



## wwPDB EM Validation Summary Report ⓘ

Nov 27, 2022 – 05:05 AM EST

PDB ID : 6DRC  
EMDB ID : EMD-7994  
Title : High IP3 Ca<sup>2+</sup> human type 3 1,4,5-inositol trisphosphate receptor  
Authors : Hite, R.K.; Paknejad, N.  
Deposited on : 2018-06-11  
Resolution : 3.92 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](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  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
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) : 2.31.2

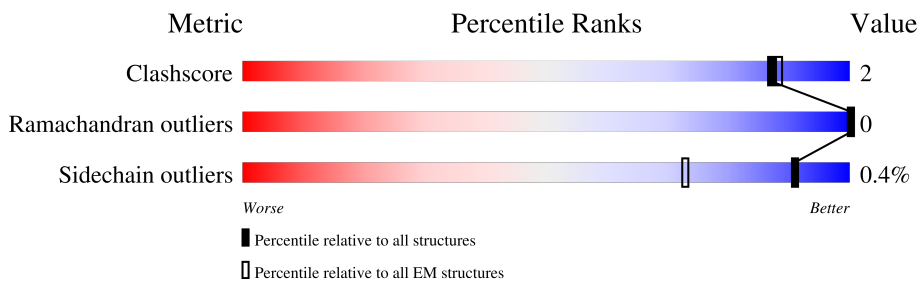
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.92 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	2671	
1	B	2671	
1	C	2671	
1	D	2671	

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 138896 atoms, of which 69420 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.

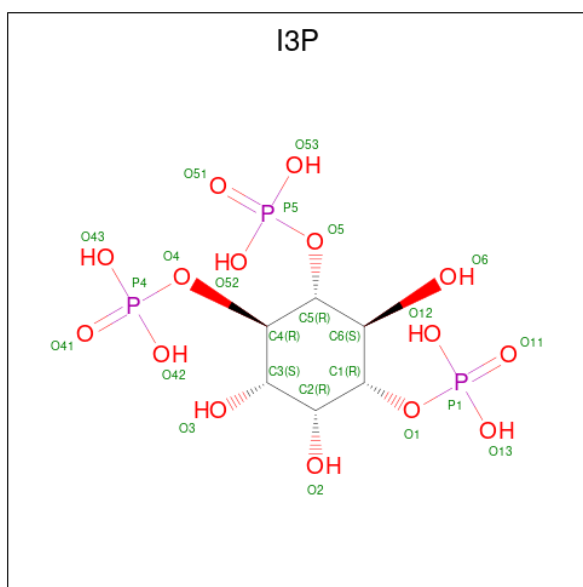
- Molecule 1 is a protein called Inositol 1,4,5-trisphosphate receptor type 3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	A	2186	34688	11057	17346	2984	3195	106	0	0
1	B	2186	34688	11057	17346	2984	3195	106	0	0
1	C	2186	34688	11057	17346	2984	3195	106	0	0
1	D	2186	34688	11057	17346	2984	3195	106	0	0

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
2	A	1	1	1	0
2	B	1	1	1	0
2	C	1	1	1	0
2	D	1	1	1	0

- Molecule 3 is D-MYO-INOSITOL-1,4,5-TRIPHOSPHATE (three-letter code: I3P) (formula:  $C_6H_{15}O_{15}P_3$ ).



Mol	Chain	Residues	Atoms				AltConf	
			Total	C	H	O		P
3	A	1	33	6	9	15	3	0
3	B	1	33	6	9	15	3	0
3	C	1	33	6	9	15	3	0
3	D	1	33	6	9	15	3	0

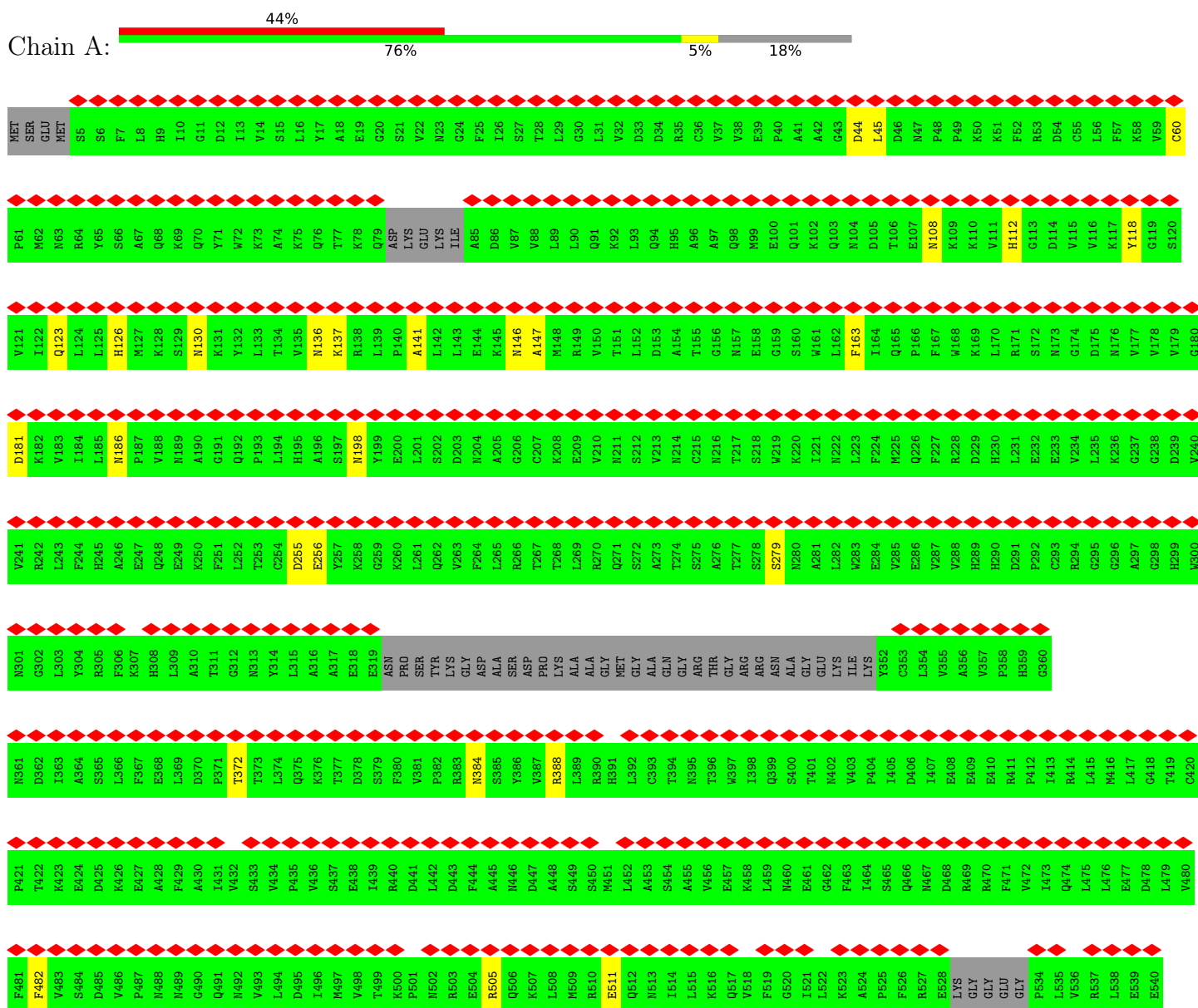
- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
			Total	Ca	
4	A	2	2	2	0
4	B	2	2	2	0
4	C	2	2	2	0
4	D	2	2	2	0

### 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: Inositol 1,4,5-trisphosphate receptor type 3

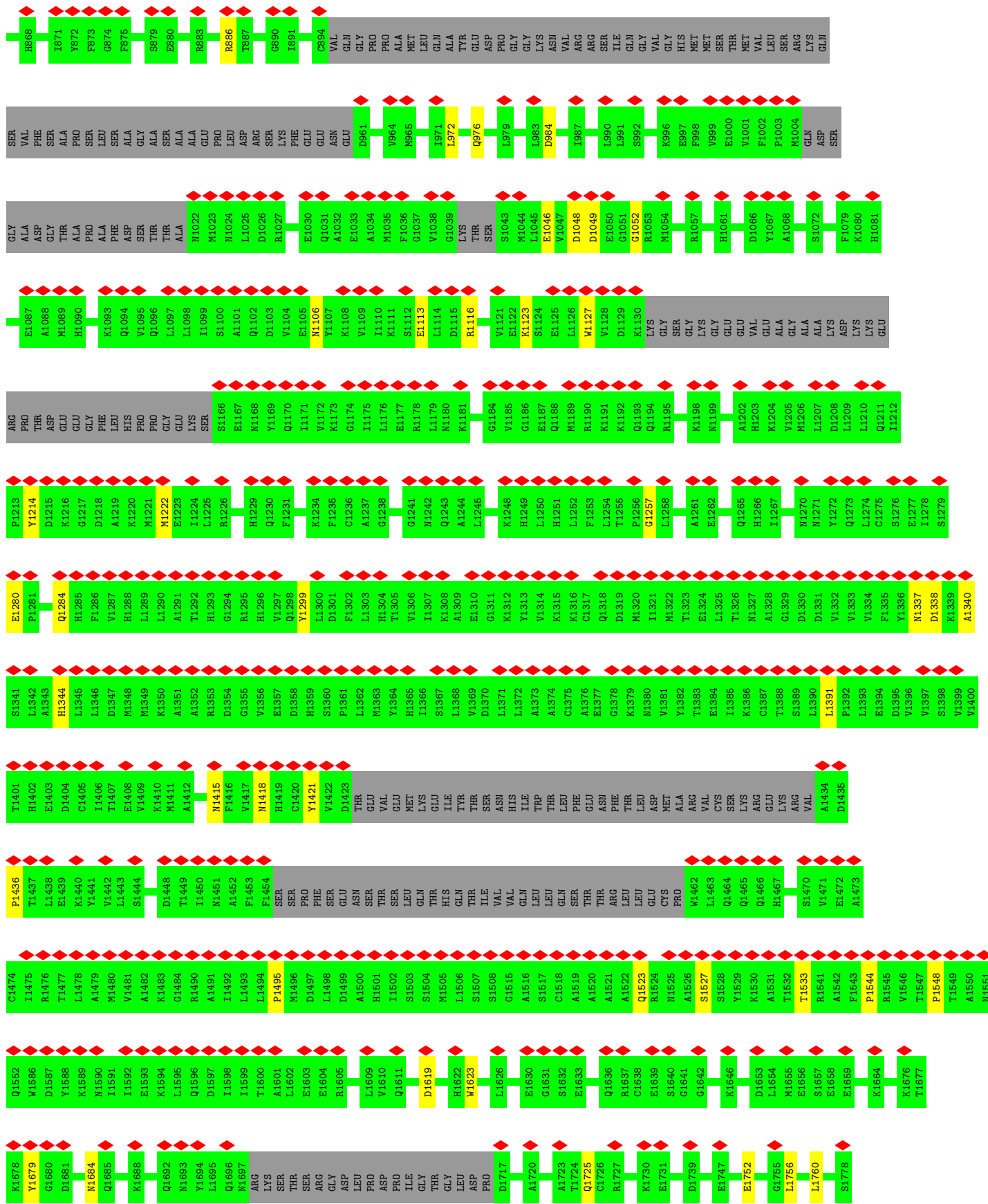


L541	S642	D543	Q644	K645	M646	A547	P548	Y549	Q650	H551	M652	F553	R554	L555	C556	Y557	R558	V559	L560	R561	H562	S563	Q564	E565	D566	Y567	R568	K569	N570	Q571	E572	H573	L574	A575	K576	Q577	F578	G579	M580	M581	S582	S583	Q584	I585	G586	Y587	D588	I589	L590	A591	E592	D593	T594	I595	T596	A597	L598	L599	H600
M601	M602	R603	L606	E607	K608	H609	I610	T611	K612	T613	E614	V615	R616	T617	F618	V619	S620	L621	V622	R623	K624	N625	R626	E627	P628	R629	F630	L631	D632	Y633	L634	S635	D636	L637	C638	V639	S640	N641	H642	I643	A644	E650	L651	I652	C653	K654	C655	V656	L657	D658	P659	M661	S662	D663	I664	L665			
I666	R667	T668	E669	L670	R671	P672	V673	K674	GLU	MET	ALA	GLN	SER	HIS	GLU	TVR	LEU	SER	ILE	GLU	TYR	SER	GLU	E690	E691	B692	M693	L694	T695	M696	T697	D698	K699	N700	N701	E702	H703	H704	E705	K706	S707	V708	R709	Q710	L711	A712	Q713	Q714	E715	R716	A717	C718	H719	A720	H721	E723	N724	V725	
L726	S727	Y728	Y729	R730	L733	K734	L735	F736	A737	R738	L741	D742	R743	A747	I748	D749	E750	I751	S752	Q753	Q754	L755	G756	V757	D758	K927	I760	F761	L762	C763	M764	A765	D766	E767	M768	L769	F770	F771	D772	L773	R774	S775	A776	V777	C778	H779	H783	V784	H785	V786	D787	R788	F790	Q791					
E792	K798	R801	L802	M803	T804	E805	I806	P807	T808	A809	I810	K813	D814	Y815	D816	S817	N818	L819	N820	A821	S822	R823	D824	D825	K826	N828	A831	N832	T833	M834	E835	E838	D839	N842	N843	V844	V845	S846	E847	A848	V849	P850	F851	A852	N853	E854	E855	K856	N857	T860	F861								
H668	N869	L870	I871	Y872	F873	G874	F875	S879	E880	E883	R886	T887	G890	C894	VAL	GLN	PRO	PRO	ALA	ALA	MET	LEU	LEU	ASP	ARG	SER	LYS	PHE	GLU	ASN	D961	V964	M965	L972	E973	Q976	L979	L983	D984	I987	L990	L991	S992	F994	K995	K996	E997	F998	V999	E1000	V1001	F1002	P1003	M1004	GLN				
ASP	SER	GLY	ALA	ASP	GLY	THR	ALA	PRO	PHE	ASP	THR	ALA	N1022	M1023	N1024	L1025	D1026	R1027	I1028	G1029	E1030	E1033	A1034	M1035	F1036	G1037	V1038	G1039	LYS	SER	S1043	M1044	L1045	E1046	V1047	D1048	D1049	E1050	G1051	R1052	M1054	R1057	H1061	H1064	Y1067	A1068	S1072												
F1079	R1085	M1089	H1090	K1093	Q1094	A1095	V1096	Q1096	THR	THR	ALA	I1099	S1100	A1101	Q1102	D1103	V1104	E1105	N1106	K1108	V1109	I1110	K1111	S1112	E1113	L1114	D1115	R1116	V1121	E1122	K1123	S1124	E1125	L1126	V1128	D1129	K1130	GLY	GLY	LYS	LYS	GLY	GLU	VAL	ALA	GLY	ALA	ALA	L1210										
GLU	ARG	THR	ASP	GLU	GLY	PHE	HIS	PRO	PRO	GLY	GLU	LYS	SER	S1166	E1167	M1168	Y1169	Q1170	I1171	V1172	K1173	G1174	I1175	L1176	E1177	R1178	L1179	M1180	K1181	M1182	C1183	G1184	V1185	G1186	E1187	Q1188	M1189	R1190	K1191	Q1192	Q1193	Q1194	R1195	K1198	N1199	A1202	H1203	K1204	V1205	M1206	L1207	D1208	L1209	L1210					
Q1211	Y1214	D1215	K1216	G1217	D1218	A1219	K1220	M1221	M1222	L1225	R1226	Y1227	T1228	H1229	Q1230	F1231	K1234	F1235	C1236	A1237	G1238	G1241	N1242	Q1243	A1244	L1245	K1248	H1249	L1250	H1251	L1252	F1253	T1255	P1256	G1257	L1258	A1261	E1262	Q1265	H1266	I1267	N1270	M1271	Y1272	Q1273	L1274	C1275	S1276	E1277	I1278									
S1279	E1280	F1281	Q1284	H1285	F1286	D1287	H1288	L1289	L1290	A1291	T1292	H1293	G1294	R1295	H1296	V1297	Q1298	Y1299	L1300	D1301	L1302	L1303	H1304	T1305	V1306	I1307	K1308	A1309	E1310	G1311	K1312	L1313	V1314	K1315	K1316	C1317	Q1318	D1319	M1320	I1321	M1322	T1323	E1324	L1325	T1326	M1327	A1328	G1329	D1330	D1331	V1332	V1333	V1334	F1335	Y1336	M1337	D1338	K1339	
A1340	S1341	L1342	A1343	H1344	L1345	L1346	D1347	A1348	M1349	K1350	A1351	A1352	R1353	D1354	G1355	V1356	E1357	D1358	H1359	S1360	F1361	L1362	M1363	Y1364	H1365	I1366	S1367	L1368	V1369	L1370	L1371	L1372	A1373	A1374	K1375	A1376	E1377	G1378	K1379	N1380	V1381	Y1382	T1383	E1384	I1385	K1386	C1387	T1388	S1389	D1390	L1391	P1392	L1393	E1394	D1395	V1396	V1397	S1398	V1399





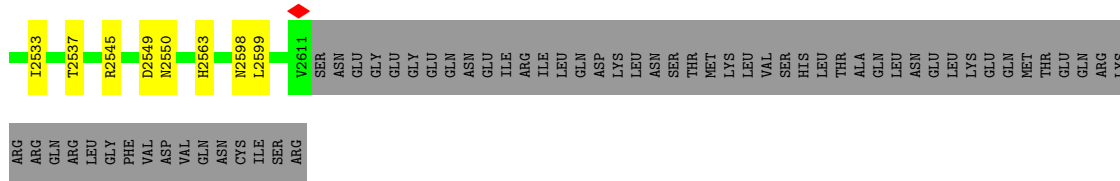




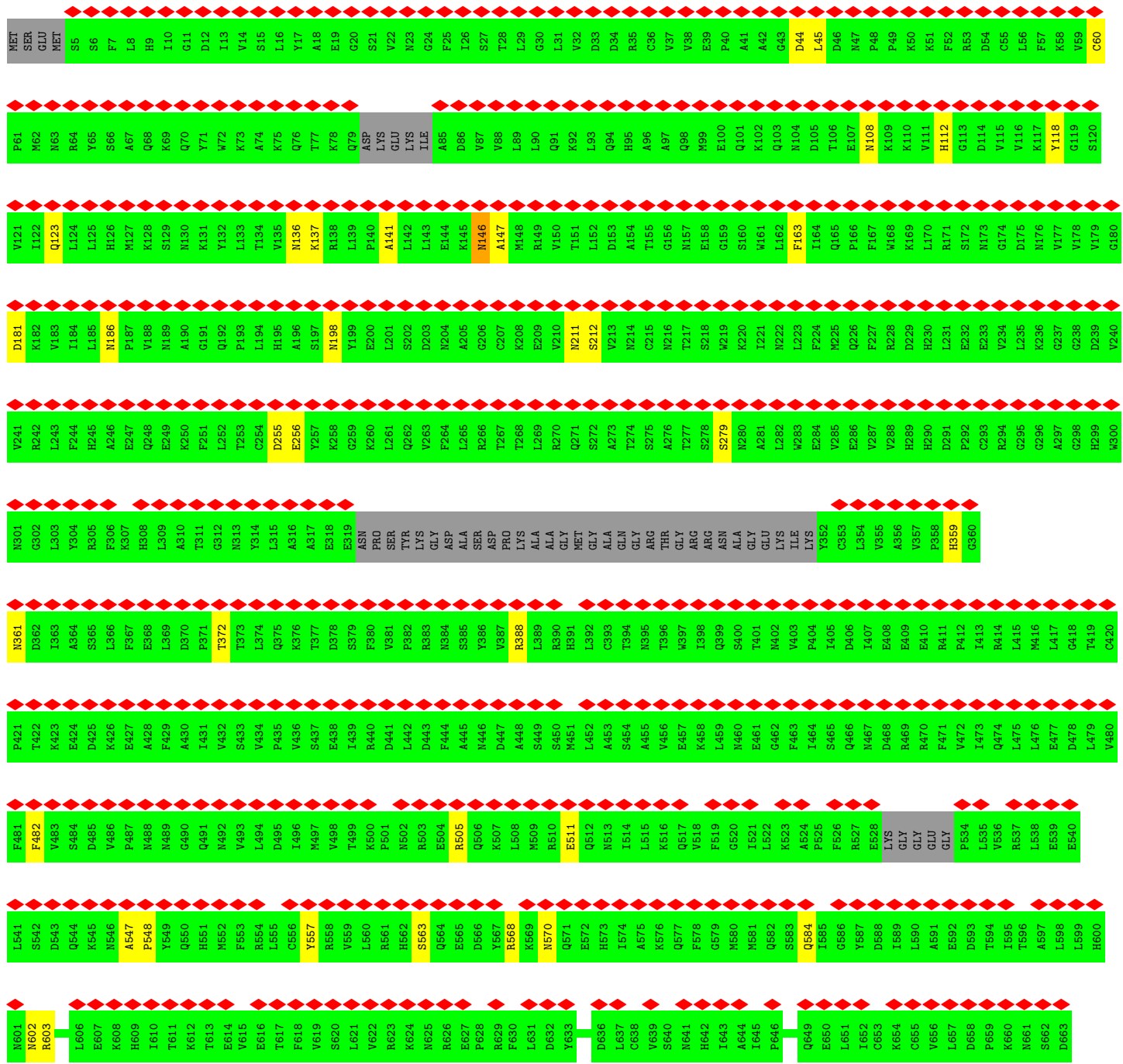
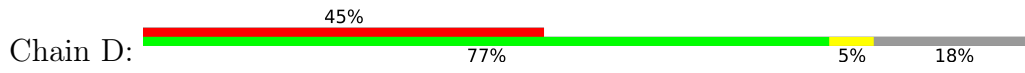


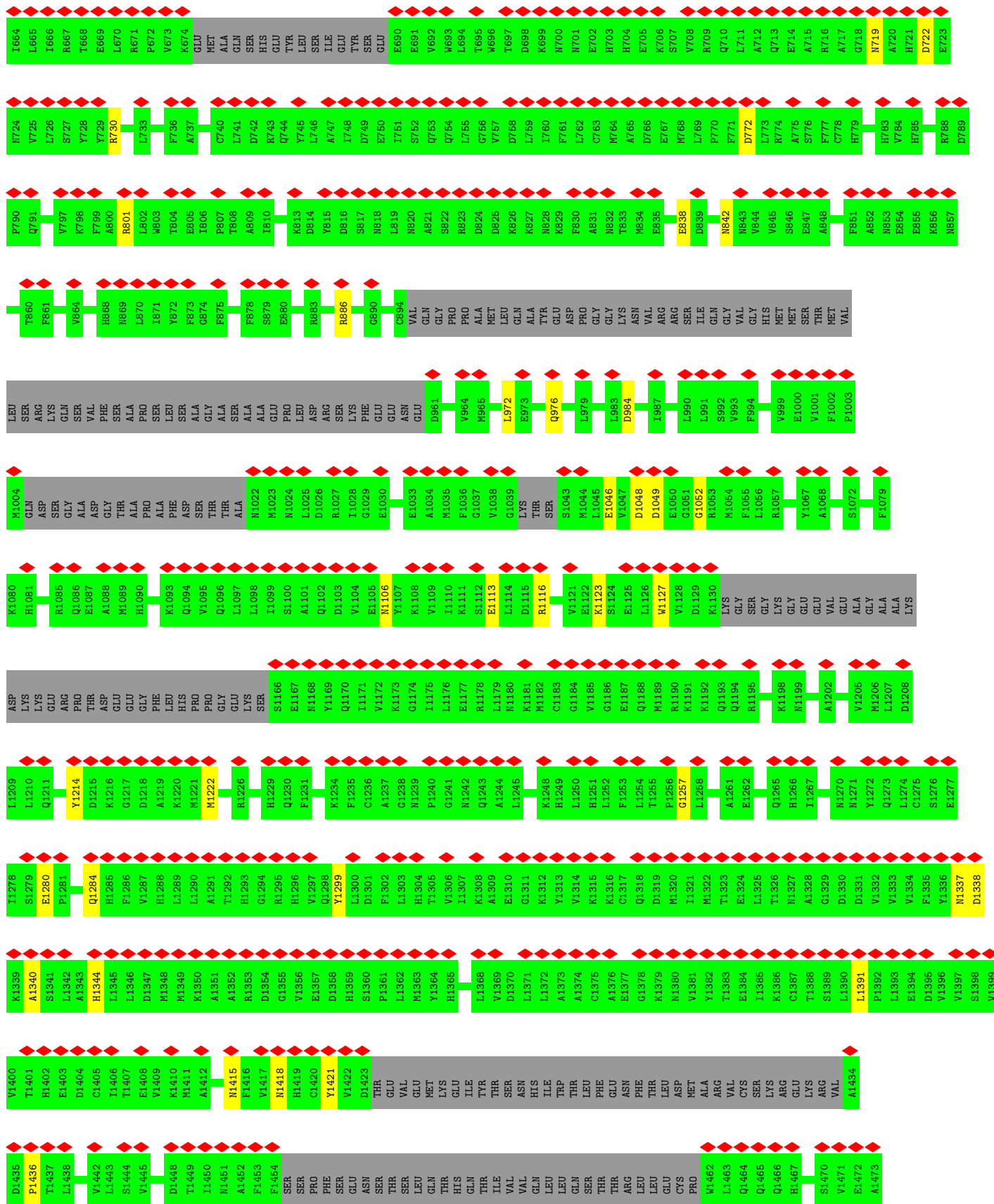
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I363	K423	V483	D543	R603	R667	S727	E792	H866	G1N	F1079	ASP
A364	E424	S484	Q544	K604	T668	Y728	K798	L870	VAL	K1080	GLY
S365	D425	S485	K545	L606	E669	Y729	R801	R870	SER	H1081	SER
L366	K426	D486	N546	E607	L670	R730	L802	Y872	ALA	A1087	ALA
F367	E427	P487	A547	K608	R671	L733	H803	F873	LEU	A1088	THR
E368	A428	N488	P548	H609	P672	K734	T804	G874	VAL	H1089	THR
L369	F429	N489	Y549	I610	V673	L735	T805	F875	ALA	H1090	ALA
D370	A430	G490	Q550	T611	F736	F736	L806	R876	ALA	K1093	ALA
P371	I431	Q491	H551	K612	K674	A737	P807	S879	ASP	Q1094	ASP
T372	V432	N492	M552	T613	GLU	R738	T808	E880	SER	Q1095	SER
L374	S433	V493	F553	T613	ALA	L741	R813	R886	ALA	L1096	ALA
L374	V434	V494	R554	E614	GLN	L746	D814	T887	ARG	L1098	ARG
Q375	P435	L494	R554	V615	SER	A747	Y815	G890	SER	L1099	SER
K376	V436	D495	L555	V615	HIS	I748	D816	G890	LYS	M1024	LYS
T377	S437	I496	C556	T617	GLU	D742	S817	G894	PHE	L1025	PHE
D378	E438	M497	Y557	T618	TYR	R743	N818	G894	GLU	D1026	GLU
S379	E439	T499	V559	S620	LEU	L746	L819	G894	ASN	R1027	ASN
F380	I439	T499	V559	S620	SER	A747	L820	G894	GLU	E1030	GLU
V381	R440	K500	L560	L621	ILE	I748	N820	G894	GLY	Q1031	GLY
P382	D441	P501	R561	V622	GLU	D749	A821	G894	PRO	A1032	PRO
R383	L442	N502	H562	R623	SER	E750	L818	G894	ALA	E1033	ALA
N384	D443	R503	S563	K624	GLU	I751	L819	G894	LEU	M1035	LEU
S385	F444	E504	Q564	N625	GLY	S752	N820	G894	VAL	F1036	VAL
Y386	A445	R505	E565	R626	PRO	Q753	A821	G894	PRO	G1037	PRO
V387	N446	Q506	D566	R626	MET	Q754	R823	G894	MET	M1037	MET
R388	D447	K507	Y567	P628	LEU	L755	D824	G894	GLN	V1038	LEU
L389	A448	L508	R568	R629	ALA	V756	D825	G894	ALA	G1039	ALA
R390	S449	M509	K569	F630	TYR	I757	K826	G894	VAL	L1043	TYR
H391	S450	R510	N570	L631	ASP	D758	A827	G894	ARG	L1044	ASP
L392	M451	E511	Q571	D632	PRO	L759	N828	G894	ILE	V1047	PRO
C393	L452	Q512	E572	Y633	LYS	I760	K829	G894	GLN	D1048	LYS
T394	A453	N513	H573	L634	GLY	F761	F830	G894	GLY	D1049	GLY
N395	S454	I514	I574	S635	ASN	L762	L831	G894	LYS	E1050	ASN
T396	A455	L515	A575	D636	VAL	C763	A831	G894	VAL	G1051	VAL
V397	V456	L516	K576	L637	ARG	M764	M832	G894	ARG	R1052	ARG
I398	E457	Q517	Q577	C638	SER	A765	E83E	G894	SER	E1054	SER
I399	K458	V518	F578	V639	ILE	D766	E83F	G894	ILE	M1055	ILE
Q399	L459	F519	G579	S640	GLY	E767	E83G	G894	GLY	K995	GLY
S400	M460	G520	M580	N641	V708	M768	D839	G894	GLY	K996	V708
V403	E461	I521	M581	H642	V709	L769	R842	G894	VAL	F997	VAL
P404	G462	L522	Q582	I643	R709	P770	M843	G894	HIS	F998	HIS
I405	F463	K523	S583	A644	L711	F771	M843	G894	MET	K999	MET
D406	I464	A524	Q584	E650	A712	D772	S846	G894	MET	K996	MET
I407	S465	P525	I585	L651	Q713	L773	E847	G894	THR	E997	THR
E408	S466	F526	Y587	C653	E714	R774	A846	G894	THR	F998	THR
E409	M467	R527	D588	K654	A715	S776	F851	G894	VAL	M1057	VAL
E409	D468	E528	I589	C655	R716	C778	R853	G894	VAL	H1061	VAL
E410	R469	LYS	L590	G556	A717	H779	M853	G894	SER	M1064	SER
R411	R470	GLY	L590	L657	N719	H783	E854	G894	THR	D1066	THR
P412	F471	GLY	A591	D557	A720	V784	R855	G894	SER	D1066	SER
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L416	L475	L535	T596	K660	D722	H786	M857	G894	VAL		ALA
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L417	L476	R537	A597	D663	E724	D788	F861	G894	VAL		ALA
G418	E477	L538	L598	D663	E724	D788	F861	G894	VAL		ALA
T419	D478	L538	L599	D663	E724	D788	F861	G894	VAL		ALA
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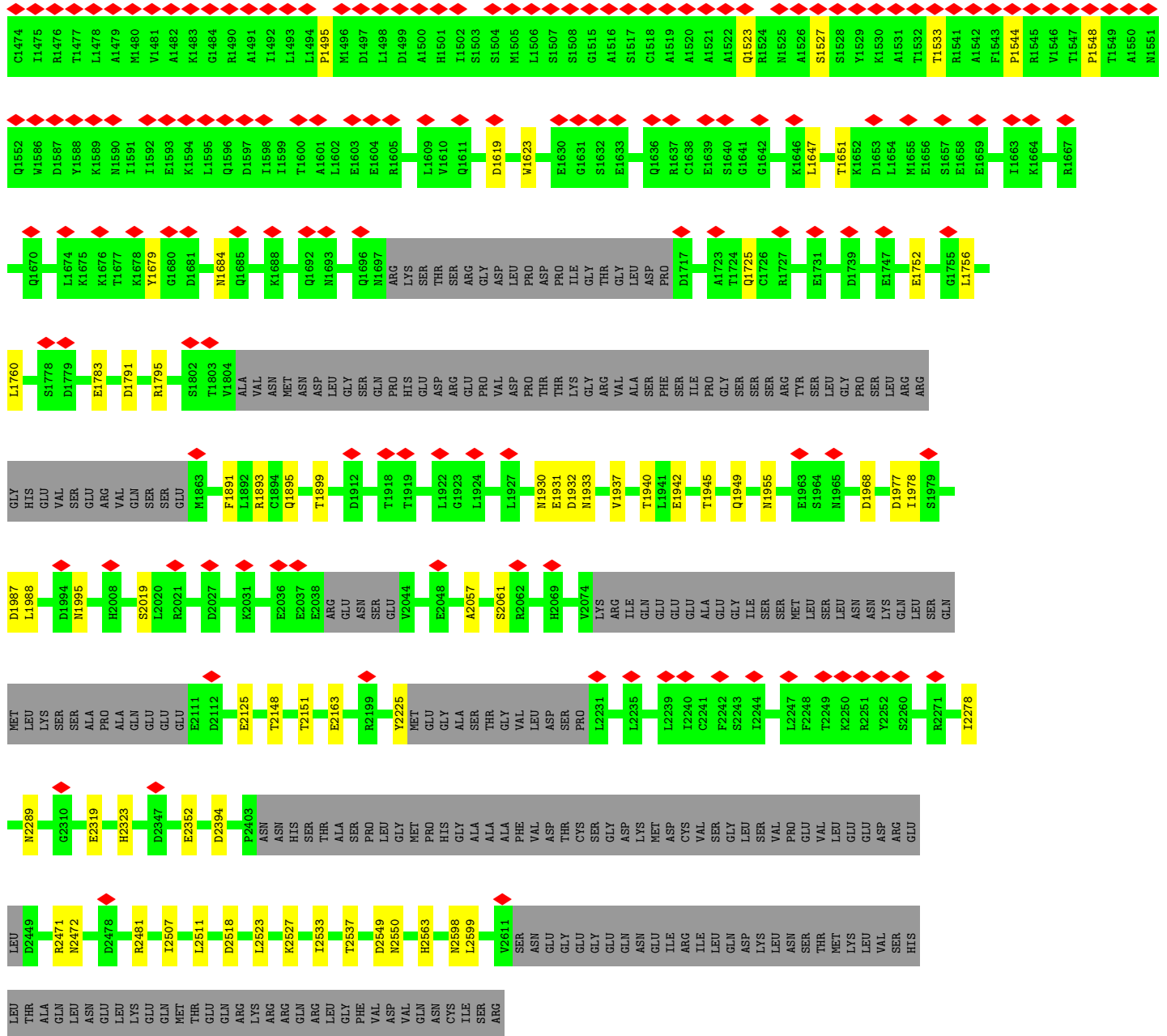
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D1338	K1339	A1340	S1341	L1342	A1343	H1344	L1345	L1346	L1347	M1348	M1349	K1350	A1351	A1352	R1353	D1354	G1355	V1356	E1357	D1358	H1359	S1360	L1361	L1362	M1363	Y1364	H1365	L1366	S1367	L1368	V1369	D1370	L1371	L1372	A1373	A1374	C1375	A1376	E1377	K1378	G1379	M1380	V1381	Y1382	T1383	E1384	I1385	K1386	C1387	T1388	S1389	L1390	L1391	P1392	L1393	E1394	E1395	V1396	V1397																																												
S1398	V1399	V1400	T1401	H1402	E1403	D1404	C1405	I1406	E1408	V1409	K1410	M1411	A1412	M1415	F1416	V1417	M1418	H1419	C1420	Y1421	V1422	D1423	THR	GLU	VAL	GLU	THR	MET	LYS	GLU	ILE	TYR	SER	ASN	GLN	HIS	ILE	TRP	THR	LEU	PHE	GLU	ASN	PHE	THR	GLY	GLU	LEU	THR	GLY	ASP	PRO	ASP	ALA	ARG	VAL	ALA	ARG	VAL	ARG	LEU	GLY	ASP	PRO	THR	THR	LYS	GLY	GLY	ARG	VAL	ALA	SER	PHE	SER	ILE	GLY	THR	THR	GLY	ASP	LEU	LEU	ASP	PRO	D1717	A1723	T1724	Q1725	C1726	R1727	K1730	E1731	E1739	E1747	E1752	G1755	L1756	L1760	S1778	E1783	D1791	R1795
VAL	A1434	D1435	P1436	L1437	L1438	V1442	L1443	S1444	D1448	T1449	I1450	M1451	A1452	F1453	F1454	SER	SER	PRO	PHE	SER	GLU	ASN	SER	THR	LEU	GLN	THR	HIS	GLN	THR	THR	THR	THR	THR	ARG	ARG	LEU	GLU	GLU	GLU	PRO	M1462	L1463	Q1464	Q1465	Q1466	H1467	S1470	V1471	E1472																																																					
A1473	C1474	I1475	R1476	T1477	L1478	A1479	M1480	V1481	A1483	G1484	R1490	A1491	I1492	L1493	L1494	P1495	H1496	D1497	L1498	D1499	A1500	H1501	I1502	S1503	S1504	M1505	L1506	S1507	S1508	G1515	A1516	S1517	C1518	A1519	A1520	A1521	A1522	Q1523	R1524	N1525	A1526	S1527	S1528	Y1529	E1530	A1531	T1532	T1533	R1541	E1542	F1543	P1544	R1545	V1546	T1547	P1548	T1549	A1550																																													
M1551	Q1552	W1586	D1587	Y1588	K1589	M1590	I1591	I1592	E1593	K1594	L1595	Q1596	D1597	I1598	I1599	L1600	A1601	L1602	E1603	E1604	L1605	Q1611	D1619	E1630	G1631	S1632	E1633	Q1636	R1637	C1638	E1639	S1640	G1641	G1642	K1646	D1653	L1654	M1655	E1656	S1657	E1658	E1659	K1664	Q1670	K1676	T1677	Y1678	G1680	D1681																																																						
M1684	Q1685	K1688	Q1692	M1693	Q1696	M1697	ARG	LYS	GLN	PRO	HIS	GLU	ASP	ARG	GLY	ASP	PRO	ASP	THR	ILE	GLY	THR	GLY	LEU	ASP	D1717	A1723	T1724	Q1725	C1726	R1727	K1730	E1731	D1739	E1747	E1752	G1755	L1756	L1760	S1778	E1783	D1791	R1795																																																												
S1802	T1803	V1804	ALA	VAL	ASN	ASN	ASN	ASP	LEU	GLY	SER	GLN	PRO	HIS	GLU	ASP	ARG	GLY	GLU	PRO	VAL	ASP	THR	THR	SER	PHE	SER	ILE	PRO	GLY	SER	SER	SER	ARG	TYR	LEU	GLY	GLY	HIS	VAL	SER	GLU	VAL	ARG	VAL	SER	SER	THR	GLU	ASP	ASN	ALA	PHO	ALA	GLN	SER	SER																																														
GLU	M1863	F1891	L1892	R1893	C1894	Q1895	K1898	T1899	D1912	T1919	L1922	G1923	L1924	L1927	M1930	E1931	D1932	M1933	V1937	T1940	L1941	E1942	T1945	Q1949	M1955	E1963	S1964	M1965	D1968	D1977	I1978	S1979	Y1984	D1987	L1988	D1994	M1995	H2008	S2019																																																																
L2020	R2021	D2027	K2031	E2036	E2037	E2038	ARG	GLU	ASN	VAL	GLU	V2044	E2048	A2057	S2061	R2062	V2074	LYS	ARG	ILE	GLN	GLU	GLU	GLU	ALA	GLY	ILE	SER	SER	MET	LEU	SER	LEU	LEU	ASN	GLN	LEU	SER	GLN	LEU	LYS	SER	SER	ALA	PHO	ALA	GLN	GLU	GLU	ASN	ASN																																																				
GLU	E2111	D2112	E2125	Y2225	MET	GLU	GLY	ALA	SER	THR	GLY	VAL	VAL	LEU	ASP	SER	PRO	L2231	L2236	L2239	I2240	C2241	F2242	T2249	K2250	R2251	Y2252	S2260	R2271	G2277	I2278	N2289	G2310	E2319	H2323	D2347	K2360	R2364	R2367	D2394	P2403	ASN	ASN																																																												
HIS	SER	THR	ALA	PRO	LEU	GLY	MET	PRO	HIS	ALA	ALA	PHE	VAL	ASP	THR	CYS	SER	GLY	ASP	LYS	MET	ASP	CYS	VAL	SER	GLY	LEU	GLU	GLU	ASP	ARG	ARG	GLU	LEU	R2449	R2471	N2472	D2476	R2481	I2507	L2511	L2523	R2524	K2527																																																											



● Molecule 1: Inositol 1,4,5-trisphosphate receptor type 3







## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	131437	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 ( $e^-/\text{\AA}^2$ )	61	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	Not provided	
Magnification	22500	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	30.948	Depositor
Minimum map value	-23.778	Depositor
Average map value	-0.007	Depositor
Map value standard deviation	0.817	Depositor
Recommended contour level	3.0	Depositor
Map size (Å)	417.79202, 417.79202, 417.79202	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.088, 1.088, 1.088	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, CA, I3P

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	0.27	0/17647	0.50	4/23845 (0.0%)
1	B	0.27	0/17647	0.50	4/23845 (0.0%)
1	C	0.27	0/17647	0.50	4/23845 (0.0%)
1	D	0.27	0/17647	0.50	4/23845 (0.0%)
All	All	0.27	0/70588	0.50	16/95380 (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	B	0	1
1	C	0	1
1	D	0	1
All	All	0	4

There are no bond length outliers.

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1548	PRO	N-CA-CB	5.73	110.17	103.30
1	D	1548	PRO	N-CA-CB	5.67	110.10	103.30
1	C	1548	PRO	N-CA-CB	5.67	110.10	103.30
1	D	1495	PRO	N-CA-CB	5.67	110.10	103.30
1	B	1548	PRO	N-CA-CB	5.65	110.08	103.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	146	ASN	Peptide
1	B	146	ASN	Peptide
1	C	146	ASN	Peptide
1	D	146	ASN	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	17342	17346	17176	75	0
1	B	17342	17346	17176	72	0
1	C	17342	17346	17176	71	0
1	D	17342	17346	17176	73	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	24	9	9	1	0
3	B	24	9	9	1	0
3	C	24	9	9	1	0
3	D	24	9	9	1	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
All	All	69476	69420	68740	278	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 2.

The worst 5 of 278 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:147:ALA:HB1	1:B:1533:THR:CB	2.13	0.78
1:A:1725:GLN:NE2	1:A:1760:LEU:O	2.18	0.76
1:D:1725:GLN:NE2	1:D:1760:LEU:O	2.18	0.76
1:C:1725:GLN:NE2	1:C:1760:LEU:O	2.18	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1725:GLN:NE2	1:B:1760:LEU:O	2.18	0.75

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	2142/2671 (80%)	2036 (95%)	106 (5%)	0	100	100
1	B	2142/2671 (80%)	2036 (95%)	106 (5%)	0	100	100
1	C	2142/2671 (80%)	2036 (95%)	106 (5%)	0	100	100
1	D	2142/2671 (80%)	2036 (95%)	106 (5%)	0	100	100
All	All	8568/10684 (80%)	8144 (95%)	424 (5%)	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	1878/2385 (79%)	1871 (100%)	7 (0%)	91	94
1	B	1878/2385 (79%)	1871 (100%)	7 (0%)	91	94
1	C	1878/2385 (79%)	1871 (100%)	7 (0%)	91	94
1	D	1878/2385 (79%)	1871 (100%)	7 (0%)	91	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	7512/9540 (79%)	7484 (100%)	28 (0%)	91 94

5 of 28 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	198	ASN
1	D	2472	ASN
1	C	1418	ASN
1	D	1418	ASN
1	C	1415	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	1725	GLN
1	C	1897	ASN
1	D	1725	GLN
1	D	146	ASN
1	B	1725	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](#)

Of 16 ligands modelled in this entry, 12 are monoatomic - leaving 4 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	I3P	A	3002	-	24,24,24	1.31	3 (12%)	36,39,39	0.65	0
3	I3P	B	3002	-	24,24,24	1.30	3 (12%)	36,39,39	0.65	0
3	I3P	C	3002	-	24,24,24	1.30	3 (12%)	36,39,39	0.65	0
3	I3P	D	3002	-	24,24,24	1.30	3 (12%)	36,39,39	0.65	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	I3P	A	3002	-	-	2/15/39/39	0/1/1/1
3	I3P	B	3002	-	-	2/15/39/39	0/1/1/1
3	I3P	C	3002	-	-	2/15/39/39	0/1/1/1
3	I3P	D	3002	-	-	2/15/39/39	0/1/1/1

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	3002	I3P	P1-O1	3.19	1.65	1.59
3	A	3002	I3P	P1-O1	3.17	1.65	1.59
3	A	3002	I3P	P4-O4	3.17	1.65	1.59
3	C	3002	I3P	P4-O4	3.15	1.65	1.59
3	B	3002	I3P	P5-O5	3.14	1.65	1.59

There are no bond angle outliers.

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

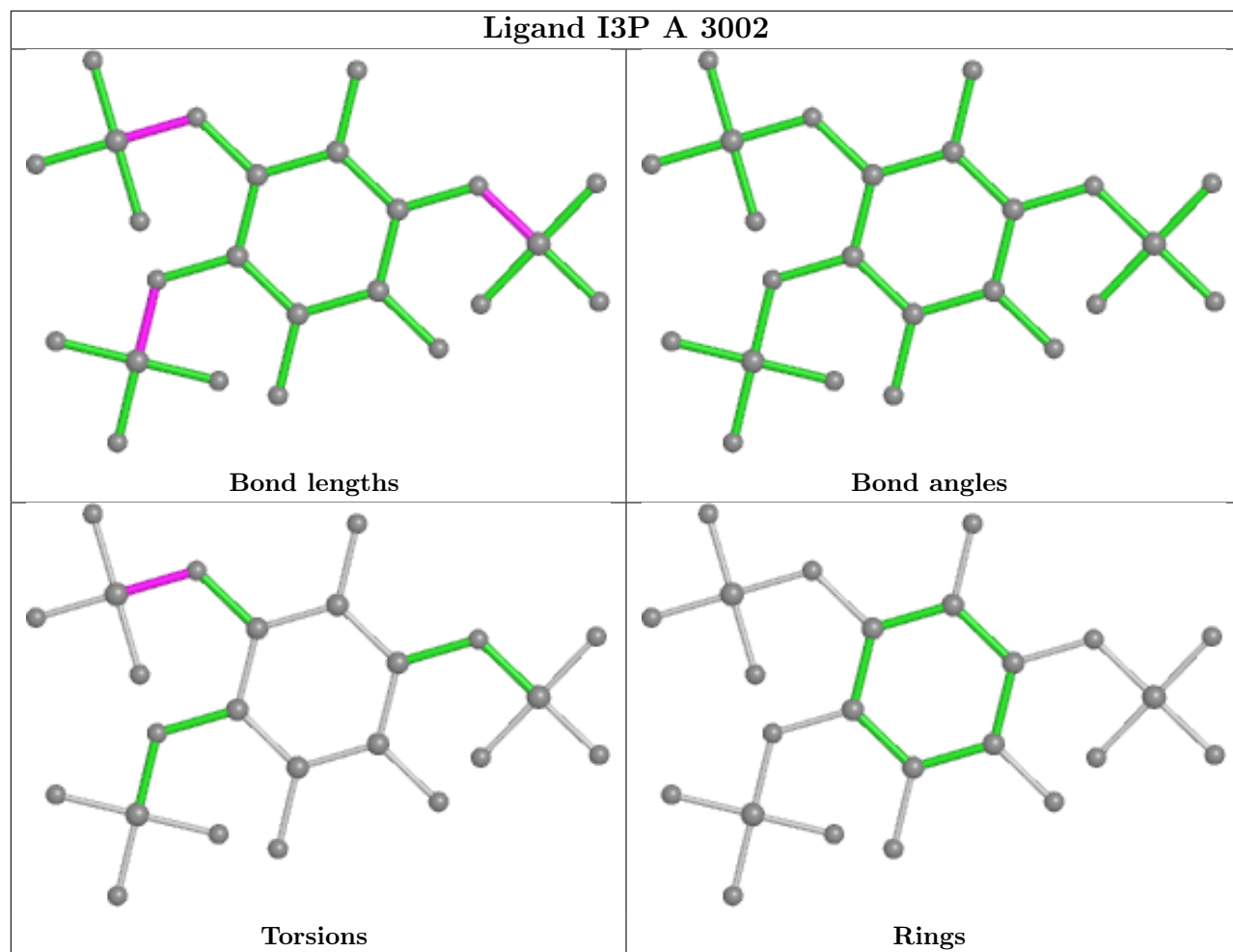
Mol	Chain	Res	Type	Atoms
3	A	3002	I3P	C5-O5-P5-O51
3	B	3002	I3P	C5-O5-P5-O51
3	C	3002	I3P	C5-O5-P5-O51
3	D	3002	I3P	C5-O5-P5-O51
3	A	3002	I3P	C5-O5-P5-O53

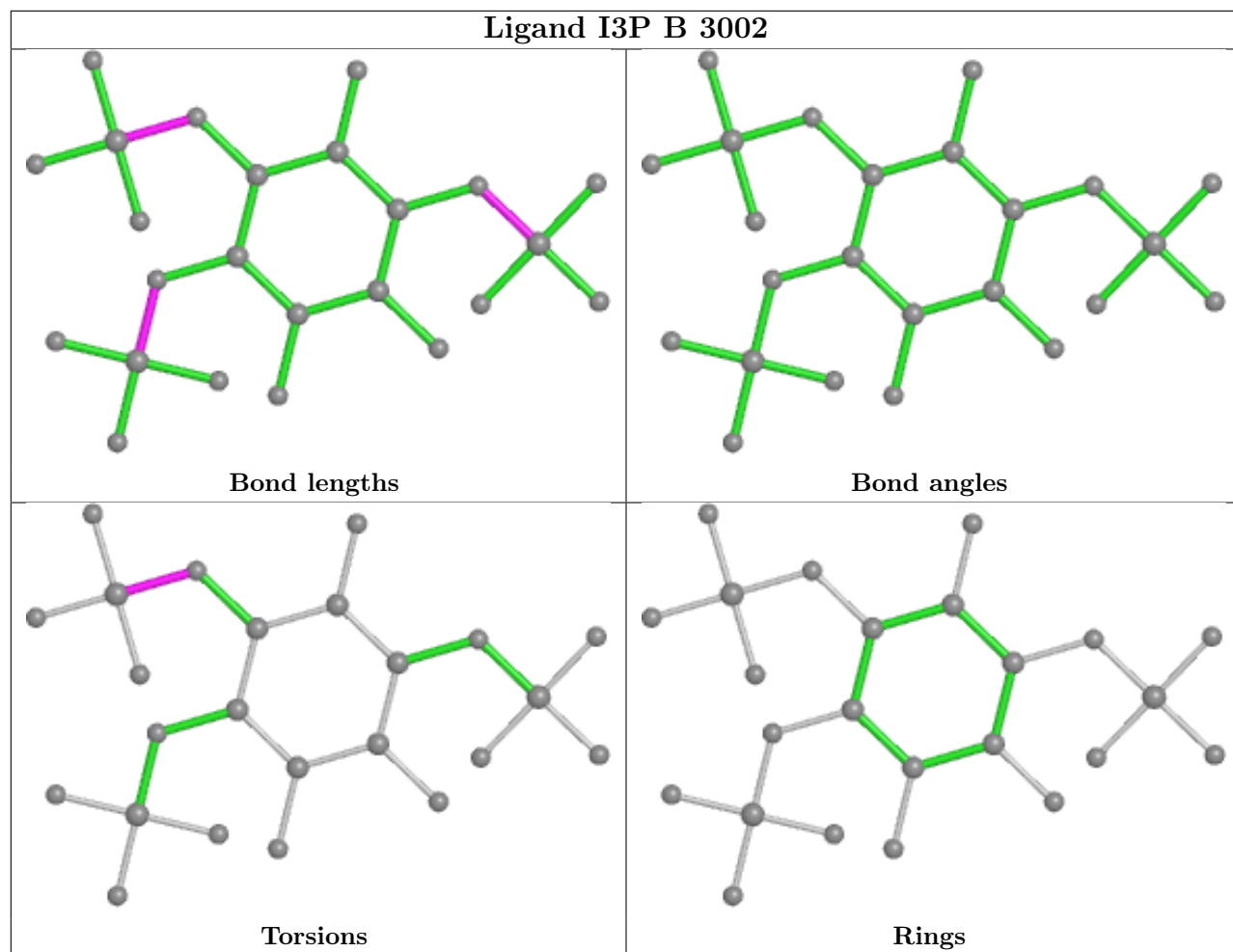
There are no ring outliers.

4 monomers are involved in 4 short contacts:

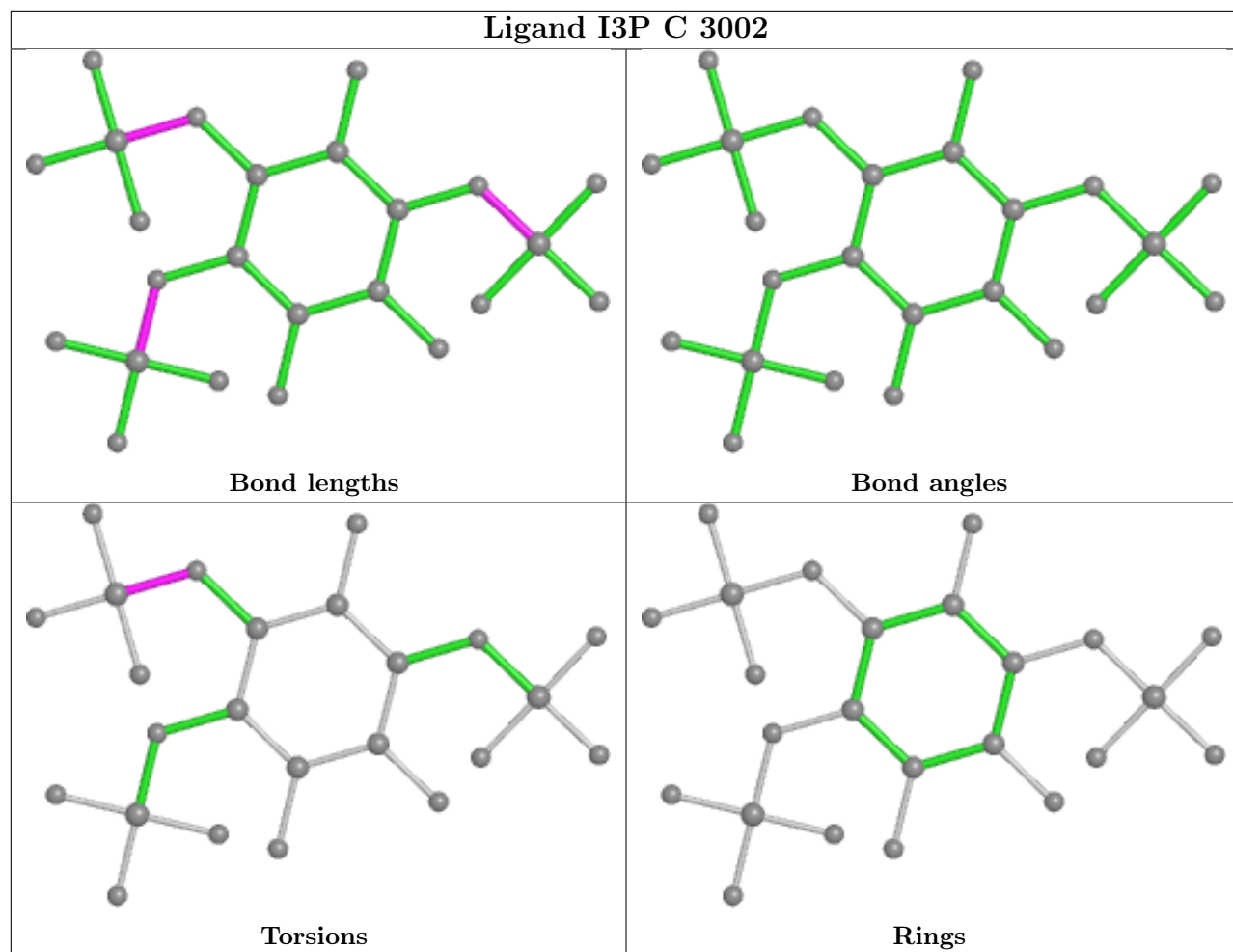
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	3002	I3P	1	0
3	B	3002	I3P	1	0
3	C	3002	I3P	1	0
3	D	3002	I3P	1	0

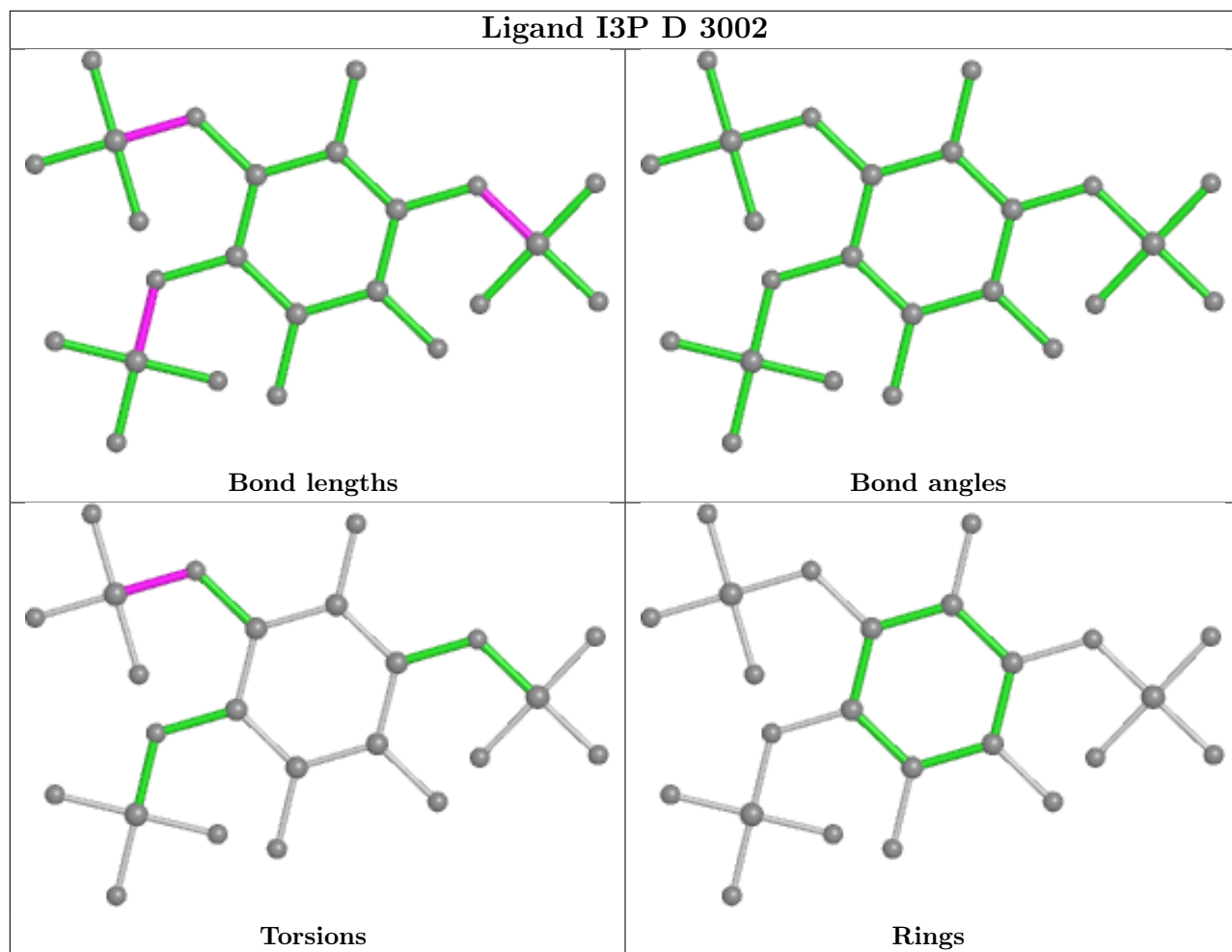
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	5
1	B	5
1	C	5
1	D	5

The worst 5 of 20 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	1552:GLN	C	1586:TRP	N	56.29

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	B	1552:GLN	C	1586:TRP	N	56.29
1	C	1552:GLN	C	1586:TRP	N	56.29
1	D	1552:GLN	C	1586:TRP	N	56.29
1	A	1533:THR	C	1541:ARG	N	17.36

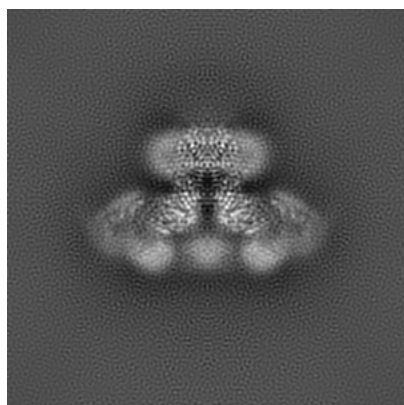
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-7994. These allow visual inspection of the internal detail of the map and identification of artifacts.

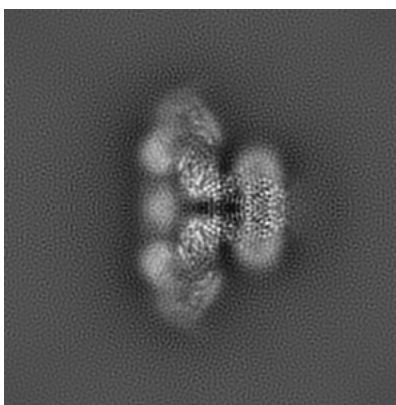
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

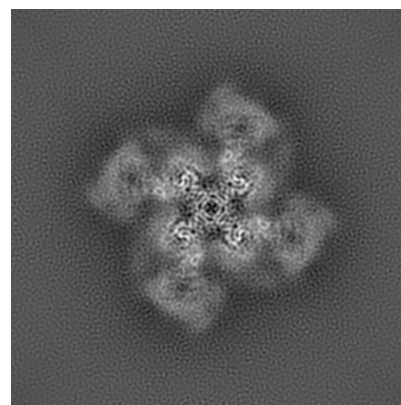
#### 6.1.1 Primary map



X



Y

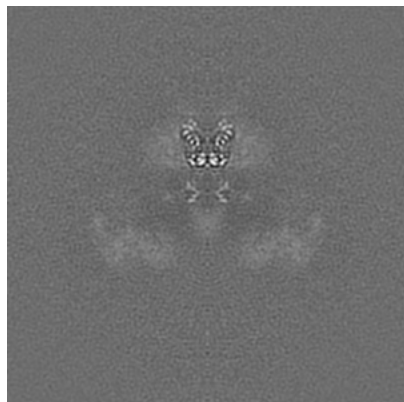


Z

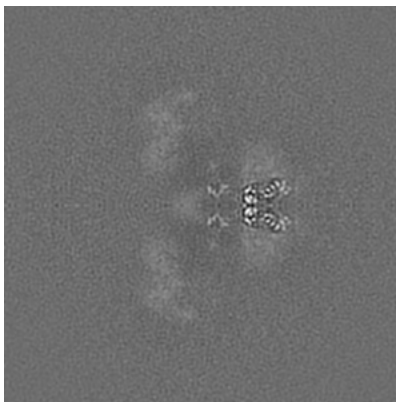
The images above show the map projected in three orthogonal directions.

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

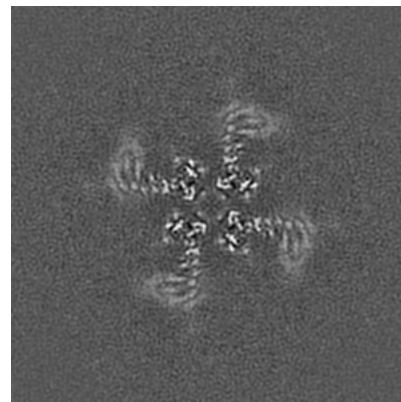
#### 6.2.1 Primary map



X Index: 192



Y Index: 192

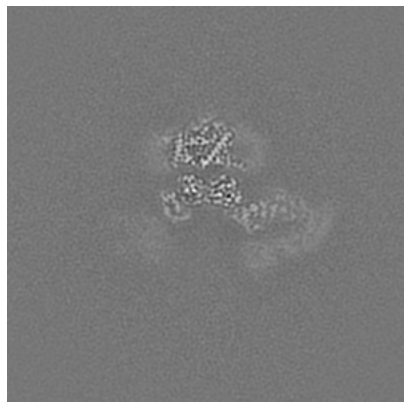


Z Index: 192

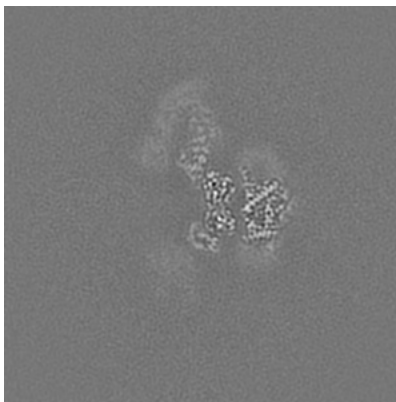
The images above show central slices of the map in three orthogonal directions.

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

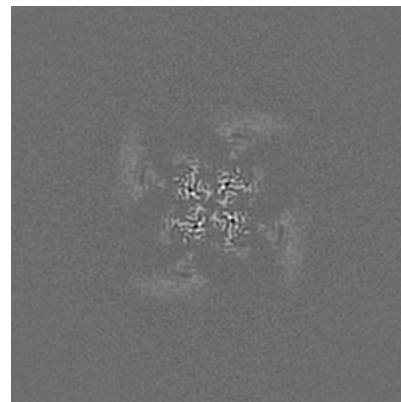
### 6.3.1 Primary map



X Index: 207



Y Index: 177

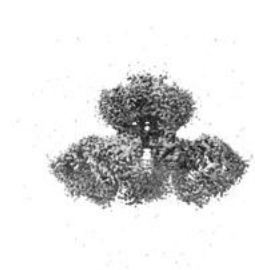


Z Index: 201

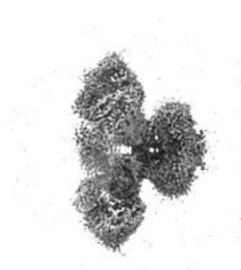
The images above show the largest variance slices of the map in three orthogonal directions.

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

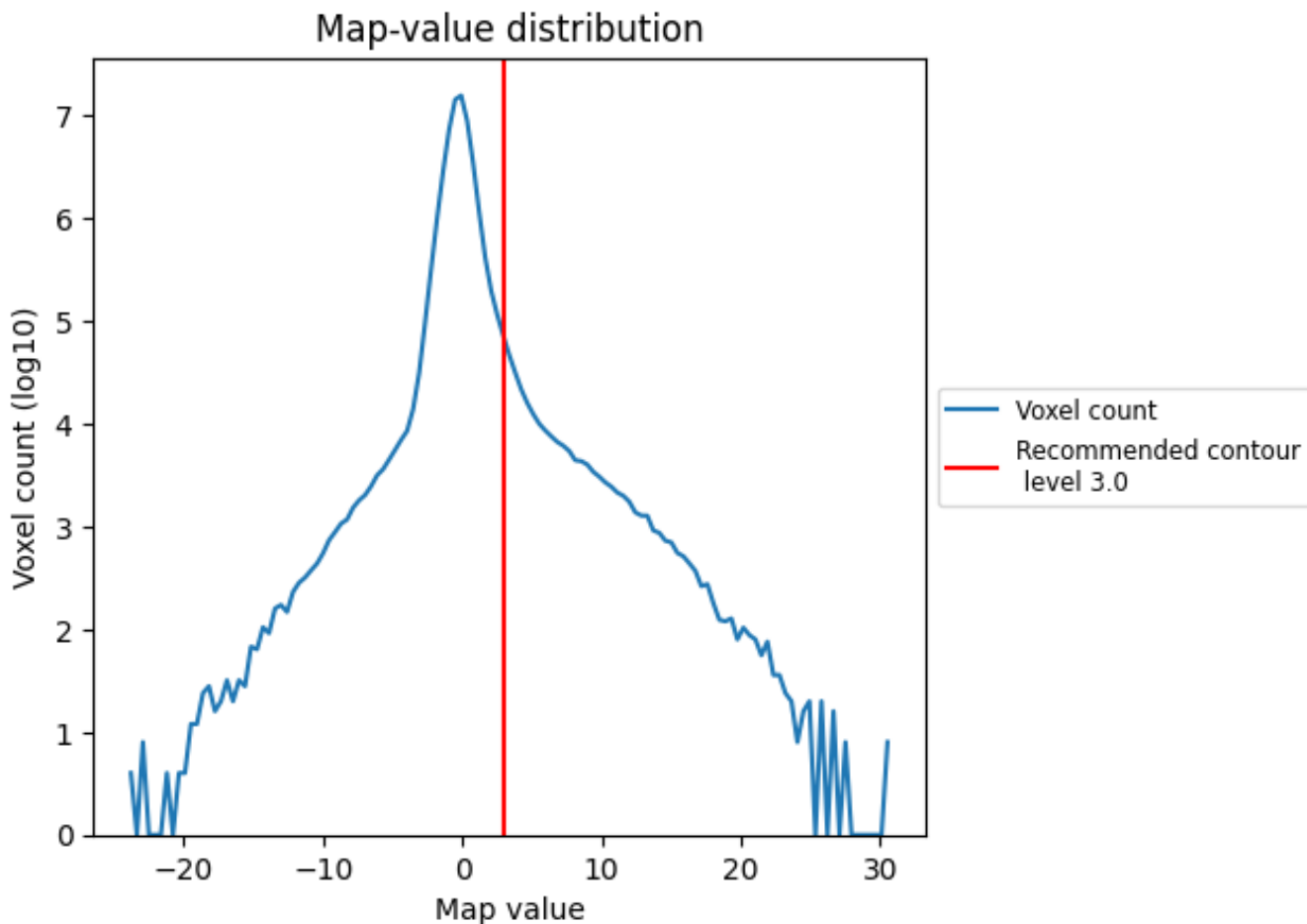
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

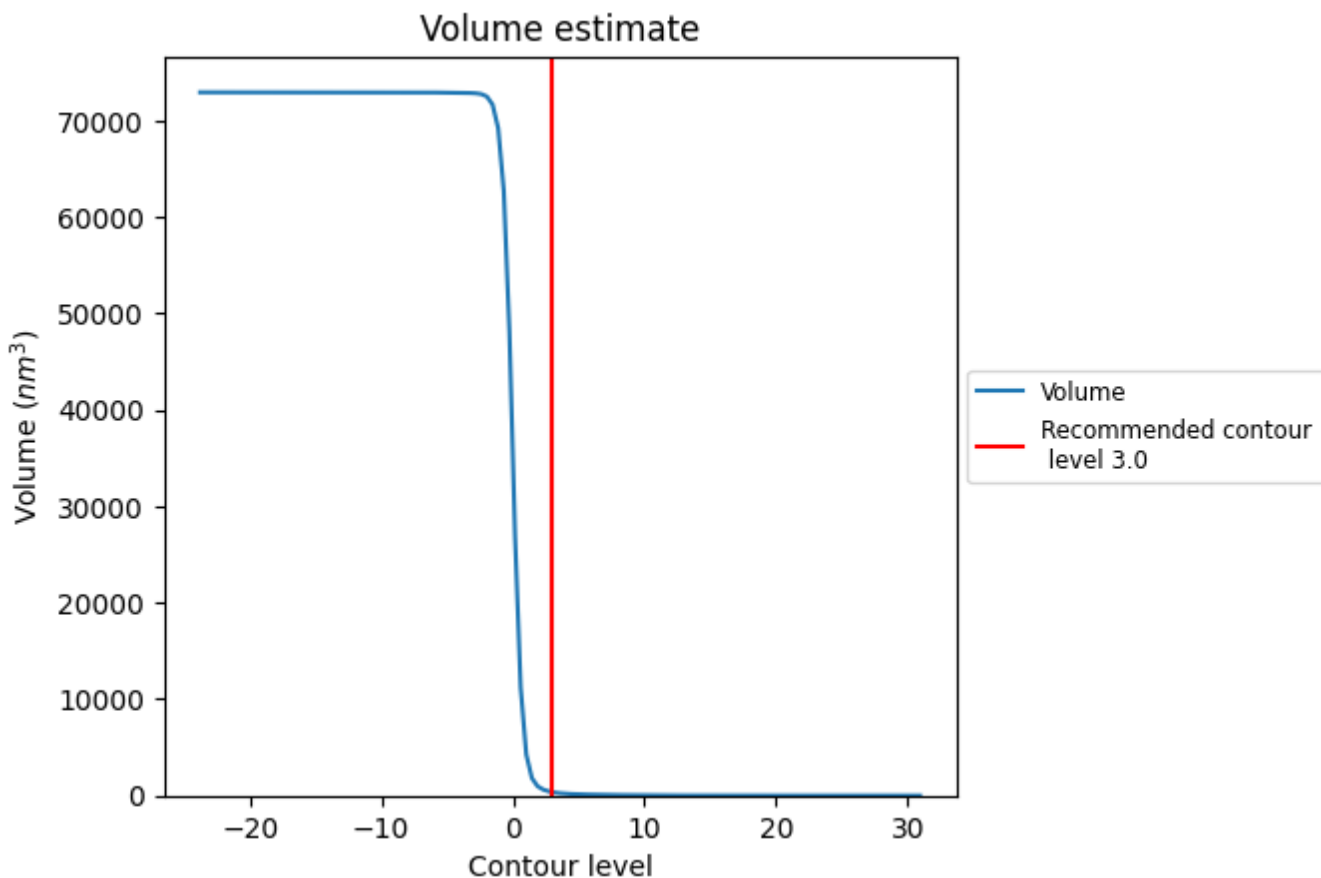
This section contains the results of statistical analysis of the map.

### 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](#)

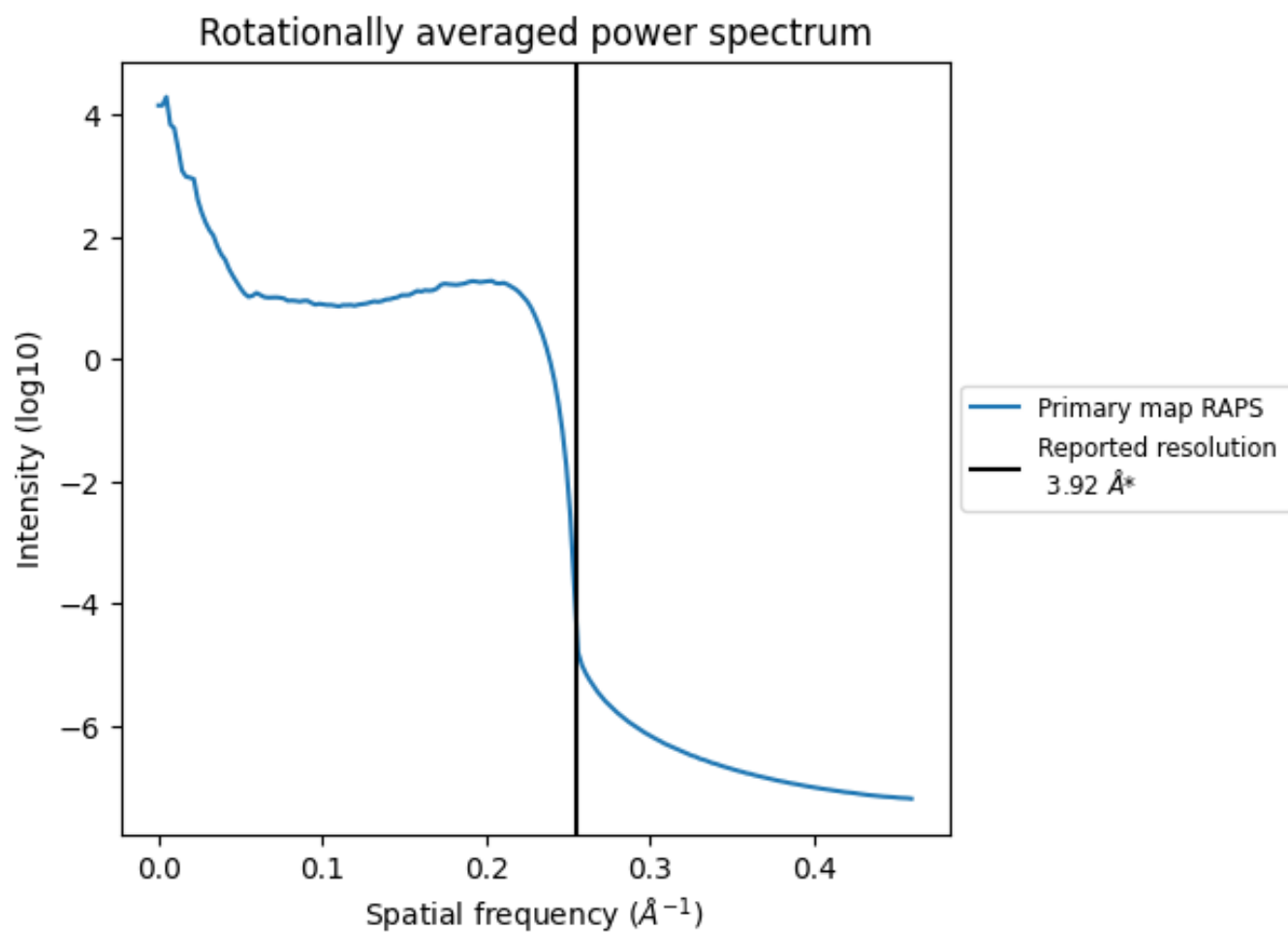


The volume at the recommended contour level is  $362 \text{ nm}^3$ ; this corresponds to an approximate mass of 327 kDa.

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  $0.255 \text{\AA}^{-1}$

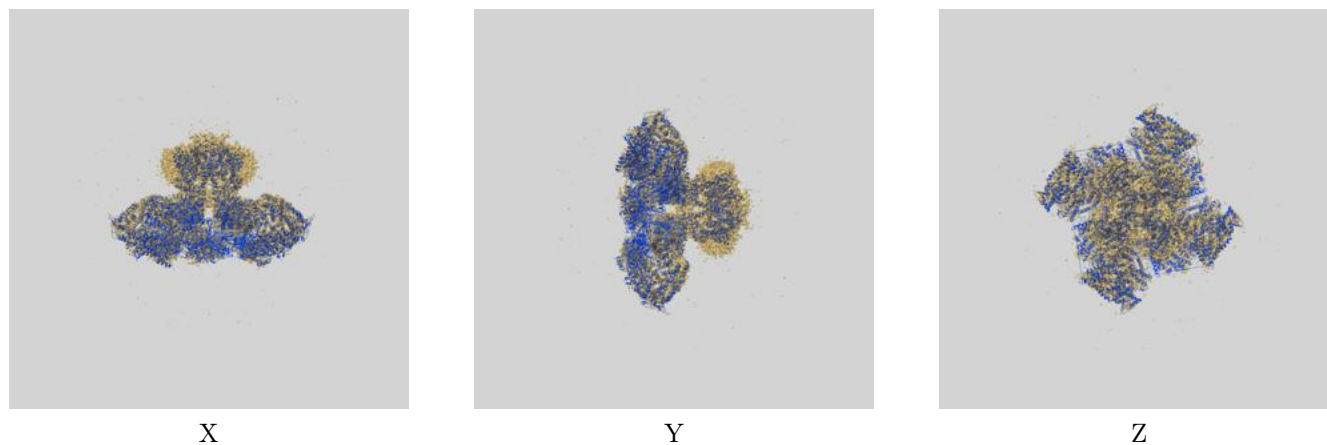
## 8 Fourier-Shell correlation

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

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

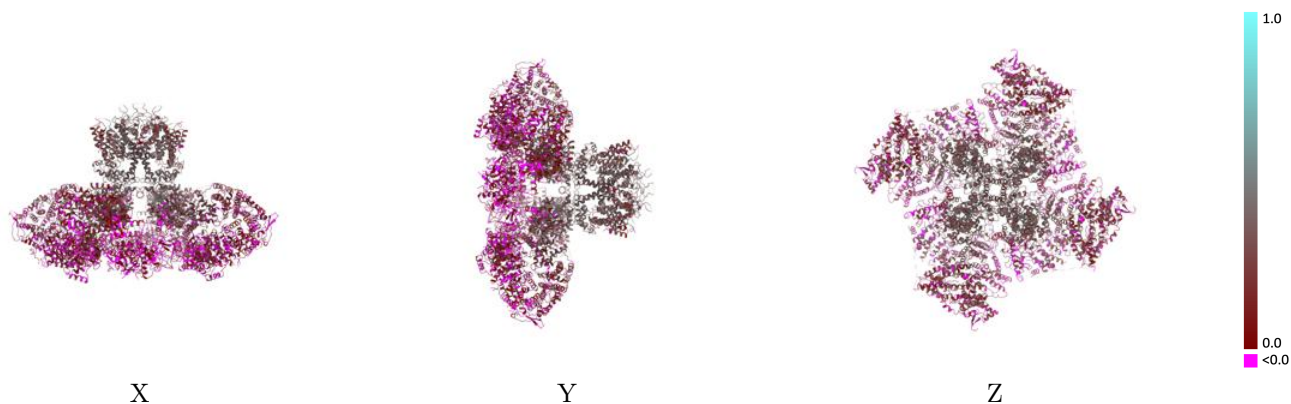
This section contains information regarding the fit between EMDB map EMD-7994 and PDB model 6DRC. Per-residue inclusion information can be found in section 3 on page 5.

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



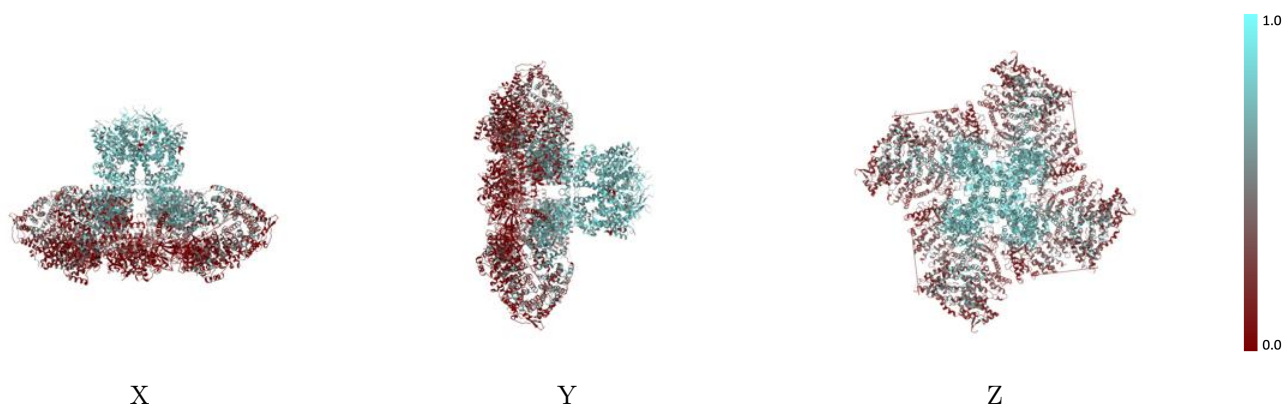
The images above show the 3D surface view of the map at the recommended contour level 3.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



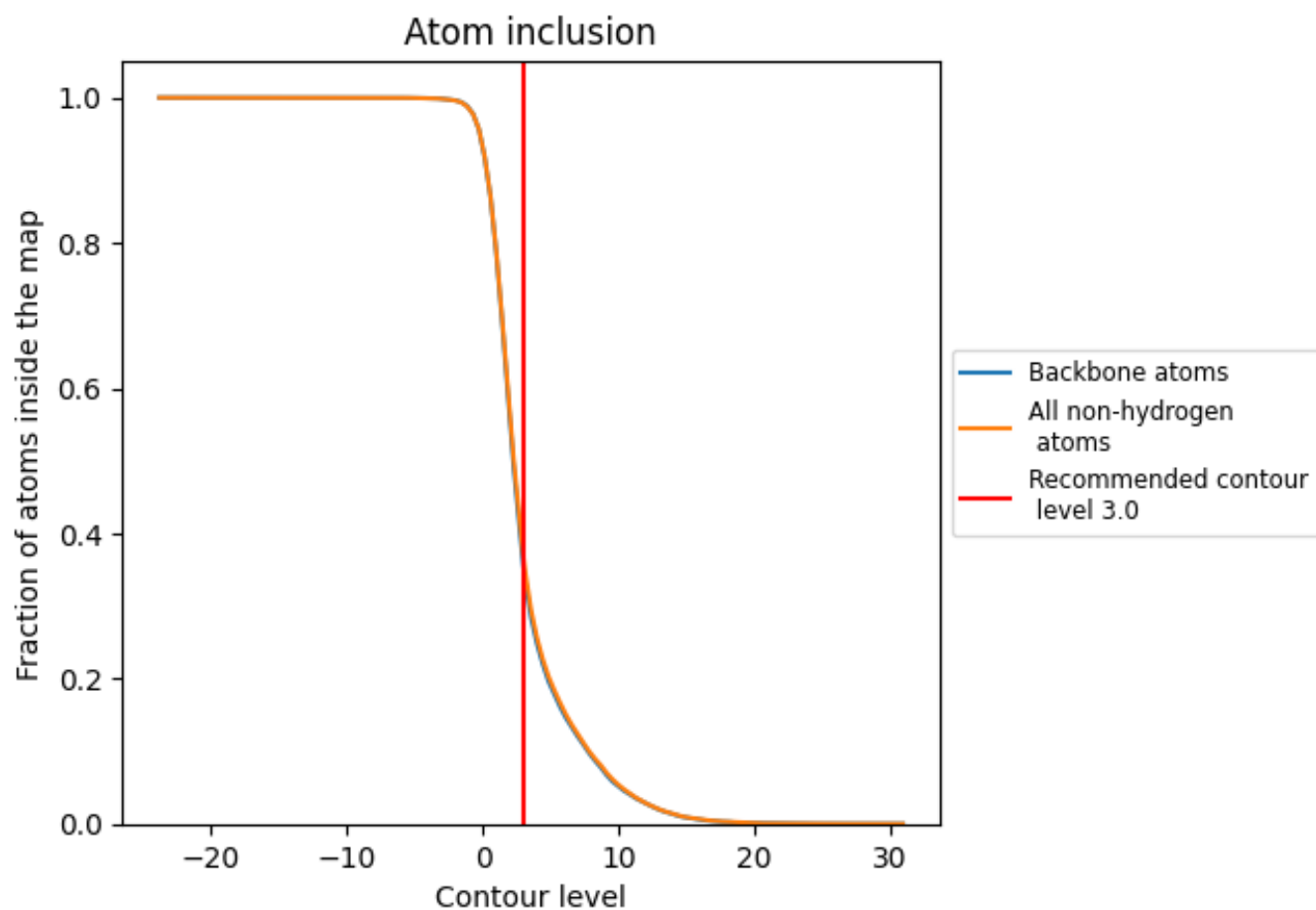
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (3.0).











## 9.4 Atom inclusion [i](#)



At the recommended contour level, 36% of all backbone atoms, 37% 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 (3.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.3697	 0.1790
A	 0.3768	 0.1790
B	 0.3765	 0.1790
C	 0.3755	 0.1790
D	 0.3765	 0.1790

