WORLDWIDE PDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Jan 2, 2025 – 12:13 pm GMT

PDB ID	:	8RWD
Title	:	Crystal structure of the adenosine A2A receptor in complex with the synthetic photoswitch 'StilSwitch3
Authors	:	Glover, H.
Deposited on	:	2024-02-03
Resolution	:	2.05 Å(reported)

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

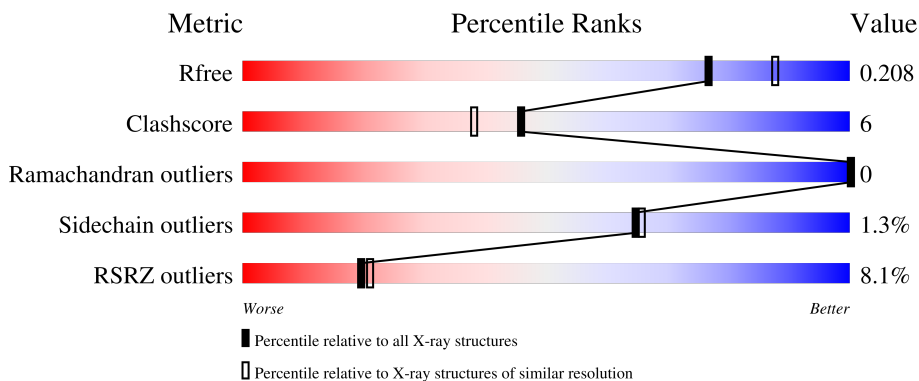|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & 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 2.05 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		0.208
Clashscore		6
Ramachandran outliers		0
Sidechain outliers		1.3%
RSRZ outliers		8.1%

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	2096 (2.04-2.04)
Clashscore	180529	2229 (2.04-2.04)
Ramachandran outliers	177936	2217 (2.04-2.04)
Sidechain outliers	177891	2217 (2.04-2.04)
RSRZ outliers	164620	2096 (2.04-2.04)

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% ▬ 76% ... 9% 14%

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 3583 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	384	2989	1951	495	520	23	0	10	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	conflict	UNP P29274

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
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	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 1,3-diethyl-8-[({E})-2-(4-methoxy-3-oxidanyl-phenyl)ethenyl]-7-methyl-purine-2,6-dione (three-letter code: A1H3H) (formula: $C_{19}H_{22}N_4O_4$) (labeled as "Ligand of Interest" by depositor).
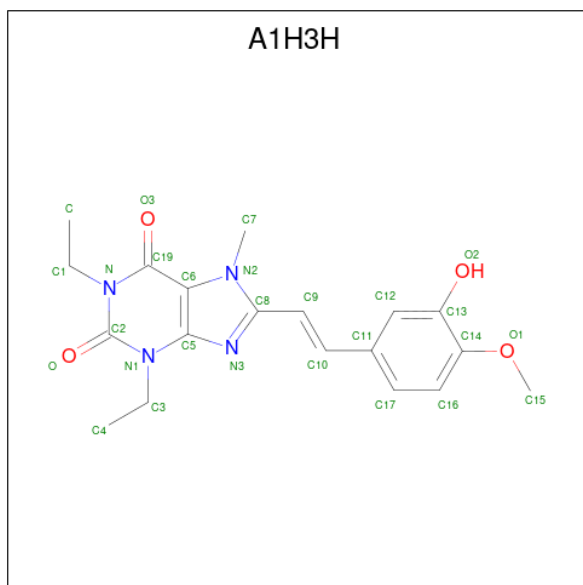
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 27	C 19	N 4	O 4	0	0

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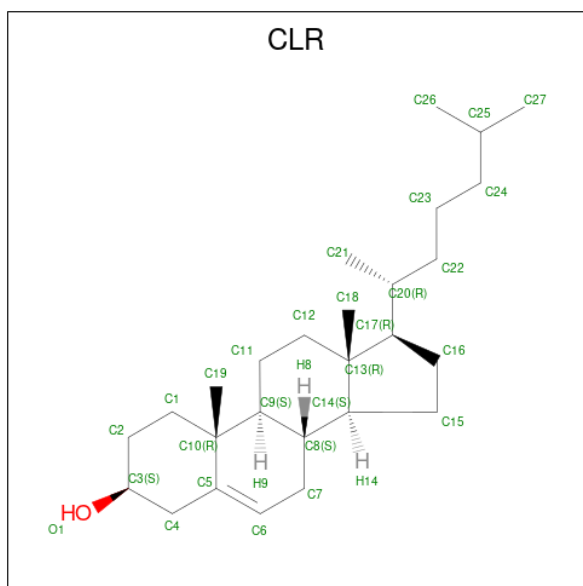
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 28	C 27	O 1	0	0
3	A	1	Total 28	C 27	O 1	0	0
3	A	1	Total 28	C 27	O 1	0	0

- 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 17	C 15	O 2	0	0
4	A	1	Total 20	C 18	O 2	0	0
4	A	1	Total 15	C 13	O 2	0	0
4	A	1	Total 17	C 15	O 2	0	0
4	A	1	Total 10	C 10		0	0
4	A	1	Total 20	C 18	O 2	0	0
4	A	1	Total 13	C 11	O 2	0	0
4	A	1	Total 16	C 14	O 2	0	0
4	A	1	Total 13	C 11	O 2	0	0
4	A	1	Total 13	C 11	O 2	0	0
4	A	1	Total 13	C 11	O 2	0	0
4	A	1	Total 10	C 8	O 2	0	0
4	A	1	Total 19	C 17	O 2	0	0
4	A	1	Total 12	C 10	O 2	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 20	C 18	O 2	0	0
4	A	1	Total 12	C 12		0	0
4	A	1	Total 18	C 16	O 2	0	0
4	A	1	Total 8	C 8		0	0
4	A	1	Total 15	C 15		0	0
4	A	1	Total 13	C 11	O 2	0	0
4	A	1	Total 15	C 13	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 12	C 10	O 2	0	0
4	A	1	Total 10	C 10		0	0
4	A	1	Total 9	C 9		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	102	Total 102	O 102	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	39.33Å　　179.01Å　　139.33Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	41.22　–　2.05 41.22　–　2.05	Depositor EDS
% Data completeness (in resolution range)	99.8 (41.22-2.05) 99.8 (41.22-2.05)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.41 (at 2.05Å)	Xtriage
Refinement program	PHENIX (1.20_4459: ???)	Depositor
R, R_{free}	0.194　,　0.209 0.193　,　0.208	Depositor DCC
R_{free} test set	1571 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	32.4	Xtriage
Anisotropy	0.094	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 60.0	EDS
L-test for twinning[2]	$< |L| > = 0.51, < L^2 > = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	3583	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.49% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: OLA, NA, CLR, A1H3H

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	0.27	0/3061	0.49	0/4173

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	2989	0	3023	31	0
2	A	27	0	0	0	0
3	A	84	0	138	3	0
4	A	380	0	554	14	0
5	A	1	0	0	0	0
6	A	102	0	0	3	0
All	All	3583	0	3715	41	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 6.

The worst 5 of 41 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:104:ILE:HG23	1:A:108:ILE:HD11	1.73	0.70
1:A:1022:ASN:HD21	1:A:1024:ALA:HB3	1.64	0.62
3:A:1204:CLR:H72	4:A:1226:OLA:H52	1.83	0.61
1:A:111:ARG:HB3	1:A:111:ARG:NH1	2.18	0.58
3:A:1203:CLR:H161	4:A:1208:OLA:H122	1.87	0.57

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	390/449 (87%)	388 (100%)	2 (0%)	0	100	100

There are no Ramachandran outliers to report.

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	309/368 (84%)	304 (98%)	5 (2%)	58	57

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	41	THR
1	A	80[A]	ILE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	80[B]	ILE
1	A	1022	ASN
1	A	1027	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1006	ASN
1	A	1071	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 31 ligands modelled in this entry, 1 is monoatomic - leaving 30 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	$\#|Z| > 2$
3	CLR	A	1204	-	31,31,31	0.14	0	48,48,48	0.31	0
4	OLA	A	1226	-	19,19,19	0.78	1 (5%)	19,19,19	0.93	1 (5%)
4	OLA	A	1214	-	12,12,19	0.91	1 (8%)	12,12,19	1.12	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	OLA	A	1227	-	19,19,19	0.79	1 (5%)	19,19,19	0.92	0
4	OLA	A	1230	-	8,8,19	0.35	0	7,7,19	0.69	0
4	OLA	A	1212	-	15,15,19	0.88	1 (6%)	15,15,19	1.01	2 (13%)
4	OLA	A	1228	-	11,11,19	1.03	1 (9%)	11,11,19	1.16	0
4	OLA	A	1205	-	16,16,19	0.84	1 (6%)	16,16,19	0.98	1 (6%)
4	OLA	A	1222	-	7,7,19	0.24	0	6,6,19	0.48	0
4	OLA	A	1216	-	9,9,19	0.66	0	9,9,19	1.14	1 (11%)
4	OLA	A	1225	-	14,14,19	0.91	1 (7%)	14,14,19	1.04	2 (14%)
4	OLA	A	1206	-	19,19,19	0.78	1 (5%)	19,19,19	0.92	0
3	CLR	A	1203	-	31,31,31	0.13	0	48,48,48	0.27	0
4	OLA	A	1210	-	19,19,19	0.78	1 (5%)	19,19,19	0.96	1 (5%)
4	OLA	A	1208	-	16,16,19	0.86	1 (6%)	16,16,19	0.95	1 (6%)
4	OLA	A	1218	-	11,11,19	1.03	1 (9%)	11,11,19	1.15	1 (9%)
4	OLA	A	1217	-	18,18,19	0.80	1 (5%)	18,18,19	0.94	1 (5%)
4	OLA	A	1220	-	11,11,19	0.85	1 (9%)	10,10,19	0.50	0
4	OLA	A	1229	-	9,9,19	0.94	1 (11%)	7,8,19	0.59	0
4	OLA	A	1221	-	17,17,19	0.81	1 (5%)	17,17,19	0.99	1 (5%)
3	CLR	A	1202	-	31,31,31	0.12	0	48,48,48	0.25	0
4	OLA	A	1213	-	12,12,19	0.90	1 (8%)	12,12,19	1.18	2 (16%)
4	OLA	A	1219	-	19,19,19	0.79	1 (5%)	19,19,19	0.91	1 (5%)
4	OLA	A	1211	-	12,12,19	0.90	1 (8%)	12,12,19	1.17	2 (16%)
2	A1H3H	A	1201	-	26,29,29	0.39	0	30,42,42	1.06	3 (10%)
4	OLA	A	1223	-	14,14,19	0.77	1 (7%)	13,13,19	0.47	0
4	OLA	A	1224	-	12,12,19	0.91	1 (8%)	12,12,19	1.11	1 (8%)
4	OLA	A	1209	-	9,9,19	0.97	1 (11%)	8,8,19	0.67	0
4	OLA	A	1215	-	12,12,19	0.91	1 (8%)	12,12,19	1.14	1 (8%)
4	OLA	A	1207	-	14,14,19	0.90	1 (7%)	14,14,19	1.05	1 (7%)

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
3	CLR	A	1204	-	-	0/10/68/68	0/4/4/4
4	OLA	A	1226	-	-	8/17/17/17	-
4	OLA	A	1214	-	-	6/10/10/17	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	OLA	A	1227	-	-	11/17/17/17	-
4	OLA	A	1230	-	-	4/6/6/17	-
4	OLA	A	1212	-	-	6/13/13/17	-
4	OLA	A	1228	-	-	5/9/9/17	-
4	OLA	A	1205	-	-	7/14/14/17	-
4	OLA	A	1222	-	-	3/5/5/17	-
4	OLA	A	1216	-	-	5/7/7/17	-
4	OLA	A	1225	-	-	8/12/12/17	-
4	OLA	A	1206	-	-	9/17/17/17	-
3	CLR	A	1203	-	-	0/10/68/68	0/4/4/4
4	OLA	A	1210	-	-	12/17/17/17	-
4	OLA	A	1208	-	-	8/14/14/17	-
4	OLA	A	1218	-	-	6/9/9/17	-
4	OLA	A	1217	-	-	9/16/16/17	-
4	OLA	A	1220	-	-	3/9/9/17	-
4	OLA	A	1229	-	-	4/7/7/17	-
4	OLA	A	1221	-	-	9/15/15/17	-
3	CLR	A	1202	-	-	0/10/68/68	0/4/4/4
4	OLA	A	1213	-	-	3/10/10/17	-
4	OLA	A	1219	-	-	10/17/17/17	-
4	OLA	A	1211	-	-	4/10/10/17	-
2	A1H3H	A	1201	-	-	0/9/11/11	0/3/3/3
4	OLA	A	1223	-	-	3/12/12/17	-
4	OLA	A	1224	-	-	7/10/10/17	-
4	OLA	A	1209	-	-	3/7/7/17	-
4	OLA	A	1215	-	-	9/10/10/17	-
4	OLA	A	1207	-	-	5/12/12/17	-

The worst 5 of 23 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1209	OLA	C9-C10	2.80	1.47	1.28
4	A	1228	OLA	C10-C9	2.79	1.47	1.28
4	A	1218	OLA	C10-C9	2.76	1.47	1.28
4	A	1223	OLA	C10-C9	2.75	1.47	1.31
4	A	1219	OLA	C10-C9	2.73	1.47	1.31

The worst 5 of 23 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1201	A1H3H	C6-N2-C8	-3.39	106.31	109.81
2	A	1201	A1H3H	C6-C19-N	-2.33	111.67	113.58
4	A	1210	OLA	C3-C2-C1	-2.26	108.79	114.47
2	A	1201	A1H3H	C7-N2-C6	2.18	126.88	124.49
4	A	1225	OLA	C3-C2-C1	-2.13	109.11	114.47

There are no chirality outliers.

5 of 167 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1226	OLA	C11-C10-C9-C8
4	A	1229	OLA	C9-C10-C11-C12
4	A	1225	OLA	C11-C10-C9-C8
4	A	1208	OLA	C1-C2-C3-C4
4	A	1221	OLA	C1-C2-C3-C4

There are no ring outliers.

15 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1204	CLR	1	0
4	A	1226	OLA	2	0
4	A	1227	OLA	1	0
4	A	1228	OLA	1	0
4	A	1205	OLA	1	0
4	A	1206	OLA	1	0
3	A	1203	CLR	1	0
4	A	1210	OLA	2	0
4	A	1208	OLA	1	0
4	A	1217	OLA	2	0
4	A	1220	OLA	1	0
3	A	1202	CLR	1	0
4	A	1213	OLA	1	0
4	A	1219	OLA	1	0
4	A	1209	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 1230	
Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1212	
Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1228	
Bond lengths	Bond angles
Torsions	Rings

Ligand OLA A 1205

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1222

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1216

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1225

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1206

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1210

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1208

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 1220

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1229

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1221

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1213

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1219

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1211

Bond lengths

Bond angles

Torsions

Rings

Ligand A1H3H A 1201

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1223

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1224

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1209

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1215

Bond lengths

Bond angles

Torsions

Rings

Ligand OLA A 1207

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	384/449 (85%)	0.36	31 (8%)	19	21	12, 36, 77, 102	10 (2%)

The worst 5 of 31 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	29[A]	TRP	5.1
1	A	1061	PHE	5.0
1	A	290	TYR	3.4
1	A	1021	ASP	3.2
1	A	1101	TYR	3.0

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	1226	20/20	0.66	0.23	50,69,81,87	0
4	OLA	A	1230	9/20	0.68	0.26	51,62,65,70	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
4	OLA	A	1220	12/20	0.73	0.22	42,59,70,72	0
4	OLA	A	1225	15/20	0.73	0.22	48,67,82,83	0
4	OLA	A	1214	13/20	0.74	0.18	55,63,74,81	0
4	OLA	A	1221	18/20	0.75	0.21	54,65,78,81	0
4	OLA	A	1229	10/20	0.76	0.20	47,68,72,74	0
4	OLA	A	1215	13/20	0.76	0.18	48,57,71,83	0
4	OLA	A	1212	16/20	0.77	0.20	44,59,77,79	0
4	OLA	A	1227	20/20	0.78	0.19	39,69,75,78	0
4	OLA	A	1219	20/20	0.79	0.17	45,61,79,80	0
4	OLA	A	1223	15/20	0.80	0.17	47,55,64,68	0
4	OLA	A	1213	13/20	0.80	0.17	55,69,80,82	0
4	OLA	A	1224	13/20	0.81	0.14	45,50,66,75	0
4	OLA	A	1218	12/20	0.81	0.18	44,57,76,80	0
4	OLA	A	1217	19/20	0.82	0.16	46,60,73,77	0
4	OLA	A	1207	15/20	0.82	0.19	35,49,68,74	0
4	OLA	A	1222	8/20	0.83	0.15	41,52,65,71	0
4	OLA	A	1209	10/20	0.83	0.17	39,45,54,56	0
4	OLA	A	1216	10/20	0.84	0.17	45,56,69,80	0
4	OLA	A	1205	17/20	0.85	0.18	31,45,70,73	0
4	OLA	A	1206	20/20	0.85	0.19	34,49,78,80	0
4	OLA	A	1208	17/20	0.87	0.14	41,44,80,80	0
4	OLA	A	1211	13/20	0.87	0.13	44,54,65,69	0
4	OLA	A	1210	20/20	0.88	0.14	37,55,70,75	0
4	OLA	A	1228	12/20	0.88	0.14	37,44,55,66	0
5	NA	A	1231	1/1	0.93	0.14	43,43,43,43	0
3	CLR	A	1204	28/28	0.94	0.08	23,29,53,61	0
3	CLR	A	1202	28/28	0.94	0.09	22,27,57,69	0
2	A1H3H	A	1201	27/27	0.95	0.08	20,27,51,66	0
3	CLR	A	1203	28/28	0.96	0.07	24,31,42,49	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.
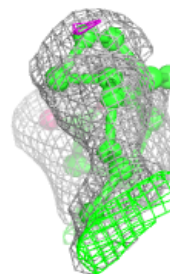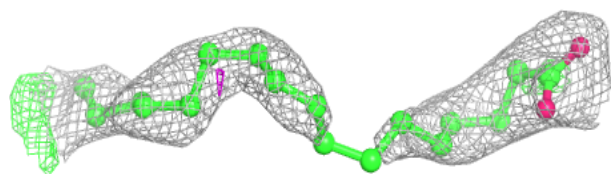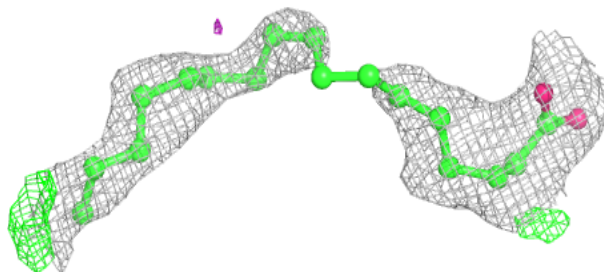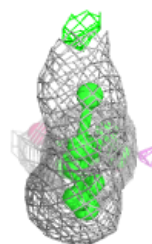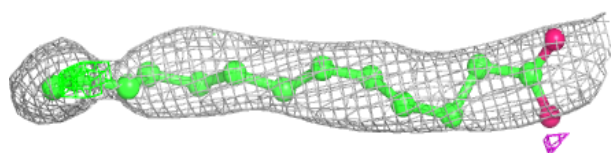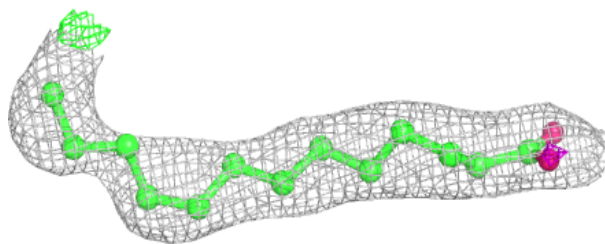
Electron density around OLA A 1226:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
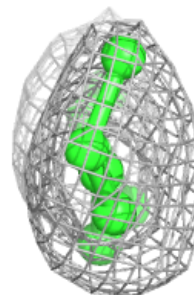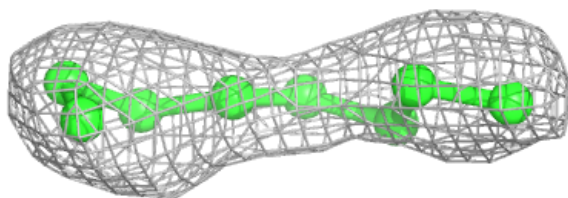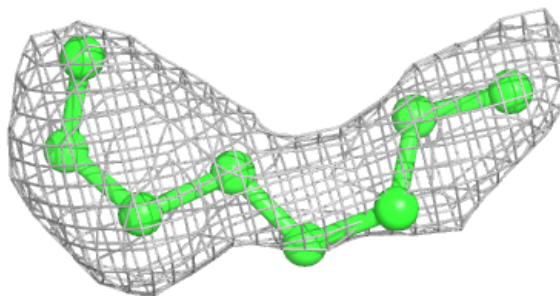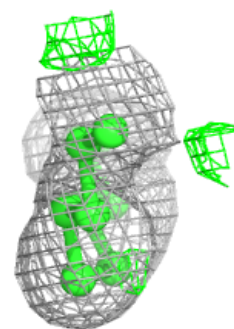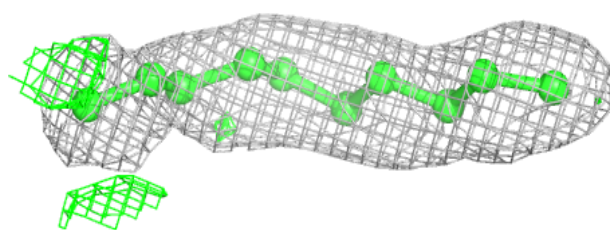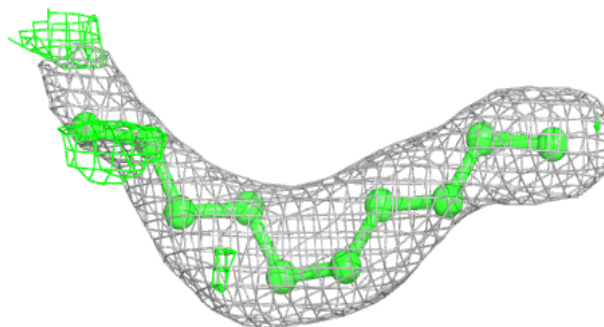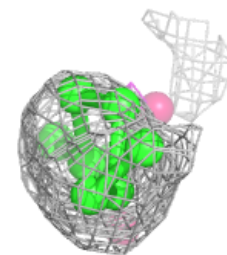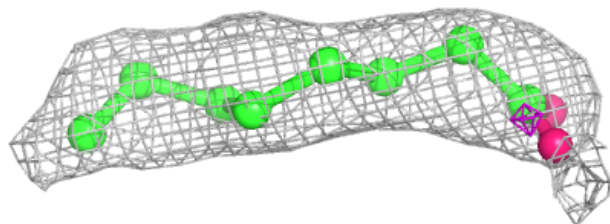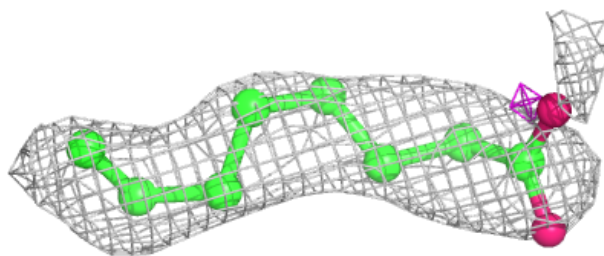and green (positive)
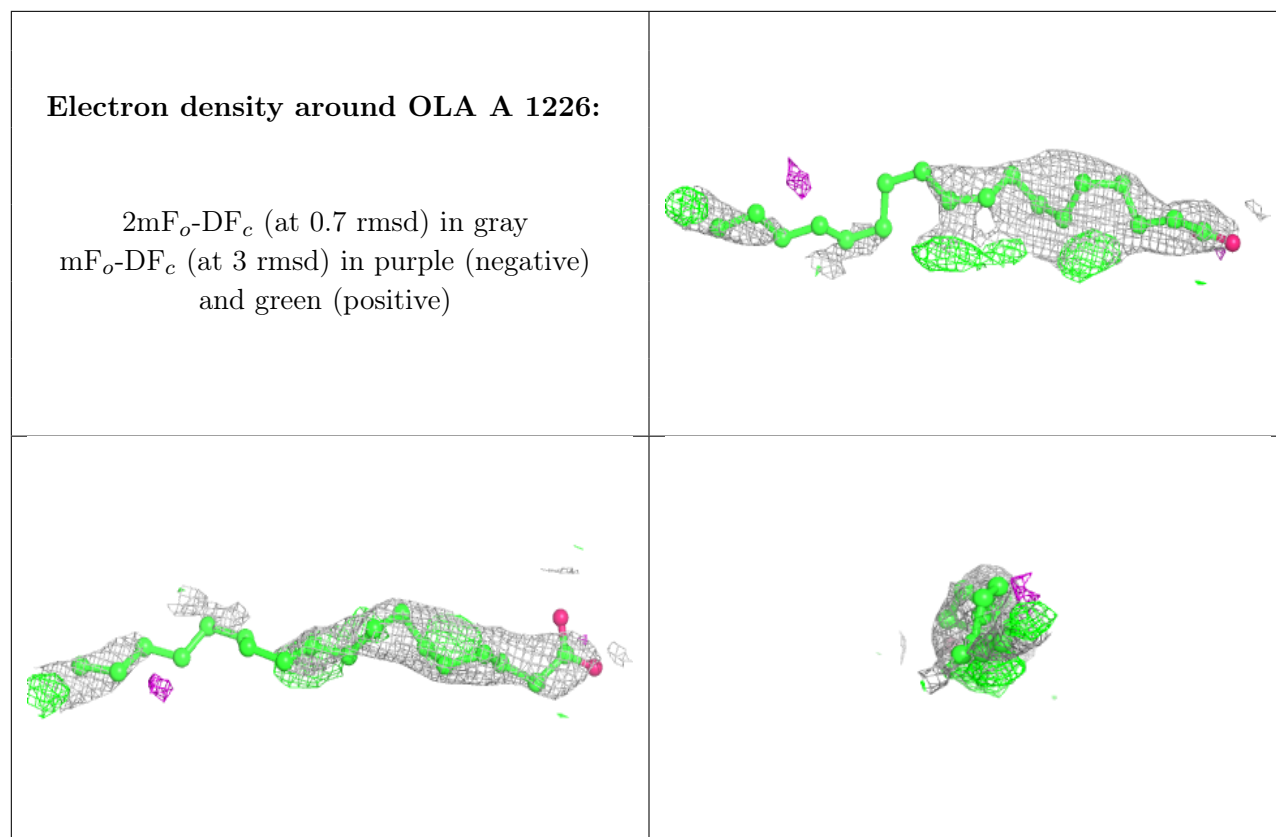
Electron density around OLA A 1230:

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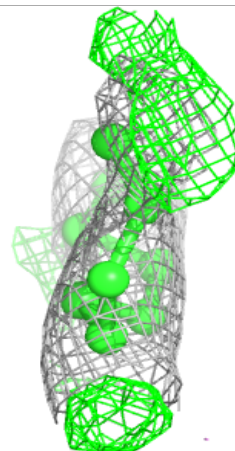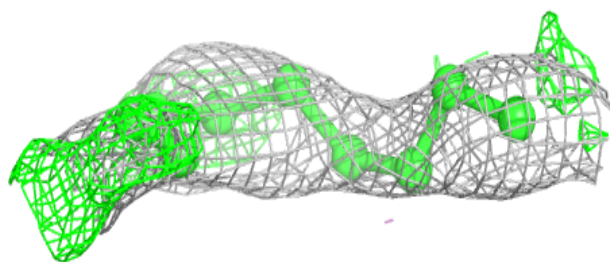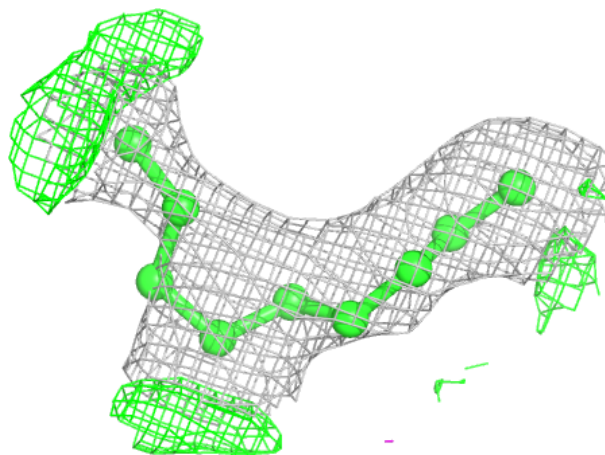
Electron density around OLA A 1220:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
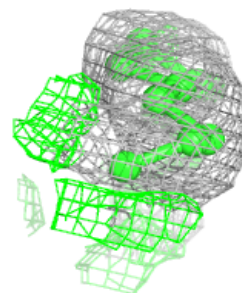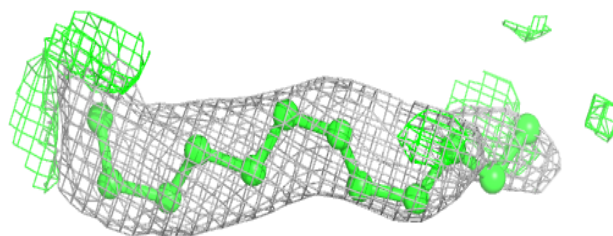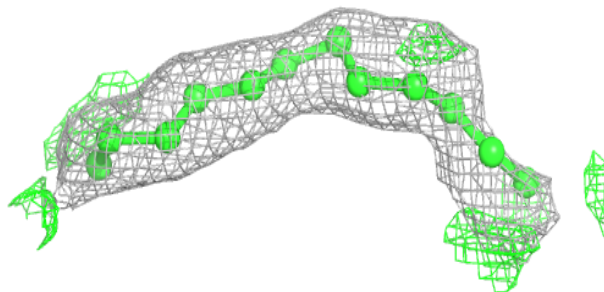
Electron density around OLA A 1225:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
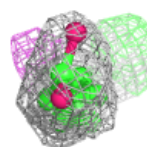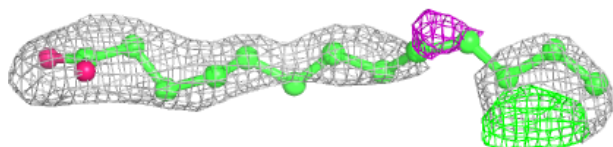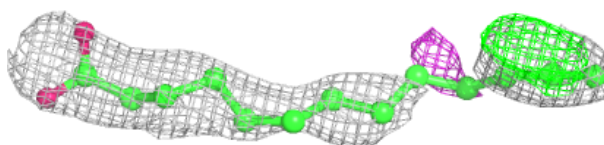
Electron density around OLA A 1214:
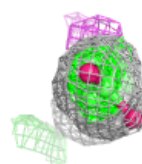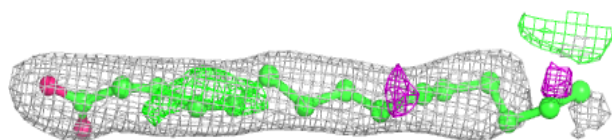
$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
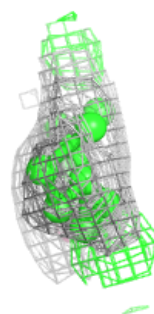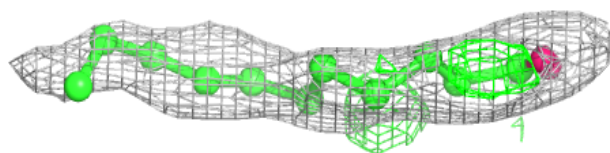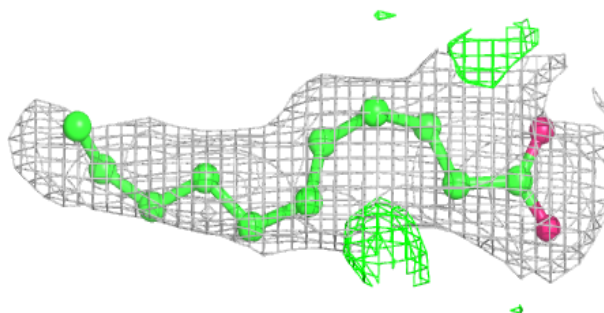
Electron density around OLA A 1221:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
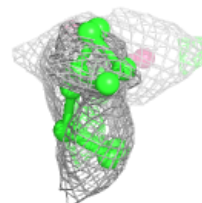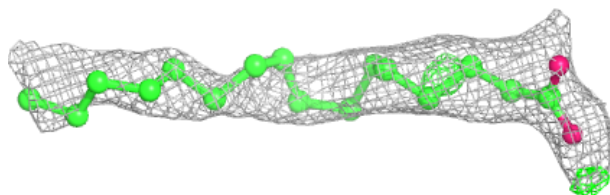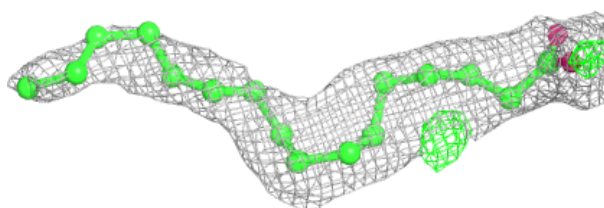
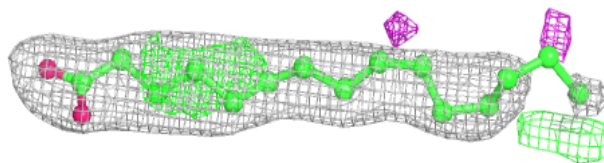**Electron density around OLA A 1229:**

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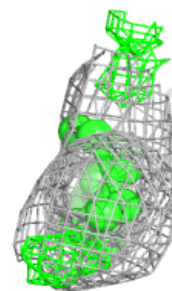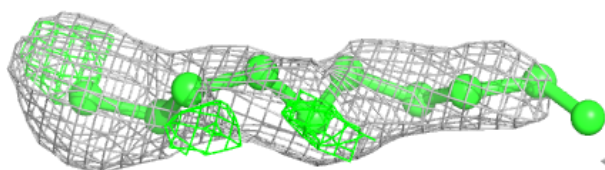
Electron density around OLA A 1215:

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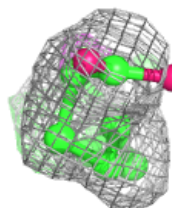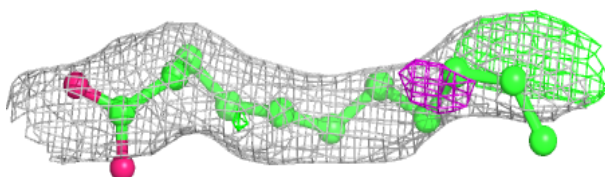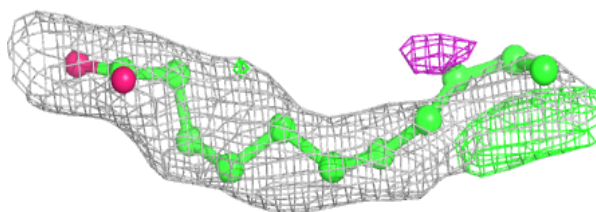
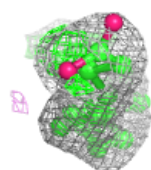**Electron density around OLA A 1212:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
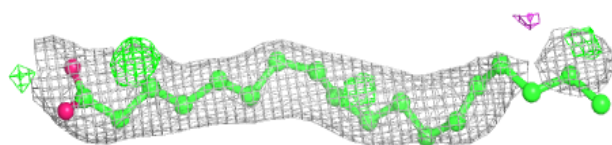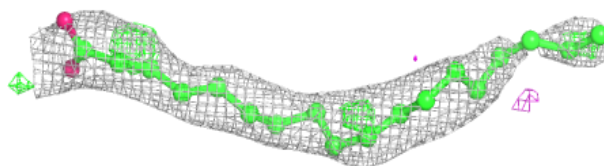and green (positive)
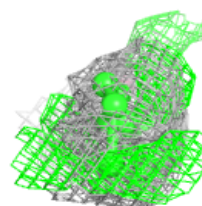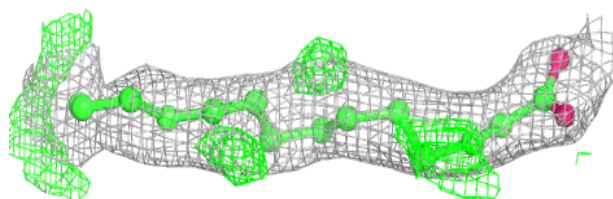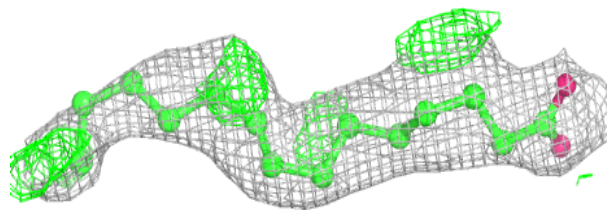
Electron density around OLA A 1227:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
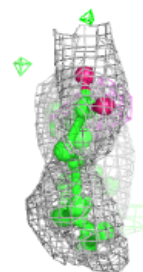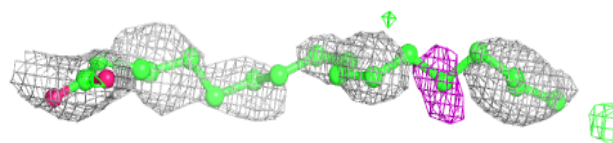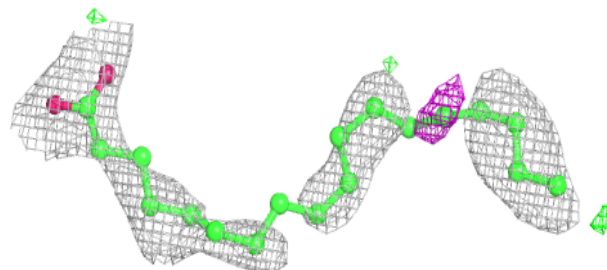
Electron density around OLA A 1219:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
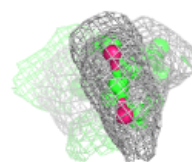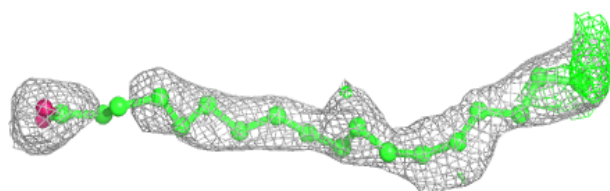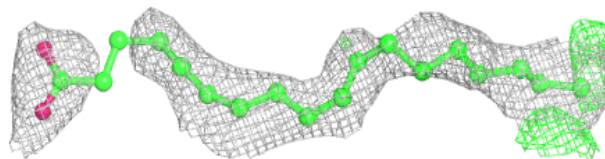
Electron density around OLA A 1223:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
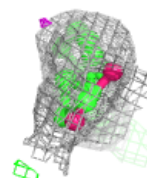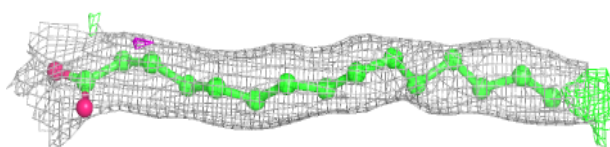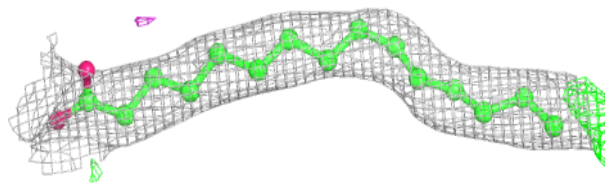and green (positive)
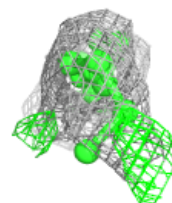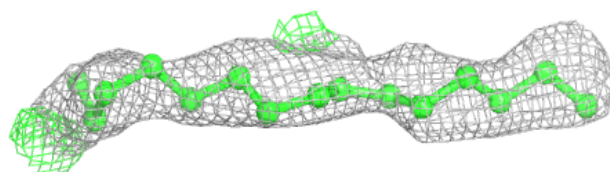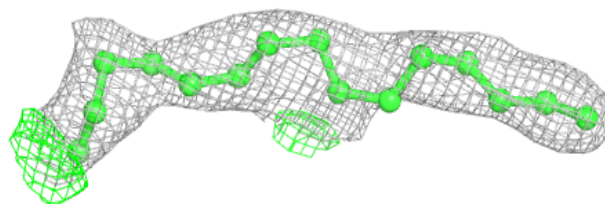
Electron density around OLA A 1213:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
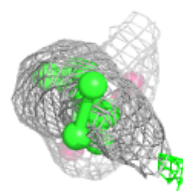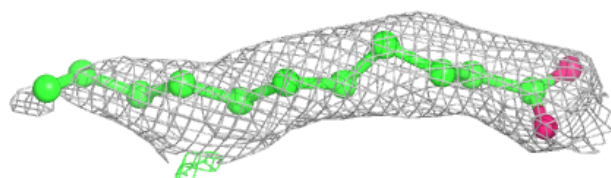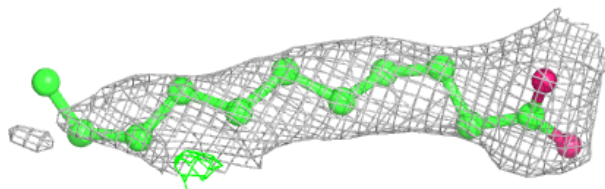
Electron density around OLA A 1224:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
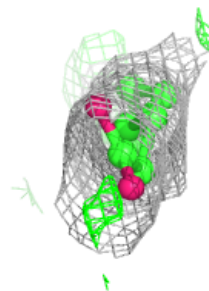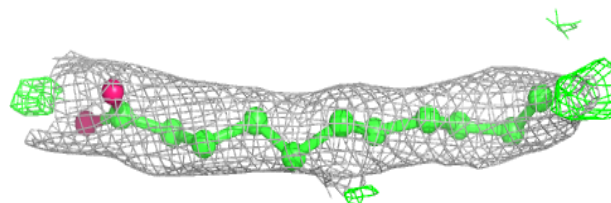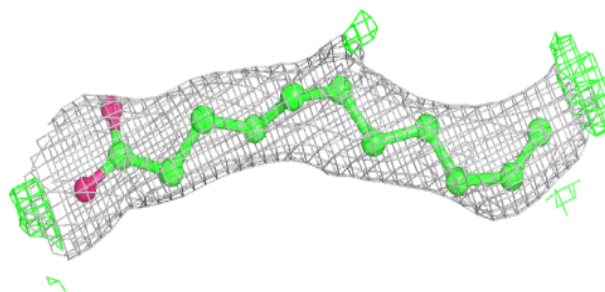
Electron density around OLA A 1218:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
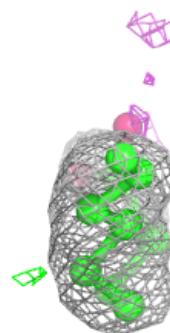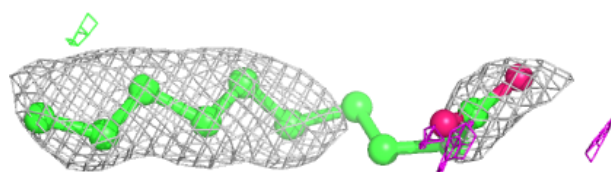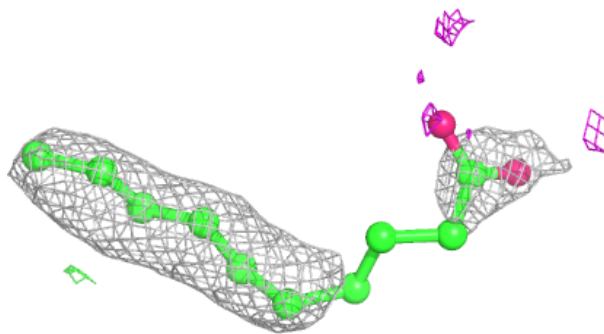
Electron density around OLA A 1217:

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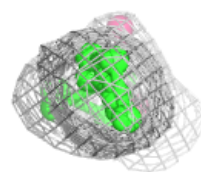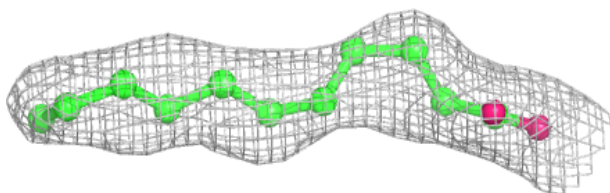$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
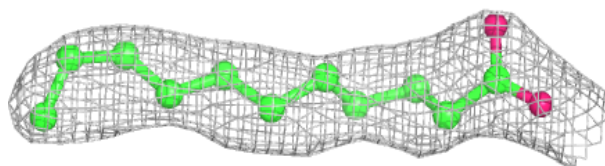and green (positive)

Electron density around OLA A 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 1222:

$2mF_o$-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)
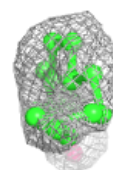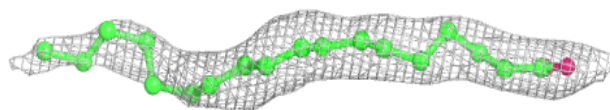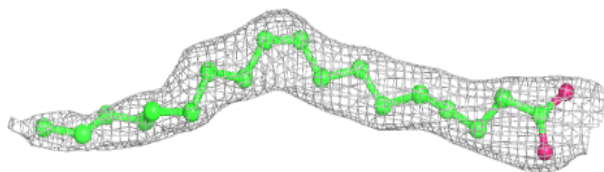and green (positive)

Electron density around OLA A 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 OLA A 1205:

$2mF_o\text{-}DF_c$ (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 1206:

$2mF_o\text{-}DF_c$ (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 1208:

$2mF_o\text{-}DF_c$ (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 1211:

$2mF_o\text{-}DF_c$ (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$_o$-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 1228:
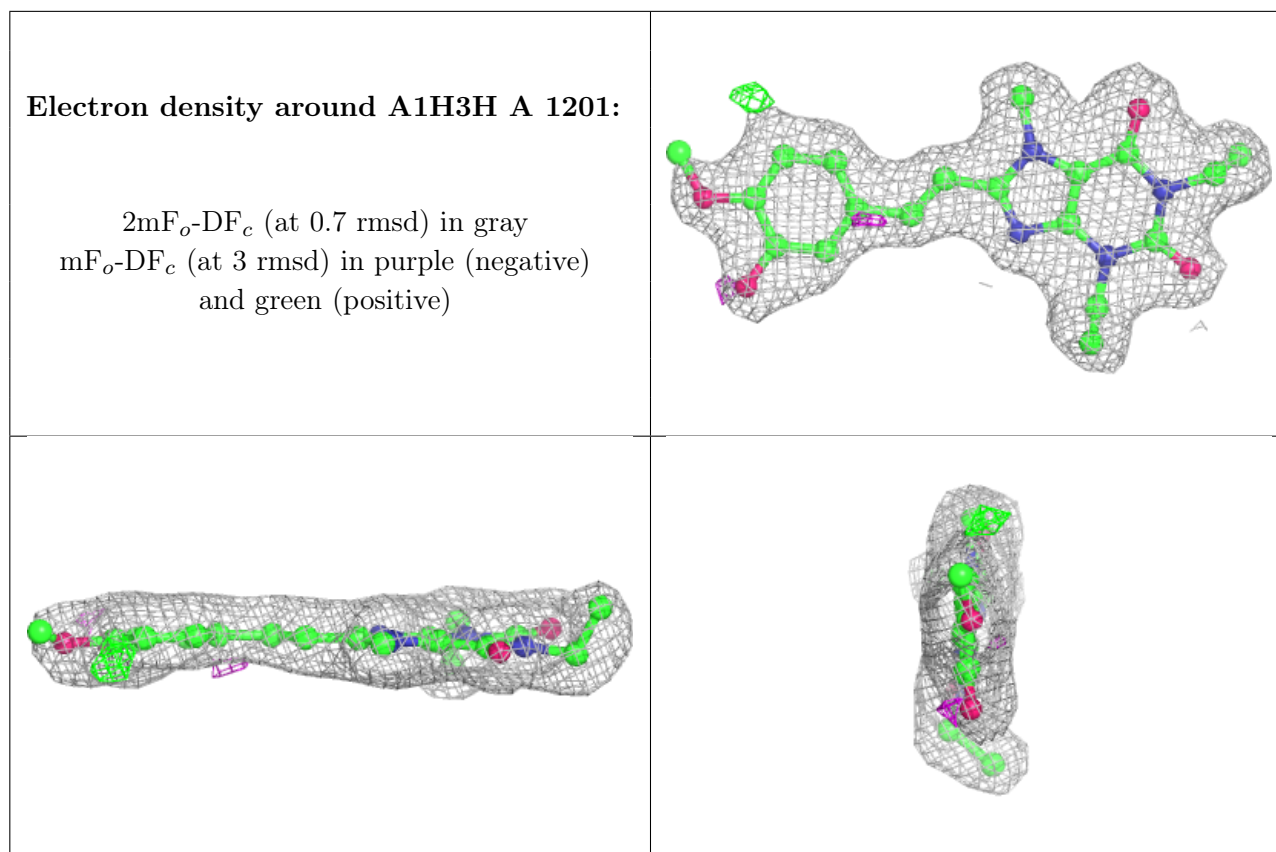
2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around A1H3H 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)
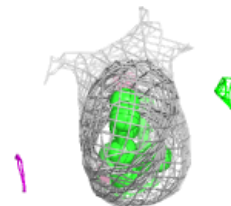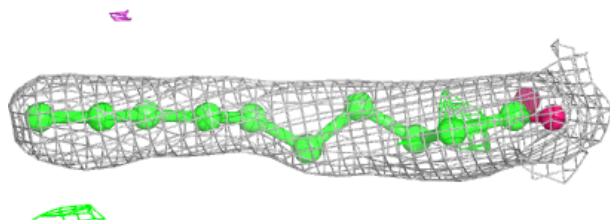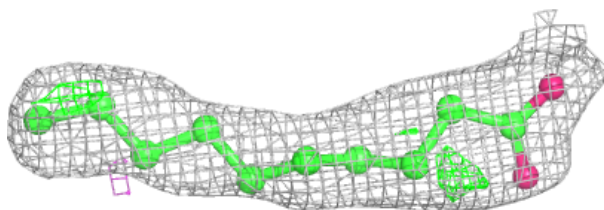
6.5 Other polymers (i)

There are no such residues in this entry.