wwPDB X-ray Structure Validation Summary Report (i)

Jun 24, 2024 – 03:07 PM EDT

PDB ID	:	7AHK
Title	:	Crystal structure of the outward-facing state of the substrate-free Na+-only bound glutamate transporter homolog GltPh
Authors	:	Kovalev, K.; Alleva, C.; Astashkin, A.; Machtens, J.-P.; Fahlke, C.; Gordeliy, V.
Deposited on	:	2020-09-24
Resolution	:	2.50 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

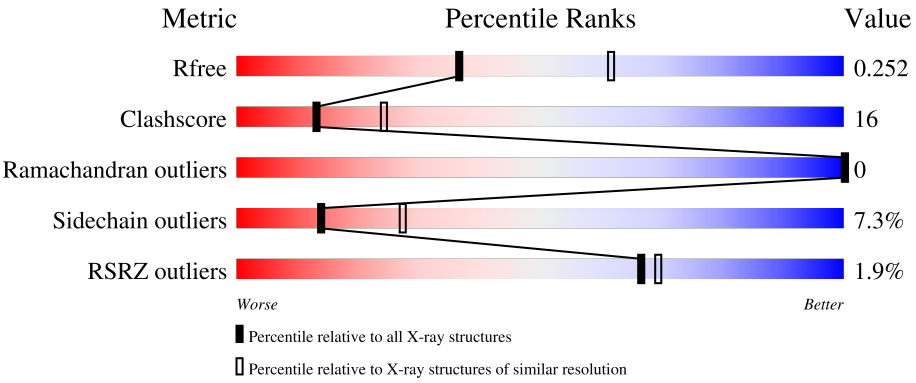
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.50 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=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	425	2% 69% 24%

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
6	GOL	A	518	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 3250 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 Glutamate transporter homolog.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	S	0	0	0
			3019	1988	487	527	17			

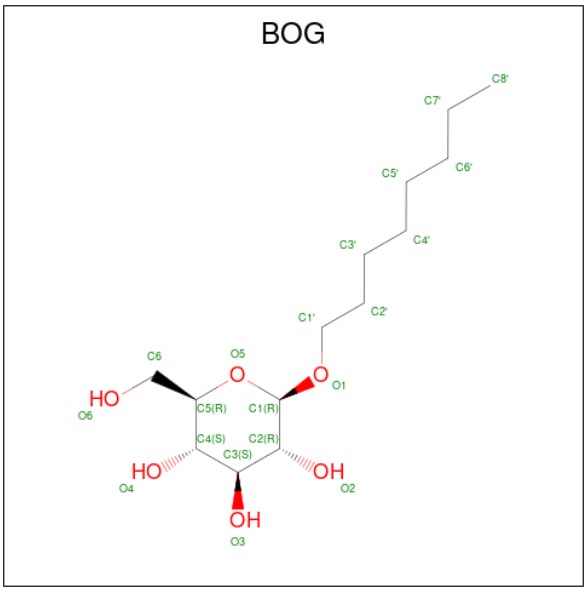
There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	37	HIS	ASP	engineered mutation	UNP O59010
A	40	HIS	LYS	engineered mutation	UNP O59010
A	125	HIS	LYS	engineered mutation	UNP O59010
A	132	HIS	LYS	engineered mutation	UNP O59010
A	223	HIS	LYS	engineered mutation	UNP O59010
A	264	HIS	LYS	engineered mutation	UNP O59010
A	368	HIS	GLU	engineered mutation	UNP O59010
A	418	THR	-	expression tag	UNP O59010
A	419	LEU	-	expression tag	UNP O59010
A	420	VAL	-	expression tag	UNP O59010
A	421	PRO	-	expression tag	UNP O59010
A	422	ARG	-	expression tag	UNP O59010
A	423	GLY	-	expression tag	UNP O59010
A	424	SER	-	expression tag	UNP O59010
A	425	GLY	-	expression tag	UNP O59010

- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na) (labeled as "Ligand of Interest" by depositor).

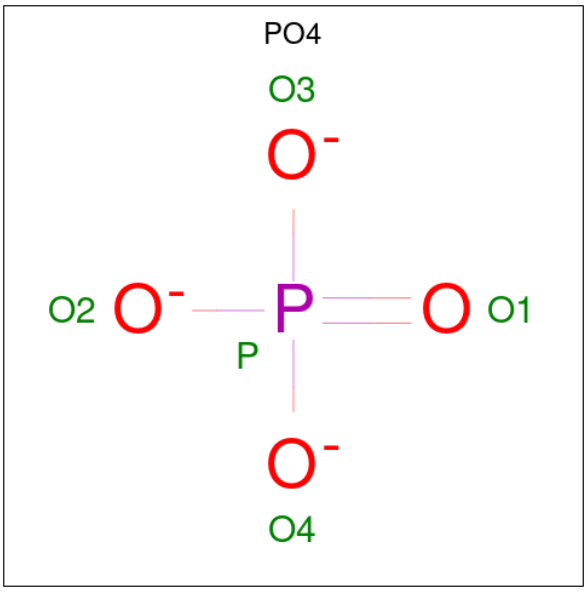
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Na	0	0
			2	2		

- Molecule 3 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: $C_{14}H_{28}O_6$).



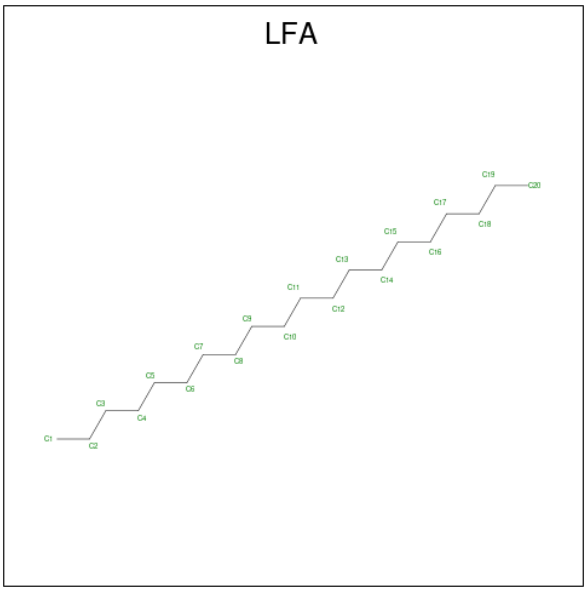
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 20 14 6	0	0

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P) (labeled as "Ligand of Interest" by depositor).



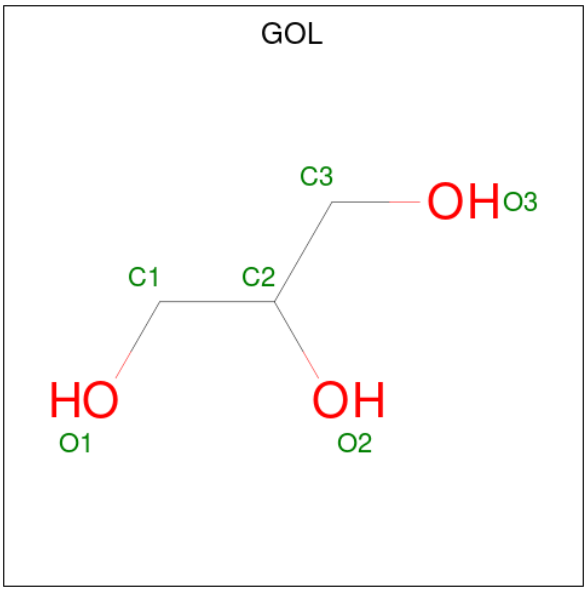
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 5 4 1	0	0

- Molecule 5 is EICOSANE (three-letter code: LFA) (formula: $C_{20}H_{42}$).



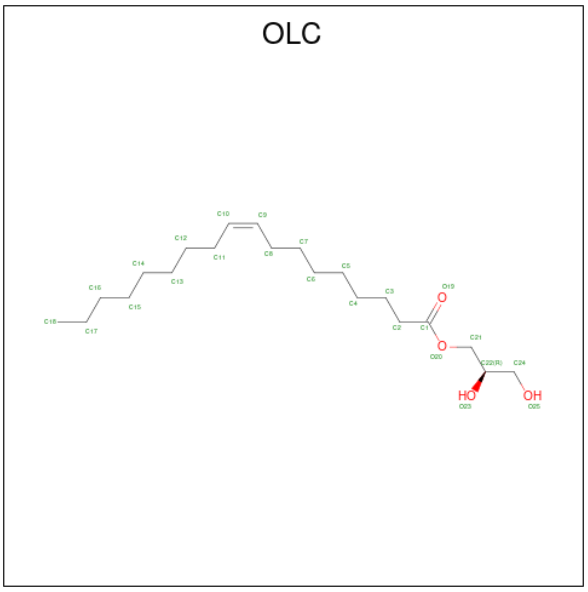
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C 12 12	0	0
5	A	1	Total C 12 12	0	0
5	A	1	Total C 12 12	0	0
5	A	1	Total C 12 12	0	0
5	A	1	Total C 3 3	0	0
5	A	1	Total C 11 11	0	0
5	A	1	Total C 6 6	0	0
5	A	1	Total C 20 20	0	0
5	A	1	Total C 3 3	0	0
5	A	1	Total C 7 7	0	0
5	A	1	Total C 20 20	0	0
5	A	1	Total C 6 6	0	0

- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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

- Molecule 7 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula: $C_{21}H_{40}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 19 15 4	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			25	21	4		

- Molecule 8 is water.

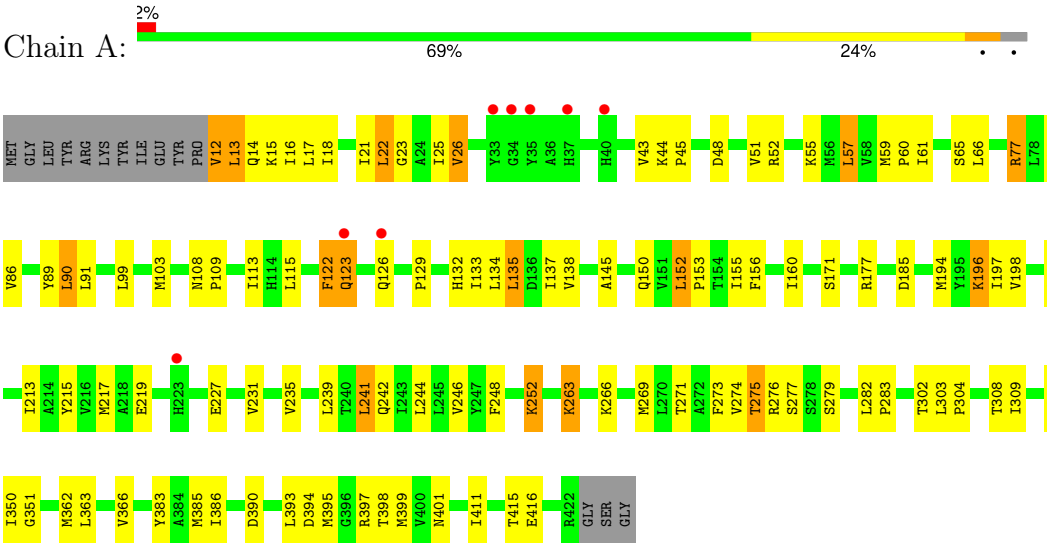
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	24	Total	O	0	0
			24	24		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Glutamate transporter homolog

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 3 2 1	Depositor
Cell constants a, b, c, α, β, γ	152.01Å 152.01Å 57.52Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.50 45.87 – 2.50	Depositor EDS
% Data completeness (in resolution range)	95.7 (20.00-2.50) 96.0 (45.87-2.50)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.26 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.8.0257	Depositor
R, R_{free}	0.211 , 0.253 0.220 , 0.252	Depositor DCC
R_{free} test set	1179 reflections (4.61%)	wwPDB-VP
Wilson B-factor (Å^2)	42.4	Xtriage
Anisotropy	0.046	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 45.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.031 for -h,-k,l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	3250	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.71% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, OLC, BOG, PO4, NA, LFA

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	0/3076	0.44	0/4198

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	80	ARG	Sidechain

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	3019	0	3191	103	1
2	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	20	0	28	0	0
4	A	5	0	0	0	0
5	A	124	0	242	22	6
6	A	12	0	16	6	0
7	A	44	0	65	8	0
8	A	24	0	0	3	0
All	All	3250	0	3542	110	7

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 16.

The worst 5 of 110 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:22:LEU:O	1:A:26:VAL:HG12	1.61	1.01
1:A:90:LEU:HD13	5:A:509:LFA:H203	1.46	0.96
1:A:276:ARG:HD2	6:A:518:GOL:O3	1.68	0.92
1:A:85:ILE:HD13	1:A:302:THR:HB	1.52	0.91
1:A:22:LEU:O	1:A:26:VAL:CG1	2.32	0.78

The worst 5 of 7 symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:516:LFA:C16	5:A:516:LFA:C18[5_555]	1.03	1.17
5:A:516:LFA:C16	5:A:516:LFA:C19[5_555]	1.40	0.80
5:A:516:LFA:C15	5:A:516:LFA:C19[5_555]	1.51	0.69
5:A:516:LFA:C17	5:A:516:LFA:C17[5_555]	1.64	0.56
5:A:516:LFA:C17	5:A:516:LFA:C18[5_555]	1.90	0.30

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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	409/425 (96%)	400 (98%)	9 (2%)	0	100 100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	315/331 (95%)	292 (93%)	23 (7%)	14 27

5 of 23 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	185	ASP
1	A	252	LYS
1	A	241	LEU
1	A	263	LYS
1	A	77	ARG

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	150	GLN
1	A	368	HIS

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 20 ligands modelled in this entry, 2 are monoatomic - leaving 18 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	LFA	A	508	-	11,11,19	0.31	0	10,10,18	0.46	0
5	LFA	A	513	-	2,2,19	0.21	0	1,1,18	0.03	0
6	GOL	A	518	-	5,5,5	0.29	0	5,5,5	0.23	0
5	LFA	A	510	-	10,10,19	0.36	0	9,9,18	0.32	0
5	LFA	A	516	-	5,5,19	0.40	0	4,4,18	0.33	0
3	BOG	A	503	-	20,20,20	0.54	0	25,25,25	0.76	0
6	GOL	A	517	-	5,5,5	0.23	0	5,5,5	0.29	0
5	LFA	A	511	-	5,5,19	0.28	0	4,4,18	0.38	0
7	OLC	A	520	-	24,24,24	0.94	1 (4%)	25,25,25	0.89	1 (4%)
5	LFA	A	512	-	19,19,19	0.26	0	18,18,18	0.53	0
5	LFA	A	509	-	2,2,19	0.18	0	1,1,18	0.05	0
5	LFA	A	506	-	11,11,19	0.30	0	10,10,18	0.45	0
4	PO4	A	504	-	4,4,4	0.99	0	6,6,6	0.46	0
5	LFA	A	514	-	6,6,19	0.33	0	5,5,18	0.33	0
5	LFA	A	515	-	19,19,19	0.26	0	18,18,18	0.52	0
5	LFA	A	507	-	11,11,19	0.33	0	10,10,18	0.44	0
7	OLC	A	519	-	18,18,24	1.15	1 (5%)	19,19,25	1.02	1 (5%)
5	LFA	A	505	-	11,11,19	0.28	0	10,10,18	0.48	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
5	LFA	A	508	-	-	6/9/9/17	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	GOL	A	518	-	-	2/4/4/4	-
5	LFA	A	510	-	-	7/8/8/17	-
6	GOL	A	517	-	-	4/4/4/4	-
3	BOG	A	503	-	-	4/11/31/31	0/1/1/1
7	OLC	A	520	-	-	15/24/24/24	-
5	LFA	A	511	-	-	1/3/3/17	-
5	LFA	A	512	-	-	9/17/17/17	-
5	LFA	A	516	-	-	1/3/3/17	-
5	LFA	A	506	-	-	6/9/9/17	-
5	LFA	A	514	-	-	3/4/4/17	-
5	LFA	A	515	-	-	9/17/17/17	-
5	LFA	A	507	-	-	2/9/9/17	-
7	OLC	A	519	-	-	10/18/18/24	-
5	LFA	A	505	-	-	8/9/9/17	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	519	OLC	O20-C1	4.58	1.46	1.33
7	A	520	OLC	O20-C1	4.32	1.45	1.33

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	520	OLC	O20-C1-C2	2.92	120.75	111.83
7	A	519	OLC	O20-C1-C2	2.92	120.74	111.83

There are no chirality outliers.

5 of 87 torsion outliers are listed below:

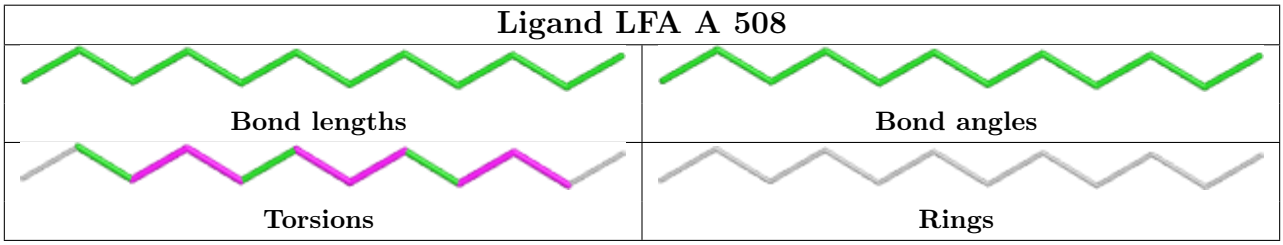
Mol	Chain	Res	Type	Atoms
6	A	517	GOL	C1-C2-C3-O3
7	A	519	OLC	O20-C21-C22-O23
7	A	520	OLC	C21-C22-C24-O25
7	A	520	OLC	O23-C22-C24-O25
7	A	520	OLC	O20-C21-C22-O23

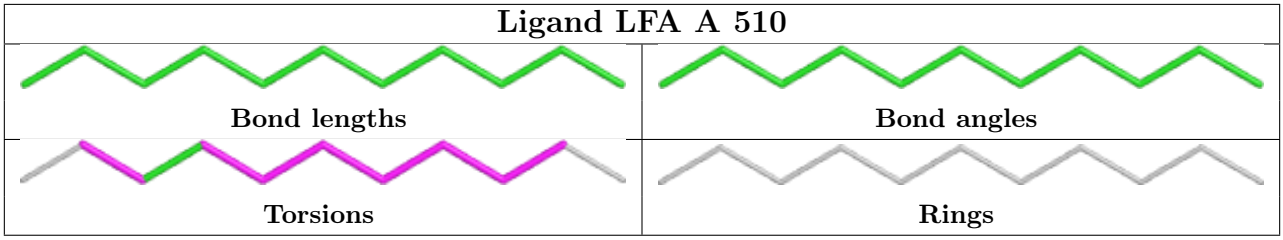
There are no ring outliers.

10 monomers are involved in 41 short contacts:

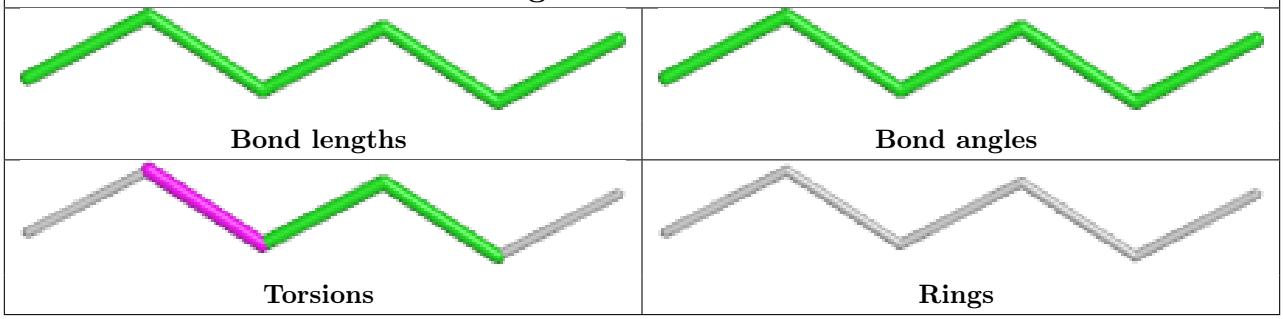
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	508	LFA	3	0
6	A	518	GOL	5	0
5	A	516	LFA	0	6
6	A	517	GOL	1	0
5	A	511	LFA	4	0
7	A	520	OLC	3	0
5	A	512	LFA	9	0
5	A	509	LFA	5	0
5	A	515	LFA	5	0
7	A	519	OLC	5	0

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.

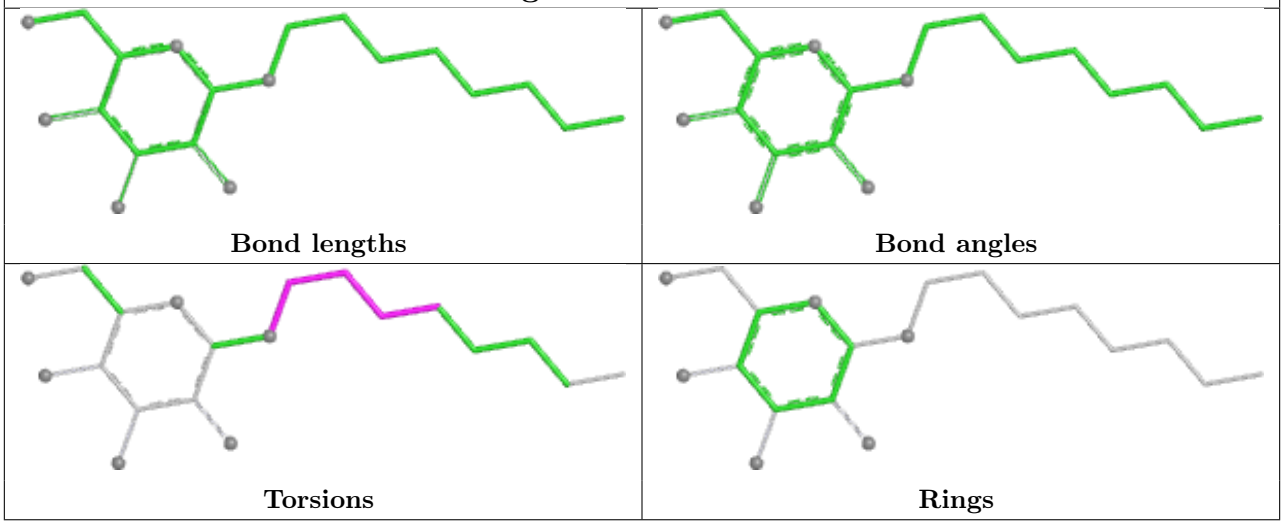




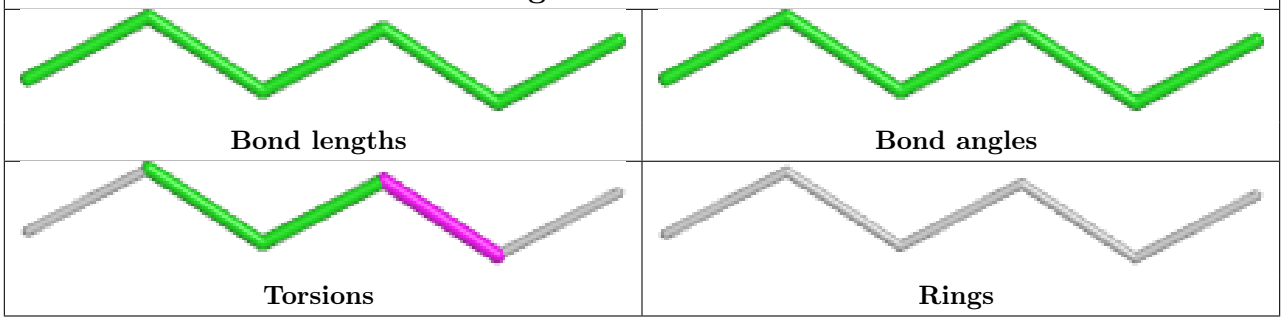
Ligand LFA A 516



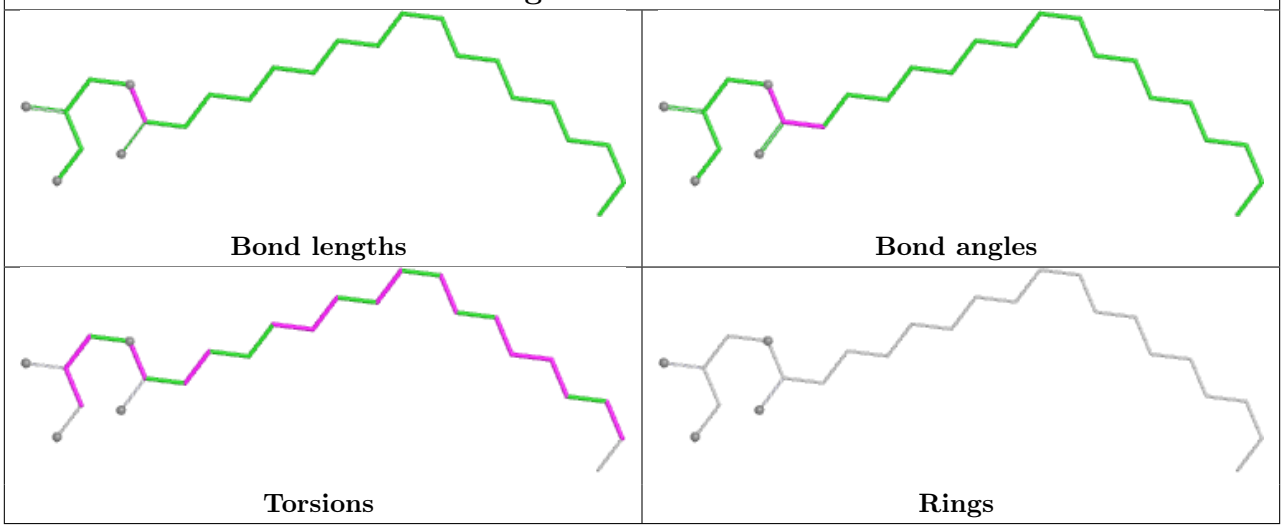
Ligand BOG A 503



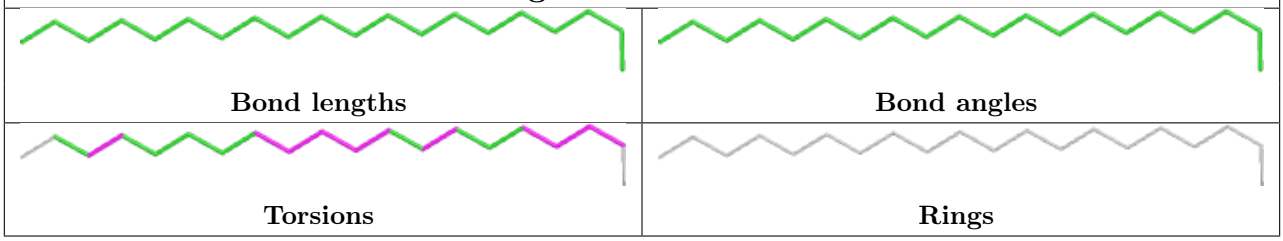
Ligand LFA A 511



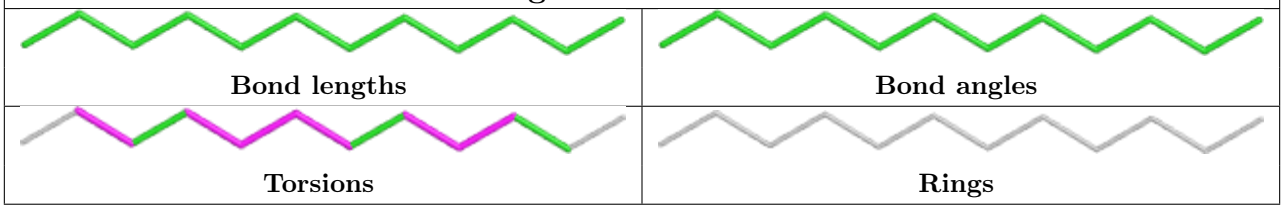
Ligand OLC A 520



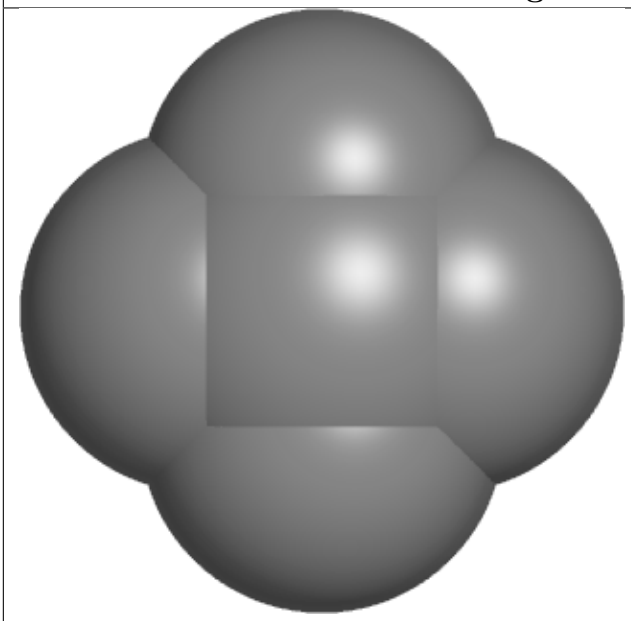
Ligand LFA A 512



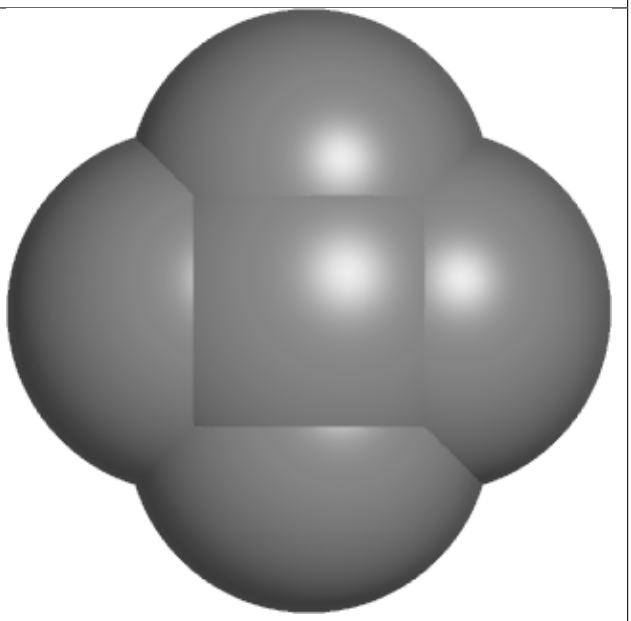
Ligand LFA A 506



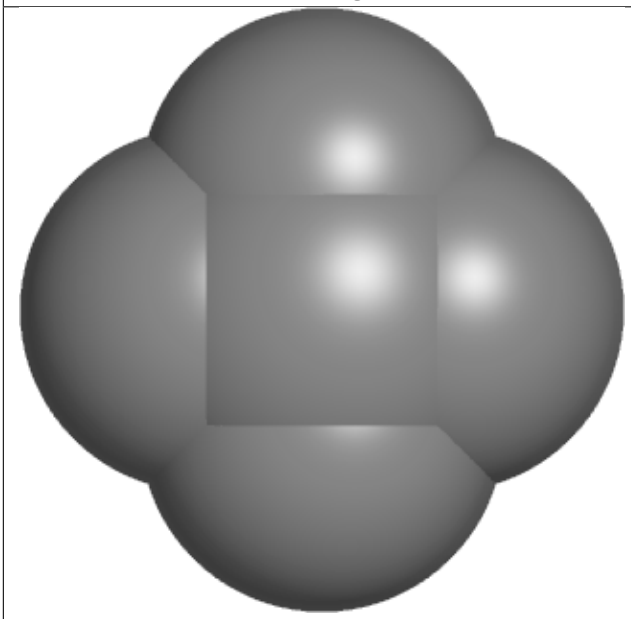
Ligand PO4 A 504



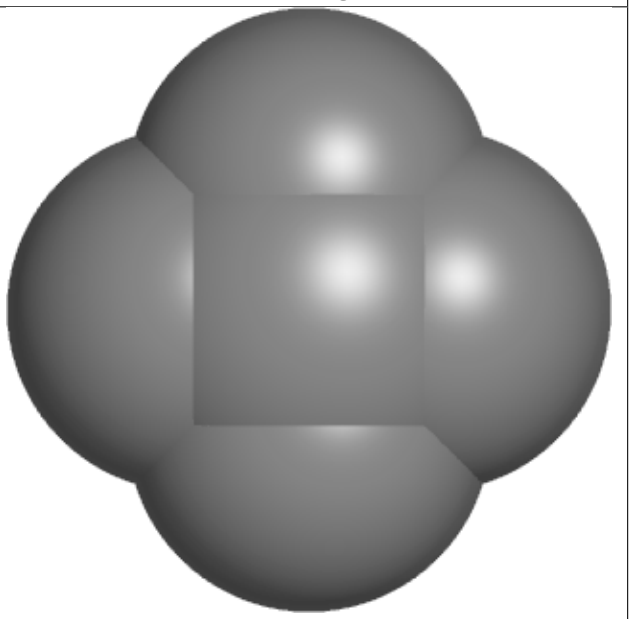
Bond lengths



Bond angles

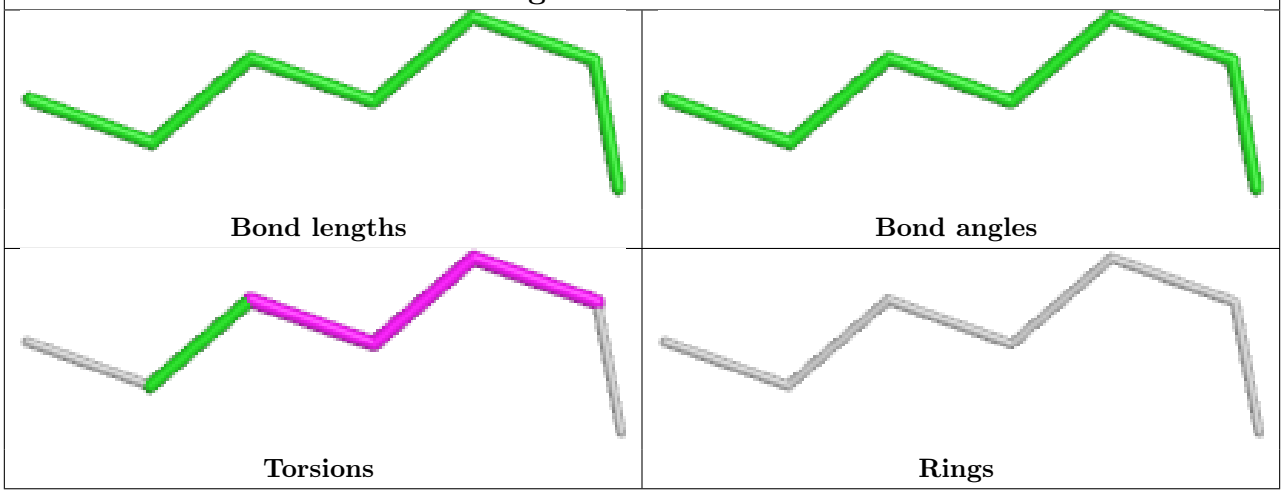


Torsions

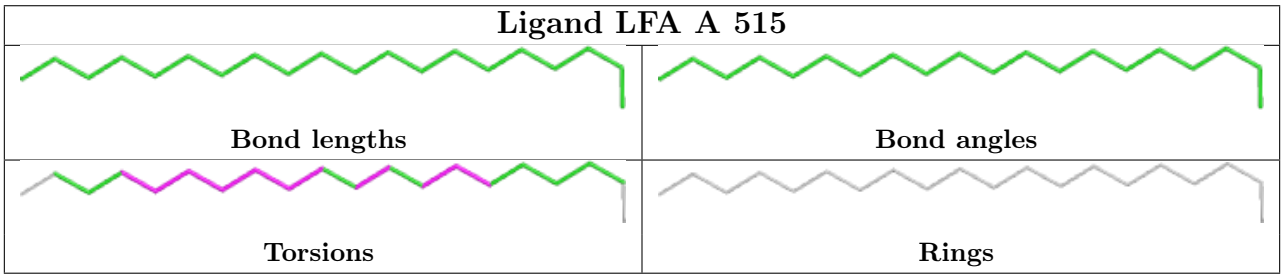


Rings

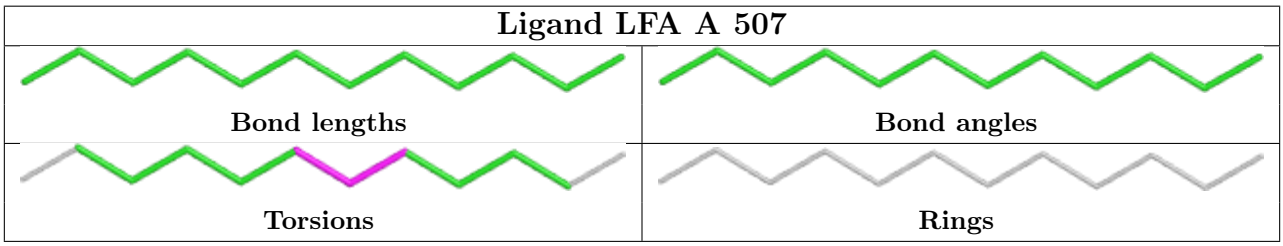
Ligand LFA A 514



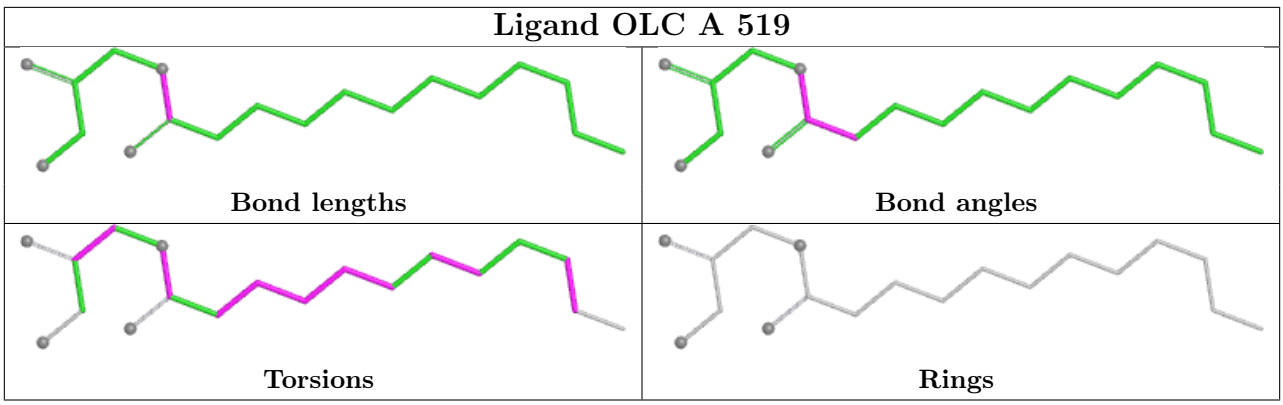
Ligand LFA A 515

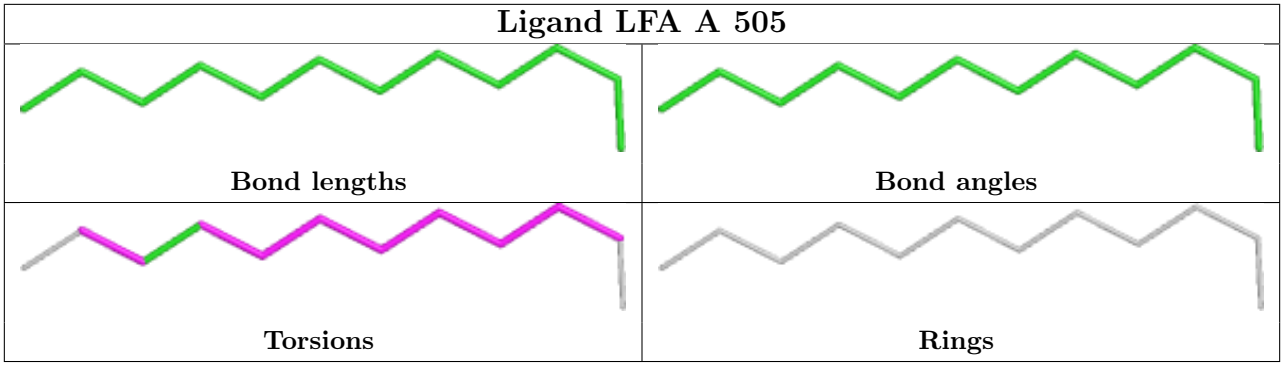


Ligand LFA A 507



Ligand OLC A 519





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, 95^{th} 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	411/425 (96%)	-0.30	8 (1%)	66	69	29, 44, 65, 94	0

The worst 5 of 8 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	126	GLN	3.3
1	A	35	TYR	2.9
1	A	34	GLY	2.7
1	A	37	HIS	2.6
1	A	123	GLN	2.4

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, 95^{th} 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
5	LFA	A	509	3/20	0.83	0.24	49,49,55,59	0
7	OLC	A	520	25/25	0.84	0.23	58,78,92,104	0

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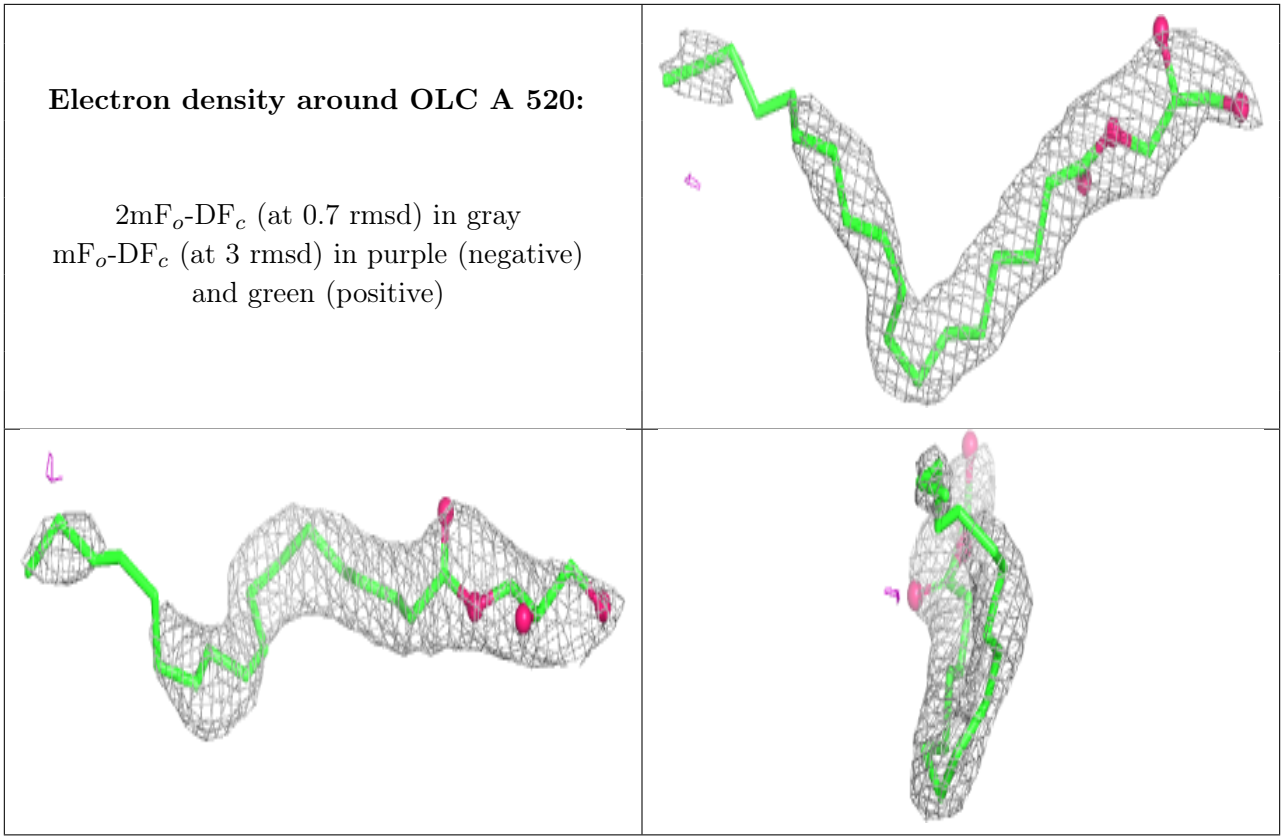
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	LFA	A	510	11/20	0.86	0.24	49,60,70,71	0
7	OLC	A	519	19/25	0.86	0.20	61,70,103,107	0
5	LFA	A	508	12/20	0.86	0.20	48,68,77,82	0
5	LFA	A	512	20/20	0.87	0.28	60,75,91,98	0
5	LFA	A	515	20/20	0.88	0.23	65,72,88,95	0
5	LFA	A	516	6/20	0.88	0.31	77,88,389,420	0
5	LFA	A	507	12/20	0.89	0.17	48,64,70,73	0
5	LFA	A	506	12/20	0.90	0.23	66,77,104,107	0
6	GOL	A	518	6/6	0.91	0.15	53,59,69,70	0
5	LFA	A	505	12/20	0.92	0.24	53,60,76,80	0
6	GOL	A	517	6/6	0.93	0.22	58,62,67,70	0
5	LFA	A	514	7/20	0.93	0.18	54,55,58,59	0
5	LFA	A	511	6/20	0.93	0.20	61,62,63,67	0
5	LFA	A	513	3/20	0.93	0.20	49,49,51,52	0
2	NA	A	502	1/1	0.94	0.06	50,50,50,50	0
3	BOG	A	503	20/20	0.94	0.14	30,42,60,62	0
2	NA	A	501	1/1	0.97	0.08	35,35,35,35	0
4	PO4	A	504	5/5	0.98	0.11	50,61,71,72	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.

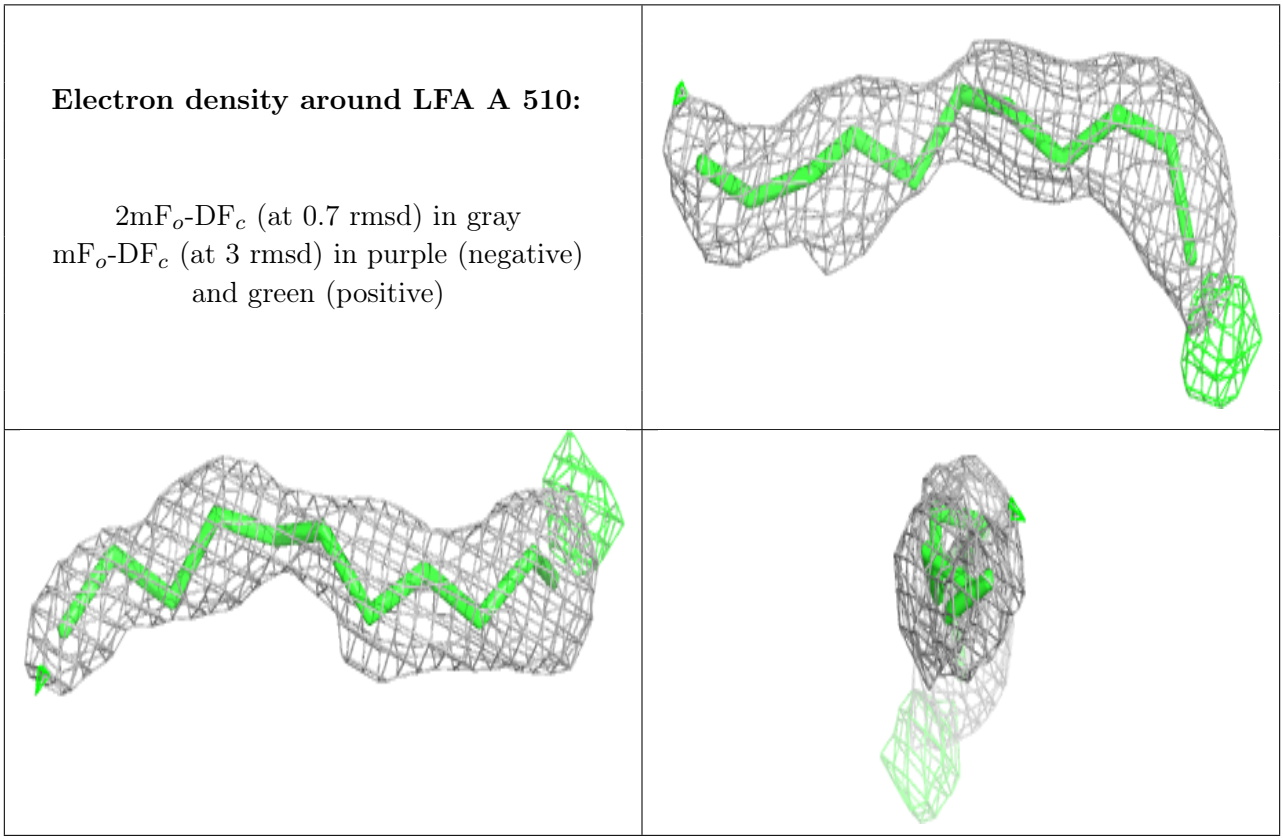
Electron density around OLC A 520:

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



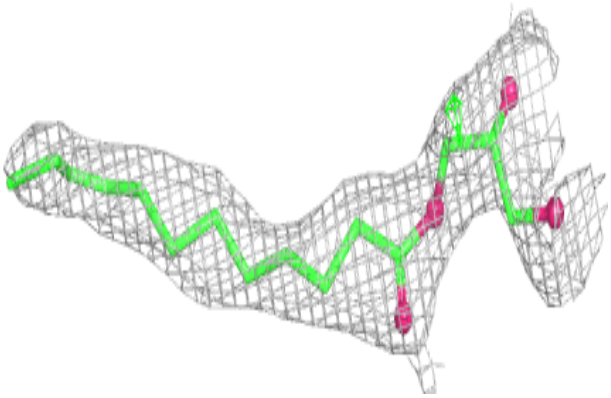
Electron density around LFA A 510:

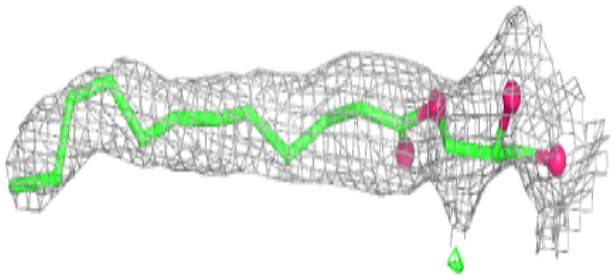
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

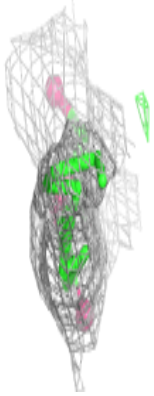


Electron density around OLC A 519:

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

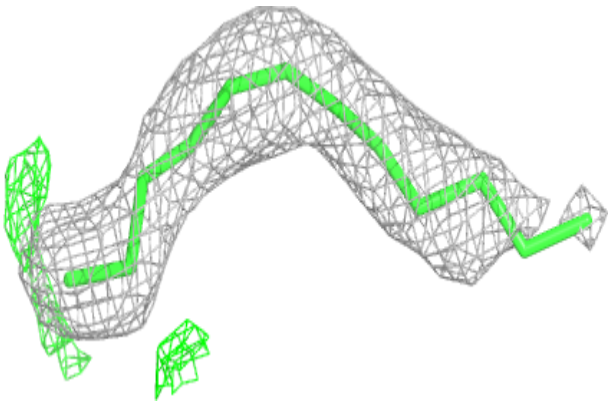


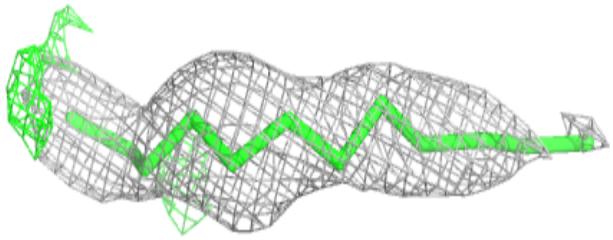


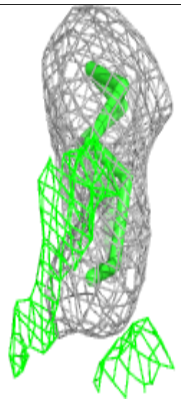


Electron density around LFA A 508:

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

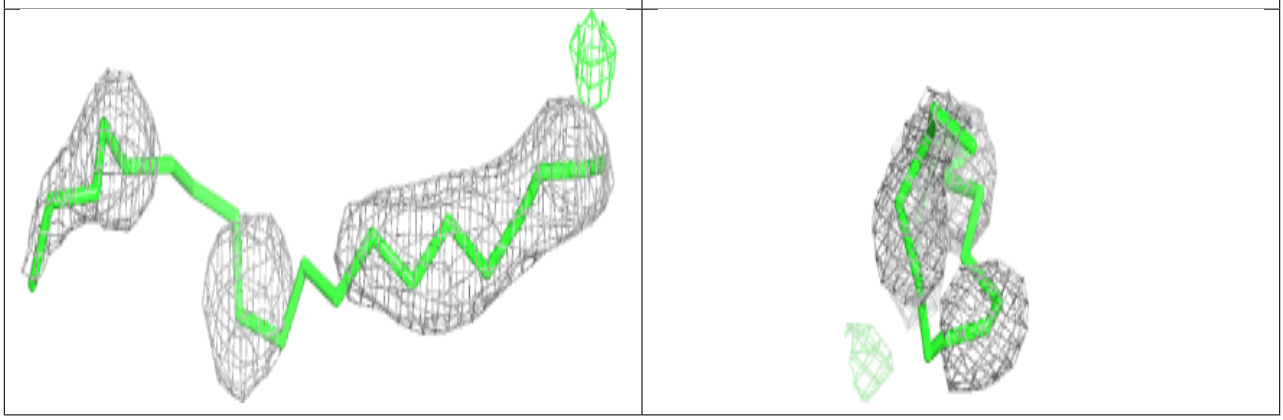






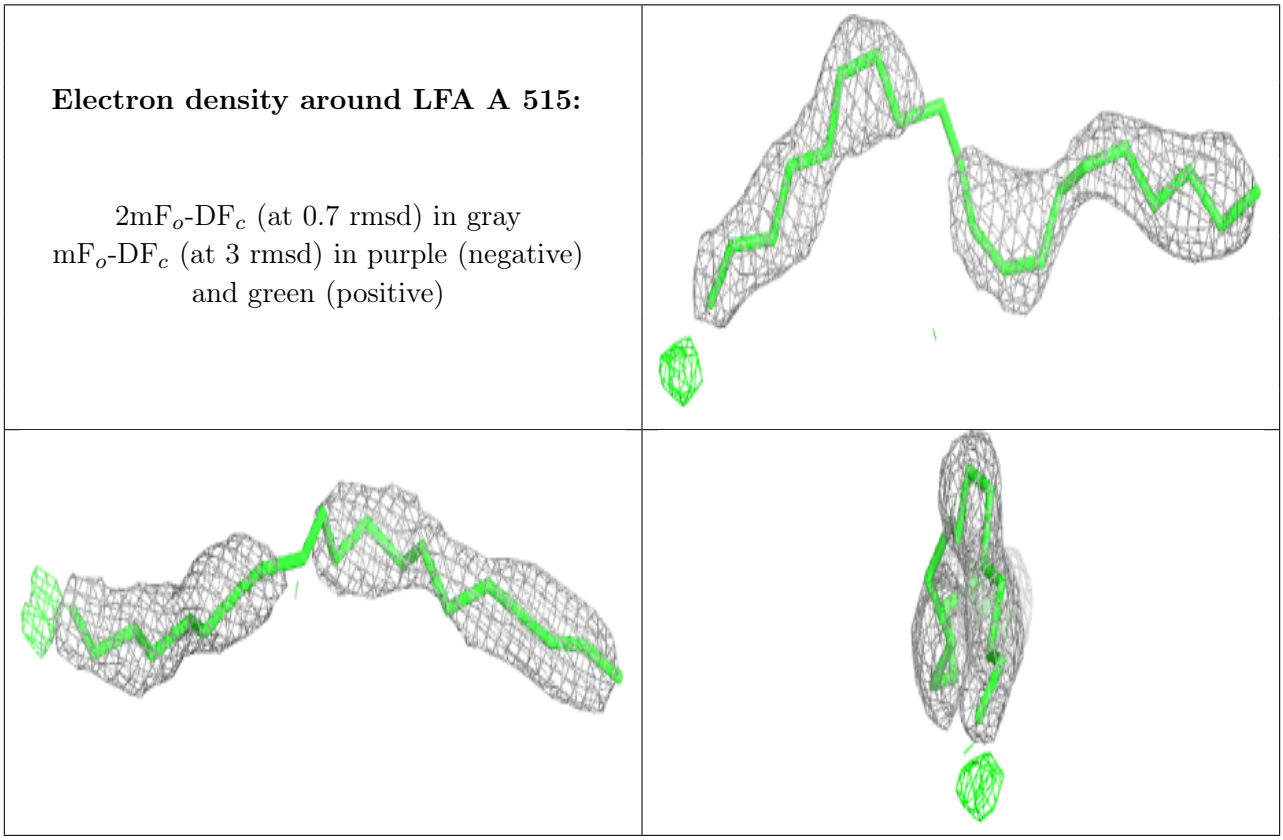
Electron density around LFA A 512:

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



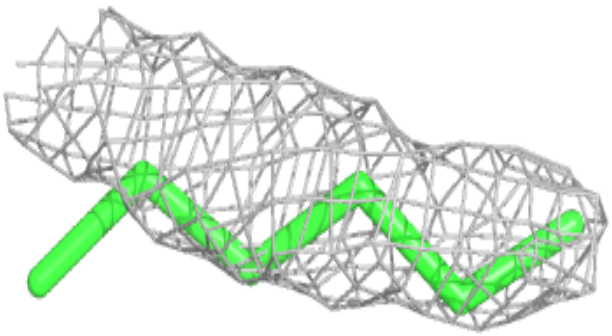
Electron density around LFA A 515:

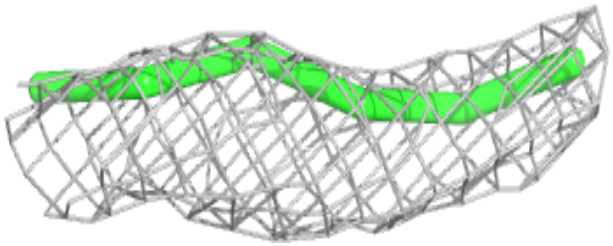
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

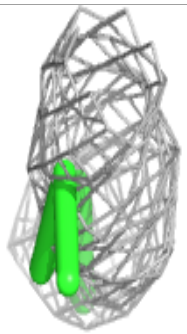


Electron density around LFA A 516:

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

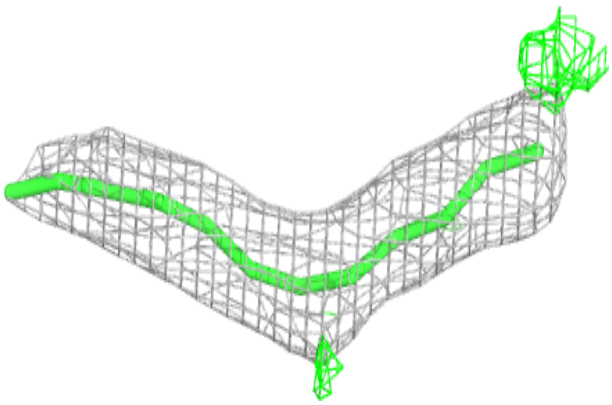


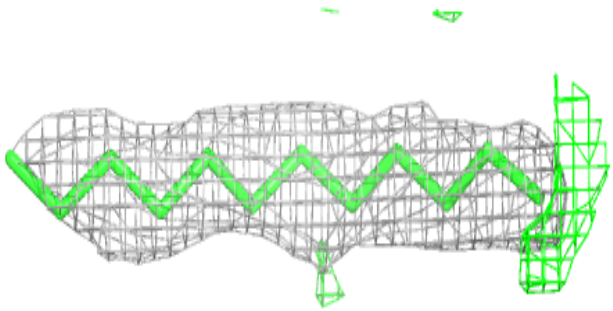


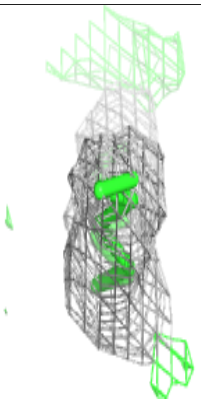


Electron density around LFA A 507:

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

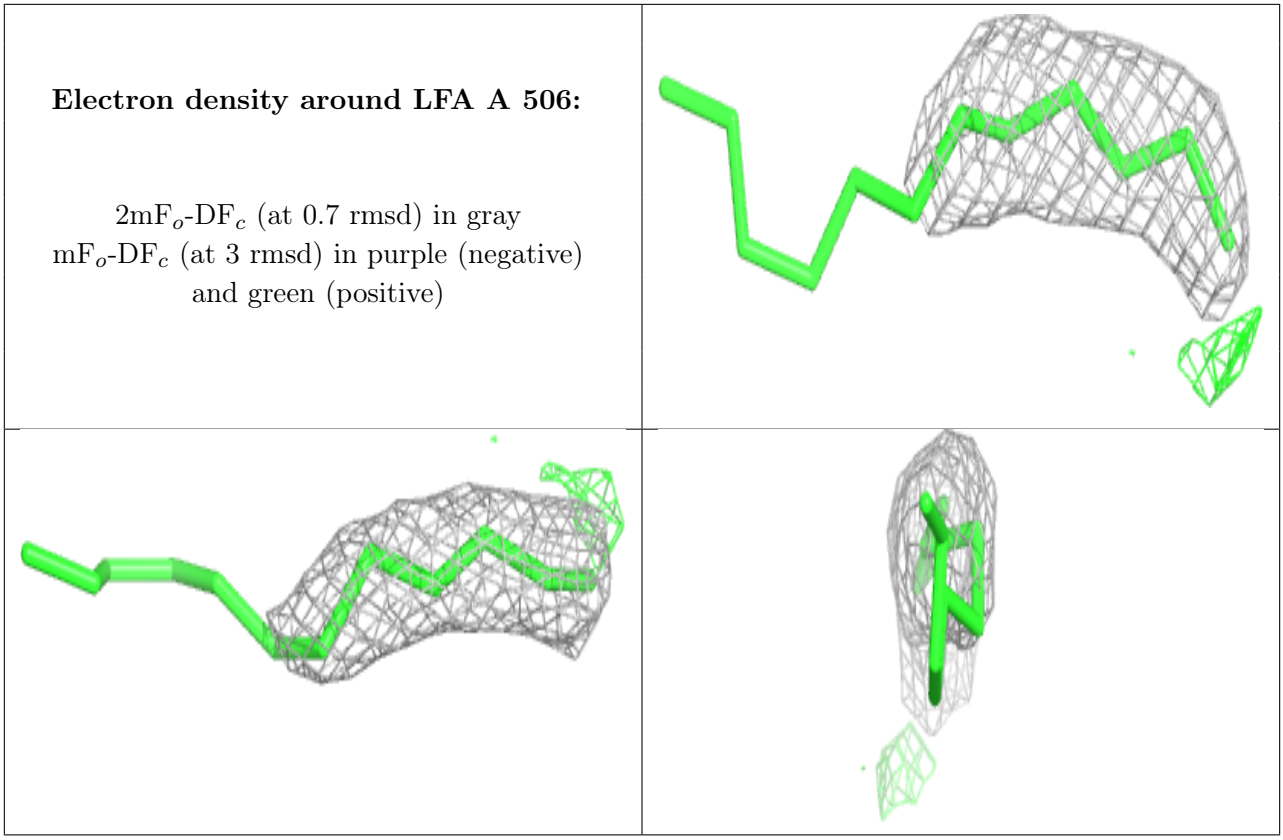






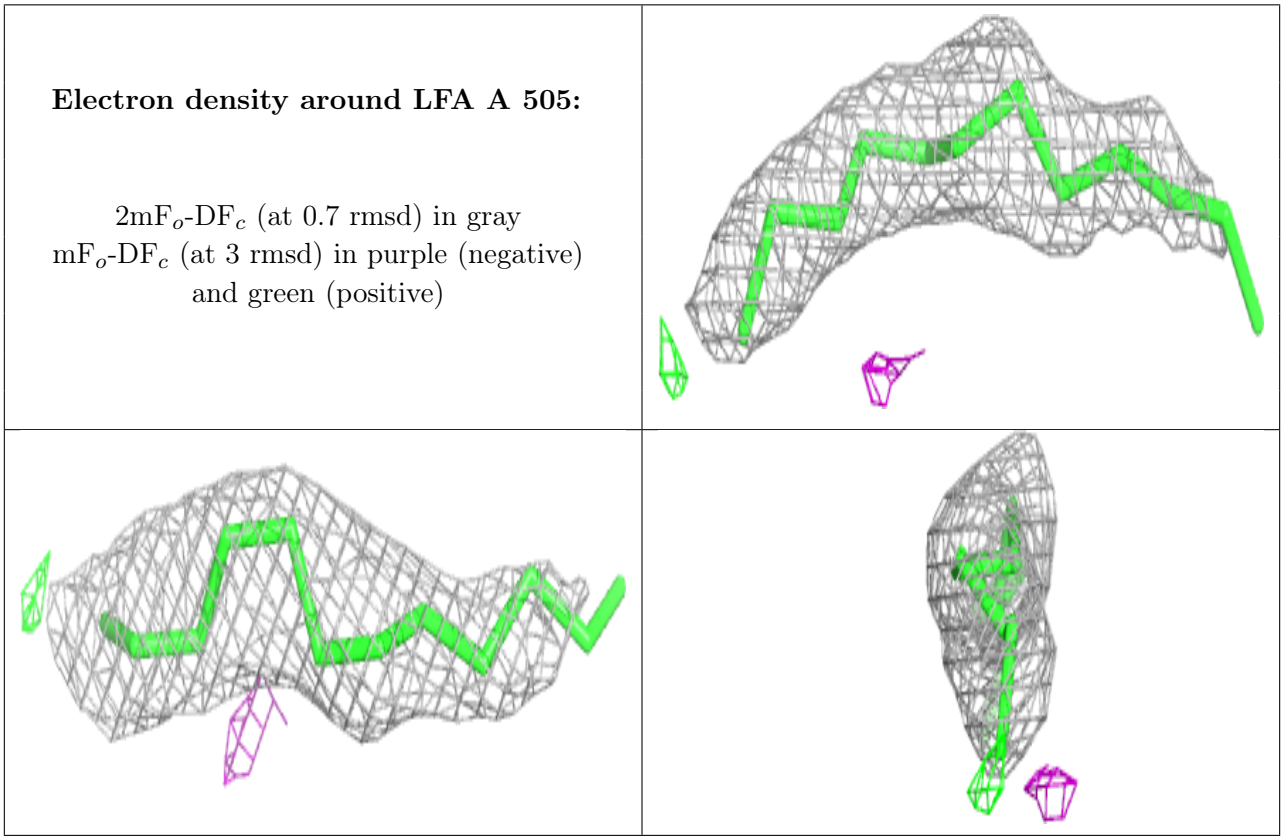
Electron density around LFA A 506:

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



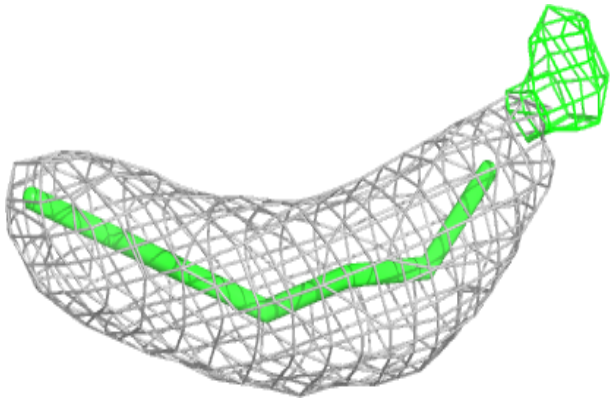
Electron density around LFA A 505:

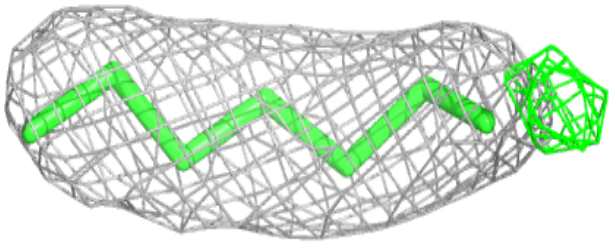
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

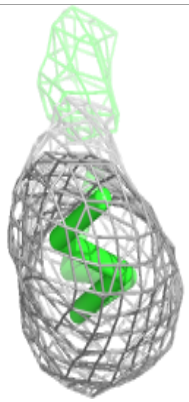


Electron density around LFA A 514:

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

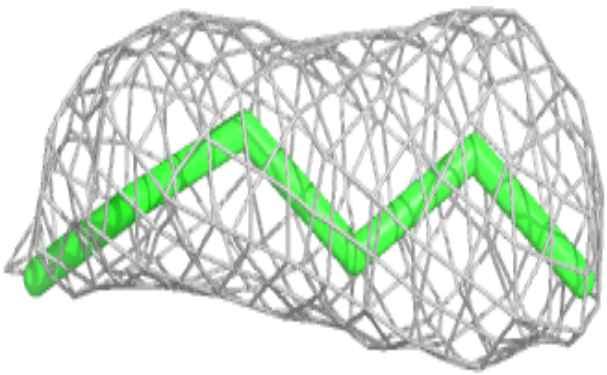


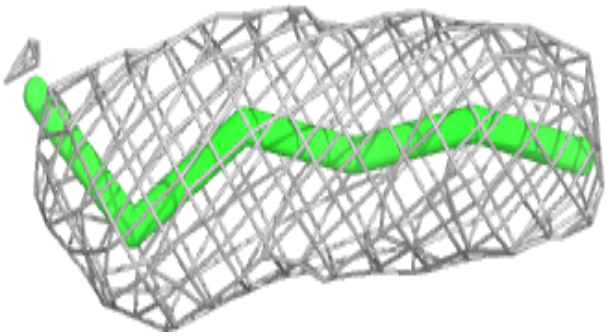


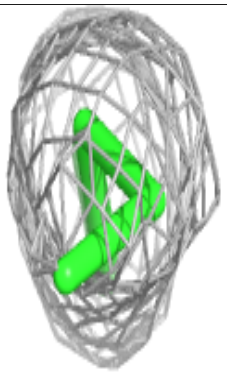


Electron density around LFA A 511:

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

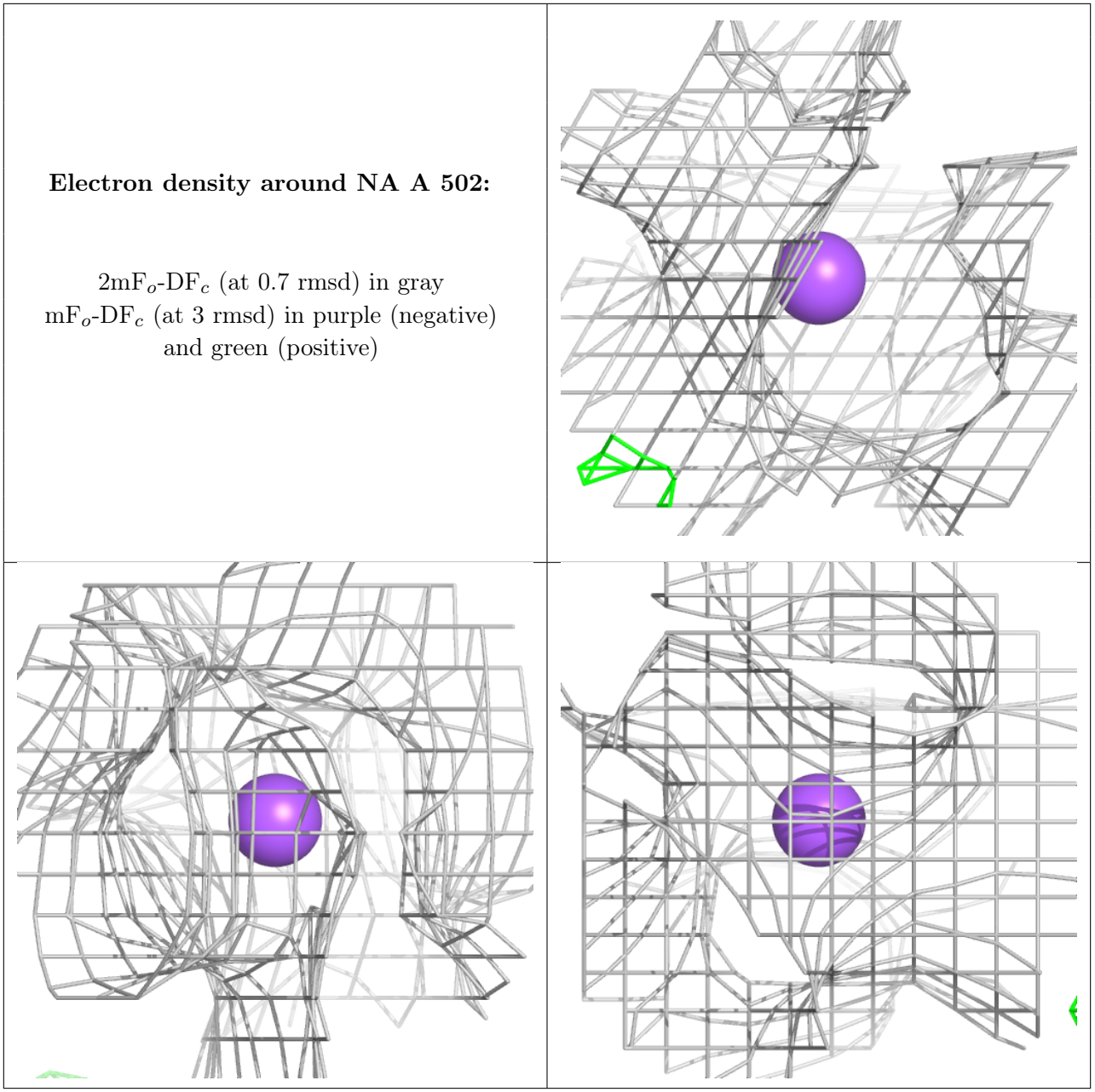






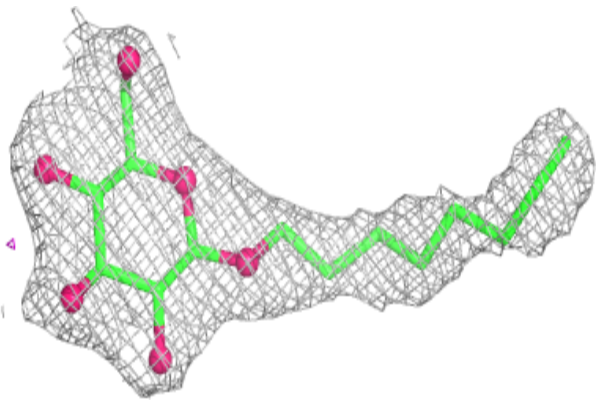
Electron density around NA A 502:

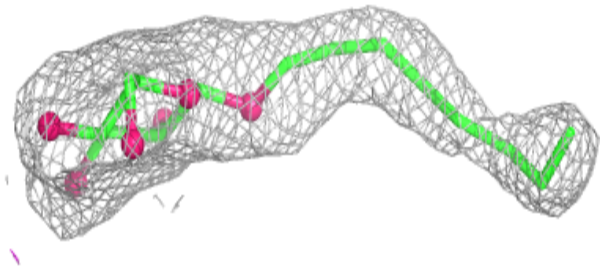
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

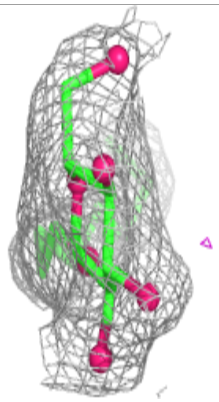


Electron density around BOG A 503:

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

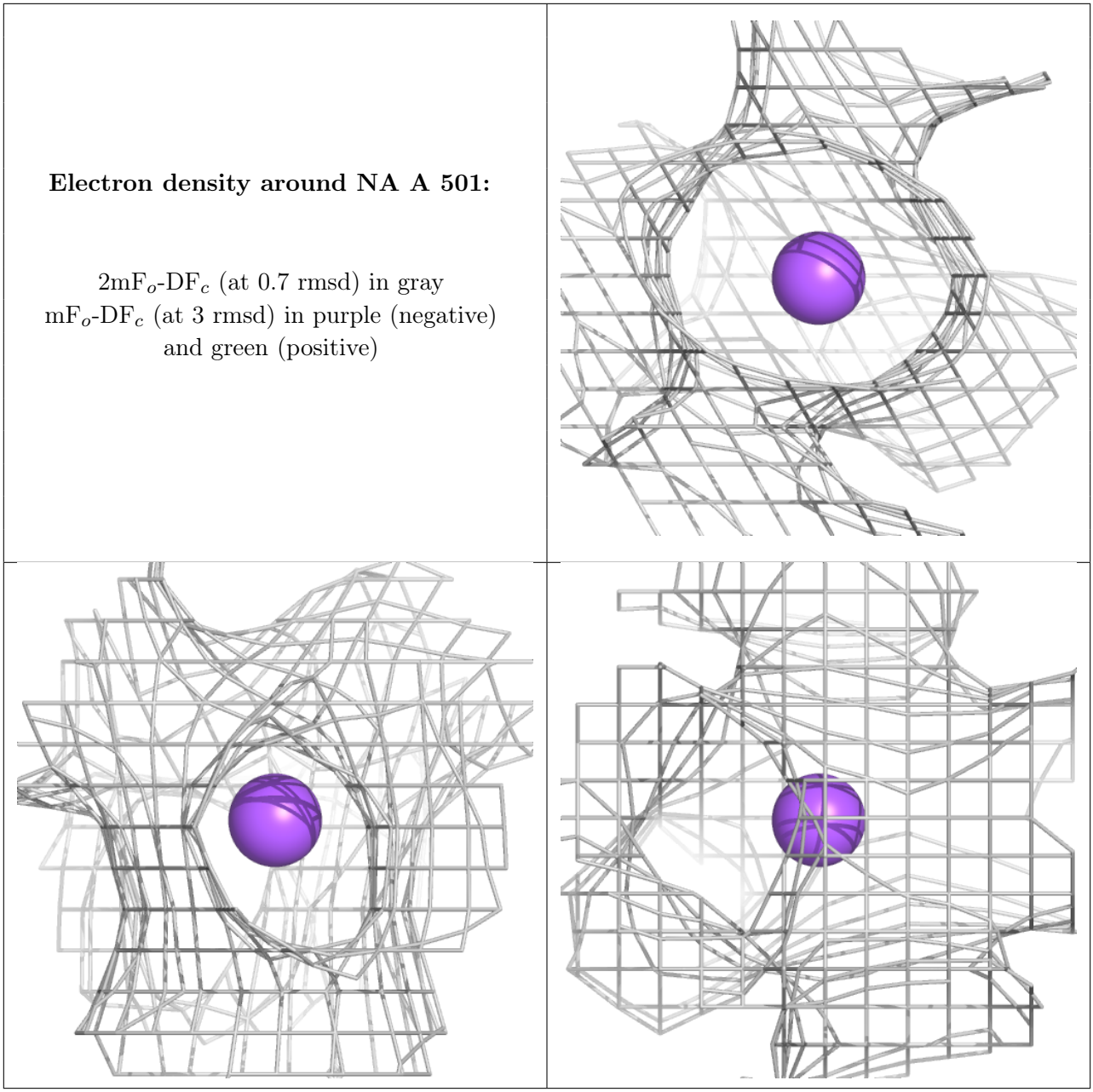






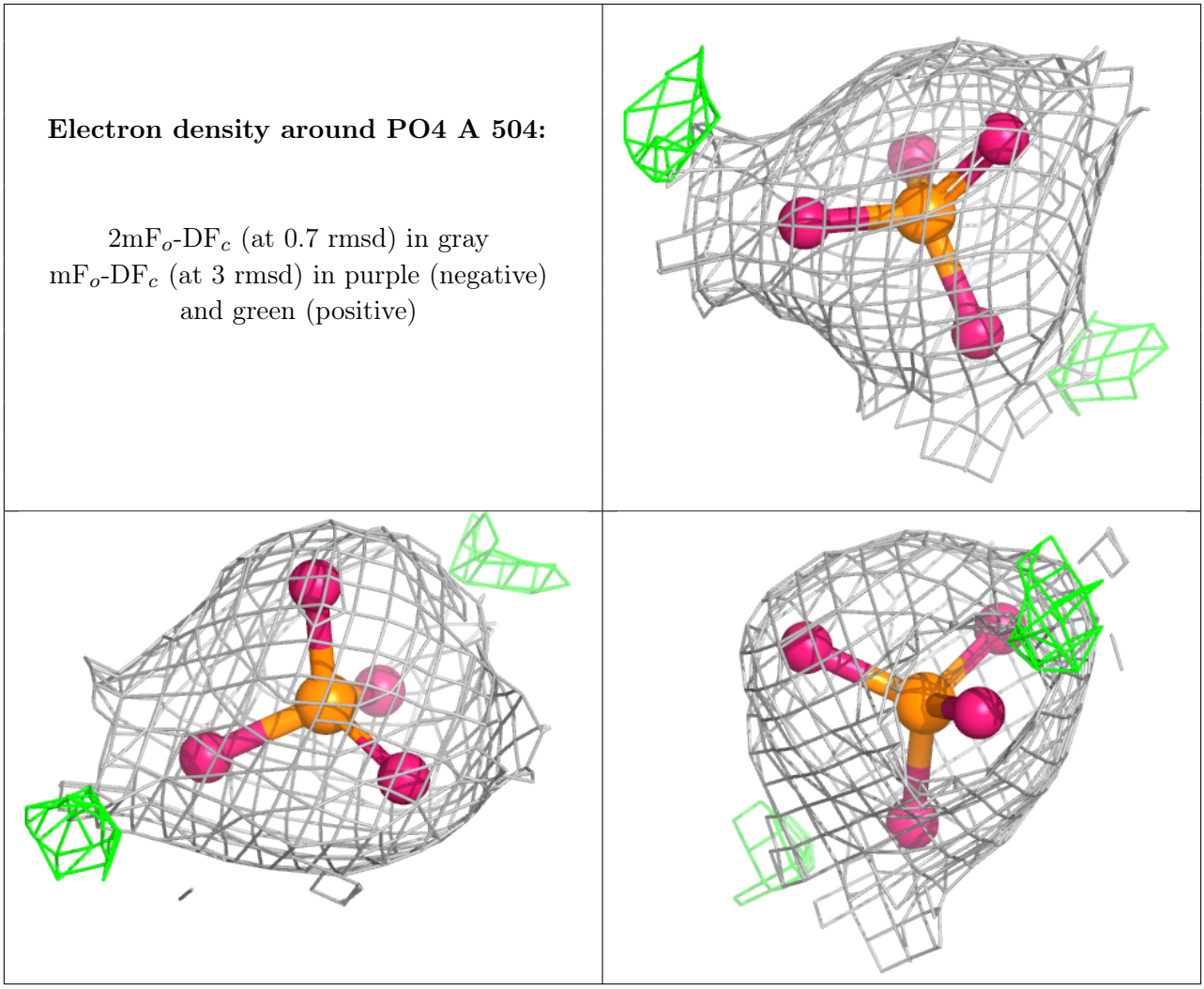
Electron density around NA A 501:

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



Electron density around PO4 A 504:

$2mF_o$-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.