



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 12, 2017 – 07:28 pm GMT

PDB ID : 3OK2
Title : Crystal structure of the ANA:RNA decamer without lattice translocation defects
Authors : Ovaere, M.; Van Meervelt, L.
Deposited on : 2010-08-24
Resolution : 1.96 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

<http://wwpdb.org/validation/2016/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 : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

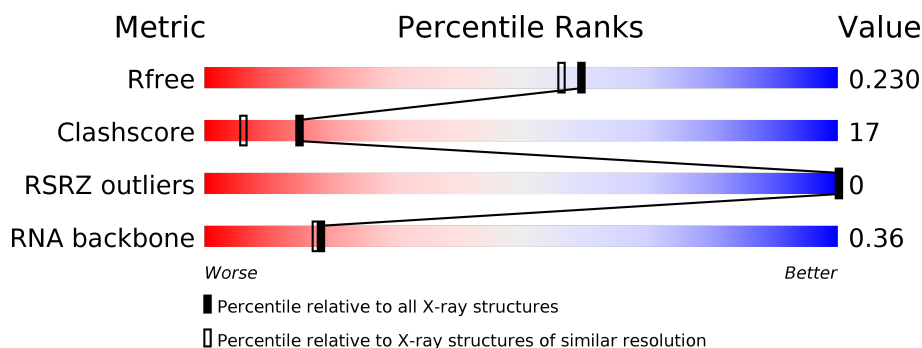
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.96 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}	100719	2004 (1.96-1.96)
Clashscore	112137	2136 (1.96-1.96)
RSRZ outliers	101464	2018 (1.96-1.96)
RNA backbone	2435	1027 (2.66-1.26)

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. 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
2	B	10	
2	D	10	
2	F	10	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 1541 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 an unknown type called (A6C)(A6C)(A6G)(A6U)(A6A)(A6A)(A6U)(A6G)(A6C)(A6C)(PO4).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
1	A	11	Total	C	N	O	P	0	0
			221	104	36	71	10		
1	C	11	Total	C	N	O	P	0	0
			221	104	36	71	10		
1	E	11	Total	C	N	O	P	0	0
			221	104	36	71	10		

- Molecule 2 is a RNA chain called GGCAUUACGG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	10	Total	C	N	O	P	0	0	0
			213	96	40	68	9			
2	D	10	Total	C	N	O	P	0	0	0
			213	96	40	68	9			
2	F	10	Total	C	N	O	P	0	0	0
			213	96	40	68	9			

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	38	Total	O	0	0
			38	38		
3	C	30	Total	O	0	0
			30	30		
3	E	48	Total	O	0	0
			48	48		
3	B	42	Total	O	0	0
			42	42		
3	D	34	Total	O	0	0
			34	34		
3	F	47	Total	O	0	0
			47	47		

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

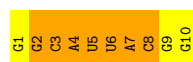
- Molecule 2: GGCAUUACGG

Chain B: 



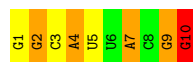
- Molecule 2: GGCAUUACGG

Chain D: 



- Molecule 2: GGCAUUACGG

Chain F: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	26.07Å 42.51Å 157.79Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.45 – 1.96 39.45 – 1.96	Depositor EDS
% Data completeness (in resolution range)	89.2 (39.45-1.96) 89.2 (39.45-1.96)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.80 (at 1.97Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.224 , (Not available) 0.226 , 0.230	Depositor DCC
R_{free} test set	567 reflections (5.01%)	DCC
Wilson B-factor (Å ²)	49.0	Xtriage
Anisotropy	0.236	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 64.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	1541	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.30% 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: A6U, PO4, A6G, A6A, A6C

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
2	B	1.48	0/238	2.20	12/370 (3.2%)
2	D	1.52	0/238	2.42	18/370 (4.9%)
2	F	1.92	6/238 (2.5%)	2.24	9/370 (2.4%)
All	All	1.65	6/714 (0.8%)	2.29	39/1110 (3.5%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	9	G	N3-C4	7.29	1.40	1.35
2	F	7	A	N3-C4	7.11	1.39	1.34
2	F	4	A	C6-N6	6.52	1.39	1.33
2	F	3	C	C3'-O3'	5.58	1.50	1.42
2	F	9	G	N7-C5	5.40	1.42	1.39
2	F	1	G	C6-N1	5.28	1.43	1.39

All (39) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	3	C	O4'-C1'-N1	11.17	117.14	108.20
2	D	9	G	C4'-C3'-C2'	-10.12	92.48	102.60
2	D	10	G	O4'-C1'-N9	9.88	116.10	108.20
2	D	9	G	O4'-C1'-N9	8.45	114.96	108.20
2	D	10	G	C4-C5-N7	-8.40	107.44	110.80
2	D	2	G	N9-C1'-C2'	-8.36	102.80	112.00
2	F	2	G	C5-C6-O6	-8.03	123.78	128.60
2	B	3	C	N1-C1'-C2'	-7.70	103.53	112.00
2	D	5	U	O4'-C1'-N1	7.68	114.35	108.20
2	D	5	U	C3'-C2'-C1'	-7.68	95.36	101.50
2	B	3	C	N3-C4-C5	7.59	124.93	121.90
2	B	10	G	O4'-C1'-N9	7.30	114.04	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	5	U	O4'-C1'-N1	6.97	113.78	108.20
2	F	7	A	O4'-C1'-N9	6.88	113.70	108.20
2	D	6	U	C4'-C3'-C2'	-6.79	95.81	102.60
2	D	7	A	N1-C6-N6	-6.63	114.62	118.60
2	D	3	C	N1-C1'-C2'	-6.32	105.05	112.00
2	D	4	A	O4'-C4'-C3'	-6.24	97.76	104.00
2	D	10	G	N9-C4-C5	6.19	107.88	105.40
2	B	3	C	C6-N1-C2	6.00	122.70	120.30
2	B	6	U	O4'-C1'-N1	5.89	112.91	108.20
2	F	5	U	N3-C4-C5	5.79	118.07	114.60
2	D	5	U	O4'-C4'-C3'	-5.77	98.23	104.00
2	F	4	A	C3'-C2'-C1'	-5.72	96.93	101.50
2	D	4	A	C3'-C2'-C1'	-5.71	96.93	101.50
2	B	3	C	O5'-P-OP2	-5.70	100.57	105.70
2	B	2	G	O4'-C1'-N9	5.69	112.75	108.20
2	B	4	A	N1-C6-N6	-5.64	115.22	118.60
2	B	3	C	O4'-C1'-N1	5.55	112.64	108.20
2	D	1	G	O4'-C1'-N9	-5.55	103.76	108.20
2	B	1	G	C4'-C3'-C2'	-5.50	97.10	102.60
2	B	3	C	C4-C5-C6	-5.48	114.66	117.40
2	F	10	G	N3-C4-N9	-5.41	122.75	126.00
2	D	10	G	C5-N7-C8	5.26	106.93	104.30
2	D	7	A	N7-C8-N9	-5.21	111.20	113.80
2	D	7	A	C5-N7-C8	5.15	106.47	103.90
2	F	2	G	O4'-C1'-N9	5.13	112.30	108.20
2	F	9	G	N1-C6-O6	-5.05	116.87	119.90
2	F	5	U	O4'-C1'-N1	5.05	112.24	108.20

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	221	0	128	6	0
1	C	221	0	128	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	221	0	128	6	0
2	B	213	0	110	2	0
2	D	213	0	110	5	0
2	F	213	0	110	8	0
3	A	38	0	0	2	0
3	B	42	0	0	2	0
3	C	30	0	0	1	0
3	D	34	0	0	2	0
3	E	48	0	0	3	0
3	F	47	0	0	2	0
All	All	1541	0	714	34	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 17.

All (34) 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)
2:F:4:A:H3'	3:F:210:HOH:O	1.58	1.02
1:C:4:A6U:H6	1:C:4:A6U:OP2	1.71	0.91
1:A:11:PO4:O1	1:C:1:A6C:H5'A	1.79	0.83
1:C:1:A6C:H1'	3:B:224:HOH:O	1.83	0.77
2:F:10:G:H8	2:F:10:G:H5'	1.50	0.76
1:C:4:A6U:OP2	1:C:4:A6U:C6	2.35	0.75
2:F:9:G:H2'	2:F:10:G:H5''	1.69	0.74
2:F:10:G:C8	2:F:10:G:H5'	2.23	0.73
1:E:8:A6G:H1'	3:E:179:HOH:O	1.88	0.72
1:A:5:A6A:N7	3:A:31:HOH:O	2.31	0.62
2:F:10:G:H8	2:F:10:G:C5'	2.14	0.59
1:C:9:A6C:O4'	1:C:9:A6C:H6	2.06	0.56
2:F:10:G:C8	2:F:10:G:C5'	2.88	0.56
1:E:11:PO4:P	3:E:189:HOH:O	2.64	0.55
2:F:2:G:N7	3:F:111:HOH:O	2.33	0.53
1:C:8:A6G:O6	2:D:3:C:N4	2.36	0.52
1:C:5:A6A:C2	2:D:7:A:C2	2.94	0.51
2:F:9:G:C2'	2:F:10:G:H5''	2.42	0.50
2:D:7:A:H2'	2:D:8:C:O4'	2.12	0.49
1:A:4:A6U:H2'	1:A:5:A6A:O4'	2.14	0.48
2:B:9:G:O2'	2:B:10:G:H5'	2.13	0.48
1:C:7:A6U:O4'	1:C:7:A6U:H6	2.14	0.47
1:E:8:A6G:C6'	3:E:179:HOH:O	2.62	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:7:A6U:H5'A	3:C:88:HOH:O	2.14	0.47
1:E:10:A6C:C6	1:E:10:A6C:H3'	2.45	0.47
1:E:7:A6U:H2'	1:E:8:A6G:H8	1.97	0.46
1:A:6:A6A:H2'	1:A:7:A6U:O4'	2.16	0.46
1:C:5:A6A:H8	1:C:5:A6A:O5'	2.16	0.46
1:A:8:A6G:N7	3:A:122:HOH:O	2.36	0.45
1:A:8:A6G:H2'	1:A:9:A6C:O4'	2.19	0.43
1:E:10:A6C:H3'	1:E:10:A6C:H6	2.02	0.42
2:B:8:C:H1'	3:B:104:HOH:O	2.21	0.41
2:D:2:G:N7	3:D:159:HOH:O	2.37	0.41
2:D:5:U:P	3:D:19:HOH:O	2.79	0.41

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein molecules in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein molecules in this entry.

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	B	9/10 (90%)	0	0
2	D	9/10 (90%)	3 (33%)	0
2	F	9/10 (90%)	2 (22%)	0
All	All	27/30 (90%)	5 (18%)	0

All (5) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	D	4	A
2	D	6	U
2	D	8	C
2	F	7	A

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Mol	Chain	Res	Type
2	F	10	G

There are no RNA pucker outliers to report.

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

30 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$
1	A6C	A	1	1	16,19,23	1.28	2 (12%)	15,27,34	1.32	3 (20%)
1	A6C	A	10	1	16,22,23	0.81	0	16,31,34	1.29	1 (6%)
1	A6C	A	2	1	16,22,23	1.23	1 (6%)	16,31,34	1.45	2 (12%)
1	A6G	A	3	1	19,26,27	1.50	2 (10%)	18,38,41	2.57	6 (33%)
1	A6U	A	4	1	15,22,23	1.56	4 (26%)	15,31,34	4.61	8 (53%)
1	A6A	A	5	1	19,25,26	1.10	2 (10%)	16,36,39	1.20	2 (12%)
1	A6A	A	6	1	19,25,26	1.35	2 (10%)	16,36,39	1.73	3 (18%)
1	A6U	A	7	1	15,22,23	1.66	3 (20%)	15,31,34	3.34	4 (26%)
1	A6G	A	8	1	19,26,27	1.56	3 (15%)	18,38,41	2.78	10 (55%)
1	A6C	A	9	1	16,22,23	1.32	4 (25%)	16,31,34	1.18	2 (12%)
1	A6C	C	1	1	16,19,23	1.13	2 (12%)	15,27,34	1.68	3 (20%)
1	A6C	C	10	1	16,22,23	1.21	2 (12%)	16,31,34	1.18	1 (6%)
1	A6C	C	2	1	16,22,23	0.88	0	16,31,34	1.09	2 (12%)
1	A6G	C	3	1	19,26,27	1.33	2 (10%)	18,38,41	2.93	8 (44%)
1	A6U	C	4	1	15,22,23	1.32	1 (6%)	15,31,34	4.39	2 (13%)
1	A6A	C	5	1	19,25,26	0.97	1 (5%)	16,36,39	1.42	2 (12%)
1	A6A	C	6	1	19,25,26	0.93	1 (5%)	16,36,39	1.20	1 (6%)
1	A6U	C	7	1	15,22,23	1.58	2 (13%)	15,31,34	4.01	2 (13%)
1	A6G	C	8	1	19,26,27	1.13	2 (10%)	18,38,41	2.77	5 (27%)
1	A6C	C	9	1	16,22,23	0.95	0	16,31,34	1.13	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	A6C	E	1	1	16,19,23	1.02	1 (6%)	15,27,34	0.99	1 (6%)
1	A6C	E	10	1	16,22,23	0.95	1 (6%)	16,31,34	1.37	3 (18%)
1	A6C	E	2	1	16,22,23	0.99	1 (6%)	16,31,34	1.25	1 (6%)
1	A6G	E	3	1	19,26,27	1.57	4 (21%)	18,38,41	2.89	7 (38%)
1	A6U	E	4	1	15,22,23	1.33	2 (13%)	15,31,34	4.02	3 (20%)
1	A6A	E	5	1	19,25,26	1.43	3 (15%)	16,36,39	1.14	2 (12%)
1	A6A	E	6	1	19,25,26	1.19	2 (10%)	16,36,39	1.31	1 (6%)
1	A6U	E	7	1	15,22,23	1.55	2 (13%)	15,31,34	4.14	4 (26%)
1	A6G	E	8	1	19,26,27	1.69	1 (5%)	18,38,41	2.51	7 (38%)
1	A6C	E	9	1	16,22,23	1.10	2 (12%)	16,31,34	1.07	1 (6%)

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
1	A6C	A	1	1	-	0/3/23/27	0/2/2/2
1	A6C	A	10	1	-	0/4/26/27	0/2/2/2
1	A6C	A	2	1	-	0/4/26/27	0/2/2/2
1	A6G	A	3	1	-	0/3/26/27	0/3/3/3
1	A6U	A	4	1	-	0/4/26/27	0/2/2/2
1	A6A	A	5	1	-	0/3/26/27	0/3/3/3
1	A6A	A	6	1	-	0/3/26/27	0/3/3/3
1	A6U	A	7	1	-	0/4/26/27	0/2/2/2
1	A6G	A	8	1	-	0/3/26/27	0/3/3/3
1	A6C	A	9	1	-	0/4/26/27	0/2/2/2
1	A6C	C	1	1	-	0/3/23/27	0/2/2/2
1	A6C	C	10	1	-	0/4/26/27	0/2/2/2
1	A6C	C	2	1	-	0/4/26/27	0/2/2/2
1	A6G	C	3	1	-	0/3/26/27	0/3/3/3
1	A6U	C	4	1	-	0/4/26/27	0/2/2/2
1	A6A	C	5	1	-	0/3/26/27	0/3/3/3
1	A6A	C	6	1	-	0/3/26/27	0/3/3/3
1	A6U	C	7	1	-	0/4/26/27	0/2/2/2
1	A6G	C	8	1	-	0/3/26/27	0/3/3/3
1	A6C	C	9	1	-	0/4/26/27	0/2/2/2
1	A6C	E	1	1	-	0/3/23/27	0/2/2/2
1	A6C	E	10	1	-	0/4/26/27	0/2/2/2
1	A6C	E	2	1	-	0/4/26/27	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	A6G	E	3	1	-	0/3/26/27	0/3/3/3
1	A6U	E	4	1	-	0/4/26/27	0/2/2/2
1	A6A	E	5	1	-	0/3/26/27	0/3/3/3
1	A6A	E	6	1	-	0/3/26/27	0/3/3/3
1	A6U	E	7	1	-	0/4/26/27	0/2/2/2
1	A6G	E	8	1	-	0/3/26/27	0/3/3/3
1	A6C	E	9	1	-	0/4/26/27	0/2/2/2

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	5	A6A	O5'-C5'	-3.42	1.40	1.44
1	A	3	A6G	O5'-C5'	-3.21	1.40	1.44
1	E	6	A6A	O5'-C5'	-3.02	1.40	1.44
1	E	5	A6A	O5'-C5'	-2.84	1.40	1.44
1	A	2	A6C	O5'-C5'	-2.69	1.41	1.44
1	E	9	A6C	O5'-C5'	-2.46	1.41	1.44
1	E	3	A6G	O5'-C5'	-2.45	1.41	1.44
1	C	6	A6A	O5'-C5'	-2.44	1.41	1.44
1	E	3	A6G	C8-N7	-2.36	1.30	1.34
1	A	4	A6U	O5'-C5'	-2.34	1.41	1.44
1	A	9	A6C	O5'-C5'	-2.33	1.41	1.44
1	A	7	A6U	C6-C5	-2.30	1.33	1.38
1	C	10	A6C	C6-C5	-2.25	1.33	1.38
1	A	9	A6C	O3'-C3'	-2.24	1.37	1.43
1	E	9	A6C	O3'-C3'	-2.13	1.38	1.43
1	A	9	A6C	C6-C5	-2.13	1.33	1.38
1	E	2	A6C	O5'-C5'	-2.03	1.41	1.44
1	A	4	A6U	C6-C5	-2.01	1.33	1.38
1	E	1	A6C	C6'-C1'	2.02	1.54	1.52
1	C	1	A6C	C3'-C4'	2.02	1.57	1.53
1	A	5	A6A	O4'-C6'	2.09	1.47	1.43
1	A	6	A6A	C2-N3	2.11	1.35	1.32
1	C	3	A6G	C2-N1	2.13	1.39	1.35
1	A	6	A6A	C4-N3	2.13	1.38	1.35
1	E	3	A6G	C2-N1	2.15	1.39	1.35
1	A	4	A6U	C4-N3	2.18	1.37	1.33
1	C	8	A6G	C6-C5	2.18	1.45	1.41
1	A	9	A6C	C6-N1	2.19	1.38	1.35
1	E	4	A6U	C6-N1	2.27	1.38	1.35
1	A	1	A6C	O2'-C2'	2.33	1.48	1.43
1	E	6	A6A	C6'-C1'	2.37	1.55	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	8	A6G	C3'-C4'	2.47	1.58	1.53
1	C	5	A6A	C2-N3	2.52	1.36	1.32
1	A	1	A6C	C6'-C1'	2.56	1.55	1.52
1	C	10	A6C	C6-N1	2.60	1.39	1.35
1	E	10	A6C	C6-N1	2.64	1.39	1.35
1	E	4	A6U	C4-N3	2.83	1.38	1.33
1	C	8	A6G	C6-N1	2.95	1.38	1.33
1	E	5	A6A	C6'-C1'	3.00	1.56	1.52
1	A	8	A6G	C6'-C1'	3.00	1.56	1.52
1	C	7	A6U	C6-N1	3.02	1.39	1.35
1	C	1	A6C	C6-N1	3.07	1.40	1.35
1	A	4	A6U	C6-N1	3.08	1.40	1.35
1	E	7	A6U	C6-N1	3.17	1.40	1.35
1	E	5	A6A	C3'-C4'	3.24	1.59	1.53
1	A	7	A6U	C6-N1	3.31	1.40	1.35
1	C	4	A6U	C4-N3	3.48	1.39	1.33
1	E	7	A6U	C4-N3	3.65	1.39	1.33
1	A	8	A6G	C6-N1	3.72	1.39	1.33
1	E	3	A6G	C6-N1	3.95	1.40	1.33
1	A	3	A6G	C6-N1	4.05	1.40	1.33
1	C	7	A6U	C4-N3	4.10	1.40	1.33
1	A	7	A6U	C4-N3	4.17	1.40	1.33
1	C	3	A6G	C6-N1	4.54	1.41	1.33
1	E	8	A6G	C6-N1	6.19	1.44	1.33

All (97) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	8	A6G	C5-C6-N1	-8.29	111.68	123.48
1	C	3	A6G	C5-C6-N1	-7.49	112.82	123.48
1	A	8	A6G	C5-C6-N1	-7.25	113.16	123.48
1	E	3	A6G	C5-C6-N1	-7.10	113.37	123.48
1	A	3	A6G	C5-C6-N1	-6.91	113.65	123.48
1	E	8	A6G	C5-C6-N1	-6.32	114.49	123.48
1	C	4	A6U	C5-C4-N3	-4.04	113.48	123.12
1	A	4	A6U	O2'-C2'-C3'	-3.94	101.78	110.36
1	E	3	A6G	N3-C2-N1	-3.88	121.79	127.46
1	C	3	A6G	O4'-C4'-C5'	-3.72	99.36	107.65
1	C	5	A6A	O4'-C4'-C5'	-3.48	99.89	107.65
1	E	8	A6G	N3-C2-N1	-3.45	122.42	127.46
1	E	3	A6G	C6-C5-C4	-3.45	117.41	120.84
1	E	6	A6A	O2'-C2'-C3'	-3.45	102.86	110.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	8	A6G	C6-C5-C4	-3.43	117.44	120.84
1	E	4	A6U	C5-C4-N3	-3.26	115.33	123.12
1	A	4	A6U	O4'-C4'-C5'	-3.20	100.52	107.65
1	A	6	A6A	O4'-C4'-C5'	-3.15	100.63	107.65
1	A	3	A6G	C6-C5-C4	-3.13	117.73	120.84
1	C	7	A6U	C5-C4-N3	-3.12	115.68	123.12
1	A	4	A6U	C5-C4-N3	-2.98	116.01	123.12
1	A	3	A6G	N3-C2-N1	-2.96	123.14	127.46
1	E	7	A6U	C5-C4-N3	-2.91	116.17	123.12
1	C	3	A6G	C6-C5-C4	-2.86	118.00	120.84
1	A	8	A6G	N3-C2-N1	-2.81	123.35	127.46
1	A	8	A6G	C6-C5-C4	-2.66	118.20	120.84
1	C	3	A6G	N3-C2-N1	-2.63	123.61	127.46
1	C	8	A6G	N2-C2-N1	-2.55	113.16	117.24
1	C	2	A6C	O2'-C2'-C3'	-2.54	104.83	110.36
1	E	3	A6G	C5'-C4'-C3'	-2.48	106.71	112.00
1	A	2	A6C	O4'-C4'-C5'	-2.46	102.17	107.65
1	A	7	A6U	C5-C4-N3	-2.44	117.28	123.12
1	A	5	A6A	O2'-C2'-C3'	-2.43	105.06	110.36
1	A	1	A6C	O2'-C2'-C1'	-2.37	105.54	109.78
1	E	8	A6G	O2'-C2'-C1'	-2.36	105.57	109.78
1	A	8	A6G	C2-N3-C4	-2.34	112.43	115.16
1	A	8	A6G	C3'-C2'-C1'	-2.34	107.34	111.34
1	E	10	A6C	O2'-C2'-C1'	-2.34	105.61	109.78
1	C	3	A6G	C2-N3-C4	-2.33	112.43	115.16
1	C	8	A6G	O2'-C2'-C3'	-2.29	105.37	110.36
1	A	4	A6U	C2'-C3'-C4'	-2.26	106.24	110.22
1	C	5	A6A	N3-C2-N1	-2.21	126.93	128.86
1	A	8	A6G	N2-C2-N1	-2.12	113.85	117.24
1	A	8	A6G	O2'-C2'-C3'	-2.10	105.78	110.36
1	A	7	A6U	C5'-C4'-C3'	-2.07	107.60	112.00
1	E	8	A6G	C4-C5-N7	2.07	111.41	109.41
1	A	1	A6C	C6'-O4'-C4'	2.08	115.03	112.17
1	A	5	A6A	C5-C6-N6	2.11	124.78	120.47
1	A	9	A6C	C3'-C2'-C1'	2.12	114.97	111.34
1	C	8	A6G	N2-C2-N3	2.14	121.70	117.75
1	A	8	A6G	C5'-C4'-C3'	2.15	116.57	112.00
1	E	9	A6C	C6-N1-C1'	2.15	123.12	119.74
1	A	9	A6C	C2'-C3'-C4'	2.17	114.03	110.22
1	A	4	A6U	C3'-C2'-C1'	2.18	115.06	111.34
1	A	7	A6U	C6'-O4'-C4'	2.18	115.17	112.17
1	E	5	A6A	O3'-C3'-C4'	2.18	114.79	109.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	2	A6C	C6'-O4'-C4'	2.19	115.18	112.17
1	C	3	A6G	C4-C5-N7	2.20	111.53	109.41
1	A	3	A6G	O2'-C2'-C3'	2.23	115.22	110.36
1	E	3	A6G	C4-C5-N7	2.34	111.67	109.41
1	E	7	A6U	C2'-C3'-C4'	2.34	114.34	110.22
1	E	10	A6C	C6'-O4'-C4'	2.37	115.43	112.17
1	C	10	A6C	O3'-C3'-C4'	2.39	115.31	109.28
1	E	1	A6C	C3'-C2'-C1'	2.40	115.44	111.34
1	C	1	A6C	O5'-C5'-C4'	2.41	119.46	111.34
1	A	6	A6A	O2'-C2'-C3'	2.43	115.64	110.36
1	E	5	A6A	C5-C6-N6	2.44	125.45	120.47
1	A	4	A6U	O3'-C3'-C4'	2.52	115.63	109.28
1	E	4	A6U	C2'-C3'-C4'	2.53	114.67	110.22
1	A	4	A6U	C6'-O4'-C4'	2.63	115.79	112.17
1	C	2	A6C	C6'-O4'-C4'	2.65	115.82	112.17
1	E	7	A6U	C6'-O4'-C4'	2.68	115.86	112.17
1	A	8	A6G	N2-C2-N3	2.72	122.77	117.75
1	C	6	A6A	C4-C5-N7	2.83	112.15	109.41
1	A	3	A6G	O3'-C3'-C2'	3.06	117.02	110.36
1	E	10	A6C	O3'-C3'-C2'	3.07	117.03	110.36
1	A	1	A6C	O3'-C3'-C2'	3.15	117.21	110.36
1	C	1	A6C	C2'-C3'-C4'	3.18	115.81	110.22
1	E	8	A6G	C6'-O4'-C4'	3.36	116.79	112.17
1	E	3	A6G	C2'-C3'-C4'	3.40	116.21	110.22
1	A	10	A6C	C6'-O4'-C4'	3.47	116.95	112.17
1	C	1	A6C	C6'-O4'-C4'	3.66	117.20	112.17
1	A	2	A6C	C6'-O4'-C4'	4.11	117.83	112.17
1	C	3	A6G	C6'-O4'-C4'	4.25	118.02	112.17
1	E	8	A6G	C6-N1-C2	4.44	122.44	116.06
1	A	6	A6A	C6'-O4'-C4'	4.79	118.77	112.17
1	A	3	A6G	C6-N1-C2	5.30	123.69	116.06
1	C	3	A6G	C6-N1-C2	5.60	124.12	116.06
1	C	8	A6G	C6-N1-C2	5.83	124.45	116.06
1	A	8	A6G	C6-N1-C2	5.84	124.45	116.06
1	E	3	A6G	C6-N1-C2	5.97	124.65	116.06
1	A	7	A6U	C4-N3-C2	12.08	124.51	114.13
1	E	4	A6U	C4-N3-C2	14.62	126.69	114.13
1	C	7	A6U	C4-N3-C2	14.78	126.82	114.13
1	E	7	A6U	C4-N3-C2	15.11	127.11	114.13
1	A	4	A6U	C4-N3-C2	16.09	127.95	114.13
1	C	4	A6U	C4-N3-C2	16.12	127.97	114.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

15 monomers are involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	4	A6U	1	0
1	A	5	A6A	2	0
1	A	6	A6A	1	0
1	A	7	A6U	1	0
1	A	8	A6G	2	0
1	A	9	A6C	1	0
1	C	1	A6C	2	0
1	C	4	A6U	2	0
1	C	5	A6A	2	0
1	C	7	A6U	2	0
1	C	8	A6G	1	0
1	C	9	A6C	1	0
1	E	10	A6C	2	0
1	E	7	A6U	1	0
1	E	8	A6G	3	0

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

33 such 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
1	A6C	A	1	1	16,19,23	1.28	2 (12%)	15,27,34	1.32	3 (20%)
1	A6C	A	10	1	16,22,23	0.81	0	16,31,34	1.29	1 (6%)
1	PO4	A	11	-	0,3,4	0.00	-	0,3,6	0.00	-
1	A6C	A	2	1	16,22,23	1.23	1 (6%)	16,31,34	1.45	2 (12%)
1	A6G	A	3	1	19,26,27	1.50	2 (10%)	18,38,41	2.57	6 (33%)
1	A6U	A	4	1	15,22,23	1.56	4 (26%)	15,31,34	4.61	8 (53%)
1	A6A	A	5	1	19,25,26	1.10	2 (10%)	16,36,39	1.20	2 (12%)
1	A6A	A	6	1	19,25,26	1.35	2 (10%)	16,36,39	1.73	3 (18%)
1	A6U	A	7	1	15,22,23	1.66	3 (20%)	15,31,34	3.34	4 (26%)
1	A6G	A	8	1	19,26,27	1.56	3 (15%)	18,38,41	2.78	10 (55%)
1	A6C	A	9	1	16,22,23	1.32	4 (25%)	16,31,34	1.18	2 (12%)
1	A6C	C	1	1	16,19,23	1.13	2 (12%)	15,27,34	1.68	3 (20%)
1	A6C	C	10	1	16,22,23	1.21	2 (12%)	16,31,34	1.18	1 (6%)
1	PO4	C	11	-	0,3,4	0.00	-	0,3,6	0.00	-
1	A6C	C	2	1	16,22,23	0.88	0	16,31,34	1.09	2 (12%)
1	A6G	C	3	1	19,26,27	1.33	2 (10%)	18,38,41	2.93	8 (44%)
1	A6U	C	4	1	15,22,23	1.32	1 (6%)	15,31,34	4.39	2 (13%)
1	A6A	C	5	1	19,25,26	0.97	1 (5%)	16,36,39	1.42	2 (12%)
1	A6A	C	6	1	19,25,26	0.93	1 (5%)	16,36,39	1.20	1 (6%)
1	A6U	C	7	1	15,22,23	1.58	2 (13%)	15,31,34	4.01	2 (13%)
1	A6G	C	8	1	19,26,27	1.13	2 (10%)	18,38,41	2.77	5 (27%)
1	A6C	C	9	1	16,22,23	0.95	0	16,31,34	1.13	0
1	A6C	E	1	1	16,19,23	1.02	1 (6%)	15,27,34	0.99	1 (6%)
1	A6C	E	10	1	16,22,23	0.95	1 (6%)	16,31,34	1.37	3 (18%)
1	PO4	E	11	-	0,3,4	0.00	-	0,3,6	0.00	-
1	A6C	E	2	1	16,22,23	0.99	1 (6%)	16,31,34	1.25	1 (6%)
1	A6G	E	3	1	19,26,27	1.57	4 (21%)	18,38,41	2.89	7 (38%)
1	A6U	E	4	1	15,22,23	1.33	2 (13%)	15,31,34	4.02	3 (20%)
1	A6A	E	5	1	19,25,26	1.43	3 (15%)	16,36,39	1.14	2 (12%)
1	A6A	E	6	1	19,25,26	1.19	2 (10%)	16,36,39	1.31	1 (6%)
1	A6U	E	7	1	15,22,23	1.55	2 (13%)	15,31,34	4.14	4 (26%)
1	A6G	E	8	1	19,26,27	1.69	1 (5%)	18,38,41	2.51	7 (38%)
1	A6C	E	9	1	16,22,23	1.10	2 (12%)	16,31,34	1.07	1 (6%)

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
1	A6C	A	1	1	-	0/3/23/27	0/2/2/2
1	A6C	A	10	1	-	0/4/26/27	0/2/2/2
1	PO4	A	11	-	-	0/0/0/0	0/0/0/0
1	A6C	A	2	1	-	0/4/26/27	0/2/2/2
1	A6G	A	3	1	-	0/3/26/27	0/3/3/3
1	A6U	A	4	1	-	0/4/26/27	0/2/2/2
1	A6A	A	5	1	-	0/3/26/27	0/3/3/3
1	A6A	A	6	1	-	0/3/26/27	0/3/3/3
1	A6U	A	7	1	-	0/4/26/27	0/2/2/2
1	A6G	A	8	1	-	0/3/26/27	0/3/3/3
1	A6C	A	9	1	-	0/4/26/27	0/2/2/2
1	A6C	C	1	1	-	0/3/23/27	0/2/2/2
1	A6C	C	10	1	-	0/4/26/27	0/2/2/2
1	PO4	C	11	-	-	0/0/0/0	0/0/0/0
1	A6C	C	2	1	-	0/4/26/27	0/2/2/2
1	A6G	C	3	1	-	0/3/26/27	0/3/3/3
1	A6U	C	4	1	-	0/4/26/27	0/2/2/2
1	A6A	C	5	1	-	0/3/26/27	0/3/3/3
1	A6A	C	6	1	-	0/3/26/27	0/3/3/3
1	A6U	C	7	1	-	0/4/26/27	0/2/2/2
1	A6G	C	8	1	-	0/3/26/27	0/3/3/3
1	A6C	C	9	1	-	0/4/26/27	0/2/2/2
1	A6C	E	1	1	-	0/3/23/27	0/2/2/2
1	A6C	E	10	1	-	0/4/26/27	0/2/2/2
1	PO4	E	11	-	-	0/0/0/0	0/0/0/0
1	A6C	E	2	1	-	0/4/26/27	0/2/2/2
1	A6G	E	3	1	-	0/3/26/27	0/3/3/3
1	A6U	E	4	1	-	0/4/26/27	0/2/2/2
1	A6A	E	5	1	-	0/3/26/27	0/3/3/3
1	A6A	E	6	1	-	0/3/26/27	0/3/3/3
1	A6U	E	7	1	-	0/4/26/27	0/2/2/2
1	A6G	E	8	1	-	0/3/26/27	0/3/3/3
1	A6C	E	9	1	-	0/4/26/27	0/2/2/2

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	5	A6A	O5'-C5'	-3.42	1.40	1.44
1	A	3	A6G	O5'-C5'	-3.21	1.40	1.44
1	E	6	A6A	O5'-C5'	-3.02	1.40	1.44
1	E	5	A6A	O5'-C5'	-2.84	1.40	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	2	A6C	O5'-C5'	-2.69	1.41	1.44
1	E	9	A6C	O5'-C5'	-2.46	1.41	1.44
1	E	3	A6G	O5'-C5'	-2.45	1.41	1.44
1	C	6	A6A	O5'-C5'	-2.44	1.41	1.44
1	E	3	A6G	C8-N7	-2.36	1.30	1.34
1	A	4	A6U	O5'-C5'	-2.34	1.41	1.44
1	A	9	A6C	O5'-C5'	-2.33	1.41	1.44
1	A	7	A6U	C6-C5	-2.30	1.33	1.38
1	C	10	A6C	C6-C5	-2.25	1.33	1.38
1	A	9	A6C	O3'-C3'	-2.24	1.37	1.43
1	E	9	A6C	O3'-C3'	-2.13	1.38	1.43
1	A	9	A6C	C6-C5	-2.13	1.33	1.38
1	E	2	A6C	O5'-C5'	-2.03	1.41	1.44
1	A	4	A6U	C6-C5	-2.01	1.33	1.38
1	E	1	A6C	C6'-C1'	2.02	1.54	1.52
1	C	1	A6C	C3'-C4'	2.02	1.57	1.53
1	A	5	A6A	O4'-C6'	2.09	1.47	1.43
1	A	6	A6A	C2-N3	2.11	1.35	1.32
1	C	3	A6G	C2-N1	2.13	1.39	1.35
1	A	6	A6A	C4-N3	2.13	1.38	1.35
1	E	3	A6G	C2-N1	2.15	1.39	1.35
1	A	4	A6U	C4-N3	2.18	1.37	1.33
1	C	8	A6G	C6-C5	2.18	1.45	1.41
1	A	9	A6C	C6-N1	2.19	1.38	1.35
1	E	4	A6U	C6-N1	2.27	1.38	1.35
1	A	1	A6C	O2'-C2'	2.33	1.48	1.43
1	E	6	A6A	C6'-C1'	2.37	1.55	1.52
1	A	8	A6G	C3'-C4'	2.47	1.58	1.53
1	C	5	A6A	C2-N3	2.52	1.36	1.32
1	A	1	A6C	C6'-C1'	2.56	1.55	1.52
1	C	10	A6C	C6-N1	2.60	1.39	1.35
1	E	10	A6C	C6-N1	2.64	1.39	1.35
1	E	4	A6U	C4-N3	2.83	1.38	1.33
1	C	8	A6G	C6-N1	2.95	1.38	1.33
1	E	5	A6A	C6'-C1'	3.00	1.56	1.52
1	A	8	A6G	C6'-C1'	3.00	1.56	1.52
1	C	7	A6U	C6-N1	3.02	1.39	1.35
1	C	1	A6C	C6-N1	3.07	1.40	1.35
1	A	4	A6U	C6-N1	3.08	1.40	1.35
1	E	7	A6U	C6-N1	3.17	1.40	1.35
1	E	5	A6A	C3'-C4'	3.24	1.59	1.53
1	A	7	A6U	C6-N1	3.31	1.40	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	4	A6U	C4-N3	3.48	1.39	1.33
1	E	7	A6U	C4-N3	3.65	1.39	1.33
1	A	8	A6G	C6-N1	3.72	1.39	1.33
1	E	3	A6G	C6-N1	3.95	1.40	1.33
1	A	3	A6G	C6-N1	4.05	1.40	1.33
1	C	7	A6U	C4-N3	4.10	1.40	1.33
1	A	7	A6U	C4-N3	4.17	1.40	1.33
1	C	3	A6G	C6-N1	4.54	1.41	1.33
1	E	8	A6G	C6-N1	6.19	1.44	1.33

All (97) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	8	A6G	C5-C6-N1	-8.29	111.68	123.48
1	C	3	A6G	C5-C6-N1	-7.49	112.82	123.48
1	A	8	A6G	C5-C6-N1	-7.25	113.16	123.48
1	E	3	A6G	C5-C6-N1	-7.10	113.37	123.48
1	A	3	A6G	C5-C6-N1	-6.91	113.65	123.48
1	E	8	A6G	C5-C6-N1	-6.32	114.49	123.48
1	C	4	A6U	C5-C4-N3	-4.04	113.48	123.12
1	A	4	A6U	O2'-C2'-C3'	-3.94	101.78	110.36
1	E	3	A6G	N3-C2-N1	-3.88	121.79	127.46
1	C	3	A6G	O4'-C4'-C5'	-3.72	99.36	107.65
1	C	5	A6A	O4'-C4'-C5'	-3.48	99.89	107.65
1	E	8	A6G	N3-C2-N1	-3.45	122.42	127.46
1	E	3	A6G	C6-C5-C4	-3.45	117.41	120.84
1	E	6	A6A	O2'-C2'-C3'	-3.45	102.86	110.36
1	E	8	A6G	C6-C5-C4	-3.43	117.44	120.84
1	E	4	A6U	C5-C4-N3	-3.26	115.33	123.12
1	A	4	A6U	O4'-C4'-C5'	-3.20	100.52	107.65
1	A	6	A6A	O4'-C4'-C5'	-3.15	100.63	107.65
1	A	3	A6G	C6-C5-C4	-3.13	117.73	120.84
1	C	7	A6U	C5-C4-N3	-3.12	115.68	123.12
1	A	4	A6U	C5-C4-N3	-2.98	116.01	123.12
1	A	3	A6G	N3-C2-N1	-2.96	123.14	127.46
1	E	7	A6U	C5-C4-N3	-2.91	116.17	123.12
1	C	3	A6G	C6-C5-C4	-2.86	118.00	120.84
1	A	8	A6G	N3-C2-N1	-2.81	123.35	127.46
1	A	8	A6G	C6-C5-C4	-2.66	118.20	120.84
1	C	3	A6G	N3-C2-N1	-2.63	123.61	127.46
1	C	8	A6G	N2-C2-N1	-2.55	113.16	117.24
1	C	2	A6C	O2'-C2'-C3'	-2.54	104.83	110.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	3	A6G	C5'-C4'-C3'	-2.48	106.71	112.00
1	A	2	A6C	O4'-C4'-C5'	-2.46	102.17	107.65
1	A	7	A6U	C5-C4-N3	-2.44	117.28	123.12
1	A	5	A6A	O2'-C2'-C3'	-2.43	105.06	110.36
1	A	1	A6C	O2'-C2'-C1'	-2.37	105.54	109.78
1	E	8	A6G	O2'-C2'-C1'	-2.36	105.57	109.78
1	A	8	A6G	C2-N3-C4	-2.34	112.43	115.16
1	A	8	A6G	C3'-C2'-C1'	-2.34	107.34	111.34
1	E	10	A6C	O2'-C2'-C1'	-2.34	105.61	109.78
1	C	3	A6G	C2-N3-C4	-2.33	112.43	115.16
1	C	8	A6G	O2'-C2'-C3'	-2.29	105.37	110.36
1	A	4	A6U	C2'-C3'-C4'	-2.26	106.24	110.22
1	C	5	A6A	N3-C2-N1	-2.21	126.93	128.86
1	A	8	A6G	N2-C2-N1	-2.12	113.85	117.24
1	A	8	A6G	O2'-C2'-C3'	-2.10	105.78	110.36
1	A	7	A6U	C5'-C4'-C3'	-2.07	107.60	112.00
1	E	8	A6G	C4-C5-N7	2.07	111.41	109.41
1	A	1	A6C	C6'-O4'-C4'	2.08	115.03	112.17
1	A	5	A6A	C5-C6-N6	2.11	124.78	120.47
1	A	9	A6C	C3'-C2'-C1'	2.12	114.97	111.34
1	C	8	A6G	N2-C2-N3	2.14	121.70	117.75
1	A	8	A6G	C5'-C4'-C3'	2.15	116.57	112.00
1	E	9	A6C	C6-N1-C1'	2.15	123.12	119.74
1	A	9	A6C	C2'-C3'-C4'	2.17	114.03	110.22
1	A	4	A6U	C3'-C2'-C1'	2.18	115.06	111.34
1	A	7	A6U	C6'-O4'-C4'	2.18	115.17	112.17
1	E	5	A6A	O3'-C3'-C4'	2.18	114.79	109.28
1	E	2	A6C	C6'-O4'-C4'	2.19	115.18	112.17
1	C	3	A6G	C4-C5-N7	2.20	111.53	109.41
1	A	3	A6G	O2'-C2'-C3'	2.23	115.22	110.36
1	E	3	A6G	C4-C5-N7	2.34	111.67	109.41
1	E	7	A6U	C2'-C3'-C4'	2.34	114.34	110.22
1	E	10	A6C	C6'-O4'-C4'	2.37	115.43	112.17
1	C	10	A6C	O3'-C3'-C4'	2.39	115.31	109.28
1	E	1	A6C	C3'-C2'-C1'	2.40	115.44	111.34
1	C	1	A6C	O5'-C5'-C4'	2.41	119.46	111.34
1	A	6	A6A	O2'-C2'-C3'	2.43	115.64	110.36
1	E	5	A6A	C5-C6-N6	2.44	125.45	120.47
1	A	4	A6U	O3'-C3'-C4'	2.52	115.63	109.28
1	E	4	A6U	C2'-C3'-C4'	2.53	114.67	110.22
1	A	4	A6U	C6'-O4'-C4'	2.63	115.79	112.17
1	C	2	A6C	C6'-O4'-C4'	2.65	115.82	112.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	7	A6U	C6'-O4'-C4'	2.68	115.86	112.17
1	A	8	A6G	N2-C2-N3	2.72	122.77	117.75
1	C	6	A6A	C4-C5-N7	2.83	112.15	109.41
1	A	3	A6G	O3'-C3'-C2'	3.06	117.02	110.36
1	E	10	A6C	O3'-C3'-C2'	3.07	117.03	110.36
1	A	1	A6C	O3'-C3'-C2'	3.15	117.21	110.36
1	C	1	A6C	C2'-C3'-C4'	3.18	115.81	110.22
1	E	8	A6G	C6'-O4'-C4'	3.36	116.79	112.17
1	E	3	A6G	C2'-C3'-C4'	3.40	116.21	110.22
1	A	10	A6C	C6'-O4'-C4'	3.47	116.95	112.17
1	C	1	A6C	C6'-O4'-C4'	3.66	117.20	112.17
1	A	2	A6C	C6'-O4'-C4'	4.11	117.83	112.17
1	C	3	A6G	C6'-O4'-C4'	4.25	118.02	112.17
1	E	8	A6G	C6-N1-C2	4.44	122.44	116.06
1	A	6	A6A	C6'-O4'-C4'	4.79	118.77	112.17
1	A	3	A6G	C6-N1-C2	5.30	123.69	116.06
1	C	3	A6G	C6-N1-C2	5.60	124.12	116.06
1	C	8	A6G	C6-N1-C2	5.83	124.45	116.06
1	A	8	A6G	C6-N1-C2	5.84	124.45	116.06
1	E	3	A6G	C6-N1-C2	5.97	124.65	116.06
1	A	7	A6U	C4-N3-C2	12.08	124.51	114.13
1	E	4	A6U	C4-N3-C2	14.62	126.69	114.13
1	C	7	A6U	C4-N3-C2	14.78	126.82	114.13
1	E	7	A6U	C4-N3-C2	15.11	127.11	114.13
1	A	4	A6U	C4-N3-C2	16.09	127.95	114.13
1	C	4	A6U	C4-N3-C2	16.12	127.97	114.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

17 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	11	PO4	1	0
1	A	4	A6U	1	0
1	A	5	A6A	2	0
1	A	6	A6A	1	0
1	A	7	A6U	1	0
1	A	8	A6G	2	0
1	A	9	A6C	1	0
1	C	1	A6C	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	C	4	A6U	2	0
1	C	5	A6A	2	0
1	C	7	A6U	2	0
1	C	8	A6G	1	0
1	C	9	A6C	1	0
1	E	10	A6C	2	0
1	E	11	PO4	1	0
1	E	7	A6U	1	0
1	E	8	A6G	3	0

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
2	B	10/10 (100%)	-0.63	0 100 100	45, 52, 59, 60	0
2	D	10/10 (100%)	-0.45	0 100 100	52, 62, 69, 70	0
2	F	10/10 (100%)	-0.58	0 100 100	43, 49, 52, 58	0
All	All	30/30 (100%)	-0.55	0 100 100	43, 52, 67, 70	0

There are no RSRZ outliers to report.

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
1	A6G	A	8	24/25	0.98	0.09	-0.47	32,43,49,50	0
1	A6A	A	5	23/24	0.97	0.09	-	42,48,57,63	0
1	A6U	E	7	21/22	0.97	0.08	-	33,40,45,49	0
1	A6C	E	9	21/22	0.97	0.10	-	37,42,48,49	0
1	A6C	C	10	21/22	0.94	0.12	-	55,61,68,71	0
1	A6C	A	10	21/22	0.97	0.10	-	32,49,51,53	0
1	A6U	A	4	21/22	0.96	0.09	-	48,57,64,66	0
1	A6G	E	8	24/25	0.97	0.10	-	34,39,43,46	0
1	A6C	A	1	18/22	0.96	0.09	-	34,41,48,56	0
1	A6A	E	6	23/24	0.98	0.09	-	38,41,48,54	0
1	A6U	C	7	21/22	0.92	0.11	-	64,71,74,77	0
1	A6U	A	7	21/22	0.97	0.09	-	38,44,53,61	0
1	A6C	E	10	21/22	0.96	0.10	-	43,47,53,59	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
1	A6A	C	5	23/24	0.93	0.09	-	49,62,70,71	0
1	A6C	C	2	21/22	0.97	0.09	-	45,50,52,55	0
1	A6C	A	9	21/22	0.97	0.10	-	39,44,47,47	0
1	A6C	E	1	18/22	0.96	0.09	-	48,55,61,61	0
1	A6C	C	1	18/22	0.95	0.12	-	42,46,57,58	0
1	A6U	E	4	21/22	0.96	0.10	-	39,49,51,53	0
1	A6G	A	3	24/25	0.92	0.13	-	51,54,60,62	0
1	A6G	C	3	24/25	0.95	0.10	-	46,53,57,63	0
1	A6C	E	2	21/22	0.96	0.10	-	51,58,61,65	0
1	A6U	C	4	21/22	0.94	0.12	-	54,62,68,72	0
1	A6G	C	8	24/25	0.92	0.09	-	53,63,78,81	0
1	A6A	C	6	23/24	0.93	0.10	-	54,68,71,75	0
1	A6G	E	3	24/25	0.96	0.09	-	41,47,59,63	0
1	A6C	A	2	21/22	0.97	0.11	-	45,52,55,57	0
1	A6C	C	9	21/22	0.90	0.13	-	53,68,76,82	0
1	A6A	A	6	23/24	0.96	0.10	-	42,46,50,53	0
1	A6A	E	5	23/24	0.96	0.09	-	37,45,50,55	0

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.