Full wwPDB X-ray Structure Validation Report (i)

Jan 14, 2024 – 03:11 am GMT

PDB ID	:	6RF9
Title	:	Crystal structure of the Y154F mutant of the light-driven sodium pump KR2 in the monomeric form, pH 8.0
Authors	:	Kovalev, K.; Polovinkin, V.; Gushchin, I.; Borshchevskiy, V.; Gordeliy, V.
Deposited on	:	2019-04-12
Resolution	:	1.80 Å(reported)

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

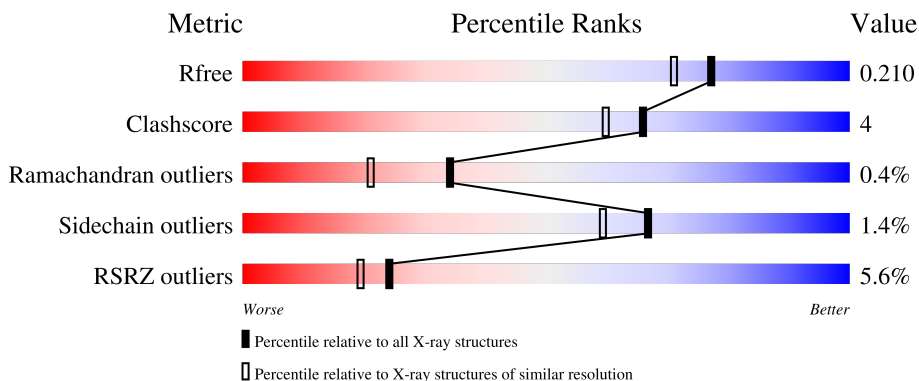|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1   Overall quality at a glance ⓘ

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

The reported resolution of this entry is 1.80 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		0.210
Clashscore		4
Ramachandran outliers		0.4%
Sidechain outliers		1.4%
RSRZ outliers		5.6%

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}	130704	5950 (1.80-1.80)
Clashscore	141614	6793 (1.80-1.80)
Ramachandran outliers	138981	6697 (1.80-1.80)
Sidechain outliers	138945	6696 (1.80-1.80)
RSRZ outliers	127900	5850 (1.80-1.80)

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	288	5% 86% 7% 6%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	A	315	-	-	-	X

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 2519 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 Sodium pumping rhodopsin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	270	2239	1509	334	384	12	0	18	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	154	PHE	TYR	engineered mutation	UNP N0DKS8
A	281	LEU	-	expression tag	UNP N0DKS8
A	282	GLU	-	expression tag	UNP N0DKS8
A	283	HIS	-	expression tag	UNP N0DKS8
A	284	HIS	-	expression tag	UNP N0DKS8
A	285	HIS	-	expression tag	UNP N0DKS8
A	286	HIS	-	expression tag	UNP N0DKS8
A	287	HIS	-	expression tag	UNP N0DKS8
A	288	HIS	-	expression tag	UNP N0DKS8

- Molecule 2 is EICOSANE (three-letter code: LFA) (formula: $C_{20}H_{42}$).
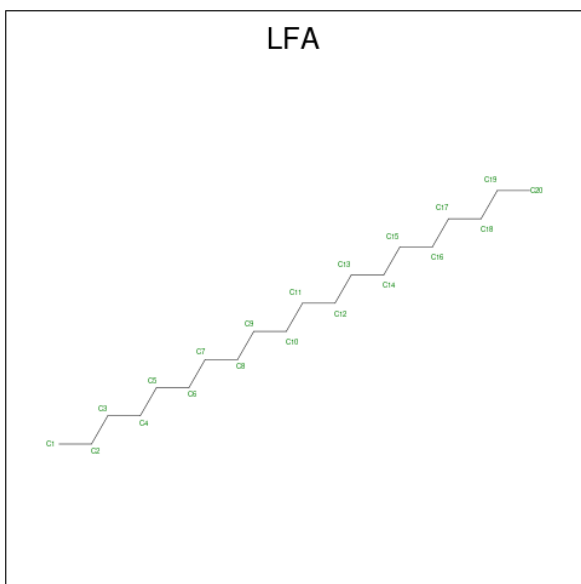
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 6	C 6	0	0
2	A	1	Total 10	C 10	0	0
2	A	1	Total 11	C 11	0	0
2	A	1	Total 6	C 6	0	0
2	A	1	Total 11	C 11	0	0
2	A	1	Total 4	C 4	0	0
2	A	1	Total 14	C 14	0	0
2	A	1	Total 6	C 6	0	0
2	A	1	Total 7	C 7	0	0
2	A	1	Total 6	C 6	0	0
2	A	1	Total 6	C 6	0	0
2	A	1	Total 9	C 9	0	0
2	A	1	Total 10	C 10	0	0
2	A	1	Total 3	C 3	0	0
2	A	1	Total 3	C 3	0	0
2	A	1	Total 11	C 11	0	0
2	A	1	Total 10	C 10	0	0
2	A	1	Total 11	C 11	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1   C2

HO

O1

OH

O2

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 6	C 3	O 3	0	0

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

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

- Molecule 5 is RETINAL (three-letter code: RET) (formula: $C_{20}H_{28}O$).

W O R L D W I D E

PDB
PROTEIN DATA BANK

RET
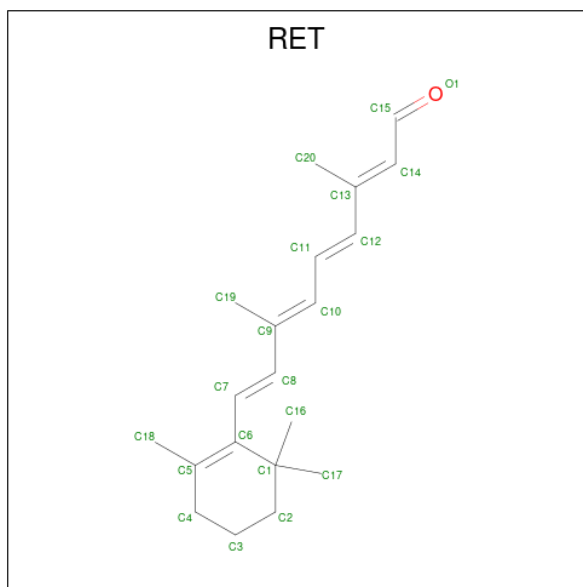
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total 20	C 20	0	0

• Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	97	Total 97	O 97	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: Sodium pumping rhodopsin

Chain A:
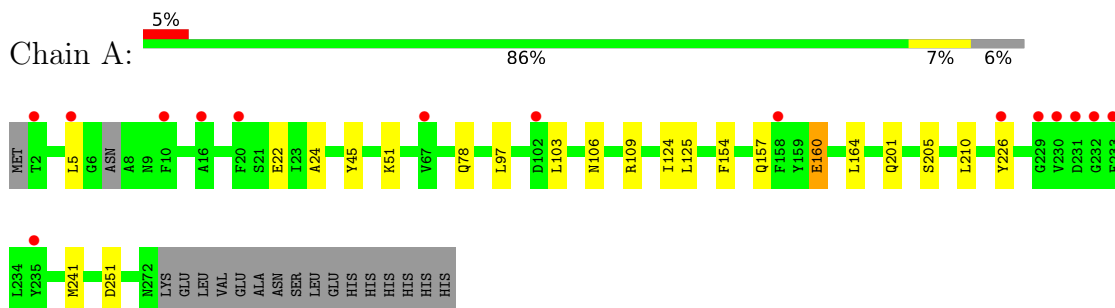
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	40.47Å 81.85Å 233.57Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.94 – 1.80 40.93 – 1.80	Depositor EDS
% Data completeness (in resolution range)	99.4 (19.94-1.80) 99.4 (40.93-1.80)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.51 (at 1.79Å)	Xtriage
Refinement program	PHENIX 1.13_2998: ???, REFMAC	Depositor
R, R_{free}	0.163 , 0.203 0.175 , 0.210	Depositor DCC
R_{free} test set	1772 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å^2)	26.5	Xtriage
Anisotropy	0.653	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 74.9	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	2519	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.08% 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 (i)

5.1   Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: LFA, NA, GOL, RET

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	0.30	0/2344	0.45	0/3185

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	2239	0	2231	16	0
2	A	144	0	267	5	0
3	A	18	0	18	2	0
4	A	1	0	0	0	0
5	A	20	0	27	1	0
6	A	97	0	0	6	0
All	All	2519	0	2543	20	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 4.

All (20) 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:78[B]:GLN:NE2	6:A:401:HOH:O	2.22	0.71
1:A:201:GLN:HB3	3:A:316:GOL:H31	1.73	0.71
1:A:109[B]:ARG:NH1	6:A:407:HOH:O	2.28	0.66
1:A:109[A]:ARG:NH2	1:A:251:ASP:OD2	2.21	0.63
1:A:106:ASN:ND2	6:A:404:HOH:O	2.26	0.61
5:A:324:RET:H171	5:A:324:RET:H8	1.83	0.59
1:A:5:LEU:HB3	1:A:97:LEU:HD23	1.85	0.59
2:A:309:LFA:H32	2:A:314:LFA:H91	1.85	0.58
1:A:154:PHE:O	1:A:157:GLN:HG3	2.10	0.52
1:A:125:LEU:HD23	6:A:441:HOH:O	2.09	0.52
1:A:160:GLU:HG3	1:A:226[A]:TYR:OH	2.16	0.46
2:A:322:LFA:H72	2:A:322:LFA:H101	1.72	0.45
1:A:124:ILE:HG23	6:A:441:HOH:O	2.17	0.45
1:A:205:SER:OG	3:A:316:GOL:H32	2.18	0.43
2:A:322:LFA:H51	2:A:322:LFA:H82	1.75	0.42
1:A:24:ALA:HA	1:A:241[B]:MET:SD	2.60	0.41
1:A:45:TYR:CE1	2:A:302:LFA:H162	2.56	0.41
1:A:51:LYS:HB2	6:A:424:HOH:O	2.20	0.41
1:A:109[B]:ARG:NH2	1:A:251:ASP:OD2	2.52	0.40
1:A:210:LEU:HD12	2:A:314:LFA:H41	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	284/288 (99%)	279 (98%)	4 (1%)	1 (0%)	34	21

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	103	LEU

5.3.2 Protein sidechains (i)

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

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	238/248 (96%)	235 (99%)	3 (1%)	69	62

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

Mol	Chain	Res	Type
1	A	22	GLU
1	A	160	GLU
1	A	164	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 24 ligands modelled in this entry, 1 is monoatomic - leaving 23 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond

length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	LFA	A	313	-	8,8,19	0.12	0	7,7,18	0.75	0
2	LFA	A	301	-	5,5,19	0.14	0	4,4,18	0.58	0
2	LFA	A	318	-	2,2,19	0.10	0	0,1,18	-	-
2	LFA	A	312	-	5,5,19	0.15	0	4,4,18	0.56	0
2	LFA	A	311	-	5,5,19	0.15	0	4,4,18	0.54	0
2	LFA	A	317	-	2,2,19	0.10	0	0,1,18	-	-
2	LFA	A	303	-	10,10,19	0.12	0	9,9,18	0.71	0
2	LFA	A	305	-	10,10,19	0.11	0	9,9,18	0.87	0
2	LFA	A	302	-	9,9,19	0.12	0	8,8,18	0.72	0
2	LFA	A	304	-	5,5,19	0.15	0	4,4,18	0.59	0
3	GOL	A	316	-	3,3,5	0.70	0	2,2,5	0.41	0
3	GOL	A	315	-	3,3,5	0.72	0	2,2,5	0.51	0
2	LFA	A	321	-	9,9,19	0.12	0	8,8,18	0.73	0
2	LFA	A	319	-	10,10,19	0.11	0	9,9,18	0.80	0
3	GOL	A	320	-	5,5,5	0.93	0	5,5,5	1.02	0
2	LFA	A	314	-	9,9,19	0.12	0	8,8,18	0.77	0
2	LFA	A	322	-	10,10,19	0.11	0	9,9,18	0.82	0
5	RET	A	324	1	20,20,21	0.56	0	27,27,28	0.81	1 (3%)
2	LFA	A	307	-	13,13,19	0.10	0	12,12,18	0.86	0
2	LFA	A	306	-	3,3,19	0.27	0	2,2,18	0.74	0
2	LFA	A	308	-	5,5,19	0.15	0	4,4,18	0.59	0
2	LFA	A	309	-	6,6,19	0.15	0	5,5,18	0.65	0
3	GOL	A	310	-	3,3,5	0.69	0	2,2,5	0.51	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.

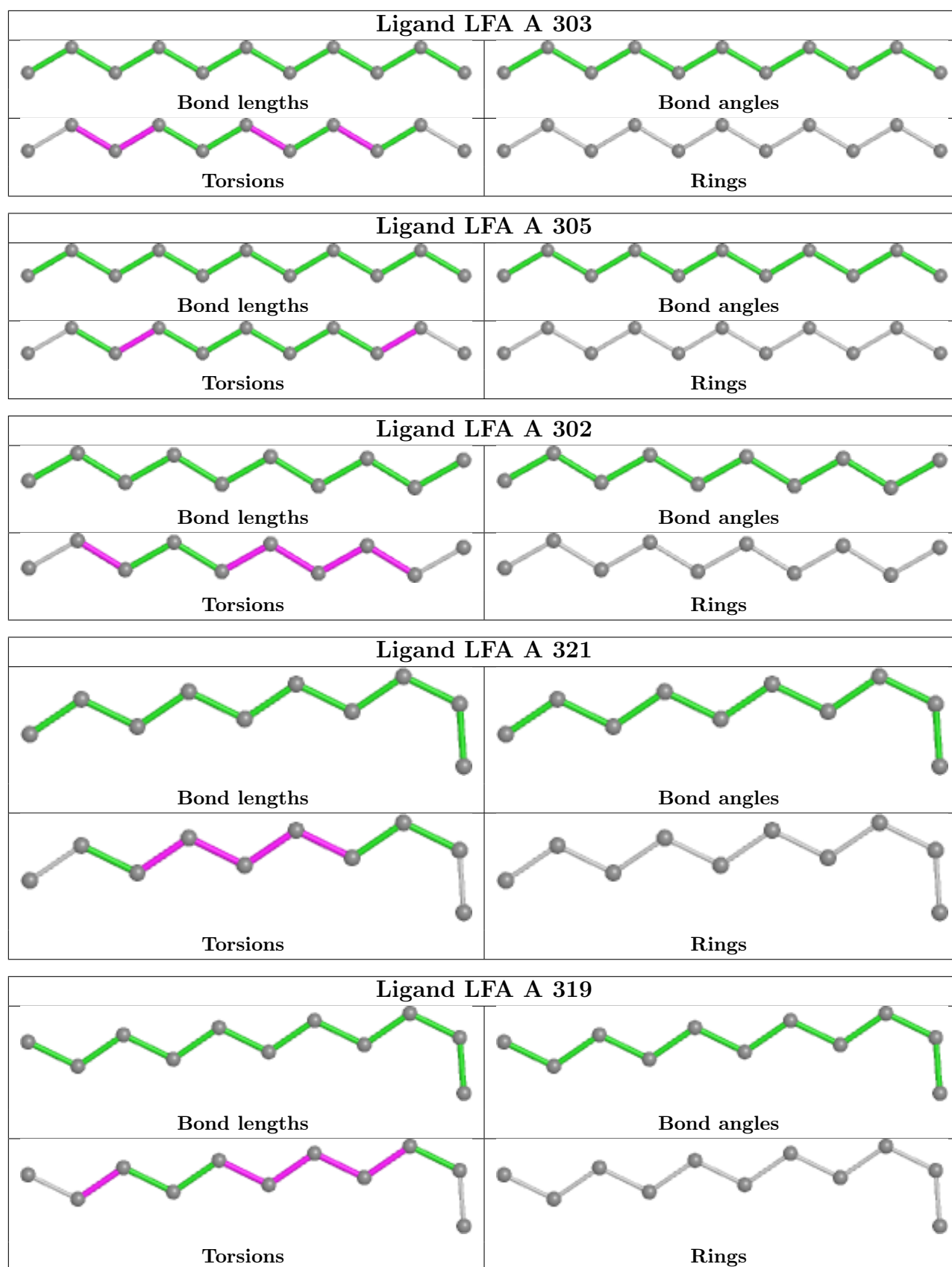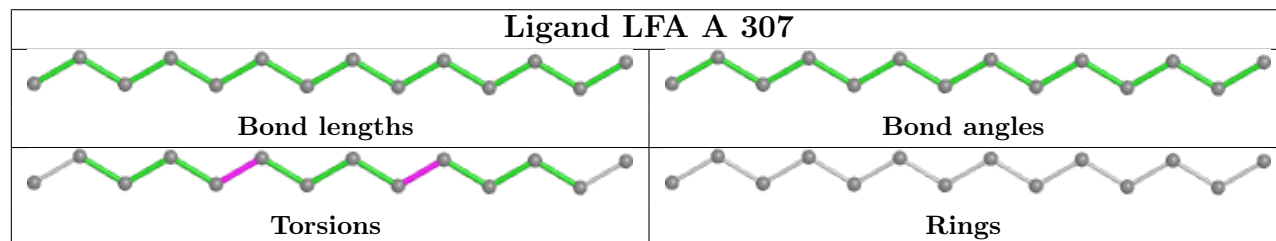| Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	LFA	A	313	-	-	0/6/6/17	-
2	LFA	A	301	-	-	1/3/3/17	-
2	LFA	A	312	-	-	0/3/3/17	-
2	LFA	A	311	-	-	1/3/3/17	-
2	LFA	A	303	-	-	4/8/8/17	-
2	LFA	A	305	-	-	2/8/8/17	-
2	LFA	A	302	-	-	5/7/7/17	-
2	LFA	A	304	-	-	0/3/3/17	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	316	-	-	1/1/1/4	-
3	GOL	A	315	-	-	0/1/1/4	-
2	LFA	A	321	-	-	4/7/7/17	-
2	LFA	A	319	-	-	5/8/8/17	-
3	GOL	A	320	-	-	4/4/4/4	-
2	LFA	A	314	-	-	4/7/7/17	-
2	LFA	A	322	-	-	5/8/8/17	-
5	RET	A	324	1	-	6/13/30/31	0/1/1/1
2	LFA	A	307	-	-	2/11/11/17	-
2	LFA	A	306	-	-	0/1/1/17	-
2	LFA	A	308	-	-	1/3/3/17	-
2	LFA	A	309	-	-	2/4/4/17	-
3	GOL	A	310	-	-	1/1/1/4	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	324	RET	C8-C9-C10	-2.24	115.50	118.94

There are no chirality outliers.

All (48) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	320	GOL	O1-C1-C2-C3
3	A	320	GOL	C1-C2-C3-O3
3	A	320	GOL	O2-C2-C3-O3
5	A	324	RET	C7-C8-C9-C19
5	A	324	RET	C20-C13-C14-C15
3	A	320	GOL	O1-C1-C2-O2
2	A	322	LFA	C3-C4-C5-C6
2	A	307	LFA	C10-C11-C12-C13
2	A	309	LFA	C2-C3-C4-C5
2	A	309	LFA	C3-C4-C5-C6
2	A	303	LFA	C13-C14-C15-C16
2	A	314	LFA	C3-C4-C5-C6
2	A	319	LFA	C5-C6-C7-C8
5	A	324	RET	C1-C6-C7-C8
5	A	324	RET	C5-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
3	A	310	GOL	O1-C1-C2-O2
2	A	321	LFA	C3-C4-C5-C6
2	A	321	LFA	C5-C6-C7-C8
2	A	319	LFA	C2-C3-C4-C5
5	A	324	RET	C7-C8-C9-C10
2	A	302	LFA	C11-C12-C13-C14
2	A	302	LFA	C17-C18-C19-C20
2	A	302	LFA	C13-C14-C15-C16
3	A	316	GOL	O2-C2-C3-O3
2	A	307	LFA	C14-C15-C16-C17
2	A	319	LFA	C3-C4-C5-C6
5	A	324	RET	C12-C13-C14-C15
2	A	302	LFA	C12-C13-C14-C15
2	A	305	LFA	C16-C17-C18-C19
2	A	301	LFA	C17-C18-C19-C20
2	A	321	LFA	C4-C5-C6-C7
2	A	302	LFA	C14-C15-C16-C17
2	A	314	LFA	C7-C8-C9-C10
2	A	319	LFA	C11-C10-C9-C8
2	A	319	LFA	C4-C5-C6-C7
2	A	311	LFA	C1-C2-C3-C4
2	A	308	LFA	C16-C17-C18-C19
2	A	321	LFA	C6-C7-C8-C9
2	A	305	LFA	C10-C11-C12-C13
2	A	314	LFA	C5-C6-C7-C8
2	A	322	LFA	C7-C8-C9-C10
2	A	314	LFA	C6-C7-C8-C9
2	A	322	LFA	C1-C2-C3-C4
2	A	322	LFA	C4-C5-C6-C7
2	A	322	LFA	C2-C3-C4-C5
2	A	303	LFA	C17-C18-C19-C20
2	A	303	LFA	C11-C12-C13-C14
2	A	303	LFA	C16-C17-C18-C19

There are no ring outliers.

6 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	302	LFA	1	0
3	A	316	GOL	2	0
2	A	314	LFA	2	0
2	A	322	LFA	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	324	RET	1	0
2	A	309	LFA	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 LFA A 301

Ligand LFA A 311

Ligand LFA A 303

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 305

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 302

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 321

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 319

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 314

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 322

Bond lengths

Bond angles

Torsions

Rings

Ligand RET A 324

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 307

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 308

Bond lengths

Bond angles

Torsions

Rings

Ligand LFA A 309

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	270/288 (93%)	0.44	15 (5%)	24	19	20, 29, 55, 82	2 (0%)

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	230	VAL	6.0
1	A	233	PHE	5.0
1	A	232	GLY	3.9
1	A	158[A]	PHE	3.6
1	A	235	TYR	3.6
1	A	5	LEU	3.4
1	A	10	PHE	3.1
1	A	229	GLY	3.0
1	A	20	PHE	2.8
1	A	231	ASP	2.6
1	A	102	ASP	2.4
1	A	2	THR	2.4
1	A	226[A]	TYR	2.3
1	A	16	ALA	2.2
1	A	67	VAL	2.1

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
3	GOL	A	320	6/6	0.51	0.26	58,59,63,64	0
2	LFA	A	314	10/20	0.55	0.34	58,62,65,65	0
2	LFA	A	303	11/20	0.72	0.20	48,52,63,63	0
2	LFA	A	319	11/20	0.73	0.27	50,53,57,59	0
2	LFA	A	321	10/20	0.75	0.31	52,54,56,58	0
2	LFA	A	322	11/20	0.76	0.23	52,54,57,58	0
2	LFA	A	309	7/20	0.79	0.13	57,58,60,60	0
3	GOL	A	315	4/6	0.80	0.55	67,68,70,71	0
2	LFA	A	311	6/20	0.81	0.21	62,63,66,67	0
2	LFA	A	313	9/20	0.81	0.23	57,62,63,63	0
2	LFA	A	312	6/20	0.83	0.13	56,57,58,60	0
2	LFA	A	318	3/20	0.84	0.23	55,55,55,57	0
2	LFA	A	302	10/20	0.84	0.19	41,46,53,56	0
2	LFA	A	307	14/20	0.85	0.15	49,53,56,59	0
2	LFA	A	301	6/20	0.86	0.18	34,35,38,38	6
2	LFA	A	305	11/20	0.86	0.11	56,58,59,60	0
2	LFA	A	304	6/20	0.87	0.13	43,45,46,47	0
2	LFA	A	317	3/20	0.87	0.19	55,55,56,56	0
5	RET	A	324	20/21	0.87	0.15	21,25,31,31	0
2	LFA	A	308	6/20	0.89	0.20	50,53,54,54	0
4	NA	A	323	1/1	0.92	0.11	37,37,37,37	0
2	LFA	A	306	4/20	0.92	0.16	45,46,48,50	0
3	GOL	A	316	4/6	0.93	0.09	59,59,60,61	0
3	GOL	A	310	4/6	0.95	0.08	62,64,64,66	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 LFA A 314:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
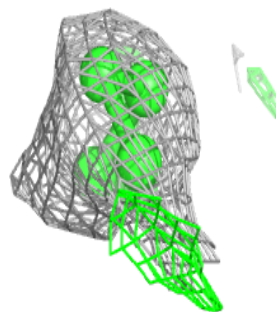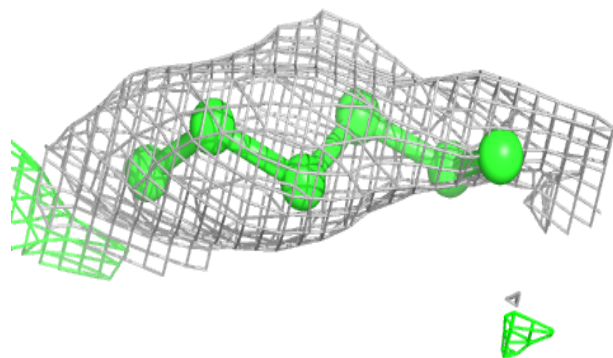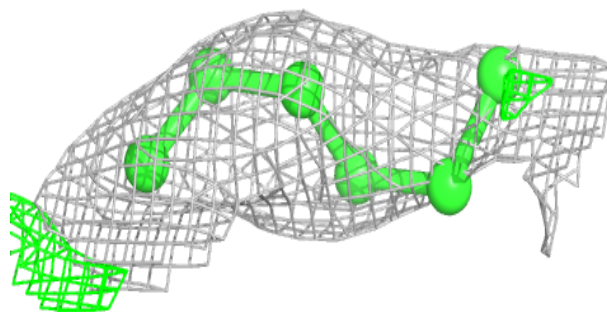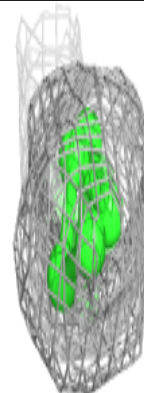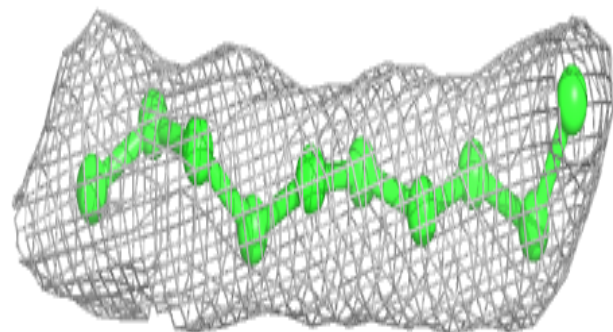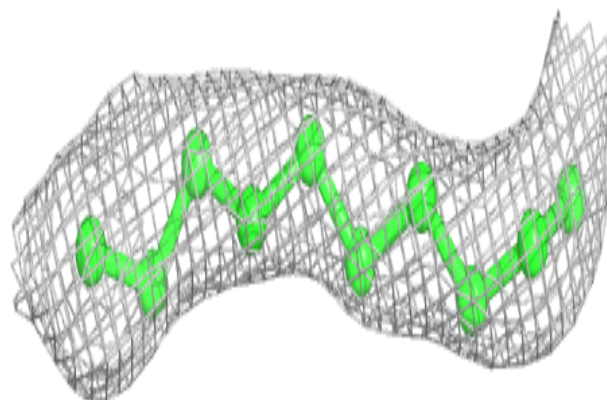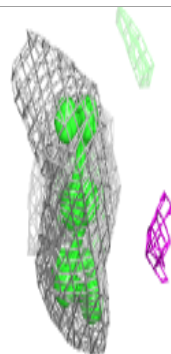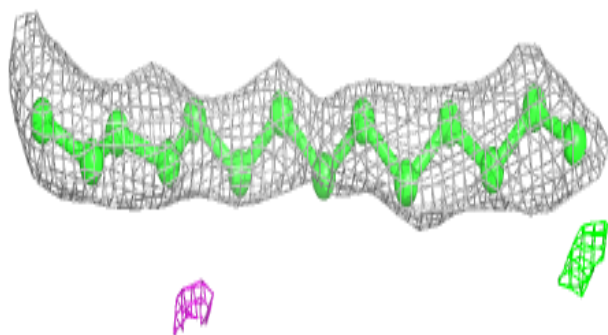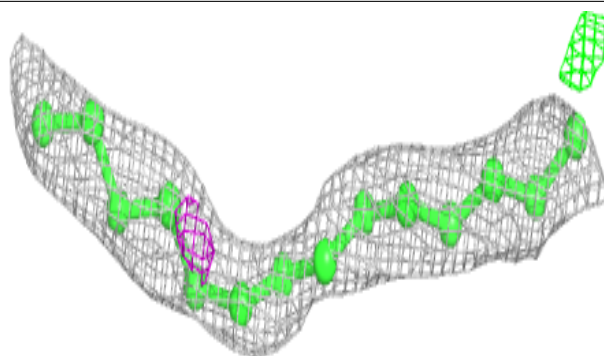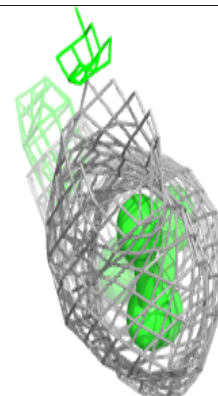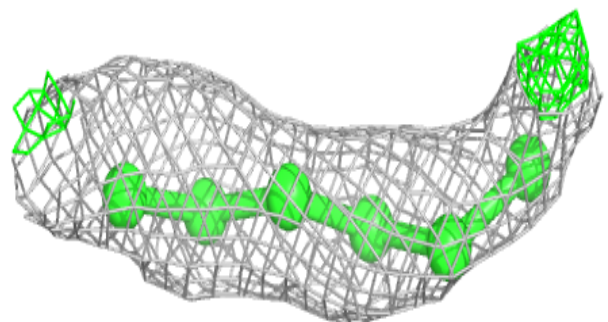mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
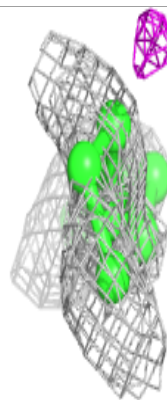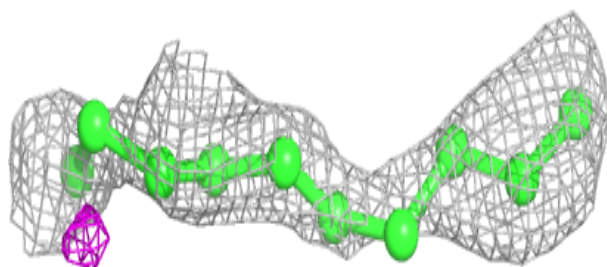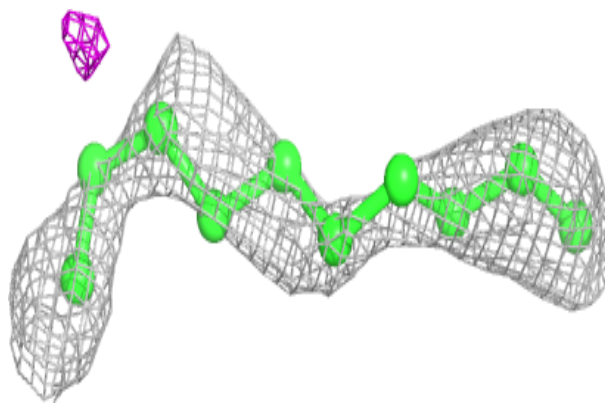
Electron density around LFA A 303:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
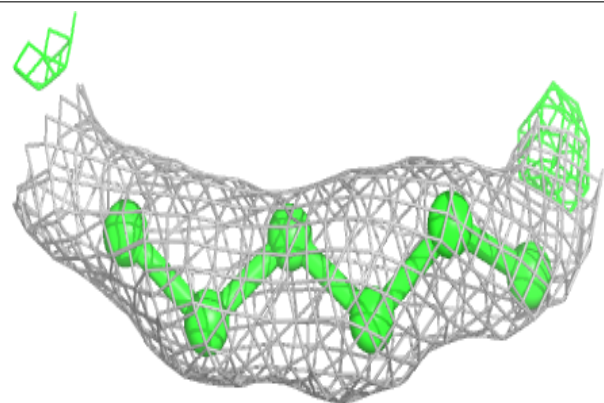mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
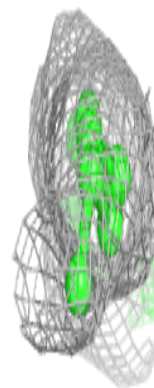and green (positive)
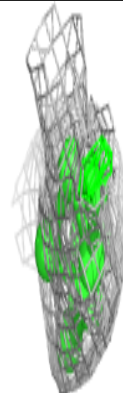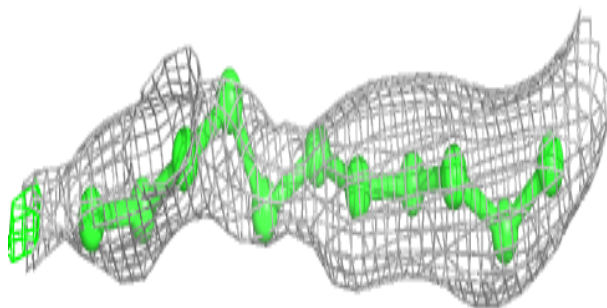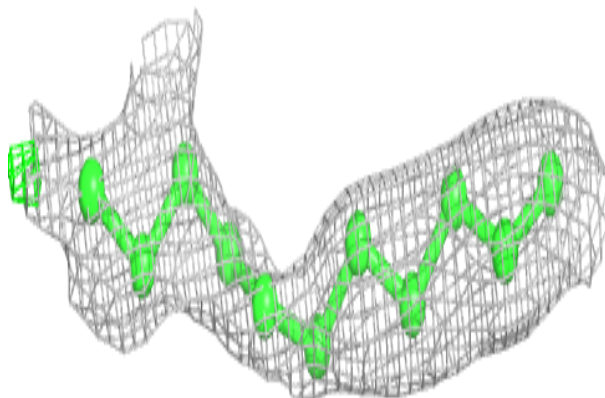
Electron density around LFA A 319:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
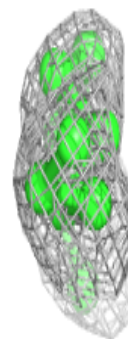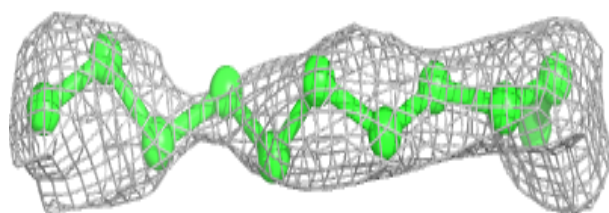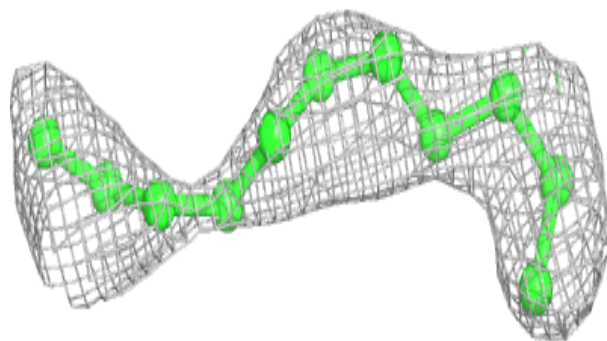
Electron density around LFA A 321:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
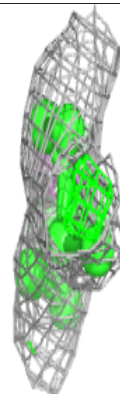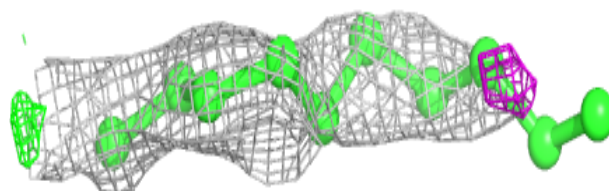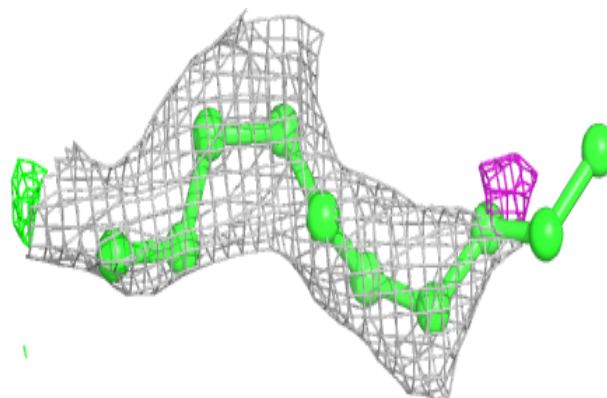
Electron density around LFA A 322:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
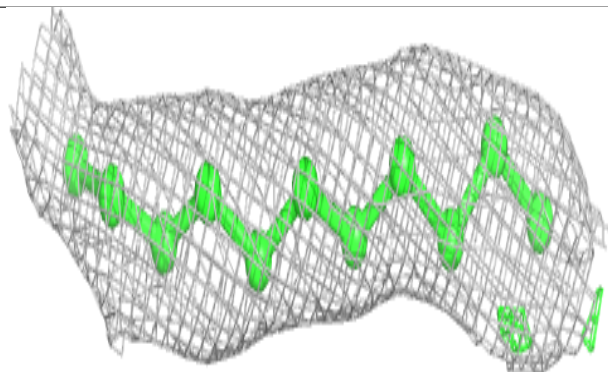mF_o-DF_c (at 3 rmsd) in purple (negative)
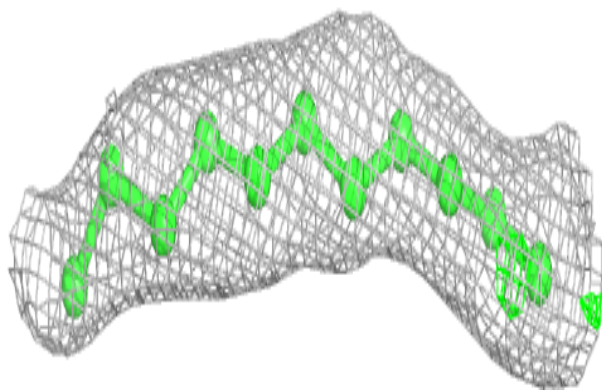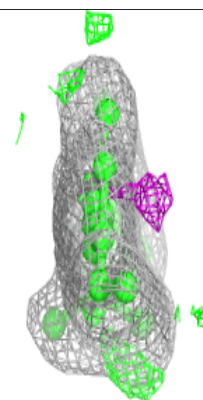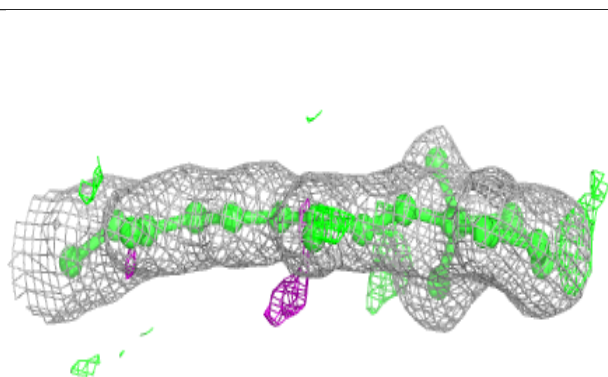and green (positive)
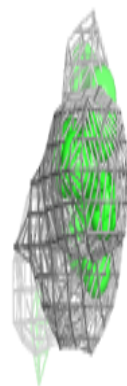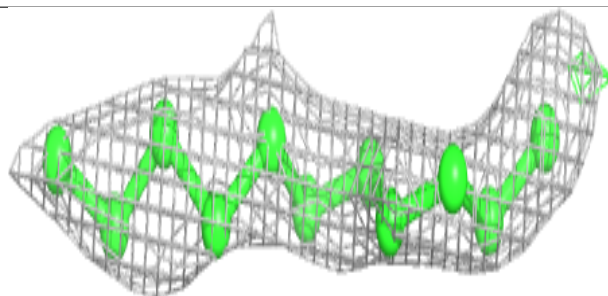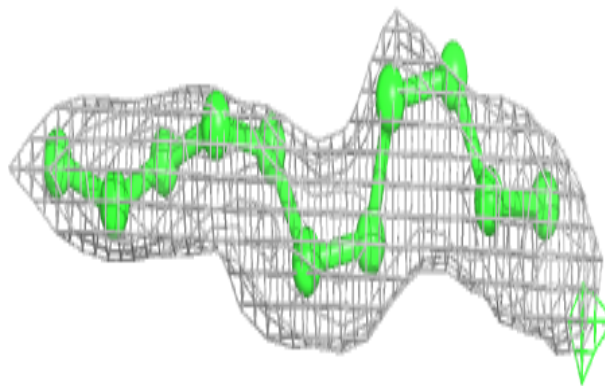
Electron density around LFA A 309:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
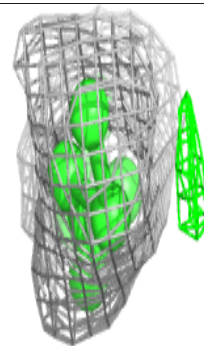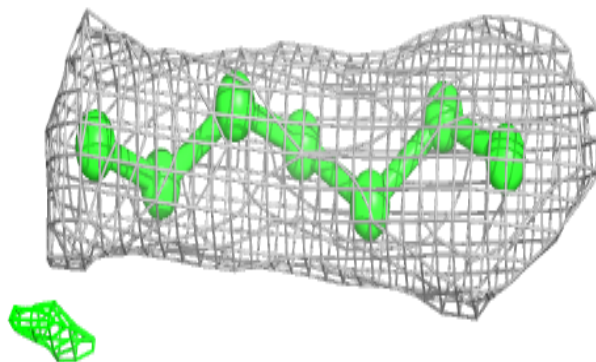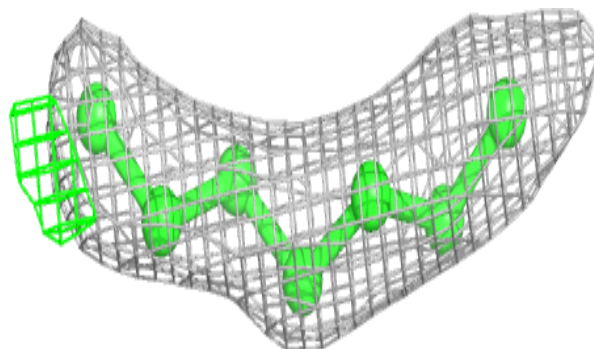
Electron density around LFA A 311:

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

Electron density around LFA A 302:

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

Electron density around LFA A 307:

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

Electron density around LFA A 301:

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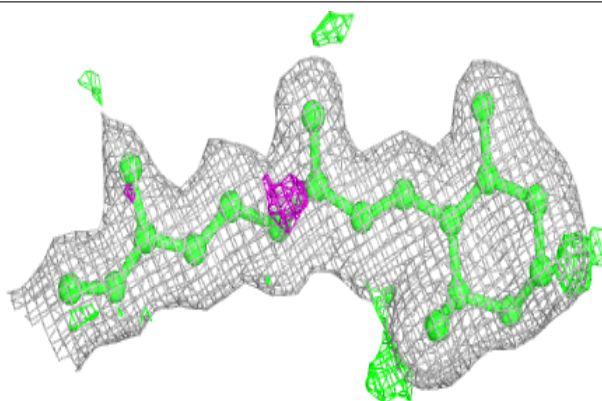and green (positive)

Electron density around LFA A 305:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
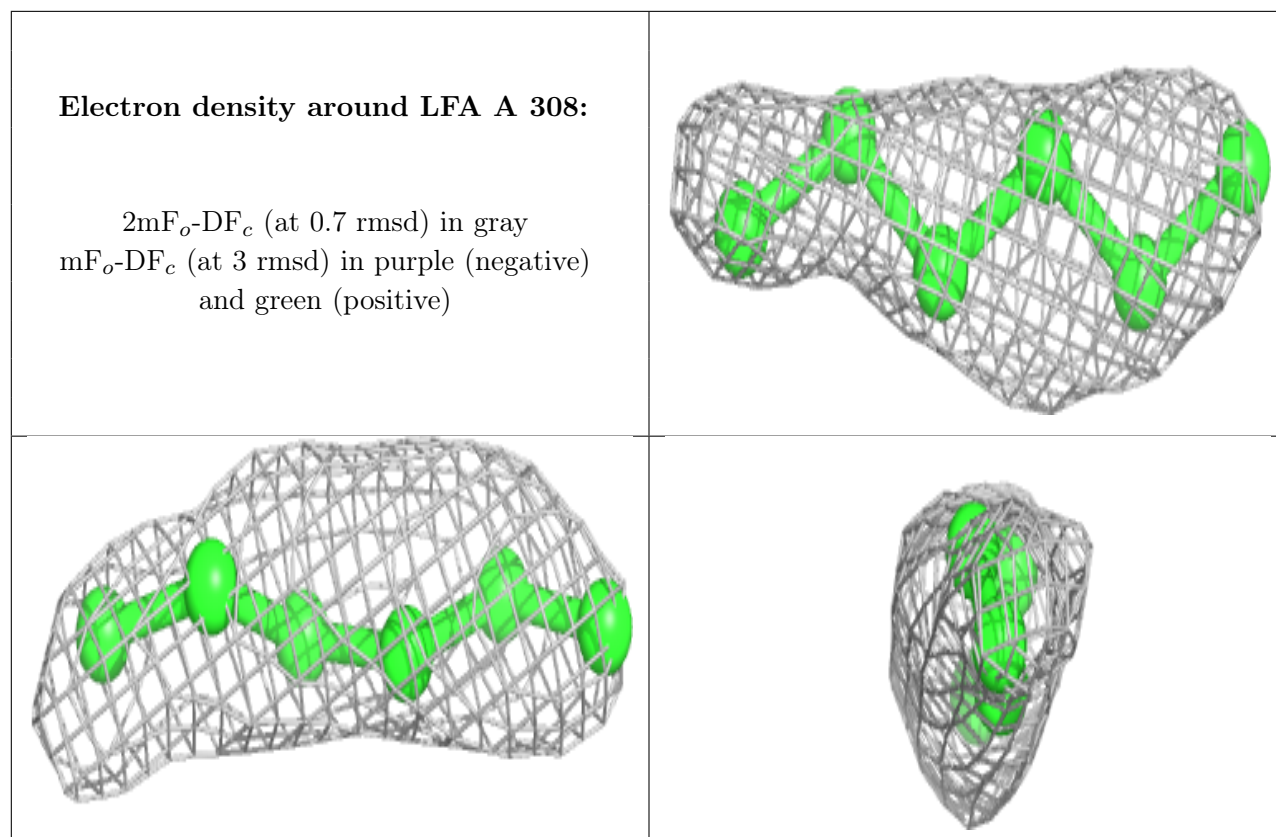mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around RET A 324:

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 LFA A 308:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.