



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2020 – 12:28 PM BST

PDB ID : 6R4G
Title : Crystal structure of human GFAT-1 in complex with UDP-GlcNAc
Authors : Ruegenberg, S.; Horn, M.; Pichlo, C.; Allmeroth, K.; Baumann, U.; Denzel, M.S.
Deposited on : 2019-03-22
Resolution : 2.50 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
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) : 2.13.1

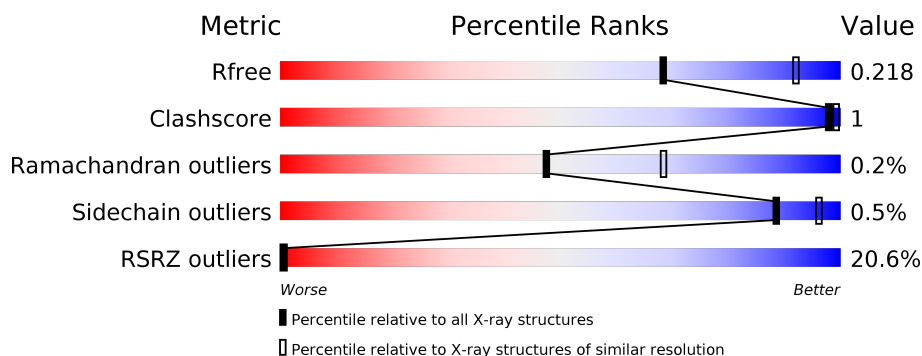
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 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 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 $\leq 5\%$. 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	687	<div> <div>9%</div> <div>92%</div> <div>5%</div> </div>
1	B	687	<div> <div>30%</div> <div>93%</div> <div>5%</div> </div>

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 20869 atoms, of which 10388 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.

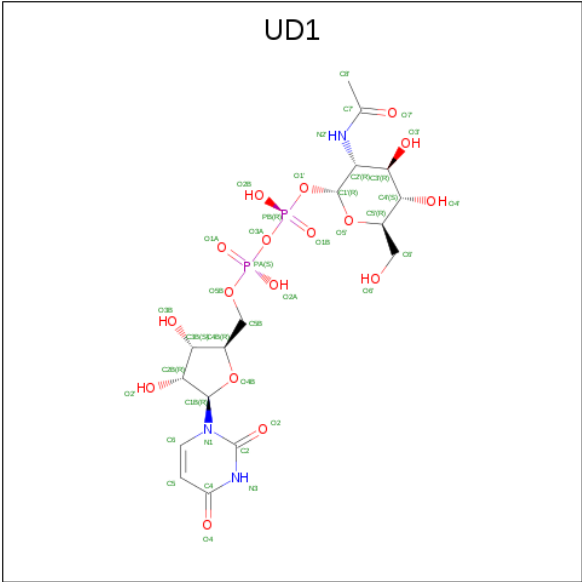
- Molecule 1 is a protein called Glutamine--fructose-6-phosphate aminotransferase [isomerizing] 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	652	Total	C	H	N	O	S	0	0	0
			10291	3251	5142	897	969	32			
1	B	652	Total	C	H	N	O	S	0	0	0
			10317	3250	5170	894	971	32			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	299A	HIS	-	insertion	UNP Q06210
A	299B	HIS	-	insertion	UNP Q06210
A	299C	HIS	-	insertion	UNP Q06210
A	299D	HIS	-	insertion	UNP Q06210
A	299E	HIS	-	insertion	UNP Q06210
A	299F	HIS	-	insertion	UNP Q06210
B	299A	HIS	-	insertion	UNP Q06210
B	299B	HIS	-	insertion	UNP Q06210
B	299C	HIS	-	insertion	UNP Q06210
B	299D	HIS	-	insertion	UNP Q06210
B	299E	HIS	-	insertion	UNP Q06210
B	299F	HIS	-	insertion	UNP Q06210

- Molecule 2 is URIDINE-DIPHOSPHATE-N-ACETYLGLUCOSAMINE (three-letter code: UD1) (formula: C₁₇H₂₇N₃O₁₇P₂).

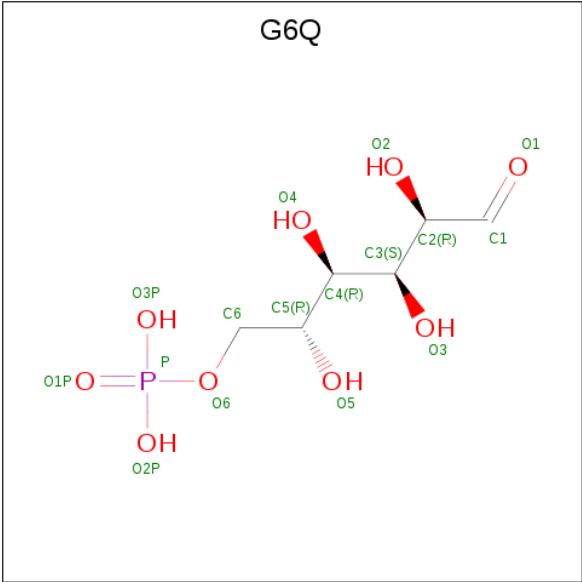


Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	P	0	0
			64	17	25	3	17	2		
2	B	1	Total	C	H	N	O	P	0	0
			64	17	25	3	17	2		

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Mg	0	0
			1	1		
3	A	1	Total	Mg	0	0
			1	1		

- Molecule 4 is GLUCOSE-6-PHOSPHATE (three-letter code: G6Q) (formula: C₆H₁₃O₉P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	H	O	P	0	0
			29	6	13	9	1		
4	B	1	Total	C	H	O	P	0	0
			29	6	13	9	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	47	Total	O	0	0
			47	47		
5	B	26	Total	O	0	0
			26	26		

4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	152.43 Å 152.43 Å 169.27 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.36 – 2.50 48.67 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.8 (46.36-2.50) 96.6 (48.67-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.48 (at 2.51 Å)	Xtriage
Refinement program	PHENIX (dev_2499: ???)	Depositor
R, R_{free}	0.190 , 0.216 0.192 , 0.218	Depositor DCC
R_{free} test set	1935 reflections (2.80%)	wwPDB-VP
Wilson B-factor (Å ²)	54.6	Xtriage
Anisotropy	0.106	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 57.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	20869	wwPDB-VP
Average B, all atoms (Å ²)	98.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.35% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: MG, G6Q, UD1

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	0.24	0/5238	0.43	0/7071
1	B	0.24	0/5234	0.42	0/7065
All	All	0.24	0/10472	0.42	0/14136

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	5149	5142	5152	9	1
1	B	5147	5170	5168	5	1
2	A	39	25	25	0	0
2	B	39	25	25	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	16	13	11	0	0
4	B	16	13	11	0	0
5	A	47	0	0	0	0
5	B	26	0	0	0	0
All	All	10481	10388	10392	14	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 1.

All (14) 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:36:ASP:O	1:A:64:GLY:N	2.23	0.71
1:A:533:GLU:OE1	1:A:633:ARG:NH1	2.24	0.71
1:A:2:CYS:N	1:A:123:ASN:OD1	2.27	0.67
1:B:2:CYS:N	1:B:33:ARG:O	2.31	0.64
1:A:640:SER:N	1:A:645:GLN:OE1	2.30	0.63
1:A:451:GLY:O	1:A:456:ARG:NH1	2.40	0.54
1:A:595:ARG:NH2	1:A:623:GLU:O	2.46	0.48
1:A:44:GLY:N	1:A:56:LYS:O	2.39	0.48
1:A:622:LYS:N	1:A:637:VAL:O	2.48	0.45
1:B:419:PHE:CZ	1:B:433:LEU:HA	2.52	0.44
1:B:554:GLU:OE1	1:B:558:LYS:NZ	2.46	0.43
1:A:419:PHE:CZ	1:A:433:LEU:HA	2.54	0.42
1:B:642:ASP:OD1	1:B:643:CYS:N	2.52	0.42
1:B:250:VAL:O	1:B:251:GLU:HB2	2.21	0.41

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)
1:A:312:GLU:OE2	1:B:538:LYS:NZ[4_554]	2.18	0.02

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	646/687 (94%)	628 (97%)	17 (3%)	1 (0%)	47 68
1	B	646/687 (94%)	615 (95%)	30 (5%)	1 (0%)	47 68

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1292/1374 (94%)	1243 (96%)	47 (4%)	2 (0%)	47 68

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	632	LYS
1	B	677	SER

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	565/601 (94%)	562 (100%)	3 (0%)	88 96
1	B	568/601 (94%)	565 (100%)	3 (0%)	88 96
All	All	1133/1202 (94%)	1127 (100%)	6 (0%)	88 96

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	95	ARG
1	A	170	PHE
1	A	632	LYS
1	B	79	MET
1	B	170	PHE
1	B	482	PHE

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

5.3.3 RNA ⓘ

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 6 ligands modelled in this entry, 2 are 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
2	UD1	A	701	3	34,41,41	3.54	15 (44%)	45,62,62	1.19	5 (11%)
4	G6Q	B	703	-	14,15,15	0.46	0	20,21,21	0.69	0
4	G6Q	A	703	-	14,15,15	0.36	0	20,21,21	1.03	1 (5%)
2	UD1	B	701	3	34,41,41	3.55	15 (44%)	45,62,62	1.24	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
2	UD1	A	701	3	-	1/24/63/63	0/3/3/3
4	G6Q	B	703	-	-	7/18/20/20	-
4	G6Q	A	703	-	-	4/18/20/20	-
2	UD1	B	701	3	-	2/24/63/63	0/3/3/3

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	UD1	C3B-C2B	-8.30	1.30	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	701	UD1	C3B-C2B	-8.24	1.30	1.53
2	A	701	UD1	O4B-C1B	-7.72	1.30	1.41
2	B	701	UD1	O4B-C1B	-7.68	1.30	1.41
2	B	701	UD1	C6-N1	7.56	1.45	1.35
2	B	701	UD1	C4-N3	7.51	1.46	1.33
2	A	701	UD1	C4-N3	7.50	1.46	1.33
2	A	701	UD1	C6-N1	7.47	1.45	1.35
2	A	701	UD1	C2-N3	6.21	1.50	1.38
2	B	701	UD1	C2-N3	6.12	1.50	1.38
2	B	701	UD1	C2B-C1B	5.84	1.62	1.53
2	A	701	UD1	C2B-C1B	5.66	1.62	1.53
2	B	701	UD1	C6-C5	4.63	1.48	1.38
2	A	701	UD1	C6-C5	4.59	1.48	1.38
2	B	701	UD1	O4B-C4B	4.39	1.54	1.45
2	A	701	UD1	O4B-C4B	4.31	1.54	1.45
2	A	701	UD1	C5B-C4B	-3.45	1.40	1.51
2	B	701	UD1	C5B-C4B	-3.32	1.41	1.51
2	B	701	UD1	O5'-C1'	3.17	1.49	1.41
2	A	701	UD1	O5'-C1'	3.12	1.49	1.41
2	A	701	UD1	C7'-N2'	3.12	1.45	1.34
2	B	701	UD1	C7'-N2'	3.09	1.45	1.34
2	A	701	UD1	O3B-C3B	2.97	1.50	1.43
2	B	701	UD1	O3B-C3B	2.97	1.50	1.43
2	A	701	UD1	C2'-N2'	2.34	1.49	1.45
2	B	701	UD1	C3'-C2'	-2.33	1.48	1.53
2	A	701	UD1	C3'-C2'	-2.31	1.48	1.53
2	B	701	UD1	C2'-N2'	2.23	1.49	1.45
2	B	701	UD1	O4-C4	-2.21	1.19	1.24
2	A	701	UD1	O4-C4	-2.10	1.19	1.24

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	701	UD1	O3A-PB-O1'	3.19	108.93	102.48
2	A	701	UD1	O3A-PB-O1'	3.01	108.55	102.48
2	B	701	UD1	C3B-C2B-C1B	2.86	105.29	100.98
2	B	701	UD1	PB-O3A-PA	-2.60	123.89	132.83
4	A	703	G6Q	O2-C2-C3	2.55	115.52	109.46
2	A	701	UD1	PB-O3A-PA	-2.54	124.10	132.83
2	A	701	UD1	O5'-C1'-O1'	-2.46	108.15	111.36
2	A	701	UD1	C8'-C7'-N2'	2.39	120.14	116.10
2	B	701	UD1	C8'-C7'-N2'	2.34	120.06	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	701	UD1	C3B-C2B-C1B	2.34	104.50	100.98

There are no chirality outliers.

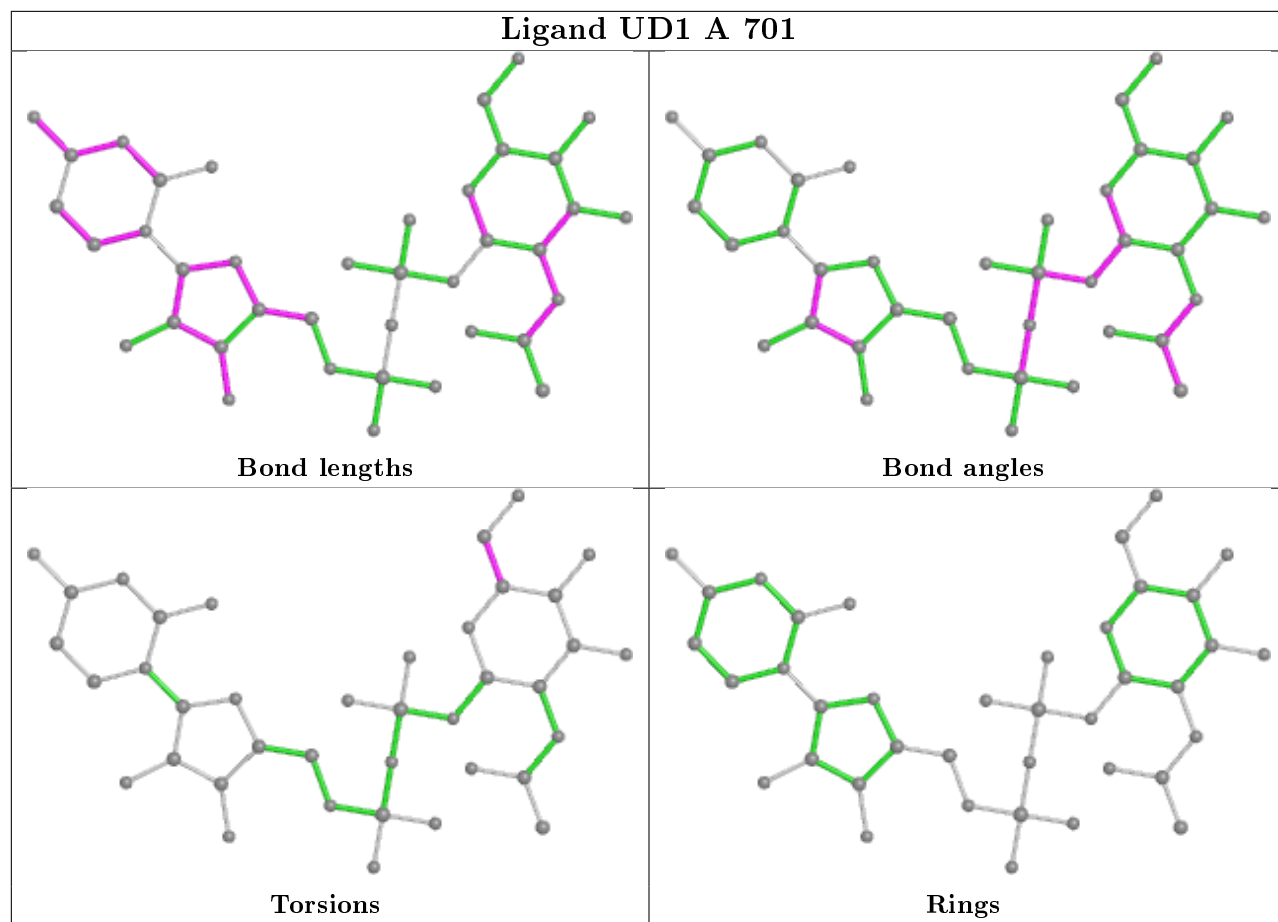
All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	703	G6Q	C4-C5-C6-O6
4	A	703	G6Q	O5-C5-C6-O6
4	B	703	G6Q	C1-C2-C3-C4
4	B	703	G6Q	O2-C2-C3-C4
4	B	703	G6Q	O2-C2-C3-O3
4	B	703	G6Q	C1-C2-C3-O3
2	A	701	UD1	C4'-C5'-C6'-O6'
2	B	701	UD1	C4'-C5'-C6'-O6'
2	B	701	UD1	PA-O3A-PB-O1'
4	B	703	G6Q	C6-O6-P-O2P
4	B	703	G6Q	C6-O6-P-O3P
4	A	703	G6Q	C3-C4-C5-O5
4	A	703	G6Q	C5-C6-O6-P
4	B	703	G6Q	C3-C4-C5-O5

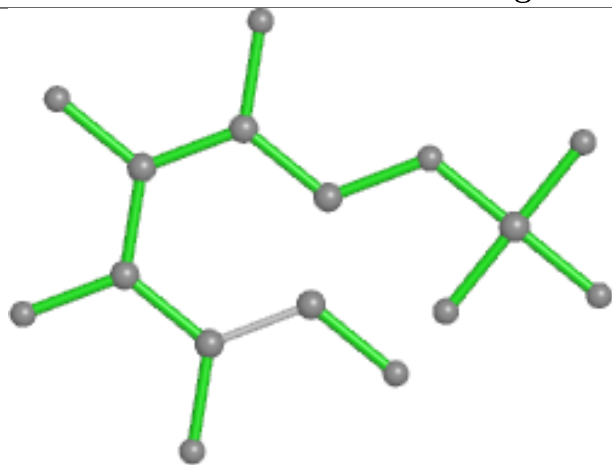
There are no ring outliers.

No monomer is involved in short contacts.

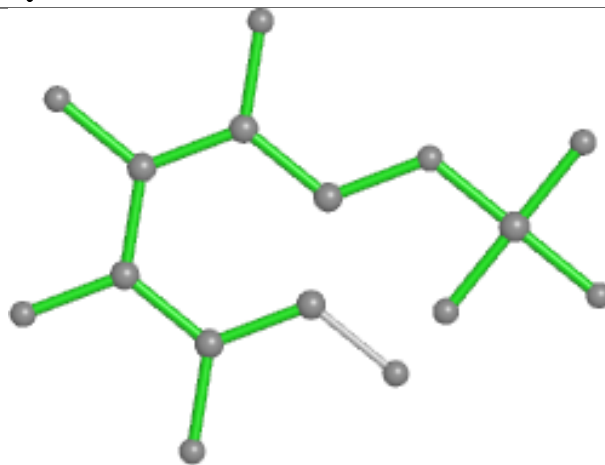
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 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.



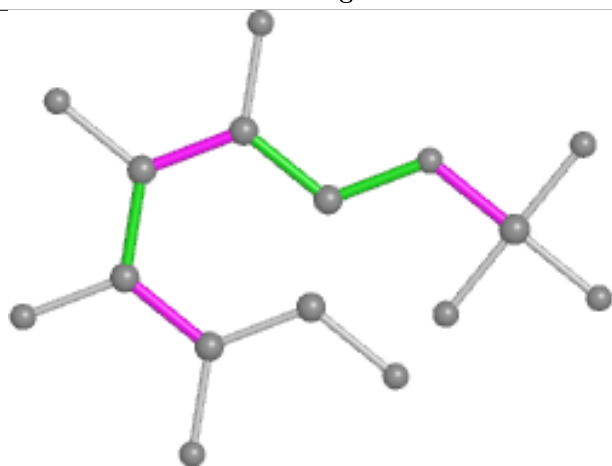
Ligand G6Q B 703



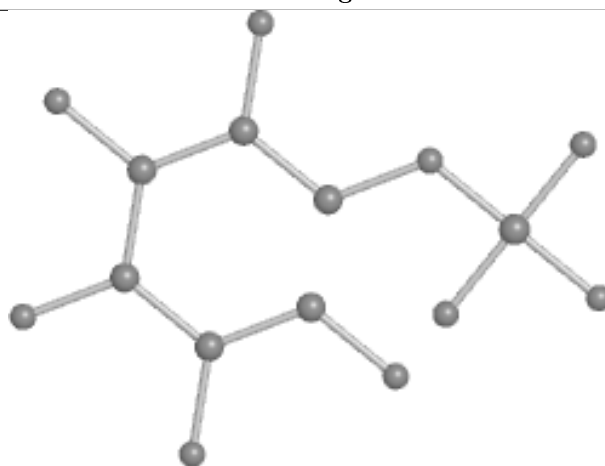
Bond lengths



Bond angles

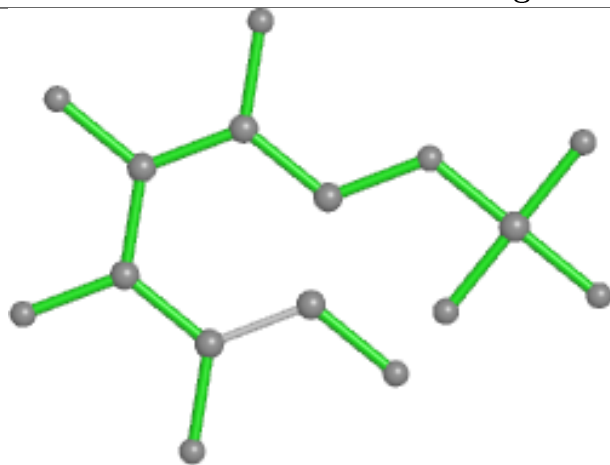


Torsions

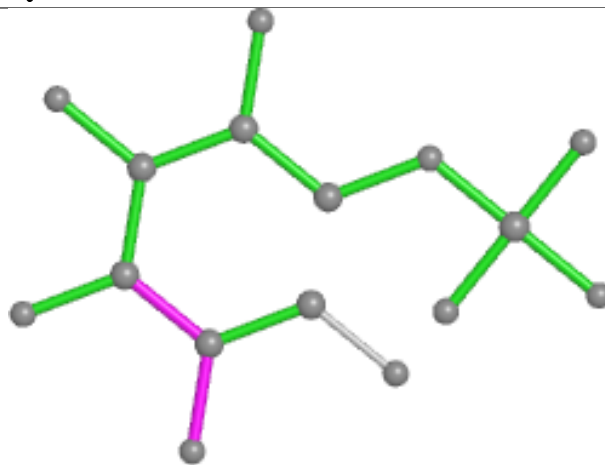


Rings

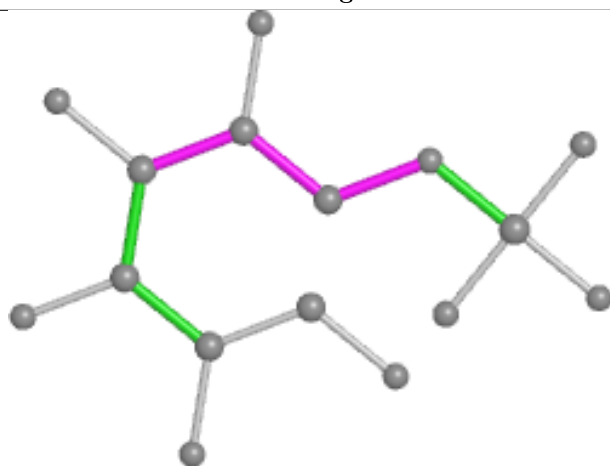
Ligand G6Q A 703



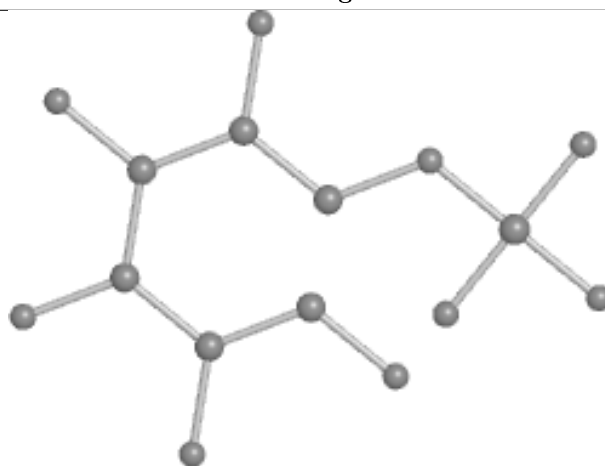
Bond lengths



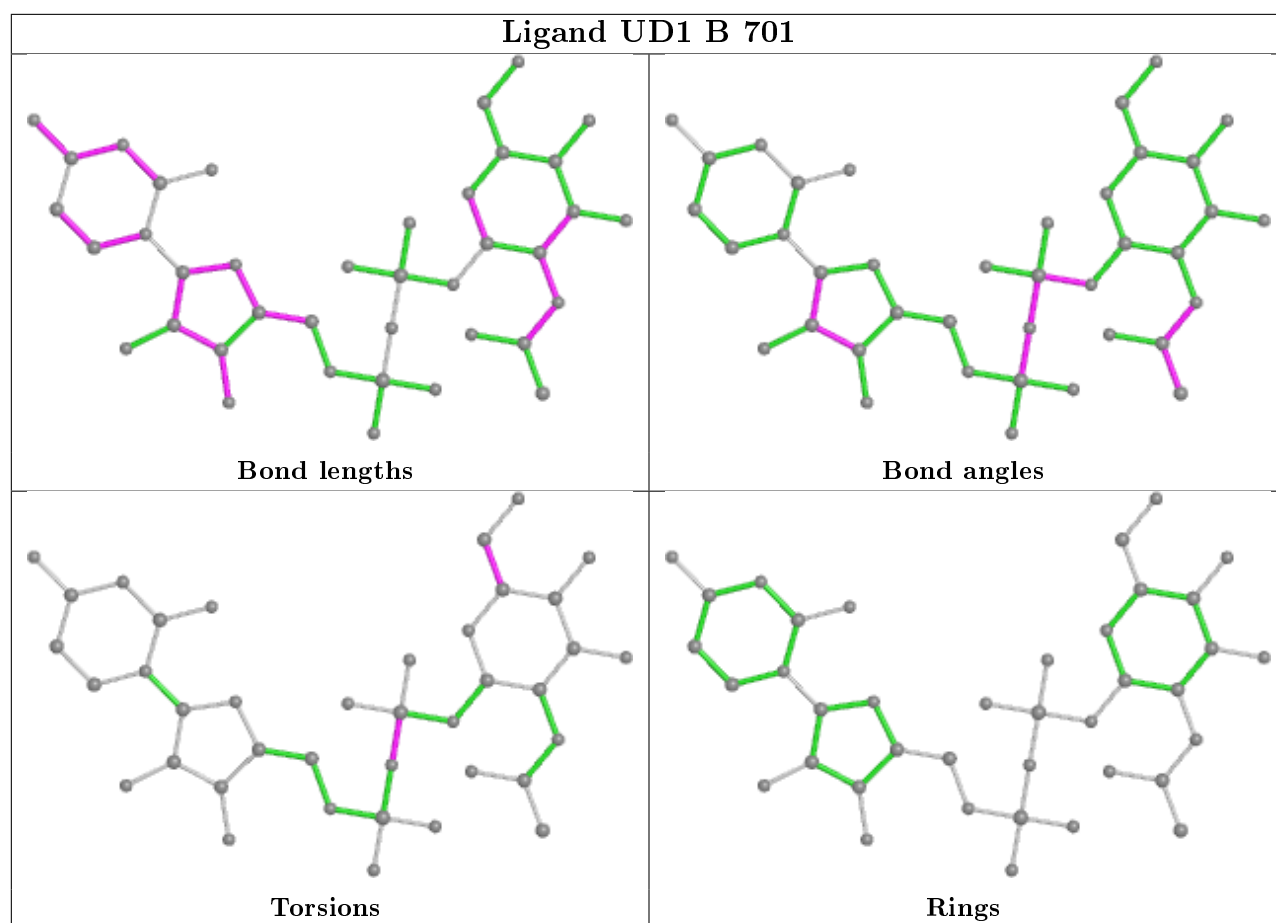
Bond angles



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(Å ²)	Q<0.9
1	A	652/687 (94%)	0.73	65 (9%) 7 6	42, 63, 131, 185	0
1	B	652/687 (94%)	1.90	203 (31%) 0 0	46, 90, 187, 266	0
All	All	1304/1374 (94%)	1.32	268 (20%) 1 0	42, 71, 176, 266	0

All (268) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	247	LEU	14.8
1	B	225	LEU	11.9
1	B	53	ASN	11.1
1	B	155	LEU	10.3
1	B	77	GLN	10.3
1	B	79	MET	10.2
1	B	54	ALA	10.0
1	B	217	LEU	9.2
1	B	50	TRP	9.2
1	B	51	GLU	9.1
1	B	251	GLU	8.8
1	B	198	ALA	8.4
1	B	224	ILE	8.4
1	B	219	THR	8.3
1	A	77	GLN	8.3
1	B	628	ILE	8.1
1	B	306	VAL	8.0
1	B	285	VAL	7.8
1	B	245	THR	7.7
1	B	246	CYS	7.7
1	B	249	PRO	7.7
1	B	134	LYS	7.7
1	B	222	ILE	7.6
1	B	47	ASP	7.6

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Mol	Chain	Res	Type	RSRZ
1	B	250	VAL	7.5
1	B	118	PHE	7.5
1	B	158	TYR	7.4
1	B	248	PHE	7.3
1	B	174	VAL	7.3
1	B	159	MET	7.3
1	B	46	ASN	7.2
1	B	216	LYS	7.0
1	B	255	VAL	7.0
1	B	281	VAL	7.0
1	B	288	ARG	6.7
1	B	75	LYS	6.7
1	B	48	LYS	6.6
1	B	218	SER	6.6
1	B	15	THR	6.5
1	B	223	PRO	6.5
1	B	135	PHE	6.5
1	B	215	HIS	6.5
1	B	141	TYR	6.5
1	B	45	GLY	6.5
1	B	156	VAL	6.4
1	A	628	ILE	6.3
1	B	305	ALA	6.3
1	B	49	ASP	6.3
1	B	257	TYR	6.1
1	B	73	VAL	6.1
1	B	81	LEU	6.1
1	B	12	VAL	6.1
1	A	674	LEU	6.1
1	A	99	HIS	6.1
1	B	157	LYS	6.0
1	B	44	GLY	6.0
1	B	192	VAL	6.0
1	B	52	ALA	6.0
1	B	85	PHE	6.0
1	B	165	SER	5.9
1	B	78	ASP	5.9
1	B	41	GLY	5.9
1	B	176	ARG	5.8
1	B	181	LEU	5.8
1	B	220	ASP	5.8
1	B	76	GLN	5.7

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Mol	Chain	Res	Type	RSRZ
1	B	170	PHE	5.6
1	A	45	GLY	5.6
1	B	132	LEU	5.6
1	B	153	ALA	5.5
1	B	58	GLN	5.5
1	B	57	ILE	5.4
1	B	83	ILE	5.4
1	B	629	LYS	5.3
1	B	168	THR	5.3
1	B	2	CYS	5.3
1	B	221	HIS	5.3
1	B	10	TYR	5.2
1	A	79	MET	5.2
1	B	173	LEU	5.2
1	B	143	PHE	5.1
1	B	160	TYR	5.1
1	A	78	ASP	5.1
1	B	129	TYR	5.0
1	B	115	ASN	5.0
1	B	254	ALA	5.0
1	B	272	ARG	5.0
1	B	308	THR	5.0
1	B	214	GLU	5.0
1	B	252	GLU	4.9
1	B	292	HIS	4.8
1	B	287	GLY	4.8
1	B	164	GLU	4.8
1	B	133	LYS	4.8
1	B	139	LYS	4.8
1	B	142	ASP	4.8
1	B	625	THR	4.7
1	B	189	PHE	4.7
1	B	137	GLU	4.6
1	B	138	SER	4.6
1	A	54	ALA	4.6
1	B	167	ASP	4.6
1	B	166	GLN	4.6
1	B	136	LEU	4.5
1	A	55	CYS	4.5
1	B	55	CYS	4.5
1	B	282	ALA	4.5
1	B	177	VAL	4.5

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Mol	Chain	Res	Type	RSRZ
1	B	163	ARG	4.5
1	B	140	GLY	4.4
1	B	244	THR	4.4
1	B	627	THR	4.4
1	A	75	LYS	4.4
1	A	132	LEU	4.3
1	B	197	GLN	4.3
1	B	291	ILE	4.3
1	A	136	LEU	4.3
1	B	289	LEU	4.3
1	B	274	ILE	4.2
1	B	130	LYS	4.2
1	B	194	PHE	4.2
1	B	16	ARG	4.1
1	B	13	PRO	4.1
1	B	56	LYS	4.1
1	B	169	SER	4.1
1	A	627	THR	4.1
1	B	114	LYS	4.0
1	B	112	SER	4.0
1	B	307	GLN	4.0
1	B	284	VAL	4.0
1	B	145	SER	4.0
1	B	117	GLU	4.0
1	B	7	TYR	3.9
1	B	119	ILE	3.9
1	B	273	VAL	3.9
1	B	624	ASP	3.9
1	B	258	TYR	3.9
1	A	50	TRP	3.8
1	B	213	SER	3.8
1	B	259	PHE	3.8
1	B	113	ASP	3.7
1	B	293	ARG	3.7
1	B	201	THR	3.7
1	B	154	LYS	3.7
1	B	622	LYS	3.7
1	B	211	VAL	3.7
1	A	48	LYS	3.6
1	A	625	THR	3.6
1	B	131	ASP	3.5
1	B	42	PHE	3.5

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Mol	Chain	Res	Type	RSRZ
1	B	172	THR	3.4
1	B	19	ILE	3.4
1	A	105	VAL	3.4
1	B	74	HIS	3.4
1	B	378	TYR	3.4
1	B	8	LEU	3.4
1	B	116	ASN	3.4
1	A	158	TYR	3.4
1	B	595	ARG	3.3
1	B	20	LEU	3.3
1	A	76	GLN	3.3
1	B	152	ILE	3.3
1	A	114	LYS	3.3
1	A	2	CYS	3.2
1	B	397	MET	3.2
1	B	199	VAL	3.2
1	B	209	ILE	3.2
1	B	253	LYS	3.2
1	B	290	SER	3.2
1	B	120	VAL	3.2
1	A	49	ASP	3.1
1	B	162	ASN	3.1
1	B	193	HIS	3.1
1	A	629	LYS	3.1
1	A	52	ALA	3.1
1	B	266	VAL	3.1
1	B	11	HIS	3.1
1	B	623	GLU	3.0
1	B	146	GLU	3.0
1	A	73	VAL	3.0
1	B	185	PHE	3.0
1	B	161	ASP	3.0
1	A	56	LYS	3.0
1	B	283	ALA	3.0
1	A	51	GLU	2.9
1	B	374	CYS	2.9
1	B	226	TYR	2.9
1	B	398	VAL	2.9
1	B	80	ASP	2.9
1	B	309	LEU	2.9
1	A	549	TYR	2.9
1	A	143	PHE	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	125	ILE	2.8
1	B	310	GLN	2.8
1	B	87	VAL	2.8
1	B	349	TYR	2.8
1	B	150	GLU	2.8
1	A	61	LYS	2.8
1	B	631	THR	2.7
1	B	681	GLU	2.7
1	B	400	LEU	2.7
1	A	47	ASP	2.7
1	A	624	ASP	2.7
1	B	286	ASP	2.7
1	A	134	LYS	2.7
1	A	141	TYR	2.7
1	B	32	TYR	2.7
1	B	626	GLU	2.6
1	A	103	SER	2.6
1	B	84	GLU	2.6
1	B	187	LEU	2.6
1	B	275	PHE	2.6
1	A	46	ASN	2.5
1	B	88	HIS	2.5
1	B	426	THR	2.5
1	B	271	ASN	2.5
1	A	374	CYS	2.5
1	A	557	LEU	2.5
1	B	270	THR	2.5
1	A	577	HIS	2.4
1	A	98	THR	2.4
1	B	529	LYS	2.4
1	B	549	TYR	2.4
1	B	207	LEU	2.4
1	A	552	CYS	2.4
1	A	400	LEU	2.4
1	A	398	VAL	2.4
1	B	9	ASN	2.4
1	B	379	HIS	2.4
1	B	62	LYS	2.4
1	A	83	ILE	2.3
1	A	119	ILE	2.3
1	B	195	PRO	2.3
1	A	144	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	573	GLY	2.3
1	A	225	LEU	2.3
1	B	579	PRO	2.3
1	B	190	LYS	2.3
1	A	60	ILE	2.3
1	A	126	ILE	2.3
1	A	378	TYR	2.3
1	A	626	GLU	2.3
1	A	106	ASN	2.2
1	B	178	ILE	2.2
1	A	72	GLU	2.2
1	A	349	TYR	2.2
1	B	382	VAL	2.2
1	B	180	GLN	2.2
1	B	43	ASP	2.2
1	A	377	SER	2.2
1	A	44	GLY	2.2
1	B	17	ARG	2.2
1	B	91	ILE	2.2
1	A	575	LEU	2.2
1	A	100	GLY	2.2
1	B	147	THR	2.1
1	A	553	LEU	2.1
1	B	420	LEU	2.1
1	B	33	ARG	2.1
1	B	474	SER	2.1
1	B	86	ASP	2.1
1	A	62	LYS	2.1
1	A	81	LEU	2.0
1	A	397	MET	2.0
1	A	401	ALA	2.0
1	B	89	LEU	2.0
1	A	139	LYS	2.0
1	B	196	GLY	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 ⓘ

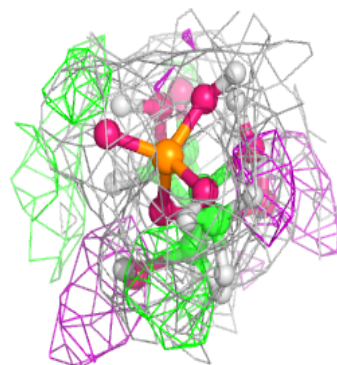
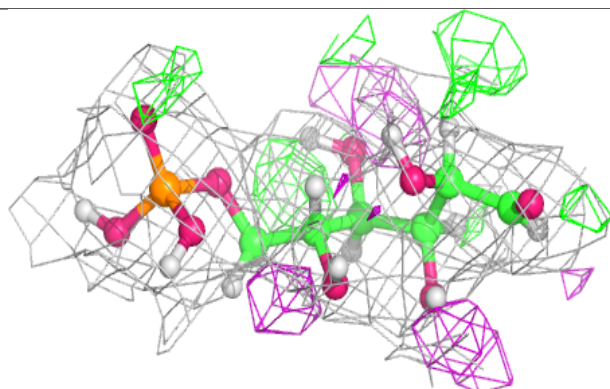
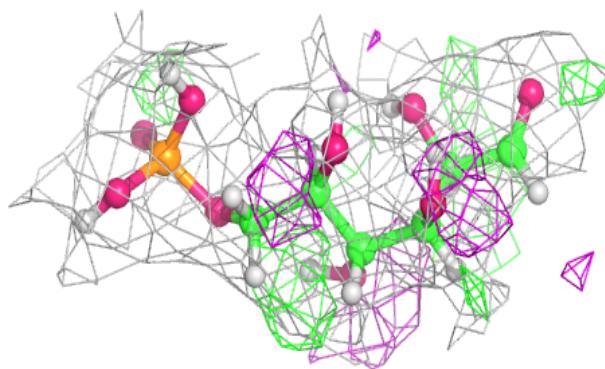
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	MG	B	702	1/1	0.86	0.14	50,50,50,50	0
3	MG	A	702	1/1	0.90	0.23	42,42,42,42	0
4	G6Q	A	703	16/16	0.95	0.31	46,58,70,75	0
2	UD1	B	701	39/39	0.95	0.17	62,82,110,115	0
4	G6Q	B	703	16/16	0.96	0.31	52,63,76,78	0
2	UD1	A	701	39/39	0.97	0.15	51,68,92,97	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.

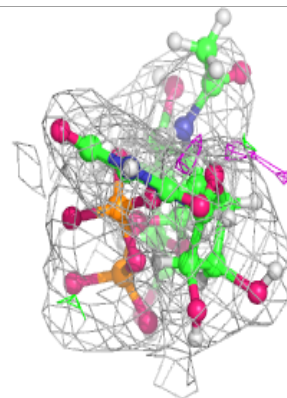
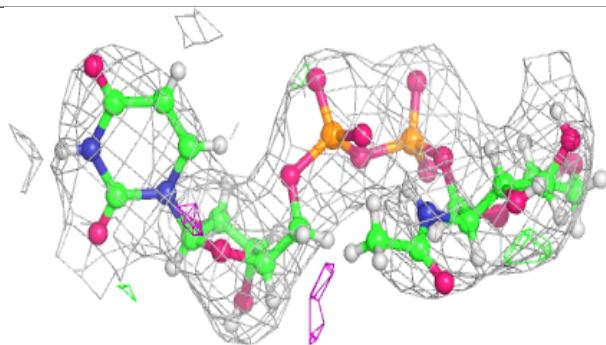
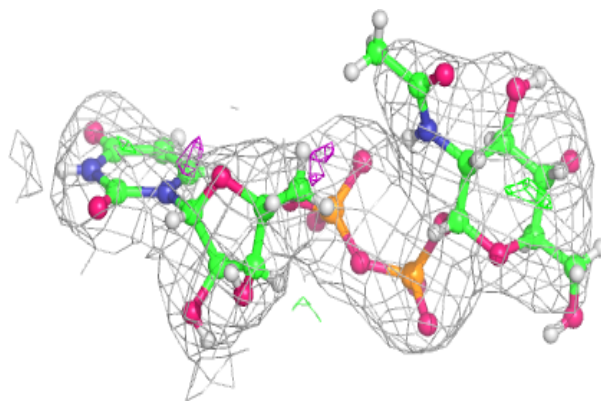
Electron density around G6Q A 703:

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

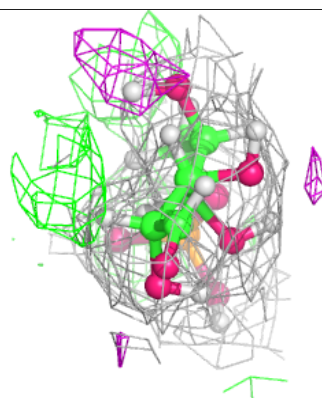
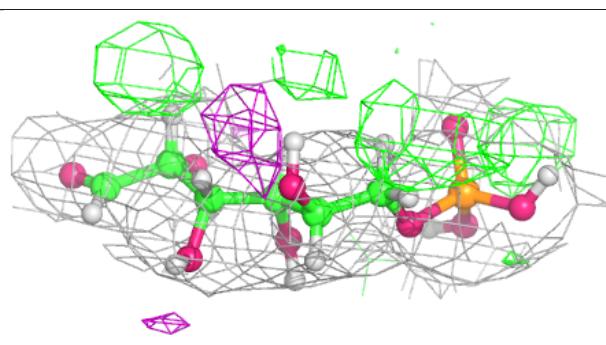
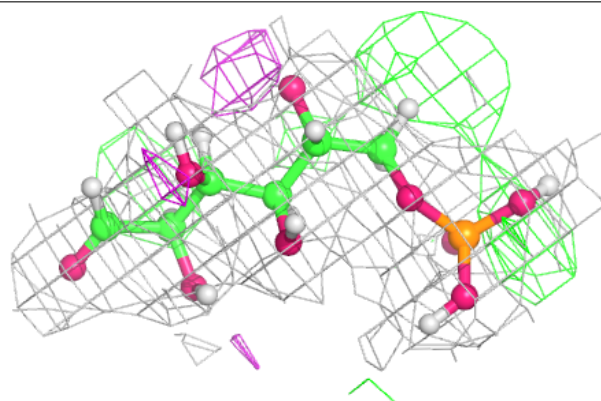


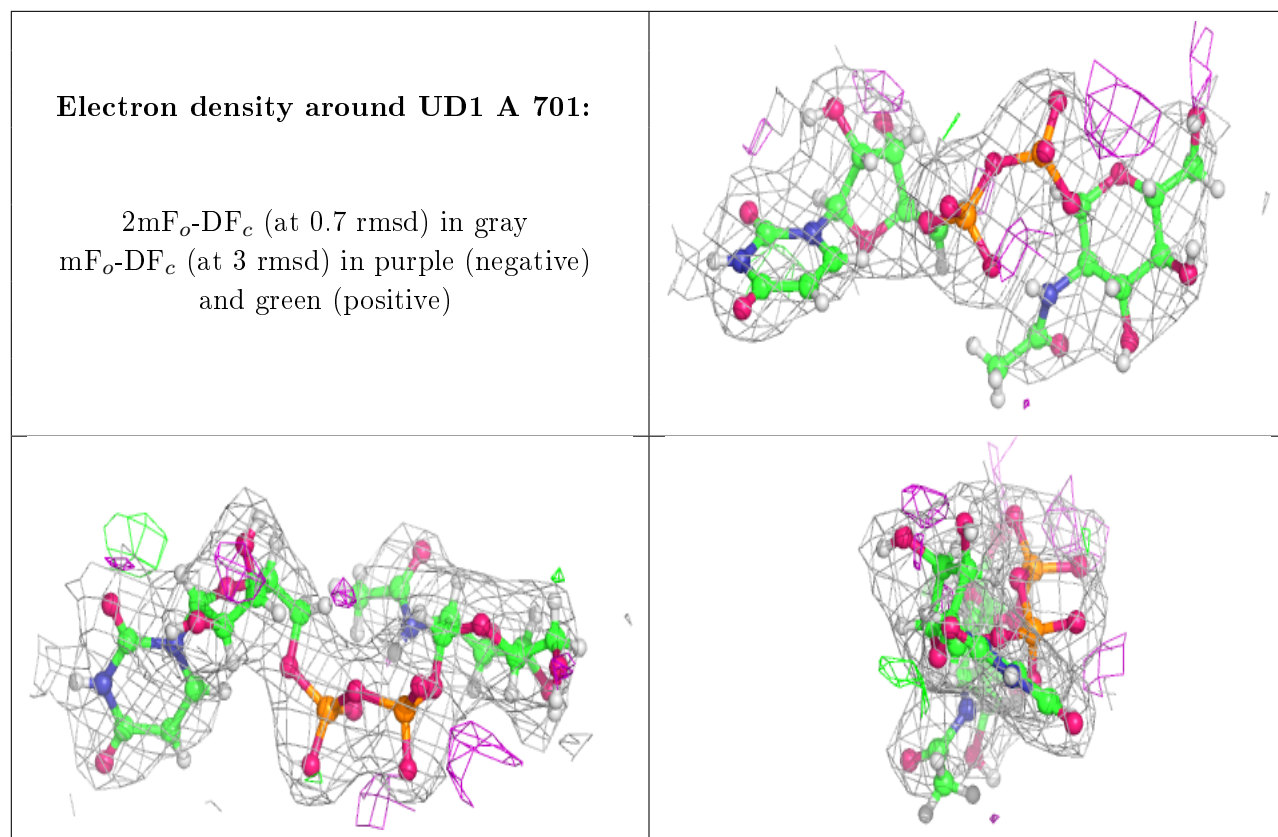
Electron density around UD1 B 701:

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

**Electron density around G6Q B 703:**

$2mF_o-DF_c$ (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.