



wwPDB EM Validation Summary Report ⓘ

Nov 19, 2022 – 03:27 PM EST

PDB ID : 7T3T
EMDB ID : EMD-25670
Title : IP3, ATP, and Ca²⁺ bound type 3 IP3 receptor in the active state
Authors : Schmitz, E.A.; Takahashi, H.; Karakas, E.
Deposited on : 2021-12-08
Resolution : 3.80 Å (reported)
Based on initial model : 6UQK

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) : 2.31.3

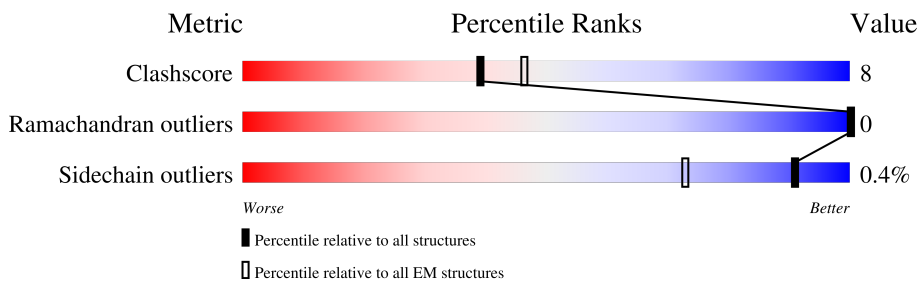
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.80 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	2633	
1	B	2633	
1	C	2633	
1	D	2633	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 68516 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.

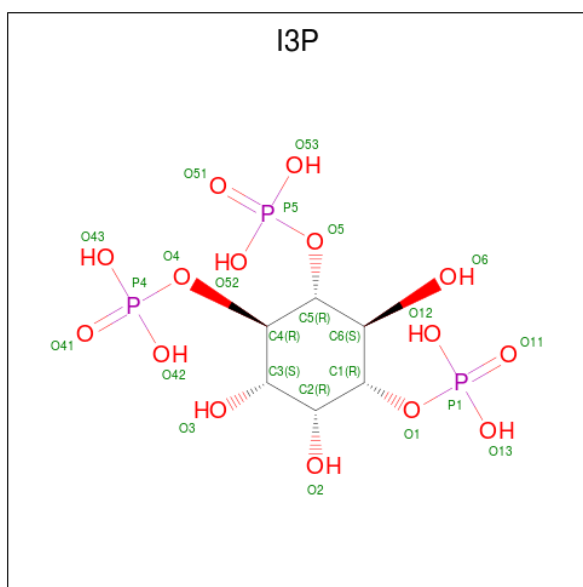
- Molecule 1 is a protein called Inositol 1,4,5-trisphosphate receptor type 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2121	17072	10908	2923	3138	103	0	0
1	B	2121	17072	10908	2923	3138	103	0	0
1	C	2121	17072	10908	2923	3138	103	0	0
1	D	2121	17072	10908	2923	3138	103	0	0

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

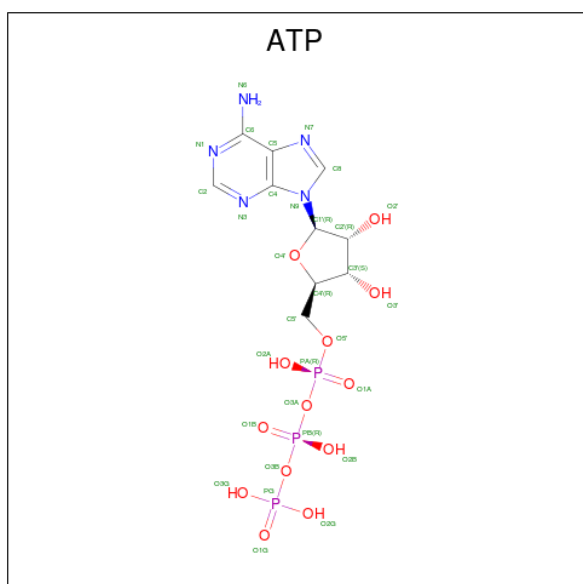
Mol	Chain	Residues	Atoms		AltConf
2	A	1	Total 1	Zn 1	0
2	B	1	Total 1	Zn 1	0
2	C	1	Total 1	Zn 1	0
2	D	1	Total 1	Zn 1	0

- Molecule 3 is D-MYO-INOSITOL-1,4,5-TRIPHOSPHATE (three-letter code: I3P) (formula: C₆H₁₅O₁₅P₃) (labeled as "Ligand of Interest" by depositor).



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

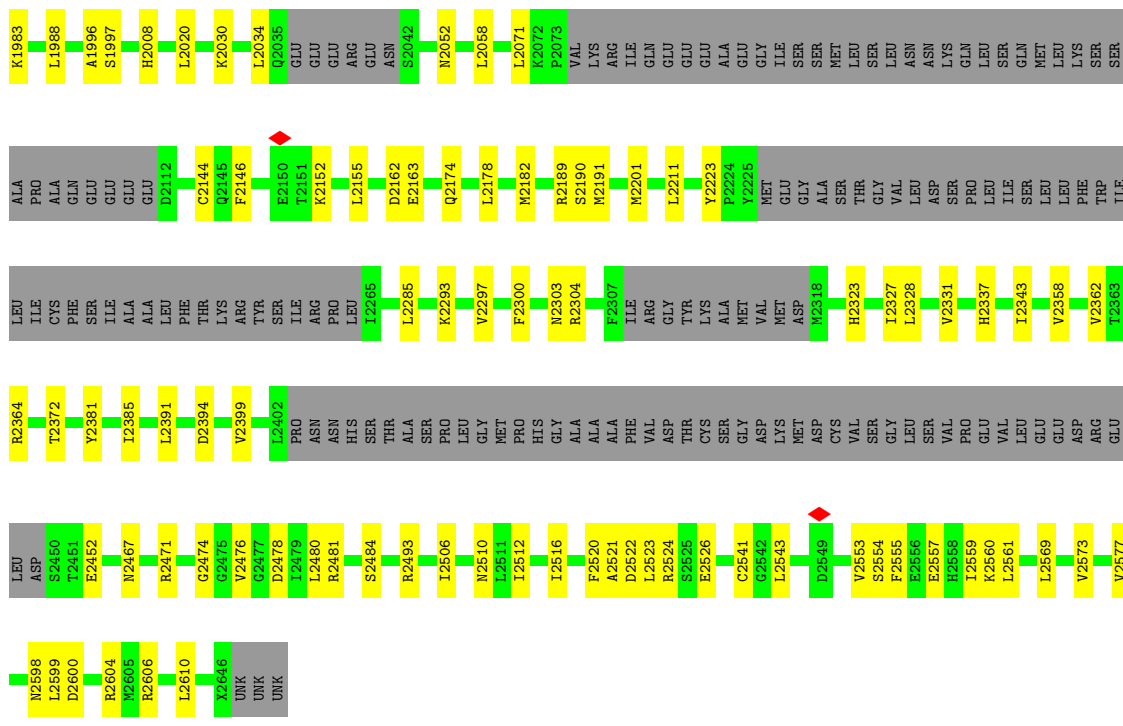
- Molecule 4 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



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

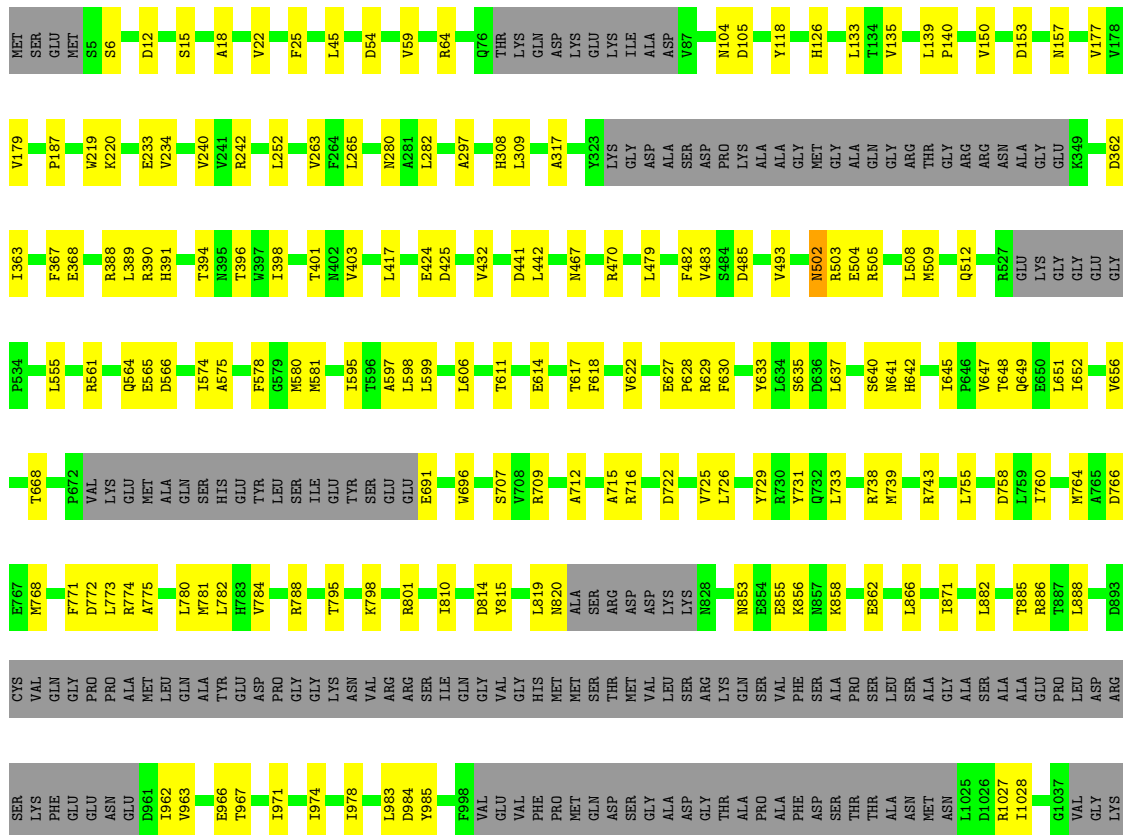
- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
5	A	1	Total	Ca	0
			1	1	
5	B	1	Total	Ca	0
			1	1	
5	C	1	Total	Ca	0
			1	1	
5	D	1	Total	Ca	0
			1	1	



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

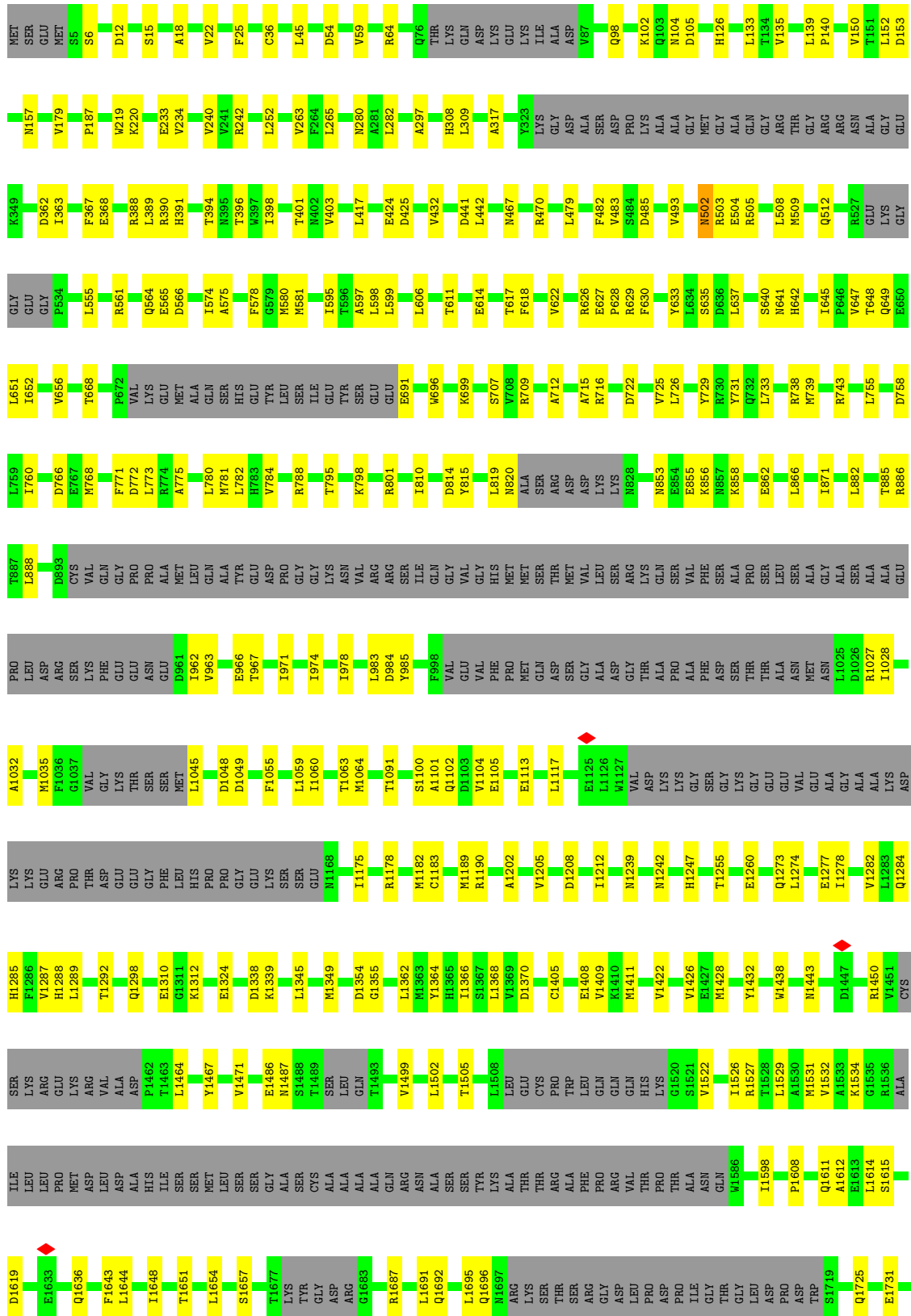
Chain C: 65% 15% 19%



THR	GLU	E1310	LYS	LEU	L1617	E1731	SER	V1960	LEU	L2327	SER	H2558
SER	GLY	G1311	ARG	PRO	V1618	L1736	LEU	T1961	ASN	L2328	VAL	I2559
SER	PHE	K1312	GLU	MET	D1619	L1962	GLY	H1962	ASN	V2331	ASP	R2560
MET	LEU	V1313	LYS	ASP	V1620	E1963	PRO	E1963	GLN	H2337	PRO	L2561
L1045	HIS	V1314	ARG	LEU	L1621	M1746	SER	I1967	LEU	L2343	ILE	L2569
D1048	PRO	C1317	VAL	ASP	E1633	I1758	ARG	I1974	SER	V2343	SER	V2573
D1049	GLY	I1321	ALA	ASP	Q1636	M1774	ARG	L1975	GLN	V2362	LEU	V2577
F1055	GLY	I1463	ASP	P1462	F1643	M1775	GLY	L1975	MET	L2363	LEU	L2598
L1059	LYS	E1324	L1464	T1464	F1644	M1776	HIS	C1982	LYS	R2364	PHE	L2599
I1060	SER	D1338	L1467	Y1467	L1644	S1782	GLU	K1983	SER	R2372	TRP	L2600
I1060	SER	K1339	Y1467	Y1467	I1648	S1782	SER	L1988	SER	L2372	ILE	D2600
T1063	GLU	I1175	V1471	V1471	I1648	F1785	GLU	A1996	ALA	L2372	LEU	S2450
M1064	GLY	I1175	E1486	E1486	T1651	V1788	ARG	A1996	PRO	Y2381	ILE	F2451
T1091	GLY	R1178	E1486	E1486	T1651	V1788	VAL	S1997	ALA	Y2381	CYS	F2452
S1100	ALA	R1178	T1489	T1489	L1654	R1792	GLN	H2008	GLN	I2385	PHE	N2467
A1101	M1182	M1182	SER	SER	S1657	R1792	SER	H2008	GLU	L2391	ILE	R2471
Q1102	C1183	C1183	LEU	LEU	T1677	T1803	GLU	L2020	GLU	D2384	ALA	G2474
D1103	M1189	M1189	GLM	ALA	T1677	T1803	MET	L2020	GLU	D2384	ALA	G2474
V1104	R1190	R1190	ALA	ALA	T1677	T1803	G1884	L2025	GLU	L2399	PHE	G2475
E1105	R1190	R1190	ALA	ALA	T1677	T1803	M1870	K2030	GLU	V2399	THR	V2476
E1113	A1202	A1202	ASN	ASN	T1677	T1803	Q1871	L2034	ARG	L2402	ARG	G2477
L1117	V1205	V1205	ALA	ALA	T1677	T1803	R1883	L2034	GLU	L2402	THR	D2478
E1125	D1208	D1208	LEU	LEU	T1677	T1803	C1894	Q2035	GLU	L2402	SER	F2479
L1126	I1212	I1212	LEU	LEU	T1677	T1803	C1894	Q2035	GLU	L2402	ILE	L2480
M1127	C1405	C1405	LEU	LEU	T1677	T1803	Q1895	Q2035	GLU	L2402	ARG	R2481
VAL	M1239	M1239	GLY	CYS	T1677	T1803	M1900	L2042	ARG	L2402	PRO	S2484
ASP	N1242	N1242	TRP	TRP	T1677	T1803	T1901	L2042	ASN	L2402	LEU	R2493
LYS	M1242	M1242	TRP	TRP	T1677	T1803	N1902	L2042	ASN	L2402	ALA	F2506
LYS	H1247	H1247	GLN	GLN	T1677	T1803	L1911	N2052	GLY	L2402	GLY	N2510
SER	T1256	T1256	GLN	GLN	T1677	T1803	M1914	L2058	LEU	L2402	MET	L2511
LYS	E1260	E1260	LYS	LYS	T1677	T1803	C1915	L2058	LEU	L2402	PRO	L2512
GLY	Q1273	Q1273	S4521	S4521	T1677	T1803	S1917	L2058	LEU	L2402	ALA	F2516
GLU	L1274	L1274	V1522	V1522	T1677	T1803	L1922	L2058	LEU	L2402	ALA	A2521
VAL	E1277	E1277	I1526	I1526	T1677	T1803	L1925	L2058	LEU	L2402	ALA	D2522
ALA	I1278	I1278	T1528	T1528	T1677	T1803	I1929	L2058	LEU	L2402	PHE	L2523
GLY	V1282	V1282	A1530	A1530	T1677	T1803	N1930	L2058	LEU	L2402	VAL	R2524
ALA	L1283	L1283	H1531	H1531	T1677	T1803	M1933	L2058	LEU	L2402	ASP	F2525
LYS	Q1284	Q1284	V1532	V1532	T1677	T1803	V1934	L2058	LEU	L2402	THR	E2526
LYS	H1285	H1285	F1444	F1444	T1677	T1803	T1940	L2058	LEU	L2402	GLY	C2541
LYS	F1286	F1286	A1533	A1533	T1677	T1803	T1940	L2058	LEU	L2402	GLY	G2542
GLU	V1287	V1287	K1534	K1534	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
ARG	H1288	H1288	A1612	A1612	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
PRO	L1289	L1289	G1535	G1535	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
THR	Q1298	Q1298	R1451	R1451	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
ASP	Q1298	Q1298	A1612	A1612	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
GLU	Q1298	Q1298	I1616	I1616	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543
SER	Q1298	Q1298	V1616	V1616	T1677	T1803	T1940	L2058	LEU	L2402	ASP	L2543

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

Chain D: 65% 15% 19%



L1736	PRO	L1962	ASN	ASP	V2331	PRO	K2560
M1746	SER	E1963	LYS	SER	V2337	GLU	L2561
I1758	LEU	I1967	GLN	PRO	H2337	VAL	L2569
M1765	ARG	I1974	LEU	ILE	L2343	GLU	V2573
M1774	GLY	L1975	SER	GLN	V2362	GLU	V2577
L1775	GLY	C1982	MET	LEU	I2363	ASP	M2598
F1785	HIS	K1983	LEU	PHE	R2364	ARG	L2599
V1788	VAL	L1988	LYS	LEU	T2372	LEU	D2600
R1792	GLU	A1996	SER	TRP	Y2381	ILE	R2604
T1803	GLU	S1997	ALA	ILE	I2385	T2451	M2605
VAL	MET	H2008	PRO	LEU	L2391	E2452	R2606
ALA	G1864	L2020	ALA	CYS	D2394	M2467	L2610
VAL	ALA	L2025	GLN	PHE	V2399	R2471	X2646
ASN	M1870	K2030	GLU	ILE	L2402	G2474	UNK
MET	Q1871	L2034	GLU	LEU	PRO	G2475	UNK
ASN	P1872	Q2635	LEU	THR	ASN	V2476	UNK
ASP	R1893	GLU	ILE	ARG	ASN	G2477	
LEU	C1894	GLU	E2150	TYR	ASN	D2478	
GLY	Q1895	GLU	T2151	SER	ASN	L2479	
SER	M1900	GLU	K2152	ILE	ASN	L2480	
GLN	Y1901	ARG	L2155	ARG	HIS	R2481	
PRO	M1902	GLU	L2155	PRO	THR	S2484	
HIS	Y1902	ASN	D2162	LEU	ALA	R2493	
GLU	C1905	S2042	E2163	LEU	SER	L2506	
ASP	L1911	M2052	Q2174	LEU	PRO	M2510	
ARG	M1914	L2058	L2176	LEU	GLY	L2511	
GLU	C1915	L2071	M2182	LEU	THR	L2512	
PRO	G1916	K2072	M2189	LEU	ALA	L2516	
THR	S1917	P2073	R2189	LEU	ALA	A2521	
THR	L1922	VAL	S2189	LEU	ALA	D2522	
LYS	L1925	LYS	M2191	LEU	PHE	L2523	
GLY	I1929	ARG	M2201	LEU	VAL	R2524	
VAL	I1929	ILE	M2201	LEU	ASP	S2525	
ALA	M1933	GLN	L2211	LEU	THR	E2526	
SER	V1934	GLU	Y2223	LEU	CYS	C2541	
PHE	M1934	GLU	P2224	LEU	SER	G2542	
SER	T1940	ALA	Y2225	LEU	ASP	L2543	
ILE	T1940	GLU	MET	LEU	LYS	P2549	
PRO	G1950	GLY	GLY	VAL	MET	V2553	
GLY	P1951	ILE	GLY	VAL	ASP	S2554	
SER	C1952	SER	GLY	ASP	CYS	F2555	
SER	M1955	MET	THR	ALA	VAL	E2556	
ARG	V1960	LEU	THR	ALA	GLY	F2557	
TYR	T1961	SER	VAL	THR	LEU	G2558	
SER		LEU	VAL	GLY	SER	L2559	
LEU		LEU	LEU	VAL	SER		
GLY		ASN	LEU	LEU	VAL		

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	20039	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1600	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.560	Depositor
Minimum map value	-0.794	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.047	Depositor
Recommended contour level	0.12	Depositor
Map size (\AA)	397.44, 397.44, 397.44	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.828, 0.828, 0.828	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: I3P, ZN, CA, ATP

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	0.26	0/17287	0.47	1/23345 (0.0%)
1	B	0.26	0/17287	0.47	1/23345 (0.0%)
1	C	0.26	0/17287	0.47	1/23345 (0.0%)
1	D	0.26	0/17287	0.47	1/23345 (0.0%)
All	All	0.26	0/69148	0.47	4/93380 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1370	ASP	CB-CG-OD2	5.19	122.97	118.30
1	B	1370	ASP	CB-CG-OD2	5.19	122.97	118.30
1	C	1370	ASP	CB-CG-OD2	5.19	122.97	118.30
1	D	1370	ASP	CB-CG-OD2	5.19	122.97	118.30

There are no chirality outliers.

There are no planarity outliers.

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	17072	0	17103	269	0
1	B	17072	0	17103	269	0
1	C	17072	0	17103	274	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	17072	0	17103	269	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	0	9	0	0
3	B	24	0	9	0	0
3	C	24	0	9	0	0
3	D	24	0	9	0	0
4	A	31	0	12	3	0
4	B	31	0	12	3	0
4	C	31	0	12	3	0
4	D	31	0	12	2	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
All	All	68516	0	68496	1065	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 8.

The worst 5 of 1065 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:B:240:VAL:HG11	1:B:309:LEU:HD11	1.51	0.91
1:D:240:VAL:HG11	1:D:309:LEU:HD11	1.51	0.91
1:C:240:VAL:HG11	1:C:309:LEU:HD11	1.51	0.90
1:A:240:VAL:HG11	1:A:309:LEU:HD11	1.51	0.88
1:C:712:ALA:HB1	1:C:716:ARG:HH12	1.42	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	2058/2633 (78%)	1969 (96%)	89 (4%)	0	100	100
1	B	2058/2633 (78%)	1969 (96%)	89 (4%)	0	100	100
1	C	2058/2633 (78%)	1969 (96%)	89 (4%)	0	100	100
1	D	2058/2633 (78%)	1969 (96%)	89 (4%)	0	100	100
All	All	8232/10532 (78%)	7876 (96%)	356 (4%)	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	1899/2329 (82%)	1892 (100%)	7 (0%)	91	95
1	B	1899/2329 (82%)	1892 (100%)	7 (0%)	91	95
1	C	1899/2329 (82%)	1892 (100%)	7 (0%)	91	95
1	D	1899/2329 (82%)	1892 (100%)	7 (0%)	91	95
All	All	7596/9316 (82%)	7568 (100%)	28 (0%)	91	95

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

Mol	Chain	Res	Type
1	C	502	ASN
1	D	1902	ASN
1	C	1450	ARG
1	D	1450	ARG
1	C	1443	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1933	ASN
1	C	1746	ASN
1	D	1933	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 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 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
4	ATP	C	2703	-	26,33,33	0.63	0	31,52,52	1.05	2 (6%)
3	I3P	B	2702	-	24,24,24	1.25	3 (12%)	36,39,39	0.60	1 (2%)
4	ATP	A	2703	-	26,33,33	0.62	0	31,52,52	1.05	2 (6%)
4	ATP	D	2703	-	26,33,33	0.62	0	31,52,52	1.05	2 (6%)
3	I3P	A	2702	-	24,24,24	1.25	3 (12%)	36,39,39	0.60	1 (2%)
3	I3P	D	2702	-	24,24,24	1.24	3 (12%)	36,39,39	0.60	1 (2%)
3	I3P	C	2702	-	24,24,24	1.25	3 (12%)	36,39,39	0.60	1 (2%)
4	ATP	B	2703	-	26,33,33	0.62	0	31,52,52	1.05	2 (6%)

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
4	ATP	C	2703	-	-	5/18/38/38	0/3/3/3
3	I3P	B	2702	-	-	5/15/39/39	0/1/1/1
4	ATP	A	2703	-	-	5/18/38/38	0/3/3/3
4	ATP	D	2703	-	-	5/18/38/38	0/3/3/3
3	I3P	A	2702	-	-	5/15/39/39	0/1/1/1
3	I3P	D	2702	-	-	5/15/39/39	0/1/1/1
3	I3P	C	2702	-	-	5/15/39/39	0/1/1/1
4	ATP	B	2703	-	-	5/18/38/38	0/3/3/3

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	2702	I3P	P1-O1	3.04	1.65	1.59
3	A	2702	I3P	P1-O1	3.00	1.65	1.59
3	C	2702	I3P	P1-O1	3.00	1.65	1.59
3	D	2702	I3P	P1-O1	2.97	1.64	1.59
3	C	2702	I3P	P4-O4	2.97	1.64	1.59

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	2703	ATP	C5-C6-N6	2.23	123.74	120.35
4	B	2703	ATP	C5-C6-N6	2.23	123.74	120.35
4	C	2703	ATP	C5-C6-N6	2.23	123.74	120.35
4	D	2703	ATP	C5-C6-N6	2.23	123.74	120.35
4	A	2703	ATP	PB-O3B-PG	2.05	139.85	132.83

There are no chirality outliers.

5 of 40 torsion outliers are listed below:

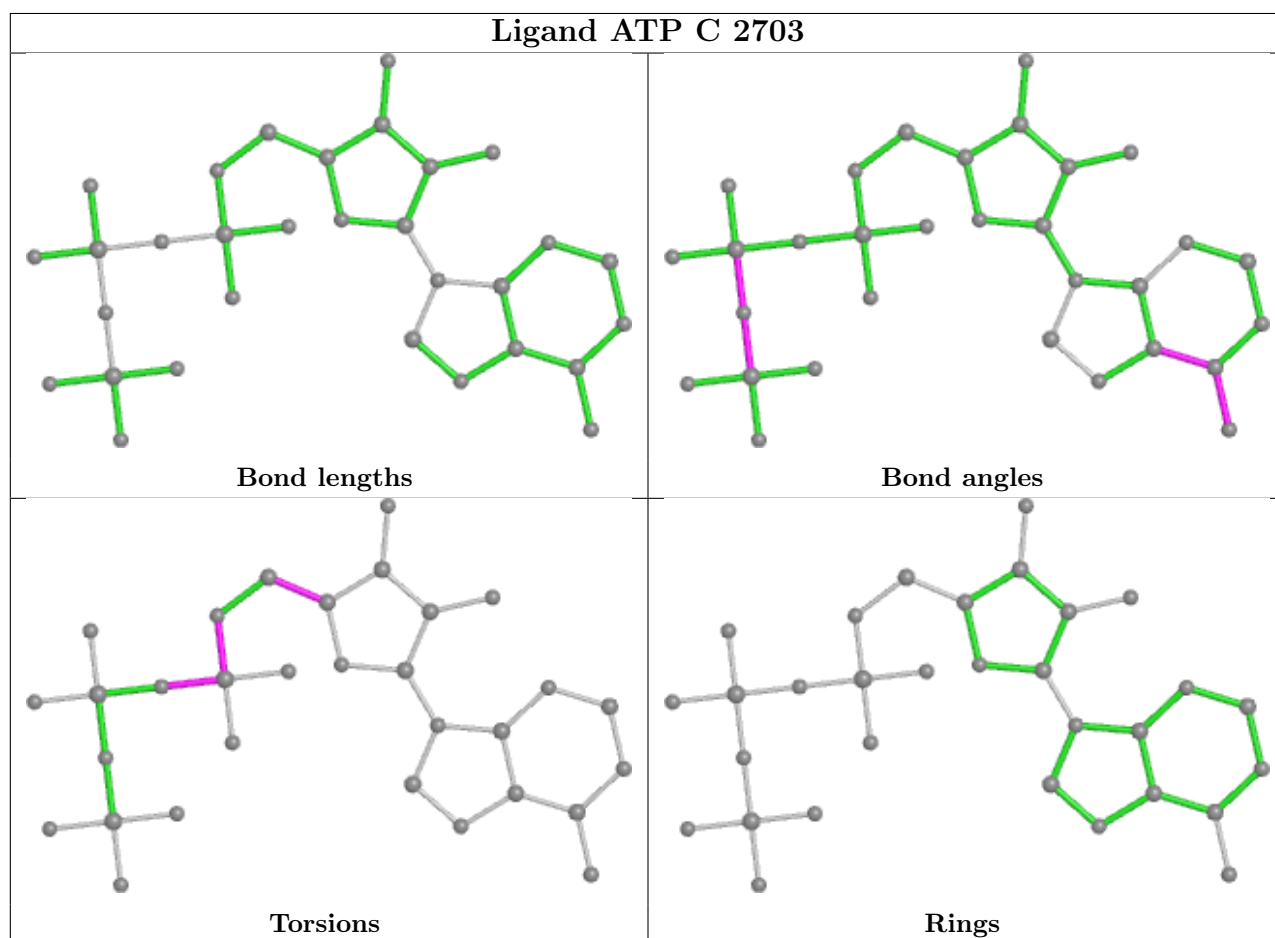
Mol	Chain	Res	Type	Atoms
3	A	2702	I3P	C1-O1-P1-O11
3	A	2702	I3P	C5-O5-P5-O53
3	B	2702	I3P	C1-O1-P1-O11
3	B	2702	I3P	C5-O5-P5-O53
3	C	2702	I3P	C1-O1-P1-O11

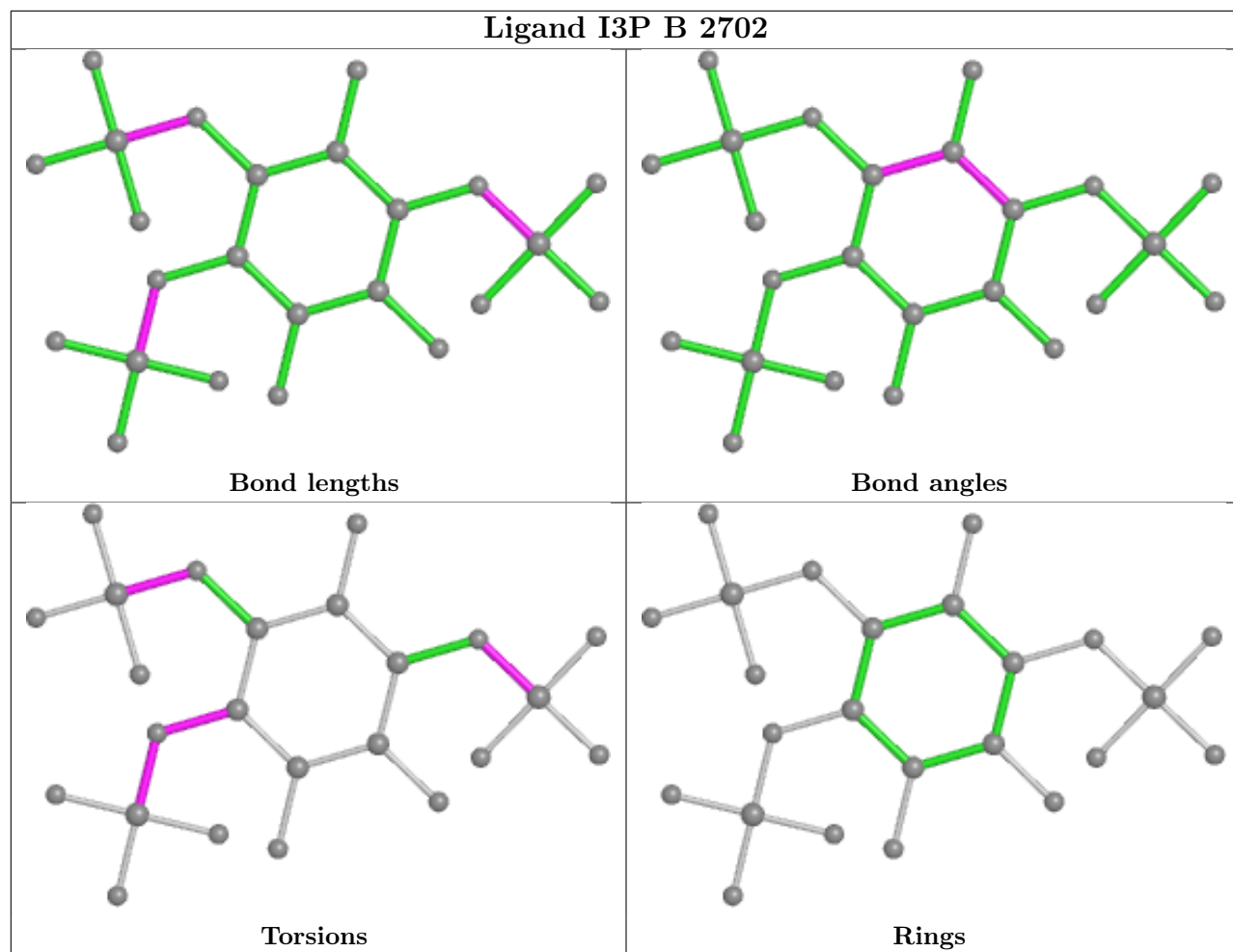
There are no ring outliers.

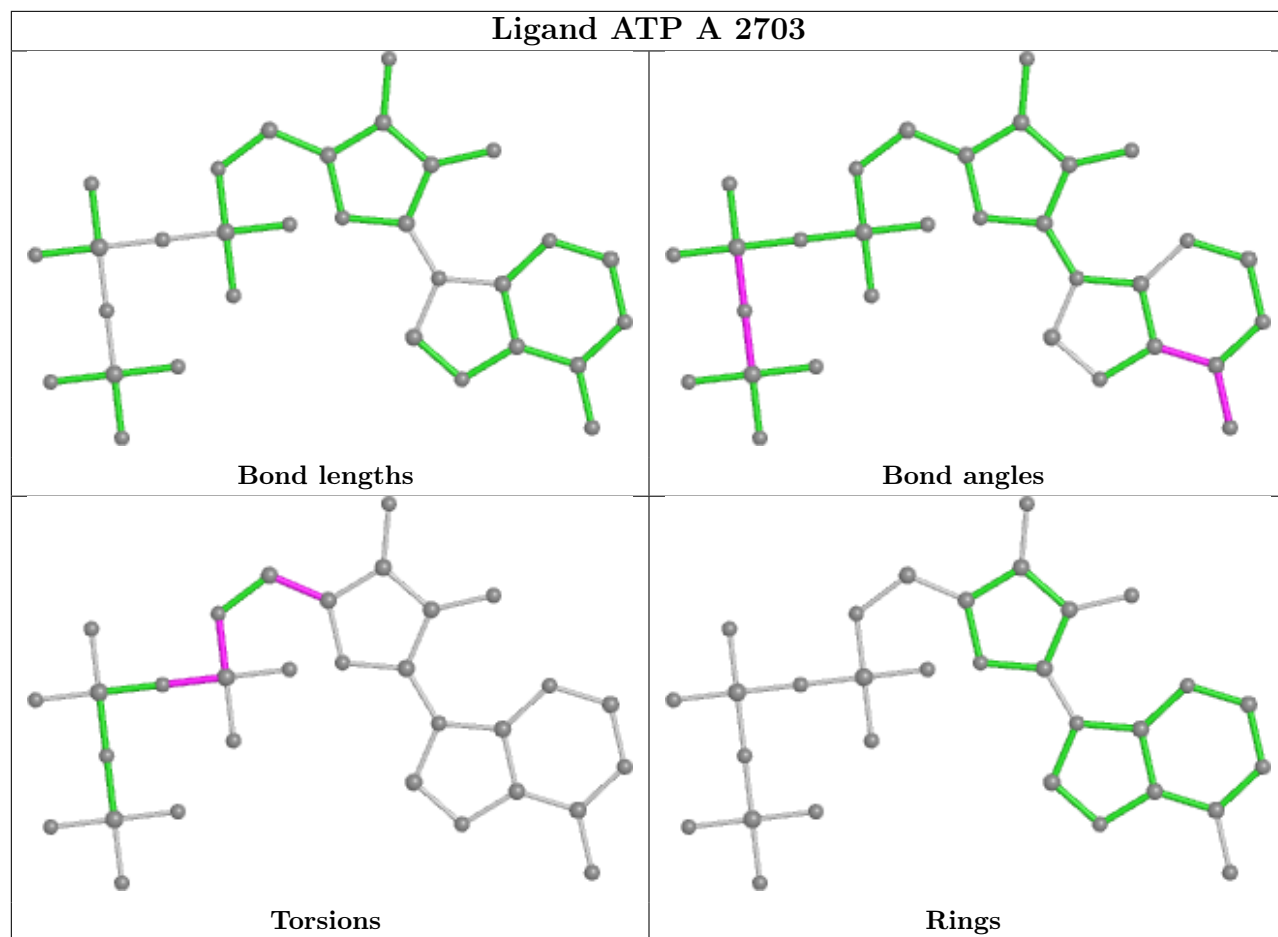
4 monomers are involved in 11 short contacts:

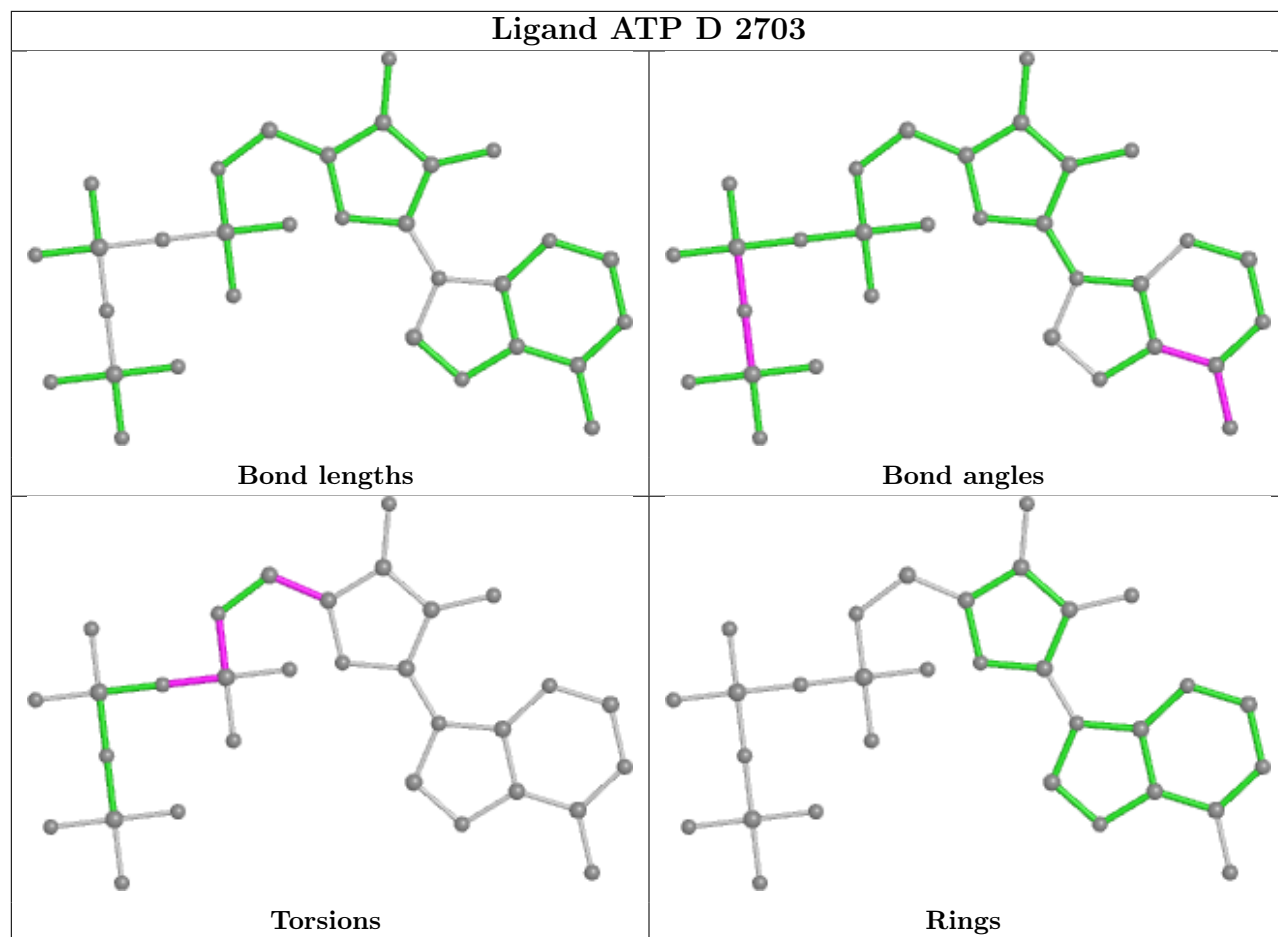
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	2703	ATP	3	0
4	A	2703	ATP	3	0
4	D	2703	ATP	2	0
4	B	2703	ATP	3	0

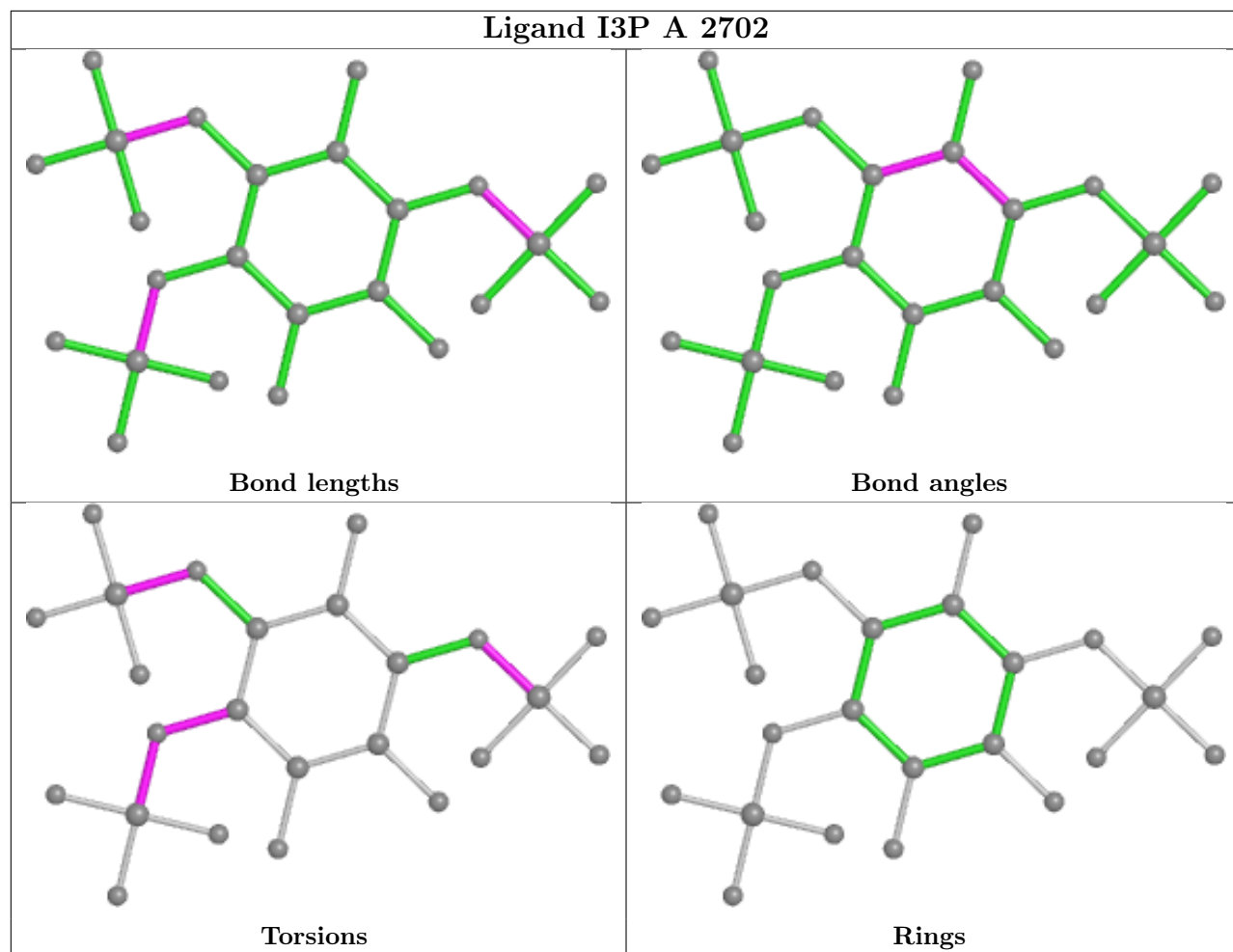
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

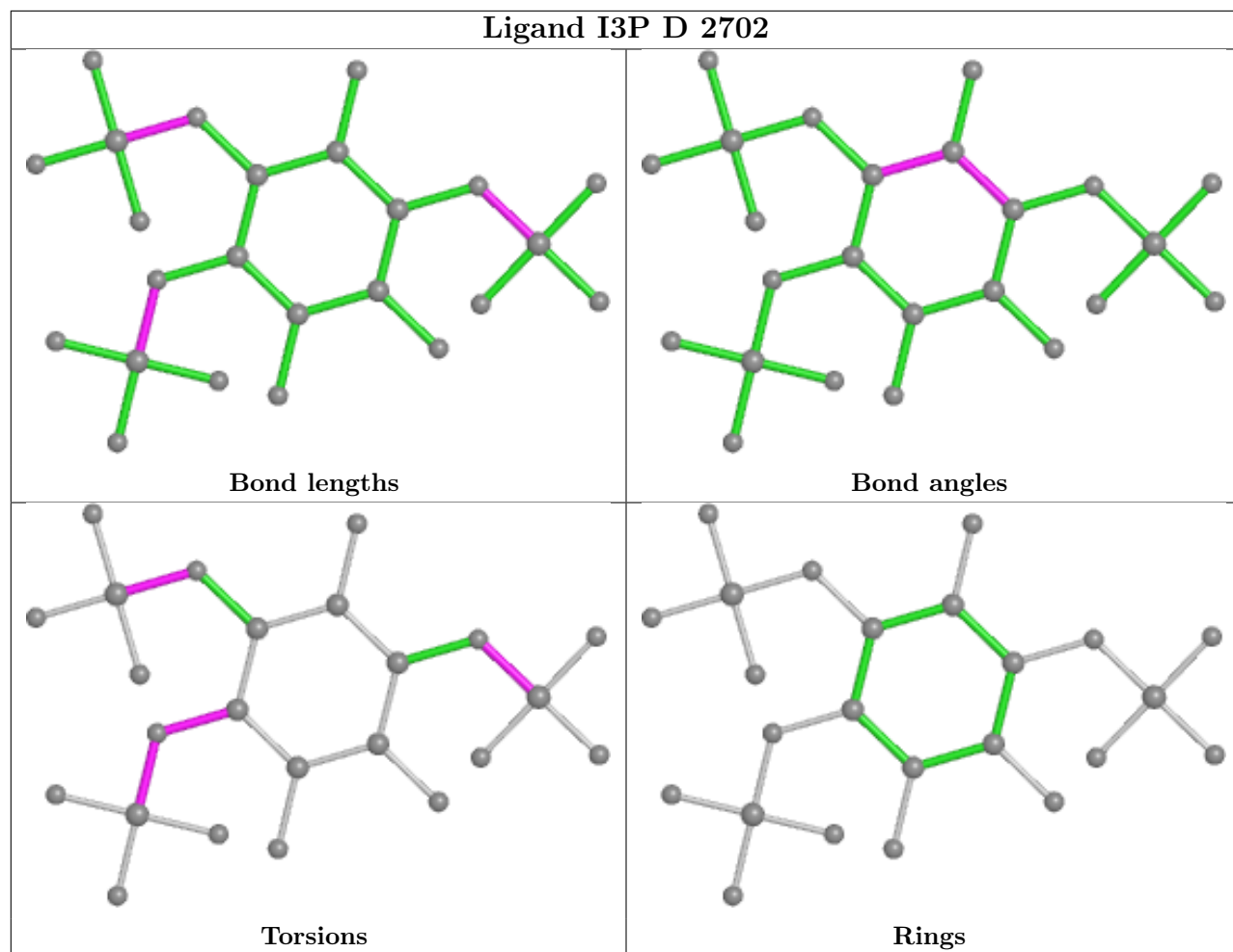


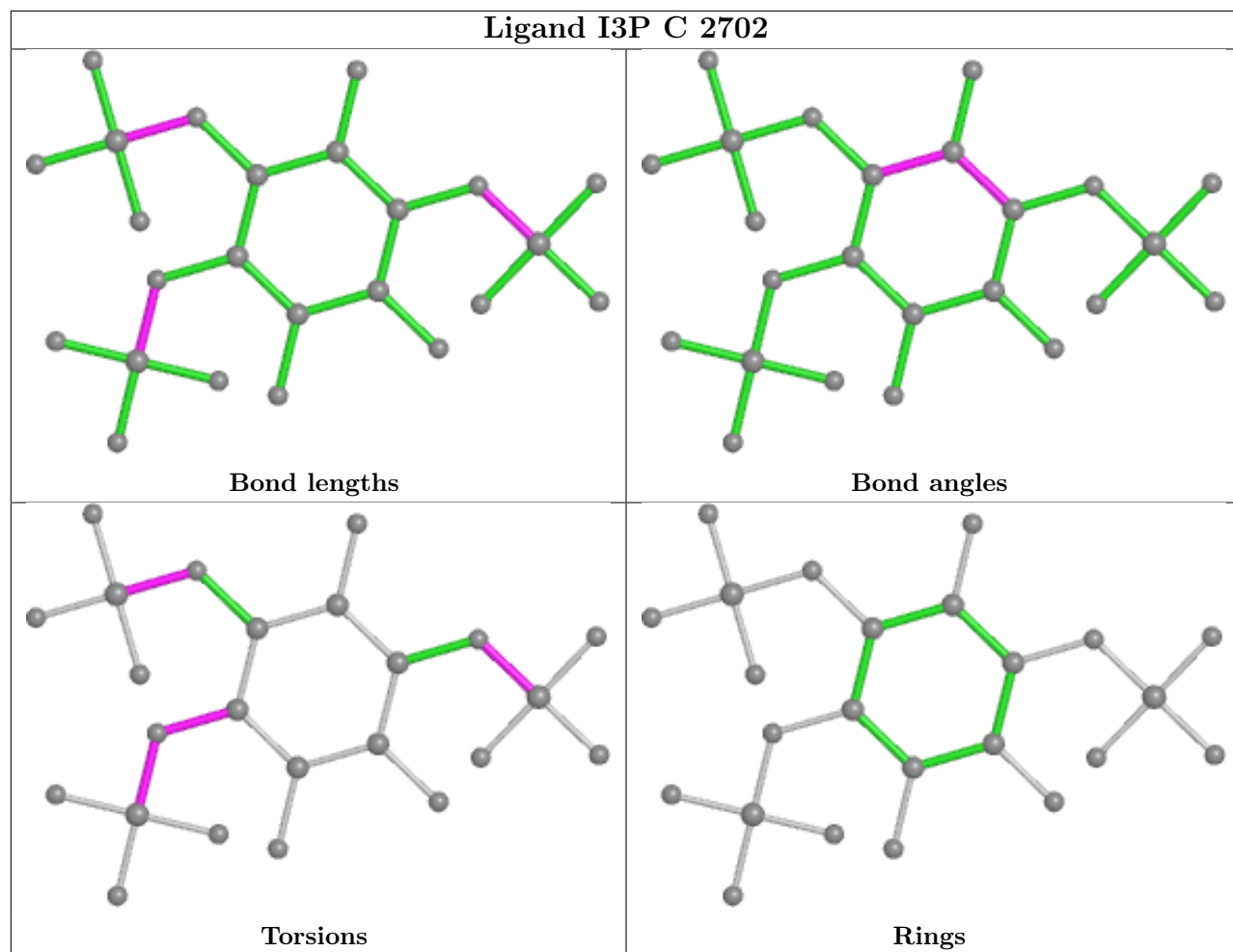


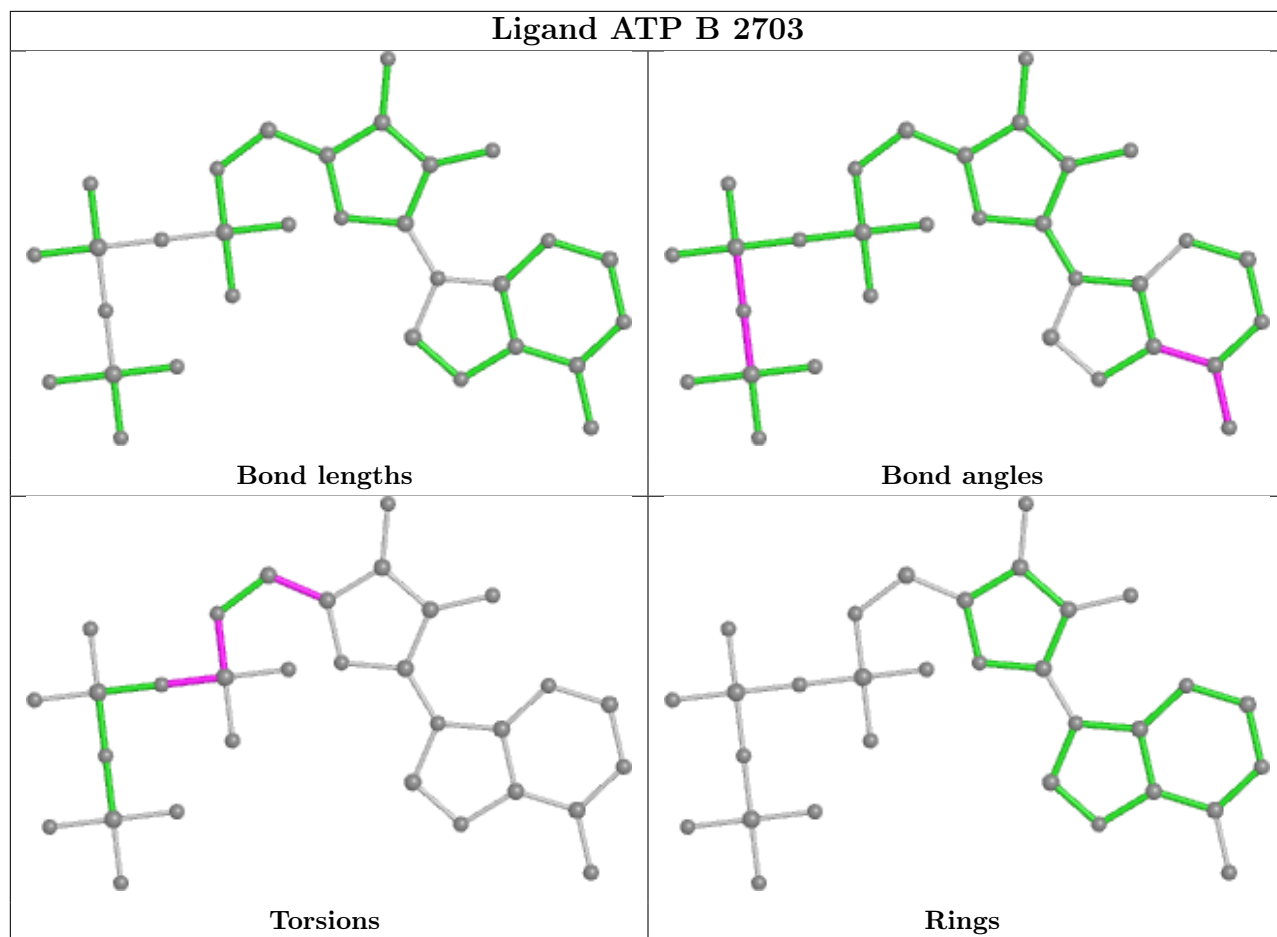












5.7 Other polymers [\(i\)](#)

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	1
1	B	1
1	C	1
1	D	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	2611:VAL	C	2628:UNK	N	28.89
1	B	2611:VAL	C	2628:UNK	N	28.89

Continued on next page...

Continued from previous page...

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	C	2611:VAL	C	2628:UNK	N	28.89
1	D	2611:VAL	C	2628:UNK	N	28.89

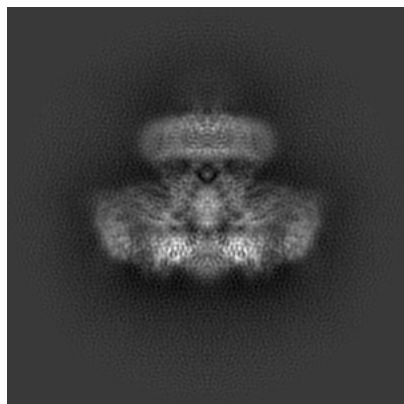
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25670. These allow visual inspection of the internal detail of the map and identification of artifacts.

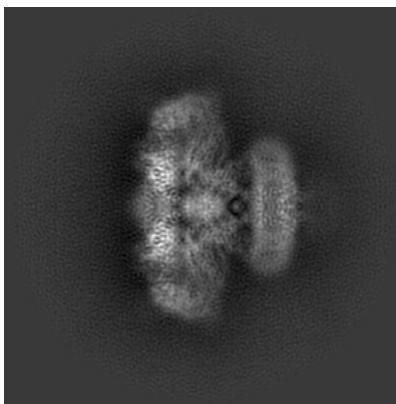
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

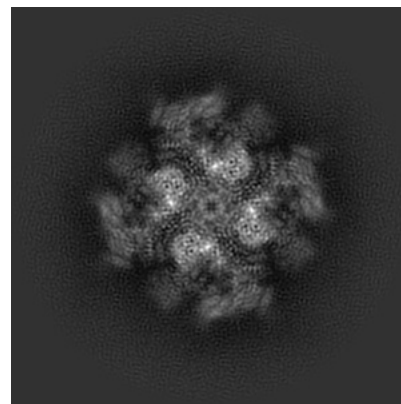
6.1.1 Primary map



X

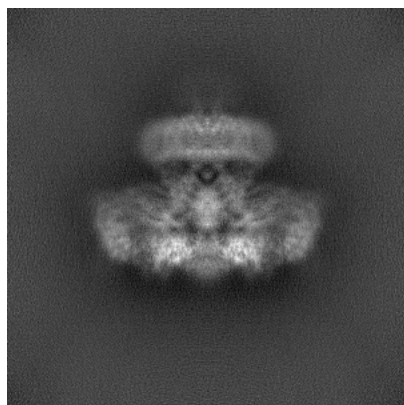


Y

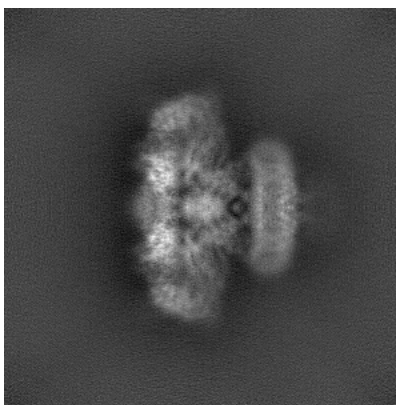


Z

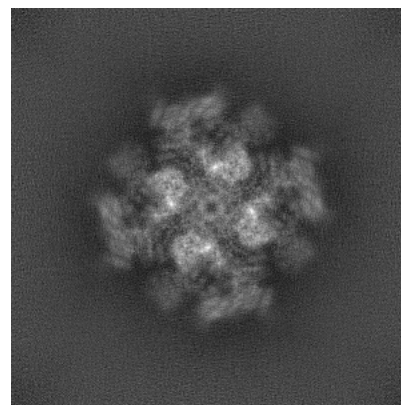
6.1.2 Raw map



X



Y

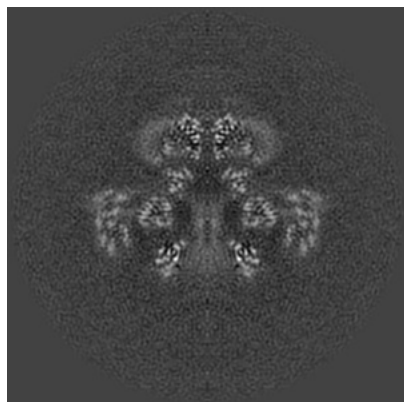


Z

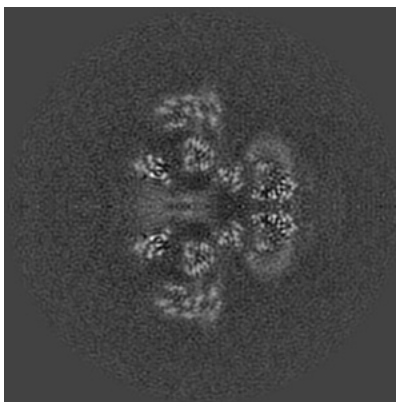
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

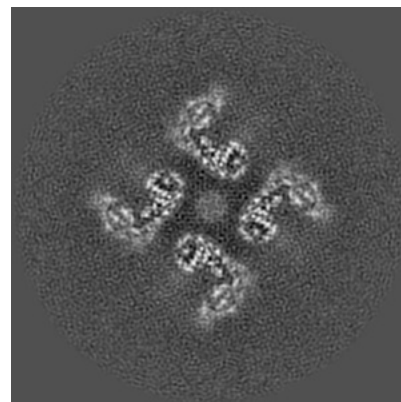
6.2.1 Primary map



X Index: 240

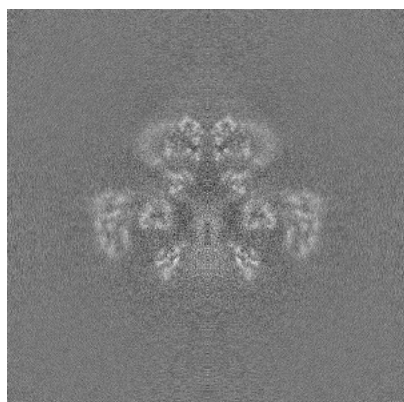


Y Index: 240

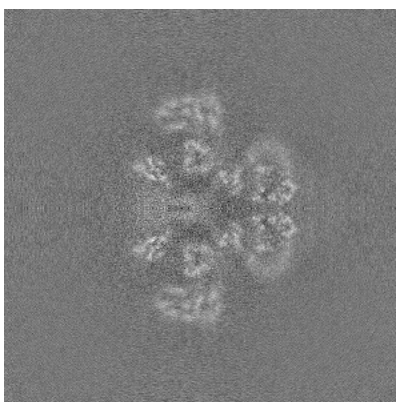


Z Index: 240

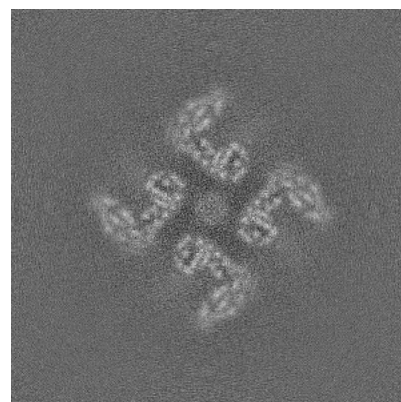
6.2.2 Raw map



X Index: 240



Y Index: 240

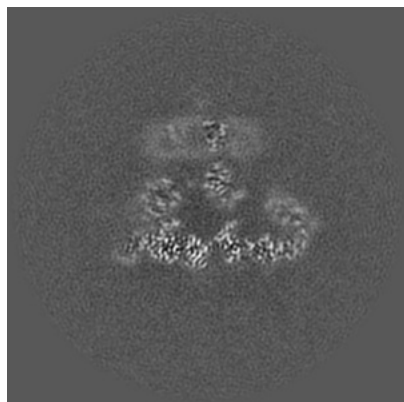


Z Index: 240

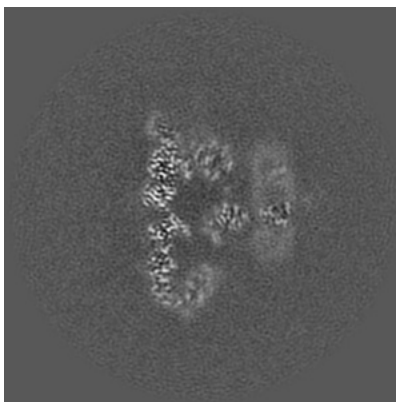
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

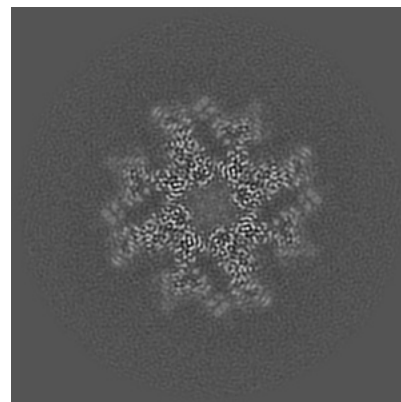
6.3.1 Primary map



X Index: 206

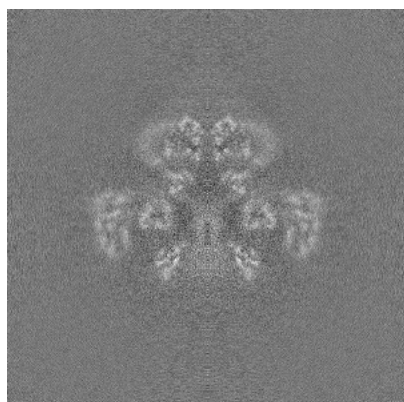


Y Index: 206

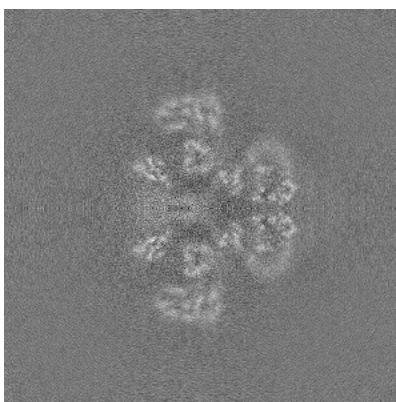


Z Index: 191

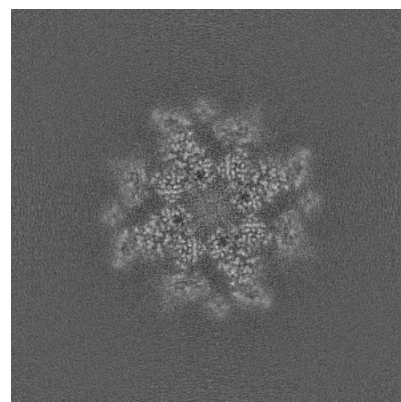
6.3.2 Raw map



X Index: 240



Y Index: 240

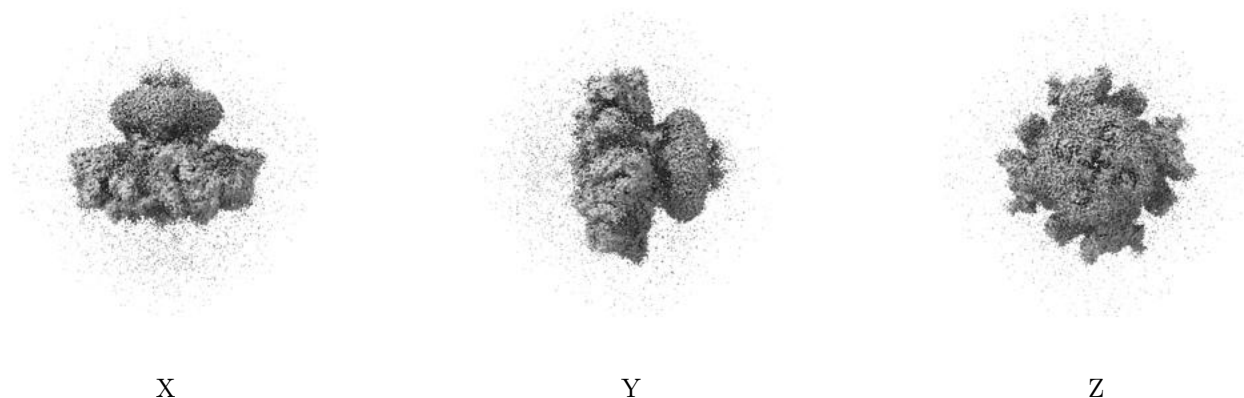


Z Index: 189

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

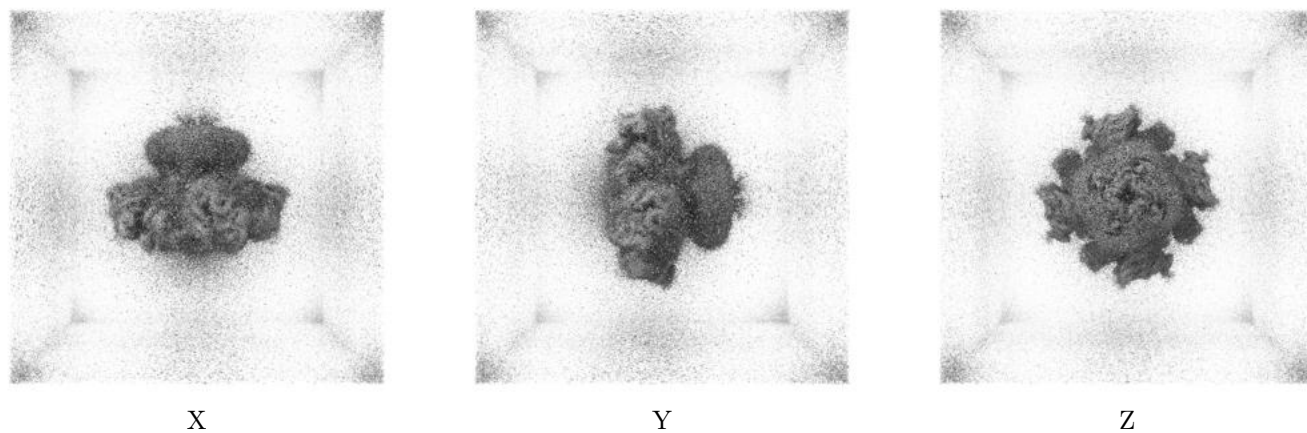
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.12. 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.

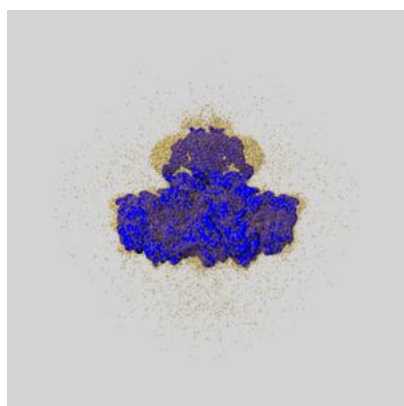
6.5 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

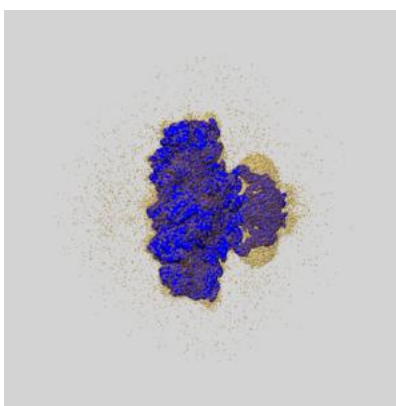
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

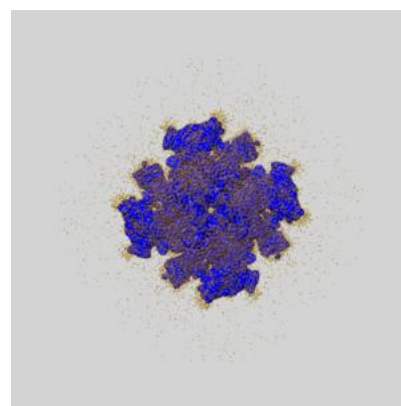
6.5.1 emd_25670_msk_1.map [i](#)



X



Y

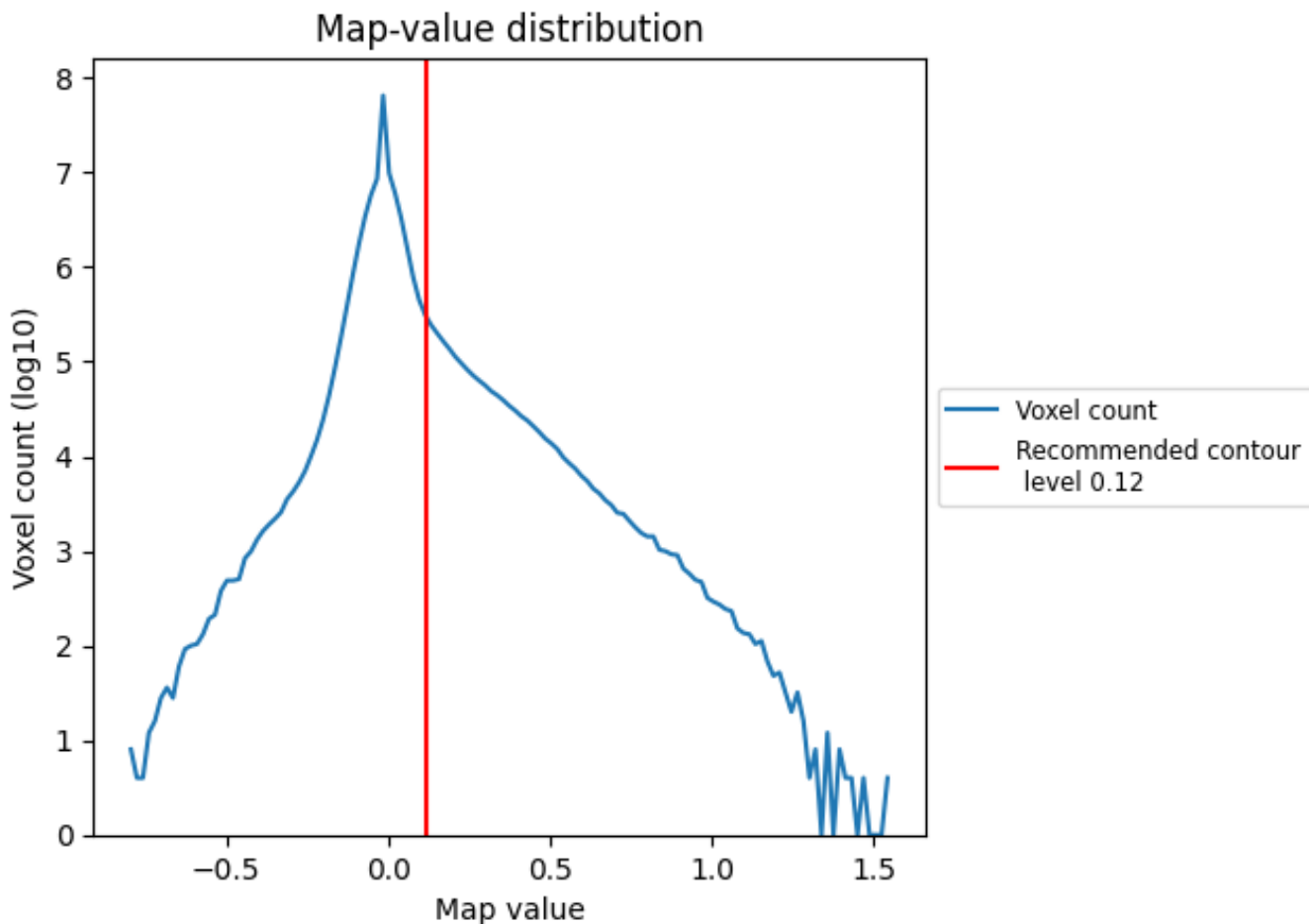


Z

7 Map analysis [i](#)

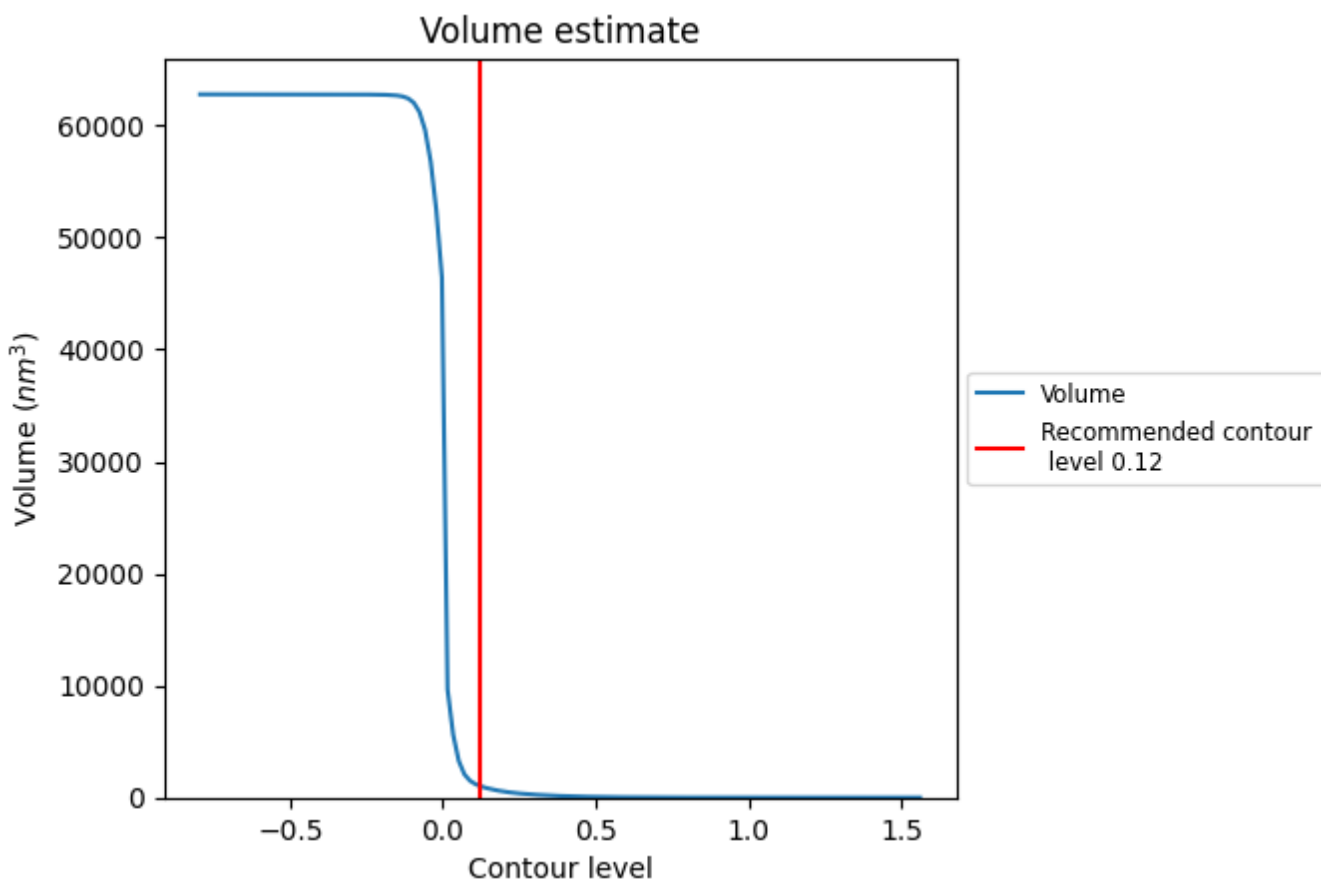
This section contains the results of statistical analysis of the map.

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.

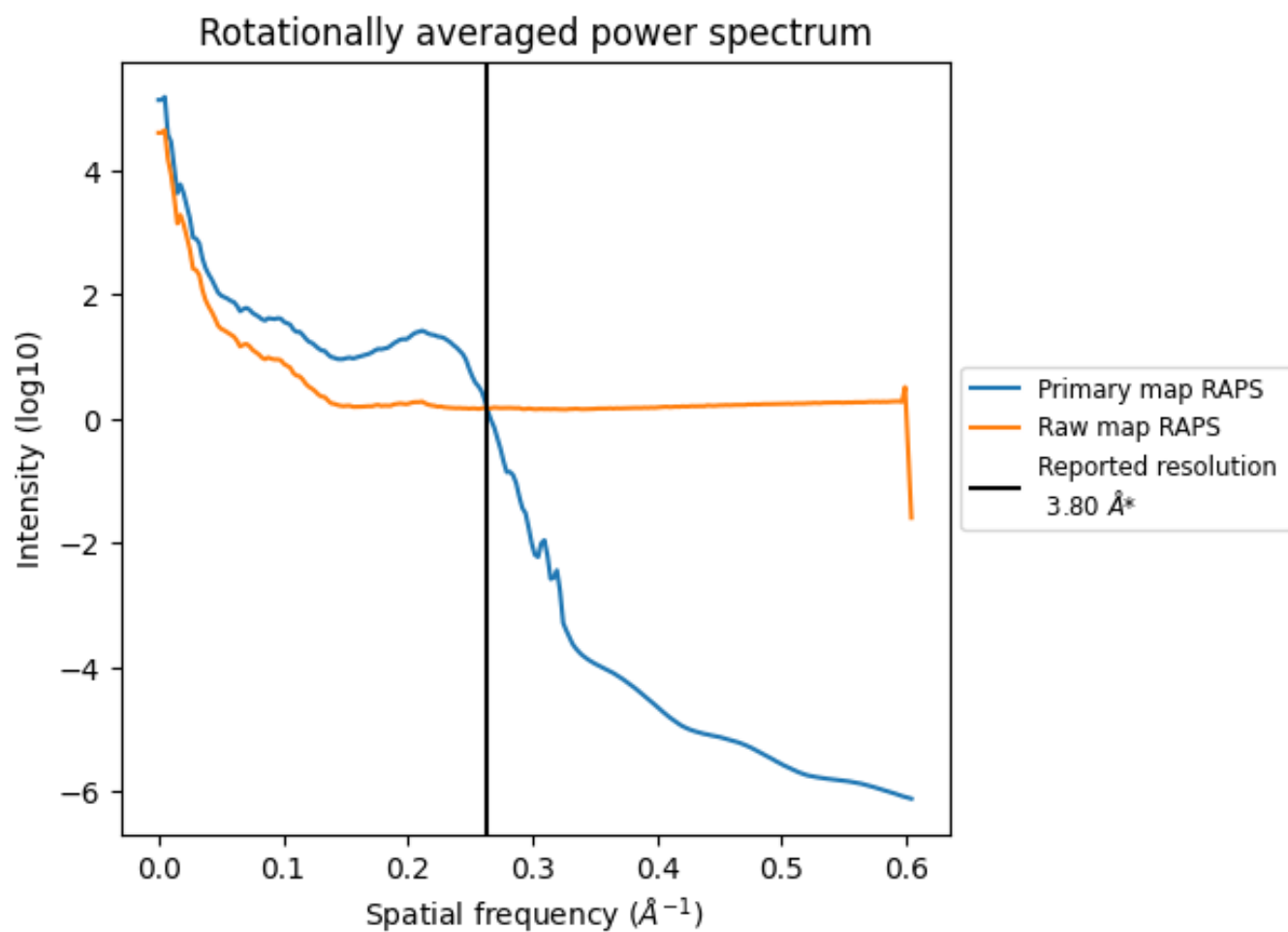
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1054 nm³; this corresponds to an approximate mass of 952 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](#)

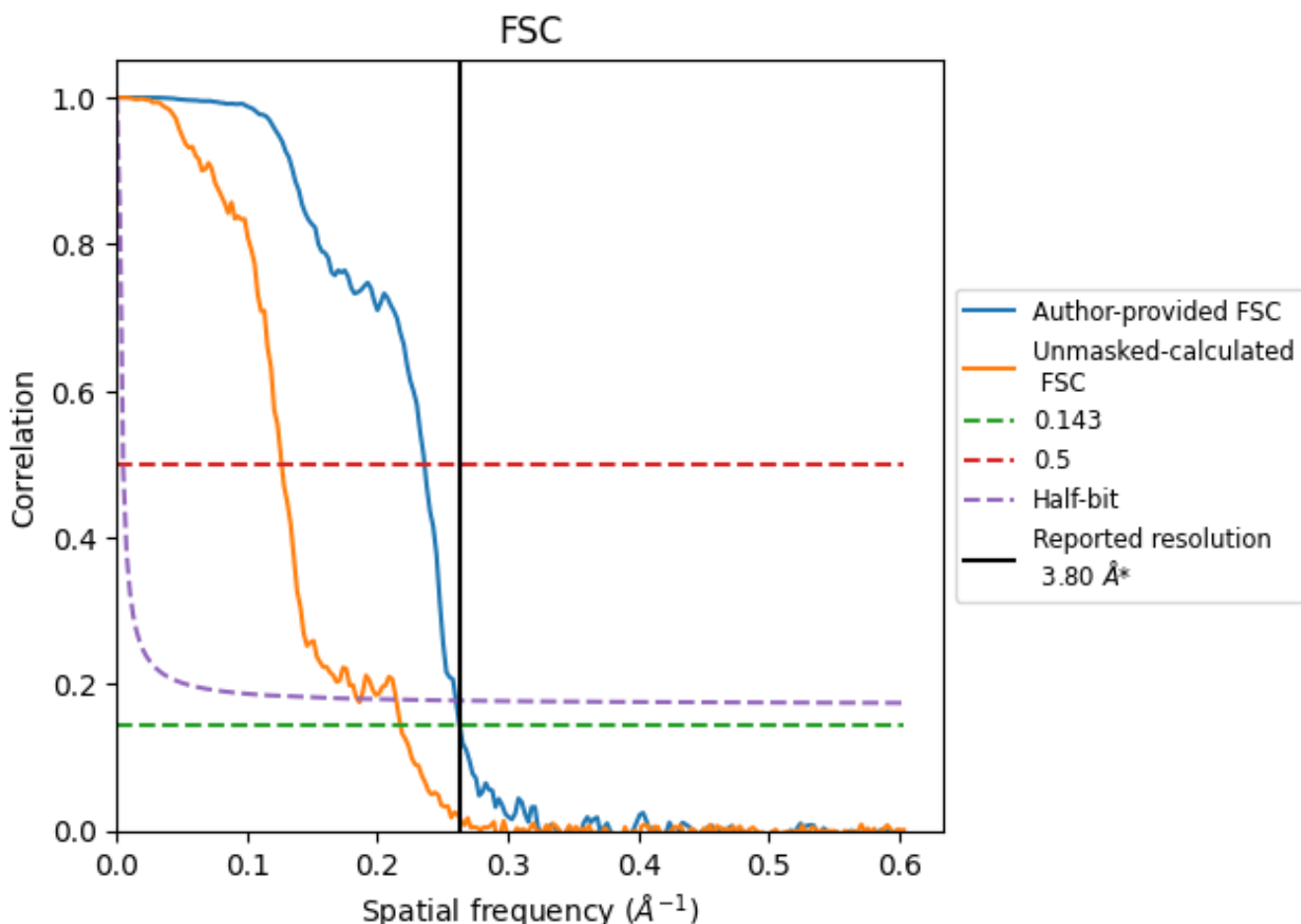


*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

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 0.263 Å⁻¹

8.2 Resolution estimates

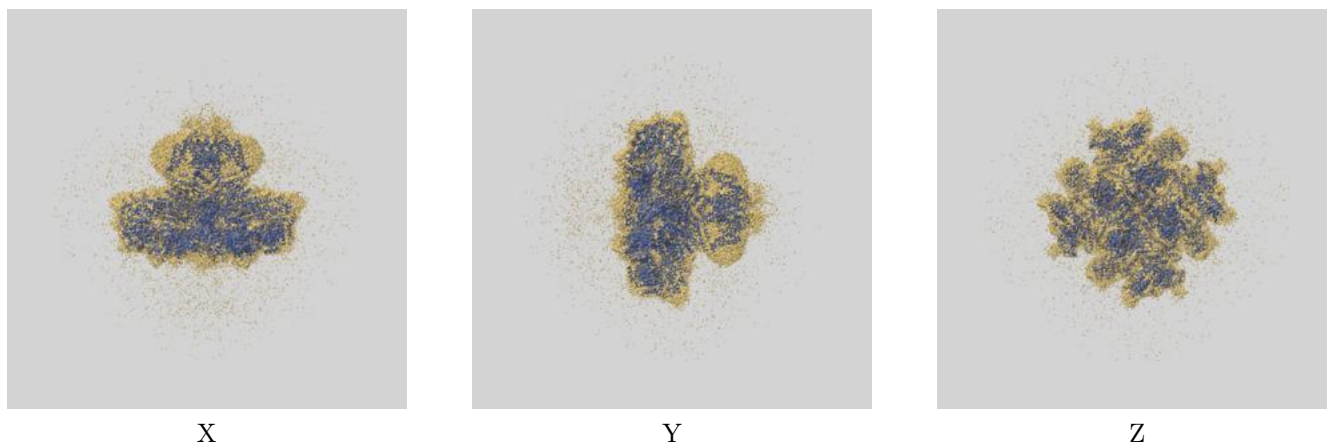
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.80	4.24	3.84
Unmasked-calculated*	4.59	7.90	5.42

*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 4.59 differs from the reported value 3.8 by more than 10 %

9 Map-model fit [i](#)

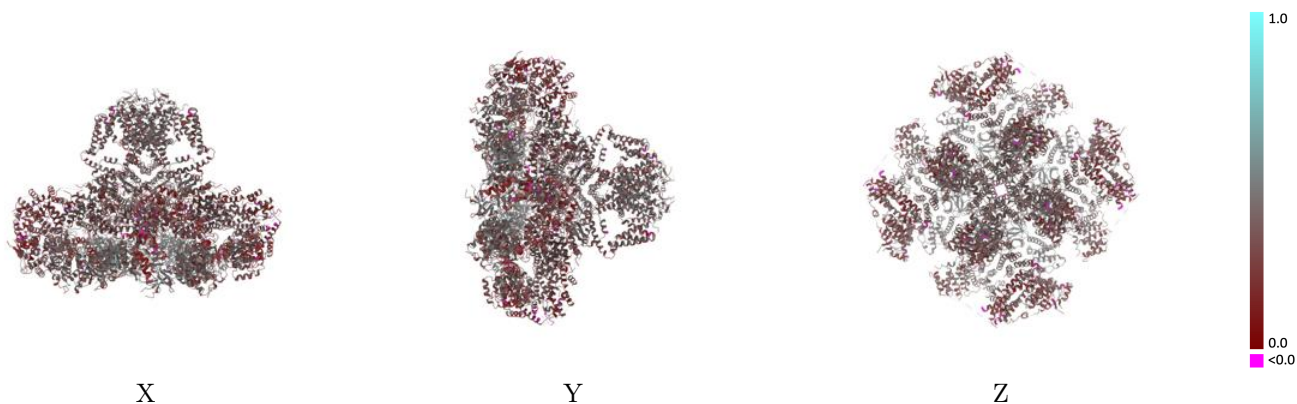
This section contains information regarding the fit between EMDB map EMD-25670 and PDB model 7T3T. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



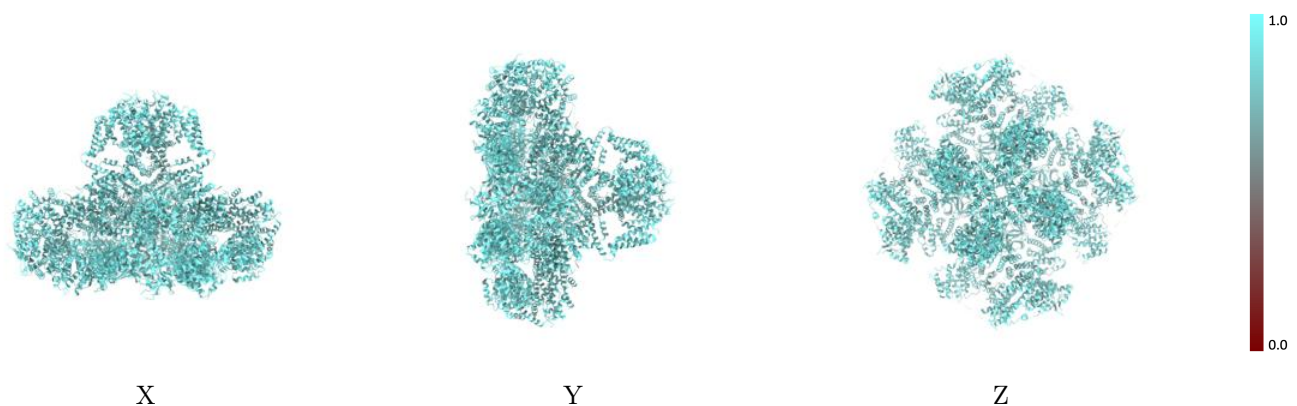
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



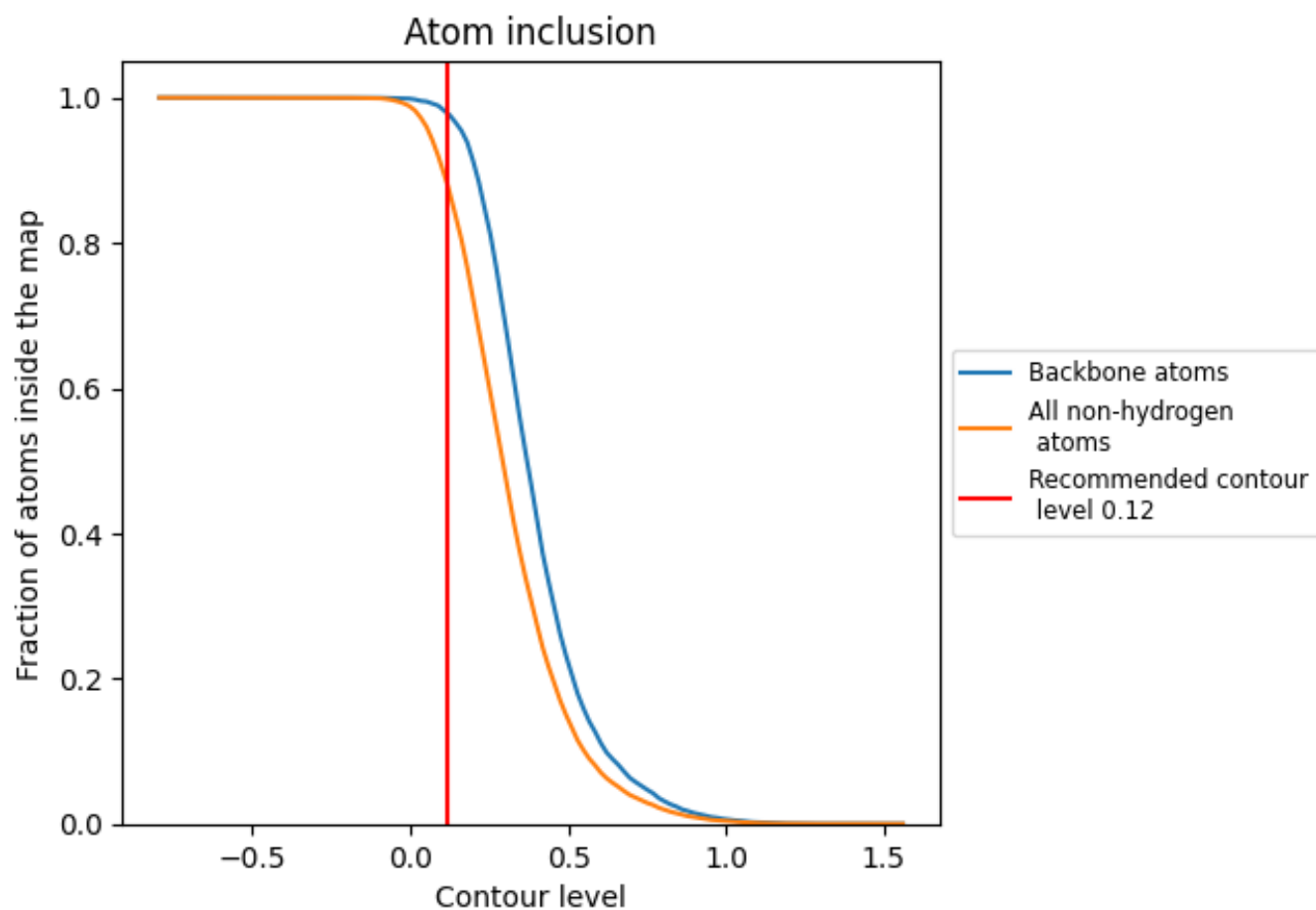
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.12).


9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 88% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8779	 0.3570
A	 0.8777	 0.3570
B	 0.8782	 0.3570
C	 0.8777	 0.3570
D	 0.8780	 0.3570

