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

wwPDB X-ray Structure Validation Summary Report (i)

Aug 9, 2020 – 12:24 PM BST

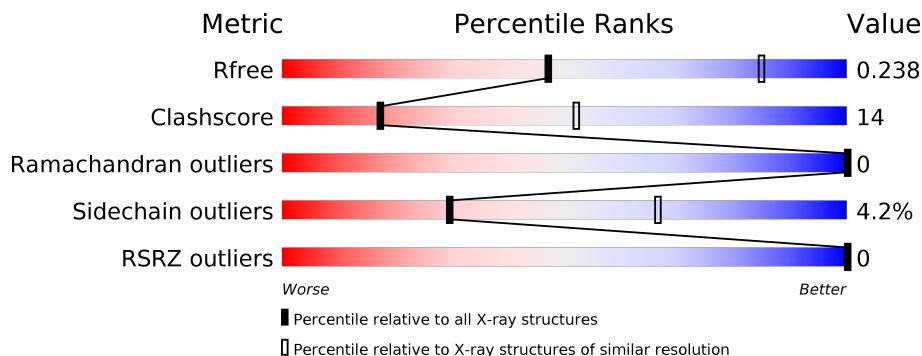|		
PDB ID	:	2X72
Title	:	CRYSTAL STRUCTURE OF THE CONSTITUTIVELY ACTIVE E113Q,D2C,D282C RHODOPSIN MUTANT WITH BOUND GALPHACT PEPTIDE.
Authors	:	Standfuss, J.; Edwards, P.C.; Dantona, A.; Fransen, M.; Xie, G.; Oprian, D.D.; Schertler, G.F.X.
Deposited on	:	2010-02-22
Resolution	:	3.00 Å(reported)

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 3.00 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		0.238
Clashscore		14
Ramachandran outliers		0
Sidechain outliers		4.2%
RSRZ outliers		0

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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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 on 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	349	69% 22% • 6%
2	B	11	45% 55%
3	C	5	40% 60%

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
7	RET	A	410	-	-	X	-

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 2932 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 RHODOPSIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	327	Total 2602	C 1735	N 401	O 438	S 28	0	1	0

There are 3 discrepancies between the modelled and reference sequences:

| Chain	Residue	Modelled	Actual	Comment	Reference
A	2	CYS	ASN	engineered mutation	UNP P02699
A	113	GLN	GLU	engineered mutation	UNP P02699
A	282	CYS	ASP	engineered mutation	UNP P02699

- Molecule 2 is a protein called GUANINE NUCLEOTIDE-BINDING PROTEIN G(T) SUB-UNIT ALPHA-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	11	Total 88	C 57	N 13	O 17	S 1	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	341	LEU	LYS	engineered mutation	UNP P04695

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.
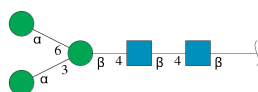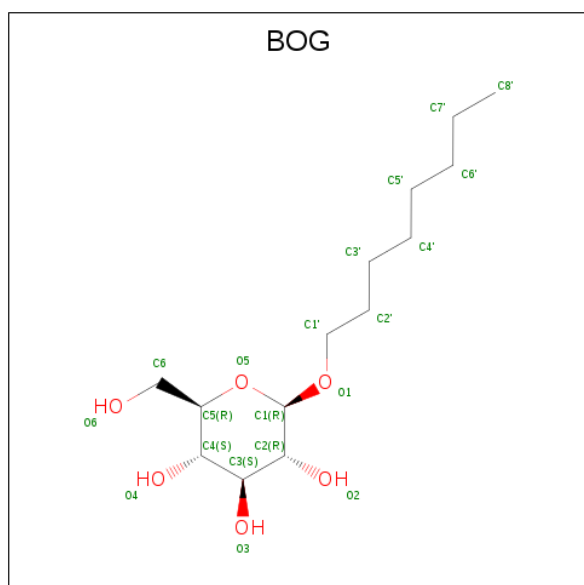
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	C	5	61	34	2	25	0	0	0

- Molecule 4 is DI-PALMITOYL-3-SN-PHOSPHATIDYLETHANOLAMINE (three-letter code: PEF) (formula: $C_{37}H_{74}NO_8P$).

PEF
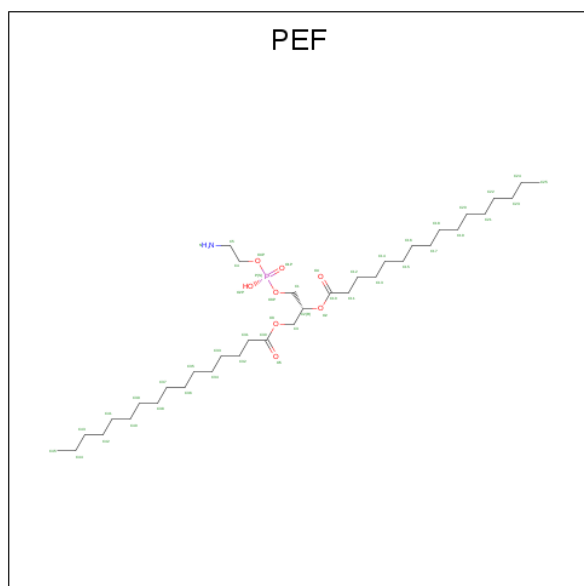
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
4	A	1	47	37	1	8	1	0	0

- Molecule 5 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: $C_{14}H_{28}O_6$).

BOG

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

- Molecule 6 is PALMITIC ACID (three-letter code: PLM) (formula: $C_{16}H_{32}O_2$).
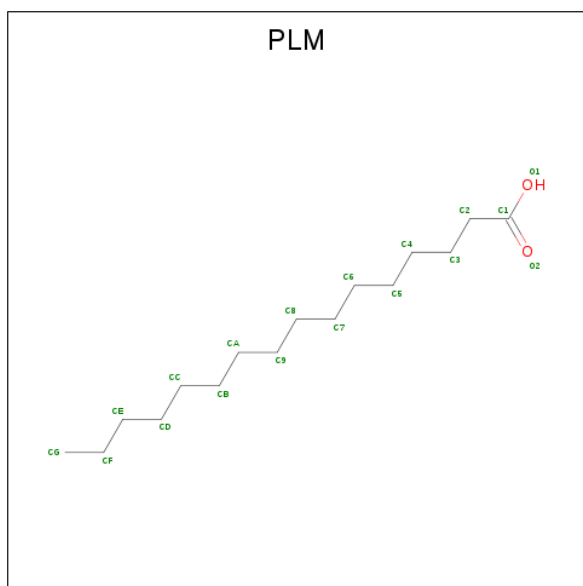
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 17	C 16	O 1	0	0
6	A	1	Total 17	C 16	O 1	0	0

- Molecule 7 is RETINAL (three-letter code: RET) (formula: $C_{20}H_{28}O$).
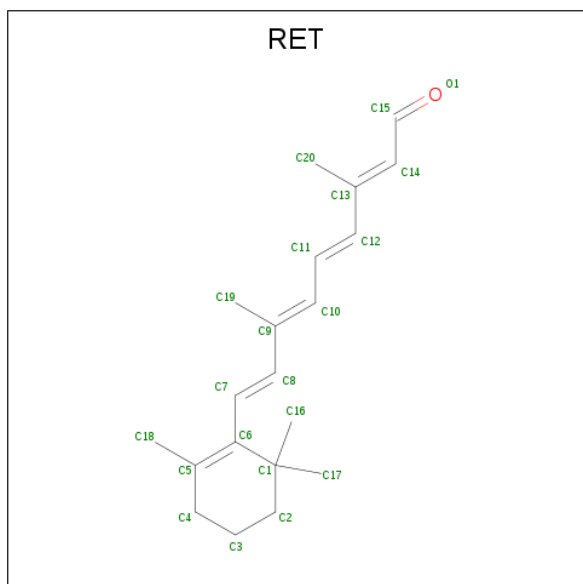
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total 21	C 20	O 1	0	0

- Molecule 8 is 2-(HEXADECANOYLOXY)-1-[(PHOSPHONOOXY)METHYL]ETHYL HEXADECANOATE (three-letter code: LPP) (formula: $C_{35}H_{69}O_8P$).

LPP
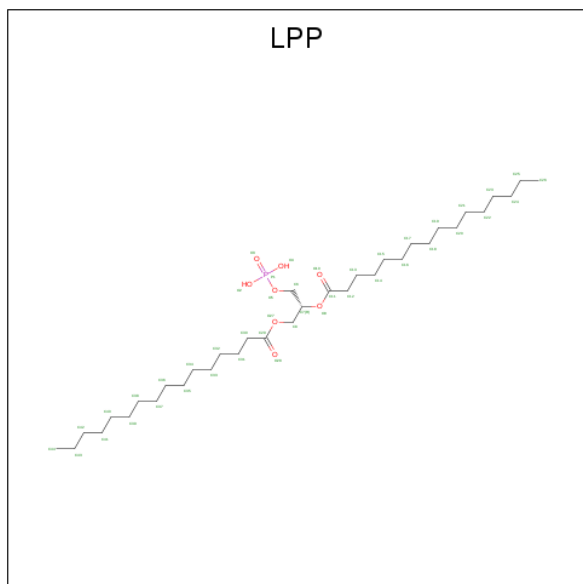
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
8	A	1	Total 37	C 28	O 8	P 1	0	0

- Molecule 9 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).

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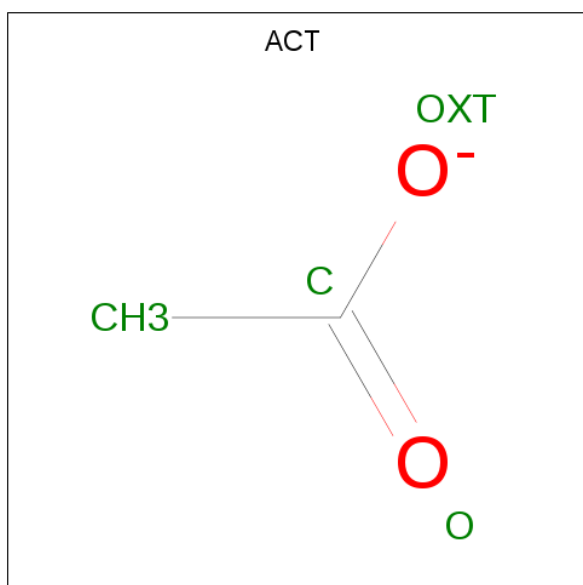
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total 4	C 2	O 2	0	0

- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	16	Total 16	O 16	0	0
10	B	2	Total 2	O 2	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: RHODOPSIN
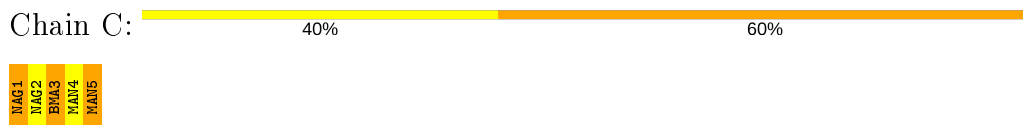

Chain A:
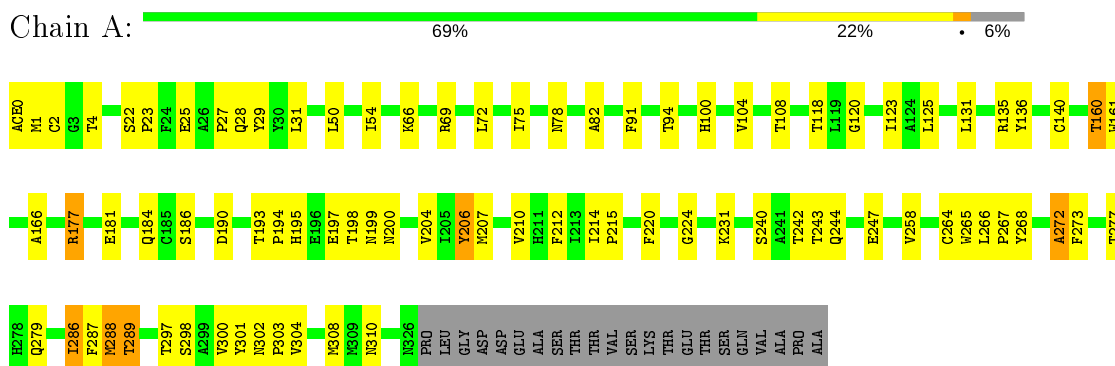
• Molecule 2: GUANINE NUCLEOTIDE-BINDING PROTEIN G(T) SUBUNIT ALPHA-1

Chain B:

• Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain C:

4   Data and refinement statistics (i)

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α, β, γ	243.99Å 243.99Å 109.16Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	39.94 – 3.00 39.94 – 3.00	Depositor EDS
% Data completeness (in resolution range)	91.9 (39.94-3.00) 62.7 (39.94-3.00)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	2.13 (at 3.01Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.210 , 0.244 0.211 , 0.238	Depositor DCC
R_{free} test set	810 reflections (5.18%)	wwPDB-VP
Wilson B-factor (Å^2)	65.9	Xtriage
Anisotropy	0.663	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 59.3	EDS
L-test for twinning[2]	$<|L|> = 0.47, <L^2> = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	2932	wwPDB-VP
Average B, all atoms (Å^2)	79.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.05% 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: BMA, NAG, ACE, RET, LPP, ACT, PEF, BOG, PLM, MAN

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	0.51	0/2687	0.65	2/3662 (0.1%)
2	B	0.72	0/88	0.61	0/115
All	All	0.52	0/2775	0.65	2/3777 (0.1%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	0	ACE	C-N-CA	8.50	142.95	121.70
1	A	272	ALA	CB-CA-C	-7.25	99.23	110.10

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	2602	0	2579	64	0
2	B	88	0	89	4	0
3	C	61	0	52	3	0
4	A	47	0	73	6	0
5	A	20	0	28	2	0
6	A	34	0	62	1	0
7	A	21	0	28	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	A	37	0	50	8	0
9	A	4	0	3	0	0
10	A	16	0	0	1	0
10	B	2	0	0	0	0
All	All	2932	0	2964	81	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 14.

The worst 5 of 81 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:ASN:HD21	1:A:160:THR:HG21	1.17	1.08
1:A:200:ASN:O	1:A:204:VAL:HG23	1.67	0.94
1:A:78:ASN:ND2	1:A:160:THR:HG21	1.87	0.87
1:A:100:HIS:CE1	4:A:401:PEF:H111	2.19	0.77
1:A:214:ILE:HB	1:A:215:PRO:HD3	1.73	0.70

There are no symmetry-related clashes.

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	326/349 (93%)	294 (90%)	32 (10%)	0	100	100
2	B	9/11 (82%)	9 (100%)	0	0	100	100
All	All	335/360 (93%)	303 (90%)	32 (10%)	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	279/296 (94%)	268 (96%)	11 (4%)	32	69
2	B	10/10 (100%)	9 (90%)	1 (10%)	7	29
All	All	289/306 (94%)	277 (96%)	12 (4%)	30	66

5 of 12 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	242	THR
1	A	258	VAL
1	A	288	MET
1	A	206	TYR
1	A	286	ILE

Some 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)

5 monosaccharides are modelled in this entry.

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	NAG	C	1	1,3	14,14,15	0.56	0	17,19,21	2.29	6 (35%)
3	NAG	C	2	3	14,14,15	0.62	0	17,19,21	1.37	1 (5%)
3	BMA	C	3	3	11,11,12	0.88	0	15,15,17	1.97	4 (26%)
3	MAN	C	4	3	11,11,12	0.53	0	15,15,17	1.13	2 (13%)
3	MAN	C	5	3	11,11,12	0.91	1 (9%)	15,15,17	1.97	3 (20%)

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	NAG	C	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	C	2	3	-	0/6/23/26	0/1/1/1
3	BMA	C	3	3	-	2/2/19/22	0/1/1/1
3	MAN	C	4	3	-	2/2/19/22	0/1/1/1
3	MAN	C	5	3	-	2/2/19/22	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	5	MAN	C2-C3	2.08	1.55	1.52

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1	NAG	C1-O5-C5	5.37	119.47	112.19
3	C	5	MAN	C1-C2-C3	4.92	115.72	109.67
3	C	5	MAN	O5-C5-C6	4.17	113.74	107.20
3	C	1	NAG	C2-N2-C7	4.15	128.81	122.90
3	C	2	NAG	O5-C5-C6	3.93	113.37	107.20

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	3	BMA	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	C	3	BMA	C4-C5-C6-O6
3	C	5	MAN	C4-C5-C6-O6
3	C	5	MAN	O5-C5-C6-O6
3	C	4	MAN	C4-C5-C6-O6

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	1	NAG	2	0
3	C	5	MAN	1	0
3	C	3	BMA	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 oligosaccharide.

Oligosaccharide Chain C

Bond lengths

Bond angles

Torsions

Rings
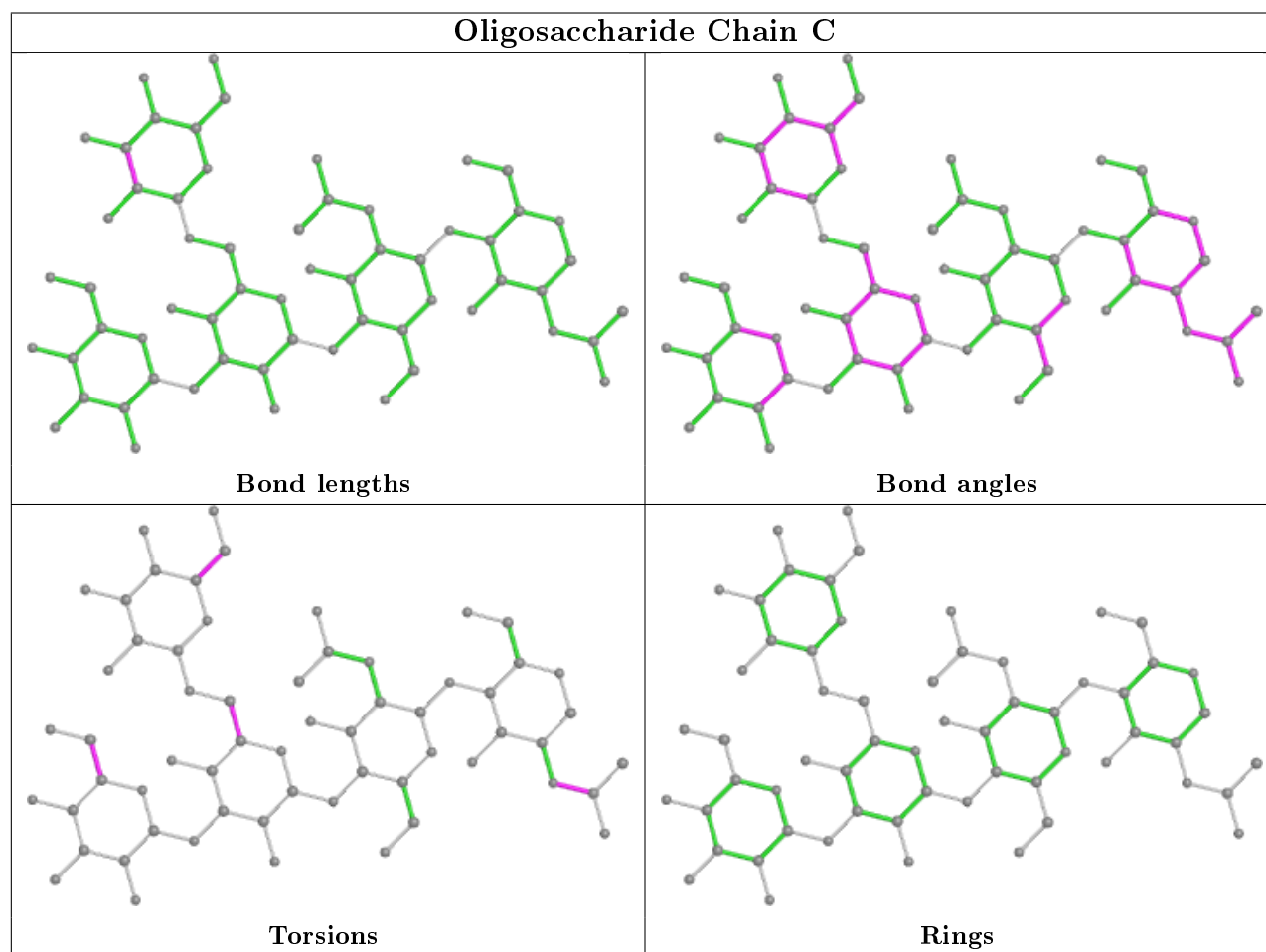
5.6 Ligand geometry (i)

7 ligands are modelled in this entry.

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	$\#|Z| > 2$
8	LPP	A	411	-	36,36,43	1.16	2 (5%)	40,41,48	1.23	3 (7%)
7	RET	A	410	-	21,21,21	0.90	1 (4%)	27,28,28	1.85	8 (29%)
6	PLM	A	404	1	16,16,17	0.68	0	15,15,17	1.25	1 (6%)
6	PLM	A	403	1	16,16,17	0.72	0	15,15,17	1.08	1 (6%)
9	ACT	A	412	-	1,3,3	2.44	1 (100%)	0,3,3	0.00	-
5	BOG	A	402	-	20,20,20	0.81	1 (5%)	25,25,25	1.21	1 (4%)
4	PEF	A	401	-	46,46,46	0.93	2 (4%)	49,51,51	1.13	4 (8%)

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
8	LPP	A	411	-	-	21/38/38/45	-
7	RET	A	410	-	-	3/14/31/31	0/1/1/1
6	PLM	A	404	1	-	0/13/14/15	-
6	PLM	A	403	1	-	0/13/14/15	-
5	BOG	A	402	-	-	2/11/31/31	0/1/1/1
4	PEF	A	401	-	-	7/50/50/50	-

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	411	LPP	O9-C11	4.67	1.47	1.34
8	A	411	LPP	O27-C29	4.26	1.45	1.33
7	A	410	RET	C1-C6	-3.12	1.49	1.53
9	A	412	ACT	CH3-C	2.44	1.51	1.48
5	A	402	BOG	O1-C1	2.22	1.44	1.40

The worst 5 of 18 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	A	411	LPP	O9-C11-C12	4.91	122.08	111.50
7	A	410	RET	C11-C10-C9	-4.16	121.38	127.31
5	A	402	BOG	C1'-O1-C1	3.68	119.94	113.84
7	A	410	RET	C3-C4-C5	-3.38	108.05	114.08
7	A	410	RET	C16-C1-C6	-3.23	105.06	110.30

There are no chirality outliers.

5 of 33 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	411	LPP	C6-O5-P1-O2
8	A	411	LPP	C6-O5-P1-O3
8	A	411	LPP	C6-O5-P1-O4
8	A	411	LPP	O10-C11-O9-C7
5	A	402	BOG	O5-C1-O1-C1'

There are no ring outliers.

5 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	411	LPP	8	0
7	A	410	RET	9	0
6	A	403	PLM	1	0
5	A	402	BOG	2	0
4	A	401	PEF	6	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 LPP A 411

Bond lengths

Bond angles

Torsions

Rings

Ligand RET A 410

Bond lengths

Bond angles

Torsions

Rings

Ligand PLM A 404

Bond lengths

Bond angles

Torsions

Rings

Ligand PLM A 403

Bond lengths

Bond angles

Torsions

Rings

Ligand BOG A 402

Bond lengths

Bond angles

Torsions

Rings

Ligand PEF A 401

Bond lengths

Bond angles

Torsions

Rings
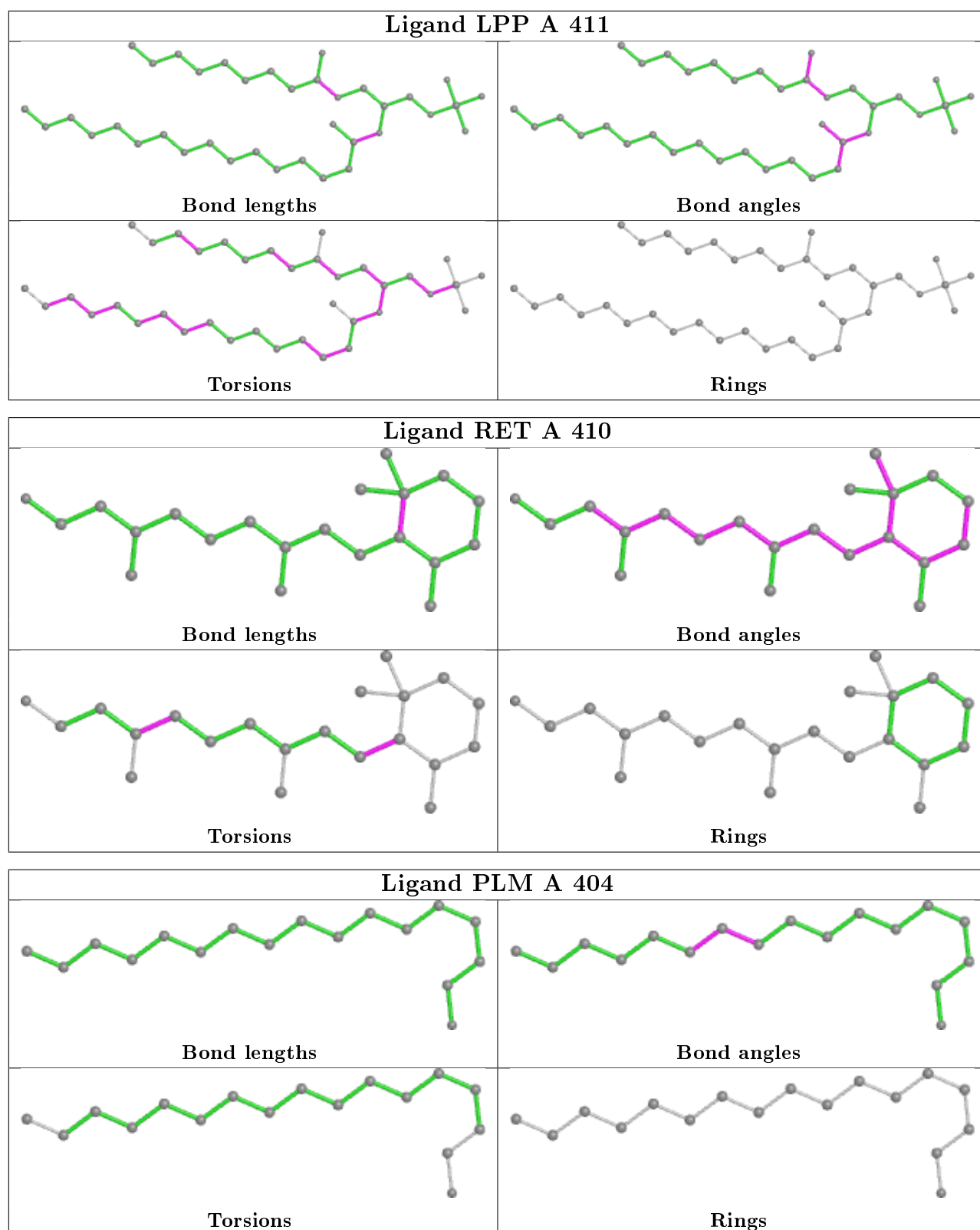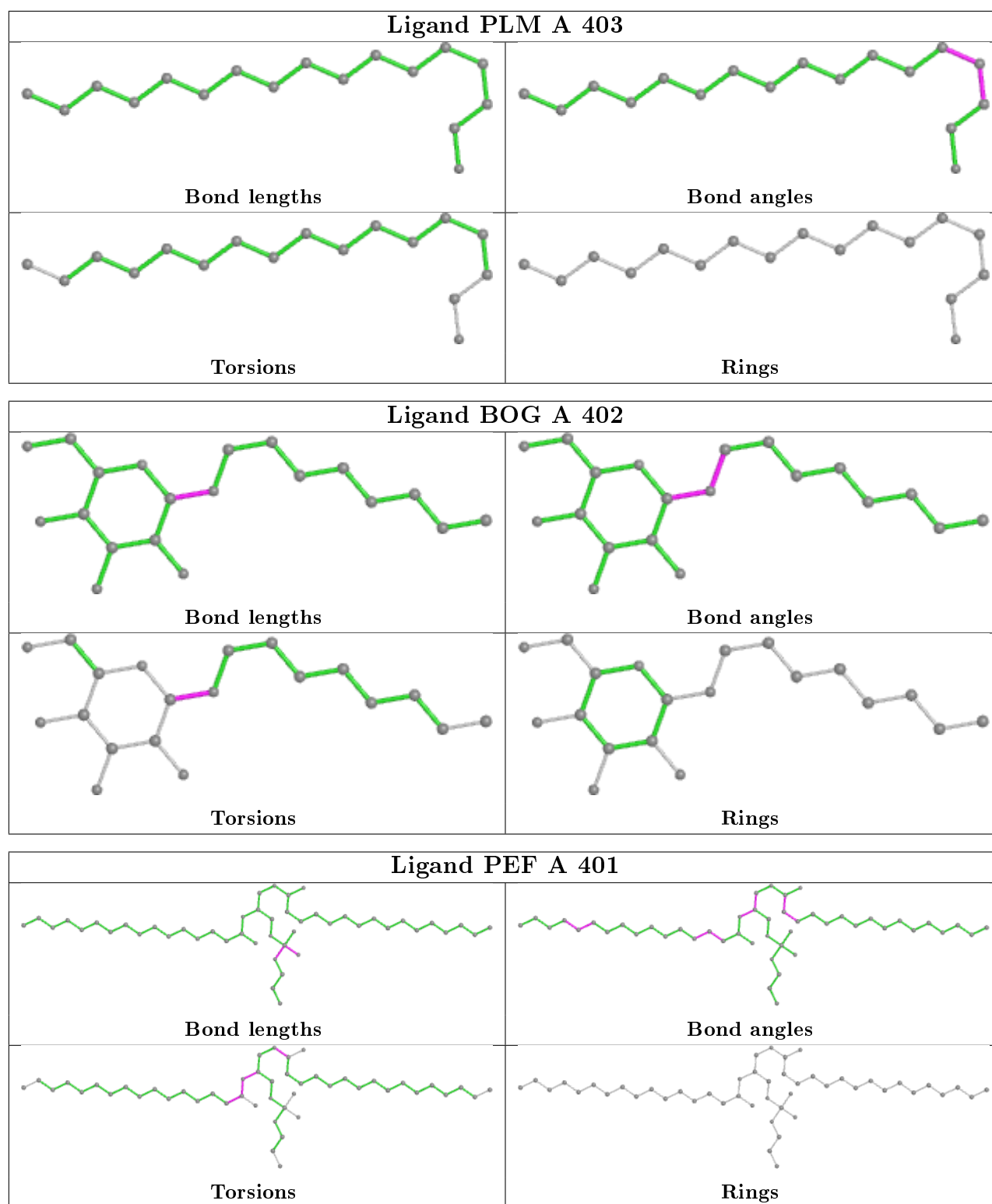
5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

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	326/349 (93%)	-0.87	0 100	100	59, 74, 98, 135	0
2	B	11/11 (100%)	-0.89	0 100	100	83, 90, 97, 100	0
All	All	337/360 (93%)	-0.87	0 100	100	59, 75, 99, 135	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates (i)

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	MAN	C	5	11/12	0.91	0.25	104,112,118,118	0
3	MAN	C	4	11/12	0.94	0.25	81,89,94,100	0
3	BMA	C	3	11/12	0.95	0.14	78,92,103,111	0
3	NAG	C	2	14/15	0.98	0.12	51,59,73,77	0
3	NAG	C	1	14/15	0.98	0.10	55,59,66,70	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.
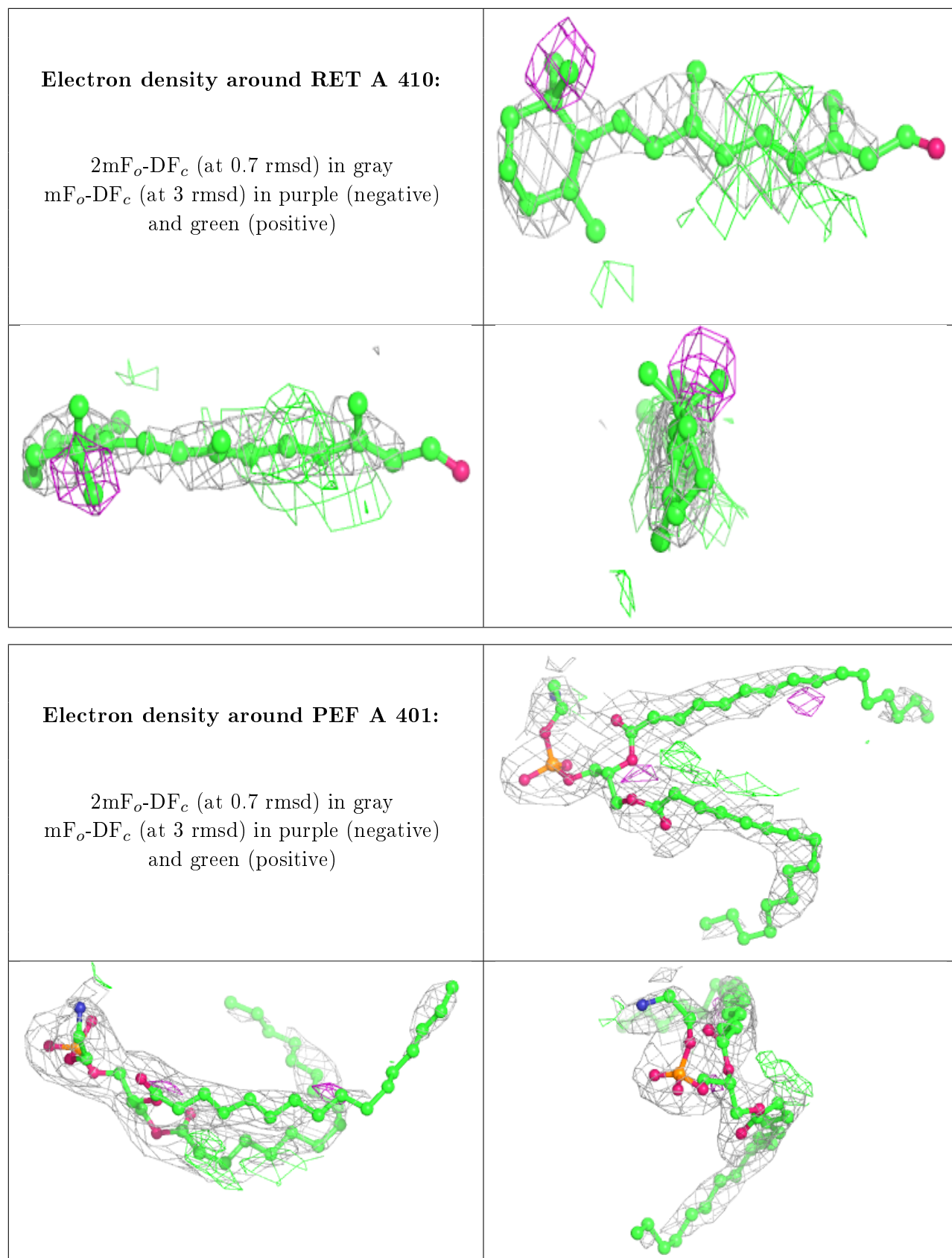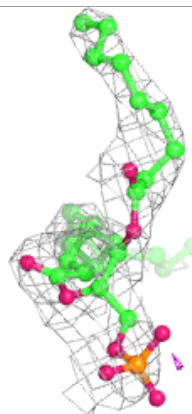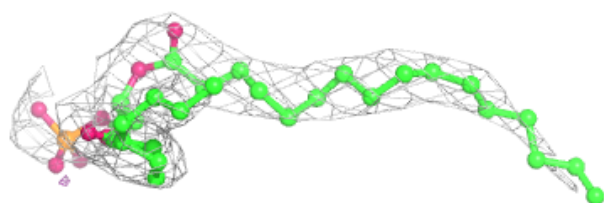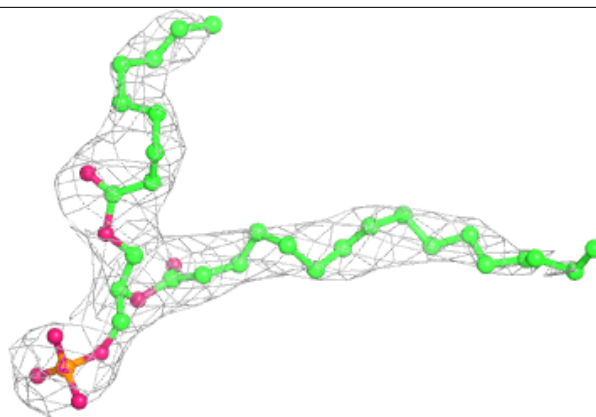
Electron density around Chain C:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray

$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
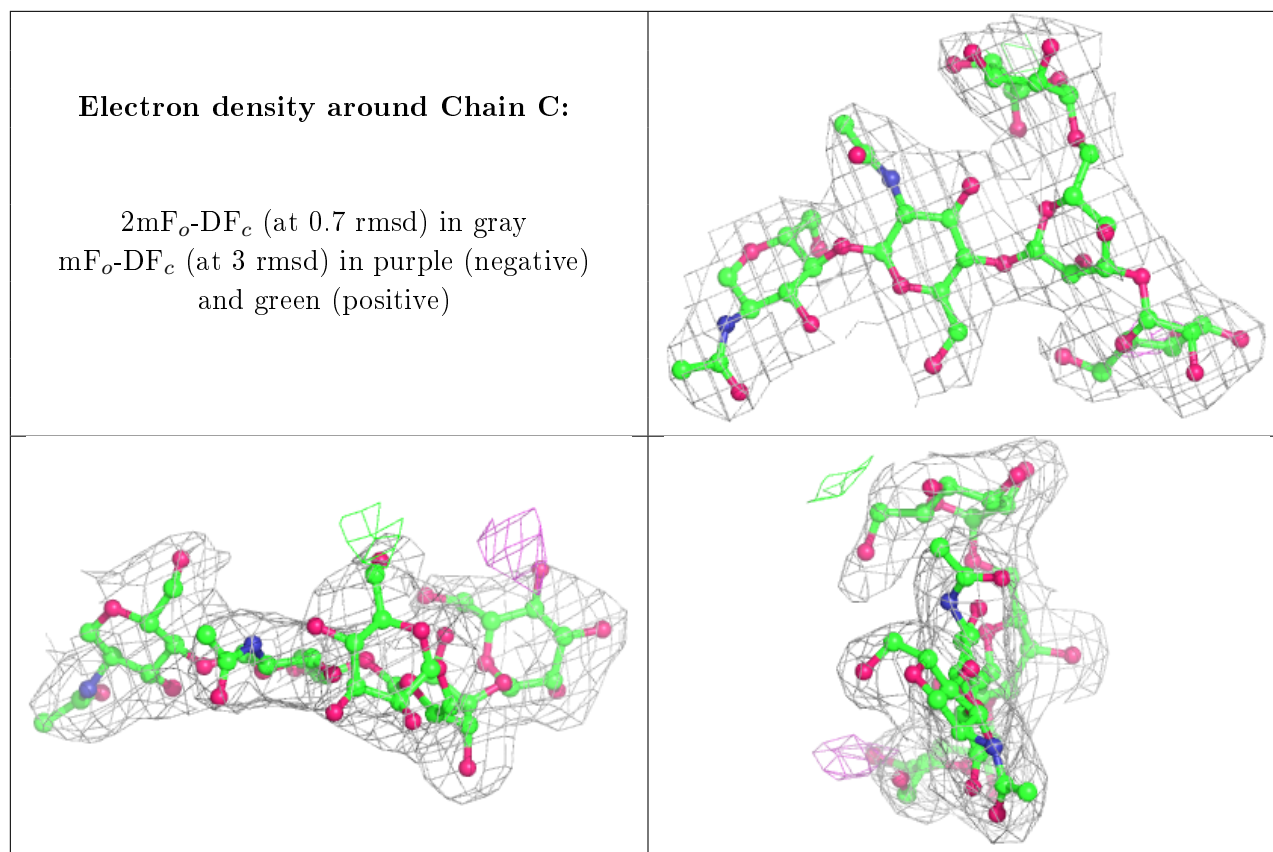
6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
7	RET	A	410	21/21	0.80	0.38	73,84,87,90	21
4	PEF	A	401	47/47	0.87	0.36	63,105,124,147	0
8	LPP	A	411	37/44	0.90	0.32	79,117,175,186	0
6	PLM	A	404	17/18	0.92	0.26	84,100,114,117	0
5	BOG	A	402	20/20	0.93	0.31	78,116,134,137	0
6	PLM	A	403	17/18	0.95	0.20	79,88,112,116	0
9	ACT	A	412	4/4	0.96	0.41	83,88,96,98	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.
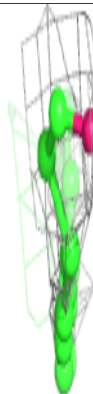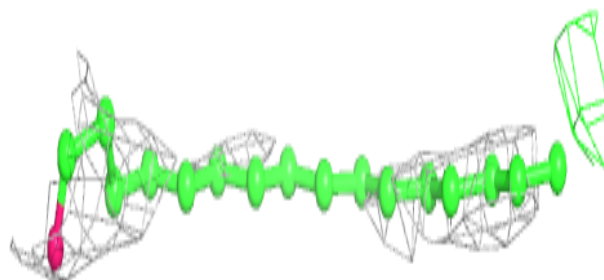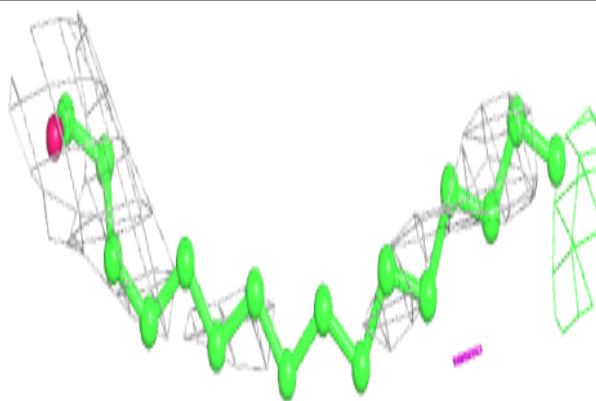
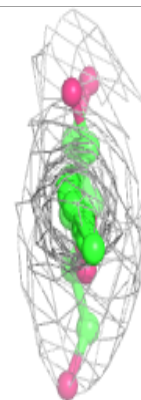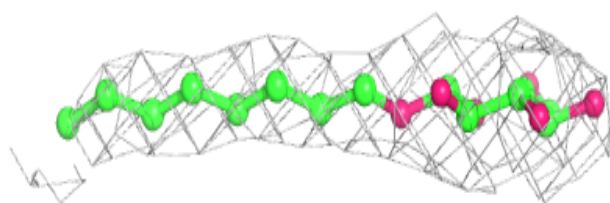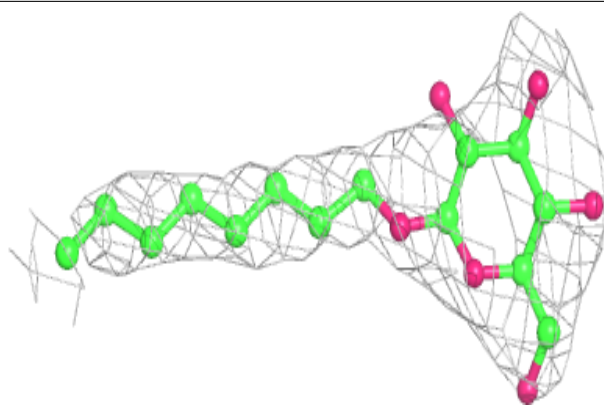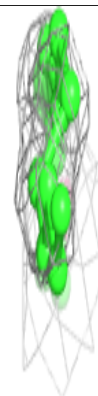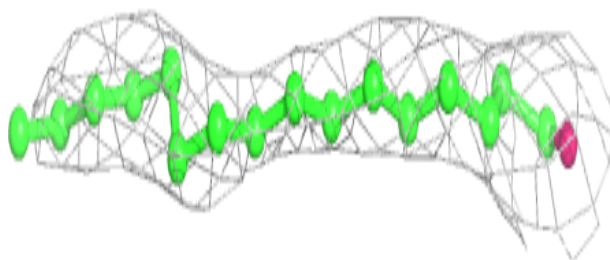**Electron density around RET A 410:**

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

Electron density around PEF A 401:

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

Electron density around LPP A 411:

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

Electron density around PLM A 404:

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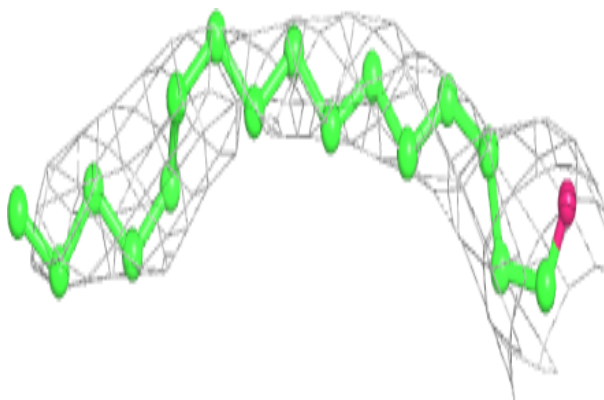and green (positive)

Electron density around BOG A 402:

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

Electron density around PLM A 403:

$2mF_o$-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.