



wwPDB EM Validation Summary Report ⓘ

Feb 25, 2024 – 12:41 AM EST

PDB ID : 7LHE
EMDB ID : EMD-23337
Title : Structure of full-length IP3R1 channel reconstituted into lipid nanodisc in the apo-state
Authors : Baker, M.R.; Fan, G.; Baker, M.L.; Serysheva, I.I.
Deposited on : 2021-01-22
Resolution : 3.30 Å (reported)
Based on initial model : 6MU2

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.dev70
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 : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

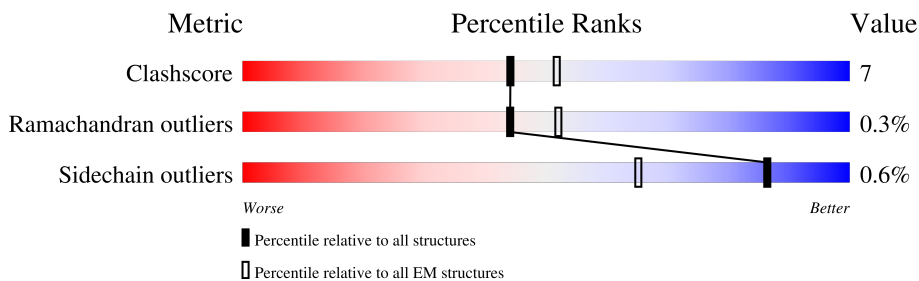
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.30 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	2734	
1	B	2734	
1	C	2734	
1	D	2734	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	PLX	A	2801	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	PLX	A	2802	X	-	-	-
2	PLX	A	2803	X	-	-	-
2	PLX	A	2804	X	-	-	-
2	PLX	A	2806	X	-	-	-
2	PLX	A	2807	X	-	-	-
2	PLX	A	2808	X	-	-	-
2	PLX	B	2801	X	-	-	-
2	PLX	B	2802	X	-	-	-
2	PLX	B	2803	X	-	-	-
2	PLX	B	2804	X	-	-	-
2	PLX	B	2805	X	-	-	-
2	PLX	B	2806	X	-	-	-
2	PLX	B	2807	X	-	-	-
2	PLX	B	2808	X	-	-	-
2	PLX	C	2801	X	-	-	-
2	PLX	C	2802	X	-	-	-
2	PLX	C	2803	X	-	-	-
2	PLX	C	2804	X	-	-	-
2	PLX	C	2805	X	-	-	-
2	PLX	C	2807	X	-	-	-
2	PLX	C	2808	X	-	-	-
2	PLX	D	2801	X	-	-	-
2	PLX	D	2802	X	-	-	-
2	PLX	D	2803	X	-	-	-
2	PLX	D	2804	X	-	-	-
2	PLX	D	2806	X	-	-	-
2	PLX	D	2807	X	-	-	-

2 Entry composition [i](#)

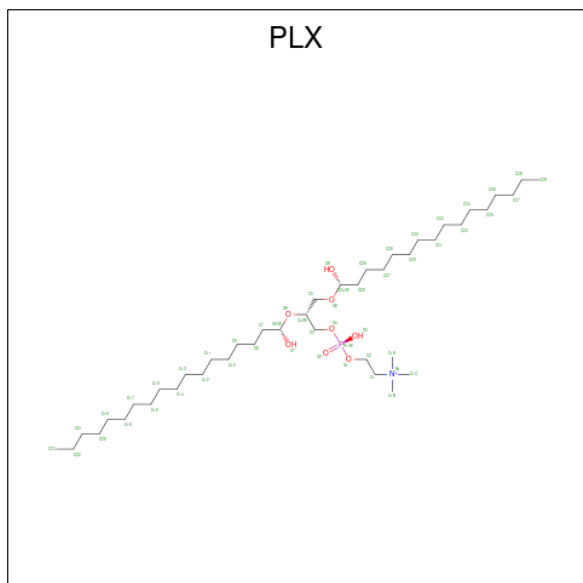
There are 3 unique types of molecules in this entry. The entry contains 73691 atoms, of which 0 are hydrogens and 0 are deuteriums.

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	2298	Total 18148	C 11558	N 3171	O 3309	S 110	0	0
1	D	2298	Total 18148	C 11558	N 3171	O 3309	S 110	0	0
1	C	2298	Total 18148	C 11558	N 3171	O 3309	S 110	0	0
1	B	2298	Total 18148	C 11558	N 3171	O 3309	S 110	0	0

- Molecule 2 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) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	Total 34	C 24	N 1	O 8	P 1	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	Total 36	26	1	8	1	0
2	A	1	Total 36	26	1	8	1	0
2	A	1	Total 39	29	1	8	1	0
2	A	1	Total 46	36	1	8	1	0
2	A	1	Total 43	33	1	8	1	0
2	A	1	Total 40	30	1	8	1	0
2	D	1	Total 34	24	1	8	1	0
2	D	1	Total 36	26	1	8	1	0
2	D	1	Total 36	26	1	8	1	0
2	D	1	Total 39	29	1	8	1	0
2	D	1	Total 46	36	1	8	1	0
2	D	1	Total 43	33	1	8	1	0
2	C	1	Total 40	30	1	8	1	0
2	C	1	Total 34	24	1	8	1	0
2	C	1	Total 36	26	1	8	1	0
2	C	1	Total 36	26	1	8	1	0
2	C	1	Total 39	29	1	8	1	0
2	C	1	Total 46	36	1	8	1	0
2	C	1	Total 43	33	1	8	1	0
2	B	1	Total 40	30	1	8	1	0
2	B	1	Total 46	36	1	8	1	0

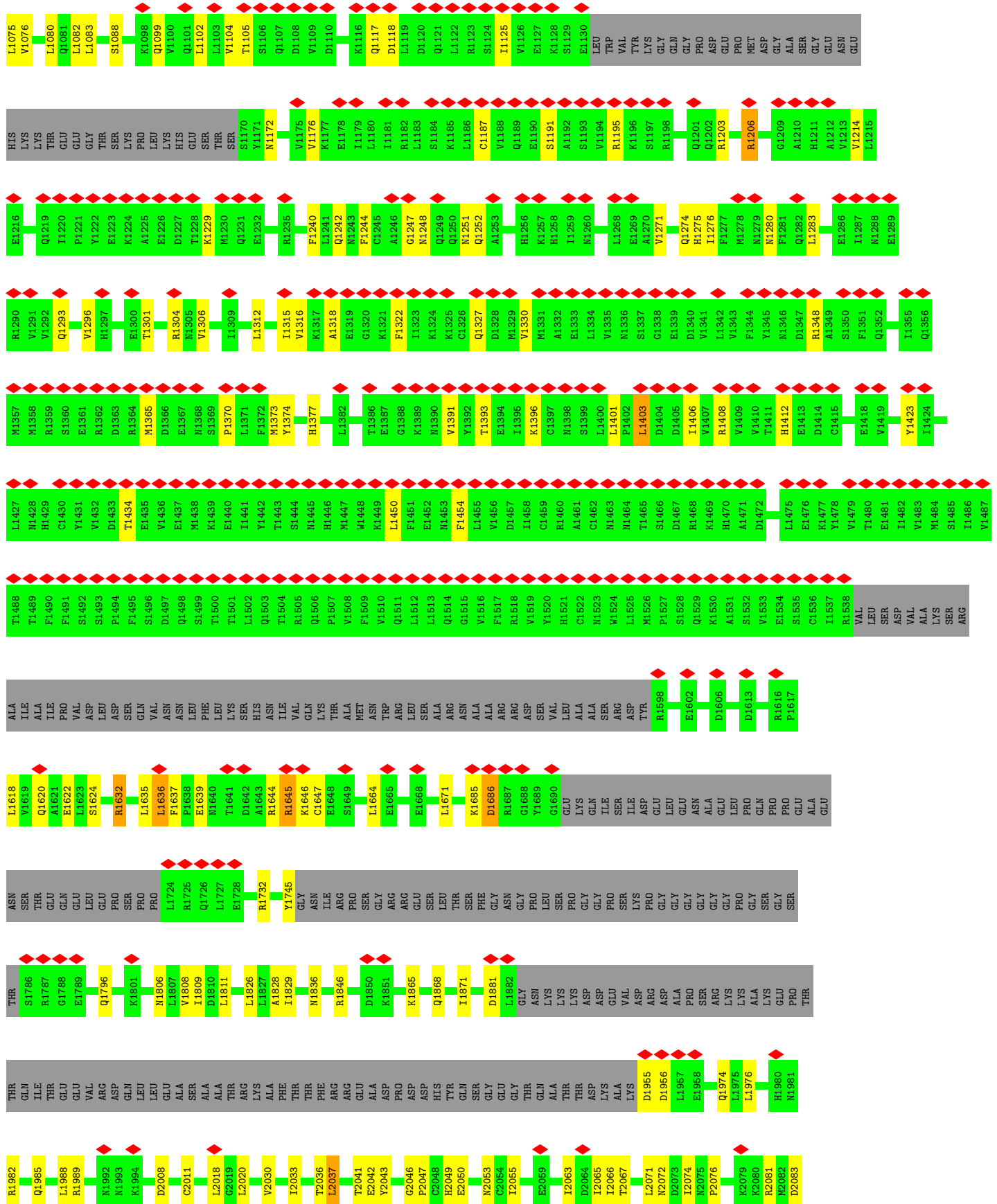
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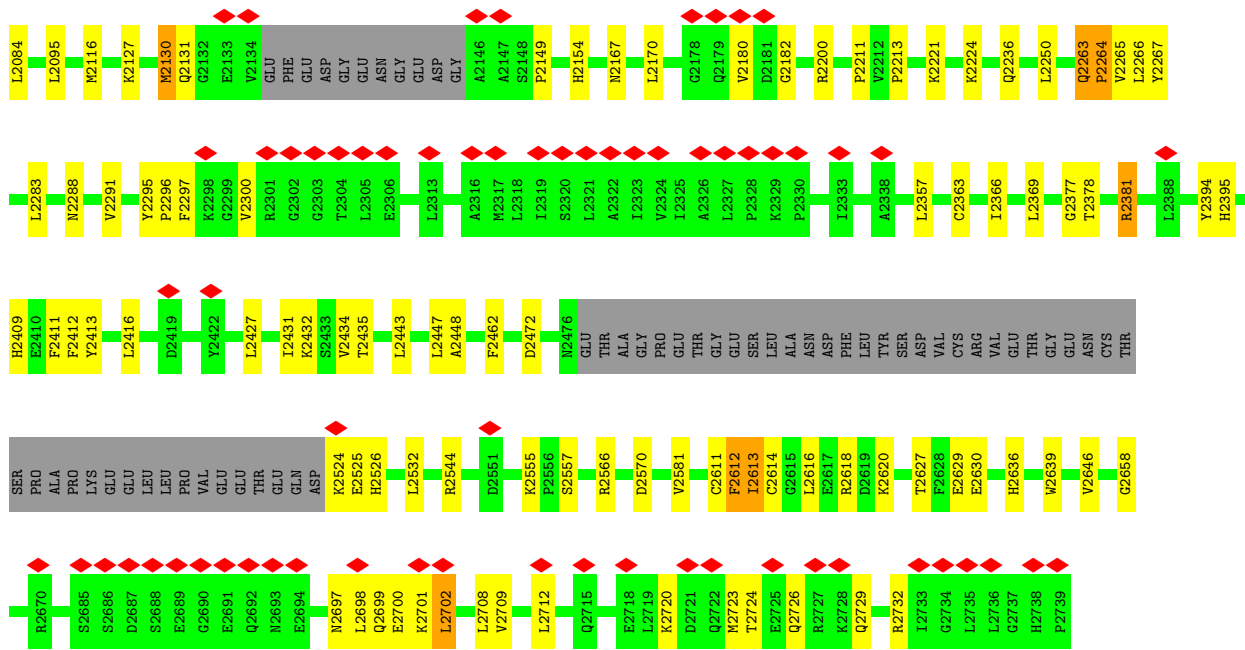
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Mol	Chain	Residues	Atoms					AltConf
2	B	1	Total	C	N	O	P	0
			42	32	1	8	1	
2	B	1	Total	C	N	O	P	0
			40	30	1	8	1	
2	B	1	Total	C	N	O	P	0
			34	24	1	8	1	
2	B	1	Total	C	N	O	P	0
			36	26	1	8	1	
2	B	1	Total	C	N	O	P	0
			36	26	1	8	1	
2	B	1	Total	C	N	O	P	0
			39	29	1	8	1	

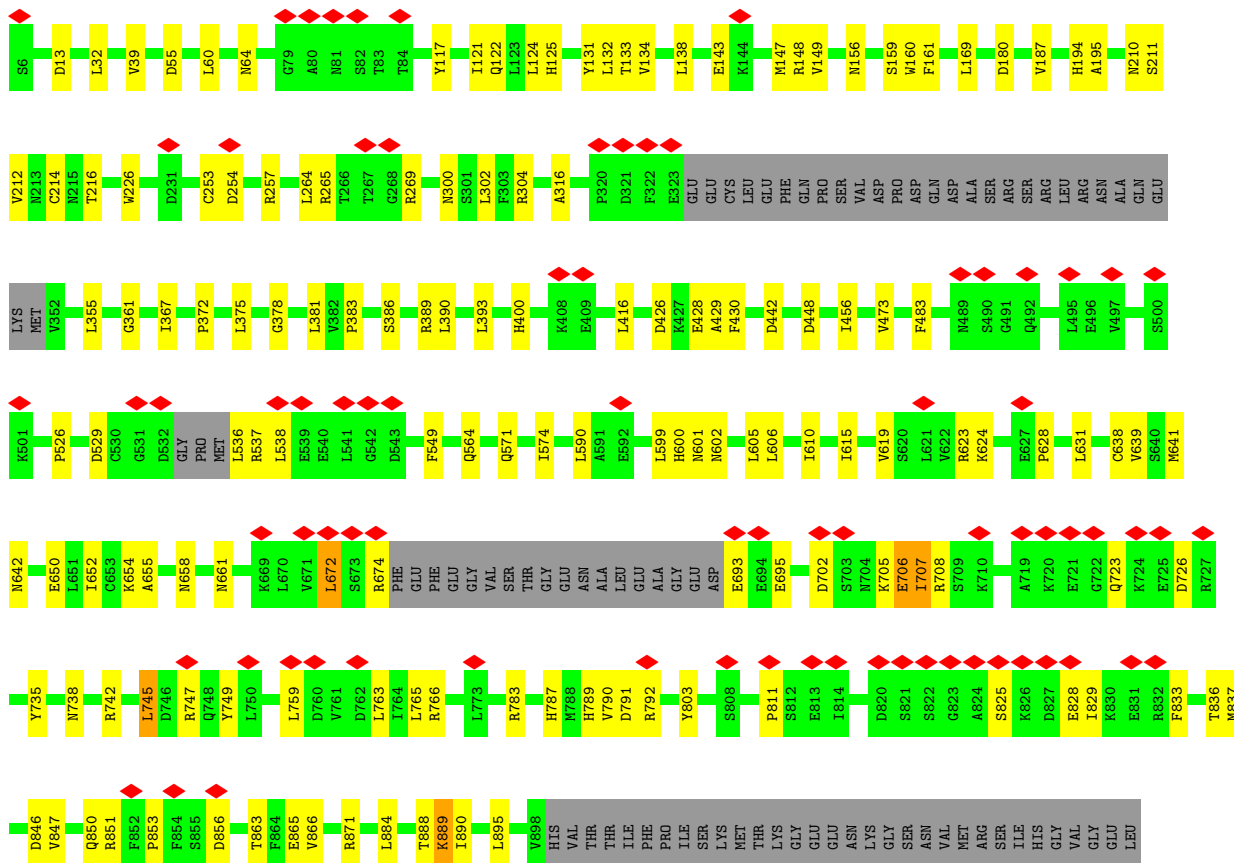
- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

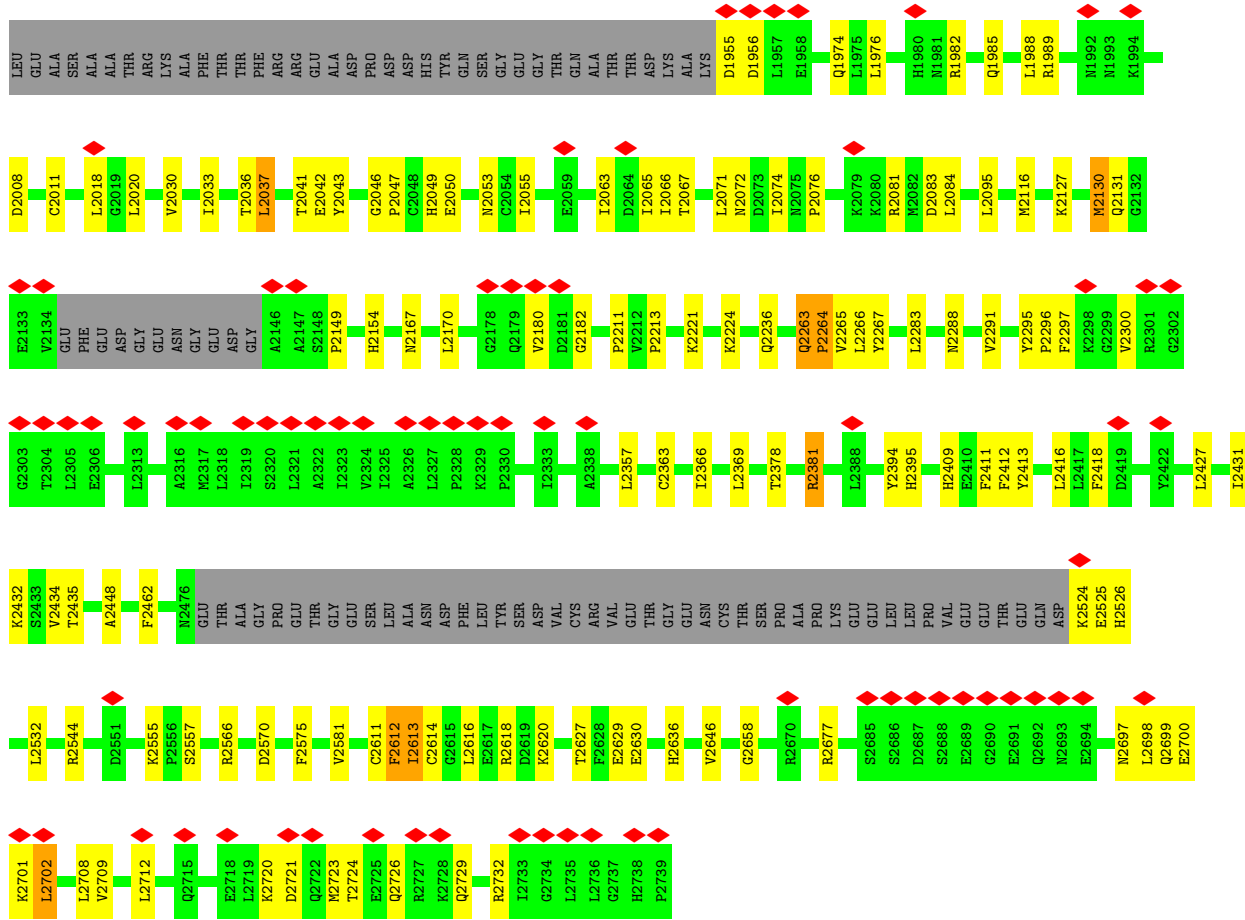
Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total	Zn	0
			1	1	
3	D	1	Total	Zn	0
			1	1	
3	C	1	Total	Zn	0
			1	1	
3	B	1	Total	Zn	0
			1	1	



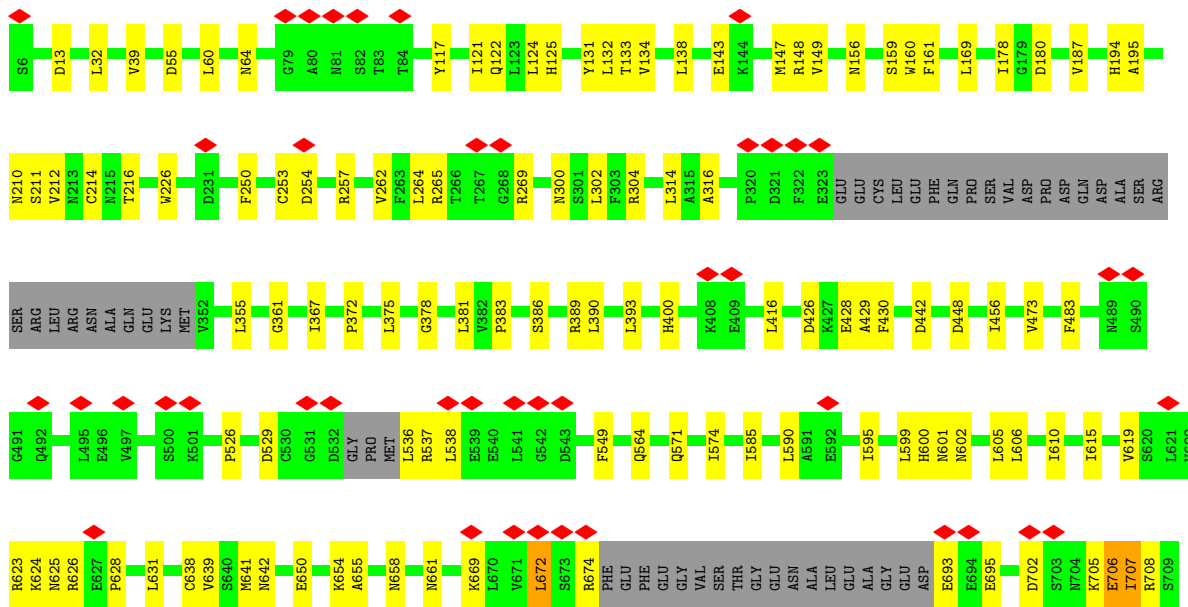


● Molecule 1: Inositol 1,4,5-trisphosphate receptor type 1





• 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	573723	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 ($e^-/\text{\AA}^2$)	56	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	46943	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	1.754	Depositor
Minimum map value	-0.700	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.040	Depositor
Recommended contour level	0.263	Depositor
Map size (\AA)	470.80002, 470.80002, 470.80002	wwPDB
Map dimensions	440, 440, 440	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: ZN, PLX

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	0.28	0/18460	0.64	19/24875 (0.1%)
1	B	0.28	0/18460	0.64	19/24875 (0.1%)
1	C	0.28	0/18460	0.64	19/24875 (0.1%)
1	D	0.28	0/18460	0.64	19/24875 (0.1%)
All	All	0.28	0/73840	0.64	76/99500 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	7
1	B	0	7
1	C	0	7
1	D	0	7
All	All	0	28

There are no bond length outliers.

The worst 5 of 76 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1403	LEU	CA-CB-CG	9.26	136.59	115.30
1	A	1403	LEU	CA-CB-CG	9.26	136.59	115.30
1	C	1403	LEU	CA-CB-CG	9.26	136.59	115.30
1	D	1403	LEU	CA-CB-CG	9.24	136.56	115.30
1	A	381	LEU	CA-CB-CG	8.48	134.80	115.30

There are no chirality outliers.

5 of 28 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1637	PHE	Peptide
1	A	2263	GLN	Peptide
1	A	2295	TYR	Peptide
1	A	706	GLU	Peptide
1	A	707	ILE	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	18148	0	17980	255	0
1	B	18148	0	17980	256	0
1	C	18148	0	17980	252	0
1	D	18148	0	17980	245	0
2	A	274	0	370	29	0
2	B	313	0	422	33	0
2	C	274	0	369	30	0
2	D	234	0	315	29	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
All	All	73691	0	73396	1013	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 7.

The worst 5 of 1013 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:C:2409:HIS:CG	2:C:2804:PLX:H51	1.37	1.58
1:D:2409:HIS:CG	2:D:2803:PLX:H51	1.40	1.54
1:A:2409:HIS:CG	2:A:2803:PLX:H51	1.46	1.49
1:C:2409:HIS:CD2	2:C:2804:PLX:H51	1.49	1.46
1:B:2409:HIS:CG	2:B:2807:PLX:H51	1.49	1.43

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	2270/2734 (83%)	2018 (89%)	246 (11%)	6 (0%)	41	71
1	B	2270/2734 (83%)	2018 (89%)	246 (11%)	6 (0%)	41	71
1	C	2270/2734 (83%)	2018 (89%)	246 (11%)	6 (0%)	41	71
1	D	2270/2734 (83%)	2018 (89%)	246 (11%)	6 (0%)	41	71
All	All	9080/10936 (83%)	8072 (89%)	984 (11%)	24 (0%)	44	71

5 of 24 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2412	PHE
1	D	2412	PHE
1	C	2412	PHE
1	B	2412	PHE
1	A	2612	PHE

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	1972/2444 (81%)	1961 (99%)	11 (1%)	86	91
1	B	1972/2444 (81%)	1961 (99%)	11 (1%)	86	91
1	C	1972/2444 (81%)	1961 (99%)	11 (1%)	86	91
1	D	1972/2444 (81%)	1961 (99%)	11 (1%)	86	91
All	All	7888/9776 (81%)	7844 (99%)	44 (1%)	86	91

5 of 44 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	1304	ARG
1	B	766	ARG
1	C	1348	ARG
1	C	2381	ARG
1	B	1206	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 31 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	2108	ASN
1	B	1836	ASN
1	C	122	GLN
1	B	2108	ASN
1	B	64	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 32 ligands modelled in this entry, 4 are monoatomic - leaving 28 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
2	PLX	C	2805	-	38,38,51	1.95	4 (10%)	42,46,59	1.62	5 (11%)
2	PLX	B	2807	-	35,35,51	2.02	5 (14%)	39,43,59	1.71	5 (12%)
2	PLX	B	2804	-	39,39,51	1.91	4 (10%)	43,47,59	1.60	5 (11%)
2	PLX	B	2801	-	39,39,51	1.92	4 (10%)	43,47,59	1.61	5 (11%)
2	PLX	D	2803	-	35,35,51	2.01	4 (11%)	39,43,59	1.70	5 (12%)
2	PLX	C	2807	-	45,45,51	1.79	4 (8%)	49,53,59	1.57	5 (10%)
2	PLX	C	2808	-	42,42,51	1.86	4 (9%)	46,50,59	1.55	5 (10%)
2	PLX	D	2806	-	45,45,51	1.69	6 (13%)	49,53,59	1.66	6 (12%)
2	PLX	D	2802	-	35,35,51	2.02	4 (11%)	39,43,59	1.62	6 (15%)
2	PLX	A	2804	-	38,38,51	1.96	4 (10%)	42,46,59	1.62	5 (11%)
2	PLX	A	2808	-	39,39,51	1.92	4 (10%)	43,47,59	1.60	5 (11%)
2	PLX	B	2805	-	33,33,51	2.07	4 (12%)	37,41,59	1.73	5 (13%)
2	PLX	D	2804	-	38,38,51	1.96	4 (10%)	42,46,59	1.62	5 (11%)
2	PLX	A	2801	-	33,33,51	2.07	4 (12%)	37,41,59	1.72	5 (13%)
2	PLX	A	2807	-	42,42,51	1.86	4 (9%)	46,50,59	1.54	5 (10%)
2	PLX	B	2806	-	35,35,51	2.02	4 (11%)	39,43,59	1.62	6 (15%)
2	PLX	D	2807	-	42,42,51	1.86	4 (9%)	46,50,59	1.54	5 (10%)
2	PLX	C	2804	-	35,35,51	2.02	5 (14%)	39,43,59	1.69	5 (12%)
2	PLX	A	2802	-	35,35,51	2.02	4 (11%)	39,43,59	1.63	6 (15%)
2	PLX	B	2802	-	45,45,51	1.79	4 (8%)	49,53,59	1.51	5 (10%)
2	PLX	C	2802	-	33,33,51	2.07	4 (12%)	37,41,59	1.73	5 (13%)
2	PLX	D	2801	-	33,33,51	2.07	4 (12%)	37,41,59	1.73	5 (13%)
2	PLX	A	2803	-	35,35,51	2.02	4 (11%)	39,43,59	1.71	6 (15%)
2	PLX	B	2803	-	41,41,51	1.88	4 (9%)	45,49,59	1.56	5 (11%)
2	PLX	C	2803	-	35,35,51	2.02	4 (11%)	39,43,59	1.63	6 (15%)
2	PLX	C	2801	-	39,39,51	1.92	4 (10%)	43,47,59	1.60	5 (11%)
2	PLX	B	2808	-	38,38,51	1.96	4 (10%)	42,46,59	1.62	5 (11%)
2	PLX	A	2806	-	45,45,51	1.79	4 (8%)	49,53,59	1.56	5 (10%)

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
2	PLX	C	2805	-	3/3/5/5	23/42/42/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PLX	B	2807	-	3/3/5/5	16/39/39/55	-
2	PLX	B	2804	-	3/3/5/5	22/43/43/55	-
2	PLX	B	2801	-	3/3/5/5	23/43/43/55	-
2	PLX	D	2803	-	3/3/5/5	21/39/39/55	-
2	PLX	C	2807	-	3/3/5/5	25/49/49/55	-
2	PLX	C	2808	-	3/3/5/5	25/46/46/55	-
2	PLX	D	2806	-	3/3/5/5	25/49/49/55	-
2	PLX	D	2802	-	3/3/5/5	19/39/39/55	-
2	PLX	A	2804	-	3/3/5/5	26/42/42/55	-
2	PLX	A	2808	-	3/3/5/5	20/43/43/55	-
2	PLX	B	2805	-	3/3/5/5	18/37/37/55	-
2	PLX	D	2804	-	3/3/5/5	24/42/42/55	-
2	PLX	A	2801	-	3/3/5/5	17/37/37/55	-
2	PLX	A	2807	-	3/3/5/5	25/46/46/55	-
2	PLX	B	2806	-	3/3/5/5	19/39/39/55	-
2	PLX	D	2807	-	3/3/5/5	26/46/46/55	-
2	PLX	C	2804	-	3/3/5/5	18/39/39/55	-
2	PLX	A	2802	-	3/3/5/5	19/39/39/55	-
2	PLX	B	2802	-	3/3/5/5	26/49/49/55	-
2	PLX	C	2802	-	3/3/5/5	18/37/37/55	-
2	PLX	D	2801	-	3/3/5/5	18/37/37/55	-
2	PLX	A	2803	-	3/3/5/5	17/39/39/55	-
2	PLX	B	2803	-	3/3/5/5	24/45/45/55	-
2	PLX	C	2803	-	3/3/5/5	19/39/39/55	-
2	PLX	C	2801	-	3/3/5/5	21/43/43/55	-
2	PLX	B	2808	-	3/3/5/5	24/42/42/55	-
2	PLX	A	2806	-	3/3/5/5	25/49/49/55	-

The worst 5 of 116 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2801	PLX	O7-C6	-7.25	1.18	1.39
2	C	2804	PLX	O7-C6	-7.24	1.18	1.39
2	C	2803	PLX	O7-C6	-7.24	1.18	1.39
2	B	2808	PLX	O7-C6	-7.23	1.18	1.39
2	C	2808	PLX	O7-C6	-7.23	1.18	1.39

The worst 5 of 146 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
2	D	2806	PLX	O9-C24-C25	7.26	122.58	109.12
2	C	2807	PLX	O9-C24-C25	6.48	121.13	109.12
2	A	2806	PLX	O9-C24-C25	6.45	121.08	109.12
2	D	2803	PLX	O9-C24-C25	6.02	120.28	109.12
2	C	2804	PLX	O9-C24-C25	5.98	120.20	109.12

5 of 84 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	2801	PLX	C24
2	A	2801	PLX	C4
2	A	2801	PLX	C6
2	A	2802	PLX	C24
2	A	2802	PLX	C4

5 of 603 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	2801	PLX	O7-C6-C7-C8
2	A	2801	PLX	C3-O4-P1-O2
2	A	2801	PLX	C3-O4-P1-O3
2	A	2801	PLX	O9-C24-C25-C26
2	A	2802	PLX	O7-C6-O6-C4

There are no ring outliers.

24 monomers are involved in 121 short contacts:

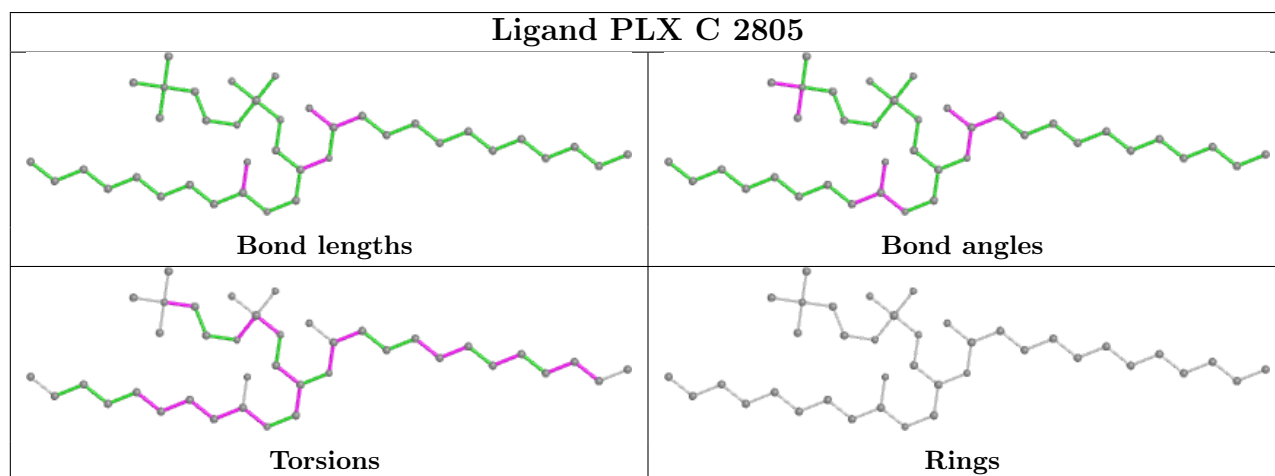
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	2805	PLX	1	0
2	B	2807	PLX	20	0
2	D	2803	PLX	18	0
2	C	2807	PLX	7	0
2	C	2808	PLX	1	0
2	D	2806	PLX	5	0
2	D	2802	PLX	1	0
2	A	2804	PLX	2	0
2	B	2805	PLX	2	0
2	D	2804	PLX	2	0
2	A	2801	PLX	1	0
2	A	2807	PLX	1	0
2	B	2806	PLX	3	0

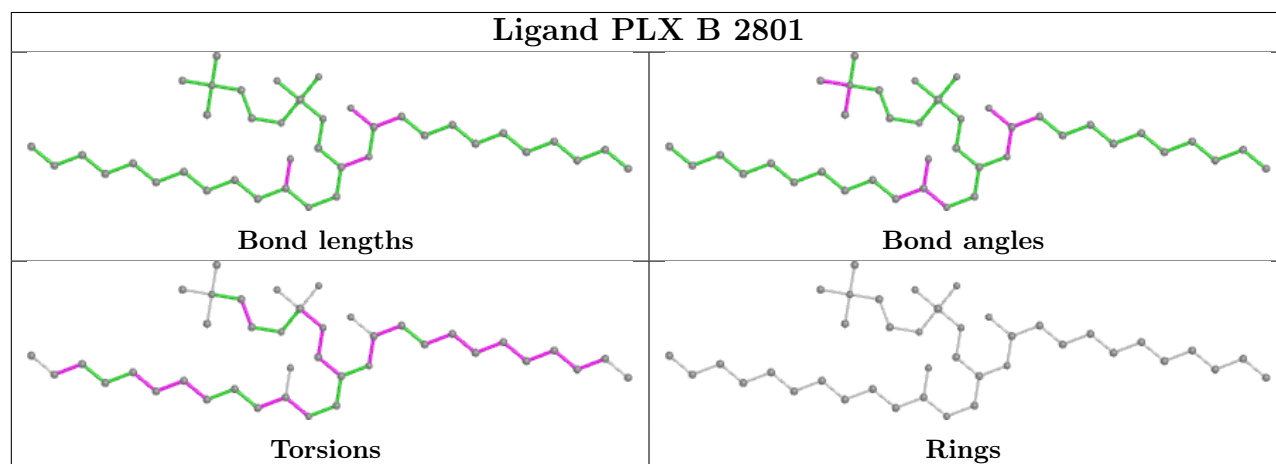
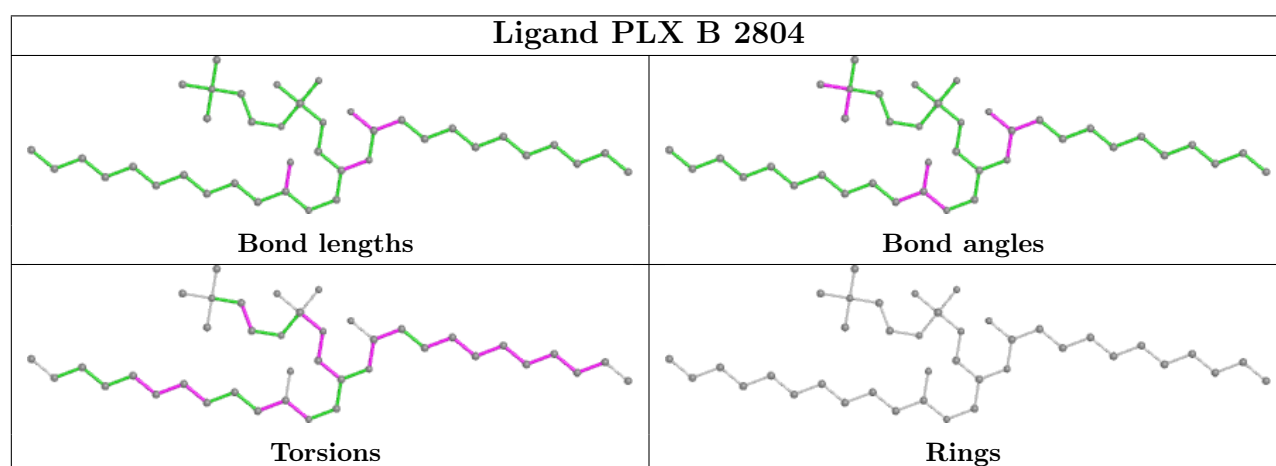
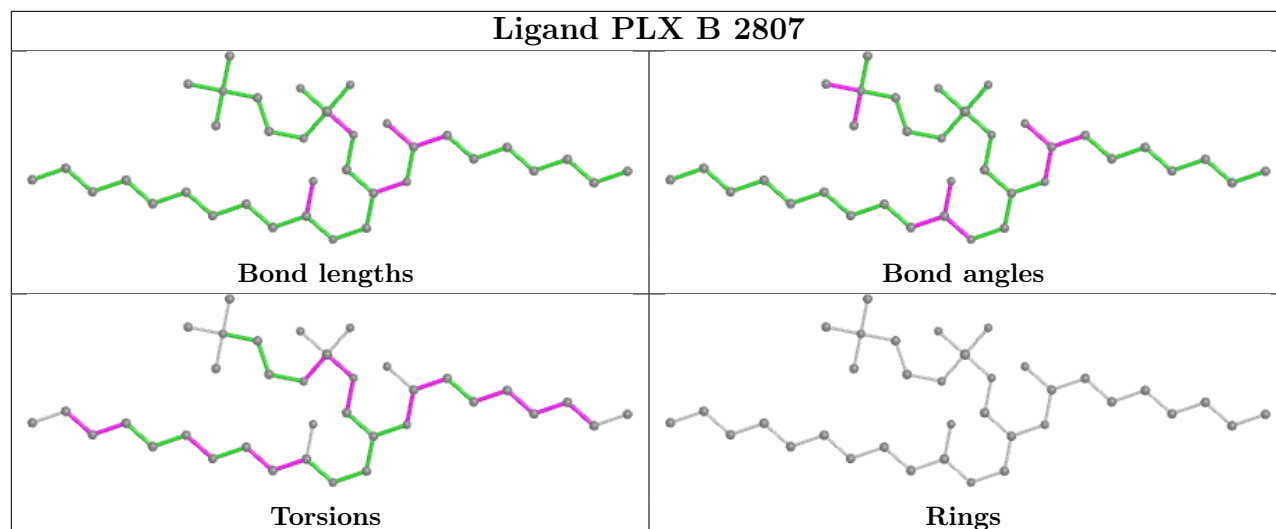
Continued on next page...

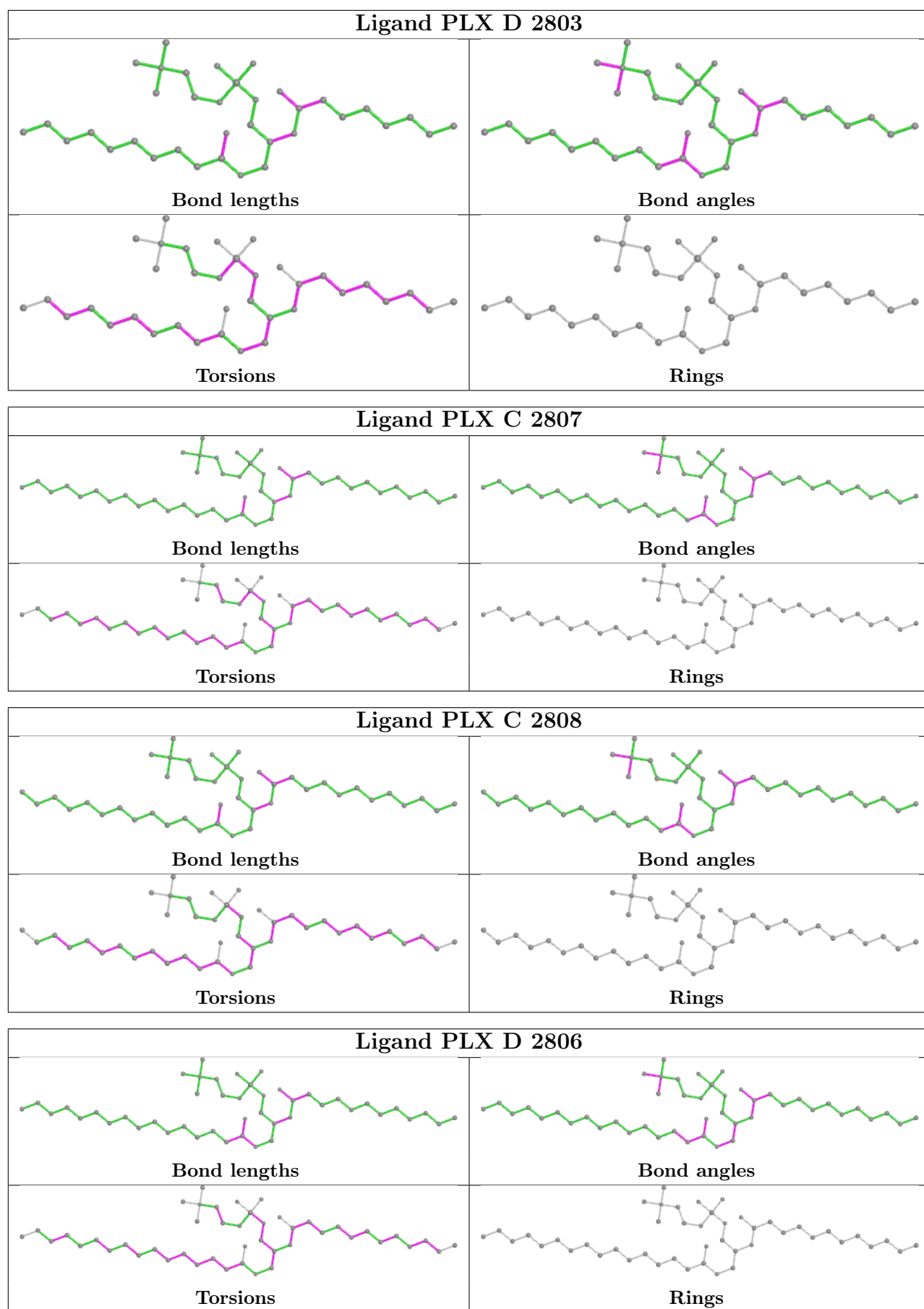
Continued from previous page...

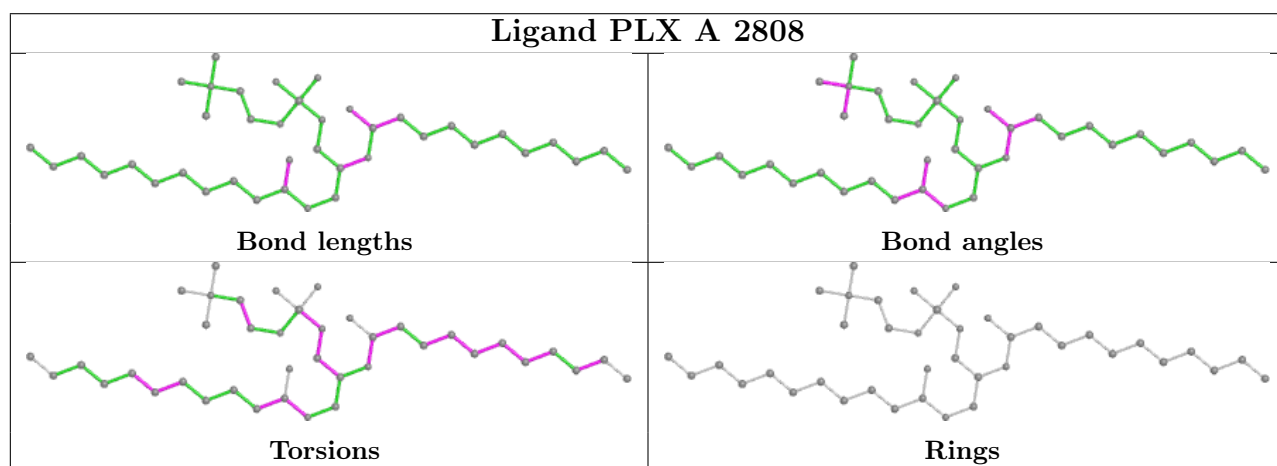
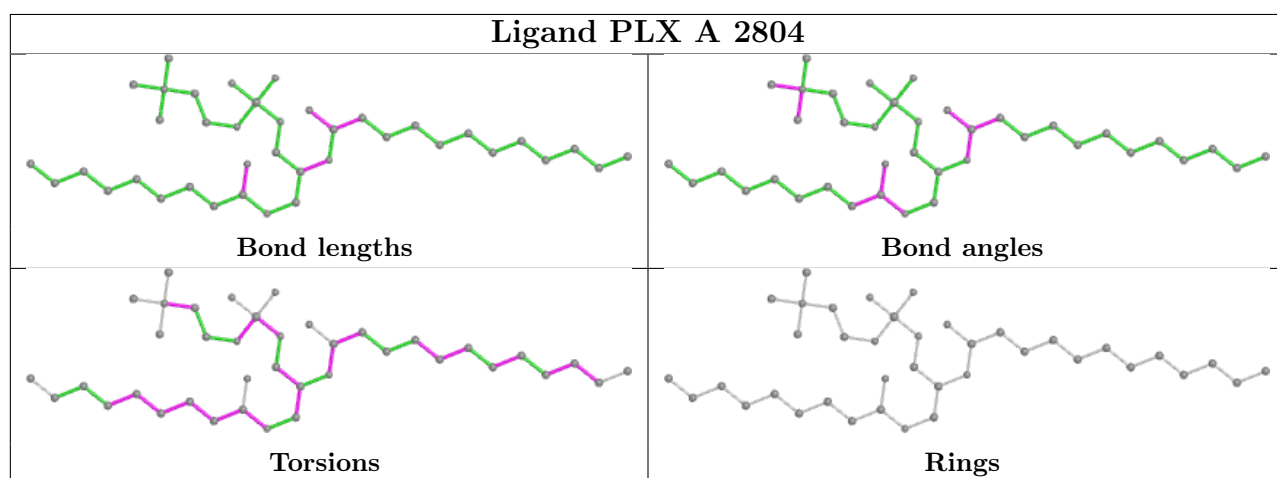
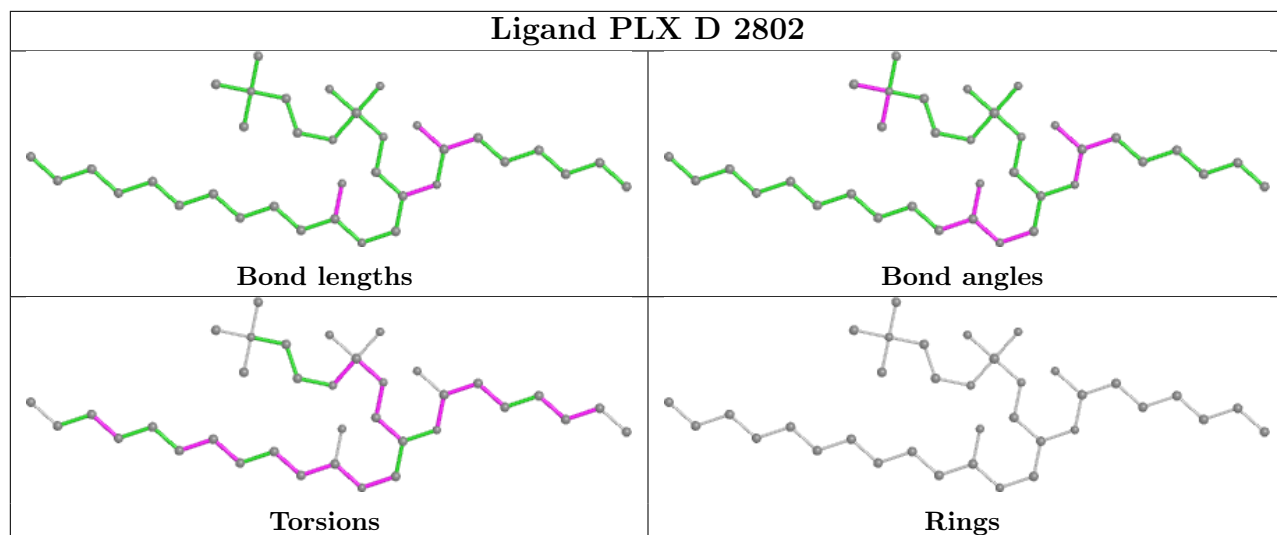
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	2807	PLX	2	0
2	C	2804	PLX	18	0
2	A	2802	PLX	2	0
2	B	2802	PLX	7	0
2	C	2802	PLX	2	0
2	D	2801	PLX	2	0
2	A	2803	PLX	18	0
2	B	2803	PLX	1	0
2	C	2803	PLX	3	0
2	B	2808	PLX	2	0
2	A	2806	PLX	6	0

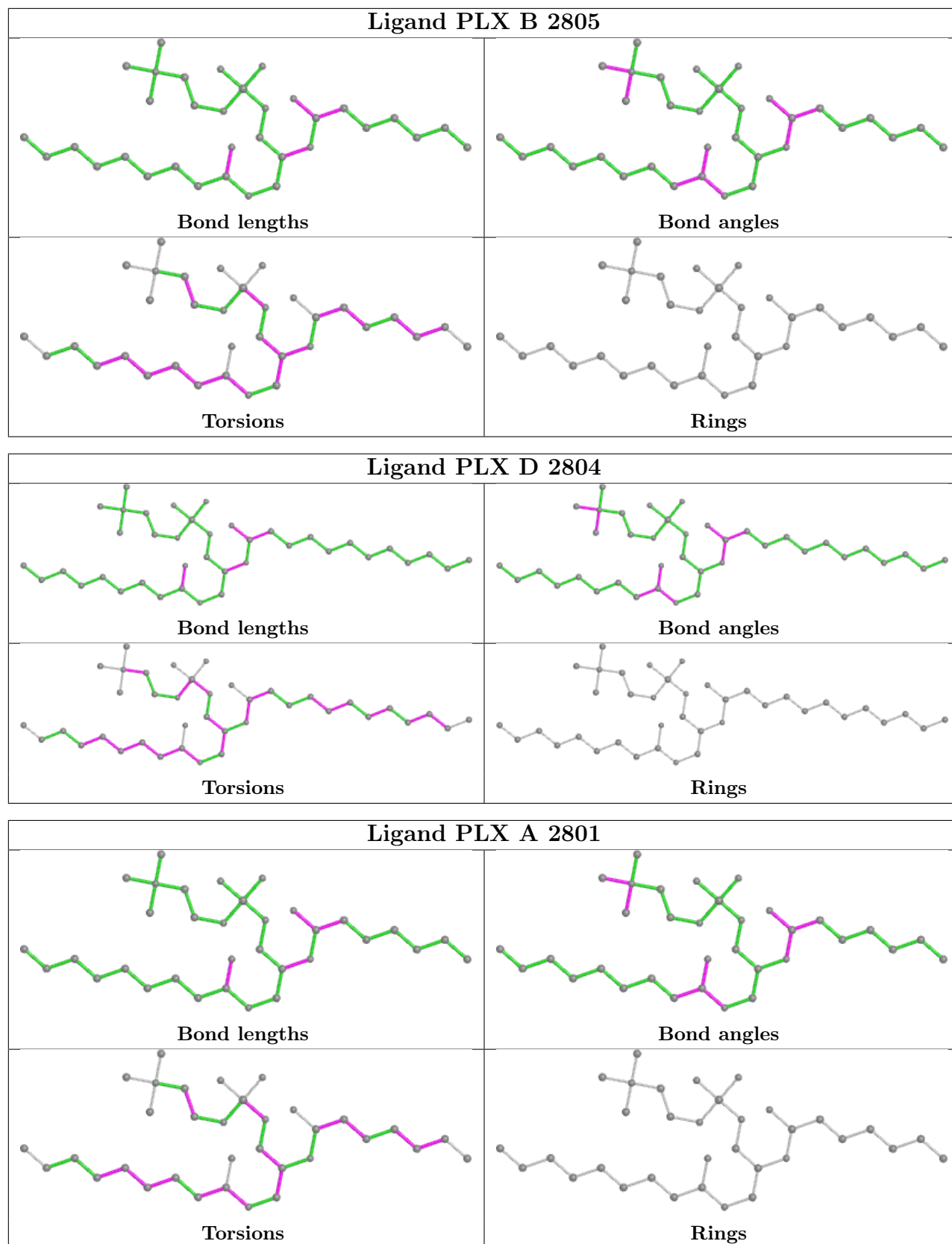
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

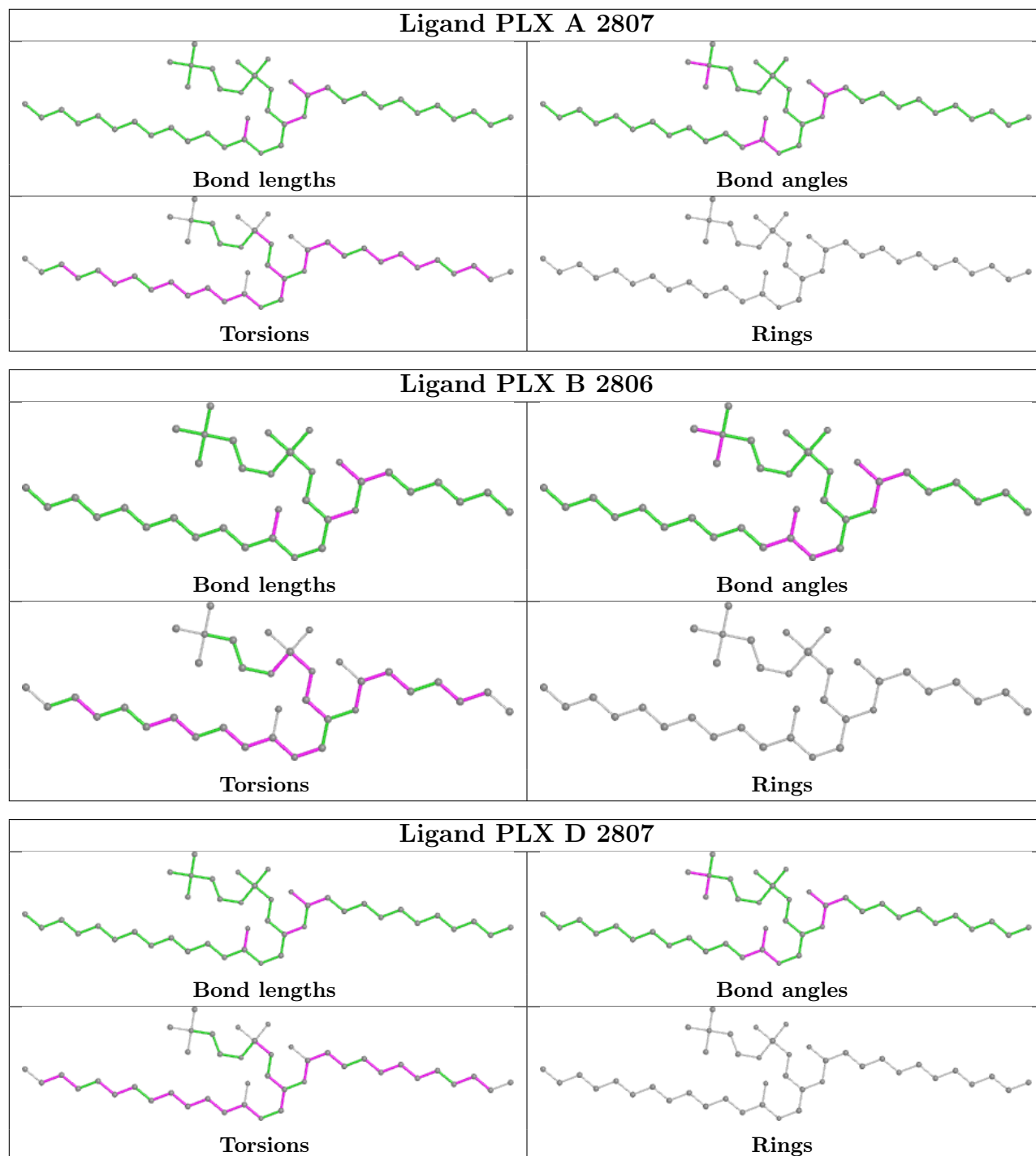


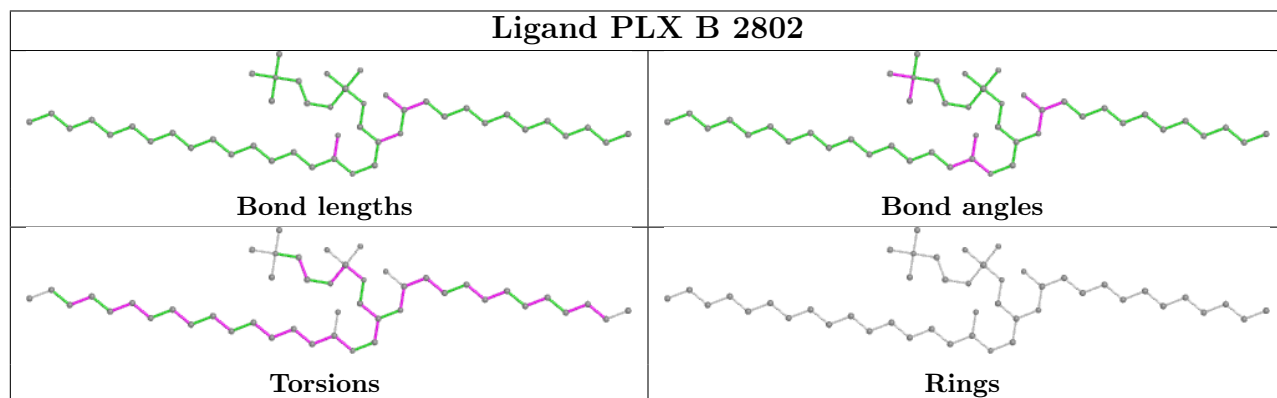
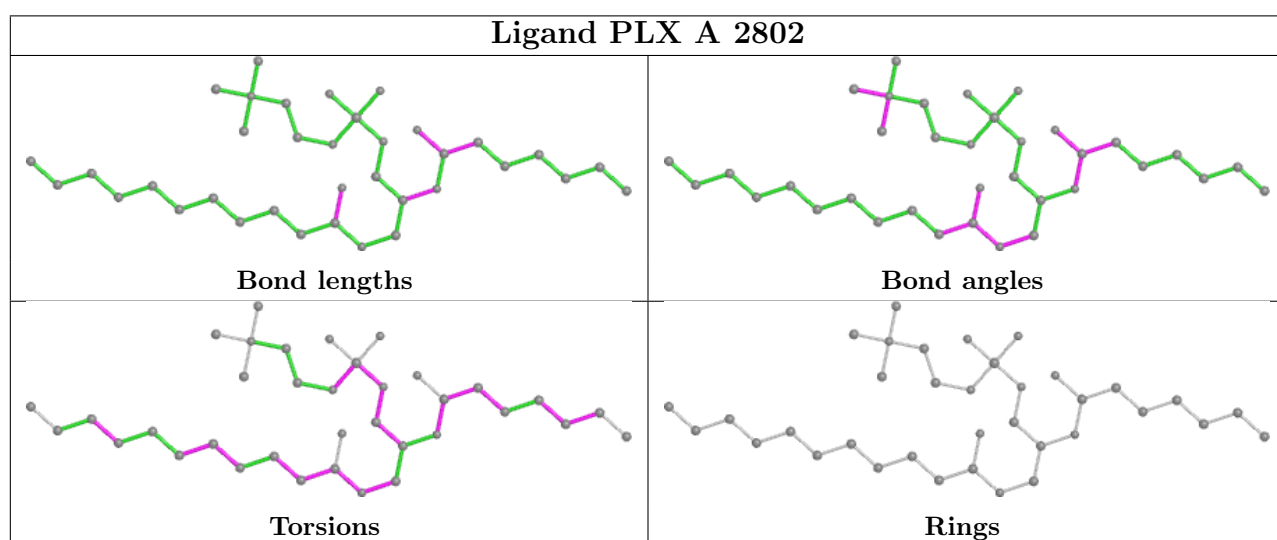
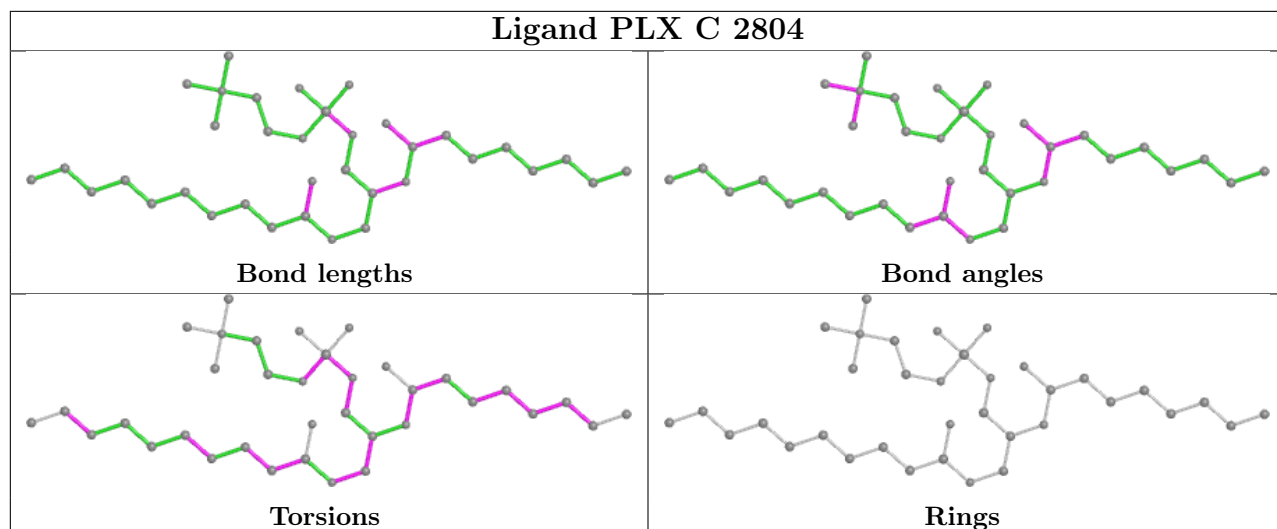


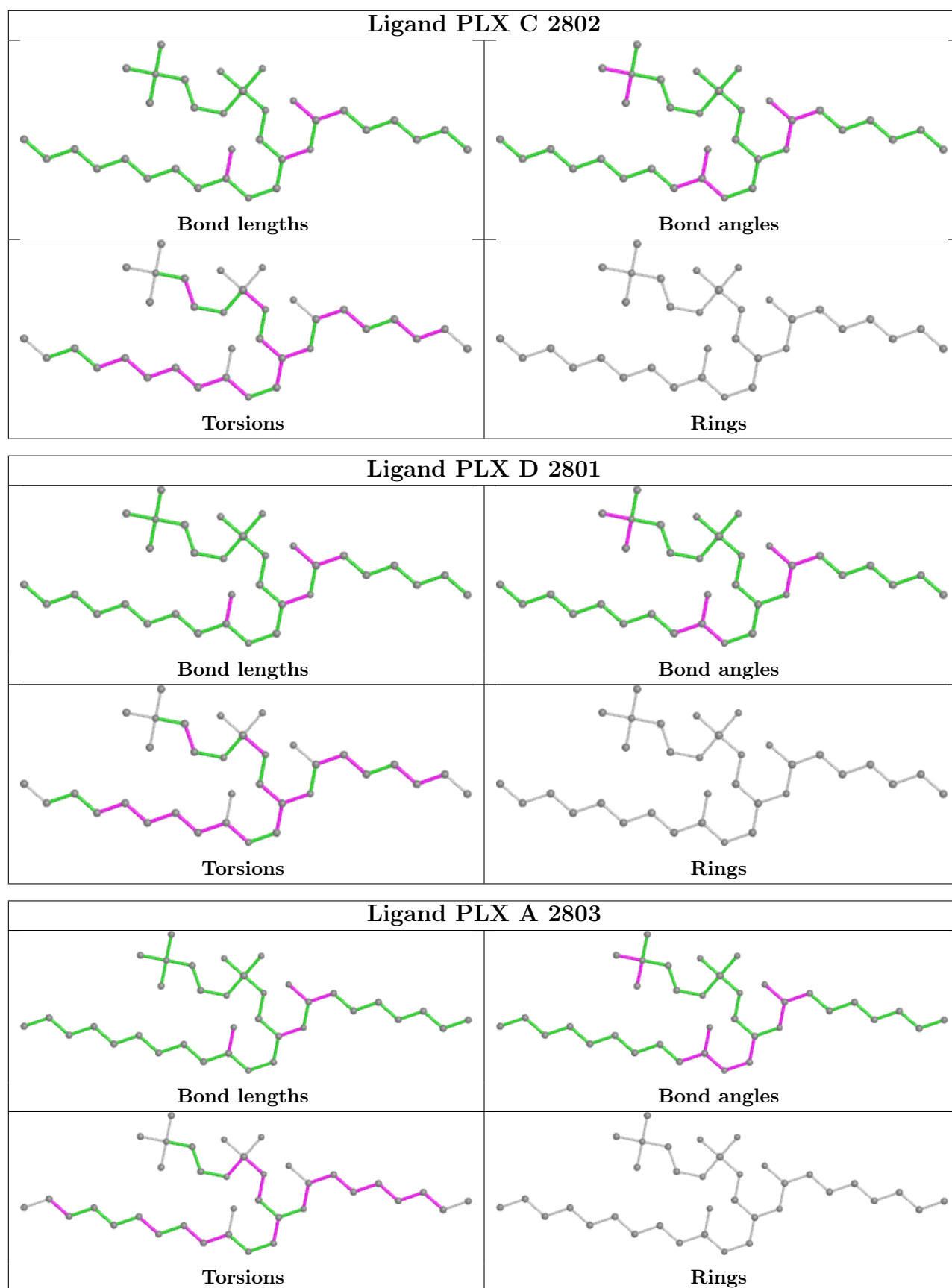


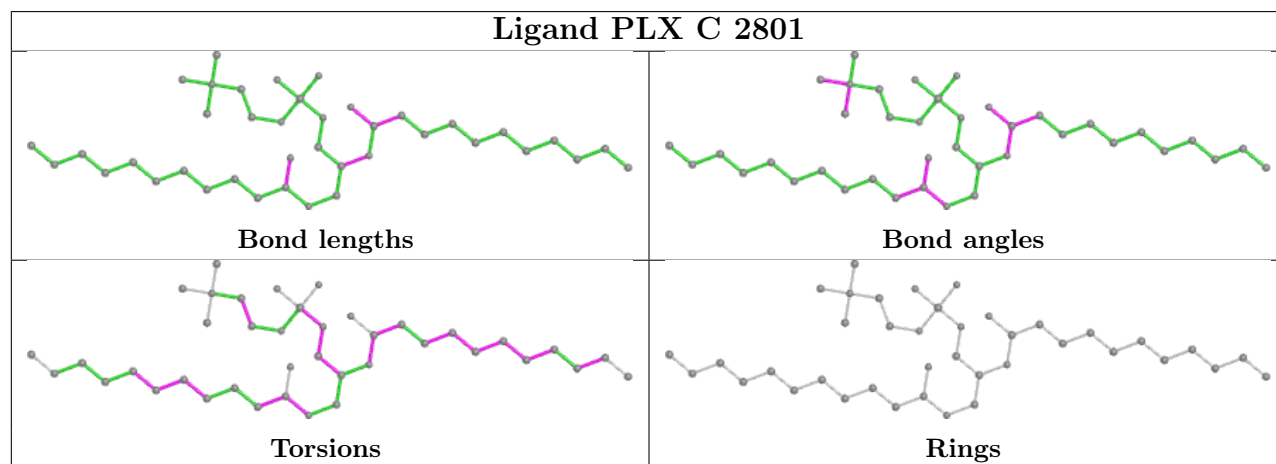
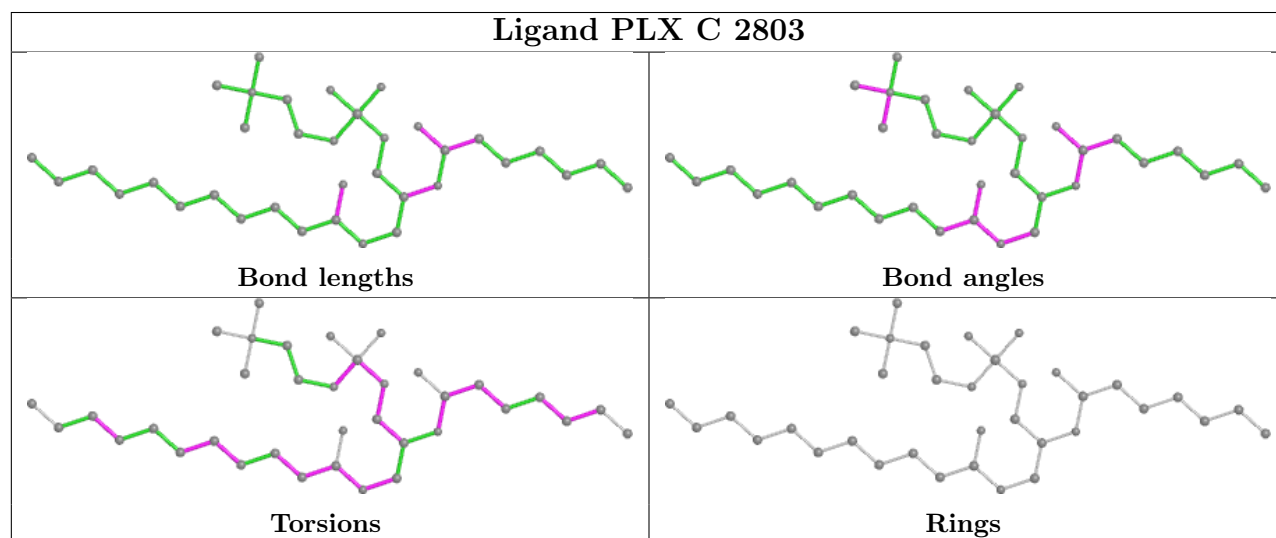
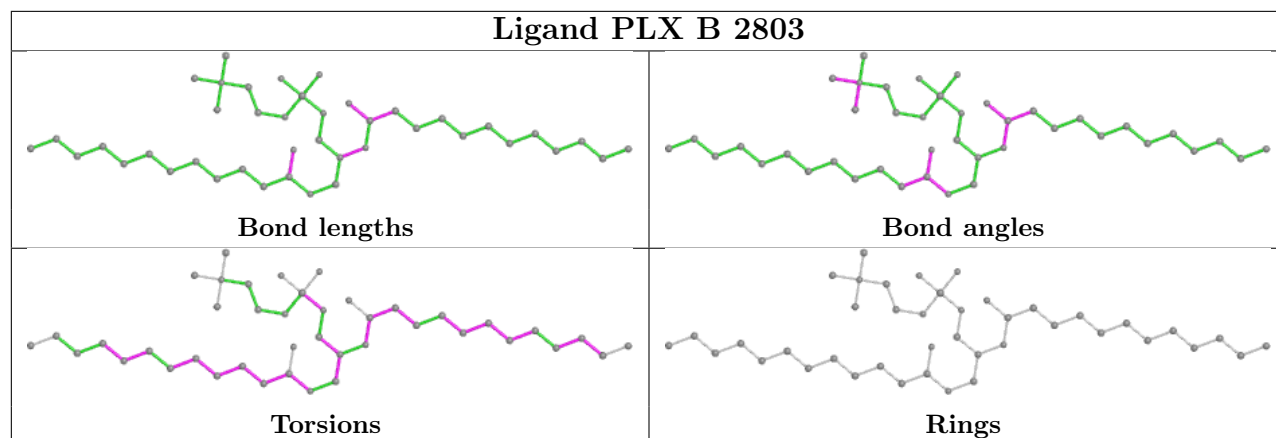


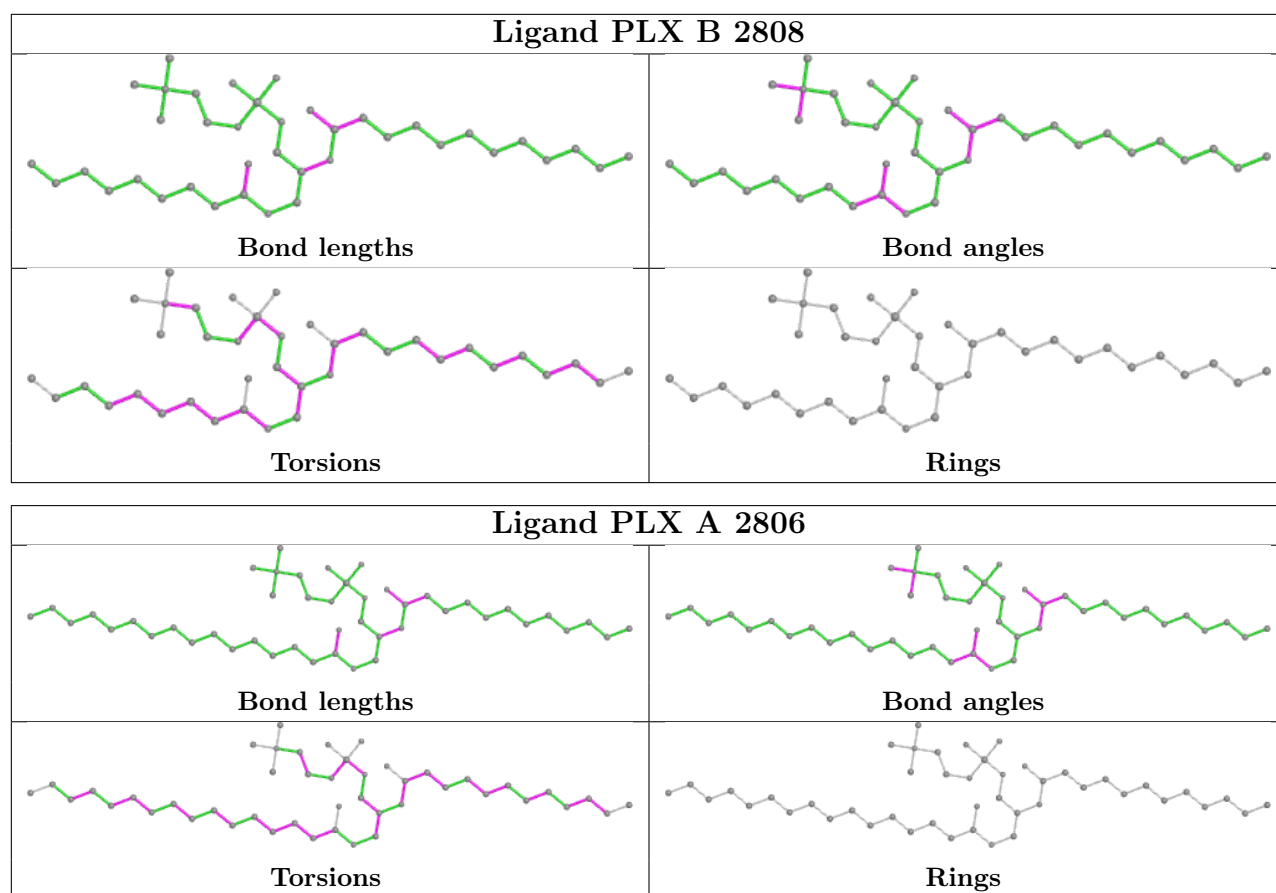












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

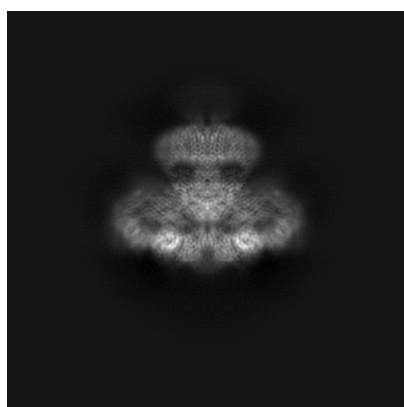
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23337. These allow visual inspection of the internal detail of the map and identification of artifacts.

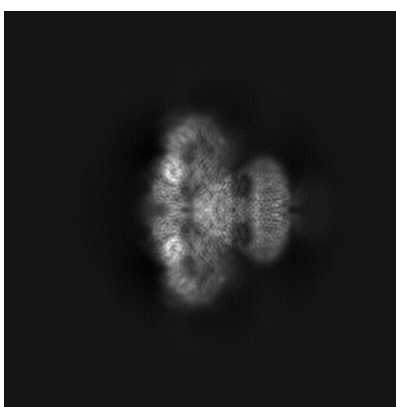
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

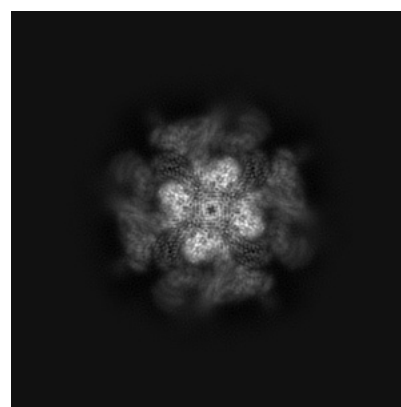
6.1.1 Primary map



X



Y

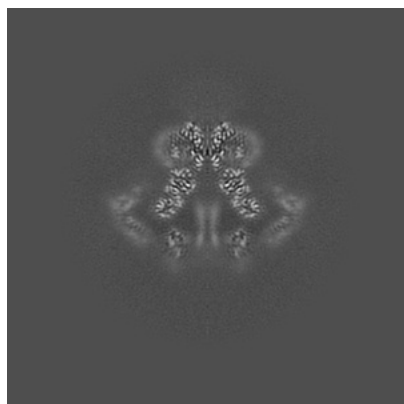


Z

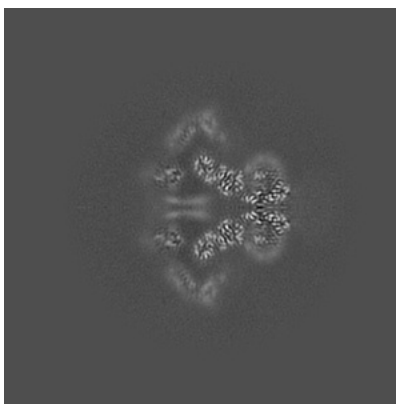
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

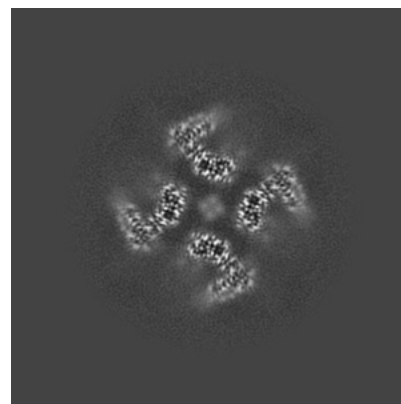
6.2.1 Primary map



X Index: 220



Y Index: 220

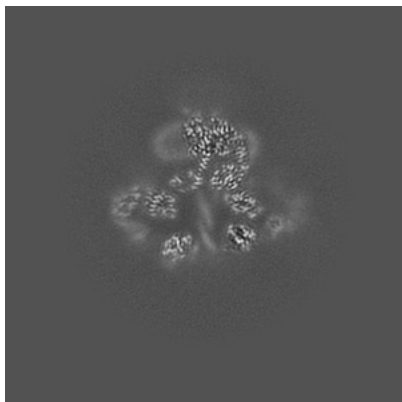


Z Index: 220

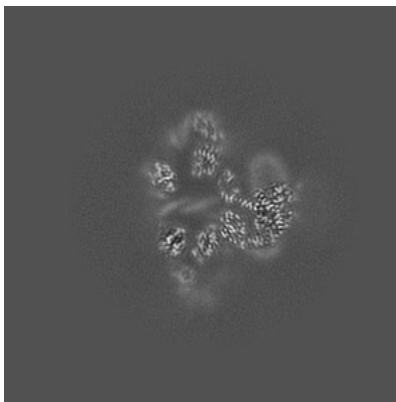
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

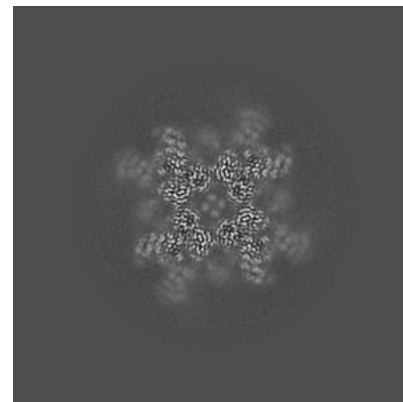
6.3.1 Primary map



X Index: 229



Y Index: 229

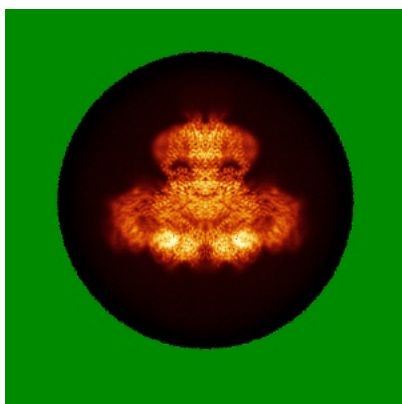


Z Index: 182

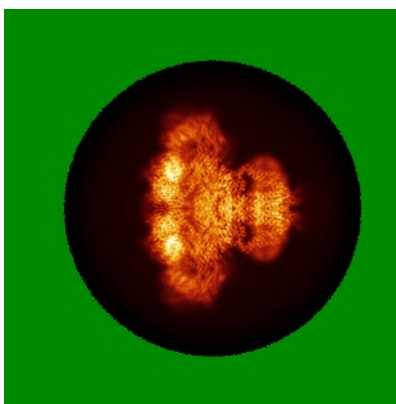
The images above show the largest variance slices of the map in three orthogonal directions.

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

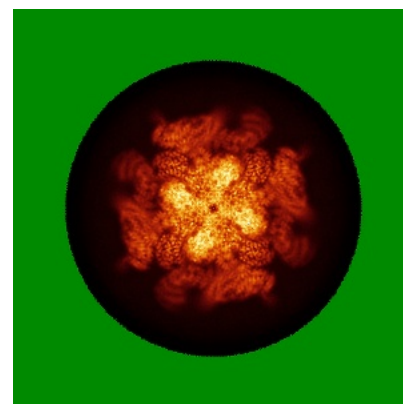
6.4.1 Primary map



X



Y

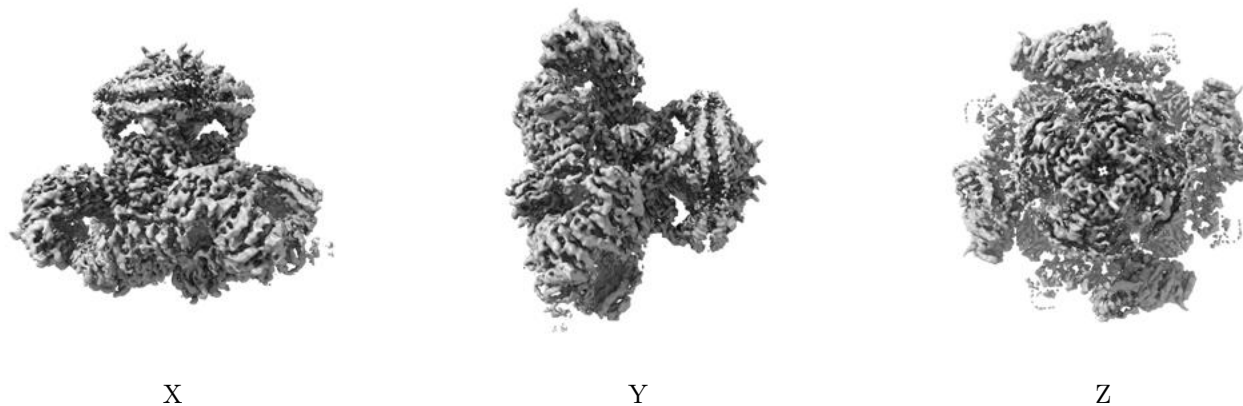


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.263. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

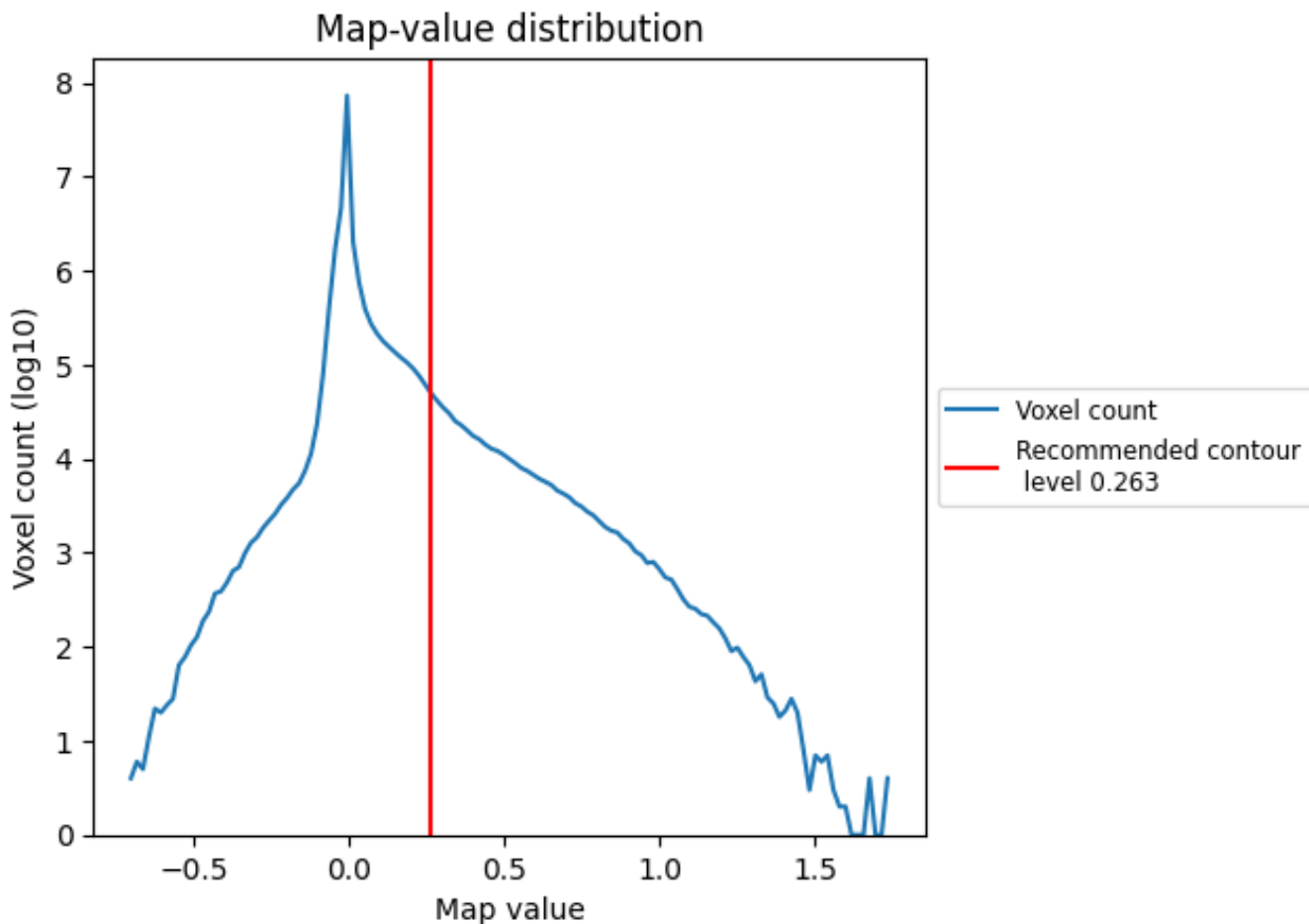
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

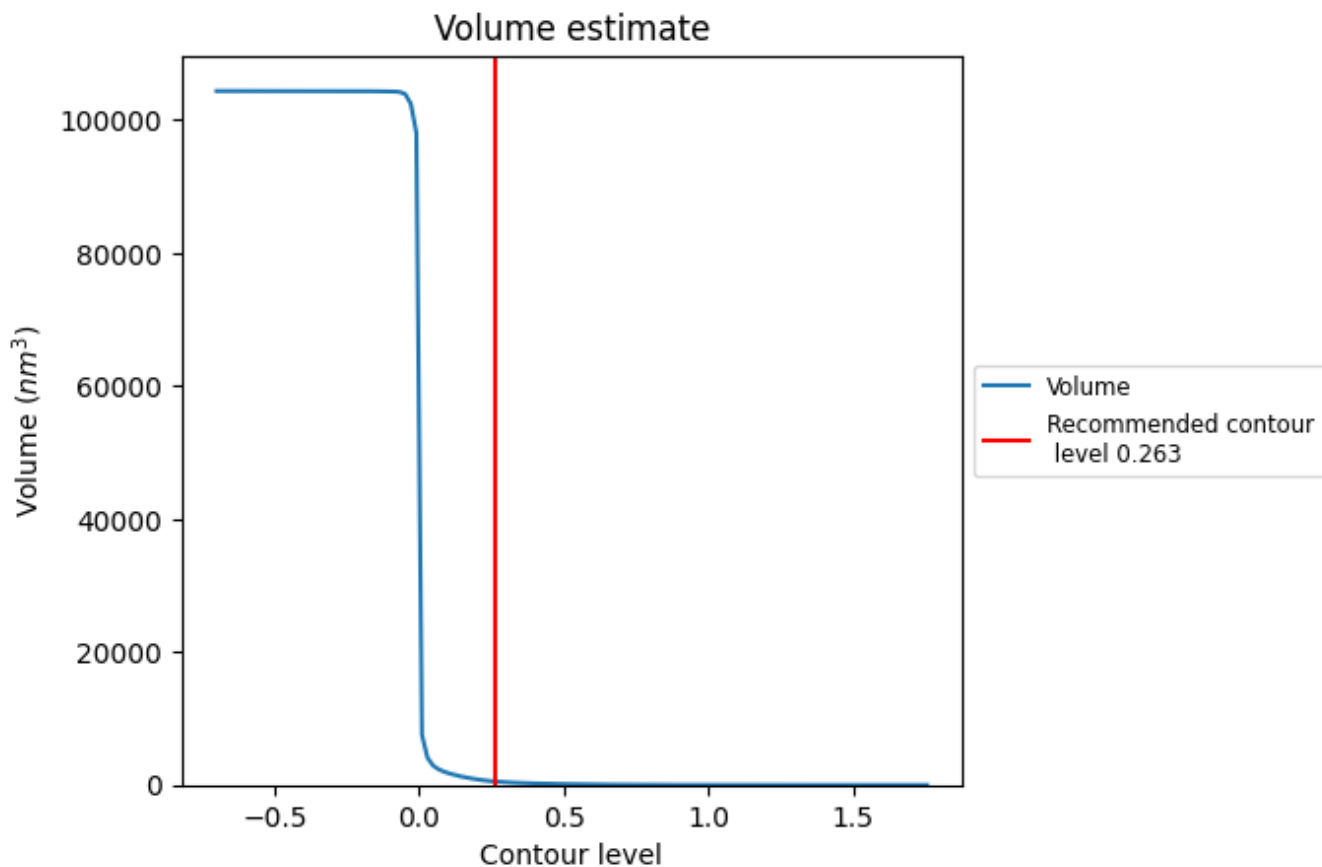
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

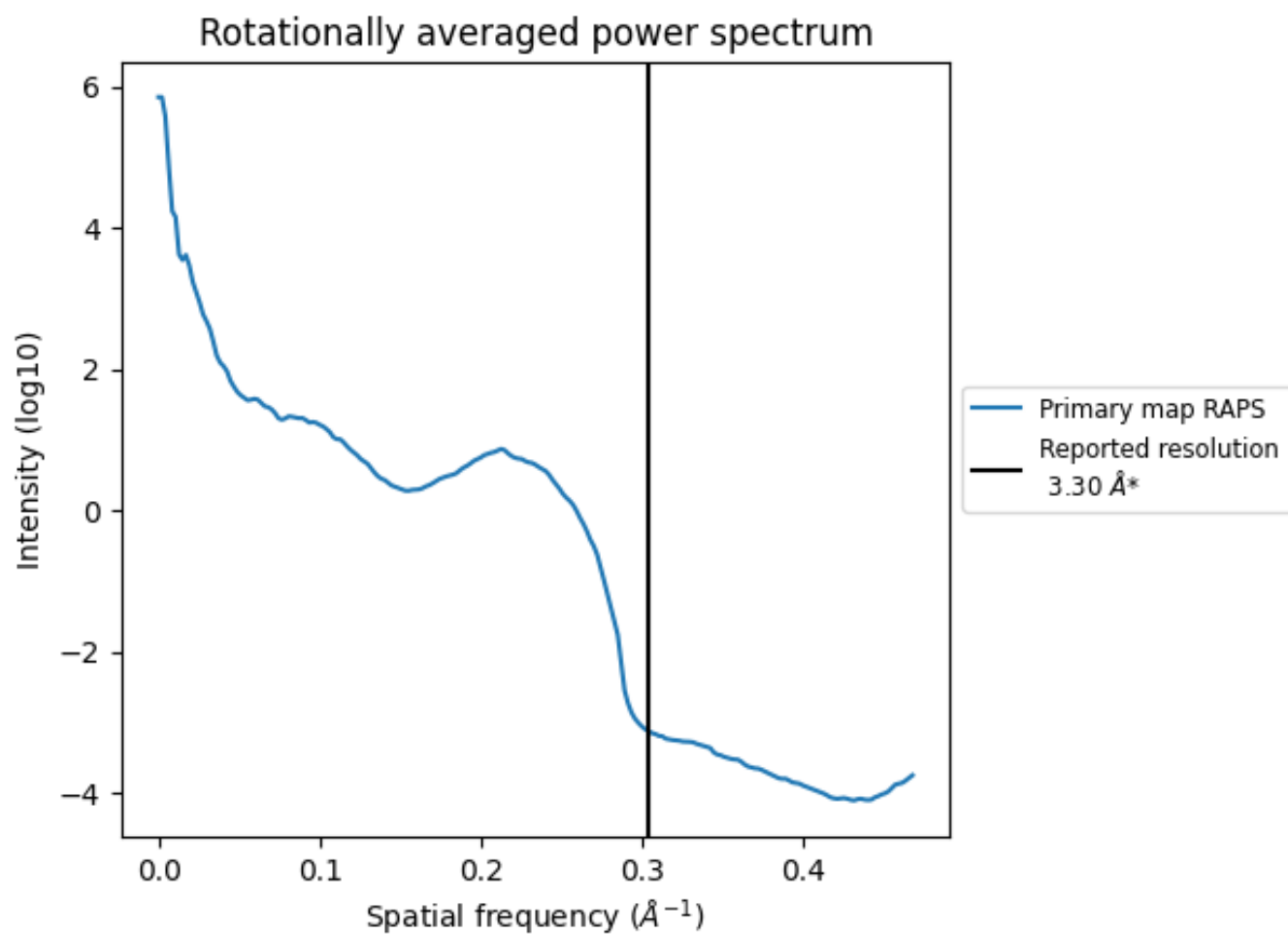
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 514 nm³; this corresponds to an approximate mass of 464 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 0.303 Å⁻¹

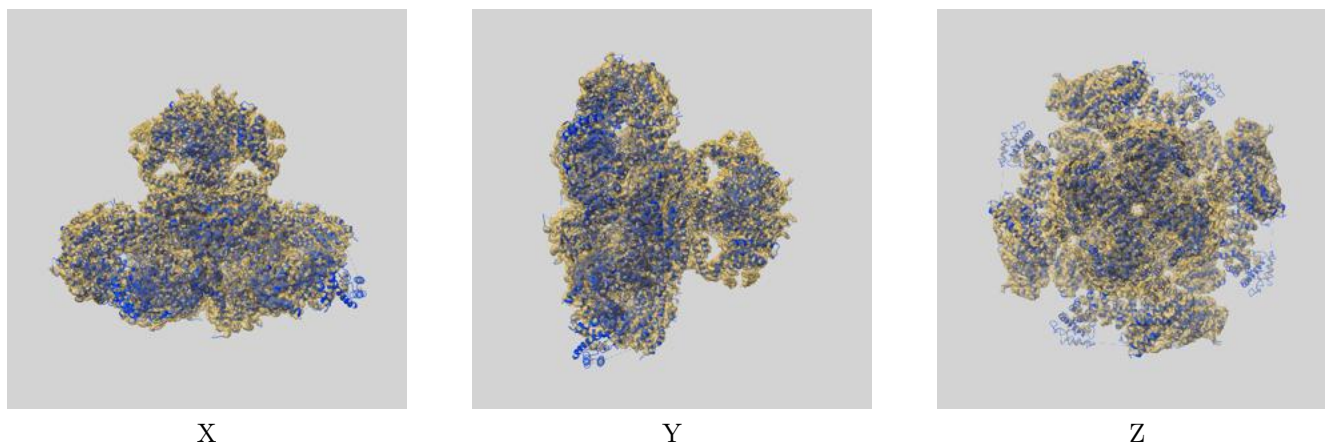
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

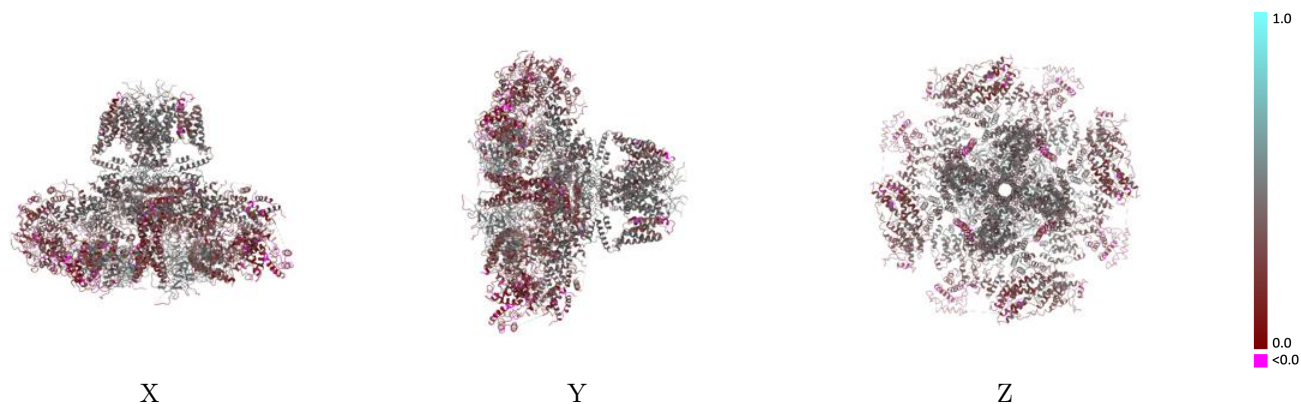
This section contains information regarding the fit between EMDB map EMD-23337 and PDB model 7LHE. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



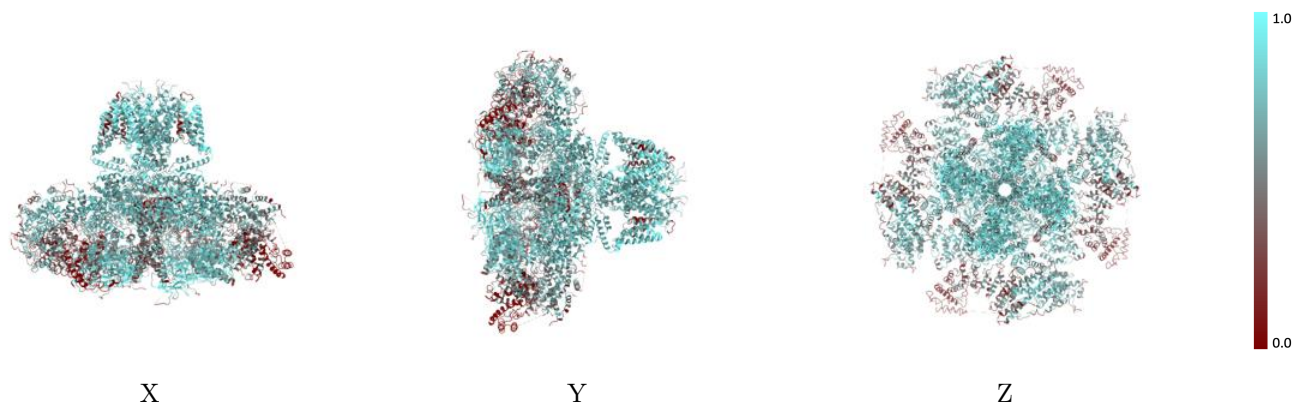
The images above show the 3D surface view of the map at the recommended contour level 0.263 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



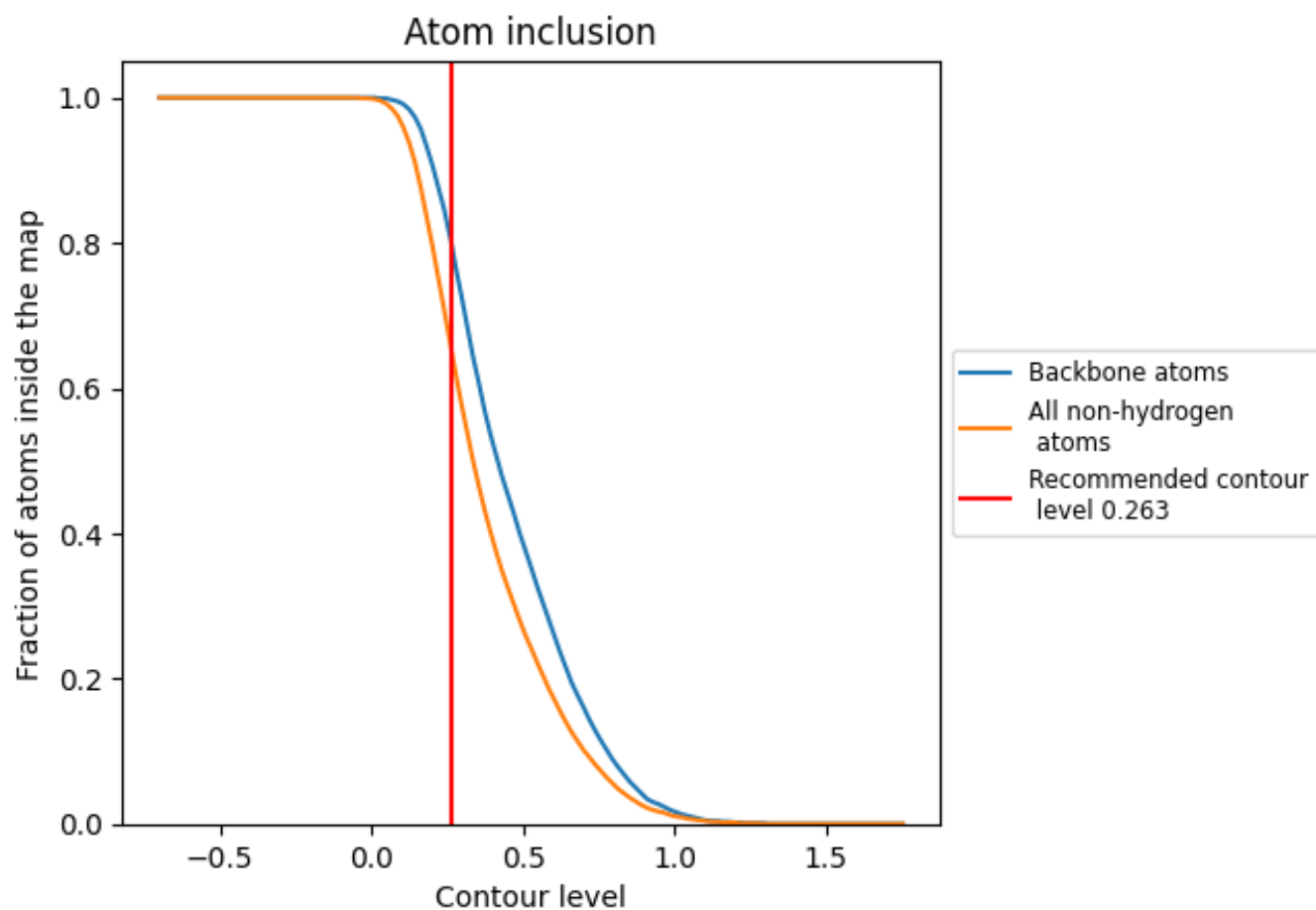
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.263).











9.4 Atom inclusion [i](#)



At the recommended contour level, 80% 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 (0.263) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6540	 0.3460
A	 0.6540	 0.3460
B	 0.6540	 0.3460
C	 0.6540	 0.3460
D	 0.6540	 0.3450

