



## Full wwPDB EM Validation Report ⓘ

Nov 22, 2022 – 02:50 AM JST

PDB ID : 7DXJ  
EMDB ID : EMD-30911  
Title : Human 46QHuntingtin-HAP40 complex structure  
Authors : Guo, Q.; Fernandez-Busnadiego, R.  
Deposited on : 2021-01-19  
Resolution : 3.60 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](mailto: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>.

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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

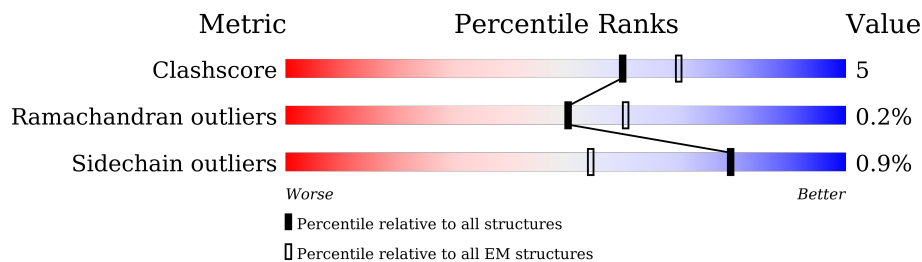
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.60 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  $\geq 3$ , 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	3167	
2	B	371	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 20491 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 Huntingtin.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2353	18458	11839	3157	3343	119	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1234	ARG	LYS	conflict	UNP P42858
A	1716	ASN	THR	variant	UNP P42858
A	2305	HIS	TYR	variant	UNP P42858

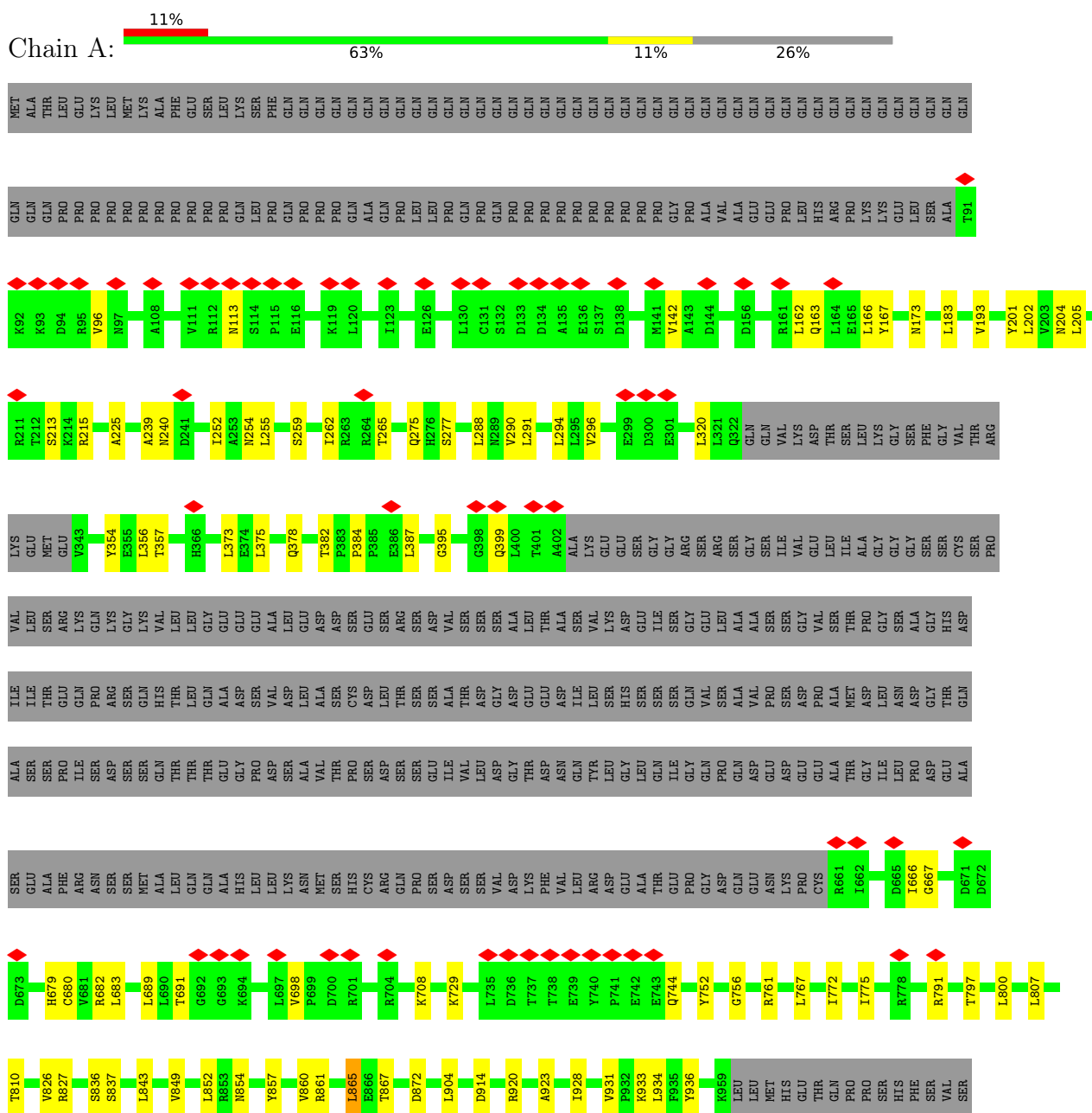
- Molecule 2 is a protein called 40-kDa huntingtin-associated protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	268	2033	1290	367	366	10	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: Huntingtin



THR	THR	THR	Y983	N997	L998	V1001	R1015	H1016	L1017	G1020	C1021	L1027	V1045	P1046	P1047	L1048	SER	ALA	SER	ASP	GLU	SER	ARG	SER	LYS	C1068	M1062	H1063	T1064	M1074	F1075	P1076	L1077	D1078	L1079	S1080	L1088	L1093	R1102	SER	SER	TRP	ALA	PRO	GLU	GLU							
GLU	ALA	ASN	PRO	VAL	PRO	ALA	ALA	THR	LYS	GLN	GLU	V1121	R1128	A1129	L1130	V1131	P1132	M1133	L1137	L1142	N1146	D1154	P1157	GLY	PRO	ALA	ILE	LYS	ALA	ALA	L1223	L1229	P1230	L1235	H1236	D1251	K1258	E1275	K1284	Q1310	L1312	K1313	F1316	G1317	T1318	ASN	LEU						
GLN	ALA	SER	VAL	PRO	LEU	SER	PRO	LYS	LYS	GLY	SER	LYS	ALA	ALA	ALA	GLN	ARG	GLN	SER	LEU	ASP	THR	THR	THR	THR	LYS	SER	SER	SER	L1223	L1229	P1230	L1235	H1236	D1251	K1258	E1275	K1284	Q1310	L1312	K1313	F1316	G1317	T1318	ASN	LEU							
ALA	SER	GLN	ASP	GLY	LEU	SER	SER	PRO	PRO	LYS	SER	LYS	ALA	ALA	GLN	ARG	ARG	LEU	GLY	GLY	SER	SER	VAL	ARG	ARG	ARG	ASN	ASN	MET	VAL	GLN	ALA	GLU	GLN	GLU	GLN	THR	SER	GLY	TRP	PHE	ASP	VAL	LEU	GLN	LYS	THR						
GLN	LEU	LYS	THR	LEU	THR	SER	VAL	THR	LYS	ASN	ARG	ALA	ALA	ASP	ILE	ILE	R1419	V1438	L1451	L1454	N1457	L1461	D1462	S1463	D1464	Q1465	V1466	F1467	R1484	E1485	S1486	E1487	L1500	S1501	Y1502	E1503	ARG	TYR	HIS	SER	LYS	GLN	VAL	ILE	I1511	A1525							
S1526	G1527	R1528	V1531	T1532	D1544	F1545	F1546	V1547	L1548	ARG	GLY	THR	ASN	LYS	ALA	ALA	ASP	ALA	G1557	K1558	E1559	L1560	E1561	K1564	E1565	L1571	V1580	V1587	E1594	M1595	E1596	D1597	K1600	R1601	L1602	S1603	D1622	L1630	L1637	L1642	L1648	P1656	M1659	V1665									
Q1666	L1667	W1668	A1674	I1675	L1676	E1685	D1686	Q1693	P1699	I1702	R1709	D1712	G1713	ASP	SER	ASN	THR	LEU	GLU	GLY	HIS	SER	GLY	LYS	GLN	ILE	K1729	N1730	L1731	P1732	E1734	E1735	R1738	F1739	L1740	Q1764	F1767	Y1768	C1769	L1772	L1783	K1784	F1788										
A1794	A1795	T1796	R1797	L1798	F1799	R1800	S1801	D1802	G1805	F1808	L1811	T1823	L1828	Q1834	I1835	L1836	L1837	V1839	N1840	R1845	V1846	A1848	V1849	V1850	F1854	LYS	ARG	HIS	SER	LEU	SER	SER	THR	LYS	LEU	LEU	PRO	GLN	MET	SER	HIS	PRO	V2012	E2013	M2014	N2019	L2020	Q2021					
LEU	ALA	ALA	LYS	L1832	C1885	R1886	R1887	E1888	I1889	S1909	E1910	V1917	D1922	L1923	I1924	A1945	L1948	C1957	E1958	N1959	L1960	T1969	I1976	S1979	Q1980	S1981	V1984	L1985	V1989	L1993	R1998	V1999	L2000	D2005	R2010	R2011	V2012	E2013	M2014	N2019	L2020	Q2021											
S2022	S2023	M2024	A2025	Q2026	L2027	M2029	E2030	E2031	L2032	M2033	R2034	I2035	Q2036	E2037	Y2038	L2039	Q2040	L2044	A2045	R2047	H2048	Q2049	L2055	D2056	R2057	F2058	R2059	L2060	S2061	T2062	MET	GLN	ASP	SER	LEU	SER	PRO	PRO	VAL	SER	SER	HIS	PRO	LEU	ASP	GLY	ASP	GLY	HIS	VAL	SER	LEU	GLU
THR	VAL	SER	PRO	D2092	K2093	D2094	H2098	K2101	S2102	Q2103	C2104	H2105	T2106	R2107	L2112	L2113	E2114	L2118	V2119	N2120	R2121	A2124	E2125	F2130	N2133	N2137	P2143	E2151	G2155	Q2156	E2162	R2171	E2189	L2190	P2191	A2192	E2193	P2194	S2199	K2200	N2201	W2202	D2203	L2204									
D2207	Q2212	L2217	L2231	L2235	D2244	L2253	L2256	P2266	L2269	D2270	L2271	L2280	Q2283	E2295	F2296	V2297	H2299	L2311	Q2321	S2324	PRO	ARG	ARG	THR	ASN	PRO	PRO	LYS	ALA	ILE	SER	GLU	GLU	GLU	GLU	GLU	VAL	ASP	PRO	ASN	THR												
N2348	P2349	K2350	V2351	L2352	E2361	K2362	S2365	L2366	Q2367	S2368	V2369	R2376	N2377	T2385	L2388	R2389	N2390	L2391	L2392	L2400	V2411	K2412	K2413	L2414	G2415	K2419	F2420	G2421	G2422	P2423	A2427	E2430	I2431	I2446	R2448	L2449	L2452	R2457	L2471	VAL	THR	GLN	PRO										



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	192473	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 ( $e^-/\text{\AA}^2$ )	60	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	0.549	Depositor
Minimum map value	-0.367	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	216.0, 216.0, 216.0	wwPDB
Map dimensions	160, 160, 160	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.35, 1.35, 1.35	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	0.34	1/18818 (0.0%)	0.63	14/25566 (0.1%)
2	B	0.31	0/2067	0.60	0/2808
All	All	0.34	1/20885 (0.0%)	0.62	14/28374 (0.0%)

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	3
2	B	0	2
All	All	0	5

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	193	VAL	C-N	-5.71	1.21	1.34

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1350	LEU	CA-CB-CG	7.61	132.80	115.30
1	A	852	LEU	CA-CB-CG	7.27	132.02	115.30
1	A	183	LEU	CA-CB-CG	6.47	130.18	115.30
1	A	865	LEU	CB-CG-CD2	-6.10	100.63	111.00
1	A	904	LEU	CA-CB-CG	6.08	129.29	115.30
1	A	2269	LEU	CA-CB-CG	6.01	129.12	115.30
1	A	1062	MET	CA-CB-CG	5.61	122.84	113.30
1	A	998	LEU	CA-CB-CG	5.61	128.19	115.30
1	A	1088	LEU	CA-CB-CG	5.23	127.33	115.30
1	A	2510	MET	CA-CB-CG	5.22	122.17	113.30
1	A	2201	LEU	CA-CB-CG	5.17	127.19	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1130	LEU	CA-CB-CG	5.17	127.19	115.30
1	A	356	LEU	CA-CB-CG	5.06	126.94	115.30
1	A	767	LEU	CA-CB-CG	5.03	126.87	115.30

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1045	VAL	Peptide
1	A	2512	VAL	Peptide
1	A	296	VAL	Peptide
2	B	162	ALA	Peptide
2	B	63	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	18458	0	18893	179	0
2	B	2033	0	2074	24	0
All	All	20491	0	20967	195	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 5.

All (195) 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:928:ILE:HD11	1:A:1027:LEU:HB3	1.75	0.67
1:A:1275:GLU:OE2	1:A:1310:GLN:NE2	2.28	0.67
2:B:101:GLU:HG3	2:B:117:PRO:HG2	1.78	0.66
1:A:2511:THR:HB	1:A:2515:ALA:HA	1.79	0.64
1:A:1981:SER:HB2	1:A:2011:ARG:HD2	1.78	0.64
1:A:1772:LEU:HD12	1:A:1828:LEU:HD13	1.79	0.63
1:A:1999:VAL:HG11	2:B:323:GLN:HB3	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1783:PHE:HB3	1:A:1838:LEU:HD22	1.82	0.61
1:A:2493:GLN:NE2	2:B:60:GLN:O	2.34	0.61
2:B:337:ILE:HG22	2:B:360:LEU:HD12	1.84	0.60
1:A:1784:LYS:HG3	1:A:1838:LEU:HD11	1.84	0.60
1:A:1924:ILE:HD13	1:A:1969:THR:HG22	1.83	0.60
1:A:2547:ARG:NH1	1:A:2879:GLU:OE2	2.34	0.60
1:A:775:ILE:HG21	1:A:800:LEU:HD11	1.85	0.59
1:A:931:VAL:HG22	1:A:1001:VAL:HG21	1.84	0.59
1:A:689:LEU:HB2	1:A:752:TYR:HE2	1.67	0.58
1:A:978:ARG:O	1:A:1313:LYS:NZ	2.36	0.58
2:B:149:ALA:HB2	2:B:164:HIS:HB2	1.84	0.58
1:A:1438:VAL:HG21	1:A:1485:GLU:HB2	1.86	0.58
1:A:2548:GLY:O	1:A:2552:GLN:HB2	2.03	0.58
1:A:1989:VAL:HG11	1:A:2035:ILE:HG23	1.84	0.58
1:A:1733:GLU:HB3	1:A:1794:ALA:HB2	1.86	0.58
1:A:2700:LEU:HD21	1:A:2716:MET:HG3	1.85	0.58
2:B:70:GLN:NE2	2:B:92:GLU:OE1	2.37	0.58
1:A:2118:LEU:HD11	1:A:3071:HIS:HB2	1.86	0.57
1:A:2448:ARG:O	1:A:2452:LEU:HB2	2.04	0.57
1:A:1076:PRO:HB2	1:A:1235:LEU:HD21	1.86	0.57
1:A:1461:LEU:HD11	1:A:1467:PHE:HB3	1.86	0.57
1:A:96:VAL:HG13	1:A:142:VAL:HG11	1.87	0.57
1:A:1976:ILE:H	1:A:2011:ARG:HH12	1.53	0.57
2:B:273:ARG:HH22	2:B:294:THR:HG21	1.70	0.57
1:A:173:ASN:OD1	1:A:215:ARG:NH2	2.38	0.56
1:A:1316:PHE:HD2	1:A:1454:LEU:HD13	1.70	0.56
1:A:667:GLY:O	1:A:679:HIS:ND1	2.38	0.56
1:A:1080:SER:HB3	1:A:1258:LYS:HE2	1.87	0.56
1:A:2000:LEU:HD13	2:B:320:LEU:HD11	1.87	0.56
1:A:1015:ARG:HH21	1:A:1074:TRP:HE1	1.54	0.56
1:A:827:ARG:HB2	1:A:867:THR:HG22	1.87	0.56
1:A:1676:LEU:HD11	1:A:1740:LEU:HD21	1.88	0.56
1:A:2321:GLN:O	1:A:2376:ARG:NH2	2.39	0.56
2:B:62:CYS:SG	2:B:63:LEU:N	2.79	0.55
1:A:772:ILE:HG23	1:A:800:LEU:HD23	1.88	0.55
1:A:2420:PRO:HB2	1:A:2427:ALA:H	1.71	0.55
1:A:354:TYR:OH	1:A:680:CYS:SG	2.60	0.54
1:A:2297:VAL:HG22	1:A:2400:LEU:HD21	1.89	0.54
2:B:282:PRO:HG2	2:B:287:LEU:HD12	1.87	0.54
1:A:225:ALA:HB2	1:A:265:THR:HG22	1.88	0.54
1:A:920:ARG:HD2	1:A:1020:GLY:HA3	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:318:LEU:HD12	2:B:347:LEU:HB3	1.89	0.54
1:A:1666:GLN:HE21	1:A:1767:PHE:HD2	1.55	0.54
1:A:1685:GLU:HG3	1:A:1788:PHE:HA	1.90	0.54
1:A:2104:CYS:O	1:A:2137:ASN:ND2	2.41	0.54
1:A:3043:ALA:HB3	1:A:3048:ALA:HB2	1.90	0.54
1:A:2039:LEU:HB3	1:A:2045:ALA:HB2	1.90	0.53
2:B:170:GLN:HG2	2:B:206:ARG:HH22	1.73	0.53
1:A:3021:SER:O	1:A:3025:SER:N	2.42	0.53
2:B:158:PRO:HB2	2:B:194:ALA:HB2	1.89	0.53
1:A:2689:PRO:HD2	1:A:2692:LEU:HD12	1.90	0.53
1:A:934:LEU:HD12	1:A:997:ASN:HB3	1.90	0.52
2:B:129:VAL:HG13	2:B:141:ALA:HB1	1.91	0.52
1:A:2506:VAL:HG11	1:A:2703:VAL:HG13	1.90	0.52
1:A:2553:GLU:OE2	1:A:2974:ARG:NH1	2.43	0.52
1:A:2551:GLU:OE2	1:A:2876:ARG:NH1	2.42	0.52
1:A:2522:CYS:SG	1:A:2563:ASN:ND2	2.82	0.52
1:A:252:ILE:HA	1:A:255:LEU:HD23	1.92	0.52
1:A:3016:PHE:O	1:A:3020:HIS:ND1	2.42	0.52
1:A:2986:PRO:HA	1:A:2989:ILE:HG12	1.92	0.52
1:A:1917:VAL:HG23	1:A:1948:LEU:HD21	1.91	0.52
1:A:1960:LEU:HD13	1:A:1969:THR:HG21	1.92	0.51
1:A:2764:GLU:HG2	1:A:2768:ARG:HH12	1.75	0.51
1:A:378:GLN:NE2	1:A:382:THR:OG1	2.43	0.51
1:A:1531:VAL:HG23	1:A:1532:THR:HG23	1.92	0.51
1:A:2826:LEU:HD12	1:A:2870:ILE:HD13	1.92	0.51
1:A:666:ILE:HD13	1:A:683:LEU:HA	1.93	0.51
1:A:2512:VAL:HG13	1:A:2513:PRO:HD2	1.93	0.51
1:A:2896:VAL:HG22	1:A:2921:CYS:HB3	1.92	0.51
1:A:1093:LEU:HD12	1:A:1137:LEU:HD12	1.93	0.51
1:A:384:PRO:HG2	1:A:387:LEU:HB3	1.93	0.51
1:A:1064:THR:HG21	2:B:175:GLN:HG2	1.92	0.51
1:A:861:ARG:NH1	1:A:914:ASP:OD1	2.44	0.51
1:A:857:TYR:HD2	1:A:860:VAL:HG23	1.77	0.50
1:A:865:LEU:HD21	1:A:923:ALA:HA	1.92	0.50
1:A:1571:LEU:HD22	1:A:1580:VAL:HG13	1.94	0.50
1:A:2980:LEU:HD13	1:A:2989:ILE:HB	1.93	0.50
1:A:914:ASP:O	1:A:920:ARG:NH1	2.41	0.50
1:A:1847:TRP:HA	1:A:1850:VAL:HG12	1.93	0.50
1:A:213:SER:O	1:A:254:ASN:ND2	2.44	0.50
1:A:1017:LEU:O	1:A:1021:CYS:HB2	2.11	0.50
1:A:1630:LEU:HD22	1:A:1674:ALA:HB1	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1659:MET:HB2	1:A:1665:VAL:HG22	1.94	0.50
1:A:1546:PHE:HE1	1:A:1564:LYS:HG2	1.77	0.49
1:A:1823:THR:O	1:A:1886:ASN:ND2	2.44	0.49
1:A:2283:GLN:NE2	1:A:2390:ASN:OD1	2.46	0.49
1:A:2388:LEU:HA	1:A:2391:ILE:HG22	1.95	0.49
1:A:2311:LEU:HD23	1:A:2388:LEU:HD13	1.93	0.49
1:A:2365:SER:O	1:A:2369:VAL:N	2.44	0.49
1:A:1738:ARG:HH11	1:A:1808:PHE:HB3	1.77	0.49
1:A:1699:PRO:HB3	1:A:1735:THR:HA	1.95	0.48
1:A:1603:SER:HB2	1:A:1637:LEU:HG	1.95	0.48
1:A:2411:VAL:HG21	1:A:2431:ILE:HD11	1.95	0.48
1:A:2543:LEU:HD13	1:A:2923:TYR:HB3	1.96	0.48
2:B:63:LEU:HD22	2:B:96:LEU:HD22	1.96	0.48
1:A:2502:ILE:HG21	1:A:2671:LEU:HD21	1.96	0.47
1:A:3017:GLN:HA	1:A:3020:HIS:HD1	1.79	0.47
1:A:826:VAL:HG11	1:A:849:VAL:HG21	1.94	0.47
1:A:2564:ILE:HG23	1:A:2571:GLN:HE21	1.78	0.47
1:A:2366:LEU:HD22	1:A:2389:ARG:HG3	1.97	0.47
1:A:756:GLY:O	1:A:761:ARG:NH2	2.48	0.47
1:A:1502:TYR:OH	1:A:1544:ASP:O	2.28	0.47
1:A:2526:GLN:N	1:A:2612:GLN:O	2.40	0.47
1:A:1078:ASP:OD1	1:A:1078:ASP:N	2.46	0.47
1:A:2446:ILE:HG23	2:B:108:LEU:HD22	1.97	0.47
1:A:2496:VAL:HG13	1:A:2695:GLU:HG3	1.97	0.47
1:A:854:ASN:ND2	1:A:2324:SER:OG	2.48	0.46
1:A:807:LEU:O	1:A:810:THR:OG1	2.27	0.46
1:A:2121:ARG:HD2	1:A:3067:ALA:HB2	1.97	0.46
1:A:1128:ARG:HE	1:A:1131:VAL:HG21	1.81	0.46
1:A:167:TYR:CZ	1:A:204:ASN:HB3	2.50	0.46
1:A:357:THR:HG21	1:A:375:LEU:HD12	1.98	0.46
1:A:2701:LEU:HB2	1:A:2741:ALA:HB2	1.96	0.46
1:A:1312:LEU:HD11	1:A:1451:LEU:HD21	1.97	0.46
1:A:2860:SER:HA	1:A:2902:ARG:HD2	1.99	0.45
1:A:2899:SER:OG	1:A:2918:MET:SD	2.62	0.45
1:A:1834:GLN:O	1:A:1838:LEU:HB2	2.16	0.45
1:A:202:LEU:HD11	1:A:239:ALA:HB2	1.98	0.45
1:A:1546:PHE:CE1	1:A:1564:LYS:HG2	2.52	0.45
1:A:691:THR:O	1:A:744:GLN:NE2	2.50	0.44
1:A:3033:MET:SD	1:A:3098:GLN:NE2	2.90	0.44
1:A:698:VAL:HG23	1:A:708:LYS:HE2	1.99	0.44
1:A:791:ARG:HH22	1:A:797:THR:HG22	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:288:LEU:HB2	2:B:291:HIS:HD2	1.81	0.44
1:A:162:LEU:O	1:A:166:LEU:HG	2.17	0.44
1:A:2349:PRO:HD2	1:A:2352:ILE:HD12	1.99	0.44
1:A:1738:ARG:HD3	1:A:1798:LEU:HD22	2.00	0.44
2:B:87:ALA:HB2	2:B:131:LEU:HD22	2.00	0.44
1:A:275:GLN:HG2	1:A:320:LEU:HD22	2.00	0.43
1:A:2231:LEU:HD13	1:A:2235:LEU:HB3	1.99	0.43
1:A:163:GLN:HA	1:A:166:LEU:HB2	1.99	0.43
1:A:2737:TYR:HE1	2:B:116:GLU:HG3	1.83	0.43
1:A:2513:PRO:O	1:A:2515:ALA:N	2.51	0.43
1:A:2362:MET:HB3	1:A:2392:ILE:HD13	2.01	0.43
1:A:2832:ALA:HB1	1:A:2851:ILE:HD13	2.01	0.43
1:A:395:GLY:HA3	1:A:399:GLN:HE22	1.83	0.43
1:A:983:TYR:OH	1:A:1275:GLU:OE1	2.37	0.43
1:A:2112:LEU:HB3	1:A:2143:PRO:HG2	2.00	0.43
1:A:259:SER:HB3	1:A:262:ILE:HG22	2.01	0.43
1:A:1811:LEU:HD21	1:A:1836:LEU:HD21	2.01	0.43
1:A:2526:GLN:HB2	1:A:2614:SER:H	1.84	0.43
1:A:1157:PRO:HD3	1:A:1236:HIS:HE1	1.83	0.43
1:A:1702:ILE:H	1:A:1702:ILE:HG13	1.69	0.43
1:A:2171:ARG:HG3	1:A:2217:LEU:HD11	2.01	0.43
1:A:872:ASP:HA	1:A:933:LYS:HB3	2.01	0.42
1:A:1769:CYS:SG	1:A:1828:LEU:HD11	2.59	0.42
1:A:1993:LEU:HD22	1:A:2044:LEU:HD13	2.01	0.42
2:B:173:LEU:HD21	2:B:210:LEU:HD13	2.02	0.42
1:A:1142:LEU:HD12	1:A:1223:LEU:HD22	2.01	0.42
1:A:2101:LYS:HA	1:A:2105:TRP:CE3	2.54	0.42
1:A:934:LEU:HD13	1:A:936:TYR:HE2	1.84	0.42
1:A:2047:ARG:NH2	2:B:331:GLU:OE1	2.52	0.42
1:A:2998:LEU:HD21	1:A:3039:PHE:HE1	1.84	0.42
1:A:252:ILE:HD13	1:A:290:VAL:HG11	2.01	0.42
1:A:836:SER:OG	1:A:837:SER:N	2.52	0.42
1:A:2106:THR:HG22	1:A:2137:ASN:HD21	1.85	0.42
1:A:2280:LEU:HD11	1:A:2566:THR:HG21	2.01	0.42
1:A:201:TYR:O	1:A:205:LEU:HB2	2.19	0.41
1:A:373:LEU:HD23	1:A:373:LEU:HA	1.93	0.41
1:A:682:ARG:NE	1:A:729:LYS:O	2.53	0.41
1:A:288:LEU:HD23	1:A:288:LEU:HA	1.93	0.41
1:A:291:LEU:HD23	1:A:294:LEU:HD12	2.01	0.41
1:A:2446:ILE:HA	1:A:2449:ILE:HG22	2.02	0.41
1:A:1350:LEU:HD21	1:A:1889:ILE:HG23	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1656:PRO:HD3	1:A:1668:TRP:CE2	2.55	0.41
1:A:2162:GLU:HG2	1:A:2235:LEU:HD11	2.02	0.41
1:A:1796:THR:HG22	1:A:1839:VAL:HG23	2.03	0.41
1:A:2457:ARG:NH2	1:A:2661:GLY:O	2.54	0.41
1:A:2739:VAL:HG21	1:A:2766:THR:HG21	2.03	0.41
2:B:274:VAL:HG21	2:B:298:TYR:CE2	2.55	0.41
1:A:1885:CYS:O	1:A:1888:GLU:HB2	2.20	0.41
1:A:1693:GLN:HG3	1:A:1732:PRO:HG3	2.02	0.41
1:A:872:ASP:OD1	1:A:872:ASP:N	2.50	0.41
1:A:1017:LEU:O	1:A:1021:CYS:CB	2.68	0.41
1:A:1500:LEU:HD23	1:A:1511:ILE:HD12	2.02	0.41
1:A:1546:PHE:CE2	1:A:1587:VAL:HG22	2.55	0.41
1:A:1642:LEU:HD22	1:A:1648:LEU:HD21	2.02	0.41
1:A:1979:SER:O	1:A:2026:GLN:NE2	2.42	0.41
1:A:2561:ARG:HG2	1:A:2564:ILE:HD12	2.03	0.41
1:A:1764:GLN:O	1:A:1768:TYR:HB2	2.20	0.40
1:A:1229:LEU:HA	1:A:1230:PRO:HD3	1.91	0.40
1:A:2256:LEU:HD12	1:A:2271:LEU:HD23	2.02	0.40
1:A:2385:THR:O	1:A:2389:ARG:HB2	2.21	0.40
1:A:2517:ASN:O	1:A:2521:SER:OG	2.27	0.40
1:A:2296:PHE:O	1:A:2299:HIS:HB2	2.21	0.40
1:A:2710:ARG:NH1	1:A:2714:GLU:OE2	2.54	0.40
1:A:1740:LEU:HD23	1:A:1740:LEU:HA	1.89	0.40
1:A:1998:ARG:H	2:B:324:SER:HB2	1.86	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	2313/3167 (73%)	2166 (94%)	142 (6%)	5 (0%)	47 79

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	262/371 (71%)	251 (96%)	10 (4%)	1 (0%)	34	71
All	All	2575/3538 (73%)	2417 (94%)	152 (6%)	6 (0%)	50	79

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2514	VAL
1	A	277	SER
2	B	163	GLY
1	A	2513	PRO
1	A	2266	PRO
1	A	1046	PRO

### 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	2075/2792 (74%)	2056 (99%)	19 (1%)	78	90
2	B	202/274 (74%)	201 (100%)	1 (0%)	88	95
All	All	2277/3066 (74%)	2257 (99%)	20 (1%)	79	90

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	113	ASN
1	A	240	ASN
1	A	843	LEU
1	A	1133	MET
1	A	1146	ASN
1	A	1364	GLN
1	A	1702	ILE
1	A	1709	ARG
1	A	1838	LEU
1	A	1959	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1984	VAL
1	A	2019	ASN
1	A	2133	ASN
1	A	2253	LEU
1	A	2377	ASN
1	A	2390	ASN
1	A	2512	VAL
1	A	2528	ARG
1	A	2796	LYS
2	B	268	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	113	ASN
1	A	240	ASN
1	A	377	GLN
1	A	378	GLN
1	A	399	GLN
1	A	854	ASN
1	A	1091	ASN
1	A	1140	HIS
1	A	1146	ASN
1	A	1272	GLN
1	A	1352	HIS
1	A	1492	ASN
1	A	1666	GLN
1	A	1765	HIS
1	A	1825	HIS
1	A	1959	ASN
1	A	2019	ASN
1	A	2033	ASN
1	A	2133	ASN
1	A	2137	ASN
1	A	2283	GLN
1	A	2377	ASN
1	A	2390	ASN
1	A	2555	GLN
1	A	2563	ASN
1	A	2568	HIS
1	A	2571	GLN
1	A	2596	GLN

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Mol	Chain	Res	Type
1	A	2612	GLN
1	A	2978	GLN
1	A	3085	ASN
2	B	70	GLN
2	B	352	GLN
2	B	357	HIS
2	B	361	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](#)

There are no chain breaks in this entry.

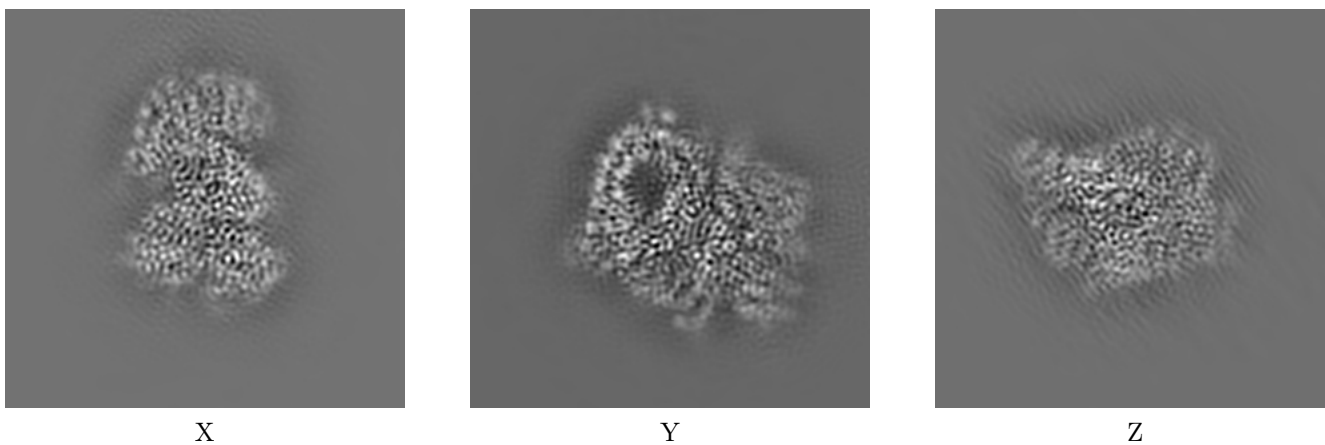
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30911. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

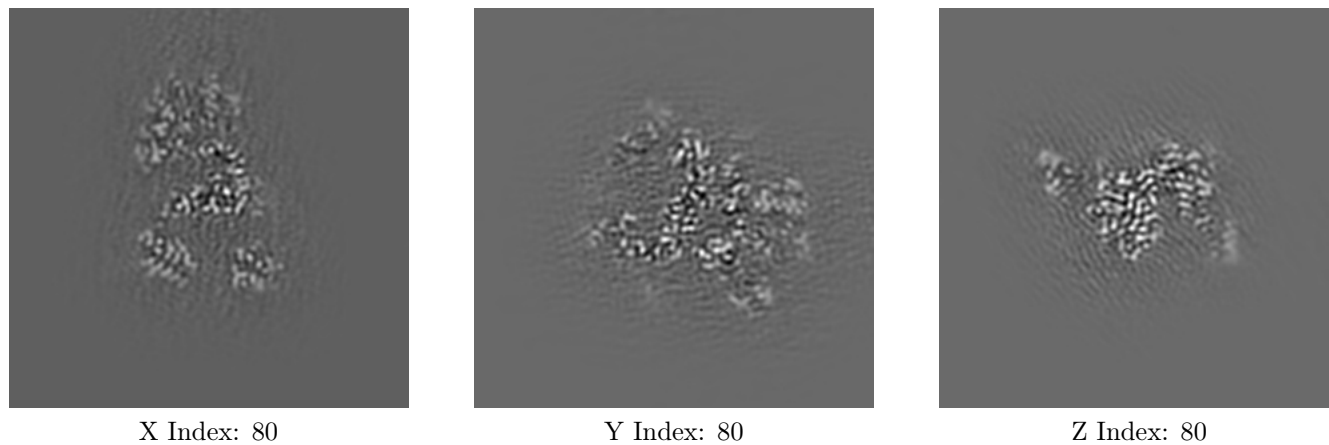
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

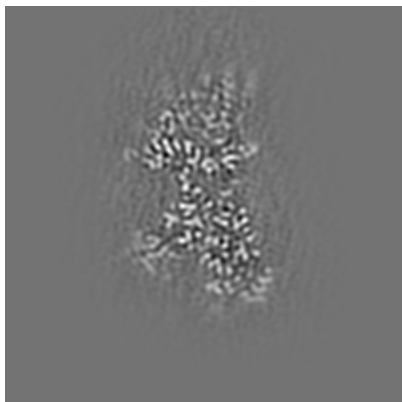
#### 6.2.1 Primary map



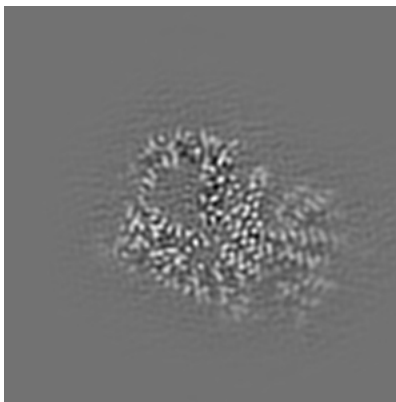
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

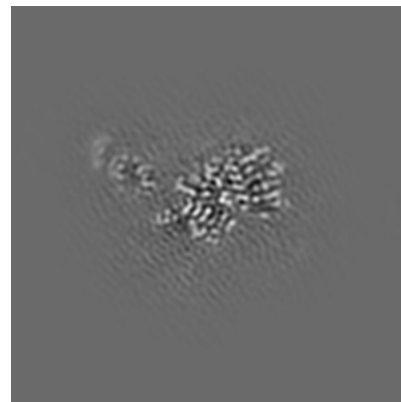
### 6.3.1 Primary map



X Index: 66



Y Index: 89

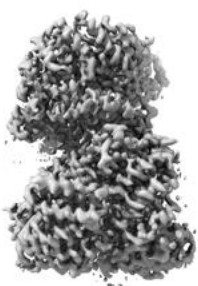


Z Index: 84

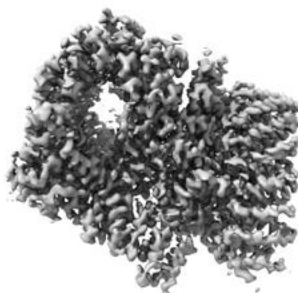
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

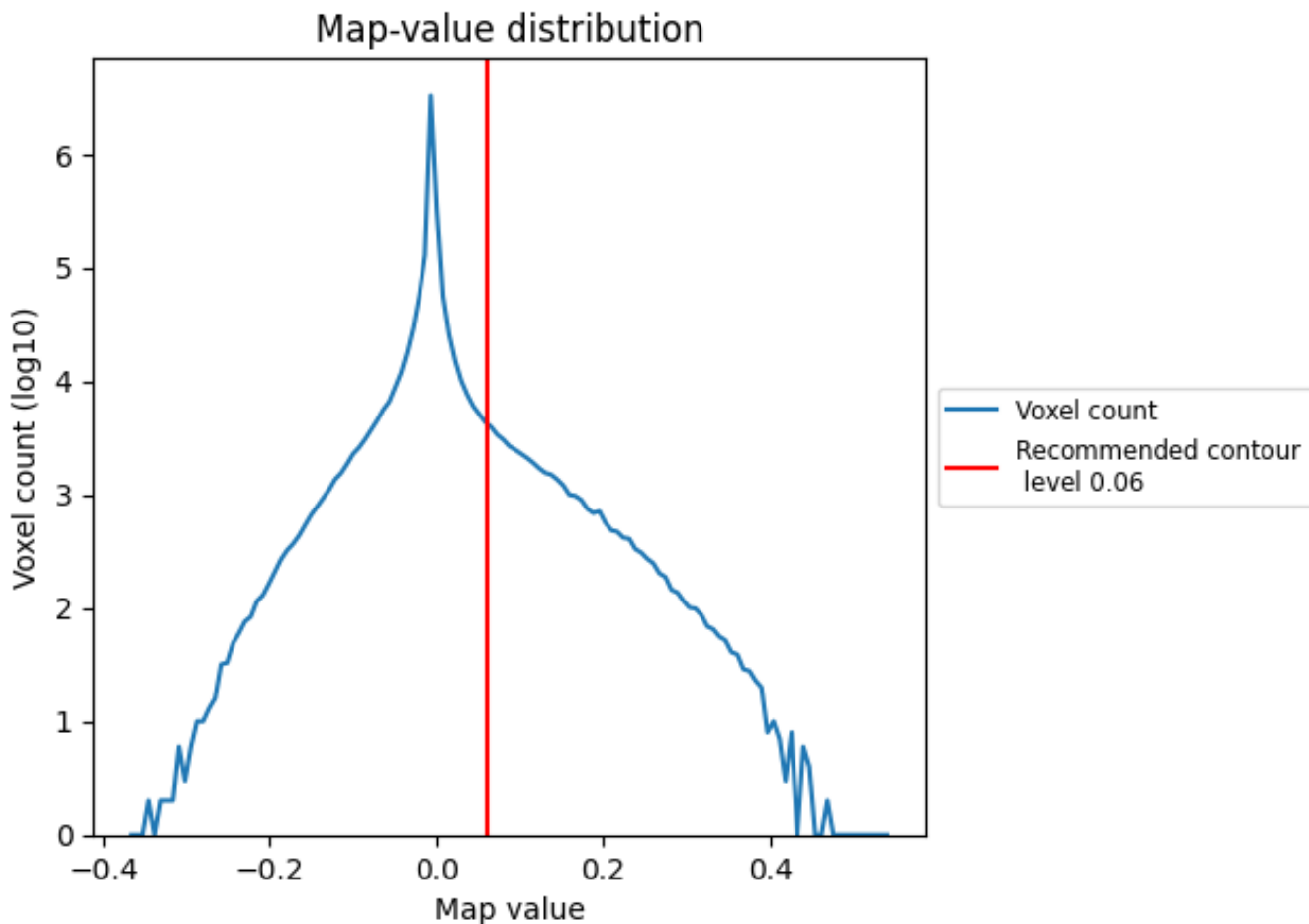
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

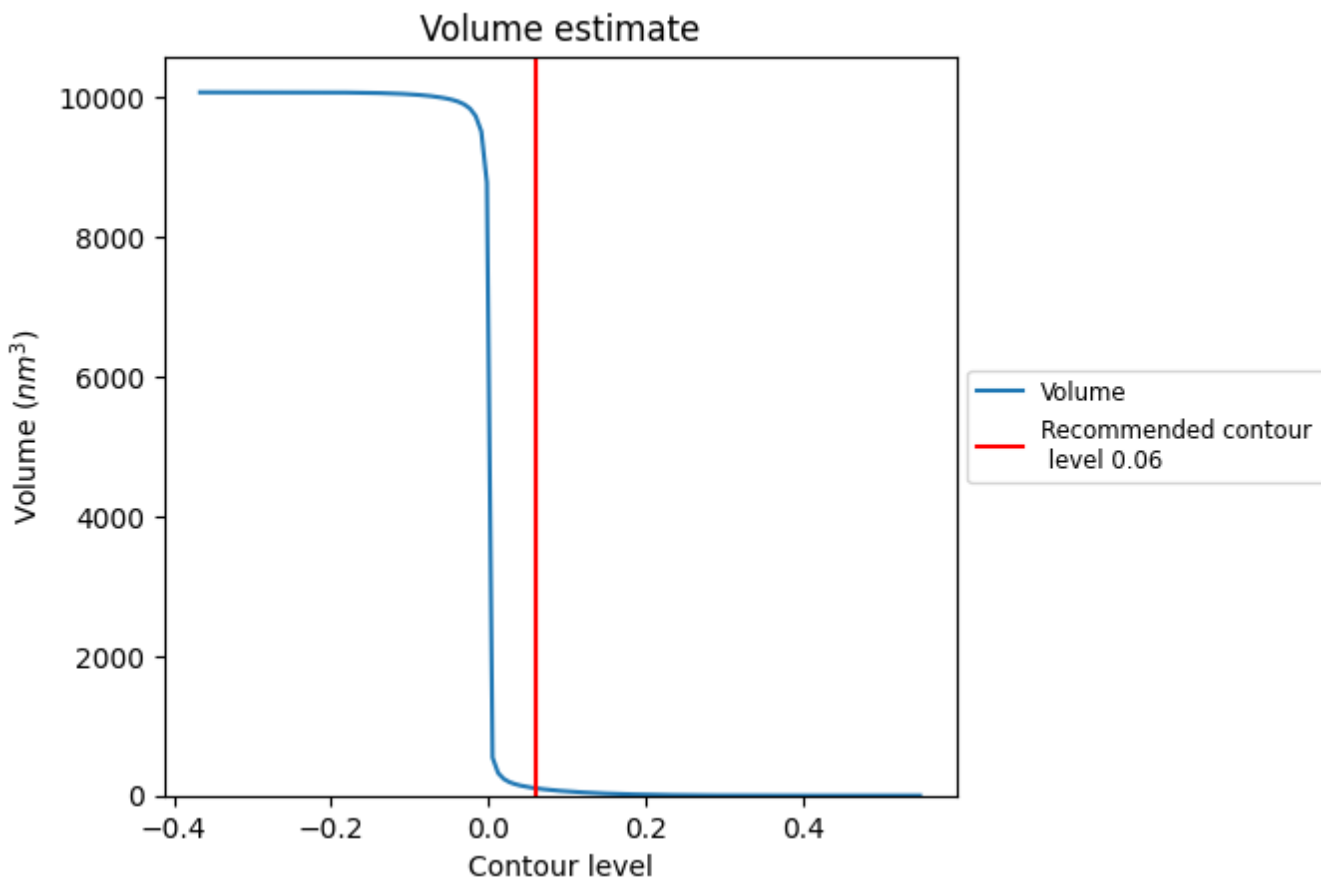
This section contains the results of statistical analysis of the map.

### 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.

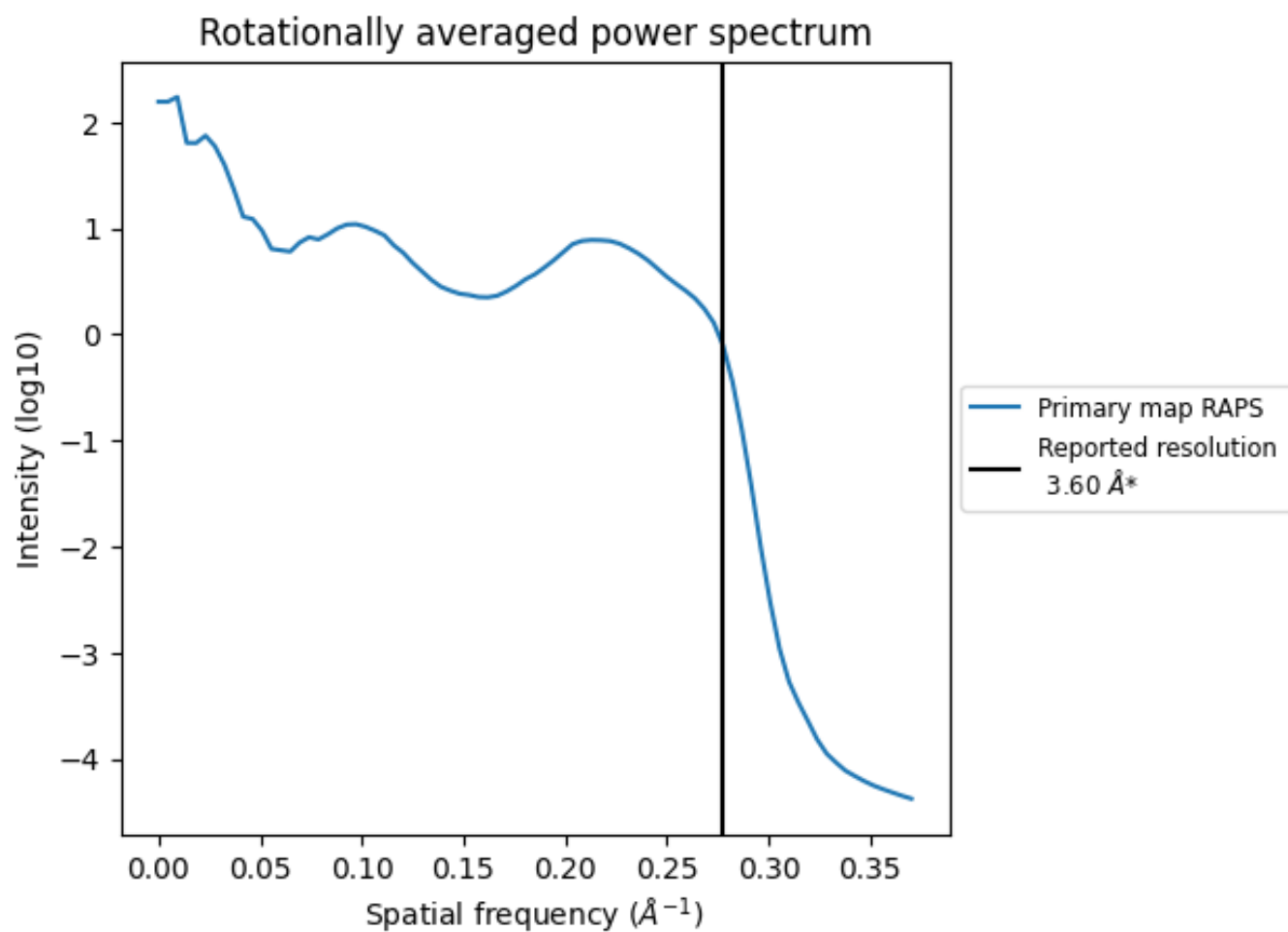
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 105 nm<sup>3</sup>; this corresponds to an approximate mass of 95 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 0.278 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

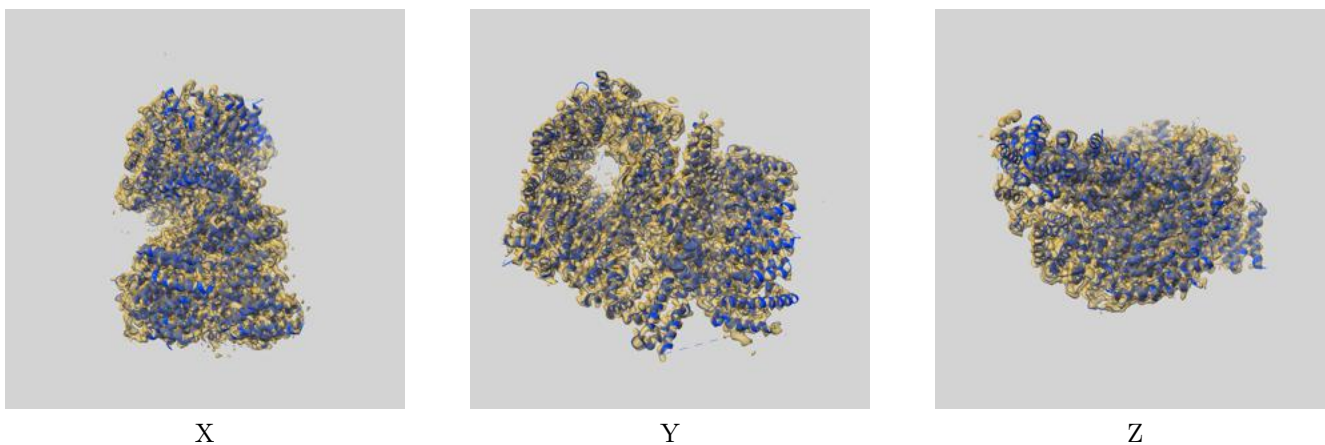
This section was not generated. No FSC curve or half-maps provided.



## 9 Map-model fit [i](#)

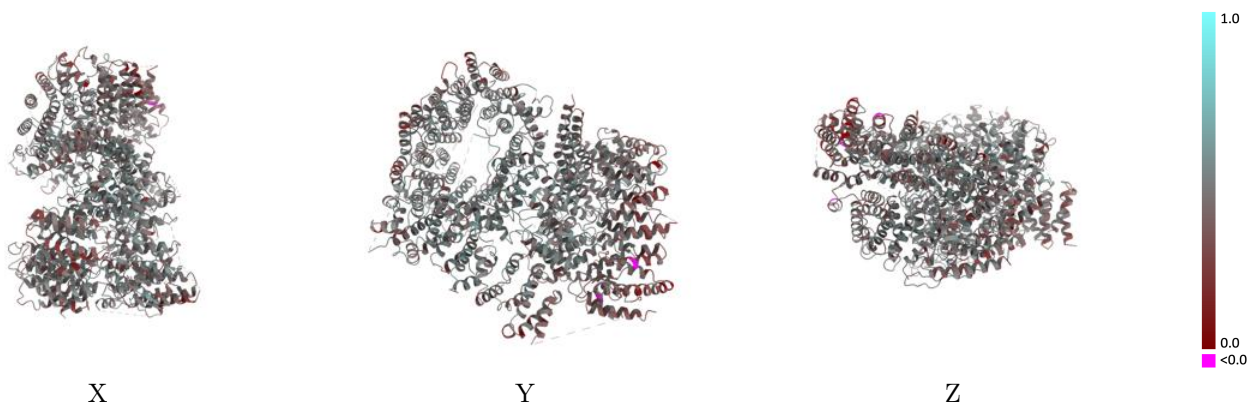
This section contains information regarding the fit between EMDB map EMD-30911 and PDB model 7DXJ. Per-residue inclusion information can be found in section [3](#) on page [4](#).

### 9.1 Map-model overlay [i](#)



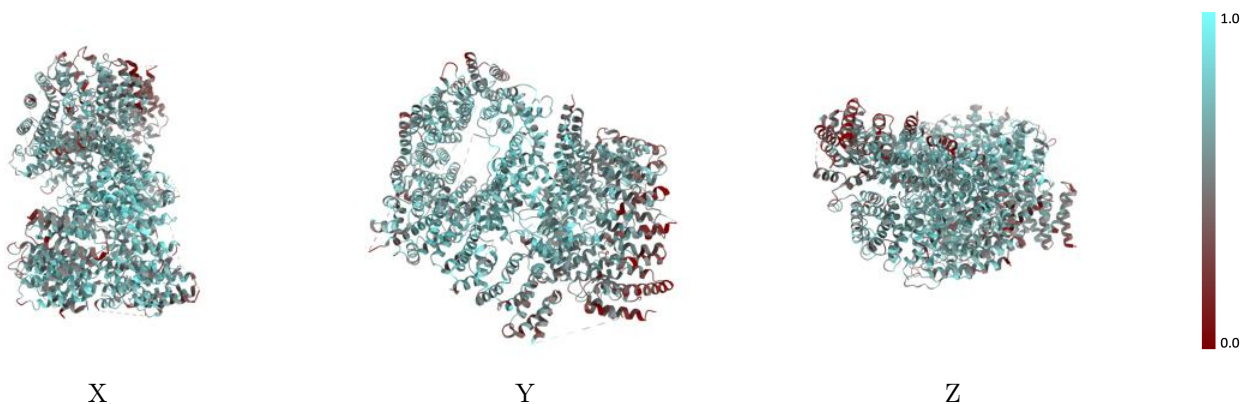
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



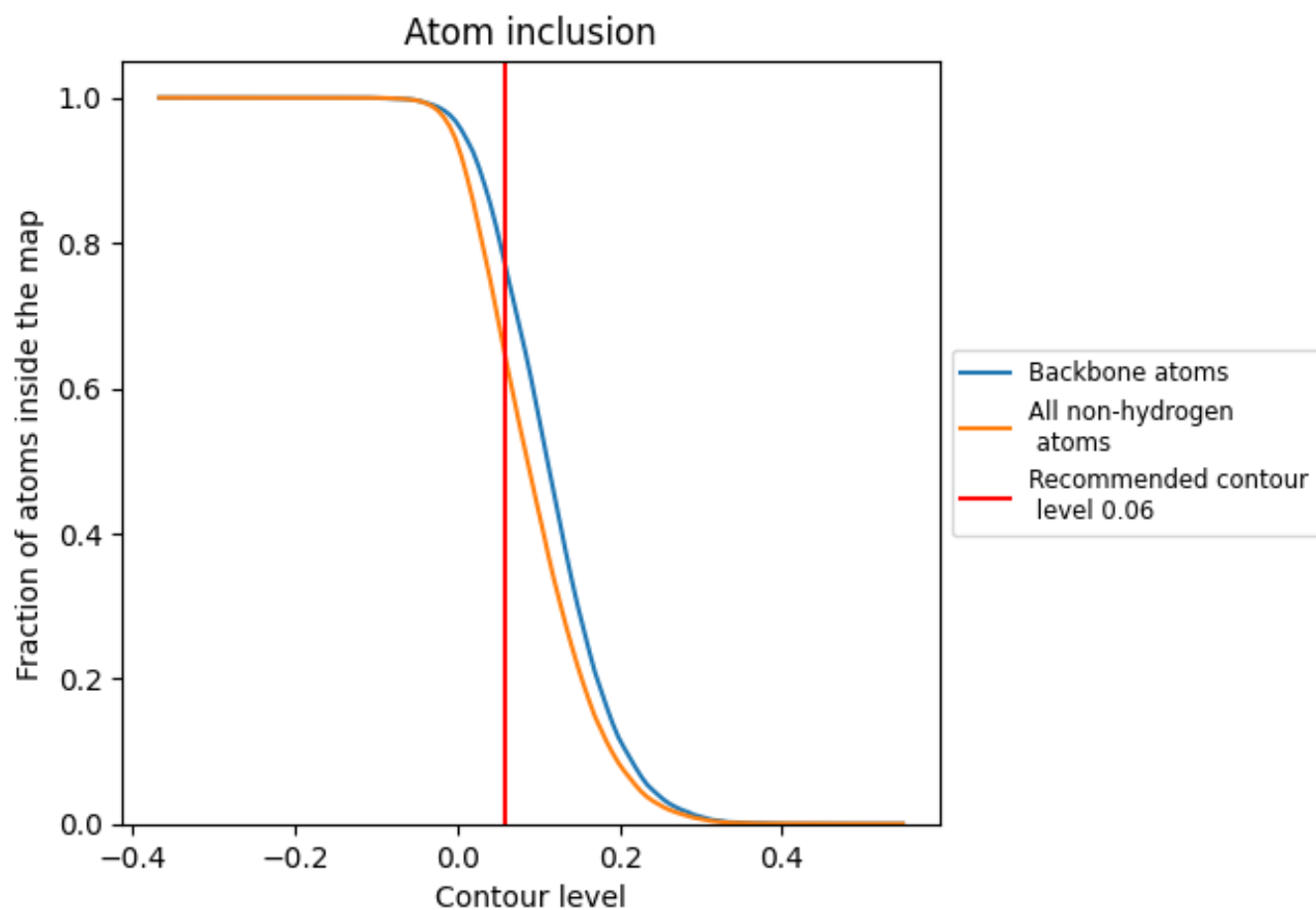
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.06).







## 9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 64% 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 (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6387	 0.4470
A	 0.6335	 0.4450
B	 0.6859	 0.4670

