Full wwPDB X-ray Structure Validation Report (i)

Sep 3, 2023 – 06:25 AM EDT

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PDB ID	:	3SXA
Title	:	Crystal structure of ABBB+UDP+Gal with Glycerol as the cryoprotectant
Authors	:	Johal, A.R.; Evans, S.V.
Deposited on	:	2011-07-14
Resolution	:	1.50 Å(reported)

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
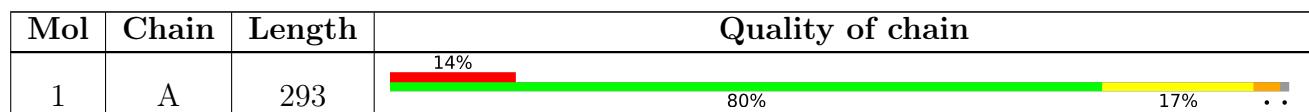
The reported resolution of this entry is 1.50 Å.

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	Percentile Ranks	Value
Rfree		0.219
Clashscore		12
Ramachandran outliers		0
Sidechain outliers		2.7%
RSRZ outliers		13.7%

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	2936 (1.50-1.50)
Clashscore	141614	3144 (1.50-1.50)
Ramachandran outliers	138981	3066 (1.50-1.50)
Sidechain outliers	138945	3064 (1.50-1.50)
RSRZ outliers	127900	2884 (1.50-1.50)

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	293	14% / 80% / 17% · ·

2 Entity composition (i)

There are 7 unique types of molecules in this entry. The entry contains 2685 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.
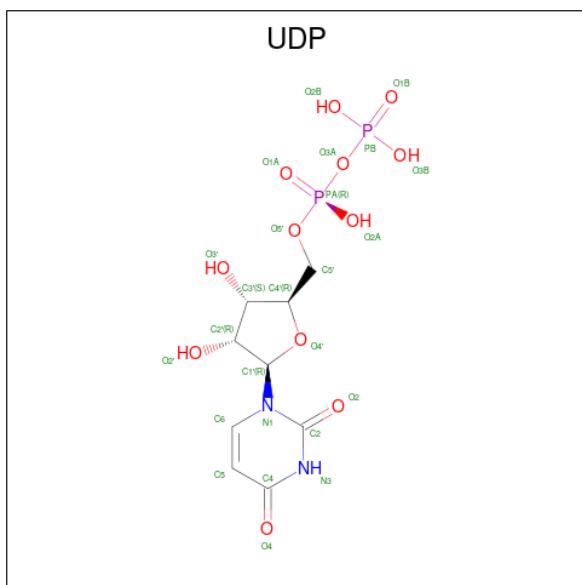
- Molecule 1 is a protein called Histo-blood group ABO system transferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	291	Total 2396	C 1549	N 418	O 415	S 14	0	0	0

There are 5 discrepancies between the modelled and reference sequences:
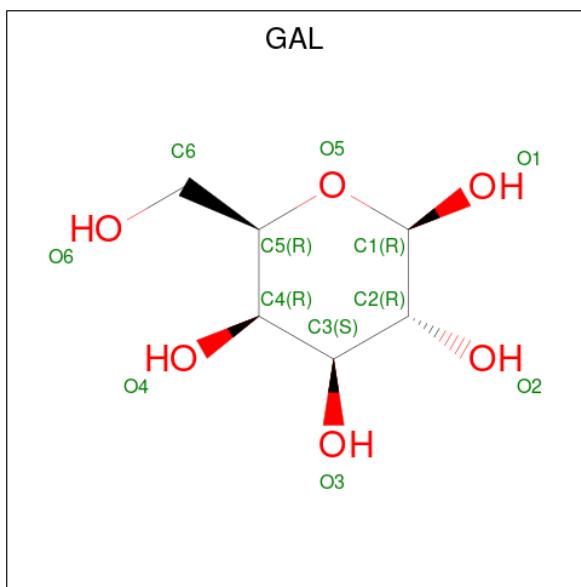
Chain	Residue	Modelled	Actual	Comment	Reference
A	62	PHE	-	expression tag	UNP P16442
A	63	MET	-	expression tag	UNP P16442
A	235	SER	GLY	SEE REMARK 999	UNP P16442
A	266	MET	LEU	SEE REMARK 999	UNP P16442
A	268	ALA	GLY	SEE REMARK 999	UNP P16442

- Molecule 2 is URIDINE-5'-DIPHOSPHATE (three-letter code: UDP) (formula: $C_9H_{14}N_2O_{12}P_2$).
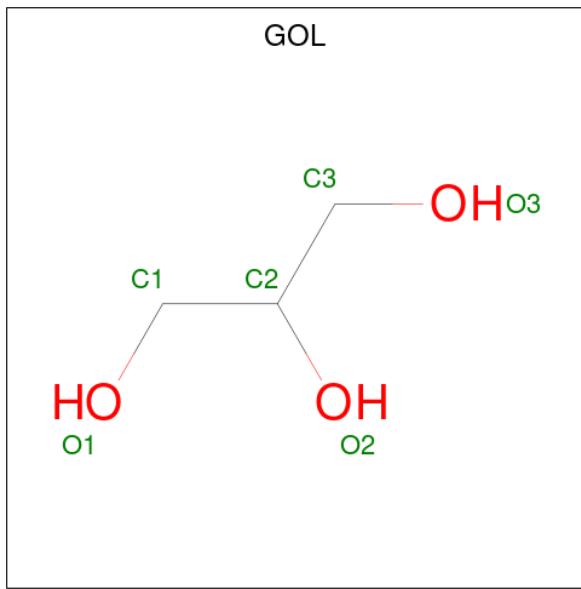
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 25	C 9	N 2	O 12	P 2	0	0

- Molecule 3 is beta-D-galactopyranose (three-letter code: GAL) (formula: $C_6H_{12}O_6$).

GAL

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			12	6	6		

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

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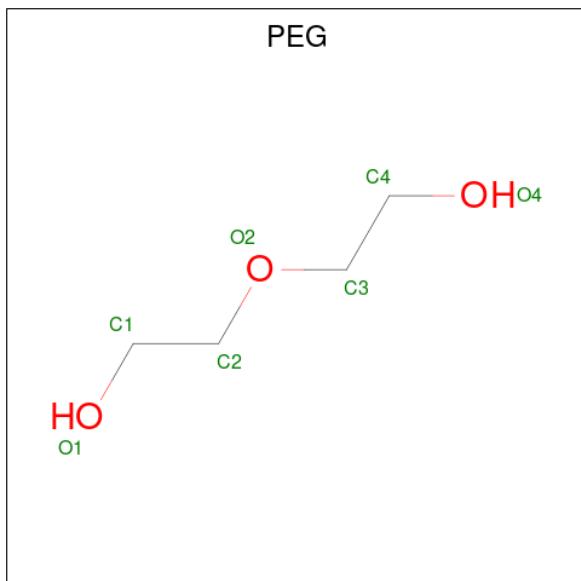
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

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

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 7	C 4	O 3	0	0
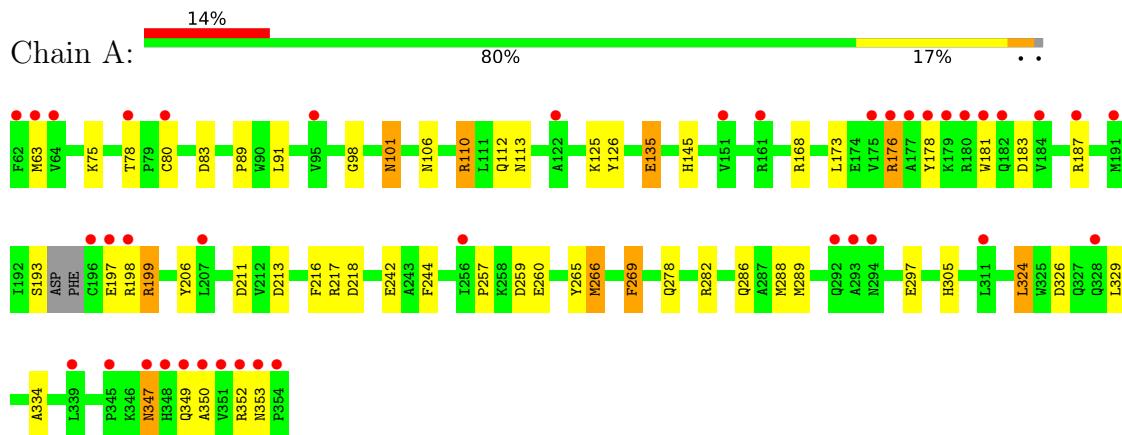
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	238	Total 238	O 238	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: Histo-blood group ABO system transferase

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	52.48Å 149.74Å 79.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 1.50 19.81 – 1.50	Depositor EDS
% Data completeness (in resolution range)	96.8 (20.00-1.50) 96.9 (19.81-1.50)	Depositor EDS
R_{merge}	0.03	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.89 (at 1.50Å)	Xtriage
Refinement program	REFMAC 5.5.0066	Depositor
R, R_{free}	0.204 , 0.233 0.192 , 0.219	Depositor DCC
R_{free} test set	2493 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å^2)	20.6	Xtriage
Anisotropy	0.270	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.41 , 56.3	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	0.97	EDS
Total number of atoms	2685	wwPDB-VP
Average B, all atoms (Å^2)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.97% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MN, PEG, GAL, GOL, UDP

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	1.40	12/2463 (0.5%)	1.29	19/3341 (0.6%)

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	266	MET	CB-CG	10.39	1.84	1.51
1	A	135	GLU	CD-OE1	-9.85	1.14	1.25
1	A	266	MET	CG-SD	-8.24	1.59	1.81
1	A	135	GLU	CD-OE2	7.65	1.34	1.25
1	A	206	TYR	CE2-CZ	7.61	1.48	1.38
1	A	135	GLU	CG-CD	6.84	1.62	1.51
1	A	244	PHE	CG-CD1	6.03	1.47	1.38
1	A	266	MET	CA-CB	6.00	1.67	1.53
1	A	135	GLU	CB-CG	-5.84	1.41	1.52
1	A	297	GLU	CG-CD	5.21	1.59	1.51
1	A	216	PHE	CE1-CZ	5.07	1.47	1.37
1	A	334	ALA	CA-CB	5.01	1.62	1.52

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	288	MET	CG-SD-CE	-8.92	85.94	100.20
1	A	259	ASP	CB-CG-OD1	8.67	126.11	118.30
1	A	168	ARG	NE-CZ-NH2	-8.03	116.29	120.30
1	A	218	ASP	CB-CG-OD2	7.31	124.88	118.30
1	A	269	PHE	CB-CG-CD2	7.19	125.83	120.80
1	A	326	ASP	CB-CG-OD2	-6.79	112.19	118.30
1	A	324	LEU	CB-CG-CD2	-6.68	99.64	111.00
1	A	213	ASP	CB-CG-OD1	6.26	123.93	118.30
1	A	126	TYR	CB-CG-CD1	-6.06	117.36	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	83	ASP	CB-CG-OD2	-5.90	112.99	118.30
1	A	282	ARG	NE-CZ-NH1	5.86	123.23	120.30
1	A	110	ARG	NE-CZ-NH2	5.53	123.06	120.30
1	A	324	LEU	CB-CG-CD1	5.52	120.39	111.00
1	A	265	TYR	CB-CG-CD1	-5.45	117.73	121.00
1	A	199	ARG	NE-CZ-NH2	-5.37	117.62	120.30
1	A	91	LEU	CB-CG-CD1	-5.34	101.91	111.00
1	A	217	ARG	NE-CZ-NH2	-5.26	117.67	120.30
1	A	211	ASP	CB-CG-OD1	5.18	122.96	118.30
1	A	135	GLU	CG-CD-OE1	-5.01	108.28	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts   ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2396	0	2383	58	0
2	A	25	0	11	0	0
3	A	12	0	12	0	0
4	A	6	0	8	0	0
5	A	1	0	0	0	0
6	A	7	0	9	0	0
7	A	238	0	0	22	1
All	All	2685	0	2423	58	1

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 12.

All (58) 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:266:MET:CB	1:A:266:MET:CG	1.84	1.50
1:A:193:SER:C	7:A:423:HOH:O	1.68	1.26
1:A:289:MET:HG2	7:A:418:HOH:O	1.12	1.23

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:GLU:HA	1:A:278:GLN:NE2	1.57	1.18
1:A:63:MET:SD	1:A:112:GLN:NE2	2.18	1.14
1:A:197:GLU:HG3	7:A:423:HOH:O	1.55	1.06
1:A:197:GLU:CG	7:A:423:HOH:O	2.02	1.06
1:A:135:GLU:OE1	7:A:412:HOH:O	1.75	1.05
1:A:125:LYS:HE3	7:A:399:HOH:O	0.85	1.02
1:A:329:LEU:O	7:A:414:HOH:O	1.79	1.00
1:A:197:GLU:CA	1:A:278:GLN:HE22	1.75	0.98
1:A:197:GLU:HA	1:A:278:GLN:HE22	0.81	0.96
1:A:199:ARG:HB2	7:A:533:HOH:O	1.77	0.83
1:A:266:MET:CB	1:A:266:MET:SD	2.68	0.81
1:A:347:ASN:ND2	1:A:350:ALA:CB	2.45	0.80
1:A:75:LYS:HA	1:A:75:LYS:HE3	1.64	0.78
1:A:347:ASN:ND2	1:A:350:ALA:HB2	1.99	0.78
1:A:347:ASN:HD21	1:A:350:ALA:HB2	1.55	0.72
1:A:101:ASN:HD22	1:A:101:ASN:C	1.99	0.66
1:A:110:ARG:HH22	1:A:113:ASN:HD22	1.44	0.66
1:A:347:ASN:ND2	1:A:350:ALA:HB3	2.10	0.65
1:A:80:CYS:O	7:A:400:HOH:O	2.14	0.65
1:A:286:GLN:HA	1:A:289:MET:HE2	1.81	0.63
1:A:181:TRP:CG	1:A:352:ARG:HD3	2.34	0.63
1:A:197:GLU:CA	1:A:278:GLN:NE2	2.47	0.62
1:A:349:GLN:NE2	1:A:353:ASN:HD22	2.01	0.58
1:A:106:ASN:OD1	1:A:145:HIS:HE1	1.88	0.57
1:A:176:ARG:HG2	7:A:450:HOH:O	2.07	0.54
1:A:242:GLU:H	1:A:242:GLU:CD	2.12	0.54
1:A:75:LYS:HE3	1:A:75:LYS:CA	2.28	0.53
1:A:183:ASP:O	1:A:187:ARG:HG2	2.08	0.52
1:A:135:GLU:CG	7:A:412:HOH:O	2.58	0.52
1:A:242:GLU:CG	7:A:486:HOH:O	2.59	0.51
1:A:110:ARG:HH22	1:A:113:ASN:ND2	2.08	0.51
1:A:305:HIS:HE1	7:A:19:HOH:O	1.93	0.50
1:A:266:MET:HB3	1:A:324:LEU:HD23	1.92	0.50
1:A:289:MET:CE	7:A:60:HOH:O	2.60	0.50
1:A:181:TRP:CD1	1:A:352:ARG:HD3	2.49	0.48
1:A:289:MET:HE3	7:A:60:HOH:O	2.14	0.47
1:A:242:GLU:HG3	7:A:486:HOH:O	2.14	0.46
1:A:329:LEU:HG	7:A:455:HOH:O	2.15	0.46
1:A:305:HIS:HD2	7:A:51:HOH:O	1.98	0.46
1:A:289:MET:CG	7:A:418:HOH:O	2.00	0.45
1:A:110:ARG:NH2	1:A:113:ASN:HD22	2.14	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:89:PRO:HG2	7:A:384:HOH:O	2.17	0.44
1:A:286:GLN:HA	1:A:289:MET:CE	2.47	0.43
1:A:63:MET:HA	1:A:112:GLN:HE22	1.84	0.43
1:A:349:GLN:HE22	1:A:353:ASN:ND2	2.17	0.43
1:A:289:MET:CE	7:A:413:HOH:O	2.66	0.43
1:A:197:GLU:HG2	7:A:423:HOH:O	1.93	0.42
1:A:349:GLN:NE2	1:A:353:ASN:ND2	2.66	0.42
1:A:101:ASN:C	1:A:101:ASN:ND2	2.70	0.42
1:A:176:ARG:HE	1:A:176:ARG:HB2	1.44	0.42
1:A:80:CYS:HB3	1:A:98:GLY:O	2.19	0.41
1:A:257:PRO:HG2	1:A:260:GLU:OE2	2.20	0.41
1:A:178:TYR:CE1	1:A:187:ARG:HG3	2.56	0.41
1:A:289:MET:HE2	1:A:289:MET:HB2	1.75	0.41
1:A:197:GLU:HA	1:A:278:GLN:CD	2.31	0.40

All (1) 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)
7:A:460:HOH:O	7:A:507:HOH:O[3_454]	1.89	0.31

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	287/293 (98%)	282 (98%)	5 (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	260/262 (99%)	253 (97%)	7 (3%)	44	15

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	78	THR
1	A	101	ASN
1	A	173	LEU
1	A	176	ARG
1	A	198	ARG
1	A	269	PHE
1	A	347	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	73	GLN
1	A	101	ASN
1	A	113	ASN
1	A	145	HIS
1	A	275	GLN
1	A	278	GLN
1	A	286	GLN
1	A	294	ASN
1	A	305	HIS
1	A	347	ASN
1	A	349	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

WORLDWIDE
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PROTEIN DATA BANK

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 5 ligands modelled in this entry, 1 is monoatomic - leaving 4 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
3	GAL	A	2	-	12,12,12	1.60	3 (25%)	17,17,17	2.35	7 (41%)
6	PEG	A	7	-	6,6,6	1.13	0	5,5,5	1.75	2 (40%)
4	GOL	A	3	-	5,5,5	0.70	0	5,5,5	1.17	0
2	UDP	A	1	5	24,26,26	1.66	4 (16%)	37,40,40	1.51	7 (18%)

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	GAL	A	2	-	-	0/2/22/22	0/1/1/1
6	PEG	A	7	-	-	1/4/4/4	-
4	GOL	A	3	-	-	2/4/4/4	-
2	UDP	A	1	5	-	1/16/32/32	0/2/2/2

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1	UDP	PB-O1B	3.71	1.62	1.50
2	A	1	UDP	C6-C5	3.21	1.42	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1	UDP	O4'-C1'	3.14	1.49	1.42
3	A	2	GAL	O5-C1	2.85	1.50	1.42
3	A	2	GAL	C4-C3	2.53	1.58	1.52
3	A	2	GAL	C6-C5	2.46	1.60	1.51
2	A	1	UDP	O3'-C3'	2.40	1.48	1.43

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	2	GAL	C1-O5-C5	-5.24	103.78	113.66
2	A	1	UDP	N3-C2-N1	4.23	120.50	114.89
3	A	2	GAL	O1-C1-O5	-3.67	99.37	110.38
3	A	2	GAL	O1-C1-C2	3.58	119.12	109.03
3	A	2	GAL	C4-C3-C2	-3.33	105.02	110.82
3	A	2	GAL	O5-C1-C2	3.11	115.83	110.28
6	A	7	PEG	O2-C2-C1	2.88	122.72	110.07
2	A	1	UDP	C4-N3-C2	-2.87	122.79	126.58
3	A	2	GAL	O5-C5-C4	2.80	114.79	109.69
2	A	1	UDP	C6-N1-C2	-2.77	117.45	120.99
2	A	1	UDP	PA-O3A-PB	-2.72	123.51	132.83
3	A	2	GAL	O2-C2-C3	-2.44	104.70	110.35
2	A	1	UDP	C5-C4-N3	2.30	118.28	114.84
2	A	1	UDP	O2-C2-N1	-2.25	119.79	122.79
6	A	7	PEG	C3-O2-C2	2.19	122.79	113.29
2	A	1	UDP	O4'-C4'-C3'	-2.19	100.78	105.11

There are no chirality outliers.

All (4) torsion outliers are listed below:
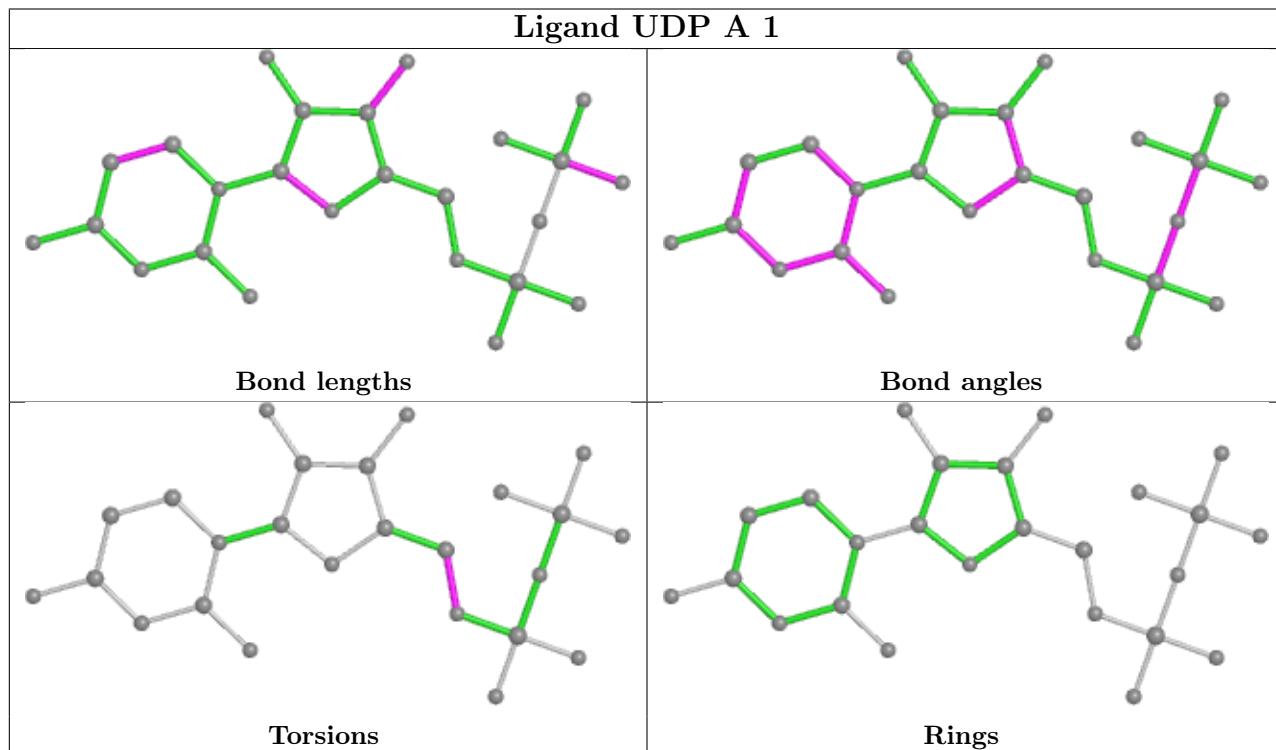
Mol	Chain	Res	Type	Atoms
4	A	3	GOL	O1-C1-C2-C3
4	A	3	GOL	O1-C1-C2-O2
2	A	1	UDP	C4'-C5'-O5'-PA
6	A	7	PEG	C4-C3-O2-C2

There are no ring outliers.

No monomer is involved in short contacts.

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 UDP A 1

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	291/293 (99%)	1.12	40 (13%)	3	3	10, 17, 37, 50	0

All (40) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	354	PRO	10.7
1	A	80	CYS	9.2
1	A	350	ALA	8.7
1	A	181	TRP	8.0
1	A	351	VAL	7.8
1	A	348	HIS	7.7
1	A	349	GLN	6.7
1	A	64	VAL	6.5
1	A	353	ASN	5.6
1	A	198	ARG	5.6
1	A	178	TYR	5.3
1	A	197	GLU	5.1
1	A	62	PHE	5.1
1	A	177	ALA	5.1
1	A	161	ARG	4.8
1	A	63	MET	4.5
1	A	184	VAL	4.0
1	A	78	THR	3.8
1	A	256	ILE	3.6
1	A	347	ASN	3.6
1	A	179	LYS	3.3
1	A	293	ALA	3.3
1	A	196	CYS	3.2
1	A	345	PRO	3.1
1	A	175	VAL	2.8
1	A	352	ARG	2.8
1	A	176	ARG	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	294	ASN	2.7
1	A	292	GLN	2.6
1	A	187	ARG	2.4
1	A	311	LEU	2.4
1	A	182	GLN	2.3
1	A	151	VAL	2.3
1	A	191	MET	2.2
1	A	328	GLN	2.2
1	A	180	ARG	2.1
1	A	339	LEU	2.1
1	A	95	VAL	2.0
1	A	207	LEU	2.0
1	A	122	ALA	2.0

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

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

6.3 Carbohydrates ⓘ
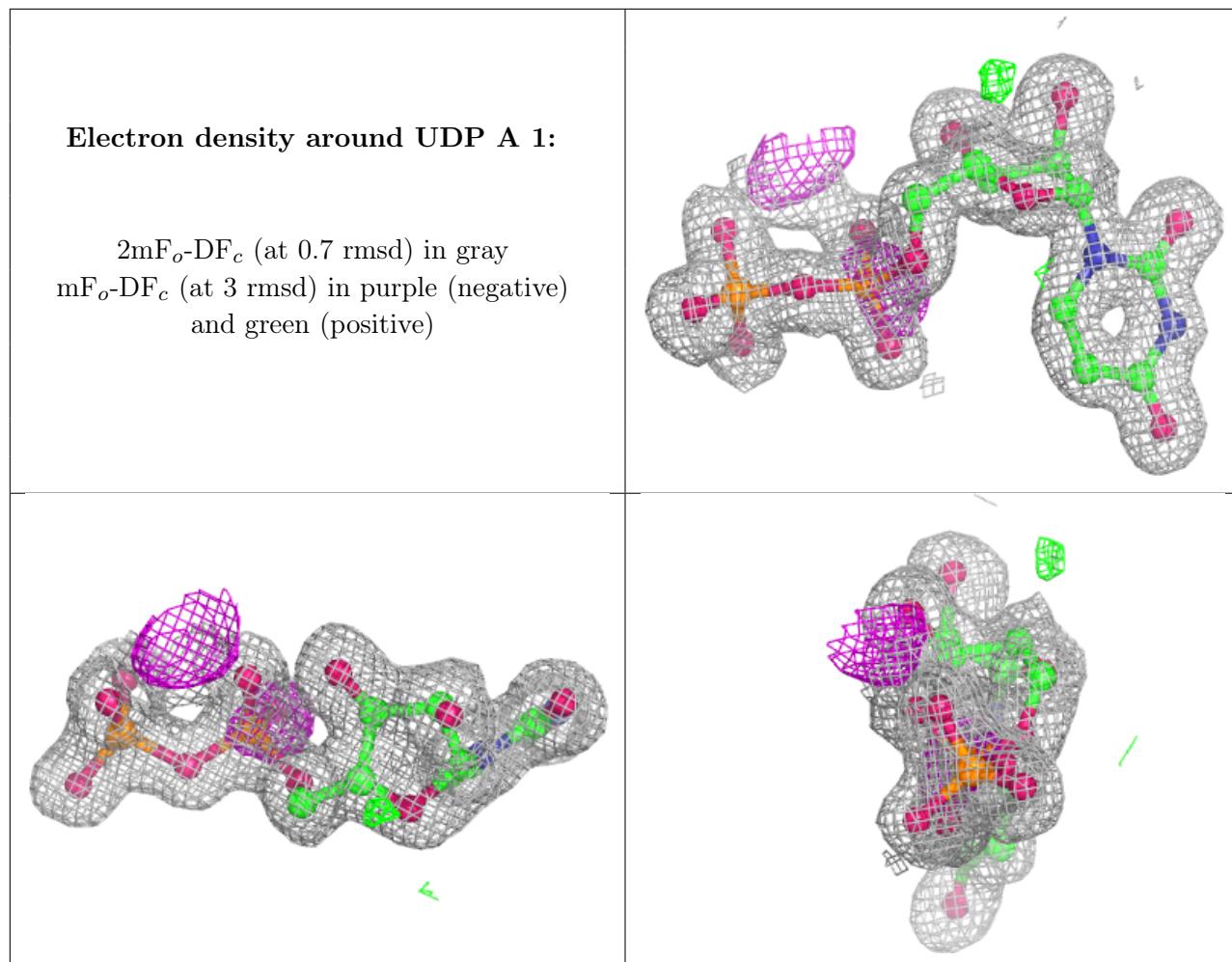
There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	PEG	A	7	7/7	0.61	0.30	45,46,48,50	0
4	GOL	A	3	6/6	0.71	0.17	32,36,39,45	0
3	GAL	A	2	12/12	0.89	0.16	20,24,33,39	0
2	UDP	A	1	25/25	0.93	0.11	16,20,25,29	0
5	MN	A	6	1/1	0.99	0.07	19,19,19,19	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 UDP A 1:

$2mF_o$-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.