W O R L D W I D E
wwPDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jan 2, 2025 – 12:12 pm GMT

PDB ID	:	8RWI
Title	:	Steady state structure of the human adenosine A2A receptor bound to synthetic photoswitch 'StilSwitch2' determined by serial synchrotron crystallography
Authors	:	Glover, H.; Weinert, T.
Deposited on	:	2024-02-05
Resolution	:	2.80 Å(reported)

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

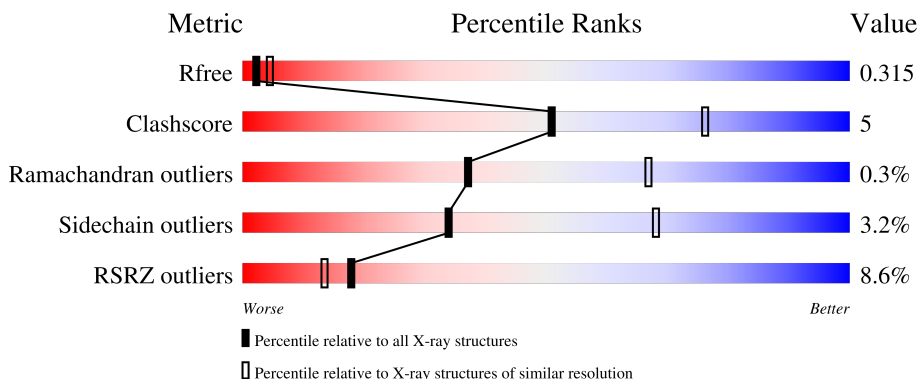|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh &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

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.315
Clashscore		5
Ramachandran outliers		0.3%
Sidechain outliers		3.2%
RSRZ outliers		8.6%

Worse ... *Better*

▮ Percentile relative to all X-ray structures

◫ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	3657 (2.80-2.80)
Clashscore	180529	4123 (2.80-2.80)
Ramachandran outliers	177936	4071 (2.80-2.80)
Sidechain outliers	177891	4073 (2.80-2.80)
RSRZ outliers	164620	3659 (2.80-2.80)

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 <=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	449	7% ... 73% 11% • 15%

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 3188 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 Adenosine receptor A2a,Soluble cytochrome b562.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	383	2835	1856	459	499	21	0	0	0

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-24	MET	-	initiating methionine	UNP P29274
A	-23	LYS	-	expression tag	UNP P29274
A	-22	THR	-	expression tag	UNP P29274
A	-21	ILE	-	expression tag	UNP P29274
A	-20	ILE	-	expression tag	UNP P29274
A	-19	ALA	-	expression tag	UNP P29274
A	-18	LEU	-	expression tag	UNP P29274
A	-17	SER	-	expression tag	UNP P29274
A	-16	TYR	-	expression tag	UNP P29274
A	-15	ILE	-	expression tag	UNP P29274
A	-14	PHE	-	expression tag	UNP P29274
A	-13	CYS	-	expression tag	UNP P29274
A	-12	LEU	-	expression tag	UNP P29274
A	-11	VAL	-	expression tag	UNP P29274
A	-10	PHE	-	expression tag	UNP P29274
A	-9	ALA	-	expression tag	UNP P29274
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	engineered mutation	UNP P29274

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Chain	Residue	Modelled	Actual	Comment	Reference
A	88	ALA	THR	engineered mutation	UNP P29274
A	107	ALA	ARG	engineered mutation	UNP P29274
A	122	ALA	LYS	engineered mutation	UNP P29274
A	154	ALA	ASN	engineered mutation	UNP P29274
A	202	ALA	LEU	engineered mutation	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	engineered mutation	UNP P29274
A	239	ALA	VAL	engineered mutation	UNP P29274
A	318	ALA	-	expression tag	UNP P29274
A	319	HIS	-	expression tag	UNP P29274
A	320	HIS	-	expression tag	UNP P29274
A	321	HIS	-	expression tag	UNP P29274
A	322	HIS	-	expression tag	UNP P29274
A	323	HIS	-	expression tag	UNP P29274
A	324	HIS	-	expression tag	UNP P29274
A	325	HIS	-	expression tag	UNP P29274
A	326	HIS	-	expression tag	UNP P29274
A	327	HIS	-	expression tag	UNP P29274
A	328	HIS	-	expression tag	UNP P29274

- Molecule 2 is 8-[({E})-2-[3,4-bis(oxidanyl)phenyl]ethenyl]-1,3-diethyl-7-methyl-purine-2,6-dione (three-letter code: A1H3I) (formula: $C_{18}H_{20}N_4O_4$) (labeled as "Ligand of Interest" by depositor).
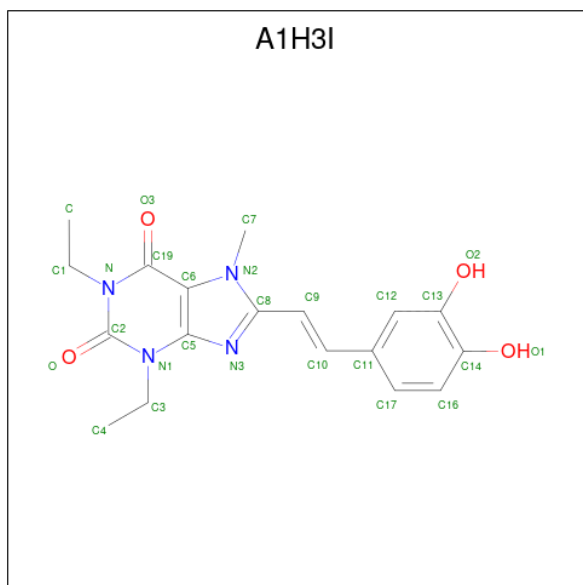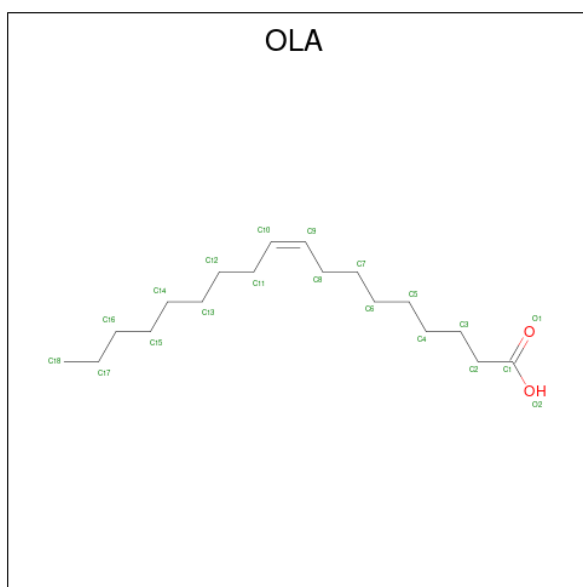
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 26	C 18	N 4	O 4	0	0

- Molecule 3 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).
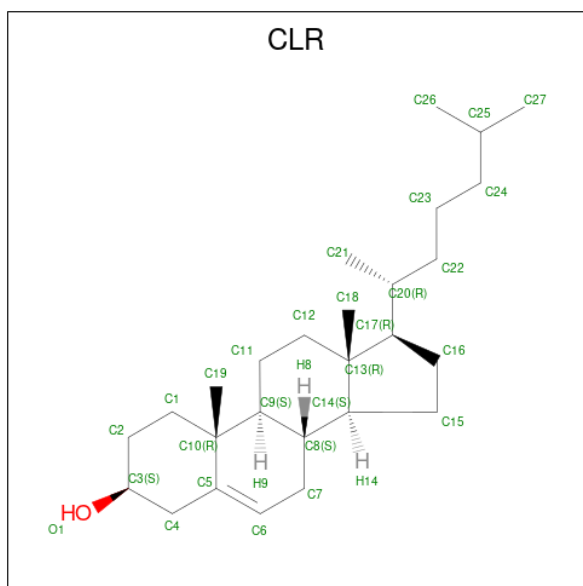
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 28	C 27	O 1	0	0
3	A	1	Total 28	C 27	O 1	0	0
3	A	1	Total 28	C 27	O 1	0	0

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

OLA

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 11	C 11		0	0
4	A	1	Total 18	C 16	O 2	0	0
4	A	1	Total 12	C 10	O 2	0	0
4	A	1	Total 9	C 7	O 2	0	0
4	A	1	Total 17	C 15	O 2	0	0
4	A	1	Total 16	C 14	O 2	0	0
4	A	1	Total 16	C 14	O 2	0	0
4	A	1	Total 20	C 18	O 2	0	0
4	A	1	Total 20	C 18	O 2	0	0
4	A	1	Total 15	C 15		0	0
4	A	1	Total 11	C 9	O 2	0	0
4	A	1	Total 9	C 7	O 2	0	0
4	A	1	Total 8	C 6	O 2	0	0
4	A	1	Total 17	C 15	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 10	C 10		0	0
4	A	1	Total 10	C 10		0	0
4	A	1	Total 9	C 7	O 2	0	0

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	14	Total 14	O 14	0	0

3 Residue-property plots ⓘ

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, α, β, γ	40.55Å 182.54Å 143.66Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.94 – 2.80 19.94 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.9 (19.94-2.80) 99.6 (19.94-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.12 (at 2.79Å)	Xtriage
Refinement program	PHENIX (1.20_4459: ???)	Depositor
R, R_{free}	0.275 , 0.317 0.273 , 0.315	Depositor DCC
R_{free} test set	12941 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å²)	68.5	Xtriage
Anisotropy	0.092	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.30 , 84.0	EDS
L-test for twinning [2]	$< \|L\| > = 0.55$, $< L^2 > = 0.40$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	3188	wwPDB-VP
Average B, all atoms (Å²)	76.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.68% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \|L\| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: NA, A1H3I, OLA, CLR

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	0.24	0/2896	0.38	0/3959

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 ⓘ

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	2835	0	2787	31	0
2	A	26	0	0	0	0
3	A	84	0	138	2	0
4	A	228	0	323	3	0
5	A	1	0	0	0	0
6	A	14	0	0	0	0
All	All	3188	0	3248	33	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 (33) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1033:MET:HB3	1:A:1072:ILE:HD13	1.75	0.68
1:A:1018:GLU:HG3	1:A:1019:LYS:HD3	1.81	0.62
1:A:1068:LEU:HD22	1:A:1102:ILE:HG13	1.83	0.60
1:A:224:THR:HA	1:A:227:LYS:HE2	1.84	0.59
1:A:288:TYR:HA	1:A:292:ILE:HD12	1.85	0.58
1:A:137:LEU:HB3	1:A:140:MET:HE2	1.93	0.51
1:A:1082:GLY:O	1:A:1084:VAL:N	2.44	0.51
1:A:101:ASP:OD2	1:A:102:ARG:NH1	2.45	0.50
1:A:298:THR:O	1:A:302:ILE:HG13	2.12	0.50
1:A:1030:LEU:HD22	1:A:1072:ILE:HG23	1.94	0.49
1:A:187:LEU:HD11	3:A:1202:CLR:H262	1.95	0.48
1:A:1011:ASN:OD1	1:A:1098:ARG:NH1	2.47	0.48
1:A:207:GLN:NE2	1:A:225:LEU:HD11	2.29	0.48
1:A:40:VAL:HG11	1:A:116:VAL:HG12	1.96	0.48
1:A:32:TRP:CD1	1:A:33:LEU:HD23	2.49	0.48
1:A:1063:HIS:O	1:A:1067:ILE:HD12	2.14	0.48
1:A:270:MET:O	1:A:274:ILE:HG12	2.14	0.47
1:A:1103:GLN:HE22	1:A:1106:LEU:HD22	1.80	0.47
1:A:207:GLN:HE21	1:A:225:LEU:HD11	1.80	0.47
1:A:1010:LEU:HD12	1:A:1033:MET:SD	2.56	0.46
1:A:1013:ASN:HB3	1:A:1029:ALA:HB1	1.97	0.46
1:A:1068:LEU:O	1:A:1072:ILE:HG13	2.16	0.46
3:A:1203:CLR:H6	4:A:1207:OLA:H22	1.97	0.46
4:A:1218:OLA:H72	4:A:1218:OLA:H42	1.73	0.46
1:A:303:ILE:HD13	1:A:303:ILE:HA	1.91	0.44
1:A:275:VAL:HG21	4:A:1206:OLA:H81	2.00	0.44
1:A:208:LEU:O	1:A:1004:GLU:HG2	2.19	0.43
1:A:7:SER:O	1:A:11:THR:OG1	2.31	0.43
1:A:1067:ILE:HD12	1:A:1067:ILE:H	1.85	0.42
1:A:32:TRP:HD1	1:A:33:LEU:HD23	1.84	0.42
1:A:225:LEU:O	1:A:229:VAL:HG23	2.19	0.42
1:A:261:ASP:OD1	1:A:261:ASP:N	2.36	0.42
1:A:1028:ASP:O	1:A:1032:LYS:HG2	2.20	0.41

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	377/449 (84%)	369 (98%)	7 (2%)	1 (0%)	37	67

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1083	LYS

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	A	280/368 (76%)	271 (97%)	9 (3%)	34	68

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	VAL
1	A	102	ARG
1	A	113	ASN
1	A	150	LYS
1	A	199	ARG
1	A	1013	ASN
1	A	1106	LEU
1	A	290	TYR
1	A	305	SER

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	207	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 22 ligands modelled in this entry, 1 is monoatomic - leaving 21 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	1221	-	8,8,19	0.69	0	8,8,19	1.20	0
4	OLA	A	1220	-	9,9,19	0.96	1 (11%)	8,8,19	0.70	0
4	OLA	A	1205	-	10,10,19	0.80	1 (10%)	9,9,19	0.75	0
4	OLA	A	1214	-	14,14,19	1.03	1 (7%)	13,13,19	1.01	0
4	OLA	A	1212	-	19,19,19	0.79	1 (5%)	19,19,19	0.94	1 (5%)
4	OLA	A	1207	-	11,11,19	1.04	1 (9%)	11,11,19	1.18	1 (9%)
4	OLA	A	1206	-	17,17,19	0.83	1 (5%)	17,17,19	0.97	1 (5%)
4	OLA	A	1211	-	15,15,19	0.87	1 (6%)	15,15,19	1.02	1 (6%)
3	CLR	A	1202	-	31,31,31	0.37	0	48,48,48	0.55	0
3	CLR	A	1203	-	31,31,31	0.36	0	48,48,48	0.55	0
4	OLA	A	1219	-	9,9,19	0.95	1 (11%)	7,8,19	0.57	0
4	OLA	A	1213	-	19,19,19	0.78	1 (5%)	19,19,19	0.93	0
4	OLA	A	1218	-	16,16,19	0.85	1 (6%)	16,16,19	0.94	1 (6%)
4	OLA	A	1217	-	7,7,19	0.75	0	7,7,19	1.35	2 (28%)
4	OLA	A	1210	-	15,15,19	0.88	1 (6%)	15,15,19	0.98	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	OLA	A	1209	-	16,16,19	0.85	1 (6%)	16,16,19	0.96	1 (6%)
4	OLA	A	1216	-	8,8,19	0.69	0	8,8,19	1.26	1 (12%)
4	OLA	A	1215	-	10,10,19	0.62	0	10,10,19	1.21	2 (20%)
3	CLR	A	1204	-	31,31,31	0.35	0	48,48,48	0.45	0
2	A1H3I	A	1201	-	25,28,28	0.55	0	29,41,41	1.29	3 (10%)
4	OLA	A	1208	-	8,8,19	0.69	0	8,8,19	1.19	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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	OLA	A	1221	-	-	5/6/6/17	-
4	OLA	A	1220	-	-	5/7/7/17	-
4	OLA	A	1205	-	-	3/8/8/17	-
4	OLA	A	1214	-	-	6/12/12/17	-
4	OLA	A	1212	-	-	6/17/17/17	-
4	OLA	A	1207	-	-	6/9/9/17	-
4	OLA	A	1206	-	-	9/15/15/17	-
4	OLA	A	1211	-	-	7/13/13/17	-
3	CLR	A	1202	-	-	2/10/68/68	0/4/4/4
3	CLR	A	1203	-	-	1/10/68/68	0/4/4/4
4	OLA	A	1219	-	-	5/7/7/17	-
4	OLA	A	1213	-	-	7/17/17/17	-
4	OLA	A	1218	-	-	8/14/14/17	-
4	OLA	A	1217	-	-	4/5/5/17	-
4	OLA	A	1210	-	-	8/13/13/17	-
4	OLA	A	1209	-	-	6/14/14/17	-
4	OLA	A	1216	-	-	6/6/6/17	-
4	OLA	A	1215	-	-	3/8/8/17	-
3	CLR	A	1204	-	-	4/10/68/68	0/4/4/4
2	A1H3I	A	1201	-	-	3/7/9/9	0/3/3/3
4	OLA	A	1208	-	-	2/6/6/17	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1214	OLA	C10-C9	3.64	1.52	1.31
4	A	1207	OLA	C10-C9	2.79	1.47	1.28
4	A	1220	OLA	C10-C9	2.79	1.47	1.28
4	A	1210	OLA	C10-C9	2.73	1.47	1.31
4	A	1212	OLA	C10-C9	2.72	1.47	1.31
4	A	1218	OLA	C10-C9	2.71	1.47	1.31
4	A	1219	OLA	C10-C9	2.71	1.47	1.31
4	A	1211	OLA	C10-C9	2.71	1.47	1.31
4	A	1206	OLA	C10-C9	2.71	1.47	1.31
4	A	1209	OLA	C10-C9	2.70	1.47	1.31
4	A	1213	OLA	C10-C9	2.69	1.47	1.31
4	A	1205	OLA	C10-C9	2.41	1.47	1.29

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1201	A1H3I	C5-N1-C2	-3.95	118.50	122.22
2	A	1201	A1H3I	C6-N2-C8	-3.15	106.56	109.81
4	A	1215	OLA	C3-C2-C1	-2.13	109.11	114.47
4	A	1217	OLA	O2-C1-C2	2.06	120.66	114.03
4	A	1210	OLA	O2-C1-C2	2.05	120.63	114.03
4	A	1212	OLA	C3-C2-C1	-2.05	109.31	114.47
4	A	1207	OLA	O2-C1-C2	2.04	120.60	114.03
4	A	1216	OLA	O2-C1-C2	2.04	120.58	114.03
4	A	1209	OLA	O2-C1-C2	2.03	120.55	114.03
4	A	1211	OLA	O2-C1-C2	2.02	120.52	114.03
4	A	1217	OLA	C3-C2-C1	-2.02	109.38	114.47
4	A	1215	OLA	O2-C1-C2	2.01	120.50	114.03
4	A	1206	OLA	O2-C1-C2	2.00	120.47	114.03
2	A	1201	A1H3I	C7-N2-C6	2.00	126.69	124.49
4	A	1218	OLA	O2-C1-C2	2.00	120.46	114.03

There are no chirality outliers.

All (106) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1201	A1H3I	C11-C10-C9-C8
4	A	1219	OLA	C7-C8-C9-C10
4	A	1213	OLA	C11-C12-C13-C14
4	A	1207	OLA	C1-C2-C3-C4
3	A	1204	CLR	C20-C22-C23-C24
4	A	1218	OLA	C4-C5-C6-C7

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Mol	Chain	Res	Type	Atoms
4	A	1216	OLA	C1-C2-C3-C4
4	A	1210	OLA	C1-C2-C3-C4
4	A	1212	OLA	C1-C2-C3-C4
4	A	1218	OLA	C1-C2-C3-C4
3	A	1202	CLR	C20-C22-C23-C24
3	A	1202	CLR	C22-C23-C24-C25
4	A	1217	OLA	C1-C2-C3-C4
4	A	1214	OLA	C5-C6-C7-C8
4	A	1209	OLA	C1-C2-C3-C4
4	A	1214	OLA	C11-C10-C9-C8
4	A	1208	OLA	C1-C2-C3-C4
4	A	1209	OLA	C11-C12-C13-C14
4	A	1218	OLA	C11-C12-C13-C14
4	A	1211	OLA	C1-C2-C3-C4
4	A	1220	OLA	C1-C2-C3-C4
4	A	1206	OLA	C4-C5-C6-C7
4	A	1212	OLA	C3-C4-C5-C6
4	A	1211	OLA	C3-C4-C5-C6
4	A	1207	OLA	C5-C6-C7-C8
4	A	1210	OLA	C4-C5-C6-C7
4	A	1211	OLA	C4-C5-C6-C7
4	A	1220	OLA	C5-C6-C7-C8
4	A	1213	OLA	C1-C2-C3-C4
4	A	1218	OLA	C3-C4-C5-C6
4	A	1206	OLA	C11-C10-C9-C8
4	A	1211	OLA	C11-C10-C9-C8
4	A	1220	OLA	C3-C4-C5-C6
4	A	1205	OLA	C11-C12-C13-C14
4	A	1213	OLA	C4-C5-C6-C7
4	A	1207	OLA	C3-C4-C5-C6
4	A	1220	OLA	C4-C5-C6-C7
2	A	1201	A1H3I	C-C1-N-C19
4	A	1208	OLA	C4-C5-C6-C7
4	A	1214	OLA	C1-C2-C3-C4
4	A	1207	OLA	C4-C5-C6-C7
4	A	1210	OLA	C3-C4-C5-C6
4	A	1221	OLA	C4-C5-C6-C7
4	A	1216	OLA	C4-C5-C6-C7
4	A	1213	OLA	C3-C4-C5-C6
4	A	1212	OLA	C11-C10-C9-C8
3	A	1203	CLR	C21-C20-C22-C23
4	A	1209	OLA	C11-C10-C9-C8

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Mol	Chain	Res	Type	Atoms
4	A	1210	OLA	C11-C10-C9-C8
4	A	1213	OLA	C11-C10-C9-C8
4	A	1218	OLA	C11-C10-C9-C8
4	A	1216	OLA	C3-C4-C5-C6
4	A	1219	OLA	C11-C10-C9-C8
4	A	1214	OLA	C4-C5-C6-C7
4	A	1212	OLA	C4-C5-C6-C7
4	A	1209	OLA	C4-C5-C6-C7
4	A	1212	OLA	C5-C6-C7-C8
4	A	1205	OLA	C11-C10-C9-C8
4	A	1219	OLA	C12-C13-C14-C15
4	A	1210	OLA	C5-C6-C7-C8
4	A	1211	OLA	C11-C12-C13-C14
4	A	1217	OLA	C3-C4-C5-C6
4	A	1221	OLA	C1-C2-C3-C4
4	A	1212	OLA	C9-C10-C11-C12
4	A	1205	OLA	C9-C10-C11-C12
4	A	1206	OLA	C1-C2-C3-C4
4	A	1206	OLA	C7-C8-C9-C10
4	A	1211	OLA	C7-C8-C9-C10
4	A	1213	OLA	C13-C14-C15-C16
4	A	1209	OLA	C7-C8-C9-C10
4	A	1214	OLA	C7-C8-C9-C10
3	A	1204	CLR	C16-C17-C20-C22
3	A	1204	CLR	C13-C17-C20-C21
4	A	1218	OLA	O1-C1-C2-C3
4	A	1217	OLA	O1-C1-C2-C3
4	A	1206	OLA	O1-C1-C2-C3
4	A	1216	OLA	O1-C1-C2-C3
4	A	1206	OLA	O2-C1-C2-C3
4	A	1216	OLA	O2-C1-C2-C3
4	A	1218	OLA	O2-C1-C2-C3
4	A	1206	OLA	C9-C10-C11-C12
4	A	1217	OLA	O2-C1-C2-C3
3	A	1204	CLR	C13-C17-C20-C22
4	A	1210	OLA	C7-C8-C9-C10
4	A	1216	OLA	C2-C3-C4-C5
4	A	1215	OLA	C3-C4-C5-C6
4	A	1221	OLA	O1-C1-C2-C3
4	A	1211	OLA	C9-C10-C11-C12
4	A	1221	OLA	O2-C1-C2-C3
4	A	1218	OLA	C7-C8-C9-C10

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Mol	Chain	Res	Type	Atoms
4	A	1210	OLA	C9-C10-C11-C12
4	A	1219	OLA	C9-C10-C11-C12
4	A	1210	OLA	C11-C12-C13-C14
4	A	1220	OLA	C7-C8-C9-C10
4	A	1206	OLA	C6-C7-C8-C9
4	A	1209	OLA	C9-C10-C11-C12
4	A	1207	OLA	C7-C8-C9-C10
4	A	1221	OLA	C3-C4-C5-C6
4	A	1219	OLA	C11-C12-C13-C14
4	A	1213	OLA	C2-C3-C4-C5
2	A	1201	A1H3I	C4-C3-N1-C5
4	A	1207	OLA	O2-C1-C2-C3
4	A	1215	OLA	O2-C1-C2-C3
4	A	1215	OLA	O1-C1-C2-C3
4	A	1206	OLA	C12-C13-C14-C15
4	A	1214	OLA	C9-C10-C11-C12

There are no ring outliers.

5 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1207	OLA	1	0
4	A	1206	OLA	1	0
3	A	1202	CLR	1	0
3	A	1203	CLR	1	0
4	A	1218	OLA	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 then 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.

Ligand OLA A 1221

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1220

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1205

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1214

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1212

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1207

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1206

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1211

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR A 1202

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR A 1203

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1219

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1213

Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1218

Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1217

Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1210

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1209

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1216

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1215

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR A 1204

Bond lengths

Bond angles

Torsions

Rings

Ligand A1H3I A 1201

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1208

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

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, 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	A	383/449 (85%)	0.57	33 (8%)	18	13	37, 70, 119, 127	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1003	LEU	4.2
1	A	1017	ILE	4.0
1	A	1033	MET	3.8
1	A	1105	TYR	3.8
1	A	1101	TYR	3.7
1	A	1	PRO	3.6
1	A	1030	LEU	3.6
1	A	1016	VAL	3.5
1	A	73	ALA	3.3
1	A	1014	LEU	3.2
1	A	1091	ALA	3.1
1	A	1013	ASN	3.1
1	A	1106	LEU	3.0
1	A	1102	ILE	2.9
1	A	226	GLN	2.9
1	A	1010	LEU	2.8
1	A	1087	ALA	2.8
1	A	1061	PHE	2.8
1	A	165	ALA	2.7
1	A	164	VAL	2.5
1	A	1100	ALA	2.5
1	A	1062	ARG	2.4
1	A	1068	LEU	2.4
1	A	1026	VAL	2.4
1	A	1069	VAL	2.4
1	A	1094	LEU	2.2
1	A	167	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	1020	ALA	2.1
1	A	1024	ALA	2.1
1	A	70	PHE	2.1
1	A	1067	ILE	2.0
1	A	1070	GLY	2.0
1	A	1065	PHE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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
4	OLA	A	1213	20/20	0.47	0.21	75,97,114,114	0
4	OLA	A	1217	8/20	0.49	0.22	83,96,104,109	0
4	OLA	A	1210	16/20	0.51	0.20	72,86,97,99	0
4	OLA	A	1220	10/20	0.53	0.19	60,81,94,96	0
4	OLA	A	1215	11/20	0.58	0.20	75,80,90,94	0
4	OLA	A	1211	16/20	0.59	0.17	73,99,109,113	0
4	OLA	A	1212	20/20	0.61	0.18	55,85,111,116	0
4	OLA	A	1207	12/20	0.62	0.17	63,79,107,121	0
3	CLR	A	1202	28/28	0.63	0.22	70,78,86,86	28
4	OLA	A	1208	9/20	0.67	0.20	53,66,74,79	0
3	CLR	A	1203	28/28	0.67	0.22	69,78,87,89	28
4	OLA	A	1206	18/20	0.68	0.19	77,84,95,108	0
4	OLA	A	1209	17/20	0.70	0.18	60,88,102,104	0
4	OLA	A	1218	17/20	0.73	0.17	64,75,102,103	0
3	CLR	A	1204	28/28	0.73	0.24	65,84,92,93	28
4	OLA	A	1216	9/20	0.74	0.27	64,75,93,94	0
4	OLA	A	1219	10/20	0.75	0.24	64,73,80,82	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	OLA	A	1221	9/20	0.78	0.15	39,59,73,78	0
4	OLA	A	1214	15/20	0.79	0.17	65,70,81,86	0
2	A1H3I	A	1201	26/26	0.85	0.19	47,52,66,75	26
4	OLA	A	1205	11/20	0.87	0.12	50,59,67,74	0
5	NA	A	1222	1/1	0.97	0.11	52,52,52,52	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 1213:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
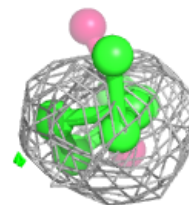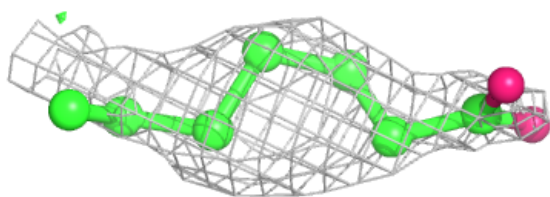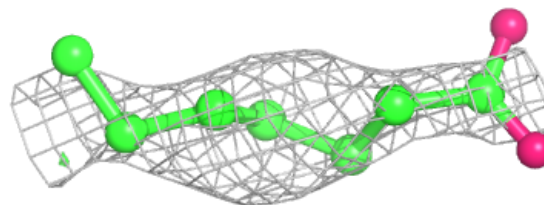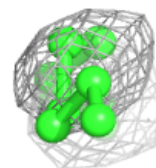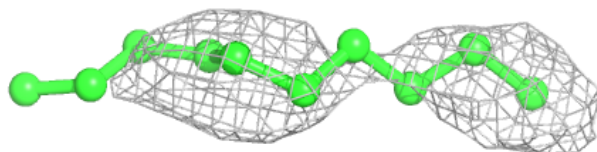mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
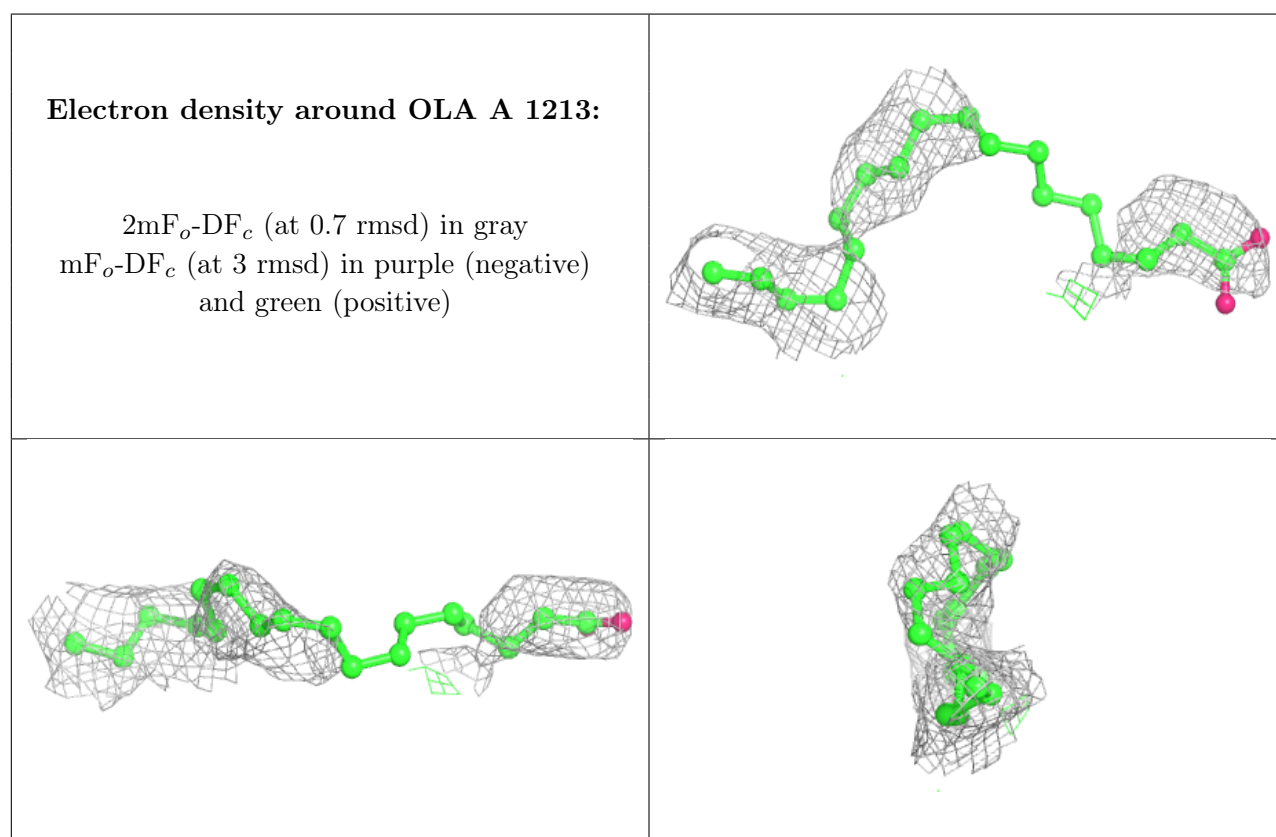
Electron density around OLA A 1217:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
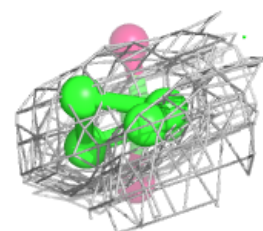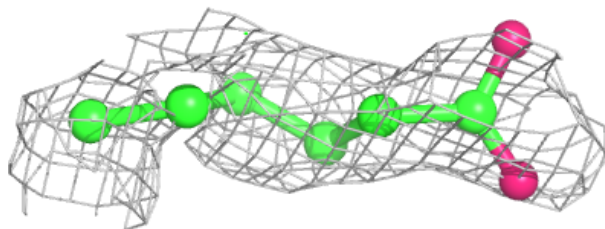
Electron density around OLA A 1210:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
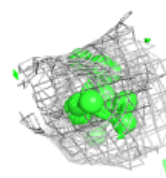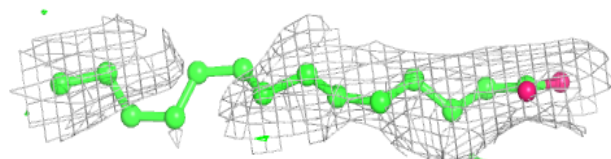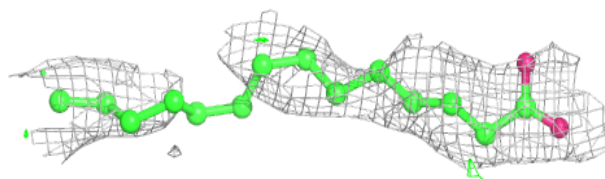
Electron density around OLA A 1220:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
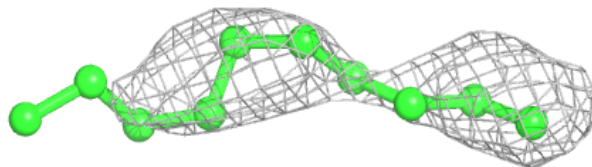mF_o-DF_c (at 3 rmsd) in purple (negative)
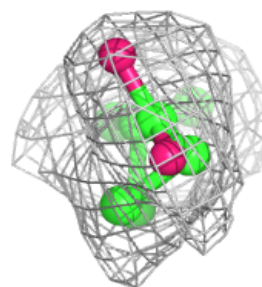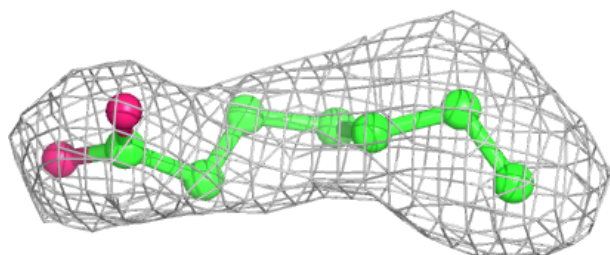and green (positive)
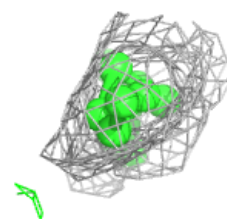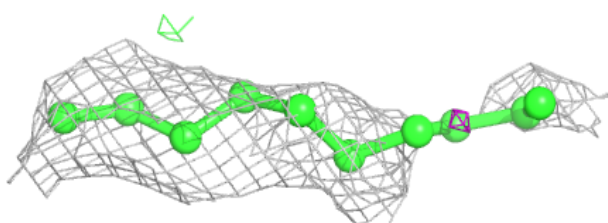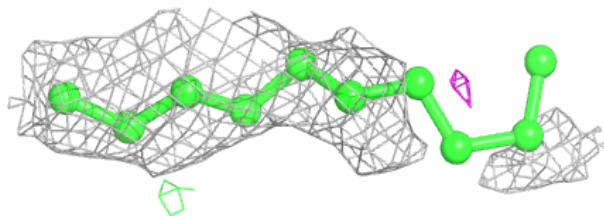
Electron density around OLA A 1215:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
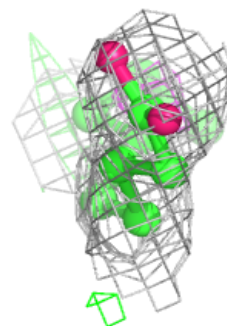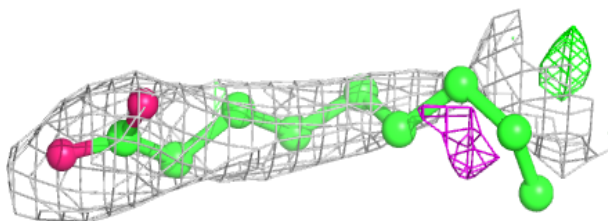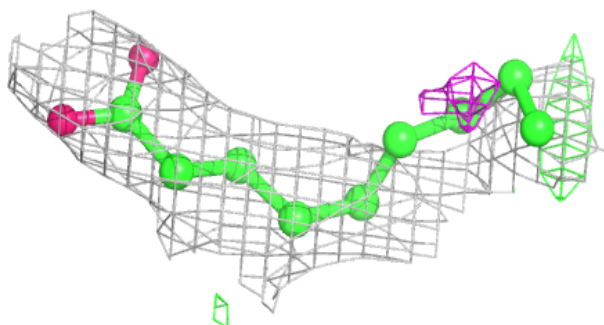
Electron density around OLA A 1211:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
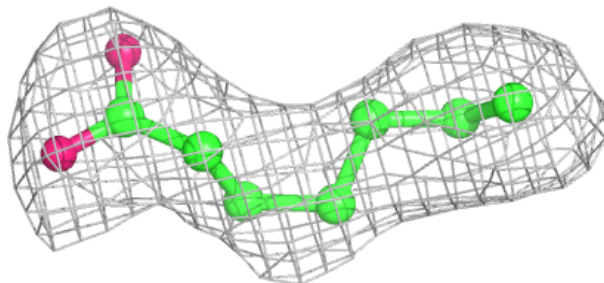mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
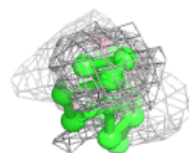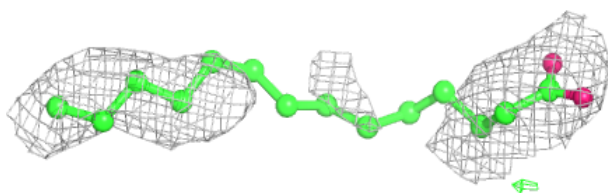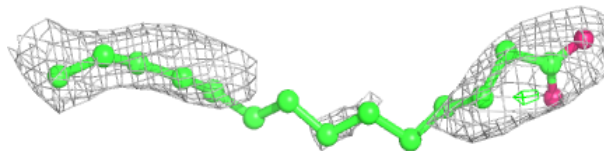
Electron density around OLA A 1212:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
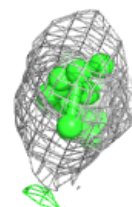and green (positive)
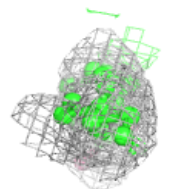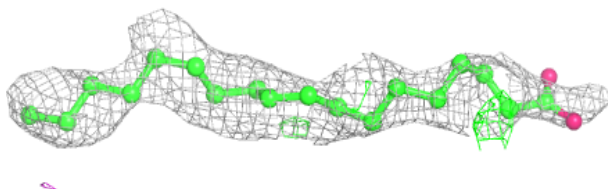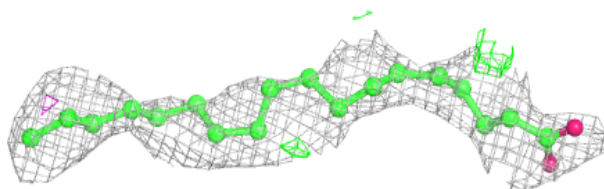
Electron density around OLA A 1207:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
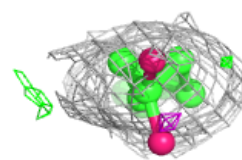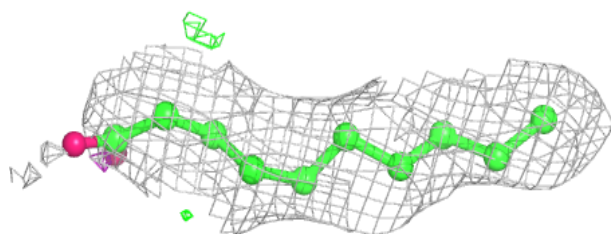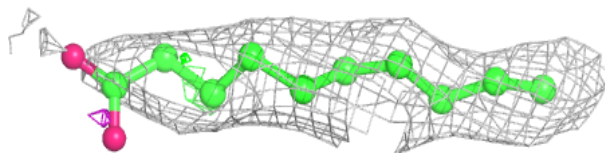
Electron density around CLR A 1202:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
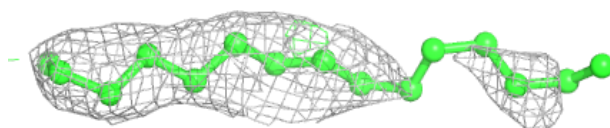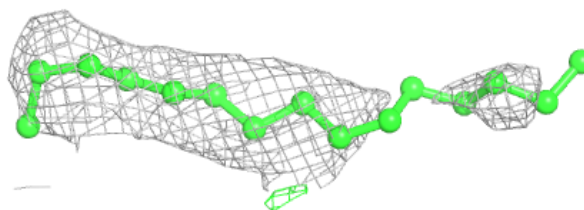and green (positive)
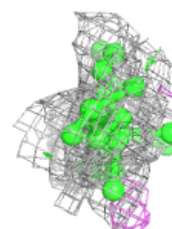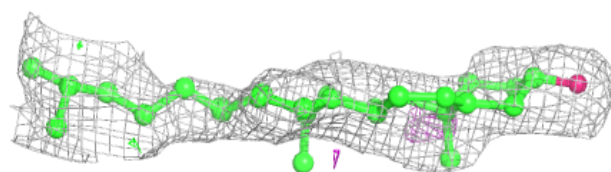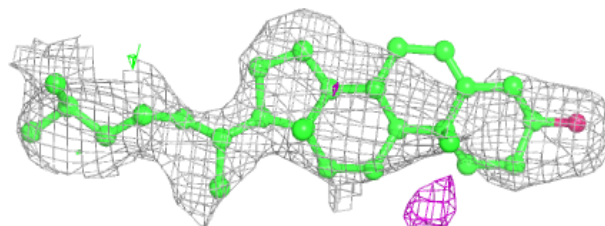
Electron density around OLA A 1208:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
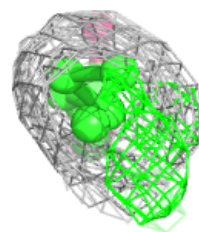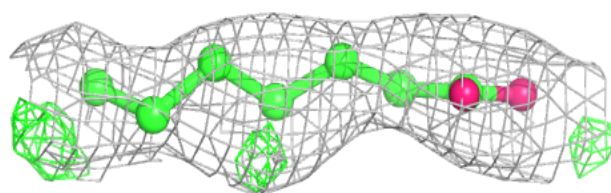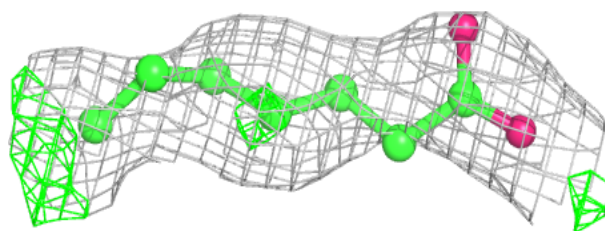
Electron density around CLR A 1203:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
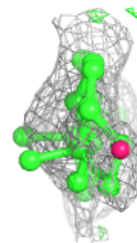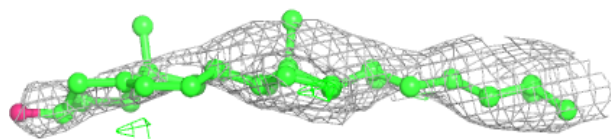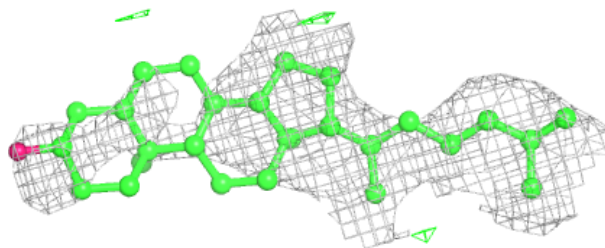
Electron density around OLA A 1206:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
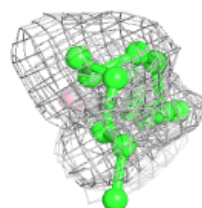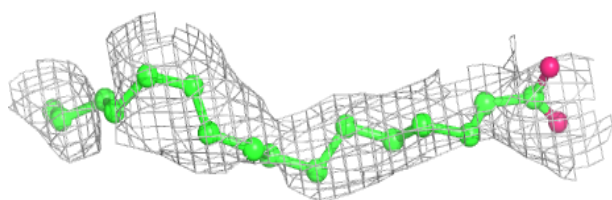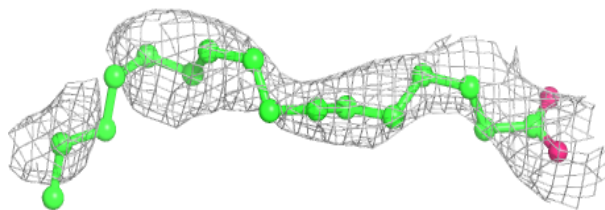
Electron density around OLA A 1209:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
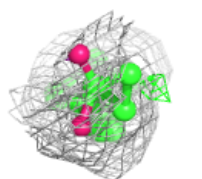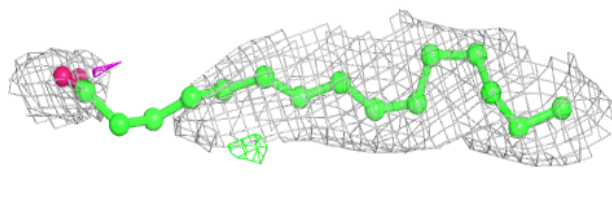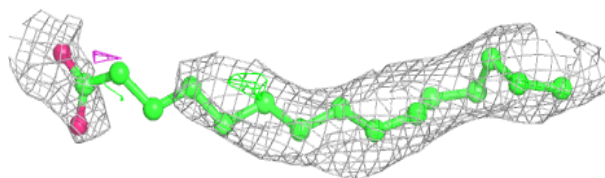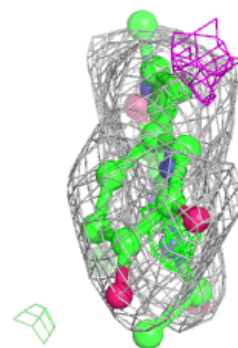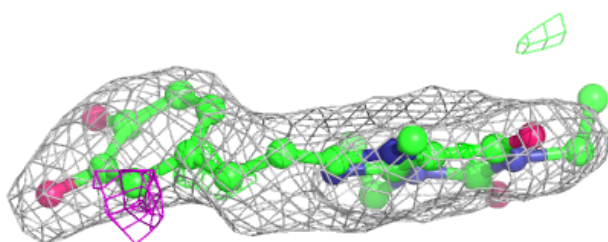
Electron density around OLA A 1218:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
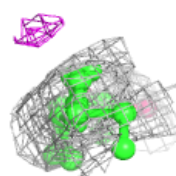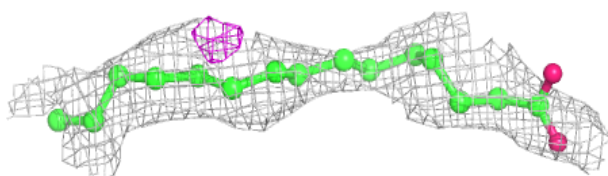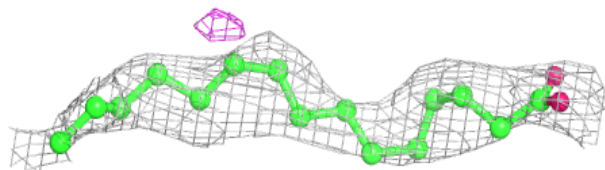
Electron density around CLR A 1204:
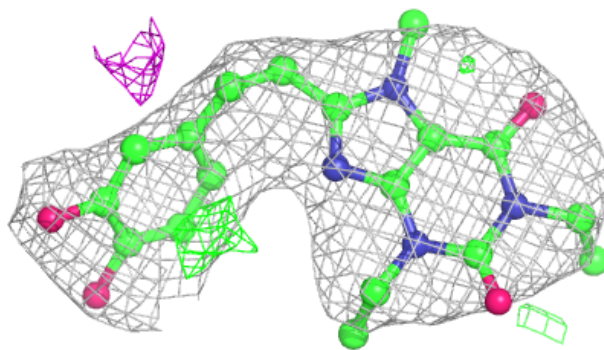
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
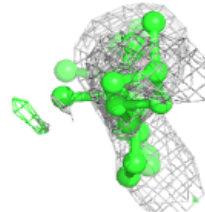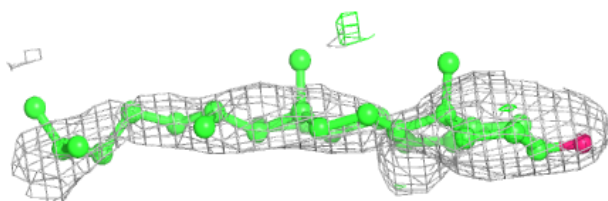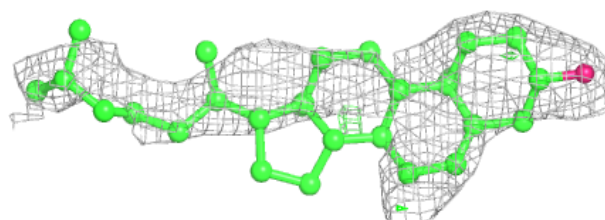
Electron density around OLA A 1216:

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

Electron density around OLA A 1219:

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

Electron density around OLA A 1221:

$2mF_o$-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)
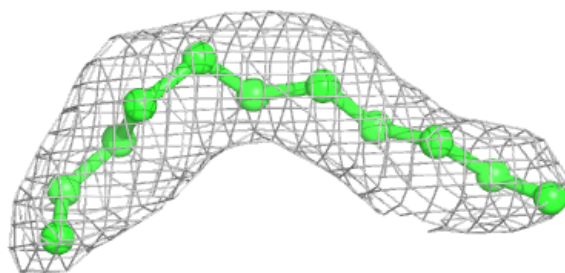and green (positive)

Electron density around A1H3I A 1201:

$2mF_o$-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)
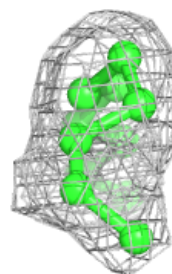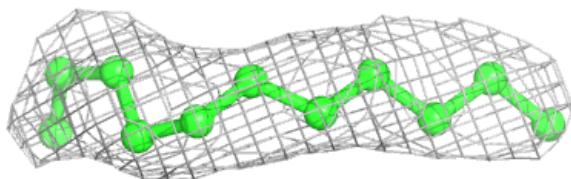
6.5 Other polymers (i)

There are no such residues in this entry.