



# wwPDB EM Validation Summary Report ⓘ

Jun 18, 2024 – 04:23 PM JST

PDB ID : 8ZJM  
EMDB ID : EMD-60150  
Title : Structure of DOCK5/ELMO1/Rac1 core (RhoG/DOCK5/ELMO1/Rac1 dataset, class 5)  
Authors : Kukimoto-Niino, M.; Katsura, K.; Ishizuka-Katsura, Y.; Mishima-Tsumagari, C.; Yonemochi, M.; Inoue, M.; Nakagawa, R.; Kaushik, R.; Zhang, K.Y.J.; Shirouzu, M.  
Deposited on : 2024-05-15  
Resolution : 4.52 Å (reported)  
Based on initial model : 7DPA

This is a wwPDB EM Validation Summary 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.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) : 2.37.1

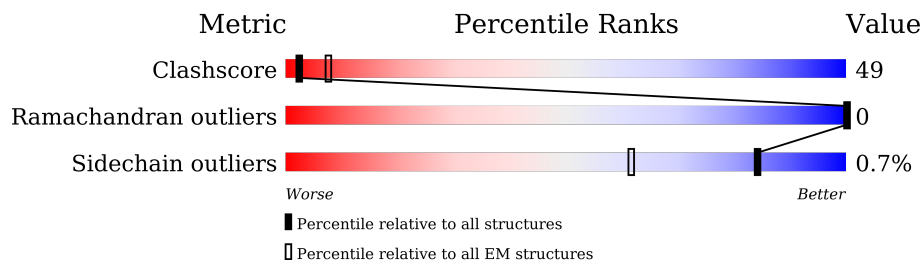
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.52 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	733	 11% 16% 73%
1	D	733	 11% 16% 73%
2	B	1648	 10% 32% 67%
2	E	1648	 10% 31% 68%
3	C	184	 8% 34% 61%
3	F	184	 6% 33% 62%

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 32858 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 Engulfment and cell motility protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	198	Total	C	N	O	S	0	0
			1608	1018	277	303	10		
1	D	198	Total	C	N	O	S	0	0
			1608	1018	277	303	10		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	GLY	-	expression tag	UNP Q92556
A	-4	GLY	-	expression tag	UNP Q92556
A	-3	SER	-	expression tag	UNP Q92556
A	-2	GLY	-	expression tag	UNP Q92556
A	-1	GLY	-	expression tag	UNP Q92556
A	0	SER	-	expression tag	UNP Q92556
D	-5	GLY	-	expression tag	UNP Q92556
D	-4	GLY	-	expression tag	UNP Q92556
D	-3	SER	-	expression tag	UNP Q92556
D	-2	GLY	-	expression tag	UNP Q92556
D	-1	GLY	-	expression tag	UNP Q92556
D	0	SER	-	expression tag	UNP Q92556

- Molecule 2 is a protein called Deducator of cytokinesis protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1642	Total	C	N	O	S	0	0
			13436	8618	2264	2484	70		
2	E	1642	Total	C	N	O	S	0	0
			13436	8618	2264	2484	70		

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-5	GLY	-	expression tag	UNP Q9H7D0

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-4	GLY	-	expression tag	UNP Q9H7D0
B	-3	SER	-	expression tag	UNP Q9H7D0
B	-2	GLY	-	expression tag	UNP Q9H7D0
B	-1	GLY	-	expression tag	UNP Q9H7D0
B	0	SER	-	expression tag	UNP Q9H7D0
B	1285	ARG	LYS	variant	UNP Q9H7D0
E	-5	GLY	-	expression tag	UNP Q9H7D0
E	-4	GLY	-	expression tag	UNP Q9H7D0
E	-3	SER	-	expression tag	UNP Q9H7D0
E	-2	GLY	-	expression tag	UNP Q9H7D0
E	-1	GLY	-	expression tag	UNP Q9H7D0
E	0	SER	-	expression tag	UNP Q9H7D0
E	1285	ARG	LYS	variant	UNP Q9H7D0

- Molecule 3 is a protein called Ras-related C3 botulinum toxin substrate 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	177	1385	890	228	259	8	0	0
3	F	177	1385	890	228	259	8	0	0

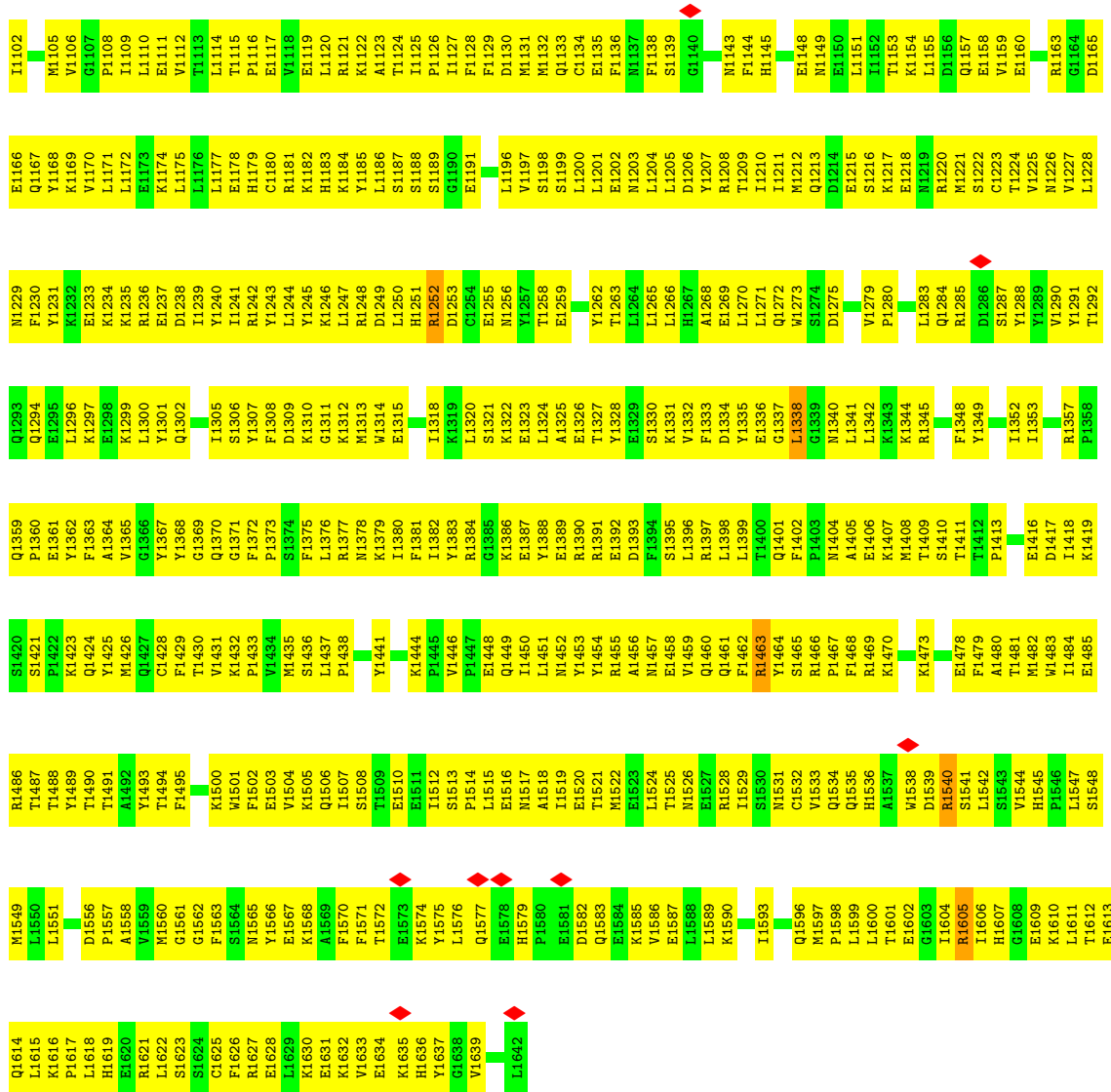
There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-6	GLY	-	expression tag	UNP P63000
C	-5	SER	-	expression tag	UNP P63000
C	-4	SER	-	expression tag	UNP P63000
C	-3	GLY	-	expression tag	UNP P63000
C	-2	SER	-	expression tag	UNP P63000
C	-1	SER	-	expression tag	UNP P63000
C	0	GLY	-	expression tag	UNP P63000
C	15	ALA	GLY	engineered mutation	UNP P63000
F	-6	GLY	-	expression tag	UNP P63000
F	-5	SER	-	expression tag	UNP P63000
F	-4	SER	-	expression tag	UNP P63000
F	-3	GLY	-	expression tag	UNP P63000
F	-2	SER	-	expression tag	UNP P63000
F	-1	SER	-	expression tag	UNP P63000
F	0	GLY	-	expression tag	UNP P63000
F	15	ALA	GLY	engineered mutation	UNP P63000

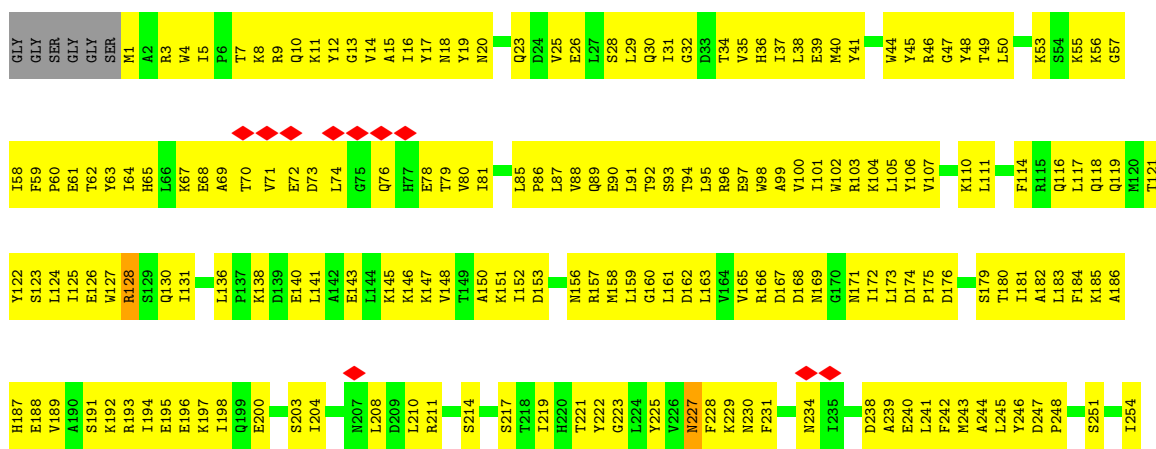




H187	L390	F322	K390	K459	E520	F584	S645	W715	R776	K842	N908	I973	F1038
E188	L260	F322	E391	K460	E521	Y585	N646	L716	F777	F843	I909	S974	E1039
V189	R261	V326	N392	K461	E522	L586	E717	E717	G778	R844	L910	T975	Q1041
S191	G263	M327	N393	T462	T523	T587	Q648	T718	G779	Q845	E911	F976	L1042
R193	S264	I329	H394	P463	C525	L588	N649	Y719	Q780	S846	N912	K977	L1043
L194	N265	T330	K395	K464	H526	F589	I650	T720	S781	R847	D914	T978	W1044
E195	N266	D331	W400	N465	I527	G590	K651	K722	F787	Q851	R915	R979	M1045
K196	G266	I332	V401	N466	R528	T591	H652	H723	M788	L852	N918	I982	Y1046
K197	N267	I333	S402	E467	F529	K592	H653	F724	N789	R853	N919	R983	F1047
I198	P268	I333	L403	V468	T530	M593	L654	S725	S790	R854	G919	D984	H1048
E200	K269	I333	K404	T469	F531	E594	K655	A726	I791	Q855	A920	F985	L1049
S203	E270	I333	L405	M470	R532	M595	L657	L728	R792	K856	T921	L986	L1049
I204	I271	I333	L406	S471	R533	M596	M658	L728	Q793	L857	A922	M987	A1050
L208	I272	I333	T411	H472	R534	E597	E659	A729	F794	M858	N923	I988	Y1051
D209	E272	I333	Q412	D474	S535	E597	V660	K732	A797	L794	G924	T989	F1052
R211	N275	I333	K415	K478	S536	K598	Q662	L733	F798	R859	N924	F990	A1053
G212	N276	I333	N416	L479	Q537	L600	E664	S734	M800	Q860	H924	F991	H1056
Q213	L277	I333	F417	L480	E538	A602	L665	K736	N801	L801	R925	I991	E1057
S214	F281	I333	S418	L481	T539	S603	L666	L737	L802	M802	E930	M992	S1058
S217	T282	I333	H419	K482	R640	S604	R667	F738	N803	N803	E931	F993	L1059
T218	D283	I333	L420	L483	D541	S605	L669	N738	D804	D804	R932	M994	Q1060
I219	L284	I333	V421	I484	K642	R604	L669	F739	R804	R804	L933	I997	L1061
H220	S285	I333	D422	I485	S543	R604	L669	N740	P805	L868	L934	G998	E1062
S221	S286	I333	R423	H486	E544	N605	D670	Y741	P806	F869	R934	G999	T1063
T221	R287	I333	S424	G487	A546	N606	N671	A742	E807	Q871	R935	R996	F1064
Y222	D288	I333	T425	A488	F547	L606	T672	K743	E808	Q872	N937	Y1002	Q1065
Y225	L289	I333	A352	G489	G548	V607	L673	A744	A809	R875	R938	V1006	Q1066
V226	L290	I333	A353	Y490	G548	T610	L674	D745	N810	E876	N940	M1007	Q1067
V226	R291	I333	M554	E491	G548	P611	L675	K749	R811	R877	N941	M1008	Q1068
N227	R292	I333	S418	A492	A550	R612	L676	E751	A815	L878	N942	M1010	Q1069
F228	R293	I333	H419	G492	F551	S612	L677	L763	A816	R880	N943	M1011	Q1070
K229	V294	I333	L420	I493	F552	S613	L678	L763	A817	L817	N944	T1012	Q1071
N230	S295	I333	M431	S494	V552	K613	M681	L763	R818	L882	Q946	N1014	Q1072
F231	L296	I333	G482	S494	K653	D614	S684	F754	Y819	R883	H949	R1015	Y1076
N234	L299	I333	F433	Y496	M555	S615	D685	A755	L820	D884	R949	V1016	D1078
D238	C298	I333	P435	K497	N556	T616	D685	A756	R821	R885	R950	R1017	R1079
A239	Q299	I333	I436	S498	P557	K617	D690	L757	S822	L886	F953	F1017	K1081
E240	R302	I333	L438	V500	T560	D618	F691	K758	L823	Q889	N954	R1019	E1082
L241	V303	I333	D441	T502	T561	S619	L692	A759	R619	L890	N957	M1022	I1083
M242	G304	I333	V442	Y502	L562	F620	V693	L760	N825	L890	R957	Q1023	F1085
A244	H305	I333	R443	Q503	G565	D621	F694	K761	N826	N893	N959	F1024	R1086
L245	E307	I333	N444	V504	L569	L622	A696	T762	V827	S894	A959	A1025	I1087
Y246	L308	I333	D445	K505	L625	A623	A696	F764	K828	S895	L960	E1026	R1088
D247	L309	I333	Y447	Q506	V570	L626	A696	R765	L829	K896	L961	V1027	D1089
P248	K309	I333	V448	W509	V571	L626	C627	F766	F831	D898	Q962	L1028	M1090
T254	E310	I333	T449	Y510	V572	S628	K708	L767	R832	D898	N964	T1029	W1091
E255	G311	I333	L450	E511	Y572	F629	F709	L768	E835	S902	D965	F1031	Y1092
N257	K312	I333	I451	T512	G574	R630	F709	Q710	L836	S903	D966	M1030	L1094
M257	K313	I333	E454	V513	G574	L631	K711	H711	S837	Q904	Y969	F1033	H1097
Y258	H314	I333	F455	K514	D575	T632	H712	L773	W838	Q904	S970	M1033	K1098
	T315	I333	D456	V515	N576	Q633	M713	Y774	L839	L905	H971	F1033	I1099
	L318	I333	K457	S516	K577	D636	P714	L775	F840	L906	K1100	M1033	K1100
	R320	I333	K385	A518	K578	L637			C841	L906	Y972	F1033	F1101
	P321	I333	V386	I519	M579	L638				L640			
		I333	A388		E580	L641				L642			
		I333	A389		A582	W643				R644			



● Molecule 2: Dedicator of cytokinesis protein 5







R1456	Q1157	M1221	E1158	V1159	E1160	R1163	G1164	D1165	E1166	F1230	Q1167	Y1168	K1169	V1170	L1171	L1172	E1173	K1174	L1175	L1176	L1177	E1178	H1179	R1242	Y1243	K1181	K1182	H1183	K1184	Y1185	L1186	S1187	S1188	R1252	G1253	E1255	M1256	Y1257	L1196	V1197	S1198	E1259	A1260	L1200	A1261	E1262	T1263	L1264	L1265	D1266	Y1267	R1268	E1269	L1270	L1271	M1272	Q1273	W1274	D1275	E1215	S1216	K1217	E1218	M1219	
R1220	M1221	S1222	C1223	T1224	V1225	M1226	V1227	L1228	M1229	F1230	Q1231	K1232	E1233	K1234	K1235	R1236	E1237	D1238	L1239	Y1240	I1241	R1242	Y1243	L1244	Y1245	K1246	L1247	R1248	D1249	L1250	H1251	R1252	G1253	E1255	M1256	Y1257	L1321	K1322	E1323	L1324	A1325	E1326	T1327	Y1328	E1329	L1330	K1331	V1332	F1333	D1334	Y1335	T1336	L1337	G1338	L1339	M1340	L1341	L1342	K1343	M1344					
L1283	Q1284	R1285	D1286	L1287	Y1288	Y1289	V1290	L1291	T1292	Q1293	Q1294	E1295	L1296	K1297	E1298	L1299	L1300	Y1301	Q1302	I1305	Q1306	F1307	Y1307	F1308	D1309	K1310	G1311	L1312	M1313	W1314	E1315	I1316	L1317	L1318	L1319	L1320	S1321	K1322	E1323	L1324	A1325	E1326	T1327	Y1328	E1329	L1330	K1331	V1332	F1333	D1334	Y1335	T1336	L1337	G1338	L1339	M1340	L1341	L1342	K1343	M1344					
R1345	F1346	Y1347	Y1348	L1349	L1350	R1351	Q1352	Q1353	Q1354	Q1355	Q1356	Q1357	Q1358	Q1359	Q1360	Q1361	Q1362	Q1363	Q1364	Q1365	Q1366	Q1367	Q1368	Q1369	Q1370	Q1371	Q1372	Q1373	Q1374	Q1375	Q1376	Q1377	Q1378	Q1379	Q1380	Q1381	Q1382	Q1383	Q1384	Q1385	Q1386	Q1387	Q1388	Q1389	Q1390	Q1391	Q1392	Q1393	Q1394	Q1395	Q1396	Q1397	Q1398	Q1399	Q1400	Q1401	Q1402	Q1403	Q1404	Q1405	Q1406	Q1407	Q1408		
T1409	S1410	T1411	T1412	P1413	E1414	D1417	L1418	L1419	S1420	S1421	E1422	K1423	Q1424	Q1425	A1426	Q1427	C1428	F1429	T1430	V1431	K1432	P1433	V1434	M1435	S1436	L1437	P1438	Y1439	K1440	P1441	P1442	E1443	Q1444	L1445	L1446	L1447	L1448	L1449	L1450	L1451	L1452	Y1453	Y1454	R1455	A1456	M1457	E1458	L1459	Q1460	Q1461	F1462	R1463	Y1464	S1465	R1466	P1467	F1468	L1469	K1470	M1471					
K1473	F1474	A1475	A1476	M1477	L1478	L1479	L1480	L1481	L1482	L1483	L1484	L1485	L1486	L1487	L1488	L1489	L1490	L1491	A1492	Y1493	L1494	F1495	K1500	W1501	F1502	E1503	L1504	K1505	Q1506	L1507	L1508	L1509	E1510	E1511	L1512	P1513	S1514	L1515	L1516	M1517	A1518	L1519	E1520	T1521	Y1522	E1523	L1524	T1525	M1526	E1527	L1528	L1529	S1530	M1531	C1532	Y1533	Q1534	Q1535	L1536	H1537	W1538	L1539			
R1540	S1541	L1542	S1543	V1544	P1545	L1546	L1547	S1548	M1549	L1550	L1551	D1552	P1553	A1554	L1555	L1556	L1557	A1558	G1559	F1560	F1561	F1562	F1563	S1564	M1565	Y1566	E1567	K1568	A1569	F1570	L1571	Y1572	E1573	K1574	Y1575	L1576	Q1577	E1578	H1579	L1580	E1581	D1582	Q1583	E1584	K1585	V1586	E1587	L1588	L1589	K1590	T1591	T1592	T1593	Q1594	M1595	M1596	P1597	P1598	L1599	L1600	L1601	E1602	G1603	L1604	R1605
I1606	H1607	G1608	E1609	K1610	L1611	L1612	E1613	Q1614	L1615	M1616	L1617	L1618	H1619	E1620	L1621	L1622	S1623	S1624	L1625	F1626	R1627	E1628	L1629	E1630	E1631	K1632	L1633	E1634	K1635	H1636	L1637	G1638	V1639	L1640	L1641	L1642																													

• Molecule 3: Ras-related C3 botulinum toxin substrate 1

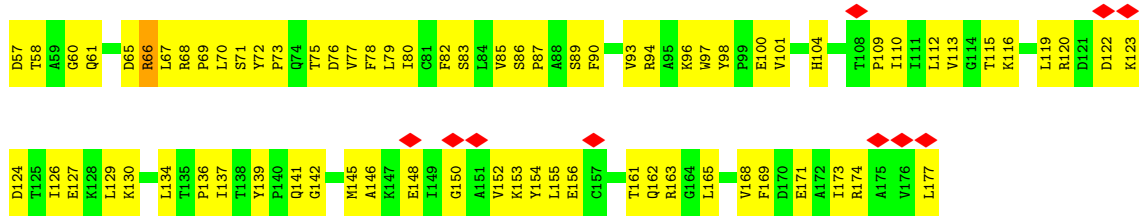


GLY	SER	GLY	SER	GLY	SER	GLY	M1	Q2	A3	I4	K5	C6	V7	V8	V9	G10	D11	G12	A13	V14	A15	K16	T17	L20	I21	Y22	T23	T24	T25	N26	A27	F28	P29	R30	A31	Y32	I33	P34	T35	V36	F37	D38	N39	Y40	S41	A42	N43	V44	M45	V46	D47	G48	K49	P50	V51	N52	L53	L54	D122
R56	D57	T58	A59	G60	Q61	D65	R66	L67	R68	P69	L70	S71	Y72	P73	T75	D76	V77	F78	L79	I80	C81	F82	S83	L84	R85	S86	P87	F88	F90	Y93	R94	A95	K96	H97	Y98	P99	E100	V101	H104	M107	T108	P109	L110	I111	L112	L113	G114	T115	K116	L119	R120	D121	D122						
K123	D124	T125	I126	E127	K128	L129	K130	L134	T136	P136	I137	L138	Y139	P140	Q141	G142	L143	A144	M145	A146	K147	E148	L149	G150	A151	V152	K153	Y154	L155	E156	C157	T161	Q162	R163	G164	L165	K166	T167	V168	F169	D170	E171	A172	L173	R174	A175	V176	L177											

• Molecule 3: Ras-related C3 botulinum toxin substrate 1



GLY	SER	GLY	SER	GLY	SER	GLY	M1	Q2	A3	I4	K5	C6	V7	V8	V9	G10	D11	G12	A13	V14	A15	K16	T17	L20	I21	Y22	T23	T24	T25	N26	A27	F28	P29	R30	A31	Y32	I33	P34	T35	V36	F37	D38	N39	Y40	S41	A42	N43	V44	M45	V46	K49	P50	V51	N52	L53	L54	W56
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## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	156585	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 ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	64000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.052	Depositor
Minimum map value	-0.015	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	452.2, 452.2, 452.2	wwPDB
Map dimensions	340, 340, 340	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.33, 1.33, 1.33	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	0.33	0/1641	0.55	0/2218
1	D	0.33	0/1641	0.56	0/2218
2	B	0.36	0/13722	0.54	1/18514 (0.0%)
2	E	0.36	0/13722	0.54	1/18514 (0.0%)
3	C	0.32	0/1415	0.50	0/1924
3	F	0.32	0/1415	0.50	0/1924
All	All	0.35	0/33556	0.54	2/45312 (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	1
1	D	0	1
2	B	0	1
2	E	0	1
All	All	0	4

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	1338	LEU	CA-CB-CG	5.62	128.24	115.30
2	B	1338	LEU	CA-CB-CG	5.61	128.19	115.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	541	GLN	Peptide

*Continued on next page...*

Continued from previous page...

Mol	Chain	Res	Type	Group
2	B	1041	GLN	Peptide
1	D	541	GLN	Peptide
2	E	1041	GLN	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	1608	0	1617	136	0
1	D	1608	0	1617	148	0
2	B	13436	0	13516	1369	0
2	E	13436	0	13516	1393	0
3	C	1385	0	1407	129	0
3	F	1385	0	1407	128	0
All	All	32858	0	33080	3217	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 49.

The worst 5 of 3217 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)
2:E:929:MET:HA	2:E:933:LEU:HD13	1.43	1.01
1:A:701:LEU:HD23	2:B:31:ILE:HG23	1.43	1.00
2:B:929:MET:HA	2:B:933:LEU:HD13	1.43	0.99
2:E:1545:HIS:HB2	3:F:5:LYS:HE2	1.49	0.95
2:E:657:LEU:HD23	2:E:696:ALA:HB1	1.51	0.93

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	196/733 (27%)	170 (87%)	26 (13%)	0	100	100
1	D	196/733 (27%)	170 (87%)	26 (13%)	0	100	100
2	B	1640/1648 (100%)	1476 (90%)	164 (10%)	0	100	100
2	E	1640/1648 (100%)	1476 (90%)	164 (10%)	0	100	100
3	C	175/184 (95%)	160 (91%)	15 (9%)	0	100	100
3	F	175/184 (95%)	160 (91%)	15 (9%)	0	100	100
All	All	4022/5130 (78%)	3612 (90%)	410 (10%)	0	100	100

There are no Ramachandran outliers to report.

### 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	183/664 (28%)	182 (100%)	1 (0%)	88	93
1	D	183/664 (28%)	182 (100%)	1 (0%)	88	93
2	B	1495/1497 (100%)	1485 (99%)	10 (1%)	84	90
2	E	1495/1497 (100%)	1484 (99%)	11 (1%)	84	90
3	C	153/157 (98%)	151 (99%)	2 (1%)	69	82
3	F	153/157 (98%)	151 (99%)	2 (1%)	69	82
All	All	3662/4636 (79%)	3635 (99%)	27 (1%)	84	90

5 of 27 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	E	128	ARG
2	E	478	LYS
2	E	1605	ARG

*Continued on next page...*

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Mol	Chain	Res	Type
2	E	415	LYS
2	E	769	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 47 such sidechains are listed below:

Mol	Chain	Res	Type
2	E	187	HIS
2	E	723	HIS
2	E	227	ASN
2	E	649	ASN
2	E	889	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.



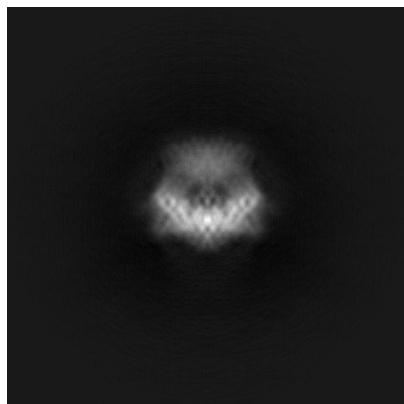
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-60150. These allow visual inspection of the internal detail of the map and identification of artifacts.

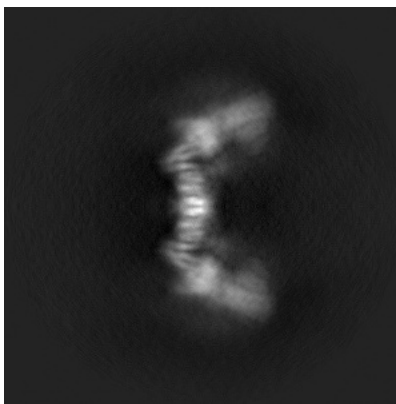
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

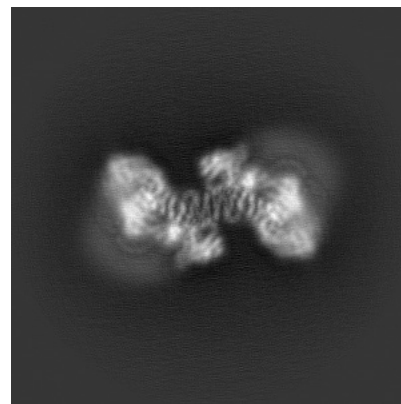
#### 6.1.1 Primary map



X

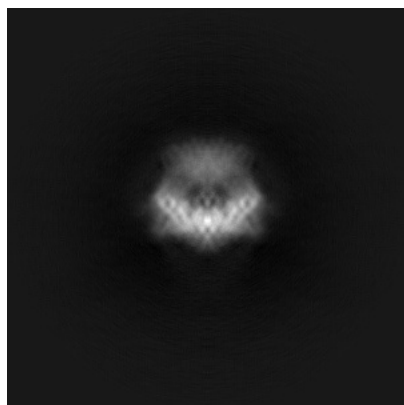


Y

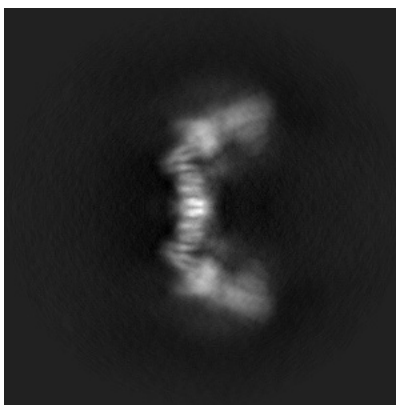


Z

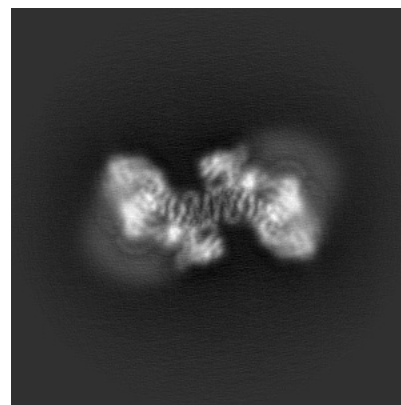
#### 6.1.2 Raw map



X



Y

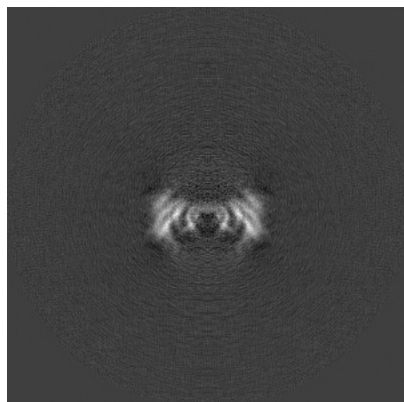


Z

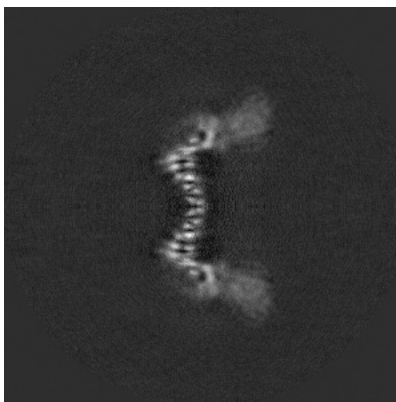
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

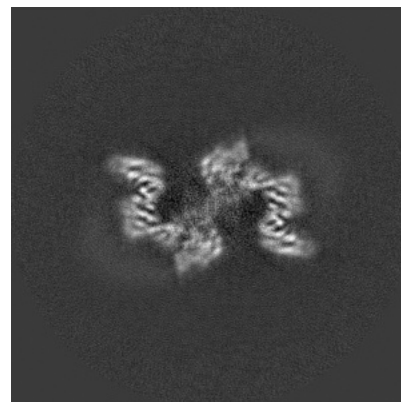
### 6.2.1 Primary map



X Index: 170

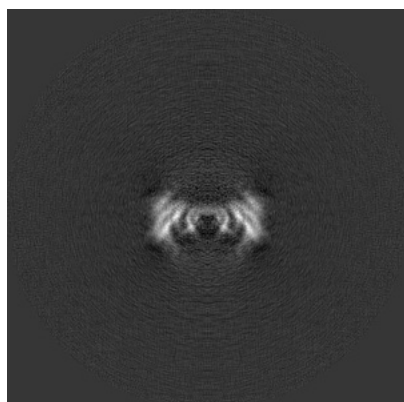


Y Index: 170

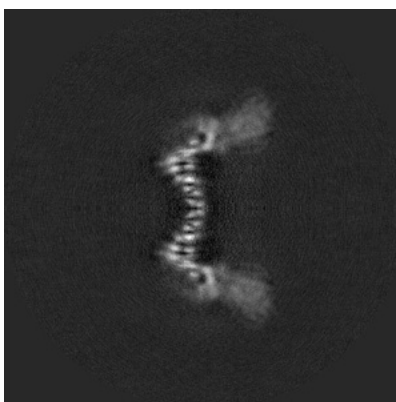


Z Index: 170

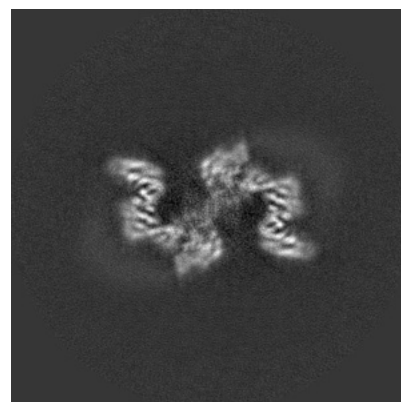
### 6.2.2 Raw map



X Index: 170



Y Index: 170

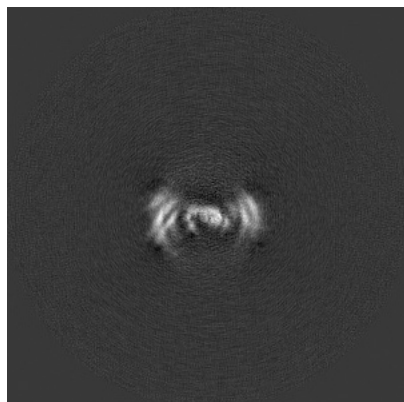


Z Index: 170

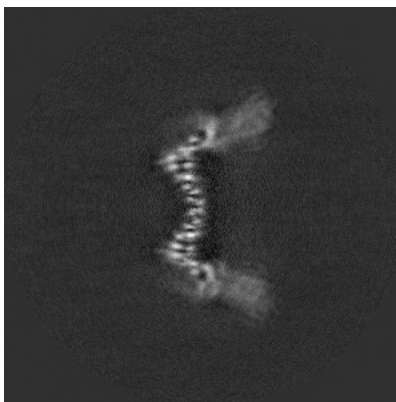
The images above show central slices of the map in three orthogonal directions.

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

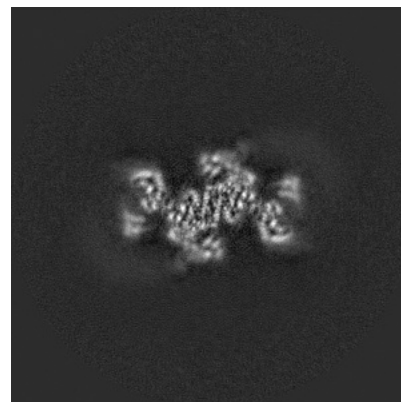
### 6.3.1 Primary map



X Index: 166

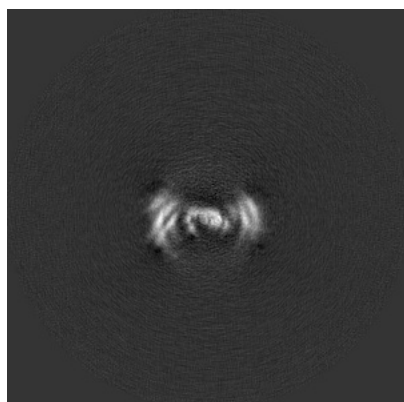


Y Index: 169

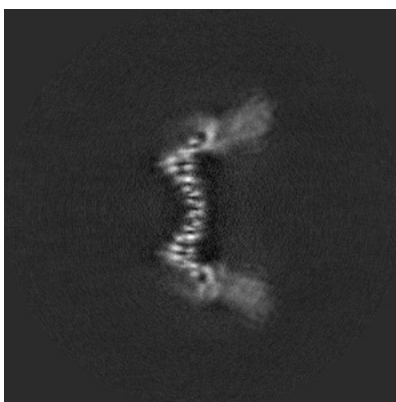


Z Index: 159

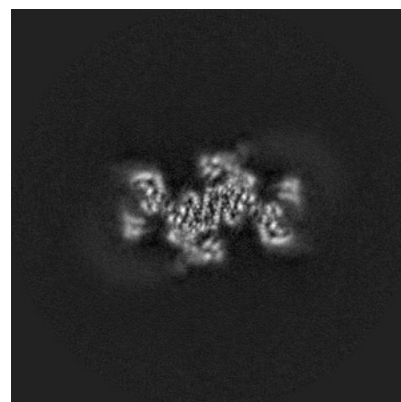
### 6.3.2 Raw map



X Index: 166



Y Index: 169

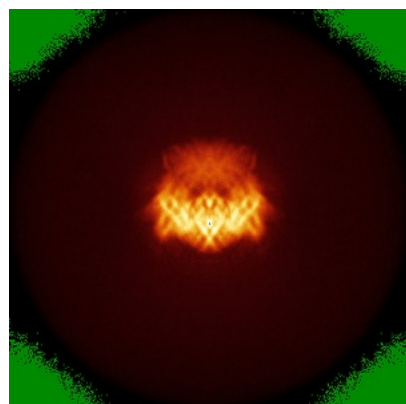


Z Index: 159

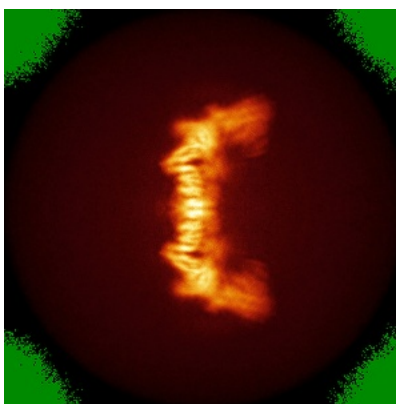
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



X

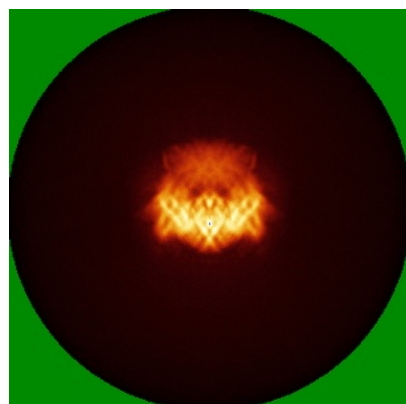


Y

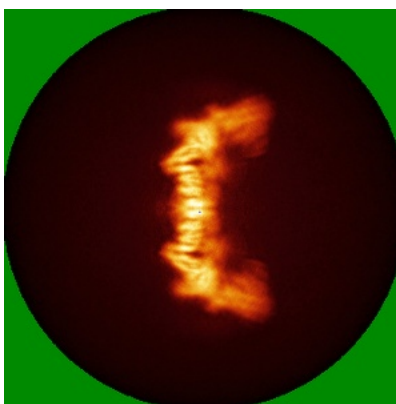


Z

### 6.4.2 Raw map



X



Y

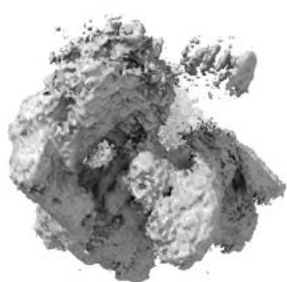


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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

### 6.5.1 Primary map



X



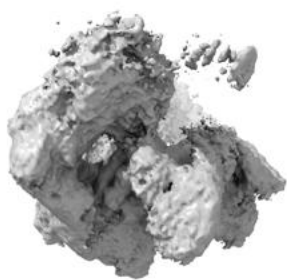
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. 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



X



Y



Z

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.

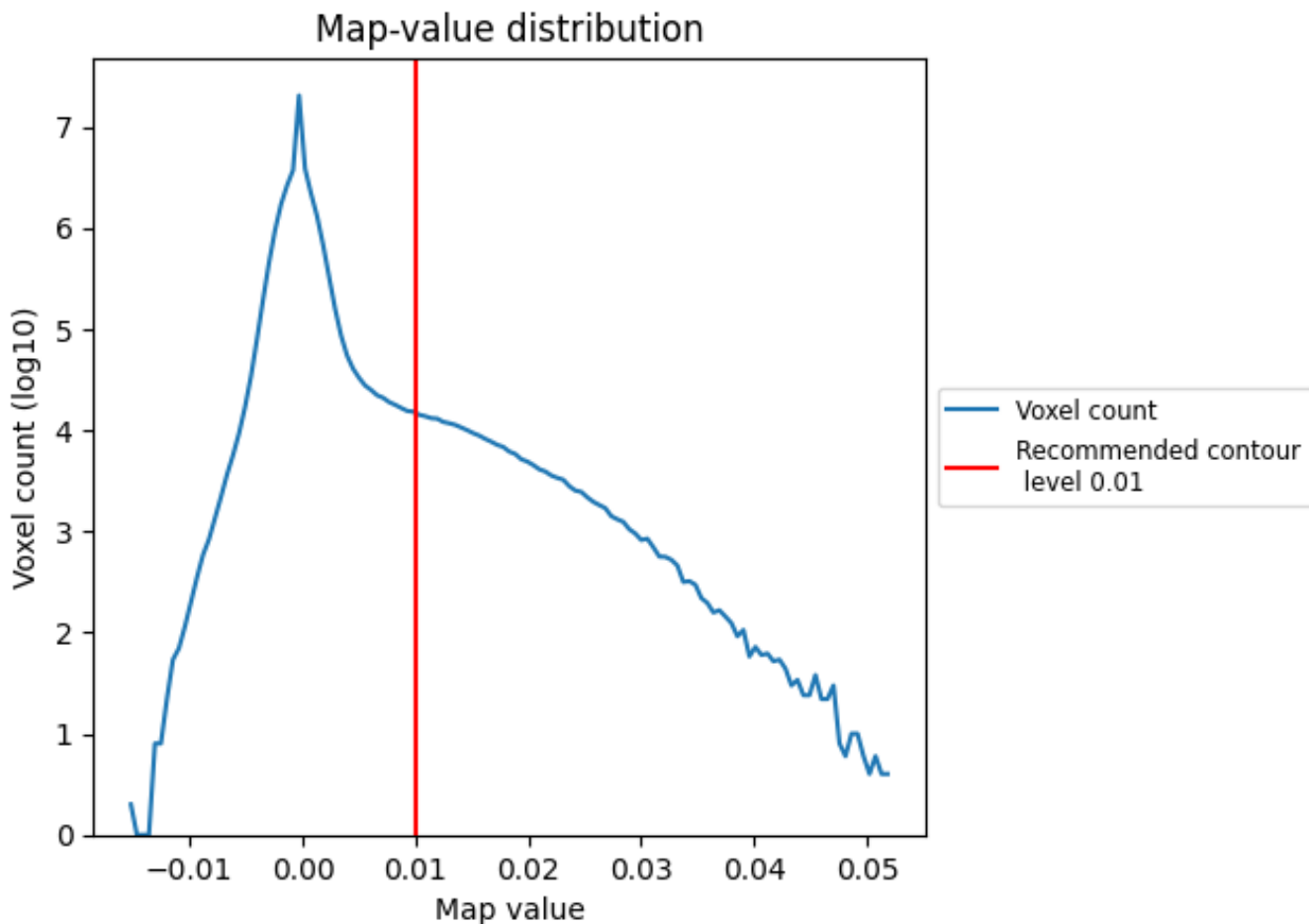
## 6.6 Mask visualisation [i](#)

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.

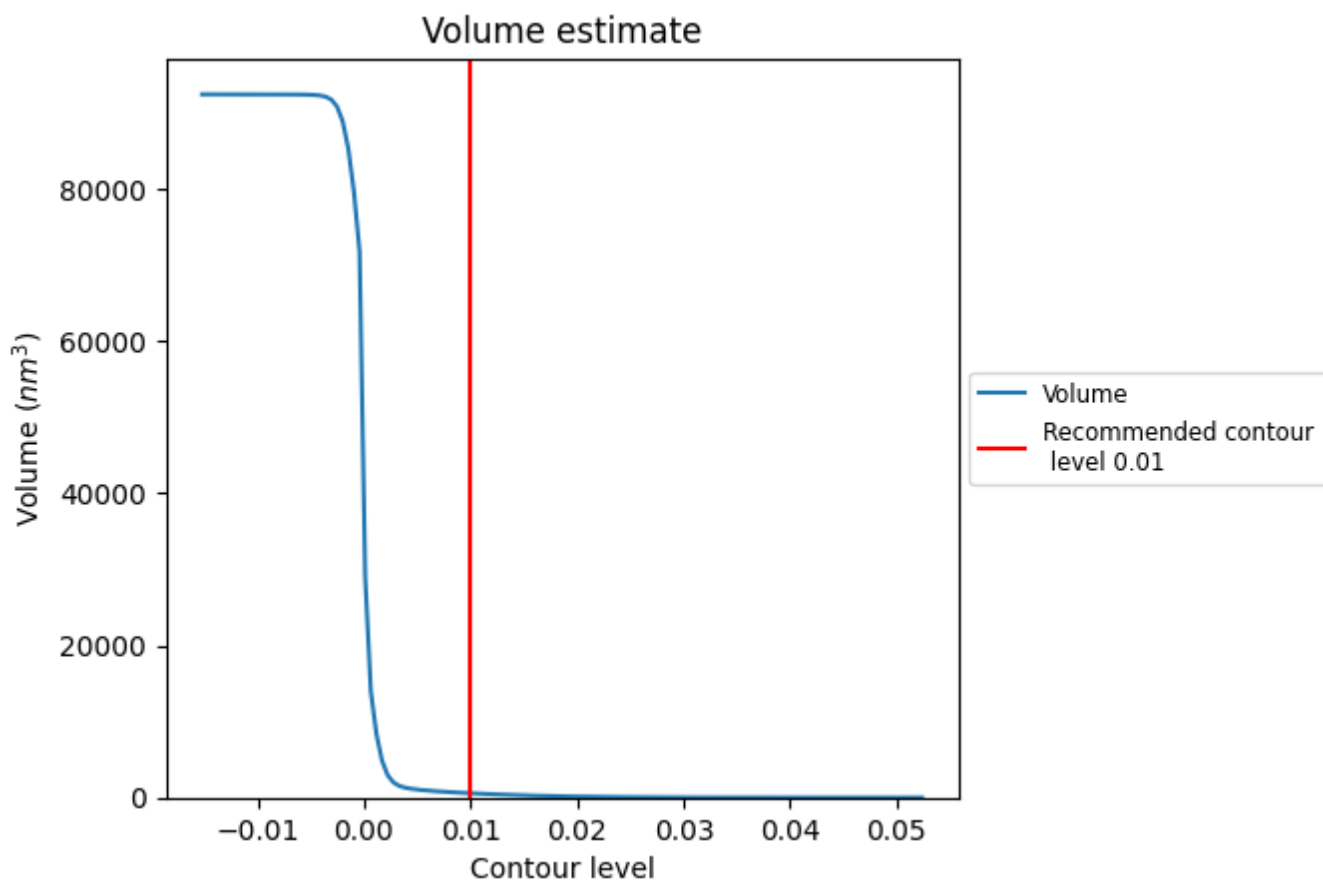
### 7.1 Map-value distribution [i](#)



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.



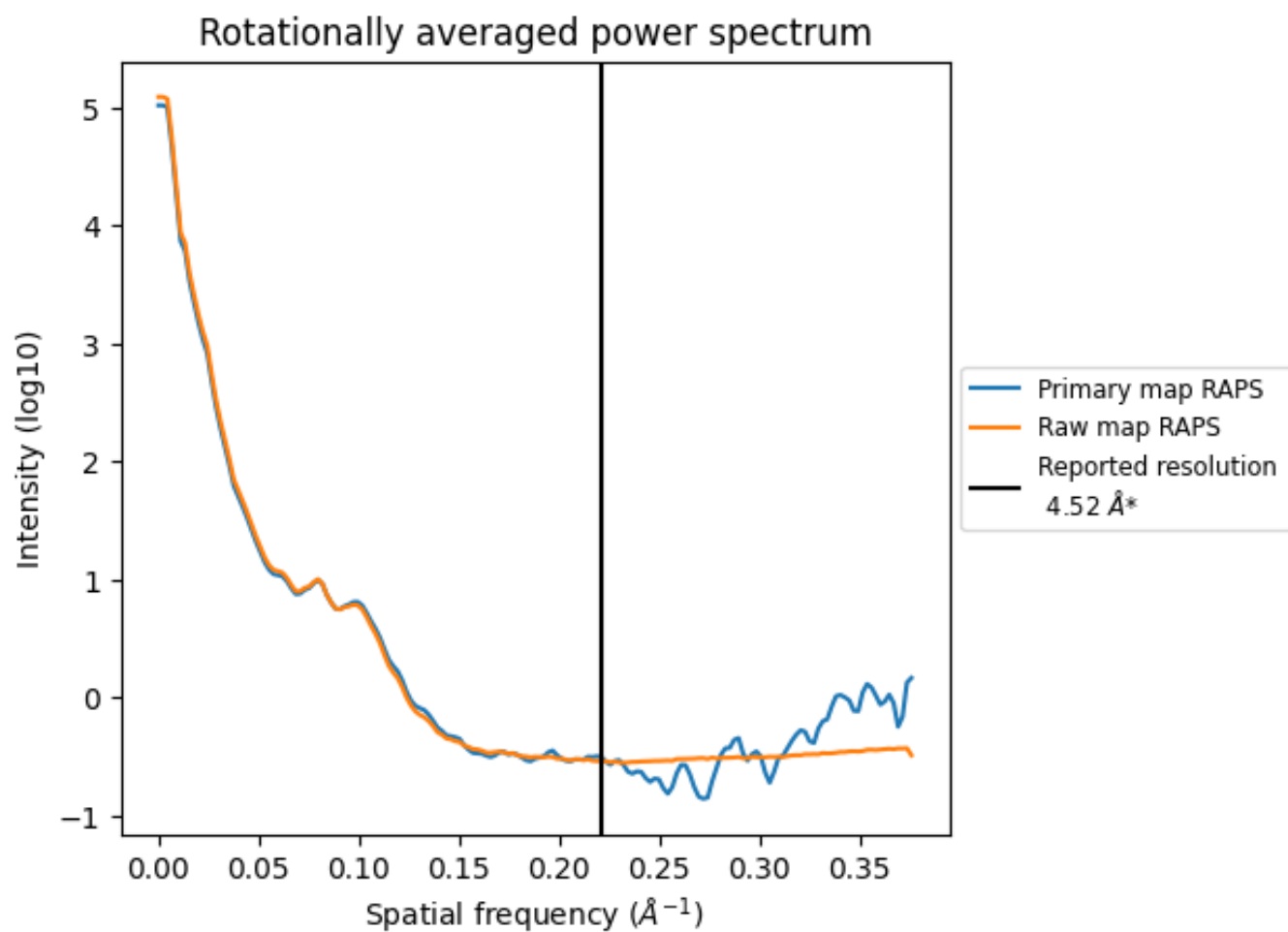
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 568  $\text{nm}^3$ ; this corresponds to an approximate mass of 513 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



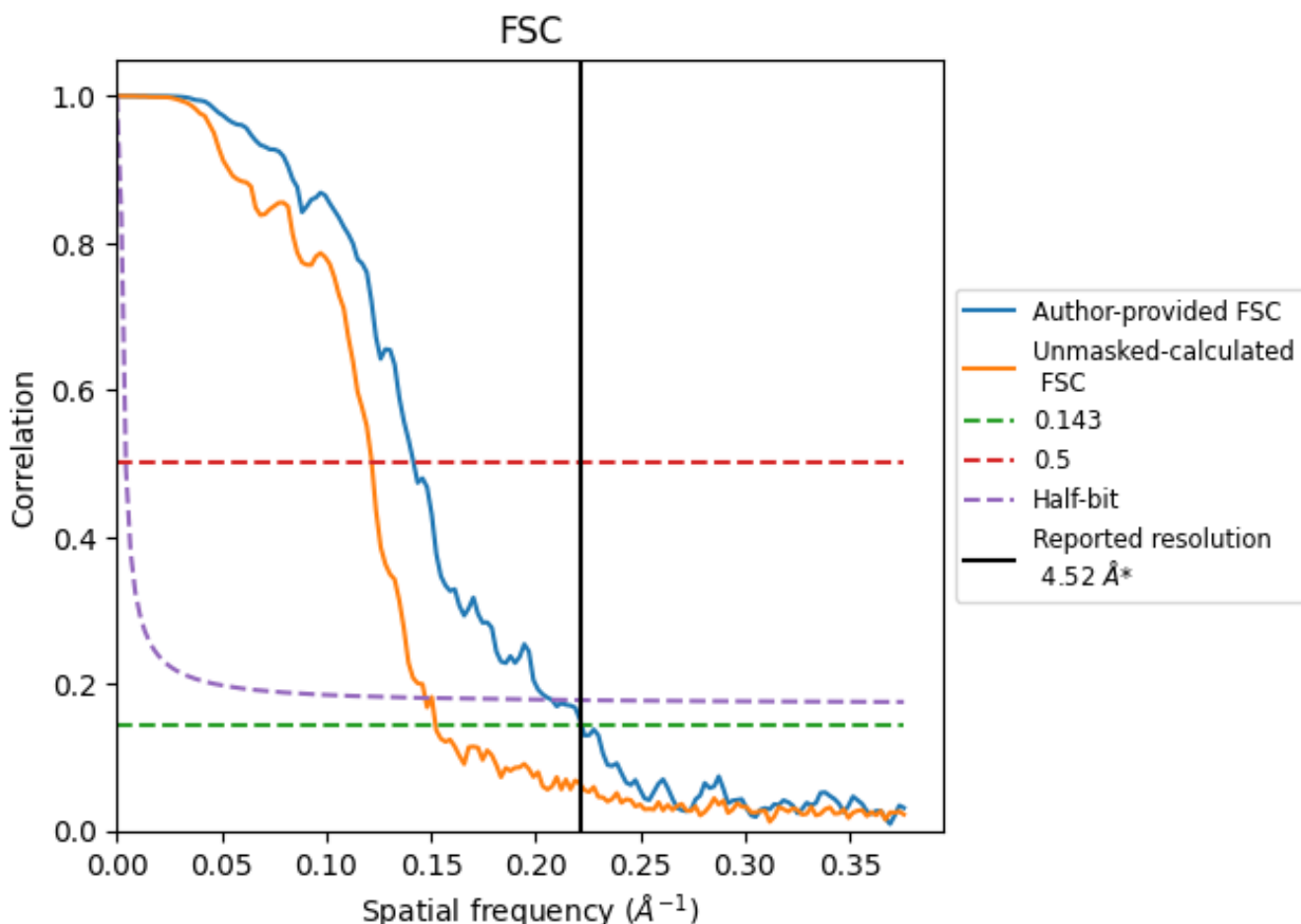
\*Reported resolution corresponds to spatial frequency of 0.221 Å<sup>-1</sup>



## 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 0.221 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

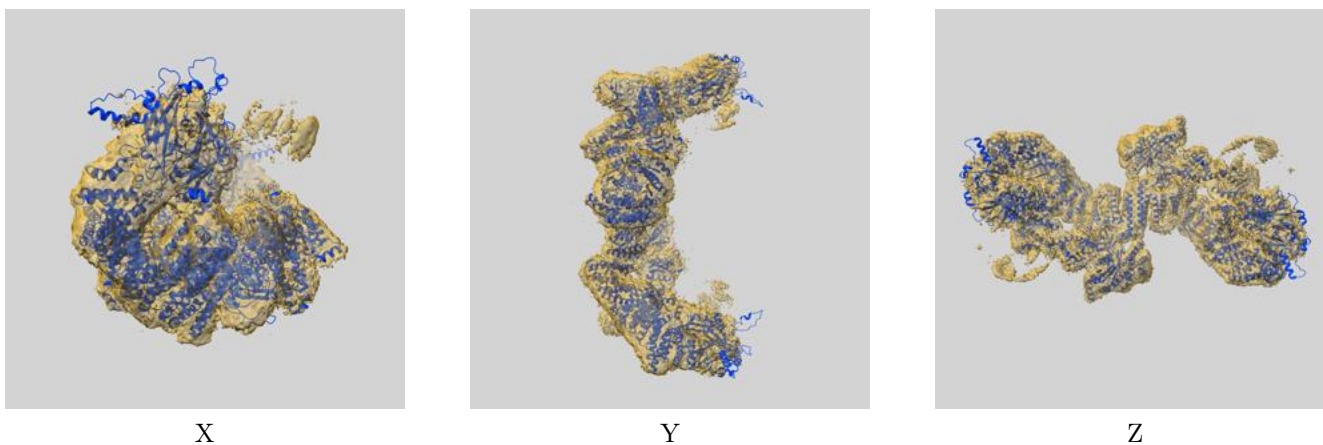
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.52	-	-
Author-provided FSC curve	4.50	7.05	4.81
Unmasked-calculated*	6.57	8.21	6.79

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.57 differs from the reported value 4.52 by more than 10 %

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

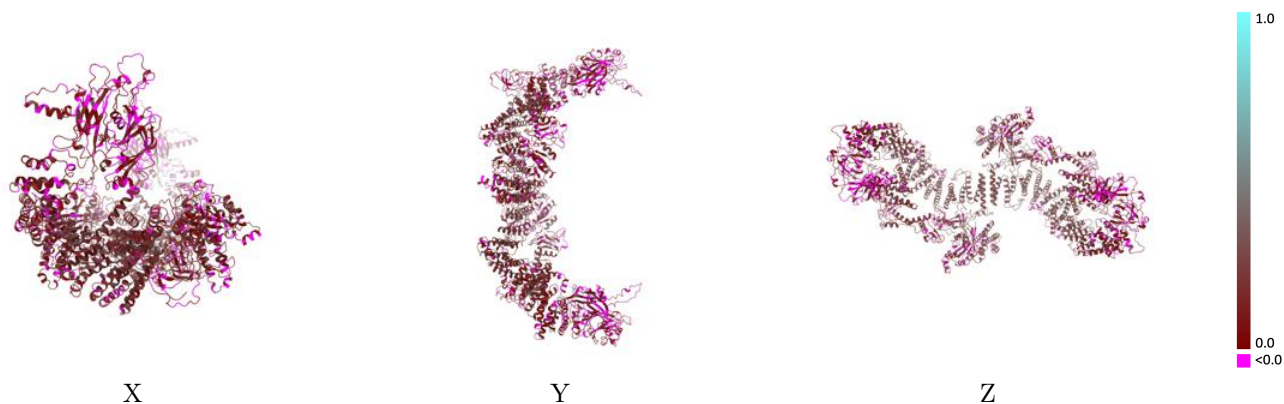
This section contains information regarding the fit between EMDB map EMD-60150 and PDB model 8ZJM. Per-residue inclusion information can be found in section 3 on page 5.

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



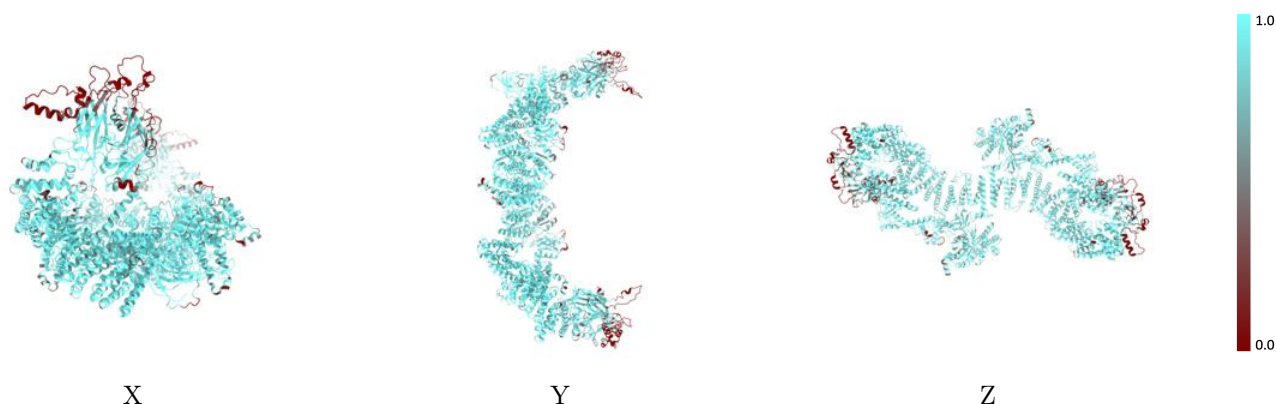
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



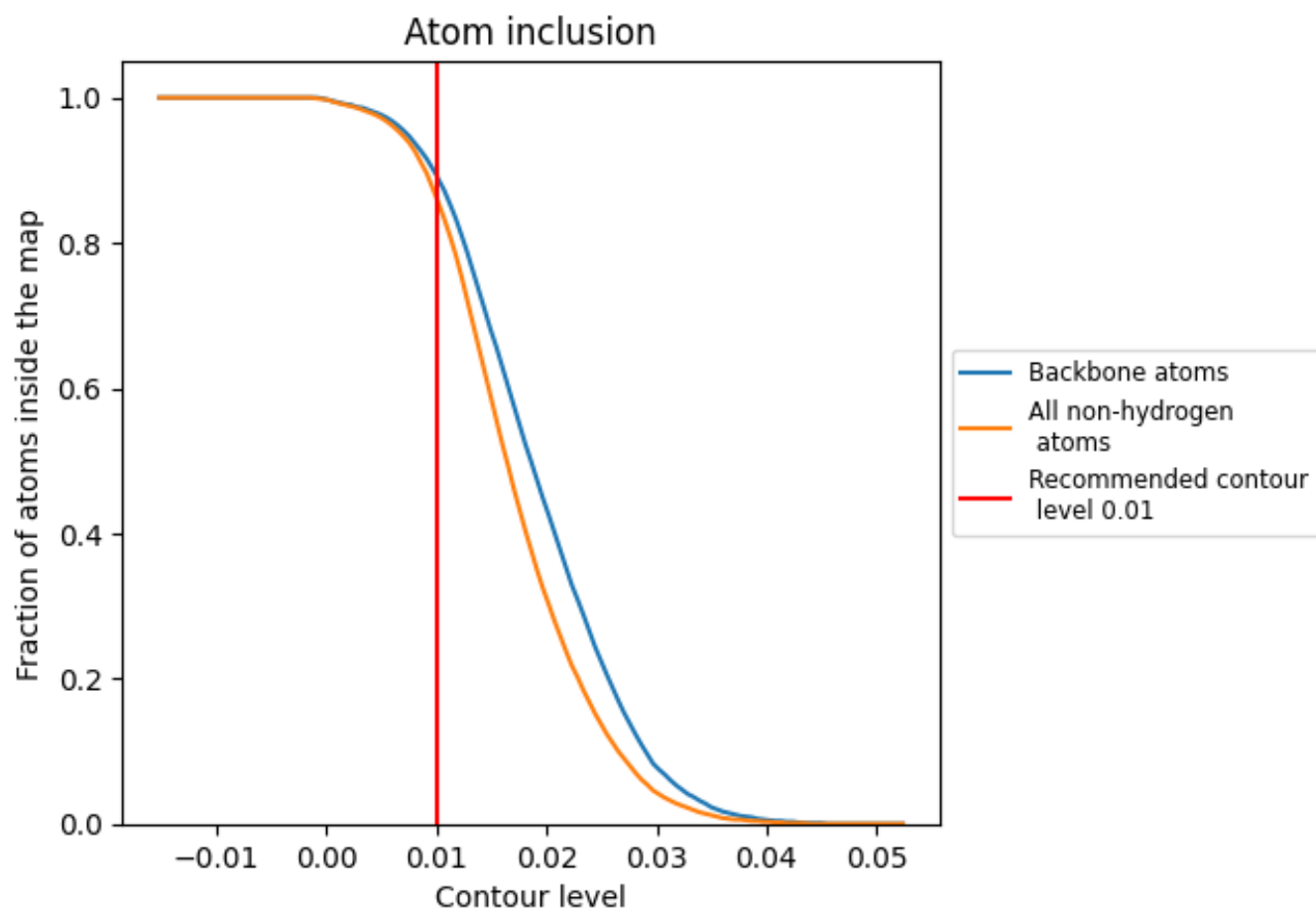
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 86% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8620	 0.1420
A	 0.8650	 0.1090
B	 0.8590	 0.1490
C	 0.8680	 0.1320
D	 0.8770	 0.1070
E	 0.8600	 0.1450
F	 0.8720	 0.1300

