



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 02:42 AM UTC

PDB ID : 2PA4 / pdb_00002pa4
Title : Crystal structure of UDP-glucose pyrophosphorylase from *Corynebacteria glutamicum* in complex with magnesium and UDP-glucose
Authors : Holden, H.M.; Thoden, J.B.
Deposited on : 2007-03-27
Resolution : 2.00 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

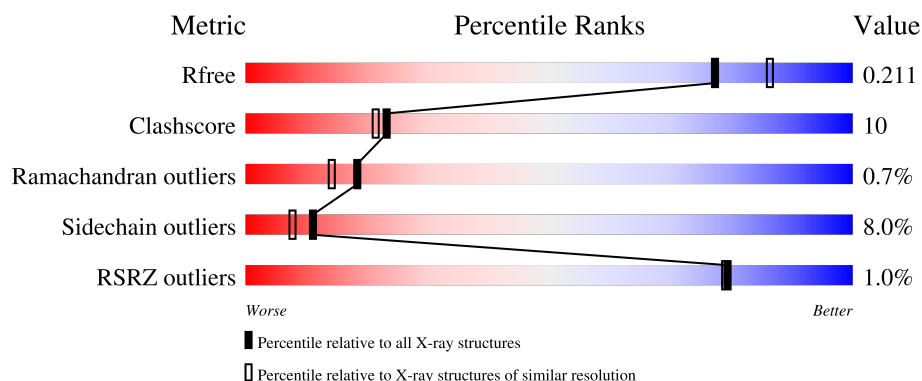
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	10052 (2.00-2.00)
Clashscore	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)
RSRZ outliers	180081	10067 (2.00-2.00)

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 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 $\leq 5\%$. 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	323	2% 65% 24% •• 9%
1	B	323	% 69% 18% 5% • 7%
1	C	323	% 65% 23% • • 7%
1	D	323	% 62% 24% • • 9%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 9694 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 UTP-GLUCOSE-1-PHOSPHATE URIDYLYLTRANSFERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	294	Total	C	N	O	S	0	5	0
			2227	1407	384	429	7			
1	B	299	Total	C	N	O	S	0	4	0
			2265	1430	395	433	7			
1	C	299	Total	C	N	O	S	0	6	0
			2271	1433	395	436	7			
1	D	295	Total	C	N	O	S	0	5	0
			2236	1414	384	430	8			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	316	LEU	-	expression tag	UNP Q6M6R3
A	317	GLU	-	expression tag	UNP Q6M6R3
A	318	HIS	-	expression tag	UNP Q6M6R3
A	319	HIS	-	expression tag	UNP Q6M6R3
A	320	HIS	-	expression tag	UNP Q6M6R3
A	321	HIS	-	expression tag	UNP Q6M6R3
A	322	HIS	-	expression tag	UNP Q6M6R3
A	323	HIS	-	expression tag	UNP Q6M6R3
B	316	LEU	-	expression tag	UNP Q6M6R3
B	317	GLU	-	expression tag	UNP Q6M6R3
B	318	HIS	-	expression tag	UNP Q6M6R3
B	319	HIS	-	expression tag	UNP Q6M6R3
B	320	HIS	-	expression tag	UNP Q6M6R3
B	321	HIS	-	expression tag	UNP Q6M6R3
B	322	HIS	-	expression tag	UNP Q6M6R3
B	323	HIS	-	expression tag	UNP Q6M6R3
C	316	LEU	-	expression tag	UNP Q6M6R3
C	317	GLU	-	expression tag	UNP Q6M6R3
C	318	HIS	-	expression tag	UNP Q6M6R3
C	319	HIS	-	expression tag	UNP Q6M6R3

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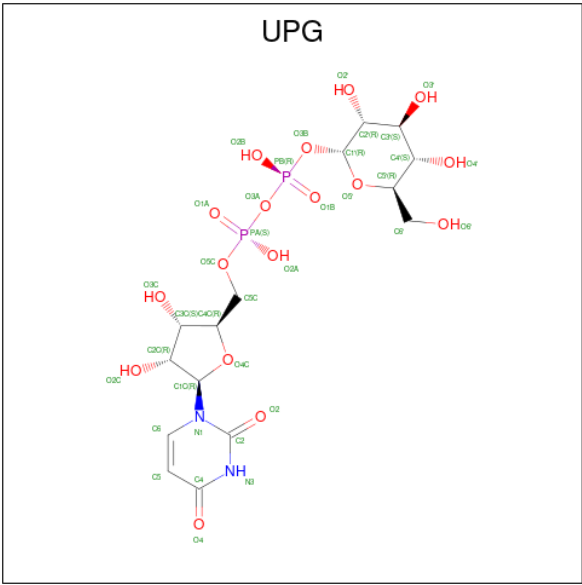
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Chain	Residue	Modelled	Actual	Comment	Reference
C	320	HIS	-	expression tag	UNP Q6M6R3
C	321	HIS	-	expression tag	UNP Q6M6R3
C	322	HIS	-	expression tag	UNP Q6M6R3
C	323	HIS	-	expression tag	UNP Q6M6R3
D	316	LEU	-	expression tag	UNP Q6M6R3
D	317	GLU	-	expression tag	UNP Q6M6R3
D	318	HIS	-	expression tag	UNP Q6M6R3
D	319	HIS	-	expression tag	UNP Q6M6R3
D	320	HIS	-	expression tag	UNP Q6M6R3
D	321	HIS	-	expression tag	UNP Q6M6R3
D	322	HIS	-	expression tag	UNP Q6M6R3
D	323	HIS	-	expression tag	UNP Q6M6R3

- Molecule 2 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Mg 2 2	0	0
2	B	2	Total Mg 2 2	0	0
2	C	2	Total Mg 2 2	0	0
2	D	2	Total Mg 2 2	0	0

- Molecule 3 is URIDINE-5'-DIPHOSPHATE-GLUCOSE (CCD ID: UPG) (formula: C₁₅H₂₄N₂O₁₇P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
3	B	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
3	C	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
3	D	1	Total	C	N	O	P	0	0
			36	15	2	17	2		

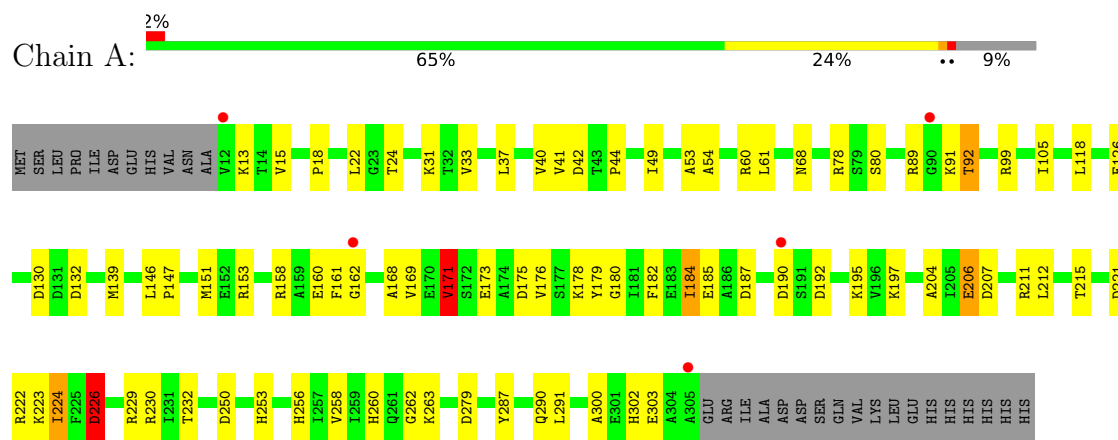
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	185	Total	O	0	0
			185	185		
4	B	136	Total	O	0	0
			136	136		
4	C	120	Total	O	0	0
			120	120		
4	D	102	Total	O	0	0
			102	102		

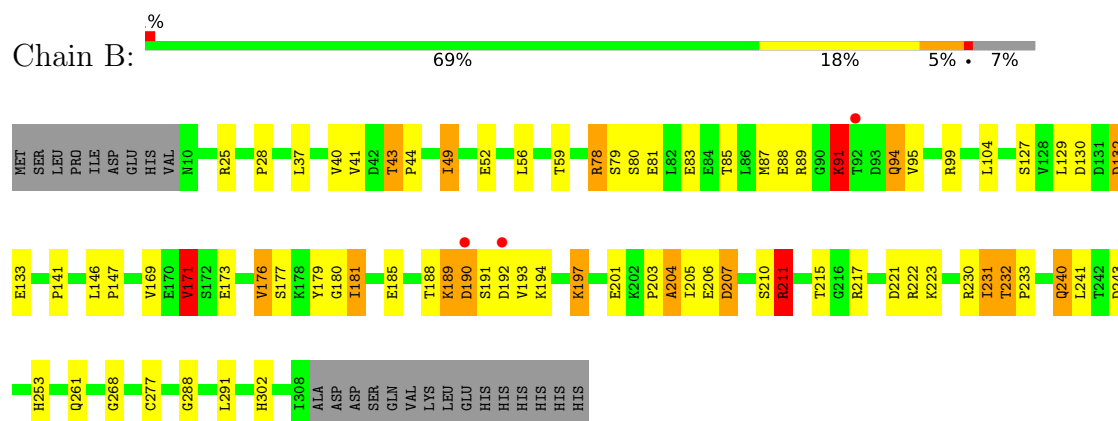
3 Residue-property plots

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.

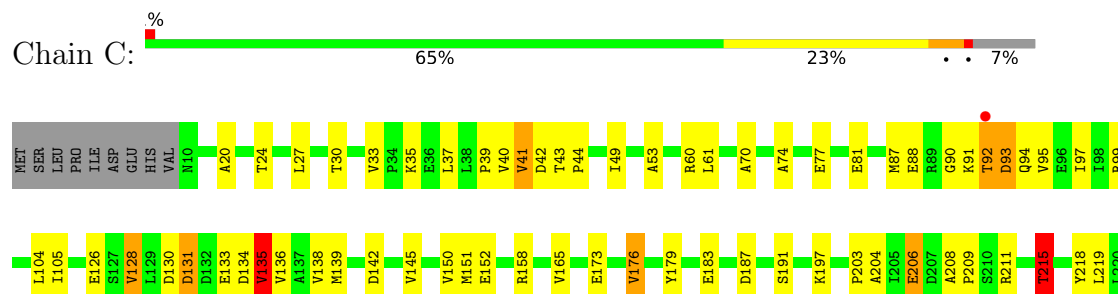
• Molecule 1: UTP-GLUCOSE-1-PHOSPHATE URIDYLTRANSFERASE

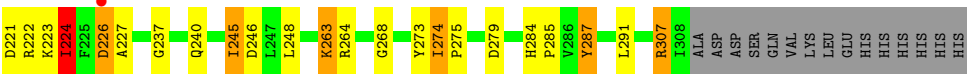


• Molecule 1: UTP-GLUCOSE-1-PHOSPHATE URIDYLTRANSFERASE

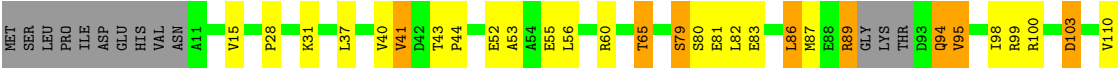


• Molecule 1: UTP-GLUCOSE-1-PHOSPHATE URIDYLTRANSFERASE





● Molecule 1: UTP-GLUCOSE-1-PHOSPHATE URIDYLTRANSFERASE



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	173.40Å 47.60Å 161.50Å 90.00° 102.70° 90.00°	Depositor
Resolution (Å)	20.00 – 2.00 20.00 – 2.00	Depositor EDS
% Data completeness (in resolution range)	88.8 (20.00-2.00) 89.1 (20.00-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.45 (at 1.98Å)	Xtriage
Refinement program	TNT	Depositor
R, R_{free}	0.201 , 0.243 0.211 , 0.211	Depositor DCC
R_{free} test set	7883 reflections (10.02%)	wwPDB-VP
Wilson B-factor (Å ²)	34.0	Xtriage
Anisotropy	0.917	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 62.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	9694	wwPDB-VP
Average B, all atoms (Å ²)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.55% 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, UPG

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	0.94	0/2282	1.51	22/3098 (0.7%)
1	B	0.93	0/2315	1.49	18/3140 (0.6%)
1	C	0.94	0/2330	1.48	23/3160 (0.7%)
1	D	0.93	0/2289	1.53	25/3104 (0.8%)
All	All	0.93	0/9216	1.50	88/12502 (0.7%)

There are no bond length outliers.

All (88) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	207	ASP	N-CA-C	9.07	123.44	112.38
1	B	40	VAL	N-CA-C	-8.40	94.37	106.55
1	C	40	VAL	N-CA-C	-8.19	93.13	106.32
1	C	176	VAL	N-CA-C	8.13	118.89	110.36
1	A	215	THR	N-CA-C	-8.00	98.99	110.59
1	B	197	LYS	N-CA-CB	-7.55	99.55	110.65
1	D	171	VAL	N-CA-CB	-7.43	103.77	112.32
1	A	258	VAL	N-CA-C	-7.38	97.81	108.36
1	D	215	THR	N-CA-C	-7.37	98.94	110.36
1	D	94	GLN	N-CA-C	-7.25	105.05	114.04
1	B	91	LYS	N-CA-C	7.19	121.94	107.41
1	A	232	THR	N-CA-C	-7.11	101.08	110.40
1	B	204	ALA	N-CA-C	-7.10	100.69	110.35
1	D	179	TYR	N-CA-C	7.08	119.89	109.69
1	A	211	ARG	N-CA-C	-6.94	103.39	112.41
1	D	268	GLY	N-CA-C	6.90	122.26	114.67
1	B	240	GLN	N-CA-C	6.64	119.41	109.25
1	B	268	GLY	N-CA-C	6.64	122.19	114.16
1	C	224	ILE	CB-CA-C	-6.63	101.88	112.16
1	C	134	ASP	N-CA-C	6.49	120.40	112.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	268	GLY	N-CA-C	6.41	121.72	114.67
1	D	287	TYR	N-CA-C	6.38	121.14	113.23
1	C	274	ILE	N-CA-CB	6.37	115.42	110.45
1	C	135	VAL	CB-CA-C	-6.33	101.45	110.82
1	B	232	THR	N-CA-CB	6.28	118.86	109.82
1	A	40	VAL	N-CA-C	-6.26	96.24	106.32
1	A	232	THR	CB-CA-C	-6.19	99.74	109.09
1	B	215	THR	N-CA-C	-6.18	101.63	110.59
1	B	201	GLU	N-CA-C	6.18	118.78	108.96
1	C	20	ALA	N-CA-C	6.12	120.78	112.88
1	A	287	TYR	N-CA-C	6.04	120.38	112.89
1	A	226	ASP	CA-CB-CG	6.04	118.64	112.60
1	C	240	GLN	N-CA-C	6.02	119.33	109.76
1	B	181	ILE	N-CA-C	5.97	116.53	108.17
1	C	215	THR	N-CA-C	-5.97	101.69	110.52
1	D	146	LEU	N-CA-C	5.94	119.11	110.14
1	A	204	ALA	N-CA-C	-5.92	102.71	110.53
1	D	95	VAL	N-CA-C	-5.92	103.69	111.09
1	A	180	GLY	N-CA-C	-5.87	100.82	111.15
1	A	54	ALA	CA-C-N	5.87	128.95	120.38
1	A	54	ALA	C-N-CA	5.87	128.95	120.38
1	C	237	GLY	N-CA-C	-5.87	105.86	114.90
1	C	70	ALA	N-CA-C	5.85	119.52	112.38
1	C	126	GLU	N-CA-C	5.84	118.12	111.11
1	D	86	LEU	N-CA-C	5.81	118.49	111.40
1	D	65	THR	CB-CA-C	-5.79	99.35	110.24
1	D	189	LYS	N-CA-CB	-5.78	100.72	110.49
1	D	237	GLY	N-CA-C	-5.77	106.98	115.30
1	A	207	ASP	N-CA-C	5.74	120.13	113.18
1	A	173	GLU	CB-CA-C	-5.73	100.93	110.68
1	D	150	VAL	CB-CA-C	-5.73	103.28	112.16
1	A	33	VAL	N-CA-C	5.71	113.53	107.76
1	C	204	ALA	N-CA-C	-5.71	103.00	110.53
1	D	135	VAL	CB-CA-C	-5.67	101.62	110.69
1	B	43	THR	N-CA-C	5.66	118.47	109.64
1	D	211	ARG	N-CA-C	-5.64	104.63	112.30
1	B	179	TYR	N-CA-C	5.63	117.18	109.18
1	C	41	VAL	N-CA-CB	5.59	120.46	111.23
1	D	258	VAL	N-CA-C	-5.59	99.83	107.99
1	C	165	VAL	N-CA-C	5.56	116.74	108.46
1	D	180	GLY	N-CA-C	-5.54	100.05	113.18
1	C	24	THR	N-CA-C	5.48	117.96	111.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	211	ARG	N-CA-C	-5.47	105.30	112.41
1	C	287	TYR	N-CA-C	5.44	119.97	113.23
1	C	274	ILE	CA-C-O	5.42	122.32	118.69
1	A	171	VAL	N-CA-CB	-5.41	101.80	111.92
1	D	40	VAL	N-CA-C	-5.41	97.61	106.32
1	A	132	ASP	CB-CA-C	-5.39	102.18	110.81
1	A	176	VAL	N-CA-C	5.38	116.11	110.62
1	D	219	LEU	N-CA-C	-5.38	96.47	107.70
1	B	169	VAL	N-CA-CB	5.37	121.96	111.92
1	A	179	TYR	N-CA-C	5.34	116.39	108.86
1	A	230	ARG	N-CA-C	5.33	119.86	112.45
1	B	171	VAL	N-CA-CB	-5.31	103.52	112.44
1	D	52	GLU	N-CA-C	-5.25	105.64	111.36
1	B	180	GLY	N-CA-C	-5.24	100.75	113.18
1	D	187	ASP	N-CA-C	-5.21	99.71	110.80
1	A	24	THR	N-CA-C	5.20	118.41	111.75
1	D	31	LYS	N-CA-C	-5.17	105.64	111.28
1	C	245	ILE	N-CA-C	-5.17	105.46	110.42
1	D	41	VAL	N-CA-CB	5.17	119.76	111.23
1	C	219	LEU	N-CA-CB	5.14	119.18	110.69
1	D	204	ALA	N-CA-C	-5.09	103.76	110.43
1	B	179	TYR	N-CA-CB	-5.07	103.22	111.22
1	A	92	THR	N-CA-C	5.05	118.21	111.75
1	B	104	LEU	N-CA-C	5.02	116.76	111.28
1	C	179	TYR	N-CA-C	5.02	116.91	109.69
1	C	104	LEU	CB-CA-C	-5.00	103.00	110.90

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	2227	0	2274	44	0
1	B	2265	0	2328	52	0
1	C	2271	0	2331	49	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	2236	0	2289	59	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	36	0	22	0	0
3	B	36	0	22	0	0
3	C	36	0	22	0	0
3	D	36	0	22	0	0
4	A	185	0	0	6	1
4	B	136	0	0	0	0
4	C	120	0	0	1	0
4	D	102	0	0	3	0
All	All	9694	0	9310	191	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 10.

All (191) 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:B:211:ARG:HH11	1:B:211:ARG:HG2	1.21	1.00
1:C:173:GLU:HG2	1:C:211[A]:ARG:NH1	1.85	0.92
1:C:136:VAL:HG21	1:C:224:ILE:HD11	1.57	0.87
1:D:86:LEU:O	4:D:362:HOH:O	1.93	0.87
1:A:250:ASP:OD2	4:A:373:HOH:O	1.92	0.86
1:D:205:ILE:HD12	1:D:205:ILE:H	1.40	0.85
1:D:185:GLU:HB2	1:D:197:LYS:HB3	1.62	0.81
1:D:126:GLU:OE1	1:D:229:ARG:NH2	2.15	0.80
1:A:139:MET:HE2	1:A:151:MET:HG3	1.66	0.78
1:B:176:VAL:O	1:B:181:ILE:HD11	1.85	0.77
1:B:188:THR:HG23	1:B:189[A]:LYS:HE2	1.67	0.75
1:B:91:LYS:HB3	1:B:94:GLN:NE2	2.04	0.73
1:A:175:ASP:OD1	1:A:178:LYS:NZ	2.22	0.73
1:A:68:ASN:OD1	4:A:357:HOH:O	2.08	0.71
1:B:85:THR:O	1:B:89[A]:ARG:HG2	1.90	0.70
1:C:131:ASP:OD2	4:C:360:HOH:O	2.11	0.69
1:D:186:ALA:C	1:D:187:ASP:O	2.32	0.68
1:D:83:GLU:OE2	1:D:99:ARG:HD3	1.94	0.68
1:B:28:PRO:HD2	1:C:42:ASP:O	1.93	0.68
1:B:79:SER:O	1:B:83:GLU:HG3	1.94	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:207:ASP:OD1	1:B:207:ASP:N	2.27	0.68
1:D:56:LEU:HD12	1:D:151:MET:HB2	1.76	0.68
1:B:130:ASP:HB2	1:B:133:GLU:HG3	1.76	0.67
1:B:37:LEU:HA	1:B:44:PRO:HB3	1.76	0.67
1:B:146:LEU:HA	1:B:147:PRO:C	2.20	0.67
1:D:188:THR:OG1	1:D:193:VAL:O	2.08	0.67
1:A:300:ALA:O	1:A:303:GLU:HB2	1.96	0.66
1:A:126:GLU:OE1	1:A:229:ARG:NH2	2.29	0.65
1:A:226:ASP:OD2	1:A:226:ASP:N	2.24	0.65
1:C:37:LEU:HA	1:C:44:PRO:HB3	1.79	0.65
1:C:263[B]:LYS:HZ1	1:C:264:ARG:H	1.45	0.65
1:D:307:ARG:NH1	4:D:427:HOH:O	2.28	0.65
1:C:60:ARG:NH1	1:C:128:VAL:O	2.29	0.64
1:C:92:THR:O	1:C:95:VAL:HG22	1.98	0.64
1:C:227:ALA:HB2	1:C:248:LEU:HD21	1.80	0.64
1:B:191:SER:O	1:B:194:LYS:NZ	2.31	0.64
1:D:169:VAL:HG12	1:D:260:HIS:HB3	1.80	0.64
1:D:226:ASP:N	1:D:226:ASP:OD1	2.30	0.63
1:B:211:ARG:HG2	1:B:211:ARG:NH1	1.98	0.62
1:C:183[B]:GLU:HG2	1:C:209:PRO:CG	2.28	0.62
1:A:61:LEU:HG	1:A:105:ILE:HD13	1.82	0.62
1:B:302:HIS:HE1	1:C:279:ASP:OD1	1.83	0.61
1:C:183[B]:GLU:HG2	1:C:209:PRO:HG3	1.81	0.61
1:A:223:LYS:NZ	1:A:253[A]:HIS:CE1	2.68	0.60
1:B:171:VAL:HG12	1:B:176:VAL:HG23	1.84	0.60
1:B:204:ALA:HB3	1:B:207:ASP:OD1	2.02	0.60
1:A:223:LYS:HZ3	1:A:253[A]:HIS:CE1	2.20	0.59
1:C:91:LYS:HB3	1:C:94:GLN:HG2	1.84	0.59
1:D:187:ASP:O	1:D:188:THR:HG23	2.03	0.59
1:D:53:ALA:HA	1:D:139:MET:HE1	1.86	0.58
1:C:95:VAL:O	1:C:99:ARG:HG3	2.04	0.58
1:C:307:ARG:CZ	1:C:307:ARG:HB3	2.30	0.58
1:D:87[A]:MET:HG2	1:D:95:VAL:HG21	1.85	0.58
1:D:187:ASP:OD1	1:D:194:LYS:HE2	2.03	0.57
1:C:61:LEU:HD13	1:C:105:ILE:HD13	1.85	0.57
1:C:74:ALA:HA	1:C:77:GLU:HG2	1.85	0.57
1:D:60:ARG:NH2	1:D:128:VAL:O	2.36	0.57
1:D:215:THR:OG1	1:D:216:GLY:N	2.37	0.57
1:B:188:THR:HB	1:B:193:VAL:O	2.05	0.56
1:B:181:ILE:HD13	1:B:203:PRO:CD	2.35	0.56
1:D:37:LEU:HA	1:D:44:PRO:HB3	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:13:LYS:HE2	1:A:60:ARG:HD2	1.87	0.56
1:A:169:VAL:HG12	1:A:260:HIS:HB3	1.88	0.56
1:D:199:MET:HG2	1:D:242:THR:HG23	1.87	0.56
1:D:89:ARG:C	4:D:362:HOH:O	2.50	0.55
1:D:164:SER:O	1:D:255:VAL:HA	2.07	0.55
1:C:226:ASP:N	1:C:226:ASP:OD1	2.40	0.55
1:C:221:ASP:O	1:C:224:ILE:HG13	2.07	0.55
1:C:53:ALA:HA	1:C:139:MET:HE1	1.88	0.54
1:B:52:GLU:CD	1:B:217:ARG:HH21	2.15	0.54
1:D:79:SER:HB3	1:D:82:LEU:HB3	1.89	0.54
1:A:302:HIS:HE1	1:D:279:ASP:OD2	1.91	0.53
1:A:291:LEU:HD21	1:D:275:PRO:HD3	1.91	0.53
1:B:181:ILE:CD1	1:B:203:PRO:CD	2.86	0.53
1:C:183[B]:GLU:HG2	1:C:209:PRO:CB	2.37	0.53
1:A:185:GLU:HB2	1:A:197:LYS:CB	2.38	0.53
1:B:94:GLN:HG2	1:C:27:LEU:HD12	1.91	0.53
1:B:181:ILE:CD1	1:B:203:PRO:HD2	2.39	0.52
1:D:172:SER:O	1:D:175:ASP:N	2.34	0.52
1:B:277:CYS:HB3	1:C:274:ILE:HG12	1.91	0.52
1:D:166:LEU:HD21	1:D:245:ILE:HD13	1.90	0.52
1:B:185:GLU:HG3	1:B:197:LYS:HG3	1.92	0.52
1:D:56:LEU:CD1	1:D:151:MET:HB2	2.40	0.51
1:C:135:VAL:HG13	1:C:158:ARG:CZ	2.40	0.51
1:D:183:GLU:HA	1:D:209:PRO:HB2	1.93	0.51
1:A:78[A]:ARG:CZ	1:A:99:ARG:HD3	2.42	0.50
1:D:171:VAL:HG13	1:D:172:SER:N	2.27	0.50
1:A:171:VAL:HG13	1:A:175:ASP:HB2	1.92	0.49
1:B:181:ILE:HD13	1:B:203:PRO:CG	2.42	0.49
1:D:187:ASP:O	1:D:188:THR:CG2	2.60	0.49
1:A:190:ASP:HB3	1:A:192:ASP:OD1	2.13	0.49
1:A:262:GLY:N	4:A:471:HOH:O	2.45	0.49
1:A:31:LYS:HD2	1:D:98:ILE:HB	1.93	0.49
1:A:185:GLU:HB2	1:A:197:LYS:HB3	1.94	0.49
1:C:139:MET:HE2	1:C:151:MET:HG3	1.95	0.48
1:D:186:ALA:O	1:D:187:ASP:O	2.30	0.48
1:A:279:ASP:OD2	1:D:302:HIS:HE1	1.96	0.48
1:B:95:VAL:O	1:B:99:ARG:HG3	2.14	0.48
1:A:158:ARG:O	1:A:162:GLY:N	2.38	0.47
1:B:223:LYS:HE2	1:B:253:HIS:CE1	2.49	0.47
1:C:203:PRO:HG2	1:C:208:ALA:HB2	1.95	0.47
1:B:25[A]:ARG:NH1	1:C:287:TYR:OH	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:171:VAL:CG1	1:D:172:SER:N	2.78	0.47
1:A:146:LEU:HB2	1:A:263:LYS:HB3	1.96	0.47
1:A:221:ASP:OD2	1:A:222:ARG:N	2.48	0.47
1:C:307:ARG:CZ	1:C:307:ARG:CB	2.91	0.47
1:B:132:ASP:O	1:B:132:ASP:OD1	2.33	0.46
1:B:192:ASP:OD1	1:B:261:GLN:NE2	2.48	0.46
1:D:112:GLN:HG2	1:D:114:LYS:O	2.14	0.46
1:D:79:SER:O	1:D:83:GLU:HG3	2.15	0.46
1:A:42:ASP:O	1:D:28:PRO:HD2	2.15	0.46
1:B:43:THR:HA	1:B:44:PRO:HD3	1.91	0.46
1:A:221:ASP:O	1:A:224:ILE:HG13	2.16	0.46
1:C:221:ASP:OD1	1:C:223:LYS:HG3	2.15	0.46
1:B:188:THR:HG22	1:B:190:ASP:H	1.81	0.46
1:D:103:ASP:C	1:D:103:ASP:OD2	2.59	0.46
1:D:167:CYS:SG	1:D:215:THR:CG2	3.04	0.46
1:D:183:GLU:HG2	1:D:197:LYS:HE3	1.97	0.46
1:A:78[B]:ARG:HG3	4:A:424:HOH:O	2.16	0.45
1:D:15:VAL:HG21	1:D:139:MET:HE3	1.97	0.45
1:B:52:GLU:OE1	1:B:217:ARG:NH2	2.39	0.45
1:B:91:LYS:HB3	1:B:94:GLN:HE22	1.80	0.45
1:A:184:ILE:HD11	1:A:212:LEU:CD1	2.47	0.45
1:A:153:ARG:NH2	4:A:365:HOH:O	2.28	0.45
1:A:185:GLU:HB2	1:A:197:LYS:HB2	1.99	0.45
1:D:187:ASP:C	1:D:188:THR:HG23	2.42	0.45
1:C:87:MET:O	1:C:88:GLU:C	2.59	0.45
1:D:87[B]:MET:HG2	1:D:95:VAL:HG21	1.98	0.45
1:C:43:THR:HA	1:C:44:PRO:HD3	1.90	0.45
1:C:263[B]:LYS:NZ	1:C:264:ARG:H	2.13	0.44
1:C:30:THR:HA	1:C:33:VAL:O	2.18	0.44
1:A:206:GLU:H	1:A:206:GLU:CD	2.25	0.44
1:A:22:LEU:HD22	1:D:82:LEU:CD1	2.47	0.44
1:A:146:LEU:HA	1:A:147:PRO:C	2.42	0.44
1:A:168:ALA:HB2	1:A:182:PHE:CE1	2.53	0.44
1:B:240:GLN:O	1:B:241:LEU:C	2.58	0.44
1:A:37:LEU:HA	1:A:44:PRO:HB3	2.00	0.44
1:B:232:THR:HB	1:B:233:PRO:HD2	2.00	0.44
1:C:35:LYS:HE3	1:C:142:ASP:HB3	2.00	0.44
1:C:284:HIS:HA	1:C:285:PRO:HD3	1.92	0.44
1:D:125:ALA:O	1:D:126:GLU:C	2.59	0.44
1:A:89:ARG:HB2	1:A:91:LYS:HD2	2.00	0.43
1:A:130:ASP:O	1:A:222:ARG:NH2	2.50	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:78:ARG:HE	1:B:78:ARG:HB3	1.37	0.43
1:B:83:GLU:O	1:B:87:MET:HG2	2.18	0.43
1:C:183[B]:GLU:CG	1:C:209:PRO:HG3	2.48	0.43
1:A:161:PHE:C	1:A:162:GLY:O	2.61	0.43
1:C:60:ARG:HH11	1:C:128:VAL:HG13	1.83	0.43
1:B:192:ASP:CG	1:B:261:GLN:HE21	2.25	0.43
1:B:56:LEU:O	1:B:56:LEU:HG	2.18	0.43
1:B:91:LYS:CB	1:B:94:GLN:HE22	2.31	0.43
1:B:291:LEU:HD21	1:C:275:PRO:HD3	2.00	0.43
1:C:93:ASP:O	1:C:97:ILE:HG13	2.19	0.42
1:C:39:PRO:O	1:C:273:TYR:OH	2.20	0.42
1:B:94:GLN:HE21	1:B:94:GLN:HB2	1.61	0.42
1:D:43:THR:HA	1:D:44:PRO:HD3	1.91	0.42
1:B:210:SER:O	1:B:211:ARG:NH1	2.52	0.42
1:D:110:VAL:HG22	1:D:128:VAL:HG21	2.02	0.42
4:A:403:HOH:O	1:D:302:HIS:HD2	2.03	0.42
1:C:87:MET:O	1:C:90:GLY:N	2.48	0.42
1:B:91:LYS:CB	1:B:94:GLN:NE2	2.80	0.42
1:C:60:ARG:NH1	1:C:128:VAL:HG13	2.35	0.42
1:B:231:ILE:HD11	1:B:243:ASP:O	2.20	0.42
1:C:206:GLU:H	1:C:206:GLU:HG2	1.49	0.42
1:B:130:ASP:O	1:B:222:ARG:NH2	2.53	0.41
1:A:18:PRO:HG2	1:A:118:LEU:HD11	2.01	0.41
1:C:173:GLU:HG2	1:C:211[A]:ARG:HH11	1.77	0.41
1:D:112:GLN:HB2	1:D:124:LEU:HD12	2.01	0.41
1:C:133:GLU:O	1:C:222:ARG:HD2	2.21	0.41
1:D:56:LEU:CD1	1:D:151:MET:CB	2.98	0.41
1:D:83:GLU:HG2	1:D:95:VAL:HG13	2.02	0.41
1:D:302:HIS:O	1:D:303:GLU:C	2.64	0.41
1:C:245:ILE:O	1:C:246:ASP:C	2.62	0.41
1:C:145:VAL:HG21	1:C:215:THR:HG21	2.02	0.41
1:D:167:CYS:SG	1:D:215:THR:HG21	2.61	0.41
1:D:205:ILE:H	1:D:205:ILE:CD1	2.13	0.41
1:A:15:VAL:HG21	1:A:53:ALA:HB1	2.02	0.41
1:B:221:ASP:C	1:B:223:LYS:N	2.79	0.41
1:D:284:HIS:HA	1:D:285:PRO:HD3	1.96	0.41
1:D:80:SER:O	1:D:81:GLU:C	2.63	0.41
1:C:130:ASP:O	1:C:133:GLU:HB2	2.21	0.40
1:C:138:VAL:HB	1:C:218:TYR:HB2	2.03	0.40
1:A:195[B]:LYS:HD2	1:A:256:HIS:NE2	2.36	0.40
1:B:49:ILE:HG12	1:B:141:PRO:HA	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:168:ALA:HA	1:D:213:ALA:O	2.21	0.40
1:A:291:LEU:HD23	1:D:275:PRO:HG3	2.04	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)
1:C:307:ARG:NH1	4:A:465:HOH:O[3_445]	2.15	0.05

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	297/323 (92%)	282 (95%)	14 (5%)	1 (0%)	36	35
1	B	301/323 (93%)	291 (97%)	8 (3%)	2 (1%)	18	14
1	C	303/323 (94%)	292 (96%)	10 (3%)	1 (0%)	36	35
1	D	296/323 (92%)	272 (92%)	20 (7%)	4 (1%)	9	4
All	All	1197/1292 (93%)	1137 (95%)	52 (4%)	8 (1%)	18	14

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	173	GLU
1	D	187	ASP
1	A	41	VAL
1	D	41	VAL
1	D	210	SER
1	B	41	VAL
1	C	41	VAL
1	B	288	GLY

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	238/260 (92%)	226 (95%)	12 (5%)	22	20
1	B	241/260 (93%)	217 (90%)	24 (10%)	7	4
1	C	243/260 (94%)	222 (91%)	21 (9%)	10	6
1	D	239/260 (92%)	217 (91%)	22 (9%)	8	5
All	All	961/1040 (92%)	882 (92%)	79 (8%)	11	7

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	ILE
1	A	80	SER
1	A	92	THR
1	A	160[A]	GLU
1	A	160[B]	GLU
1	A	171	VAL
1	A	184	ILE
1	A	187	ASP
1	A	206	GLU
1	A	224	ILE
1	A	226	ASP
1	A	290	GLN
1	B	49	ILE
1	B	59	THR
1	B	78	ARG
1	B	80	SER
1	B	81	GLU
1	B	88	GLU
1	B	91	LYS
1	B	94	GLN
1	B	127	SER
1	B	129	LEU
1	B	132	ASP
1	B	171	VAL

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Mol	Chain	Res	Type
1	B	173	GLU
1	B	176	VAL
1	B	177	SER
1	B	189[A]	LYS
1	B	189[B]	LYS
1	B	190	ASP
1	B	205	ILE
1	B	206	GLU
1	B	207	ASP
1	B	211	ARG
1	B	230	ARG
1	B	231	ILE
1	C	49	ILE
1	C	81	GLU
1	C	92	THR
1	C	93	ASP
1	C	128	VAL
1	C	131	ASP
1	C	135	VAL
1	C	150	VAL
1	C	152	GLU
1	C	176	VAL
1	C	187	ASP
1	C	191	SER
1	C	197	LYS
1	C	206	GLU
1	C	215	THR
1	C	224	ILE
1	C	226	ASP
1	C	263[A]	LYS
1	C	263[B]	LYS
1	C	291	LEU
1	C	307	ARG
1	D	55	GLU
1	D	65	THR
1	D	79	SER
1	D	89	ARG
1	D	94	GLN
1	D	100	ARG
1	D	103	ASP
1	D	131	ASP
1	D	134	ASP

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Mol	Chain	Res	Type
1	D	135	VAL
1	D	150	VAL
1	D	171	VAL
1	D	176	VAL
1	D	185	GLU
1	D	205	ILE
1	D	206	GLU
1	D	215	THR
1	D	226	ASP
1	D	251	GLU
1	D	261[A]	GLN
1	D	261[B]	GLN
1	D	291	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	68	ASN
1	A	94	GLN
1	B	94	GLN
1	B	240	GLN
1	B	253	HIS
1	B	261	GLN
1	C	94	GLN
1	C	302	HIS
1	D	240	GLN
1	D	290	GLN
1	D	297	GLN
1	D	302	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 8 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$
3	UPG	D	326	2	37,38,38	1.47	6 (16%)	55,58,58	1.50	8 (14%)
3	UPG	B	326	2	37,38,38	1.50	5 (13%)	55,58,58	1.62	9 (16%)
3	UPG	A	326	2	37,38,38	1.61	5 (13%)	55,58,58	1.70	10 (18%)
3	UPG	C	326	2	37,38,38	1.37	3 (8%)	55,58,58	1.56	9 (16%)

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	UPG	D	326	2	-	2/23/59/59	0/3/3/3
3	UPG	B	326	2	-	2/23/59/59	0/3/3/3
3	UPG	A	326	2	-	2/23/59/59	0/3/3/3
3	UPG	C	326	2	-	3/23/59/59	0/3/3/3

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	326	UPG	PB-O3A	6.43	1.66	1.59
3	D	326	UPG	PB-O3A	5.13	1.65	1.59
3	B	326	UPG	PB-O3A	4.72	1.64	1.59
3	C	326	UPG	PB-O3A	3.91	1.63	1.59
3	C	326	UPG	C4-N3	-3.66	1.32	1.38
3	B	326	UPG	C2-N1	3.44	1.43	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	326	UPG	PA-O3A	3.43	1.63	1.59
3	A	326	UPG	C4-N3	-3.09	1.33	1.38
3	C	326	UPG	C2-N1	2.83	1.42	1.38
3	B	326	UPG	C2-N3	-2.81	1.33	1.38
3	A	326	UPG	C6-C5	2.65	1.41	1.35
3	D	326	UPG	PA-O3A	2.56	1.62	1.59
3	D	326	UPG	C2-N1	2.49	1.42	1.38
3	D	326	UPG	C3'-C2'	2.27	1.58	1.52
3	B	326	UPG	O3C-C3C	2.18	1.48	1.43
3	D	326	UPG	O3'-C3'	2.17	1.48	1.43
3	A	326	UPG	O5'-C1'	2.16	1.47	1.41
3	D	326	UPG	C4-N3	-2.08	1.35	1.38
3	A	326	UPG	PB-O2B	-2.04	1.45	1.55

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	326	UPG	C4-N3-C2	-5.11	120.27	126.61
3	C	326	UPG	N3-C2-N1	5.11	121.54	114.89
3	B	326	UPG	C5-C4-N3	4.72	121.41	114.80
3	A	326	UPG	N3-C2-N1	4.69	120.99	114.89
3	A	326	UPG	C4-N3-C2	-4.57	120.94	126.61
3	B	326	UPG	C4-N3-C2	-4.43	121.11	126.61
3	C	326	UPG	C4-N3-C2	-4.28	121.30	126.61
3	D	326	UPG	C5-C4-N3	4.12	120.57	114.80
3	D	326	UPG	N3-C2-N1	3.77	119.80	114.89
3	A	326	UPG	C5-C4-N3	3.64	119.89	114.80
3	B	326	UPG	O2B-PB-O1B	3.49	128.66	112.44
3	A	326	UPG	O2-C2-N1	-3.43	118.33	122.80
3	B	326	UPG	N3-C2-N1	3.35	119.25	114.89
3	A	326	UPG	O4-C4-C5	-3.25	119.55	125.16
3	B	326	UPG	O4-C4-C5	-3.11	119.80	125.16
3	C	326	UPG	O2-C2-N1	-3.10	118.75	122.80
3	C	326	UPG	O5'-C1'-O3B	-3.02	107.42	111.36
3	D	326	UPG	O2B-PB-O3A	-2.83	99.62	107.27
3	B	326	UPG	C1'-O5'-C5'	2.82	119.22	113.72
3	A	326	UPG	C1'-O5'-C5'	2.67	118.94	113.72
3	C	326	UPG	C6-N1-C2	-2.56	117.88	121.00
3	C	326	UPG	C5-C4-N3	2.54	118.35	114.80
3	A	326	UPG	O4'-C4'-C3'	-2.53	104.42	110.38
3	D	326	UPG	O5'-C1'-C2'	-2.38	105.48	110.37
3	D	326	UPG	O4-C4-C5	-2.38	121.06	125.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	326	UPG	O2-C2-N3	-2.34	117.18	121.49
3	A	326	UPG	O3A-PA-O1A	-2.25	103.92	110.70
3	B	326	UPG	O2-C2-N3	-2.23	117.38	121.49
3	A	326	UPG	C6-N1-C2	-2.21	118.31	121.00
3	D	326	UPG	C5C-C4C-C3C	-2.17	107.41	115.21
3	C	326	UPG	O3B-PB-O1B	2.16	116.70	109.81
3	C	326	UPG	O5'-C1'-C2'	-2.11	106.03	110.37
3	C	326	UPG	O2B-PB-O1B	2.09	122.17	112.44
3	B	326	UPG	O3A-PB-O1B	-2.08	104.44	110.70
3	A	326	UPG	O2B-PB-O1B	2.02	121.83	112.44
3	B	326	UPG	O3B-PB-O1B	2.00	116.21	109.81

There are no chirality outliers.

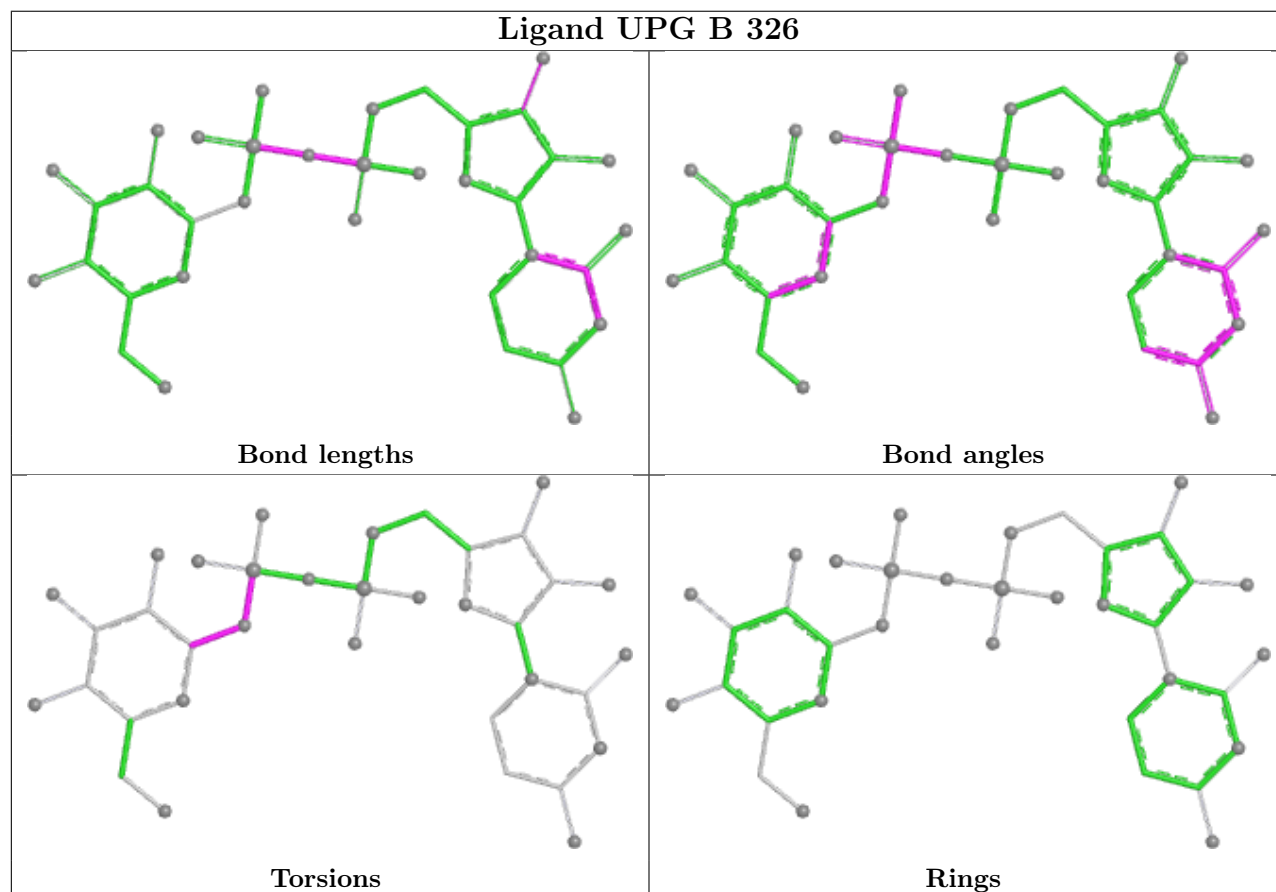
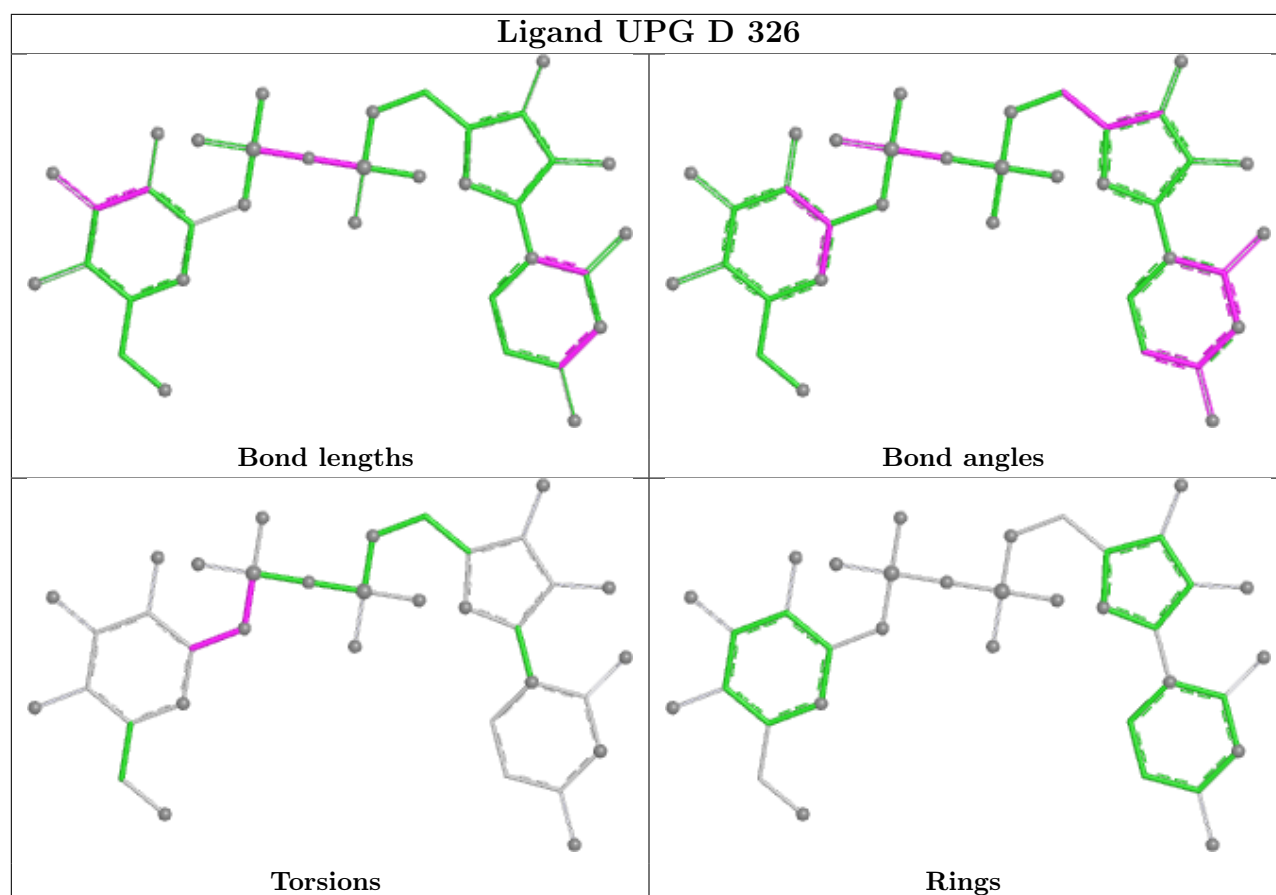
All (9) torsion outliers are listed below:

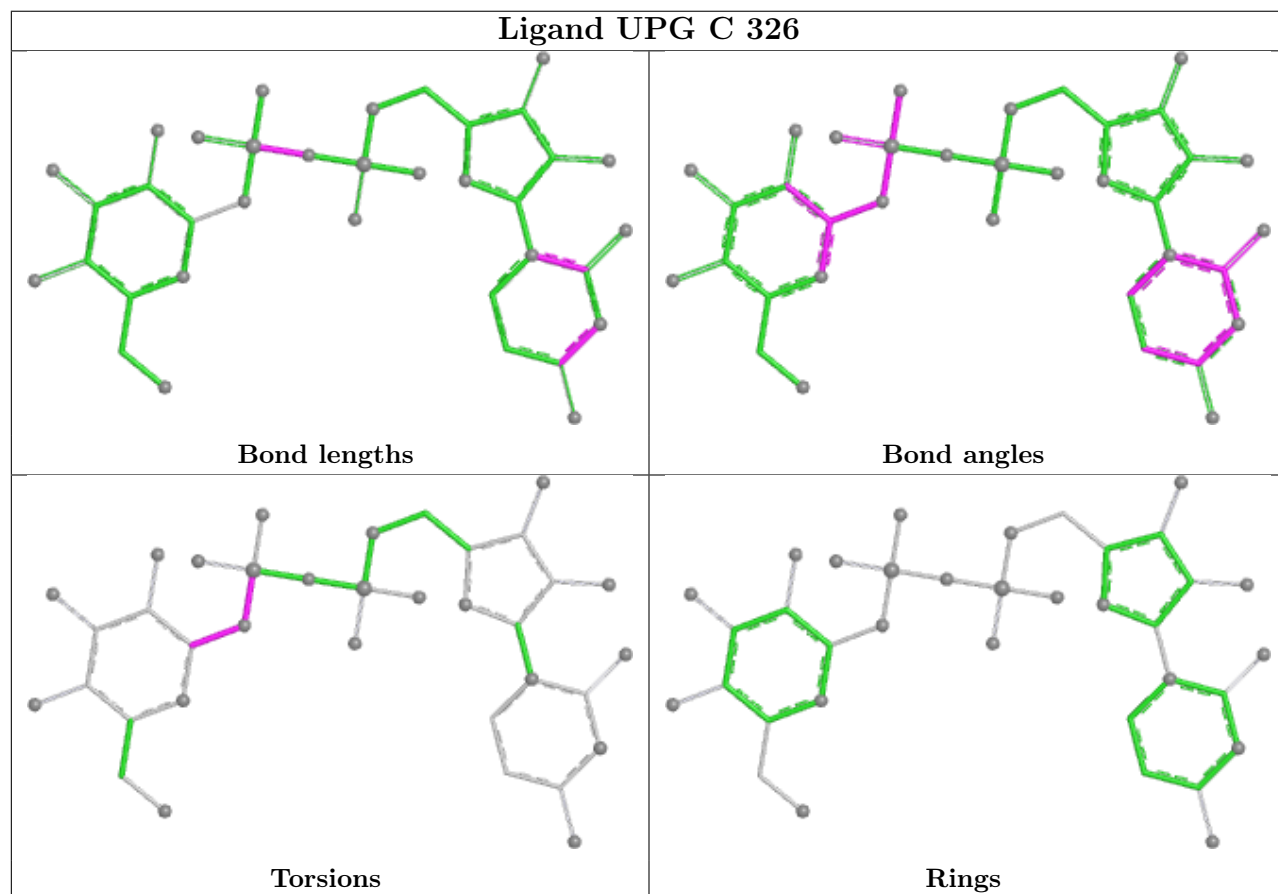
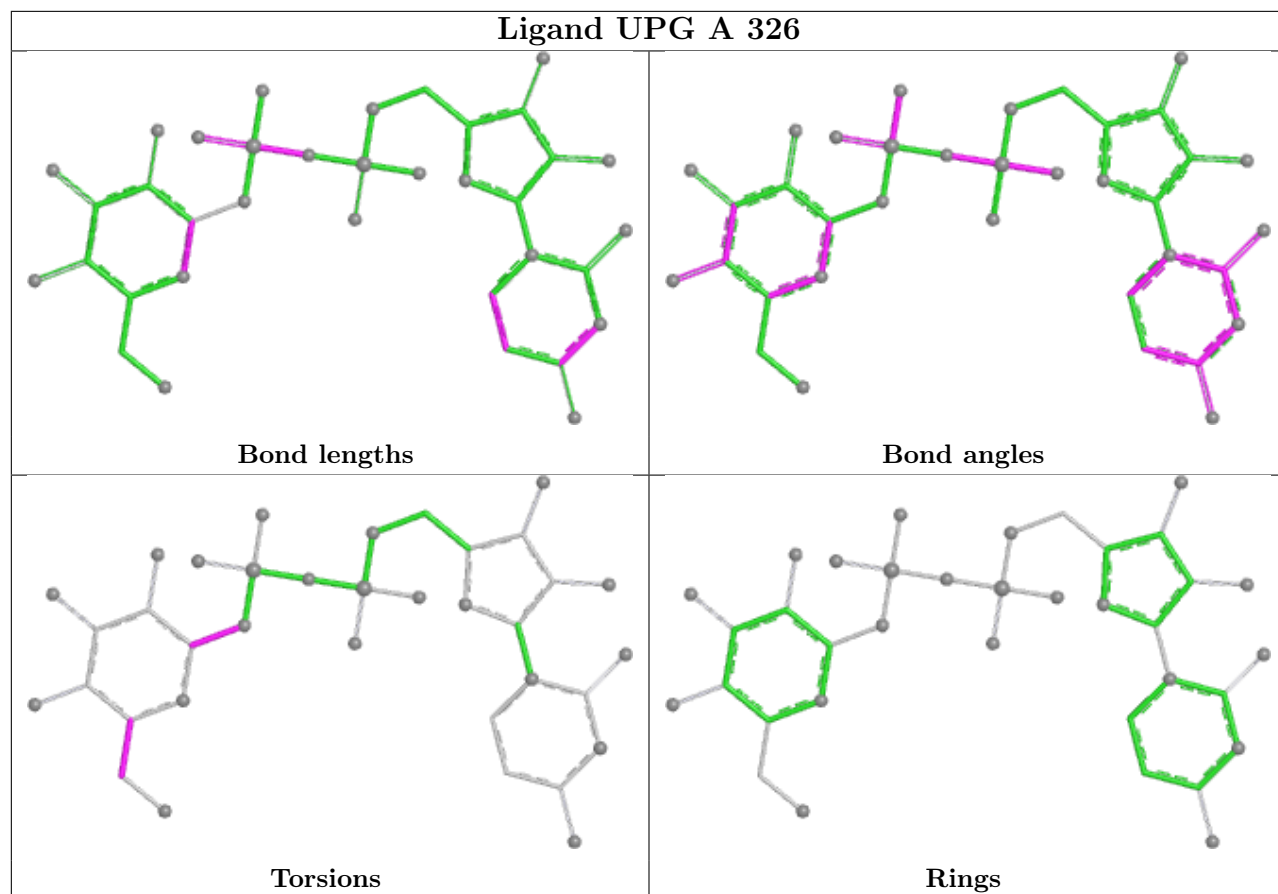
Mol	Chain	Res	Type	Atoms
3	B	326	UPG	C2'-C1'-O3B-PB
3	A	326	UPG	C2'-C1'-O3B-PB
3	C	326	UPG	C1'-O3B-PB-O3A
3	C	326	UPG	C2'-C1'-O3B-PB
3	D	326	UPG	C2'-C1'-O3B-PB
3	B	326	UPG	C1'-O3B-PB-O2B
3	C	326	UPG	C1'-O3B-PB-O1B
3	D	326	UPG	C1'-O3B-PB-O1B
3	A	326	UPG	O5'-C5'-C6'-O6'

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.





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	294/323 (91%)	-0.22	5 (1%) 69 68	18, 34, 67, 82	5 (1%)
1	B	299/323 (92%)	-0.21	3 (1%) 79 79	18, 36, 67, 84	4 (1%)
1	C	299/323 (92%)	-0.22	2 (0%) 84 84	19, 35, 64, 83	6 (2%)
1	D	295/323 (91%)	-0.09	2 (0%) 84 84	19, 37, 70, 81	5 (1%)
All	All	1187/1292 (91%)	-0.18	12 (1%) 79 79	18, 36, 69, 84	20 (1%)

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	188	THR	3.4
1	D	308	ILE	3.1
1	A	90	GLY	2.9
1	A	305	ALA	2.7
1	B	92	THR	2.5
1	C	92	THR	2.4
1	B	192	ASP	2.4
1	C	226	ASP	2.2
1	A	12	VAL	2.1
1	A	190	ASP	2.0
1	A	162	GLY	2.0
1	B	190	ASP	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 oligosaccharides in this entry.

6.4 Ligands

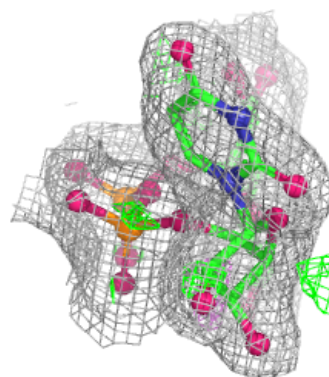
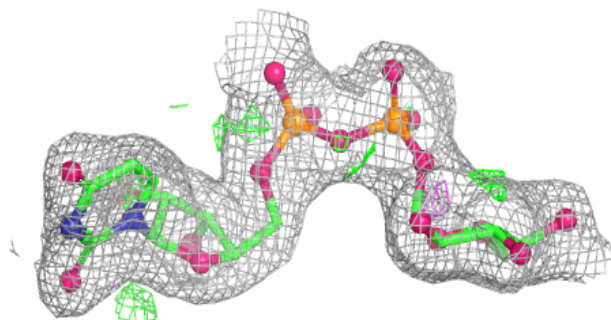
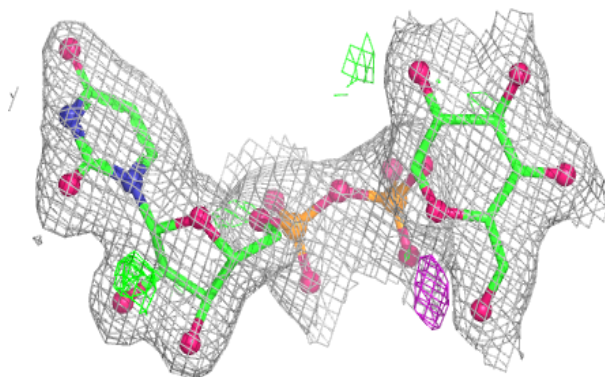
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	UPG	D	326	36/36	0.95	0.07	27,34,39,41	0
3	UPG	C	326	36/36	0.96	0.07	29,35,39,39	0
3	UPG	B	326	36/36	0.96	0.06	28,33,39,43	0
3	UPG	A	326	36/36	0.97	0.07	26,32,35,35	0
2	MG	A	324	1/1	0.97	0.06	37,37,37,37	0
2	MG	A	325	1/1	0.97	0.04	29,29,29,29	0
2	MG	C	324	1/1	0.97	0.07	45,45,45,45	0
2	MG	B	325	1/1	0.98	0.04	30,30,30,30	0
2	MG	B	324	1/1	0.99	0.12	38,38,38,38	0
2	MG	C	325	1/1	0.99	0.05	34,34,34,34	0
2	MG	D	324	1/1	0.99	0.08	38,38,38,38	0
2	MG	D	325	1/1	0.99	0.07	34,34,34,34	0

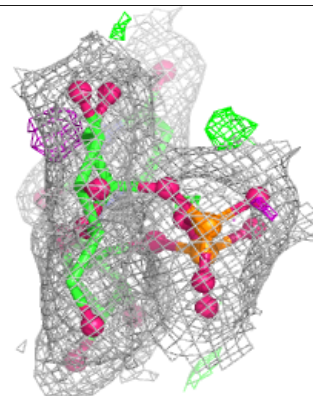
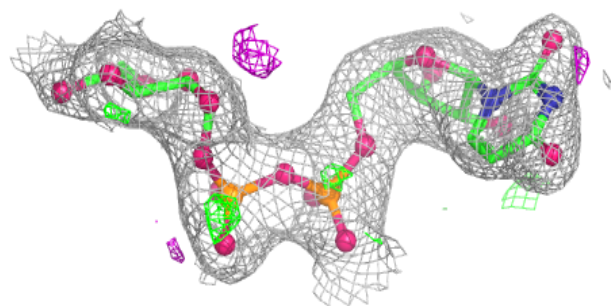
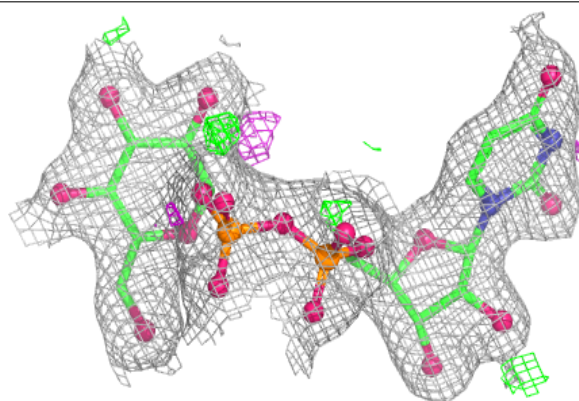
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around UPG D 326:

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

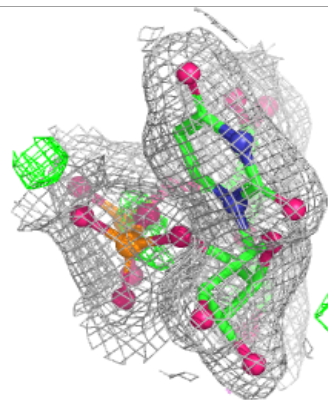
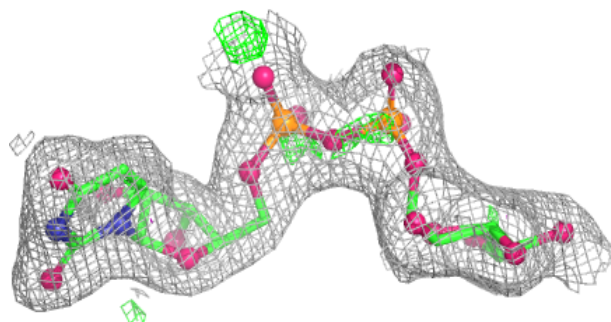
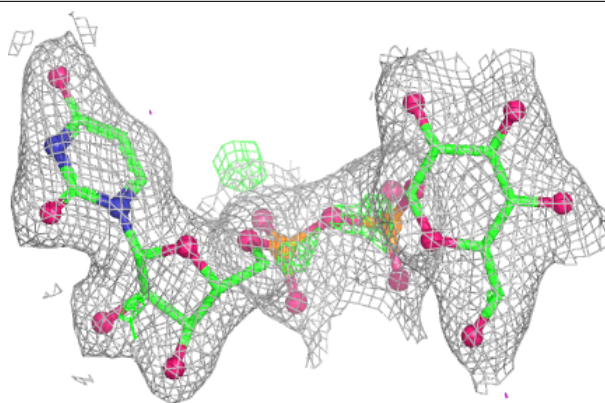
**Electron density around UPG C 326:**

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

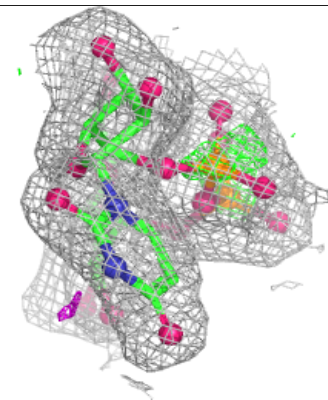
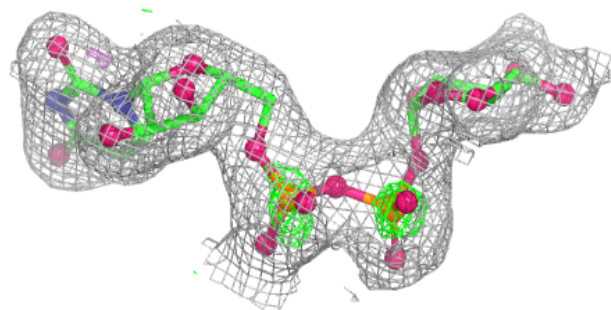
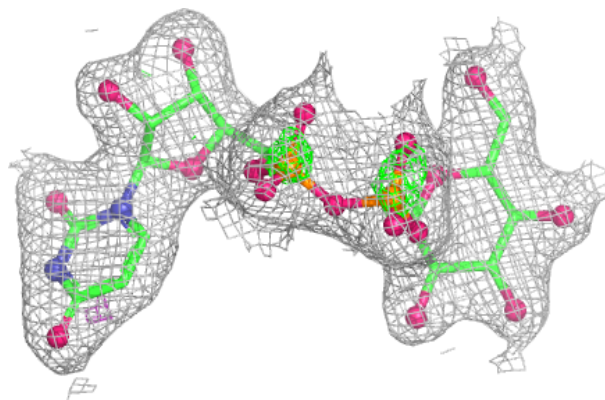


Electron density around UPG B 326:

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

**Electron density around UPG A 326:**

$2mF_o-DF_c$ (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.