



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 27, 2017 – 04:20 PM EDT

PDB ID : 1I5L  
Title : CRYSTAL STRUCTURE OF AN SM-LIKE PROTEIN (AF-SM1) FROM  
ARCHAEOGLOBUS FULGIDUS COMPLEXED WITH SHORT POLY-U  
RNA  
Authors : Toro, I.; Thore, S.; Mayer, C.; Basquin, J.; Seraphin, B.; Suck, D.  
Deposited on : unknown  
Resolution : 2.75 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](mailto: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.

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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 : rb-20030345  
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) : rb-20030345

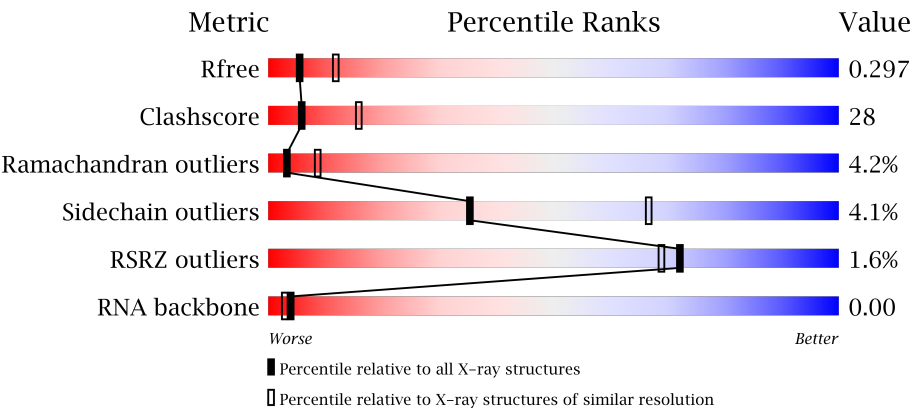
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.75 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.





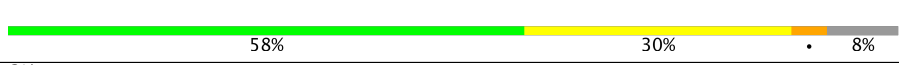
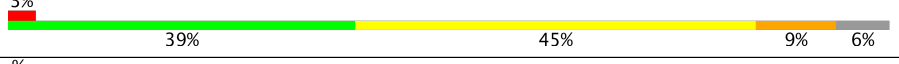
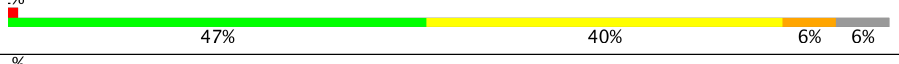
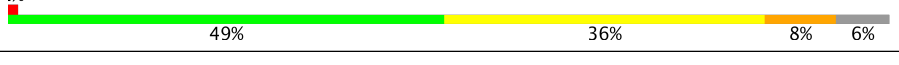
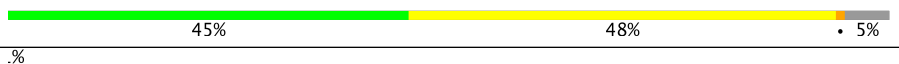




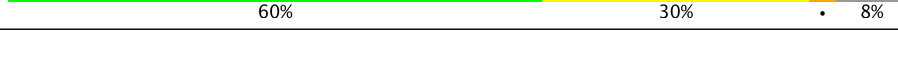
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	100719	3666 (2.80-2.72)
Clashscore	112137	4174 (2.80-2.72)
Ramachandran outliers	110173	4103 (2.80-2.72)
Sidechain outliers	110143	4106 (2.80-2.72)
RSRZ outliers	101464	3697 (2.80-2.72)
RNA backbone	2435	1024 (3.10-2.42)

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  $\geq 3$ , 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
1	U	3	<div><div>67%</div><div>33%67%</div></div>
1	Y	3	<div><div>100%</div><div>100%</div></div>
2	A	77	<div><div>%</div><div>49%38%5%8%</div></div>
2	B	77	<div><div>3%</div><div>49%39%6%5%</div></div>

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Mol	Chain	Length	Quality of chain
2	C	77	
2	D	77	
2	E	77	
2	F	77	
2	G	77	
2	H	77	
2	I	77	
2	J	77	
2	K	77	
2	L	77	
2	M	77	
2	N	77	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	URI	A	201	-	-	X	X
3	URI	B	101	-	-	-	X
3	URI	C	301	-	-	-	X
3	URI	H	401	-	-	-	X

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 8036 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 RNA chain called 5'-R(\*UP\*UP\*U)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	U	3	Total	C	N	O	P	0	0	0
			57	27	6	22	2			
1	Y	3	Total	C	N	O	P	0	0	0
			57	27	6	22	2			

- Molecule 2 is a protein called PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1.

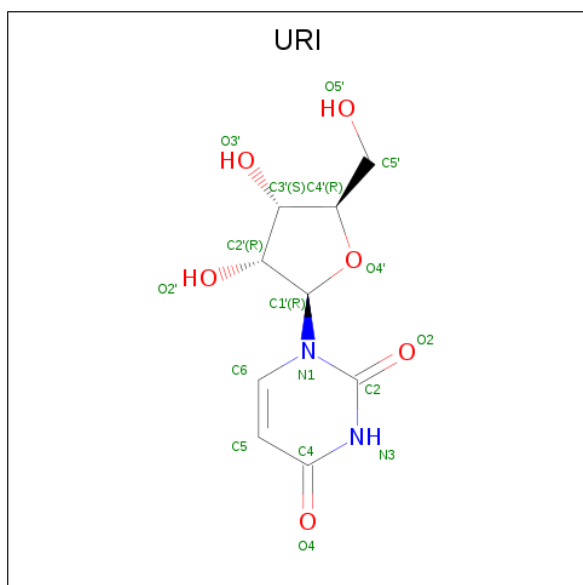
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	71	Total	C	N	O	S	0	0	0
			549	347	101	100	1			
2	B	73	Total	C	N	O	S	0	0	0
			560	354	103	102	1			
2	C	74	Total	C	N	O	S	0	0	0
			571	362	104	103	2			
2	D	73	Total	C	N	O	S	0	0	0
			563	357	103	102	1			
2	E	71	Total	C	N	O	S	0	0	0
			549	347	101	100	1			
2	F	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	G	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	H	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	I	73	Total	C	N	O	S	0	0	0
			564	357	103	102	2			
2	J	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	K	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	L	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	M	72	Total	C	N	O	S	0	0	0
			556	352	102	101	1			
2	N	71	Total	C	N	O	S	0	0	0
			549	347	101	100	1			

- Molecule 3 is URIDINE (three-letter code: URI) (formula: C<sub>9</sub>H<sub>12</sub>N<sub>2</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			17	9	2	6		
3	B	1	Total	C	N	O	0	0
			17	9	2	6		
3	C	1	Total	C	N	O	0	0
			17	9	2	6		
3	H	1	Total	C	N	O	0	0
			17	9	2	6		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	Y	1	Total	0	0
			1		
4	B	1	Total	0	0
			1		
4	C	3	Total	0	0
			3		

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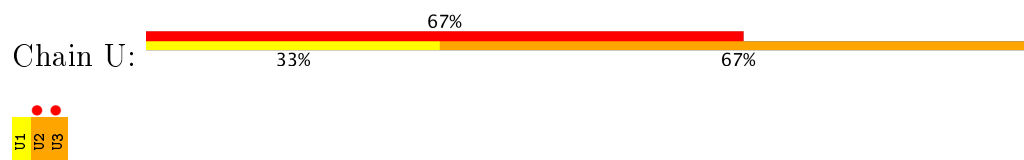
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	4	Total 4	O 4	0	0
4	E	4	Total 4	O 4	0	0
4	F	2	Total 2	O 2	0	0
4	G	8	Total 8	O 8	0	0
4	H	4	Total 4	O 4	0	0
4	I	5	Total 5	O 5	0	0
4	J	4	Total 4	O 4	0	0
4	K	4	Total 4	O 4	0	0
4	L	2	Total 2	O 2	0	0
4	M	7	Total 7	O 7	0	0
4	N	8	Total 8	O 8	0	0

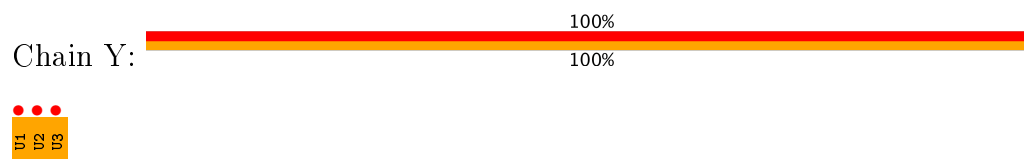
### 3 Residue-property plots [i](#)

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.

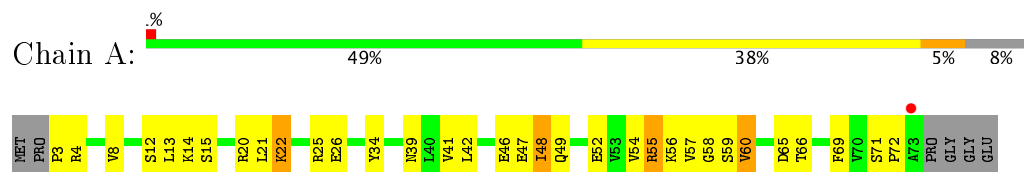
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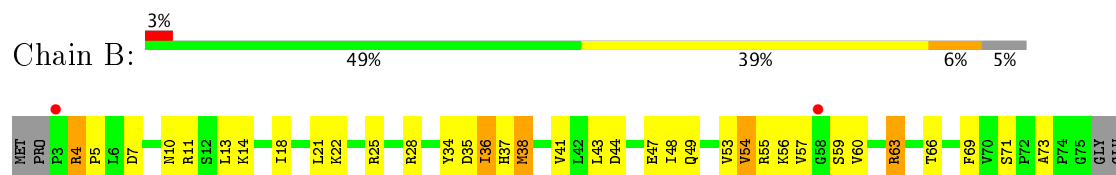
- Molecule 1: 5'-R(\*UP\*UP\*U)-3'



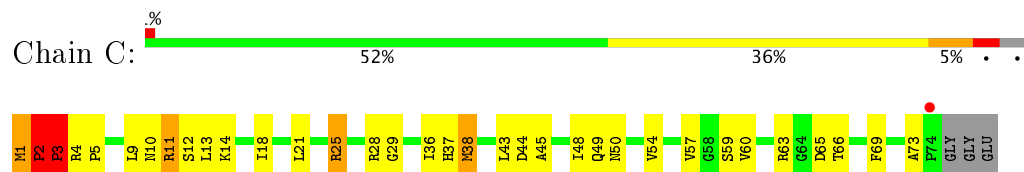
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1



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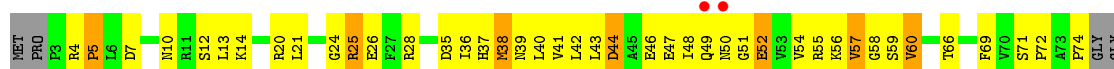




- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1



- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1



GLU

- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1

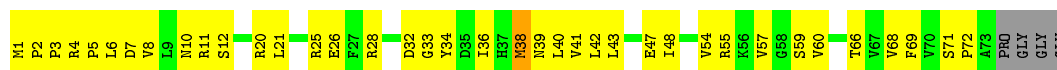


GLU

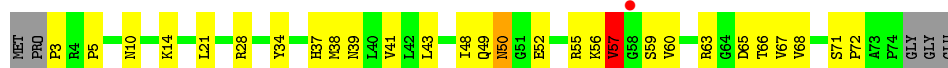
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1



- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1



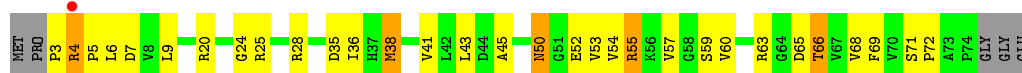
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1





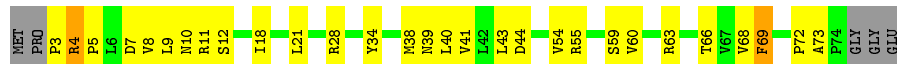
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1

Chain K: 



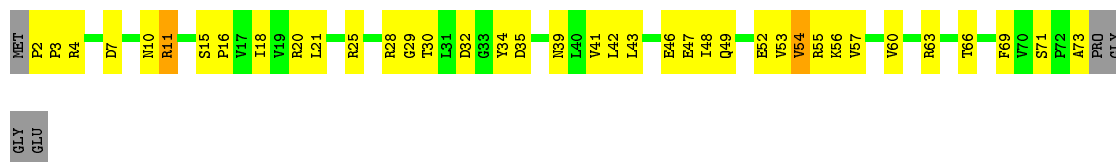
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1

Chain L: 



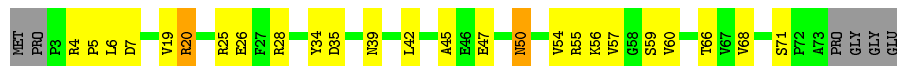
- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1

Chain M: 



- Molecule 2: PUTATIVE SNRNP SM-LIKE PROTEIN AF-SM1

Chain N: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	69.86Å 130.44Å 70.05Å 90.00° 115.36° 90.00°	Depositor
Resolution (Å)	25.00 – 2.75 65.22 – 2.70	Depositor EDS
% Data completeness (in resolution range)	97.5 (25.00-2.75) 94.6 (65.22-2.70)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	0.05	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.82 (at 2.69Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.225 , 0.300 0.224 , 0.297	Depositor DCC
$R_{free}$ test set	1469 reflections (5.11%)	DCC
Wilson B-factor (Å <sup>2</sup> )	74.8	Xtriage
Anisotropy	0.258	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 68.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.27$	Xtriage
Estimated twinning fraction	0.208 for l,-k,h	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	8036	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	82.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.19% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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:  
URI

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	U	0.36	0/62	1.07	0/94
1	Y	0.44	0/62	1.24	1/94 (1.1%)
2	A	0.41	0/556	0.69	0/751
2	B	0.39	0/568	0.78	0/768
2	C	0.50	1/580 (0.2%)	0.93	4/786 (0.5%)
2	D	0.39	0/572	0.68	0/775
2	E	0.37	0/556	0.73	0/751
2	F	0.39	0/564	0.71	0/763
2	G	0.41	0/564	0.72	0/763
2	H	0.42	0/564	0.74	0/763
2	I	0.39	0/572	0.71	0/774
2	J	0.49	0/564	0.85	1/763 (0.1%)
2	K	0.41	0/564	0.68	0/763
2	L	0.41	0/564	0.74	0/763
2	M	0.38	0/564	0.73	0/763
2	N	0.40	0/556	0.73	0/751
All	All	0.41	1/8032 (0.0%)	0.76	6/10885 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	2	PRO	N-CA	5.17	1.56	1.47

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	3	PRO	N-CA-C	8.32	133.72	112.10
2	C	2	PRO	N-CA-C	8.30	133.69	112.10
2	C	2	PRO	CA-N-CD	-6.28	102.71	111.50
2	J	50	ASN	CA-CB-CG	-5.62	101.04	113.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	3	PRO	CA-C-N	-5.61	104.86	117.20
1	Y	2	U	C2'-C3'-O3'	5.19	122.00	113.70

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	U	57	0	32	5	0
1	Y	57	0	32	4	0
2	A	549	0	576	42	0
2	B	560	0	586	43	0
2	C	571	0	601	46	0
2	D	563	0	590	49	0
2	E	549	0	576	32	0
2	F	556	0	583	47	0
2	G	556	0	583	42	0
2	H	556	0	583	30	0
2	I	564	0	594	44	0
2	J	556	0	583	39	0
2	K	556	0	583	30	0
2	L	556	0	583	23	0
2	M	556	0	583	34	0
2	N	549	0	576	19	0
3	A	17	0	12	6	0
3	B	17	0	12	4	0
3	C	17	0	12	4	0
3	H	17	0	12	1	0
4	B	1	0	0	0	0
4	C	3	0	0	0	0
4	D	4	0	0	1	0
4	E	4	0	0	0	0
4	F	2	0	0	0	0
4	G	8	0	0	0	0
4	H	4	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	I	5	0	0	0	0
4	J	4	0	0	1	0
4	K	4	0	0	1	0
4	L	2	0	0	0	0
4	M	7	0	0	2	0
4	N	8	0	0	1	0
4	Y	1	0	0	0	0
All	All	8036	0	8292	452	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 28.

All (452) 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:C:2:PRO:HB2	2:C:3:PRO:CD	1.40	1.49
2:C:2:PRO:CB	2:C:3:PRO:HD3	1.45	1.41
2:C:2:PRO:CB	2:C:3:PRO:CD	1.97	1.38
1:U:3:U:H4'	3:A:201:URI:H5'2	1.23	1.09
2:H:73:ALA:HB1	2:H:74:PRO:HD2	1.30	1.07
2:C:2:PRO:HB3	2:C:3:PRO:HD3	1.09	1.07
2:E:36:ILE:CD1	2:J:52:GLU:HB2	1.84	1.07
2:C:2:PRO:HB2	2:C:3:PRO:HD2	1.08	1.05
2:E:36:ILE:HD12	2:J:52:GLU:HB2	1.36	1.03
2:F:36:ILE:H	2:F:36:ILE:HD12	1.27	0.99
2:M:21:LEU:HD22	2:M:66:THR:HG22	1.45	0.98
2:I:1:MET:HB3	2:I:2:PRO:HD3	1.47	0.96
1:U:3:U:H4'	3:A:201:URI:C5'	1.97	0.94
1:U:2:U:H4'	1:U:3:U:OP2	1.68	0.92
2:B:36:ILE:HD12	2:B:36:ILE:H	1.36	0.91
2:J:28:ARG:HD2	2:J:48:ILE:HD11	1.53	0.91
2:M:10:ASN:HB2	2:M:34:TYR:OH	1.72	0.90
2:C:1:MET:HB3	2:D:14:LYS:NZ	1.87	0.89
2:B:28:ARG:HD3	2:B:48:ILE:CD1	2.02	0.89
2:G:36:ILE:H	2:G:36:ILE:HD12	1.38	0.89
2:M:48:ILE:HG22	2:M:49:GLN:N	1.87	0.88
2:H:73:ALA:HB1	2:H:74:PRO:CD	2.04	0.87
2:D:20:ARG:O	2:D:21:LEU:HD23	1.73	0.87
2:E:36:ILE:HG12	2:J:49:GLN:HG2	1.58	0.85
2:C:18:ILE:HG13	2:C:73:ALA:HB2	1.57	0.84
2:H:71:SER:HB2	2:I:60:VAL:HG12	1.59	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:28:ARG:HD3	2:F:48:ILE:CD1	2.10	0.80
2:M:71:SER:HB2	2:N:60:VAL:HG12	1.62	0.80
2:G:33:GLY:H	2:G:41:VAL:HB	1.46	0.80
2:A:49:GLN:HB3	2:A:54:VAL:HG21	1.65	0.79
2:I:1:MET:HB3	2:I:2:PRO:CD	2.12	0.78
2:L:21:LEU:HD22	2:L:66:THR:HG22	1.65	0.78
2:M:48:ILE:CG2	2:M:49:GLN:N	2.46	0.78
2:C:36:ILE:HD12	2:C:36:ILE:H	1.48	0.77
3:B:101:URI:H4'	3:C:301:URI:C5'	2.14	0.77
2:H:4:ARG:HB3	2:H:7:ASP:OD2	1.85	0.76
2:F:36:ILE:H	2:F:36:ILE:CD1	1.99	0.75
2:C:43:LEU:HD23	2:C:59:SER:HB3	1.68	0.74
2:G:21:LEU:HD22	2:G:66:THR:HG22	1.69	0.74
2:E:54:VAL:O	2:E:55:ARG:HB3	1.87	0.74
2:F:71:SER:HB3	2:G:60:VAL:HG12	1.69	0.74
2:H:54:VAL:O	2:H:55:ARG:HB2	1.86	0.73
2:F:43:LEU:HD23	2:F:59:SER:HB3	1.70	0.73
2:E:36:ILE:HD12	2:J:52:GLU:CB	2.16	0.72
2:F:25:ARG:HG3	2:F:25:ARG:HH11	1.55	0.72
1:U:3:U:C4'	3:A:201:URI:H5'2	2.13	0.72
2:B:21:LEU:HB3	2:B:66:THR:CG2	2.19	0.72
2:C:1:MET:HB3	2:D:14:LYS:HZ3	1.53	0.72
2:D:28:ARG:HD3	2:D:48:ILE:HD11	1.71	0.71
2:I:1:MET:CB	2:I:2:PRO:HD3	2.18	0.71
2:L:39:ASN:O	2:L:40:LEU:HD23	1.90	0.70
2:B:37:HIS:ND1	3:B:101:URI:H2'	2.06	0.70
2:A:55:ARG:HH22	2:G:18:ILE:HG21	1.55	0.70
2:D:73:ALA:CB	2:D:74:PRO:CD	2.70	0.69
2:F:36:ILE:N	2:F:36:ILE:HD12	2.04	0.69
2:H:73:ALA:CB	2:H:74:PRO:HD2	2.18	0.69
2:K:71:SER:HB2	2:L:60:VAL:HG12	1.72	0.69
2:J:28:ARG:HD2	2:J:48:ILE:CD1	2.23	0.69
2:E:28:ARG:HD3	2:E:48:ILE:CD1	2.23	0.68
2:M:18:ILE:HG13	2:M:73:ALA:HB2	1.75	0.68
2:F:72:PRO:O	2:F:74:PRO:HD3	1.93	0.68
2:M:3:PRO:HG3	2:M:11:ARG:HH22	1.59	0.68
2:G:28:ARG:HD3	2:G:48:ILE:HD11	1.75	0.68
2:C:5:PRO:HG3	2:D:41:VAL:HG23	1.74	0.67
2:E:21:LEU:HD22	2:E:66:THR:HG22	1.76	0.67
2:K:57:VAL:HG21	2:K:60:VAL:HG13	1.77	0.67
2:C:36:ILE:N	2:C:36:ILE:HD12	2.08	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:4:ARG:HB3	2:E:7:ASP:OD1	1.94	0.67
2:F:28:ARG:HD3	2:F:48:ILE:HD12	1.75	0.67
2:M:3:PRO:HG3	2:M:11:ARG:NH2	2.10	0.67
2:A:54:VAL:O	2:A:55:ARG:HB2	1.94	0.66
2:B:48:ILE:HG22	2:B:49:GLN:N	2.10	0.66
2:B:4:ARG:H	2:B:5:PRO:CD	2.07	0.66
2:B:28:ARG:HD3	2:B:48:ILE:HD12	1.75	0.66
2:H:68:VAL:HG13	2:I:66:THR:HG21	1.76	0.66
2:J:3:PRO:N	4:J:81:HOH:O	2.28	0.66
2:B:48:ILE:CG2	2:B:49:GLN:N	2.59	0.66
2:K:69:PHE:HZ	2:L:55:ARG:HH21	1.44	0.66
2:A:52:GLU:O	2:A:54:VAL:HG23	1.96	0.66
2:J:71:SER:HB2	2:K:60:VAL:HG12	1.78	0.66
2:B:28:ARG:HD3	2:B:48:ILE:HD11	1.76	0.65
2:B:25:ARG:HH11	2:B:25:ARG:HG3	1.60	0.65
2:F:50:ASN:O	2:F:52:GLU:N	2.29	0.65
2:B:36:ILE:HD12	2:B:36:ILE:N	2.09	0.65
2:F:13:LEU:O	2:F:14:LYS:HB2	1.97	0.65
2:A:21:LEU:HD22	2:A:66:THR:HG22	1.80	0.64
2:G:43:LEU:HD23	2:G:59:SER:HB3	1.80	0.64
2:C:3:PRO:HG2	2:C:11:ARG:HH12	1.61	0.64
2:J:55:ARG:O	2:J:56:LYS:HG3	1.97	0.64
2:C:36:ILE:CD1	2:C:36:ILE:H	2.10	0.64
2:D:36:ILE:HD12	2:D:37:HIS:N	2.12	0.64
2:D:73:ALA:HB1	2:D:74:PRO:HD3	1.79	0.63
2:E:4:ARG:NH1	2:E:6:LEU:HG	2.13	0.63
2:A:25:ARG:NH1	2:G:20:ARG:HH12	1.96	0.63
2:I:1:MET:SD	2:J:14:LYS:NZ	2.68	0.63
2:K:54:VAL:O	2:K:55:ARG:CB	2.46	0.63
2:H:20:ARG:O	2:H:21:LEU:HD23	1.98	0.62
2:D:28:ARG:HD3	2:D:48:ILE:CD1	2.28	0.62
2:A:55:ARG:NH2	2:G:18:ILE:HG21	2.13	0.62
2:C:28:ARG:HD3	2:C:48:ILE:HD11	1.80	0.62
2:G:36:ILE:CD1	2:G:36:ILE:H	2.10	0.62
2:E:28:ARG:HD3	2:E:48:ILE:HD12	1.82	0.62
2:K:54:VAL:O	2:K:55:ARG:HB2	2.00	0.62
2:F:4:ARG:HG2	2:F:4:ARG:HH11	1.64	0.62
2:D:21:LEU:HD22	2:D:66:THR:HG22	1.82	0.61
2:E:4:ARG:HH12	2:E:6:LEU:HG	1.64	0.61
2:K:57:VAL:HG21	2:K:60:VAL:CG1	2.30	0.61
2:C:57:VAL:HG21	2:C:60:VAL:HG13	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:35:ASP:OD2	2:M:39:ASN:HB2	2.00	0.61
2:N:4:ARG:HB3	2:N:7:ASP:OD2	2.00	0.61
2:B:13:LEU:O	2:B:14:LYS:HB2	2.01	0.61
2:M:48:ILE:CG2	2:M:49:GLN:H	2.13	0.61
2:C:21:LEU:HD22	2:C:66:THR:HG22	1.82	0.61
2:C:1:MET:H2	2:C:2:PRO:HD2	1.66	0.61
2:J:43:LEU:HD23	2:J:59:SER:HB3	1.83	0.60
2:M:54:VAL:HG12	2:M:55:ARG:HG3	1.81	0.60
2:E:71:SER:HB3	2:F:60:VAL:HG12	1.83	0.60
2:A:71:SER:HB3	2:B:60:VAL:HG12	1.82	0.60
2:C:28:ARG:HD3	2:C:48:ILE:CD1	2.32	0.60
2:L:8:VAL:HG21	2:M:41:VAL:HG11	1.84	0.60
1:U:3:U:O3'	3:A:201:URI:H2'	2.01	0.60
2:C:1:MET:N	2:C:2:PRO:CD	2.65	0.60
2:E:5:PRO:HG3	2:F:41:VAL:HG23	1.84	0.60
2:K:50:ASN:OD1	2:K:50:ASN:O	2.19	0.60
2:I:42:LEU:O	2:I:59:SER:HA	2.02	0.59
2:G:54:VAL:O	2:G:55:ARG:HB2	2.02	0.59
2:H:60:VAL:HG12	2:N:71:SER:HB2	1.84	0.59
2:D:54:VAL:O	2:D:55:ARG:HG3	2.02	0.59
2:L:10:ASN:C	2:L:12:SER:H	2.06	0.59
2:N:25:ARG:HH11	2:N:25:ARG:HG2	1.66	0.59
2:A:46:GLU:HG2	2:A:56:LYS:HG2	1.85	0.58
2:D:73:ALA:O	2:D:74:PRO:C	2.41	0.58
2:F:39:ASN:O	2:F:40:LEU:HD23	2.04	0.58
2:L:10:ASN:HB2	2:L:34:TYR:OH	2.03	0.58
2:E:25:ARG:HG3	2:E:25:ARG:HH11	1.69	0.57
2:I:10:ASN:HB2	2:I:34:TYR:OH	2.04	0.57
2:A:3:PRO:O	2:A:4:ARG:HG2	2.03	0.57
2:C:1:MET:HB3	2:D:14:LYS:CE	2.34	0.57
2:C:63:ARG:NH2	2:C:65:ASP:OD2	2.38	0.57
2:G:13:LEU:HD22	2:G:32:ASP:O	2.04	0.57
2:A:49:GLN:CB	2:A:54:VAL:HG21	2.33	0.57
2:A:54:VAL:HG12	2:A:54:VAL:O	2.05	0.57
2:A:57:VAL:HG21	2:A:60:VAL:HG13	1.85	0.57
2:F:46:GLU:HG2	2:F:56:LYS:HG2	1.85	0.57
2:K:4:ARG:HB2	2:K:7:ASP:OD2	2.04	0.57
2:G:28:ARG:HD3	2:G:48:ILE:CD1	2.34	0.56
2:K:3:PRO:C	2:K:4:ARG:HG2	2.26	0.56
2:A:26:GLU:HB2	2:A:48:ILE:HG13	1.88	0.56
2:G:36:ILE:HD12	2:G:36:ILE:N	2.15	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:68:VAL:HG13	2:M:66:THR:HG21	1.88	0.56
2:L:4:ARG:HB3	2:L:7:ASP:OD2	2.05	0.56
2:N:20:ARG:HG3	2:N:68:VAL:HB	1.87	0.56
2:B:10:ASN:HB2	2:B:34:TYR:OH	2.06	0.56
2:I:68:VAL:HG13	2:J:66:THR:HG21	1.87	0.56
2:A:13:LEU:O	2:A:14:LYS:HB2	2.05	0.56
2:I:20:ARG:O	2:I:21:LEU:HD23	2.06	0.56
2:K:68:VAL:HG13	2:L:66:THR:HG21	1.88	0.56
2:B:21:LEU:HB3	2:B:66:THR:HG22	1.87	0.56
2:E:46:GLU:HG2	2:E:56:LYS:HG2	1.88	0.56
2:E:54:VAL:O	2:E:54:VAL:HG12	2.05	0.55
2:E:36:ILE:HD11	2:J:49:GLN:O	2.06	0.55
2:D:18:ILE:HG12	2:D:28:ARG:HG2	1.89	0.55
2:F:26:GLU:HB2	2:F:48:ILE:O	2.06	0.55
1:Y:1:U:O4	2:J:39:ASN:ND2	2.38	0.55
2:F:42:LEU:O	2:F:59:SER:HA	2.07	0.55
2:G:37:HIS:O	2:G:38:MET:CB	2.55	0.55
2:M:53:VAL:HG12	2:M:54:VAL:N	2.21	0.55
2:N:54:VAL:O	2:N:55:ARG:HB2	2.06	0.55
2:E:36:ILE:HG12	2:J:49:GLN:CG	2.34	0.55
2:I:1:MET:CB	2:I:2:PRO:CD	2.80	0.55
2:K:72:PRO:HD2	2:L:59:SER:O	2.07	0.54
2:D:49:GLN:HB2	2:D:54:VAL:CG2	2.37	0.54
2:I:6:LEU:HD11	2:I:36:ILE:HD12	1.89	0.54
2:K:5:PRO:HG3	2:L:41:VAL:HG23	1.89	0.54
2:I:66:THR:O	2:I:66:THR:HG22	2.07	0.54
2:E:20:ARG:NH1	2:E:26:GLU:OE2	2.40	0.54
2:D:4:ARG:HB3	2:D:4:ARG:NH1	2.22	0.54
2:E:28:ARG:HD3	2:E:48:ILE:HD11	1.90	0.54
2:G:21:LEU:HD22	2:G:66:THR:CG2	2.37	0.54
2:J:21:LEU:HD22	2:J:66:THR:HG22	1.90	0.54
2:M:21:LEU:HD22	2:M:66:THR:CG2	2.29	0.54
2:D:73:ALA:CB	2:D:74:PRO:HD3	2.37	0.53
2:B:4:ARG:N	2:B:5:PRO:CD	2.69	0.53
2:I:39:ASN:O	2:I:40:LEU:HD23	2.07	0.53
2:N:35:ASP:OD2	2:N:39:ASN:HB2	2.07	0.53
2:M:2:PRO:HD2	4:M:83:HOH:O	2.08	0.53
2:A:66:THR:O	2:A:66:THR:CG2	2.57	0.53
2:F:35:ASP:OD2	2:F:39:ASN:HB2	2.08	0.53
2:K:20:ARG:NH1	4:K:81:HOH:O	2.42	0.53
2:H:8:VAL:HG21	2:I:41:VAL:HG11	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:4:ARG:HG2	2:I:4:ARG:HH11	1.74	0.53
2:H:20:ARG:C	2:H:21:LEU:HD23	2.29	0.52
2:H:69:PHE:C	2:H:69:PHE:CD1	2.83	0.52
2:N:50:ASN:OD1	2:N:50:ASN:O	2.27	0.52
2:F:4:ARG:HG2	2:F:4:ARG:NH1	2.23	0.52
2:F:21:LEU:HD22	2:F:66:THR:HG22	1.92	0.52
2:H:57:VAL:HG21	2:H:60:VAL:HG13	1.91	0.52
1:Y:1:U:O2'	2:J:65:ASP:HB2	2.09	0.52
2:D:73:ALA:HB3	2:D:74:PRO:CD	2.39	0.52
2:A:20:ARG:NH1	2:B:25:ARG:HE	2.07	0.52
2:D:73:ALA:HB1	2:D:74:PRO:CD	2.39	0.52
2:I:10:ASN:C	2:I:12:SER:H	2.12	0.52
2:L:3:PRO:O	2:L:4:ARG:HB2	2.09	0.52
2:F:69:PHE:CD1	2:F:69:PHE:C	2.82	0.52
2:G:10:ASN:C	2:G:12:SER:H	2.13	0.52
2:G:34:TYR:C	2:G:34:TYR:CD1	2.83	0.52
2:M:55:ARG:O	2:M:56:LYS:HG3	2.09	0.52
2:F:21:LEU:HB3	2:F:66:THR:CG2	2.39	0.52
2:M:11:ARG:CZ	4:M:84:HOH:O	2.58	0.52
2:D:42:LEU:HB2	2:D:60:VAL:HG13	1.91	0.52
2:B:71:SER:HB2	2:C:59:SER:O	2.10	0.52
2:C:21:LEU:HD22	2:C:66:THR:CG2	2.39	0.52
2:D:13:LEU:O	2:D:14:LYS:HB2	2.10	0.52
2:D:54:VAL:C	2:D:55:ARG:HG3	2.30	0.52
2:E:5:PRO:HA	2:F:41:VAL:CG2	2.40	0.51
2:L:69:PHE:C	2:L:69:PHE:CD1	2.83	0.51
2:J:10:ASN:HB2	2:J:34:TYR:OH	2.09	0.51
2:C:1:MET:H2	2:C:2:PRO:CD	2.23	0.51
2:C:2:PRO:HB3	2:C:3:PRO:CD	1.94	0.51
2:D:54:VAL:HG12	2:D:55:ARG:HG3	1.91	0.51
2:F:13:LEU:O	2:F:14:LYS:CB	2.58	0.51
2:E:8:VAL:HG21	2:F:41:VAL:HG11	1.92	0.51
2:I:54:VAL:HG22	2:I:54:VAL:O	2.10	0.51
2:B:43:LEU:HD23	2:B:59:SER:HB3	1.91	0.51
2:M:57:VAL:HG21	2:M:60:VAL:HG13	1.92	0.51
2:A:34:TYR:CD1	2:A:34:TYR:C	2.83	0.51
2:B:35:ASP:O	2:B:37:HIS:N	2.43	0.51
2:A:25:ARG:NH1	2:G:20:ARG:NH1	2.59	0.51
2:A:55:ARG:HH21	2:G:18:ILE:HD13	1.76	0.51
2:I:20:ARG:HD2	2:I:26:GLU:HG2	1.92	0.51
2:I:33:GLY:H	2:I:41:VAL:HB	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:4:ARG:HG3	2:I:7:ASP:OD2	2.10	0.51
2:C:4:ARG:HH21	2:K:53:VAL:N	2.09	0.50
2:M:28:ARG:HD3	2:M:48:ILE:HD11	1.92	0.50
2:C:13:LEU:O	2:C:14:LYS:HB2	2.11	0.50
2:H:50:ASN:HA	4:H:404:HOH:O	2.11	0.50
2:I:57:VAL:HG21	2:I:60:VAL:HG13	1.92	0.50
2:F:21:LEU:HB3	2:F:66:THR:HG23	1.93	0.50
2:I:36:ILE:C	2:I:38:MET:H	2.15	0.50
2:G:25:ARG:HH11	2:G:25:ARG:HG3	1.76	0.50
2:N:19:VAL:O	2:N:26:GLU:HB2	2.10	0.50
2:D:4:ARG:O	2:D:7:ASP:HB2	2.12	0.50
2:I:54:VAL:O	2:I:55:ARG:HB2	2.12	0.50
2:I:4:ARG:HG2	2:I:4:ARG:NH1	2.27	0.50
2:E:13:LEU:O	2:E:14:LYS:HB2	2.11	0.49
1:Y:1:U:H5''	2:J:37:HIS:CE1	2.47	0.49
2:I:5:PRO:HG3	2:J:41:VAL:HG23	1.93	0.49
2:D:10:ASN:C	2:D:12:SER:H	2.15	0.49
2:F:47:GLU:HB3	2:F:55:ARG:HG2	1.94	0.49
2:H:41:VAL:HG23	2:N:5:PRO:HG3	1.95	0.49
2:N:57:VAL:HG21	2:N:60:VAL:HG13	1.94	0.49
2:I:43:LEU:HD23	2:I:59:SER:HB3	1.94	0.49
2:C:25:ARG:HH12	2:C:49:GLN:NE2	2.11	0.49
2:N:25:ARG:HD2	2:N:47:GLU:OE1	2.13	0.49
2:I:28:ARG:HG3	2:I:48:ILE:HD11	1.95	0.48
2:F:25:ARG:HG3	2:F:25:ARG:NH1	2.26	0.48
2:M:4:ARG:HG3	2:M:7:ASP:OD2	2.13	0.48
2:B:69:PHE:CD1	2:B:69:PHE:C	2.86	0.48
2:F:25:ARG:NE	2:F:47:GLU:OE1	2.47	0.48
2:I:28:ARG:HG3	2:I:48:ILE:CD1	2.43	0.48
2:C:69:PHE:C	2:C:69:PHE:CD1	2.87	0.48
2:F:48:ILE:CG2	2:F:52:GLU:H	2.27	0.48
2:J:38:MET:SD	2:K:63:ARG:HG2	2.54	0.48
2:H:39:ASN:O	2:H:40:LEU:HD23	2.14	0.48
2:I:71:SER:HB2	2:J:60:VAL:HG12	1.95	0.48
2:K:35:ASP:O	2:K:38:MET:N	2.46	0.48
2:D:15:SER:HB2	2:D:16:PRO:HD2	1.94	0.48
2:D:4:ARG:HG3	2:D:7:ASP:OD1	2.14	0.48
2:H:65:ASP:HB2	3:H:401:URI:H1'	1.96	0.48
2:B:18:ILE:HG12	2:B:28:ARG:HG2	1.94	0.47
2:F:25:ARG:CG	2:F:25:ARG:HH11	2.25	0.47
2:G:4:ARG:HB3	2:G:7:ASP:CG	2.35	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:28:ARG:O	2:N:45:ALA:HA	2.14	0.47
2:B:71:SER:HB3	2:C:60:VAL:HG12	1.97	0.47
2:A:25:ARG:HH12	2:G:20:ARG:HH12	1.62	0.47
2:J:63:ARG:O	2:J:66:THR:HB	2.14	0.47
2:F:10:ASN:C	2:F:12:SER:H	2.18	0.47
2:D:43:LEU:HD23	2:D:59:SER:HB3	1.96	0.47
2:J:21:LEU:HD13	2:J:66:THR:HG21	1.97	0.47
2:G:54:VAL:O	2:G:54:VAL:HG12	2.14	0.47
2:C:29:GLY:HA3	2:C:45:ALA:HB2	1.97	0.47
2:C:18:ILE:HG21	2:D:55:ARG:HH22	1.80	0.47
2:K:43:LEU:HD23	2:K:59:SER:HB3	1.96	0.47
2:F:54:VAL:O	2:F:55:ARG:HB3	2.14	0.47
2:G:57:VAL:HG21	2:G:60:VAL:HG13	1.96	0.47
2:D:34:TYR:C	2:D:34:TYR:CD1	2.89	0.47
2:D:38:MET:SD	2:E:63:ARG:HG2	2.55	0.47
2:K:6:LEU:HD23	2:K:9:LEU:HD12	1.97	0.46
2:A:65:ASP:HA	2:B:63:ARG:NH2	2.30	0.46
2:C:4:ARG:NH2	2:K:53:VAL:O	2.48	0.46
2:A:71:SER:HA	2:A:72:PRO:HD3	1.80	0.46
2:B:38:MET:SD	2:C:63:ARG:CD	3.04	0.46
2:F:57:VAL:O	2:F:59:SER:N	2.49	0.46
2:G:42:LEU:HB2	2:G:60:VAL:HG23	1.98	0.46
2:J:21:LEU:HD13	2:J:66:THR:CG2	2.45	0.46
2:B:54:VAL:O	2:B:55:ARG:HB2	2.16	0.46
2:K:20:ARG:HG2	2:K:68:VAL:HB	1.96	0.46
2:I:32:ASP:HB2	2:I:43:LEU:HG	1.98	0.46
2:D:73:ALA:HB3	2:D:74:PRO:HD2	1.98	0.46
2:H:25:ARG:NH2	2:H:49:GLN:NE2	2.64	0.46
2:A:46:GLU:OE2	2:A:56:LYS:HE2	2.16	0.46
2:D:34:TYR:CE1	2:K:52:GLU:OE1	2.69	0.46
2:A:22:LYS:HB3	2:A:22:LYS:NZ	2.31	0.45
2:C:10:ASN:C	2:C:12:SER:H	2.18	0.45
2:B:21:LEU:HB3	2:B:66:THR:HG23	1.94	0.45
3:B:101:URI:H4'	3:C:301:URI:H5'2	1.92	0.45
2:D:20:ARG:NH1	4:D:80:HOH:O	2.48	0.45
2:D:4:ARG:CZ	2:D:4:ARG:HB3	2.45	0.45
2:E:54:VAL:O	2:E:55:ARG:CB	2.59	0.45
2:M:53:VAL:CG1	2:M:54:VAL:N	2.79	0.45
2:G:46:GLU:HA	2:G:55:ARG:O	2.16	0.45
2:E:36:ILE:HD13	2:J:52:GLU:HB2	1.90	0.45
2:A:41:VAL:HG23	2:G:5:PRO:HG3	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:58:GLY:O	2:A:59:SER:HB3	2.16	0.45
2:C:3:PRO:HG2	2:C:11:ARG:NH1	2.30	0.45
2:A:49:GLN:HB3	2:A:54:VAL:CG2	2.43	0.45
2:G:21:LEU:HD13	2:G:66:THR:HG21	1.99	0.45
2:H:4:ARG:O	2:H:7:ASP:N	2.49	0.45
2:L:66:THR:HG22	2:L:66:THR:O	2.16	0.45
2:F:24:GLY:O	2:F:25:ARG:C	2.55	0.45
2:I:1:MET:CG	2:I:2:PRO:HD3	2.46	0.45
2:C:37:HIS:O	2:C:38:MET:CB	2.64	0.45
2:H:73:ALA:CB	2:H:74:PRO:CD	2.79	0.45
2:C:57:VAL:HG21	2:C:60:VAL:CG1	2.46	0.45
2:L:54:VAL:O	2:L:55:ARG:HB3	2.17	0.45
2:N:34:TYR:HA	2:N:39:ASN:O	2.17	0.45
2:B:21:LEU:O	2:B:22:LYS:C	2.54	0.45
2:H:21:LEU:HD22	2:H:66:THR:HG22	1.98	0.45
2:I:72:PRO:HD2	2:J:59:SER:O	2.17	0.45
2:K:4:ARG:HG3	2:K:7:ASP:OD2	2.17	0.45
2:A:54:VAL:O	2:A:54:VAL:CG1	2.65	0.44
2:F:25:ARG:CG	2:F:25:ARG:NH1	2.80	0.44
2:G:20:ARG:HG2	2:G:68:VAL:HB	1.98	0.44
2:J:56:LYS:O	2:J:57:VAL:HG13	2.16	0.44
2:A:8:VAL:HG21	2:B:41:VAL:HG11	1.99	0.44
2:F:28:ARG:HD3	2:F:48:ILE:HD11	1.94	0.44
2:I:8:VAL:HG21	2:J:41:VAL:HG11	1.99	0.44
2:A:20:ARG:HH11	2:B:25:ARG:HE	1.64	0.44
2:A:34:TYR:HA	2:A:39:ASN:O	2.17	0.44
2:E:25:ARG:NH1	2:E:25:ARG:HG3	2.31	0.44
2:L:43:LEU:O	2:L:44:ASP:C	2.55	0.44
3:B:101:URI:H4'	3:C:301:URI:H5'1	1.98	0.44
2:I:5:PRO:HA	2:J:41:VAL:CG2	2.47	0.44
2:D:18:ILE:HD11	2:D:28:ARG:NH1	2.33	0.44
2:F:47:GLU:OE2	2:F:55:ARG:HD3	2.16	0.44
2:G:4:ARG:HH11	2:G:4:ARG:HG3	1.82	0.44
2:L:66:THR:O	2:L:66:THR:CG2	2.65	0.44
2:G:66:THR:HG22	2:G:66:THR:O	2.17	0.44
2:D:5:PRO:HG3	2:E:41:VAL:HG23	2.00	0.44
2:D:65:ASP:HA	2:E:63:ARG:NH2	2.32	0.44
2:F:37:HIS:O	2:F:38:MET:CB	2.66	0.44
2:F:43:LEU:O	2:F:44:ASP:C	2.56	0.44
2:G:69:PHE:CD1	2:G:69:PHE:C	2.91	0.44
2:H:72:PRO:HD2	2:I:59:SER:O	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:18:ILE:HG12	2:L:28:ARG:HG2	2.00	0.44
2:D:28:ARG:O	2:D:45:ALA:HA	2.18	0.44
2:D:4:ARG:HG3	2:D:7:ASP:CG	2.38	0.44
2:H:10:ASN:C	2:H:12:SER:H	2.21	0.43
2:K:69:PHE:CD1	2:K:69:PHE:C	2.91	0.43
2:D:49:GLN:O	2:D:50:ASN:C	2.57	0.43
2:J:34:TYR:HA	2:J:39:ASN:O	2.18	0.43
2:N:42:LEU:O	2:N:59:SER:HA	2.19	0.43
2:A:42:LEU:O	2:A:59:SER:HA	2.18	0.43
2:H:49:GLN:O	2:H:50:ASN:C	2.57	0.43
2:D:10:ASN:HB2	2:D:34:TYR:OH	2.19	0.43
2:M:15:SER:HB2	2:M:16:PRO:HD2	2.00	0.43
2:N:47:GLU:HB3	2:N:54:VAL:HG23	2.01	0.43
2:G:37:HIS:O	2:G:38:MET:HB3	2.19	0.43
2:N:55:ARG:CG	2:N:56:LYS:N	2.81	0.43
2:A:65:ASP:OD1	3:A:201:URI:H5'1	2.18	0.43
2:D:49:GLN:HB2	2:D:54:VAL:HG23	2.01	0.43
2:F:4:ARG:O	2:F:7:ASP:HB2	2.17	0.43
2:I:25:ARG:HG2	2:I:25:ARG:HH11	1.84	0.43
2:J:65:ASP:HA	2:K:63:ARG:NH2	2.33	0.43
2:D:9:LEU:HA	2:D:9:LEU:HD23	1.82	0.43
2:I:66:THR:CG2	2:I:66:THR:O	2.67	0.43
2:K:3:PRO:O	2:K:4:ARG:NE	2.50	0.43
2:L:5:PRO:HG3	2:M:41:VAL:HG23	1.99	0.43
2:M:48:ILE:HG23	2:M:52:GLU:H	1.83	0.43
2:M:20:ARG:HH22	2:N:25:ARG:HH21	1.65	0.43
2:I:5:PRO:HA	2:J:41:VAL:HG21	2.00	0.42
2:C:50:ASN:CG	2:C:50:ASN:O	2.58	0.42
2:B:25:ARG:NE	2:B:47:GLU:OE1	2.52	0.42
2:C:18:ILE:CG1	2:C:73:ALA:HB2	2.40	0.42
2:F:5:PRO:HG3	2:G:41:VAL:HG23	2.00	0.42
2:G:71:SER:HA	2:G:72:PRO:HD3	1.81	0.42
2:D:25:ARG:HD2	2:D:25:ARG:H	1.83	0.42
2:E:25:ARG:HD3	2:E:47:GLU:OE1	2.19	0.42
2:A:60:VAL:HG12	2:G:71:SER:HB2	2.01	0.42
2:G:22:LYS:CE	2:G:65:ASP:O	2.68	0.42
2:H:28:ARG:HD2	2:H:48:ILE:HD11	2.02	0.42
2:J:67:VAL:HG12	2:J:68:VAL:N	2.33	0.42
2:M:69:PHE:CD1	2:M:69:PHE:C	2.92	0.42
2:I:57:VAL:HG21	2:I:60:VAL:CG1	2.49	0.42
2:J:5:PRO:HG3	2:K:41:VAL:HG23	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:4:ARG:H	2:B:5:PRO:HD2	1.80	0.42
2:H:43:LEU:O	2:H:44:ASP:C	2.58	0.42
2:B:38:MET:SD	2:C:63:ARG:HD3	2.60	0.42
2:B:25:ARG:CG	2:B:25:ARG:NH1	2.82	0.42
2:C:9:LEU:HA	2:C:9:LEU:HD12	1.93	0.42
2:N:6:LEU:HG	4:N:83:HOH:O	2.19	0.42
2:B:37:HIS:O	2:B:38:MET:CB	2.67	0.41
2:G:13:LEU:O	2:G:14:LYS:HB2	2.20	0.41
2:G:4:ARG:O	2:G:7:ASP:N	2.52	0.41
2:M:16:PRO:HA	2:M:29:GLY:O	2.19	0.41
2:A:46:GLU:HA	2:A:55:ARG:O	2.20	0.41
2:H:21:LEU:HD13	2:H:66:THR:HG21	2.03	0.41
2:J:55:ARG:O	2:J:56:LYS:CG	2.67	0.41
2:M:57:VAL:HG21	2:M:60:VAL:CG1	2.50	0.41
2:C:43:LEU:O	2:C:44:ASP:C	2.58	0.41
2:A:20:ARG:NH1	2:B:25:ARG:HH21	2.18	0.41
2:B:56:LYS:O	2:B:57:VAL:HG13	2.19	0.41
2:J:68:VAL:HG13	2:K:66:THR:HG21	2.02	0.41
2:A:65:ASP:HB2	3:A:201:URI:O4'	2.20	0.41
2:G:42:LEU:HB2	2:G:60:VAL:CG2	2.50	0.41
2:A:20:ARG:HH12	2:B:25:ARG:HH21	1.68	0.41
2:B:4:ARG:O	2:B:7:ASP:HB2	2.20	0.41
2:F:4:ARG:H	2:F:7:ASP:HB2	1.85	0.41
2:I:6:LEU:CD1	2:I:36:ILE:HD12	2.50	0.41
2:K:28:ARG:O	2:K:45:ALA:HA	2.20	0.41
2:L:10:ASN:C	2:L:12:SER:N	2.73	0.41
2:H:5:PRO:HG3	2:I:41:VAL:HG23	2.01	0.41
2:I:33:GLY:O	2:I:34:TYR:HB3	2.20	0.41
2:A:12:SER:O	2:A:15:SER:OG	2.33	0.41
2:B:35:ASP:O	2:B:36:ILE:C	2.58	0.41
2:F:71:SER:HA	2:F:72:PRO:HD3	1.93	0.41
2:G:4:ARG:O	2:G:7:ASP:HB2	2.21	0.41
2:H:19:VAL:HG22	2:H:70:VAL:HG22	2.03	0.41
3:C:301:URI:H2'	3:C:301:URI:H6	1.86	0.41
2:L:38:MET:SD	2:M:63:ARG:HG2	2.61	0.41
2:M:25:ARG:HD2	2:M:47:GLU:OE1	2.20	0.41
1:Y:3:U:OP1	2:L:63:ARG:NH2	2.53	0.41
2:B:4:ARG:HH21	2:B:11:ARG:HH12	1.68	0.41
2:D:10:ASN:C	2:D:12:SER:N	2.73	0.41
2:C:5:PRO:CG	2:D:41:VAL:HG23	2.47	0.41
2:E:8:VAL:HA	2:E:11:ARG:HD3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:57:VAL:HG21	2:H:60:VAL:CG1	2.50	0.41
2:I:47:GLU:O	2:I:54:VAL:HG12	2.21	0.41
2:J:50:ASN:HA	2:J:50:ASN:HD22	1.11	0.41
2:B:18:ILE:HG13	2:B:73:ALA:HB3	2.02	0.40
2:B:43:LEU:O	2:B:44:ASP:C	2.59	0.40
2:F:48:ILE:HG23	2:F:52:GLU:H	1.86	0.40
2:F:4:ARG:O	2:F:5:PRO:C	2.58	0.40
2:M:32:ASP:HB2	2:M:43:LEU:HG	2.03	0.40
2:C:54:VAL:HG12	2:C:54:VAL:O	2.21	0.40
2:D:3:PRO:O	2:E:33:GLY:HA3	2.21	0.40
2:J:72:PRO:HD2	2:K:59:SER:O	2.21	0.40
2:M:46:GLU:HG2	2:M:56:LYS:HG2	2.04	0.40
2:A:47:GLU:O	2:A:54:VAL:HB	2.21	0.40
2:A:69:PHE:C	2:A:69:PHE:CD1	2.95	0.40
2:D:32:ASP:HB3	2:D:41:VAL:HG12	2.03	0.40
2:M:30:THR:O	2:M:42:LEU:HA	2.22	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	A	69/77 (90%)	59 (86%)	9 (13%)	1 (1%)	13	35
2	B	71/77 (92%)	56 (79%)	10 (14%)	5 (7%)	1	3
2	C	72/77 (94%)	58 (81%)	10 (14%)	4 (6%)	2	5
2	D	71/77 (92%)	60 (84%)	9 (13%)	2 (3%)	6	16
2	E	69/77 (90%)	59 (86%)	8 (12%)	2 (3%)	5	15
2	F	70/77 (91%)	55 (79%)	9 (13%)	6 (9%)	1	1
2	G	70/77 (91%)	61 (87%)	6 (9%)	3 (4%)	3	8

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	H	70/77 (91%)	57 (81%)	9 (13%)	4 (6%)	2	4
2	I	71/77 (92%)	61 (86%)	8 (11%)	2 (3%)	6	16
2	J	70/77 (91%)	61 (87%)	8 (11%)	1 (1%)	13	35
2	K	70/77 (91%)	57 (81%)	8 (11%)	5 (7%)	1	2
2	L	70/77 (91%)	57 (81%)	9 (13%)	4 (6%)	2	4
2	M	70/77 (91%)	62 (89%)	7 (10%)	1 (1%)	13	35
2	N	69/77 (90%)	58 (84%)	10 (14%)	1 (1%)	13	35
All	All	982/1078 (91%)	821 (84%)	120 (12%)	41 (4%)	3	9

All (41) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	36	ILE
2	B	53	VAL
2	C	2	PRO
2	C	3	PRO
2	D	73	ALA
2	E	55	ARG
2	F	51	GLY
2	I	38	MET
2	K	55	ARG
2	B	38	MET
2	C	38	MET
2	F	38	MET
2	F	44	ASP
2	G	11	ARG
2	G	38	MET
2	K	50	ASN
2	L	72	PRO
2	M	54	VAL
2	N	50	ASN
2	C	11	ARG
2	D	3	PRO
2	F	52	GLU
2	F	58	GLY
2	H	38	MET
2	H	55	ARG
2	H	73	ALA
2	K	38	MET
2	L	11	ARG

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Mol	Chain	Res	Type
2	L	73	ALA
2	A	55	ARG
2	F	25	ARG
2	I	11	ARG
2	K	65	ASP
2	L	4	ARG
2	B	54	VAL
2	E	65	ASP
2	G	55	ARG
2	H	24	GLY
2	K	24	GLY
2	B	4	ARG
2	J	57	VAL

### 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	
2	A	62/66 (94%)	59 (95%)	3 (5%)	30	60
2	B	63/66 (96%)	62 (98%)	1 (2%)	68	89
2	C	65/66 (98%)	63 (97%)	2 (3%)	45	76
2	D	64/66 (97%)	60 (94%)	4 (6%)	21	48
2	E	62/66 (94%)	60 (97%)	2 (3%)	44	75
2	F	63/66 (96%)	58 (92%)	5 (8%)	14	35
2	G	63/66 (96%)	60 (95%)	3 (5%)	30	60
2	H	63/66 (96%)	59 (94%)	4 (6%)	21	48
2	I	64/66 (97%)	62 (97%)	2 (3%)	45	76
2	J	63/66 (96%)	62 (98%)	1 (2%)	68	89
2	K	63/66 (96%)	59 (94%)	4 (6%)	21	48
2	L	63/66 (96%)	61 (97%)	2 (3%)	44	75
2	M	63/66 (96%)	62 (98%)	1 (2%)	68	89
2	N	62/66 (94%)	60 (97%)	2 (3%)	44	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	883/924 (96%)	847 (96%)	36 (4%)	35 67

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	22	LYS
2	A	48	ILE
2	A	60	VAL
2	B	63	ARG
2	C	1	MET
2	C	25	ARG
2	D	4	ARG
2	D	25	ARG
2	D	49	GLN
2	D	74	PRO
2	E	7	ASP
2	E	63	ARG
2	F	5	PRO
2	F	20	ARG
2	F	49	GLN
2	F	57	VAL
2	F	60	VAL
2	G	5	PRO
2	G	34	TYR
2	G	71	SER
2	H	20	ARG
2	H	69	PHE
2	H	71	SER
2	H	74	PRO
2	I	3	PRO
2	I	69	PHE
2	J	57	VAL
2	K	4	ARG
2	K	25	ARG
2	K	36	ILE
2	K	66	THR
2	L	9	LEU
2	L	69	PHE
2	M	11	ARG
2	N	20	ARG
2	N	66	THR

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

Mol	Chain	Res	Type
2	A	49	GLN
2	A	50	ASN
2	C	49	GLN
2	E	49	GLN
2	E	50	ASN
2	G	49	GLN
2	I	50	ASN
2	J	37	HIS
2	J	50	ASN
2	L	49	GLN
2	L	50	ASN
2	N	50	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	U	3/3 (100%)	2 (66%)	2 (66%)
1	Y	3/3 (100%)	2 (66%)	2 (66%)
All	All	6/6 (100%)	4 (66%)	4 (66%)

All (4) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	U	2	U
1	U	3	U
1	Y	2	U
1	Y	3	U

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	U	1	U
1	U	2	U
1	Y	1	U
1	Y	2	U

## 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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	URI	A	201	-	14,18,18	1.09	1 (7%)	15,26,26	4.11	3 (20%)
3	URI	B	101	-	14,18,18	1.12	1 (7%)	15,26,26	4.06	2 (13%)
3	URI	C	301	-	14,18,18	0.97	1 (7%)	15,26,26	4.08	3 (20%)
3	URI	H	401	-	14,18,18	1.05	1 (7%)	15,26,26	4.05	2 (13%)

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	URI	A	201	-	-	0/2/22/22	0/2/2/2
3	URI	B	101	-	-	0/2/22/22	0/2/2/2
3	URI	C	301	-	-	0/2/22/22	0/2/2/2
3	URI	H	401	-	-	0/2/22/22	0/2/2/2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	301	URI	C4-N3	2.69	1.37	1.33
3	H	401	URI	C4-N3	2.85	1.38	1.33
3	A	201	URI	C4-N3	3.00	1.38	1.33
3	B	101	URI	C4-N3	3.09	1.38	1.33

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
3	B	101	URI	C5-C4-N3	-3.62	114.47	123.12
3	C	301	URI	C5-C4-N3	-3.55	114.64	123.12
3	A	201	URI	C5-C4-N3	-3.55	114.65	123.12
3	H	401	URI	C5-C4-N3	-3.53	114.69	123.12
3	A	201	URI	O3'-C3'-C2'	-2.84	102.74	111.83
3	C	301	URI	O3'-C3'-C2'	-2.58	103.57	111.83
3	H	401	URI	C4-N3-C2	14.96	126.98	114.13
3	C	301	URI	C4-N3-C2	15.01	127.02	114.13
3	A	201	URI	C4-N3-C2	15.08	127.08	114.13
3	B	101	URI	C4-N3-C2	15.10	127.10	114.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	201	URI	6	0
3	B	101	URI	4	0
3	C	301	URI	4	0
3	H	401	URI	1	0

## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	U	3/3 (100%)	2.39	2 (66%) 0 0	86, 86, 102, 107	3 (100%)
1	Y	3/3 (100%)	2.84	3 (100%) 0 0	70, 70, 81, 111	3 (100%)
2	A	71/77 (92%)	-0.16	1 (1%) 75 72	42, 72, 118, 185	0
2	B	73/77 (94%)	-0.03	2 (2%) 55 49	46, 84, 153, 181	0
2	C	74/77 (96%)	-0.13	1 (1%) 75 72	50, 79, 138, 162	0
2	D	73/77 (94%)	-0.27	1 (1%) 75 72	44, 74, 128, 201	0
2	E	71/77 (92%)	-0.17	0 100 100	45, 73, 125, 151	0
2	F	72/77 (93%)	-0.04	2 (2%) 53 48	38, 77, 149, 201	0
2	G	72/77 (93%)	-0.28	1 (1%) 75 72	43, 67, 105, 197	0
2	H	72/77 (93%)	-0.23	1 (1%) 75 72	47, 76, 132, 191	0
2	I	73/77 (94%)	-0.20	0 100 100	46, 77, 126, 144	0
2	J	72/77 (93%)	-0.06	1 (1%) 75 72	39, 77, 140, 168	0
2	K	72/77 (93%)	-0.22	1 (1%) 75 72	39, 72, 122, 162	0
2	L	72/77 (93%)	-0.09	0 100 100	41, 78, 135, 192	0
2	M	72/77 (93%)	-0.07	0 100 100	42, 76, 131, 156	0
2	N	71/77 (92%)	-0.33	0 100 100	37, 70, 106, 127	0
All	All	1016/1084 (93%)	-0.15	16 (1%) 72 69	37, 75, 136, 201	6 (0%)

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	Y	1	U	4.0
2	B	58	GLY	3.9
2	G	74	PRO	3.5
2	A	73	ALA	3.3
2	C	74	PRO	3.2

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Mol	Chain	Res	Type	RSRZ
2	B	3	PRO	3.1
2	H	74	PRO	2.9
1	U	2	U	2.9
2	D	74	PRO	2.8
1	U	3	U	2.8
2	F	49	GLN	2.8
2	J	58	GLY	2.5
1	Y	2	U	2.3
1	Y	3	U	2.2
2	F	50	ASN	2.1
2	K	4	ARG	2.1

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
3	URI	H	401	17/17	0.81	0.36	8.45	75,83,97,99	17
3	URI	B	101	17/17	0.76	0.27	4.64	67,72,80,82	17
3	URI	A	201	17/17	0.71	0.40	3.72	84,91,99,100	17
3	URI	C	301	17/17	0.81	0.29	2.17	97,99,100,102	17

## 6.5 Other polymers [i](#)

There are no such residues in this entry.