



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 16, 2025 – 06:39 am GMT

PDB ID : 9FUP  
Title : Serial microseconds crystallography at ID29 using fixed-target (small foils):  
A2a adenosine receptor co-crystallised with Istradefylline  
Authors : Orlans, J.; Rose, S.L.; Ferguson, G.; Lebon, G.; Basu, S.; de Sanctis, D.  
Deposited on : 2024-06-26  
Resolution : 2.50 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](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

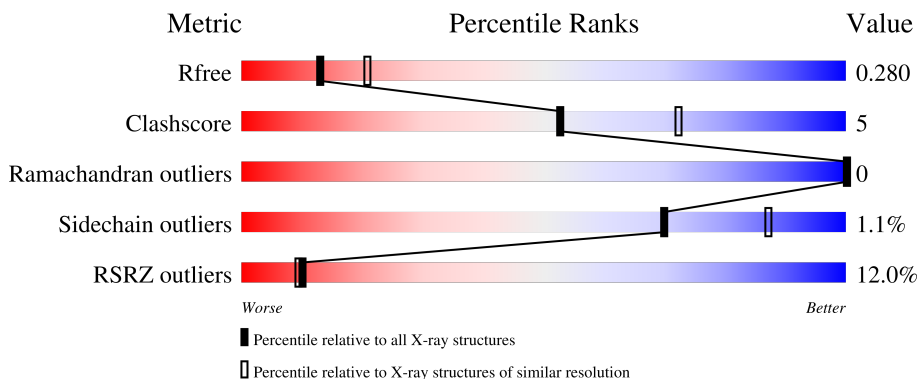
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	423	

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 6454 atoms, of which 3249 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 Adenosine receptor A2a,Soluble cytochrome b562.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	383	5562	1844	2746	457	493	22	0	2	0

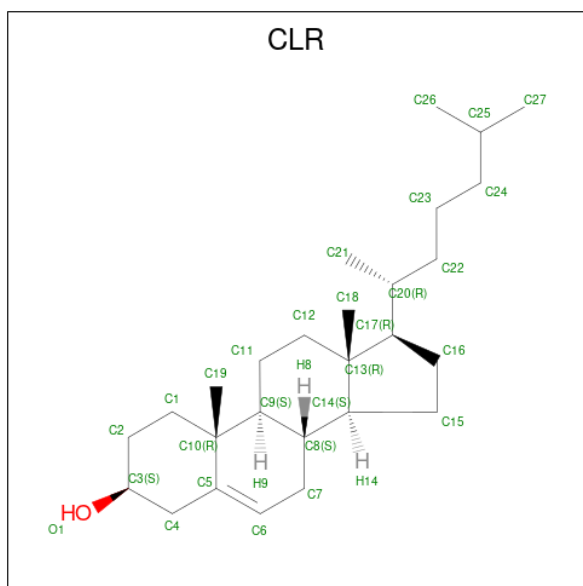
There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-8	ASP	-	expression tag	UNP P29274
A	-7	TYR	-	expression tag	UNP P29274
A	-6	LYS	-	expression tag	UNP P29274
A	-5	ASP	-	expression tag	UNP P29274
A	-4	ASP	-	expression tag	UNP P29274
A	-3	ASP	-	expression tag	UNP P29274
A	-2	ASP	-	expression tag	UNP P29274
A	-1	GLY	-	expression tag	UNP P29274
A	0	ALA	-	expression tag	UNP P29274
A	1	PRO	-	expression tag	UNP P29274
A	54	LEU	ALA	conflict	UNP P29274
A	88	ALA	THR	conflict	UNP P29274
A	107	ALA	ARG	conflict	UNP P29274
A	122	ALA	LYS	conflict	UNP P29274
A	154	ALA	ASN	conflict	UNP P29274
A	202	ALA	LEU	conflict	UNP P29274
A	1007	TRP	MET	conflict	UNP P0ABE7
A	1102	ILE	HIS	conflict	UNP P0ABE7
A	1106	LEU	-	linker	UNP P0ABE7
A	235	ALA	LEU	conflict	UNP P29274
A	239	ALA	VAL	conflict	UNP P29274
A	277	ALA	SER	conflict	UNP P29274
A	318	ALA	-	expression tag	UNP P29274

- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

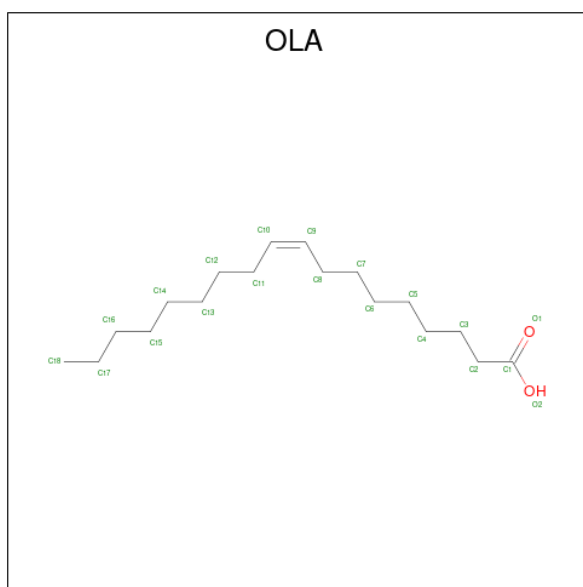
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Na 1 1	0	0

- Molecule 3 is CHOLESTEROL (three-letter code: CLR) (formula:  $C_{27}H_{46}O$ ).



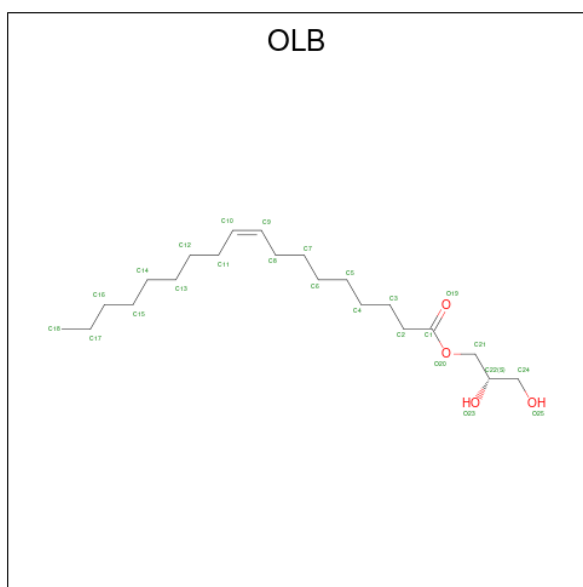
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C H O 74 27 46 1	0	0
3	A	1	Total C H O 74 27 46 1	0	0
3	A	1	Total C H O 74 27 46 1	0	0

- Molecule 4 is OLEIC ACID (three-letter code: OLA) (formula:  $C_{18}H_{34}O_2$ ).



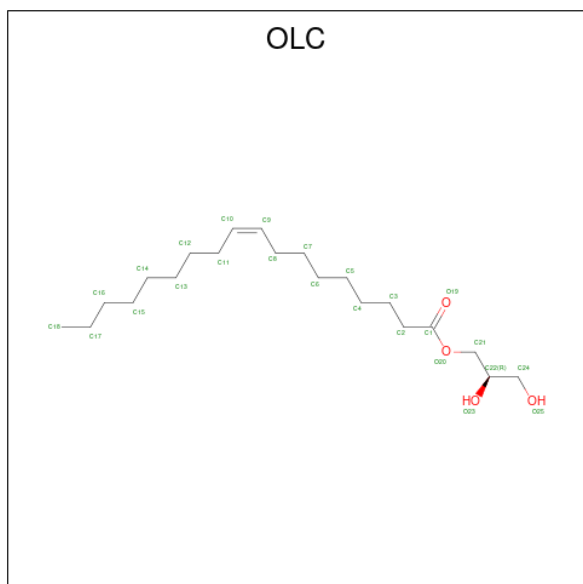
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C H O 53 18 33 2	0	0
4	A	1	Total C H O 37 13 22 2	0	0
4	A	1	Total C H O 21 7 12 2	0	0
4	A	1	Total C H O 46 16 28 2	0	0
4	A	1	Total C H O 28 10 16 2	0	0
4	A	1	Total C H 19 7 12	0	0
4	A	1	Total C H O 49 17 30 2	0	0
4	A	1	Total C 10 10	0	0
4	A	1	Total C H 20 7 13	0	0
4	A	1	Total C H O 43 15 26 2	0	0
4	A	1	Total C H O 43 15 26 2	0	0

- Molecule 5 is (2S)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLB) (formula: C<sub>21</sub>H<sub>40</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	H	O	0	0
			46	15	27	4		
5	A	1	Total	C	H	O	0	0
			49	16	29	4		

- Molecule 6 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula: C<sub>21</sub>H<sub>40</sub>O<sub>4</sub>).



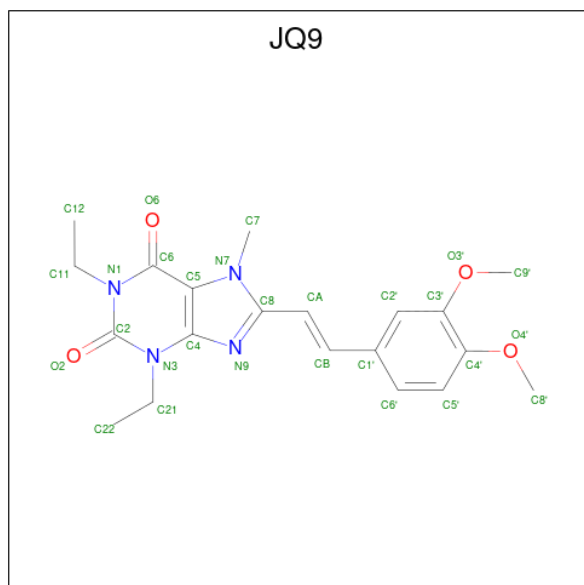
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	H	O	0	0
			65	21	40	4		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
6	A	1	46	15	27	4	0	0

- Molecule 7 is 8-[(E)-2-(3,4-dimethoxyphenyl)ethenyl]-1,3-diethyl-7-methyl-purine-2,6-dione (three-letter code: JQ9) (formula: C<sub>20</sub>H<sub>24</sub>N<sub>4</sub>O<sub>4</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
7	A	1	52	20	24	4	4	0	0

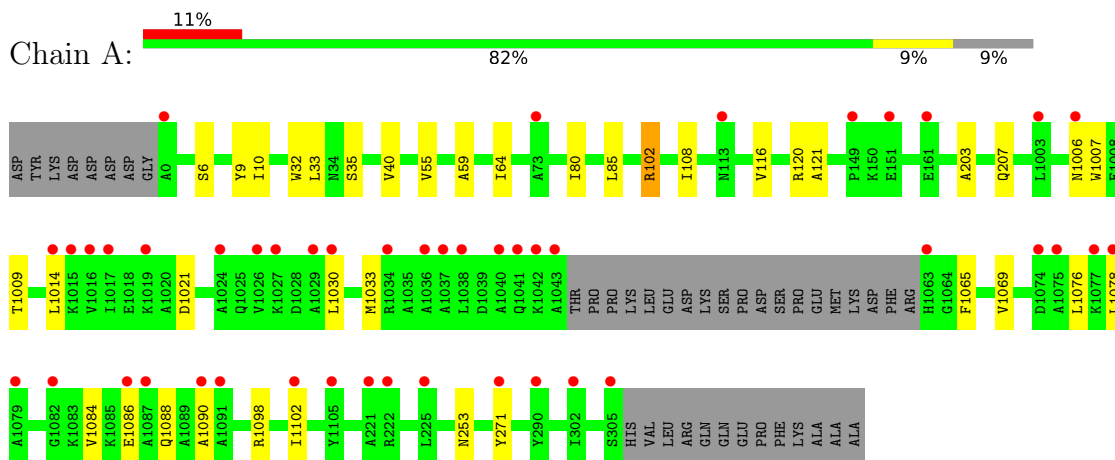
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	42	Total	O	0	0
			42	42		

### 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: Adenosine receptor A2a,Soluble cytochrome b562





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	40.17Å 179.40Å 142.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	55.77 – 2.50 55.77 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.5 (55.77-2.50) 84.8 (55.77-2.50)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	0.53 (at 2.51Å)	Xtrriage
Refinement program	PHENIX 1.21_5207	Depositor
R, $R_{free}$	0.251 , 0.288 0.245 , 0.280	Depositor DCC
$R_{free}$ test set	1837 reflections (10.19%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.0	Xtrriage
Anisotropy	0.452	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 79.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.44$ , $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	6454	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	87.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.44% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: CLR, JQ9, OLC, OLB, NA, OLA

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	0.25	0/2883	0.41	0/3952

There are no bond length outliers.

There are no bond angle outliers.

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	2816	2746	2762	31	0
2	A	1	0	0	0	0
3	A	84	138	138	2	0
4	A	151	218	218	2	0
5	A	39	56	52	0	0
6	A	44	67	65	0	0
7	A	28	24	0	1	0
8	A	42	0	0	2	0
All	All	3205	3249	3235	31	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 5.

All (31) close contacts within the same asymmetric unit are listed below, sorted by their clash

magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1084:VAL:HG12	1:A:1088:GLN:HE22	1.52	0.75
1:A:1090:ALA:O	8:A:1301:HOH:O	2.14	0.64
1:A:6:SER:OG	4:A:1208:OLA:O1	2.12	0.62
1:A:1084:VAL:O	1:A:1088:GLN:OE1	2.18	0.61
1:A:1084:VAL:HG12	1:A:1088:GLN:NE2	2.17	0.59
1:A:80:ILE:HD11	3:A:1202:CLR:H182	1.87	0.57
1:A:1021:ASP:OD1	1:A:1021:ASP:N	2.37	0.56
1:A:10:ILE:HD12	1:A:64:ILE:HG12	1.91	0.52
1:A:85:LEU:HD21	7:A:1220:JQ9:C12	2.39	0.52
1:A:1078:LEU:HD21	1:A:1086:GLU:CB	2.40	0.52
1:A:32:TRP:CD1	1:A:33:LEU:HD23	2.45	0.52
1:A:1030:LEU:HB2	1:A:1076:LEU:HD13	1.93	0.51
1:A:1065:PHE:O	1:A:1069:VAL:HG22	2.16	0.46
1:A:108:ILE:HD12	1:A:108:ILE:O	2.16	0.46
1:A:1098:ARG:HA	1:A:1102:ILE:HB	1.98	0.45
1:A:1088:GLN:OE1	1:A:1088:GLN:N	2.41	0.45
1:A:253:ASN:OD1	8:A:1302:HOH:O	2.21	0.45
1:A:9:TYR:CD2	1:A:10:ILE:HD13	2.52	0.45
1:A:80:ILE:CD1	3:A:1202:CLR:H182	2.47	0.45
1:A:108:ILE:O	1:A:108:ILE:CG1	2.66	0.44
1:A:40:VAL:HG21	1:A:116:VAL:HG12	1.99	0.44
1:A:55:VAL:HA	1:A:59:ALA:HB3	1.99	0.44
1:A:1007:TRP:HZ3	1:A:1102:ILE:HG22	1.84	0.43
1:A:271:TYR:CE1	4:A:1208:OLA:H32	2.54	0.42
1:A:40:VAL:HG13	1:A:121:ALA:HB2	2.02	0.41
1:A:1006:ASN:HA	1:A:1009:THR:HG22	2.02	0.41
1:A:203:ALA:O	1:A:207:GLN:HG3	2.21	0.41
1:A:6:SER:O	1:A:10:ILE:HG12	2.22	0.40
1:A:1007:TRP:CZ3	1:A:1102:ILE:HG22	2.57	0.40
1:A:1014:LEU:HG	1:A:1033:MET:HE1	2.02	0.40
1:A:102:ARG:HH11	1:A:102:ARG:HG2	1.85	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	A	381/423 (90%)	375 (98%)	6 (2%)	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 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	A	276/343 (80%)	273 (99%)	3 (1%)	70 87

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	35	SER
1	A	102	ARG
1	A	120	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	157	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 1 is monoatomic - leaving 19 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	OLA	A	1208	-	17,17,19	0.69	0	17,17,19	0.56	0
4	OLA	A	1205	-	19,19,19	0.63	0	19,19,19	0.54	0
4	OLA	A	1211	-	18,18,19	0.64	0	18,18,19	0.53	0
5	OLB	A	1216	-	18,18,24	0.38	0	18,19,25	0.42	0
4	OLA	A	1209	-	11,11,19	0.82	0	11,11,19	0.70	0
3	CLR	A	1204	-	31,31,31	0.40	0	48,48,48	0.58	0
4	OLA	A	1215	-	16,16,19	0.68	0	16,16,19	0.60	0
4	OLA	A	1206	-	14,14,19	0.70	0	14,14,19	0.64	0
3	CLR	A	1203	-	31,31,31	0.41	0	48,48,48	0.51	0
4	OLA	A	1207	-	8,8,19	0.92	0	8,8,19	0.84	0
6	OLC	A	1218	-	24,24,24	0.35	0	25,25,25	0.42	0
4	OLA	A	1210	-	6,6,19	0.35	0	5,5,19	0.24	0
4	OLA	A	1213	-	6,6,19	0.25	0	5,5,19	0.15	0
5	OLB	A	1217	-	19,19,24	0.36	0	20,20,25	0.41	0
4	OLA	A	1212	-	9,9,19	0.35	0	8,8,19	0.22	0
3	CLR	A	1202	-	31,31,31	0.40	0	48,48,48	0.55	0
7	JQ9	A	1220	-	27,30,30	0.76	0	31,43,43	1.18	4 (12%)
4	OLA	A	1214	-	16,16,19	0.69	0	16,16,19	0.65	0
6	OLC	A	1219	-	18,18,24	0.40	0	18,19,25	0.41	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	OLA	A	1208	-	-	7/15/15/17	-
4	OLA	A	1205	-	-	11/17/17/17	-
4	OLA	A	1211	-	-	6/16/16/17	-
5	OLB	A	1216	-	-	6/18/18/24	-
4	OLA	A	1209	-	-	4/9/9/17	-
3	CLR	A	1204	-	-	2/10/68/68	0/4/4/4
4	OLA	A	1215	-	-	5/14/14/17	-
4	OLA	A	1206	-	-	7/12/12/17	-
3	CLR	A	1203	-	-	0/10/68/68	0/4/4/4
4	OLA	A	1207	-	-	1/6/6/17	-
6	OLC	A	1218	-	-	10/24/24/24	-
4	OLA	A	1210	-	-	2/4/4/17	-
4	OLA	A	1213	-	-	1/4/4/17	-
5	OLB	A	1217	-	-	10/19/19/24	-
4	OLA	A	1212	-	-	4/7/7/17	-
3	CLR	A	1202	-	-	0/10/68/68	0/4/4/4
7	JQ9	A	1220	-	-	0/11/13/13	0/3/3/3
4	OLA	A	1214	-	-	5/14/14/17	-
6	OLC	A	1219	-	-	5/18/18/24	-

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	1220	JQ9	C5-N7-C8	-3.46	106.24	109.81
7	A	1220	JQ9	C4-N3-C2	-2.67	119.70	122.22
7	A	1220	JQ9	C21-N3-C2	2.08	119.72	116.75
7	A	1220	JQ9	C11-N1-C6	-2.05	115.98	117.56

There are no chirality outliers.

All (86) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1216	OLB	C21-C22-C24-O25
6	A	1218	OLC	C21-C22-C24-O25
5	A	1217	OLB	O19-C1-O20-C21
5	A	1217	OLB	C2-C1-O20-C21
3	A	1204	CLR	C22-C23-C24-C25
4	A	1208	OLA	C6-C7-C8-C9

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Mol	Chain	Res	Type	Atoms
4	A	1206	OLA	C5-C6-C7-C8
4	A	1205	OLA	C13-C14-C15-C16
6	A	1218	OLC	C12-C13-C14-C15
6	A	1218	OLC	C11-C12-C13-C14
5	A	1217	OLB	C3-C4-C5-C6
6	A	1218	OLC	C5-C6-C7-C8
4	A	1209	OLA	C4-C5-C6-C7
4	A	1205	OLA	C11-C12-C13-C14
4	A	1205	OLA	C6-C7-C8-C9
4	A	1212	OLA	C10-C11-C12-C13
5	A	1217	OLB	C6-C7-C8-C9
4	A	1214	OLA	C2-C3-C4-C5
4	A	1206	OLA	C3-C4-C5-C6
4	A	1210	OLA	C3-C4-C5-C6
5	A	1217	OLB	C10-C11-C12-C13
6	A	1218	OLC	C14-C15-C16-C17
4	A	1208	OLA	C1-C2-C3-C4
4	A	1208	OLA	C3-C4-C5-C6
4	A	1215	OLA	C3-C4-C5-C6
4	A	1205	OLA	C4-C5-C6-C7
5	A	1217	OLB	C7-C8-C9-C10
4	A	1209	OLA	C1-C2-C3-C4
4	A	1212	OLA	C11-C12-C13-C14
4	A	1211	OLA	C5-C6-C7-C8
4	A	1208	OLA	C2-C3-C4-C5
4	A	1207	OLA	C3-C4-C5-C6
6	A	1218	OLC	O23-C22-C24-O25
4	A	1205	OLA	C2-C3-C4-C5
4	A	1205	OLA	C15-C16-C17-C18
4	A	1214	OLA	C12-C13-C14-C15
6	A	1219	OLC	C2-C3-C4-C5
6	A	1219	OLC	C6-C7-C8-C9
5	A	1216	OLB	C9-C10-C11-C12
6	A	1219	OLC	C9-C10-C11-C12
4	A	1212	OLA	C12-C13-C14-C15
5	A	1217	OLB	C5-C6-C7-C8
5	A	1216	OLB	C2-C3-C4-C5
4	A	1209	OLA	C3-C4-C5-C6
4	A	1210	OLA	C1-C2-C3-C4
6	A	1218	OLC	C10-C11-C12-C13
5	A	1216	OLB	C3-C4-C5-C6
4	A	1214	OLA	C3-C4-C5-C6

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Mol	Chain	Res	Type	Atoms
4	A	1215	OLA	C2-C3-C4-C5
5	A	1216	OLB	O23-C22-C24-O25
4	A	1205	OLA	C12-C13-C14-C15
4	A	1213	OLA	C5-C6-C7-C8
6	A	1219	OLC	C2-C1-O20-C21
6	A	1219	OLC	O19-C1-O20-C21
4	A	1215	OLA	C7-C8-C9-C10
4	A	1208	OLA	C4-C5-C6-C7
4	A	1206	OLA	O1-C1-C2-C3
4	A	1205	OLA	C7-C8-C9-C10
5	A	1217	OLB	C22-C21-O20-C1
4	A	1215	OLA	O1-C1-C2-C3
4	A	1211	OLA	C3-C4-C5-C6
4	A	1214	OLA	C4-C5-C6-C7
4	A	1209	OLA	C7-C8-C9-C10
3	A	1204	CLR	C23-C24-C25-C27
4	A	1208	OLA	O2-C1-C2-C3
4	A	1206	OLA	O2-C1-C2-C3
4	A	1208	OLA	O1-C1-C2-C3
6	A	1218	OLC	C4-C5-C6-C7
4	A	1215	OLA	O2-C1-C2-C3
4	A	1211	OLA	C14-C15-C16-C17
4	A	1206	OLA	C1-C2-C3-C4
4	A	1212	OLA	C9-C10-C11-C12
5	A	1217	OLB	C9-C10-C11-C12
4	A	1205	OLA	C5-C6-C7-C8
5	A	1216	OLB	C4-C5-C6-C7
6	A	1218	OLC	C9-C10-C11-C12
4	A	1205	OLA	O1-C1-C2-C3
4	A	1211	OLA	C11-C12-C13-C14
6	A	1218	OLC	C7-C8-C9-C10
4	A	1205	OLA	O2-C1-C2-C3
4	A	1206	OLA	C9-C10-C11-C12
4	A	1206	OLA	C4-C5-C6-C7
5	A	1217	OLB	C2-C3-C4-C5
4	A	1214	OLA	C1-C2-C3-C4
4	A	1211	OLA	O2-C1-C2-C3
4	A	1211	OLA	O1-C1-C2-C3

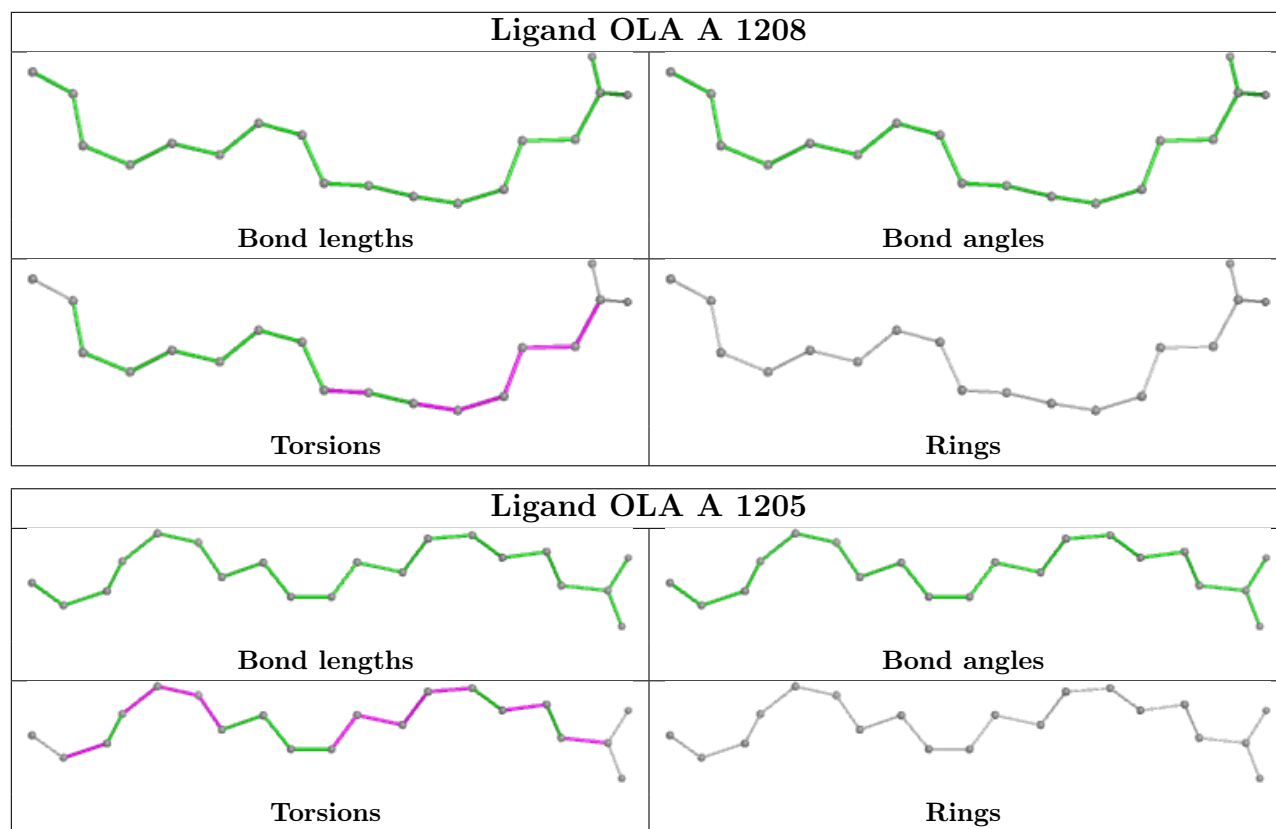
There are no ring outliers.

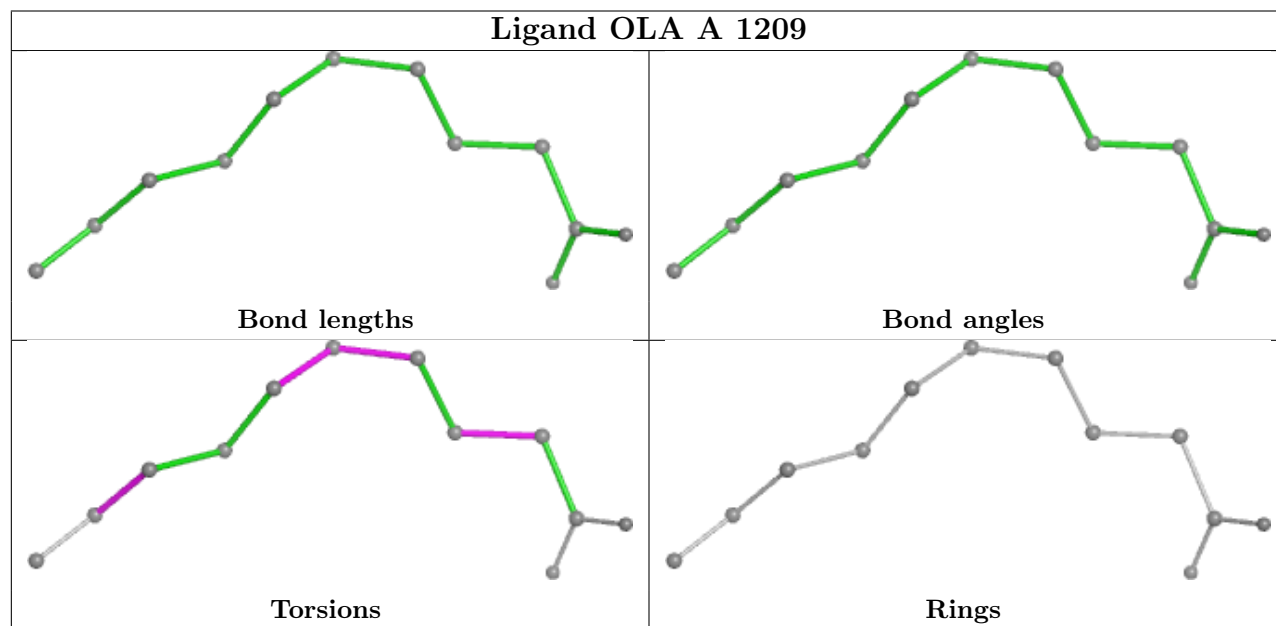
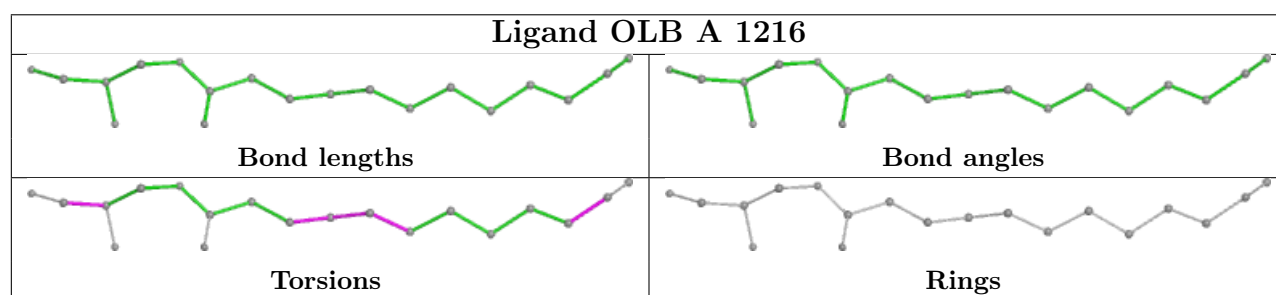
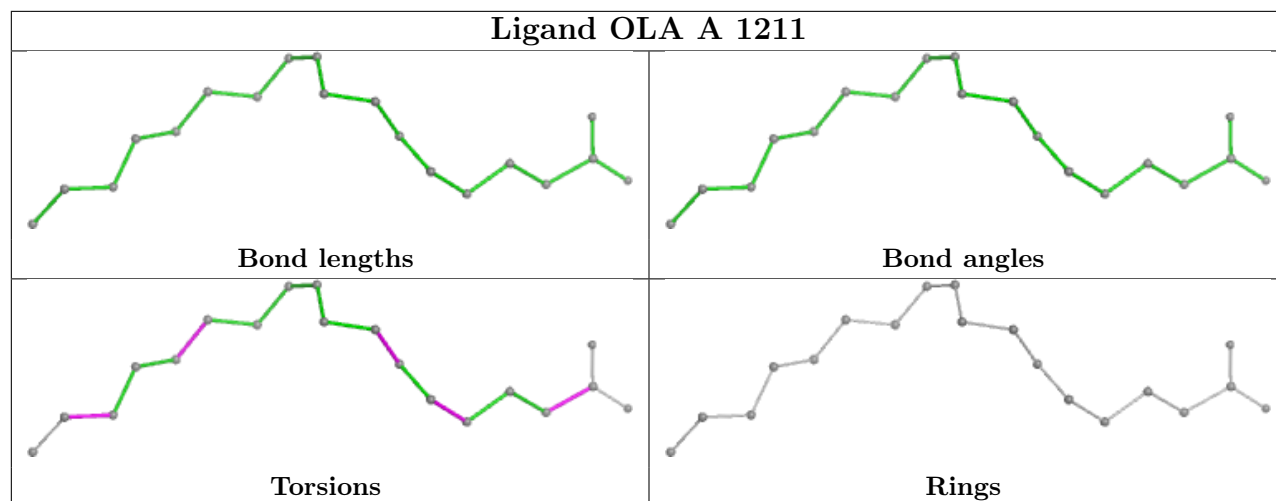
3 monomers are involved in 5 short contacts:

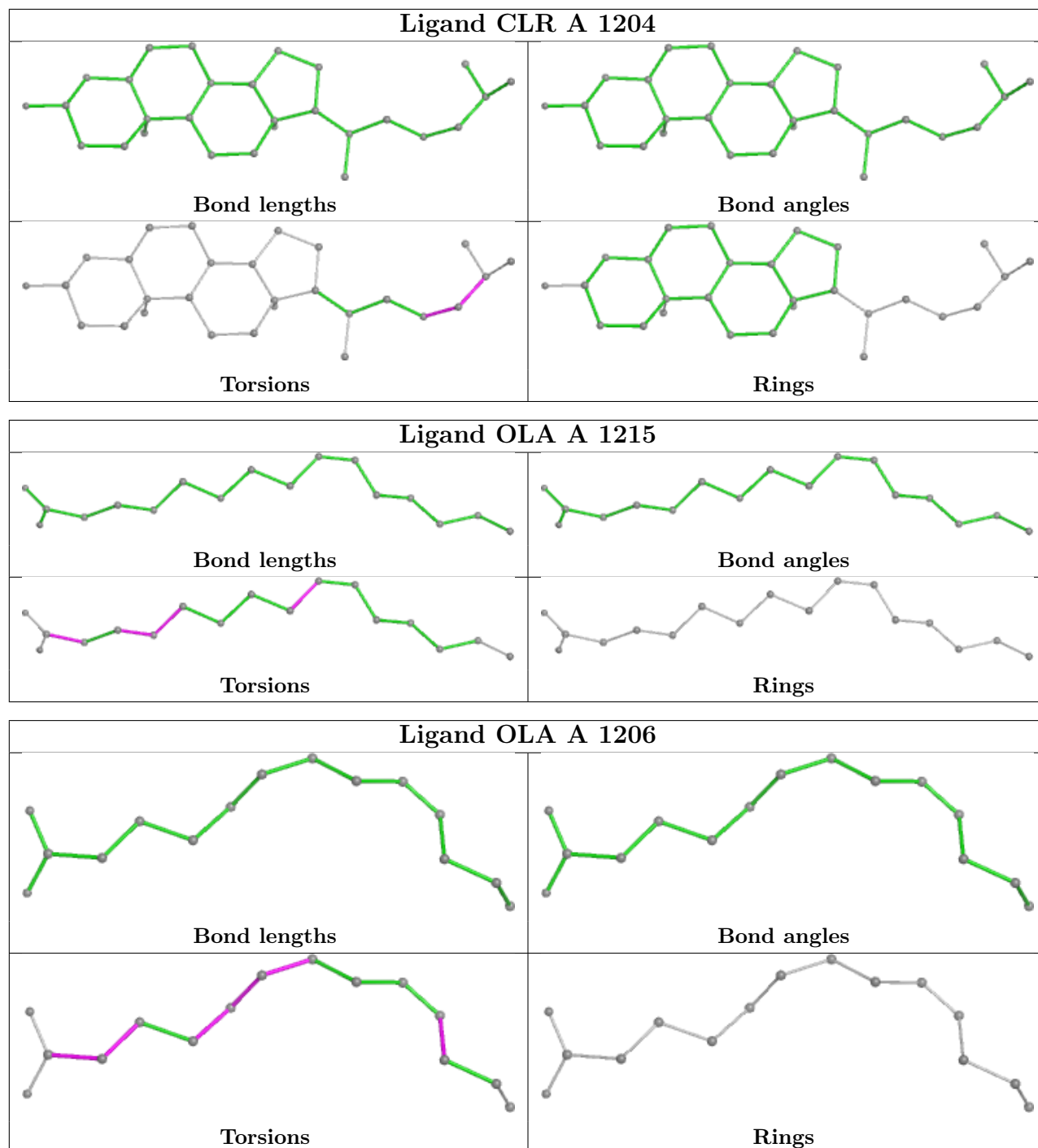


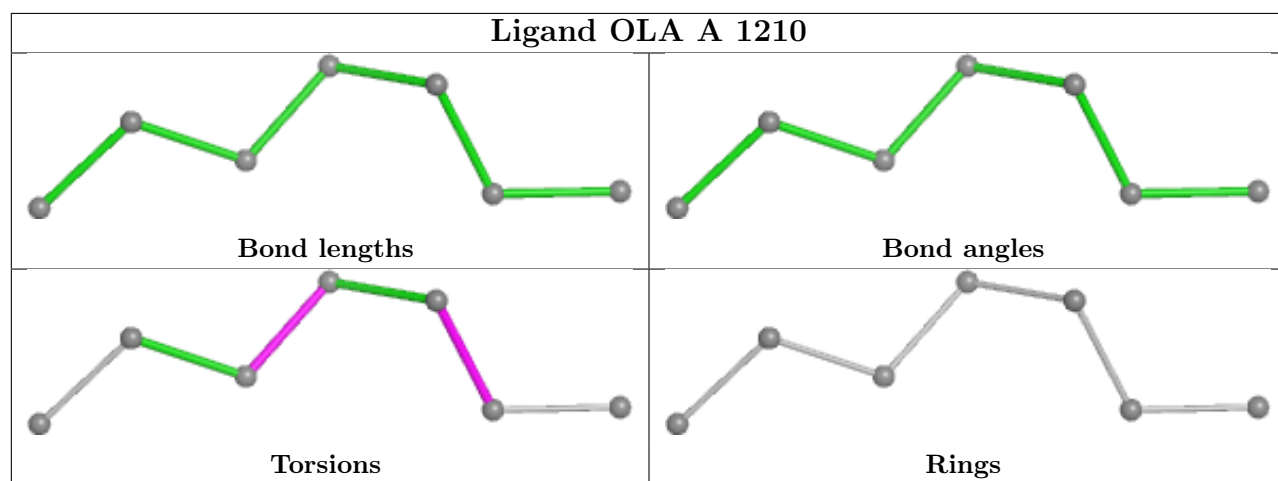
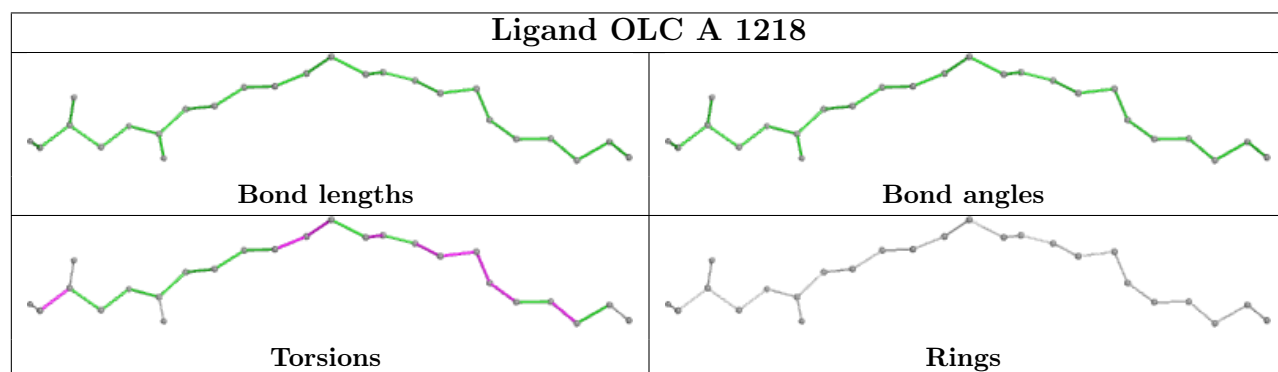
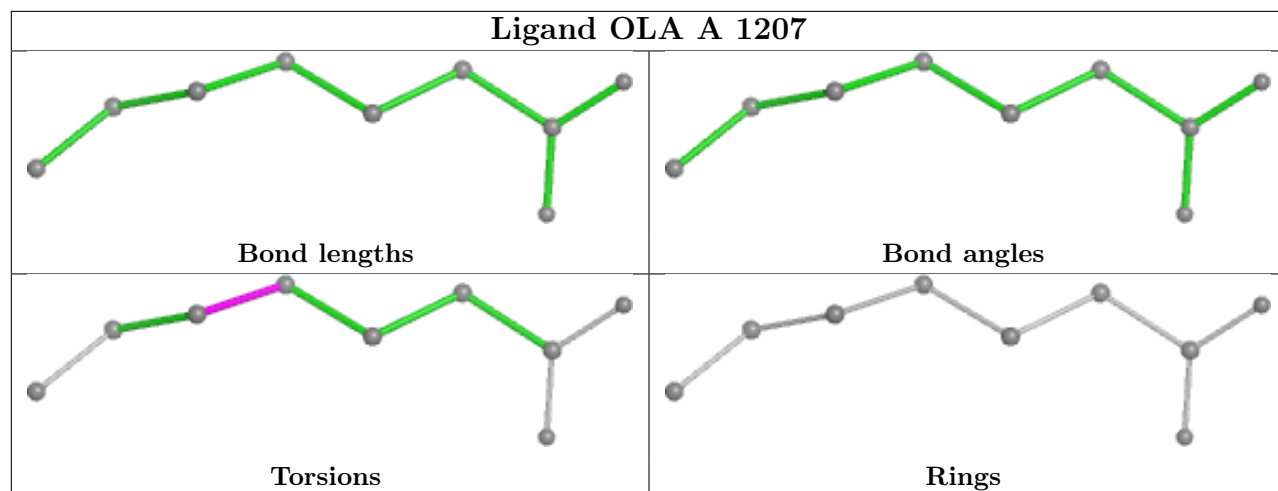
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1208	OLA	2	0
3	A	1202	CLR	2	0
7	A	1220	JQ9	1	0

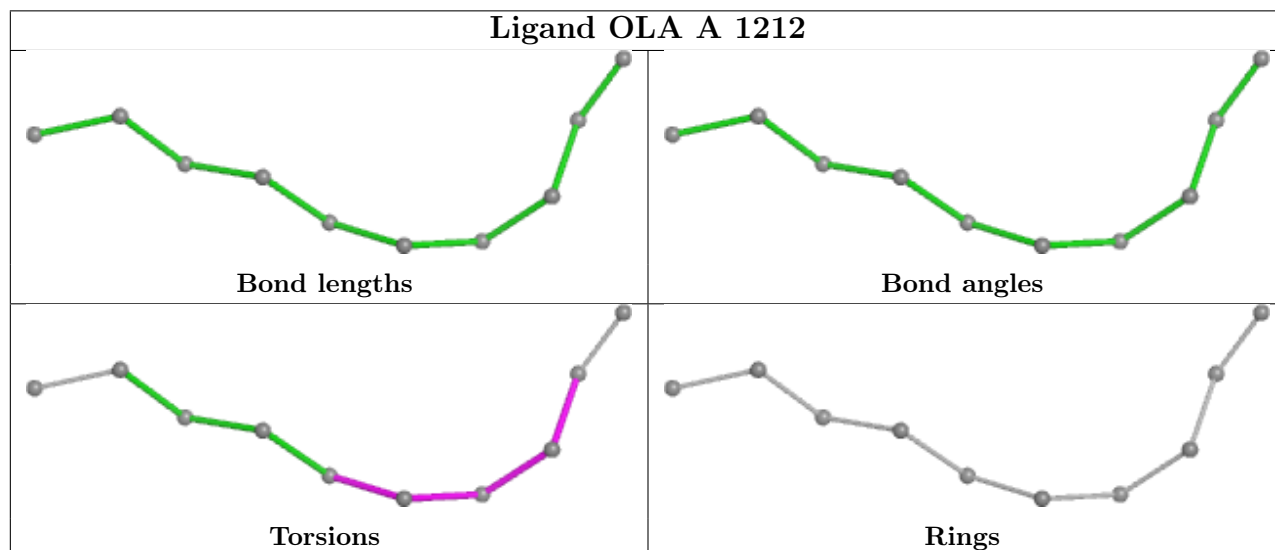
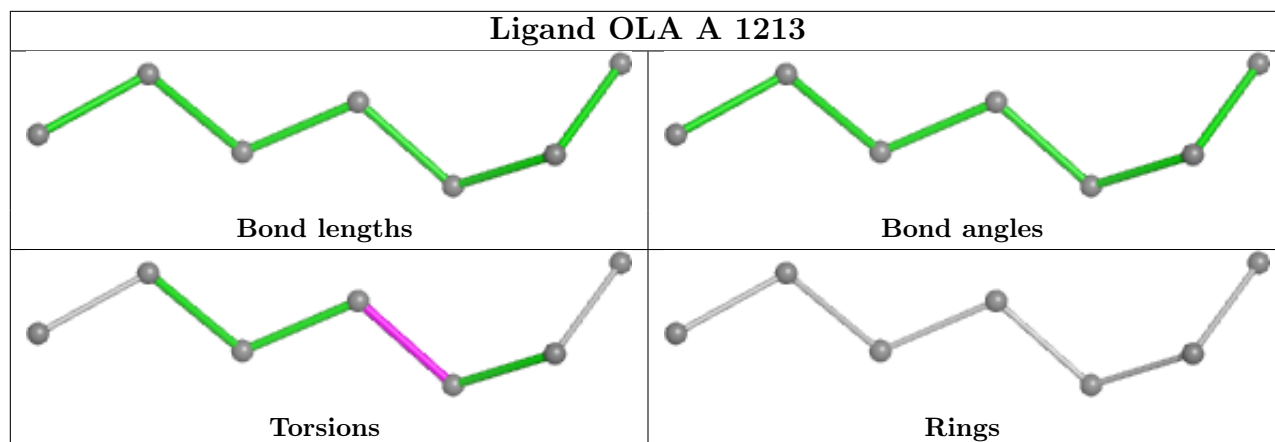
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

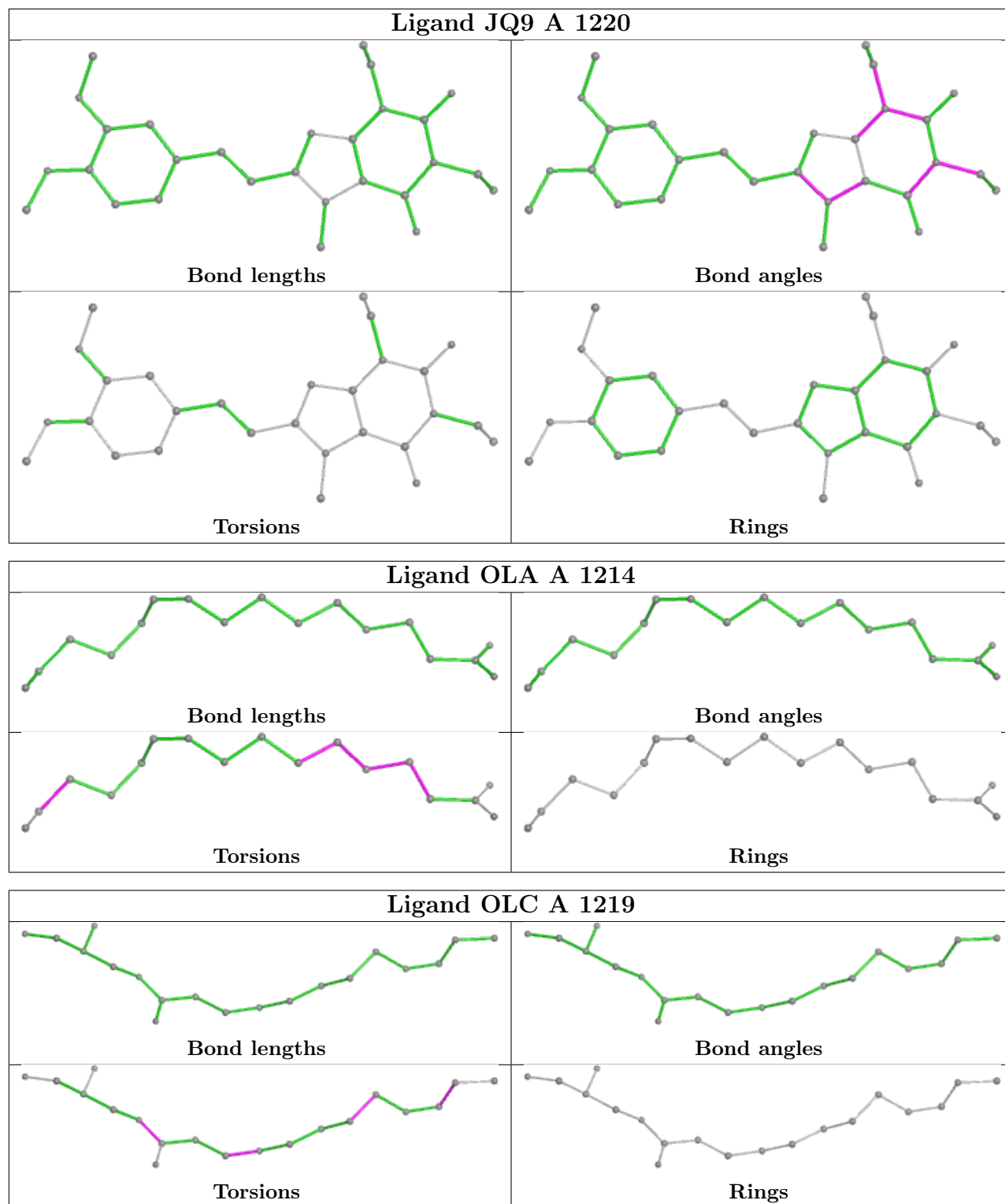












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	383/423 (90%)	0.77	46 (12%) <b>10</b> <b>9</b>	36, 81, 153, 188	2 (0%)

All (46) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1043	ALA	5.3
1	A	1026	VAL	4.8
1	A	1086	GLU	4.4
1	A	1017	ILE	4.2
1	A	1030	LEU	4.2
1	A	1091	ALA	4.2
1	A	1003	LEU	4.2
1	A	1041	GLN	3.8
1	A	1038	LEU	3.8
1	A	1036	ALA	3.6
1	A	1075	ALA	3.5
1	A	1087	ALA	3.5
1	A	271	TYR	3.2
1	A	1078	LEU	3.1
1	A	0	ALA	3.1
1	A	1090	ALA	3.1
1	A	113	ASN	3.1
1	A	1063	HIS	2.9
1	A	225	LEU	2.9
1	A	1027	LYS	2.8
1	A	1074	ASP	2.8
1	A	1105	TYR	2.7
1	A	161	GLU	2.6
1	A	290	TYR	2.5
1	A	222	ARG	2.5
1	A	305	SER	2.4
1	A	1014	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	1024	ALA	2.3
1	A	1042	LYS	2.3
1	A	1016	VAL	2.3
1	A	73	ALA	2.2
1	A	149	PRO	2.2
1	A	1015	LYS	2.2
1	A	1102	ILE	2.2
1	A	1019	LYS	2.1
1	A	302	ILE	2.1
1	A	151	GLU	2.1
1	A	1037	ALA	2.1
1	A	1079	ALA	2.1
1	A	1082	GLY	2.1
1	A	1034	ARG	2.0
1	A	1029	ALA	2.0
1	A	221	ALA	2.0
1	A	1006	ASN	2.0
1	A	1040	ALA	2.0
1	A	1077	LYS	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 monosaccharides 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, 95<sup>th</sup> 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.

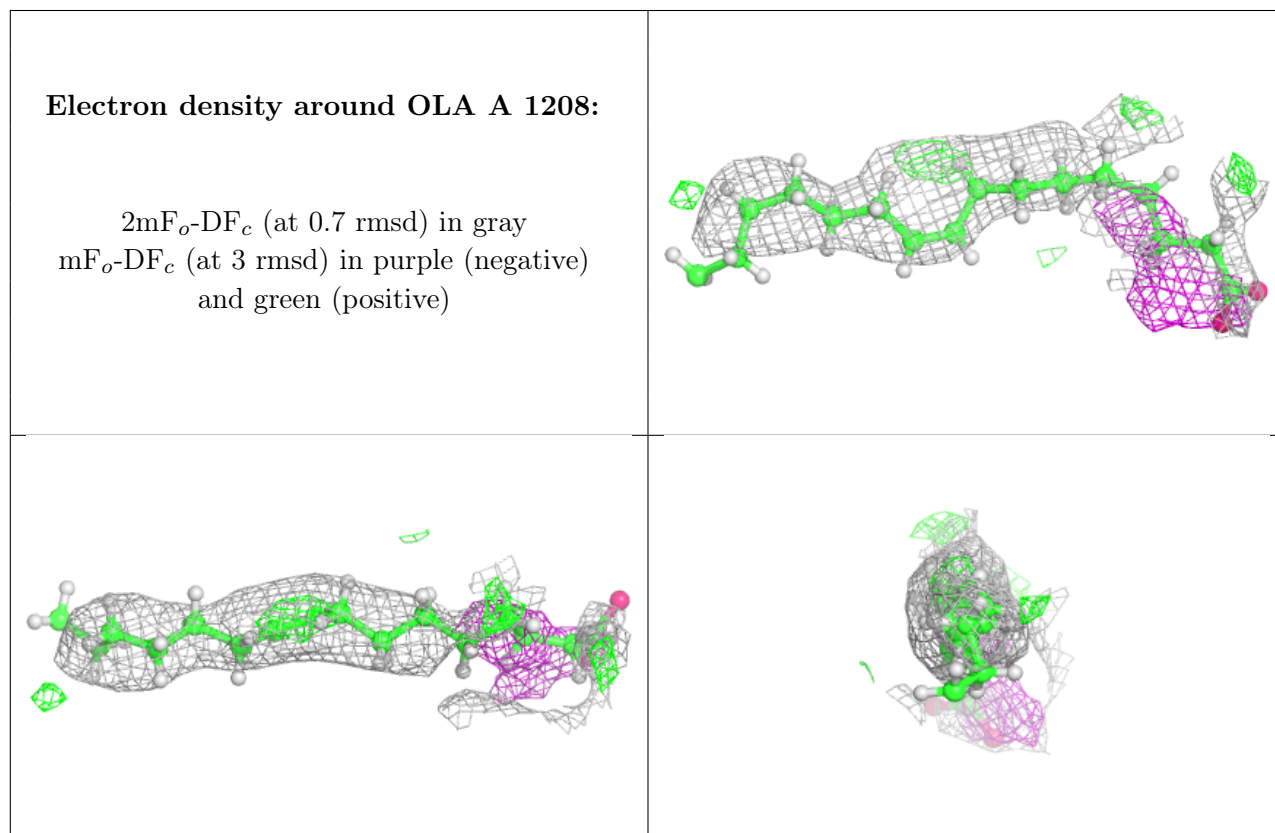
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	OLA	A	1208	18/20	0.62	0.25	72,91,109,109	0
4	OLA	A	1211	19/20	0.69	0.24	86,106,127,135	0
4	OLA	A	1215	17/20	0.69	0.29	79,106,122,127	0
4	OLA	A	1210	7/20	0.70	0.33	75,103,123,123	0

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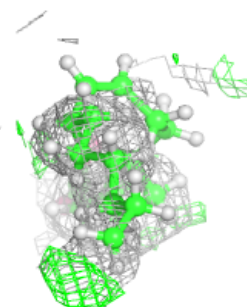
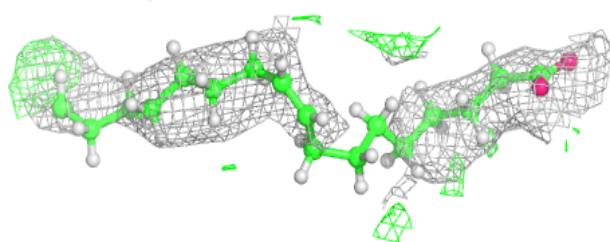
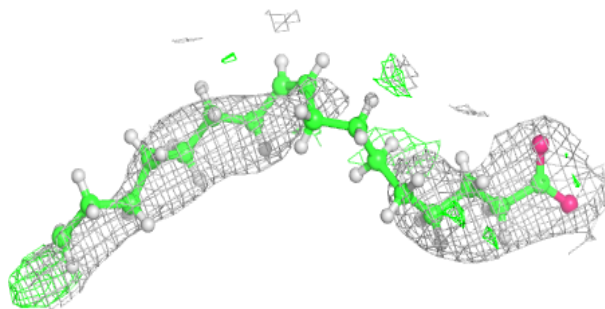
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	OLA	A	1205	20/20	0.72	0.23	69,88,104,106	0
4	OLA	A	1206	15/20	0.73	0.21	80,102,124,130	0
4	OLA	A	1214	17/20	0.75	0.24	72,88,102,105	0
6	OLC	A	1219	19/25	0.78	0.27	63,80,104,112	46
6	OLC	A	1218	25/25	0.81	0.40	68,88,108,114	65
5	OLB	A	1216	19/25	0.81	0.23	64,85,105,117	46
5	OLB	A	1217	20/25	0.85	0.25	73,92,103,106	49
4	OLA	A	1213	7/20	0.85	0.20	73,88,104,104	0
3	CLR	A	1202	28/28	0.85	0.17	70,90,111,119	0
4	OLA	A	1209	12/20	0.86	0.27	60,84,97,100	28
4	OLA	A	1207	9/20	0.87	0.16	63,84,95,96	0
3	CLR	A	1203	28/28	0.88	0.14	68,85,97,101	0
4	OLA	A	1212	10/20	0.91	0.21	64,67,79,84	0
3	CLR	A	1204	28/28	0.91	0.15	67,86,99,114	0
2	NA	A	1201	1/1	0.92	0.25	56,56,56,56	0
7	JQ9	A	1220	28/28	0.93	0.10	45,62,84,91	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.

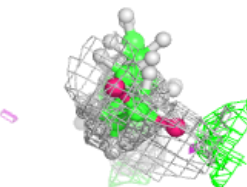
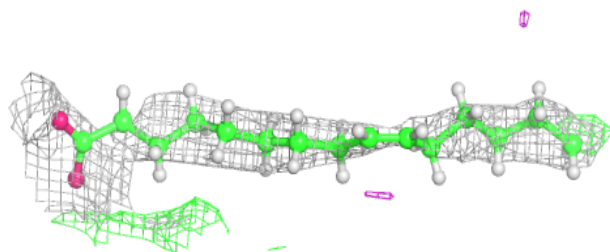
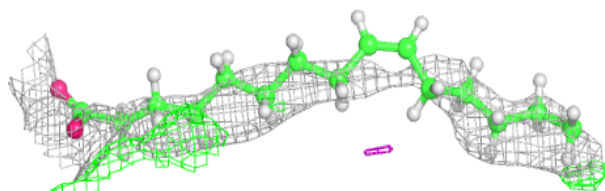


**Electron density around OLA A 1211:**

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

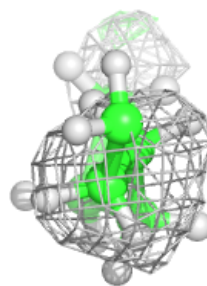
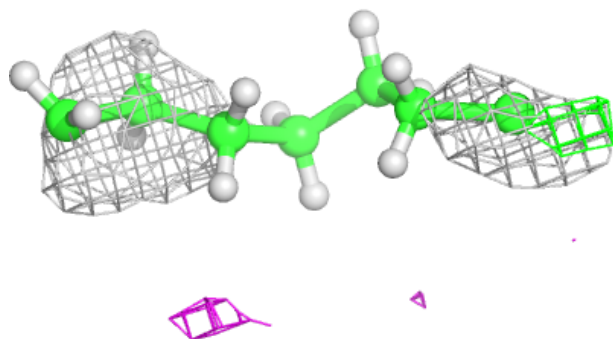
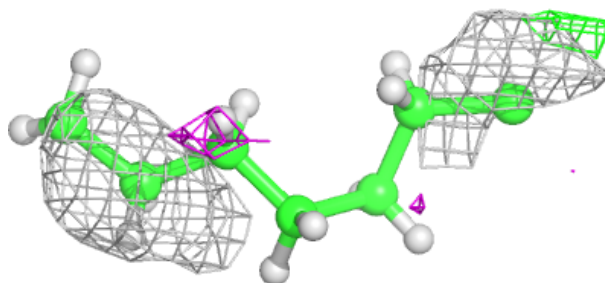
**Electron density around OLA A 1215:**

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

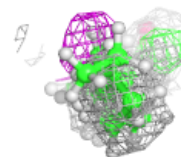
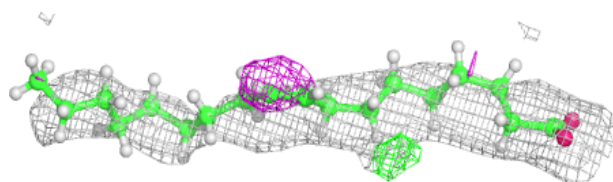
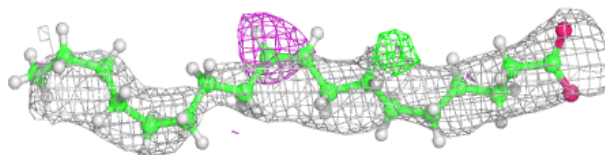


**Electron density around OLA A 1210:**

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

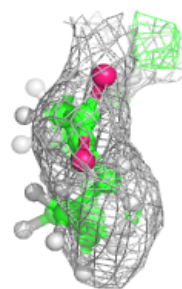
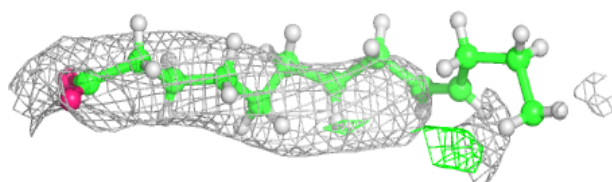
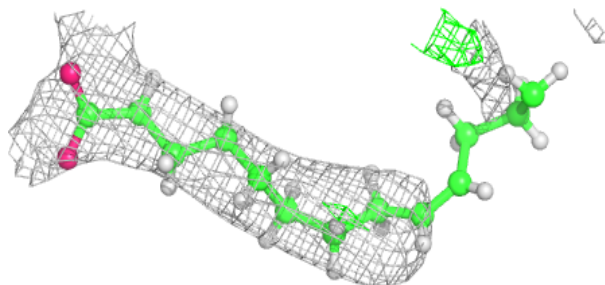
**Electron density around OLA A 1205:**

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

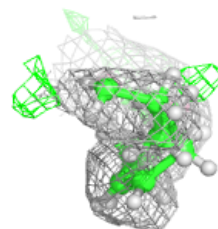
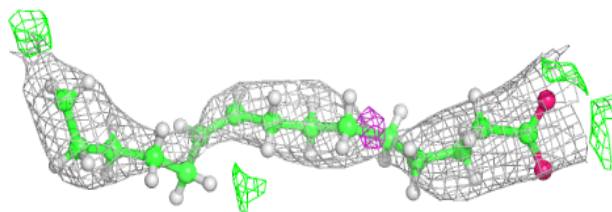
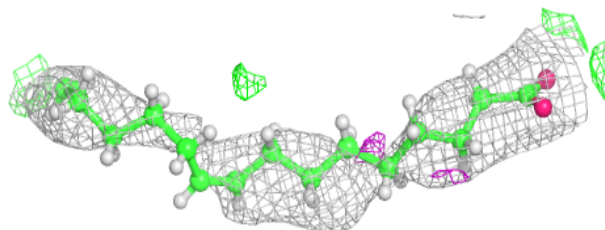


**Electron density around OLA A 1206:**

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

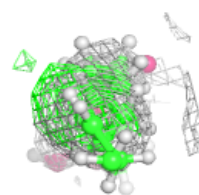
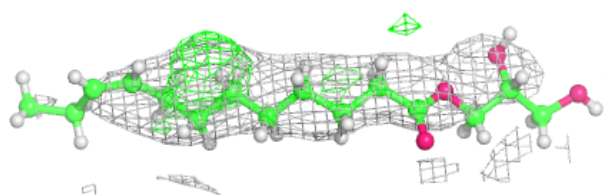
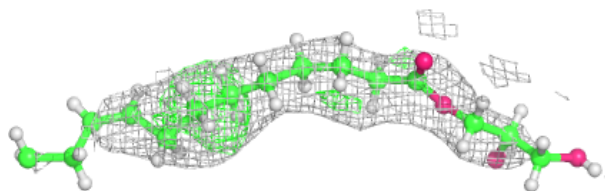
**Electron density around OLA A 1214:**

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

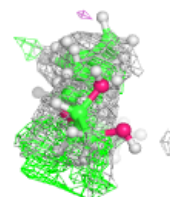
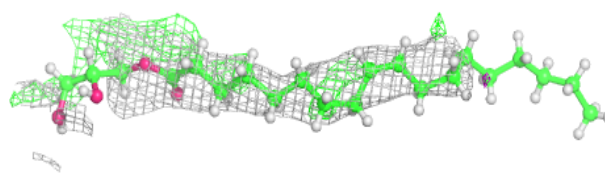
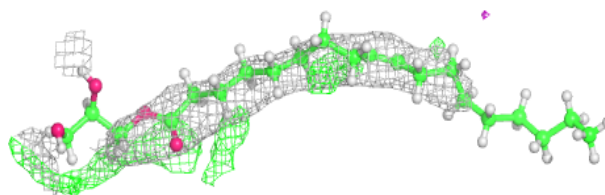


**Electron density around OLC A 1219:**

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

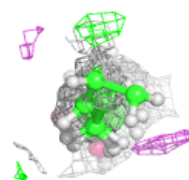
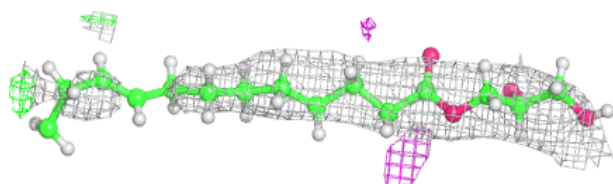
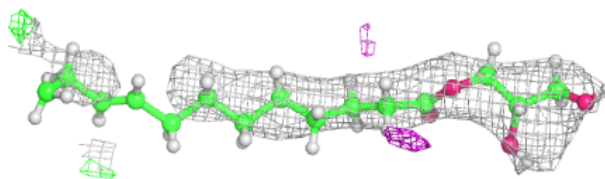
**Electron density around OLC A 1218:**

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

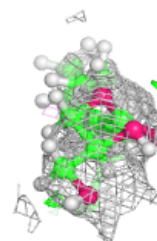
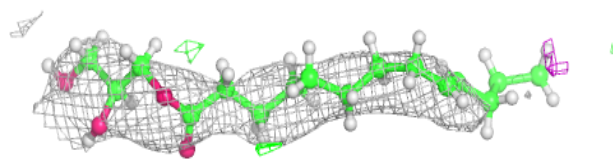
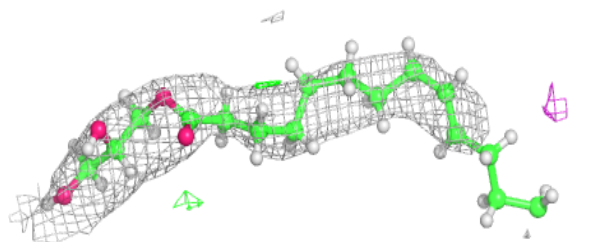


**Electron density around OLB A 1216:**

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

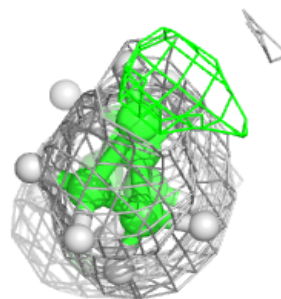
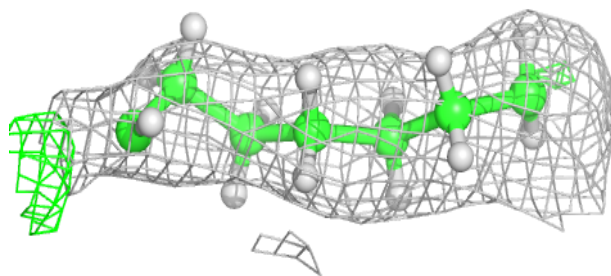
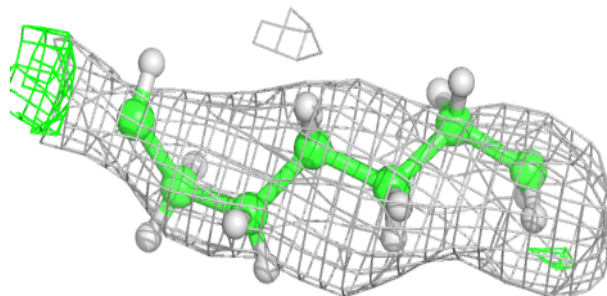
**Electron density around OLB A 1217:**

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

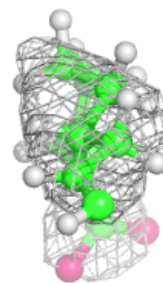
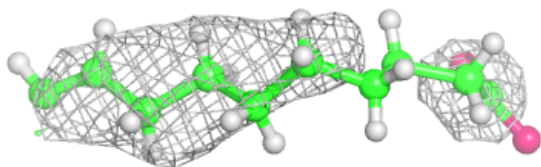
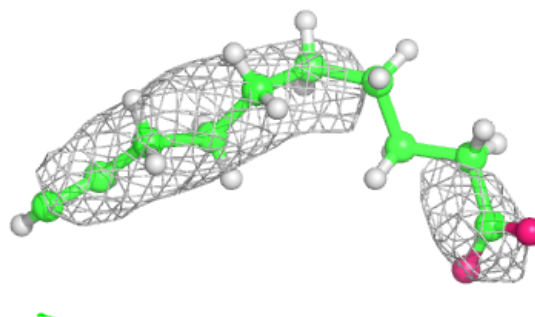


**Electron density around OLA A 1213:**

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

**Electron density around OLA A 1209:**

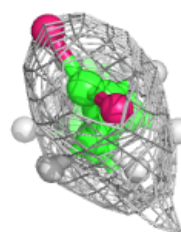
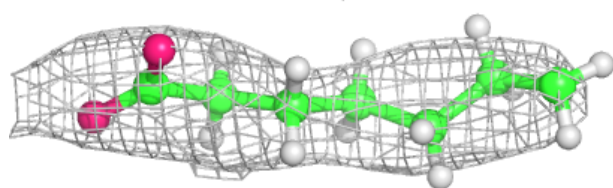
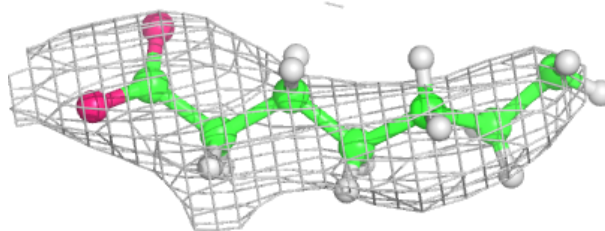
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



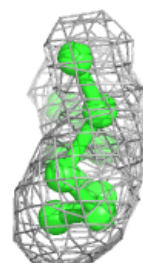
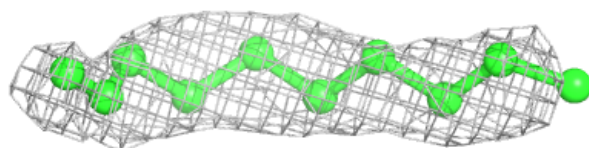
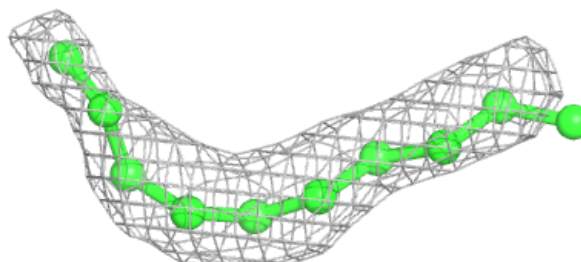


**Electron density around OLA A 1207:**

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

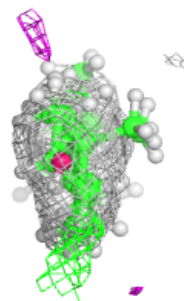
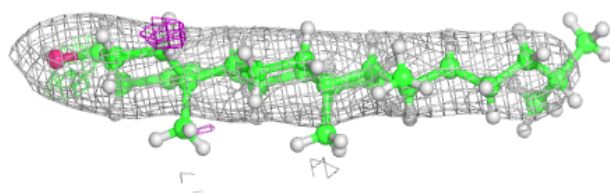
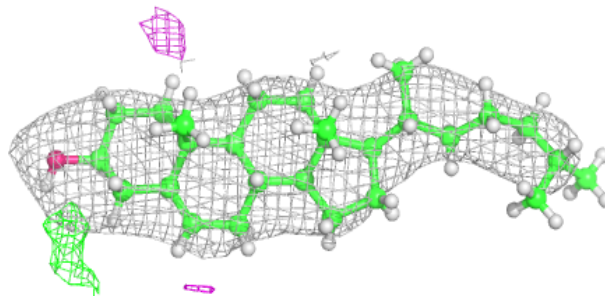
**Electron density around OLA A 1212:**

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

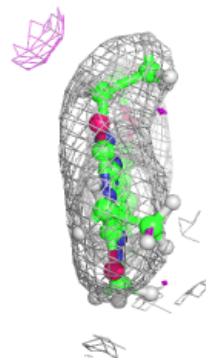
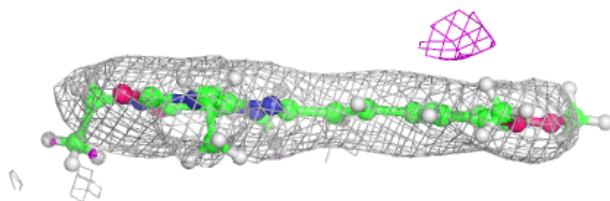
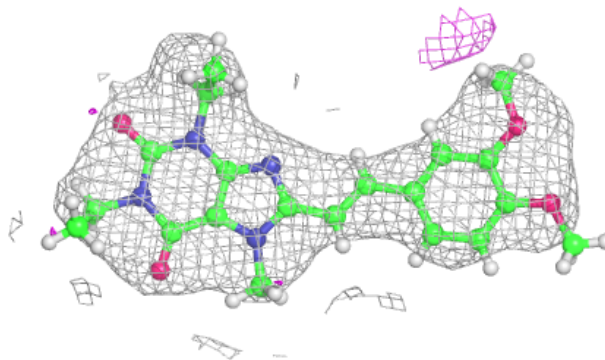


**Electron density around CLR A 1204:**

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

**Electron density around JQ9 A 1220:**

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



## 6.5 Other polymers [i](#)

There are no such residues in this entry.