



wwPDB EM Validation Summary Report ⓘ

Apr 22, 2024 – 05:37 pm BST

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)

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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

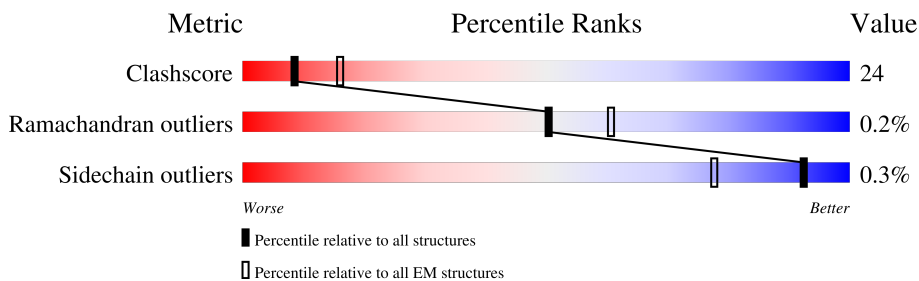
1 Overall quality at a glance

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

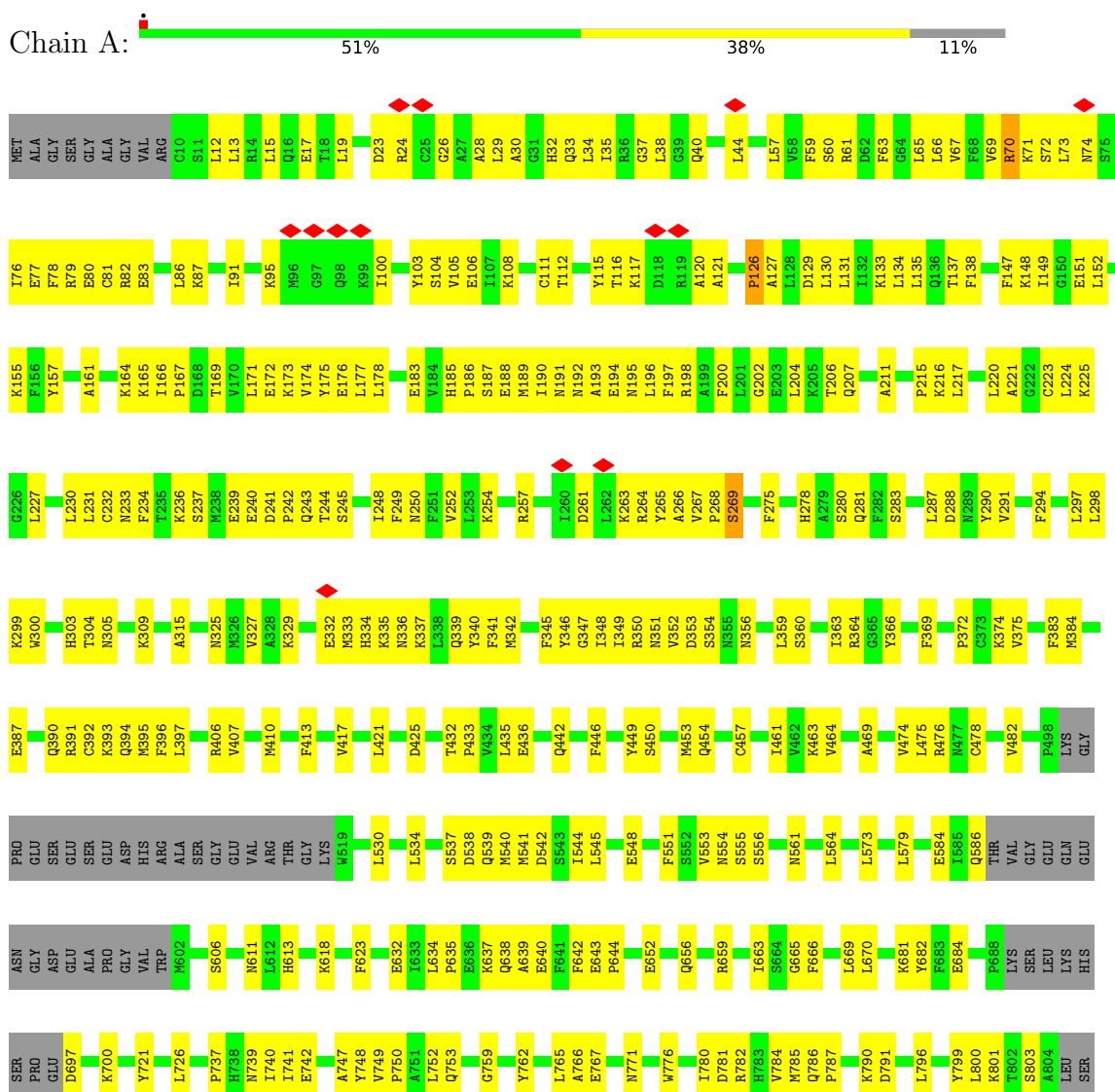
- Molecule 5 is a DNA chain called DNA.

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

3 Residue-property plots

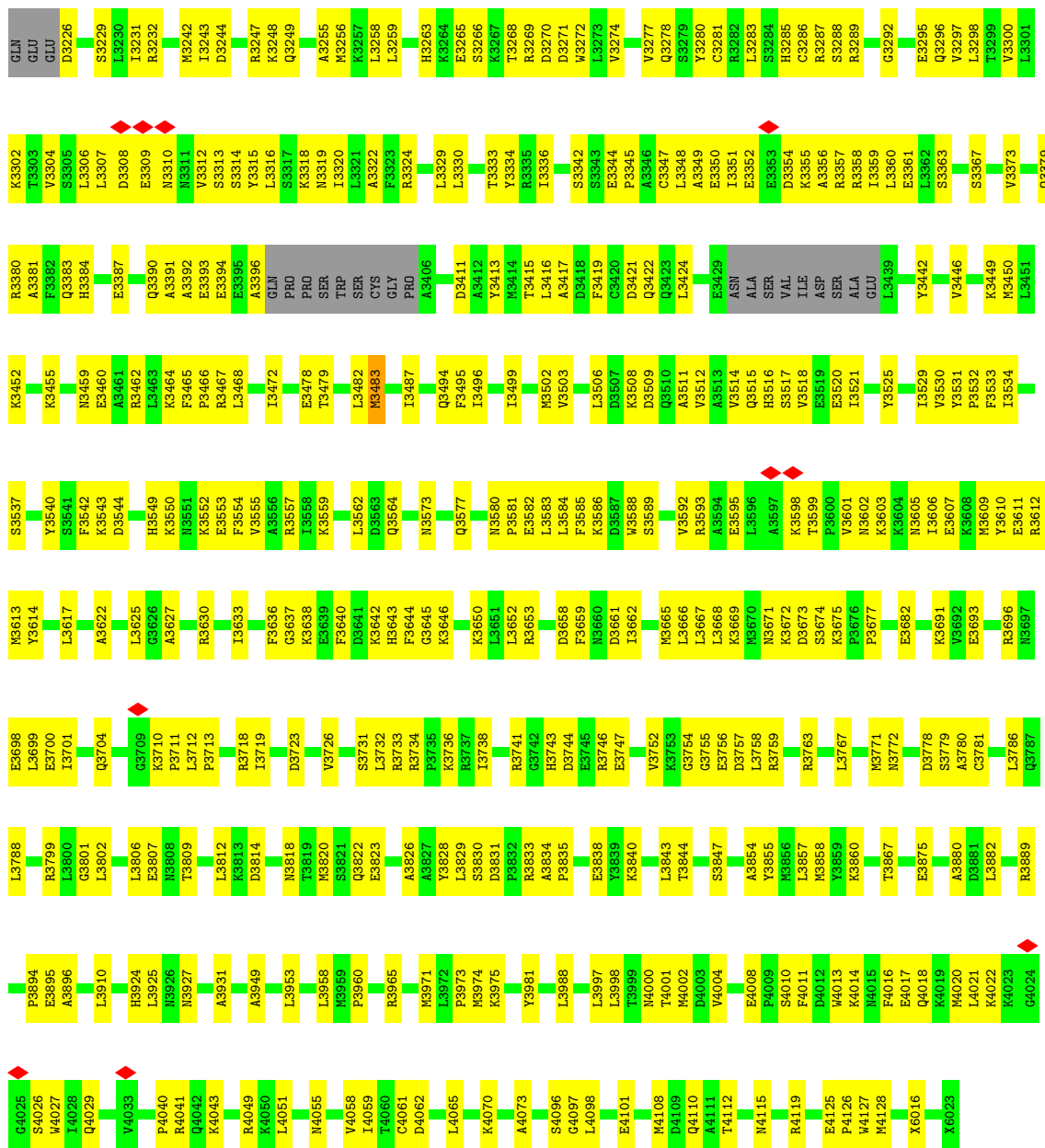
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: DNA-dependent protein kinase catalytic subunit,DNA-dependent protein kinase catalytic subunit,DNA-dependent protein kinase catalytic subunit,DNA-PKcs

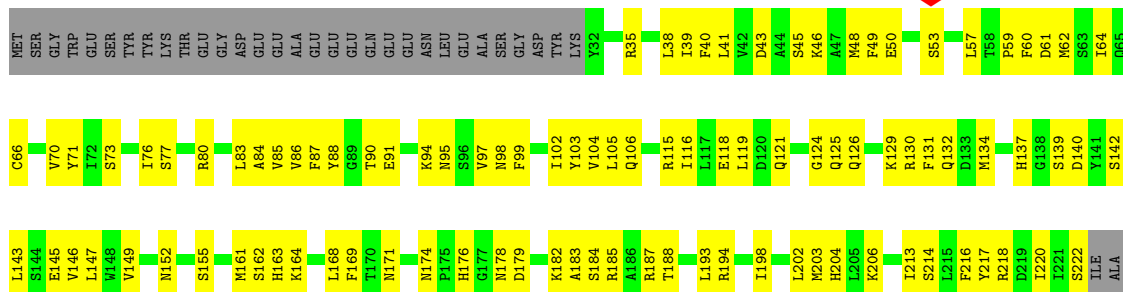


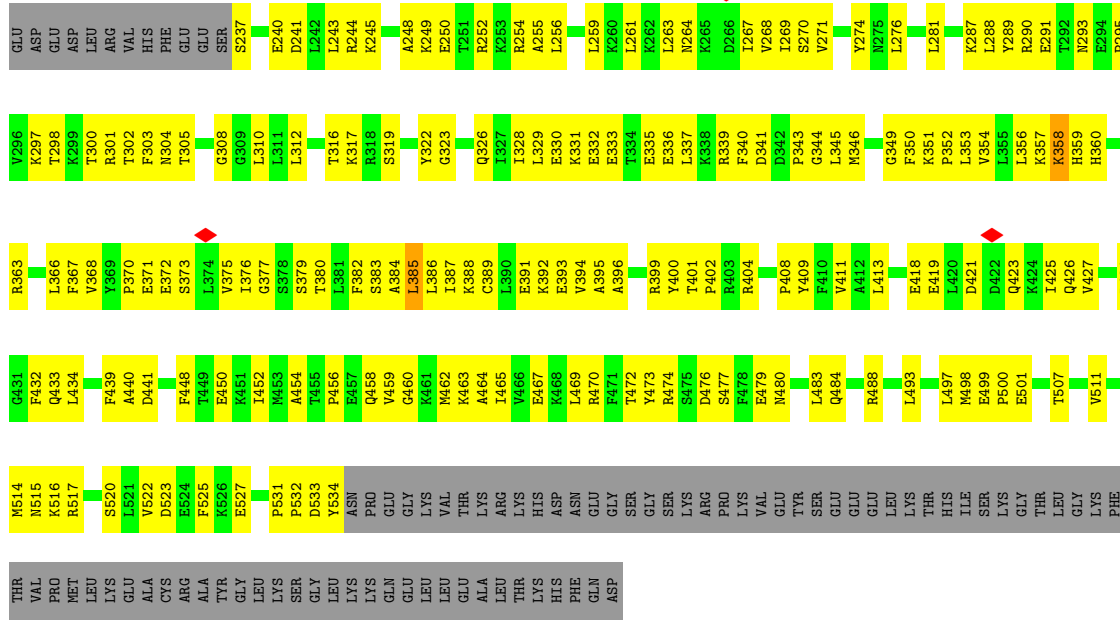
A1883	L1884	D1887	A1891	K1892	S1893	K1894	K1895	K1896	M1897	Q1898	F1900	H1901	G1902	C1903	I1905	T1906	E1907	G1908	M1909	E1910	T1911	I1912	K1913	L1914	L1915	L1916	K1917	L1918	C1919	Y1920	D1921	A1922	F1923	T1924	E1925	L1933	L1934	R1936	R1937	R1938	L1939	Y1940	H1941	Y1945	C1947	A1948	I1949	M1950	C1954	V1955							
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	L1843	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	G1666	S1667	F1668	P1669	E1670	V1671	F1672	T1673	I1676	S1677	D1678	D1681	K1682	E1683	L1684	D1685	L1686	H1687	L1688	K1689	G1690	Q1691	A1692	F1699	T1700	S1701	L1702	L1707	E1708	E1709	L1710	R1711	V1712	V1713	Q1716	L1717	L1718	V1719	H1720	F1721	P1722	M1723	M1724	S1725	I1726	M1727	L1728	L1729					
T1733	F1734	R1735	F1736	F1739	V1740	D1741	C1742	K1745	L1747	E1751	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	L1798	E1799	E1803	M1804	K1807	D1808	D1809	F1810	R1811	M1812	S1813										
I1567	M1568	T1569	L1571	L1572	K1573	M1574	L1575	L1576	L1577	L1580	E1581	L1582	M1583	S1586	D1588	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	A1492	P1493	G1494	D1495	L1496	R1497	L1500	P1501	S1502	L1503	D1504	L1505	S1506	C1507	K1508	Q1509	L1514	A1518	F1519	A1520	G1525	E1526	R1527	L1528	L1531	L1532	L1538	S1539	T1540	ALA	SER	LEU	GLY	SER	SER	GLY	S1549	H1552	F1553	Y1558	L1562	E1565	T1566												
M1403	K1404	A1405	L1406	Y1411	K1412	D1413	L1414	L1415	E1416	H1417	H1418	L1419	E1420	E1421	A1425	Q1427	I1428	L1429	E1430	N1435	L1436	Y1437	G1438	P1439	Q1442	Y1443	D1444	R1445	S1446	R1447	L1448	A1449	V1452	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	G1374	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	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	SER	F1956
Q3133	K3050	L2847	ARG	LEU	L1959
A3134	S2966	F2848	LYS	LEU	K1960
D3058	E2967	L2851	GLY	GLU	F1961
L3135	K2970	R2852	VAL	GLU	L2100
Q3059	Q2971	D2428	ALA	TRP	V2101
E3137	Q2972	D2429	VAL	TRP	K2102
I3138	Y2972	E2430	ALA	VAL	M2103
I3142	D2973	R2431	GLN	VAL	H2104
Q3148	A2974	K2432	LYS	ALA	L2108
F3064	A2975	L2433	ARG	GLY	GLY
I3065	L2976	L2434	LEU	GLY	PRO
D3066	L2977	V2434	SER	ILE	PRO
K3067	K2978	I2438	VAL	ALA	PRO
A3068	Q2979	M2443	GLY	ALA	GLN
K3069	D2980	M2444	ASP	TRP	GLY
H3070	L2981	V2345	LYS	GLN	VAL
R3167	H3071	L2349	PRO	GLN	GLY
R3168	P2986	K2350	PHE	GLY	GLU
P3169	G3071	L2351	GLY	GLN	GLU
D3170	E3072	Q2352	LYS	ASP	ASP
A3171	L3073	H2353	MET	LYS	TYR
K3172	Q3074	H2354	GLY	ASP	SER
K3173	K3075	H2355	LEU	THR	VAL
D3174	N3003	L2356	LEU	THR	VAL
H3179	H3004	L2361	THR	GLN	VAL
D3180	L3005	L2362	GLY	THR	VAL
D3181	W3008	L2363	ASP	ALA	VAL
I3182	L3011	L2364	GLY	ASP	ASN
L3190	L3015	L2365	VAL	GLY	ASN
E3195	S3018	L2366	VAL	PHE	PRO
K3196	I3019	L2367	VAL	ASP	PRO
L3197	D3020	D2368	ARG	TRP	ARG
THR	R3098	S2369	GLY	TRP	ARG
PRO	S3021	Q2370	ALA	THR	LYS
LEU	E3022	R2371	ALA	THR	LYS
PRO	N3023	L2372	GLY	GLY	TYR
GLU	D3026	L2373	THR	LEU	ILE
ASP	L3027	L2374	THR	LEU	ILE
ASN	N3028	L2375	ALA	LEU	ARG
SER	G3104	L2376	ALA	LEU	ARG
MET	I3029	Q2472	THR	THR	LYS
ASN	W3031	M2473	VAL	VAL	GLY
VAL	S3032	I2476	VAL	PHE	GLY
ASP	E3033	S2489	ARG	LEU	GLY
GLN	P3034	M2493	ARG	THR	GLY
ASP	F3035	D2494	ARG	THR	GLY
GLY	I3114	E2497	LEU	GLU	ASP
ASP	S3115	E2497	LEU	GLU	ASP
PRO	E3038	L2501	ARG	THR	ASP
PRO	T3039	L2501	ARG	HIS	ASP
SER	L3120	M2506	ARG	THR	ASP
ASP	L3121	L2506	ARG	THR	ASP
ARG	H3122	M2514	PHE	THR	GLY
MET	R3125	L2517	LEU	THR	GLY
GLU	L3129	R2558	LEU	THR	GLY
VAL	S3047	L2559	LEU	THR	GLY
GLU	K3048	L2560	GLY	THR	ASP
		L2563	GLY	THR	ASP
		D2571	ALA	THR	ASP
		Y2572	THR	THR	ASP
		P2573	GLN	THR	ASP
		N2574	GLN	THR	ASP
		P2575	GLY	THR	ASP
		M2576	LYS	THR	ASP
		F2577	ASP	THR	ASP
		H2579	PHE	THR	ASP
		P2580	LEU	THR	ASP
		L2581	LEU	THR	ASP
		F2586	THR	THR	ASP
		I2591	ALA	THR	ASP
		D2592	GLY	THR	ASP
		S2593	VAL	THR	ASP
		D2594	ASN	THR	ASP
		W2595	LYS	THR	ASP
		R2596	VAL	THR	ASP
		L2599	VAL	THR	ASP
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		D2782	VAL	THR	ASP
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		Y2775	VAL	THR	ASP
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		H2777	LYS	THR	ASP
		P2781	VAL	THR	ASP
		D2782	VAL	THR	ASP
		S2783	GLY	THR	ASP
		Q2784	ALA	THR	ASP
		L2791	ALA	THR	ASP
		L2794	ARG	THR	ASP
		V2923	ARG	THR	ASP
		E2935	ARG	THR	ASP
		V2938	ARG	THR	ASP
		F2943	ARG	THR	ASP
		E2946	PHE	THR	ASP
		I2947	MET	THR	ASP
		G2948	ARG	THR	ASP
		I2952	GLN	THR	ASP
		L2957	LEU	THR	ASP
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		A2959	SER	THR	ASP
		R2962	HIS	THR	ASP
		L2097	SER	THR	ASP
		L2098	LEU	THR	ASP
		A2099	SER	THR	ASP
		L2100	GLU	THR	ASP
		V2101	GLY	THR	ASP
		K2102	MET	THR	ASP
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		M2104	GLN	THR	ASP
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		V2138	M2219	ARG	ASP
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		K2162	V2230	ARG	ASP
		H2163	F2231	ARG	ASP
		W2164	M2305	ARG	ASP
		L2165	M2306	ARG	ASP
			M2307	ARG	ASP
			S2308	ARG	ASP
			F2309	ARG	ASP
			V2310	ARG	ASP
			R2311	ARG	ASP
			Y2312	ARG	ASP
			K2313	ARG	ASP
			E2314	ARG	ASP
			V2315	ARG	ASP
			Y2316	ARG	ASP
			E2321	ARG	ASP
			Q2422	ARG	ASP
			W2425	ARG	ASP
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			K2283	ARG	ASP
			Y2288	ARG	ASP
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			G2293	ARG	ASP
			L2294	ARG	ASP
			Q2295	ARG	ASP
			S2296	ARG	ASP
			S2297	ARG	ASP
			E2298	ARG	ASP
			Y2299	ARG	ASP
			V2304	ARG	ASP
			M2305	ARG	ASP
			M2306	ARG	ASP
			M2307	ARG	ASP
			S2308	ARG	ASP
			F2309	ARG	ASP
			V2310	ARG	ASP
			R2311	ARG	ASP
			Y2312	ARG	ASP
			K2313	ARG	ASP
			E2314	ARG	ASP
			V2315	ARG	ASP
			Y2316	ARG	ASP
			E2321	ARG	ASP
			Q2422	ARG	ASP
			W2425	ARG	ASP
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			L2398	ARG	ASP
			E2399	ARG	ASP
			V2400	ARG	ASP
			V2405	ARG	ASP
			M2408	ARG	ASP
			T2409	ARG	ASP
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			L2415	ARG	ASP
			E2314	ARG	ASP
			V2315	ARG	ASP
			Y2316	ARG	ASP
			E2321	ARG	ASP
			Q2422	ARG	ASP
			W2425	ARG	ASP
			C2248	ARG	ASP
			L2424	ARG	ASP
			R2425	ARG	ASP
			H2426	ARG	ASP
			R2427	ARG	ASP
			D2428	ARG	ASP
			E2430	ARG	ASP
			R2431	ARG	ASP
			Q2432	ARG	ASP
			K2433	ARG	ASP
			V2434	ARG	ASP
			I2438	ARG	ASP
			M2443	ARG	ASP
			P2444	ARG	ASP
			K2445	ARG	ASP
			L2446	ARG	ASP
			L2451	ARG	ASP
			R2452	ARG	ASP
			E2453	ARG	ASP
			L2454	ARG	ASP
			H2464	ARG	ASP
			F2465	ARG	ASP
			S2466	ARG	ASP
			T2467	ARG	ASP
			Q2472	ARG	ASP

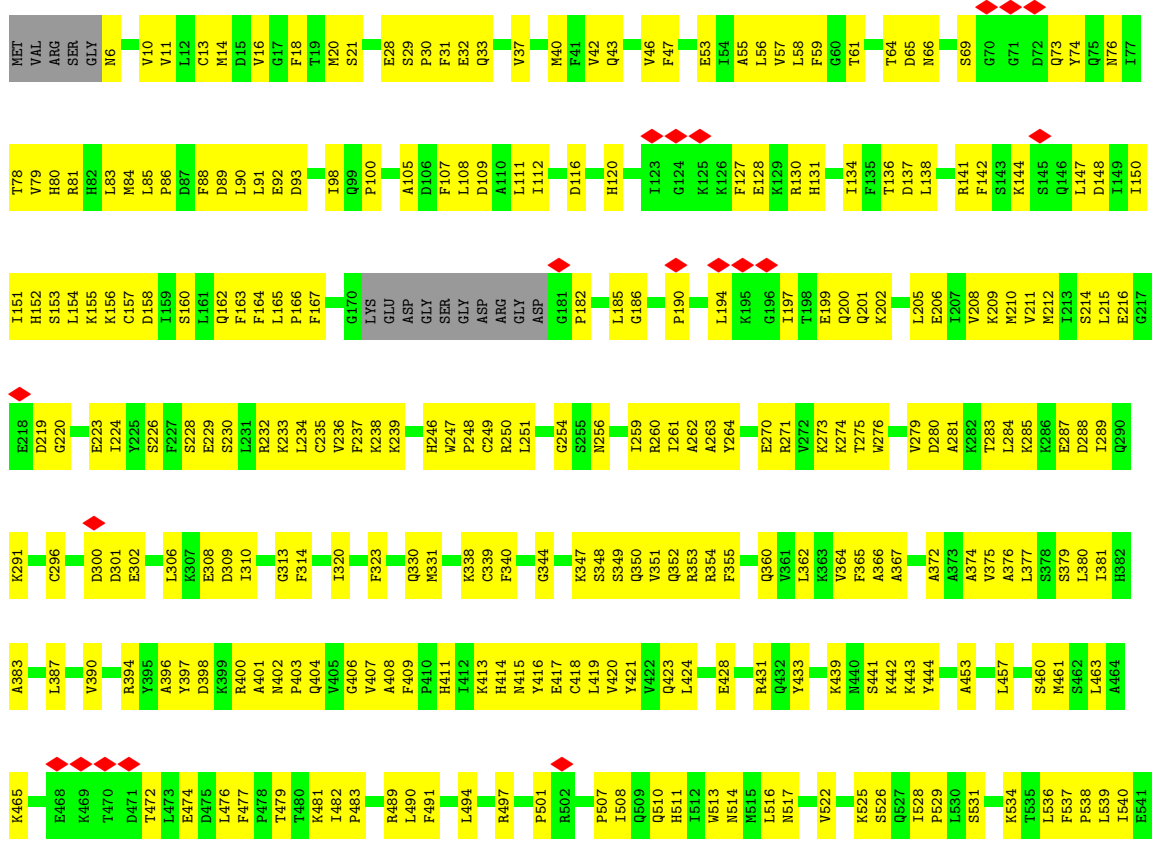


● Molecule 2: X-ray repair cross-complementing protein 6





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



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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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

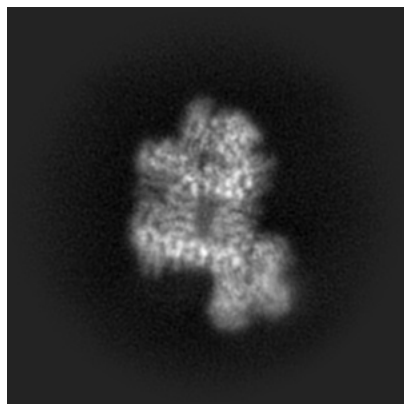
6 Map visualisation [i](#)

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.

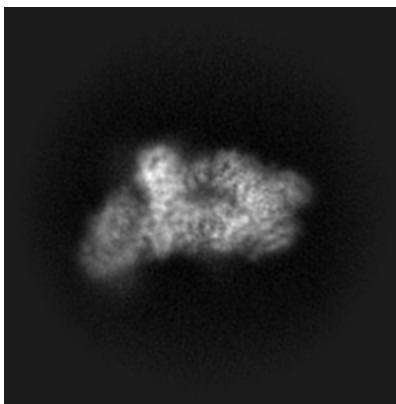
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

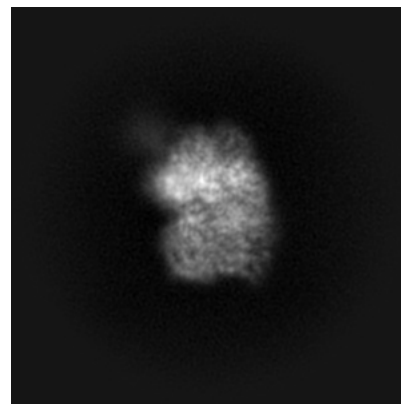
6.1.1 Primary map



X

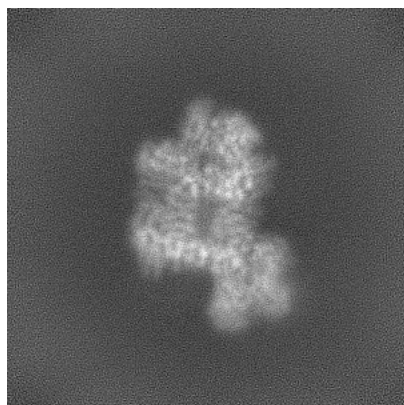


Y

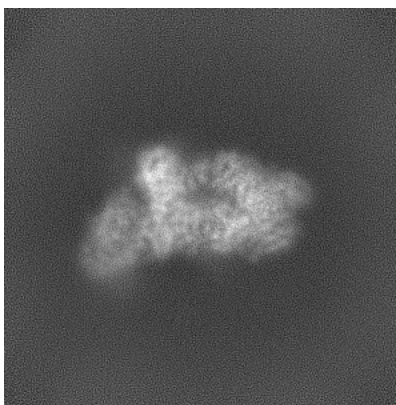


Z

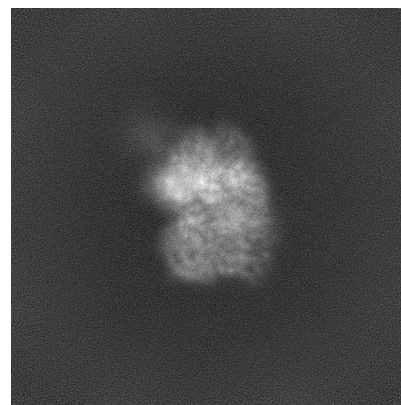
6.1.2 Raw map



X



Y

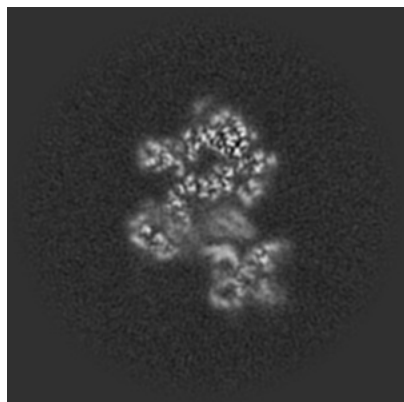


Z

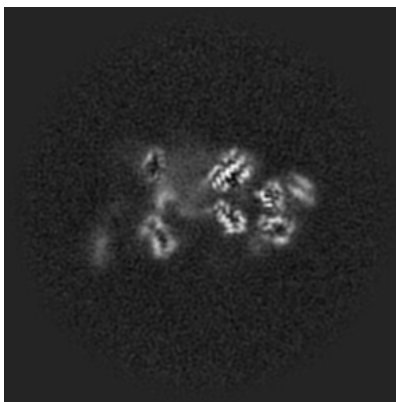
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

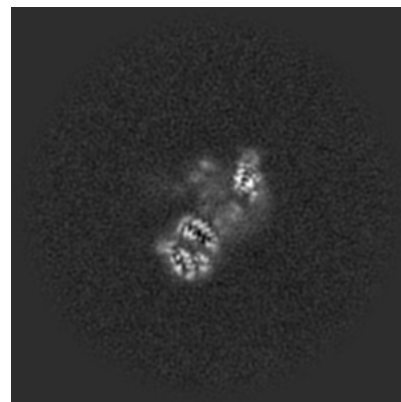
6.2.1 Primary map



X Index: 170

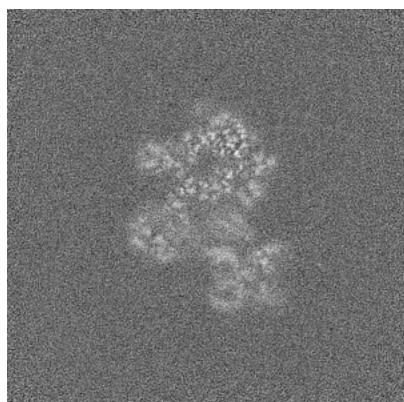


Y Index: 170

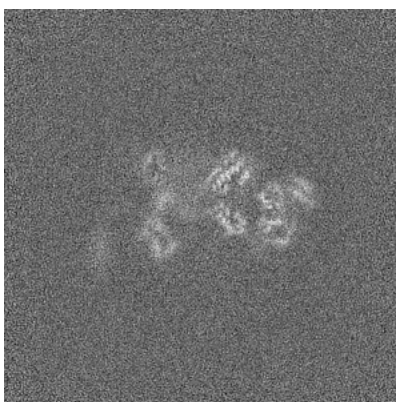


Z Index: 170

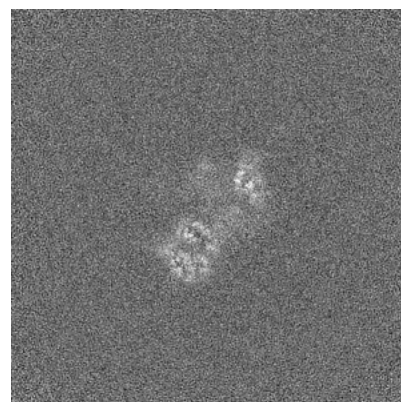
6.2.2 Raw map



X Index: 170



Y Index: 170

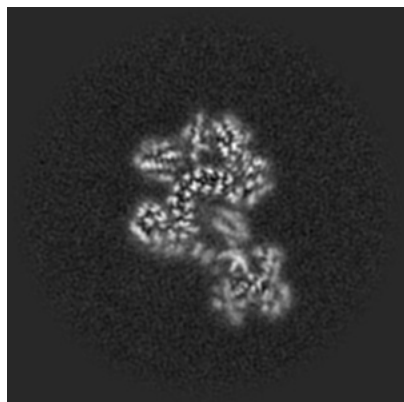


Z Index: 170

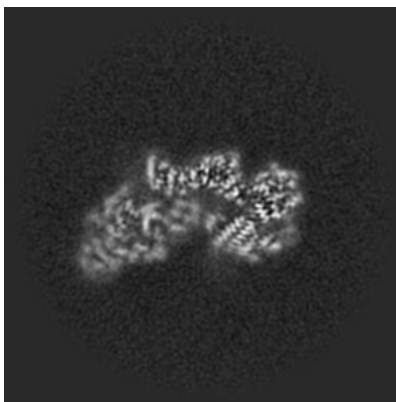
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

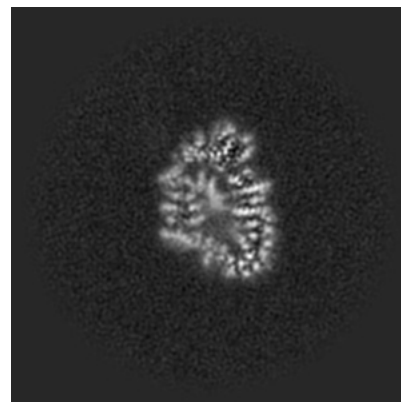
6.3.1 Primary map



X Index: 161

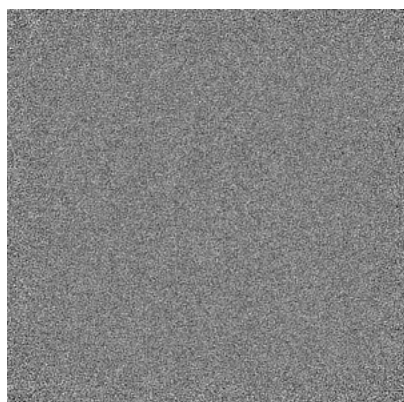


Y Index: 194

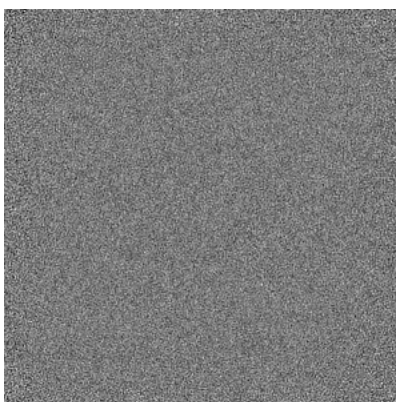


Z Index: 131

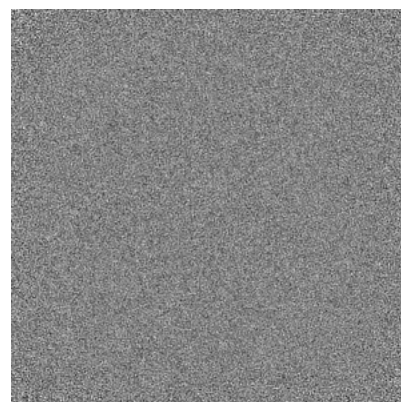
6.3.2 Raw map



X Index: 0



Y Index: 0

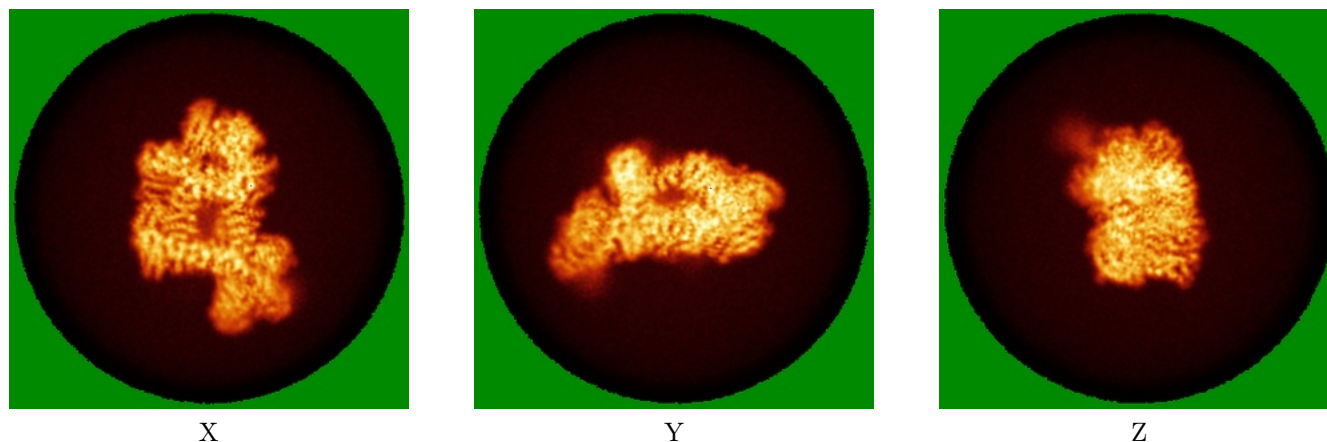


Z Index: 0

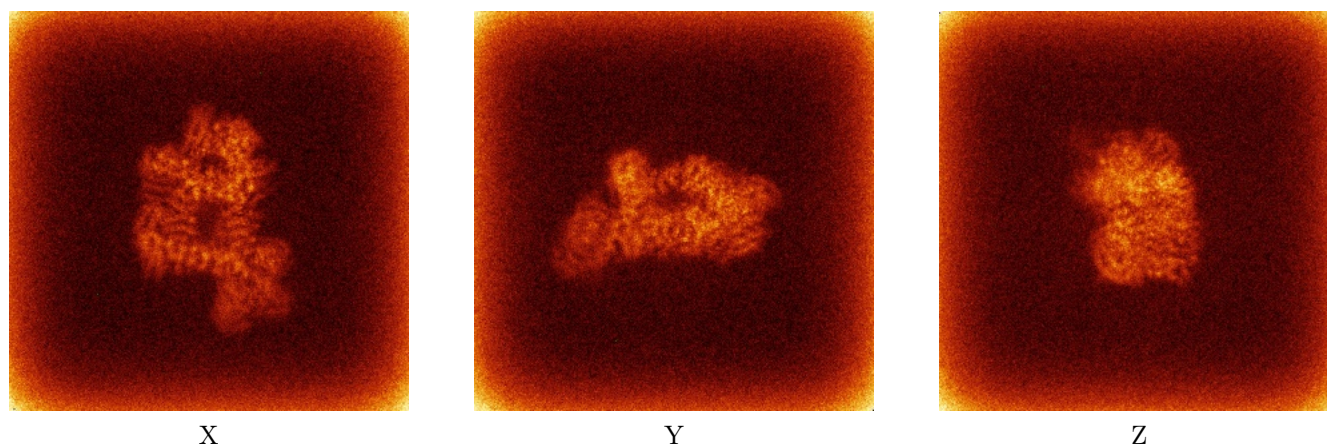
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



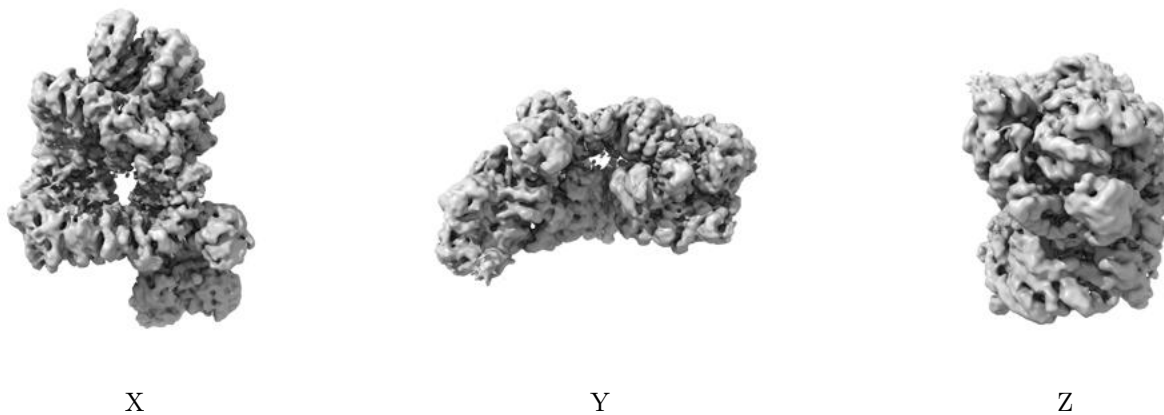
6.4.2 Raw map



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.

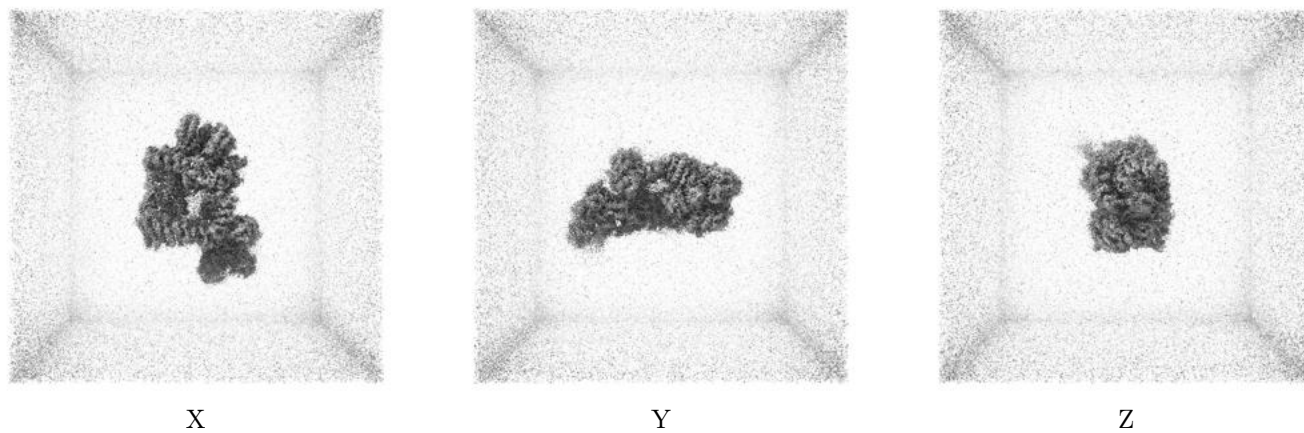
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.125. 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.

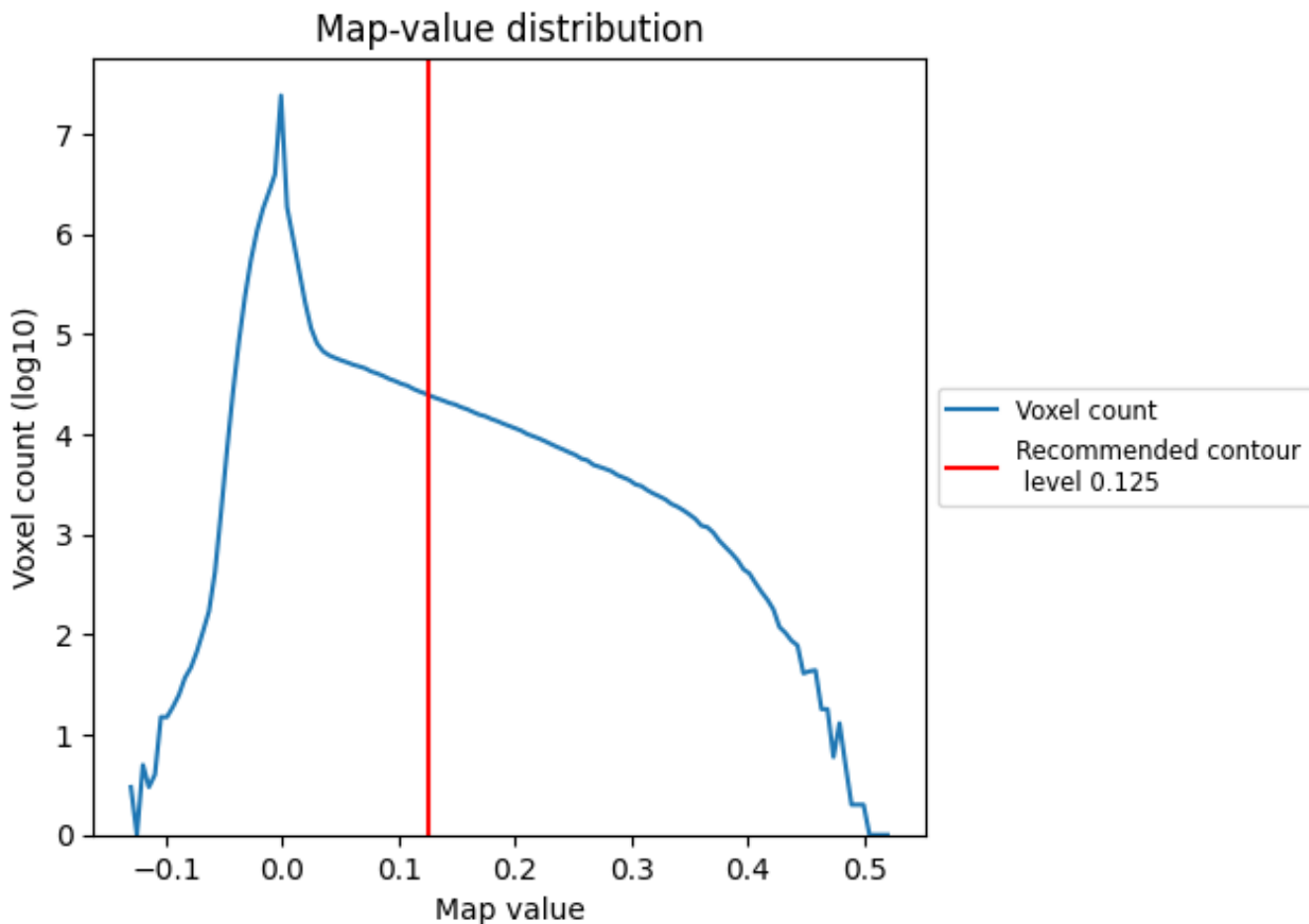
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

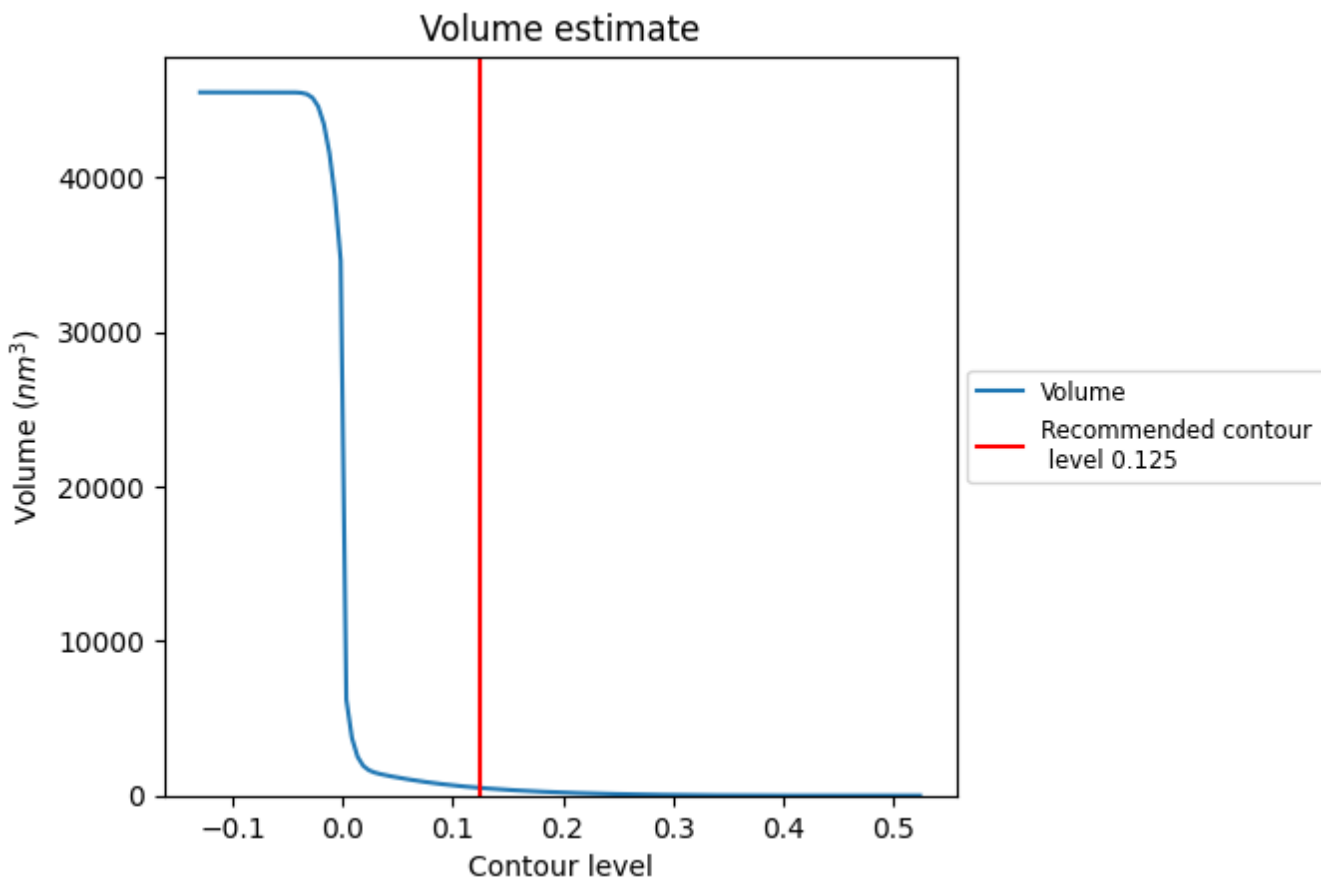
This section contains the results of statistical analysis of the map.

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.

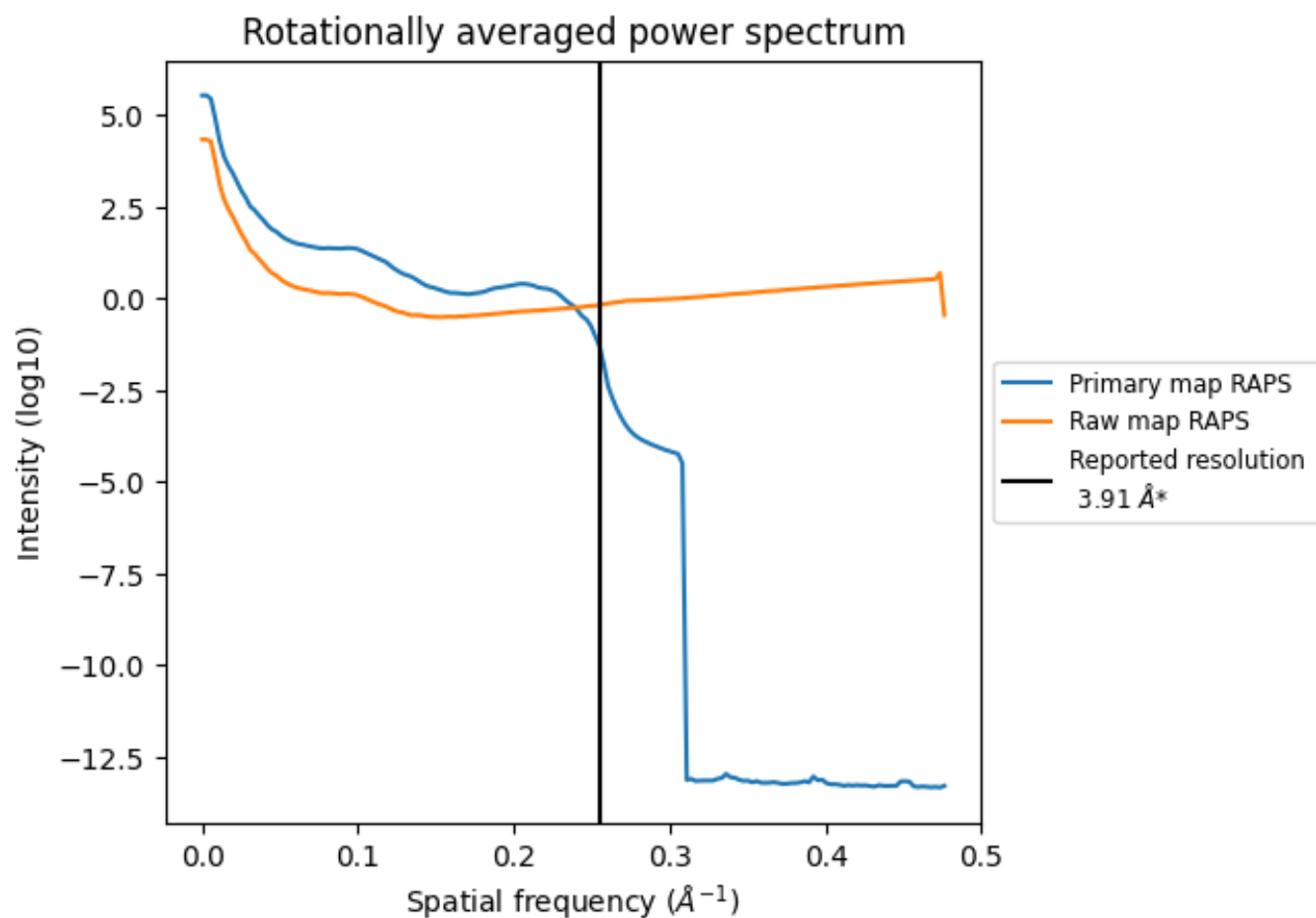
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 497 nm³; 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](#)

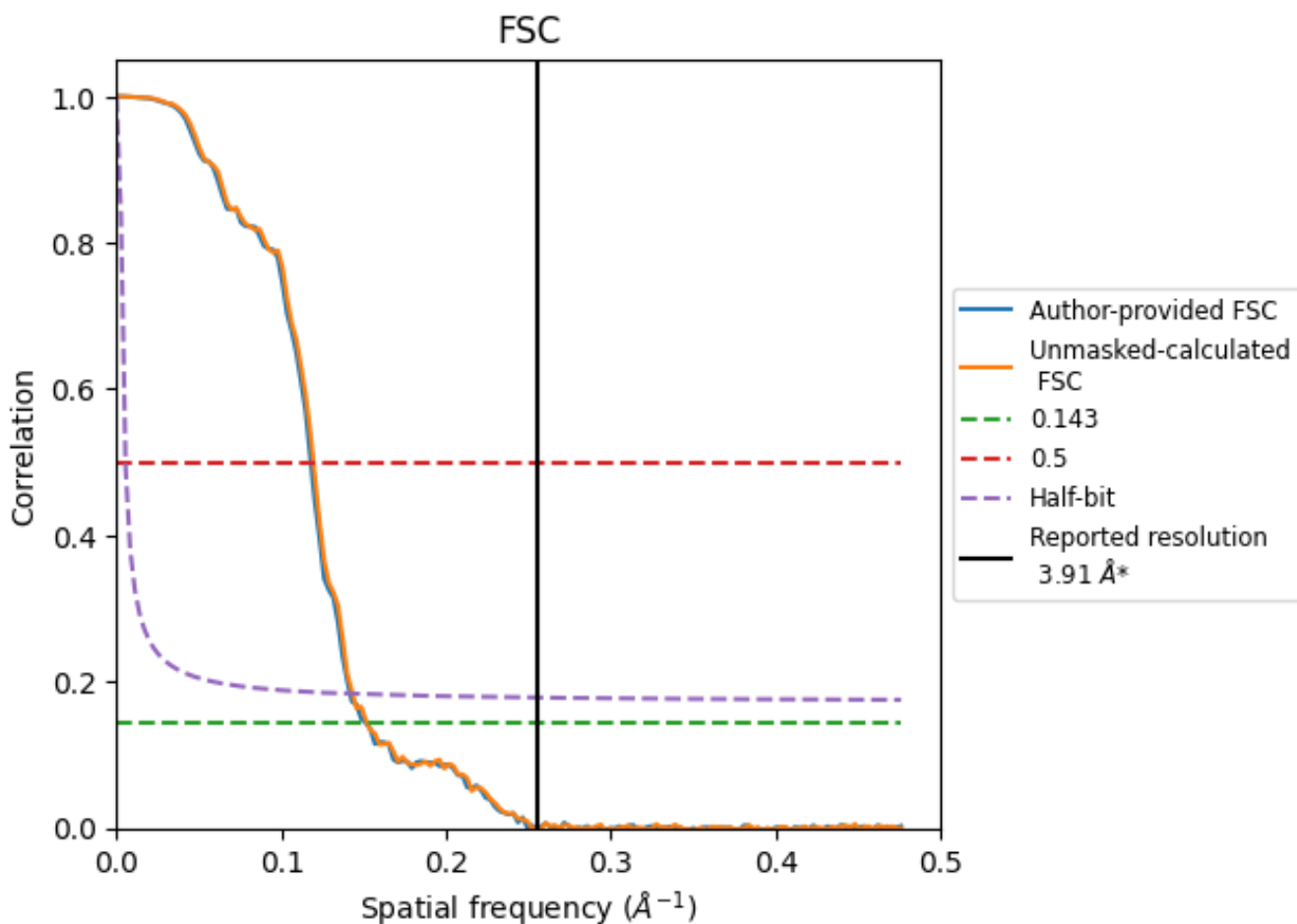


*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

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 \AA^{-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

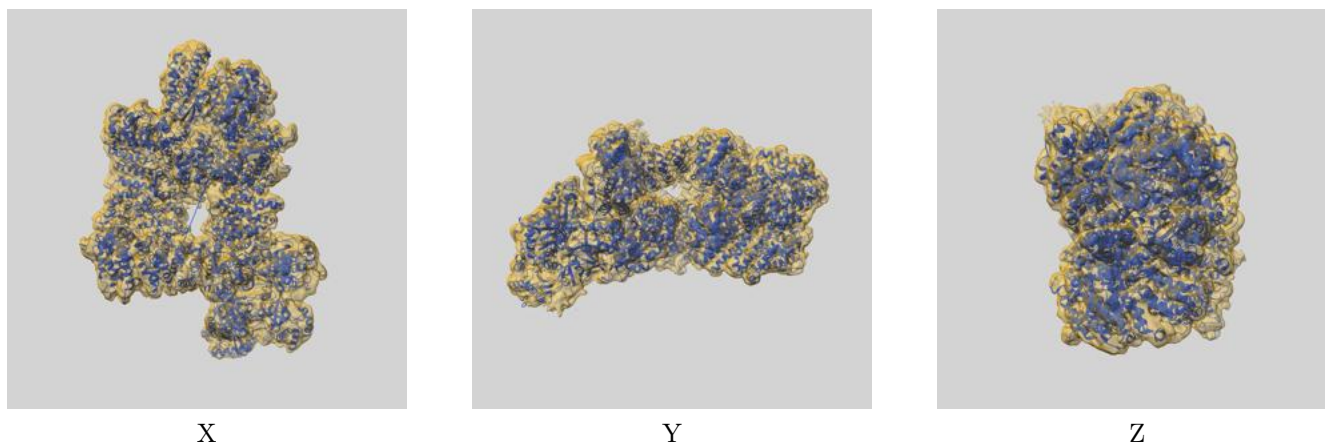
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 6.60 differs from the reported value 3.91 by more than 10 %

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](#)

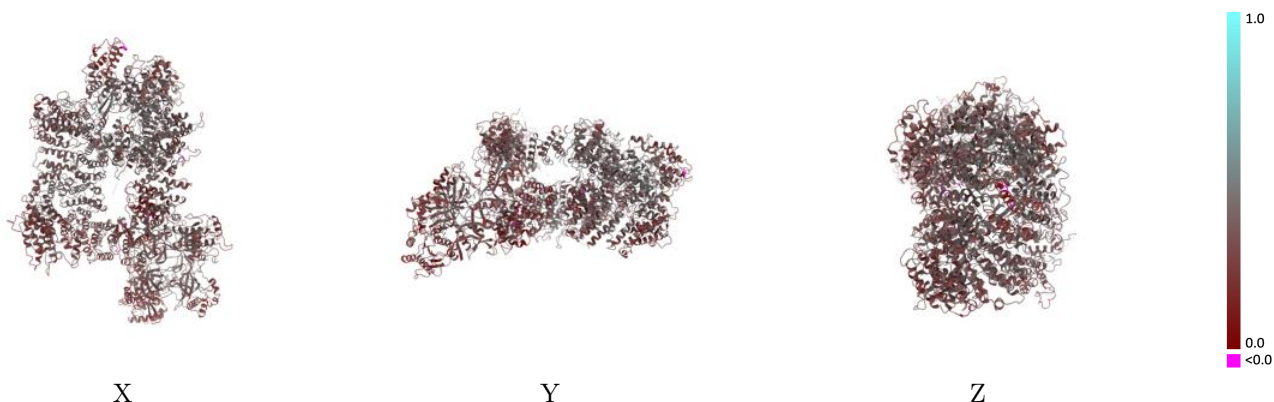
This section contains information regarding the fit between EMDB map EMD-11217 and PDB model 6ZHA. Per-residue inclusion information can be found in section 3 on page 4.

9.1 Map-model overlay [i](#)



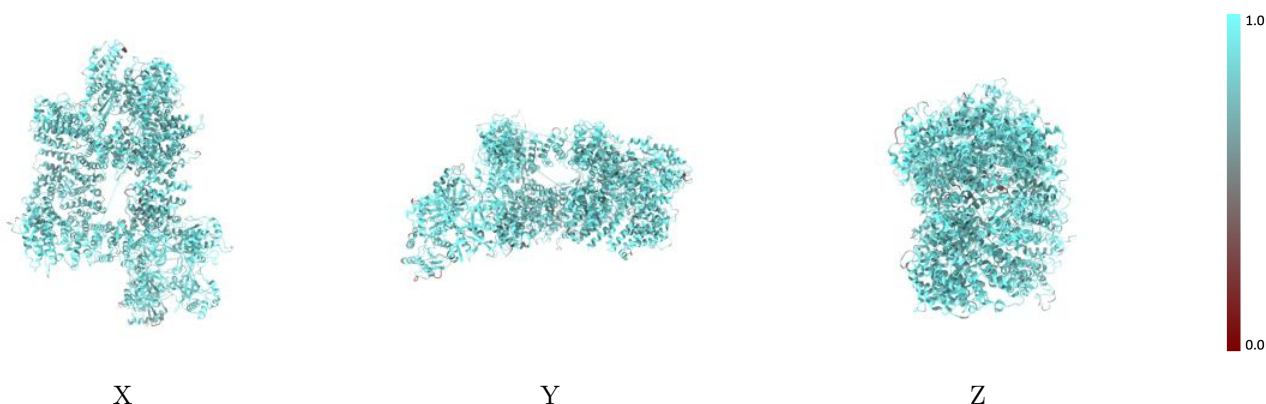
The images above show the 3D surface view of the map at the recommended contour level 0.125 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



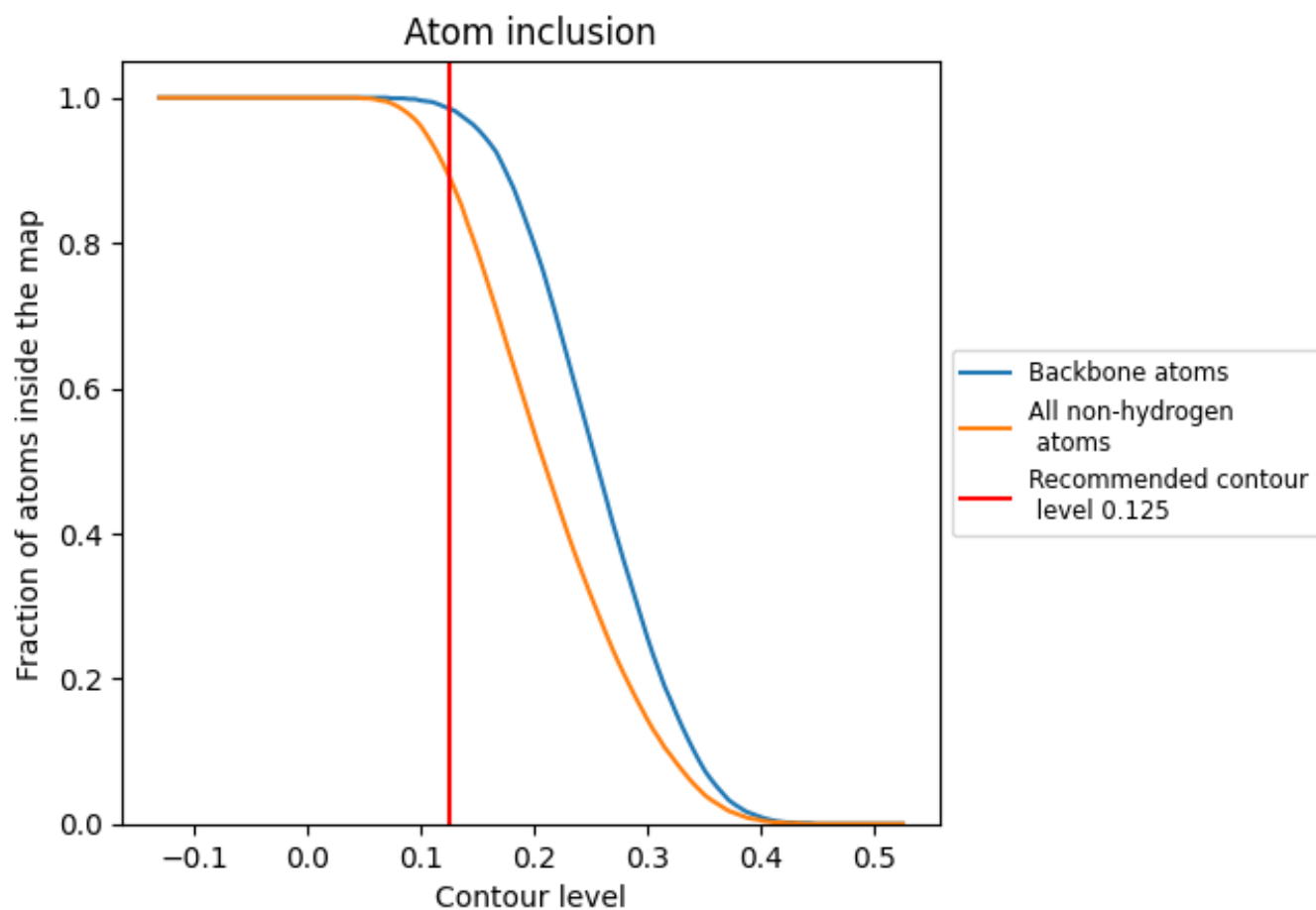
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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, 98% 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	 0.8930	 0.3380
A	 0.8960	 0.3460
B	 0.8940	 0.3370
C	 0.8550	 0.2850
D	 0.9940	 0.3340
E	 0.9820	 0.3100

