Full wwPDB X-ray Structure Validation Report ⓘ

Nov 29, 2022 – 03:25 pm GMT

PDB ID	:	7Z5Y
Title	:	CRYSTAL STRUCTURE OF WEISSELLA VIRIDESCENS FEMXVV NON-RIBOSOMAL AMINO ACID TRANSFERASE IN COMPLEX WITH A PEPTIDYL-XNA CONJUGATE
Authors	:	Li de la Sierra-Gallay, I.
Deposited on	:	2022-03-10
Resolution	:	1.71 Å(reported)

This is a Full wwPDB X-ray Structure Validation 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 ⓘ 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 ⓘ) were used in the production of this report:

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.31.3
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0267
CCP4	:	7.1.010 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 1.71 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.
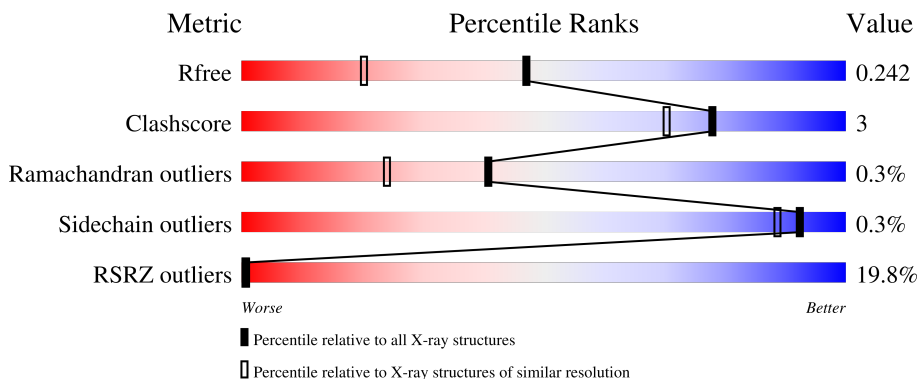
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5722 (1.74-1.70)
Clashscore	141614	6152 (1.74-1.70)
Ramachandran outliers	138981	6051 (1.74-1.70)
Sidechain outliers	138945	6051 (1.74-1.70)
RSRZ outliers	127900	5629 (1.74-1.70)

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	343	19% / 91% / 7% •
2	B	4	75% / 25%
3	C	5	20% / 80% / 20%

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
2	6HA	B	7	-	-	-	X

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 2996 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 UDP-N-acetylmuramoylpentapeptide-lysine N(6)-alanyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	336	Total 2691	C 1707	N 445	O 527	S 12	0	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	336	GLY	-	expression tag	UNP Q9EY50
A	337	HIS	-	expression tag	UNP Q9EY50
A	338	HIS	-	expression tag	UNP Q9EY50
A	339	HIS	-	expression tag	UNP Q9EY50
A	340	HIS	-	expression tag	UNP Q9EY50
A	341	HIS	-	expression tag	UNP Q9EY50
A	342	HIS	-	expression tag	UNP Q9EY50

- Molecule 2 is a DNA chain called HNA (5'-D(P*(6HA)P*(6HC)P*(6HC))-R(P*(A9Z))-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	4	Total 91	C 45	N 19	O 23	P 4	0	0	0

- Molecule 3 is a protein called UDP-MurNAc-pentapeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	5	Total 31	C 17	N 5	O 8	S 1	0	0	0

- 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 URIDINE-5'-DIPHOSPHATE (three-letter code: UDP) (formula: $C_9H_{14}N_2O_{12}P_2$) (labeled as "Ligand of Interest" by depositor).

UDP
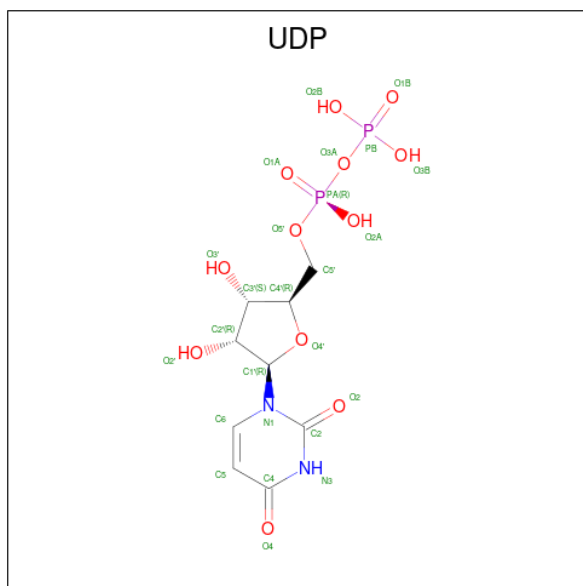
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			24	9	2	11	2		

- Molecule 6 is N-acetyl-alpha-muramic acid (three-letter code: MUB) (formula: $C_{11}H_{19}NO_8$) (labeled as "Ligand of Interest" by depositor).
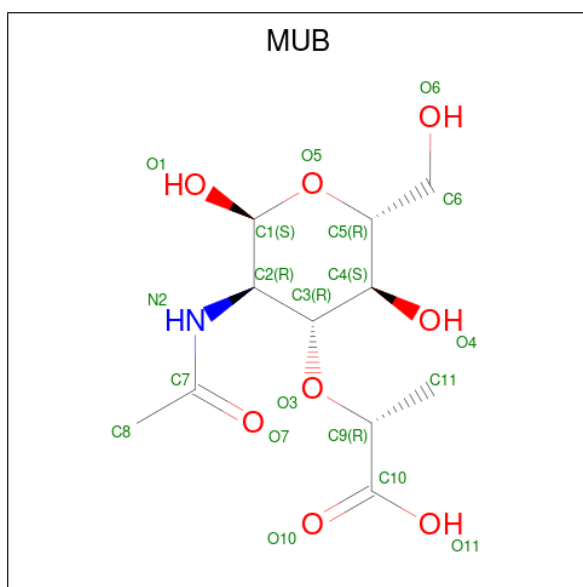
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	C	1	Total	C	N	O	0	0
			19	11	1	7		

- Molecule 7 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	129	Total	O	0	0
			129	129		
7	B	2	Total	O	0	0
			2	2		
7	C	3	Total	O	0	0
			3	3		

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.
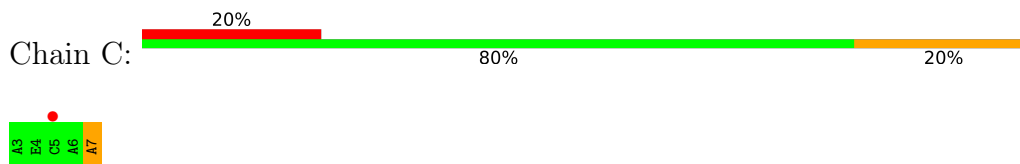
• Molecule 1: UDP-N-acetylmuramoylpentapeptide-lysine N(6)-alanyltransferase

Chain A:
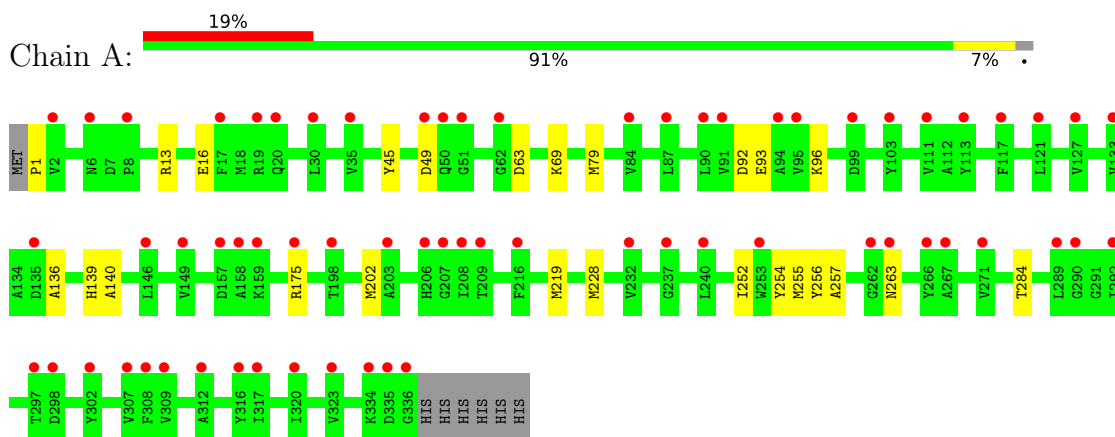
• Molecule 2: HNA (5'-D(P*(6HA)P*(6HC)P*(6HC))-R(P*(A9Z))-3')

Chain B:
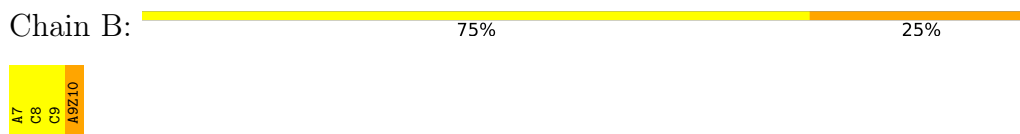
• Molecule 3: UDP-MurNAc-pentapeptide

Chain C:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	42.16Å 101.96Å 46.19Å 90.00° 102.78° 90.00°	Depositor
Resolution (Å)	41.20 – 1.71 41.20 – 1.71	Depositor EDS
% Data completeness (in resolution range)	92.9 (41.20-1.71) 93.9 (41.20-1.71)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.97 (at 1.71Å)	Xtriage
Refinement program	PHENIX 1.20_4459	Depositor
R, R_{free}	0.212 , 0.241 0.213 , 0.242	Depositor DCC
R_{free} test set	1923 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	27.7	Xtriage
Anisotropy	0.466	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	(Not available) , (Not available)	EDS
L-test for twinning[2]	$< |L| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	2996	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.07% 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: UDP, GOL, 6HA, 6HC, FGA, A9Z, DAL, MUB

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	0.45	0/2752	0.63	0/3733
3	C	0.33	0/9	0.38	0/9
All	All	0.45	0/2761	0.63	0/3742

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 ⓘ

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	2691	0	2602	16	0
2	B	91	0	55	1	0
3	C	31	0	22	1	0
4	A	6	0	8	0	0
5	A	24	0	11	0	0
6	C	19	0	17	0	0
7	A	129	0	0	3	0
7	B	2	0	0	0	0
7	C	3	0	0	0	0
All	All	2996	0	2715	16	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 3.

All (16) 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:92:ASP:O	1:A:96:LYS:HD3	1.87	0.74
1:A:219:MET:HG2	1:A:228:MET:SD	2.40	0.61
1:A:63:ASP:OD2	1:A:69:LYS:NZ	2.41	0.51
1:A:263:ASN:HB2	7:A:552:HOH:O	2.12	0.49
1:A:175:ARG:NH1	7:A:505:HOH:O	2.46	0.49
1:A:202:MET:HG3	2:B:10:A9Z:H2	1.96	0.48
1:A:254:TYR:HE1	1:A:257:ALA:HB2	1.80	0.47
1:A:136:ALA:HB3	1:A:140:ALA:HB2	2.01	0.43
1:A:252:ILE:HG13	1:A:284:THR:HG21	2.02	0.42
1:A:256:TYR:OH	3:C:7:DAL:O	2.34	0.42
1:A:13:ARG:O	1:A:16:GLU:HG2	2.20	0.41
1:A:254:TYR:CE1	1:A:257:ALA:HB2	2.56	0.41
1:A:1:PRO:HG2	1:A:45:TYR:CE2	2.55	0.41
1:A:93:GLU:HA	1:A:93:GLU:OE1	2.21	0.40
1:A:139:HIS:HD2	7:A:514:HOH:O	2.03	0.40
1:A:255:MET:HE2	1:A:256:TYR:CE2	2.57	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	334/343 (97%)	330 (99%)	3 (1%)	1 (0%)	41	24

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	79	MET

5.3.2　Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	288/295 (98%)	287 (100%)	1 (0%)	92	89
3	C	1/1 (100%)	1 (100%)	0	100	100
All	All	289/296 (98%)	288 (100%)	1 (0%)	92	89

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	263	ASN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

7 non-standard protein/DNA/RNA residues 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	FGA	C	4	3	7,8,9	0.64	0	7,9,11	1.06	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	DAL	C	7	3	5,5,5	0.98	0	6,6,6	1.61	2 (33%)
3	DAL	C	6	3	3,4,5	0.68	0	2,4,6	0.77	0
2	6HC	B	8	2	18,21,22	0.84	1 (5%)	21,29,32	0.95	0
2	6HA	B	7	2	22,25,25	0.91	1 (4%)	24,37,37	1.38	2 (8%)
2	6HC	B	9	2	18,21,22	0.91	0	21,29,32	1.10	2 (9%)
2	A9Z	B	10	3,2	24,31,32	0.77	0	19,45,48	1.20	3 (15%)

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	FGA	C	4	3	-	0/7/8/9	-
3	DAL	C	7	3	-	2/4/4/4	-
3	DAL	C	6	3	-	0/0/2/4	-
2	6HC	B	8	2	-	1/7/22/23	0/2/2/2
2	6HA	B	7	2	-	1/6/23/23	0/3/3/3
2	6HC	B	9	2	-	2/7/22/23	0/2/2/2
2	A9Z	B	10	3,2	-	2/5/31/32	0/4/4/4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	7	6HA	C5-C4	2.49	1.47	1.40
2	B	8	6HC	C6-C5	2.05	1.39	1.35

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	7	6HA	N3-C2-N1	-3.38	123.40	128.68
2	B	10	A9Z	C5T-N1T-C2'	3.31	128.41	125.48
2	B	7	6HA	C4-C5-N7	-2.97	106.30	109.40
3	C	7	DAL	OXT-C-O	-2.80	117.72	124.09
2	B	9	6HC	C1'-N1-C6	2.45	123.56	119.77
2	B	9	6HC	C6'-O4'-C4'	2.30	115.30	112.19
2	B	10	A9Z	C5-C6-N6	2.29	123.84	120.35
3	C	7	DAL	OXT-C-CA	2.20	122.02	114.06
2	B	10	A9Z	C5T-C4T-N3T	-2.04	108.30	111.34

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	9	6HC	O4'-C4'-C5'-O5'
2	B	9	6HC	C3'-C4'-C5'-O5'
2	B	10	A9Z	O4'-C4'-C5'-O5'
2	B	10	A9Z	C3'-C4'-C5'-O5'
2	B	8	6HC	O4'-C4'-C5'-O5'
3	C	7	DAL	O-C-CA-N
2	B	7	6HA	O4'-C4'-C5'-O5'
3	C	7	DAL	OXT-C-CA-N

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	7	DAL	1	0
2	B	10	A9Z	1	0

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

3 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	#$|Z| > 2$
6	MUB	C	101	5,3	18,19,20	0.43	0	21,26,28	1.40	3 (14%)
5	UDP	A	402	6	21,25,26	0.34	0	31,37,40	0.52	0
4	GOL	A	401	-	5,5,5	1.16	0	5,5,5	0.98	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
6	MUB	C	101	5,3	-	0/10/32/34	0/1/1/1
5	UDP	A	402	6	-	2/13/31/32	0/2/2/2
4	GOL	A	401	-	-	0/4/4/4	-

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	C	101	MUB	O5-C1-C2	4.46	114.00	109.52
6	C	101	MUB	C1-C2-N2	-2.68	107.62	110.73
6	C	101	MUB	O1-C1-C2	-2.05	104.96	109.22

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	402	UDP	PB-O3A-PA-O2A
5	A	402	UDP	O4'-C4'-C5'-O5'

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 MUB C 101

Bond lengths

Bond angles

Torsions

Rings

Ligand UDP A 402

Bond lengths

Bond angles

Torsions

Rings
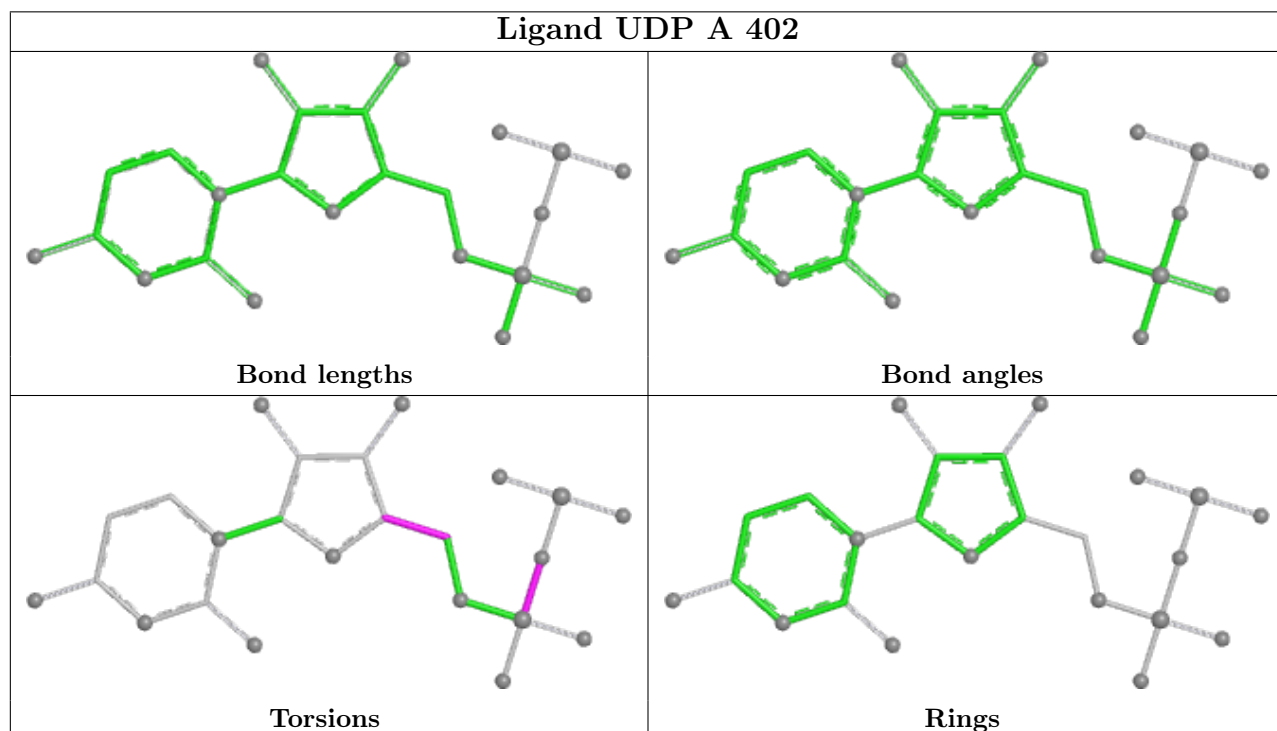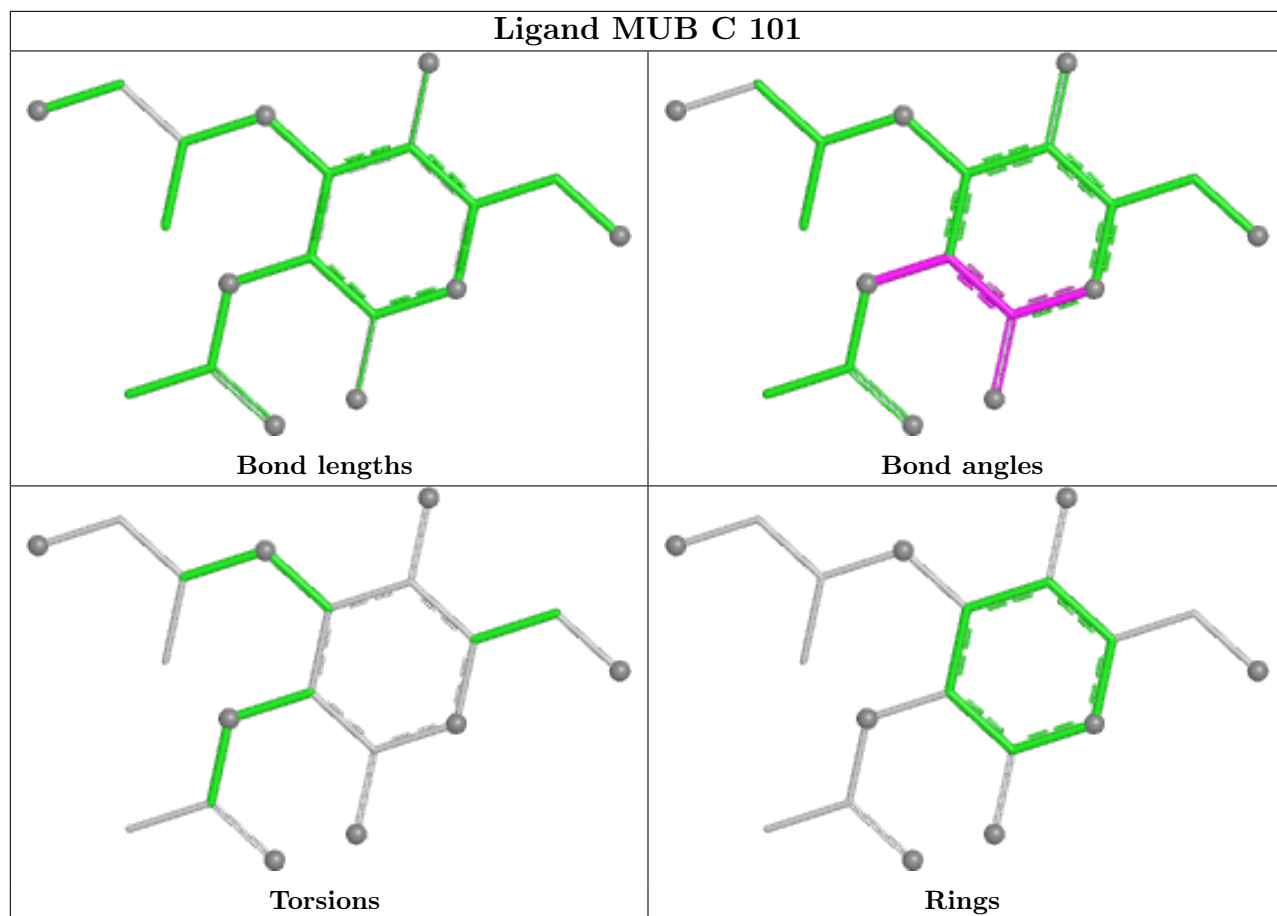
5.7 Other polymers (i)

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 ⓘ

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(Å²)	Q<0.9
1	A	336/343 (97%)	1.30	66 (19%)	1	1	21, 29, 41, 55	0
2	B	0/4	-		-		-	-
3	C	2/5 (40%)	2.86	1 (50%)	0	0	40, 40, 40, 42	0
All	All	338/352 (96%)	1.31	67 (19%)	1	1	21, 29, 41, 55	0

All (67) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	335	ASP	5.1
1	A	51	GLY	4.3
1	A	90	LEU	4.0
3	C	5	CYS	3.9
1	A	298	ASP	3.8
1	A	237	GLY	3.5
1	A	8	PRO	3.5
1	A	50	GLN	3.4
1	A	207	GLY	3.3
1	A	133	VAL	3.3
1	A	135	ASP	3.3
1	A	263	ASN	3.1
1	A	203	ALA	3.1
1	A	317	ILE	2.8
1	A	159	LYS	2.8
1	A	157	ASP	2.8
1	A	103	TYR	2.7
1	A	121	LEU	2.7
1	A	336	GLY	2.7
1	A	334	LYS	2.7
1	A	320	ILE	2.7
1	A	95	VAL	2.6
1	A	111	VAL	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	267	ALA	2.6
1	A	117	PHE	2.6
1	A	84	VAL	2.6
1	A	240	LEU	2.6
1	A	302	TYR	2.6
1	A	146	LEU	2.5
1	A	262	GLY	2.5
1	A	35	VAL	2.5
1	A	87	LEU	2.5
1	A	99	ASP	2.5
1	A	49	ASP	2.4
1	A	232	VAL	2.4
1	A	30	LEU	2.4
1	A	297	THR	2.4
1	A	323	VAL	2.4
1	A	309	VAL	2.4
1	A	316	TYR	2.4
1	A	292	ILE	2.3
1	A	308	PHE	2.3
1	A	208	ILE	2.3
1	A	6	ASN	2.3
1	A	175	ARG	2.3
1	A	127	VAL	2.3
1	A	158	ALA	2.3
1	A	62	GLY	2.2
1	A	312	ALA	2.2
1	A	2	VAL	2.2
1	A	91	VAL	2.2
1	A	198	THR	2.2
1	A	289	LEU	2.1
1	A	209	THR	2.1
1	A	94	ALA	2.1
1	A	253	TRP	2.1
1	A	149	VAL	2.1
1	A	290	GLY	2.1
1	A	266	TYR	2.1
1	A	216	PHE	2.1
1	A	206	HIS	2.1
1	A	271	VAL	2.1
1	A	17	PHE	2.1
1	A	20	GLN	2.1
1	A	307	VAL	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	113	TYR	2.0
1	A	19	ARG	2.0

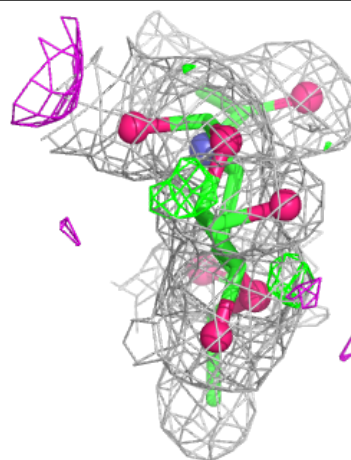## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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
2	6HA	B	7	23/23	0.43	0.40	63,74,85,90	0
3	DAL	C	7	6/6	0.53	0.31	31,33,34,37	0
3	FGA	C	4	9/10	0.64	0.17	39,40,46,48	0
2	6HC	B	8	20/21	0.67	0.31	58,63,76,82	0
2	A9Z	B	10	28/29	0.71	0.19	39,45,53,54	0
2	6HC	B	9	20/21	0.74	0.30	50,55,61,63	0
3	DAL	C	6	5/6	0.93	0.12	31,32,35,37	0

6.3 Carbohydrates ⓘ

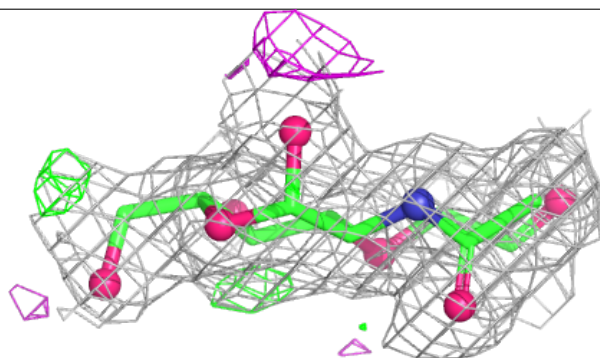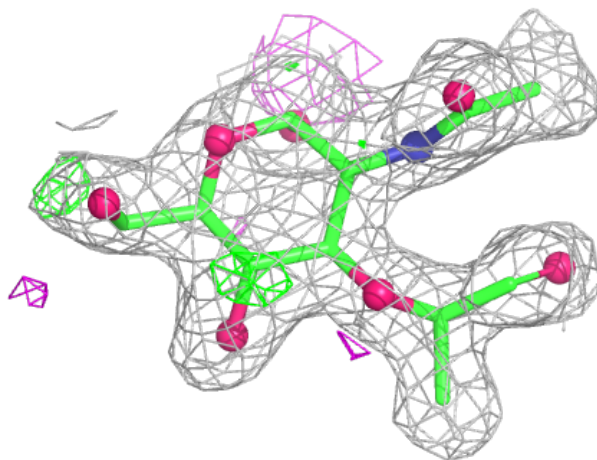There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.
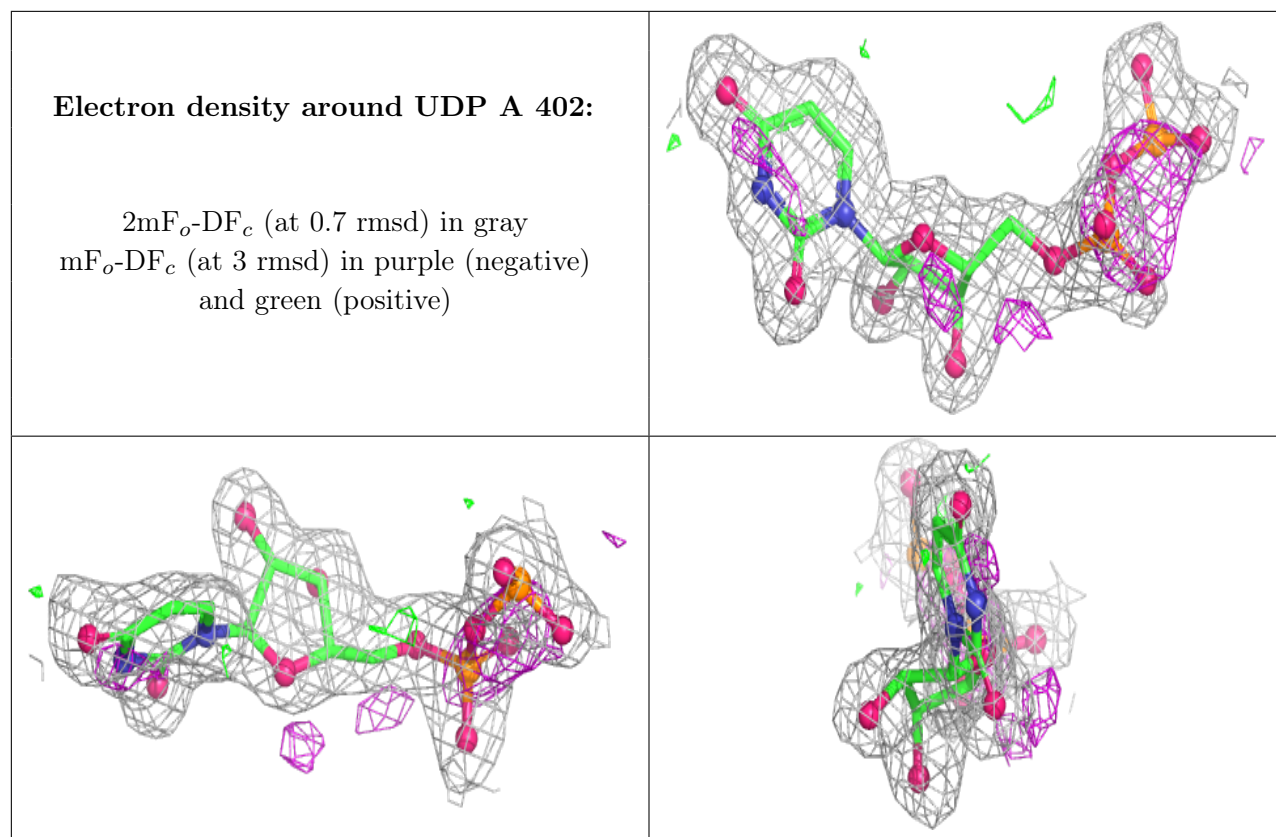
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	GOL	A	401	6/6	0.83	0.16	25,26,26,30	0
6	MUB	C	101	19/20	0.84	0.14	29,34,39,39	0
5	UDP	A	402	24/25	0.89	0.14	23,29,33,35	0

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 MUB C 101:

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

Electron density around UDP 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)

6.5 Other polymers ⓘ

There are no such residues in this entry.