WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Mar 6, 2025 – 08:14 pm GMT

PDB ID	:	6XZ7
EMDB ID	:	EMD-10655
Title	:	E. coli 50S ribosomal subunit in complex with dirithromycin, fMet-Phe-tRNA(Phe) and deacylated tRNA(iMet).
Authors	:	Pichkur, E.B.; Polikanov, Y.S.; Myasnikov, A.G.; Konevega, A.L.
Deposited on	:	2020-02-03
Resolution	:	2.10 Å(reported)
Based on initial model	:	4YBB

This is a Full wwPDB EM 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/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

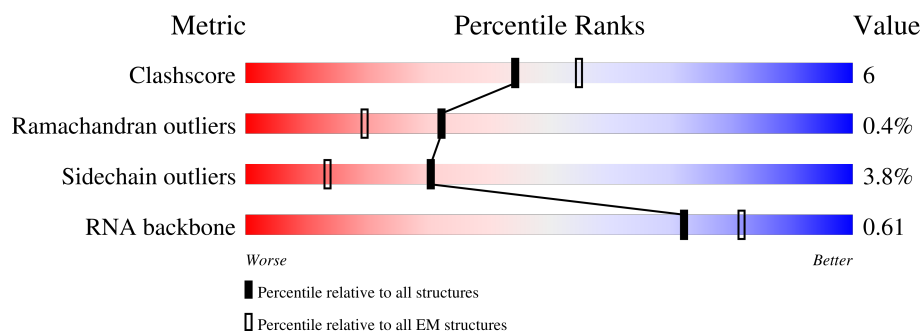|		
EMDB validation analysis	:	FAILED
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.10 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	Percentile Ranks	Value
Clashscore		6
Ramachandran outliers		0.4%
Sidechain outliers		3.8%
RNA backbone		0.61

Worse   *Better*

▌ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%
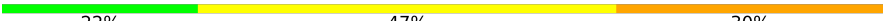
Mol	Chain	Length	Quality of chain
1	A	2897	76% 21% •
2	B	120	80% 18% •
3	C	271	85% 15%
4	D	209	89% 11%
5	E	201	88% 11% •
6	F	177	54% 40% 6% •
7	G	176	70% 26% •

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Mol	Chain	Length	Quality of chain
8	H	135	68% 29%
9	I	134	77% 21%
10	J	142	87% 12%
11	K	123	85% 15%
12	L	144	87% 13%
13	M	136	88% 11%
14	N	125	93% 6%
15	O	117	80% 19%
16	P	114	84% 15%
17	Q	117	97%
18	R	103	90% 7%
19	S	110	92% 7%
20	T	93	85% 14%
21	U	102	86% 13%
22	V	94	81% 18%
23	W	76	87% 13%
24	X	77	88% 12%
25	Y	62	89% 11%
26	Z	58	90% 9%
27	a	56	98%
28	b	51	98%
29	c	46	96%
30	d	64	94% 6%
31	e	38	97%
32	f	76	24% 55% 21%

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Mol	Chain	Length	Quality of chain
33	g	76	22% 47% 30%

2 Entry composition (i)

There are 36 unique types of molecules in this entry. The entry contains 94915 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2897	62252	27778	11454	20121	2899	3	0

- Molecule 2 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	120	2569	1144	468	837	120	0	0

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	271	2083	1288	423	365	7	0	0

- Molecule 4 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	209	1566	980	288	294	4	1	0

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	201	1552	974	283	290	5	0	0

- Molecule 6 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	177	1411	899	249	257	6	0	0

- Molecule 7 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 8 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	135	Total	C	N	O	S	0	0
			1023	649	179	192	3		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	85	VAL	SER	conflict	UNP P0A7J3
H	86	THR	MET	conflict	UNP P0A7J3

- Molecule 9 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	134	Total	C	N	O	S	0	0
			979	619	169	185	6		

- Molecule 10 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 11 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	123	Total	C	N	O	S	0	0
			946	593	181	166	6		

- Molecule 12 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 13 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	136	Total 1075	C 686	N 205	O 178	S 6	1	0

- Molecule 14 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	125	Total 993	C 613	N 202	O 173	S 5	0	0

- Molecule 15 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	117	Total 900	C 557	N 179	O 163	S 1	0	0

- Molecule 16 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	114	Total 917	C 574	N 179	O 163	S 1	0	0

- Molecule 17 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	Q	117	Total 947	C 604	N 192	O 151	0	0

- Molecule 18 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	103	Total 816	C 516	N 153	O 145	S 2	0	0

- Molecule 19 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 20 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	93	Total 739	C 466	N 139	O 132	S 2	0	0

- Molecule 21 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	U	102	Total 780	C 492	N 146	O 142	0	0

- Molecule 22 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	94	Total 753	C 479	N 137	O 134	S 3	0	0

- Molecule 23 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	76	Total 580	C 359	N 117	O 103	S 1	1	0

- Molecule 24 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	77	Total 625	C 388	N 129	O 106	S 2	0	0

- Molecule 25 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	62	Total 501	C 308	N 98	O 94	S 1	0	0

- Molecule 26 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	58	Total 449	C 281	N 87	O 79	S 2	2	0

- Molecule 27 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	a	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 28 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	b	51	Total	C	N	O	0	0
			414	266	76	72		

- Molecule 29 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	c	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 30 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	d	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 31 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	e	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 32 is a RNA chain called Deacylated tRNAi(Met).

Mol	Chain	Residues	Atoms						AltConf	Trace
32	f	76	Total	C	N	O	P	S	0	0
			1625	725	294	529	76	1		

- Molecule 33 is a RNA chain called fMet-Phe-tRNA(Phe).

Mol	Chain	Residues	Atoms						AltConf	Trace
33	g	76	Total	C	N	O	P	S	0	0
			1667	760	297	534	75	1		

- Molecule 34 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
34	A	174	Total 174	Mg 174	0
34	B	3	Total 3	Mg 3	0
34	U	1	Total 1	Mg 1	0

- Molecule 35 is Dirithromycin (three-letter code: DI0) (formula: $C_{42}H_{78}N_2O_{14}$) (labeled as "Ligand of Interest" by depositor).
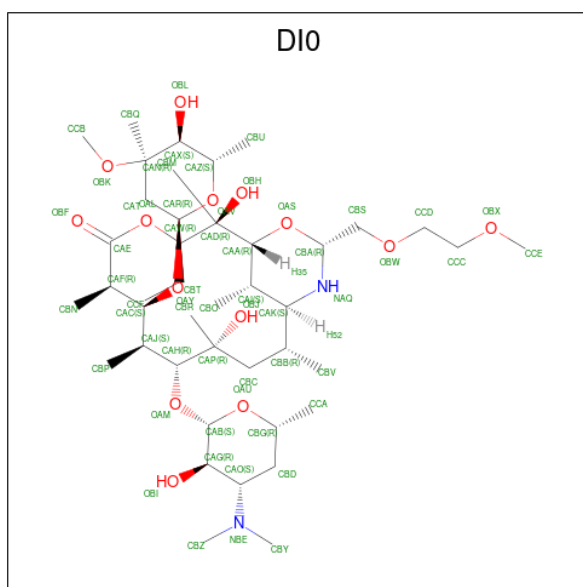
Mol	Chain	Residues	Atoms				AltConf
35	A	1	Total 58	C 42	N 2	O 14	0

- Molecule 36 is water.

Mol	Chain	Residues	Atoms		AltConf
36	A	498	Total 498	O 498	0
36	B	9	Total 9	O 9	0
36	C	7	Total 7	O 7	0
36	D	1	Total 1	O 1	0
36	E	1	Total 1	O 1	0

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Mol	Chain	Residues	Atoms		AltConf
36	L	6	Total 6	O 6	0
36	N	1	Total 1	O 1	0
36	T	1	Total 1	O 1	0
36	d	4	Total 4	O 4	0

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. 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. 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: 23S rRNA

Chain A:

• Molecule 2: 5S rRNA

Chain B:

• Molecule 3: 50S ribosomal protein L2

Chain C:

• Molecule 4: 50S ribosomal protein L3

Chain D:

M1 I2 G3 T25 R33 D39 D43 G53 R77 S95 I96 S97 V98 E99 T129 Q130 Q148 N149 Q150 T151 K157 D181 L186 V193 D200 K204 P205 A209
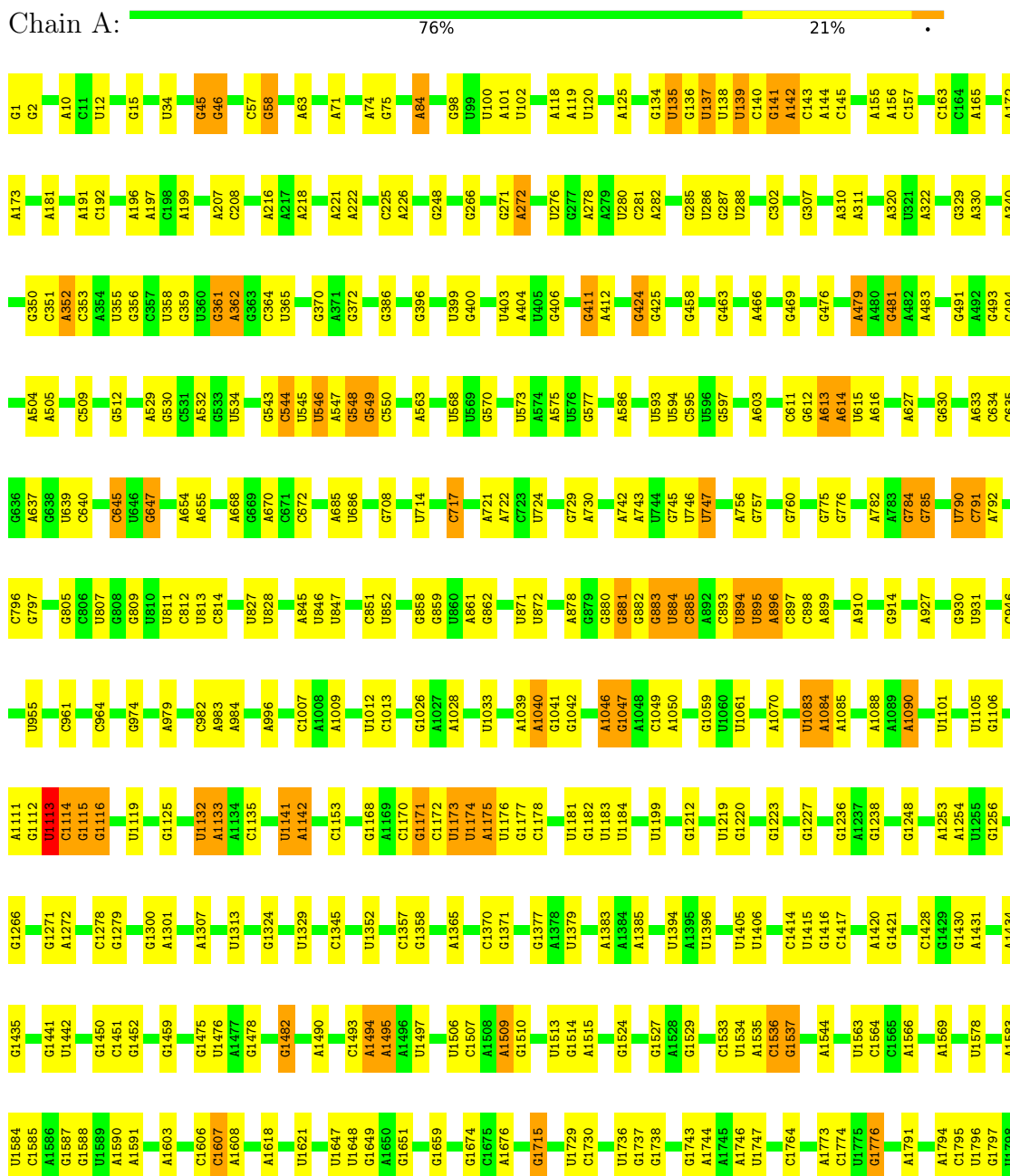
• Molecule 5: 50S ribosomal protein L4

Chain E:

88% 11% •

M1 E2 K6 D7 A11 S15 E16 T17 R21 R44 R61 S75 L118 I119 E122 Q136 D140 E155 N156 L157 R162 N163 V169 R170 D171 A172 V187 M188 A201

• Molecule 6: 50S ribosomal protein L5

Chain F:

54% 40% 6% •

A2 K3 L4 Y7 Y8 K9 D10 E11 V12 V13 K14 E19 S24 R30 V31 E32 K33 I34 T35 L36 N37 M38 G39 V40 G41 E42 A43 I44 K47 K48 L49 L50 D51 A54 A55 D56 I60 P65 L66 I67 T68 S73 I79 R80 Q81 G82 Y83 G86 C87

K88 V89 T90 L91 R92 G93 E94 R95 M96 W97 E98 E101 R102 L103 I104 T105 I106 A107 V108 P109 R110 I111 F114 L117 S121 G126 S129 M130 G131 E134 Q135 I136 I137 I141 D142 Y143 V146 D147 R148 V149 R150 I154 T155 T158 S162 G166

L170 F175 P176 F177 R178

• Molecule 7: 50S ribosomal protein L6

Chain G:

70% 26% •

S2 R3 V4 A5 K6 V10 K18 I19 N20 I24 G28 E32 L33 T34 R35 N38 E42 D47 N48 T49 L50 P54 R55 W62 A63 Q64 T67 A68 L71 L72 M75 V79 T84 K85 K86 L87 K99 G100 N101 L105 V113

Q116 L117 P118 I121 T122 A123 T127 Q128 T129 E130 I131 V132 R153 P154 E155 G159 K160 Y164 E167 E173 K176 K177
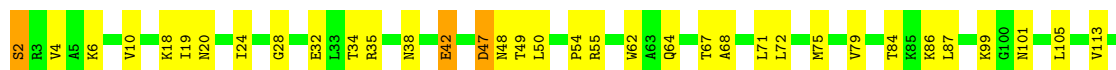
• Molecule 8: 50S ribosomal protein L10

Chain H:

68% 29% • •

A2 V12 S16 A22 D29 S30 M38 L41 R42 V50 Y51 M52 R53 V54 T58 L59 L60 R61 R62 A63 V64 E65 G66 T67 P68 F69 E70 C71 L72 K73 L81 I82 A83 Y84 V85 T86 A92 F96 N103 A104 K105 F106 E107 V108 P119 Q122

I123 D124 P130 E133 E134 A135 I136

• Molecule 9: 50S ribosomal protein L11

Chain I:

77% 21% •

Y8 V9 K10 L11 Q12 A15 A18 N19 P20 S21 P22 P23 V24 G25 I35 M36 C39 P56 I59 K72 L80 I86 S90 V98 G99 K100 I101 A110 K113 A114 M117 M125 L138 V139 V140 E141

• Molecule 10: 50S ribosomal protein L13

Chain J: 87% 12%

M1 T5 A6 K12 E31 R35 L36 R37 T45 N58 T88 F89 E90 P110 G115 R116 A117 R120 Y125 N128 H132 I142
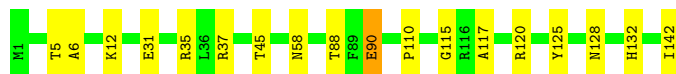
• Molecule 11: 50S ribosomal protein L14

Chain K: 85% 15%

M1 V10 A11 D12 V24 A33 I38 I39 K40 V57 V63 R70 R71 S91 L107 R108 S109 E110 K111 F112 M113 I116 E121 V122 L123

• Molecule 12: 50S ribosomal protein L15

Chain L: 87% 13%

M1 G11 R21 R41 S42 P56 R59 I77 K84 V85 V90 D91 L92 N93 A108 T118 V122 R123 R132 I142 E143 E144
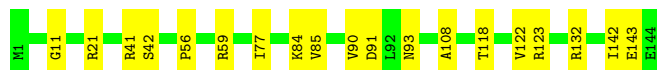
• Molecule 13: 50S ribosomal protein L16

Chain M: 88% 11%

M1 L20 D25 R44 R50 M53 T54 R55 K58 R59 R66 E75 K76 P77 V80 4D481 E90 E104 E110 R114 M136

• Molecule 14: 50S ribosomal protein L17

Chain N: 93% 6%

M1 R2 K5 V29 R30 K40 E74 I75 R96 I97 L98 A125

• Molecule 15: 50S ribosomal protein L18

Chain O: 80% 19%

M1 D2 R15 T24 R33 N43 G44 S45 S52 T53 V54 A59 E60 Q61 L62 K63 Y64 T65 G66 N67 K88 D89 S95 Y99 H100 D108 R111 L115 Q116 F117

• Molecule 16: 50S ribosomal protein L19

Chain P: 84% 15%

S2 K6 Q7 L8 E34 G35 S36 A49 N52 R53 T60 K63 I64 S65 V73 T76 S83 R88 A91 T104 E112 R113 L114 N115
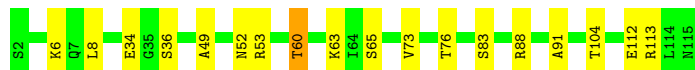
• Molecule 17: 50S ribosomal protein L20

Chain Q:

97%

A2 R3 V4 D49 R64 A118

• Molecule 18: 50S ribosomal protein L21

Chain R:

90%
7%

M1 E34 E37 V51 P52 F53 V58 I59 K60 K71 K81 S102 A103
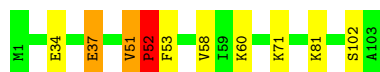
• Molecule 19: 50S ribosomal protein L22

Chain S:

92%
7%

M1 I4 R11 K70 K83 R84 R95 I96 T100 V106 R110

• Molecule 20: 50S ribosomal protein L23

Chain T:

85%
14%

M1 L11 E18 T22 K26 S27 N28 K33 K49 R69 H70 W80 K88 E89 L93

• Molecule 21: 50S ribosomal protein L24

Chain U:

86%
13%

A2 A3 K4 L14 N27 K47 L52 G57 S68 A71 D81 R86 D89 R94 F95 F96 I103

• Molecule 22: 50S ribosomal protein L25

Chain V:

81%
18%

M1 F2 T3 I4 R9 K10 E11 K34 E41 D45 K46 M50 S58 E59 V60 L61 T62 I63 V64 V65 D66 V72 P81 R93 A94

• Molecule 23: 50S ribosomal protein L27

Chain W:

87%
13%

T10 R11 E17 A18 K19 F26 E29 A33 D64 G65 R77 E85
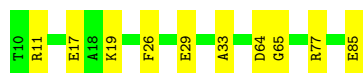
• Molecule 24: 50S ribosomal protein L28

Chain X:

88% 12%

S2 R3 Q6 P12 S42 T48 R57 D65 T66 R74 Y78

• Molecule 25: 50S ribosomal protein L29

Chain Y:

89% 11%

K2 V11 M15 R29 S34 L42 V46 D49 A63
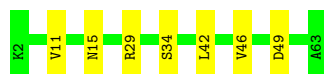
• Molecule 26: 50S ribosomal protein L30

Chain Z:

90% 9% .

A2 S12 L25 E37 R38 T41 P42 A43 E59

• Molecule 27: 50S ribosomal protein L32

Chain a:

98% .

A2 S11 K57

• Molecule 28: 50S ribosomal protein L33

Chain b:

98% .

G4 T17 I54

• Molecule 29: 50S ribosomal protein L34

Chain c:

96% .

M1 S8 K25 K46
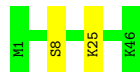
• Molecule 30: 50S ribosomal protein L35

Chain d:

94% 6%

P2 K15 H31 I32 L33 K52 A65

• Molecule 31: 50S ribosomal protein L36

Chain e: 97%   .

M1 D20 G38

• Molecule 32: Deacylated tRNAi(Met)

Chain f: 24%   55%   21%

G2 C3 G4 G5 G6 G7 U8 G9 G10 A11 G12 C13 A14 G15 C16 C17 G19 U20 A21 G22 C23 U24 C25 G26 U27 C28 G29 G30 G31 C32 C39 C40 C41 G42 A43 U47 C48 G49 U50 C51 G52 G53 U54 U55 C56 A57 A58 A59 U60 C61 C62 G63 G64 C65 C66 C67 C68

C69 G70 C71 A72 A73 C74 C75 A76
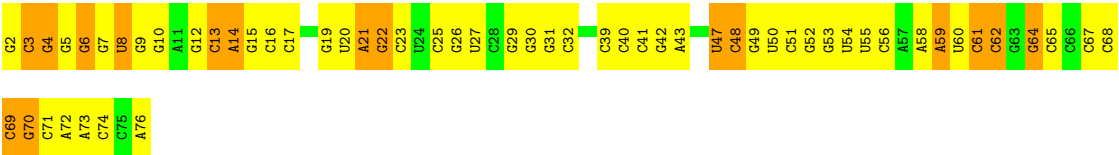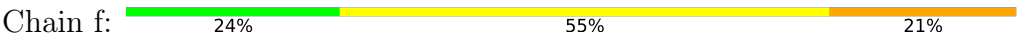
• Molecule 33: fMet-Phe-tRNA(Phe)

Chain g: 22%   47%   30%

G1 C2 G3 G4 A5 U6 U7 U8 A9 G10 C11 U12 C13 A14 G15 U16 U17 G18 G19 G20 A21 G22 A23 G24 C25 G26 C27 C28 A31 C32 U33 G34 A35 A36 G37 A38 U39 C40 G43 A44 G45 G46 U47 C48 C49 U50 G51 U52 G53 U54 U55 C56 G57 A58 C61 A62 C63

A64 G65 A66 A67 U68 U69 C70 G71 C72 A73 C74 C75 31M76
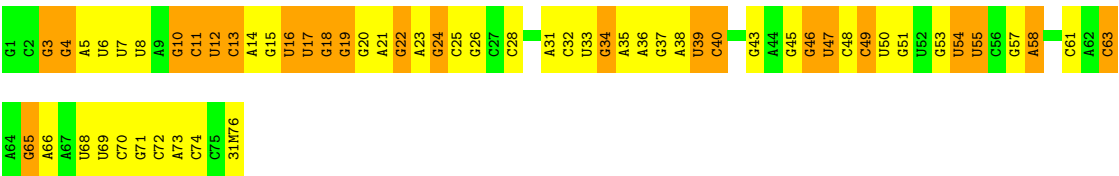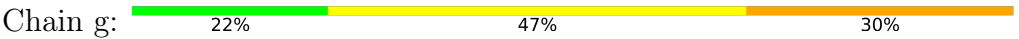
4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	401905	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	80	Depositor
Minimum defocus (nm)	300	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	75000	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: G7M, 2MA, OMC, 6MZ, DI0, 4D4, PSU, MG, M2G, OMU, 1MG, 2MG, 4SU, OMG, MEQ, 1MA, 5MU, H2U, YYG, 5MC, 3TD, 31M, 7MG

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	0.72	1/69172 (0.0%)	0.74	7/107908 (0.0%)
2	B	0.56	0/2872	0.71	0/4478
3	C	0.37	0/2122	0.46	0/2852
4	D	0.36	0/1576	0.46	0/2119
5	E	0.34	0/1571	0.44	0/2113
6	F	0.29	0/1435	0.45	0/1926
7	G	0.30	0/1343	0.46	0/1816
8	H	0.42	0/1037	0.56	0/1402
9	I	0.47	0/993	0.64	0/1341
10	J	0.37	0/1152	0.43	0/1551
11	K	0.36	0/955	0.47	0/1279
12	L	0.34	0/1062	0.47	0/1413
13	M	0.36	0/1081	0.45	0/1443
14	N	0.35	0/1006	0.44	0/1345
15	O	0.31	0/910	0.44	0/1219
16	P	0.36	0/929	0.45	0/1242
17	Q	0.40	0/960	0.38	0/1278
18	R	0.41	0/829	0.54	1/1107 (0.1%)
19	S	0.36	0/864	0.45	0/1156
20	T	0.32	0/745	0.42	0/994
21	U	0.33	0/788	0.48	1/1051 (0.1%)
22	V	0.33	0/766	0.42	0/1025
23	W	0.37	0/587	0.44	0/776
24	X	0.37	0/635	0.46	0/848
25	Y	0.27	0/502	0.37	0/667
26	Z	0.31	0/453	0.44	0/605
27	a	0.35	0/450	0.45	0/599
28	b	0.32	0/421	0.44	0/561
29	c	0.34	0/380	0.43	0/498
30	d	0.38	0/513	0.46	0/676
31	e	0.35	0/303	0.44	0/397

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
32	f	0.80	4/1725 (0.2%)	1.72	77/2689 (2.9%)
33	g	0.68	1/1458 (0.1%)	1.38	33/2272 (1.5%)
All	All	0.64	6/101595 (0.0%)	0.73	119/152646 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
18	R	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
32	f	59	A	O3'-P	-6.50	1.53	1.61
32	f	39	C	O3'-P	-6.25	1.53	1.61
32	f	12	G	O3'-P	-6.06	1.53	1.61
32	f	25	C	O3'-P	-6.00	1.53	1.61
1	A	1774	C	O3'-P	-5.19	1.54	1.61
33	g	63	C	O3'-P	-5.06	1.55	1.61

All (119) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
32	f	62	C	N1-C1'-C2'	-11.72	98.76	114.00
32	f	30	G	N9-C1'-C2'	-10.75	100.03	114.00
33	g	13	C	C4'-C3'-O3'	9.83	132.66	113.00
33	g	13	C	N1-C1'-C2'	-9.76	101.27	112.00
33	g	24	G	N9-C1'-C2'	-9.75	101.28	112.00
32	f	65	C	N1-C1'-C2'	-9.73	101.29	112.00
32	f	52	G	N9-C1'-C2'	-9.64	101.39	112.00
33	g	65	G	N9-C1'-C2'	-9.21	101.87	112.00
32	f	23	C	C4'-C3'-O3'	8.76	130.52	113.00
32	f	12	G	N9-C1'-C2'	-8.61	102.53	112.00
32	f	42	G	N9-C1'-C2'	-8.55	102.59	112.00
32	f	51	C	N1-C1'-C2'	-8.36	102.80	112.00
32	f	72	A	N9-C1'-C2'	-8.36	102.80	112.00
33	g	47	U	C4'-C3'-O3'	8.36	129.72	113.00
32	f	65	C	C4'-C3'-O3'	8.27	129.53	113.00
32	f	43	A	N9-C1'-C2'	-8.12	103.07	112.00
32	f	5	G	N9-C1'-C2'	-8.06	103.14	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
32	f	29	G	N9-C1'-C2'	-8.01	103.19	112.00
32	f	51	C	C1'-C2'-O2'	-7.87	86.98	110.60
33	g	22	G	C2'-C3'-O3'	7.83	126.72	109.50
32	f	29	G	C4'-C3'-O3'	7.81	128.61	113.00
33	g	51	G	N9-C1'-C2'	-7.71	103.51	112.00
32	f	72	A	C4'-C3'-O3'	7.66	128.31	113.00
33	g	22	G	P-O3'-C3'	7.64	128.87	119.70
33	g	68	U	N1-C1'-C2'	-7.62	103.62	112.00
33	g	50	U	N1-C1'-C2'	-7.62	103.62	112.00
32	f	73	A	N9-C1'-C2'	-7.57	103.68	112.00
32	f	21	A	O5'-P-OP2	-7.55	98.91	105.70
32	f	40	C	C1'-C2'-O2'	-7.54	87.97	110.60
33	g	5	A	N9-C1'-C2'	-7.50	103.75	112.00
32	f	6	G	N9-C1'-C2'	-7.49	103.76	112.00
32	f	2	G	N9-C1'-C2'	-7.42	103.84	112.00
32	f	13	C	N1-C1'-C2'	-7.38	103.88	112.00
32	f	12	G	C4'-C3'-O3'	7.35	127.69	113.00
32	f	42	G	C4'-C3'-O3'	7.26	127.52	113.00
32	f	14	A	N9-C1'-C2'	-7.24	104.03	112.00
33	g	11	C	N1-C1'-C2'	-7.24	104.04	112.00
32	f	23	C	C1'-C2'-O2'	-7.19	89.03	110.60
33	g	57	G	N9-C1'-C2'	-7.07	104.22	112.00
32	f	59	A	N9-C1'-C2'	-6.95	104.36	112.00
33	g	57	G	C1'-C2'-O2'	-6.94	89.79	110.60
32	f	64	G	C1'-C2'-O2'	-6.90	89.90	110.60
32	f	22	G	C1'-C2'-O2'	-6.88	89.97	110.60
32	f	71	C	C4'-C3'-O3'	6.84	126.68	113.00
32	f	47	U	P-O3'-C3'	6.81	127.87	119.70
32	f	64	G	C4'-C3'-O3'	6.77	126.54	113.00
33	g	69	U	N1-C1'-C2'	-6.76	104.56	112.00
33	g	51	G	C1'-C2'-O2'	-6.73	90.42	110.60
32	f	26	G	C1'-C2'-O2'	-6.72	90.45	110.60
32	f	23	C	N1-C1'-C2'	-6.68	104.66	112.00
32	f	40	C	N1-C1'-C2'	-6.67	104.66	112.00
1	A	2193	G	C2'-C3'-O3'	6.66	124.36	113.70
33	g	69	U	C4'-C3'-O3'	6.58	126.17	113.00
33	g	50	U	C4'-C3'-O3'	6.56	126.12	113.00
1	A	1113	U	C2'-C3'-O3'	6.55	124.17	113.70
32	f	71	C	N1-C1'-C2'	-6.44	104.92	112.00
32	f	2	G	C4'-C3'-O3'	6.41	125.83	113.00
33	g	12	U	N1-C1'-C2'	-6.41	104.95	112.00
33	g	50	U	C1'-C2'-O2'	-6.31	91.66	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
32	f	4	G	N9-C1'-C2'	-6.22	105.15	112.00
32	f	30	G	O5'-P-OP2	-6.20	100.12	105.70
32	f	53	G	N9-C1'-C2'	-6.20	105.18	112.00
32	f	61	C	N1-C1'-C2'	-6.12	105.27	112.00
33	g	70	C	N1-C1'-C2'	-6.12	105.27	112.00
32	f	27	U	N1-C1'-C2'	-6.09	105.30	112.00
33	g	18	G	C4'-C3'-O3'	-6.08	96.63	109.40
32	f	69	C	C4'-C3'-O3'	6.08	125.16	113.00
32	f	42	G	C1'-C2'-O2'	-6.07	92.40	110.60
32	f	52	G	C4'-C3'-O3'	6.01	125.02	113.00
32	f	40	C	C4'-C3'-O3'	5.99	124.98	113.00
1	A	1313	U	C2-N1-C1'	5.98	124.87	117.70
33	g	3	G	N9-C1'-C2'	-5.97	105.43	112.00
32	f	3	C	C1'-C2'-O2'	-5.94	92.77	110.60
32	f	70	G	N9-C1'-C2'	-5.94	105.47	112.00
33	g	13	C	C1'-C2'-O2'	-5.94	92.78	110.60
32	f	64	G	N9-C1'-C2'	-5.92	105.48	112.00
32	f	15	G	N9-C1'-C2'	-5.92	105.49	112.00
32	f	53	G	C4'-C3'-O3'	5.86	124.73	113.00
32	f	29	G	C1'-C2'-O2'	-5.86	93.03	110.60
32	f	13	C	C4'-C3'-O3'	5.85	124.70	113.00
33	g	5	A	C4'-C3'-O3'	5.82	124.63	113.00
32	f	27	U	C4'-C3'-O3'	5.79	124.58	113.00
33	g	19	G	C4'-C3'-O3'	-5.78	97.27	109.40
33	g	68	U	C4'-C3'-O3'	5.78	124.55	113.00
32	f	48	C	C4'-C3'-O3'	-5.74	97.35	109.40
32	f	74	C	O5'-P-OP1	-5.72	100.55	105.70
32	f	41	C	N1-C1'-C2'	-5.71	105.72	112.00
18	R	52	PRO	CA-N-CD	-5.64	103.61	111.50
32	f	62	C	C3'-C2'-C1'	5.59	105.97	101.50
33	g	65	G	O5'-P-OP2	-5.59	100.67	105.70
1	A	512	G	O4'-C1'-N9	5.58	112.66	108.20
32	f	74	C	C1'-C2'-O2'	-5.52	94.04	110.60
32	f	51	C	C4'-C3'-O3'	5.47	123.95	113.00
32	f	27	U	C1'-C2'-O2'	-5.44	94.27	110.60
32	f	43	A	C4'-C3'-O3'	5.44	123.88	113.00
32	f	22	G	N9-C1'-C2'	-5.43	106.03	112.00
32	f	69	C	N1-C1'-C2'	-5.41	106.05	112.00
32	f	43	A	P-O5'-C5'	-5.38	112.29	120.90
32	f	50	U	N1-C1'-C2'	-5.38	106.08	112.00
33	g	50	U	O5'-P-OP1	-5.35	100.89	105.70
32	f	70	G	O4'-C1'-N9	-5.30	103.96	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
32	f	74	C	C4'-C3'-O3'	5.28	123.55	113.00
1	A	404	A	O4'-C1'-C2'	-5.26	100.54	105.80
32	f	42	G	O5'-P-OP1	5.26	117.01	110.70
32	f	43	A	C1'-C2'-O2'	-5.23	94.90	110.60
32	f	62	C	O4'-C1'-N1	5.22	112.38	108.20
33	g	18	G	C1'-C2'-O2'	5.21	126.23	110.60
32	f	5	G	C4'-C3'-O3'	5.21	123.41	113.00
32	f	4	G	C4'-C3'-O3'	5.18	123.37	113.00
32	f	30	G	O5'-P-OP1	5.16	116.89	110.70
32	f	4	G	C1'-C2'-O2'	-5.13	95.22	110.60
32	f	50	U	C4'-C3'-O3'	5.10	123.20	113.00
33	g	47	U	P-O3'-C3'	5.08	125.80	119.70
33	g	70	C	C3'-C2'-C1'	5.08	105.56	101.50
1	A	12	U	N3-C2-O2	-5.04	118.67	122.20
21	U	52	LEU	CA-CB-CG	5.02	126.85	115.30
32	f	3	C	N1-C1'-C2'	-5.01	106.49	112.00
33	g	4	G	N9-C1'-C2'	-5.01	106.49	112.00
1	A	1872	A	O4'-C1'-N9	5.00	112.20	108.20

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
18	R	51	VAL	Mainchain

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	62252	0	31324	392	0
2	B	2569	0	1301	13	0
3	C	2083	0	2154	22	0
4	D	1566	0	1617	14	0
5	E	1552	0	1619	13	0
6	F	1411	0	1444	95	0
7	G	1323	0	1371	31	0
8	H	1023	0	1052	36	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	I	979	0	1028	30	0
10	J	1129	0	1162	10	0
11	K	946	0	1023	10	0
12	L	1053	0	1129	12	0
13	M	1075	0	1155	10	0
14	N	993	0	1034	6	0
15	O	900	0	935	18	0
16	P	917	0	962	10	0
17	Q	947	0	1019	3	0
18	R	816	0	839	7	0
19	S	857	0	922	5	0
20	T	739	0	807	14	0
21	U	780	0	830	7	0
22	V	753	0	780	11	0
23	W	580	0	593	5	0
24	X	625	0	652	4	0
25	Y	501	0	531	3	0
26	Z	449	0	487	3	0
27	a	444	0	458	0	0
28	b	414	0	442	0	0
29	c	377	0	418	0	0
30	d	504	0	572	0	0
31	e	302	0	343	0	0
32	f	1625	0	829	0	0
33	g	1667	0	880	0	0
34	A	174	0	0	0	0
34	B	3	0	0	0	0
34	U	1	0	0	0	0
35	A	58	0	0	1	0
36	A	498	0	0	13	0
36	B	9	0	0	0	0
36	C	7	0	0	1	0
36	D	1	0	0	0	0
36	E	1	0	0	0	0
36	L	6	0	0	0	0
36	N	1	0	0	0	0
36	T	1	0	0	0	0
36	d	4	0	0	0	0
All	All	94915	0	61712	730	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 6.

All (730) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:883:G:N2	1:A:894:U:O2	1.56	1.37
1:A:1:G:N2	1:A:2902:C:O2	1.64	1.30
9:I:98:VAL:O	9:I:138:LEU:HD23	1.22	1.25
1:A:1:G:N1	1:A:2902:C:N3	1.92	1.17
1:A:1050:A:N3	1:A:2751:G:C2	2.13	1.17
6:F:108:VAL:CG1	6:F:109:PRO:HD3	1.76	1.16
6:F:108:VAL:HG13	6:F:109:PRO:CD	1.78	1.14
8:H:67:THR:HG22	8:H:68:PRO:CD	1.76	1.14
6:F:103:LEU:HB2	6:F:107:ALA:CB	1.79	1.12
18:R:51:VAL:HG12	18:R:52:PRO:HD2	1.29	1.11
1:A:884:U:O4	1:A:893:C:C4	2.07	1.08
8:H:12:VAL:CG1	8:H:63:ALA:HB2	1.84	1.07
8:H:67:THR:HG22	8:H:68:PRO:HD3	1.04	1.03
1:A:2898:U:H2'	1:A:2899:A:C8	1.92	1.03
1:A:882:G:N1	1:A:895:U:O2	1.90	1.03
8:H:67:THR:HB	8:H:68:PRO:HD2	1.38	1.02
1:A:2898:U:H2'	1:A:2899:A:H8	1.24	1.00
6:F:103:LEU:HB2	6:F:107:ALA:HB3	1.38	1.00
1:A:884:U:O4	1:A:893:C:N3	1.96	0.99
9:I:100:LYS:HB2	9:I:141:GLU:HB2	1.46	0.98
1:A:1050:A:C4	1:A:2751:G:C2	2.51	0.98
8:H:67:THR:CG2	8:H:68:PRO:HD3	1.94	0.98
8:H:67:THR:CG2	8:H:68:PRO:CD	2.41	0.97
8:H:12:VAL:HG13	8:H:63:ALA:HB2	1.42	0.97
1:A:1050:A:H1'	1:A:2751:G:N2	1.79	0.96
1:A:894:U:O2'	1:A:895:U:OP1	1.82	0.95
1:A:1:G:N1	1:A:2902:C:C2	2.34	0.95
1:A:1050:A:C4	1:A:2751:G:N2	2.36	0.94
6:F:110:ARG:HB3	6:F:137:ILE:HG23	1.48	0.94
1:A:884:U:C4	1:A:893:C:N3	2.35	0.93
6:F:103:LEU:CB	6:F:107:ALA:HB3	1.98	0.92
1:A:2469:A:H4'	13:M:55:ARG:HD2	1.51	0.92
8:H:67:THR:CB	8:H:68:PRO:HD2	2.00	0.90
1:A:1:G:C2	1:A:2902:C:O2	2.24	0.90
1:A:1847:A:HO2'	1:A:1848:A:H8	0.98	0.90
1:A:1050:A:C2	1:A:2751:G:C2	2.59	0.90
6:F:103:LEU:CB	6:F:107:ALA:CB	2.50	0.89
1:A:883:G:H1	1:A:894:U:H3	0.89	0.89
1:A:2116:G:O6	1:A:2171:A:N6	2.06	0.89
6:F:103:LEU:CA	6:F:107:ALA:HB3	2.03	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:98:VAL:O	9:I:138:LEU:CD2	2.17	0.88
6:F:150:ARG:HG2	6:F:150:ARG:HH11	1.38	0.88
1:A:134:G:C6	1:A:135:U:C4	2.62	0.87
1:A:884:U:O4	1:A:893:C:N4	2.08	0.86
6:F:103:LEU:HA	6:F:107:ALA:CB	2.06	0.86
8:H:67:THR:CB	8:H:68:PRO:CD	2.53	0.85
6:F:103:LEU:CA	6:F:107:ALA:CB	2.54	0.85
1:A:1:G:C6	1:A:2902:C:N3	2.45	0.85
1:A:1049:C:H1'	1:A:1113:U:O2'	1.78	0.84
8:H:64:VAL:HG22	8:H:69:PHE:HB3	1.60	0.82
7:G:118:PRO:HG2	7:G:121:ILE:HD13	1.60	0.82
8:H:16:SER:OG	8:H:63:ALA:HB1	1.79	0.81
8:H:67:THR:CG2	8:H:68:PRO:HD2	2.11	0.81
8:H:67:THR:HB	8:H:68:PRO:CD	2.12	0.80
6:F:136:ILE:HG22	6:F:136:ILE:O	1.81	0.80
8:H:60:LEU:O	8:H:64:VAL:HB	1.82	0.80
1:A:884:U:H3'	1:A:885:C:H4'	1.64	0.80
1:A:2006:C:OP2	36:A:3201:HOH:O	1.98	0.80
1:A:894:U:H2'	1:A:895:U:H6	1.47	0.79
6:F:135:GLN:O	6:F:141:ILE:HG21	1.80	0.79
1:A:2099:U:H2'	1:A:2100:G:H8	1.47	0.78
1:A:1:G:O6	1:A:2902:C:N4	2.17	0.78
1:A:1050:A:H1'	1:A:2751:G:H21	1.47	0.78
1:A:1050:A:N3	1:A:2751:G:N2	2.31	0.78
1:A:883:G:C2	1:A:894:U:O2	2.36	0.78
6:F:104:ILE:O	6:F:108:VAL:HG11	1.84	0.78
8:H:12:VAL:HG12	8:H:63:ALA:HB2	1.65	0.77
1:A:2010:G:O6	36:A:3202:HOH:O	2.02	0.77
1:A:894:U:H2'	1:A:895:U:C6	2.19	0.77
6:F:103:LEU:HA	6:F:107:ALA:HB2	1.63	0.77
6:F:111:ILE:HG13	6:F:111:ILE:O	1.83	0.77
1:A:1:G:N1	1:A:2902:C:O2	2.18	0.76
1:A:1050:A:C1'	1:A:2751:G:N2	2.48	0.76
6:F:135:GLN:NE2	6:F:148:ARG:O	2.18	0.76
1:A:882:G:C6	1:A:883:G:N7	2.54	0.75
18:R:51:VAL:CG1	18:R:52:PRO:HD2	2.13	0.75
1:A:1050:A:C2	1:A:2751:G:C4	2.74	0.75
5:E:7:ASP:OD1	5:E:7:ASP:N	2.19	0.74
2:B:31:C:O2	2:B:53:A:N6	2.20	0.74
6:F:134:GLU:OE2	6:F:149:VAL:HG13	1.87	0.74
6:F:111:ILE:HD11	6:F:114:PHE:HA	1.69	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2751:G:H2'	1:A:2751:G:N3	2.02	0.74
1:A:142:A:C2	1:A:143:C:C2	2.75	0.74
1:A:63:A:H2	20:T:70:HIS:CE1	2.05	0.74
6:F:134:GLU:CD	6:F:149:VAL:HG13	2.08	0.73
1:A:611:C:C4	1:A:612:G:C5	2.77	0.73
1:A:2683:C:O2	11:K:70:ARG:NH2	2.22	0.73
6:F:80:ARG:HB2	6:F:83:TYR:CZ	2.24	0.72
6:F:149:VAL:O	6:F:149:VAL:HG12	1.88	0.72
1:A:611:C:N4	1:A:612:G:C6	2.58	0.72
3:C:133:ARG:HB3	3:C:186:ALA:HB1	1.71	0.72
6:F:102:ARG:O	6:F:106:ILE:HB	1.90	0.72
1:A:883:G:N2	1:A:894:U:C2	2.56	0.72
9:I:113:LYS:O	9:I:117:MET:N	2.23	0.71
10:J:6:ALA:H	10:J:45:THR:HG21	1.55	0.71
1:A:611:C:C4	1:A:612:G:C6	2.77	0.71
1:A:884:U:H4'	1:A:884:U:OP1	1.91	0.71
1:A:1307:A:N6	1:A:1606:C:O2	2.19	0.71
1:A:1050:A:C2	1:A:2751:G:N3	2.58	0.71
6:F:80:ARG:NH1	6:F:80:ARG:HG3	2.05	0.71
6:F:80:ARG:HG3	6:F:80:ARG:HH11	1.56	0.70
1:A:760:G:H4'	1:A:1776:G:OP1	1.92	0.70
6:F:108:VAL:HG13	6:F:109:PRO:HD3	0.84	0.69
1:A:1869:G:H21	1:A:1872:A:H2	1.38	0.69
1:A:1478:G:H1	1:A:1513:U:H3	1.39	0.69
1:A:2099:U:H2'	1:A:2100:G:C8	2.27	0.69
1:A:881:G:H2'	1:A:882:G:C8	2.27	0.69
1:A:756:A:N7	36:A:3210:HOH:O	2.25	0.69
3:C:2:ALA:N	3:C:20:VAL:O	2.27	0.68
1:A:141:G:N3	1:A:141:G:H3'	2.09	0.68
6:F:111:ILE:HA	6:F:137:ILE:CD1	2.23	0.68
1:A:1324:G:N7	36:A:3214:HOH:O	2.28	0.67
6:F:103:LEU:O	6:F:107:ALA:N	2.26	0.67
12:L:85:VAL:HG11	12:L:90:VAL:HG12	1.77	0.67
12:L:56:PRO:HG2	12:L:59:ARG:HG3	1.76	0.67
1:A:139:U:C6	20:T:1:MET:SD	2.88	0.67
9:I:98:VAL:O	9:I:138:LEU:HA	1.95	0.66
1:A:136:G:C6	1:A:137:U:C5	2.83	0.66
1:A:894:U:C4	1:A:895:U:C4	2.83	0.66
1:A:1039:A:H2	1:A:1116:G:H22	1.42	0.66
1:A:1050:A:N9	1:A:2751:G:N2	2.43	0.66
1:A:611:C:C5	1:A:612:G:C5	2.83	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:43:C:O2	6:F:92:ARG:NH2	2.29	0.66
1:A:1113:U:O5'	1:A:1113:U:H6	1.79	0.66
8:H:12:VAL:HG13	8:H:63:ALA:CB	2.22	0.66
1:A:811:U:OP1	36:A:3204:HOH:O	2.14	0.66
1:A:2127:G:O2'	1:A:2128:G:O4'	2.13	0.66
1:A:1972:G:OP2	36:A:3203:HOH:O	2.13	0.65
10:J:88:THR:OG1	10:J:90:GLU:OE2	2.14	0.65
1:A:611:C:C5	1:A:612:G:C6	2.84	0.65
1:A:1377:G:N7	36:A:3216:HOH:O	2.29	0.65
6:F:134:GLU:OE1	6:F:149:VAL:CG1	2.45	0.64
1:A:1482:G:H1'	1:A:1509:A:H61	1.62	0.64
1:A:2127:G:O2'	1:A:2128:G:O5'	2.15	0.64
25:Y:11:VAL:O	25:Y:15:ASN:ND2	2.29	0.64
6:F:150:ARG:HG2	6:F:150:ARG:NH1	2.10	0.64
8:H:16:SER:CB	8:H:63:ALA:HB1	2.28	0.64
1:A:1871:A:O2'	1:A:1872:A:N3	2.25	0.64
6:F:47:LYS:H	6:F:47:LYS:HD2	1.62	0.64
1:A:881:G:H3'	1:A:882:G:C8	2.33	0.64
1:A:2900:A:O5'	1:A:2900:A:H8	1.80	0.64
3:C:236:GLU:OE2	36:C:301:HOH:O	2.15	0.64
6:F:104:ILE:O	6:F:108:VAL:CG1	2.46	0.64
1:A:1899:A:N7	36:A:3217:HOH:O	2.29	0.64
1:A:1061:U:OP2	9:I:10:LYS:NZ	2.31	0.63
1:A:1050:A:N3	1:A:2751:G:N3	2.46	0.63
1:A:882:G:H22	1:A:895:U:H2'	1.61	0.63
7:G:47:ASP:O	7:G:49:THR:N	2.29	0.63
1:A:134:G:C5	1:A:135:U:C4	2.86	0.63
1:A:568:U:H1'	1:A:2030:6MZ:H9C1	1.81	0.62
1:A:790:U:O2'	1:A:791:C:C5	2.53	0.62
11:K:121:GLU:OE1	16:P:65:SER:OG	2.17	0.62
1:A:1:G:O6	1:A:2902:C:N3	2.32	0.62
1:A:1050:A:C4	1:A:2751:G:N1	2.67	0.62
1:A:1248:G:OP1	5:E:44:ARG:NH2	2.33	0.62
6:F:136:ILE:HD13	6:F:143:TYR:HD1	1.64	0.62
16:P:91:ALA:HB2	16:P:113:ARG:HA	1.80	0.62
6:F:4:LEU:HA	6:F:7:TYR:HB3	1.81	0.62
1:A:139:U:C5	20:T:1:MET:CE	2.83	0.62
1:A:881:G:C6	1:A:882:G:C6	2.87	0.62
18:R:37:GLU:OE2	18:R:37:GLU:HA	1.98	0.62
6:F:103:LEU:CA	6:F:107:ALA:HB2	2.28	0.61
1:A:1826:G:O2'	1:A:1971:U:OP2	2.18	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:33:ARG:NH1	4:D:53:GLY:O	2.33	0.61
1:A:355:U:H2'	1:A:356:G:H8	1.65	0.61
1:A:881:G:H3'	1:A:882:G:H8	1.66	0.61
8:H:70:GLU:O	8:H:73:LYS:HG3	2.01	0.61
9:I:100:LYS:HA	9:I:139:VAL:O	1.99	0.61
6:F:103:LEU:CB	6:F:107:ALA:HB2	2.31	0.61
20:T:11:LEU:O	25:Y:29:ARG:NH1	2.31	0.61
1:A:862:G:N7	36:A:3222:HOH:O	2.31	0.60
1:A:84:A:N1	1:A:98:G:O2'	2.32	0.60
1:A:144:A:H2'	1:A:145:C:C6	2.36	0.60
6:F:80:ARG:HH11	6:F:80:ARG:CG	2.14	0.60
8:H:134:GLU:O	8:H:134:GLU:HG3	2.00	0.60
9:I:110:ALA:O	9:I:114:ALA:N	2.34	0.60
6:F:103:LEU:C	6:F:107:ALA:HB3	2.22	0.60
1:A:136:G:C5	1:A:137:U:C5	2.89	0.60
7:G:35:ARG:HD3	7:G:71:LEU:HD23	1.82	0.59
1:A:63:A:C2	20:T:70:HIS:CE1	2.90	0.59
1:A:2324:U:H3'	1:A:2325:G:C5'	2.32	0.59
6:F:101:GLU:HA	6:F:104:ILE:HG22	1.83	0.59
26:Z:41:THR:HG22	26:Z:43:ALA:H	1.67	0.59
7:G:87:LEU:HB2	7:G:131:ILE:HG23	1.85	0.59
14:N:29:VAL:HG21	14:N:75:ILE:HG23	1.84	0.59
22:V:4:ILE:HG12	22:V:50:MET:HE1	1.83	0.59
1:A:2752:C:H6	1:A:2752:C:O5'	1.86	0.59
3:C:29:PRO:HG2	3:C:34:LEU:HD11	1.85	0.59
6:F:136:ILE:O	6:F:136:ILE:CG2	2.48	0.59
1:A:45:G:H5'	1:A:46:G:H5'	1.85	0.59
1:A:894:U:N3	1:A:895:U:C4	2.70	0.59
7:G:127:THR:HG23	7:G:130:GLU:HB2	1.85	0.59
1:A:143:C:H6	1:A:143:C:O5'	1.86	0.59
1:A:1869:G:HO2'	1:A:1871:A:H2	1.49	0.59
7:G:127:THR:OG1	7:G:128:GLN:N	2.35	0.59
1:A:807:U:OP2	12:L:41:ARG:NH1	2.36	0.58
6:F:65:PRO:HA	6:F:89:VAL:HG22	1.85	0.58
1:A:134:G:C5	1:A:135:U:C5	2.92	0.58
1:A:884:U:N3	1:A:893:C:C2	2.68	0.58
6:F:134:GLU:CD	6:F:149:VAL:CG1	2.72	0.58
6:F:141:ILE:O	6:F:141:ILE:HG23	2.04	0.58
1:A:1527:G:N1	1:A:1544:A:OP2	2.32	0.58
1:A:894:U:C2	1:A:895:U:C5	2.92	0.58
1:A:320:A:N3	5:E:163:ASN:ND2	2.50	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:20:LEU:HD13	22:V:81:PRO:HG2	1.86	0.57
8:H:103:ASN:O	8:H:105:LYS:N	2.37	0.57
1:A:883:G:N1	1:A:894:U:N3	2.35	0.57
1:A:2518:A:H2'	1:A:2518:A:N3	2.20	0.57
7:G:19:ILE:HG13	7:G:24:ILE:HD12	1.87	0.57
6:F:134:GLU:OE2	6:F:149:VAL:CG1	2.52	0.57
1:A:139:U:C5	20:T:1:MET:HE1	2.40	0.57
22:V:58:SER:OG	22:V:59:GLU:OE1	2.20	0.57
1:A:2517:C:C6	1:A:2542:A:N7	2.73	0.57
1:A:757:G:O6	36:A:3205:HOH:O	2.14	0.56
1:A:2315:G:H2'	1:A:2316:G:H8	1.69	0.56
6:F:35:THR:HG23	6:F:155:THR:HG23	1.87	0.56
15:O:99:TYR:OH	15:O:111:ARG:NH1	2.38	0.56
6:F:117:LEU:HB2	6:F:176:PRO:O	2.05	0.56
7:G:42:GLU:HB3	7:G:55:ARG:HE	1.70	0.56
8:H:22:ALA:HA	8:H:86:THR:HA	1.88	0.56
1:A:271:G:O2'	1:A:272:A:O5'	2.22	0.56
3:C:227:PRO:HA	3:C:233:GLY:HA2	1.87	0.56
13:M:77:PRO:HG2	13:M:80:VAL:HG21	1.88	0.56
6:F:110:ARG:HB3	6:F:137:ILE:CG2	2.28	0.56
13:M:75:GLU:HB2	13:M:90:GLU:HG3	1.86	0.56
1:A:218:A:N7	36:A:3224:HOH:O	2.32	0.56
3:C:79:GLU:OE2	3:C:101:ARG:NE	2.39	0.56
7:G:155:GLU:OE1	7:G:160:LYS:N	2.33	0.56
9:I:19:ASN:HA	9:I:39:CYS:SG	2.46	0.56
5:E:136:GLN:NE2	5:E:140:ASP:OD1	2.38	0.56
1:A:1041:G:C2	1:A:1115:G:C2	2.93	0.56
9:I:99:GLY:HA3	9:I:138:LEU:HD22	1.87	0.56
1:A:2898:U:O2'	1:A:2899:A:H5'	2.06	0.55
19:S:4:ILE:HG12	19:S:106:VAL:HG22	1.89	0.55
19:S:83:LYS:HD2	19:S:95:ARG:HE	1.71	0.55
6:F:111:ILE:HA	6:F:137:ILE:HD12	1.87	0.55
26:Z:37:GLU:O	26:Z:38:ARG:NH1	2.39	0.55
6:F:126:GLY:O	6:F:158:THR:OG1	2.23	0.55
13:M:25:ASP:N	13:M:25:ASP:OD1	2.38	0.55
6:F:104:ILE:HG23	6:F:105:THR:HG23	1.88	0.55
13:M:66:ARG:NH1	13:M:104:GLU:OE1	2.39	0.55
11:K:110:GLU:HA	11:K:113:MET:HG2	1.89	0.55
1:A:597:G:O2'	12:L:11:GLY:O	2.24	0.55
1:A:134:G:C6	1:A:135:U:N3	2.76	0.54
1:A:2314:A:OP1	6:F:88:LYS:NZ	2.41	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1266:G:O2'	1:A:2012:G:O6	2.21	0.54
35:A:3175:DI0:CBN	35:A:3175:DI0:CAR	2.86	0.54
1:A:370:G:O2'	1:A:424:G:OP1	2.20	0.54
1:A:894:U:HO2'	1:A:895:U:P	2.29	0.54
1:A:2032:G:N2	4:D:151:THR:OG1	2.40	0.54
5:E:157:LEU:HG	5:E:169:VAL:HG11	1.89	0.54
1:A:790:U:O2'	1:A:791:C:C6	2.61	0.54
5:E:118:LEU:HD11	5:E:188:MET:HG3	1.90	0.54
1:A:141:G:N3	1:A:141:G:H5"	2.23	0.54
13:M:110:GLU:OE2	13:M:114:ARG:NH2	2.41	0.54
1:A:668:A:H2'	1:A:670:A:H62	1.73	0.54
10:J:45:THR:HG22	17:Q:64:ARG:HH21	1.73	0.54
1:A:1494:A:O2'	1:A:1495:A:OP1	2.26	0.54
1:A:2646:C:OP2	1:A:2732:G:O2'	2.25	0.54
5:E:17:THR:O	5:E:21:ARG:NH2	2.41	0.53
2:B:40:U:N3	2:B:44:G:OP2	2.29	0.53
1:A:1050:A:C1'	1:A:2751:G:H22	2.18	0.53
1:A:2172:U:H4'	1:A:2173:A:H5'	1.90	0.53
1:A:1871:A:O2'	1:A:1872:A:O5'	2.27	0.53
3:C:5:LYS:NZ	3:C:14:ARG:O	2.40	0.53
21:U:81:ASP:OD2	21:U:96:PHE:HB3	2.09	0.53
1:A:882:G:C6	1:A:883:G:C8	2.97	0.53
1:A:894:U:C4	1:A:895:U:O4	2.62	0.53
22:V:45:ASP:OD1	22:V:45:ASP:N	2.42	0.53
1:A:1007:C:OP1	10:J:37:ARG:NH2	2.42	0.53
16:P:63:LYS:HE2	16:P:65:SER:HB2	1.91	0.53
22:V:11:GLU:N	22:V:11:GLU:OE1	2.42	0.53
1:A:1:G:O6	1:A:2902:C:C4	2.62	0.52
1:A:881:G:C2'	1:A:882:G:C8	2.92	0.52
1:A:142:A:H2'	1:A:143:C:C6	2.44	0.52
20:T:89:GLU:H	20:T:89:GLU:CD	2.13	0.52
1:A:136:G:O5'	1:A:136:G:H8	1.91	0.52
1:A:155:A:H2'	1:A:156:A:C8	2.45	0.52
1:A:1141:U:H4'	1:A:1142:A:O4'	2.10	0.52
1:A:1105:U:H2'	1:A:1106:G:H8	1.75	0.52
1:A:1796:U:H2'	1:A:1797:G:C8	2.45	0.52
1:A:2291:U:OP1	1:A:2380:C:O2'	2.26	0.52
1:A:2751:G:N3	1:A:2751:G:C2'	2.73	0.52
3:C:107:PRO:HD2	3:C:110:LEU:HD22	1.91	0.52
7:G:123:ALA:HB1	7:G:131:ILE:HD11	1.92	0.52
18:R:37:GLU:HG3	18:R:53:PHE:CE1	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2857:G:N2	1:A:2860:A:OP2	2.35	0.52
23:W:65:GLY:HA2	23:W:85:GLU:HG2	1.92	0.52
1:A:141:G:N3	1:A:141:G:C3'	2.73	0.52
1:A:2788:C:O2'	1:A:2809:A:N3	2.38	0.52
1:A:2469:A:H4'	13:M:55:ARG:CD	2.33	0.52
1:A:881:G:C3'	1:A:882:G:C8	2.93	0.52
1:A:882:G:H22	1:A:895:U:C2'	2.23	0.52
6:F:34:ILE:HG12	6:F:96:MET:HG3	1.90	0.52
1:A:894:U:O2'	1:A:895:U:P	2.68	0.51
1:A:143:C:H2'	1:A:144:A:C8	2.45	0.51
1:A:2406:A:OP2	1:A:2406:A:H2'	2.10	0.51
1:A:1049:C:C1'	1:A:1113:U:O2'	2.55	0.51
2:B:51:G:OP1	15:O:63:LYS:NZ	2.37	0.51
1:A:1007:C:OP2	36:A:3206:HOH:O	2.19	0.51
1:A:2757:A:N1	7:G:67:THR:HG21	2.26	0.51
1:A:894:U:C2	1:A:895:U:C6	2.98	0.51
1:A:463:G:N2	1:A:466:A:OP2	2.37	0.51
1:A:2315:G:H2'	1:A:2316:G:C8	2.44	0.51
6:F:108:VAL:CG1	6:F:109:PRO:CD	2.61	0.51
20:T:28:ASN:ND2	20:T:88:LYS:O	2.43	0.51
1:A:612:G:H2'	1:A:614:A:C8	2.45	0.51
2:B:66:A:H61	2:B:107:G:H2'	1.76	0.51
1:A:743:A:O2'	1:A:1659:G:OP1	2.28	0.51
1:A:1046:A:H4'	8:H:58:THR:HG21	1.91	0.51
1:A:1172:C:C5	1:A:1173:U:H1'	2.46	0.51
12:L:91:ASP:OD1	12:L:93:ASN:N	2.43	0.51
11:K:107:LEU:HB2	11:K:116:ILE:HD11	1.93	0.50
1:A:1059:G:H4'	9:I:117:MET:HE2	1.93	0.50
1:A:1796:U:H2'	1:A:1797:G:H8	1.76	0.50
4:D:3:GLY:HA3	4:D:204:LYS:HG2	1.93	0.50
1:A:534:U:O2'	17:Q:49:ASP:OD2	2.25	0.50
1:A:1715:G:O2'	1:A:1743:G:O6	2.20	0.50
1:A:2469:A:N6	1:A:2481:G:O2'	2.44	0.50
3:C:133:ARG:O	3:C:167:ARG:NH2	2.45	0.50
3:C:245:VAL:HG12	3:C:251:GLN:HA	1.94	0.50
1:A:611:C:N4	1:A:612:G:N1	2.59	0.50
1:A:1808:A:H3'	1:A:1809:A:C8	2.47	0.50
1:A:2052:A:H4'	4:D:148:GLN:O	2.11	0.50
4:D:77:ARG:NH2	4:D:200:ASP:OD1	2.45	0.50
1:A:278:A:OP2	1:A:361:G:N1	2.45	0.50
1:A:613:A:H4'	1:A:614:A:H5''	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1047:G:H1'	1:A:1111:A:H61	1.76	0.50
1:A:1506:U:H2'	1:A:1507:C:C6	2.46	0.50
1:A:611:C:C6	1:A:612:G:N7	2.79	0.50
1:A:2848:G:O2'	1:A:2867:G:N2	2.33	0.50
1:A:2899:A:H2'	1:A:2900:A:C8	2.46	0.50
1:A:1090:A:N1	1:A:1101:U:O2	2.45	0.50
1:A:1587:G:H2'	1:A:1588:G:H8	1.77	0.50
6:F:73:SER:OG	6:F:81:GLN:N	2.39	0.50
1:A:2591:C:H2'	1:A:2592:G:C8	2.48	0.49
1:A:2898:U:C2	1:A:2899:A:N7	2.80	0.49
6:F:121:SER:OG	6:F:129:SER:O	2.29	0.49
1:A:784:G:H5'	1:A:785:G:OP1	2.12	0.49
16:P:49:ALA:HB3	16:P:60:THR:HG23	1.92	0.49
1:A:355:U:H2'	1:A:356:G:C8	2.47	0.49
22:V:9:ARG:HG2	22:V:41:GLU:HG3	1.94	0.49
3:C:72:ASP:OD2	3:C:189:ARG:NH1	2.33	0.49
1:A:136:G:C6	1:A:137:U:C4	3.01	0.49
1:A:191:A:H2'	1:A:192:C:C6	2.47	0.49
1:A:729:G:C6	3:C:207:LYS:HB2	2.47	0.49
1:A:1172:C:C6	1:A:1173:U:H1'	2.48	0.49
15:O:15:ARG:NH2	15:O:95:SER:HB2	2.27	0.49
1:A:1590:A:H2'	1:A:1591:A:C8	2.48	0.49
6:F:44:ILE:HG21	6:F:79:ILE:HG22	1.94	0.49
1:A:1794:A:H2'	1:A:1795:C:C6	2.48	0.49
1:A:2313:C:H5"	6:F:88:LYS:HD3	1.95	0.49
6:F:129:SER:HA	6:F:155:THR:HA	1.94	0.49
1:A:1170:C:H2'	1:A:1171:G:O4'	2.13	0.49
11:K:40:LYS:HE3	11:K:57:VAL:HG12	1.94	0.49
1:A:1046:A:C8	8:H:62:ARG:NH2	2.81	0.49
1:A:134:G:H2'	1:A:135:U:O4'	2.13	0.48
1:A:144:A:H2'	1:A:145:C:H6	1.77	0.48
1:A:141:G:N3	1:A:141:G:C5'	2.76	0.48
1:A:1870:C:O2'	1:A:1871:A:N3	2.36	0.48
1:A:1916:A:O5'	1:A:1916:A:H8	1.96	0.48
3:C:232:HIS:HA	3:C:242:LYS:HD2	1.95	0.48
6:F:4:LEU:HD13	6:F:97:TRP:HE3	1.79	0.48
6:F:108:VAL:N	6:F:109:PRO:CD	2.77	0.48
12:L:132:ARG:HG3	12:L:142:ILE:HD12	1.94	0.48
1:A:612:G:O5'	1:A:612:G:H8	1.96	0.48
1:A:896:A:C8	1:A:896:A:H3'	2.48	0.48
1:A:1590:A:H2'	1:A:1591:A:H8	1.77	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:123:ALA:O	3:C:128:ASN:ND2	2.41	0.48
10:J:125:TYR:OH	10:J:132:HIS:NE2	2.45	0.48
22:V:72:VAL:HG12	22:V:93:ARG:HA	1.95	0.48
1:A:2000:C:OP1	14:N:5:LYS:NZ	2.35	0.48
1:A:1083:U:H4'	8:H:42:ARG:NH1	2.28	0.48
9:I:21:SER:HB3	9:I:22:PRO:HD3	1.96	0.48
1:A:1113:U:H2'	1:A:1114:C:C6	2.48	0.48
1:A:2514:U:H2'	1:A:2515:C:C6	2.48	0.48
6:F:136:ILE:HD11	6:F:146:VAL:HG21	1.95	0.48
7:G:101:ASN:ND2	7:G:116:GLN:OE1	2.47	0.48
1:A:1050:A:C5	1:A:2751:G:N1	2.82	0.48
6:F:79:ILE:HD12	6:F:79:ILE:O	2.14	0.48
1:A:546:U:O2'	1:A:548:G:OP2	2.27	0.47
1:A:1177:G:H2'	1:A:1178:C:C6	2.49	0.47
1:A:2243:U:H2'	1:A:2244:U:C6	2.49	0.47
24:X:6:GLN:O	24:X:74:ARG:NH1	2.47	0.47
1:A:630:G:N2	1:A:633:A:OP2	2.33	0.47
5:E:119:ILE:HB	5:E:187:VAL:HG22	1.97	0.47
6:F:108:VAL:N	6:F:109:PRO:HD2	2.29	0.47
22:V:2:PHE:HB2	22:V:61:LEU:HD22	1.95	0.47
23:W:26:PHE:N	23:W:29:GLU:OE1	2.36	0.47
1:A:1651:G:OP1	14:N:40:LYS:NZ	2.41	0.47
1:A:2162:G:H5''	1:A:2171:A:H2'	1.95	0.47
1:A:2751:G:H4'	7:G:4:VAL:CG2	2.45	0.47
9:I:22:PRO:HB2	9:I:23:PRO:HD3	1.96	0.47
1:A:2251:OMG:HM23	1:A:2251:OMG:H1'	1.70	0.47
20:T:33:LYS:HG2	20:T:80:TRP:CZ3	2.49	0.47
1:A:1113:U:H2'	1:A:1114:C:H6	1.80	0.47
5:E:171:ASP:OD1	5:E:172:ALA:N	2.45	0.47
1:A:307:G:N1	1:A:310:A:OP2	2.45	0.47
1:A:340:A:O2'	5:E:162:ARG:NH1	2.47	0.47
1:A:476:G:N1	1:A:479:A:OP2	2.48	0.47
1:A:611:C:C5	1:A:612:G:N7	2.82	0.47
1:A:896:A:H3'	1:A:896:A:H8	1.80	0.47
1:A:1105:U:H2'	1:A:1106:G:C8	2.49	0.47
1:A:2576:G:O2'	1:A:2579:C:OP2	2.25	0.47
3:C:163:GLN:OE1	3:C:175:ARG:NH1	2.40	0.47
4:D:129:THR:HG22	4:D:130:GLN:O	2.15	0.47
6:F:68:THR:N	6:F:86:GLY:O	2.37	0.47
6:F:103:LEU:O	6:F:107:ALA:HB3	2.14	0.47
9:I:20:PRO:HB2	9:I:23:PRO:HD2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:100:LYS:O	9:I:100:LYS:HG3	2.15	0.47
9:I:113:LYS:O	9:I:117:MET:HG2	2.15	0.47
12:L:123:ARG:NE	12:L:143:GLU:OE2	2.46	0.47
24:X:3:ARG:O	24:X:12:PRO:HD3	2.15	0.47
1:A:400:G:N7	24:X:57:ARG:NH1	2.54	0.47
1:A:881:G:C3'	1:A:882:G:H8	2.26	0.47
1:A:1915:3TD:H6	1:A:1915:3TD:O5'	2.15	0.47
1:A:2099:U:O2'	1:A:2100:G:H5'	2.14	0.47
1:A:2532:G:N2	1:A:2663:G:O2'	2.48	0.47
1:A:881:G:C5	1:A:882:G:C6	3.02	0.47
1:A:2377:A:H2'	1:A:2378:A:C8	2.50	0.47
7:G:68:ALA:O	7:G:72:LEU:HD12	2.15	0.47
7:G:164:TYR:HB2	7:G:167:GLU:HG2	1.97	0.47
9:I:19:ASN:N	9:I:20:PRO:HD2	2.29	0.47
1:A:2305:U:H5"	6:F:131:GLY:HA3	1.97	0.47
9:I:12:GLN:HA	9:I:56:PRO:HA	1.96	0.46
1:A:2720:U:OP1	16:P:53:ARG:NH2	2.48	0.46
8:H:29:ASP:OD1	8:H:30:SER:N	2.48	0.46
1:A:281:C:H2'	1:A:282:A:C8	2.49	0.46
15:O:52:SER:OG	15:O:54:VAL:HG22	2.15	0.46
15:O:64:TYR:HB3	15:O:67:ASN:ND2	2.31	0.46
1:A:593:U:H2'	1:A:594:U:C6	2.51	0.46
1:A:1870:C:O2'	1:A:1871:A:O5'	2.34	0.46
1:A:882:G:C5	1:A:883:G:C8	3.03	0.46
4:D:181:ASP:HB3	4:D:186:LEU:HB2	1.98	0.46
6:F:166:GLY:O	6:F:170:LEU:HD12	2.15	0.46
8:H:54:VAL:HG22	8:H:81:LEU:HD13	1.96	0.46
10:J:58:ASN:HD21	10:J:128:ASN:ND2	2.13	0.46
22:V:65:VAL:HG22	22:V:66:ASP:OD1	2.15	0.46
1:A:287:G:H2'	1:A:288:U:C6	2.51	0.46
1:A:350:G:H2'	1:A:351:C:O4'	2.15	0.46
1:A:479:A:N3	1:A:481:G:H5"	2.30	0.46
1:A:577:G:O2'	1:A:1254:A:OP1	2.33	0.46
1:A:811:U:H2'	12:L:21:ARG:HA	1.98	0.46
1:A:1405:U:H2'	1:A:1406:U:C6	2.50	0.46
1:A:2314:A:H2'	1:A:2315:G:H8	1.81	0.46
7:G:2:SER:O	7:G:6:LYS:N	2.44	0.46
15:O:95:SER:O	15:O:95:SER:OG	2.26	0.46
1:A:144:A:O2'	1:A:145:C:H5'	2.14	0.46
1:A:1041:G:N1	1:A:1115:G:N1	2.63	0.46
1:A:1736:U:H2'	1:A:1737:G:O4'	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2097:A:C2'	1:A:2098:U:H5'	2.45	0.46
8:H:85:VAL:HG22	8:H:92:ALA:HB2	1.98	0.46
9:I:99:GLY:HA3	9:I:138:LEU:CD2	2.46	0.46
1:A:1183:U:H2'	1:A:1184:U:C6	2.51	0.46
1:A:1219:U:H2'	1:A:1220:G:C8	2.51	0.46
8:H:16:SER:HG	8:H:63:ALA:HB1	1.81	0.46
9:I:35:ILE:CG2	9:I:36:MET:N	2.79	0.46
1:A:1028:A:N3	1:A:2486:C:O2'	2.43	0.46
1:A:1874:C:H2'	1:A:1875:G:O4'	2.16	0.46
1:A:2291:U:H2'	1:A:2292:U:C6	2.51	0.46
6:F:104:ILE:C	6:F:108:VAL:HG12	2.36	0.46
6:F:150:ARG:NH1	6:F:150:ARG:CG	2.74	0.46
1:A:851:C:H2'	1:A:852:U:C6	2.51	0.46
1:A:964:C:O2'	1:A:2273:A:N3	2.42	0.46
3:C:252:THR:OG1	3:C:253:LYS:N	2.49	0.46
23:W:33:ALA:N	23:W:64:ASP:OD1	2.48	0.46
1:A:286:U:H2'	1:A:287:G:C8	2.51	0.45
1:A:1563:U:H2'	1:A:1564:C:C6	2.51	0.45
8:H:82:ILE:HD12	8:H:84:TYR:CE2	2.51	0.45
9:I:86:ILE:HD13	9:I:138:LEU:HD21	1.97	0.45
11:K:10:VAL:HG12	11:K:12:ASP:H	1.80	0.45
15:O:15:ARG:HH21	15:O:95:SER:HB2	1.81	0.45
1:A:2298:A:H2'	1:A:2299:U:O4'	2.16	0.45
1:A:896:A:C8	1:A:896:A:C3'	2.99	0.45
1:A:2799:A:O2'	1:A:2800:A:H5"	2.16	0.45
6:F:136:ILE:HD13	6:F:143:TYR:CD1	2.47	0.45
7:G:86:LYS:HG2	7:G:132:VAL:HG22	1.98	0.45
1:A:281:C:H2'	1:A:282:A:H8	1.81	0.45
1:A:570:G:H2'	1:A:2030:6MZ:N7	2.31	0.45
4:D:1:MET:HB3	4:D:205:PRO:HG2	1.99	0.45
1:A:930:G:H1'	26:Z:25:LEU:HD21	1.99	0.45
1:A:1009:A:N3	1:A:1153:C:O2'	2.48	0.45
6:F:40:VAL:HG11	6:F:43:ALA:HB2	1.99	0.45
19:S:83:LYS:HD2	19:S:95:ARG:HH11	1.81	0.45
1:A:280:U:H2'	1:A:281:C:C6	2.52	0.45
1:A:548:G:H5"	1:A:549:G:H5'	1.98	0.45
1:A:1607:C:N4	1:A:1621:U:OP2	2.50	0.45
21:U:89:ASP:OD1	21:U:89:ASP:N	2.49	0.45
1:A:1050:A:C2	1:A:2751:G:C5	3.04	0.45
6:F:43:ALA:HA	6:F:49:LEU:HD11	1.99	0.45
1:A:172:A:H2'	1:A:173:A:C8	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:639:U:H2'	1:A:640:C:C6	2.52	0.45
1:A:2098:U:C2'	1:A:2099:U:H5'	2.47	0.45
1:A:2304:G:H22	1:A:2312:U:H3	1.65	0.45
9:I:18:ALA:C	9:I:20:PRO:HD2	2.37	0.45
15:O:88:LYS:HB2	15:O:88:LYS:HE2	1.71	0.45
1:A:1182:G:H2'	1:A:1183:U:O4'	2.17	0.45
1:A:2233:U:H2'	1:A:2234:G:C8	2.52	0.45
3:C:16:VAL:HG22	3:C:206:GLY:HA3	1.99	0.45
20:T:18:GLU:O	20:T:22:THR:HG22	2.17	0.45
1:A:1916:A:O5'	1:A:1916:A:C8	2.70	0.45
1:A:2788:C:H2'	1:A:2789:C:C6	2.52	0.45
19:S:84:ARG:O	19:S:96:ILE:N	2.44	0.45
1:A:1494:A:H2'	1:A:1495:A:C8	2.52	0.44
1:A:1868:C:H2'	1:A:1869:G:O4'	2.16	0.44
1:A:2537:U:H2'	1:A:2538:C:C6	2.52	0.44
1:A:2793:C:H2'	1:A:2794:C:C6	2.52	0.44
1:A:286:U:H2'	1:A:287:G:H8	1.82	0.44
1:A:568:U:O4	18:R:81:LYS:NZ	2.48	0.44
1:A:2193:G:H2'	1:A:2194:U:C6	2.51	0.44
1:A:2328:A:H2'	1:A:2329:U:C6	2.52	0.44
2:B:48:U:H4'	15:O:100:HIS:HD2	1.82	0.44
3:C:37:ASN:HB2	3:C:62:TYR:HB2	1.99	0.44
6:F:36:LEU:HD22	6:F:154:ILE:HG12	1.99	0.44
15:O:59:ALA:HA	15:O:62:LEU:HD12	1.98	0.44
1:A:883:G:C4	1:A:895:U:O2	2.70	0.44
1:A:1028:A:N6	1:A:1125:G:H2'	2.33	0.44
1:A:1050:A:C2	1:A:2751:G:N1	2.85	0.44
3:C:28:LYS:HA	3:C:28:LYS:HD2	1.82	0.44
7:G:28:GLY:HA3	7:G:79:VAL:HB	2.00	0.44
8:H:50:VAL:HG22	8:H:85:VAL:HG13	1.98	0.44
15:O:33:ARG:O	15:O:65:THR:HG23	2.18	0.44
1:A:351:C:H2'	1:A:352:A:O4'	2.17	0.44
1:A:543:G:H2'	1:A:544:C:O4'	2.18	0.44
6:F:103:LEU:C	6:F:107:ALA:H	2.20	0.44
16:P:60:THR:HB	16:P:73:VAL:HG22	1.98	0.44
1:A:134:G:C2	1:A:135:U:C2	3.05	0.44
1:A:137:U:O2	1:A:137:U:H2'	2.18	0.44
1:A:2822:G:O6	14:N:2:ARG:NH1	2.50	0.44
8:H:119:PRO:HG2	8:H:122:GLN:HB2	1.98	0.44
1:A:411:G:OP2	1:A:2406:A:O2'	2.30	0.44
1:A:1746:A:H2'	1:A:1747:U:C6	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:30:ARG:HG3	6:F:30:ARG:HH11	1.83	0.44
20:T:69:ARG:O	20:T:69:ARG:HG2	2.18	0.44
1:A:2161:C:H4'	1:A:2173:A:P	2.58	0.44
1:A:2845:U:H5''	16:P:52:ASN:O	2.18	0.44
4:D:25:THR:HG21	4:D:193:VAL:HG22	1.99	0.44
14:N:30:ARG:NH2	14:N:74:GLU:OE1	2.40	0.44
15:O:2:ASP:OD1	15:O:2:ASP:N	2.51	0.44
1:A:796:C:H2'	1:A:797:G:C8	2.53	0.44
1:A:871:U:H2'	1:A:872:U:C6	2.53	0.44
9:I:80:LEU:CD2	9:I:101:ILE:HD13	2.48	0.44
18:R:34:GLU:OE1	18:R:60:LYS:HG2	2.17	0.44
16:P:34:GLU:N	16:P:34:GLU:OE1	2.50	0.43
1:A:1181:U:H2'	1:A:1182:G:C8	2.54	0.43
3:C:161:TYR:HB3	3:C:194:GLU:HB2	1.98	0.43
9:I:20:PRO:HB2	9:I:23:PRO:CG	2.47	0.43
14:N:96:ARG:HD3	14:N:98:LEU:HD21	2.00	0.43
1:A:898:C:H2'	1:A:899:A:O4'	2.18	0.43
1:A:1847:A:O2'	1:A:1848:A:H8	1.79	0.43
1:A:2595:G:N2	1:A:2598:A:OP2	2.40	0.43
4:D:39:ASP:N	4:D:39:ASP:OD1	2.51	0.43
12:L:90:VAL:HG22	12:L:122:VAL:HA	1.99	0.43
21:U:96:PHE:CE2	21:U:103:ILE:HG12	2.53	0.43
1:A:672:C:OP2	12:L:42:SER:OG	2.29	0.43
1:A:1536:C:H4'	1:A:1537:G:C4	2.54	0.43
1:A:2688:G:N1	1:A:2720:U:OP2	2.32	0.43
1:A:2329:U:H2'	1:A:2330:G:C8	2.53	0.43
2:B:24:G:N7	2:B:56:G:H2'	2.33	0.43
16:P:88:ARG:HH21	16:P:112:GLU:HB2	1.82	0.43
1:A:1939:5MU:OP1	1:A:2604:PSU:O2'	2.37	0.43
4:D:97:SER:OG	4:D:98:VAL:N	2.51	0.43
9:I:18:ALA:O	9:I:19:ASN:CB	2.67	0.43
1:A:813:U:H2'	1:A:814:C:C6	2.54	0.43
6:F:104:ILE:HD11	6:F:176:PRO:HD3	2.00	0.43
7:G:155:GLU:OE1	7:G:159:GLY:N	2.52	0.43
11:K:71:ARG:HD3	11:K:71:ARG:HA	1.85	0.43
1:A:136:G:O5'	1:A:136:G:C8	2.70	0.43
1:A:143:C:O5'	1:A:143:C:C6	2.70	0.43
1:A:586:A:N1	1:A:809:G:O2'	2.46	0.43
1:A:1050:A:C6	1:A:2751:G:C6	3.06	0.43
1:A:2188:U:H2'	1:A:2189:U:O4'	2.19	0.43
1:A:2273:A:H2'	1:A:2274:A:C8	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:35:THR:HA	6:F:90:THR:HA	2.01	0.43
11:K:24:VAL:HG13	11:K:33:ALA:HB2	2.01	0.43
19:S:11:ARG:HD2	19:S:100:THR:HG22	2.00	0.43
1:A:134:G:O6	1:A:135:U:O4	2.36	0.43
1:A:1676:A:N7	36:A:3236:HOH:O	2.37	0.43
1:A:2339:C:H2'	1:A:2340:A:C8	2.53	0.43
2:B:1:U:H2'	2:B:2:G:H8	1.83	0.43
2:B:48:U:H4'	15:O:100:HIS:CD2	2.54	0.43
6:F:54:ALA:HB1	6:F:65:PRO:HG2	2.01	0.43
15:O:108:ASP:HA	15:O:111:ARG:HB2	2.00	0.43
2:B:42:C:N3	6:F:90:THR:HG22	2.33	0.43
9:I:56:PRO:HG2	9:I:72:LYS:HB2	2.01	0.43
15:O:115:LEU:HD12	15:O:115:LEU:HA	1.85	0.43
25:Y:42:LEU:O	25:Y:46:VAL:HG12	2.19	0.43
1:A:278:A:N1	1:A:361:G:O2'	2.49	0.42
1:A:594:U:H2'	1:A:595:C:C6	2.54	0.42
1:A:1040:A:N1	1:A:1115:G:N2	2.66	0.42
1:A:1199:U:H1'	17:Q:4:VAL:HG22	2.01	0.42
1:A:1441:G:H2'	1:A:1442:U:C6	2.54	0.42
6:F:150:ARG:H	6:F:150:ARG:HG3	1.46	0.42
7:G:105:LEU:HB2	7:G:113:VAL:HG13	2.01	0.42
1:A:57:C:H2'	1:A:58:G:O4'	2.19	0.42
1:A:708:G:N2	1:A:724:U:H1'	2.34	0.42
1:A:1041:G:C2	1:A:1115:G:N1	2.87	0.42
1:A:2314:A:H2'	1:A:2315:G:C8	2.53	0.42
1:A:2808:G:O2'	1:A:2890:G:O6	2.29	0.42
9:I:20:PRO:HB2	9:I:23:PRO:HG2	2.01	0.42
9:I:86:ILE:CD1	9:I:138:LEU:HD21	2.49	0.42
9:I:114:ALA:CB	9:I:125:MET:SD	3.07	0.42
1:A:544:C:H2'	1:A:545:U:O4'	2.19	0.42
1:A:1420:A:C5	1:A:2211:A:C6	3.07	0.42
1:A:1915:3TD:H2'	1:A:1916:A:H8	1.84	0.42
1:A:2333:A:P	23:W:77:ARG:HH22	2.42	0.42
1:A:2389:G:H5''	1:A:2390:U:O4'	2.19	0.42
7:G:153:ARG:HB2	7:G:153:ARG:CZ	2.49	0.42
21:U:14:LEU:HD11	21:U:71:ALA:HB2	2.01	0.42
24:X:65:ASP:OD1	24:X:66:THR:N	2.53	0.42
1:A:207:A:H2'	1:A:208:C:O4'	2.18	0.42
1:A:1172:C:H3'	1:A:1173:U:C4'	2.49	0.42
1:A:2728:U:O2'	1:A:2729:G:H8	2.03	0.42
6:F:38:MET:HE2	6:F:87:CYS:SG	2.59	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:65:GLU:O	8:H:65:GLU:HG3	2.20	0.42
21:U:47:LYS:HE2	21:U:47:LYS:HB3	1.88	0.42
1:A:2698:U:H2'	1:A:2699:C:C6	2.54	0.42
2:B:48:U:H2'	2:B:49:C:C6	2.54	0.42
6:F:175:PHE:HB3	6:F:177:PHE:CE1	2.55	0.42
1:A:483:A:O2'	21:U:57:GLY:N	2.49	0.42
1:A:721:A:H2'	1:A:722:A:C8	2.55	0.42
1:A:1915:3TD:H2'	1:A:1916:A:C8	2.55	0.42
7:G:72:LEU:HA	7:G:75:MET:HB2	2.01	0.42
12:L:77:ILE:HD13	12:L:108:ALA:HB1	2.02	0.42
23:W:17:GLU:O	23:W:19:LYS:NZ	2.52	0.42
1:A:139:U:C5	20:T:1:MET:SD	3.13	0.42
1:A:612:G:H1'	1:A:616:A:H61	1.84	0.42
6:F:121:SER:OG	6:F:121:SER:O	2.35	0.42
7:G:155:GLU:H	7:G:155:GLU:HG3	1.68	0.42
1:A:2481:G:HO2'	1:A:2482:A:H8	1.65	0.42
7:G:38:ASN:HD22	7:G:64:GLN:CD	2.23	0.42
22:V:46:LYS:HE3	22:V:46:LYS:HB2	1.79	0.42
1:A:225:C:H2'	1:A:226:A:O4'	2.20	0.42
1:A:1930:G:O2'	1:A:1968:G:O6	2.33	0.42
6:F:56:ASP:O	6:F:60:ILE:HG12	2.20	0.42
7:G:50:LEU:HA	7:G:50:LEU:HD23	1.87	0.42
10:J:117:ALA:HA	10:J:120:ARG:HH21	1.85	0.42
22:V:63:ILE:HD12	22:V:72:VAL:HG21	2.01	0.42
7:G:54:PRO:HG3	7:G:62:TRP:CE2	2.54	0.41
8:H:38:MET:O	8:H:41:LEU:N	2.53	0.41
18:R:58:VAL:HB	18:R:102:SER:OG	2.19	0.41
1:A:714:U:H1'	1:A:717:C:H5	1.86	0.41
1:A:1047:G:H1'	1:A:1111:A:N6	2.35	0.41
1:A:2375:G:N2	1:A:2378:A:OP2	2.47	0.41
7:G:10:VAL:HA	7:G:49:THR:HA	2.02	0.41
1:A:364:C:H2'	1:A:365:U:C6	2.56	0.41
1:A:2162:G:OP1	1:A:2171:A:H2'	2.20	0.41
8:H:51:TYR:OH	8:H:53:ARG:NH1	2.53	0.41
11:K:38:ILE:HD11	11:K:112:PHE:HZ	1.85	0.41
1:A:358:U:H2'	1:A:359:G:C8	2.55	0.41
1:A:1084:A:C6	1:A:1085:A:C6	3.08	0.41
1:A:1385:A:O2'	1:A:1396:U:O2	2.39	0.41
1:A:1475:G:O2'	1:A:1514:G:O6	2.34	0.41
1:A:2129:C:N4	1:A:2130:U:O4	2.54	0.41
6:F:8:TYR:HA	6:F:12:VAL:HG22	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:175:PHE:HB3	6:F:177:PHE:HE1	1.85	0.41
8:H:52:MET:HE1	8:H:96:PHE:HZ	1.85	0.41
10:J:31:GLU:OE2	10:J:35:ARG:NE	2.51	0.41
1:A:742:A:H2'	1:A:743:A:C8	2.56	0.41
1:A:984:A:N3	1:A:984:A:H2'	2.35	0.41
1:A:1042:G:N2	1:A:1114:C:H1'	2.35	0.41
6:F:80:ARG:HB2	6:F:83:TYR:CE2	2.55	0.41
13:M:50:ARG:O	13:M:53:MET:HG2	2.20	0.41
1:A:1174:U:H5'	1:A:1175:A:OP2	2.20	0.41
1:A:1278:C:H2'	1:A:1279:G:C8	2.56	0.41
1:A:1482:G:H1'	1:A:1509:A:N6	2.32	0.41
1:A:2321:U:H5'	1:A:2322:A:OP2	2.21	0.41
15:O:43:ASN:OD1	15:O:45:SER:OG	2.29	0.41
15:O:60:GLU:H	15:O:60:GLU:HG2	1.72	0.41
1:A:287:G:H2'	1:A:288:U:H6	1.85	0.41
6:F:67:ILE:HD13	6:F:87:CYS:HB3	2.02	0.41
6:F:94:GLU:HA	6:F:97:TRP:HD1	1.85	0.41
10:J:110:PRO:O	10:J:115:GLY:HA3	2.21	0.41
1:A:278:A:N6	1:A:362:A:N7	2.69	0.41
1:A:322:A:OP2	5:E:163:ASN:HB2	2.21	0.41
1:A:1223:G:C6	1:A:1227:G:C6	3.08	0.41
1:A:1799:G:O2'	3:C:180:GLU:OE2	2.24	0.41
1:A:2114:A:OP2	1:A:2115:G:C6	2.73	0.41
7:G:18:LYS:NZ	7:G:20:ASN:HB2	2.36	0.41
1:A:882:G:C2	1:A:883:G:C8	3.08	0.41
1:A:1050:A:N1	1:A:2751:G:C6	2.88	0.41
1:A:1278:C:H2'	1:A:1279:G:H8	1.86	0.41
1:A:1932:A:H2'	1:A:1933:G:O4'	2.21	0.41
2:B:78:A:H2'	2:B:79:G:O4'	2.21	0.41
2:B:118:C:H2'	2:B:119:A:C8	2.56	0.41
3:C:155:ALA:HB2	3:C:162:VAL:HG23	2.03	0.41
5:E:2:GLU:HB3	5:E:11:ALA:HB1	2.03	0.41
5:E:6:LYS:HE2	5:E:6:LYS:HA	2.02	0.41
6:F:32:GLU:OE2	6:F:32:GLU:N	2.53	0.41
6:F:42:GLU:H	6:F:42:GLU:HG3	1.72	0.41
6:F:103:LEU:HA	6:F:107:ALA:H	1.85	0.41
7:G:117:LEU:HD13	7:G:117:LEU:HA	1.88	0.41
8:H:103:ASN:C	8:H:105:LYS:H	2.24	0.41
20:T:33:LYS:HE2	20:T:80:TRP:CE3	2.56	0.41
1:A:458:G:O2'	1:A:469:G:O6	2.32	0.41
1:A:634:C:H2'	1:A:635:C:C6	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:880:G:C2	1:A:881:G:H1'	2.56	0.41
1:A:979:A:H2'	1:A:982:C:H42	1.85	0.41
1:A:1049:C:HO2'	1:A:1114:C:P	2.43	0.41
1:A:1394:U:H4'	1:A:1603:A:H4'	2.03	0.41
1:A:2484:G:OP1	13:M:44:ARG:NH2	2.49	0.41
6:F:103:LEU:O	6:F:108:VAL:N	2.54	0.41
12:L:77:ILE:CD1	12:L:108:ALA:HB1	2.51	0.41
20:T:26:LYS:HE2	20:T:26:LYS:HA	2.02	0.41
1:A:861:A:H2'	1:A:862:G:O4'	2.20	0.40
1:A:1357:C:H2'	1:A:1358:G:O4'	2.20	0.40
1:A:1871:A:H1'	1:A:1872:A:H5'	2.02	0.40
1:A:1881:C:H2'	1:A:1882:U:O4'	2.21	0.40
1:A:2116:G:C6	1:A:2171:A:N6	2.84	0.40
4:D:99:GLU:H	4:D:99:GLU:HG3	1.74	0.40
4:D:157:LYS:HE3	4:D:157:LYS:HB2	1.85	0.40
11:K:63:VAL:HG12	11:K:107:LEU:HD11	2.03	0.40
1:A:493:G:H2'	1:A:494:G:O4'	2.21	0.40
1:A:1370:C:H2'	1:A:1371:G:O4'	2.22	0.40
1:A:1430:G:H2'	1:A:1431:A:O4'	2.21	0.40
1:A:1450:G:C6	1:A:1451:C:N4	2.89	0.40
4:D:186:LEU:HD13	16:P:8:LEU:HD11	2.04	0.40
9:I:90:SER:HB2	9:I:98:VAL:CG2	2.51	0.40
10:J:58:ASN:HD21	10:J:128:ASN:HD22	1.69	0.40
1:A:1414:C:H2'	1:A:1415:U:O4'	2.21	0.40
6:F:10:ASP:OD1	6:F:11:GLU:N	2.54	0.40
1:A:1:G:H2'	1:A:2:G:H8	1.85	0.40
1:A:882:G:C6	1:A:883:G:C5	3.10	0.40
7:G:48:ASN:O	7:G:48:ASN:ND2	2.54	0.40
15:O:89:ASP:OD1	15:O:89:ASP:N	2.54	0.40
1:A:645:C:H2'	1:A:647:G:C8	2.57	0.40
1:A:1132:U:H3'	1:A:1133:A:H5"	2.04	0.40
7:G:121:ILE:N	7:G:121:ILE:HD12	2.35	0.40
21:U:4:LYS:O	21:U:94:ARG:NH2	2.50	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 PDB entries followed by that with respect to all EM entries.

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	
3	C	269/271 (99%)	265 (98%)	4 (2%)	0	100	100
4	D	206/209 (99%)	201 (98%)	4 (2%)	1 (0%)	25	23
5	E	199/201 (99%)	197 (99%)	2 (1%)	0	100	100
6	F	175/177 (99%)	163 (93%)	11 (6%)	1 (1%)	22	19
7	G	174/176 (99%)	168 (97%)	5 (3%)	1 (1%)	22	19
8	H	133/135 (98%)	109 (82%)	18 (14%)	6 (4%)	2	0
9	I	132/134 (98%)	117 (89%)	11 (8%)	4 (3%)	3	1
10	J	140/142 (99%)	140 (100%)	0	0	100	100
11	K	121/123 (98%)	120 (99%)	1 (1%)	0	100	100
12	L	142/144 (99%)	137 (96%)	5 (4%)	0	100	100
13	M	133/136 (98%)	131 (98%)	2 (2%)	0	100	100
14	N	123/125 (98%)	117 (95%)	6 (5%)	0	100	100
15	O	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
16	P	112/114 (98%)	110 (98%)	2 (2%)	0	100	100
17	Q	115/117 (98%)	115 (100%)	0	0	100	100
18	R	101/103 (98%)	96 (95%)	4 (4%)	1 (1%)	13	9
19	S	108/110 (98%)	107 (99%)	1 (1%)	0	100	100
20	T	91/93 (98%)	90 (99%)	1 (1%)	0	100	100
21	U	100/102 (98%)	95 (95%)	5 (5%)	0	100	100
22	V	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
23	W	74/76 (97%)	72 (97%)	2 (3%)	0	100	100
24	X	75/77 (97%)	75 (100%)	0	0	100	100
25	Y	60/62 (97%)	59 (98%)	1 (2%)	0	100	100
26	Z	56/58 (97%)	56 (100%)	0	0	100	100
27	a	54/56 (96%)	52 (96%)	2 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	b	49/51 (96%)	49 (100%)	0	0	100	100
29	c	44/46 (96%)	44 (100%)	0	0	100	100
30	d	62/64 (97%)	59 (95%)	3 (5%)	0	100	100
31	e	36/38 (95%)	36 (100%)	0	0	100	100
All	All	3291/3351 (98%)	3184 (97%)	93 (3%)	14 (0%)	32	29

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	H	104	ALA
8	H	106	PHE
9	I	15	ALA
9	I	19	ASN
18	R	52	PRO
4	D	149	ASN
8	H	67	THR
8	H	108	VAL
9	I	25	GLY
8	H	124	ASP
9	I	23	PRO
8	H	130	PRO
7	G	47	ASP
6	F	110	ARG

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 PDB entries followed by that with respect to all EM entries.

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	
3	C	216/216 (100%)	213 (99%)	3 (1%)	62	70
4	D	163/163 (100%)	160 (98%)	3 (2%)	54	61
5	E	165/165 (100%)	158 (96%)	7 (4%)	25	26
6	F	148/148 (100%)	127 (86%)	21 (14%)	2	1
7	G	137/137 (100%)	125 (91%)	12 (9%)	8	5

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	H	103/103 (100%)	97 (94%)	6 (6%)	17	15
9	I	104/104 (100%)	102 (98%)	2 (2%)	52	59
10	J	116/116 (100%)	112 (97%)	4 (3%)	32	35
11	K	104/104 (100%)	102 (98%)	2 (2%)	52	59
12	L	103/103 (100%)	101 (98%)	2 (2%)	52	59
13	M	108/108 (100%)	104 (96%)	4 (4%)	29	31
14	N	102/102 (100%)	101 (99%)	1 (1%)	73	79
15	O	87/87 (100%)	85 (98%)	2 (2%)	45	51
16	P	99/99 (100%)	93 (94%)	6 (6%)	15	13
17	Q	89/89 (100%)	89 (100%)	0	100	100
18	R	84/84 (100%)	82 (98%)	2 (2%)	44	49
19	S	93/93 (100%)	91 (98%)	2 (2%)	47	53
20	T	80/80 (100%)	77 (96%)	3 (4%)	28	30
21	U	83/83 (100%)	79 (95%)	4 (5%)	21	21
22	V	78/78 (100%)	76 (97%)	2 (3%)	41	46
23	W	57/58 (98%)	56 (98%)	1 (2%)	54	61
24	X	67/67 (100%)	65 (97%)	2 (3%)	36	40
25	Y	54/54 (100%)	52 (96%)	2 (4%)	29	31
26	Z	48/48 (100%)	46 (96%)	2 (4%)	25	26
27	a	47/47 (100%)	46 (98%)	1 (2%)	48	55
28	b	45/46 (98%)	44 (98%)	1 (2%)	47	53
29	c	38/38 (100%)	36 (95%)	2 (5%)	19	18
30	d	51/51 (100%)	47 (92%)	4 (8%)	10	8
31	e	34/34 (100%)	33 (97%)	1 (3%)	37	41
All	All	2703/2705 (100%)	2599 (96%)	104 (4%)	30	30

All (104) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	10	SER
3	C	38	SER
3	C	133	ARG
4	D	43	ASP
4	D	95	SER

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Mol	Chain	Res	Type
4	D	97	SER
5	E	7	ASP
5	E	15	SER
5	E	21	ARG
5	E	61	ARG
5	E	75	SER
5	E	122	GLU
5	E	155	GLU
6	F	4	LEU
6	F	14	LYS
6	F	19	GLU
6	F	24	SER
6	F	33	LYS
6	F	35	THR
6	F	42	GLU
6	F	47	LYS
6	F	51	ASP
6	F	80	ARG
6	F	98	GLU
6	F	108	VAL
6	F	110	ARG
6	F	111	ILE
6	F	130	MET
6	F	141	ILE
6	F	150	ARG
6	F	155	THR
6	F	162	SER
6	F	175	PHE
6	F	178	ARG
7	G	2	SER
7	G	32	GLU
7	G	34	THR
7	G	42	GLU
7	G	84	THR
7	G	99	LYS
7	G	127	THR
7	G	130	GLU
7	G	131	ILE
7	G	167	GLU
7	G	173	GLU
7	G	176	LYS
8	H	16	SER

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Mol	Chain	Res	Type
8	H	64	VAL
8	H	67	THR
8	H	71	CYS
8	H	105	LYS
8	H	133	GLU
9	I	59	ILE
9	I	98	VAL
10	J	5	THR
10	J	12	LYS
10	J	90	GLU
10	J	142	ILE
11	K	91	SER
11	K	109	SER
12	L	84	LYS
12	L	118	THR
13	M	53	MET
13	M	55	ARG
13	M	58	LYS
13	M	59	ARG
14	N	2	ARG
15	O	24	THR
15	O	95	SER
16	P	6	LYS
16	P	36	SER
16	P	60	THR
16	P	76	THR
16	P	83	SER
16	P	104	THR
18	R	37	GLU
18	R	71	LYS
19	S	70	LYS
19	S	95	ARG
20	T	1	MET
20	T	49	LYS
20	T	93	LEU
21	U	27	ASN
21	U	68	SER
21	U	86	ARG
21	U	89	ASP
22	V	34	LYS
22	V	59	GLU
23	W	11	ARG

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Mol	Chain	Res	Type
24	X	42	SER
24	X	48	THR
25	Y	34	SER
25	Y	49	ASP
26	Z	12	SER
26	Z	37	GLU
27	a	11	SER
28	b	17	THR
29	c	8	SER
29	c	25	LYS
30	d	15	LYS
30	d	31	HIS
30	d	33	LEU
30	d	52	LYS
31	e	20	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	134	ASN
5	E	9	GLN
5	E	90	GLN
7	G	104	ASN
7	G	111	HIS
7	G	115	HIS
10	J	128	ASN
13	M	3	GLN
15	O	100	HIS
16	P	41	GLN
16	P	66	ASN
17	Q	81	ASN
20	T	70	HIS
21	U	27	ASN
21	U	46	GLN
22	V	87	GLN
25	Y	58	ASN
29	c	29	GLN

5.3.3   RNA   ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2888/2897 (99%)	382 (13%)	16 (0%)
2	B	119/120 (99%)	7 (5%)	0
32	f	75/76 (98%)	31 (41%)	0
33	g	74/76 (97%)	48 (64%)	0
All	All	3156/3169 (99%)	468 (14%)	16 (0%)

All (468) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A
1	A	15	G
1	A	34	U
1	A	45	G
1	A	46	G
1	A	58	G
1	A	71	A
1	A	74	A
1	A	75	G
1	A	84	A
1	A	101	A
1	A	102	U
1	A	118	A
1	A	119	A
1	A	120	U
1	A	125	A
1	A	135	U
1	A	137	U
1	A	138	U
1	A	139	U
1	A	140	C
1	A	141	G
1	A	142	A
1	A	157	C
1	A	163	C
1	A	165	A
1	A	181	A
1	A	196	A
1	A	199	A
1	A	216	A
1	A	221	A
1	A	222	A
1	A	248	G
1	A	266	G

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Mol	Chain	Res	Type
1	A	272	A
1	A	276	U
1	A	285	G
1	A	302	C
1	A	311	A
1	A	329	G
1	A	330	A
1	A	352	A
1	A	353	C
1	A	361	G
1	A	362	A
1	A	372	G
1	A	386	G
1	A	396	G
1	A	399	U
1	A	403	U
1	A	406	G
1	A	411	G
1	A	412	A
1	A	424	G
1	A	425	G
1	A	479	A
1	A	481	G
1	A	491	G
1	A	504	A
1	A	505	A
1	A	509	C
1	A	529	A
1	A	530	G
1	A	532	A
1	A	544	C
1	A	546	U
1	A	547	A
1	A	548	G
1	A	549	G
1	A	550	C
1	A	563	A
1	A	573	U
1	A	575	A
1	A	603	A
1	A	613	A
1	A	614	A

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Mol	Chain	Res	Type
1	A	615	U
1	A	627	A
1	A	637	A
1	A	645	C
1	A	647	G
1	A	654	A
1	A	655	A
1	A	685	A
1	A	686	U
1	A	717	C
1	A	730	A
1	A	747	5MU
1	A	775	G
1	A	776	G
1	A	782	A
1	A	784	G
1	A	785	G
1	A	790	U
1	A	791	C
1	A	792	A
1	A	805	G
1	A	812	C
1	A	827	U
1	A	828	U
1	A	845	A
1	A	846	U
1	A	847	U
1	A	858	G
1	A	859	G
1	A	878	A
1	A	881	G
1	A	883	G
1	A	884	U
1	A	885	C
1	A	895	U
1	A	896	A
1	A	897	C
1	A	910	A
1	A	914	G
1	A	927	A
1	A	931	U
1	A	946	C

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Mol	Chain	Res	Type
1	A	961	C
1	A	974	G
1	A	983	A
1	A	996	A
1	A	1012	U
1	A	1013	C
1	A	1026	G
1	A	1033	U
1	A	1040	A
1	A	1046	A
1	A	1047	G
1	A	1070	A
1	A	1083	U
1	A	1084	A
1	A	1088	A
1	A	1090	A
1	A	1112	G
1	A	1114	C
1	A	1115	G
1	A	1116	G
1	A	1119	U
1	A	1132	U
1	A	1133	A
1	A	1135	C
1	A	1141	U
1	A	1142	A
1	A	1168	G
1	A	1171	G
1	A	1173	U
1	A	1174	U
1	A	1175	A
1	A	1176	U
1	A	1212	G
1	A	1236	G
1	A	1238	G
1	A	1253	A
1	A	1256	G
1	A	1271	G
1	A	1272	A
1	A	1300	G
1	A	1301	A
1	A	1329	U

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Mol	Chain	Res	Type
1	A	1345	C
1	A	1352	U
1	A	1365	A
1	A	1379	U
1	A	1383	A
1	A	1416	G
1	A	1417	C
1	A	1421	G
1	A	1428	C
1	A	1434	A
1	A	1435	G
1	A	1452	G
1	A	1459	G
1	A	1476	U
1	A	1482	G
1	A	1490	A
1	A	1493	C
1	A	1494	A
1	A	1495	A
1	A	1497	U
1	A	1509	A
1	A	1510	G
1	A	1515	A
1	A	1524	G
1	A	1529	G
1	A	1533	C
1	A	1534	U
1	A	1535	A
1	A	1536	C
1	A	1537	G
1	A	1566	A
1	A	1569	A
1	A	1578	U
1	A	1583	A
1	A	1584	U
1	A	1585	C
1	A	1607	C
1	A	1608	A
1	A	1647	U
1	A	1648	U
1	A	1649	G
1	A	1674	G

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Mol	Chain	Res	Type
1	A	1715	G
1	A	1729	U
1	A	1730	C
1	A	1738	G
1	A	1744	A
1	A	1764	C
1	A	1773	A
1	A	1776	G
1	A	1791	A
1	A	1800	C
1	A	1801	A
1	A	1808	A
1	A	1811	G
1	A	1816	C
1	A	1829	A
1	A	1870	C
1	A	1871	A
1	A	1872	A
1	A	1873	G
1	A	1906	G
1	A	1913	A
1	A	1914	C
1	A	1929	G
1	A	1930	G
1	A	1936	A
1	A	1955	U
1	A	1960	A
1	A	1967	C
1	A	1970	A
1	A	1971	U
1	A	1972	G
1	A	1991	U
1	A	1993	U
1	A	1997	C
1	A	2023	C
1	A	2031	A
1	A	2033	A
1	A	2043	C
1	A	2055	C
1	A	2056	G
1	A	2060	A
1	A	2061	G

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Mol	Chain	Res	Type
1	A	2062	A
1	A	2069	G7M
1	A	2093	G
1	A	2098	U
1	A	2099	U
1	A	2101	A
1	A	2105	U
1	A	2108	A
1	A	2111	U
1	A	2112	G
1	A	2113	U
1	A	2115	G
1	A	2116	G
1	A	2117	A
1	A	2118	U
1	A	2119	A
1	A	2123	G
1	A	2126	A
1	A	2127	G
1	A	2128	G
1	A	2131	U
1	A	2132	U
1	A	2133	G
1	A	2134	A
1	A	2136	G
1	A	2137	U
1	A	2145	C
1	A	2146	C
1	A	2147	A
1	A	2148	G
1	A	2149	U
1	A	2159	G
1	A	2160	C
1	A	2161	C
1	A	2162	G
1	A	2163	A
1	A	2164	C
1	A	2165	C
1	A	2167	U
1	A	2168	G
1	A	2169	A
1	A	2170	A

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Mol	Chain	Res	Type
1	A	2171	A
1	A	2172	U
1	A	2173	A
1	A	2177	C
1	A	2178	C
1	A	2179	C
1	A	2181	U
1	A	2185	U
1	A	2187	U
1	A	2188	U
1	A	2190	G
1	A	2192	U
1	A	2193	G
1	A	2194	U
1	A	2195	U
1	A	2198	A
1	A	2204	G
1	A	2211	A
1	A	2225	A
1	A	2238	G
1	A	2239	G
1	A	2268	A
1	A	2279	G
1	A	2283	C
1	A	2287	A
1	A	2288	A
1	A	2297	A
1	A	2305	U
1	A	2308	G
1	A	2322	A
1	A	2325	G
1	A	2327	A
1	A	2333	A
1	A	2334	U
1	A	2336	A
1	A	2345	G
1	A	2347	C
1	A	2350	C
1	A	2383	G
1	A	2385	C
1	A	2402	U
1	A	2406	A

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Mol	Chain	Res	Type
1	A	2425	A
1	A	2435	A
1	A	2441	U
1	A	2445	2MG
1	A	2448	A
1	A	2476	A
1	A	2478	A
1	A	2491	U
1	A	2502	G
1	A	2504	PSU
1	A	2505	G
1	A	2518	A
1	A	2525	G
1	A	2529	G
1	A	2535	G
1	A	2547	A
1	A	2566	A
1	A	2567	G
1	A	2602	A
1	A	2609	U
1	A	2613	U
1	A	2615	U
1	A	2629	U
1	A	2663	G
1	A	2689	U
1	A	2690	U
1	A	2714	G
1	A	2716	C
1	A	2726	A
1	A	2732	G
1	A	2733	A
1	A	2744	G
1	A	2748	A
1	A	2751	G
1	A	2765	A
1	A	2778	A
1	A	2798	U
1	A	2818	U
1	A	2820	A
1	A	2821	A
1	A	2832	U
1	A	2835	A

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Mol	Chain	Res	Type
1	A	2849	U
1	A	2861	U
1	A	2867	G
1	A	2873	A
1	A	2879	A
1	A	2880	C
1	A	2884	U
1	A	2885	G
1	A	2886	A
1	A	2891	U
1	A	2901	C
1	A	2903	U
2	B	9	G
2	B	35	C
2	B	42	C
2	B	56	G
2	B	89	U
2	B	90	C
2	B	109	A
32	f	3	C
32	f	4	G
32	f	6	G
32	f	7	G
32	f	8	4SU
32	f	9	G
32	f	10	G
32	f	13	C
32	f	14	A
32	f	16	C
32	f	17	C
32	f	19	G
32	f	20	U
32	f	21	A
32	f	22	G
32	f	31	G
32	f	47	U
32	f	48	C
32	f	49	G
32	f	56	C
32	f	58	A
32	f	59	A
32	f	60	U

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Mol	Chain	Res	Type
32	f	61	C
32	f	62	C
32	f	64	G
32	f	67	C
32	f	68	C
32	f	69	C
32	f	70	G
32	f	76	A
33	g	3	G
33	g	4	G
33	g	6	U
33	g	7	U
33	g	8	U
33	g	10	2MG
33	g	11	C
33	g	12	U
33	g	13	C
33	g	14	A
33	g	15	G
33	g	16	H2U
33	g	17	H2U
33	g	18	G
33	g	19	G
33	g	20	G
33	g	21	A
33	g	22	G
33	g	23	A
33	g	24	G
33	g	25	C
33	g	28	C
33	g	31	A
33	g	33	U
33	g	34	OMG
33	g	35	A
33	g	36	A
33	g	38	A
33	g	39	PSU
33	g	40	5MC
33	g	43	G
33	g	45	G
33	g	46	7MG
33	g	47	U

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Mol	Chain	Res	Type
33	g	48	C
33	g	49	5MC
33	g	53	G
33	g	54	5MU
33	g	55	PSU
33	g	58	1MA
33	g	61	C
33	g	63	C
33	g	65	G
33	g	66	A
33	g	71	G
33	g	72	C
33	g	73	A
33	g	74	C

All (16) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	100	U
1	A	549	G
1	A	784	G
1	A	790	U
1	A	894	U
1	A	1046	A
1	A	1113	U
1	A	1494	A
1	A	1535	A
1	A	2099	U
1	A	2118	U
1	A	2127	G
1	A	2130	U
1	A	2158	A
1	A	2193	G
1	A	2406	A

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

45 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	#$|Z| > 2$
33	2MG	g	10	33	18,26,27	1.53	3 (16%)	16,38,41	1.64	4 (25%)
1	PSU	A	1911	1	18,21,22	2.32	8 (44%)	22,30,33	1.84	4 (18%)
33	OMG	g	34	33	18,26,27	1.57	3 (16%)	19,38,41	1.52	4 (21%)
1	5MU	A	1939	1	19,22,23	2.67	7 (36%)	28,32,35	3.95	10 (35%)
1	OMC	A	2498	34,1	19,22,23	1.90	6 (31%)	26,31,34	0.96	1 (3%)
1	G7M	A	2069	1	20,26,27	2.24	5 (25%)	17,39,42	0.71	0
1	H2U	A	2449	1	18,21,22	4.07	5 (27%)	21,30,33	5.20	7 (33%)
1	PSU	A	1917	1	18,21,22	2.32	8 (44%)	22,30,33	1.82	4 (18%)
1	2MG	A	2445	1	18,26,27	3.39	7 (38%)	16,38,41	1.30	3 (18%)
33	PSU	g	39	33	18,21,22	1.84	5 (27%)	22,30,33	2.49	7 (31%)
32	5MU	f	54	32	19,22,23	1.65	3 (15%)	28,32,35	2.93	11 (39%)
1	3TD	A	1915	1	18,22,23	6.42	12 (66%)	22,32,35	1.93	4 (18%)
1	2MA	A	2503	34,1	19,25,26	1.20	1 (5%)	21,37,40	1.85	3 (14%)
32	5MC	f	32	32	18,22,23	0.97	2 (11%)	26,32,35	1.29	3 (11%)
32	4SU	f	8	32	18,21,22	3.20	5 (27%)	26,30,33	3.64	10 (38%)
1	PSU	A	2504	1	18,21,22	2.39	8 (44%)	22,30,33	1.89	4 (18%)
1	OMG	A	2251	1,32	18,26,27	2.46	5 (27%)	19,38,41	1.15	3 (15%)
33	H2U	g	17	33	18,21,22	1.01	2 (11%)	21,30,33	3.29	5 (23%)
33	31M	g	76	1	38,44,45	4.34	18 (47%)	38,61,64	2.23	13 (34%)
1	PSU	A	955	1	18,21,22	2.44	8 (44%)	22,30,33	1.85	4 (18%)
1	5MC	A	1962	1	18,22,23	2.01	6 (33%)	26,32,35	1.16	2 (7%)
33	1MA	g	58	33	16,25,26	1.65	5 (31%)	18,37,40	2.30	5 (27%)
32	PSU	f	55	32	18,21,22	1.31	2 (11%)	22,30,33	1.91	4 (18%)
13	4D4	M	81	13	9,11,12	2.03	2 (22%)	8,13,15	2.10	4 (50%)
1	PSU	A	746	34,1	18,21,22	2.37	9 (50%)	22,30,33	1.80	4 (18%)
33	OMC	g	32	33	19,22,23	1.39	3 (15%)	26,31,34	2.13	2 (7%)
33	5MC	g	40	33	18,22,23	1.27	1 (5%)	26,32,35	2.12	10 (38%)
33	5MC	g	49	33	18,22,23	1.07	2 (11%)	26,32,35	1.72	4 (15%)
33	YYG	g	37	33	31,42,43	2.16	7 (22%)	33,62,65	2.03	10 (30%)
1	PSU	A	2457	1	18,21,22	2.46	8 (44%)	22,30,33	1.90	4 (18%)
33	5MU	g	54	33	19,22,23	1.54	3 (15%)	28,32,35	2.42	7 (25%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
1	PSU	A	2580	1	18,21,22	2.47	10 (55%)	22,30,33	1.90	5 (22%)
1	PSU	A	2605	1	18,21,22	2.39	8 (44%)	22,30,33	1.87	4 (18%)
33	7MG	g	46	33	22,26,27	2.13	4 (18%)	29,39,42	3.15	10 (34%)
1	2MG	A	1835	1	18,26,27	3.37	7 (38%)	16,38,41	1.35	3 (18%)
1	PSU	A	2604	1	18,21,22	2.40	8 (44%)	22,30,33	1.87	4 (18%)
33	M2G	g	26	33	20,27,28	1.57	3 (15%)	22,40,43	1.06	2 (9%)
1	1MG	A	745	1	18,26,27	2.80	4 (22%)	19,39,42	1.28	3 (15%)
1	OMU	A	2552	1	19,22,23	2.68	7 (36%)	26,31,34	1.86	6 (23%)
1	6MZ	A	1618	1	18,25,26	1.98	1 (5%)	16,36,39	2.19	4 (25%)
1	5MU	A	747	1	19,22,23	2.58	7 (36%)	28,32,35	3.81	11 (39%)
33	H2U	g	16	33	18,21,22	0.99	2 (11%)	21,30,33	1.90	2 (9%)
4	MEQ	D	150[A]	4	8,9,10	0.95	0	5,10,12	0.66	0
33	PSU	g	55	33	18,21,22	2.22	6 (33%)	22,30,33	2.47	8 (36%)
1	6MZ	A	2030	1	18,25,26	1.98	1 (5%)	16,36,39	2.59	4 (25%)

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
33	2MG	g	10	33	-	0/5/27/28	0/3/3/3
1	PSU	A	1911	1	-	0/7/25/26	0/2/2/2
33	OMG	g	34	33	-	3/5/27/28	0/3/3/3
1	5MU	A	1939	1	-	0/7/25/26	0/2/2/2
1	OMC	A	2498	34,1	-	0/9/27/28	0/2/2/2
1	G7M	A	2069	1	-	1/3/25/26	0/3/3/3
1	H2U	A	2449	1	-	0/7/38/39	0/2/2/2
1	PSU	A	1917	1	-	0/7/25/26	0/2/2/2
1	2MG	A	2445	1	-	2/5/27/28	0/3/3/3
33	PSU	g	39	33	-	3/7/25/26	0/2/2/2
32	5MU	f	54	32	-	1/7/25/26	0/2/2/2
1	3TD	A	1915	1	-	0/7/25/26	0/2/2/2
1	2MA	A	2503	34,1	-	1/3/25/26	0/3/3/3
32	5MC	f	32	32	-	0/7/25/26	0/2/2/2
32	4SU	f	8	32	-	0/7/25/26	0/2/2/2
1	PSU	A	2504	1	-	2/7/25/26	0/2/2/2
1	OMG	A	2251	1,32	-	1/5/27/28	0/3/3/3
33	H2U	g	17	33	-	5/7/38/39	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
33	31M	g	76	1	-	6/27/49/50	0/4/4/4
1	PSU	A	955	1	-	0/7/25/26	0/2/2/2
1	5MC	A	1962	1	-	2/7/25/26	0/2/2/2
33	1MA	g	58	33	-	2/3/25/26	0/3/3/3
32	PSU	f	55	32	-	0/7/25/26	0/2/2/2
13	4D4	M	81	13	-	3/11/12/14	-
1	PSU	A	746	34,1	-	2/7/25/26	0/2/2/2
33	OMC	g	32	33	-	0/9/27/28	0/2/2/2
33	5MC	g	40	33	-	0/7/25/26	0/2/2/2
33	5MC	g	49	33	-	3/7/25/26	0/2/2/2
33	YYG	g	37	33	-	16/20/42/43	0/3/4/4
1	PSU	A	2457	1	-	0/7/25/26	0/2/2/2
33	5MU	g	54	33	-	2/7/25/26	0/2/2/2
1	PSU	A	2580	1	-	0/7/25/26	0/2/2/2
1	PSU	A	2605	1	-	0/7/25/26	0/2/2/2
33	7MG	g	46	33	-	3/7/37/38	0/3/3/3
1	2MG	A	1835	1	-	0/5/27/28	0/3/3/3
1	PSU	A	2604	1	-	0/7/25/26	0/2/2/2
33	M2G	g	26	33	-	0/7/29/30	0/3/3/3
1	1MG	A	745	1	-	0/3/25/26	0/3/3/3
1	OMU	A	2552	1	-	0/9/27/28	0/2/2/2
1	6MZ	A	1618	1	-	0/5/27/28	0/3/3/3
1	5MU	A	747	1	-	0/7/25/26	0/2/2/2
33	H2U	g	16	33	-	3/7/38/39	0/2/2/2
4	MEQ	D	150[A]	4	-	4/8/9/11	-
33	PSU	g	55	33	-	0/7/25/26	0/2/2/2
1	6MZ	A	2030	1	-	2/5/27/28	0/3/3/3

All (237) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1915	3TD	C2'-C1'	-18.07	1.30	1.53
33	g	76	31M	C2'-C1'	-16.92	1.28	1.53
1	A	1915	3TD	O4'-C1'	14.21	1.63	1.43
33	g	76	31M	O4'-C1'	12.06	1.57	1.41
1	A	2449	H2U	O4-C4	10.10	1.43	1.23
33	g	76	31M	O4'-C4'	-9.47	1.23	1.45
1	A	1835	2MG	O6-C6	9.24	1.42	1.23
1	A	2445	2MG	O6-C6	9.16	1.41	1.23
1	A	745	1MG	O6-C6	9.03	1.40	1.22

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1915	3TD	O4-C4	8.29	1.40	1.23
32	f	8	4SU	C4-S4	-8.15	1.53	1.68
1	A	2449	H2U	C2-N1	8.08	1.47	1.35
1	A	2449	H2U	O2-C2	8.07	1.37	1.23
1	A	2552	OMU	O4-C4	7.89	1.39	1.24
1	A	1618	6MZ	C6-N6	7.88	1.47	1.35
1	A	2030	6MZ	C6-N6	7.75	1.47	1.35
1	A	1915	3TD	O4'-C4'	-7.63	1.28	1.45
32	f	8	4SU	C4-N3	-6.86	1.30	1.37
33	g	37	YYG	O23-C21	6.69	1.46	1.34
1	A	1939	5MU	C2-N1	-6.47	1.28	1.38
33	g	46	7MG	C5-N7	-6.47	1.28	1.35
1	A	2251	OMG	O6-C6	6.41	1.36	1.23
1	A	2069	G7M	O6-C6	6.32	1.36	1.23
1	A	2449	H2U	C2-N3	6.14	1.48	1.38
1	A	747	5MU	C2-N1	-6.10	1.28	1.38
1	A	1835	2MG	C2-N2	5.69	1.46	1.33
1	A	2445	2MG	C2-N2	5.64	1.45	1.33
32	f	8	4SU	C5-C4	-5.44	1.35	1.42
1	A	1835	2MG	CM2-N2	5.35	1.55	1.45
33	g	37	YYG	O18-C16	5.25	1.46	1.33
1	A	2445	2MG	CM2-N2	5.22	1.54	1.45
33	g	76	31M	O-C	-5.10	1.13	1.23
1	A	745	1MG	C2-N2	5.06	1.43	1.34
1	A	2251	OMG	C6-N1	-5.05	1.30	1.37
33	g	76	31M	O5'-C5'	-4.93	1.32	1.44
1	A	2580	PSU	C1'-C5	-4.84	1.39	1.50
1	A	2604	PSU	C1'-C5	-4.81	1.39	1.50
1	A	2457	PSU	C1'-C5	-4.80	1.39	1.50
1	A	2445	2MG	C6-N1	-4.80	1.30	1.37
33	g	34	OMG	C6-N1	-4.78	1.30	1.37
1	A	2069	G7M	C2-N2	4.76	1.45	1.34
13	M	81	4D4	CZ-NE	4.74	1.42	1.33
1	A	1939	5MU	C2-N3	-4.73	1.29	1.38
1	A	2449	H2U	C4-N3	4.73	1.45	1.37
33	g	55	PSU	C4-N3	-4.73	1.30	1.38
1	A	1917	PSU	C1'-C5	-4.71	1.39	1.50
1	A	955	PSU	C1'-C5	-4.70	1.39	1.50
1	A	2605	PSU	C1'-C5	-4.69	1.39	1.50
1	A	746	PSU	C1'-C5	-4.68	1.39	1.50
1	A	2504	PSU	C1'-C5	-4.67	1.39	1.50
1	A	1911	PSU	C1'-C5	-4.66	1.39	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
32	f	8	4SU	C2-N3	-4.66	1.29	1.38
33	g	26	M2G	C2-N3	4.65	1.36	1.30
33	g	37	YYG	C4-N3	-4.65	1.31	1.40
1	A	2498	OMC	C4-N4	4.65	1.44	1.33
1	A	1939	5MU	C6-N1	-4.62	1.30	1.38
1	A	1835	2MG	C6-N1	-4.60	1.31	1.37
1	A	747	5MU	C2-N3	-4.58	1.29	1.38
1	A	2552	OMU	C2-N1	-4.55	1.31	1.38
1	A	2251	OMG	C2-N2	4.53	1.45	1.34
1	A	747	5MU	C6-N1	-4.46	1.30	1.38
33	g	76	31M	CTM-N	4.38	1.43	1.34
33	g	46	7MG	C4-N9	-4.33	1.32	1.37
33	g	55	PSU	C2-N3	-4.23	1.30	1.37
1	A	1962	5MC	C4-N4	4.17	1.45	1.34
1	A	2069	G7M	C6-N1	-4.16	1.31	1.37
32	f	54	5MU	C6-N1	-4.15	1.31	1.38
33	g	39	PSU	C2-N1	-4.13	1.31	1.36
33	g	46	7MG	C6-N1	-4.08	1.31	1.38
33	g	76	31M	C3'-N3'	-4.08	1.39	1.45
33	g	76	31M	C8-N7	-4.06	1.27	1.34
1	A	2457	PSU	C4-N3	-4.03	1.31	1.38
1	A	2580	PSU	C4-N3	-4.03	1.31	1.38
1	A	1962	5MC	C2-N1	-4.02	1.31	1.40
1	A	955	PSU	C2-N1	-4.01	1.31	1.36
1	A	2457	PSU	C2-N1	-3.96	1.31	1.36
1	A	955	PSU	C4-N3	-3.96	1.31	1.38
1	A	2605	PSU	C4-N3	-3.93	1.31	1.38
1	A	2504	PSU	C4-N3	-3.89	1.31	1.38
1	A	2580	PSU	C2-N1	-3.89	1.31	1.36
1	A	2445	2MG	C5-C6	-3.89	1.39	1.47
33	g	40	5MC	C6-N1	-3.88	1.31	1.38
1	A	2604	PSU	C4-N3	-3.86	1.31	1.38
1	A	2552	OMU	C4-N3	-3.83	1.31	1.38
1	A	1962	5MC	C6-N1	-3.83	1.31	1.38
1	A	2504	PSU	C2-N1	-3.82	1.31	1.36
1	A	1835	2MG	C5-C6	-3.81	1.39	1.47
33	g	10	2MG	C6-N1	-3.80	1.32	1.37
1	A	2604	PSU	C2-N1	-3.80	1.31	1.36
1	A	2605	PSU	C2-N1	-3.79	1.31	1.36
1	A	746	PSU	C4-N3	-3.77	1.31	1.38
1	A	2457	PSU	C2-N3	-3.75	1.31	1.37
1	A	1911	PSU	C4-N3	-3.75	1.31	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	745	1MG	C6-N1	-3.75	1.32	1.39
1	A	2503	2MA	C6-N6	3.74	1.47	1.34
1	A	2605	PSU	C2-N3	-3.74	1.31	1.37
1	A	2552	OMU	C2-N3	-3.73	1.31	1.38
1	A	2498	OMC	C2-N1	-3.72	1.31	1.40
1	A	1917	PSU	C4-N3	-3.72	1.31	1.38
1	A	1915	3TD	O2'-C2'	3.71	1.51	1.43
1	A	746	PSU	C2-N1	-3.70	1.31	1.36
1	A	955	PSU	C2-N3	-3.69	1.31	1.37
33	g	76	31M	C4-N3	-3.69	1.30	1.35
1	A	2580	PSU	C2-N3	-3.66	1.31	1.37
1	A	1915	3TD	C4-N3	-3.66	1.32	1.40
1	A	2604	PSU	C2-N3	-3.65	1.31	1.37
1	A	1911	PSU	C2-N1	-3.64	1.31	1.36
1	A	2504	PSU	C2-N3	-3.63	1.31	1.37
1	A	1917	PSU	C2-N1	-3.63	1.31	1.36
1	A	1915	3TD	C2-N1	-3.60	1.32	1.37
1	A	1939	5MU	C4-N3	-3.59	1.32	1.38
1	A	746	PSU	C2-N3	-3.53	1.31	1.37
1	A	747	5MU	C6-C5	3.52	1.40	1.34
32	f	54	5MU	C4-N3	-3.52	1.32	1.38
1	A	1939	5MU	C6-C5	3.51	1.40	1.34
1	A	1917	PSU	C2-N3	-3.48	1.31	1.37
1	A	747	5MU	C4-N3	-3.47	1.32	1.38
1	A	2445	2MG	C2-N1	-3.46	1.31	1.36
33	g	58	1MA	C2-N3	3.45	1.33	1.29
33	g	55	PSU	C2-N1	-3.43	1.32	1.36
1	A	1911	PSU	C2-N3	-3.42	1.31	1.37
33	g	39	PSU	C4-N3	-3.40	1.32	1.38
1	A	1915	3TD	C6-C5	3.34	1.39	1.35
32	f	54	5MU	C2-N3	-3.31	1.32	1.38
33	g	54	5MU	C4-N3	-3.28	1.32	1.38
1	A	1835	2MG	C2-N1	-3.27	1.31	1.36
33	g	76	31M	C-N3'	3.25	1.41	1.34
33	g	10	2MG	C2'-C1'	-3.10	1.49	1.53
33	g	55	PSU	C6-N1	-3.08	1.31	1.36
33	g	37	YYG	C2-N1	-3.08	1.31	1.37
33	g	54	5MU	C6-N1	-3.07	1.32	1.38
33	g	54	5MU	C2-N3	-3.04	1.32	1.38
13	M	81	4D4	CZ-NH2	3.03	1.44	1.32
1	A	1962	5MC	O2-C2	-3.02	1.18	1.23
1	A	1939	5MU	O4-C4	-3.00	1.17	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1939	5MU	O2-C2	-3.00	1.17	1.23
1	A	2498	OMC	O2-C2	-2.99	1.18	1.23
1	A	2605	PSU	O4-C4	-2.99	1.17	1.23
33	g	32	OMC	C6-N1	-2.98	1.30	1.38
1	A	2457	PSU	O4-C4	-2.98	1.17	1.23
33	g	37	YYG	C12-N1	-2.98	1.31	1.36
33	g	46	7MG	C8-N9	-2.97	1.44	1.46
1	A	955	PSU	O4-C4	-2.97	1.17	1.23
1	A	747	5MU	O4-C4	-2.97	1.17	1.23
1	A	1911	PSU	C6-C5	2.95	1.38	1.35
33	g	55	PSU	C2'-C1'	-2.95	1.49	1.53
1	A	2580	PSU	O4-C4	-2.93	1.18	1.23
1	A	1917	PSU	C6-C5	2.90	1.38	1.35
1	A	2504	PSU	C6-C5	2.90	1.38	1.35
1	A	747	5MU	O2-C2	-2.89	1.17	1.23
1	A	2604	PSU	O4-C4	-2.89	1.18	1.23
1	A	746	PSU	C6-C5	2.89	1.38	1.35
1	A	2504	PSU	O4-C4	-2.88	1.18	1.23
32	f	55	PSU	C6-C5	2.87	1.38	1.35
1	A	746	PSU	O4-C4	-2.85	1.18	1.23
33	g	76	31M	C2'-C3'	-2.84	1.48	1.53
1	A	2604	PSU	C6-C5	2.81	1.38	1.35
1	A	2069	G7M	C2-N1	-2.78	1.30	1.37
33	g	26	M2G	C6-N1	-2.78	1.33	1.37
1	A	955	PSU	C6-C5	2.77	1.38	1.35
1	A	1915	3TD	O3'-C3'	-2.75	1.36	1.43
1	A	1911	PSU	O4-C4	-2.75	1.18	1.23
1	A	2580	PSU	C6-N1	-2.75	1.31	1.36
1	A	1915	3TD	C2-N3	-2.75	1.32	1.38
1	A	2580	PSU	C6-C5	2.74	1.38	1.35
1	A	2457	PSU	C6-C5	2.74	1.38	1.35
33	g	76	31M	C5-N7	-2.72	1.29	1.39
1	A	2552	OMU	O2-C2	-2.72	1.18	1.23
1	A	2605	PSU	C6-C5	2.72	1.38	1.35
1	A	955	PSU	C6-N1	-2.72	1.31	1.36
33	g	10	2MG	C2-N1	-2.71	1.32	1.36
32	f	32	5MC	C6-N1	-2.70	1.33	1.38
1	A	745	1MG	C5-C6	-2.69	1.39	1.47
33	g	37	YYG	C2'-C1'	-2.67	1.49	1.53
33	g	49	5MC	C6-N1	-2.66	1.33	1.38
1	A	2457	PSU	C6-N1	-2.65	1.31	1.36
1	A	1917	PSU	O4-C4	-2.64	1.18	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
33	g	17	H2U	C4-N3	-2.63	1.33	1.37
1	A	2605	PSU	C6-N1	-2.61	1.31	1.36
1	A	2604	PSU	C6-N1	-2.60	1.31	1.36
1	A	2457	PSU	O2-C2	-2.59	1.18	1.23
1	A	2504	PSU	C6-N1	-2.59	1.31	1.36
33	g	26	M2G	C2-N2	2.58	1.40	1.35
32	f	8	4SU	C6-N1	-2.58	1.31	1.38
33	g	39	PSU	C2-N3	-2.58	1.33	1.37
33	g	32	OMC	C5-C4	-2.58	1.37	1.42
33	g	37	YYG	C4-N9	-2.57	1.31	1.37
33	g	58	1MA	C2-N1	-2.57	1.31	1.35
1	A	2580	PSU	O2-C2	-2.56	1.18	1.23
1	A	2552	OMU	C6-N1	-2.55	1.31	1.38
1	A	955	PSU	O2-C2	-2.55	1.18	1.23
1	A	2251	OMG	C5-C6	-2.55	1.42	1.47
1	A	1917	PSU	C6-N1	-2.54	1.32	1.36
33	g	76	31M	C5-C4	-2.54	1.34	1.40
33	g	16	H2U	C2-N3	-2.52	1.33	1.38
1	A	2498	OMC	C6-N1	-2.51	1.31	1.38
33	g	39	PSU	C6-N1	-2.49	1.32	1.36
1	A	1911	PSU	C6-N1	-2.49	1.32	1.36
33	g	39	PSU	C2'-C1'	-2.47	1.50	1.53
32	f	55	PSU	C4-N3	-2.47	1.34	1.38
33	g	16	H2U	C4-N3	-2.47	1.33	1.37
1	A	2605	PSU	O2-C2	-2.47	1.18	1.23
1	A	2504	PSU	O2-C2	-2.45	1.18	1.23
1	A	1962	5MC	C2-N3	-2.44	1.31	1.36
1	A	2604	PSU	O2-C2	-2.44	1.18	1.23
1	A	2498	OMC	C2-N3	-2.42	1.31	1.36
1	A	746	PSU	C6-N1	-2.41	1.32	1.36
1	A	2552	OMU	C5-C4	-2.41	1.38	1.43
33	g	58	1MA	C6-N6	2.40	1.33	1.27
33	g	76	31M	OTM-CTM	-2.40	1.18	1.23
1	A	1917	PSU	O2-C2	-2.38	1.18	1.23
32	f	32	5MC	C6-C5	2.35	1.38	1.34
1	A	1911	PSU	O2-C2	-2.34	1.18	1.23
33	g	17	H2U	C2-N3	-2.34	1.33	1.38
1	A	746	PSU	O2-C2	-2.34	1.18	1.23
1	A	2580	PSU	O4'-C1'	-2.30	1.40	1.43
33	g	76	31M	C2-N3	-2.30	1.28	1.32
33	g	34	OMG	C2-N1	-2.28	1.32	1.37
33	g	58	1MA	C5-C4	2.27	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1915	3TD	C6-N1	-2.25	1.32	1.36
1	A	2251	OMG	C5-C4	-2.25	1.37	1.43
33	g	55	PSU	C1'-C5	-2.23	1.45	1.50
1	A	1962	5MC	C6-C5	2.22	1.38	1.34
1	A	1915	3TD	O2-C2	-2.22	1.19	1.23
33	g	32	OMC	C2-N3	-2.21	1.31	1.36
1	A	746	PSU	O4'-C1'	-2.18	1.40	1.43
1	A	2445	2MG	C4-N3	-2.12	1.32	1.37
33	g	76	31M	CE1-CD1	-2.11	1.34	1.38
33	g	49	5MC	C6-C5	2.11	1.38	1.34
33	g	76	31M	O2'-C2'	2.09	1.47	1.43
1	A	2069	G7M	C5-C6	-2.09	1.40	1.45
33	g	76	31M	C2-N1	-2.08	1.30	1.33
33	g	58	1MA	C4-N3	-2.07	1.31	1.37
33	g	34	OMG	C4-N3	-2.05	1.32	1.37
1	A	1835	2MG	C4-N3	-2.03	1.32	1.37
1	A	2580	PSU	C4-C5	-2.01	1.38	1.44
1	A	2498	OMC	C5-C4	-2.00	1.38	1.42

All (226) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2449	H2U	C4-N3-C2	-15.23	113.16	125.79
33	g	17	H2U	C4-N3-C2	-13.77	114.37	125.79
1	A	2449	H2U	O2-C2-N1	-11.49	108.68	123.11
33	g	46	7MG	N9-C4-N3	10.82	141.66	125.47
32	f	8	4SU	C4-N3-C2	-10.44	117.20	127.34
32	f	8	4SU	C5-C4-N3	10.31	124.25	114.69
33	g	32	OMC	C2'-C1'-N1	-9.28	96.21	114.22
1	A	1939	5MU	C4-N3-C2	-9.13	115.53	127.35
32	f	54	5MU	O4-C4-C5	-8.97	114.50	124.90
1	A	747	5MU	C4-N3-C2	-8.56	116.27	127.35
1	A	747	5MU	C5M-C5-C4	8.48	128.10	118.77
1	A	1939	5MU	N3-C2-N1	8.44	126.09	114.89
1	A	1939	5MU	C5-C6-N1	-8.33	114.77	123.34
1	A	747	5MU	N3-C2-N1	8.22	125.80	114.89
1	A	1939	5MU	C5M-C5-C4	8.09	127.67	118.77
1	A	2449	H2U	O4-C4-N3	-7.92	107.72	120.28
33	g	55	PSU	N1-C2-N3	7.43	123.55	115.13
1	A	747	5MU	C5-C6-N1	-7.32	115.81	123.34
1	A	2449	H2U	O2-C2-N3	-7.19	108.11	121.50
33	g	16	H2U	C4-N3-C2	-6.92	120.05	125.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1939	5MU	C5-C4-N3	6.87	121.18	115.31
1	A	1915	3TD	N1-C2-N3	6.71	121.43	116.14
1	A	2503	2MA	C2-N3-C4	6.61	120.89	115.52
33	g	46	7MG	N9-C8-N7	-6.57	93.97	103.38
1	A	747	5MU	C5M-C5-C6	-6.57	114.07	122.85
1	A	2449	H2U	O4-C4-C5	-6.54	108.19	122.17
1	A	1939	5MU	C5M-C5-C6	-6.51	114.16	122.85
1	A	2030	6MZ	C9-N6-C6	-6.46	117.30	122.87
1	A	747	5MU	C5-C4-N3	6.46	120.83	115.31
33	g	58	1MA	O4'-C1'-C2'	-6.40	97.57	106.93
33	g	46	7MG	C5-C4-N3	-6.33	116.07	128.13
32	f	8	4SU	C5-C4-S4	-6.21	116.46	124.47
32	f	54	5MU	C4-N3-C2	-6.08	119.48	127.35
1	A	2449	H2U	N3-C2-N1	-6.07	110.24	116.65
33	g	54	5MU	C5-C4-N3	5.97	120.40	115.31
33	g	54	5MU	C4-N3-C2	-5.93	119.68	127.35
32	f	55	PSU	N1-C2-N3	5.78	121.68	115.13
1	A	2580	PSU	N1-C2-N3	5.74	121.64	115.13
1	A	2504	PSU	N1-C2-N3	5.72	121.61	115.13
1	A	2457	PSU	N1-C2-N3	5.71	121.60	115.13
32	f	54	5MU	N3-C2-N1	5.67	122.42	114.89
1	A	2604	PSU	N1-C2-N3	5.62	121.50	115.13
1	A	955	PSU	N1-C2-N3	5.57	121.44	115.13
1	A	1917	PSU	N1-C2-N3	5.56	121.44	115.13
1	A	2605	PSU	N1-C2-N3	5.56	121.42	115.13
1	A	2552	OMU	N3-C2-N1	5.51	122.21	114.89
1	A	1911	PSU	N1-C2-N3	5.51	121.37	115.13
33	g	76	31M	N3-C2-N1	-5.46	120.15	128.68
33	g	39	PSU	N1-C2-N3	5.44	121.29	115.13
32	f	8	4SU	N3-C2-N1	5.43	122.10	114.89
1	A	746	PSU	N1-C2-N3	5.43	121.28	115.13
32	f	54	5MU	C5-C4-N3	5.40	119.92	115.31
1	A	2030	6MZ	C2-N1-C6	5.24	121.08	116.59
33	g	76	31M	C4-C5-N7	-5.15	104.03	109.40
33	g	54	5MU	N3-C2-N1	5.05	121.60	114.89
33	g	40	5MC	O2-C2-N3	-5.02	114.16	122.33
1	A	2030	6MZ	N3-C2-N1	-4.92	120.99	128.68
33	g	54	5MU	O4-C4-C5	-4.90	119.23	124.90
33	g	39	PSU	O2-C2-N1	-4.88	117.41	122.79
1	A	1618	6MZ	C2-N1-C6	4.81	120.71	116.59
33	g	55	PSU	C4-N3-C2	-4.76	119.48	126.34
1	A	2552	OMU	C4-N3-C2	-4.76	120.31	126.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1618	6MZ	C9-N6-C6	-4.75	118.78	122.87
1	A	1618	6MZ	N3-C2-N1	-4.71	121.31	128.68
33	g	49	5MC	C5-C6-N1	-4.69	118.51	123.34
33	g	76	31M	C5-C6-N6	4.67	127.45	120.35
33	g	39	PSU	C4-N3-C2	-4.66	119.63	126.34
33	g	58	1MA	N1-C2-N3	4.53	131.30	126.02
33	g	39	PSU	C6-C5-C4	-4.53	115.03	118.20
33	g	76	31M	CB-CA-C	-4.38	98.88	110.25
33	g	46	7MG	C2-N3-C4	4.32	120.00	112.30
32	f	32	5MC	C5-C6-N1	-4.29	118.92	123.34
33	g	37	YYG	O4'-C1'-C2'	-4.28	100.67	106.93
1	A	1939	5MU	O2-C2-N1	-4.24	117.15	122.79
1	A	1962	5MC	C5-C6-N1	-4.23	118.99	123.34
1	A	2605	PSU	C4-N3-C2	-4.12	120.40	126.34
1	A	2457	PSU	C4-N3-C2	-4.09	120.44	126.34
1	A	746	PSU	C4-N3-C2	-4.06	120.50	126.34
1	A	2604	PSU	C4-N3-C2	-4.05	120.50	126.34
1	A	2504	PSU	C4-N3-C2	-4.04	120.51	126.34
32	f	55	PSU	C4-N3-C2	-4.02	120.54	126.34
1	A	1939	5MU	O4-C4-N3	-4.00	112.44	120.12
1	A	955	PSU	C4-N3-C2	-3.92	120.68	126.34
1	A	1911	PSU	C4-N3-C2	-3.92	120.69	126.34
1	A	1917	PSU	C4-N3-C2	-3.90	120.72	126.34
1	A	2580	PSU	C4-N3-C2	-3.89	120.73	126.34
1	A	747	5MU	O4-C4-N3	-3.87	112.69	120.12
33	g	49	5MC	O2-C2-N3	-3.72	116.28	122.33
33	g	49	5MC	C2'-C1'-N1	-3.68	102.80	113.22
33	g	76	31M	CA-C-N3'	3.67	124.74	116.70
33	g	54	5MU	C5-C6-N1	-3.65	119.58	123.34
1	A	1915	3TD	C4-N3-C2	-3.63	120.67	124.61
13	M	81	4D4	NE-CZ-NH2	-3.60	114.37	120.70
32	f	54	5MU	O2-C2-N1	-3.60	118.01	122.79
33	g	58	1MA	C2'-C3'-C4'	-3.52	95.80	102.64
33	g	37	YYG	C3'-C2'-C1'	3.52	106.28	100.98
33	g	37	YYG	C24-O23-C21	3.52	119.82	115.66
33	g	46	7MG	C5-C6-N1	3.48	117.12	110.99
1	A	747	5MU	O2-C2-N1	-3.46	118.19	122.79
33	g	76	31M	O-C-N3'	-3.42	116.60	122.93
32	f	55	PSU	O2-C2-N1	-3.42	119.03	122.79
33	g	37	YYG	C2'-C3'-C4'	-3.40	96.04	102.64
33	g	55	PSU	O2-C2-N1	-3.39	119.06	122.79
1	A	745	1MG	C5-C6-N1	3.38	118.98	113.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
33	g	37	YYG	O18-C16-C15	3.35	120.09	111.52
33	g	17	H2U	C5-C4-N3	-3.31	112.93	116.65
33	g	55	PSU	C3'-C2'-C1'	3.30	105.48	101.64
1	A	2504	PSU	O2-C2-N1	-3.29	119.17	122.79
33	g	39	PSU	O4-C4-C5	-3.25	115.53	124.05
1	A	955	PSU	O2-C2-N1	-3.24	119.23	122.79
33	g	40	5MC	O4'-C1'-N1	3.23	115.75	108.36
33	g	10	2MG	O2'-C2'-C3'	-3.18	101.54	111.82
1	A	1835	2MG	C5-C6-N1	3.17	119.56	113.95
1	A	2580	PSU	O2-C2-N1	-3.17	119.30	122.79
33	g	37	YYG	C19-O18-C16	3.17	123.11	115.94
13	M	81	4D4	NH1-CZ-NE	3.16	126.48	119.19
33	g	46	7MG	C5-C4-N9	-3.15	102.26	106.35
1	A	2457	PSU	O2-C2-N1	-3.14	119.34	122.79
1	A	2503	2MA	C5-C6-N1	-3.13	118.95	121.01
32	f	8	4SU	O2'-C2'-C1'	-3.09	99.69	110.02
33	g	40	5MC	C5-C6-N1	-3.07	120.18	123.34
33	g	37	YYG	C5-C6-N1	3.06	118.52	113.96
1	A	1911	PSU	O2-C2-N1	-3.05	119.44	122.79
1	A	2552	OMU	O2-C2-N1	-3.04	118.74	122.79
1	A	746	PSU	O2-C2-N1	-3.03	119.45	122.79
1	A	1917	PSU	O2-C2-N1	-3.01	119.48	122.79
33	g	76	31M	O4'-C1'-C2'	-3.00	102.55	106.93
1	A	2445	2MG	C5-C6-N1	3.00	119.24	113.95
1	A	747	5MU	C1'-N1-C6	-2.98	116.17	121.12
1	A	747	5MU	O2-C2-N3	-2.95	116.01	121.50
33	g	55	PSU	C5-C6-N1	-2.94	117.70	122.11
1	A	1939	5MU	C6-N1-C2	2.93	124.27	121.30
32	f	8	4SU	C3'-C2'-C1'	2.92	106.98	101.43
1	A	2604	PSU	O2-C2-N1	-2.92	119.58	122.79
33	g	46	7MG	C2-N1-C6	-2.89	119.82	125.10
1	A	2498	OMC	O2-C2-N3	-2.89	117.62	122.33
33	g	46	7MG	O6-C6-C5	-2.89	120.45	127.54
33	g	10	2MG	C8-N7-C5	2.86	108.44	102.99
32	f	54	5MU	O4-C4-N3	2.85	125.57	120.12
1	A	2251	OMG	C8-N7-C5	2.84	108.40	102.99
1	A	1915	3TD	C3'-C2'-C1'	2.84	104.94	101.64
33	g	40	5MC	C1'-N1-C2	2.83	124.74	118.42
33	g	40	5MC	C1'-N1-C6	-2.82	116.42	121.12
32	f	54	5MU	O3'-C3'-C2'	2.82	120.96	111.82
1	A	2605	PSU	O2-C2-N1	-2.81	119.69	122.79
33	g	55	PSU	O2'-C2'-C1'	-2.75	104.68	111.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
33	g	32	OMC	C5-C6-N1	-2.74	117.22	121.81
33	g	49	5MC	C5'-C4'-C3'	-2.74	104.93	115.18
1	A	1835	2MG	C8-N7-C5	2.73	108.19	102.99
33	g	46	7MG	O4'-C1'-N9	2.73	113.01	109.30
1	A	745	1MG	C8-N7-C5	2.73	108.19	102.99
32	f	8	4SU	C6-C5-C4	-2.71	117.60	119.95
1	A	2445	2MG	C8-N7-C5	2.71	108.14	102.99
1	A	2552	OMU	C5-C6-N1	-2.67	117.33	121.81
1	A	2030	6MZ	C4-C5-N7	-2.66	106.62	109.40
33	g	10	2MG	O3'-C3'-C4'	2.65	118.72	111.05
33	g	76	31M	CEM-SDM-CGM	2.64	109.48	100.40
33	g	17	H2U	C2'-C3'-C4'	2.64	107.77	102.64
32	f	8	4SU	O2-C2-N3	-2.63	116.60	121.50
33	g	10	2MG	C5-C6-N1	2.63	118.59	113.95
1	A	2552	OMU	C5-C4-N3	2.62	118.76	114.84
33	g	34	OMG	C5-C6-N1	2.62	118.57	113.95
33	g	39	PSU	C5'-C4'-C3'	-2.62	105.38	115.18
32	f	32	5MC	C5-C4-N3	-2.61	118.86	121.67
33	g	34	OMG	C3'-C2'-C1'	2.60	107.77	102.89
1	A	1939	5MU	O2-C2-N3	-2.55	116.75	121.50
33	g	76	31M	CB-CA-N	-2.53	105.46	110.79
1	A	2552	OMU	O4-C4-C5	-2.51	120.75	125.16
1	A	2457	PSU	C5-C6-N1	-2.51	118.35	122.11
33	g	16	H2U	C3'-C2'-C1'	2.50	106.17	101.43
33	g	17	H2U	O4-C4-N3	2.49	124.23	120.28
33	g	34	OMG	O4'-C1'-C2'	-2.47	102.31	106.59
1	A	2604	PSU	C5-C6-N1	-2.47	118.41	122.11
1	A	746	PSU	C5-C6-N1	-2.46	118.42	122.11
1	A	2605	PSU	C5-C6-N1	-2.46	118.42	122.11
13	M	81	4D4	CB-CA-C	-2.45	107.85	111.77
33	g	37	YYG	O23-C21-N20	2.44	115.08	110.80
33	g	40	5MC	C5-C4-N3	-2.41	119.08	121.67
33	g	40	5MC	O4'-C4'-C5'	2.40	117.27	109.37
1	A	2251	OMG	C5-C6-N1	2.38	118.16	113.95
33	g	37	YYG	O18-C16-O17	-2.37	119.20	123.84
33	g	34	OMG	C2-N1-C6	-2.36	120.75	125.10
33	g	55	PSU	O2-C2-N3	-2.35	117.39	121.82
1	A	1911	PSU	C5-C6-N1	-2.33	118.61	122.11
33	g	26	M2G	C8-N7-C5	2.33	107.43	102.99
1	A	2449	H2U	C5-C4-N3	-2.33	114.03	116.65
33	g	40	5MC	O2'-C2'-C1'	-2.33	102.24	110.02
33	g	39	PSU	O5'-C5'-C4'	2.32	116.90	108.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2504	PSU	C5-C6-N1	-2.30	118.65	122.11
33	g	40	5MC	N1-C2-N3	2.28	122.96	118.81
33	g	58	1MA	C3'-C2'-C1'	-2.28	97.55	100.98
1	A	745	1MG	O6-C6-C5	-2.26	120.18	124.19
1	A	1917	PSU	C5-C6-N1	-2.25	118.73	122.11
32	f	54	5MU	C5-C6-N1	-2.25	121.03	123.34
32	f	32	5MC	CM5-C5-C6	-2.25	119.85	122.85
1	A	2445	2MG	CM2-N2-C2	-2.24	118.91	123.86
32	f	54	5MU	C6-N1-C2	-2.24	119.03	121.30
33	g	58	1MA	O2'-C2'-C3'	-2.23	104.61	111.82
1	A	2580	PSU	C5-C6-N1	-2.21	118.79	122.11
33	g	40	5MC	O4'-C4'-C3'	-2.21	100.74	105.11
33	g	26	M2G	C5-C6-N1	2.21	117.85	113.95
1	A	2503	2MA	N3-C2-N1	-2.21	121.70	125.73
1	A	955	PSU	C5-C6-N1	-2.21	118.80	122.11
1	A	1835	2MG	CM2-N2-C2	-2.20	119.00	123.86
1	A	2580	PSU	O4'-C1'-C2'	2.19	108.23	105.14
33	g	76	31M	C2-N1-C6	2.16	122.46	118.75
33	g	76	31M	OTM-CTM-N	-2.15	118.94	122.93
1	A	1618	6MZ	C4-C5-N7	-2.15	107.16	109.40
32	f	55	PSU	C5-C6-N1	-2.14	118.90	122.11
1	A	747	5MU	C6-N1-C2	2.13	123.45	121.30
33	g	55	PSU	O4'-C4'-C3'	-2.13	100.91	105.11
33	g	46	7MG	C5'-C4'-C3'	-2.12	107.25	115.18
33	g	54	5MU	O2-C2-N1	-2.12	119.97	122.79
33	g	37	YYG	O23-C21-O22	-2.10	121.49	124.58
13	M	81	4D4	O-C-CA	-2.10	119.27	124.78
32	f	54	5MU	C1'-N1-C2	2.10	121.38	117.57
33	g	76	31M	CBM-CAM-CTM	2.08	115.35	110.85
33	g	17	H2U	C4'-O4'-C1'	2.08	114.06	109.47
32	f	8	4SU	C2'-C1'-N1	-2.05	107.41	113.22
1	A	1915	3TD	C5-C6-N1	-2.03	119.06	122.11
32	f	54	5MU	O2'-C2'-C1'	-2.03	103.24	110.02
32	f	8	4SU	O5'-C5'-C4'	2.03	115.89	108.99
1	A	1962	5MC	C5-C4-N3	-2.02	119.50	121.67
33	g	54	5MU	C2'-C1'-N1	-2.01	107.51	113.22
1	A	2251	OMG	C2-N1-C6	-2.01	121.40	125.10
33	g	76	31M	C-CA-N	2.01	116.63	111.16

There are no chirality outliers.

All (67) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	D	150[A]	MEQ	N-CA-CB-CG
13	M	81	4D4	NE-CD-CG-CB
1	A	746	PSU	C2'-C1'-C5-C4
1	A	2251	OMG	C1'-C2'-O2'-CM2
33	g	17	H2U	O4'-C1'-N1-C6
33	g	34	OMG	O4'-C4'-C5'-O5'
33	g	34	OMG	C1'-C2'-O2'-CM2
33	g	37	YYG	N1-C12-C13-C14
33	g	37	YYG	C12-C13-C14-C15
33	g	37	YYG	C13-C14-C15-N20
33	g	37	YYG	C15-C16-O18-C19
33	g	37	YYG	O23-C21-N20-C15
33	g	37	YYG	N20-C21-O23-C24
33	g	37	YYG	O22-C21-O23-C24
33	g	39	PSU	C3'-C4'-C5'-O5'
33	g	46	7MG	O4'-C4'-C5'-O5'
33	g	49	5MC	O4'-C4'-C5'-O5'
33	g	49	5MC	C3'-C4'-C5'-O5'
33	g	54	5MU	C3'-C4'-C5'-O5'
33	g	54	5MU	O4'-C4'-C5'-O5'
33	g	76	31M	CTM-CAM-CBM-CGM
33	g	76	31M	NM-CAM-CBM-CGM
33	g	37	YYG	O17-C16-O18-C19
33	g	37	YYG	O22-C21-N20-C15
1	A	2030	6MZ	O4'-C4'-C5'-O5'
1	A	2030	6MZ	C3'-C4'-C5'-O5'
1	A	2445	2MG	C3'-C4'-C5'-O5'
1	A	2504	PSU	O4'-C4'-C5'-O5'
33	g	16	H2U	C3'-C4'-C5'-O5'
33	g	34	OMG	C3'-C4'-C5'-O5'
33	g	46	7MG	C3'-C4'-C5'-O5'
33	g	58	1MA	O4'-C4'-C5'-O5'
33	g	76	31M	CBM-CGM-SDM-CEM
1	A	2504	PSU	C3'-C4'-C5'-O5'
33	g	39	PSU	O4'-C4'-C5'-O5'
33	g	58	1MA	C3'-C4'-C5'-O5'
1	A	2445	2MG	O4'-C4'-C5'-O5'
33	g	37	YYG	O4'-C4'-C5'-O5'
13	M	81	4D4	OB-CB-CG-CD
33	g	37	YYG	C13-C14-C15-C16
4	D	150[A]	MEQ	C-CA-CB-CG
13	M	81	4D4	CA-CB-CG-CD
33	g	37	YYG	C11-C12-C13-C14

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Mol	Chain	Res	Type	Atoms
33	g	37	YYG	N20-C15-C16-O17
33	g	37	YYG	C16-C15-N20-C21
33	g	16	H2U	O4'-C4'-C5'-O5'
33	g	37	YYG	C3'-C4'-C5'-O5'
4	D	150[A]	MEQ	OE1-CD-CG-CB
33	g	37	YYG	N20-C15-C16-O18
33	g	17	H2U	C4'-C5'-O5'-P
4	D	150[A]	MEQ	NE2-CD-CG-CB
33	g	46	7MG	C2'-C1'-N9-C8
33	g	16	H2U	C4'-C5'-O5'-P
33	g	39	PSU	C4'-C5'-O5'-P
33	g	76	31M	CAM-CBM-CGM-SDM
33	g	76	31M	CA-CB-CG-CD1
33	g	17	H2U	O4'-C1'-N1-C2
1	A	1962	5MC	C2'-C1'-N1-C6
1	A	2503	2MA	O4'-C4'-C5'-O5'
1	A	1962	5MC	O4'-C1'-N1-C6
32	f	54	5MU	O4'-C4'-C5'-O5'
33	g	17	H2U	C3'-C4'-C5'-O5'
33	g	76	31M	CA-CB-CG-CD2
1	A	746	PSU	O4'-C1'-C5-C6
1	A	2069	G7M	O4'-C4'-C5'-O5'
33	g	17	H2U	C2'-C1'-N1-C2
33	g	49	5MC	C2'-C1'-N1-C2

There are no ring outliers.

5 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	1939	5MU	1	0
1	A	1915	3TD	3	0
1	A	2251	OMG	1	0
1	A	2604	PSU	1	0
1	A	2030	6MZ	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 179 ligands modelled in this entry, 178 are monoatomic - leaving 1 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	#$|Z| > 2$
35	DI0	A	3175	-	58,61,61	1.62	11 (18%)	77,92,92	1.65	20 (25%)

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
35	DI0	A	3175	-	-	10/70/121/121	0/3/4/4

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	A	3175	DI0	CAF-CAE	-5.60	1.39	1.51
35	A	3175	DI0	OBI-CAG	-4.12	1.33	1.43
35	A	3175	DI0	OAU-CBG	-3.41	1.38	1.44
35	A	3175	DI0	OAY-CAC	-3.13	1.35	1.43
35	A	3175	DI0	CBC-CBB	2.86	1.58	1.54
35	A	3175	DI0	OAU-CAB	-2.79	1.34	1.41
35	A	3175	DI0	CAP-CAH	2.66	1.60	1.55
35	A	3175	DI0	CAI-CAK	2.49	1.57	1.54
35	A	3175	DI0	CAD-CAW	-2.49	1.50	1.54
35	A	3175	DI0	OBJ-CAP	-2.28	1.40	1.44
35	A	3175	DI0	OBL-CAX	-2.25	1.38	1.42

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	A	3175	DI0	OAL-CAW-CBT	4.88	116.70	107.40
35	A	3175	DI0	CBT-CAW-CAD	-4.69	106.31	115.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
35	A	3175	DI0	OBK-CAN-CAX	4.22	110.07	103.81
35	A	3175	DI0	CAP-CAH-CAJ	-3.35	109.30	114.05
35	A	3175	DI0	CBR-CAP-CBC	-2.75	106.45	111.09
35	A	3175	DI0	CCB-OBK-CAN	-2.68	111.95	117.55
35	A	3175	DI0	CBV-CBB-CBC	-2.64	106.45	112.45
35	A	3175	DI0	CBP-CAJ-CAC	-2.51	106.89	111.40
35	A	3175	DI0	CAF-CAC-CAJ	-2.37	106.20	113.05
35	A	3175	DI0	OBI-CAG-CAO	-2.35	105.59	109.77
35	A	3175	DI0	OBJ-CAP-CAH	2.22	111.80	107.59
35	A	3175	DI0	OBK-CAN-CAT	-2.22	109.41	112.96
35	A	3175	DI0	OAY-CAR-CAT	2.13	112.68	109.01
35	A	3175	DI0	CBO-CAI-CAA	-2.12	107.97	112.94
35	A	3175	DI0	CBO-CAI-CAK	-2.11	109.52	112.02
35	A	3175	DI0	OAU-CAB-CAG	-2.08	105.95	110.35
35	A	3175	DI0	OBK-CAN-CBQ	-2.07	107.48	110.92
35	A	3175	DI0	CAN-CAX-CAZ	-2.06	107.98	111.14
35	A	3175	DI0	OAM-CAH-CAJ	-2.04	108.48	111.54
35	A	3175	DI0	OAM-CAB-OAU	-2.03	105.02	110.67

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
35	A	3175	DI0	NAQ-CBA-CBS-OBW
35	A	3175	DI0	NAQ-CAK-CBB-CBC
35	A	3175	DI0	CAJ-CAH-CAP-OBJ
35	A	3175	DI0	OBX-CCC-CCD-OBW
35	A	3175	DI0	OAL-CAW-CBT-CCF
35	A	3175	DI0	CAD-CAW-OAL-CAE
35	A	3175	DI0	CBA-CBS-OBW-CCD
35	A	3175	DI0	CAJ-CAC-CAF-CBN
35	A	3175	DI0	CAD-CAW-CBT-CCF
35	A	3175	DI0	NAQ-CAK-CBB-CBV

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
35	A	3175	DI0	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths,

bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand DI0 A 3175

Bond lengths — Bond angles — Torsions — Rings
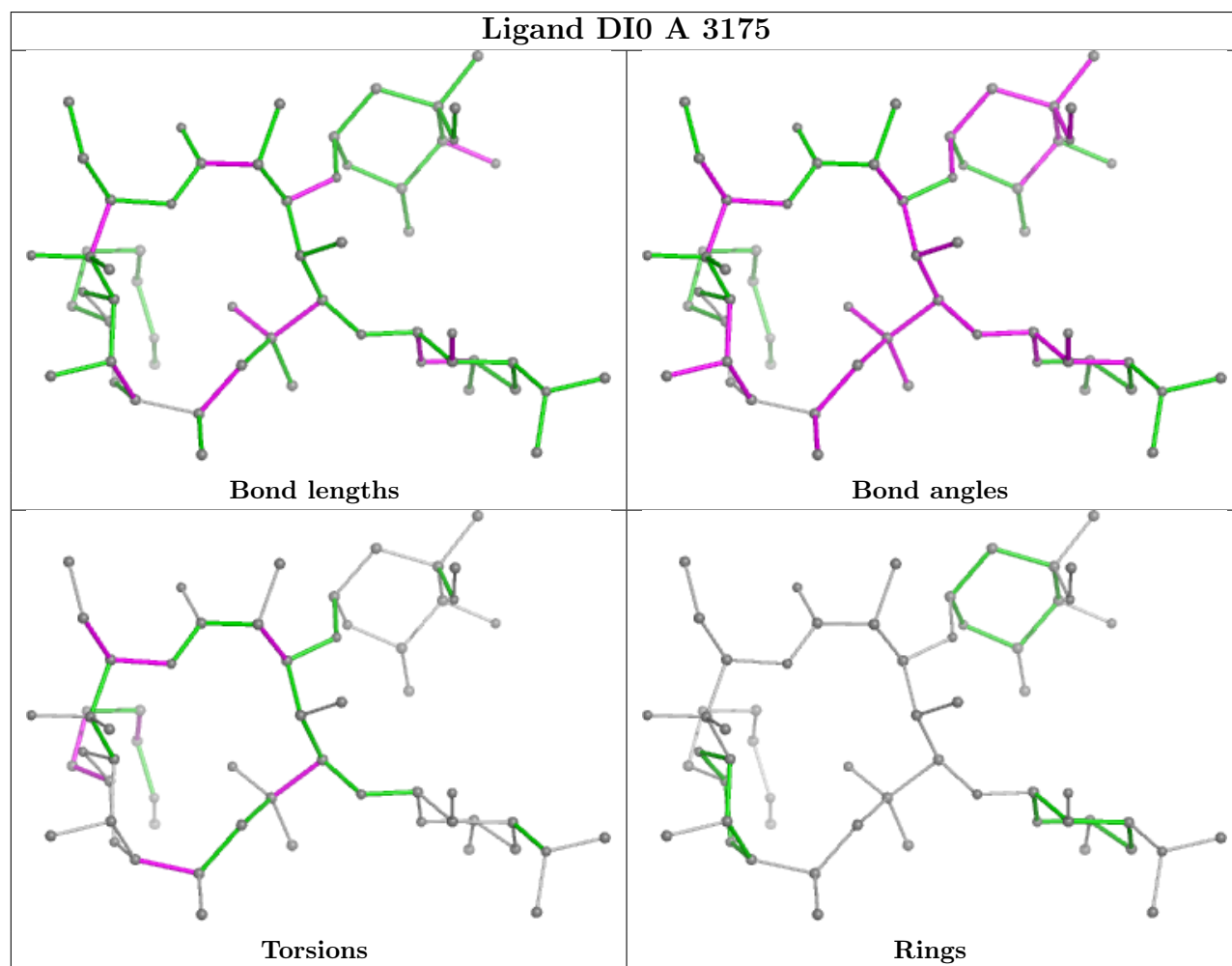
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2
33	g	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	885:C	O3'	892:A	P	11.25
1	A	1915:3TD	O3'	1916:A	P	1.31
1	g	75:C	O3'	76:31M	P	1.09