



wwPDB EM Validation Summary Report ⓘ

Nov 17, 2022 – 04:24 AM EST

PDB ID : 8EAR
EMDB ID : EMD-27983
Title : Structure of the full-length IP3R1 channel determined in the presence of Calcium/IP3/ATP
Authors : Fan, G.; Baker, M.R.; Terry, L.E.; Arige, V.; Chen, M.; Seryshev, A.B.; Baker, M.L.; Ludtke, S.J.; Yule, D.I.; Serysheva, I.I.
Deposited on : 2022-08-29
Resolution : 3.50 Å (reported)
Based on initial model : 7LHE

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.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

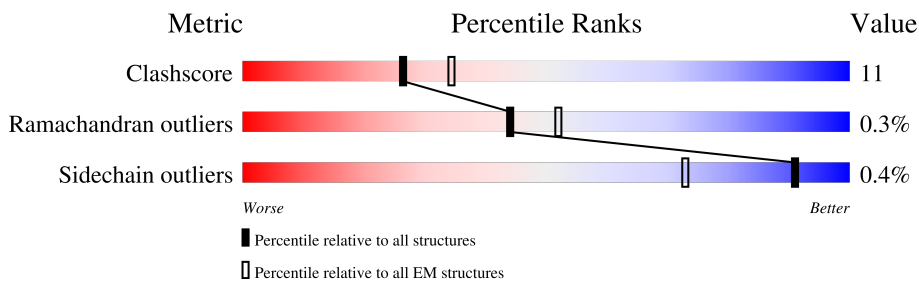
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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	2750	 20% 64% 22% 13%
1	B	2750	 20% 64% 22% 13%
1	C	2750	 20% 64% 22% 13%
1	D	2750	 20% 64% 22% 13%

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 78512 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 Inositol 1,4,5-trisphosphate receptor type 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2389	19296	12263	3334	3582	117	2	0
1	B	2389	19296	12263	3334	3582	117	2	0
1	C	2389	19296	12263	3334	3582	117	2	0
1	D	2389	19296	12263	3334	3582	117	2	0

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

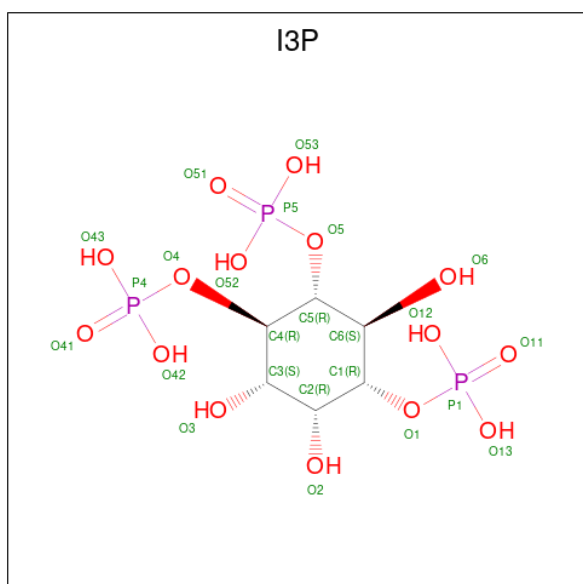
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
2	A	1	1	1	0
2	B	1	1	1	0
2	C	1	1	1	0
2	D	1	1	1	0

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: C₁₀H₁₆N₅O₁₃P₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
3	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	C	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	D	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 4 is D-MYO-INOSITOL-1,4,5-TRIPHOSPHATE (three-letter code: I3P) (formula: $C_6H_{15}O_{15}P_3$) (labeled as "Ligand of Interest" by depositor).

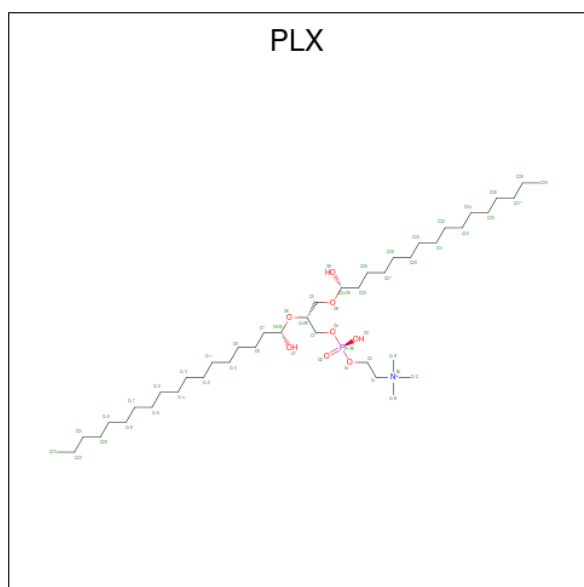


Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	O	P	0
			24	6	15	3	
4	B	1	Total	C	O	P	0
			24	6	15	3	
4	C	1	Total	C	O	P	0
			24	6	15	3	
4	D	1	Total	C	O	P	0
			24	6	15	3	

- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 6 is (9R,11S)-9-({[(1S)-1-HYDROXYHEXADECYL]OXY}METHYL)-2,2-DIMETHYL-5,7,10-TRIOXA-2LAMBDA 5 -AZA-6LAMBDA 5 -PHOSPHAOCTACOSANE-6,6,11-TRIOL (three-letter code: PLX) (formula: C₄₂H₈₉NO₈P).



Mol	Chain	Residues	Atoms					AltConf
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	A	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	B	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	C	1	Total 272	C 202	N 7	O 56	P 7	0
6	D	1	Total 272	C 202	N 7	O 56	P 7	0

Continued on next page...

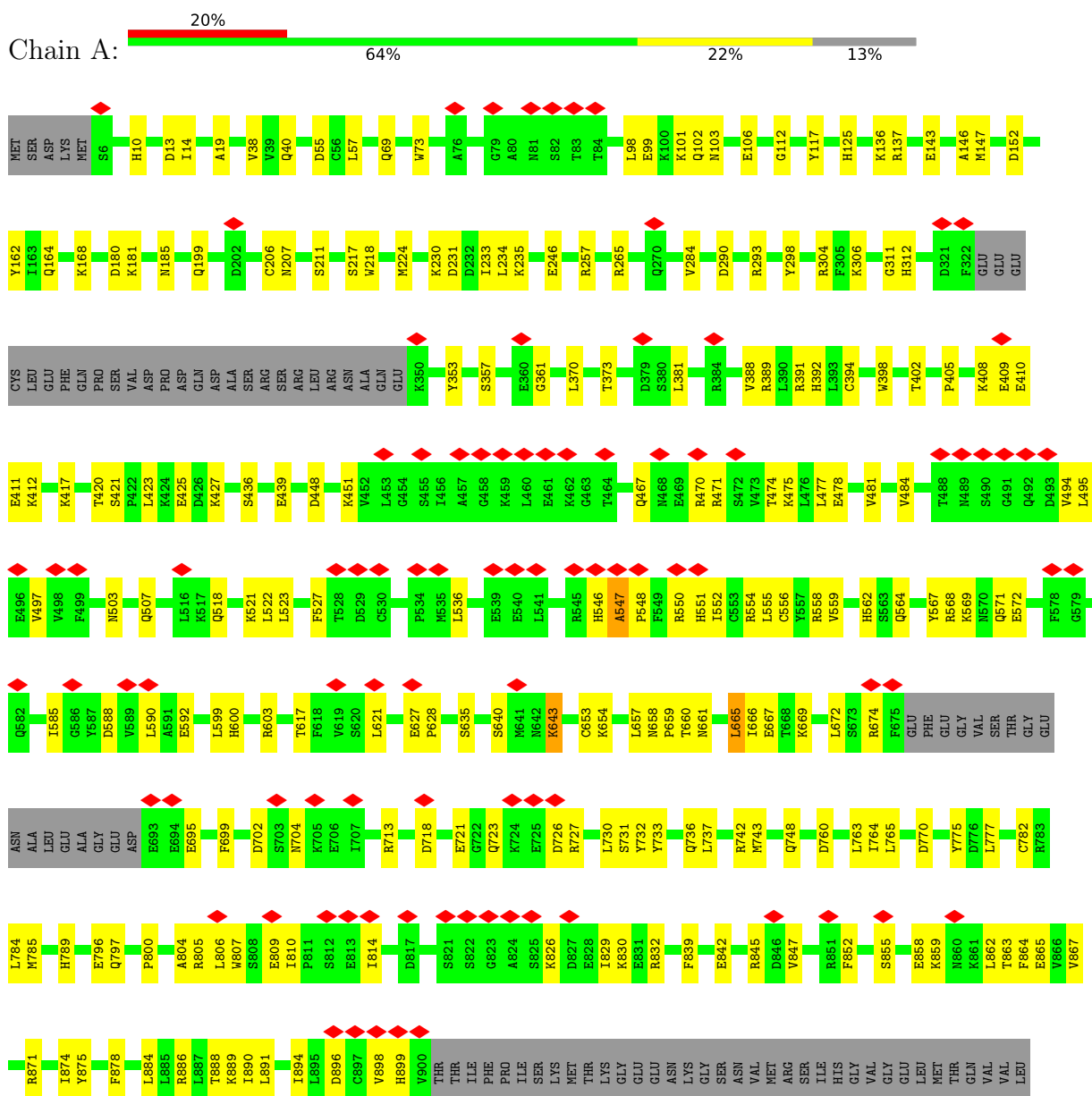
Continued from previous page...

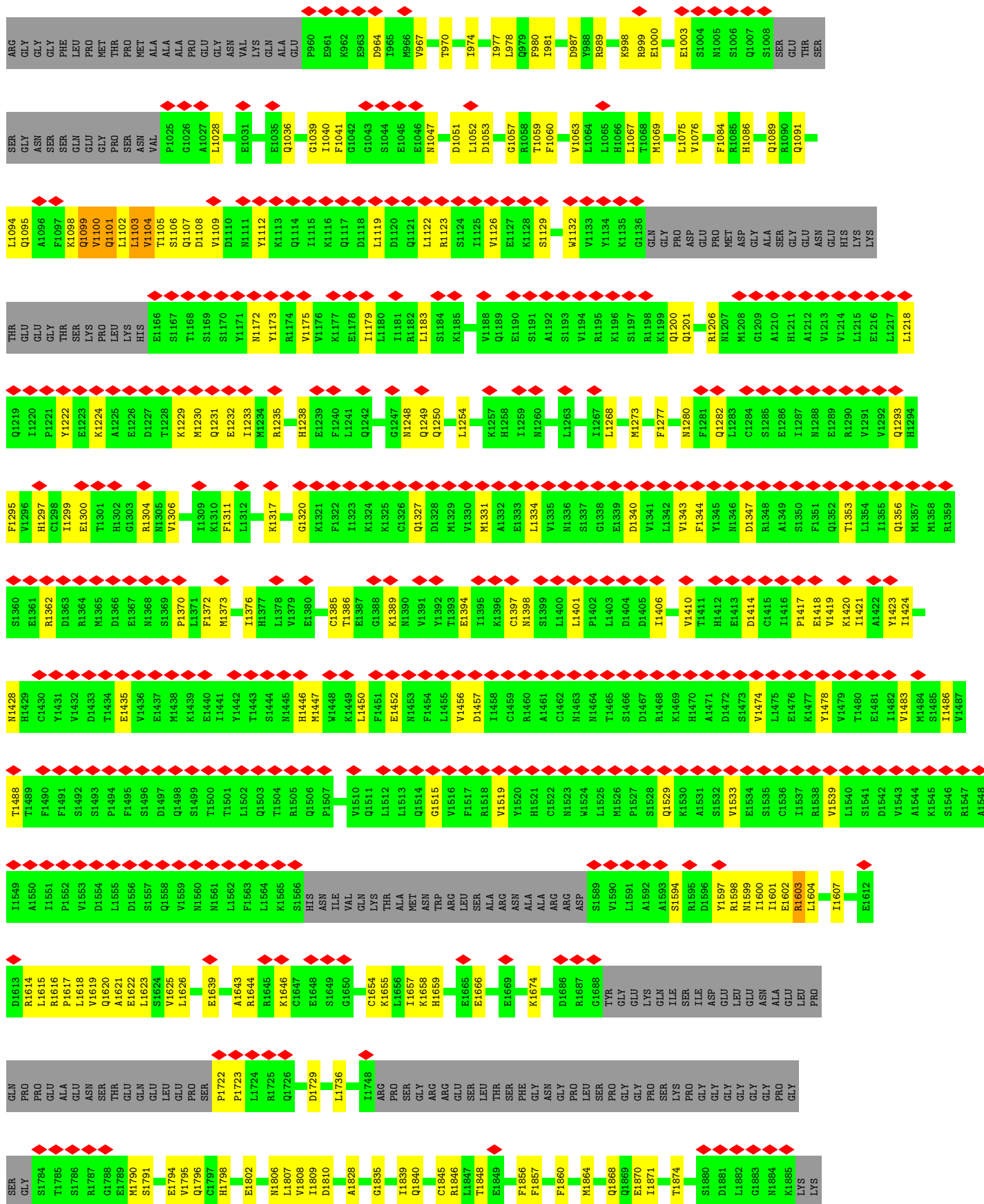
Mol	Chain	Residues	Atoms					AltConf
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	
6	D	1	Total	C	N	O	P	0
			272	202	7	56	7	

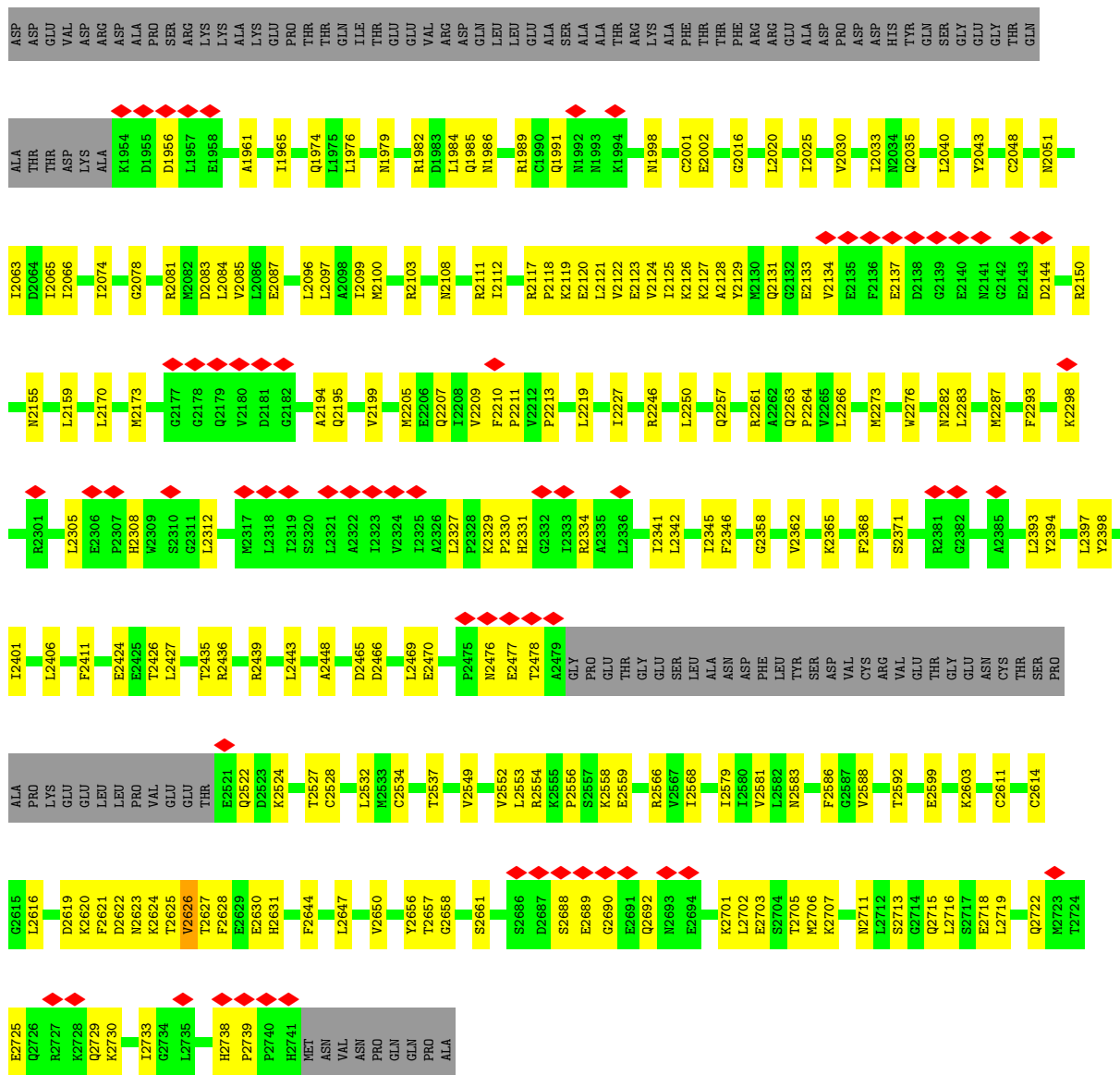
3 Residue-property plots i

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.

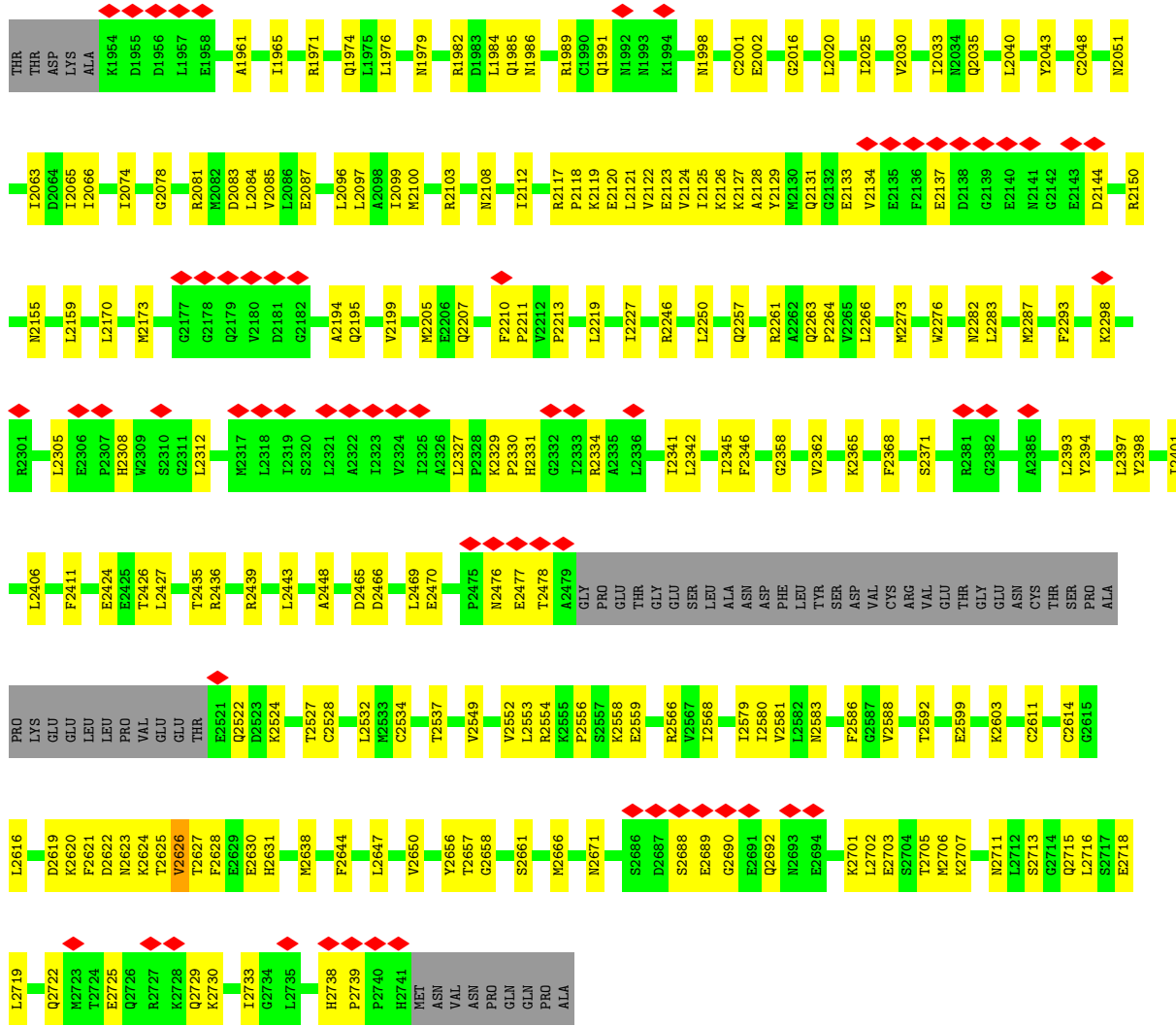
- Molecule 1: Inositol 1,4,5-trisphosphate receptor type 1



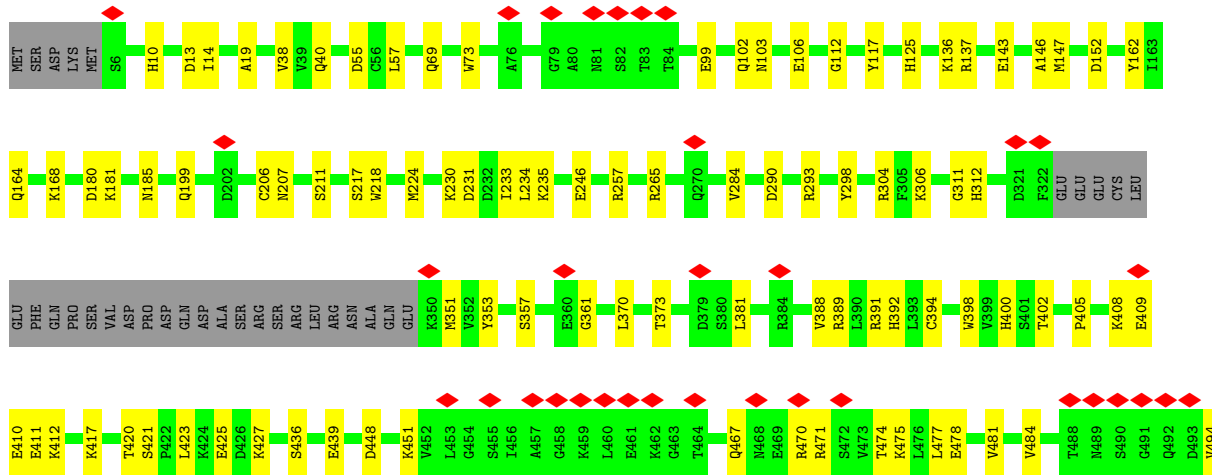


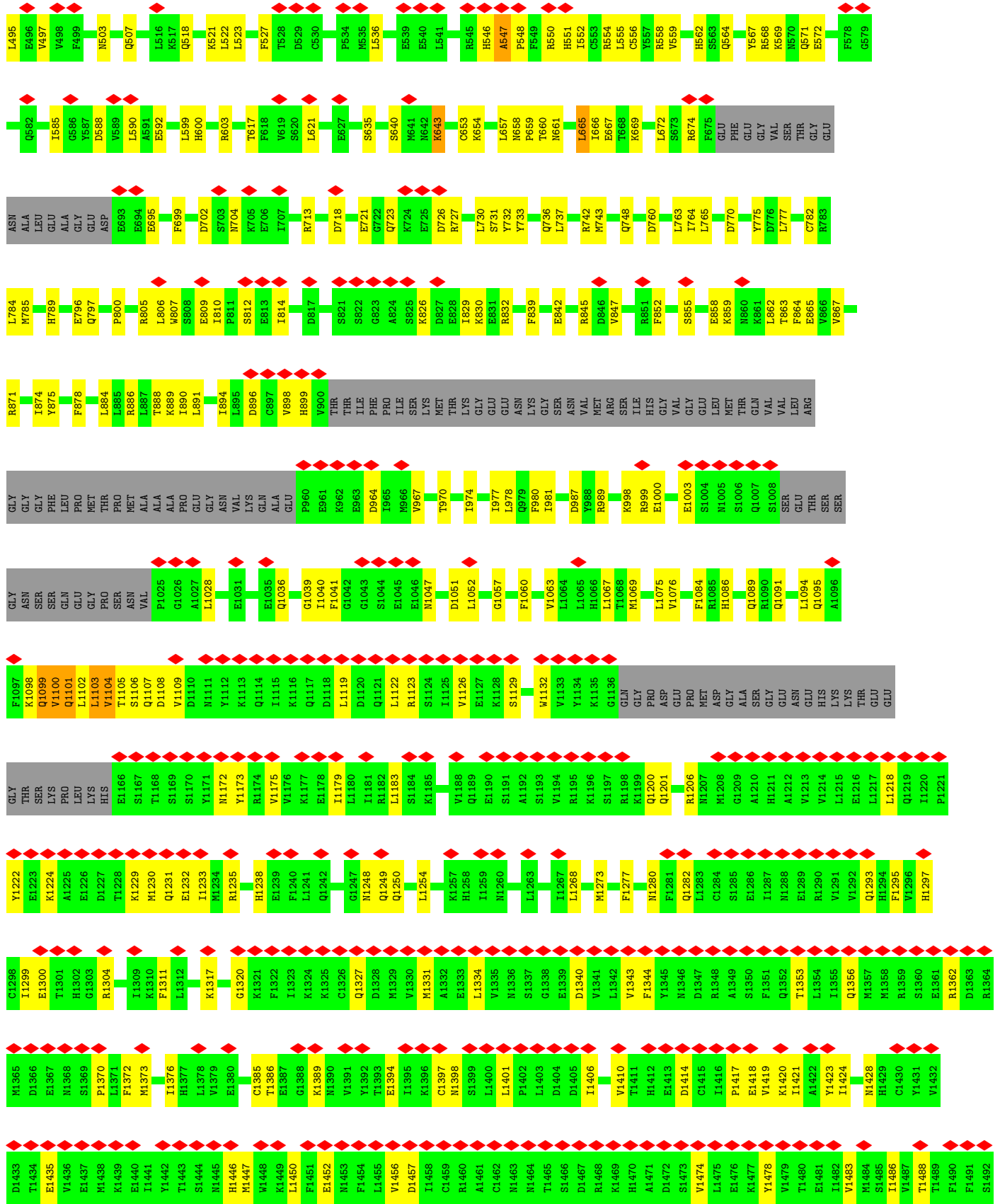


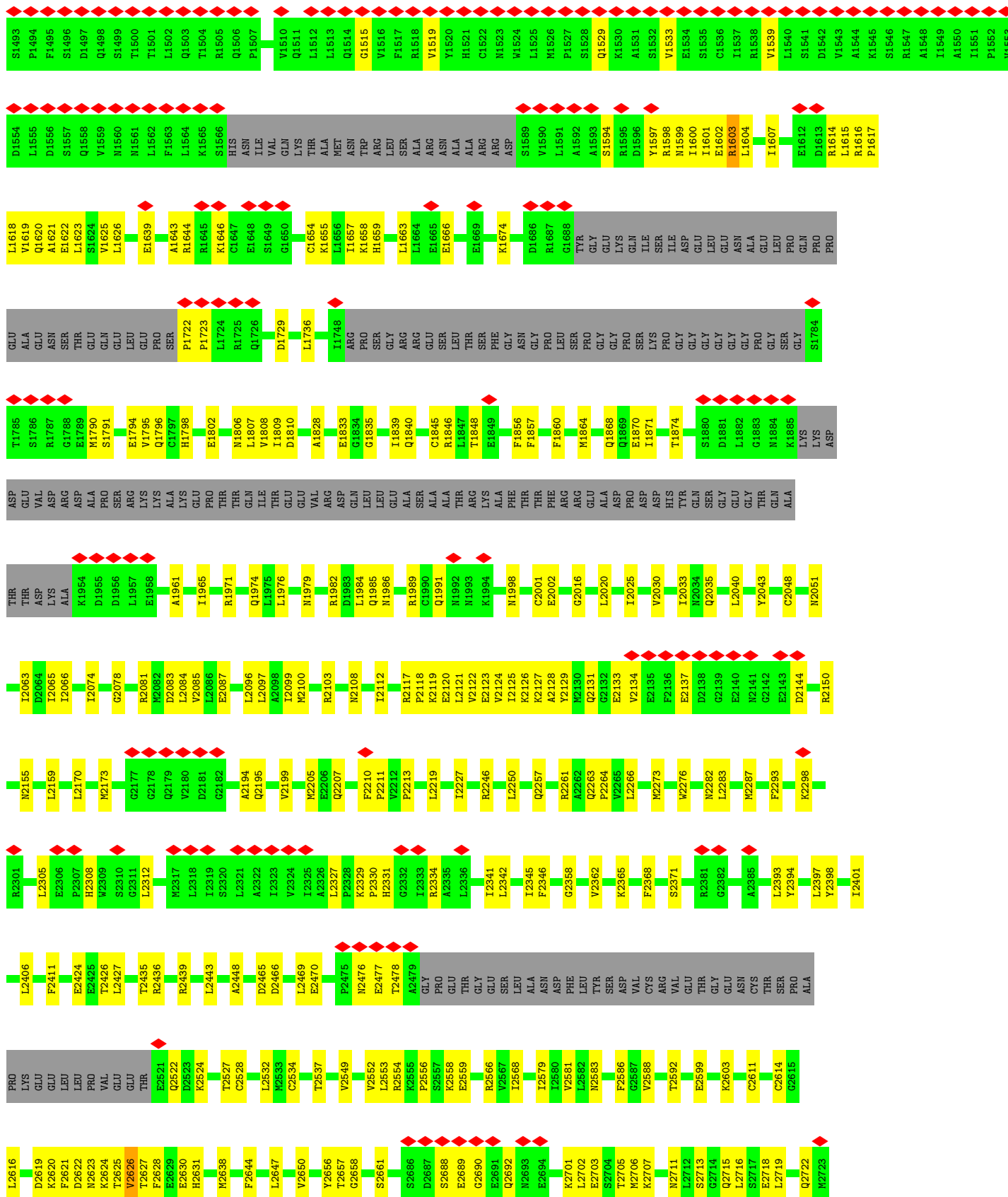
D1433	T1434	E1435	V1436	E1437	M1438	K1439	E1440	I1441	T1442	T1443	S1444	M1445	H1446	M1447	M1448	K1449	L1450	F1451	E1452	M1453	F1454	L1455	V1456	F1457	I1458	C1459	R1460	A1461	C1462	M1463	M1464	T1465	S1466	D1467	R1468	K1469	H1470	A1471	D1472	S1473	V1474	L1475	C1476	K1477	Y1478	V1479	T1480	E1481	I1482	M1483	M1484	S1485	V1486	V1487	T1488	F1489	F1490	F1491	S1492	S1493	P1494	F1495	S1496	D1497	Q1498	T1500	L1501	T1502	Q1503	T1504	R1505	Q1506	P1507	V1510	Q1511	L1512	L1513	Q1514	G1515	V1516	F1517	L1518	D1519	Y1520	H1521	C1522	N1523	W1524	L1525	M1526	P1527	S1528	Q1529	K1530	A1531	H1532	V1533	E1534	S1535	I1600	I1601	E1602	R1603	L1604	I1607	L1611	E1612	D1613	L1614	L1615	R1616	P1617	L1618	V1619	Q1620	A1621	E1622	L1623	S1624	V1625	L1626	E1639	A1643	R1644	R1645	K1646	G1647	E1648	S1649	L1650	C1654	M1655	L1656	I1657	K1658	H1659	L1663	L1664	C1665	E1666	E1669	K1674	D1686	L1687	G1688	T1689	G1690	L1691	L1692	L1693	L1694	L1695	L1696	L1697	L1698	L1699	L1700	L1701	L1702	L1703	L1704	L1705	L1706	L1707	L1708	L1709	L1710	L1711	L1712	L1713	L1714	L1715	L1716	L1717	L1718	L1719	L1720	L1721	L1722	L1723	L1724	L1725	L1726	L1727	L1728	L1729	L1730	L1731	L1732	L1733	L1734	L1735	L1736	L1737	L1738	L1739	L1740	L1741	L1742	L1743	L1744	L1745	L1746	L1747	L1748	L1749	L1750	L1751	L1752	L1753	L1754	L1755	L1756	L1757	L1758	L1759	L1760	L1761	L1762	L1763	L1764	L1765	L1766	L1767	L1768	L1769	L1770	L1771	L1772	L1773	L1774	L1775	L1776	L1777	L1778	L1779	L1780	L1781	L1782	L1783	L1784	L1785	L1786	L1787	L1788	L1789	L1790	L1791	E1794	V1795	Q1796	H1798	E1802	M1806	L1807	V1808	I1809	D1810	A1828	E1833	G1834	G1835	I1839	Q1840	C1845	R1846	L1847	T1848	E1849	F1856	F1857	F1860	M1864	Q1868	Q1869	I1870	I1871	T1874	S1880	D1881	L1882	G1883	N1884	L1885	L1886	L1887	L1888	L1889	L1890	L1891	L1892	L1893	L1894	L1895	L1896	L1897	L1898	L1899	L1900	L1901	L1902	L1903	L1904	L1905	L1906	L1907	L1908	L1909	L1910	L1911	L1912	L1913	L1914	L1915	L1916	L1917	L1918	L1919	L1920	L1921	L1922	L1923	L1924	L1925	L1926	L1927	L1928	L1929	L1930	L1931	L1932	L1933	L1934	L1935	L1936	L1937	L1938	L1939	L1940	L1941	L1942	L1943	L1944	L1945	L1946	L1947	L1948	L1949	L1950	L1951	L1952	L1953	L1954	L1955	L1956	L1957	L1958	L1959	L1960	L1961	L1962	L1963	L1964	L1965	L1966	L1967	L1968	L1969	L1970	L1971	L1972	L1973	L1974	L1975	L1976	M1979	L2096	L2097	A2098	M2100	R2103	N2108	I2112	R2117	K2119	E2120	L2121	V2122	E2123	V2124	I2125	K2126	K2127	A2128	Y2129	M2130	Q2131	G2132	E2133	V2134	E2136	Q2137	Q2138	Q2139	L2040	Y2043	C2048	M2051	Q2052	N2053	T2057	L2063	D2064	I2065	I2066	I2074	G2078	R2081	D2082	D2083	L2084	V2085	L2086	E2087	L2096	L2097	A2098	M2100	R2103	N2108	I2112	R2117	K2119	E2120	L2121	V2122	E2123	V2124	I2125	K2126	K2127	A2128	Y2129	M2130	Q2131	G2132	E2133	V2134	E2136	Q2137	Q2138	Q2139	L2040	Y2043	C2048	G2142	E2143	D2144	R2150	N2155	L2159	L2170	M2173	G2177	Q2178	Q2179	V2180	D2181	G2182	A2194	Q2195	V2199	M2205	E2206	Q2207	L2219	L2227	R2246	L2250	Q2257	R2261	A2262	Q2263	P2264	V2265	L2266	M2273	V2276	N2282	L2283	M2287	F2293	K2298	R2301	L2305	E2306	P2307	H2308	W2309	S2310	G2311	L2312	M2317	L2318	I2319	S2320	L2321	A2322	I2323	V2324	I2325	A2326	L2327	P2328	K2329	P2330	H2331	G2332	I2333	A2335	L2336	L2341	L2342	L2345	F2346	G2358	V2362	K2365	F2368	S2371	R2381	G2382	A2385	L2393	Y2394	CYS	L2397	Y2398	I2401	L2406	F2411	E2424	L2425	T2426	L2427	T2435	R2436	R2439	L2443	A2448	D2465	D2466	L2469	E2470	P2475	M2476	E2477	T2478	A2479	GLY	PRO	GLU	THR	GLY	GLU	SER	LEU	ALA	ASN	ASP	PHE	LEU	TYR	SER	ASP	VAL	CYS	ARG	VAL	GLU	THR	GLY	ASN	R2566	V2567	L2568	I2579	L2580	V2581	L2582	M2583	F2586	G2587	V2588	T2592	E2599	K2603
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

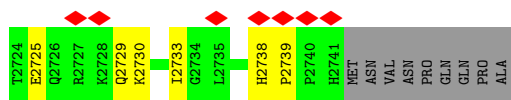


• Molecule 1: Inositol 1,4,5-trisphosphate receptor type 1









4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	133740	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	49	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	46943	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.093	Depositor
Minimum map value	-0.049	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.011	Depositor
Map size (\AA)	359.52002, 359.52002, 359.52002	wwPDB
Map dimensions	336, 336, 336	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.07, 1.07, 1.07	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: ATP, ZN, PLX, I3P, CA

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	0/19653	0.50	0/26530
1	B	0.27	0/19653	0.50	0/26530
1	C	0.27	0/19653	0.50	0/26530
1	D	0.27	0/19653	0.50	0/26530
All	All	0.27	0/78612	0.50	0/106120

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.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1099	GLN	Mainchain
1	B	1099	GLN	Mainchain
1	C	1099	GLN	Mainchain
1	D	1099	GLN	Mainchain

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	19296	0	19387	435	0
1	B	19296	0	19387	437	0
1	C	19296	0	19387	436	0
1	D	19296	0	19387	432	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	31	0	12	0	0
3	B	31	0	12	1	0
3	C	31	0	12	1	0
3	D	31	0	12	1	0
4	A	24	0	9	1	0
4	B	24	0	9	1	0
4	C	24	0	9	1	0
4	D	24	0	9	1	0
5	A	4	0	0	0	0
5	B	4	0	0	0	0
5	C	4	0	0	0	0
5	D	4	0	0	0	0
6	A	272	0	387	18	0
6	B	272	0	387	13	0
6	C	272	0	387	13	0
6	D	272	0	387	16	0
All	All	78512	0	79180	1752	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 11.

The worst 5 of 1752 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:D:2213:PRO:HG3	1:D:2647:LEU:HB3	1.54	0.89
1:B:2213:PRO:HG3	1:B:2647:LEU:HB3	1.54	0.88
1:A:2213:PRO:HG3	1:A:2647:LEU:HB3	1.54	0.87

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2213:PRO:HG3	1:C:2647:LEU:HB3	1.54	0.86
1:D:806:LEU:HG	1:D:1103:LEU:HD22	1.58	0.85

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	2369/2750 (86%)	2264 (96%)	98 (4%)	7 (0%)	41	75
1	B	2369/2750 (86%)	2264 (96%)	98 (4%)	7 (0%)	41	75
1	C	2369/2750 (86%)	2265 (96%)	97 (4%)	7 (0%)	41	75
1	D	2369/2750 (86%)	2265 (96%)	97 (4%)	7 (0%)	41	75
All	All	9476/11000 (86%)	9058 (96%)	390 (4%)	28 (0%)	44	75

5 of 28 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	547	ALA
1	B	547	ALA
1	C	547	ALA
1	D	547	ALA
1	A	665	LEU

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	2163/2459 (88%)	2153 (100%)	10 (0%)	88	94
1	B	2163/2459 (88%)	2153 (100%)	10 (0%)	88	94
1	C	2163/2459 (88%)	2153 (100%)	10 (0%)	88	94
1	D	2163/2459 (88%)	2153 (100%)	10 (0%)	88	94
All	All	8652/9836 (88%)	8612 (100%)	40 (0%)	91	94

5 of 40 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	2583[B]	ASN
1	D	1603	ARG
1	C	2626	VAL
1	D	871	ARG
1	D	2583[A]	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 39 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	2715	GLN
1	D	2207	GLN
1	D	40	GLN
1	D	1238	HIS
1	D	2623	ASN

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 56 ligands modelled in this entry, 20 are monoatomic - leaving 36 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
6	PLX	B	2802	-	36,36,51	1.19	4 (11%)	40,44,59	0.75	1 (2%)
6	PLX	B	2810	-	44,44,51	1.14	4 (9%)	48,52,59	0.77	0
6	PLX	C	2803	-	36,36,51	1.22	5 (13%)	40,44,59	0.76	1 (2%)
3	ATP	B	2803	-	26,33,33	0.62	0	31,52,52	0.73	2 (6%)
3	ATP	D	2803	-	26,33,33	0.62	0	31,52,52	0.73	2 (6%)
6	PLX	D	2814	-	36,36,51	1.19	4 (11%)	40,44,59	0.75	1 (2%)
4	I3P	A	2803	-	24,24,24	1.28	3 (12%)	36,39,39	0.66	1 (2%)
6	PLX	A	2812	-	38,38,51	1.18	4 (10%)	42,46,59	0.76	0
6	PLX	B	2814	-	37,37,51	1.23	5 (13%)	41,45,59	0.69	0
6	PLX	D	2802	-	39,39,51	1.18	3 (7%)	43,47,59	0.75	0
6	PLX	C	2806	-	37,37,51	1.23	5 (13%)	41,45,59	0.68	0
3	ATP	C	2807	-	26,33,33	0.63	0	31,52,52	0.73	2 (6%)
6	PLX	B	2812	-	35,35,51	1.22	3 (8%)	39,43,59	0.71	0
4	I3P	D	2804	-	24,24,24	1.28	3 (12%)	36,39,39	0.66	1 (2%)
6	PLX	A	2811	-	35,35,51	1.23	4 (11%)	39,43,59	0.72	0
6	PLX	D	2813	-	37,37,51	1.22	5 (13%)	41,45,59	0.68	0
6	PLX	D	2811	-	35,35,51	1.23	4 (11%)	39,43,59	0.72	0
4	I3P	C	2808	-	24,24,24	1.28	3 (12%)	36,39,39	0.65	1 (2%)
6	PLX	A	2808	-	39,39,51	1.19	3 (7%)	43,47,59	0.75	0
3	ATP	A	2802	-	26,33,33	0.61	0	31,52,52	0.74	2 (6%)
6	PLX	D	2809	-	44,44,51	1.15	5 (11%)	48,52,59	0.77	0
6	PLX	A	2813	-	37,37,51	1.23	5 (13%)	41,45,59	0.68	0
6	PLX	A	2814	-	36,36,51	1.19	4 (11%)	40,44,59	0.75	1 (2%)
6	PLX	B	2813	-	38,38,51	1.18	4 (10%)	42,46,59	0.76	0
4	I3P	B	2804	-	24,24,24	1.29	3 (12%)	36,39,39	0.65	1 (2%)
6	PLX	B	2811	-	36,36,51	1.21	4 (11%)	40,44,59	0.76	1 (2%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	PLX	C	2805	-	38,38,51	1.18	4 (10%)	42,46,59	0.76	0
6	PLX	A	2809	-	44,44,51	1.15	4 (9%)	48,52,59	0.77	0
6	PLX	C	2802	-	44,44,51	1.15	4 (9%)	48,52,59	0.77	0
6	PLX	B	2809	-	39,39,51	1.19	3 (7%)	43,47,59	0.75	0
6	PLX	D	2810	-	36,36,51	1.21	5 (13%)	40,44,59	0.76	1 (2%)
6	PLX	C	2804	-	35,35,51	1.23	3 (8%)	39,43,59	0.72	0
6	PLX	D	2812	-	38,38,51	1.18	4 (10%)	42,46,59	0.76	0
6	PLX	A	2810	-	36,36,51	1.20	4 (11%)	40,44,59	0.75	1 (2%)
6	PLX	C	2814	-	39,39,51	1.19	3 (7%)	43,47,59	0.75	0
6	PLX	C	2813	-	36,36,51	1.18	4 (11%)	40,44,59	0.74	1 (2%)

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
6	PLX	B	2802	-	-	22/40/40/55	-
6	PLX	B	2810	-	-	29/48/48/55	-
6	PLX	C	2803	-	-	14/40/40/55	-
3	ATP	B	2803	-	-	8/18/38/38	0/3/3/3
3	ATP	D	2803	-	-	8/18/38/38	0/3/3/3
6	PLX	D	2814	-	-	22/40/40/55	-
4	I3P	A	2803	-	-	2/15/39/39	0/1/1/1
6	PLX	A	2812	-	-	24/42/42/55	-
6	PLX	B	2814	-	-	21/41/41/55	-
6	PLX	D	2802	-	-	19/43/43/55	-
6	PLX	C	2806	-	-	21/41/41/55	-
3	ATP	C	2807	-	-	8/18/38/38	0/3/3/3
6	PLX	B	2812	-	-	23/39/39/55	-
4	I3P	D	2804	-	-	2/15/39/39	0/1/1/1
6	PLX	A	2811	-	-	23/39/39/55	-
6	PLX	D	2813	-	-	21/41/41/55	-
6	PLX	D	2811	-	-	23/39/39/55	-
4	I3P	C	2808	-	-	2/15/39/39	0/1/1/1
6	PLX	A	2808	-	-	19/43/43/55	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ATP	A	2802	-	-	8/18/38/38	0/3/3/3
6	PLX	D	2809	-	-	29/48/48/55	-
6	PLX	A	2813	-	-	21/41/41/55	-
6	PLX	A	2814	-	-	22/40/40/55	-
6	PLX	B	2813	-	-	25/42/42/55	-
4	I3P	B	2804	-	-	2/15/39/39	0/1/1/1
6	PLX	B	2811	-	-	14/40/40/55	-
6	PLX	C	2805	-	-	25/42/42/55	-
6	PLX	A	2809	-	-	29/48/48/55	-
6	PLX	C	2802	-	-	29/48/48/55	-
6	PLX	B	2809	-	-	19/43/43/55	-
6	PLX	D	2810	-	-	14/40/40/55	-
6	PLX	C	2804	-	-	23/39/39/55	-
6	PLX	D	2812	-	-	24/42/42/55	-
6	PLX	A	2810	-	-	14/40/40/55	-
6	PLX	C	2814	-	-	19/43/43/55	-
6	PLX	C	2813	-	-	22/40/40/55	-

The worst 5 of 125 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	2804	PLX	O6-C4	-3.61	1.39	1.44
6	B	2809	PLX	O6-C4	-3.55	1.39	1.44
6	C	2814	PLX	O6-C4	-3.55	1.39	1.44
6	B	2812	PLX	O6-C4	-3.54	1.39	1.44
6	D	2809	PLX	O6-C4	-3.53	1.39	1.44

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	2802	ATP	C5-C6-N6	2.34	123.91	120.35
3	C	2807	ATP	C5-C6-N6	2.32	123.88	120.35
3	D	2803	ATP	C5-C6-N6	2.29	123.83	120.35
3	B	2803	ATP	C5-C6-N6	2.29	123.83	120.35
6	B	2811	PLX	C8-C7-C6	-2.20	108.30	113.38

There are no chirality outliers.

5 of 650 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	2802	ATP	C5'-O5'-PA-O1A
3	A	2802	ATP	C5'-O5'-PA-O2A
3	A	2802	ATP	O4'-C4'-C5'-O5'
3	B	2803	ATP	C5'-O5'-PA-O1A
3	B	2803	ATP	C5'-O5'-PA-O2A

There are no ring outliers.

35 monomers are involved in 67 short contacts:

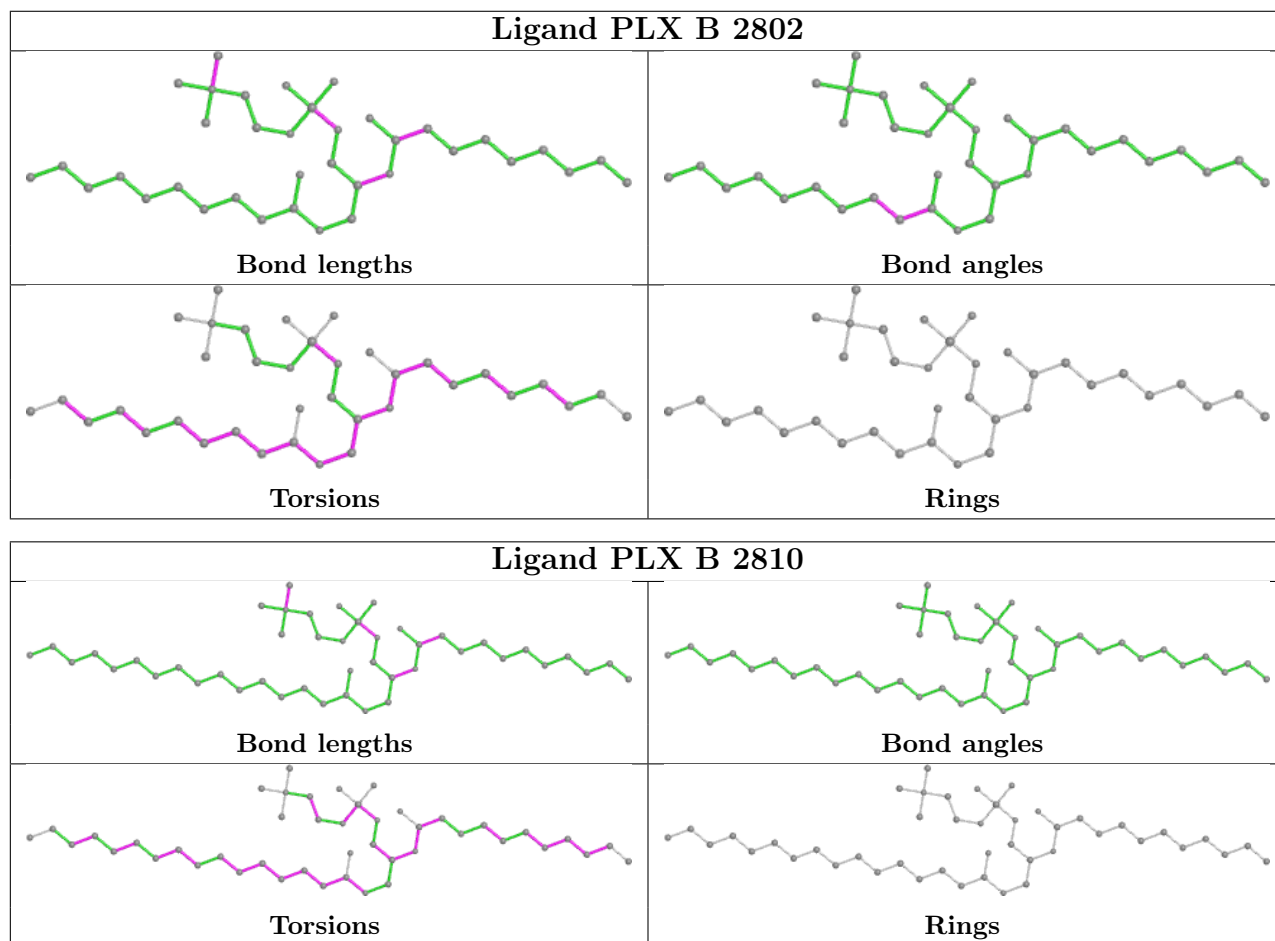
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	2802	PLX	1	0
6	B	2810	PLX	4	0
6	C	2803	PLX	1	0
3	B	2803	ATP	1	0
3	D	2803	ATP	1	0
6	D	2814	PLX	2	0
4	A	2803	I3P	1	0
6	A	2812	PLX	2	0
6	B	2814	PLX	4	0
6	D	2802	PLX	2	0
6	C	2806	PLX	5	0
3	C	2807	ATP	1	0
6	B	2812	PLX	1	0
4	D	2804	I3P	1	0
6	A	2811	PLX	2	0
6	D	2813	PLX	6	0
6	D	2811	PLX	1	0
4	C	2808	I3P	1	0
6	A	2808	PLX	1	0
6	D	2809	PLX	3	0
6	A	2813	PLX	6	0
6	A	2814	PLX	1	0
6	B	2813	PLX	1	0
4	B	2804	I3P	1	0
6	B	2811	PLX	2	0
6	C	2805	PLX	1	0
6	A	2809	PLX	5	0
6	C	2802	PLX	4	0
6	B	2809	PLX	1	0
6	D	2810	PLX	2	0
6	C	2804	PLX	1	0
6	D	2812	PLX	1	0
6	A	2810	PLX	2	0

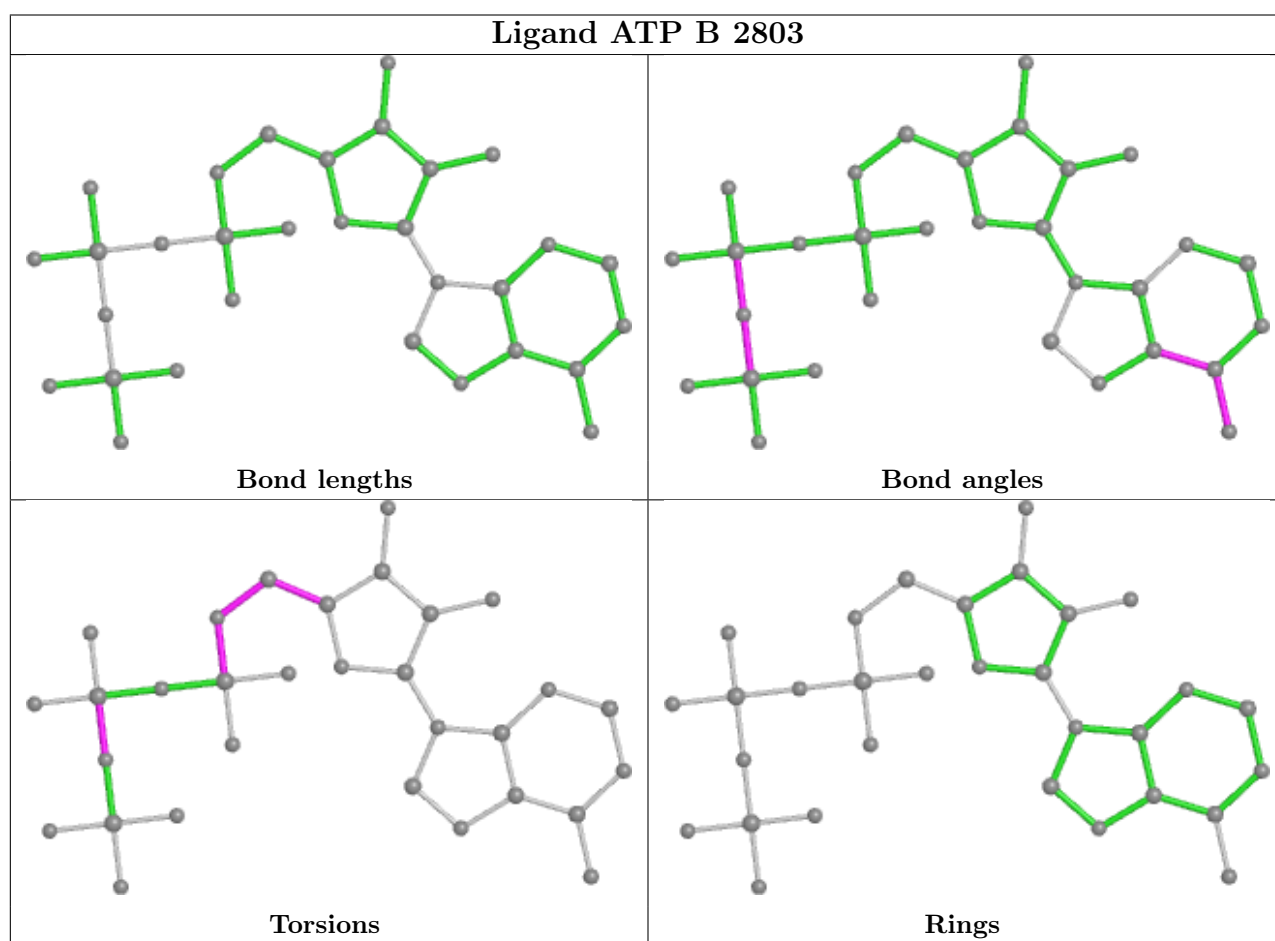
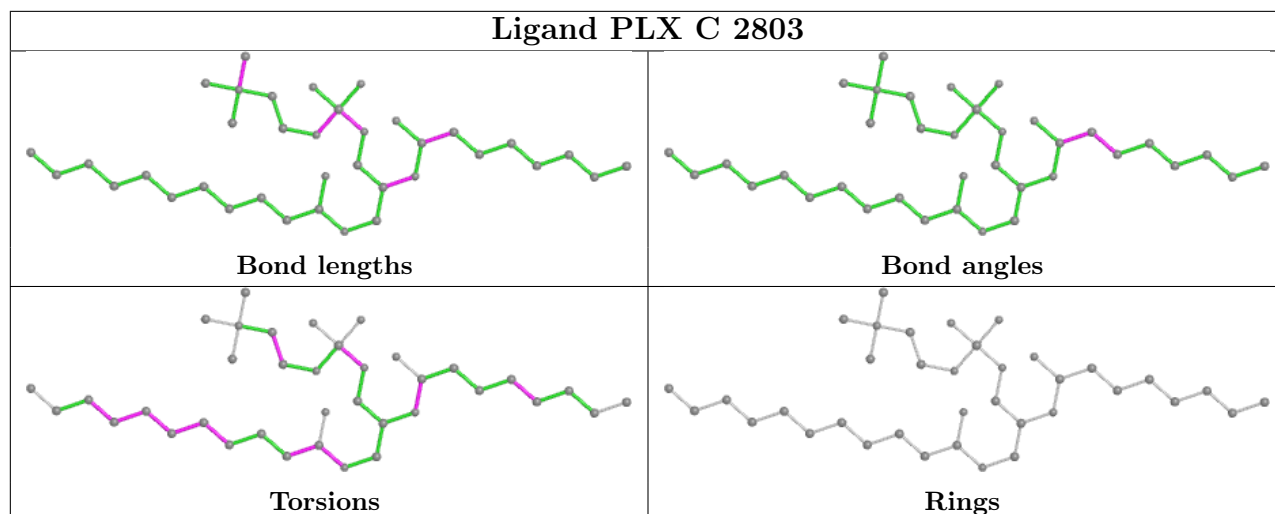
Continued on next page...

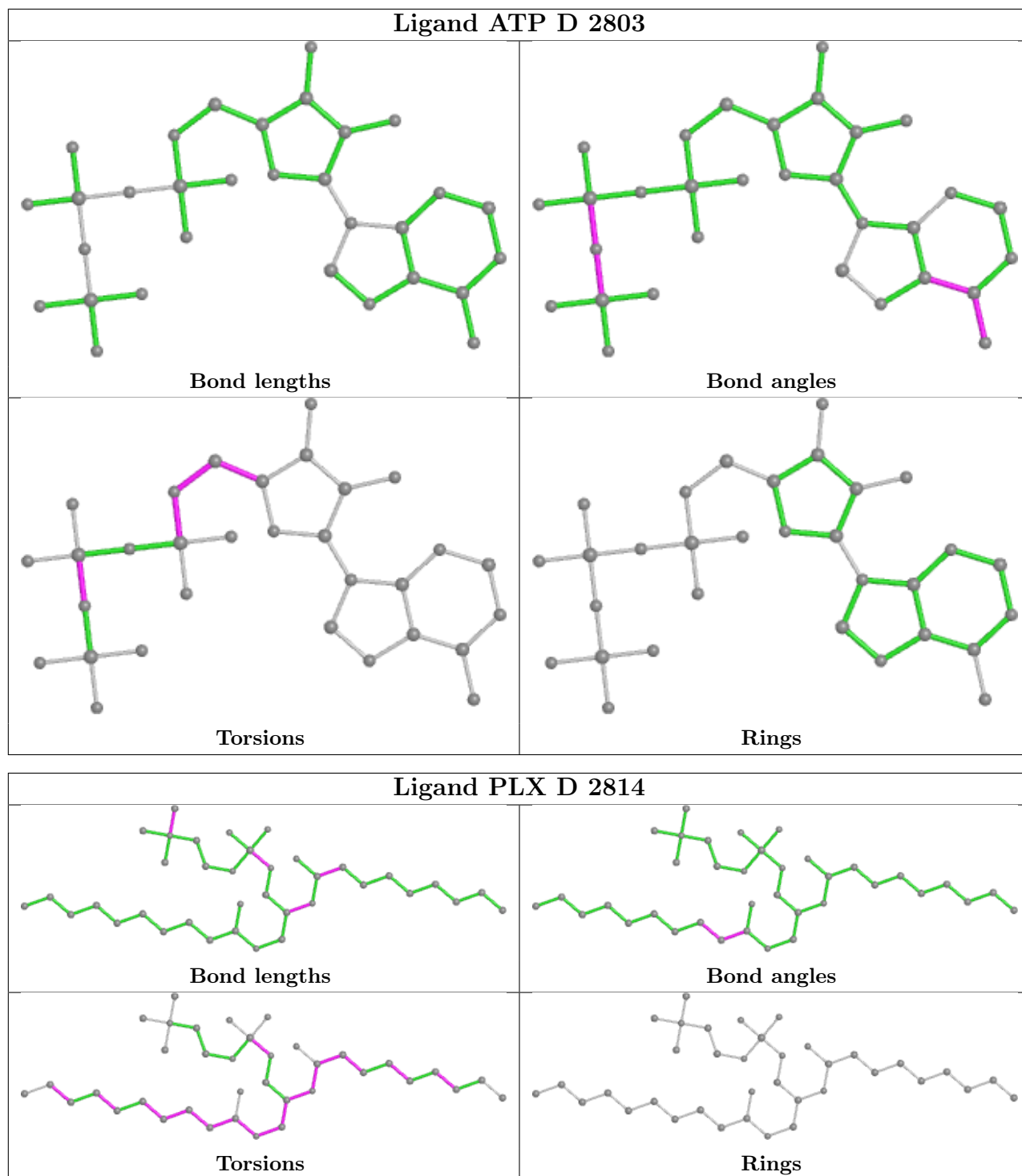
Continued from previous page...

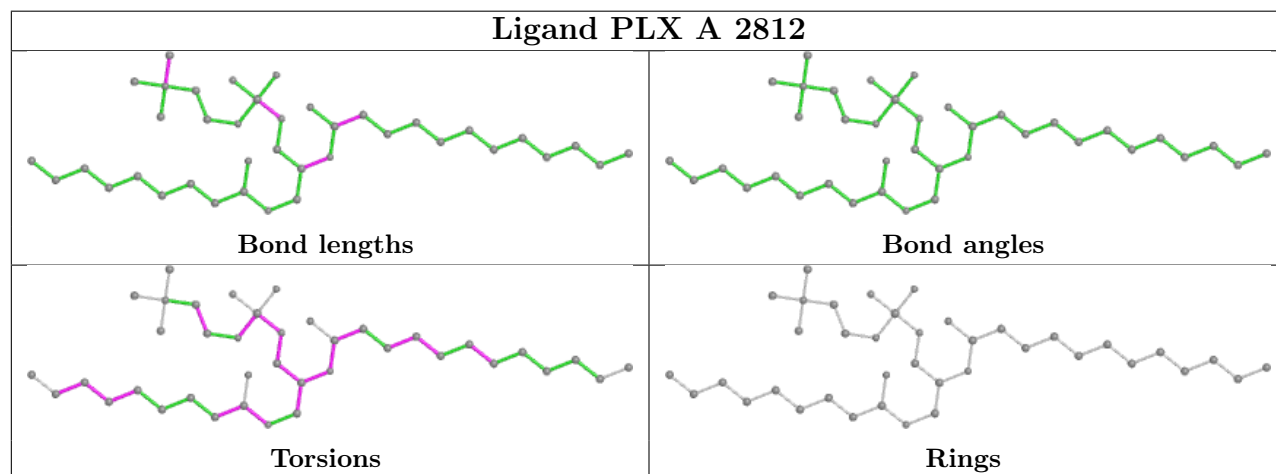
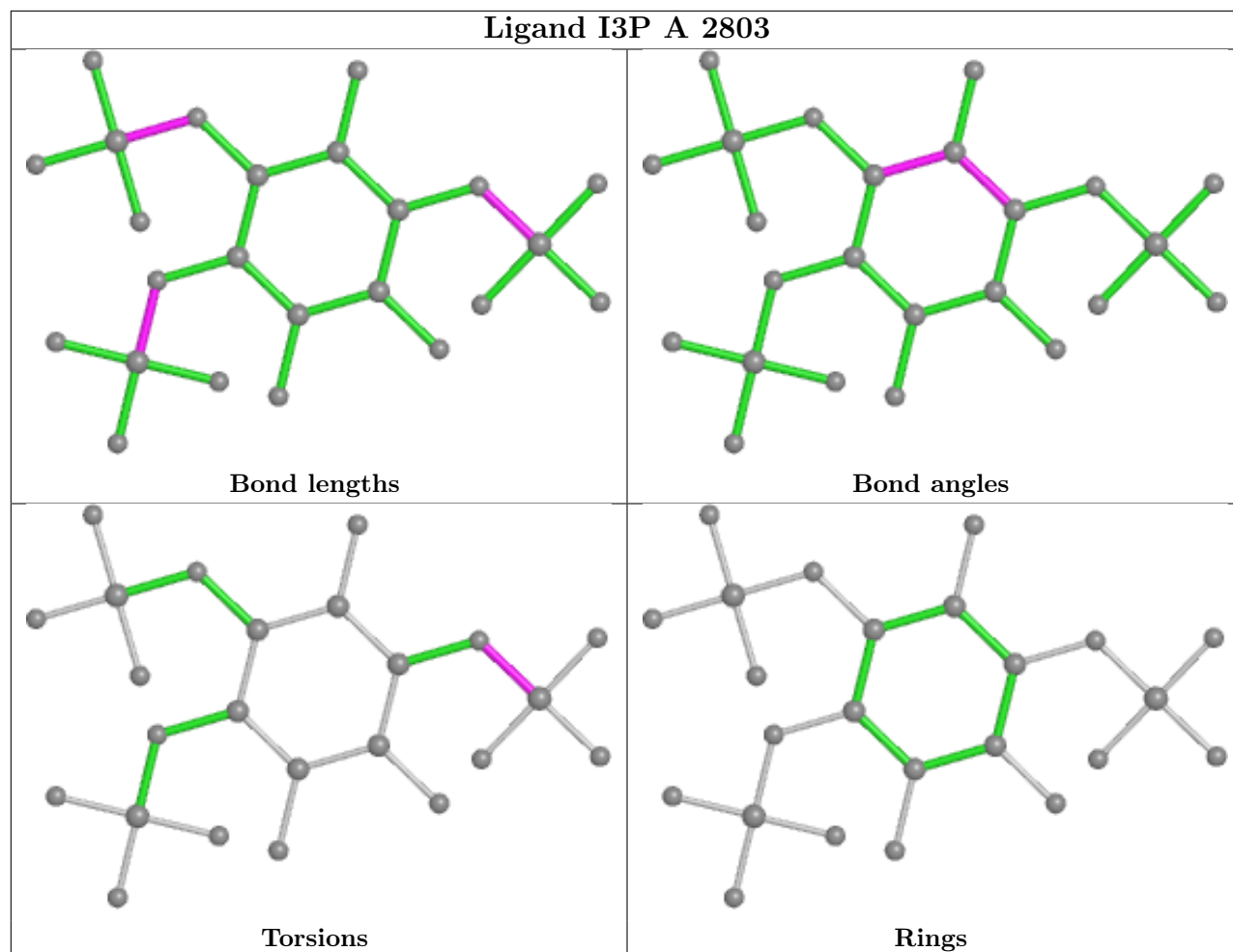
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	C	2814	PLX	1	0
6	C	2813	PLX	1	0

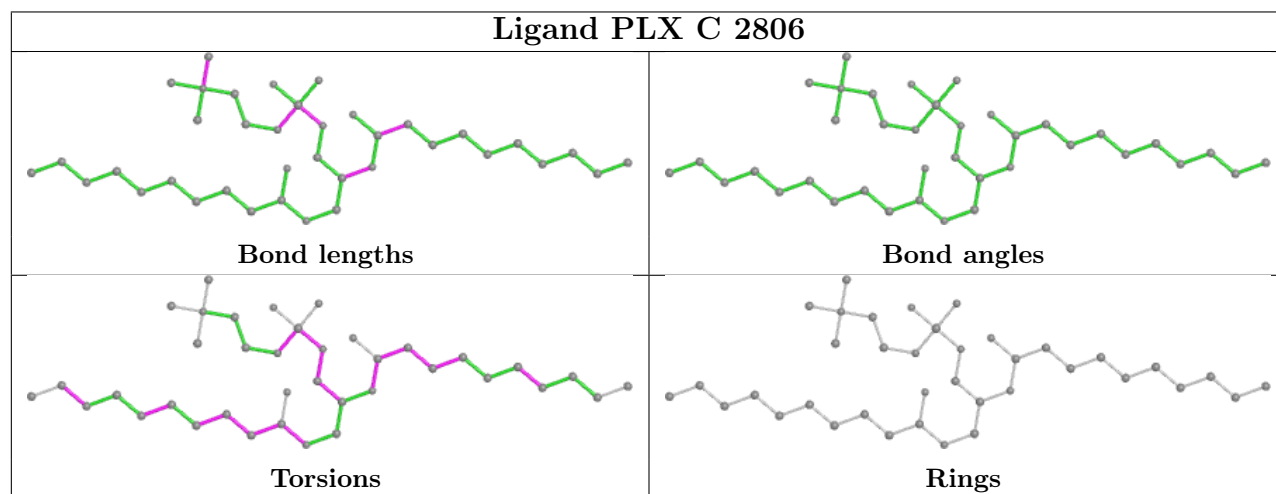
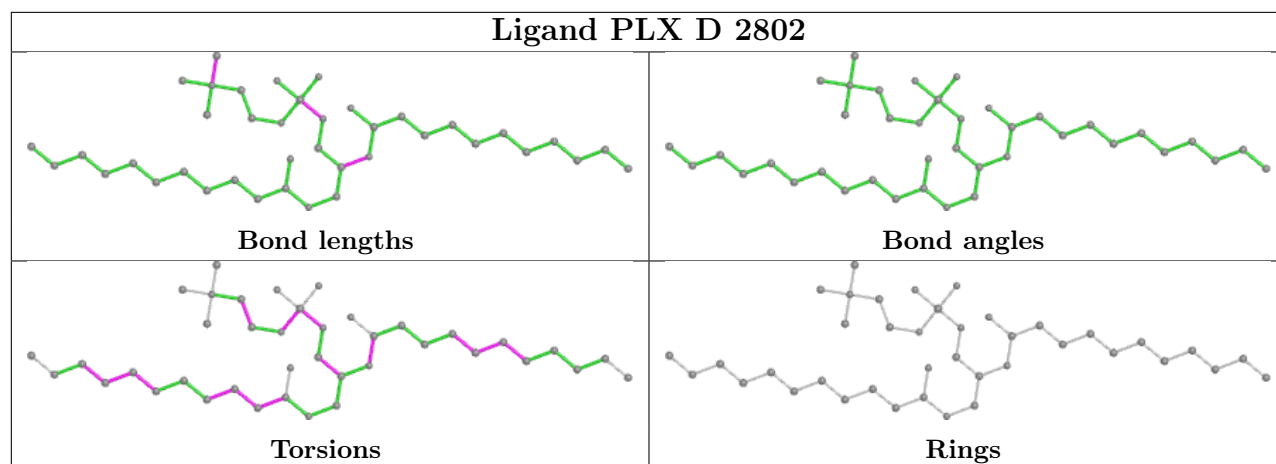
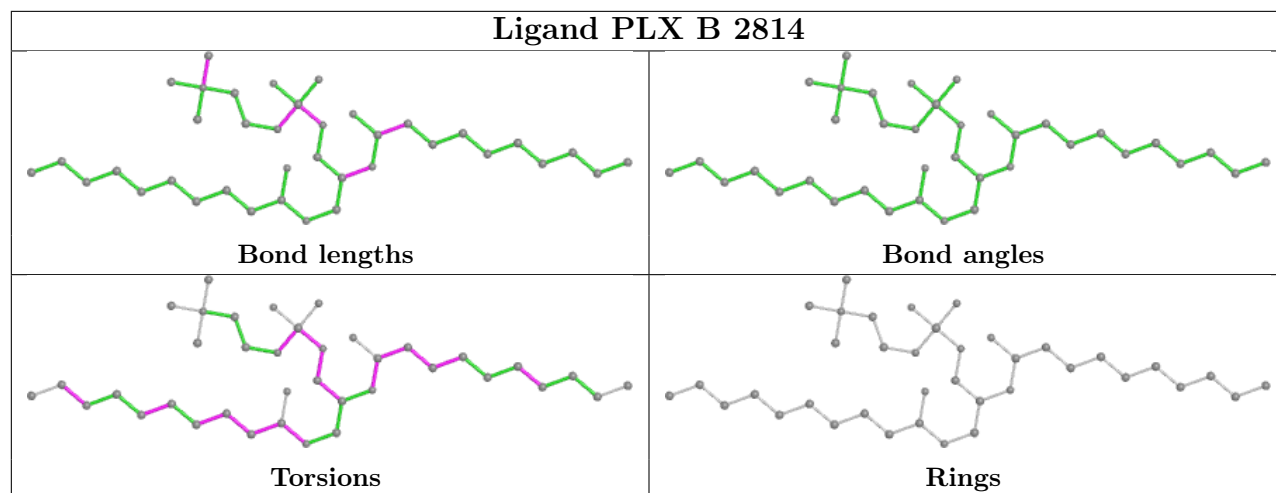
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

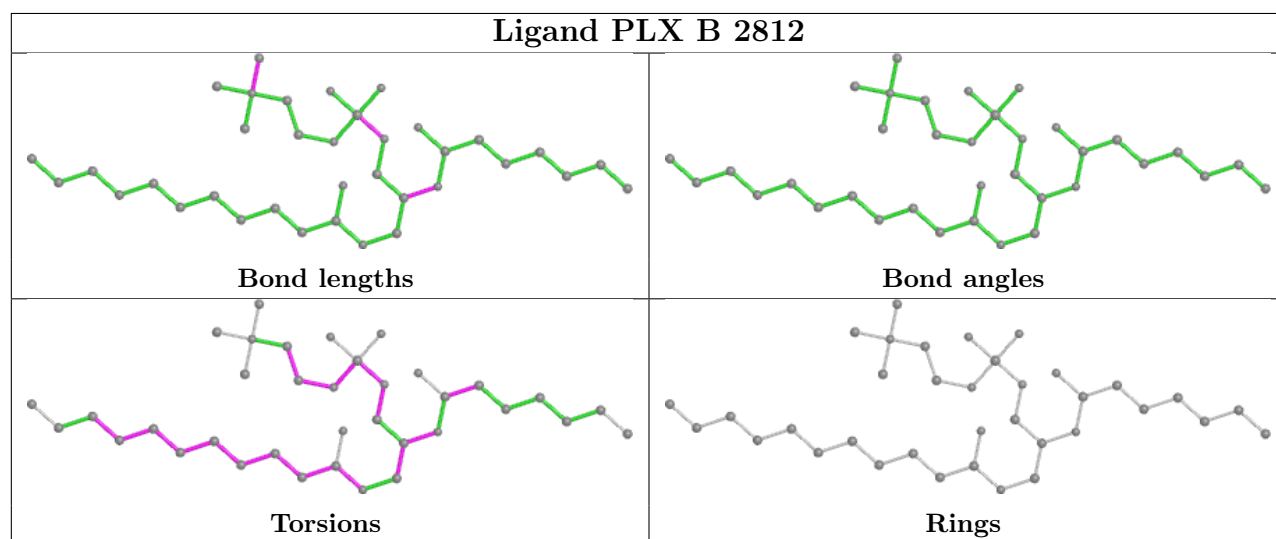
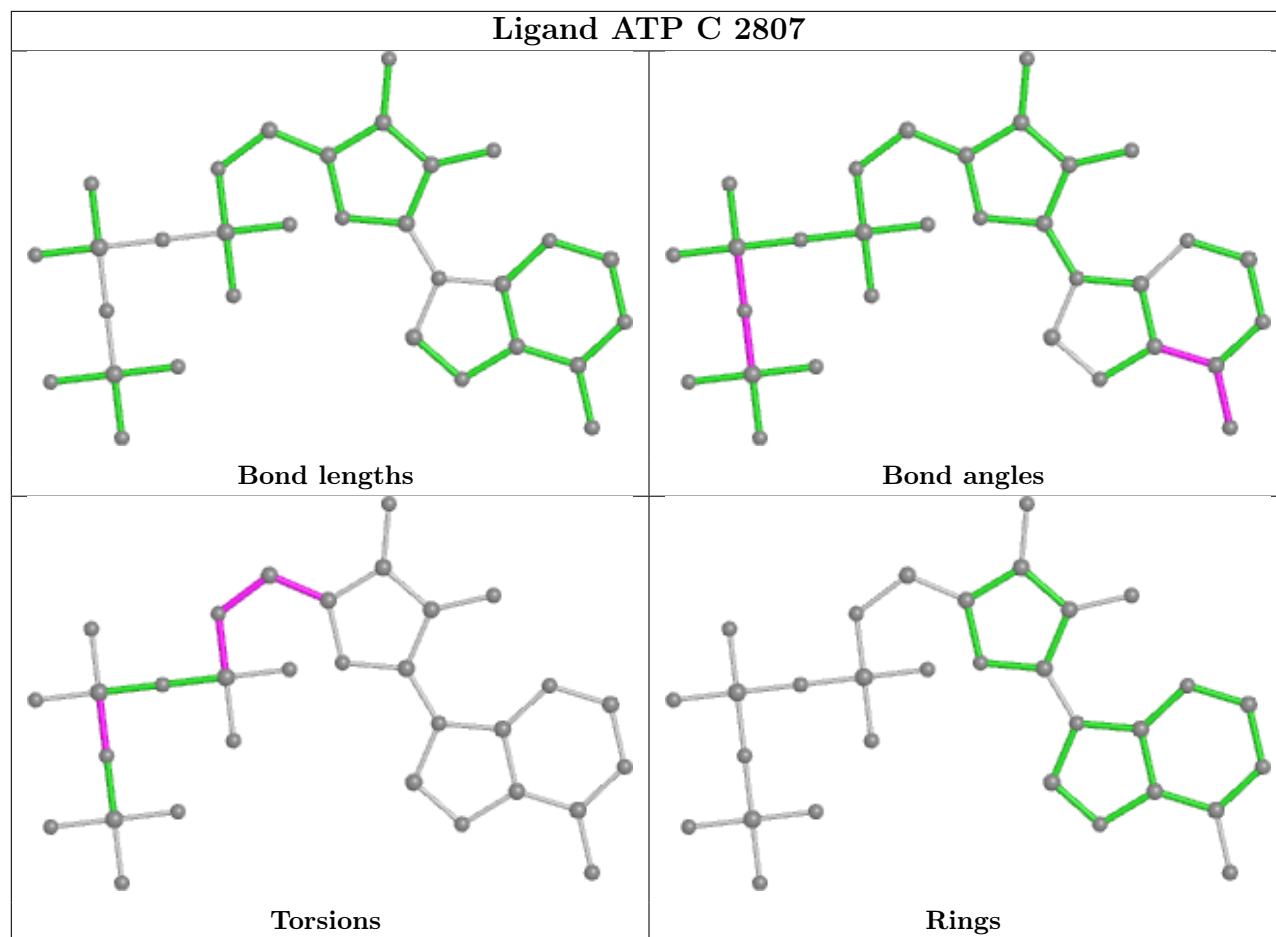


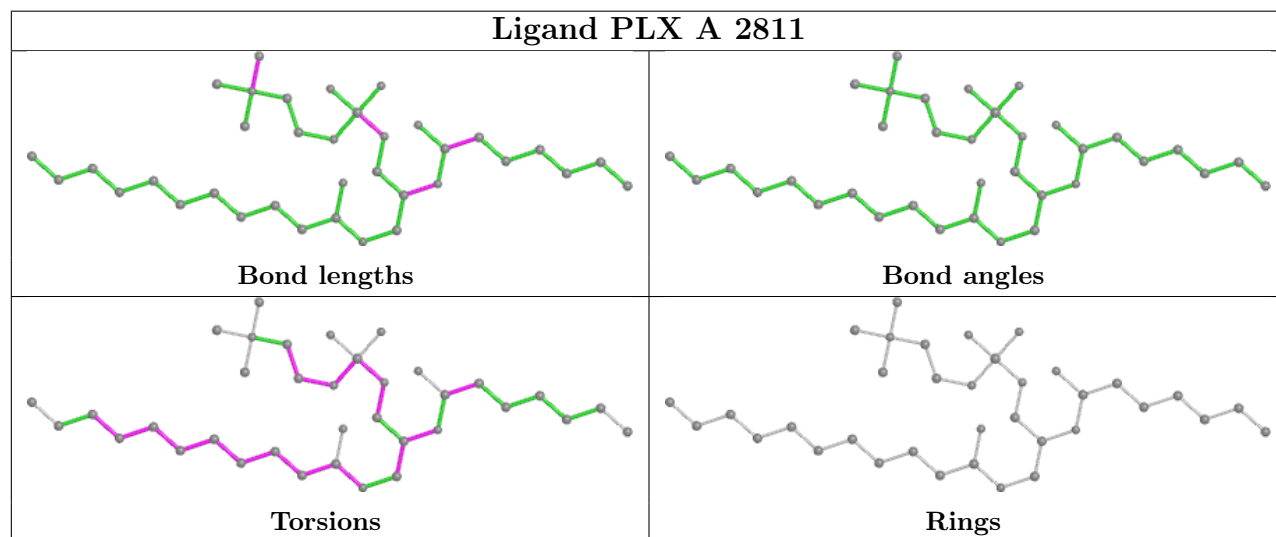
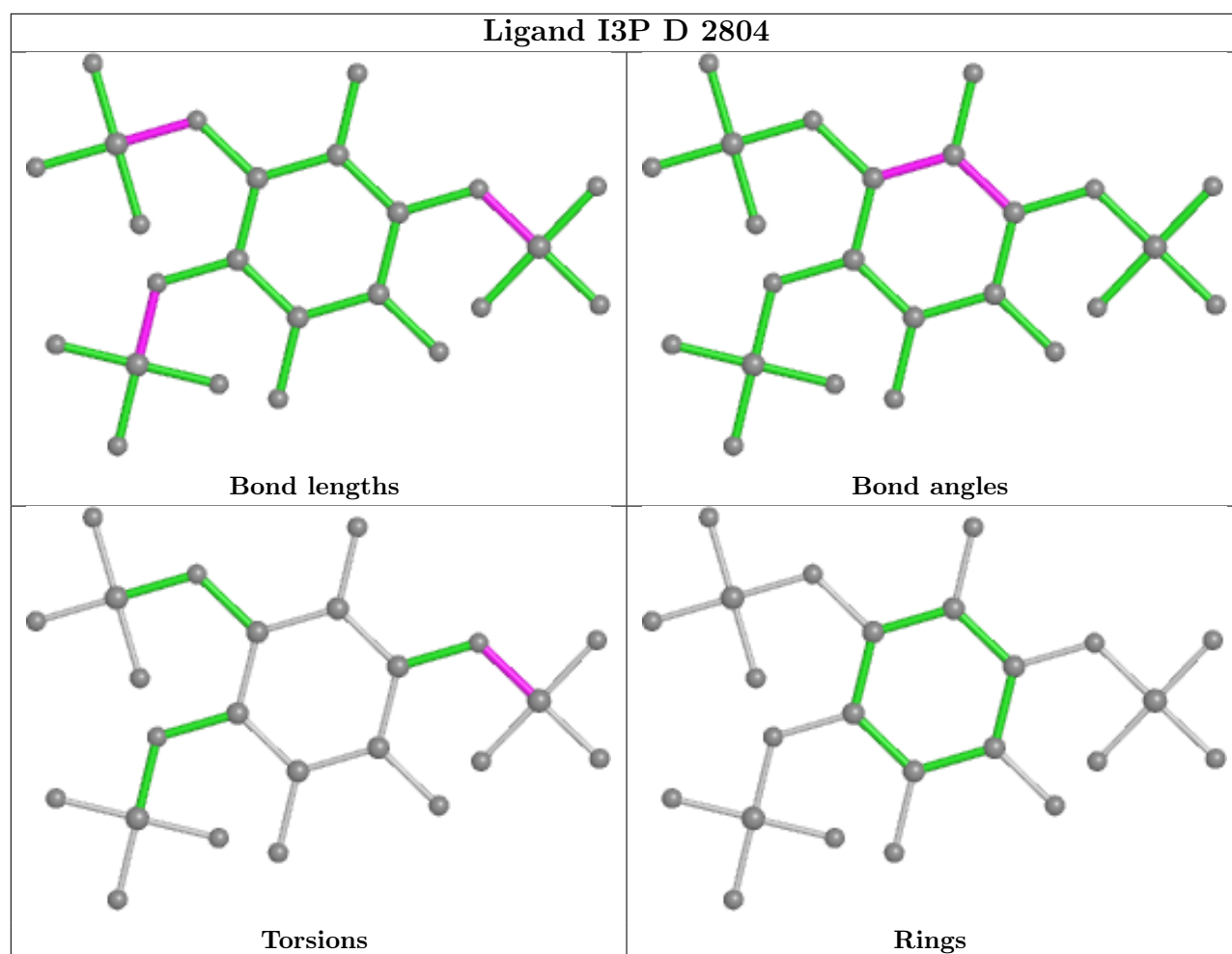


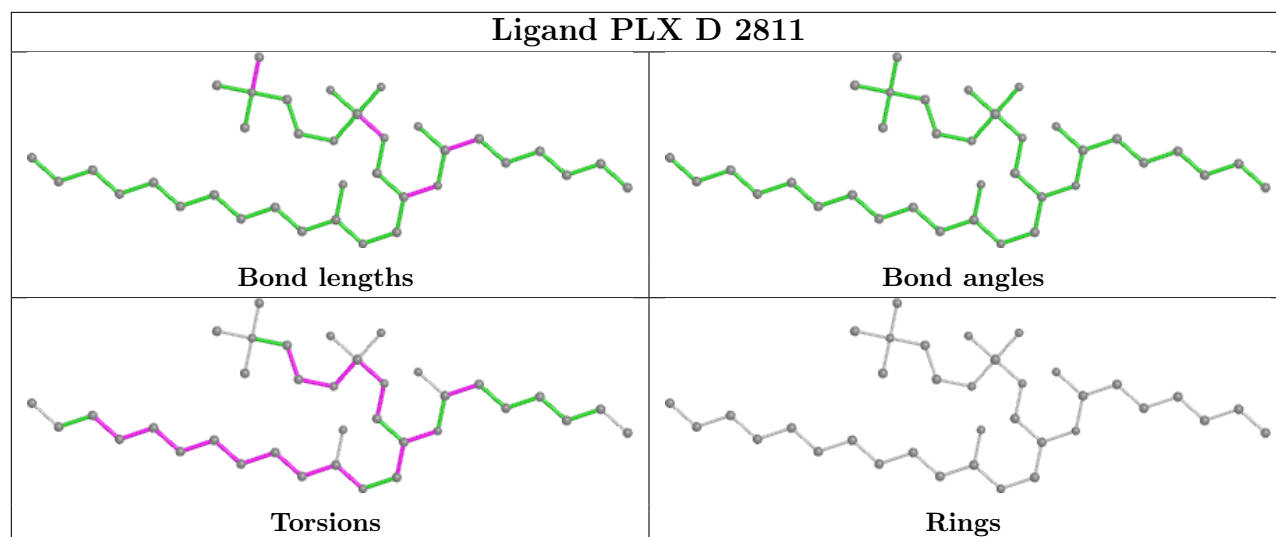
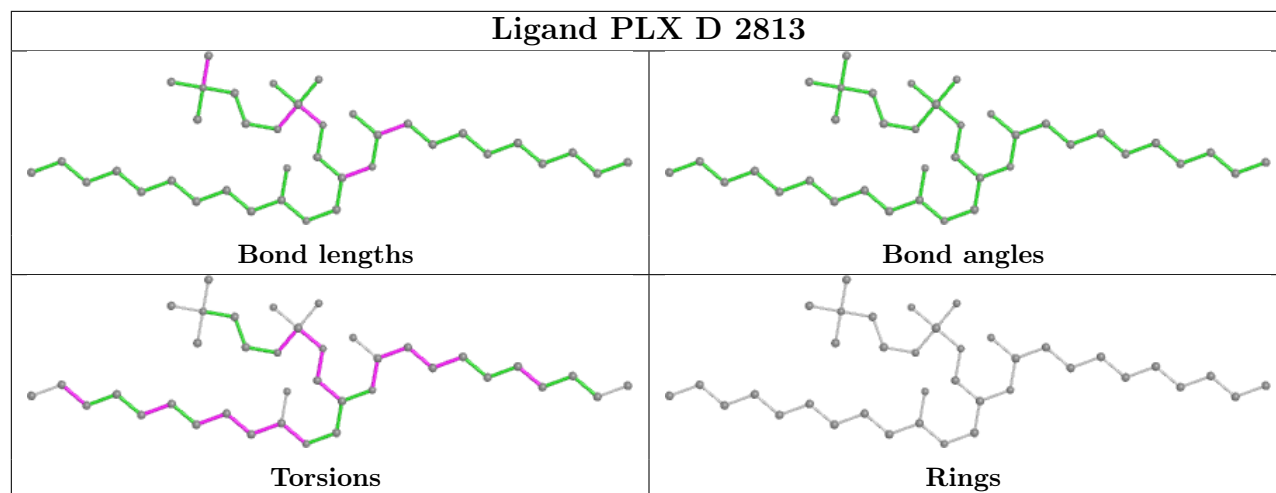


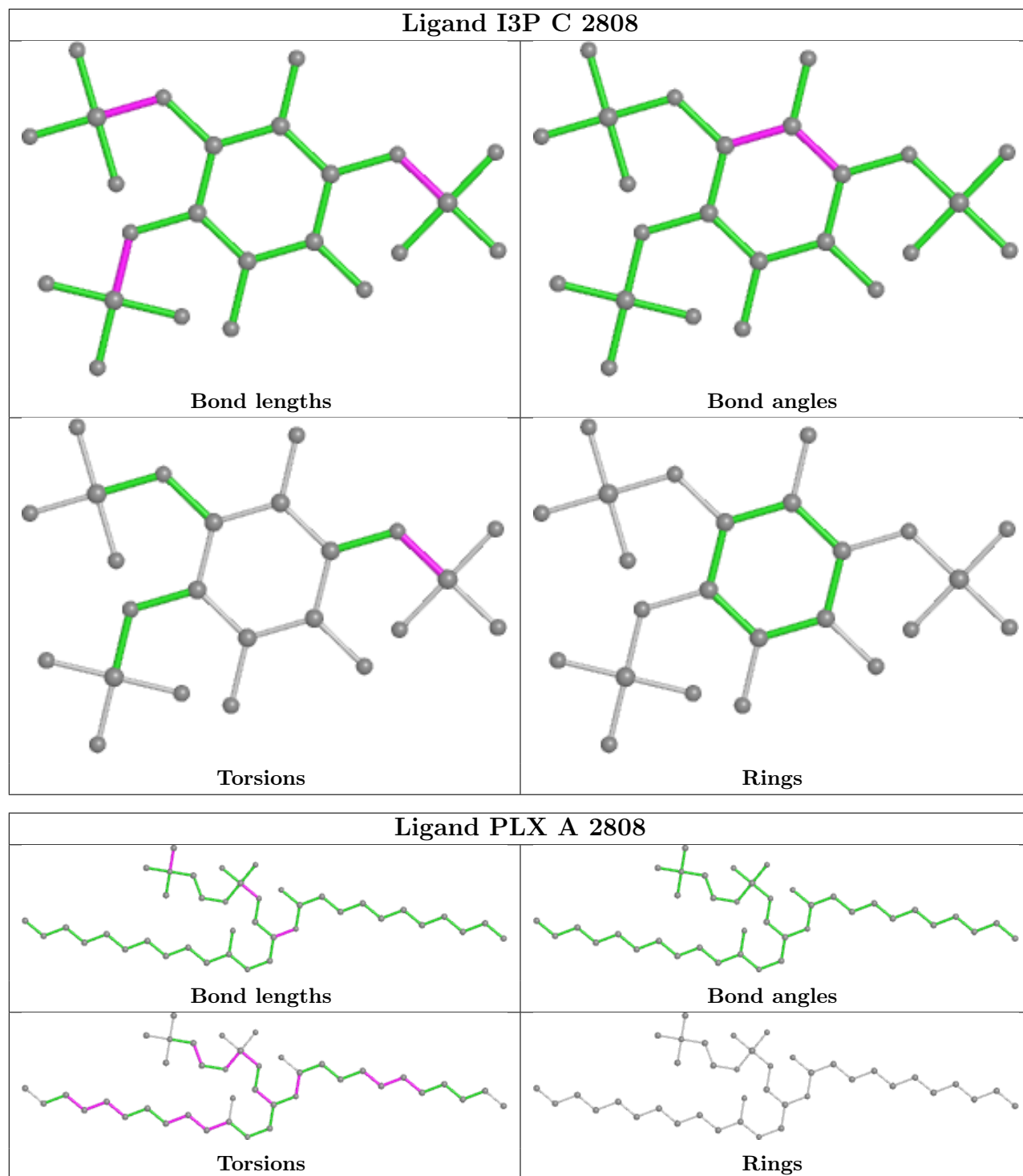


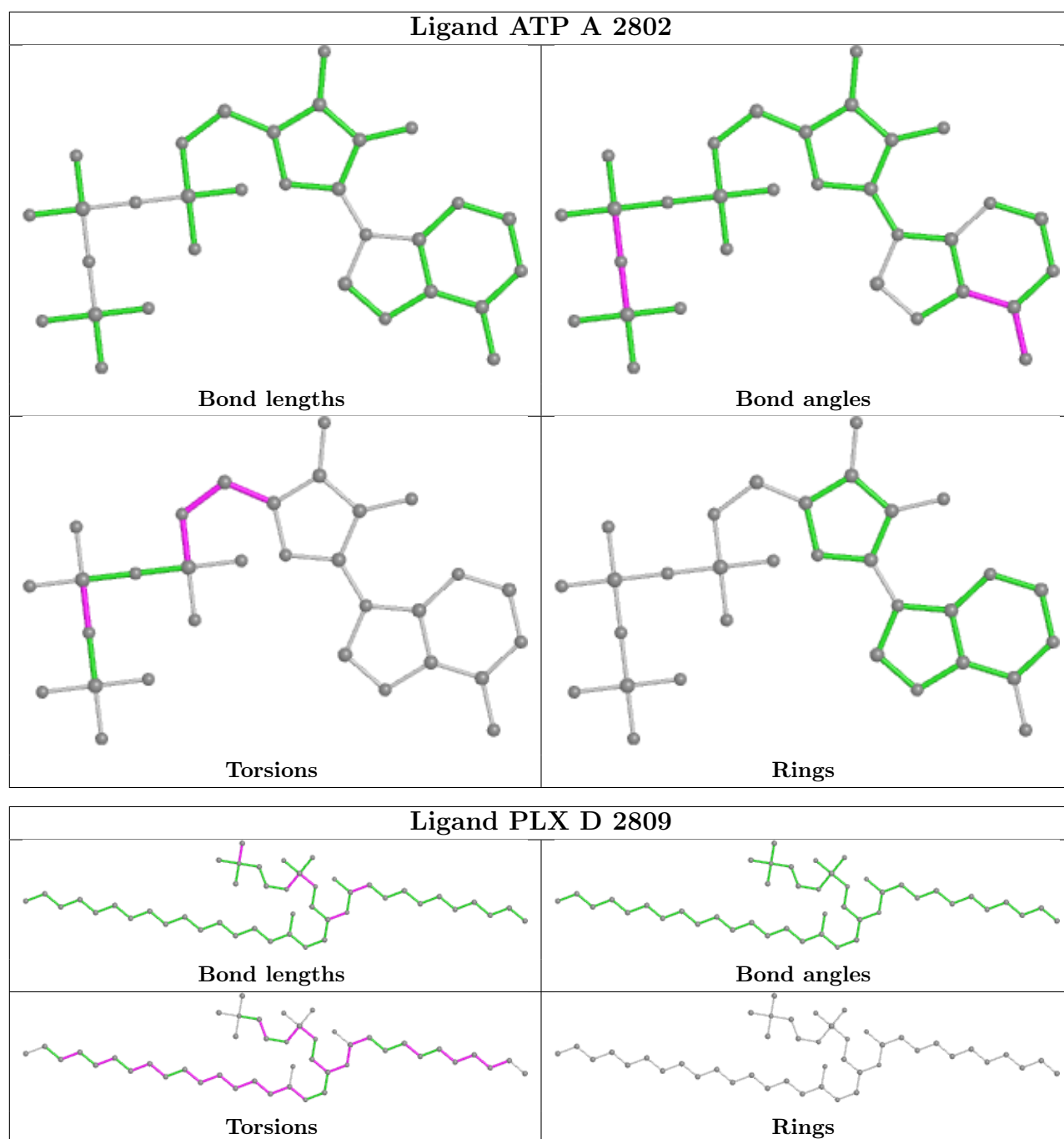


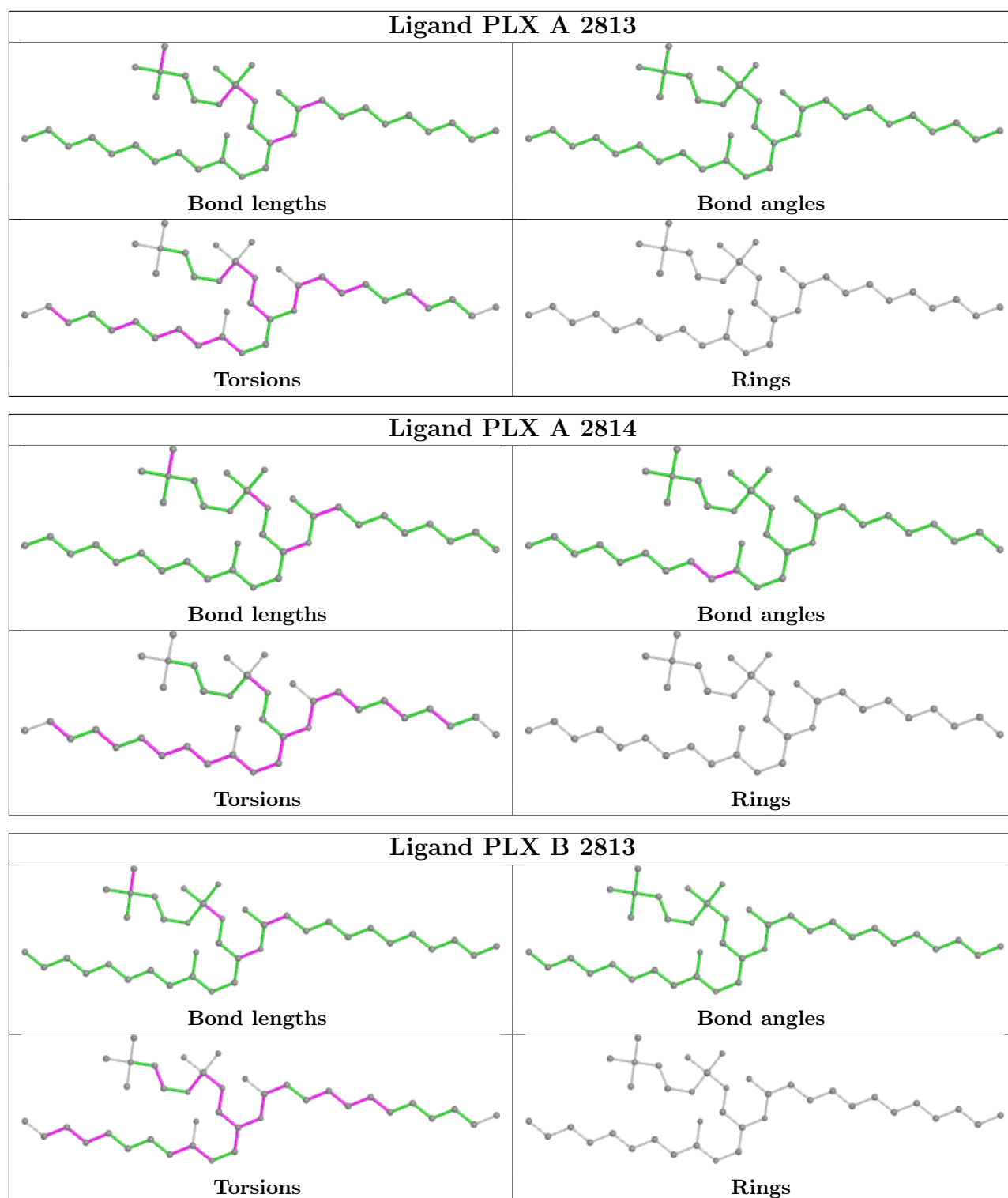


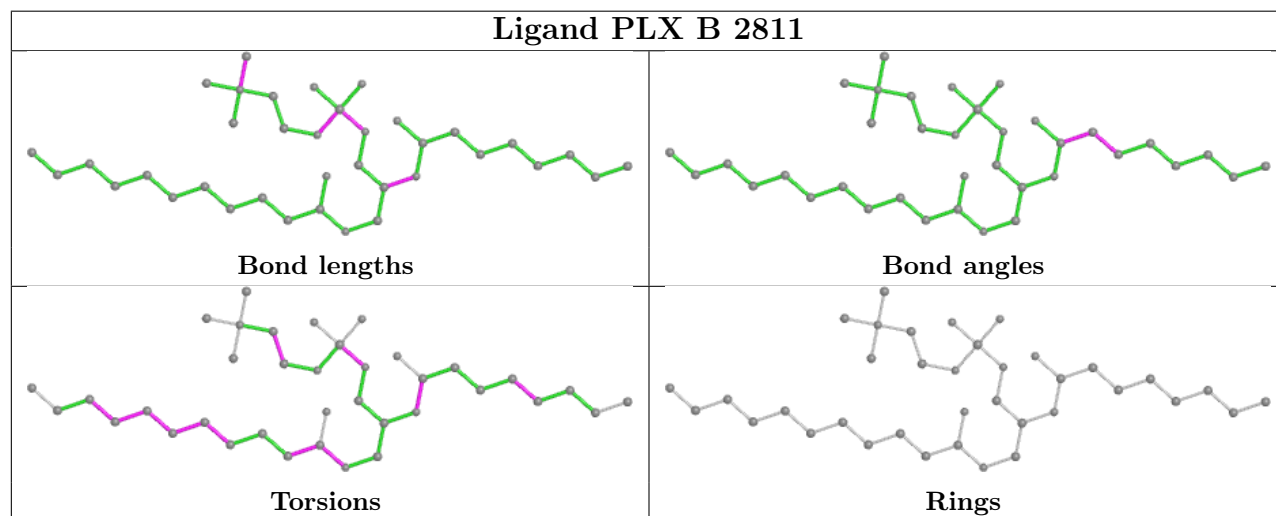
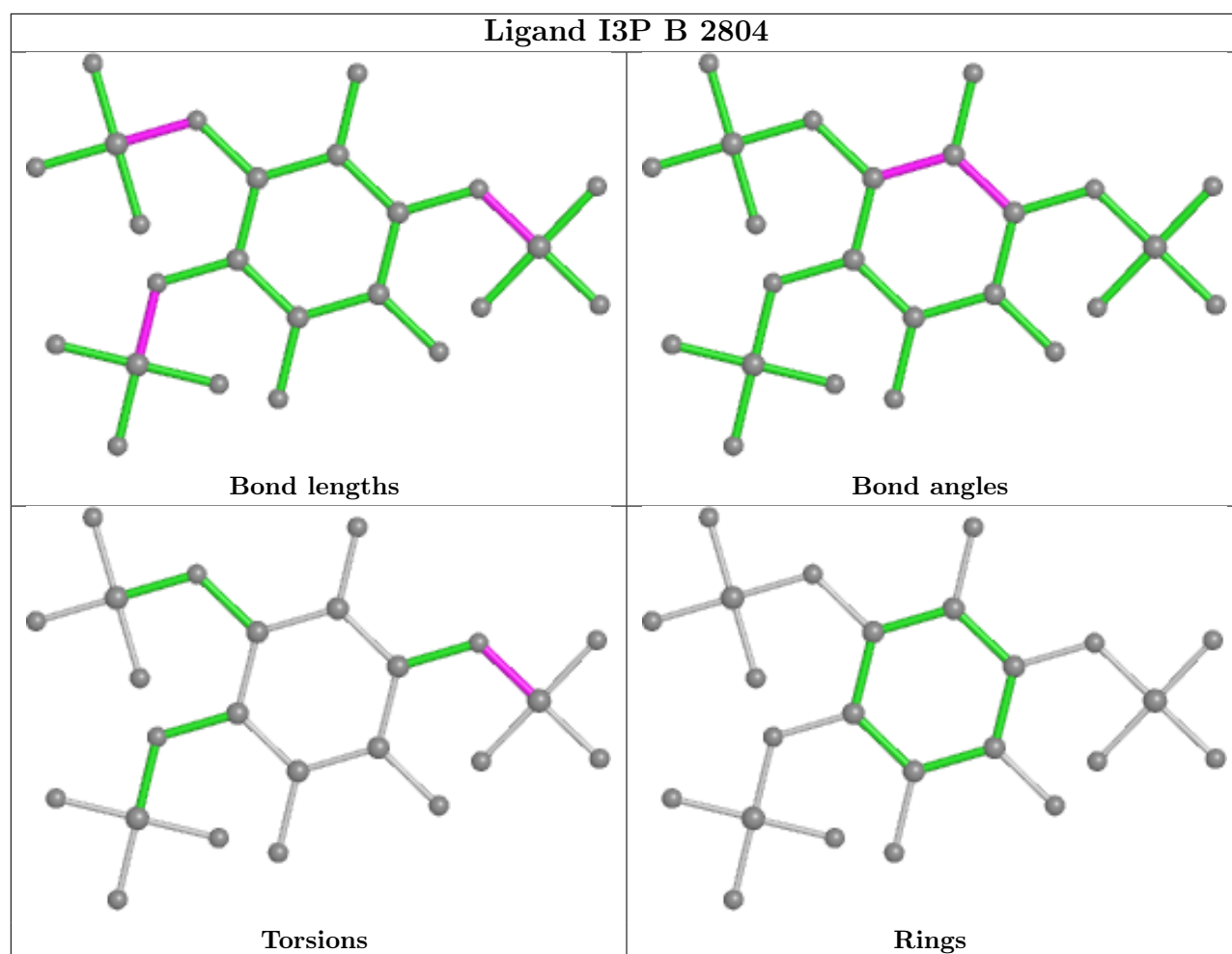


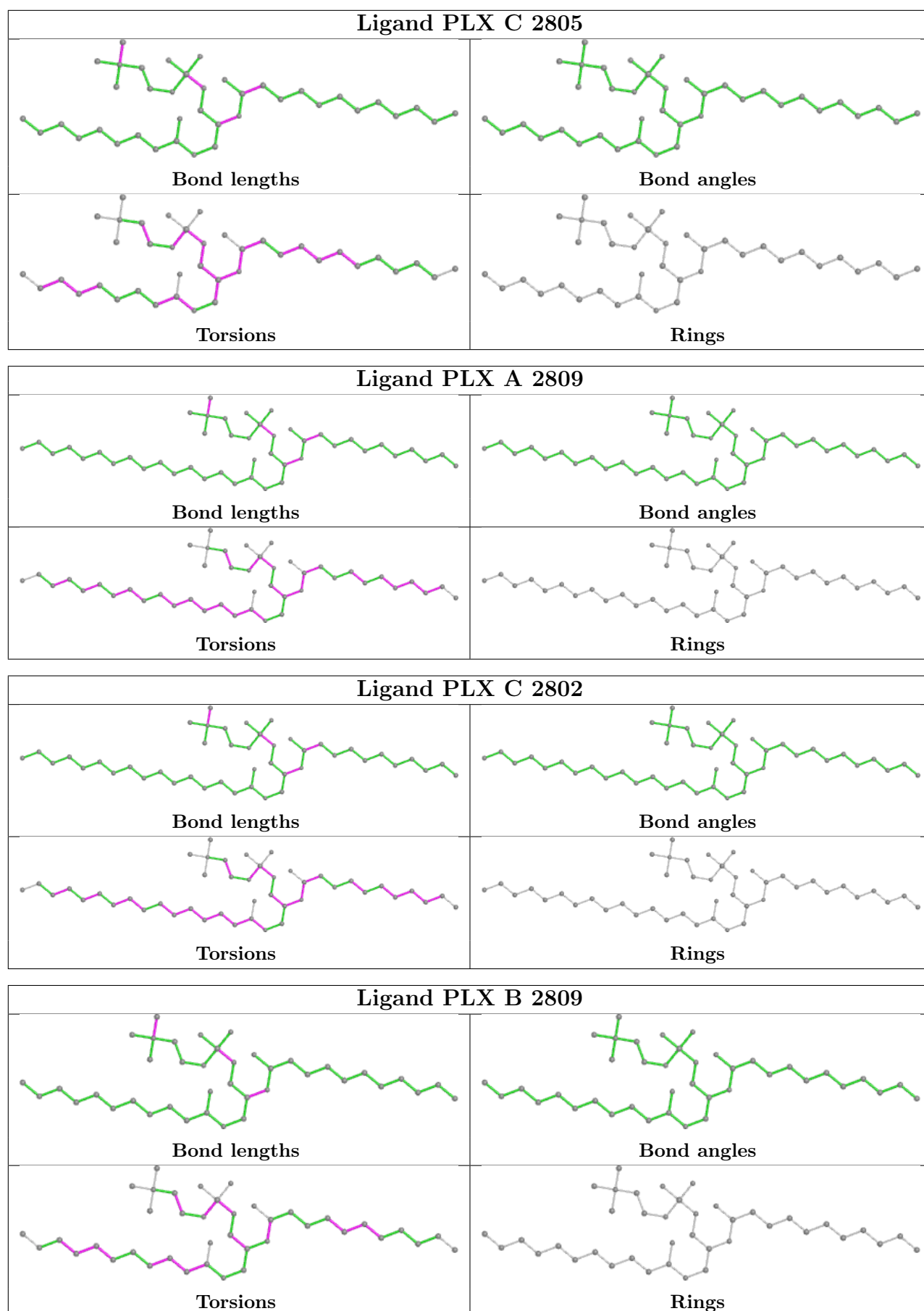


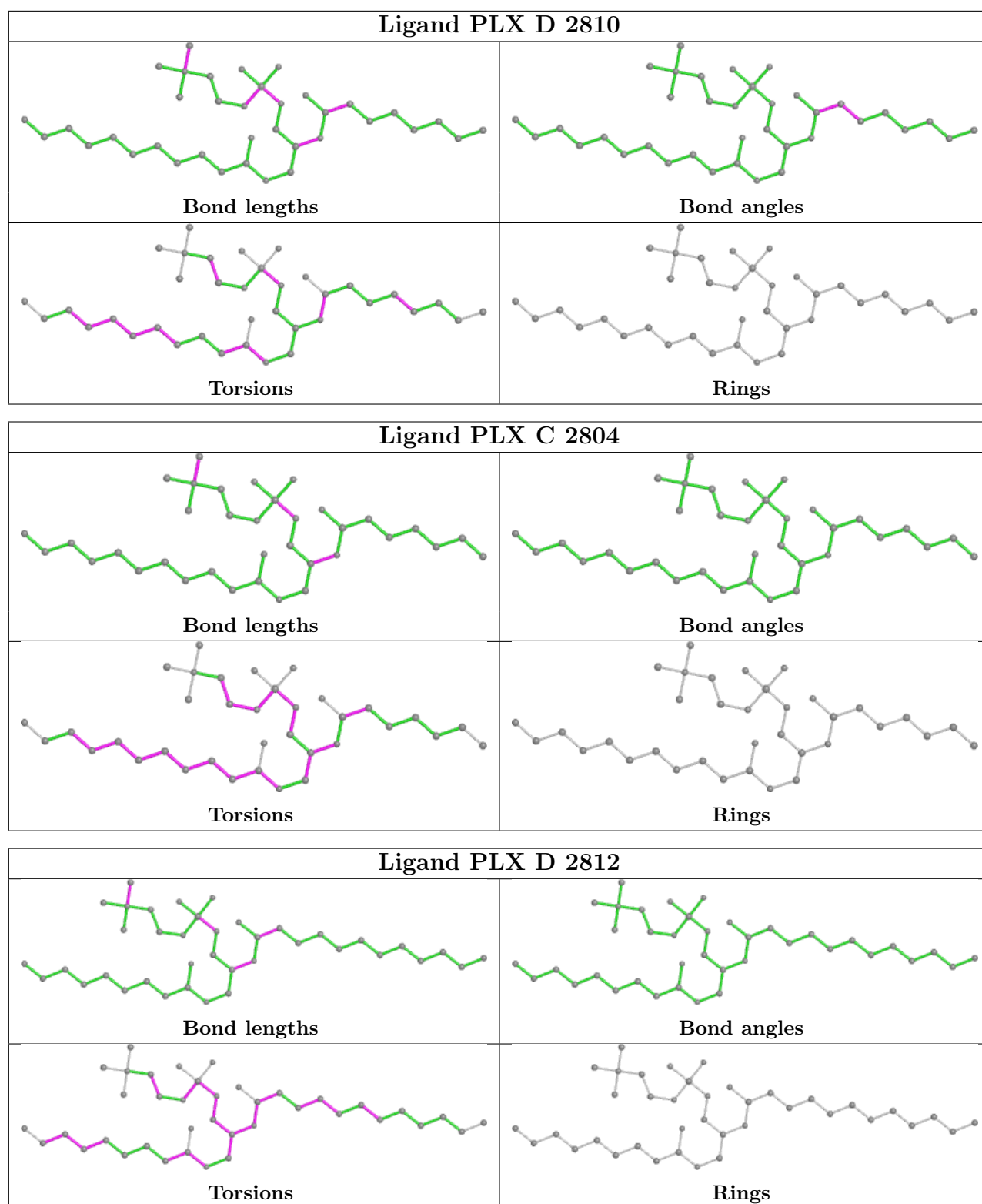


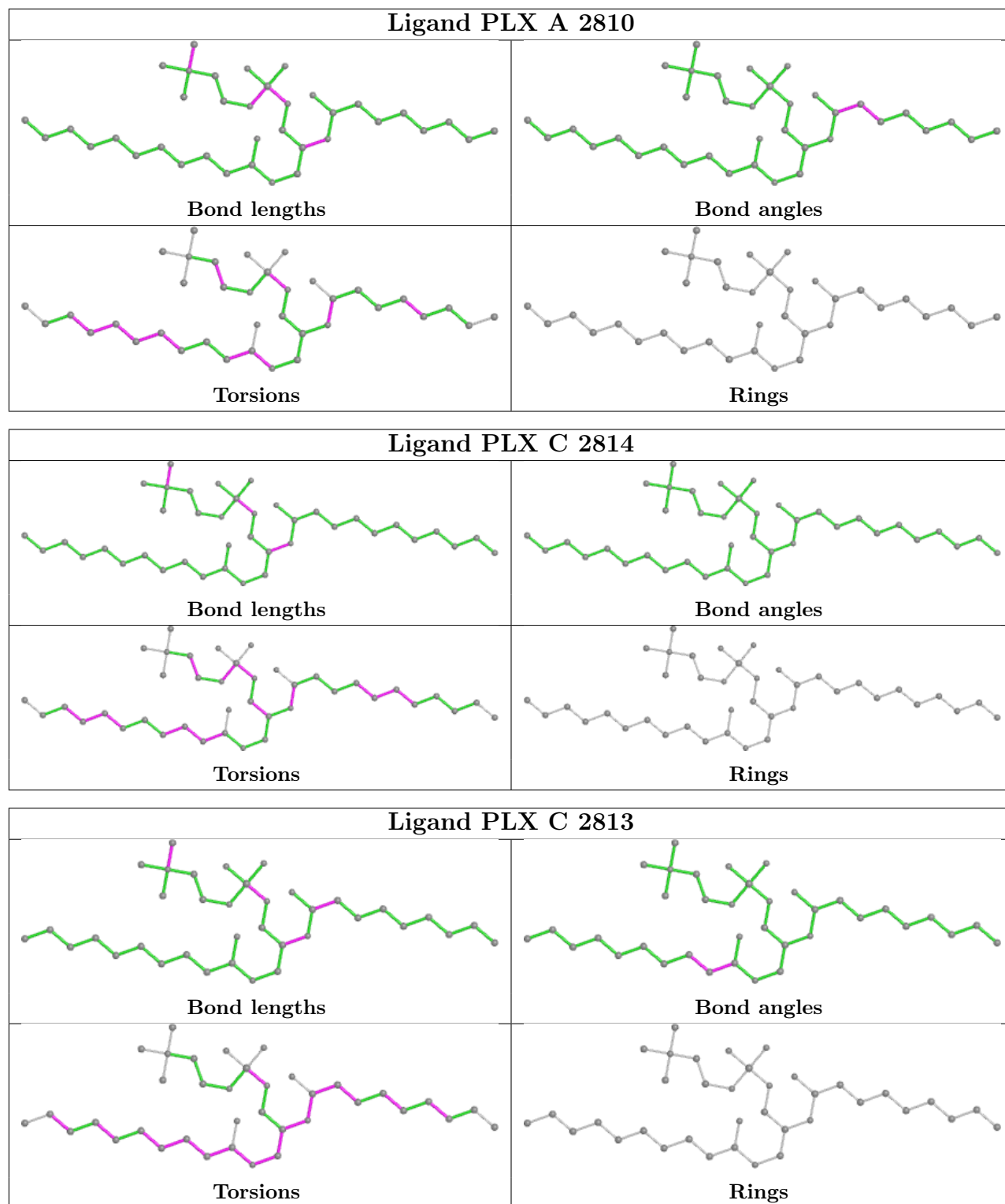












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

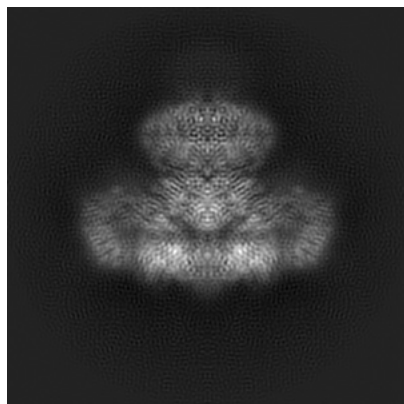
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27983. These allow visual inspection of the internal detail of the map and identification of artifacts.

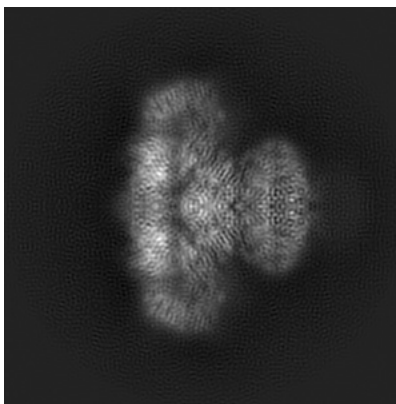
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

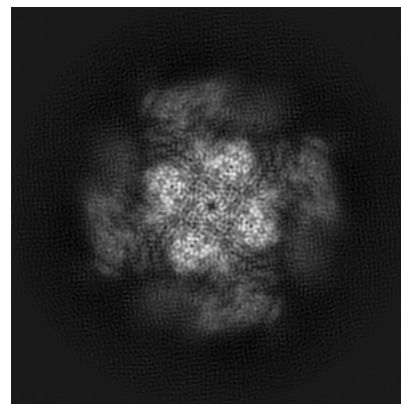
6.1.1 Primary map



X

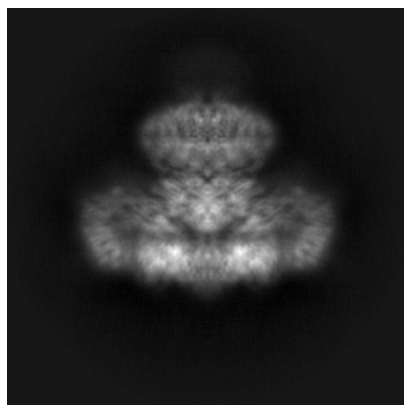


Y

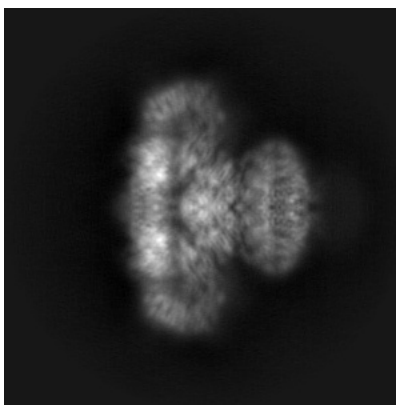


Z

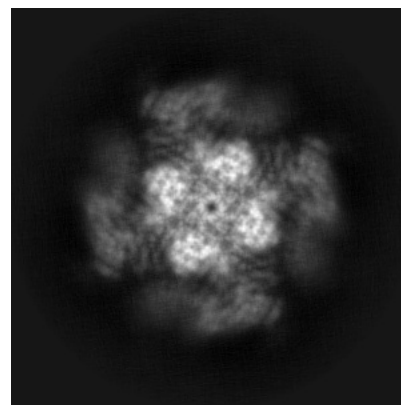
6.1.2 Raw map



X



Y

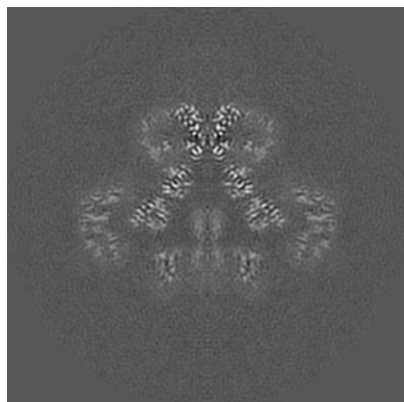


Z

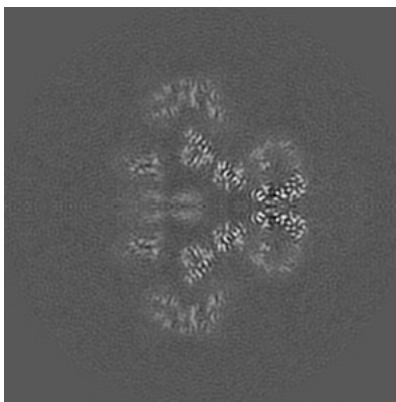
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

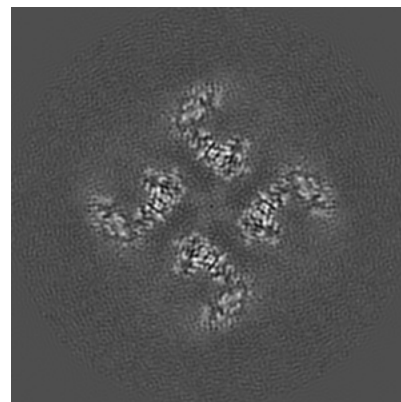
6.2.1 Primary map



X Index: 168

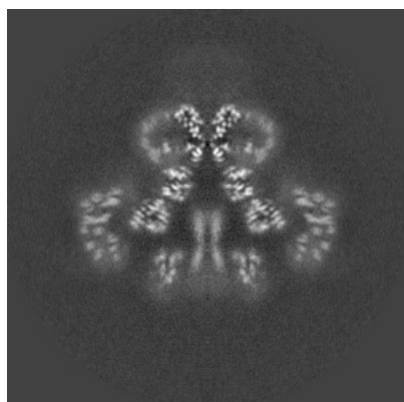


Y Index: 168

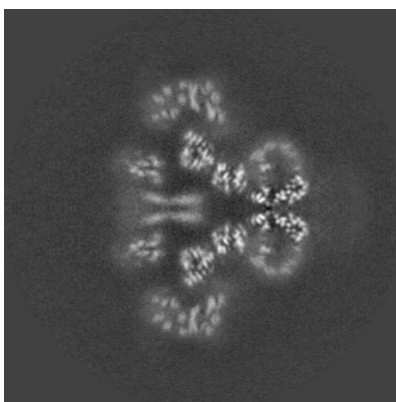


Z Index: 168

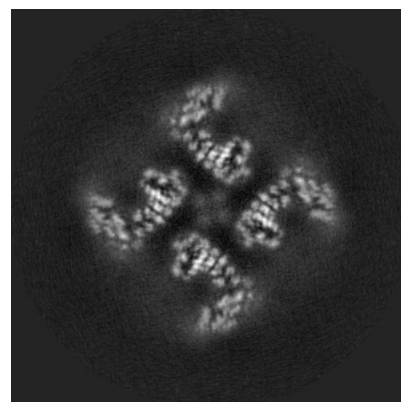
6.2.2 Raw map



X Index: 168



Y Index: 168

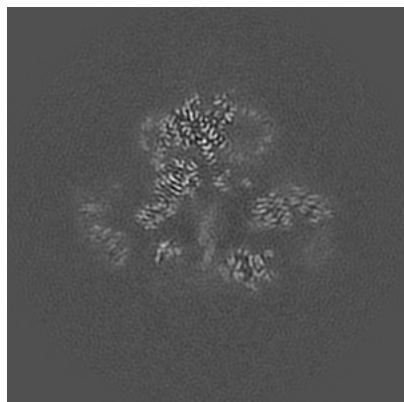


Z Index: 168

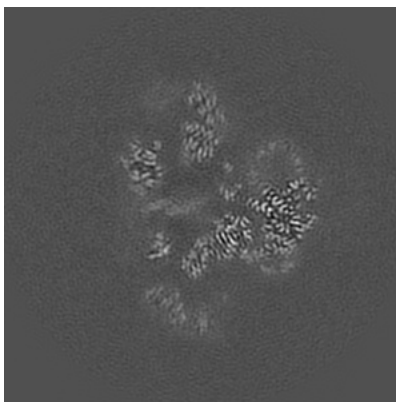
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

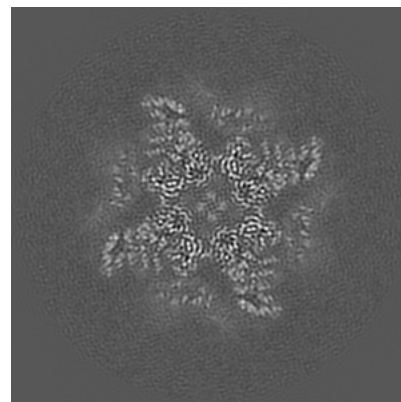
6.3.1 Primary map



X Index: 160

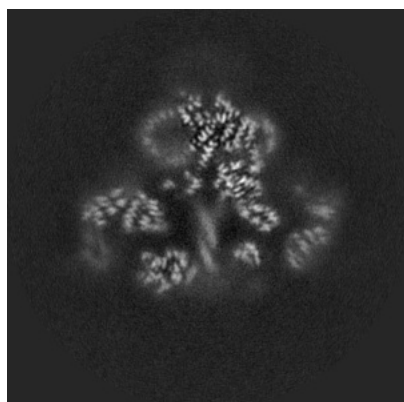


Y Index: 176

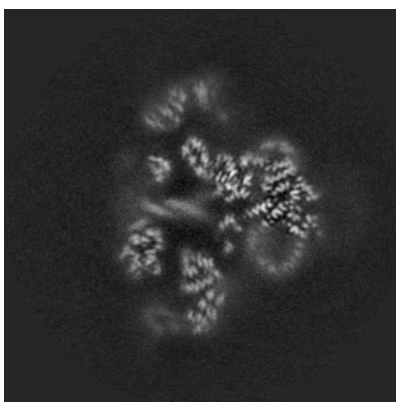


Z Index: 125

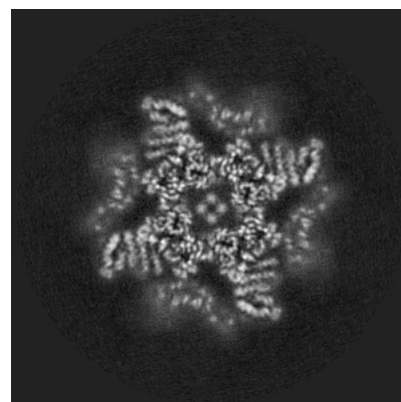
6.3.2 Raw map



X Index: 176



Y Index: 160

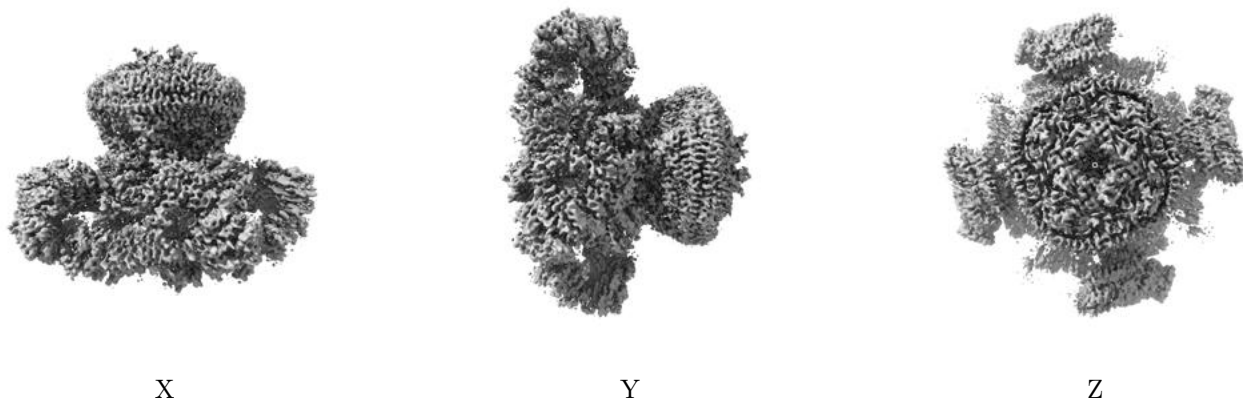


Z Index: 126

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

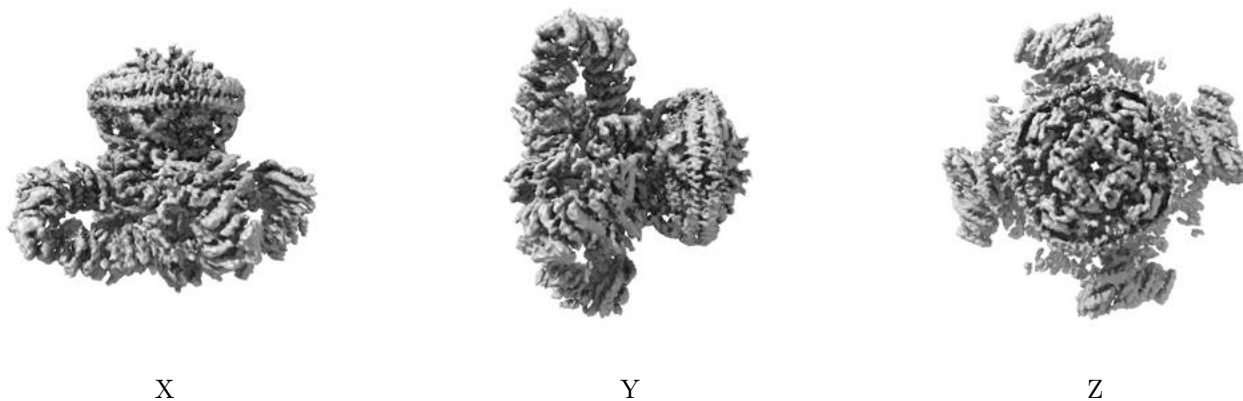
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.011. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

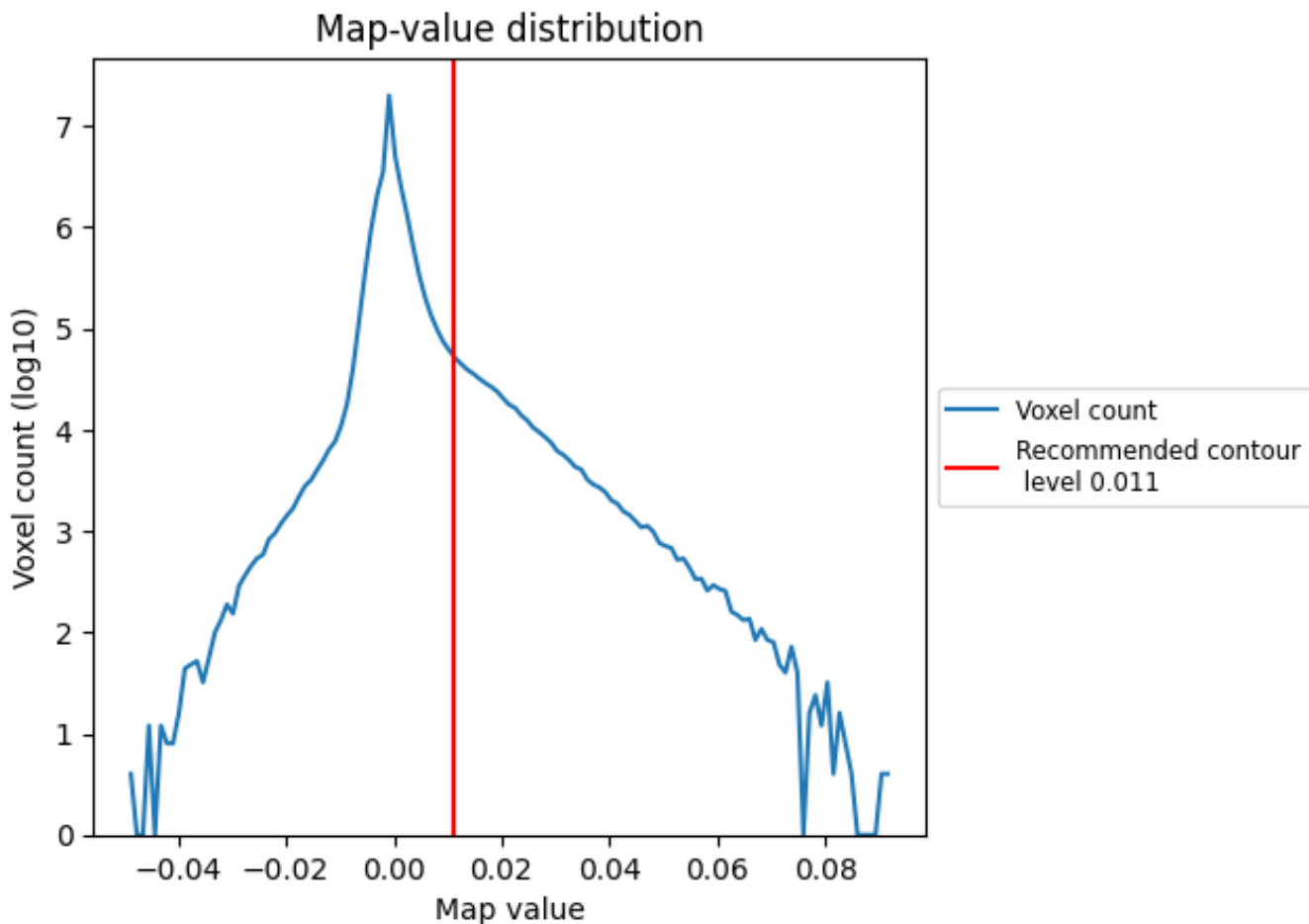
6.5 Mask visualisation [i](#)

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

7 Map analysis [i](#)

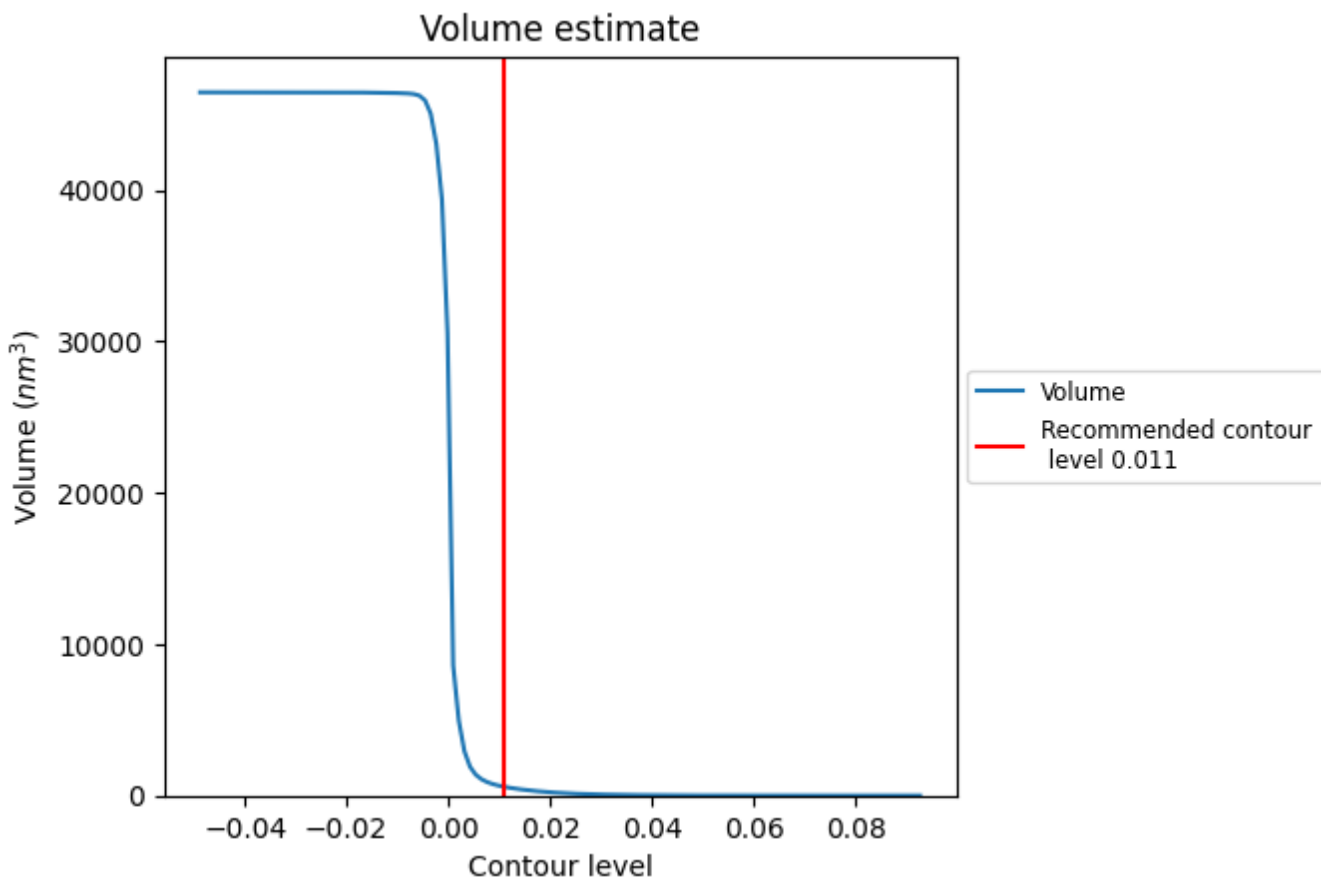
This section contains the results of statistical analysis of the map.

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.

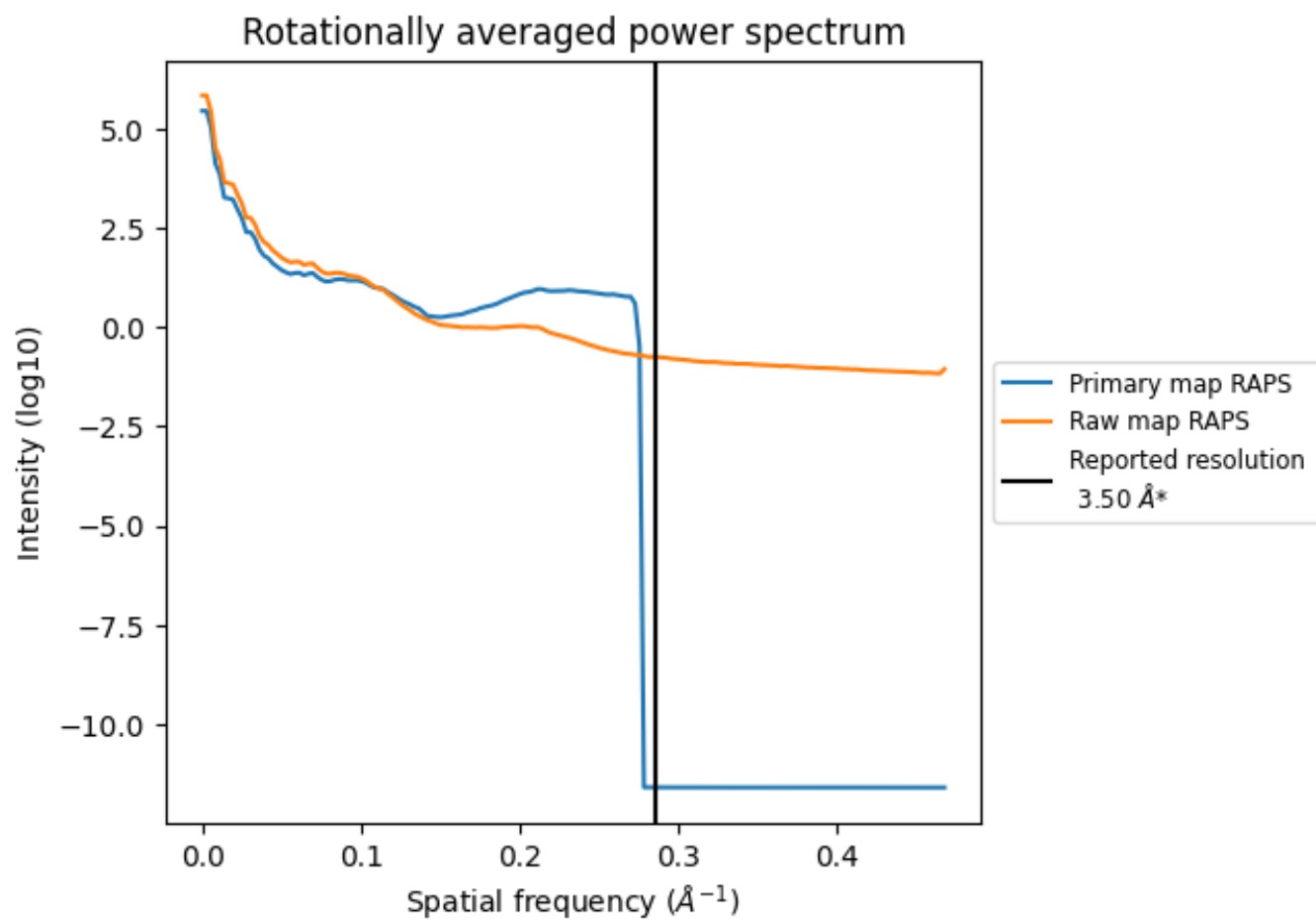
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 581 nm³; this corresponds to an approximate mass of 525 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](#)

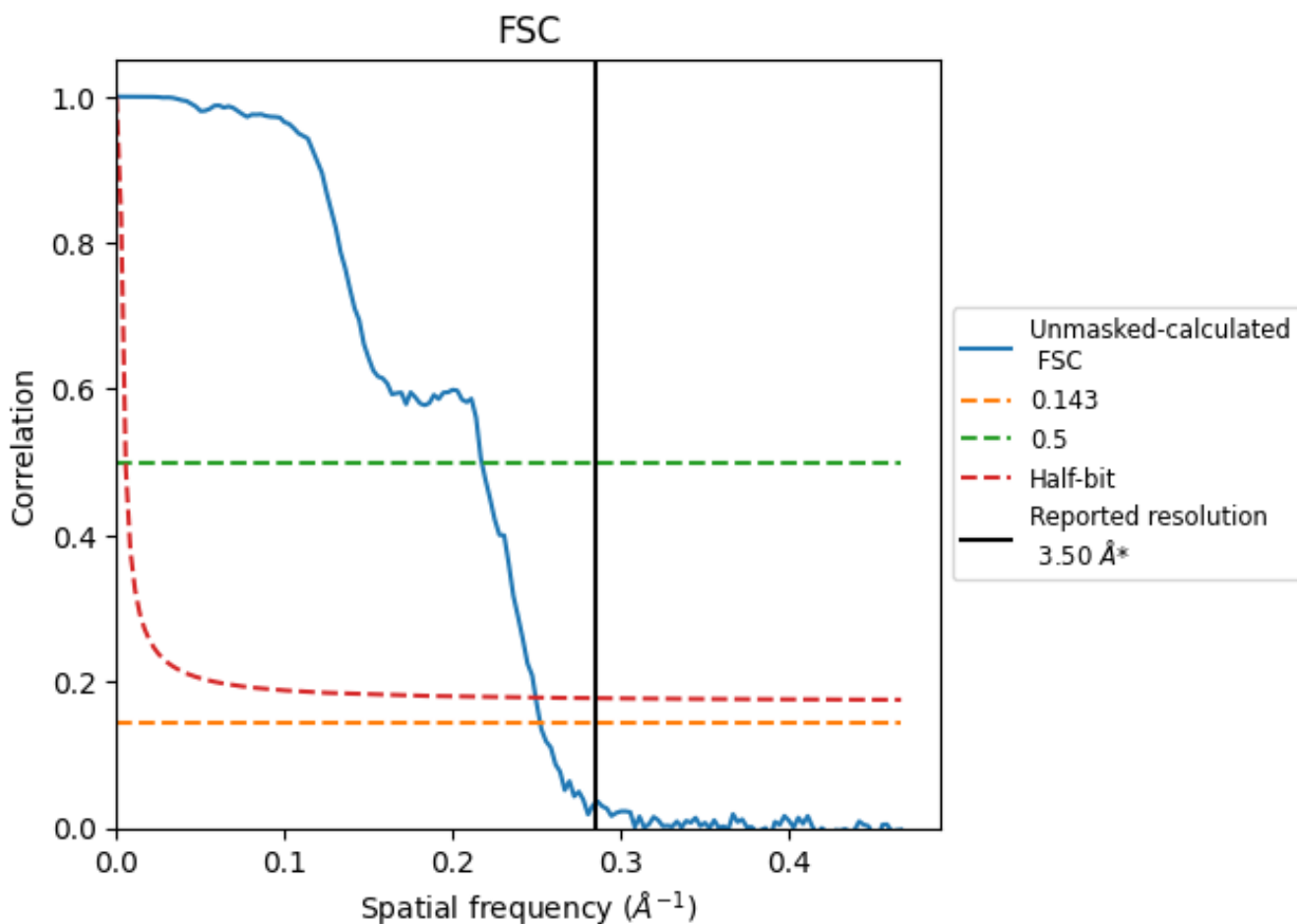


*Reported resolution corresponds to spatial frequency of 0.286 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.286 \AA^{-1}

8.2 Resolution estimates [i](#)

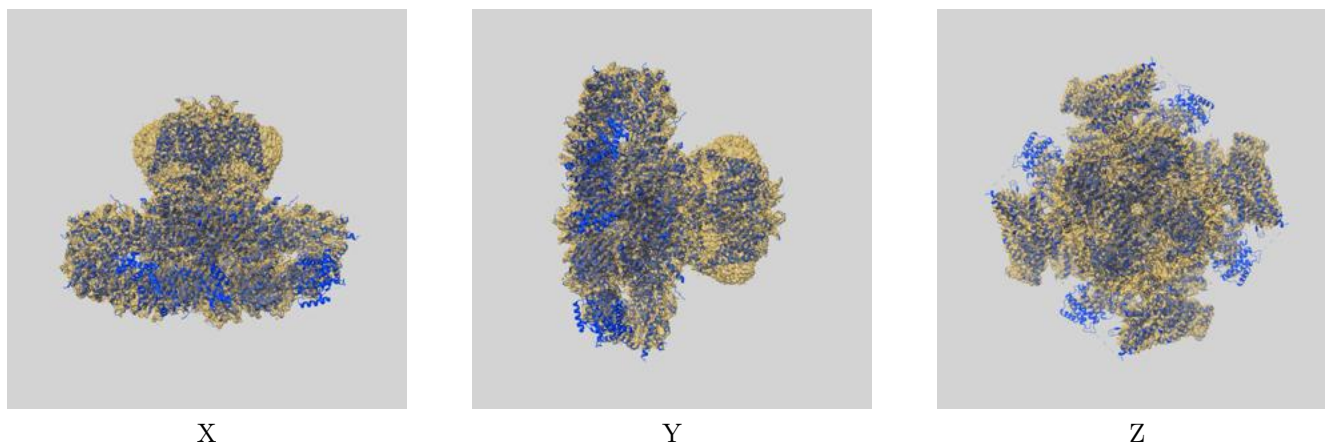
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.96	4.60	4.00

*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 3.96 differs from the reported value 3.5 by more than 10 %

9 Map-model fit [i](#)

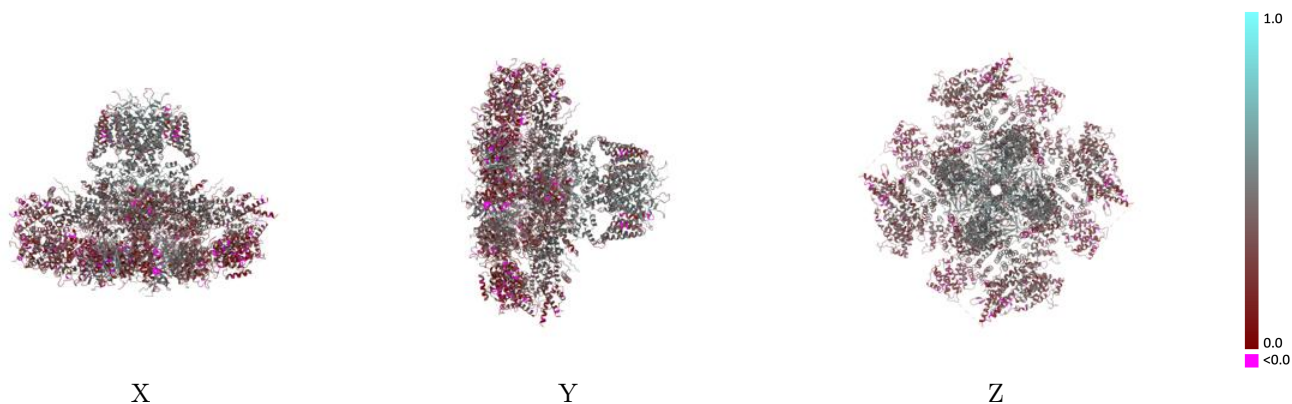
This section contains information regarding the fit between EMDB map EMD-27983 and PDB model 8EAR. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)



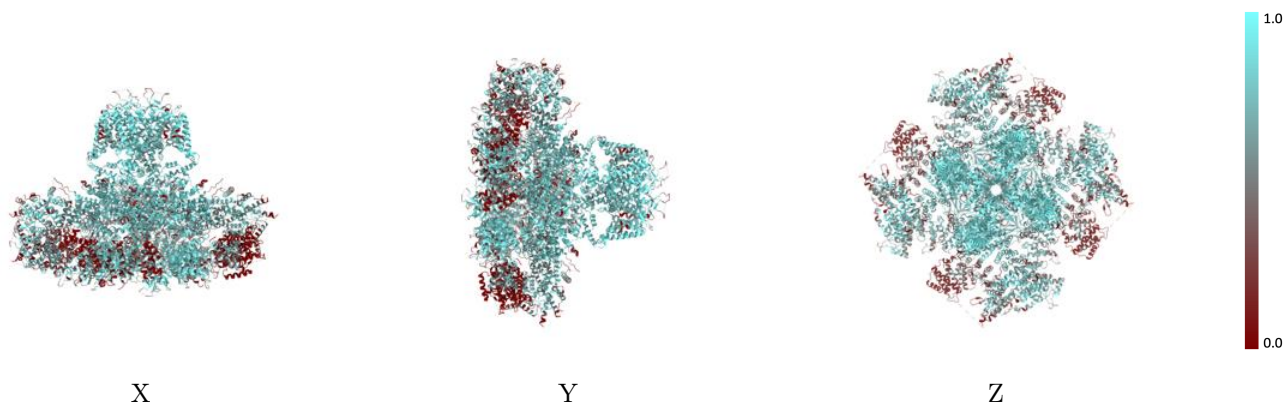
The images above show the 3D surface view of the map at the recommended contour level 0.011 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



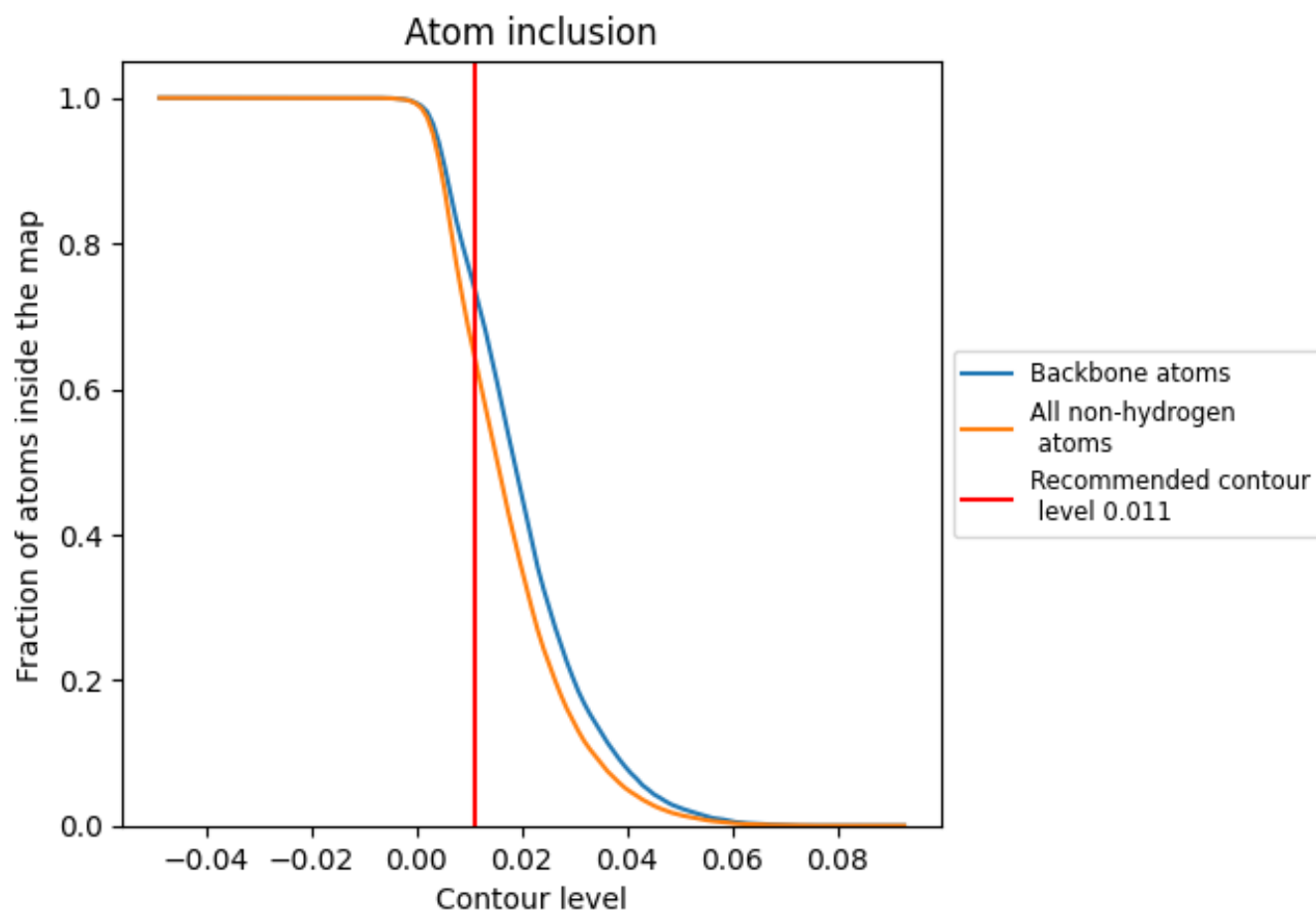
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.011).











9.4 Atom inclusion [i](#)



At the recommended contour level, 74% of all backbone atoms, 65% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.011) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6469	 0.3500
A	 0.6467	 0.3500
B	 0.6468	 0.3500
C	 0.6471	 0.3500
D	 0.6471	 0.3500

