


Z Index: 220

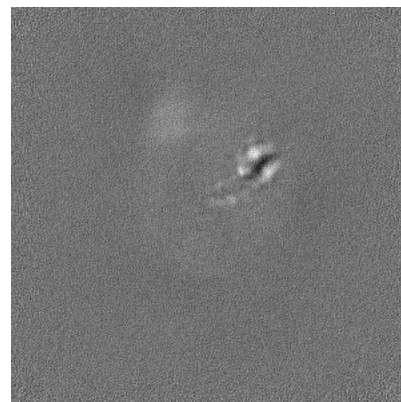
6.2.2 Raw map



X Index: 220



Y Index: 220

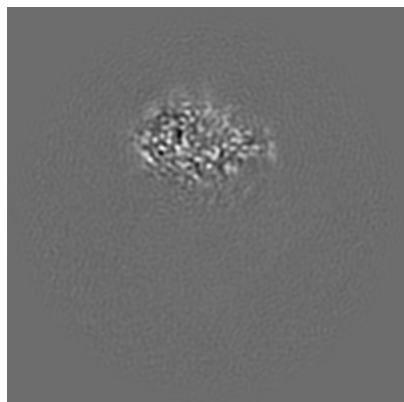


Z Index: 220

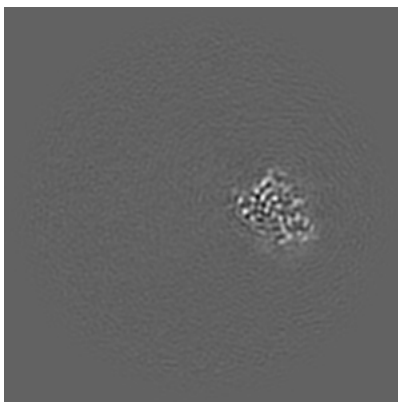
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

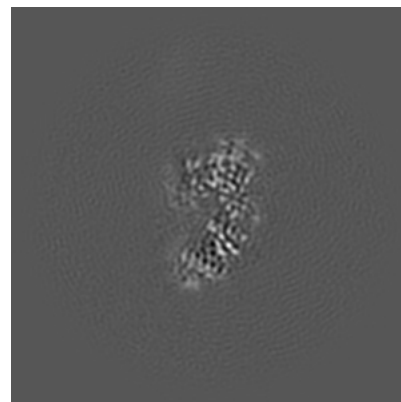
6.3.1 Primary map



X Index: 231

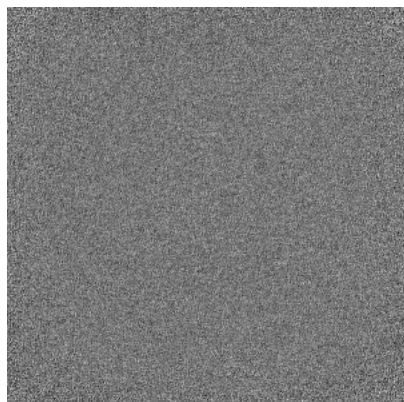


Y Index: 170

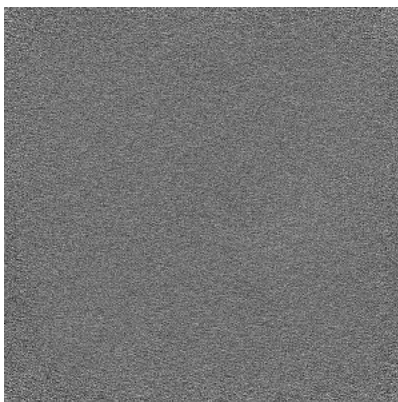


Z Index: 285

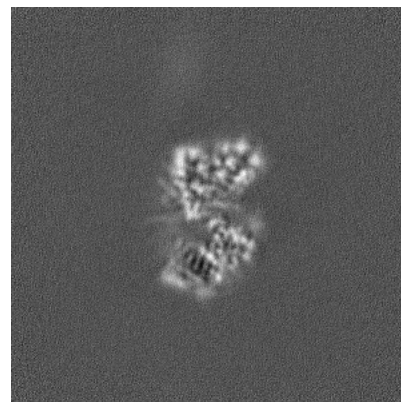
6.3.2 Raw map



X Index: 0



Y Index: 0

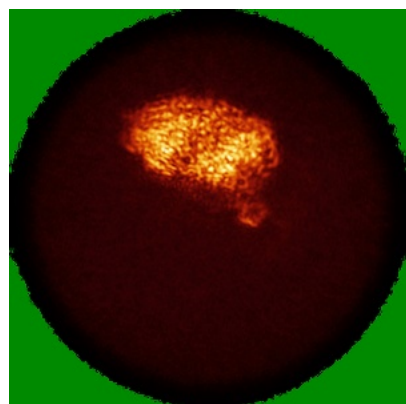


Z Index: 297

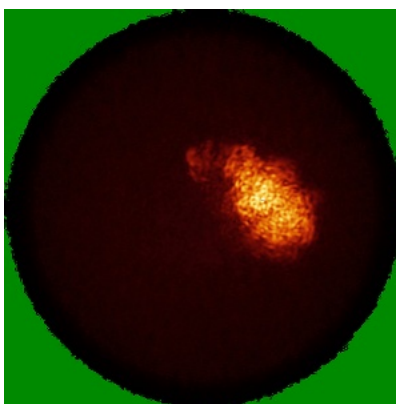
The images above show the largest variance slices of the map in three orthogonal directions.

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

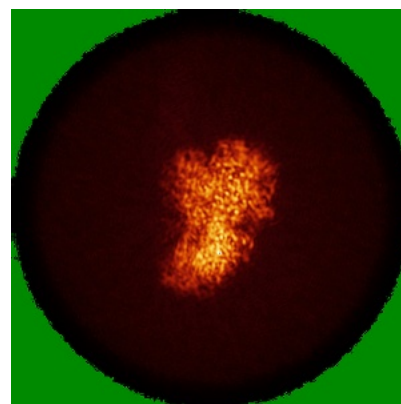
6.4.1 Primary map



X

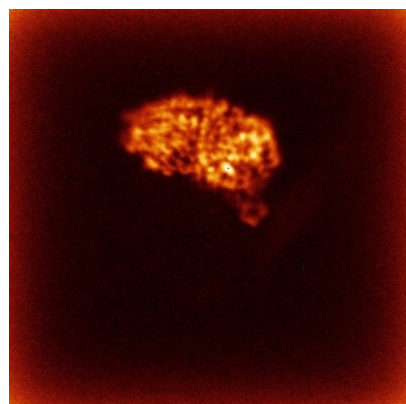


Y

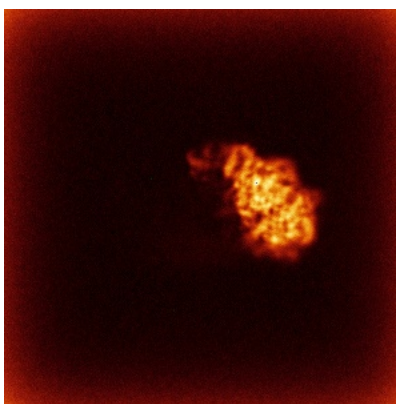


Z

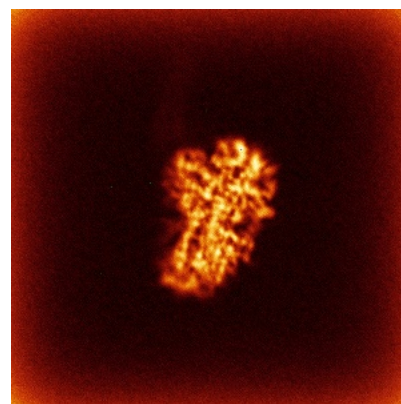
6.4.2 Raw map



X



Y

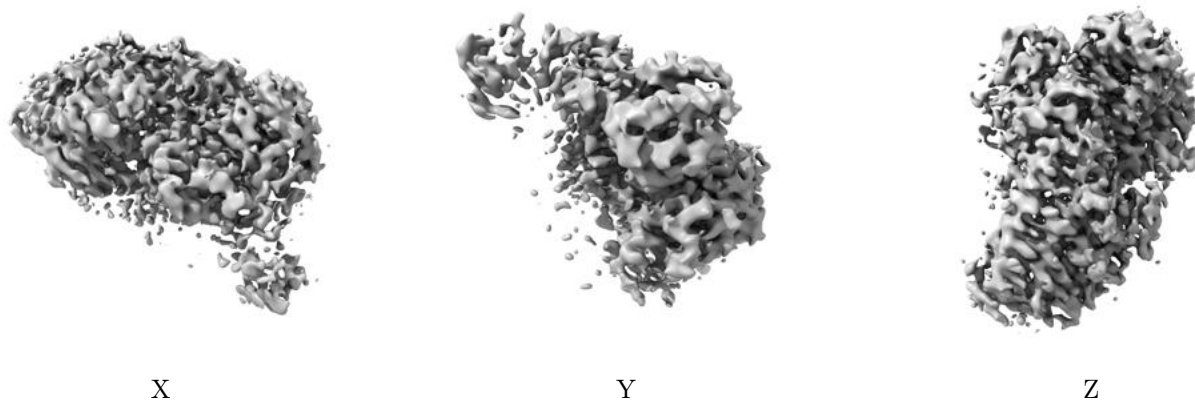


Z

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.

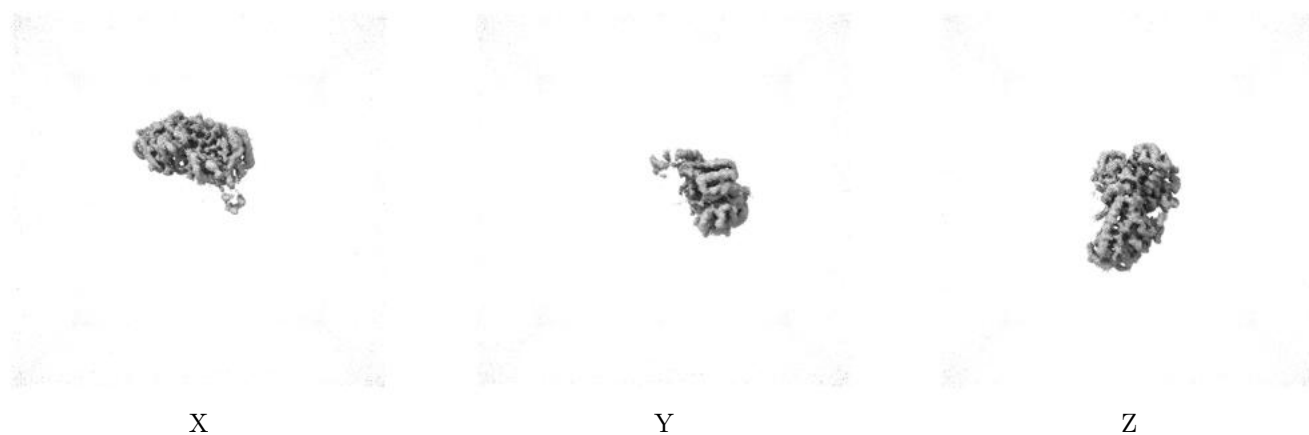
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0858. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

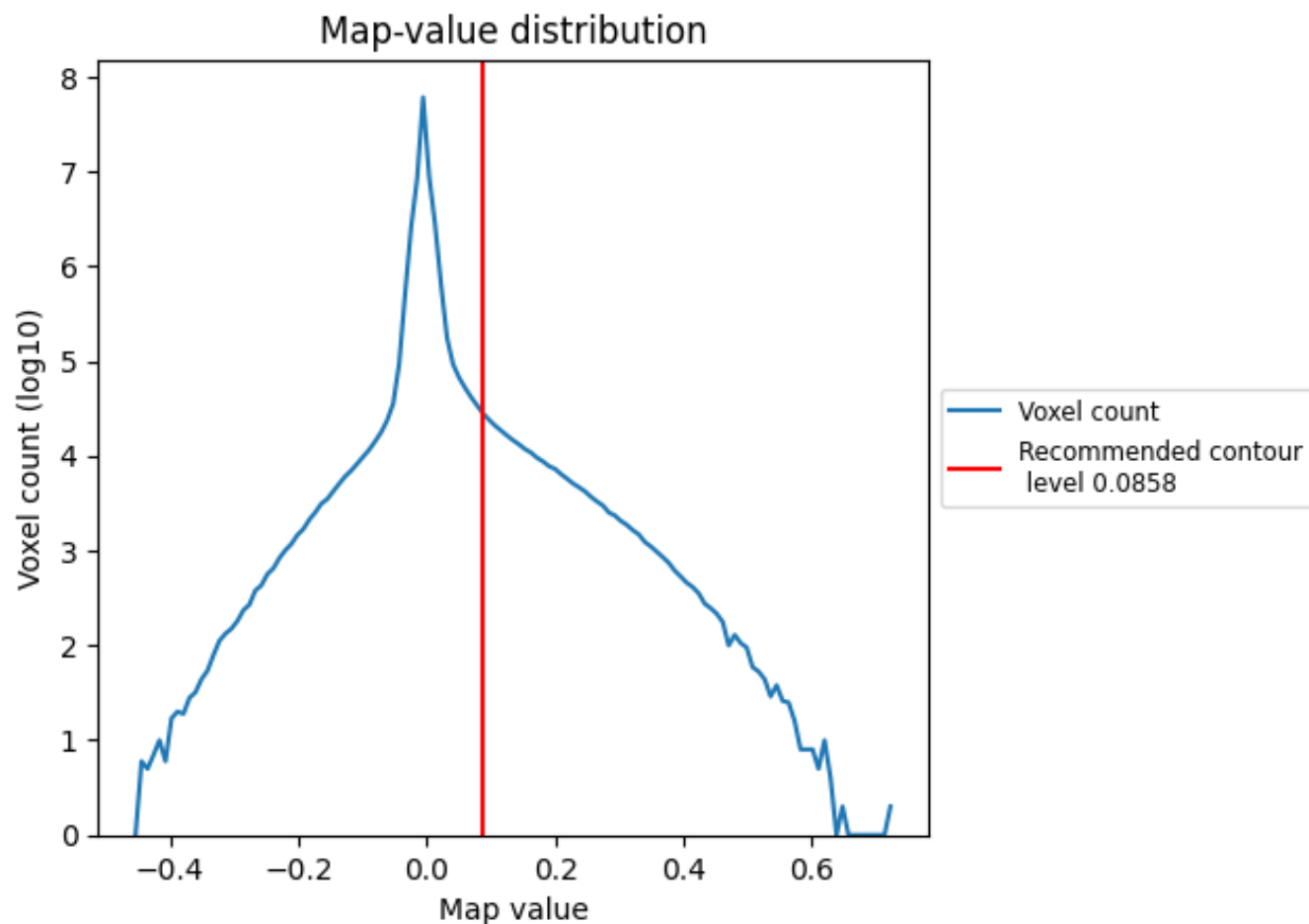
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

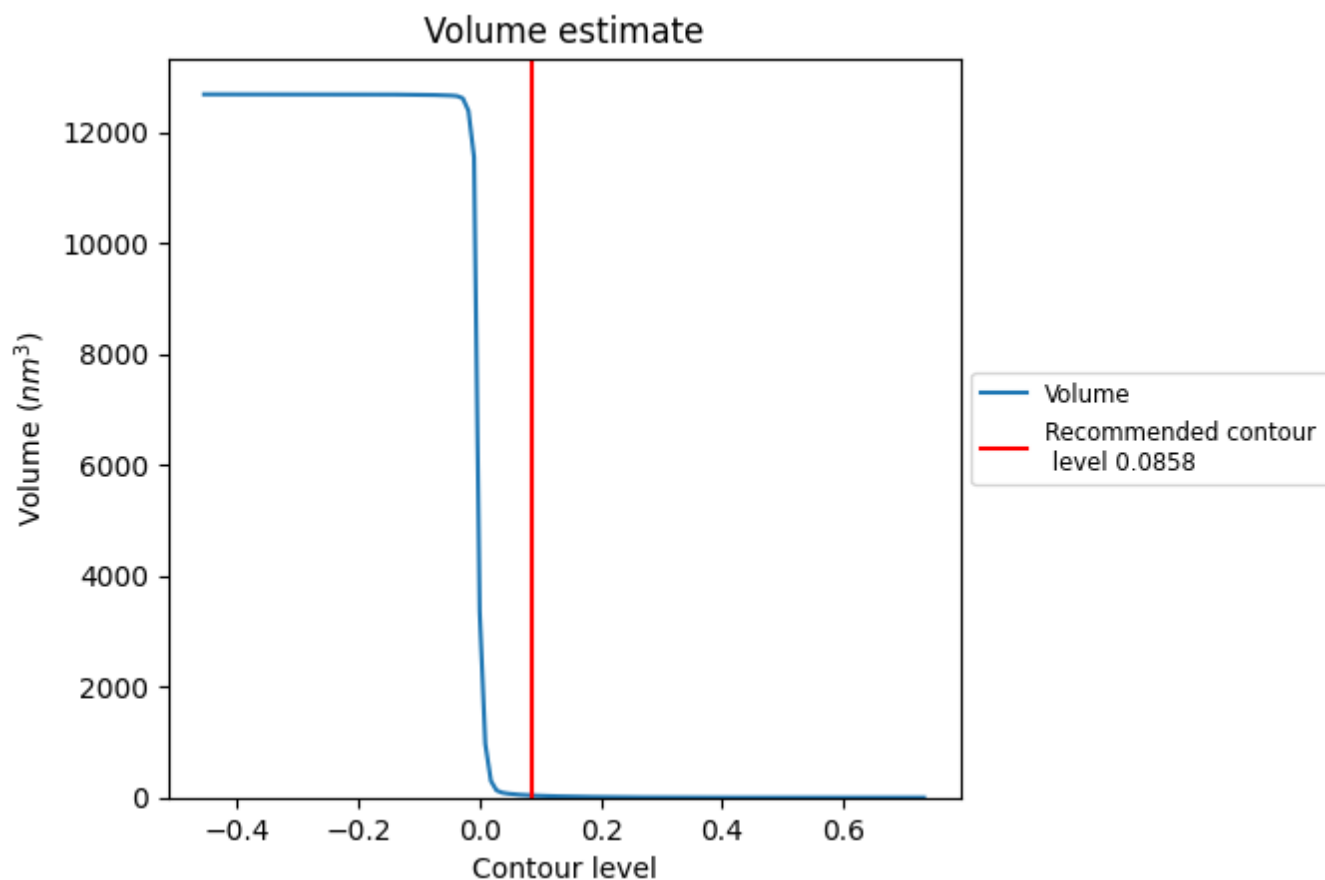
This section contains the results of statistical analysis of the map.

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.

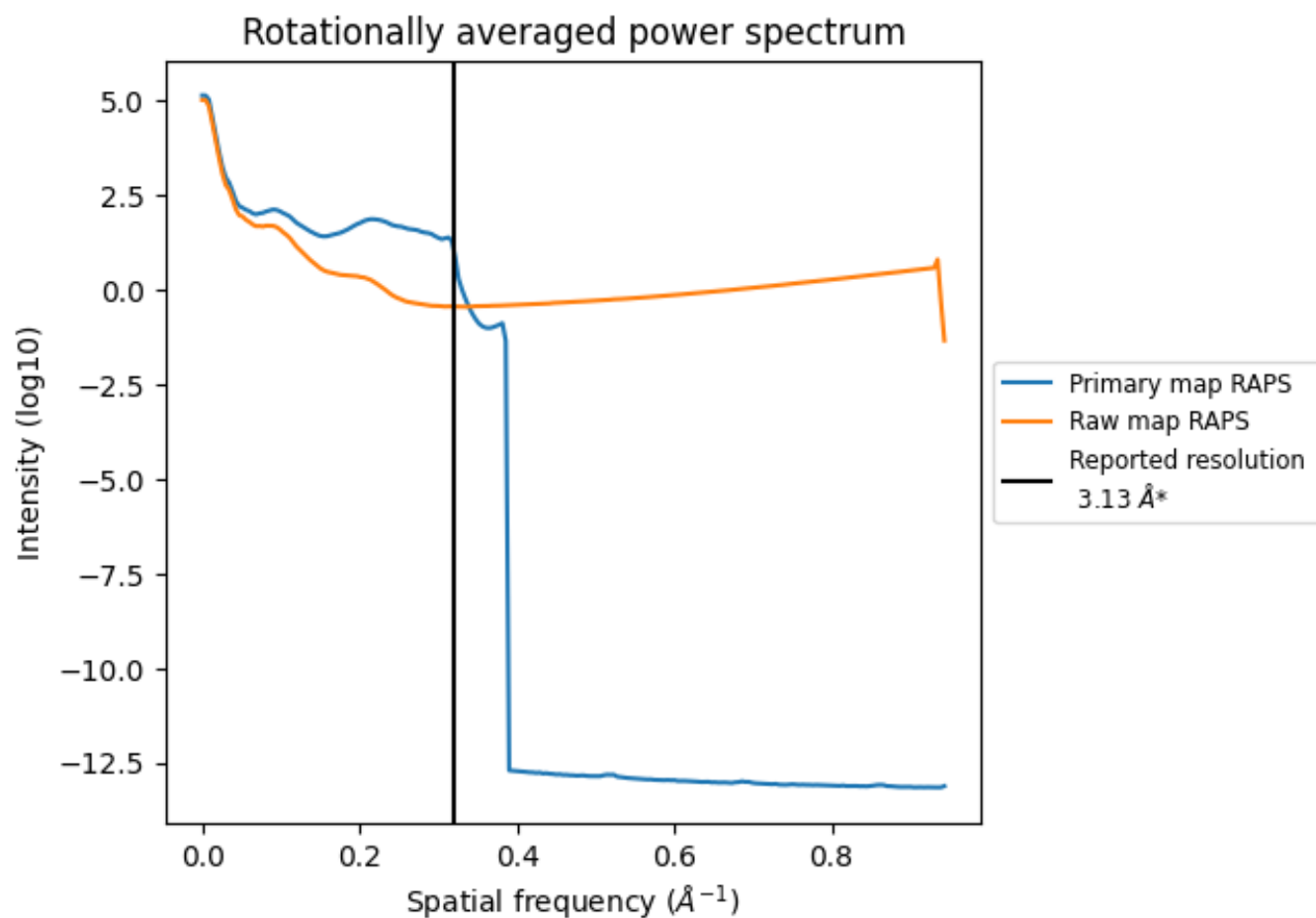
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 38 nm^3 ; this corresponds to an approximate mass of 34 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 ⓘ

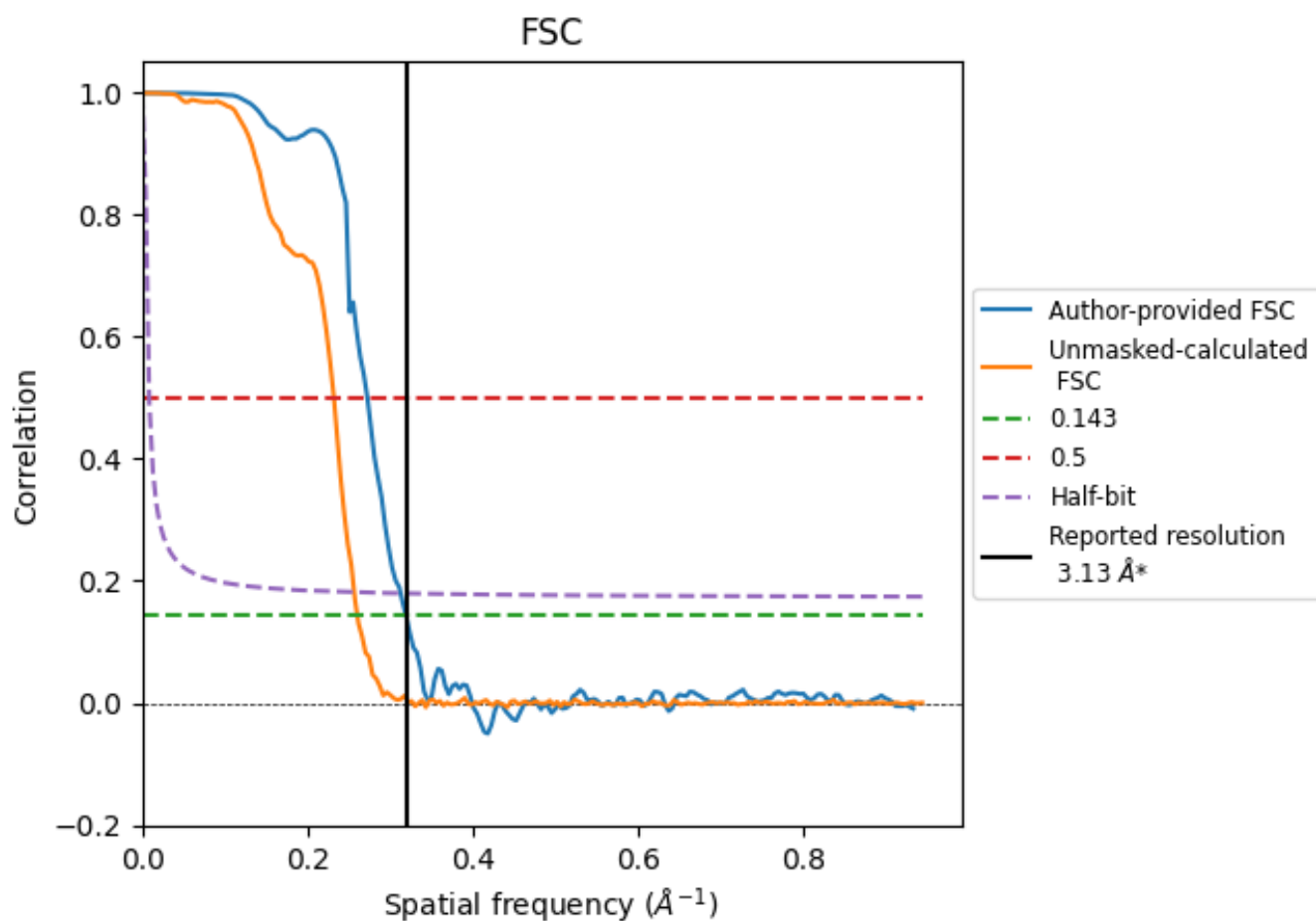


*Reported resolution corresponds to spatial frequency of 0.319 Å⁻¹

8 Fourier-Shell correlation [i](#)

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.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.319 Å⁻¹

8.2 Resolution estimates [i](#)

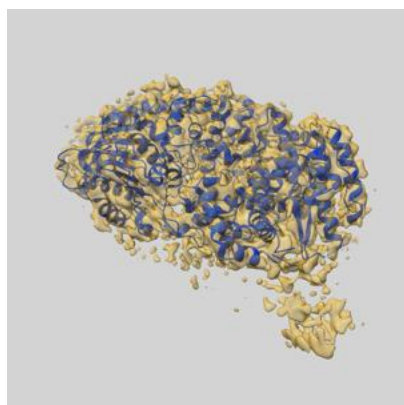
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.13	-	-
Author-provided FSC curve	3.13	3.67	3.20
Unmasked-calculated*	3.84	4.31	3.90

*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 3.84 differs from the reported value 3.13 by more than 10 %

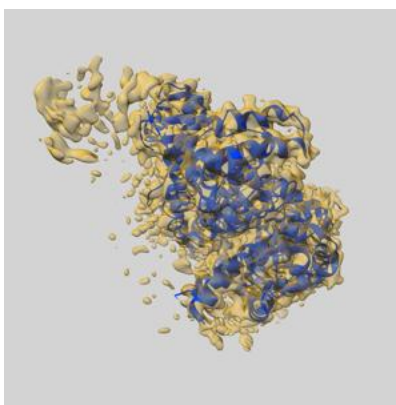
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-37958 and PDB model 8YXL. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

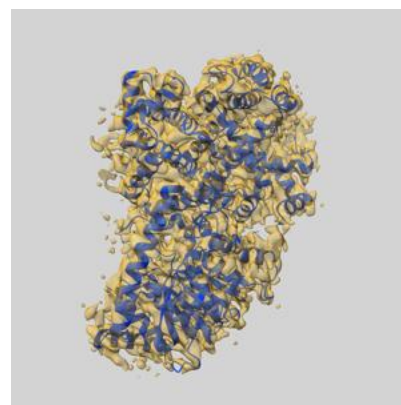
9.1 Map-model overlay [i](#)



X



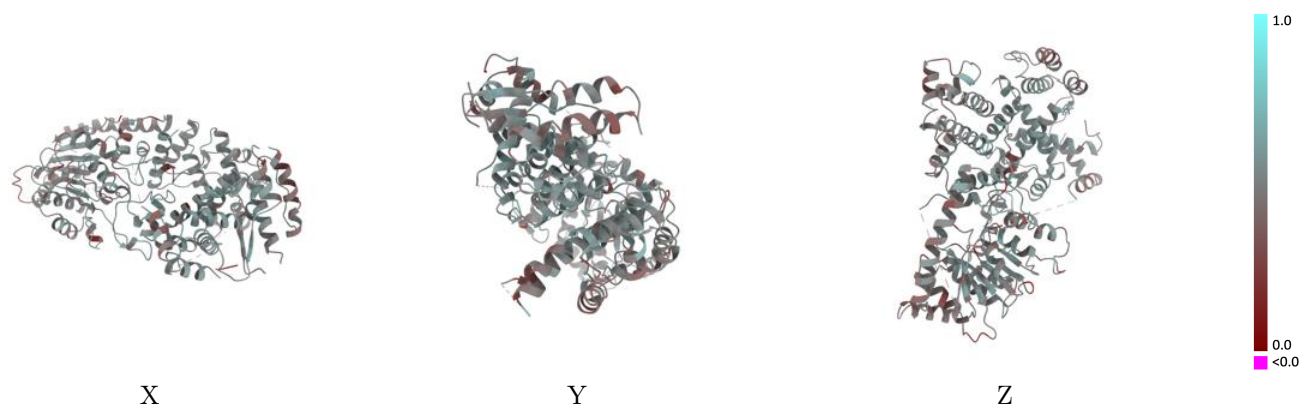
Y



Z

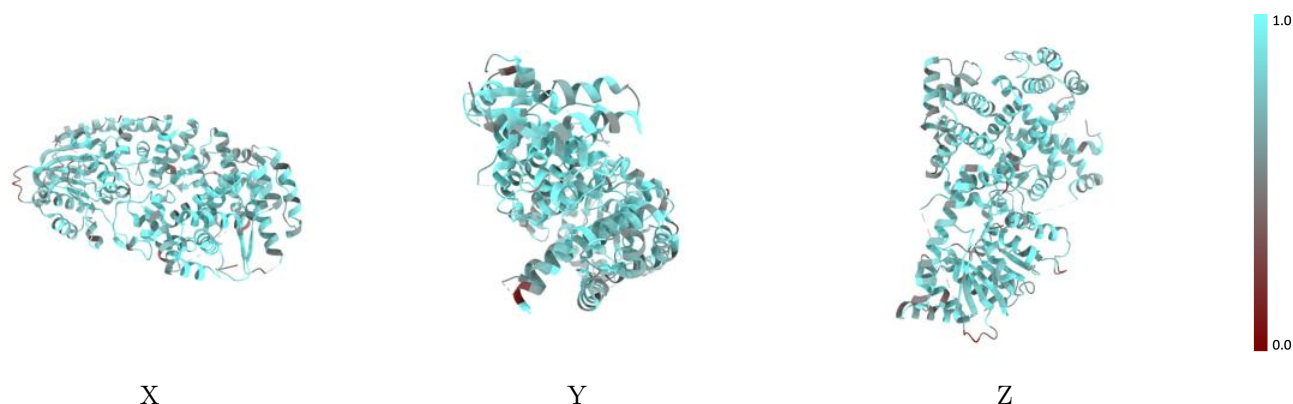
The images above show the 3D surface view of the map at the recommended contour level 0.0858 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



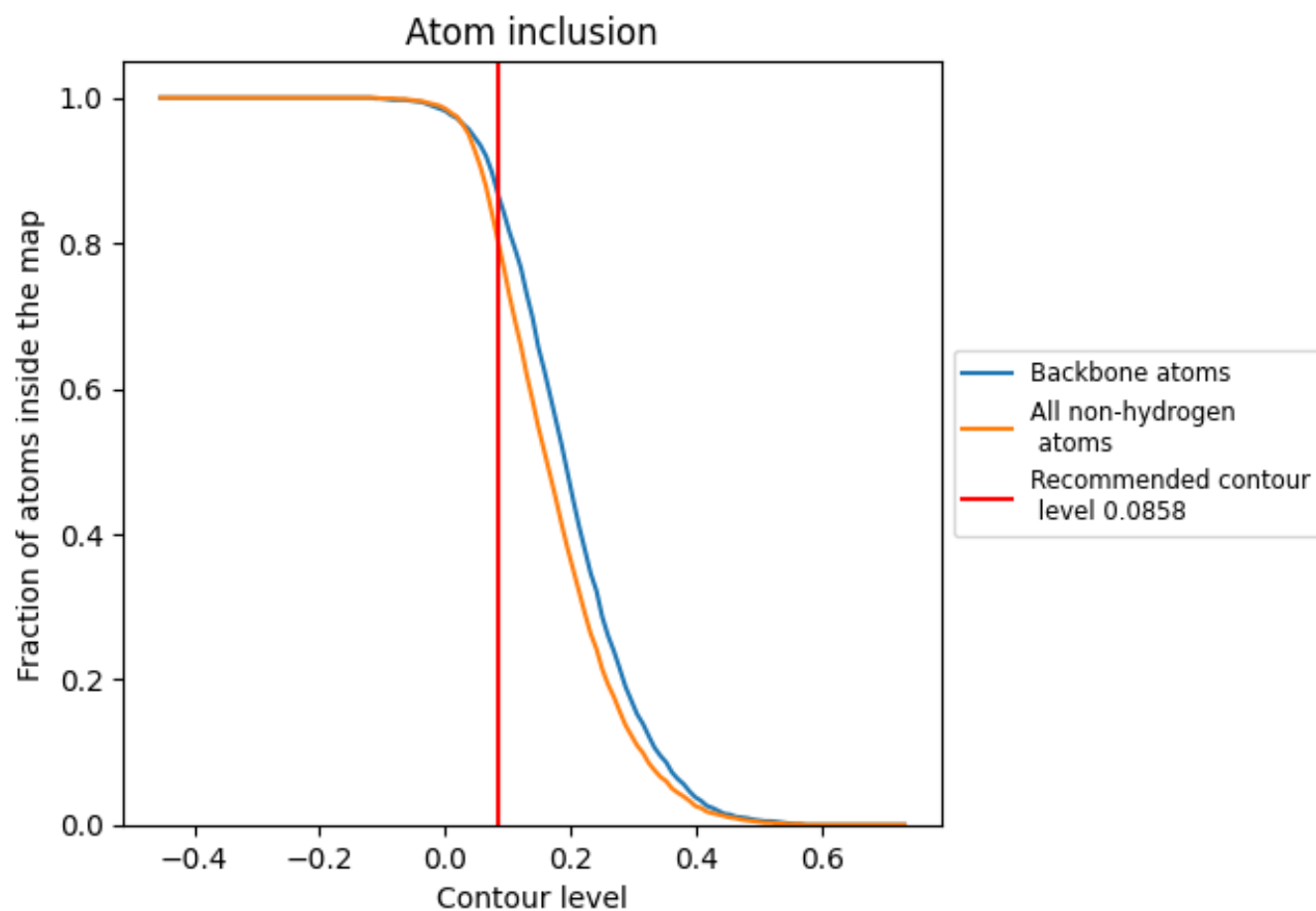
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0858).

9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 80% 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 (0.0858) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7970	0.4840
A	0.7970	0.4840

