



wwPDB EM Validation Summary Report ⓘ

Apr 29, 2024 – 07:17 am BST

PDB ID : 5G04
EMDB ID : EMD-3385
Title : Structure of the human APC-Cdc20-Hsl1 complex
Authors : Zhang, S.; Chang, L.; Alfieri, C.; Zhang, Z.; Yang, J.; Maslen, S.; Skehel, M.; Barford, D.
Deposited on : 2016-03-16
Resolution : 3.90 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:

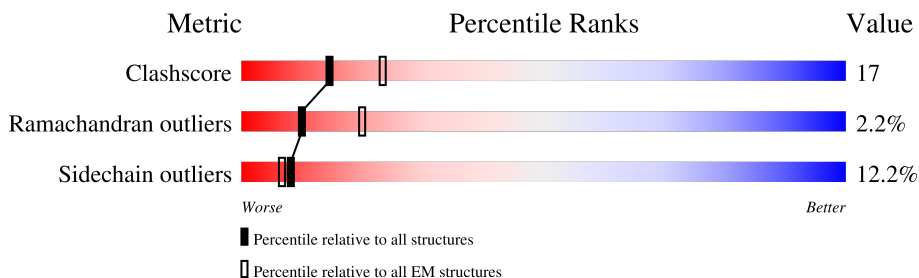
EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

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 3.90 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.











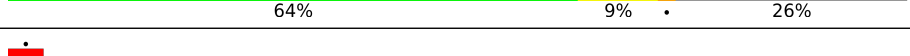
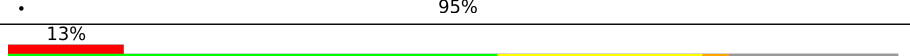
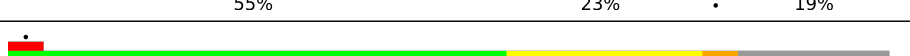
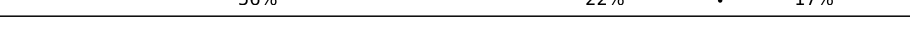
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	1944	
2	B	84	
3	C	597	
3	P	597	
4	D	121	
5	E	110	
6	F	824	
6	H	824	

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Mol	Chain	Length	Quality of chain
7	G	85	 19% 11% 71%
7	W	85	 16% 13% 71%
8	I	808	 12% 62% 26% 10%
9	J	620	 50% 26% 19%
9	K	620	 51% 24% 20%
10	L	184	 7% 59% 36%
11	M	74	 9% 49% 20% 9% 20%
12	N	822	 33% 47% 23% 5% 23%
13	O	755	 5% 50% 33% 6% 9%
14	R	499	 56% 64% 9% 26%
15	S	206	 95%
16	X	599	 13% 55% 23% 19%
16	Y	599	 56% 22% 17%

2 Entry composition i

There are 17 unique types of molecules in this entry. The entry contains 65481 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 ANAPHASE-PROMOTING COMPLEX SUBUNIT 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1437	10925	7025	1849	1977	74	0	0

- Molecule 2 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	84	649	416	117	99	17	1	0

- Molecule 3 is a protein called CELL DIVISION CYCLE PROTEIN 23 HOMOLOG.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	524	4306	2774	727	781	24	0	0
3	P	491	4039	2608	678	729	24	0	0

- Molecule 4 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 15.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	D	55	436	277	73	86	0	0

- Molecule 5 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	56	450	290	74	85	1	0	0

- Molecule 6 is a protein called CELL DIVISION CYCLE PROTEIN 27 HOMOLOG.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	498	Total	C	N	O	S	0	0
			3923	2514	664	719	26		
6	H	483	Total	C	N	O	S	0	0
			3853	2473	650	704	26		

- Molecule 7 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT CDC26.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	25	Total	C	N	O	S	0	0
			213	133	40	39	1		
7	W	25	Total	C	N	O	S	0	0
			213	133	40	39	1		

- Molecule 8 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	730	Total	C	N	O	S	0	0
			5709	3660	950	1066	33		

- Molecule 9 is a protein called CELL DIVISION CYCLE PROTEIN 16 HOMOLOG.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	504	Total	C	N	O	S	0	0
			4047	2601	684	737	25		
9	K	493	Total	C	N	O	S	0	0
			3988	2563	672	729	24		

- Molecule 10 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	182	Total	C	N	O	S	0	0
			1435	898	263	268	6		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	?	-	ARG	deletion	UNP Q9UM13

- Molecule 11 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	M	59	Total	C	N	O	S	0	0
			493	310	79	102	2		

- Molecule 12 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	N	631	Total	C	N	O	S	0	0
			4837	3067	880	868	22		

- Molecule 13 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	O	685	Total	C	N	O	S	0	0
			5395	3440	940	987	28		

- Molecule 14 is a protein called CELL DIVISION CYCLE PROTEIN 20 HOMOLOG.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	R	370	Total	C	N	O	S	2	0
			2869	1801	524	532	12		

- Molecule 15 is a protein called PROBABLE SERINE/THREONINE-PROTEIN KINASE HSL1.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	S	10	Total	C	N	O	0	0
			72	42	14	16		

- Molecule 16 is a protein called ANAPHASE-PROMOTING COMPLEX SUBUNIT 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	X	484	Total	C	N	O	S	0	0
			3767	2390	649	704	24		
16	Y	496	Total	C	N	O	S	0	0
			3859	2444	666	724	25		

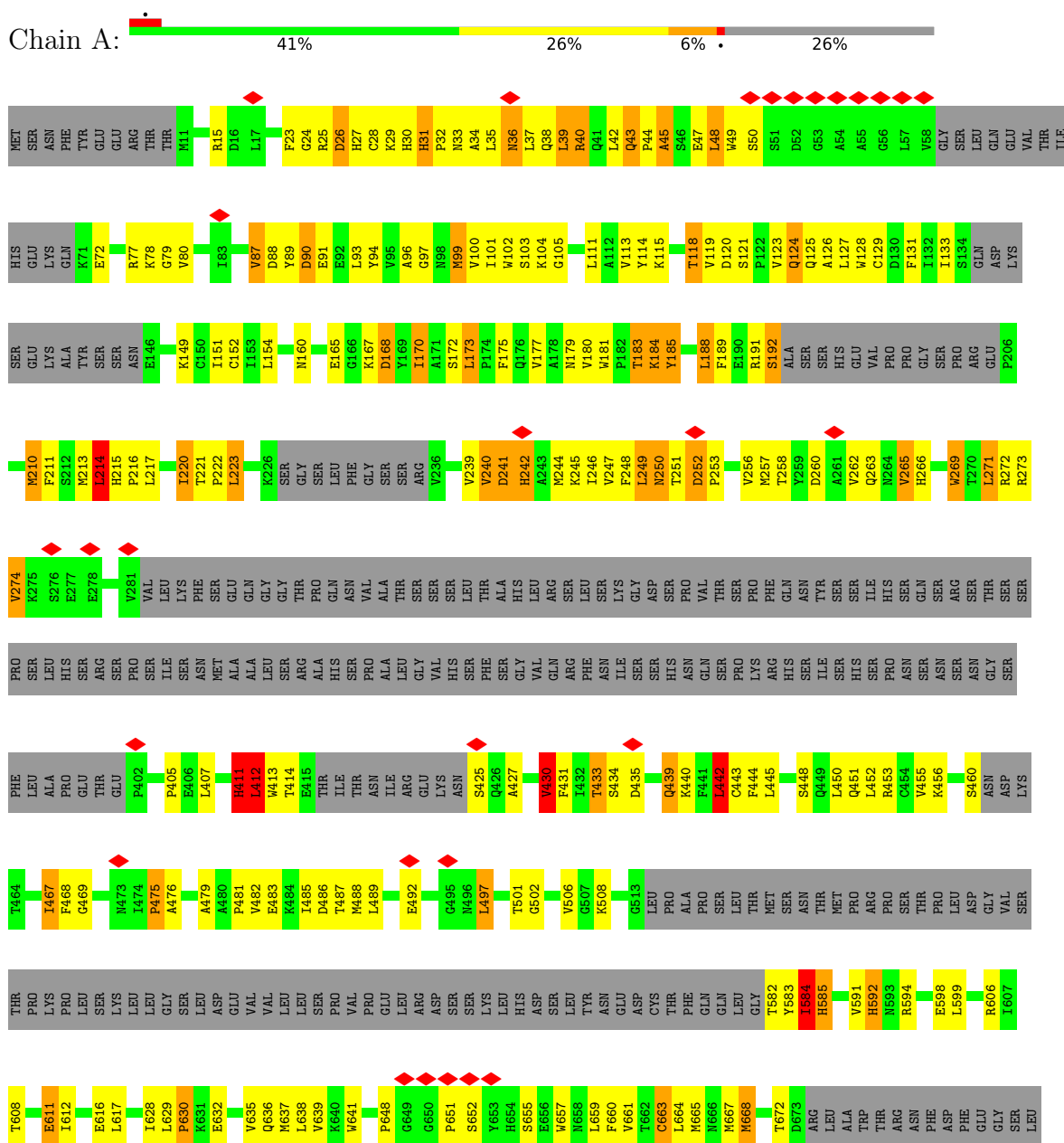
- Molecule 17 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
17	B	3	Total	Zn	0
			3	3	

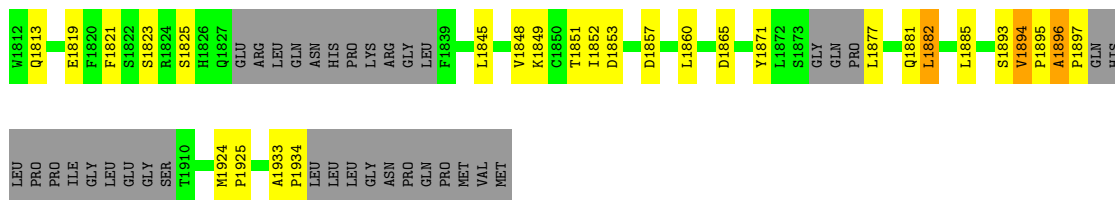
3 Residue-property plots [i](#)

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.

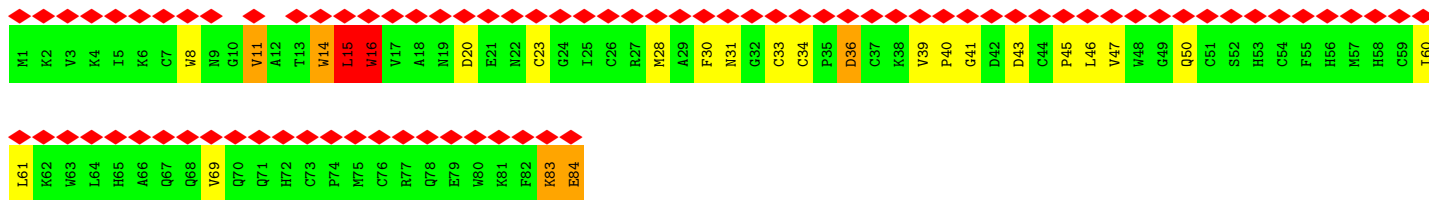
- Molecule 1: ANAPHASE-PROMOTING COMPLEX SUBUNIT 1



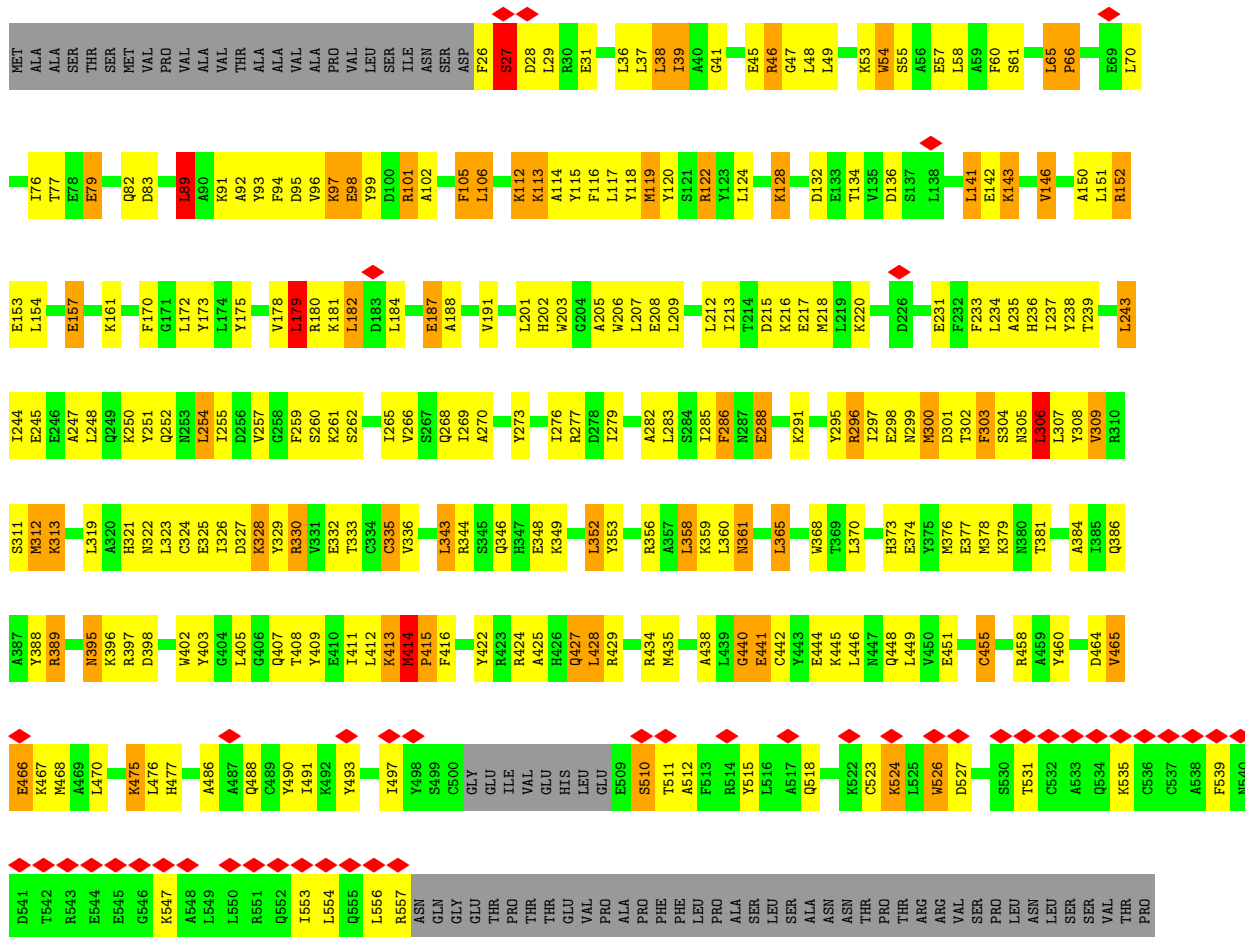
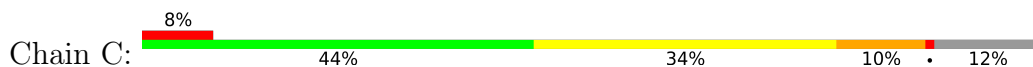
SER	PRO	VAL	ILE	ALA	PRO	LYS	LYS	ALA	ALA	ARG	PRO	SER	GLU	THR	GLY	TRP	GLU	TYR	LEU	SER	ASN	GLN	ASN	VAL	GLU	SER	HIS	LEU	LEU	ASN	ARG	CYS	LEU	SER	PRO	SER	GLU	ALA	SER	GLN	MET	LYS	ASP	GLU	ASP	PHE	SER	GLN	ASN	LEU		
SER	LEU	ASP	SER	S752	L755	F756	F757	H758	H759	I762	V765	L766	Y770	E771	E772	L773	K774	L775	M776	I777	L778	M779	G780	E781	G782	L783	L786	L789	L790	V791	Q792	L793	A794	R795	D796	L797	K798	L799	G800	P801	R808	D809	Y810	P811	H812	L813	W814	ARG	THR	THR	GLY	GLN
VAL	CYS	THR	ILE	ASP	PRO	LYS	GLN	THR	PHE	MET	HIS	HIS	PRO	PRO	ASP	PHE	F837	L852	E855	G856	H857	P858	L778	P859	Y860	P861	R869	S870	R871	L872	L876	S876	I877	Y880	I881	L882	GLY	ASP	GLU	SER	LEU	VAL	ASP	GLU	SER	GLN	TYR	GLN	TYR	LEU	LEU	ALA
PRO	GLN	LYS	LEU	GLN	VAL	GLU	GLN	GLU	ASN	ARG	PHE	SER	THR	SER	VAL	S924	L930	W933	V937	G938	L941	R942	E945	F949	G950	L953	E964	Q965	P966	A967	S968	D969	E972	L976	L977	R980	D982	L983	Q986	ALA	CYS											
GLU	GLY	ASN	PRO	PRO	LYS	GLY	LYS	SER	VAL	VAL	ASP	THR	THR	GLU	THR	M1019	M1020	H1021	L1032	Q1035	L1040	L1041	V1047	V1052	P1055	E1056	D1059	H1060	L1070	L1073	C1074	Q1075	M1078	Q981	M1170	D982	L983	Q986	ALA	CYS												
T1088	L1089	Y1092	L1093	P1094	T1097	E1098	P1099	L1100	P1101	I1102	L1107	T1108	G1109	R1110	T1117	V1118	D1119	L1120	M1121	S1122	I1125	M1131	T1132	S1133	V1134	A1136	F1137	G1140	V1141	L1145	K1146	I1147	S1151	Q1152	L1153	K1164	H1165	A1166	E1167	L1168	A1169	E1170	E1171	Y1172	A1173	L1176	M1177					
A1178	L1179	G1180	L1181	H1184	K1187	L1188	A1189	T1190	L1191	M1192	H1194	Y1196	L1197	T1198	K1199	G1200	H1201	E1202	M1203	T1204	G1207	L1208	H1201	L1209	K1216	L1217	G1218	T1219	M1220	T1225	L1227	L1228	I1229	H1231	P1233	A1234	L1235	L1236	P1237	P1238	T1239	S1240	E1242	L1243	V1244	Q1250	V1251					
A1252	A1253	V1254	G1255	G1256	G1268	L1269	Q1262	A1265	H1266	R1267	L1273	L1274	I1277	G1278	R1279	G1282	P1283	E1284	E1292	S1293	Y1294	L1302	G1303	M1304	W1306	C1306	L1307	G1308	H1309	M1312	L1313	L1314	G1315	S1317	D1318	L1319	M1320	V1321	P1322	E1323	Q1324	L1325	Y1328	M1329	V1330	G1331	H1333					
ARG	ARG	PHE	GLN	THR	GLY	MET	HIS	ARG	GLU	LYS	HIS	LYS	S1347	P1348	S1349	Y1350	Q1351	E1354	G1365	D1366	T1367	I1368	M1369	V1360	D1361	C1364	P1365	T1368	L1371	A1372	M1373	I1374	Y1375	L1376	K1377	T1378	M1379	M1380	I1383	W1386	L1396	V1399	P1401	F1403	L1404	L1405	A1407	T1408				
L1409	A1410	R1411	C1412	L1413	L1414	L1415	W1416	D1417	L1420	P1421	K1424	P1431	Q1432	I1433	I1434	M1437	SER	ILE	SER	LEU	SER	SER	GLU	ILE	LEU	PRO	CYS	SER	L1452	L1453	L1454	S1458	H1461	V1462	I1465	A1466	G1467	A1468	C1469	L1470	S1471	L1472	G1473	F1474	R1475	F1476	A1477	L1478	S1479	E1480		
M1481	L1482	F1485	M1486	C1487	L1488	F1491	A1492	M1496	T1497	Y1498	P1502	M1503	P1509	E1513	T1514	C1515	L1516	S1517	V1518	V1519	L1520	L1521	S1522	L1523	A1524	M1525	H1526	M1527	G1531	M1532	L1533	L1536	Q1537	L1538	C1539	R1540	H1543	Y1552	L1556	H1559	M1560	M1563	A1561	Y1644	E1645	Q1646	T1647	L1651				
L1567	Y1572	S1573	L1574	S1575	S1579	S1580	I1581	A1582	A1583	L1584	L1585	C1586	A1587	L1588	Y1589	P1590	H1591	H1595	S1596	L1597	D1598	H1599	R1600	Y1601	H1602	L1603	L1606	R1607	H1608	L1609	Y1610	V1611	L1612	P1616	R1617	P1621	A1632	V1636	T1637	Y1638	G1639	K1640	T1641	Q1642	V1643	Y1644	E1645	Q1646	T1647	L1651		
M1652	A1653	L1656	L1657	P1658	E1659	L1660	H1661	L1662	L1663	K1664	Q1665	S1739	T1666	K1667	G1670	P1671	R1672	Y1673	W1674	E1675	L1676	D1679	L1680	SER	LYS	GLY	T1684	Q1685	H1686	L1687	K1688	L1691	G1695	Y1696	L1697	L1701	G1704	Q1705	L1706	D1711	PRO	MET	GLY	TRP	GLN	SER	LEU	LEU	ALA	THR	VAL	
ALA	ASN	ARG	M1727	R1731	K1734	PRO	GLU	THR	ILE	S1739	A1740	F1741	T1742	S1743	D1744	L1748	S1749	F1750	A1751	C1755	T1758	Q1763	I1767	L1770	F1771	V1774	L1775	Y1776	E1777	T1780	Q1781	E1782	T1783	Y1790	I1791	M1792	M1793	D1794	I1797	R1798	R1799	E1804	M1805	S1806	L1811							



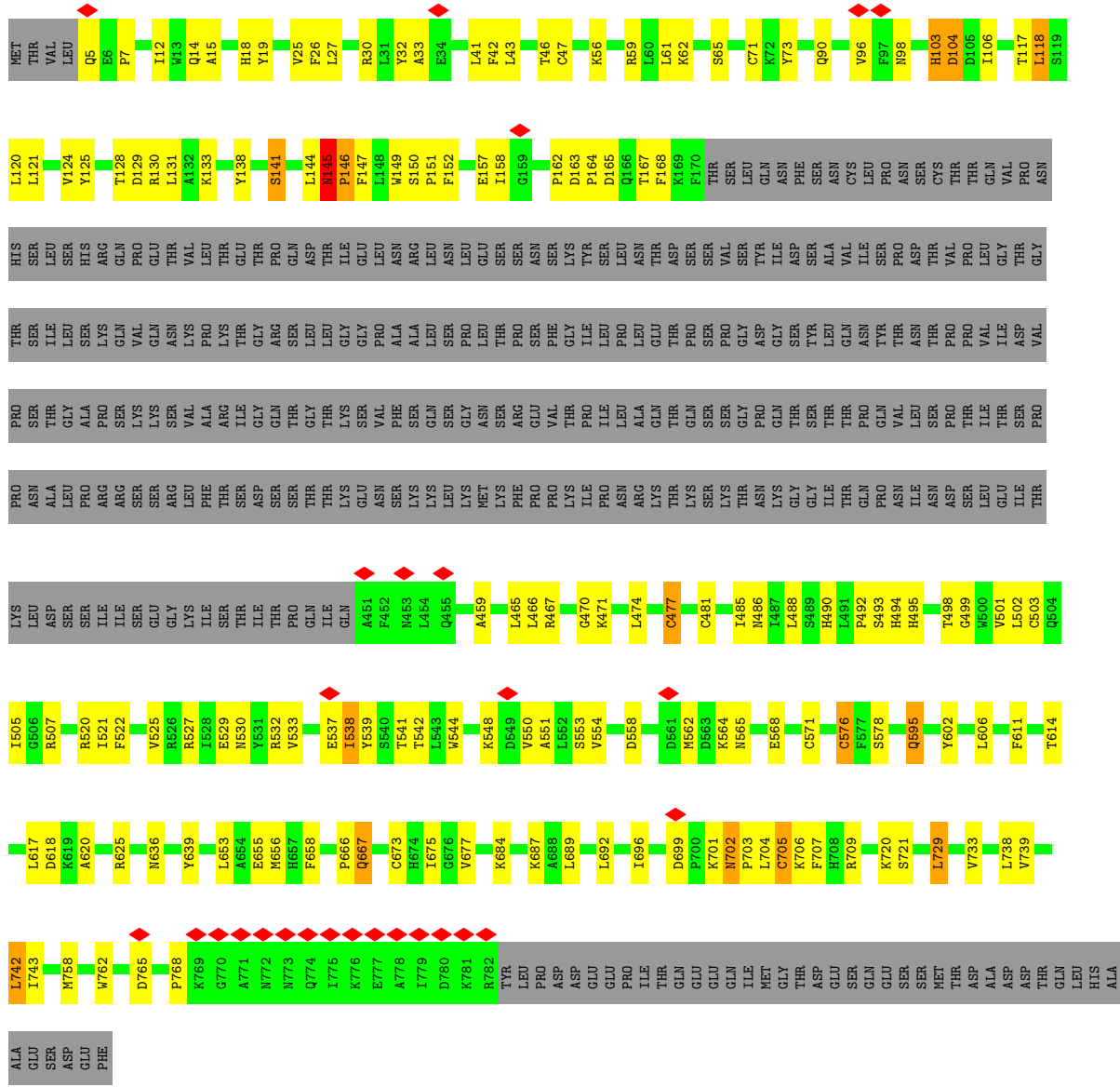
• Molecule 2: ANAPHASE-PROMOTING COMPLEX SUBUNIT 11



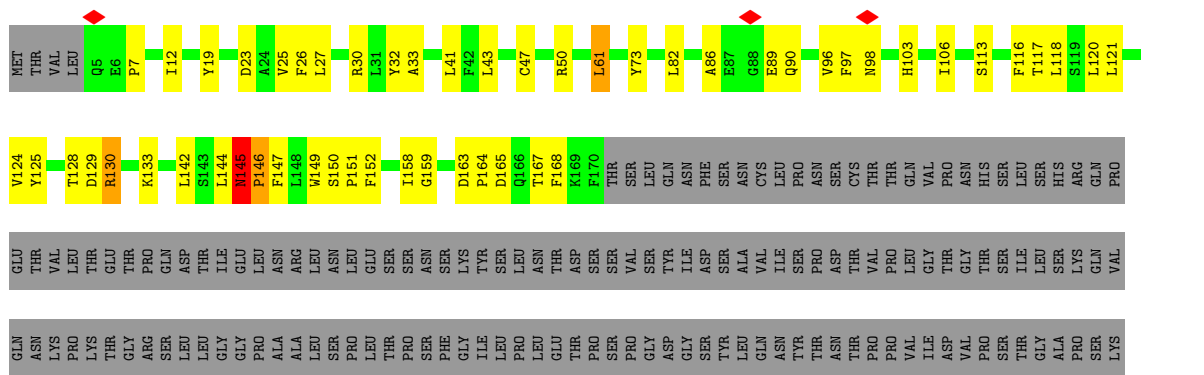
• Molecule 3: CELL DIVISION CYCLE PROTEIN 23 HOMOLOG

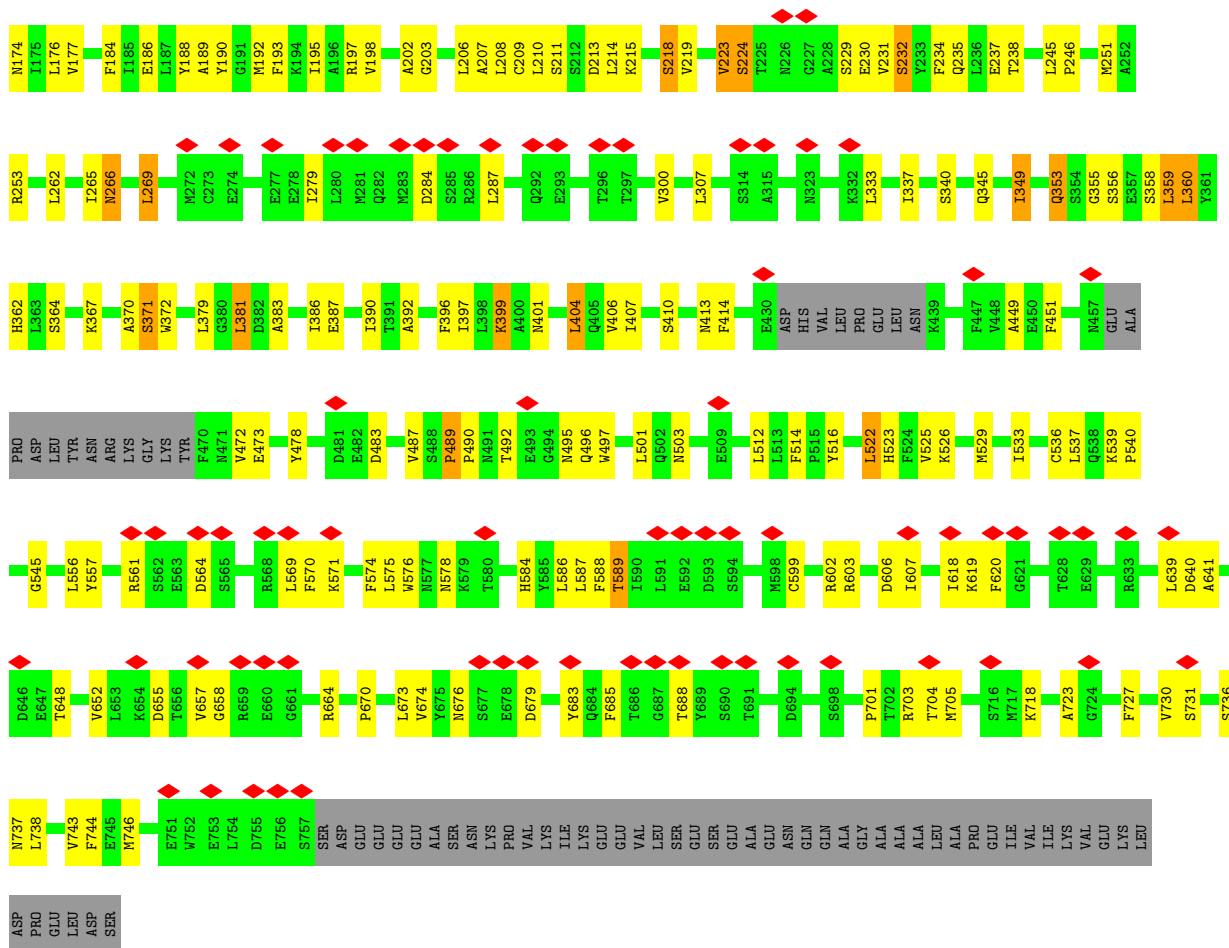


• Molecule 3: CELL DIVISION CYCLE PROTEIN 23 HOMOLOG

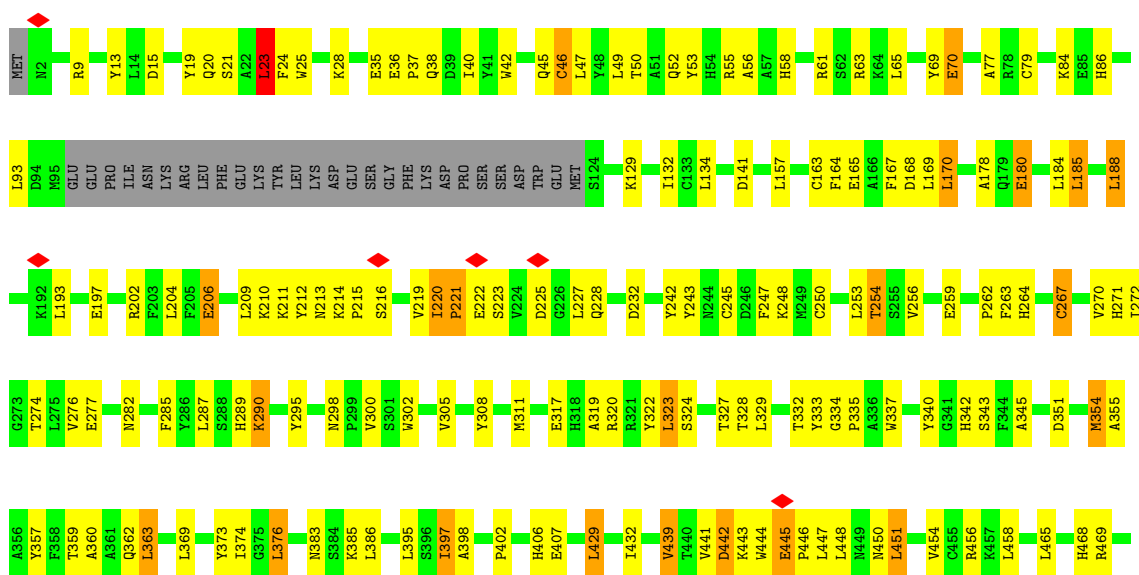


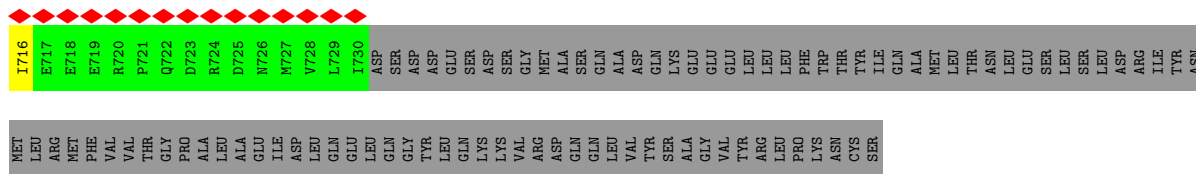
• Molecule 6: CELL DIVISION CYCLE PROTEIN 27 HOMOLOG



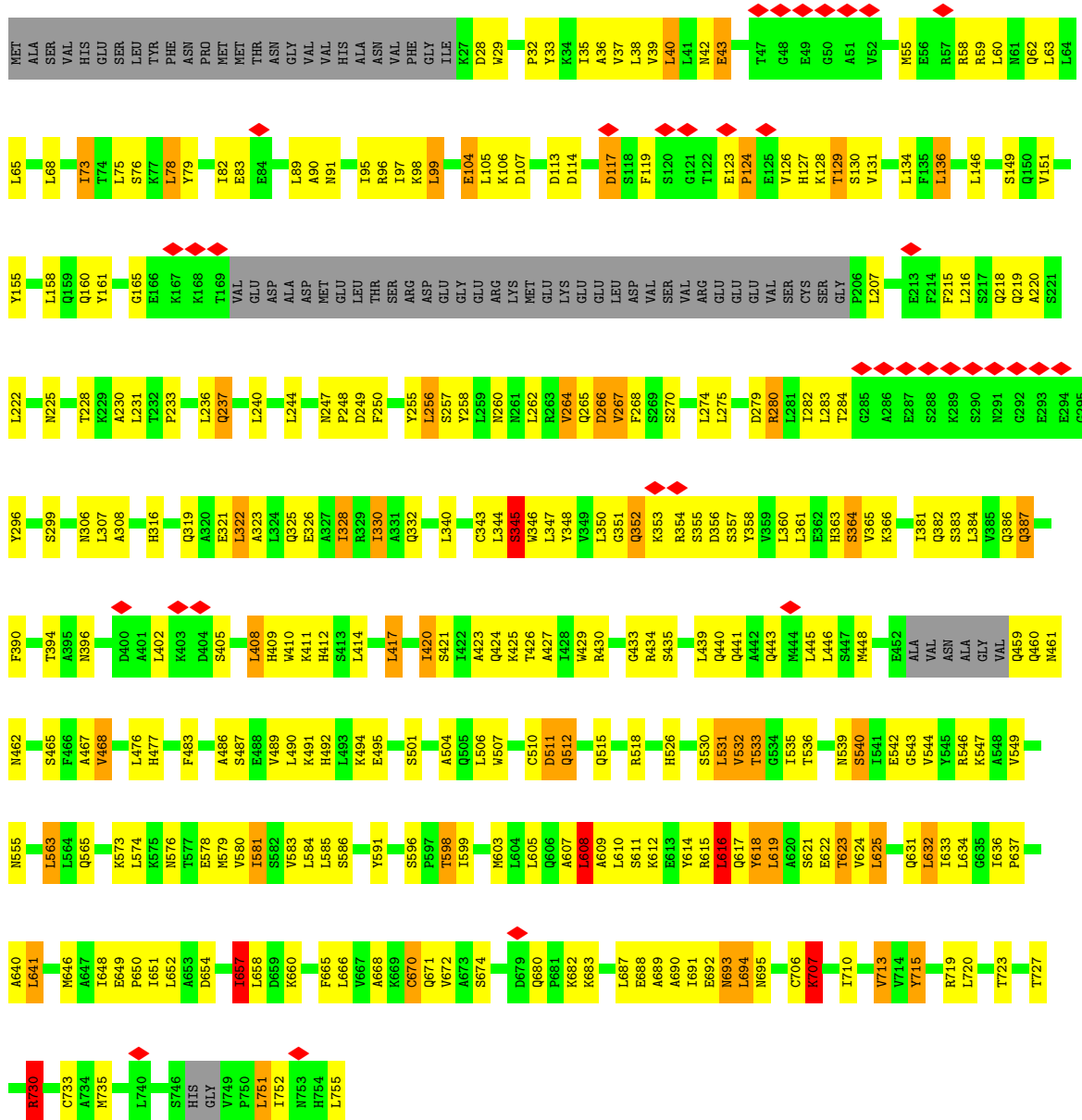


● Molecule 9: CELL DIVISION CYCLE PROTEIN 16 HOMOLOG





• Molecule 13: ANAPHASE-PROMOTING COMPLEX SUBUNIT 5



• Molecule 14: CELL DIVISION CYCLE PROTEIN 20 HOMOLOG



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	179660	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	Not provided	
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	27	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	78000	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.392	Depositor
Minimum map value	-0.196	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.08	Depositor
Map size (\AA)	386.24, 386.24, 386.24	wwPDB
Map dimensions	284, 284, 284	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.36, 1.36, 1.36	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section:
ZN

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	0.58	0/11165	0.89	29/15204 (0.2%)
2	B	0.67	0/674	0.91	0/913
3	C	0.65	0/4404	0.94	8/5945 (0.1%)
3	P	0.63	0/4134	0.91	7/5583 (0.1%)
4	D	0.58	0/446	0.85	1/610 (0.2%)
5	E	0.57	0/459	0.78	0/619
6	F	0.58	0/4013	0.83	4/5428 (0.1%)
6	H	0.59	0/3942	0.82	3/5326 (0.1%)
7	G	0.59	0/214	0.92	1/284 (0.4%)
7	W	0.64	0/214	0.86	0/284
8	I	0.65	0/5827	0.93	12/7899 (0.2%)
9	J	0.69	1/4146 (0.0%)	0.94	6/5616 (0.1%)
9	K	0.70	1/4086 (0.0%)	0.93	5/5534 (0.1%)
10	L	0.67	0/1468	0.88	1/1993 (0.1%)
11	M	0.63	1/502 (0.2%)	0.95	0/680
12	N	0.54	0/4915	0.88	15/6645 (0.2%)
13	O	0.61	1/5493 (0.0%)	0.92	14/7421 (0.2%)
14	R	0.54	2/2940 (0.1%)	0.72	1/3996 (0.0%)
15	S	0.50	0/71	1.09	1/95 (1.1%)
16	X	0.55	0/3826	0.80	6/5177 (0.1%)
16	Y	0.55	0/3919	0.82	10/5301 (0.2%)
All	All	0.61	6/66858 (0.0%)	0.88	124/90553 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
3	P	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
6	F	0	1
6	H	0	1
8	I	0	3
9	J	0	1
10	L	0	1
11	M	0	1
12	N	0	4
16	Y	0	1
All	All	0	15

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	O	268	PHE	CG-CD2	7.98	1.50	1.38
9	J	302	TRP	CB-CG	-6.32	1.38	1.50
14	R	79	TYR	CB-CG	5.73	1.60	1.51
11	M	19	TRP	CB-CG	5.53	1.60	1.50
14	R	79	TYR	CE1-CZ	5.37	1.45	1.38

The worst 5 of 124 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	P	358	LEU	CA-CB-CG	9.86	137.98	115.30
13	O	730	ARG	NE-CZ-NH1	9.15	124.88	120.30
3	C	440	GLY	N-CA-C	-8.87	90.94	113.10
9	K	351	ASP	CB-CG-OD1	8.76	126.19	118.30
1	A	1235	LEU	CA-CB-CG	8.41	134.65	115.30

There are no chirality outliers.

5 of 15 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	124	GLN	Peptide
6	F	565	ASN	Peptide
6	H	565	ASN	Peptide
8	I	489	PRO	Peptide
8	I	658	GLY	Peptide

5.2 Too-close contacts

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	10925	0	10669	471	0
2	B	649	0	595	26	0
3	C	4306	0	4273	274	0
3	P	4039	0	3989	120	0
4	D	436	0	396	27	0
5	E	450	0	435	12	0
6	F	3923	0	3819	115	0
6	H	3853	0	3793	110	0
7	G	213	0	220	16	0
7	W	213	0	220	9	0
8	I	5709	0	5597	188	0
9	J	4047	0	3949	185	0
9	K	3988	0	3908	148	0
10	L	1435	0	1382	43	0
11	M	493	0	469	17	0
12	N	4837	0	4534	155	0
13	O	5395	0	5429	231	0
14	R	2869	0	2772	59	0
15	S	72	0	71	10	0
16	X	3767	0	3819	136	0
16	Y	3859	0	3908	150	0
17	B	3	0	0	0	0
All	All	65481	0	64247	2216	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 17.

The worst 5 of 2216 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)
12:N:362:LYS:HG3	12:N:410:LEU:CD2	1.38	1.52
9:J:223:SER:CB	9:J:228:GLN:HE21	1.29	1.44
12:N:362:LYS:CG	12:N:410:LEU:HD23	1.60	1.31
12:N:362:LYS:CB	12:N:410:LEU:HD21	1.67	1.24
14:R:177:ASP:OD2	15:S:834:ILE:HD11	1.30	1.23

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	1393/1944 (72%)	1186 (85%)	149 (11%)	58 (4%)	3	26
2	B	83/84 (99%)	72 (87%)	7 (8%)	4 (5%)	2	24
3	C	520/597 (87%)	489 (94%)	23 (4%)	8 (2%)	10	45
3	P	485/597 (81%)	460 (95%)	20 (4%)	5 (1%)	15	52
4	D	53/121 (44%)	45 (85%)	7 (13%)	1 (2%)	8	41
5	E	54/110 (49%)	54 (100%)	0	0	100	100
6	F	494/824 (60%)	461 (93%)	25 (5%)	8 (2%)	9	44
6	H	477/824 (58%)	448 (94%)	22 (5%)	7 (2%)	10	45
7	G	23/85 (27%)	23 (100%)	0	0	100	100
7	W	23/85 (27%)	23 (100%)	0	0	100	100
8	I	722/808 (89%)	683 (95%)	34 (5%)	5 (1%)	22	60
9	J	500/620 (81%)	467 (93%)	29 (6%)	4 (1%)	19	57
9	K	489/620 (79%)	459 (94%)	24 (5%)	6 (1%)	13	49
10	L	180/184 (98%)	165 (92%)	11 (6%)	4 (2%)	6	38
11	M	55/74 (74%)	42 (76%)	10 (18%)	3 (6%)	2	22
12	N	601/822 (73%)	497 (83%)	58 (10%)	46 (8%)	1	16
13	O	677/755 (90%)	619 (91%)	46 (7%)	12 (2%)	8	42
14	R	361/499 (72%)	338 (94%)	20 (6%)	3 (1%)	19	57
15	S	8/206 (4%)	6 (75%)	0	2 (25%)	0	1
16	X	478/599 (80%)	463 (97%)	12 (2%)	3 (1%)	25	63
16	Y	492/599 (82%)	474 (96%)	14 (3%)	4 (1%)	19	57
All	All	8168/11057 (74%)	7474 (92%)	511 (6%)	183 (2%)	10	38

5 of 183 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	45	ALA
1	A	241	ASP
1	A	274	VAL
1	A	411	HIS
1	A	413	TRP

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	1150/1720 (67%)	970 (84%)	180 (16%)	2	17
2	B	65/75 (87%)	54 (83%)	11 (17%)	2	14
3	C	452/520 (87%)	357 (79%)	95 (21%)	1	7
3	P	421/520 (81%)	363 (86%)	58 (14%)	3	21
4	D	46/115 (40%)	37 (80%)	9 (20%)	1	9
5	E	47/89 (53%)	37 (79%)	10 (21%)	1	7
6	F	407/727 (56%)	369 (91%)	38 (9%)	9	34
6	H	408/727 (56%)	374 (92%)	34 (8%)	11	39
7	G	23/77 (30%)	22 (96%)	1 (4%)	29	57
7	W	23/77 (30%)	22 (96%)	1 (4%)	29	57
8	I	620/730 (85%)	584 (94%)	36 (6%)	20	50
9	J	424/548 (77%)	382 (90%)	42 (10%)	8	31
9	K	423/548 (77%)	379 (90%)	44 (10%)	7	29
10	L	155/169 (92%)	136 (88%)	19 (12%)	4	24
11	M	55/67 (82%)	42 (76%)	13 (24%)	1	5
12	N	460/724 (64%)	398 (86%)	62 (14%)	4	22
13	O	576/650 (89%)	478 (83%)	98 (17%)	2	14
14	R	304/411 (74%)	290 (95%)	14 (5%)	27	55
15	S	8/195 (4%)	8 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	X	406/513 (79%)	373 (92%)	33 (8%)	11	40
16	Y	416/513 (81%)	375 (90%)	41 (10%)	8	31
All	All	6889/9715 (71%)	6050 (88%)	839 (12%)	8	24

5 of 839 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
9	K	128	ILE
12	N	544	LEU
16	Y	49	LEU
9	K	231	LEU
9	K	78	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 145 such sidechains are listed below:

Mol	Chain	Res	Type
13	O	556	GLN
16	Y	505	ASN
13	O	753	ASN
16	X	95	ASN
6	H	494	HIS

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](#)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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
12	N	6
14	R	2
16	X	1
1	A	1
6	H	1

The worst 5 of 11 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	N	510:GLY	C	511:SER	N	3.32
1	N	213:TYR	C	214:ARG	N	3.24
1	X	386:MET	C	387:GLY	N	3.24
1	N	92:TRP	C	93:ASN	N	3.21
1	R	388[A]:CYS	C	389:SER	N	3.09

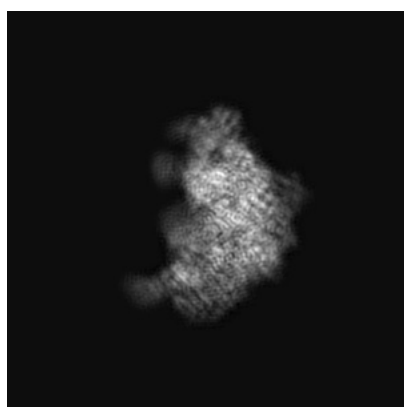
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-3385. These allow visual inspection of the internal detail of the map and identification of artifacts.

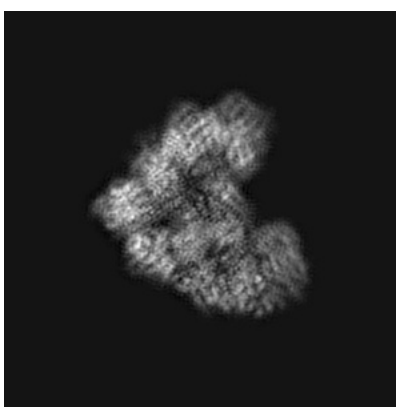
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

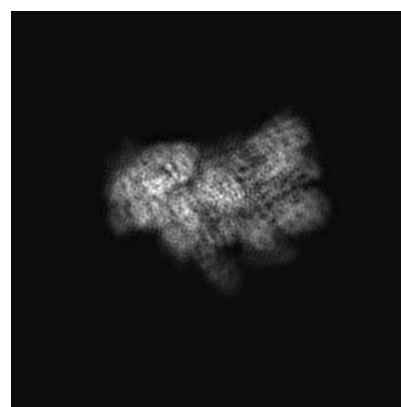
6.1.1 Primary map



X



Y

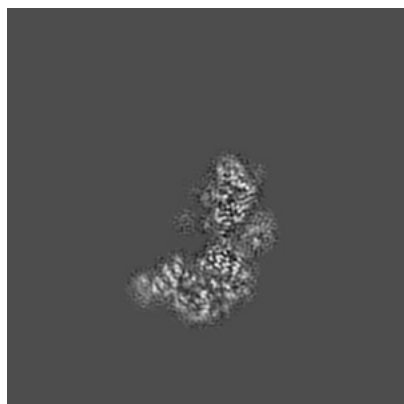


Z

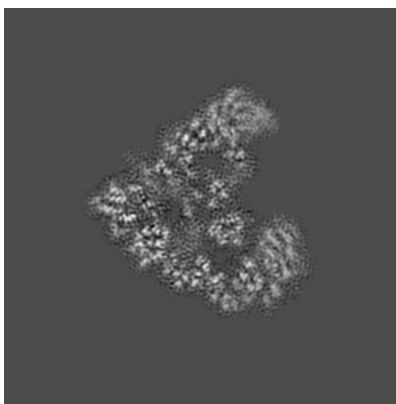
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

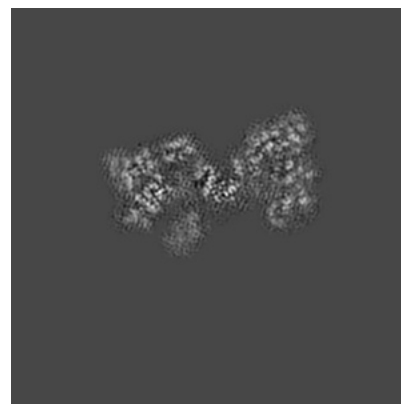
6.2.1 Primary map



X Index: 142



Y Index: 142

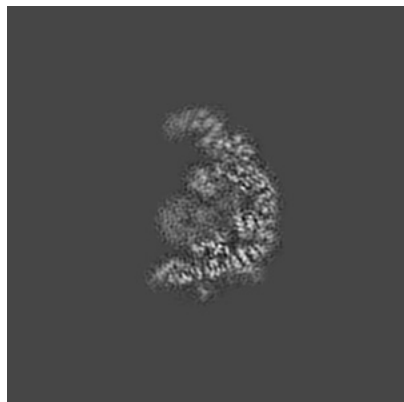


Z Index: 142

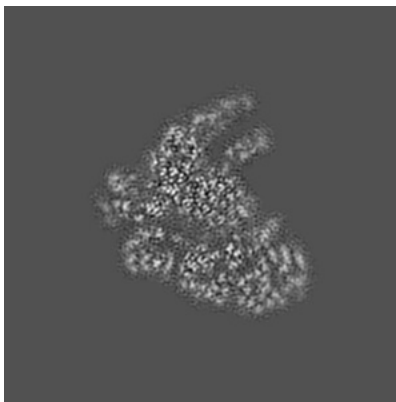
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

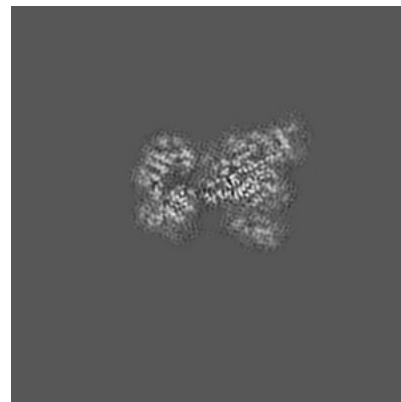
6.3.1 Primary map



X Index: 121



Y Index: 156

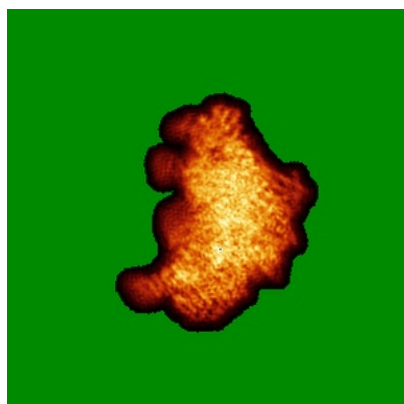


Z Index: 113

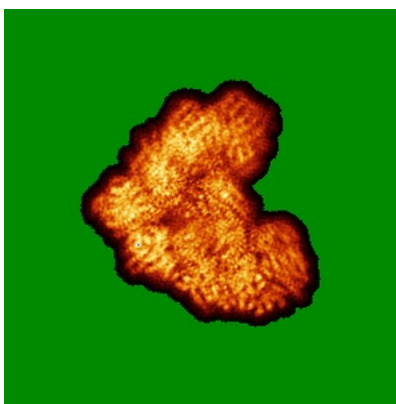
The images above show the largest variance slices of the map in three orthogonal directions.

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

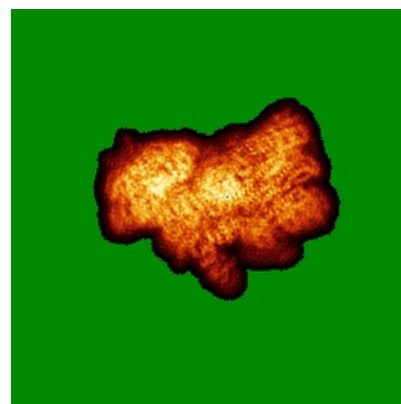
6.4.1 Primary map



X



Y

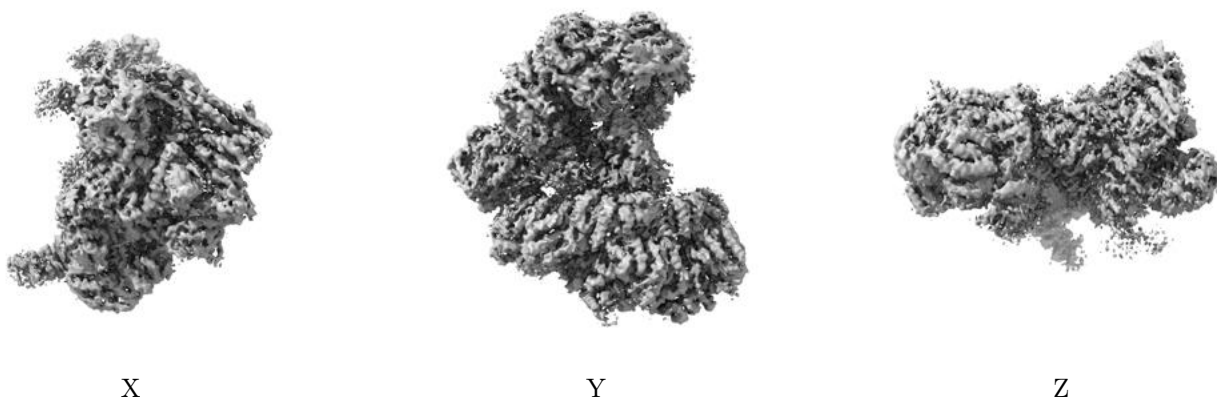


Z

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 0.08. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

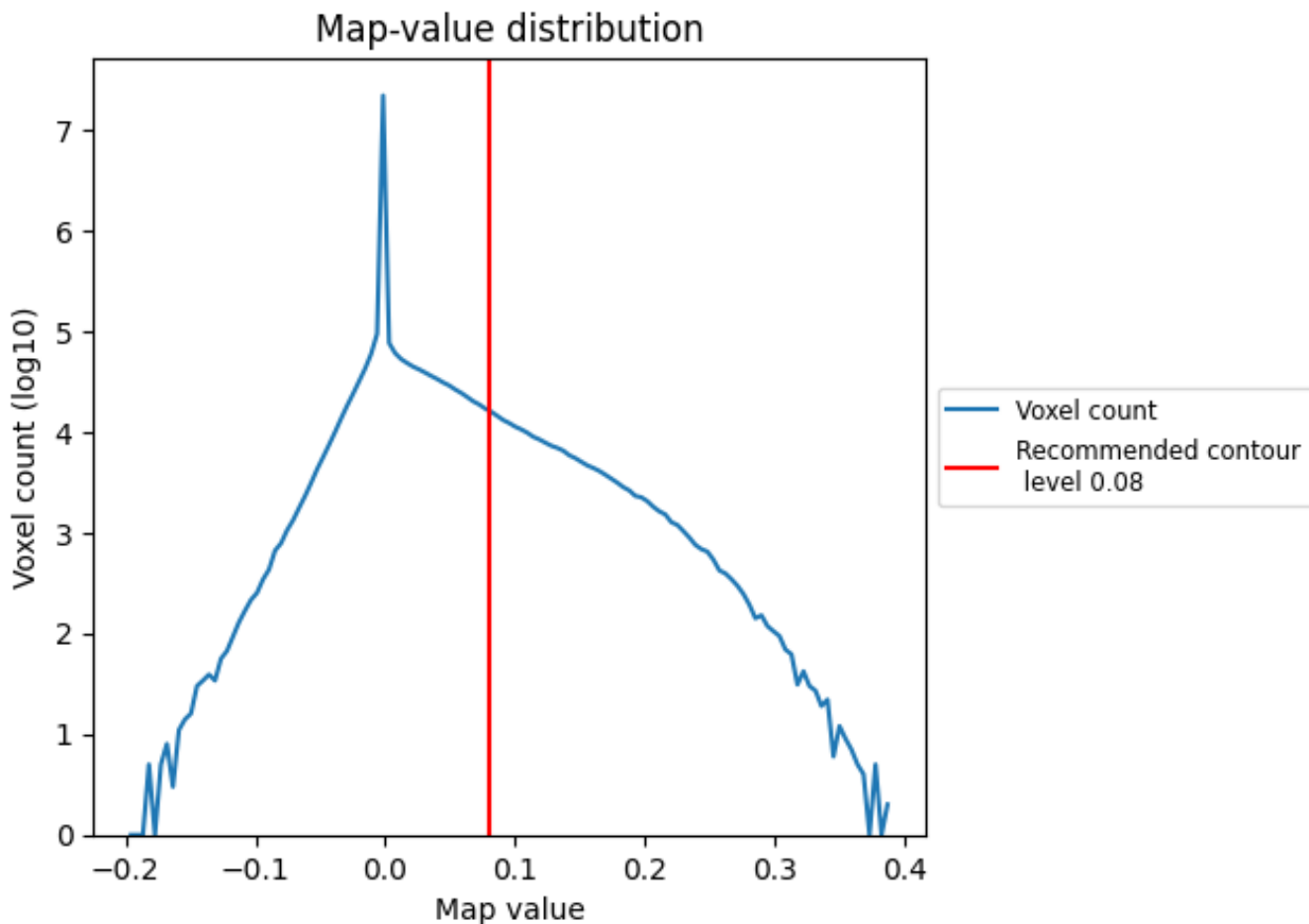
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

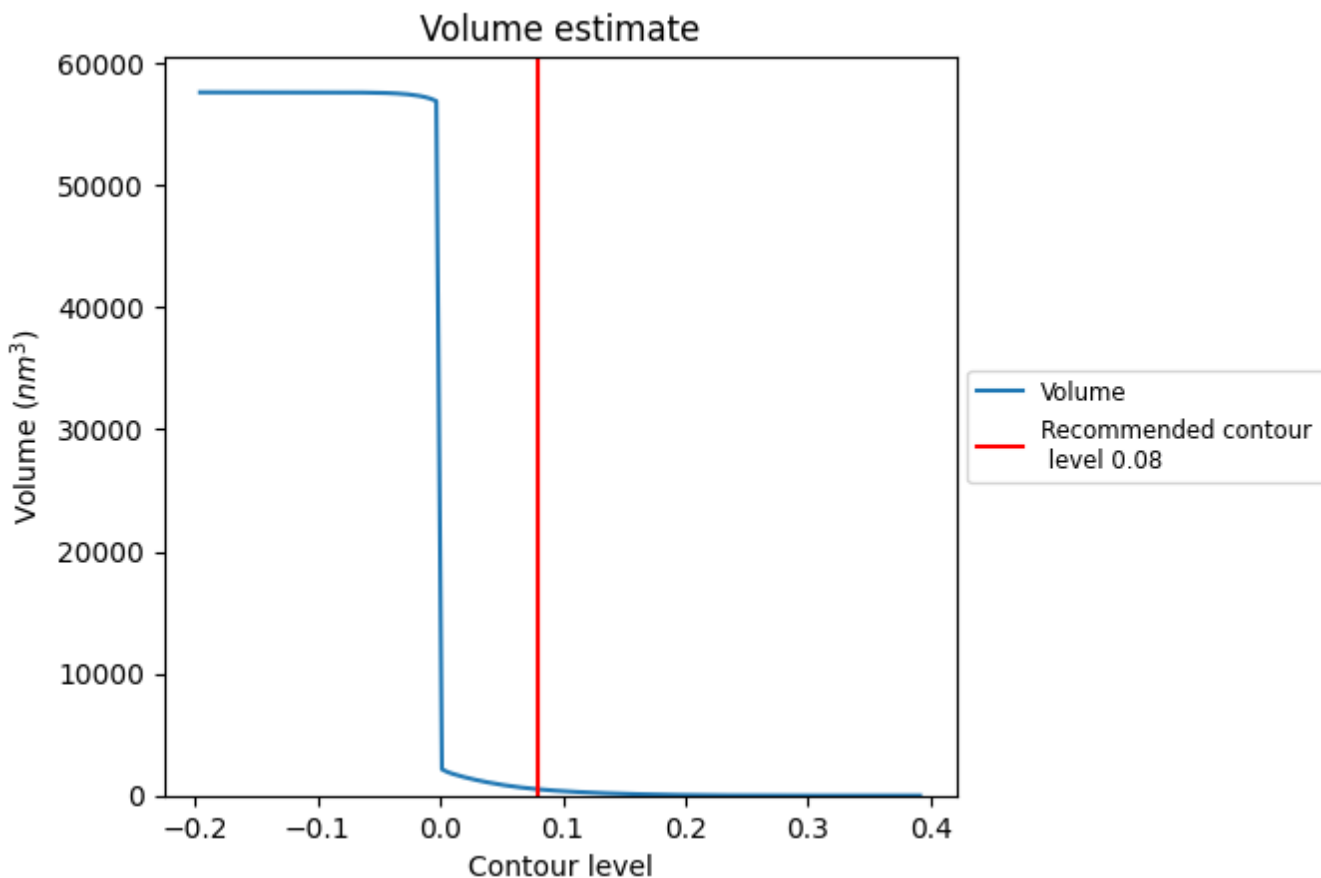
This section contains the results of statistical analysis of the map.

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.

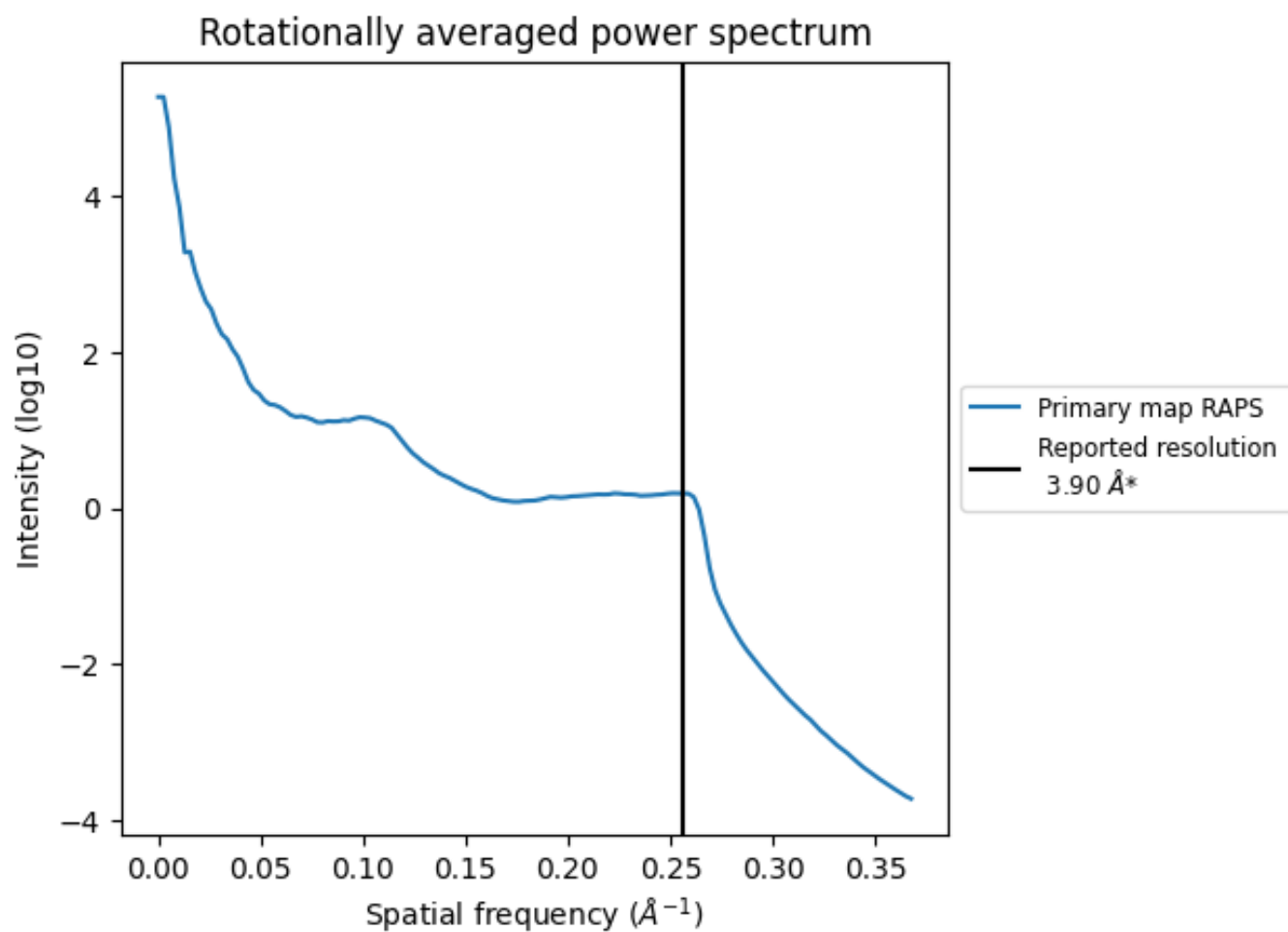
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 516 nm³; this corresponds to an approximate mass of 466 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

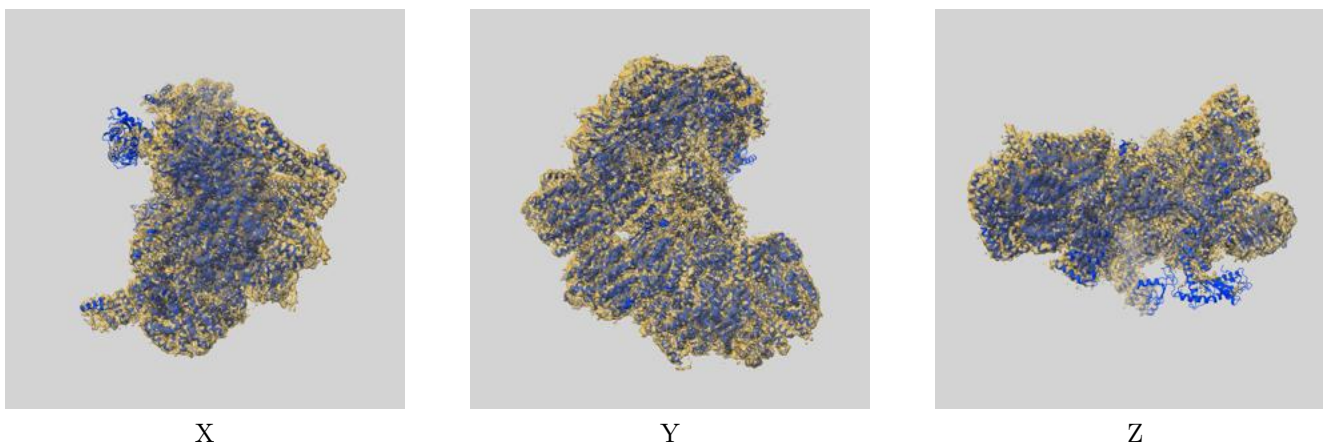
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

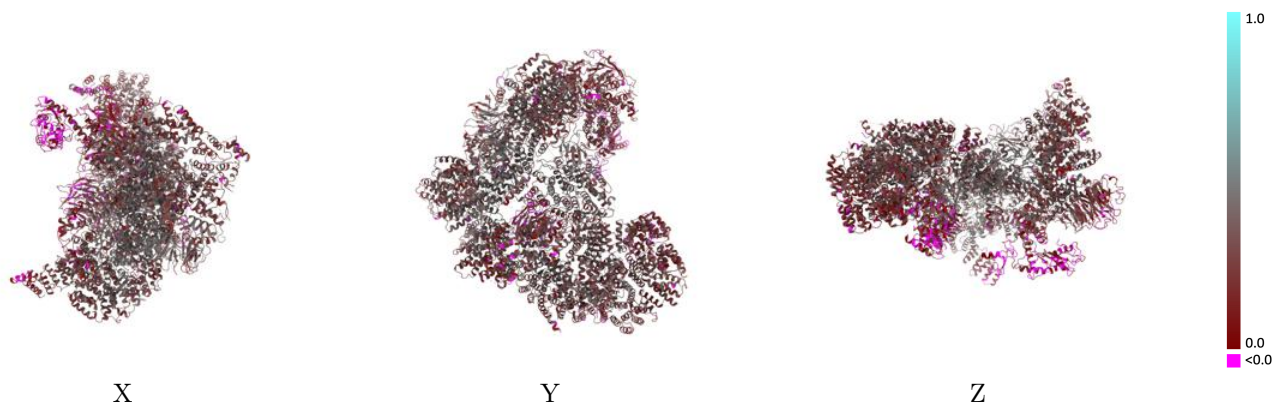
This section contains information regarding the fit between EMDB map EMD-3385 and PDB model 5G04. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



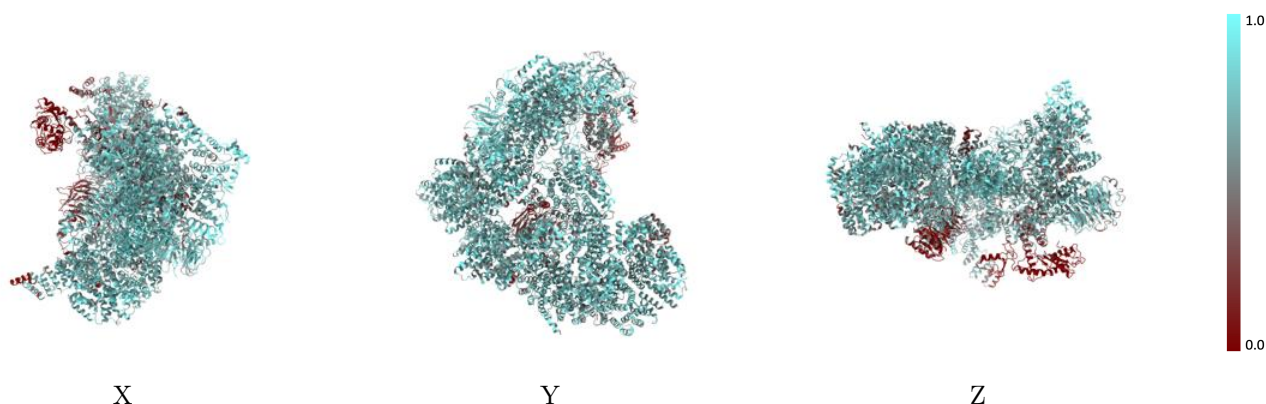
The images above show the 3D surface view of the map at the recommended contour level 0.08 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



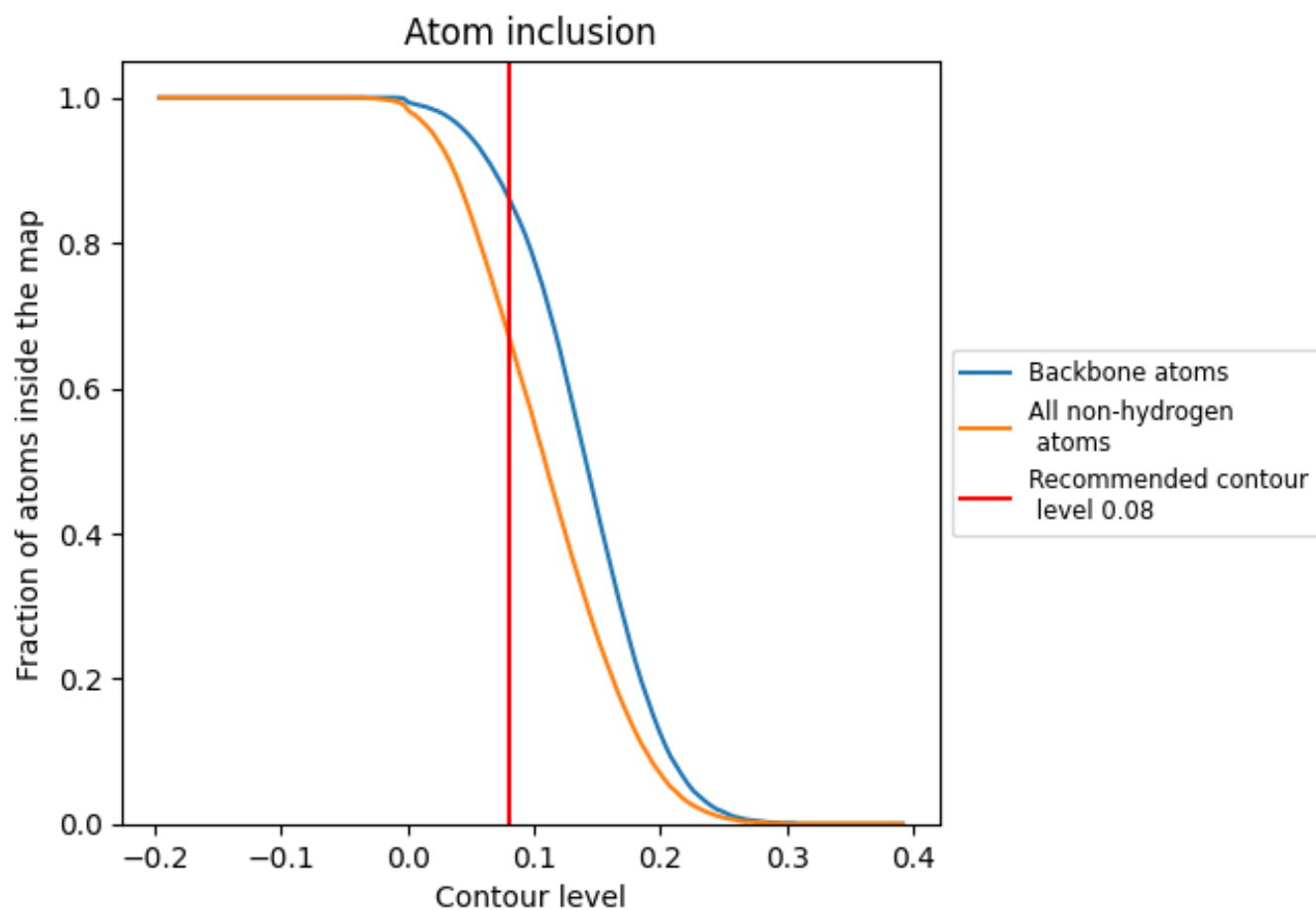
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.08).













































9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 67% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6720	 0.2990
A	 0.7500	 0.3600
B	 0.0130	 -0.0160
C	 0.7180	 0.3580
D	 0.6990	 0.3480
E	 0.7050	 0.3400
F	 0.7380	 0.3320
G	 0.7510	 0.3370
H	 0.7570	 0.3410
I	 0.6690	 0.2710
J	 0.7630	 0.3370
K	 0.7340	 0.3110
L	 0.7030	 0.3400
M	 0.6290	 0.3370
N	 0.4350	 0.1830
O	 0.7420	 0.3550
P	 0.7140	 0.3010
R	 0.2670	 0.1400
S	 0.0860	 0.0850
W	 0.6340	 0.3120
X	 0.6320	 0.2210
Y	 0.6880	 0.2530

