



Full wwPDB EM Validation Report ⓘ

Jun 2, 2024 – 08:47 PM EDT

PDB ID : 8DGI
EMDB ID : EMD-27423
Title : Structural Basis of MicroRNA Biogenesis by Dicer-1 and Its Partner Protein
Loqs-PB - complex Ia
Authors : Jouravleva, K.; Golovenko, D.; Demo, G.; Dutcher, R.C.; Tanaka Hall, T.M.;
Zamore, P.D.; Korostelev, A.A.
Deposited on : 2022-06-23
Resolution : 3.94 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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

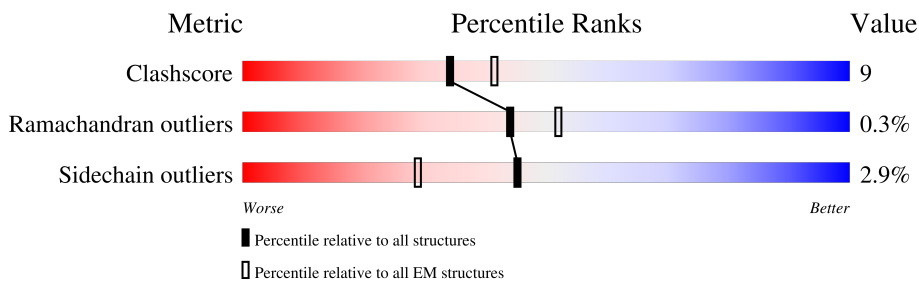
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.94 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	2249	
2	N	465	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 13580 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 Endoribonuclease Dcr-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1582	12733	8073	2236	2354	70	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	134	ARG	SER	conflict	UNP Q9VCU9
A	205	SER	THR	conflict	UNP Q9VCU9
A	416	LEU	MET	conflict	UNP Q9VCU9
A	702	SER	ALA	conflict	UNP Q9VCU9
A	796	CYS	SER	conflict	UNP Q9VCU9
A	1332	VAL	ALA	conflict	UNP Q9VCU9
A	1338	ALA	PRO	conflict	UNP Q9VCU9
A	1339	ILE	THR	conflict	UNP Q9VCU9
A	1345	ILE	LEU	conflict	UNP Q9VCU9

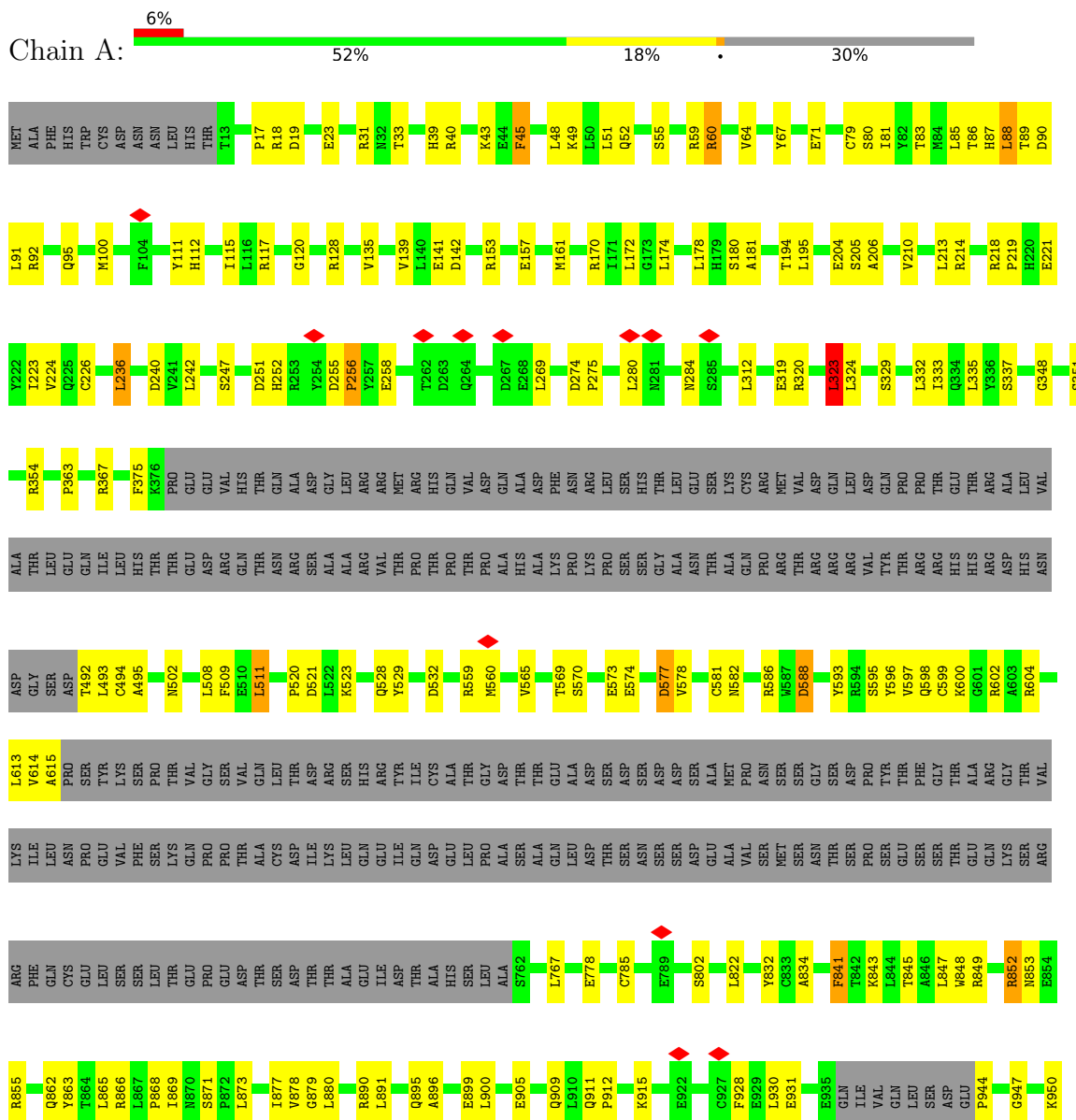
- Molecule 2 is a protein called Loquacious, isoform B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	N	108	847	535	148	160	4	0	0

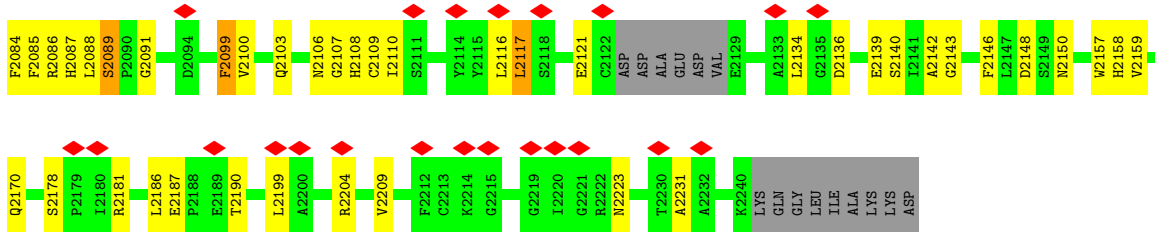
3 Residue-property plots

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.

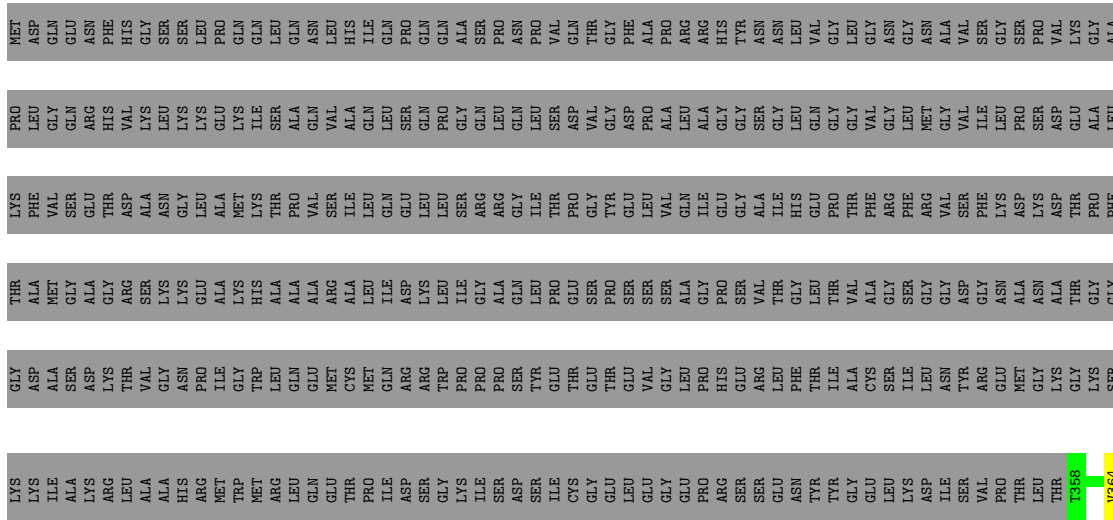
• Molecule 1: Endoribonuclease Dcr-1



G1982	F1993	E1997	Y2002	K2003	F2004	R2005	D2006	R2007	L2010	L2011	Q2012	A2013	M2014	L2015	H2016	Y2019	T2020	P2021	R2022	R2023	C2027	Y2028	F2033	L2039	D2040	Y2041	L2042	L2043	G1943	G1944	N1945	Q1946	E1947	Q1948	R1949	I1950	S1953	P1969	T1970	P1971	R1972	S2084	A2085	L2066	A2076	F2081	K2083	
ILE	PRO	TYR	ASN	LEU	VAL	SER	Q1996	C1906	V1907	E1908	A1909	L1910	A1913	P1920	A1923	L1924	L1925	F1926	M1927	A1928	W1929	L1930	G1931	V1932	R1933	V1934	L1935	P1936	D1942	G1943	G1944	N1945	Q1946	E1947	Q1948	R1949	I1950	S1953	P1969	T1970	P1971	R1972	S2084	A2085	L2066	A2076	F2081	K2083
LYS	ILE	PRO	THR	HIS	VAL	TRP	LYS	LEU	ALA	ASP	LEU	ASP	ILE	ASN	LEU	SER	VAL	GLN	ILE	CYS	GLU	MET	VAL	ARG	GLU	ALA	ASP	ALA	GLY	LEU	LEU	GLU	GLN	ASN	GLY	ALA	GLN	ASN	GLY	GLN	ASP	SER	ASN	PRO	LYS	SER	CYS	PHE
M1740	L1741	E1745	T1746	F1747	G1748	D1749	L1752	K1753	Y1754	A1755	I1756	K1757	M1764	L1765	D1766	E1767	K1678	Q1679	L1680	LEU	LEU	GLN	TYR	GLU	ILE	GLU	ILE	PRO	THR	THR	LYS	ALA	ILE	THR	L1807	M1808	W1809	L1810	P1811	P1812	CYS	TYR	VAL	PRO	LYS	LEU	GLU	ALA
ILE	PRO	THR	HIS	VAL	SER	Q1996	C1906	V1907	E1908	A1909	L1910	A1913	P1920	A1923	L1924	L1925	F1926	M1927	A1928	W1929	L1930	G1931	V1932	R1933	V1934	L1935	P1936	D1942	G1943	G1944	N1945	Q1946	E1947	Q1948	R1949	I1950	S1953	P1969	T1970	P1971	R1972	S2084	A2085	L2066	A2076	F2081	K2083	
M1686	G1661	H1662	S1663	F1664	D1665	N1666	Y1667	E1668	H1670	H1671	R1672	L1673	M1674	L1675	D1676	E1677	K1678	Q1679	L1680	LEU	LEU	GLN	TYR	GLU	ILE	GLU	ILE	PRO	THR	THR	LYS	ALA	ILE	THR	D1807	M1808	W1809	L1810	P1811	P1812	CYS	TYR	VAL	PRO	LYS	LEU	GLU	ALA
ILE	PRO	THR	HIS	VAL	SER	Q1996	C1906	V1907	E1908	A1909	L1910	A1913	P1920	A1923	L1924	L1925	F1926	M1927	A1928	W1929	L1930	G1931	V1932	R1933	V1934	L1935	P1936	D1942	G1943	G1944	N1945	Q1946	E1947	Q1948	R1949	I1950	S1953	P1969	T1970	P1971	R1972	S2084	A2085	L2066	A2076	F2081	K2083	
F1552	H1556	D1557	D1558	T1565	R1566	Y1567	E1568	I1571	A1572	K1575	P1586	H1587	D1588	GLN	LEU	VAL	LYS	LEU	LEU	GLN	ARG	SER	GLU	ILE	ALA	ALA	THR	SER	VAL	VAL	S1697	L1611	L1615	Y1618	D1622	K1627	R1632	E1633	L1636	E1641	L1642	M1643	E1653					
ASP	ASN	ALA	GLY	PRO	LEU	ASN	TYR	MET	HIS	HIS	TRP	ASP	VAL	ALA	GLN	ASP	ASP	ILE	ALA	ALA	THR	SER	GLU	ILE	ALA	ALA	THR	SER	VAL	S1697	L1611	L1615	Y1618	D1622	K1627	R1632	E1633	L1636	E1641	L1642	M1643	E1653						
SER	ALA	ILE	GLU	LEU	ILE	ILE	GLY	GLY	GLU	TRP	VAL	ASP	PHE	ILE	GLY	ILE	GLY	THR	SER	ASN	ASP	PHE	ILE	GLY	GLY	GLY	ALA	PHE	ASN	GLN	VAL	ASP	THR	PHE	HIS	GLN	ASP	PRO	VAL	ASP	LEU	ALA	ASN	VAL	LYS	PHE	ASP	
GLN	GLN	THR	ARG	TYR	GLY	SER	PRO	THR	PHE	TRP	VAL	ASP	GLY	PHE	LYS	PRO	GLY	THR	SER	GLN	ASN	ASP	THR	ILE	GLN	GLY	ALA	PHE	ASN	GLN	VAL	ASP	THR	PHE	HIS	GLN	ASP	PRO	VAL	ASP	LEU	ALA	ASN	VAL	LYS	PHE	ASP	
PRO	MET	LEU	ASP	PHE	GLY	TRP	SER	SER	GLY	TRP	VAL	ASP	GLU	ASP	PHE	ILE	GLY	THR	SER	ASN	ASP	THR	ILE	GLY	GLY	ALA	PHE	ASN	GLN	VAL	ASP	THR	PHE	HIS	GLN	ASP	PRO	VAL	ASP	LEU	ALA	ASN	VAL	LYS	PHE	ASP		
R1207	Y1208	V1209	M1210	R1211	K1212	A1215	L1216	S1219	S1220	E1221	K1224	R1226	K1227	R1228	E1229	M1230	Q1233	L1237	L1241	C1242	T1243	V1244	H1245	T1254	A1255	V1256	C1257	I1265	N1266	G1267	A1271	R1275	V1278	L1282	G1283	L1284	Q1286	ILE	GLU	ASP	GLU	ASP	GLU	ASP				
LYS	ILE	VAL	GLY	GLY	TRP	ASP	LEU	LYS	LYS	E1221	K1224	R1226	K1227	R1228	E1229	M1230	Q1233	L1237	L1241	C1242	T1243	V1244	H1245	T1254	A1255	V1256	C1257	I1265	N1266	G1267	A1271	R1275	V1278	L1282	G1283	L1284	Q1286	ILE	GLU	ASP	GLU	ASP	GLU	ASP				
ARG	ARG	GLN	TYR	TYR	TYR	LYS	ARG	ALA	ALA	CYS	PHE	GLY	ASP	ARG	PRO	VAL	ALA	VAL	ALA	GLY	GLN	ASN	ASP	THR	ILE	ASN	GLY	ASP	ASN	ASN	VAL	ASP	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR



• Molecule 2: Loquacious, isoform B



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	112398	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	48.06	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	57471	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.496	Depositor
Minimum map value	-0.340	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.0262	Depositor
Map size (\AA)	360.18, 360.18, 360.18	wwPDB
Map dimensions	414, 414, 414	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.87, 0.87, 0.87	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	0.31	0/13020	0.68	21/17661 (0.1%)
2	N	0.31	0/859	0.65	1/1153 (0.1%)
All	All	0.31	0/13879	0.68	22/18814 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	88	LEU	CB-CG-CD2	-8.55	96.46	111.00
1	A	323	LEU	CA-CB-CG	7.86	133.38	115.30
1	A	511	LEU	CA-CB-CG	7.74	133.11	115.30
1	A	577	ASP	CB-CG-OD2	7.72	125.25	118.30
1	A	1749	ASP	CB-CG-OD1	7.50	125.05	118.30
2	N	393	ASP	CB-CG-OD1	6.99	124.59	118.30
1	A	236	LEU	CA-CB-CG	6.86	131.07	115.30
1	A	532	ASP	CB-CG-OD1	6.74	124.37	118.30
1	A	88	LEU	CA-CB-CG	6.70	130.70	115.30
1	A	161	MET	CA-CB-CG	6.24	123.90	113.30
1	A	1070	LEU	CA-CB-CG	6.21	129.59	115.30
1	A	1783	LEU	CA-CB-CG	6.20	129.56	115.30
1	A	1241	LEU	CA-CB-CG	6.08	129.28	115.30
1	A	2186	LEU	CA-CB-CG	6.00	129.10	115.30
1	A	2041	TYR	CB-CG-CD2	-5.89	117.47	121.00
1	A	1548	LEU	CA-CB-CG	5.70	128.40	115.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	195	LEU	CA-CB-CG	5.67	128.35	115.30
1	A	1924	LEU	CA-CB-CG	5.42	127.76	115.30
1	A	1566	ARG	CA-CB-CG	5.41	125.30	113.40
1	A	256	PRO	N-CD-CG	-5.31	95.23	103.20
1	A	274	ASP	CB-CG-OD1	5.31	123.08	118.30
1	A	312	LEU	CA-CB-CG	5.00	126.80	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1205	THR	Peptide
1	A	2116	LEU	Peptide

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	12733	0	12650	234	0
2	N	847	0	873	8	0
All	All	13580	0	13523	242	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 9.

All (242) 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:1278:VAL:O	1:A:1282:LEU:HB3	1.79	0.81
1:A:1920:PRO:O	1:A:1923:ALA:HB3	1.83	0.78
1:A:1529:LEU:O	1:A:1533:GLN:HB2	1.84	0.78
1:A:2117:LEU:O	1:A:2121:GLU:HB3	1.92	0.70
1:A:59:ARG:HB3	1:A:1991:SER:HB3	1.77	0.67
1:A:95:GLN:HB2	1:A:115:ILE:HD12	1.77	0.67
1:A:1907:VAL:O	1:A:1910:LEU:HB2	1.96	0.64

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:92:ARG:HB2	1:A:111:TYR:HA	1.80	0.63
1:A:1794:LEU:O	1:A:1797:TYR:HB2	1.98	0.63
1:A:2062:LEU:O	1:A:2066:LEU:HB2	1.98	0.63
1:A:528:GLN:NE2	1:A:529:TYR:O	2.32	0.62
1:A:67:TYR:HB3	1:A:115:ILE:HG23	1.81	0.62
1:A:88:LEU:O	1:A:2087:HIS:NE2	2.33	0.62
1:A:985:CYS:HB3	1:A:1030:GLU:HB3	1.80	0.62
1:A:79:CYS:SG	1:A:80:SER:N	2.73	0.61
1:A:976:LEU:H	1:A:1041:ARG:HH21	1.48	0.61
1:A:153:ARG:O	1:A:157:GLU:HB2	2.01	0.60
1:A:878:VAL:O	1:A:895:GLN:NE2	2.35	0.60
1:A:2042:LEU:HD22	1:A:2157:TRP:HB2	1.84	0.59
1:A:2106:ASN:ND2	1:A:2108:HIS:O	2.35	0.59
1:A:204:GLU:HG3	1:A:206:ALA:HB2	1.84	0.59
1:A:48:LEU:HG	1:A:89:THR:HG23	1.84	0.59
1:A:43:LYS:HD2	1:A:174:LEU:HB3	1.85	0.59
1:A:1627:LYS:NZ	1:A:1641:GLU:OE2	2.35	0.59
1:A:1779:GLN:O	1:A:1784:ASN:ND2	2.36	0.58
1:A:1221:GLU:HB3	1:A:1224:LYS:HB3	1.86	0.58
1:A:329:SER:HA	1:A:332:LEU:HD12	1.87	0.57
1:A:1746:THR:O	1:A:2063:ARG:NH2	2.37	0.57
1:A:1927:MET:HA	1:A:1930:LEU:HB2	1.87	0.57
1:A:1662:ASP:HB2	1:A:1664:PHE:H	1.70	0.57
1:A:832:TYR:HD1	1:A:912:PRO:HB3	1.70	0.56
1:A:573:GLU:O	1:A:598:GLN:NE2	2.38	0.56
1:A:2016:HIS:HB2	1:A:2087:HIS:HA	1.87	0.56
1:A:214:ARG:NH2	1:A:785:CYS:SG	2.75	0.56
1:A:1776:ARG:NH2	1:A:2033:PHE:O	2.38	0.56
1:A:2076:ALA:HA	1:A:2081:PHE:HD2	1.70	0.56
1:A:52:GLN:NE2	1:A:2085:PHE:O	2.38	0.56
1:A:1275:ARG:HG2	1:A:1721:PRO:HG2	1.86	0.56
1:A:578:VAL:O	1:A:604:ARG:NH1	2.40	0.55
2:N:430:SER:HA	2:N:434:VAL:HG23	1.88	0.55
1:A:375:PHE:HB3	1:A:493:LEU:HD11	1.89	0.55
1:A:495:ALA:HB3	1:A:565:VAL:HG22	1.89	0.55
1:A:1565:ILE:HA	1:A:1568:GLU:HG2	1.88	0.55
1:A:586:ARG:NH1	1:A:595:SER:OG	2.40	0.55
1:A:1278:VAL:O	1:A:1282:LEU:CB	2.55	0.55
1:A:1173:LYS:HE2	1:A:1184:ILE:H	1.72	0.54
1:A:89:THR:HB	1:A:91:LEU:HD12	1.90	0.54
1:A:1997:GLU:OE1	1:A:2003:LYS:NZ	2.40	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:880:LEU:H	1:A:891:LEU:HD23	1.73	0.54
1:A:1927:MET:HB3	1:A:1932:VAL:HB	1.89	0.54
1:A:1158:LEU:HB3	1:A:1191:LEU:HD12	1.89	0.53
1:A:87:HIS:CG	1:A:2100:VAL:HB	2.43	0.53
1:A:247:SER:O	1:A:251:ASP:HB2	2.09	0.53
1:A:1910:LEU:O	1:A:1913:ALA:HB3	2.09	0.53
1:A:930:LEU:HA	1:A:1787:ARG:HD3	1.90	0.53
1:A:205:SER:HB2	1:A:210:VAL:HG11	1.91	0.53
1:A:895:GLN:HG2	1:A:1636:LEU:HD21	1.90	0.53
1:A:1059:THR:HA	1:A:1063:VAL:HB	1.91	0.53
1:A:877:ILE:HD13	1:A:896:ALA:HA	1.91	0.53
1:A:909:GLN:O	1:A:911:GLN:NE2	2.42	0.53
1:A:1935:LEU:HD12	1:A:1936:PRO:HD2	1.90	0.53
1:A:1076:ASP:OD1	1:A:1076:ASP:N	2.42	0.53
1:A:1284:LEU:HD12	1:A:1715:LEU:HA	1.91	0.53
1:A:2005:ARG:HH12	1:A:2150:ASN:HB2	1.72	0.53
1:A:1667:TYR:O	1:A:1672:ARG:NH1	2.42	0.52
1:A:1548:LEU:HG	1:A:1549:LEU:HG	1.91	0.52
1:A:848:TRP:HB3	1:A:865:LEU:HD13	1.90	0.52
1:A:1678:LYS:HG3	1:A:1679:GLN:HB3	1.90	0.52
1:A:2143:GLY:O	1:A:2146:PHE:HB3	2.09	0.52
1:A:559:ARG:NH2	1:A:577:ASP:OD2	2.43	0.52
1:A:802:SER:OG	1:A:890:ARG:NH1	2.37	0.52
1:A:141:GLU:HA	1:A:174:LEU:HB2	1.90	0.52
1:A:492:THR:O	1:A:582:ASN:ND2	2.42	0.52
1:A:1622:ASP:OD1	1:A:1622:ASP:N	2.41	0.52
1:A:1752:LEU:HD23	1:A:1780:VAL:HA	1.92	0.52
1:A:81:ILE:HG13	1:A:115:ILE:HD13	1.92	0.52
1:A:931:GLU:HG2	1:A:1787:ARG:HG2	1.92	0.52
1:A:117:ARG:HB2	1:A:120:GLY:H	1.76	0.51
1:A:221:GLU:OE1	1:A:596:TYR:OH	2.27	0.51
1:A:586:ARG:NH1	1:A:599:CYS:SG	2.84	0.51
1:A:52:GLN:HE21	1:A:2086:ARG:HA	1.76	0.51
1:A:64:VAL:HB	1:A:135:VAL:HG12	1.92	0.51
1:A:223:ILE:HG23	1:A:767:LEU:HD23	1.92	0.51
1:A:1179:LYS:NZ	1:A:1230:ASN:O	2.42	0.51
1:A:1228:ARG:HB2	1:A:1233:GLN:HA	1.92	0.51
1:A:1662:ASP:OD1	1:A:1662:ASP:N	2.36	0.51
1:A:242:LEU:HD21	1:A:335:LEU:HD11	1.93	0.51
1:A:2103:GLN:O	1:A:2107:GLY:N	2.44	0.51
1:A:219:PRO:HD2	1:A:600:LYS:HE3	1.93	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1282:LEU:HG	1:A:1284:LEU:H	1.75	0.50
1:A:822:LEU:HB3	1:A:890:ARG:HB3	1.92	0.50
1:A:221:GLU:OE2	1:A:600:LYS:NZ	2.44	0.50
1:A:1572:ALA:HA	1:A:1575:LYS:HD2	1.93	0.50
1:A:614:VAL:HB	1:A:767:LEU:HD22	1.93	0.50
1:A:31:ARG:O	1:A:170:ARG:NH2	2.41	0.49
1:A:256:PRO:HB2	1:A:269:LEU:HD13	1.95	0.49
1:A:1653:GLU:H	1:A:1675:LEU:HD11	1.77	0.49
1:A:2178:SER:HB3	1:A:2181:ARG:HB2	1.94	0.49
1:A:520:PRO:HA	1:A:523:LYS:HB2	1.94	0.49
1:A:1676:ASP:OD1	1:A:1676:ASP:N	2.43	0.49
1:A:508:LEU:HA	1:A:511:LEU:HG	1.95	0.49
1:A:1788:LEU:HD13	1:A:1791:ARG:HD3	1.94	0.49
1:A:1571:ILE:O	1:A:1575:LYS:N	2.43	0.49
1:A:18:ARG:O	1:A:843:LYS:NZ	2.42	0.49
1:A:1670:HIS:HA	1:A:1673:LEU:HG	1.95	0.48
1:A:1566:ARG:O	1:A:1566:ARG:NH1	2.32	0.48
1:A:1643:ASN:HB3	1:A:1678:LYS:HZ1	1.78	0.48
1:A:2047:LEU:HD11	1:A:2066:LEU:HD12	1.94	0.48
1:A:2136:ASP:O	1:A:2140:SER:N	2.47	0.48
1:A:210:VAL:HA	1:A:213:LEU:HB2	1.95	0.48
1:A:2050:ASP:OD2	1:A:2050:ASP:N	2.44	0.48
2:N:410:THR:O	2:N:427:VAL:HA	2.14	0.48
1:A:573:GLU:O	1:A:602:ARG:NH2	2.46	0.48
1:A:363:PRO:O	1:A:367:ARG:HB2	2.14	0.48
1:A:578:VAL:HG22	1:A:602:ARG:HH11	1.78	0.48
1:A:2117:LEU:O	1:A:2121:GLU:CB	2.61	0.48
1:A:574:GLU:OE1	1:A:598:GLN:NE2	2.47	0.47
1:A:181:ALA:HA	1:A:1552:PHE:HB2	1.96	0.47
1:A:502:ASN:OD1	1:A:502:ASN:N	2.47	0.47
1:A:509:PHE:HB2	1:A:529:TYR:HB3	1.95	0.47
1:A:1271:ALA:HB1	1:A:1726:ILE:HB	1.96	0.47
1:A:1611:LEU:O	1:A:1615:LEU:HB2	2.14	0.47
1:A:849:ARG:HA	1:A:1661:GLY:HA3	1.97	0.47
1:A:802:SER:HG	1:A:890:ARG:HH11	1.60	0.47
1:A:928:PHE:O	1:A:1787:ARG:NH1	2.47	0.47
1:A:853:ASN:ND2	1:A:1653:GLU:OE1	2.47	0.47
1:A:1776:ARG:O	1:A:1780:VAL:HB	2.13	0.47
1:A:1156:PRO:HA	1:A:1190:PRO:HB3	1.96	0.47
1:A:40:ARG:NH1	1:A:71:GLU:OE2	2.48	0.47
1:A:1026:THR:HG23	1:A:1028:SER:H	1.79	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2209:VAL:HG12	1:A:2231:ALA:HB1	1.98	0.46
1:A:19:ASP:HA	1:A:845:THR:HG21	1.97	0.46
1:A:900:LEU:HD22	1:A:905:GLU:HB2	1.97	0.46
1:A:139:VAL:HG22	1:A:172:LEU:HB3	1.97	0.46
1:A:852:ARG:HG2	1:A:1656:ASN:HB2	1.97	0.46
1:A:1099:TRP:HA	1:A:1102:LEU:HD12	1.97	0.46
1:A:2187:GLU:HB3	1:A:2190:THR:HB	1.96	0.46
2:N:465:LYS:H	2:N:465:LYS:HG3	1.62	0.46
1:A:180:SER:HA	1:A:593:TYR:HB3	1.97	0.46
1:A:218:ARG:NH1	1:A:778:GLU:OE2	2.49	0.46
1:A:320:ARG:HH11	1:A:323:LEU:HD13	1.80	0.46
1:A:1950:ILE:HB	1:A:1953:SER:HB3	1.98	0.46
2:N:394:TYR:HD1	2:N:456:LEU:HD12	1.81	0.45
1:A:1205:THR:O	1:A:1205:THR:OG1	2.31	0.45
1:A:87:HIS:ND1	1:A:2100:VAL:HB	2.32	0.45
1:A:869:ILE:HD12	1:A:2020:THR:HA	1.98	0.45
1:A:1173:LYS:HE2	1:A:1183:THR:HA	1.98	0.45
1:A:1926:PHE:O	1:A:1929:TRP:HB3	2.17	0.45
1:A:2007:ARG:HD2	1:A:2010:LEU:HD23	1.98	0.45
1:A:23:GLU:OE2	1:A:214:ARG:NH1	2.50	0.45
1:A:33:THR:O	1:A:172:LEU:HA	2.15	0.45
1:A:866:ARG:NH1	1:A:1664:PHE:O	2.49	0.45
1:A:1518:THR:OG1	1:A:1519:ALA:N	2.49	0.45
1:A:49:LYS:HD2	1:A:2088:LEU:HA	1.98	0.45
1:A:862:GLN:NE2	1:A:879:GLY:O	2.46	0.45
1:A:236:LEU:O	1:A:240:ASP:HB2	2.16	0.45
1:A:1798:MET:H	1:A:1798:MET:HE2	1.82	0.45
1:A:280:LEU:O	1:A:284:ASN:HB2	2.18	0.44
1:A:586:ARG:HH12	1:A:595:SER:HG	1.65	0.44
1:A:597:VAL:HA	1:A:600:LYS:HB3	2.00	0.44
1:A:224:VAL:HB	1:A:613:LEU:HD23	2.00	0.44
1:A:1667:TYR:HB3	1:A:1979:ALA:HB2	1.99	0.44
1:A:39:HIS:HA	1:A:1544:GLN:HG3	1.99	0.44
1:A:1732:MET:HA	1:A:1741:LEU:HG	1.99	0.44
1:A:1756:ILE:HD13	1:A:1779:GLN:HB3	2.00	0.44
1:A:275:PRO:HB2	1:A:324:LEU:HD12	1.99	0.44
1:A:560:MET:SD	1:A:560:MET:N	2.91	0.44
1:A:83:THR:HA	1:A:86:THR:HG22	2.00	0.44
1:A:947:GLY:O	1:A:1782:ASN:ND2	2.51	0.44
1:A:1981:ASN:HB2	1:A:1984:GLU:HB2	1.99	0.44
1:A:1811:PRO:HA	1:A:1812:PRO:HD3	1.89	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1906:CYS:O	1:A:1909:ALA:HB3	2.18	0.43
1:A:1936:PRO:HG3	1:A:1969:PRO:HD3	1.99	0.43
1:A:847:LEU:HD13	1:A:866:ARG:HH21	1.83	0.43
1:A:333:ILE:O	1:A:337:SER:OG	2.34	0.43
1:A:2109:CYS:HB3	1:A:2110:ILE:H	1.66	0.43
1:A:17:PRO:HG3	1:A:834:ALA:HB2	2.00	0.43
1:A:367:ARG:NH2	1:A:1586:PRO:O	2.52	0.43
1:A:1278:VAL:HG22	1:A:1282:LEU:HD22	2.00	0.43
1:A:1534:ALA:O	1:A:1536:ASN:N	2.52	0.43
1:A:1769:GLU:HA	1:A:1772:LEU:HD12	1.99	0.43
1:A:60:ARG:NH1	1:A:1987:ASP:O	2.52	0.43
1:A:90:ASP:OD1	1:A:2083:LYS:N	2.52	0.43
1:A:494:CYS:HB3	1:A:581:CYS:HA	1.99	0.43
1:A:915:LYS:H	1:A:915:LYS:HG2	1.64	0.43
2:N:462:MET:HB2	2:N:462:MET:HE2	1.77	0.43
1:A:1745:GLU:HB2	1:A:1909:ALA:HB2	2.01	0.43
1:A:569:THR:HG22	1:A:570:SER:H	1.83	0.43
1:A:996:ARG:NH2	1:A:1194:VAL:O	2.52	0.43
1:A:2223:ASN:OD1	1:A:2223:ASN:N	2.52	0.43
1:A:855:ARG:NH1	1:A:1618:TYR:OH	2.52	0.43
1:A:862:GLN:HE22	1:A:1677:GLU:HB3	1.84	0.43
1:A:48:LEU:HD12	1:A:85:LEU:HD23	2.01	0.42
1:A:1755:ALA:HB1	1:A:1934:VAL:HG21	2.01	0.42
1:A:348:GLY:N	1:A:351:SER:OG	2.53	0.42
1:A:1925:LEU:O	1:A:1928:ALA:HB3	2.19	0.42
1:A:2002:TYR:HB2	1:A:2159:VAL:HG21	2.01	0.42
1:A:2011:LEU:HG	1:A:2022:ASN:HD21	1.84	0.42
1:A:2012:GLN:NE2	1:A:2027:CYS:O	2.52	0.42
1:A:51:LEU:O	1:A:55:SER:OG	2.31	0.42
1:A:2039:LEU:HD23	1:A:2039:LEU:HA	1.83	0.42
1:A:90:ASP:OD1	1:A:2084:PHE:N	2.39	0.42
1:A:2002:TYR:OH	1:A:2148:ASP:OD1	2.31	0.42
1:A:88:LEU:O	1:A:90:ASP:N	2.53	0.42
1:A:1024:ILE:HG13	1:A:1031:VAL:HB	2.01	0.42
1:A:1087:THR:HG22	1:A:1097:ILE:HA	2.02	0.42
1:A:1643:ASN:HB3	1:A:1678:LYS:NZ	2.34	0.42
1:A:49:LYS:NZ	1:A:2089:SER:H	2.18	0.42
1:A:841:PHE:CZ	1:A:2091:GLY:HA3	2.55	0.42
1:A:2134:LEU:HD23	1:A:2134:LEU:HA	1.92	0.42
1:A:255:ASP:HB3	1:A:258:GLU:HB2	2.02	0.41
1:A:92:ARG:O	1:A:112:HIS:N	2.53	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1200:ARG:HB3	1:A:1219:SER:HB2	2.01	0.41
1:A:1518:THR:HG23	1:A:1521:GLU:H	1.85	0.41
1:A:866:ARG:HD3	1:A:2023:ARG:HH12	1.85	0.41
2:N:456:LEU:HD23	2:N:456:LEU:HA	1.91	0.41
1:A:319:GLU:O	1:A:323:LEU:HD12	2.20	0.41
1:A:873:LEU:HD11	1:A:899:GLU:HG3	2.02	0.41
1:A:588:ASP:N	1:A:588:ASP:OD1	2.53	0.41
1:A:944:PRO:HB3	1:A:950:LYS:HG3	2.03	0.41
1:A:1716:VAL:HG22	1:A:1948:GLN:HG2	2.01	0.41
1:A:194:THR:OG1	1:A:1557:GLU:OE2	2.37	0.41
2:N:426:LEU:HA	2:N:438:HIS:HA	2.03	0.41
1:A:45:PHE:CE1	1:A:49:LYS:HG3	2.56	0.41
1:A:868:PRO:O	1:A:871:SER:OG	2.29	0.41
1:A:1666:ASN:HA	1:A:1670:HIS:HB2	2.03	0.41
1:A:1012:THR:HG22	1:A:1082:VAL:HG22	2.02	0.41
1:A:1747:ILE:HG13	1:A:2044:THR:HG22	2.03	0.41
1:A:1993:PHE:CE2	1:A:2014:MET:HG3	2.56	0.41
1:A:1194:VAL:HG11	1:A:1237:LEU:HD12	2.03	0.41
1:A:2199:LEU:HD12	1:A:2204:ARG:HB2	2.03	0.41
1:A:1025:PHE:HB2	1:A:1209:VAL:HB	2.03	0.40
1:A:2139:GLU:O	1:A:2142:ALA:HB3	2.21	0.40
1:A:1753:LYS:HB2	1:A:1753:LYS:HE3	1.94	0.40
1:A:87:HIS:CE1	1:A:2099:PHE:HB3	2.56	0.40
1:A:1224:LYS:HA	1:A:1227:LYS:HE2	2.03	0.40
1:A:1740:ASN:OD1	1:A:1740:ASN:N	2.54	0.40
1:A:2019:TYR:HA	1:A:2088:LEU:HD12	2.04	0.40
1:A:2066:LEU:HD23	1:A:2066:LEU:HA	1.93	0.40
1:A:226:CYS:HB2	1:A:615:ALA:HB2	2.03	0.40
1:A:1067:GLN:HA	1:A:1809:TRP:HZ3	1.87	0.40
2:N:364:VAL:O	2:N:368:HIS:ND1	2.55	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	1562/2249 (70%)	1460 (94%)	97 (6%)	5 (0%)	41	74
2	N	106/465 (23%)	105 (99%)	1 (1%)	0	100	100
All	All	1668/2714 (62%)	1565 (94%)	98 (6%)	5 (0%)	44	74

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1667	TYR
1	A	2117	LEU
1	A	1535	THR
1	A	1233	GLN
1	A	1216	LEU

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	1407/1994 (71%)	1365 (97%)	42 (3%)	41	64
2	N	94/380 (25%)	93 (99%)	1 (1%)	73	84
All	All	1501/2374 (63%)	1458 (97%)	43 (3%)	45	64

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	PHE
1	A	60	ARG
1	A	100	MET
1	A	128	ARG
1	A	142	ASP
1	A	178	LEU
1	A	252	HIS
1	A	323	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	354	ARG
1	A	521	ASP
1	A	588	ASP
1	A	841	PHE
1	A	852	ARG
1	A	863	TYR
1	A	994	ARG
1	A	1040	GLU
1	A	1041	ARG
1	A	1072	LEU
1	A	1137	MET
1	A	1144	ASP
1	A	1207	ARG
1	A	1211	ARG
1	A	1275	ARG
1	A	1526	GLN
1	A	1555	LYS
1	A	1558	ASP
1	A	1632	ARG
1	A	1633	GLU
1	A	1669	ASP
1	A	1927	MET
1	A	1942	ASP
1	A	1972	ARG
1	A	2028	TYR
1	A	2041	TYR
1	A	2046	HIS
1	A	2053	GLN
1	A	2054	HIS
1	A	2081	PHE
1	A	2089	SER
1	A	2099	PHE
1	A	2158	HIS
1	A	2170	GLN
2	N	465	LYS

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	598	GLN
1	A	895	GLN
1	A	2106	ASN

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 monosaccharides 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.

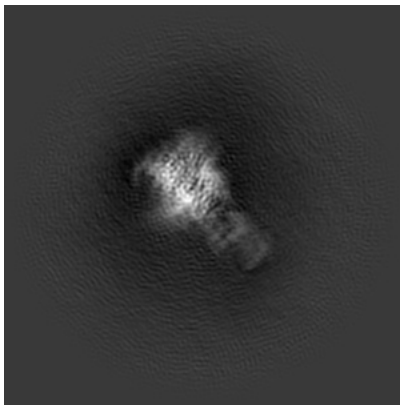
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27423. These allow visual inspection of the internal detail of the map and identification of artifacts.

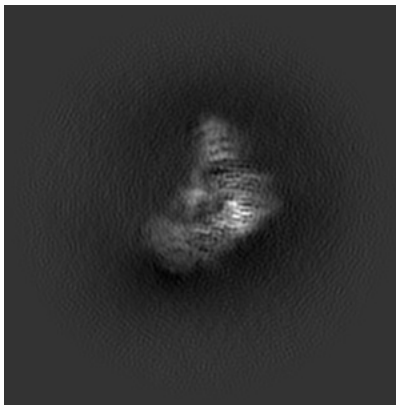
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

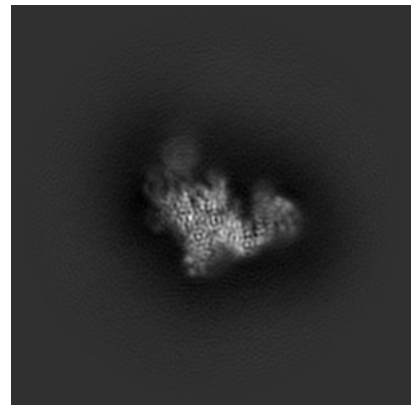
6.1.1 Primary map



X

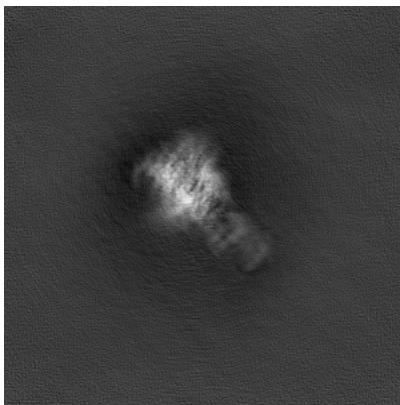


Y

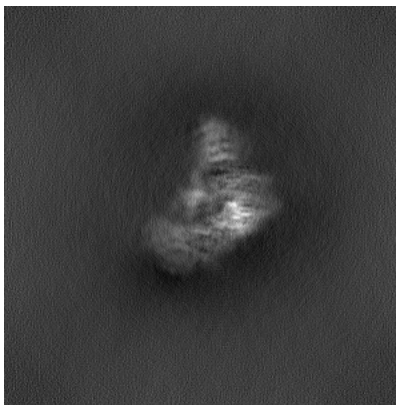


Z

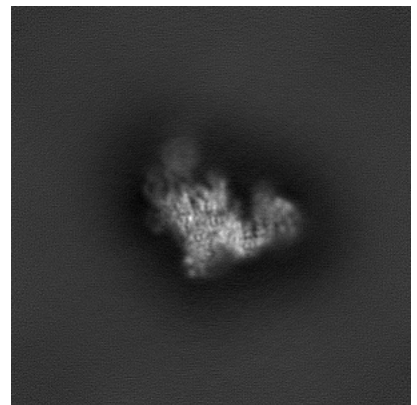
6.1.2 Raw map



X



Y

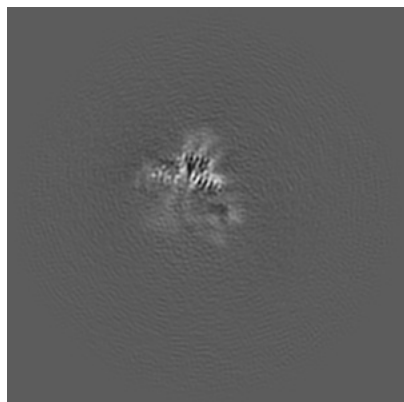


Z

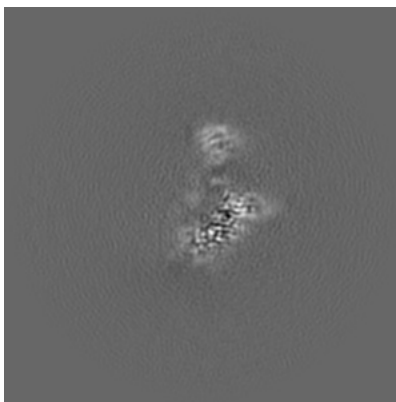
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

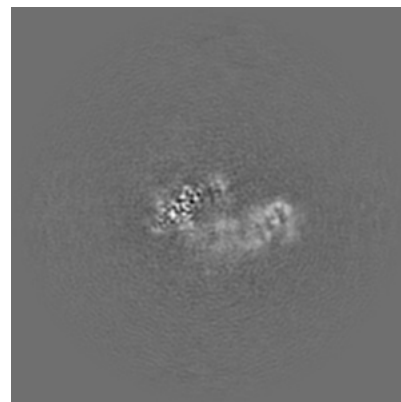
6.2.1 Primary map



X Index: 207

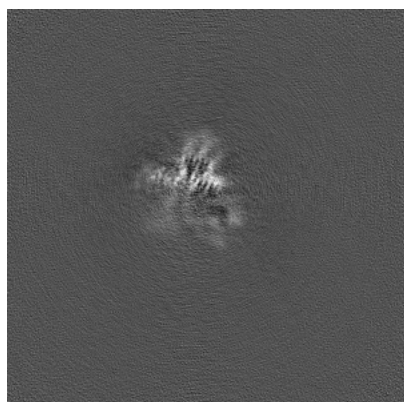


Y Index: 207

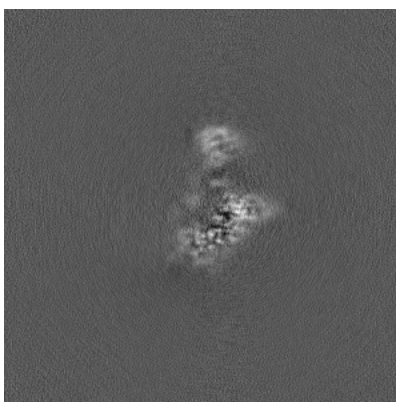


Z Index: 207

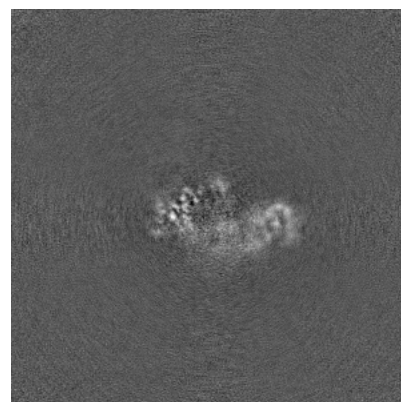
6.2.2 Raw map



X Index: 207



Y Index: 207

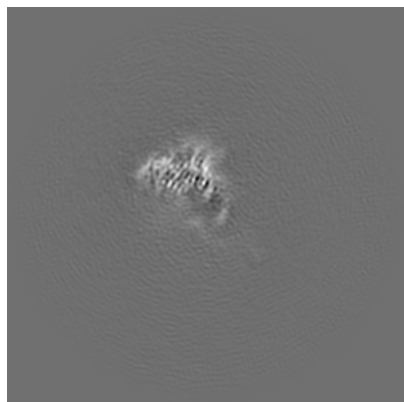


Z Index: 207

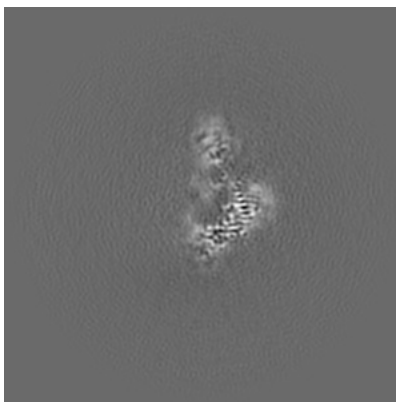
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

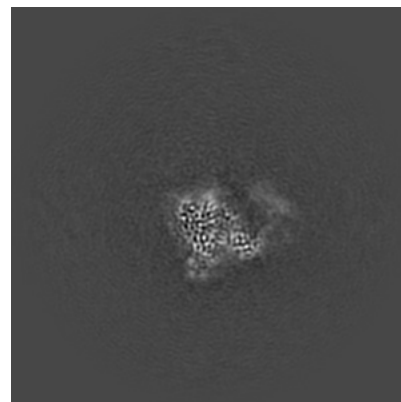
6.3.1 Primary map



X Index: 198



Y Index: 193

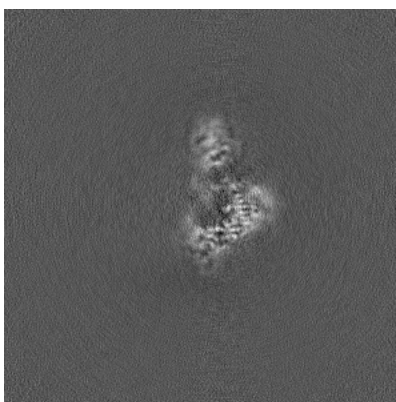


Z Index: 238

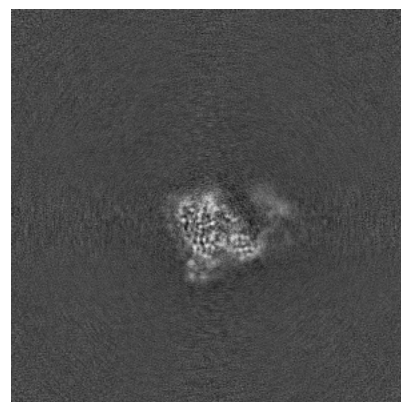
6.3.2 Raw map



X Index: 198



Y Index: 194

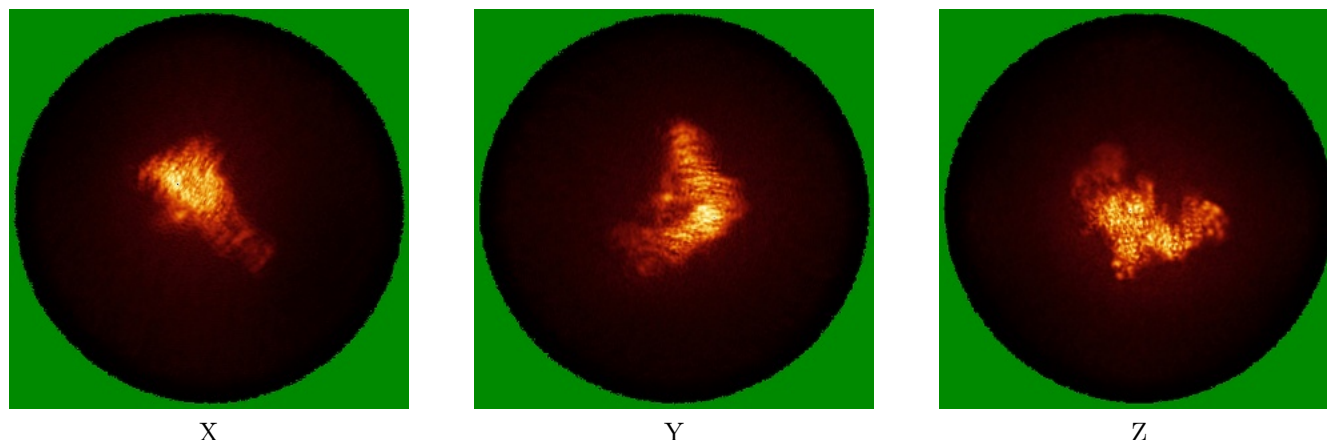


Z Index: 238

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

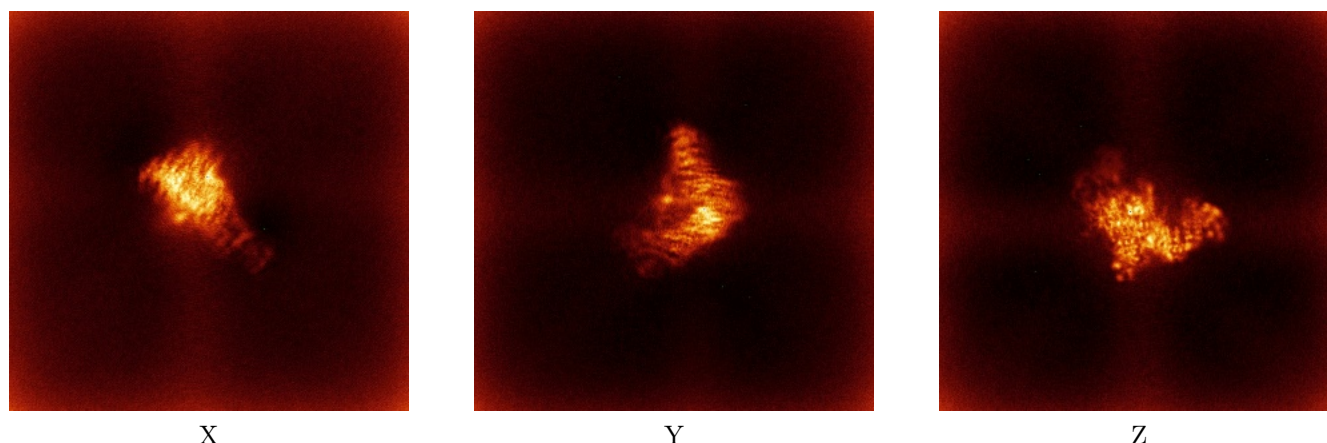


X

Y

Z

6.4.2 Raw map



X

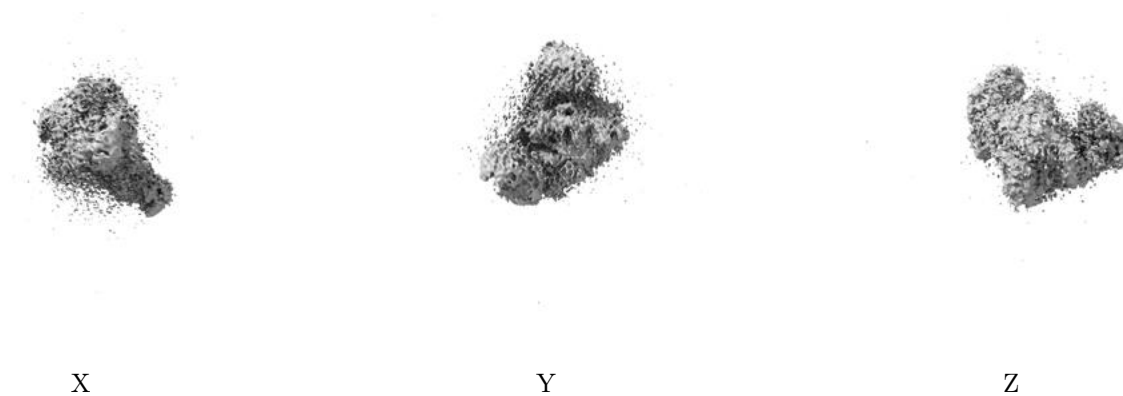
Y

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.

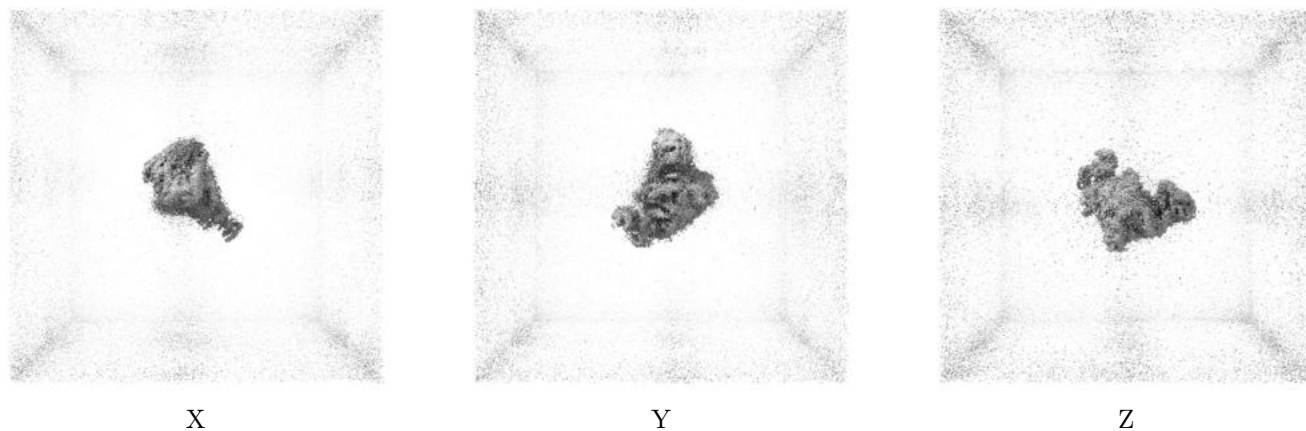
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0262. 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.

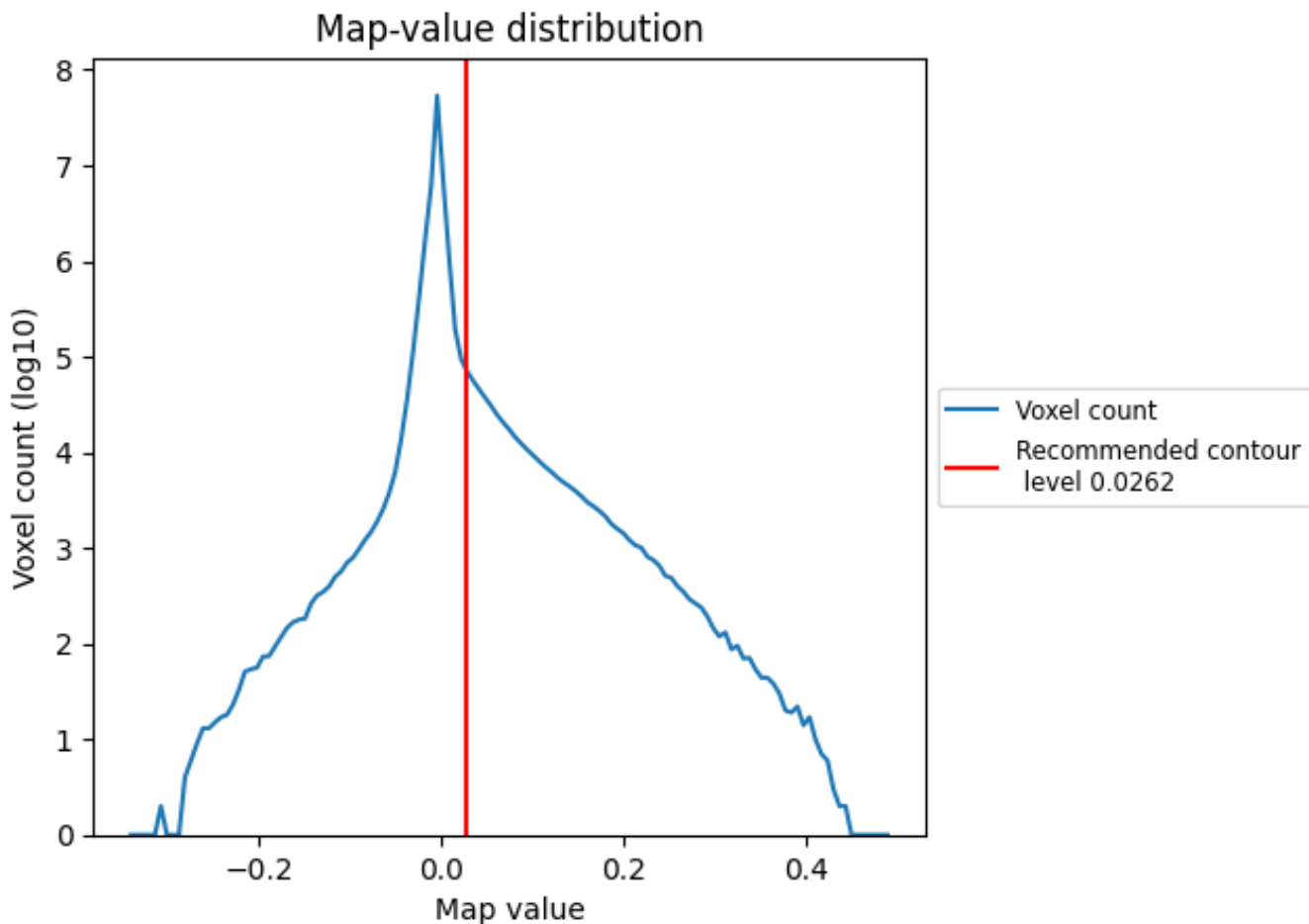
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

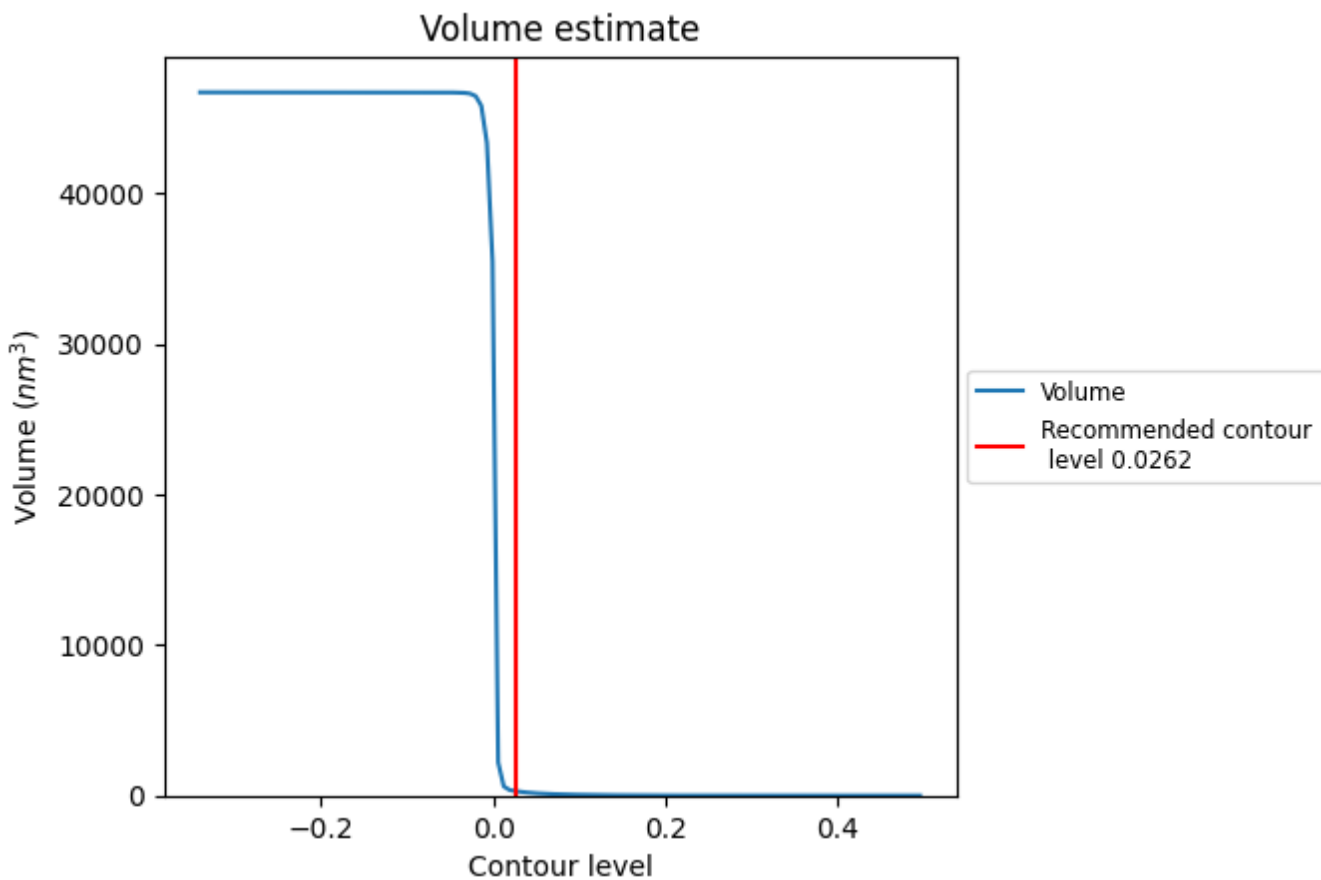
This section contains the results of statistical analysis of the map.

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.

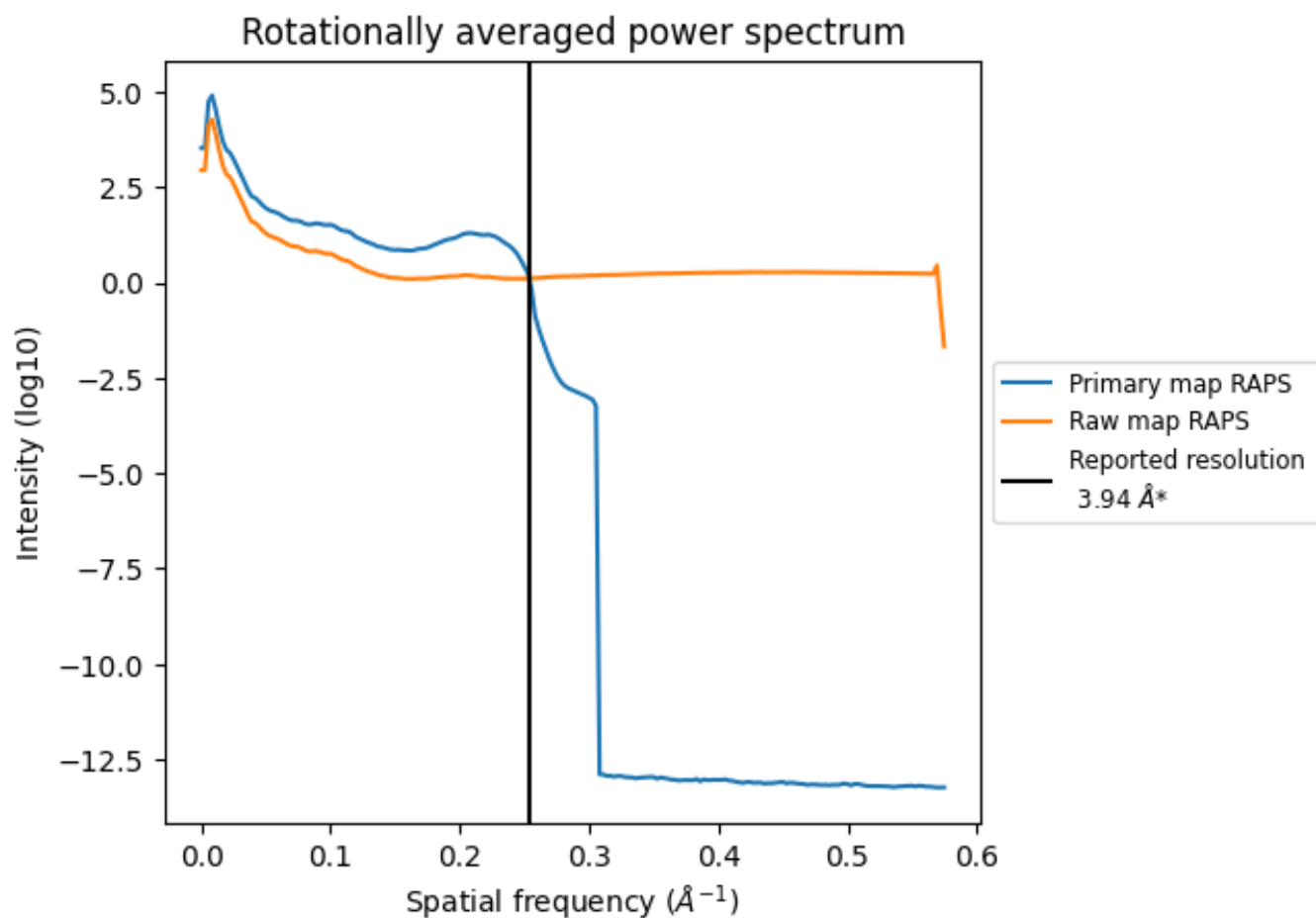
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 291 nm^3 ; this corresponds to an approximate mass of 263 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](#)

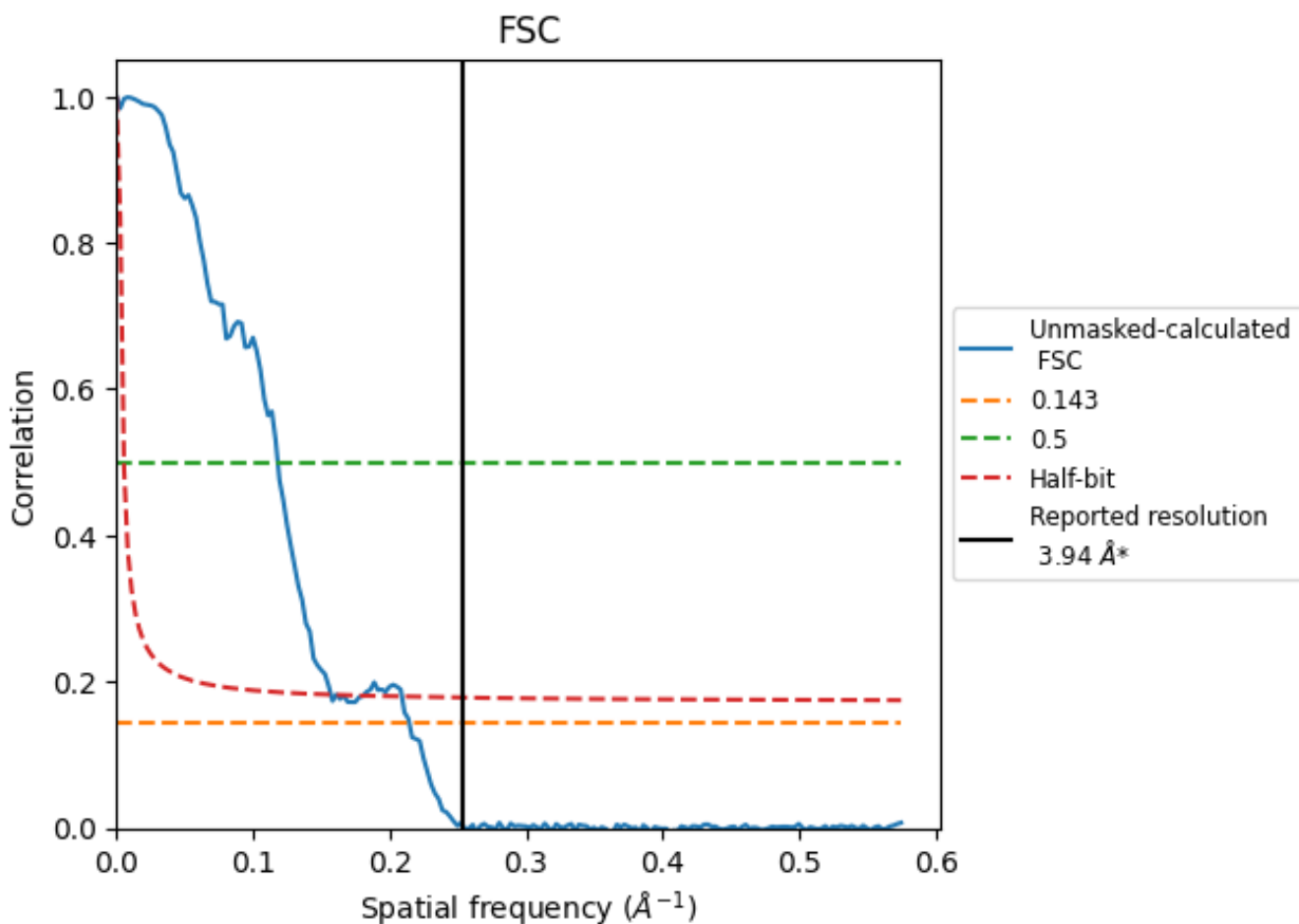


*Reported resolution corresponds to spatial frequency of 0.254 \AA^{-1}

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 0.254 Å⁻¹

8.2 Resolution estimates [i](#)

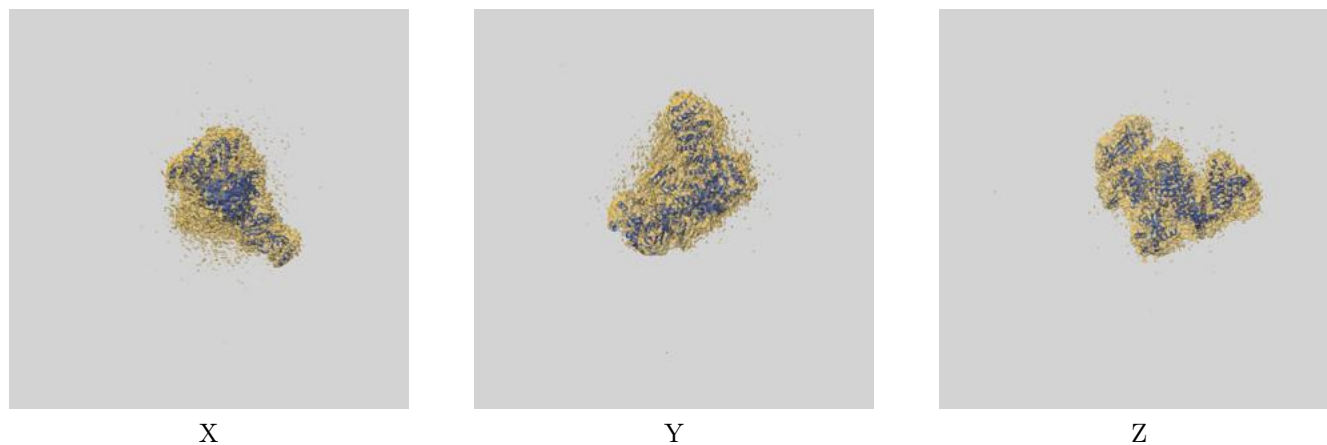
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.94	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.66	8.46	6.37

*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 4.66 differs from the reported value 3.94 by more than 10 %

9 Map-model fit [i](#)

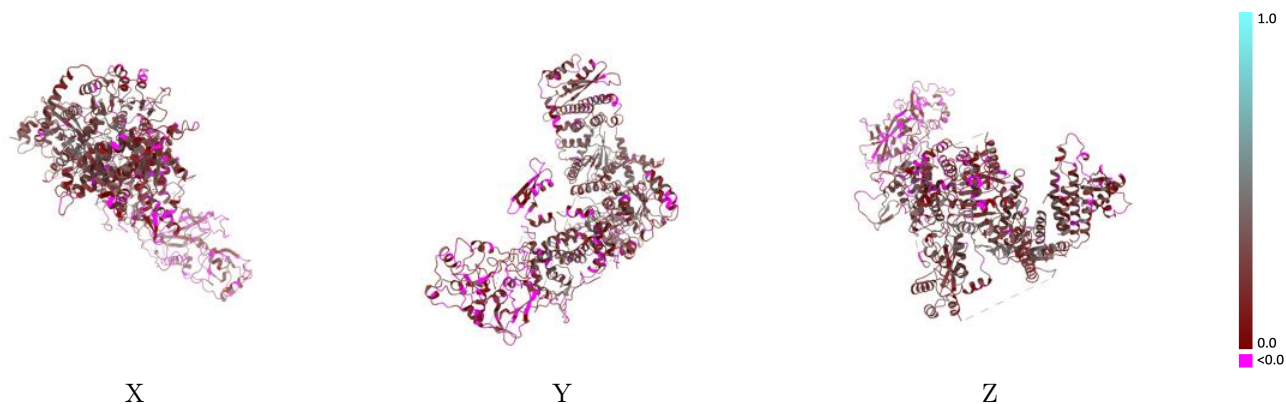
This section contains information regarding the fit between EMDB map EMD-27423 and PDB model 8DGI. Per-residue inclusion information can be found in section [3](#) on page [4](#).

9.1 Map-model overlay [i](#)



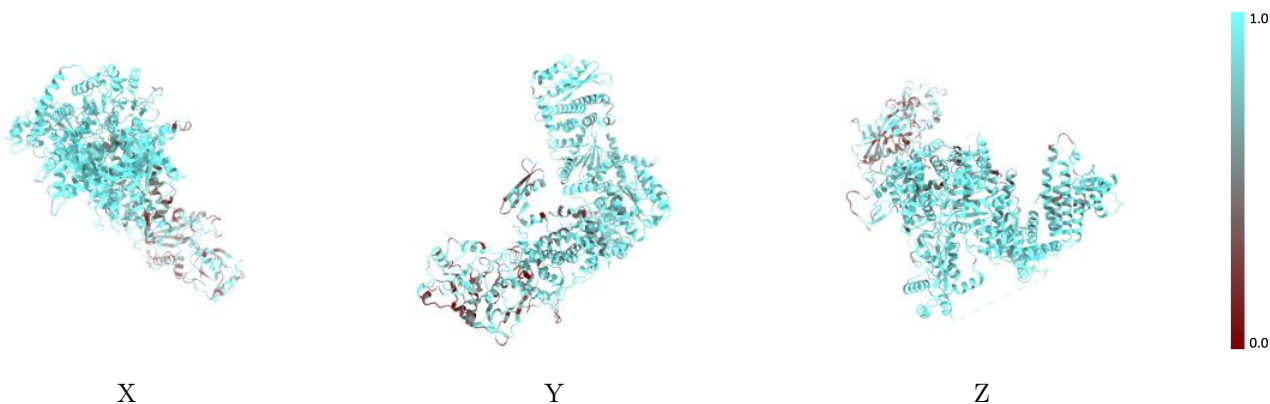
The images above show the 3D surface view of the map at the recommended contour level 0.0262 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



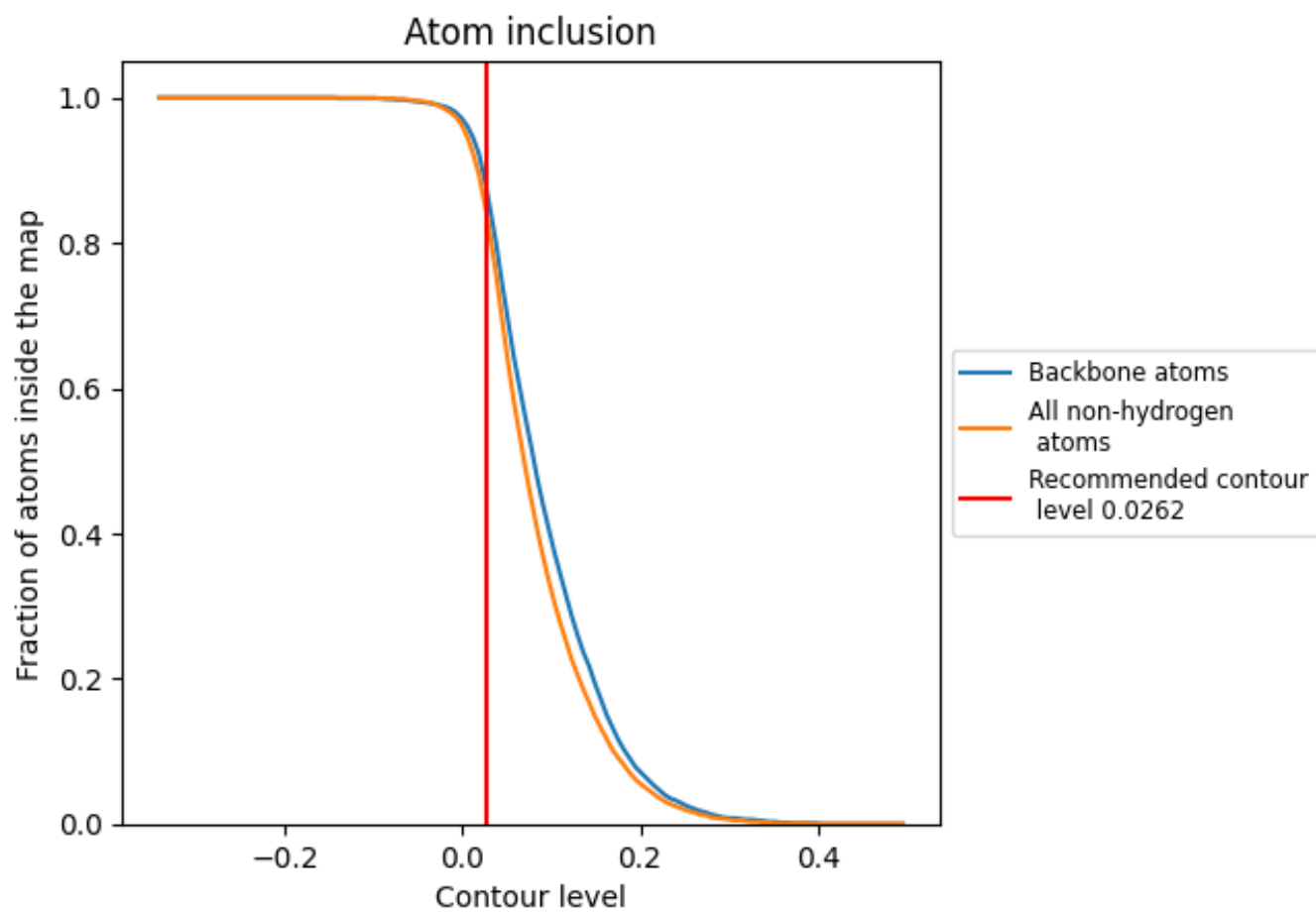
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0262).







9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 85% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.0262) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8490	 0.2060
A	 0.8430	 0.2090
N	 0.9420	 0.1610

