



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 09:31 PM UTC

PDB ID : 5LRI / pdb_00005lri
Title : PHOTOSYNTHETIC REACTION CENTER MUTANT WITH GLUL212
REPLACED WITH TRP (CHAIN L, EL212W)
Authors : Fyfe, P.K.; Jones, M.R.
Deposited on : 2016-08-19
Resolution : 2.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation 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/XrayValidationReportHelp>

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:

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

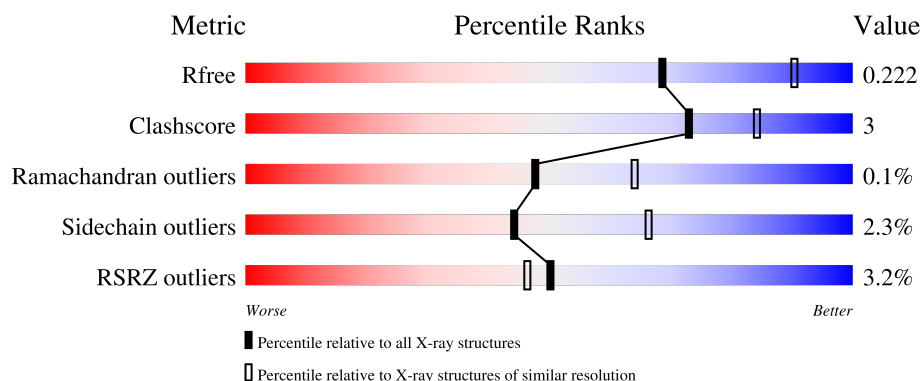
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	L	281	<div> <div>4%</div> <div> <div></div> <div>93%</div> <div>7%</div> </div> </div>
2	M	307	<div> <div>3%</div> <div> <div></div> <div>88%</div> <div>9%</div> <div>..</div> </div> </div>
3	H	260	<div> <div>3%</div> <div> <div></div> <div>85%</div> <div>6%</div> <div>8%</div> </div> </div>

2 Entry composition

There are 12 unique types of molecules in this entry. The entry contains 7494 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Reaction center protein L chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	L	281	Total	C	N	O	S	0	1	0
			2249	1522	357	362	8			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	212	TRP	GLU	engineered mutation	UNP Q3J1A5

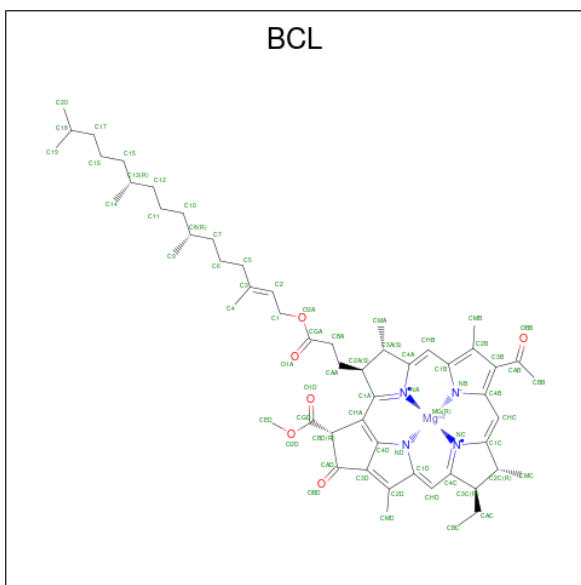
- Molecule 2 is a protein called Reaction center protein M chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	M	300	Total	C	N	O	S	0	1	0
			2400	1602	395	393	10			

- Molecule 3 is a protein called Reaction center protein H chain.

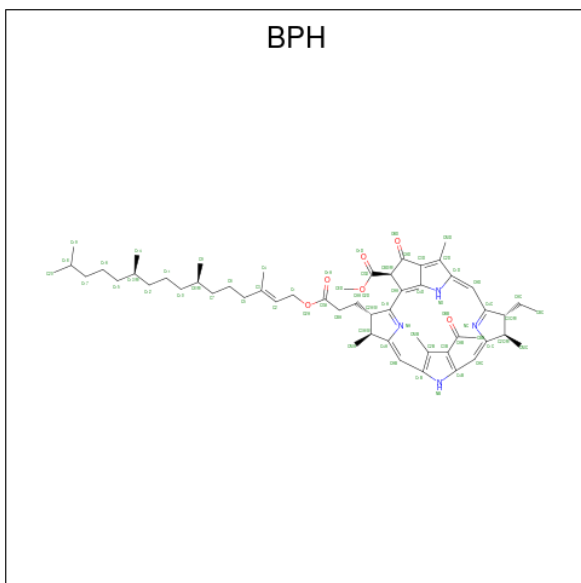
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	H	239	Total	C	N	O	S	0	2	0
			1837	1174	314	340	9			

- Molecule 4 is BACTERIOCHLOROPHYLL A (CCD ID: BCL) (formula: $C_{55}H_{74}MgN_4O_6$).



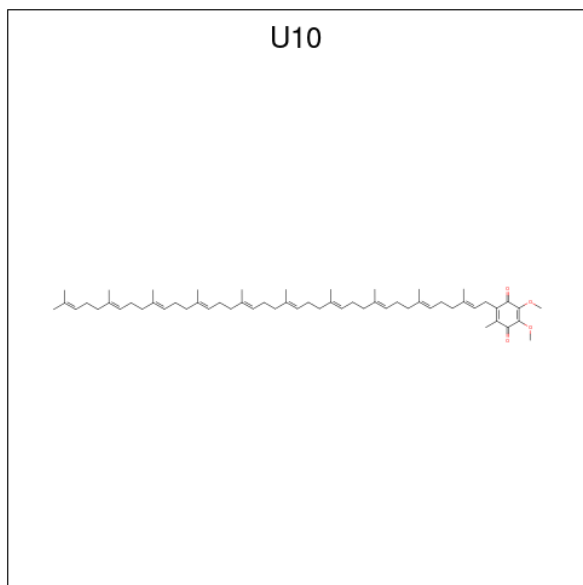
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	L	1	Total 66	C 55	Mg 1	N 4	O 6	0	0
4	M	1	Total 66	C 55	Mg 1	N 4	O 6	0	0
4	M	1	Total 66	C 55	Mg 1	N 4	O 6	0	0
4	M	1	Total 66	C 55	Mg 1	N 4	O 6	0	0

- Molecule 5 is BACTERIOPHEOPHYTIN A (CCD ID: BPH) (formula: $C_{55}H_{76}N_4O_6$).



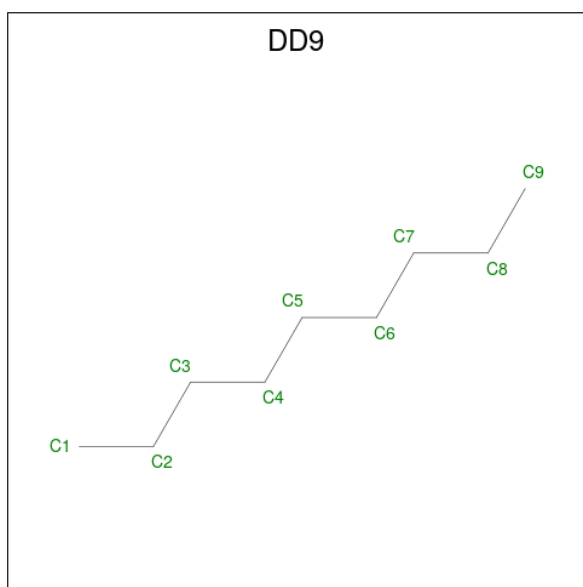
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	L	1	Total	C	N	O	0	0
			65	55	4	6		
5	M	1	Total	C	N	O	0	0
			65	55	4	6		

- Molecule 6 is UBIQUINONE-10 (CCD ID: U10) (formula: $C_{59}H_{90}O_4$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	L	1	Total	C	O	0	0
			48	44	4		
6	M	1	Total	C	O	0	0
			48	44	4		

- Molecule 7 is nonane (CCD ID: DD9) (formula: C_9H_{20}).

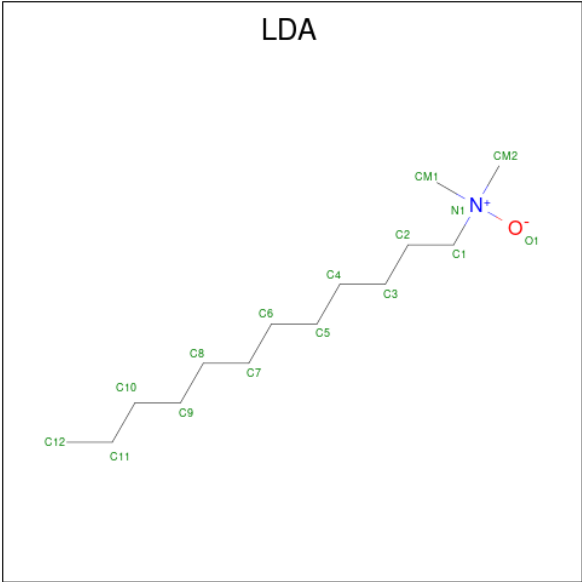


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	L	1	Total C 8 8	0	0
7	H	1	Total C 9 9	0	0
7	H	1	Total C 7 7	0	0

- Molecule 8 is FE (III) ION (CCD ID: FE) (formula: Fe).

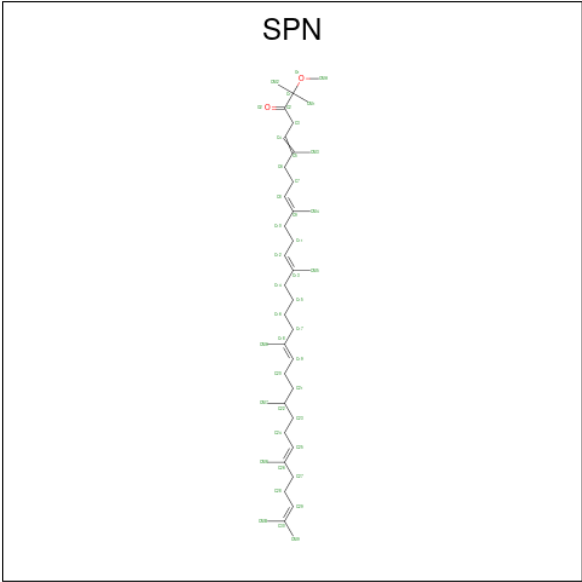
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	L	1	Total Fe 1 1	0	0

- Molecule 9 is LAURYL DIMETHYLAMINE-N-OXIDE (CCD ID: LDA) (formula: C₁₄H₃₁NO).



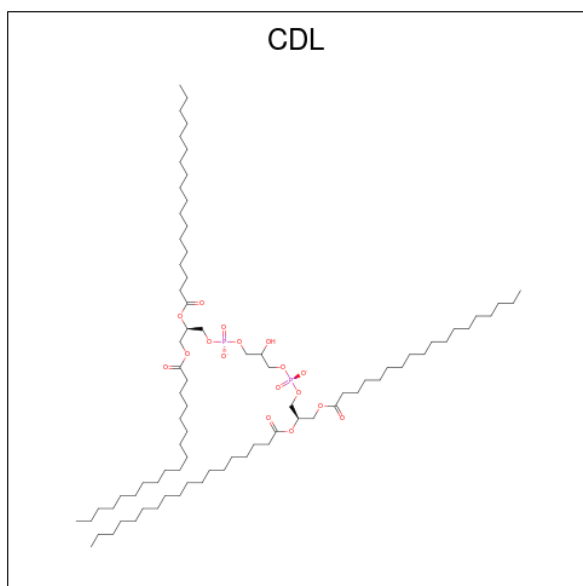
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	M	1	Total	C	N	O	0	0
			16	14	1	1		
9	M	1	Total	C	N	O	0	0
			16	14	1	1		
9	M	1	Total	C	N	O	0	0
			16	14	1	1		
9	M	1	Total	C	N	O	0	0
			16	14	1	1		
9	H	1	Total	C	N	O	0	0
			16	14	1	1		

- Molecule 10 is SPEROIDENONE (CCD ID: SPN) (formula: C₄₁H₇₀O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	M	1	Total	C	O	0	0
			43	41	2		

- Molecule 11 is CARDIOLIPIN (CCD ID: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
11	M	1	Total	C	O	P	0	0
			78	59	17	2		

- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	L	60	Total	O	0	0
			60	60		
12	M	75	Total	O	0	0
			75	75		
12	H	157	Total	O	0	0
			157	157		

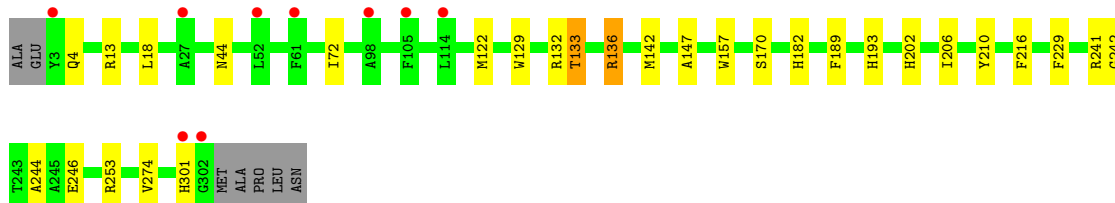
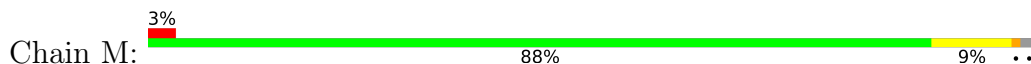
3 Residue-property plots [i](#)

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 electron 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 dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

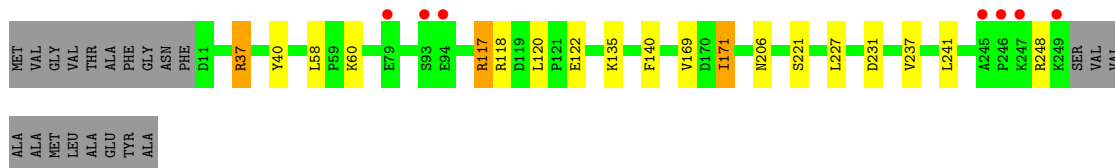
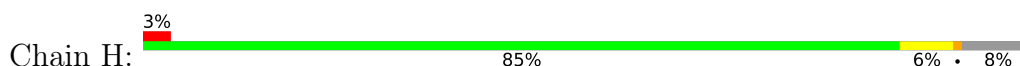
- Molecule 1: Reaction center protein L chain



- Molecule 2: Reaction center protein M chain



- Molecule 3: Reaction center protein H chain



4 Data and refinement statistics

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	139.82Å 139.82Å 185.25Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	17.91 – 2.40 17.91 – 2.40	Depositor EDS
% Data completeness (in resolution range)	94.6 (17.91-2.40) 94.6 (17.91-2.40)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.02 (at 2.40Å)	Xtriage
Refinement program	REFMAC 5.8.0131	Depositor
R, R_{free}	0.189 , 0.217 0.195 , 0.222	Depositor DCC
R_{free} test set	3863 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å ²)	46.3	Xtriage
Anisotropy	0.074	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 41.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.022 for -h,-k,l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	7494	wwPDB-VP
Average B, all atoms (Å ²)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.92% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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: U10, FE, BPH, BCL, DD9, CDL, LDA, SPN

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	L	0.99	0/2340	1.03	1/3205 (0.0%)
2	M	0.98	0/2497	1.02	3/3408 (0.1%)
3	H	1.03	2/1889 (0.1%)	1.02	3/2569 (0.1%)
All	All	1.00	2/6726 (0.0%)	1.03	7/9182 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	171	ILE	CA-CB	6.00	1.57	1.54
3	H	117	ARG	CD-NE	-5.55	1.38	1.46

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	37	ARG	NE-CZ-NH2	-5.88	113.91	119.20
3	H	117	ARG	N-CA-C	-5.86	103.20	110.41
3	H	37	ARG	CG-CD-NE	-5.66	99.55	112.00
2	M	72	ILE	N-CA-CB	5.56	116.68	110.51
1	L	6	GLU	N-CA-C	5.42	118.11	111.82
2	M	170	SER	N-CA-C	5.12	116.84	108.76
2	M	216	PHE	N-CA-C	-5.09	105.81	112.23

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	L	2249	0	2200	9	0
2	M	2400	0	2316	19	0
3	H	1837	0	1838	10	0
4	L	66	0	74	2	0
4	M	198	0	222	7	0
5	L	65	0	76	3	0
5	M	65	0	76	3	0
6	L	48	0	63	0	0
6	M	48	0	63	0	0
7	H	16	0	33	0	0
7	L	8	0	15	0	0
8	L	1	0	0	0	0
9	H	16	0	31	1	0
9	M	64	0	124	3	0
10	M	43	0	69	5	0
11	M	78	0	100	0	0
12	H	157	0	0	0	0
12	L	60	0	0	1	0
12	M	75	0	0	2	0
All	All	7494	0	7300	47	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 3.

All (47) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:242:GLY:HA2	3:H:117:ARG:HD3	1.72	0.72
5:L:302:BPH:HBB3	5:L:302:BPH:HHC	1.72	0.71
2:M:157:TRP:CD1	10:M:709:SPN:H202	2.35	0.62
2:M:242:GLY:CA	3:H:117:ARG:HD3	2.29	0.62
3:H:118:ARG:HD2	3:H:120:LEU:HD12	1.82	0.60
5:L:302:BPH:HBB2	2:M:210:TYR:HB3	1.88	0.56
1:L:181:PHE:CD2	5:M:707:BPH:HBB1	2.41	0.55
4:M:704:BCL:C3B	10:M:709:SPN:H152	2.37	0.55
4:M:704:BCL:H141	10:M:709:SPN:H101	1.87	0.55
4:M:704:BCL:CAB	10:M:709:SPN:H162	2.36	0.55
4:M:704:BCL:H71	4:M:705:BCL:H202	1.89	0.54
1:L:217:ARG:NH1	12:L:401:HOH:O	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:250:ILE:HG22	1:L:254:ILE:HD12	1.91	0.53
1:L:116:HIS:HE1	2:M:4:GLN:O	1.92	0.52
2:M:253[B]:ARG:NH2	9:M:702:LDA:HM23	2.25	0.52
1:L:135:ARG:HB3	1:L:136:PRO:HD3	1.94	0.50
2:M:133:THR:HG22	2:M:147:ALA:HB2	1.94	0.50
1:L:207:ARG:HG3	2:M:142:MET:HG2	1.94	0.50
2:M:157:TRP:NE1	10:M:709:SPN:H202	2.26	0.49
2:M:122:MET:HE1	4:M:704:BCL:HBB3	1.95	0.48
5:M:707:BPH:HHC	5:M:707:BPH:HBB3	1.95	0.48
2:M:13:ARG:O	3:H:140:PHE:HA	2.14	0.47
3:H:40:TYR:HB3	3:H:58:LEU:HD21	1.97	0.47
2:M:229:PHE:HB2	2:M:244:ALA:HB2	1.97	0.46
5:M:707:BPH:HBC3	5:M:707:BPH:HHD	1.97	0.46
1:L:52:SER:HB2	1:L:85:LEU:HD13	1.98	0.45
2:M:136:ARG:NE	2:M:136:ARG:HA	2.31	0.45
9:M:703:LDA:H21	9:M:703:LDA:HM13	1.87	0.45
1:L:51:TRP:CH2	1:L:80:LEU:HD23	2.52	0.45
1:L:177:ILE:HG12	4:L:301:BCL:HMB2	1.99	0.44
2:M:241:ARG:HD3	2:M:246:GLU:HG2	1.99	0.44
4:M:706:BCL:HBB2	4:M:706:BCL:HMB3	1.99	0.44
9:H:301:LDA:H21	9:H:301:LDA:HM13	1.85	0.44
2:M:253[A]:ARG:NH2	12:M:803:HOH:O	2.49	0.44
3:H:206:ASN:HD21	3:H:248:ARG:HD2	1.82	0.43
5:L:302:BPH:HHC	5:L:302:BPH:CBB	2.45	0.43
2:M:129:TRP:CH2	2:M:132:ARG:NH1	2.85	0.43
3:H:169:VAL:HG23	3:H:171:ILE:HD12	2.00	0.43
2:M:189:PHE:O	2:M:193:HIS:HD2	2.02	0.42
2:M:202:HIS:CE1	2:M:206:ILE:HD11	2.55	0.41
2:M:44:ASN:ND2	12:M:806:HOH:O	2.53	0.41
9:M:702:LDA:H22	9:M:702:LDA:HM22	1.84	0.41
3:H:37:ARG:NH2	3:H:60:LYS:O	2.47	0.41
4:L:301:BCL:OBB	4:L:301:BCL:HHC	2.21	0.40
4:M:705:BCL:HAA2	4:M:705:BCL:HBD	2.03	0.40
3:H:241:LEU:O	3:H:248:ARG:NH2	2.54	0.40
3:H:122:GLU:HB2	3:H:227:LEU:HD21	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	L	280/281 (100%)	273 (98%)	7 (2%)	0	100	100
2	M	299/307 (97%)	285 (95%)	13 (4%)	1 (0%)	36	50
3	H	239/260 (92%)	237 (99%)	2 (1%)	0	100	100
All	All	818/848 (96%)	795 (97%)	22 (3%)	1 (0%)	48	64

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	M	301	HIS

5.3.2 Protein sidechains

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	L	221/220 (100%)	215 (97%)	6 (3%)	39	62
2	M	236/240 (98%)	231 (98%)	5 (2%)	47	69
3	H	196/208 (94%)	192 (98%)	4 (2%)	48	70
All	All	653/668 (98%)	638 (98%)	15 (2%)	44	66

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	54	VAL
1	L	72	GLU

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Mol	Chain	Res	Type
1	L	202	LYS
1	L	210	ASP
1	L	264	GLN
1	L	267	VAL
2	M	18	LEU
2	M	133	THR
2	M	136	ARG
2	M	182	HIS
2	M	274	VAL
3	H	135	LYS
3	H	221	SER
3	H	231	ASP
3	H	237	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	116	HIS
1	L	173	HIS
1	L	183	ASN
1	L	258	GLN
1	L	280	ASN
2	M	4	GLN
2	M	44	ASN
2	M	138	GLN
2	M	193	HIS
3	H	206	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 oligosaccharides in this entry.

5.6 Ligand geometry

Of 19 ligands modelled in this entry, 1 is monoatomic - leaving 18 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	U10	M	708	-	48,48,63	1.77	4 (8%)	60,61,79	1.34	7 (11%)
9	LDA	M	701	-	13,15,15	1.96	1 (7%)	14,17,17	0.90	1 (7%)
5	BPH	L	302	-	59,70,70	1.15	5 (8%)	59,101,101	1.94	11 (18%)
10	SPN	M	709	-	42,42,42	3.59	15 (35%)	50,52,52	2.25	18 (36%)
11	CDL	M	710	-	77,77,99	1.17	4 (5%)	83,89,111	1.13	4 (4%)
6	U10	L	303	-	48,48,63	1.88	3 (6%)	60,61,79	1.48	9 (15%)
5	BPH	M	707	-	59,70,70	1.01	4 (6%)	59,101,101	1.77	14 (23%)
7	DD9	L	304	-	7,7,8	0.36	0	6,6,7	0.32	0
4	BCL	M	704	-	69,74,74	1.17	3 (4%)	79,115,115	1.42	15 (18%)
7	DD9	H	303	-	6,6,8	0.40	0	5,5,7	0.27	0
4	BCL	M	706	-	69,74,74	1.08	4 (5%)	79,115,115	1.48	16 (20%)
7	DD9	H	302	-	8,8,8	0.34	0	7,7,7	0.38	0
9	LDA	M	703	-	13,15,15	2.11	2 (15%)	14,17,17	2.46	3 (21%)
9	LDA	M	702	-	13,15,15	2.15	1 (7%)	14,17,17	2.63	3 (21%)
9	LDA	M	711	-	13,15,15	1.98	1 (7%)	14,17,17	0.38	0
4	BCL	L	301	-	69,74,74	1.18	4 (5%)	79,115,115	1.40	14 (17%)
4	BCL	M	705	-	69,74,74	1.12	2 (2%)	79,115,115	1.52	16 (20%)
9	LDA	H	301	-	13,15,15	2.19	1 (7%)	14,17,17	2.41	3 (21%)

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	U10	M	708	-	-	13/45/69/87	0/1/1/1
9	LDA	M	701	-	-	8/13/13/13	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	BPH	L	302	-	-	5/37/105/105	0/5/6/6
10	SPN	M	709	-	-	19/50/51/51	-
11	CDL	M	710	-	-	28/88/88/110	-
6	U10	L	303	-	-	19/45/69/87	0/1/1/1
5	BPH	M	707	-	-	9/37/105/105	0/5/6/6
7	DD9	L	304	-	-	3/5/5/6	-
4	BCL	M	704	-	-	8/41/137/137	-
7	DD9	H	303	-	-	0/4/4/6	-
4	BCL	M	706	-	-	1/41/137/137	-
7	DD9	H	302	-	-	2/6/6/6	-
9	LDA	M	703	-	-	2/13/13/13	-
9	LDA	M	702	-	-	3/13/13/13	-
9	LDA	M	711	-	-	4/13/13/13	-
4	BCL	L	301	-	-	3/41/137/137	-
4	BCL	M	705	-	-	2/41/137/137	-
9	LDA	H	301	-	-	5/13/13/13	-

All (54) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	M	709	SPN	C3-C4	-8.65	1.37	1.50
6	L	303	U10	C6-C1	8.39	1.50	1.35
9	H	301	LDA	O1-N1	-7.68	1.23	1.42
9	M	702	LDA	O1-N1	-7.64	1.23	1.42
6	M	708	U10	C6-C1	7.43	1.48	1.35
6	L	303	U10	C36-C34	-7.33	1.36	1.51
10	M	709	SPN	C17-C18	-7.26	1.36	1.51
10	M	709	SPN	C10-C9	-7.16	1.36	1.51
9	M	703	LDA	O1-N1	-7.13	1.24	1.42
9	M	711	LDA	O1-N1	-6.85	1.25	1.42
10	M	709	SPN	C6-C5	-6.84	1.37	1.51
10	M	709	SPN	C14-C13	-6.82	1.37	1.51
6	M	708	U10	C36-C34	-6.81	1.37	1.51
9	M	701	LDA	O1-N1	-6.61	1.25	1.42
10	M	709	SPN	C4-C5	6.28	1.47	1.33
10	M	709	SPN	C12-C13	6.22	1.47	1.33
10	M	709	SPN	C8-C9	6.16	1.47	1.33
4	M	705	BCL	MG-NA	6.01	2.20	2.06
10	M	709	SPN	C19-C18	5.97	1.46	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	L	301	BCL	MG-NA	5.06	2.18	2.06
10	M	709	SPN	C20-C19	-5.01	1.35	1.50
5	L	302	BPH	C1B-C2B	4.78	1.44	1.39
11	M	710	CDL	OB6-CB5	4.76	1.47	1.34
4	M	704	BCL	MG-ND	-4.69	1.96	2.05
11	M	710	CDL	OA6-CA5	4.63	1.47	1.34
4	M	704	BCL	MG-NA	4.63	2.17	2.06
10	M	709	SPN	C7-C8	-4.61	1.36	1.50
10	M	709	SPN	C11-C12	-4.61	1.36	1.50
11	M	710	CDL	OA8-CA7	4.60	1.46	1.33
11	M	710	CDL	OB8-CB7	4.45	1.46	1.33
4	M	706	BCL	MG-ND	-4.23	1.97	2.05
5	M	707	BPH	C1B-C2B	3.94	1.43	1.39
4	L	301	BCL	MG-ND	-3.93	1.98	2.05
6	M	708	U10	C4-C3	3.85	1.50	1.36
6	L	303	U10	C4-C3	3.49	1.48	1.36
10	M	709	SPN	C21-C22	-3.45	1.35	1.52
5	L	302	BPH	C3B-C4B	3.27	1.46	1.41
10	M	709	SPN	C16-C15	-3.23	1.35	1.51
4	L	301	BCL	C3B-C4B	3.00	1.47	1.41
4	M	706	BCL	MG-NC	-3.00	1.99	2.06
5	M	707	BPH	C1D-C2D	2.90	1.42	1.39
4	L	301	BCL	MG-NB	2.87	2.11	2.05
4	M	704	BCL	C3B-C4B	2.77	1.46	1.41
5	L	302	BPH	C4D-ND	-2.55	1.34	1.38
4	M	705	BCL	C3B-C4B	2.50	1.46	1.41
5	L	302	BPH	C1D-C2D	2.43	1.42	1.39
4	M	706	BCL	C3B-C4B	2.34	1.45	1.41
5	L	302	BPH	C3D-CAD	-2.24	1.43	1.47
4	M	706	BCL	C3C-C4C	-2.24	1.48	1.51
10	M	709	SPN	C21-C20	-2.18	1.46	1.53
5	M	707	BPH	C4D-ND	-2.15	1.35	1.38
9	M	703	LDA	C1-N1	2.13	1.53	1.51
5	M	707	BPH	C3B-C4B	2.12	1.44	1.41
6	M	708	U10	C33-C34	2.10	1.37	1.33

All (134) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	L	302	BPH	C4D-CHA-CBD	-8.32	104.46	108.45
9	M	702	LDA	CM1-N1-C1	-7.34	94.82	110.23
5	M	707	BPH	C4D-CHA-CBD	-6.76	105.21	108.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	M	703	LDA	O1-N1-C1	-6.20	94.06	109.27
9	H	301	LDA	O1-N1-C1	-6.06	94.40	109.27
10	M	709	SPN	CM5-C13-C14	5.22	124.28	115.23
9	M	702	LDA	O1-N1-C1	-4.96	97.12	109.27
11	M	710	CDL	OA6-CA5-C11	4.92	122.11	111.48
9	H	301	LDA	CM2-N1-C1	-4.83	100.09	110.23
9	M	703	LDA	CM2-N1-C1	-4.73	100.30	110.23
9	M	703	LDA	CM1-N1-C1	-4.65	100.47	110.23
10	M	709	SPN	CM3-C5-C6	4.49	123.02	115.23
5	L	302	BPH	O2D-CGD-CBD	4.45	115.84	110.95
10	M	709	SPN	CM6-C18-C17	4.38	122.82	115.23
9	H	301	LDA	CM1-N1-C1	-4.37	101.06	110.23
4	M	705	BCL	C4D-CHA-C1A	4.36	126.45	121.24
10	M	709	SPN	C15-C14-C13	4.32	123.99	113.47
11	M	710	CDL	OB6-CB5-C51	4.30	120.79	111.48
5	M	707	BPH	C2B-C1B-NB	-4.30	106.32	109.43
10	M	709	SPN	C16-C17-C18	4.22	123.75	113.47
4	M	705	BCL	C2B-C1B-NB	-3.97	106.21	110.33
5	L	302	BPH	C4-C3-C5	-3.96	108.35	115.23
10	M	709	SPN	CM4-C9-C10	3.94	122.07	115.23
5	L	302	BPH	C2B-C1B-NB	-3.89	106.61	109.43
9	M	702	LDA	CM2-N1-C1	-3.73	102.41	110.23
6	L	303	U10	C25-C24-C26	3.66	121.58	115.23
4	M	706	BCL	C1-O2A-CGA	3.62	125.41	116.65
4	M	704	BCL	C1-O2A-CGA	3.61	125.39	116.65
4	L	301	BCL	C4D-CHA-C1A	3.55	125.47	121.24
5	M	707	BPH	C1-O2A-CGA	3.54	125.23	116.65
4	M	704	BCL	C4D-CHA-C1A	3.53	125.46	121.24
6	M	708	U10	C37-C36-C34	3.52	124.83	113.19
4	L	301	BCL	C1D-ND-C4D	3.48	108.75	106.31
5	M	707	BPH	CMA-C3A-C4A	-3.47	107.14	114.61
10	M	709	SPN	C7-C6-C5	3.46	124.66	113.19
4	M	705	BCL	CED-O2D-CGD	3.43	123.69	115.92
6	L	303	U10	C37-C36-C34	3.42	124.53	113.19
10	M	709	SPN	C16-C15-C14	3.37	125.50	113.13
4	M	704	BCL	CHA-C1A-NA	-3.36	118.78	126.39
4	M	706	BCL	C2B-C1B-NB	-3.32	106.88	110.33
5	L	302	BPH	OBB-CAB-C3B	3.31	125.53	119.99
10	M	709	SPN	C11-C10-C9	3.31	124.16	113.19
4	M	705	BCL	C1C-NC-C4C	3.31	108.19	106.68
5	M	707	BPH	O2D-CGD-CBD	3.31	114.58	110.95
4	M	705	BCL	CHA-C1A-NA	-3.26	119.02	126.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	M	709	SPN	CM7-C22-C21	3.25	122.86	111.27
4	L	301	BCL	CHA-C1A-NA	-3.23	119.08	126.39
4	M	704	BCL	C1D-ND-C4D	3.22	108.57	106.31
4	M	705	BCL	OBB-CAB-CBB	-3.11	112.81	119.77
5	L	302	BPH	C1-C2-C3	-3.11	121.11	126.20
5	M	707	BPH	CED-O2D-CGD	3.07	122.89	115.92
6	L	303	U10	C30-C29-C28	-3.07	115.75	123.63
5	M	707	BPH	C2D-C1D-ND	-3.01	107.25	109.43
10	M	709	SPN	C15-C16-C17	2.98	124.09	113.13
4	M	706	BCL	OBB-CAB-C3B	2.98	125.69	120.43
4	L	301	BCL	CAA-C2A-C3A	-2.95	105.02	113.00
5	L	302	BPH	CMA-C3A-C4A	-2.93	108.30	114.61
11	M	710	CDL	OA8-CA7-C31	2.92	120.74	111.83
4	M	705	BCL	C3B-C4B-NB	-2.91	105.92	109.76
6	L	303	U10	C32-C33-C34	-2.85	121.09	127.62
5	M	707	BPH	C4-C3-C5	-2.84	110.29	115.23
6	M	708	U10	C15-C14-C16	2.82	120.13	115.23
4	M	706	BCL	O1D-CGD-CBD	-2.78	119.03	124.52
4	M	706	BCL	CMB-C2B-C1B	-2.73	121.27	125.42
4	M	704	BCL	CMB-C2B-C1B	-2.70	121.31	125.42
4	L	301	BCL	C2D-C1D-ND	-2.68	107.47	110.13
4	M	706	BCL	C4D-CHA-C1A	2.68	124.45	121.24
6	M	708	U10	C10-C9-C11	2.68	119.88	115.23
4	M	706	BCL	CAA-CBA-CGA	2.68	120.81	113.21
4	L	301	BCL	C3B-C4B-NB	-2.65	106.26	109.76
4	M	705	BCL	C1D-ND-C4D	2.62	108.15	106.31
6	L	303	U10	C7-C8-C9	-2.62	122.32	126.83
4	M	706	BCL	O2D-CGD-CBD	2.60	115.78	111.23
6	L	303	U10	C15-C14-C16	2.60	119.73	115.23
5	M	707	BPH	C1B-NB-C4B	2.59	112.60	108.82
4	M	706	BCL	CAA-C2A-C3A	-2.59	106.00	113.00
4	M	704	BCL	C2B-C1B-NB	-2.58	107.65	110.33
4	M	704	BCL	CAA-C2A-C3A	-2.58	106.03	113.00
4	L	301	BCL	C1C-NC-C4C	2.58	107.86	106.68
4	M	705	BCL	CAC-C3C-C4C	-2.57	106.88	112.58
6	M	708	U10	C17-C18-C19	-2.56	121.75	127.62
5	M	707	BPH	C3B-C4B-NB	-2.56	104.33	108.05
11	M	710	CDL	OA6-CA5-OA7	-2.56	117.73	123.70
4	M	706	BCL	C4A-NA-C1A	2.53	107.83	106.68
4	L	301	BCL	C2B-C1B-NB	-2.51	107.72	110.33
6	L	303	U10	C30-C29-C31	2.51	119.58	115.23
4	M	705	BCL	CMB-C2B-C1B	-2.48	121.64	125.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	L	301	BCL	CED-O2D-CGD	2.47	121.51	115.92
4	M	706	BCL	CAC-C3C-C4C	-2.43	107.20	112.58
4	M	706	BCL	C5-C3-C2	-2.42	115.73	121.17
5	L	302	BPH	C2D-C1D-ND	-2.42	107.68	109.43
6	M	708	U10	C30-C29-C28	-2.41	117.45	123.63
4	M	704	BCL	C2C-C3C-C4C	2.39	104.92	101.34
4	M	704	BCL	C2A-C1A-CHA	2.38	128.00	123.87
5	M	707	BPH	O1D-CGD-CBD	-2.38	121.12	124.72
10	M	709	SPN	C17-C18-C19	-2.38	115.83	121.17
6	M	708	U10	C1M-C1-C6	-2.36	120.56	124.45
6	L	303	U10	C3M-O3-C3	2.32	124.62	116.47
4	L	301	BCL	CMA-C3A-C4A	-2.30	105.58	111.77
10	M	709	SPN	CM8-C26-C27	2.28	119.19	115.23
4	M	704	BCL	CAA-CBA-CGA	2.27	119.65	113.21
4	L	301	BCL	CHD-C1D-C2D	2.25	130.16	125.49
4	M	704	BCL	C2D-C1D-ND	-2.23	107.91	110.13
4	M	704	BCL	CMA-C3A-C4A	-2.23	105.78	111.77
4	M	704	BCL	C6-C5-C3	-2.23	108.05	113.47
4	L	301	BCL	C1-O2A-CGA	2.19	121.96	116.65
4	M	706	BCL	C6-C5-C3	-2.19	108.14	113.47
5	L	302	BPH	CED-O2D-CGD	2.17	120.85	115.92
10	M	709	SPN	CM5-C13-C12	-2.16	118.08	123.63
4	M	706	BCL	OBB-CAB-CBB	-2.15	114.95	119.77
5	M	707	BPH	C1-C2-C3	-2.15	122.67	126.20
4	M	705	BCL	CHD-C1D-C2D	2.15	129.96	125.49
5	L	302	BPH	O2A-CGA-O1A	-2.15	118.26	123.63
4	M	705	BCL	C1-O2A-CGA	2.13	121.82	116.65
5	M	707	BPH	CAA-C2A-C3A	-2.13	107.23	113.00
9	M	701	LDA	CM2-N1-C1	2.12	114.68	110.23
4	M	704	BCL	C3B-C4B-NB	-2.12	106.97	109.76
4	L	301	BCL	C11-C12-C13	-2.12	108.93	115.97
4	M	705	BCL	CMD-C2D-C1D	2.11	128.45	124.73
10	M	709	SPN	C10-C9-C8	-2.10	116.44	121.17
10	M	709	SPN	CM7-C22-C23	2.10	118.77	111.27
4	M	705	BCL	C4A-NA-C1A	2.10	107.64	106.68
10	M	709	SPN	C21-C20-C19	2.10	117.69	112.16
4	M	706	BCL	CHD-C1D-ND	-2.09	121.86	124.80
4	M	705	BCL	CHD-C1D-ND	-2.08	121.88	124.80
4	L	301	BCL	OBB-CAB-CBB	-2.08	115.11	119.77
5	L	302	BPH	C1B-NB-C4B	2.08	111.85	108.82
6	L	303	U10	C3-C2-C1	2.07	122.20	118.10
4	M	706	BCL	C2C-C3C-C4C	2.05	104.42	101.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	M	708	U10	C32-C33-C34	-2.04	122.95	127.62
4	M	705	BCL	CHB-C1B-NB	2.03	127.10	124.05
10	M	709	SPN	C24-C25-C26	-2.03	122.98	127.62
5	M	707	BPH	CMD-C2D-C3D	2.02	128.72	124.68
4	M	704	BCL	C4-C3-C2	-2.00	118.48	123.63

There are no chirality outliers.

All (134) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	L	303	U10	C23-C24-C26-C27
6	L	303	U10	C25-C24-C26-C27
6	M	708	U10	C32-C33-C34-C35
6	M	708	U10	C32-C33-C34-C36
9	M	701	LDA	C2-C1-N1-O1
9	M	701	LDA	C2-C1-N1-CM1
9	M	701	LDA	C2-C1-N1-CM2
9	M	711	LDA	C2-C1-N1-CM1
10	M	709	SPN	C20-C21-C22-CM7
11	M	710	CDL	CA2-OA2-PA1-OA4
11	M	710	CDL	CA2-OA2-PA1-OA5
11	M	710	CDL	CA3-OA5-PA1-OA2
11	M	710	CDL	CA3-OA5-PA1-OA4
11	M	710	CDL	CB2-OB2-PB2-OB3
11	M	710	CDL	CB2-OB2-PB2-OB5
6	L	303	U10	C27-C28-C29-C30
6	M	708	U10	C27-C28-C29-C30
6	L	303	U10	C27-C28-C29-C31
10	M	709	SPN	C14-C15-C16-C17
10	M	709	SPN	CM3-C5-C6-C7
10	M	709	SPN	C11-C10-C9-CM4
10	M	709	SPN	CM5-C13-C14-C15
10	M	709	SPN	C16-C17-C18-CM6
10	M	709	SPN	C4-C5-C6-C7
10	M	709	SPN	C11-C10-C9-C8
10	M	709	SPN	C12-C13-C14-C15
10	M	709	SPN	C16-C17-C18-C19
6	L	303	U10	C34-C36-C37-C38
6	M	708	U10	C24-C26-C27-C28
6	L	303	U10	C17-C18-C19-C20
10	M	709	SPN	C3-C4-C5-CM3
6	M	708	U10	C27-C28-C29-C31

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Mol	Chain	Res	Type	Atoms
6	M	708	U10	C37-C38-C39-C40
6	M	708	U10	C29-C31-C32-C33
4	M	704	BCL	C13-C15-C16-C17
4	M	704	BCL	C15-C16-C17-C18
4	M	704	BCL	C8-C10-C11-C12
6	M	708	U10	C37-C38-C39-C41
5	M	707	BPH	C16-C17-C18-C20
11	M	710	CDL	C36-C37-C38-C39
5	M	707	BPH	C16-C17-C18-C19
9	H	301	LDA	C5-C6-C7-C8
6	L	303	U10	C17-C18-C19-C21
9	H	301	LDA	C4-C5-C6-C7
9	H	301	LDA	C1-C2-C3-C4
11	M	710	CDL	C11-CA5-OA6-CA4
4	L	301	BCL	C13-C15-C16-C17
11	M	710	CDL	OA7-CA5-OA6-CA4
9	M	703	LDA	C1-C2-C3-C4
9	M	702	LDA	C2-C3-C4-C5
6	L	303	U10	C35-C34-C36-C37
4	M	704	BCL	C5-C6-C7-C8
9	M	701	LDA	C3-C4-C5-C6
5	M	707	BPH	C12-C13-C15-C16
5	M	707	BPH	C4-C3-C5-C6
6	M	708	U10	C35-C34-C36-C37
5	M	707	BPH	C2-C3-C5-C6
6	L	303	U10	C33-C34-C36-C37
6	M	708	U10	C33-C34-C36-C37
11	M	710	CDL	C13-C14-C15-C16
9	M	702	LDA	C6-C7-C8-C9
9	M	711	LDA	C2-C3-C4-C5
4	L	301	BCL	C15-C16-C17-C18
6	L	303	U10	C30-C29-C31-C32
5	M	707	BPH	C14-C13-C15-C16
9	M	701	LDA	C1-C2-C3-C4
11	M	710	CDL	OA5-CA3-CA4-CA6
11	M	710	CDL	C11-C12-C13-C14
11	M	710	CDL	C35-C36-C37-C38
11	M	710	CDL	C78-C79-C80-C81
6	M	708	U10	C30-C29-C31-C32
10	M	709	SPN	C3-C4-C5-C6
11	M	710	CDL	CA5-C11-C12-C13
9	M	701	LDA	C7-C8-C9-C10

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Mol	Chain	Res	Type	Atoms
6	L	303	U10	C28-C29-C31-C32
9	M	711	LDA	C2-C1-N1-CM2
11	M	710	CDL	C74-C75-C76-C77
11	M	710	CDL	C40-C41-C42-C43
6	M	708	U10	C28-C29-C31-C32
9	M	701	LDA	C9-C10-C11-C12
4	L	301	BCL	C11-C12-C13-C15
5	L	302	BPH	C4-C3-C5-C6
6	L	303	U10	C15-C14-C16-C17
11	M	710	CDL	OA5-CA3-CA4-OA6
4	M	705	BCL	C13-C15-C16-C17
11	M	710	CDL	CA3-CA4-CA6-OA8
9	M	702	LDA	C1-C2-C3-C4
5	L	302	BPH	C8-C10-C11-C12
6	L	303	U10	C5-C4-O4-C4M
11	M	710	CDL	CA2-OA2-PA1-OA3
11	M	710	CDL	CA3-OA5-PA1-OA3
11	M	710	CDL	CB2-OB2-PB2-OB4
9	H	301	LDA	C9-C10-C11-C12
11	M	710	CDL	C16-C17-C18-C19
11	M	710	CDL	CB7-C71-C72-C73
11	M	710	CDL	C19-C20-C21-C22
4	M	704	BCL	C2-C1-O2A-CGA
4	M	706	BCL	C15-C16-C17-C18
5	M	707	BPH	C15-C16-C17-C18
7	L	304	DD9	C3-C4-C5-C6
5	L	302	BPH	C2-C3-C5-C6
11	M	710	CDL	C14-C15-C16-C17
6	L	303	U10	C29-C31-C32-C33
6	L	303	U10	C7-C8-C9-C10
7	H	302	DD9	C2-C3-C4-C5
6	L	303	U10	C13-C14-C16-C17
6	M	708	U10	C5-C4-O4-C4M
10	M	709	SPN	C5-C6-C7-C8
9	M	703	LDA	C7-C8-C9-C10
11	M	710	CDL	C17-C18-C19-C20
4	M	704	BCL	C4-C3-C5-C6
4	M	704	BCL	C12-C13-C15-C16
6	L	303	U10	C20-C19-C21-C22
10	M	709	SPN	CM8-C26-C27-C28
9	M	701	LDA	C5-C6-C7-C8
9	H	301	LDA	C3-C4-C5-C6

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Mol	Chain	Res	Type	Atoms
7	L	304	DD9	C5-C6-C7-C8
9	M	711	LDA	C11-C10-C9-C8
10	M	709	SPN	C21-C22-C23-C24
6	L	303	U10	C24-C26-C27-C28
11	M	710	CDL	C33-C34-C35-C36
5	M	707	BPH	C13-C15-C16-C17
7	L	304	DD9	C4-C5-C6-C7
7	H	302	DD9	C5-C6-C7-C8
5	L	302	BPH	O2A-C1-C2-C3
5	M	707	BPH	O2A-C1-C2-C3
10	M	709	SPN	CM2-C1-C2-C3
10	M	709	SPN	C10-C11-C12-C13
10	M	709	SPN	C18-C19-C20-C21
4	M	704	BCL	C14-C13-C15-C16
10	M	709	SPN	C6-C7-C8-C9
6	L	303	U10	C18-C19-C21-C22
5	L	302	BPH	CAD-CBD-CGD-O2D
4	M	705	BCL	CAA-CBA-CGA-O2A

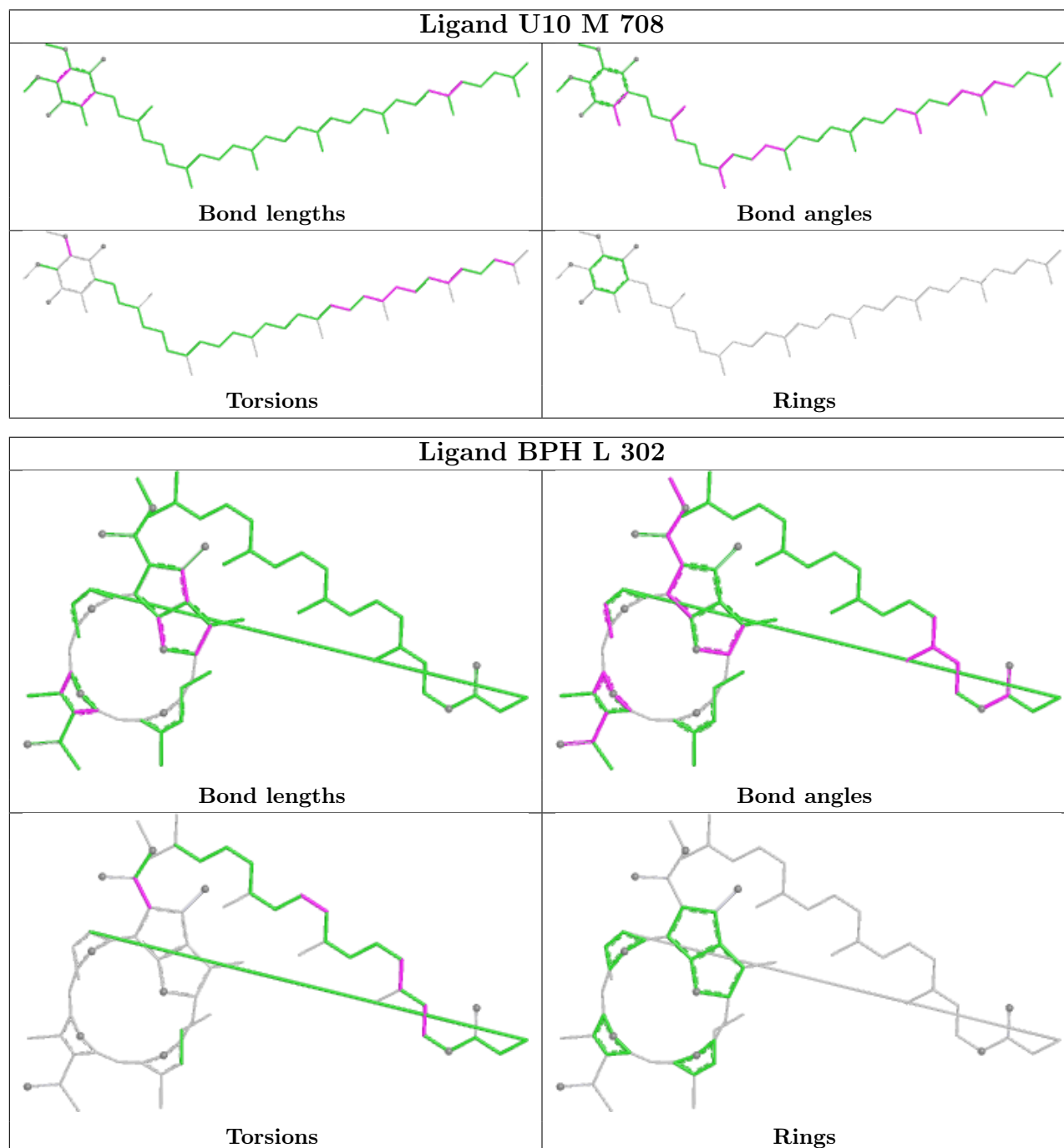
There are no ring outliers.

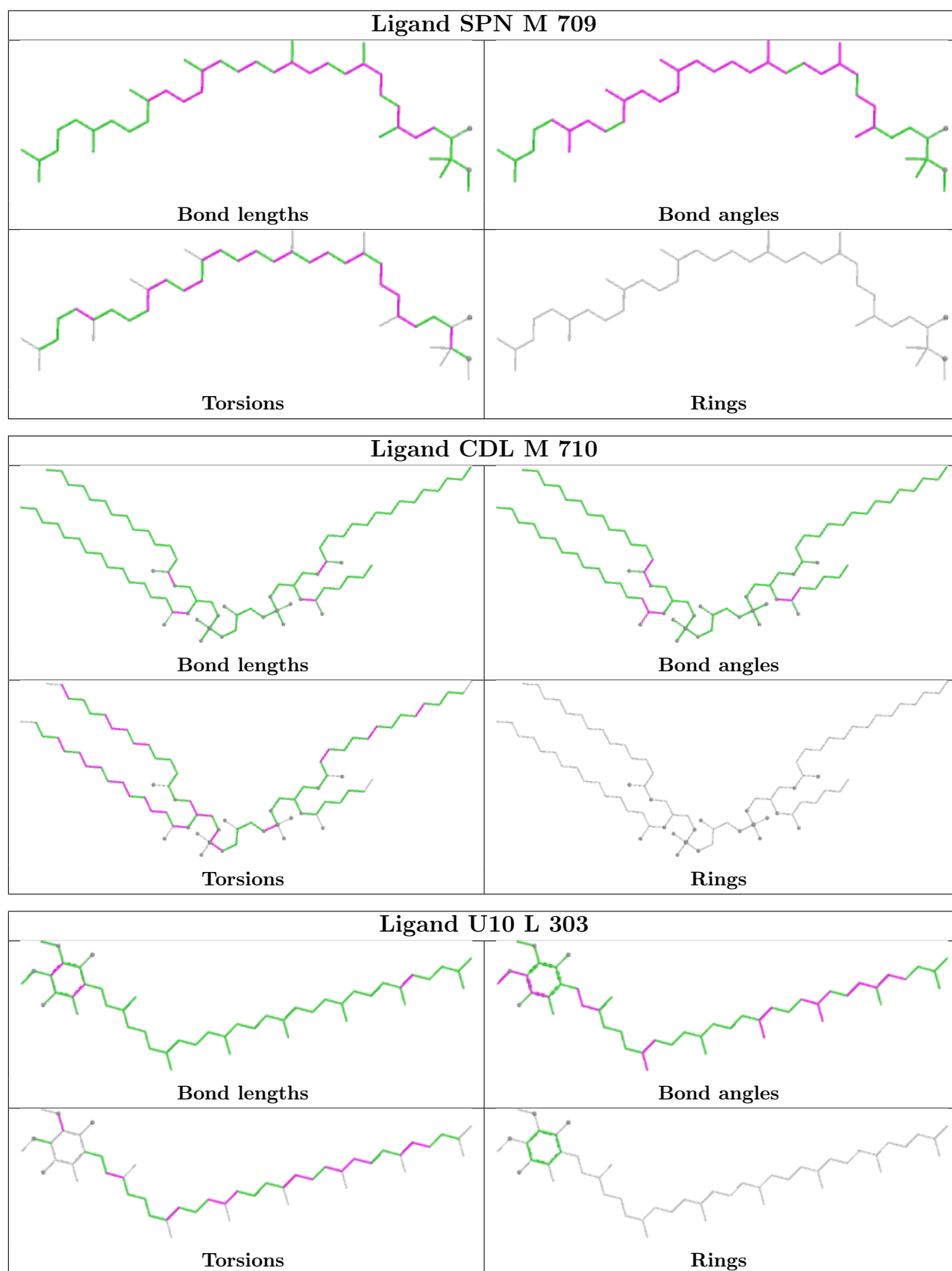
10 monomers are involved in 21 short contacts:

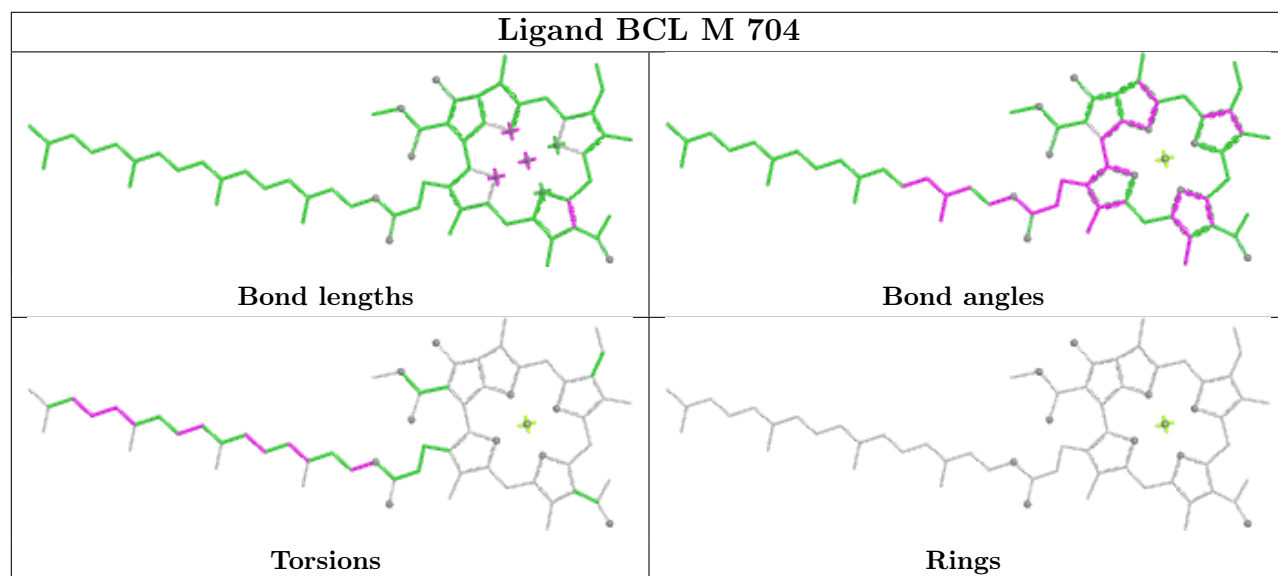
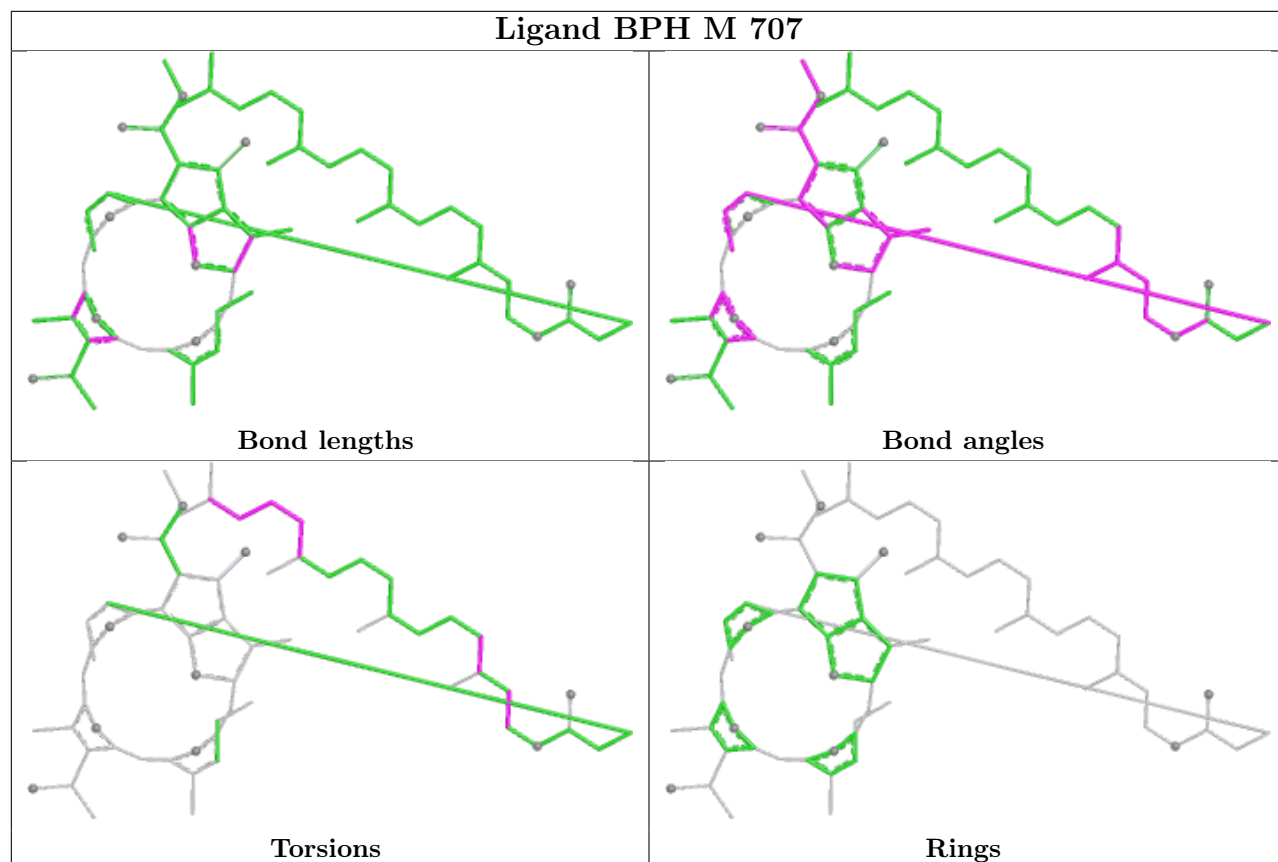
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	L	302	BPH	3	0
10	M	709	SPN	5	0
5	M	707	BPH	3	0
4	M	704	BCL	5	0
4	M	706	BCL	1	0
9	M	703	LDA	1	0
9	M	702	LDA	2	0
4	L	301	BCL	2	0
4	M	705	BCL	2	0
9	H	301	LDA	1	0

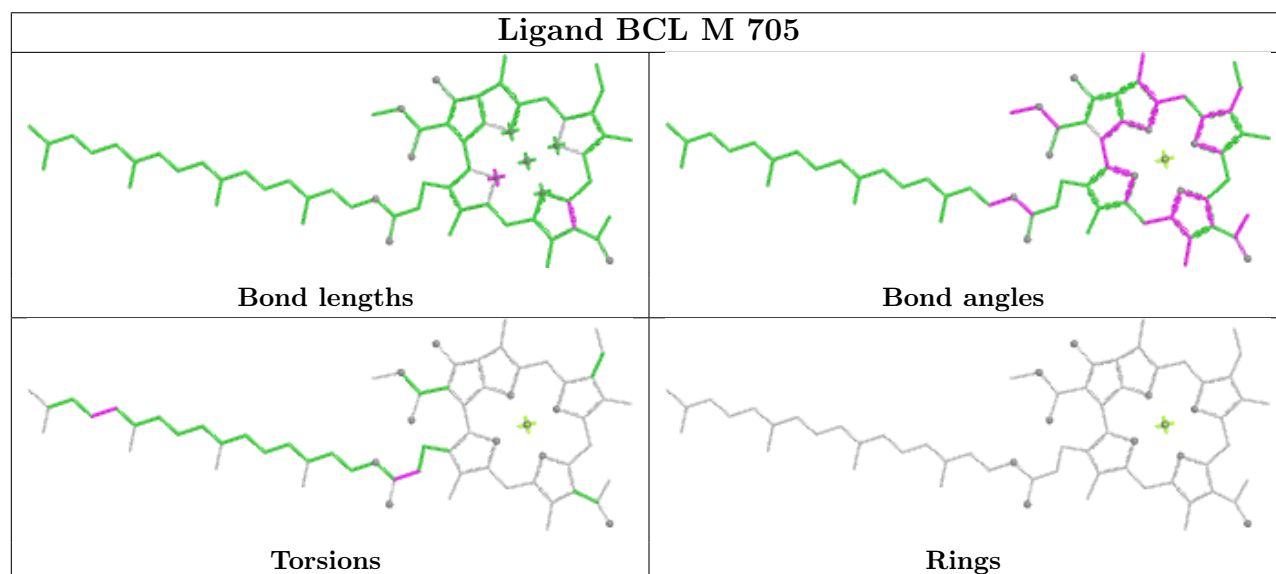
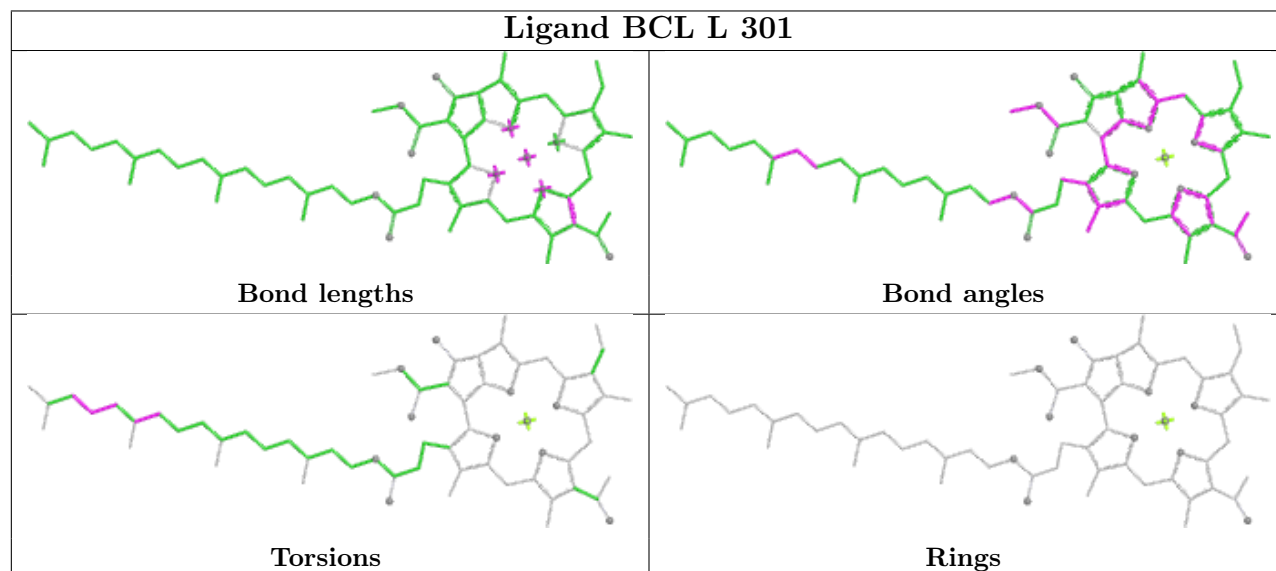
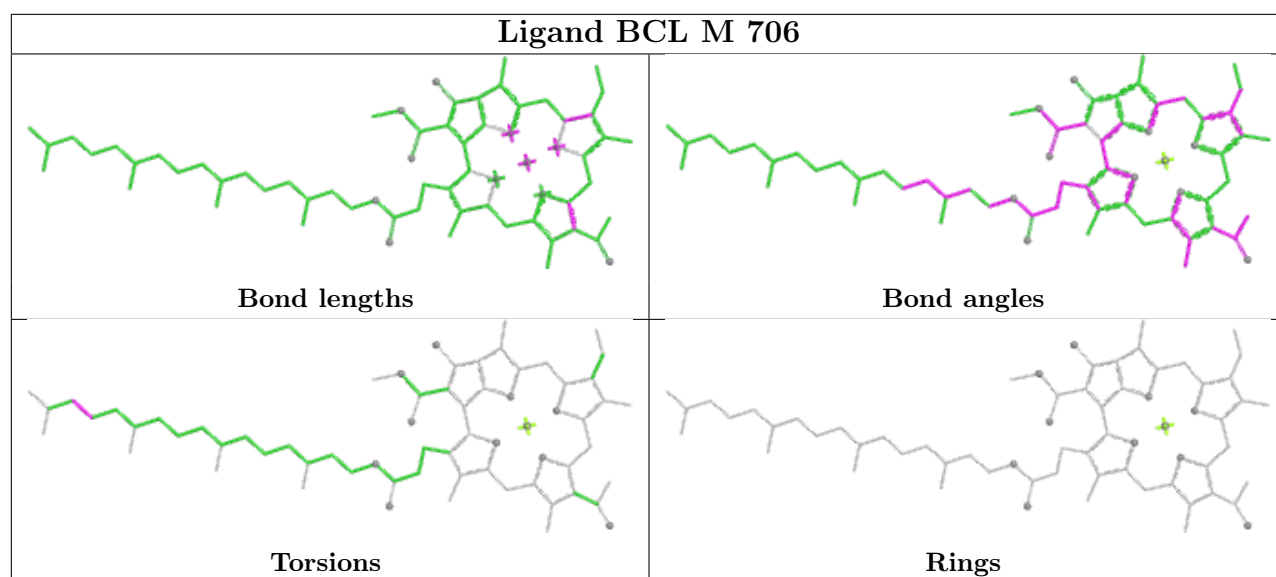
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.









5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	L	281/281 (100%)	0.22	10 (3%) 46 42	27, 49, 82, 106	1 (0%)
2	M	300/307 (97%)	0.17	9 (3%) 52 48	22, 53, 81, 107	1 (0%)
3	H	239/260 (91%)	-0.10	7 (2%) 53 50	26, 49, 68, 109	2 (0%)
All	All	820/848 (96%)	0.11	26 (3%) 50 46	22, 50, 80, 109	4 (0%)

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	M	302	GLY	4.7
2	M	3	TYR	3.8
3	H	94[A]	GLU	3.7
3	H	245	ALA	3.3
2	M	27	ALA	3.1
3	H	249	LYS	3.0
1	L	50	ALA	3.0
3	H	247	LYS	3.0
2	M	52	LEU	2.9
1	L	80	LEU	2.8
1	L	59	TRP	2.8
1	L	277	GLY	2.7
3	H	93	SER	2.6
2	M	98	ALA	2.5
2	M	301	HIS	2.5
1	L	72	GLU	2.5
1	L	83	GLY	2.5
2	M	114	LEU	2.4
3	H	246	PRO	2.3
1	L	53	ALA	2.2
2	M	105	PHE	2.2
1	L	54	VAL	2.1
1	L	58	THR	2.1

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Mol	Chain	Res	Type	RSRZ
1	L	67[A]	TYR	2.1
2	M	61	PHE	2.0
3	H	79	GLU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

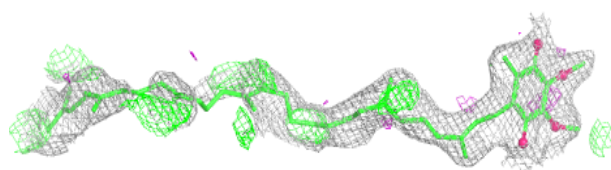
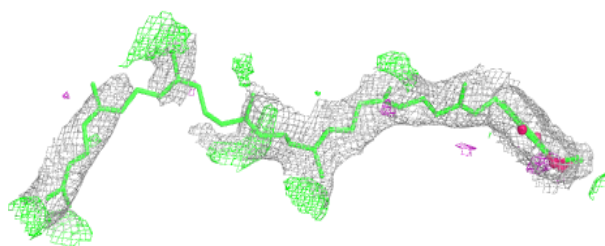
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
7	DD9	H	303	7/9	0.64	0.22	76,80,81,81	0
9	LDA	M	703	16/16	0.75	0.21	74,84,101,101	0
6	U10	L	303	48/63	0.77	0.19	55,90,113,120	0
7	DD9	L	304	8/9	0.79	0.17	62,80,90,91	0
9	LDA	H	301	16/16	0.79	0.15	99,104,112,112	0
7	DD9	H	302	9/9	0.80	0.21	77,82,89,89	0
9	LDA	M	711	16/16	0.81	0.23	77,83,106,107	0
9	LDA	M	701	16/16	0.86	0.13	56,69,79,81	0
11	CDL	M	710	78/100	0.88	0.17	48,80,97,99	0
5	BPH	M	707	65/65	0.90	0.12	41,52,120,124	0
10	SPN	M	709	43/43	0.91	0.12	46,60,86,93	0
9	LDA	M	702	16/16	0.91	0.12	67,70,77,77	0
6	U10	M	708	48/63	0.92	0.10	30,41,74,81	0
5	BPH	L	302	65/65	0.93	0.09	28,39,50,52	0
4	BCL	M	704	66/66	0.93	0.11	38,45,90,91	0
4	BCL	M	705	66/66	0.94	0.10	33,39,70,84	0
4	BCL	M	706	66/66	0.94	0.09	27,34,63,74	0
4	BCL	L	301	66/66	0.95	0.08	36,40,55,61	0
8	FE	L	305	1/1	0.99	0.03	37,37,37,37	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

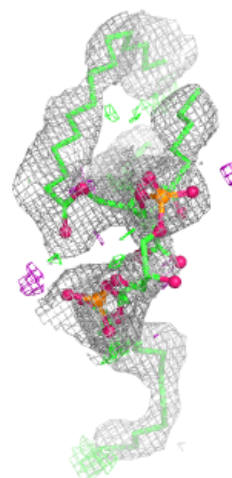
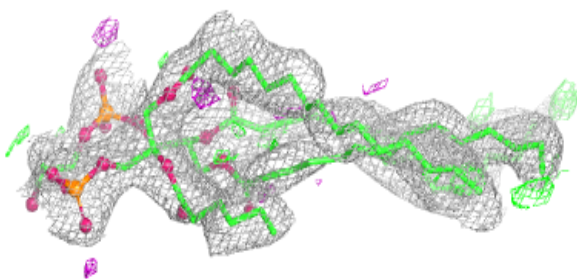
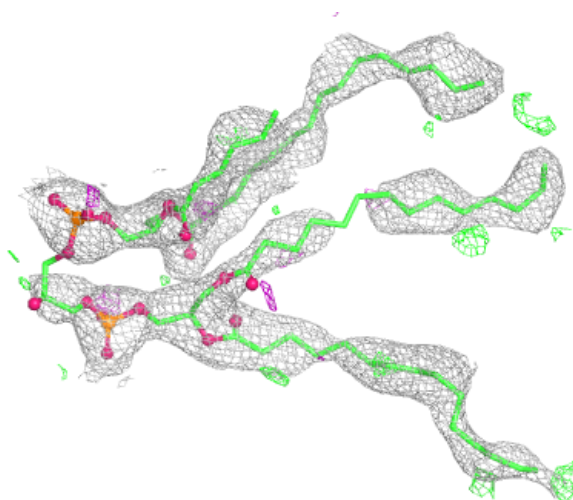
Electron density around U10 L 303:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



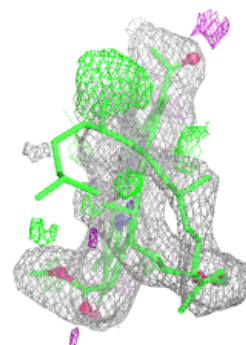
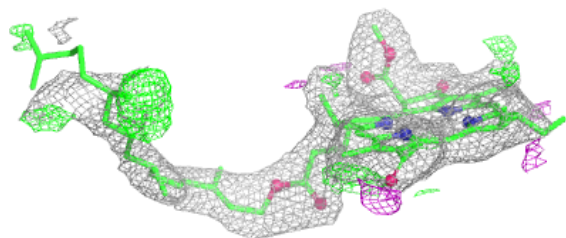
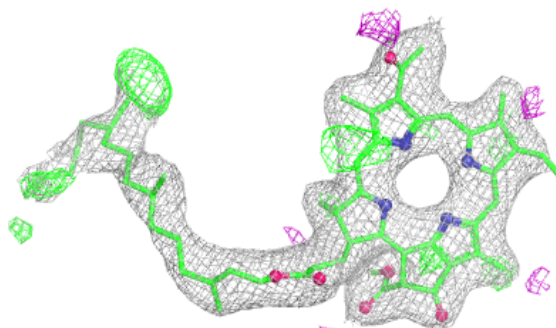
Electron density around CDL M 710:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

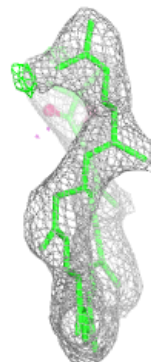
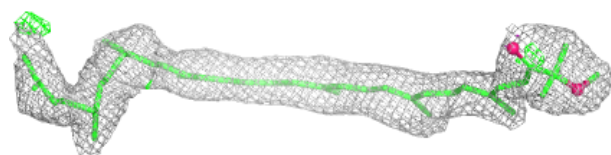
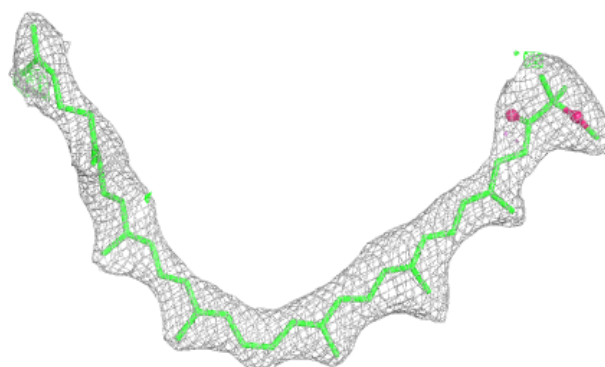


Electron density around BPH M 707:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

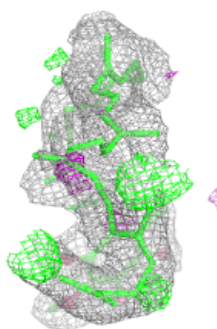
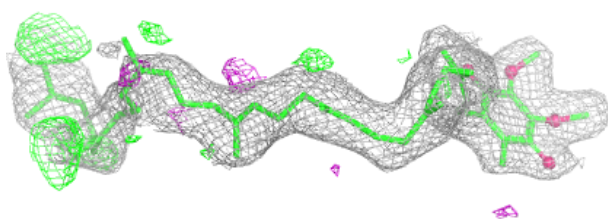
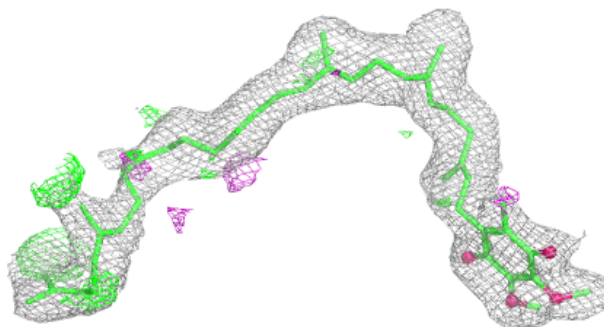
**Electron density around SPN M 709:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



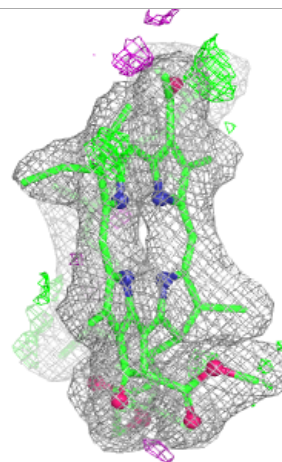
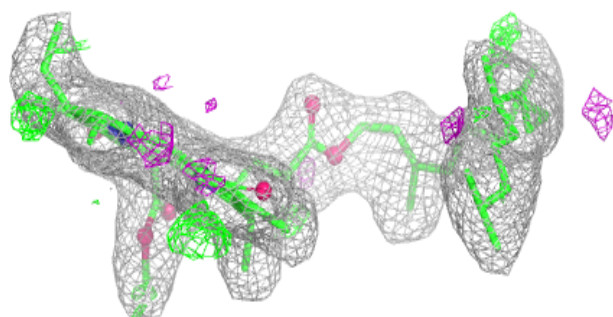
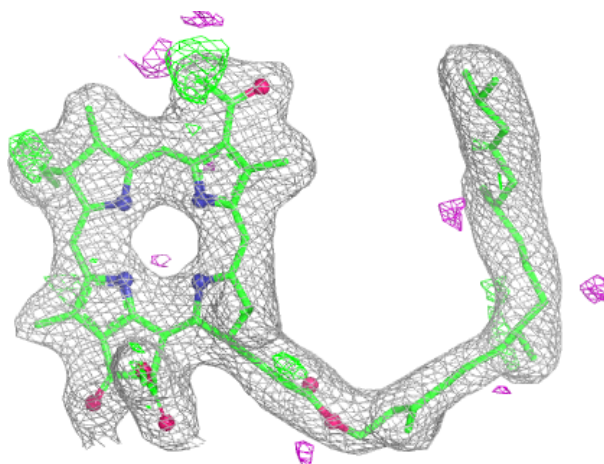
Electron density around U10 M 708:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



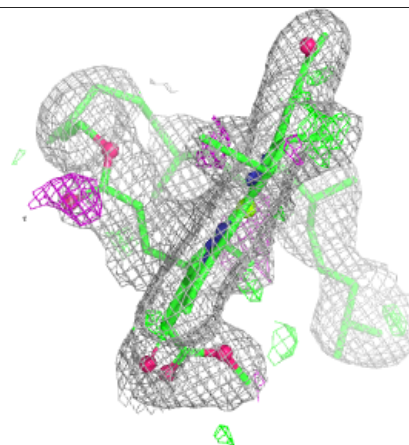
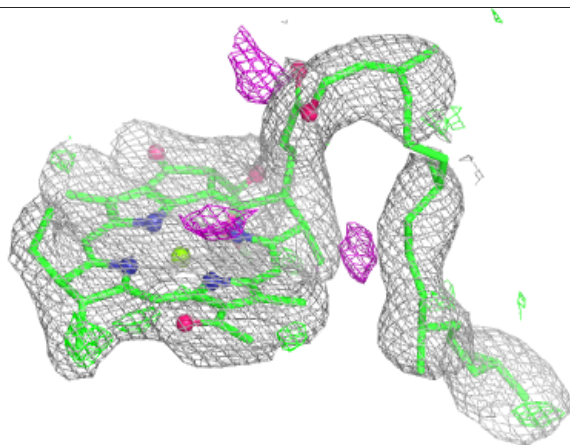
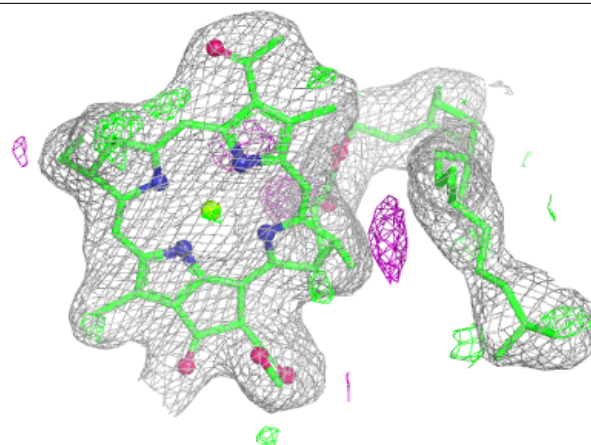
Electron density around BPH L 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

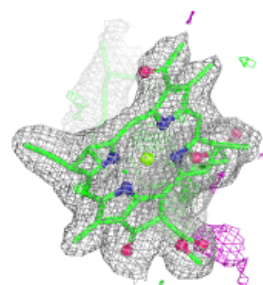
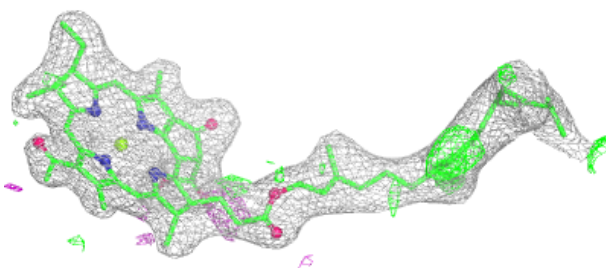
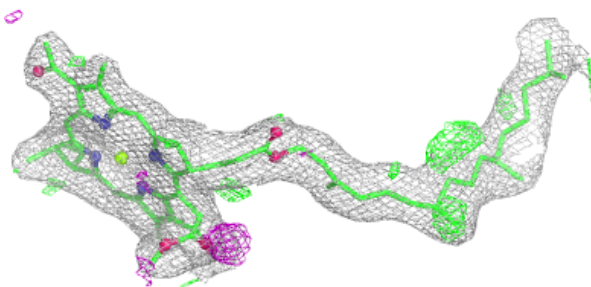


Electron density around BCL M 704:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

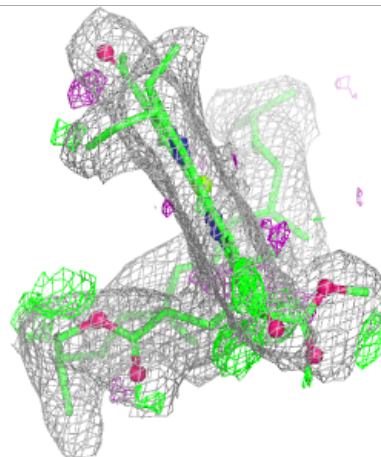
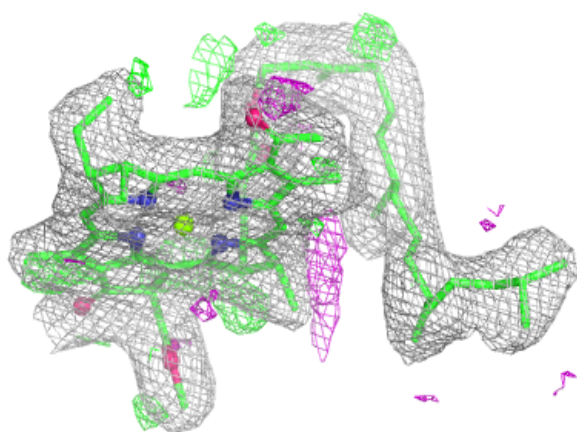
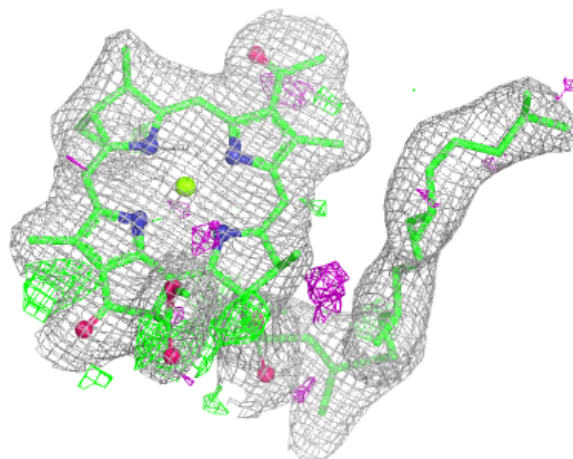
**Electron density around BCL M 705:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



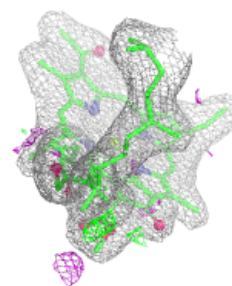
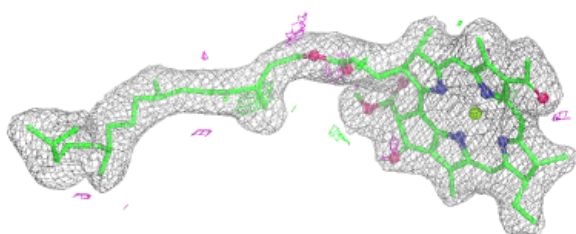
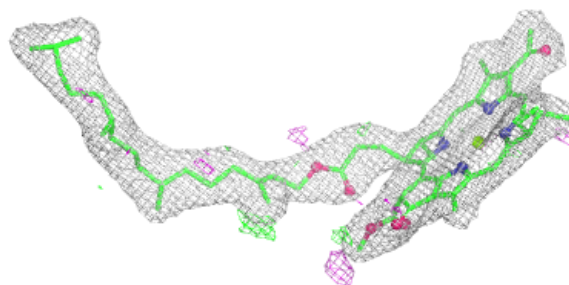
Electron density around BCL M 706:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around BCL L 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers ⓘ

There are no such residues in this entry.