



wwPDB EM Validation Summary Report ⓘ

Dec 17, 2022 – 05:29 pm GMT

PDB ID : 6ZHA
EMDB ID : EMD-11217
Title : Cryo-EM structure of DNA-PK monomer
Authors : Chaplin, A.K.; Hardwick, S.W.; Chirgadze, D.Y.; Blundell, T.L.
Deposited on : 2020-06-21
Resolution : 3.91 Å (reported)

This is a wwPDB EM Validation Summary 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.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

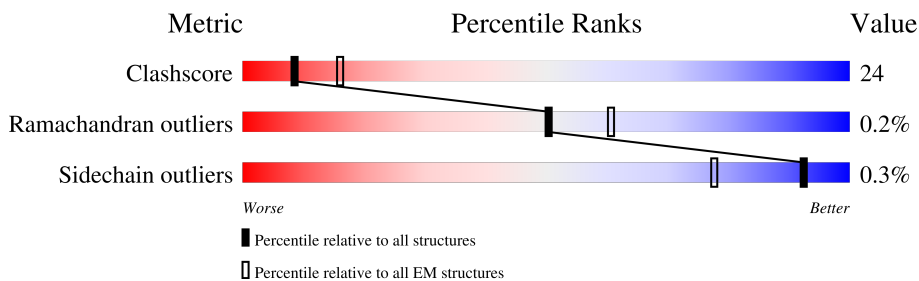
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.91 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	4156	
2	B	609	
3	C	732	
4	D	25	
5	E	24	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 38289 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 DNA-dependent protein kinase catalytic subunit,DNA-dependent protein kinase catalytic subunit,DNA-dependent protein kinase catalytic subunit,DNA-PKcs.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3707	29124	18685	4920	5334	185	0	0

- Molecule 2 is a protein called X-ray repair cross-complementing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	489	3908	2504	663	723	18	0	0

- Molecule 3 is a protein called X-ray repair cross-complementing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	539	4260	2733	717	787	23	0	0

- Molecule 4 is a DNA chain called DNA.

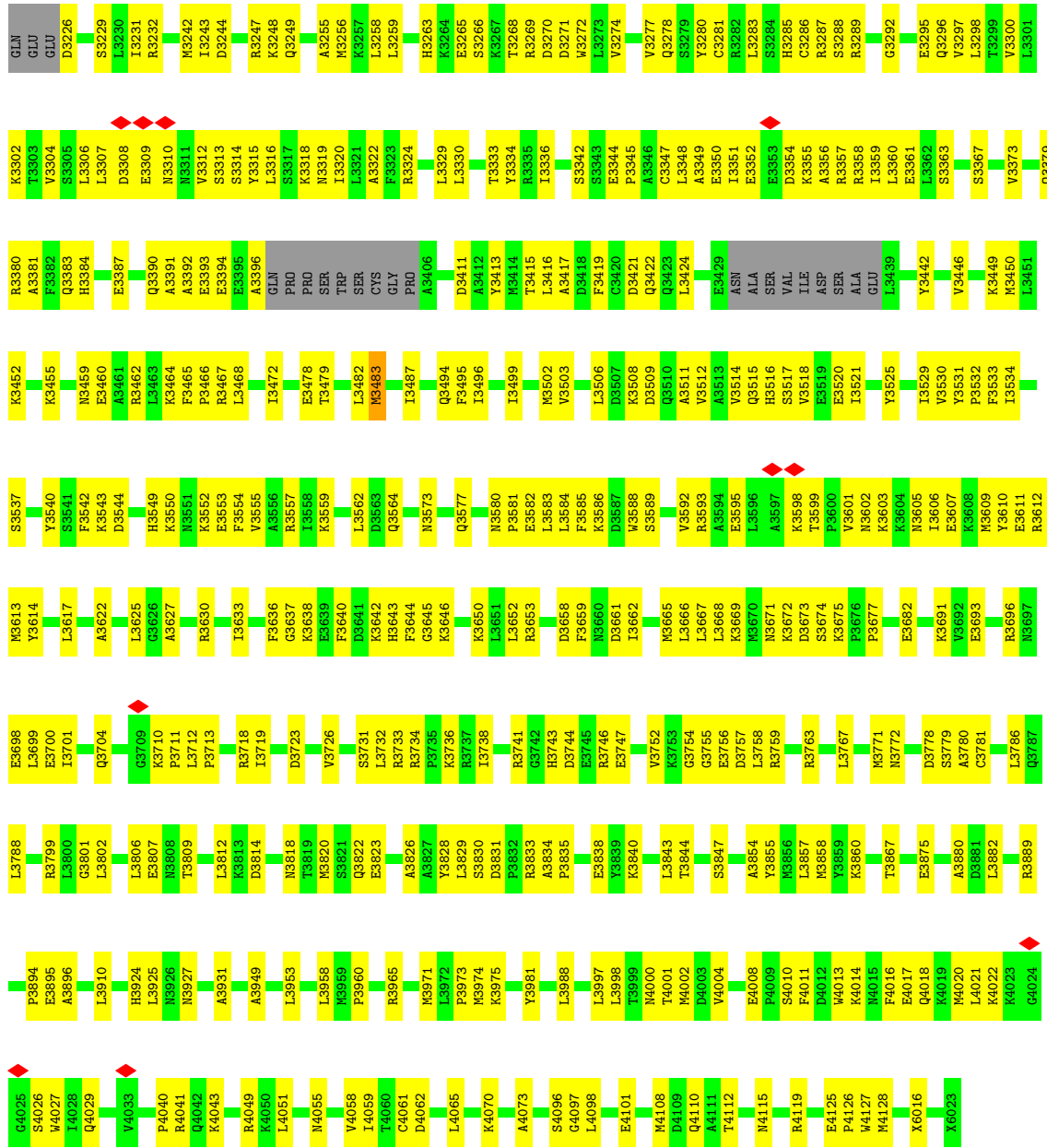
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	25	510	248	94	144	24	0	0

- Molecule 5 is a DNA chain called DNA.

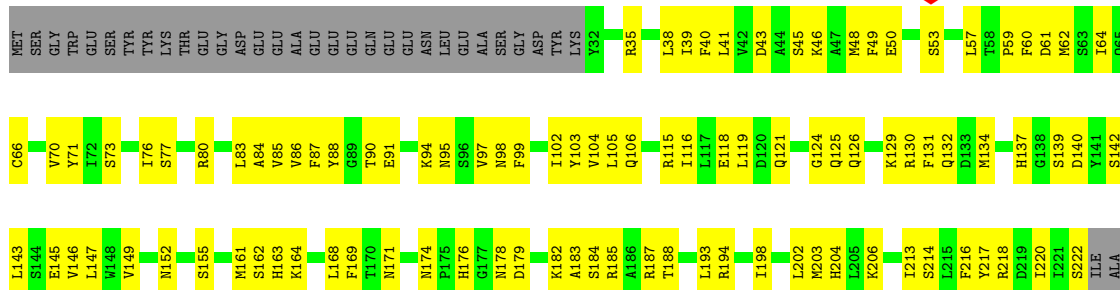
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	E	24	487	240	80	145	22	0	0

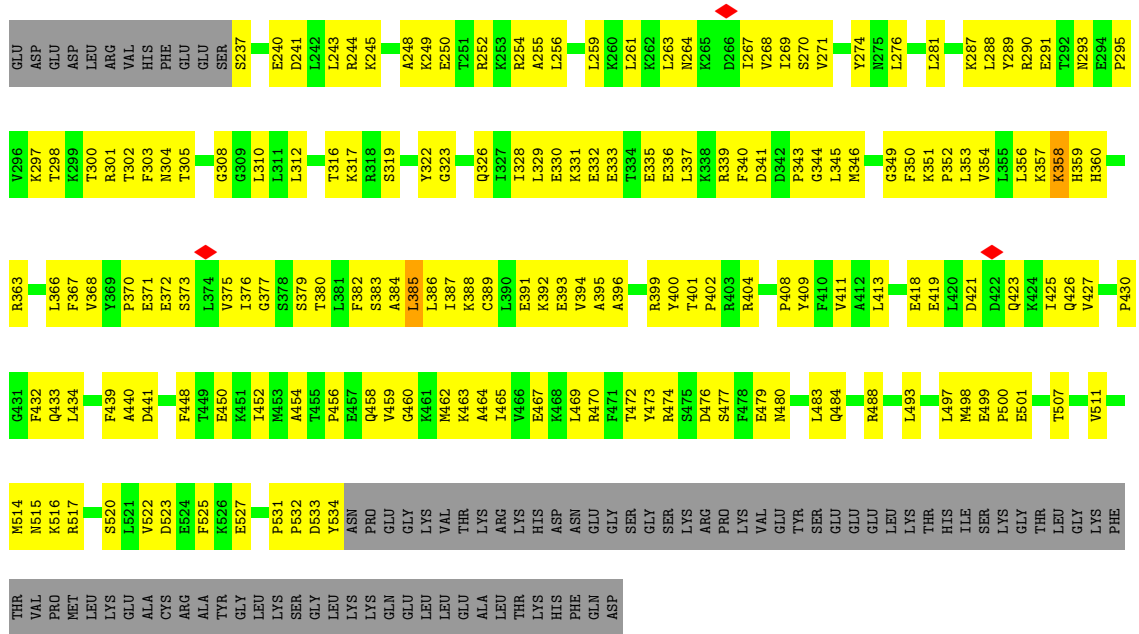
L1883	L1884	D1887	A1891	K1892	E1893	S1894	K1895	L1896	M1897	Q1898	F1900	H1901	G1902	C1903	I1904	I1905	T1906	E1907	G1908	M1909	E1910	T1911	I1912	K1913	L1914	L1915	L1916	K1917	L1918	C1919	Y1920	D1921	A1922	F1923	T1924	E1925	L1933	L1934	R1936	R1937	R1938	L1939	Y1940	H1941	Y1945	N1946	C1947	A1948	L1949	M1950	C1954	V1955						
F1814	T1815	R1816	Q1817	F1818	F1819	V1820	D1821	R1822	S1823	L1824	L1827	L1828	W1829	H1830	C1831	D1834	A1835	L1836	R1837	E1838	F1839	F1840	S1841	T1842	I1843	V1844	I1848	L1851	K1852	S1853	R1854	F1855	T1856	K1857	E1860	F1863	Q1866	I1867	T1868	K1869	M1871	G1872	Y1873	I1876	D1877	D1878	V1879	M1880	Y1881	S1882								
S1657	S1658	V1659	S1664	H1665	C1666	S1667	F1668	P1669	E1670	V1671	F1672	T1673	I1676	S1677	D1678	D1681	K1682	E1683	L1684	D1685	L1686	H1687	L1688	K1689	Q1690	Q1691	A1692	F1699	T1700	S1701	L1702	L1707	E1708	E1709	L1710	R1711	V1712	V1713	Q1716	L1717	L1718	V1719	H1720	F1721	P1722	M1723	M1724	S1725	L1726	M1727	L1728	L1729						
T1733	P1734	R1735	F1736	F1739	V1740	D1741	C1742	K1745	L1746	E1747	F1748	Q1754	M1757	L1758	L1759	T1763	E1764	V1765	L1766	C1767	R1768	E1769	Q1770	Q1771	H1772	V1773	M1774	E1775	F1782	R1783	R1784	I1785	A1786	R1787	C1791	Q1794	V1795	T1796	K1798	E1799	E1803	M1804	K1807	D1808	D1809	F1810	R1811	M1812	S1813									
I1567	M1568	T1569	L1570	L1571	L1572	K1573	M1574	L1575	L1576	L1577	L1580	E1581	L1582	M1583	S1586	D1587	M1588	M1589	M1592	V1593	V1596	L1601	S1604	K1617	L1618	A1619	T1620	I1621	L1623	Q1624	H1625	V1626	K1627	K1628	C1629	V1632	V1633	L1636	D1636	E1640	M1643	L1646	L1649	A1650	K1651	I1652												
S1485	L1486	I1491	P1492	G1494	D1495	L1496	R1497	L1500	P1501	S1502	L1503	D1504	L1505	S1506	C1507	K1508	Q1509	L1514	A1518	F1519	A1520	G1521	L1524	C1525	E1526	R1527	L1528	L1531	L1532	L1538	S1539	T1540	ALA	SER	LEU	GLY	SER	GLN	GLY	S1549	H1552	F1553	Y1558	L1562	E1565	T1566												
M1403	K1404	A1405	L1406	Y1411	K1412	D1413	L1414	L1415	E1416	L1417	H1418	L1419	R1420	E1421	A1425	Q1426	S1427	I1428	L1436	Y1437	G1438	P1439	Q1442	Y1443	D1444	R1445	S1446	R1447	L1448	A1449	V1452	T1455	L1458	A1461	G1462	I1467	Q1471	S1472	T1473	D1474	H1477	S1478	V1479	E1482	L1483	L1484												
ALA	G1319	M1320	R1321	T1322	S1323	P1324	Q1325	E1326	R1329	K1334	C1335	T1336	V1337	L1338	V1339	R1340	I1341	S1352	P1353	V1356	L1359	K1360	L1361	D1362	L1363	C1364	L1365	T1366	L1367	L1368	V1373	K1374	L1375	L1376	E1377	E1378	I1382	G1383	F1384	M1385	I1386	G1387	D1388	V1389	Q1390	V1391	M1392	G1314	THR	GLY	ALA							
G1234	P1239	Y1243	L1244	R1245	C1246	F1247	L1248	S1249	L1250	L1254	L1257	L1260	L1261	L1264	E1265	C1266	Y1267	F1270	E1273	R1274	T1275	A1278	L1282	Q1287	L1290	F1297	L1298	E1299	S1300	M1303	H1304	D1305	I1306	I1307	A1308	A1309	E1310	K1311	C1312	F1313	G1314	THR	GLY	ALA														
P1154	R1155	P1158	P1159	S1162	L1163	C1164	L1165	L1166	K1170	M1171	L1172	L1173	C1176	Q1180	T1181	H1185	E1186	K1186	L1190	F1191	Y1192	V1195	P1196	L1197	L1198	P1199	R1202	S1203	P1204	M1205	L1206	W1207	L1208	K1209	D1210	V1211	L1212	K1213	E1214	E1215	G1216	V1217	S1218	F1219	I1221	M1222	T1223	F1224	E1225	G1226								
F1073	K1074	R1075	S1079	F1082	I1085	Y1086	R1087	E1088	F1089	E1092	E1093	S1094	L1095	H993	Y994	Q1098	F1099	E1102	V1105	I1106	Y1107	L1111	A1112	L1113	A1114	H1115	E1118	S1203	P1204	M1205	L1206	W1207	L1208	K1209	D1210	V1211	L1212	K1213	E1214	E1215	G1216	V1217	S1218	F1219	I1221	M1222	T1223	F1224	E1225	G1226								
E878	M879	K880	K881	W886	D887	R888	E889	K890	R891	L892	F898	M901	K902	R913	E916	L919	T920	A921	K927	V928	E932	H835	S936	M937	V938	L942	G943	K944	A945	T946	Q947	MET	PRO	GLU	GLY	GLY	GLN	GLY	ALA	P956	Y959	Y962	K963	R964	P965	F966	S967	P967										
ASP	GLU	THR	LYS	ASN	ASN	TRP	GLU	VAL	SER	ALA	LEU	SER	ARG	ALA	ALA	GLN	LYS	GLY	PHE	ASN	LYS	VAL	VAL	VAL	LEU	LYS	HIS	LEU	LYS	LYS	LYS	THR	LYS	ASN	LEU	SER	SER	ASN	GLU	A845	I846	S847	L848	E849	E850	I851	R852	I853	R854	G860	S861	M869	T872	V873	T874	S875	S876	D877

V3132	L3049	T2846	ALA	L2424	L2325	L2249	S2166	L2097	F1956
Q3133	K3050	T2847	ARG	R2425	L2326	S2250	P2167	L2097	L1959
A3134	E2967	F2848	LYS	H2426	L2327	S2251	L2168	L2098	K1960
D3058	K2970	F2851	GLY	R2427	R2328	P2252	L2169	A2099	F1961
T3135	Q3059	F2852	VAL	D2428	Y2329	R2253	G2178	L2100	L1976
E3137	S3060	F2854	ALA	D2429	V2330	R2254	E2180	V2101	L1975
I3138	L3061	F2855	GLU	E2430	M2331	L2255	E2181	K2102	L1977
I3142	L3062	C2857	GLN	R2431	E2332	L2256	G2182	M2103	L1978
Q3148	F3064	I2861	LYS	Q2432	R2333	F2257	H2183	H2104	E1979
L3157	A2974	A2866	ARG	R2433	K2334	E2258	H2184	L2108	R1986
L3161	A2975	L2869	GLY	V2434	M2335	F2260	H2185	GLY	ARG
R3167	K2978	L2869	ALA	T2438	L2341	D2264	M2186	PRO	TYR
R3168	Q2979	L2869	THR	M2443	V2345	N2266	V2187	PRO	GLY
P3169	P2986	R2891	GLN	R2444	V2345	N2266	E2188	GLN	ASN
D3170	E2988	E2894	GLY	K2445	L2349	K2267	A2191	VAL	PRO
A3171	K2991	E2895	LYS	L2446	K2350	K2268	S2195	GLU	PRO
K3172	N3003	A2896	ASP	L2451	Q2351	D2269	S2196	VAL	VAL
M3173	H3004	L2897	THR	R2452	H2352	N2270	M2196	SER	GLU
D3174	L3005	L2900	LEU	E2453	Q2353	S2271	L2199	VAL	VAL
W3179	W3008	P2902	PRO	L2464	T2355	L2277	P2202	R2120	PRO
D3180	E3085	ALA	GLY	F2465	M2356	L2277	V2205	L2122	GLN
I3182	L3011	ALA	ASP	S2466	N2365	G2278	K2206	D2121	VAL
L3190	L3089	LEU	VAL	T2467	T2368	V2280	K2207	R2121	GLU
E3195	Y3090	ALA	ASP	Q2472	K2369	V2280	K2208	R2122	VAL
K3196	S3015	LYS	ASN	M2473	S2370	N2283	E2209	F2127	LYS
L3197	S3018	ARG	LYS	L2476	F2371	Y2288	V2210	F2128	TYR
PRO	I3019	VAL	THR	R2478	P2372	Y2288	L2211	G2134	ILE
LEU	D3020	THR	LEU	L2479	L2373	Q2291	L2215	M2135	GLU
PRO	S3021	THR	LEU	M2479	L2374	C2292	L2216	M2136	ARG
PRO	E3022	THR	LEU	D2482	F2383	Q2293	N2217	L2137	ARG
GLU	I3101	ARG	VAL	S2489	L2386	L2294	M2220	V2138	LYS
GLU	I3103	THR	THR	R2493	L2396	Q2295	V2223	P2139	ALA
ASN	M3105	THR	THR	D2494	C2397	Y2299	K2227	L2146	ALA
MET	I3107	THR	VAL	E2497	L2398	Y2299	K2228	L2146	ASN
VAL	Q3108	THR	GLU	E2497	V2400	Y2304	A2229	L2149	GLY
ASP	M3111	THR	THR	L2501	V2405	N2305	V2230	L2150	ASP
ASP	E3032	THR	GLN	L2506	M2408	M2306	F2231	L2150	ASP
GLN	P3034	THR	ALA	L2506	T2409	M2307	N2234	T2153	VAL
GLY	F3035	THR	THR	M2514	E2410	S2308	L2235	E2154	GLY
ASP	E3038	THR	GLY	L2514	L2411	F2309	E2236	E2155	PRO
PRO	T3039	THR	THR	L2517	Y2412	V2310	I2237	V2156	SER
ASP	Y3040	THR	GLN	L2517	Y2412	R2311	I2238	F2157	MET
SER	L3121	THR	LEU	R2558	L2415	K2312	K2239	R2158	SER
ARG	H3122	THR	THR	L2559	L2415	K2313	V2242	P2159	SER
MET	R3125	THR	THR	L2559	K2418	E2314	E2243	Y2160	LEU
GLU	L3129	THR	THR	L2540	Q2422	E2315	C2244	A2161	SER
VAL	R3047	THR	ALA	P2548	Q2422	E2316	W2245	H2163	TYR
GLU	K3048	THR	LYS	K2549	V2423	Y2316	C2248	L2165	ALA
									ASP

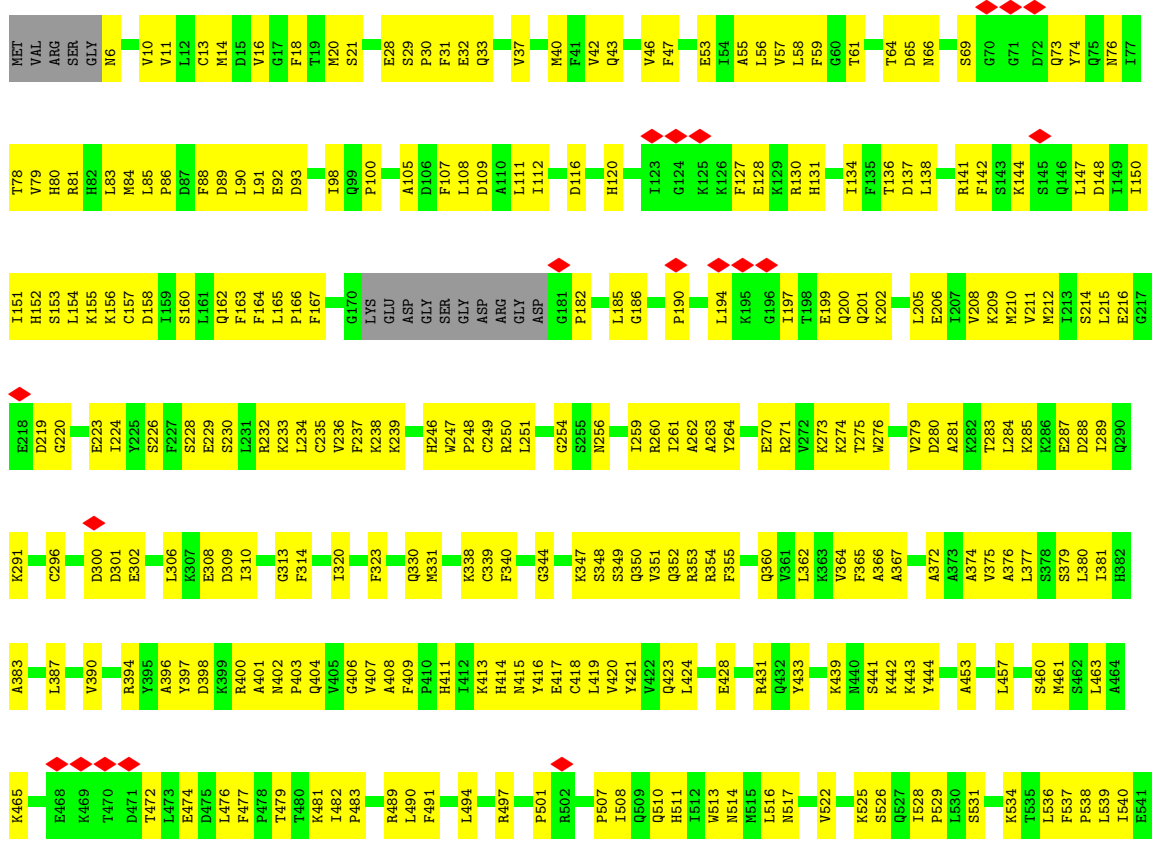


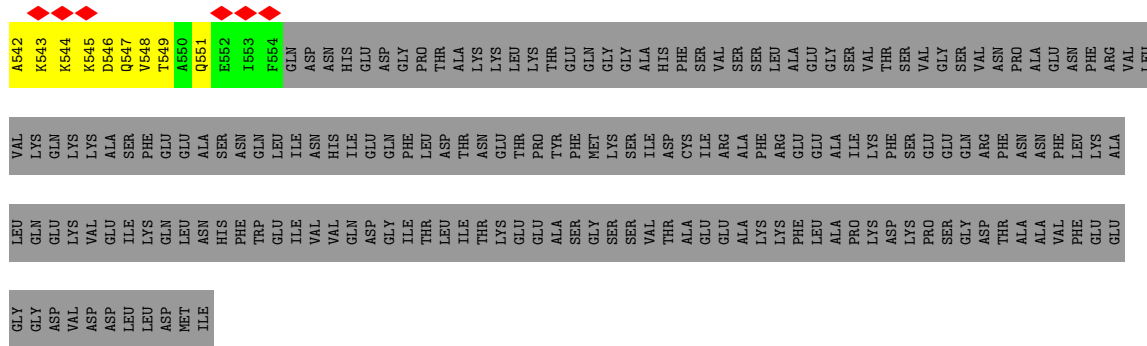
• Molecule 2: X-ray repair cross-complementing protein 6



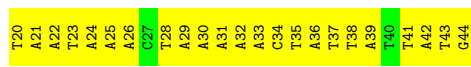
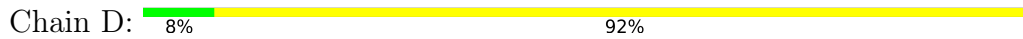


• Molecule 3: X-ray repair cross-complementing protein 5

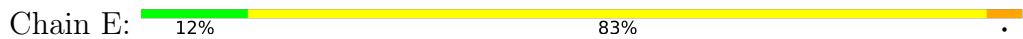




• Molecule 4: DNA



• Molecule 5: DNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	59967	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 ($e^-/\text{\AA}^2$)	52.97	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.525	Depositor
Minimum map value	-0.130	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.025	Depositor
Recommended contour level	0.125	Depositor
Map size (Å)	356.99997, 356.99997, 356.99997	wwPDB
Map dimensions	340, 340, 340	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	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	0.44	0/29576	0.52	1/40030 (0.0%)
2	B	0.39	0/3984	0.53	0/5371
3	C	0.34	0/4346	0.50	0/5867
4	D	0.98	0/573	1.01	0/882
5	E	0.90	1/544 (0.2%)	1.11	0/837
All	All	0.45	1/39023 (0.0%)	0.55	1/52987 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	E	27	DT	C3'-O3'	-5.36	1.36	1.44

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	126	PRO	N-CA-CB	6.21	110.76	103.30

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	29124	0	29016	1292	0
2	B	3908	0	3962	253	0
3	C	4260	0	4262	260	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	510	0	286	24	0
5	E	487	0	279	23	0
All	All	38289	0	37805	1788	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 24.

The worst 5 of 1788 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:3472:ILE:HG21	1:A:3483:MET:CE	1.54	1.36
1:A:2330:VAL:CB	1:A:2336:ILE:HG22	1.55	1.35
1:A:2330:VAL:HG23	1:A:2335:ASN:O	1.31	1.25
2:B:370:PRO:HB3	2:B:382:PHE:CD2	1.76	1.21
1:A:2330:VAL:HB	1:A:2336:ILE:CG2	1.72	1.20

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	3649/4156 (88%)	3291 (90%)	351 (10%)	7 (0%)	47	79
2	B	485/609 (80%)	431 (89%)	53 (11%)	1 (0%)	47	79
3	C	535/732 (73%)	491 (92%)	44 (8%)	0	100	100
All	All	4669/5497 (85%)	4213 (90%)	448 (10%)	8 (0%)	50	79

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1352	SER

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Mol	Chain	Res	Type
1	A	2330	VAL
2	B	385	LEU
1	A	1390	GLN
1	A	2134	GLY

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	3153/3671 (86%)	3144 (100%)	9 (0%)	92	95
2	B	433/548 (79%)	432 (100%)	1 (0%)	93	96
3	C	466/649 (72%)	465 (100%)	1 (0%)	93	96
All	All	4052/4868 (83%)	4041 (100%)	11 (0%)	92	95

5 of 11 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2207	LYS
1	A	3483	MET
3	C	439	LYS
2	B	358	LYS
1	A	1146	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 17 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3927	ASN
3	C	547	GLN
1	A	1231	GLN
1	A	2365	ASN
1	A	2859	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 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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	4128:MET	C	5009:UNK	N	93.14
1	A	5016:UNK	C	6004:UNK	N	49.17

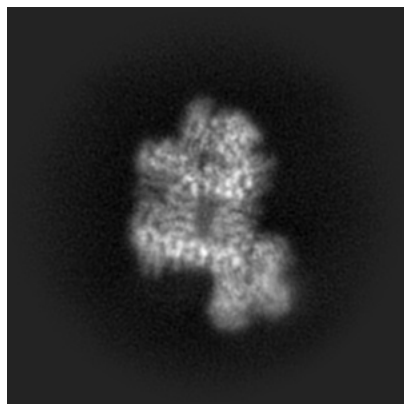
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11217. These allow visual inspection of the internal detail of the map and identification of artifacts.

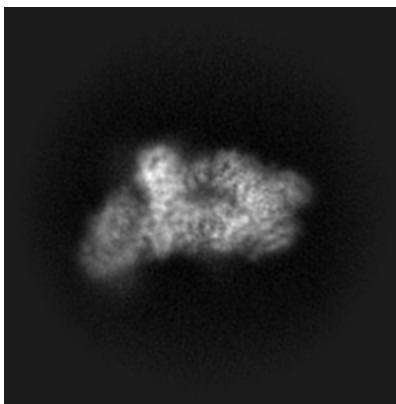
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

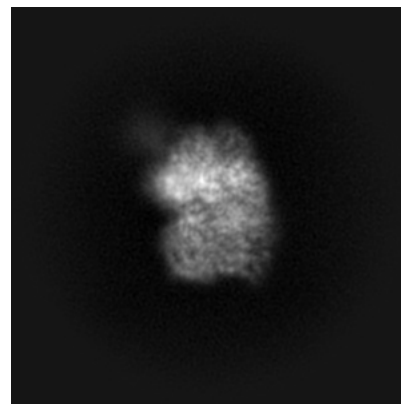
6.1.1 Primary map



X

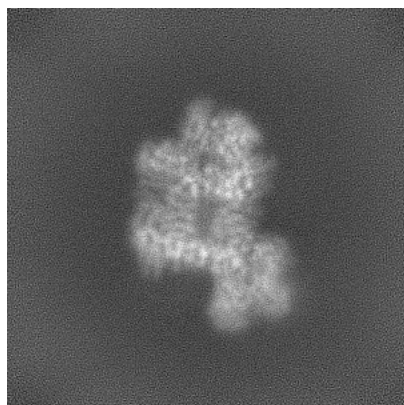


Y

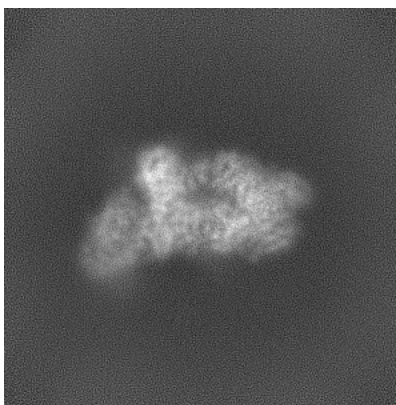


Z

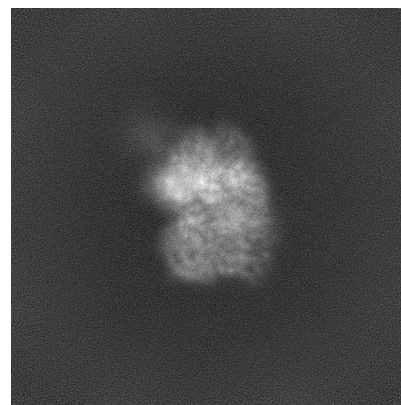
6.1.2 Raw map



X



Y

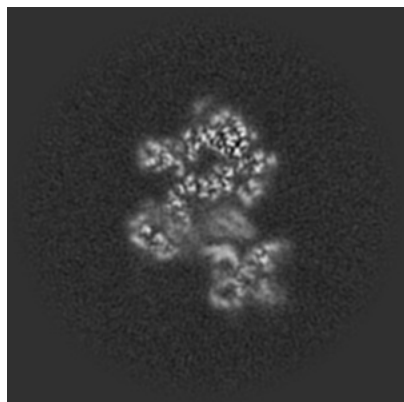


Z

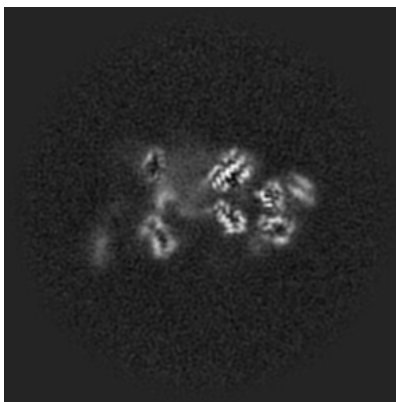
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

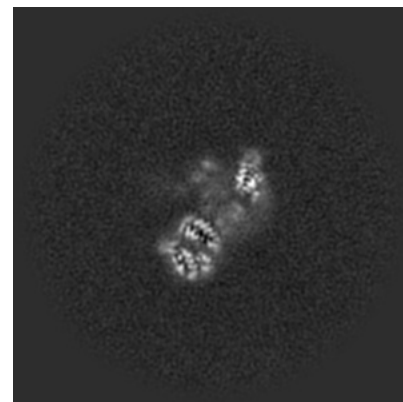
6.2.1 Primary map



X Index: 170

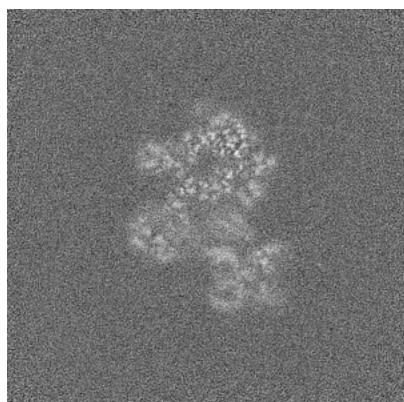


Y Index: 170

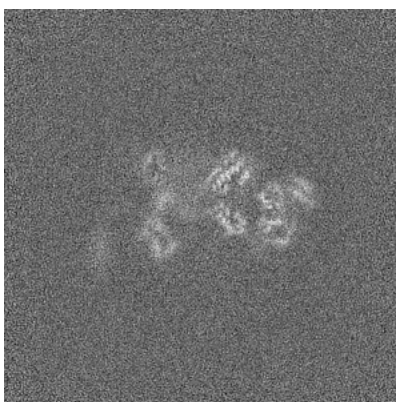


Z Index: 170

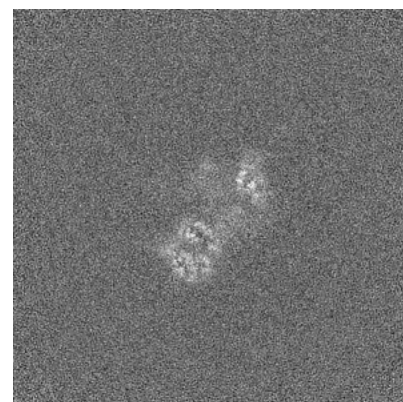
6.2.2 Raw map



X Index: 170



Y Index: 170

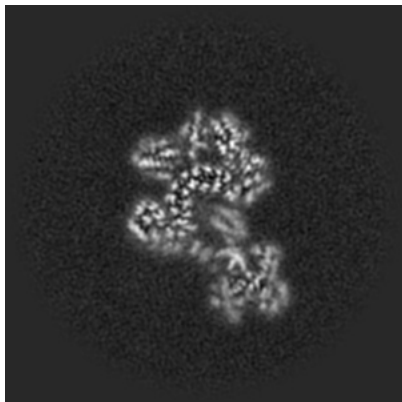


Z Index: 170

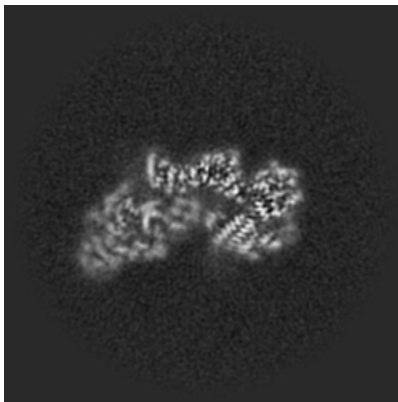
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

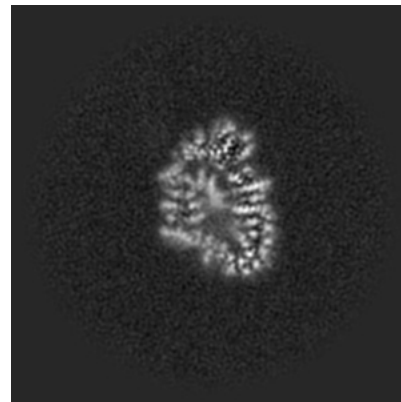
6.3.1 Primary map



X Index: 161

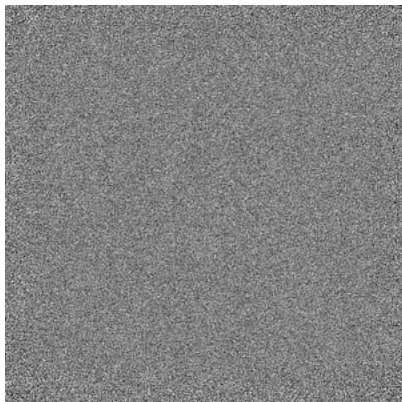


Y Index: 194

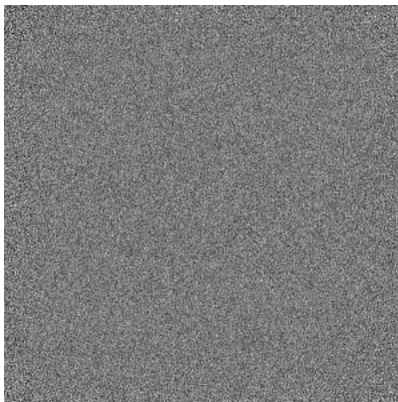


Z Index: 131

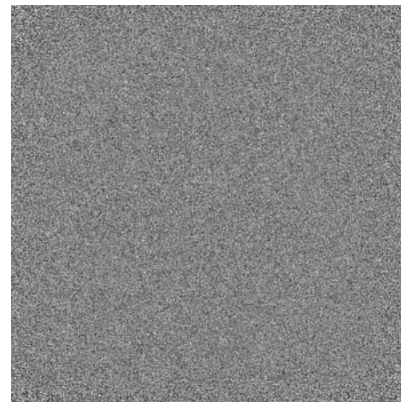
6.3.2 Raw map



X Index: 0



Y Index: 0

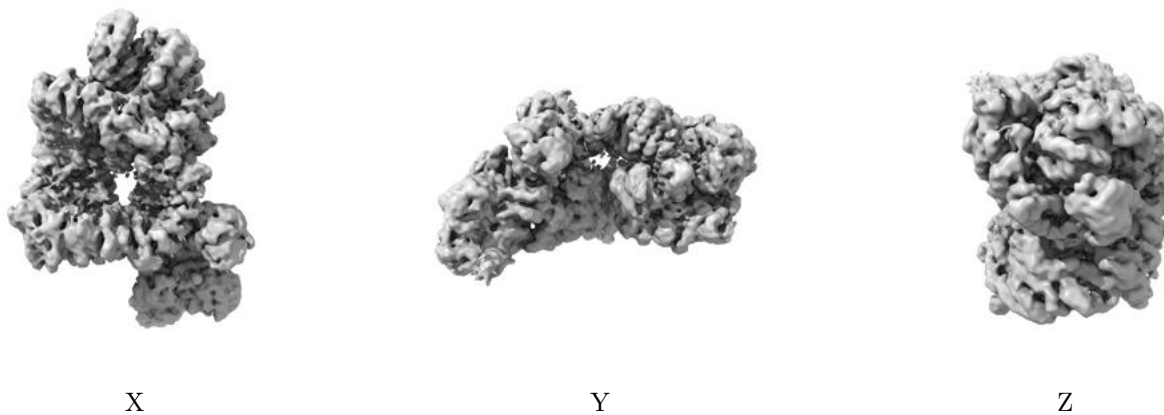


Z Index: 0

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

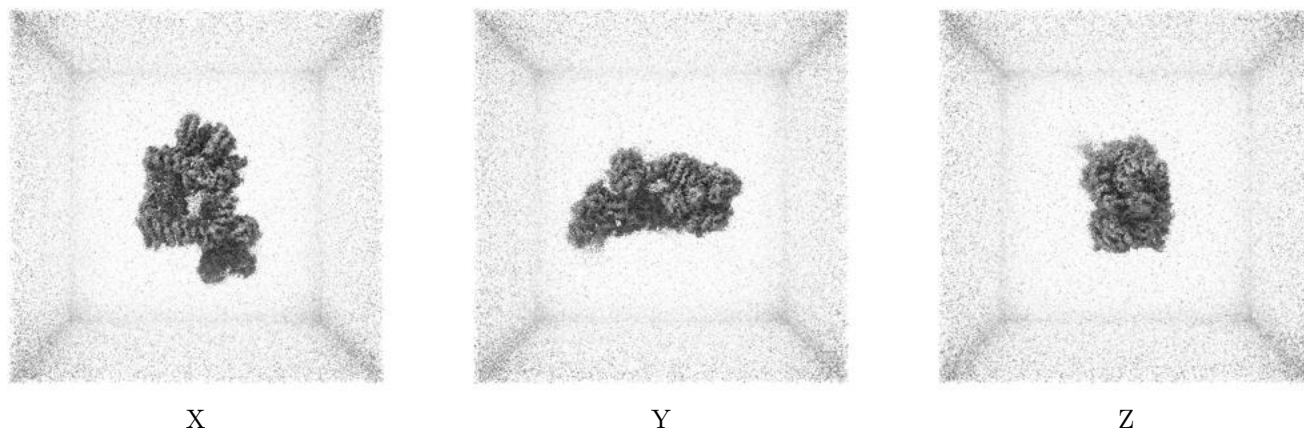
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.125. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 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.

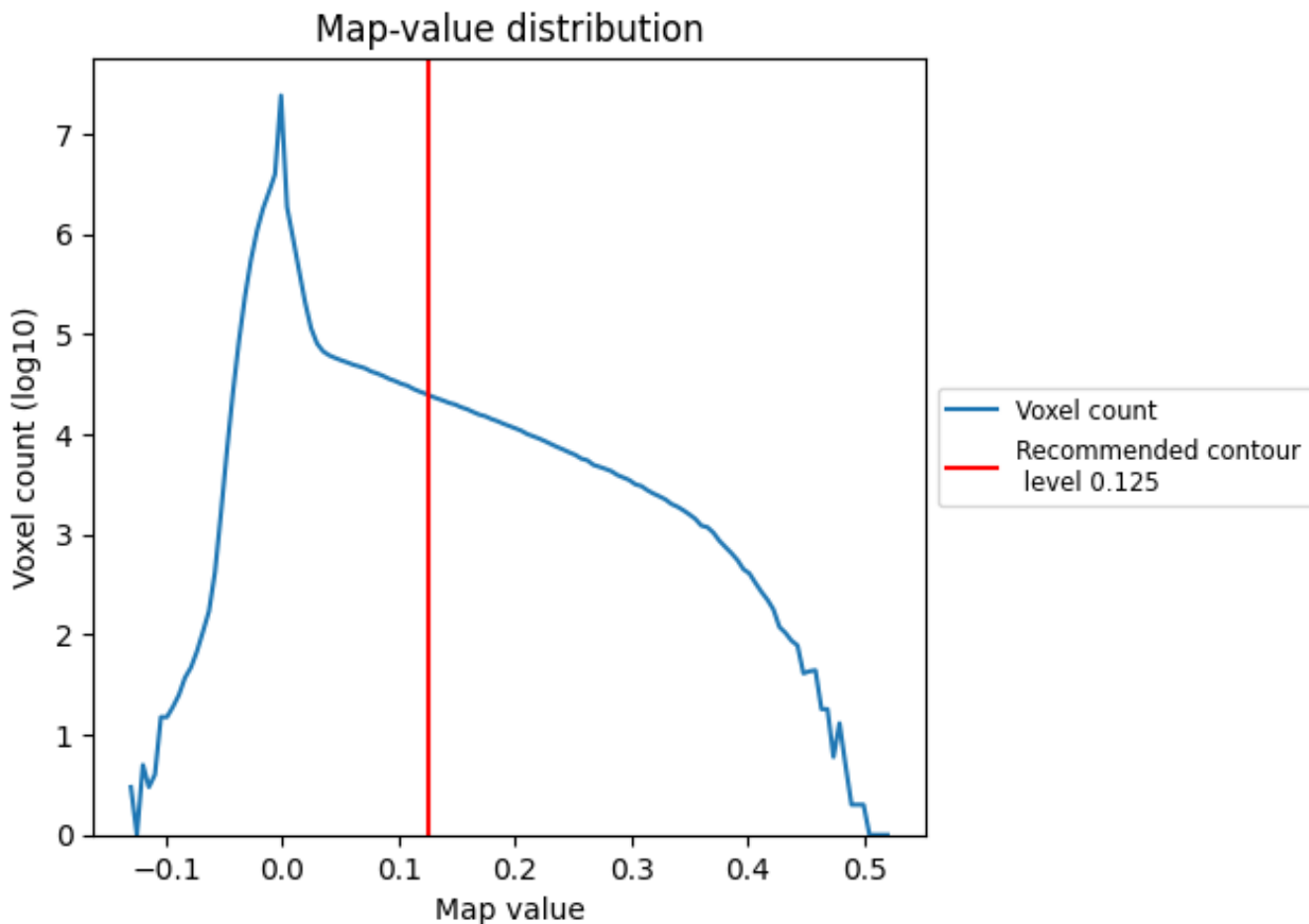
6.5 Mask visualisation [i](#)

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

7 Map analysis [i](#)

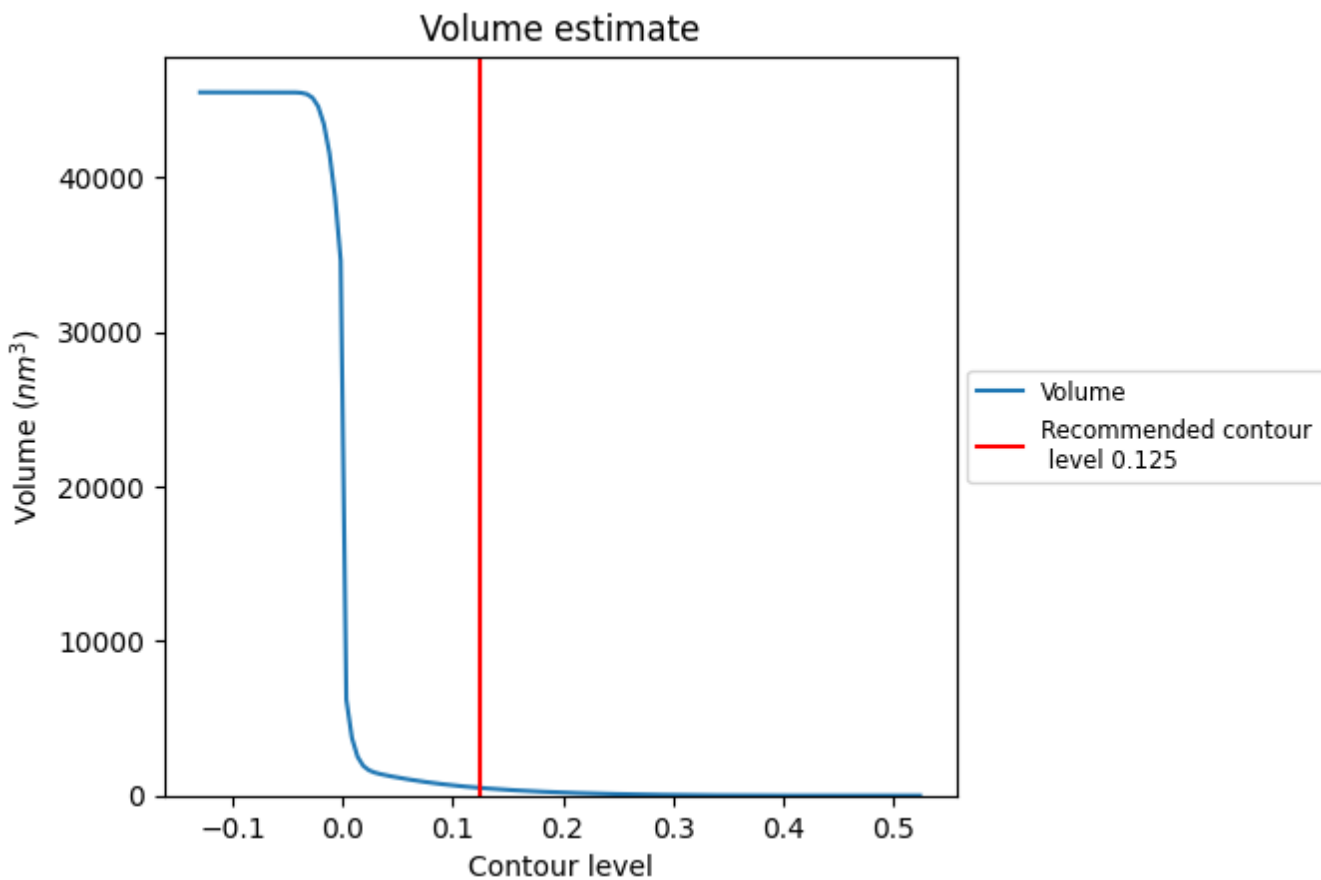
This section contains the results of statistical analysis of the map.

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.

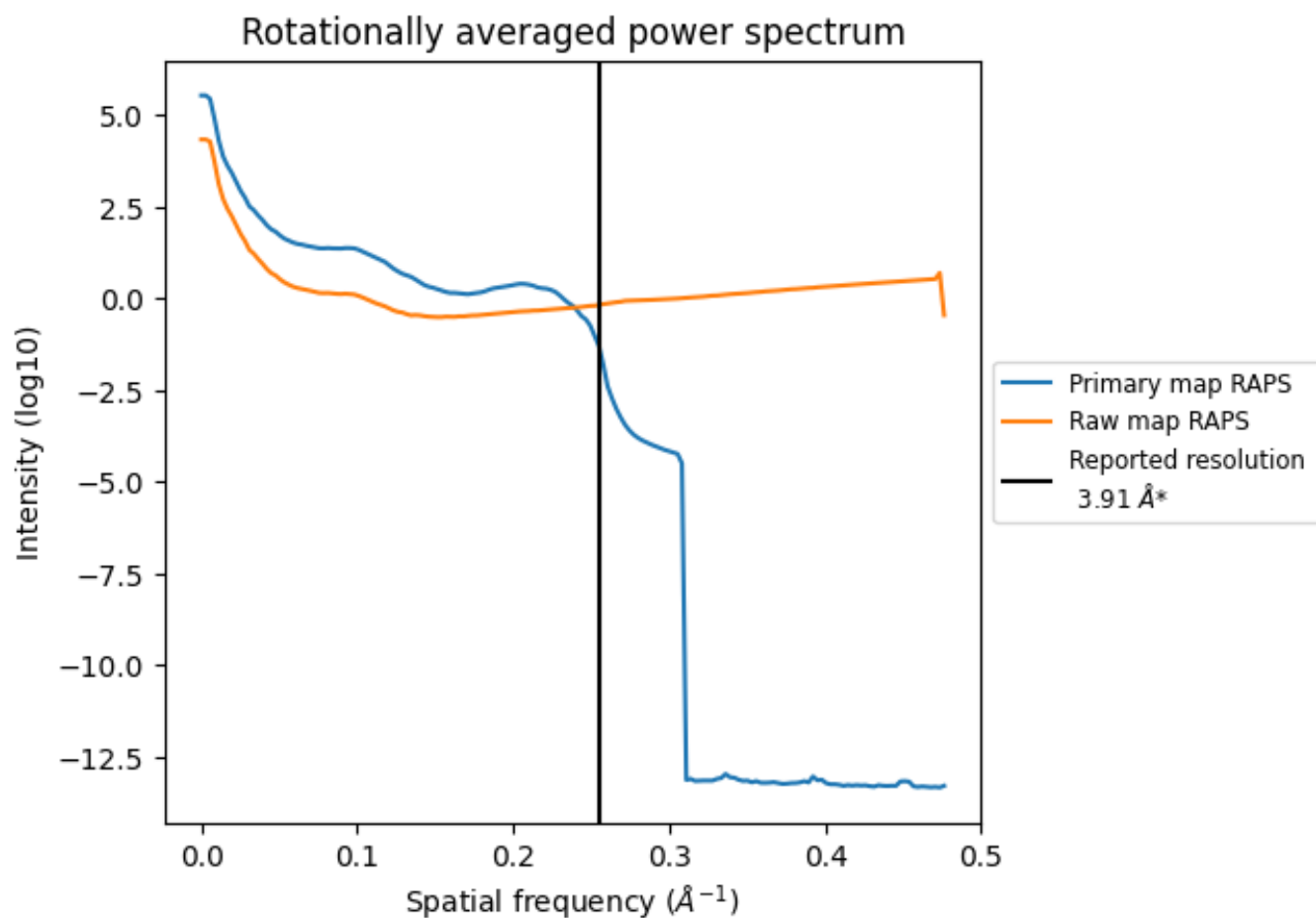
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 497 nm^3 ; this corresponds to an approximate mass of 449 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](#)

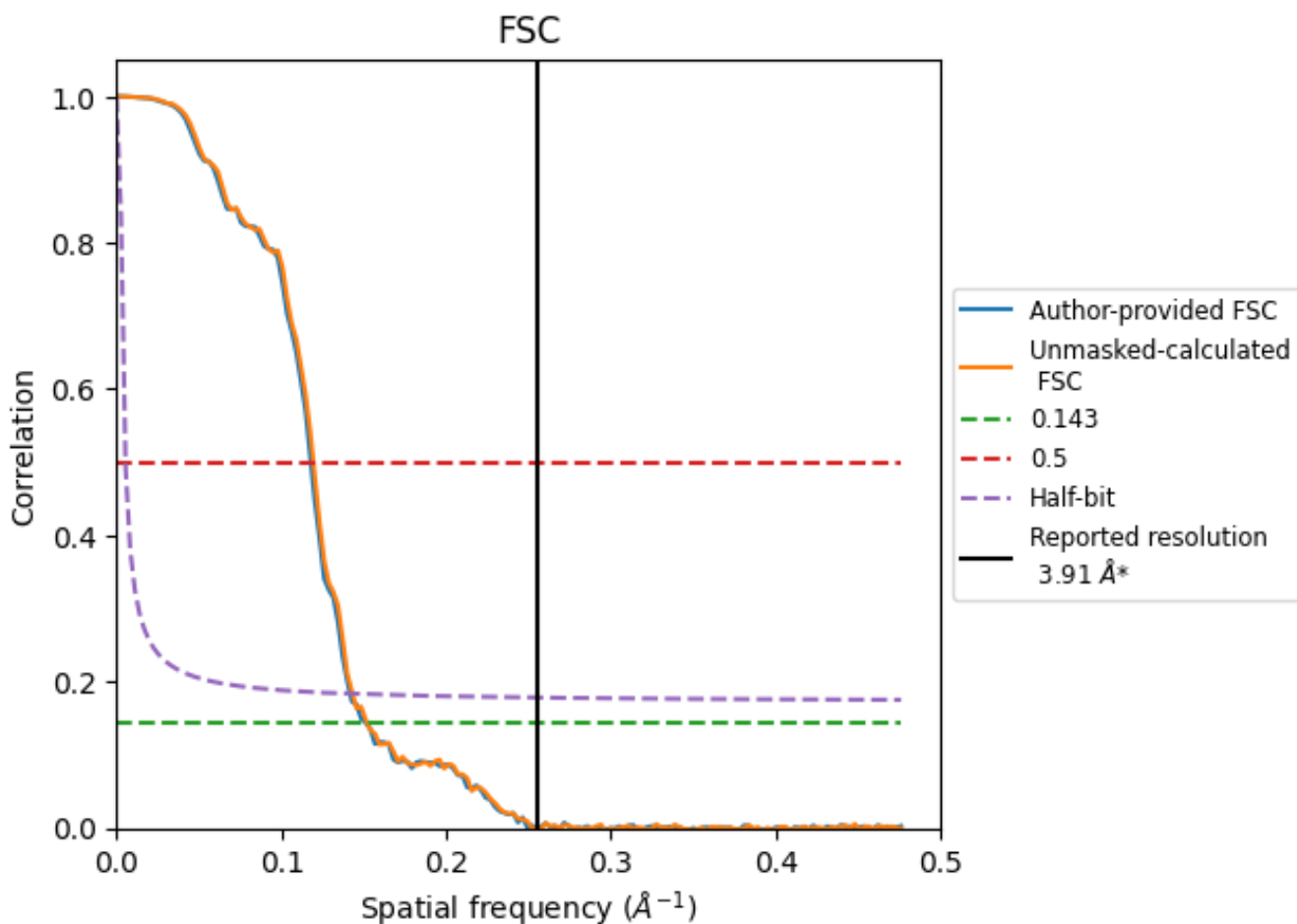


*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

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 0.256 Å⁻¹

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.91	-	-
Author-provided FSC curve	6.60	8.47	7.05
Unmasked-calculated*	6.57	8.37	6.98

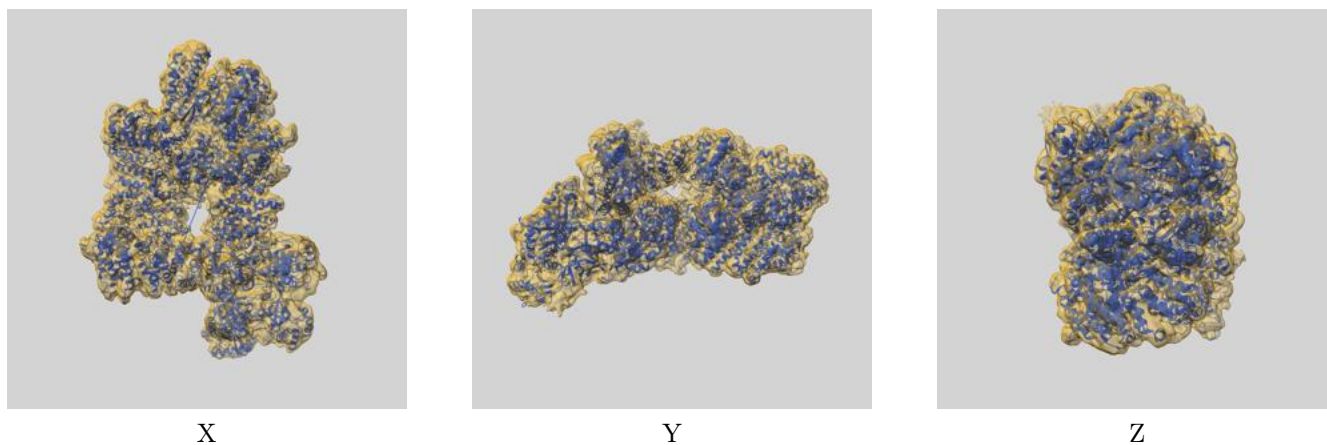
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 6.60 differs from the reported value 3.91 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.57 differs from the reported value 3.91 by more than 10 %

9 Map-model fit [i](#)

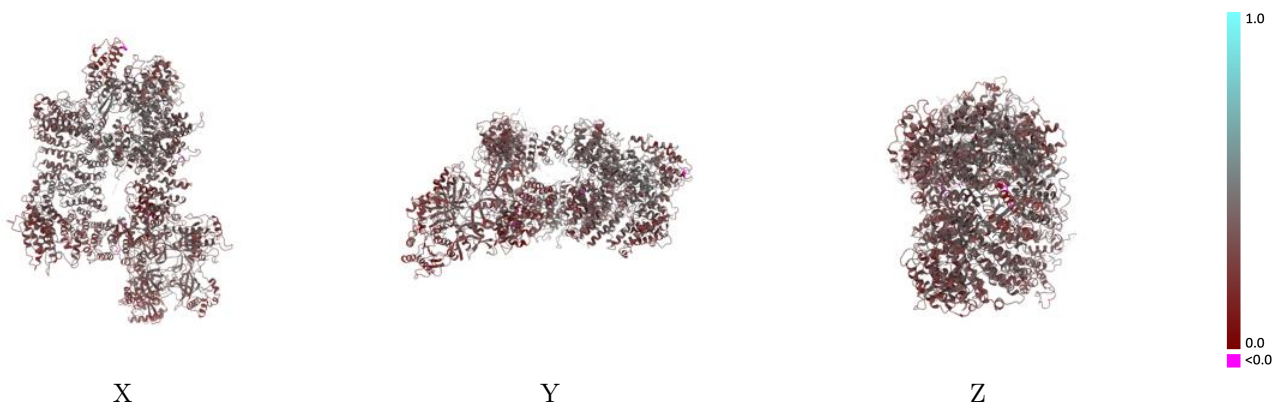
This section contains information regarding the fit between EMDB map EMD-11217 and PDB model 6ZHA. Per-residue inclusion information can be found in section 3 on page 4.

9.1 Map-model overlay [i](#)



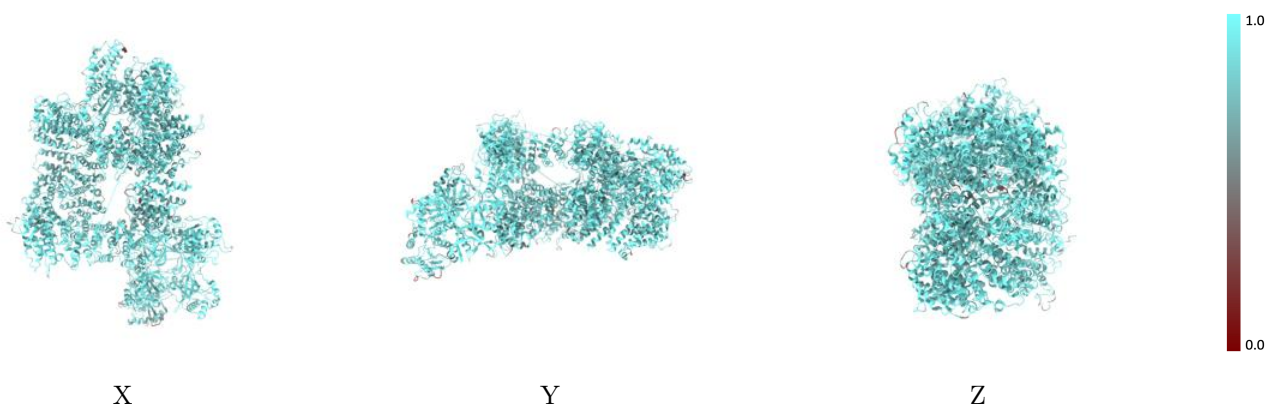
The images above show the 3D surface view of the map at the recommended contour level 0.125 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



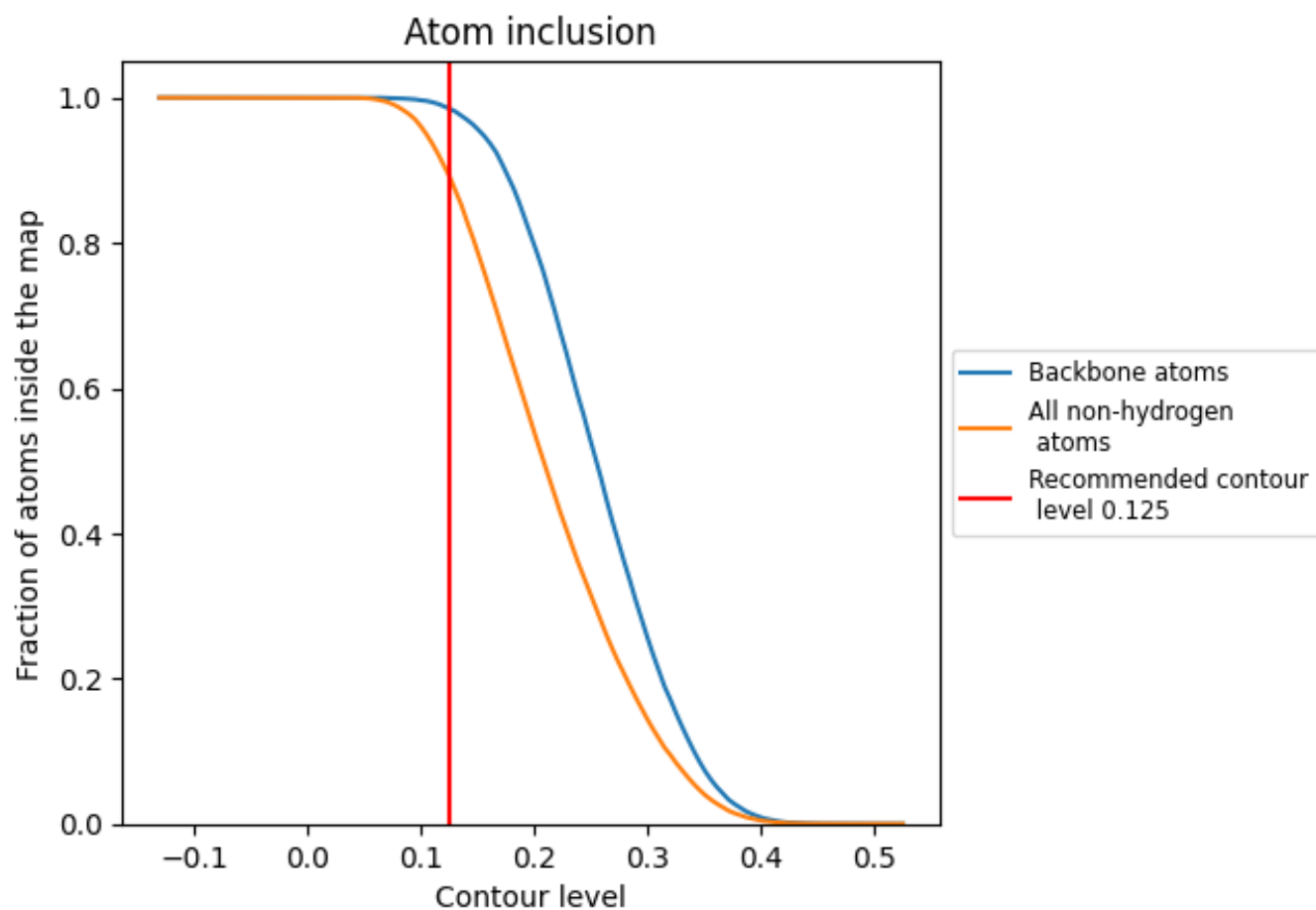
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.125).













9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 89% 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 (0.125) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8935	 0.3380
A	 0.8957	 0.3460
B	 0.8945	 0.3370
C	 0.8546	 0.2850
D	 0.9941	 0.3340
E	 0.9815	 0.3100

