



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 10, 2025 – 04:00 PM EST

PDB ID : 4LFC  
Title : Crystal Structure of 30S ribosomal subunit from *Thermus thermophilus*  
Authors : Demirci, H.; Belardinelli, R.; Carr, J.; Murphy IV, F.; Jogl, G.; Dahlberg, A.E.; Gregory, S.T.  
Deposited on : 2013-06-26  
Resolution : 3.60 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 1.21  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.004 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

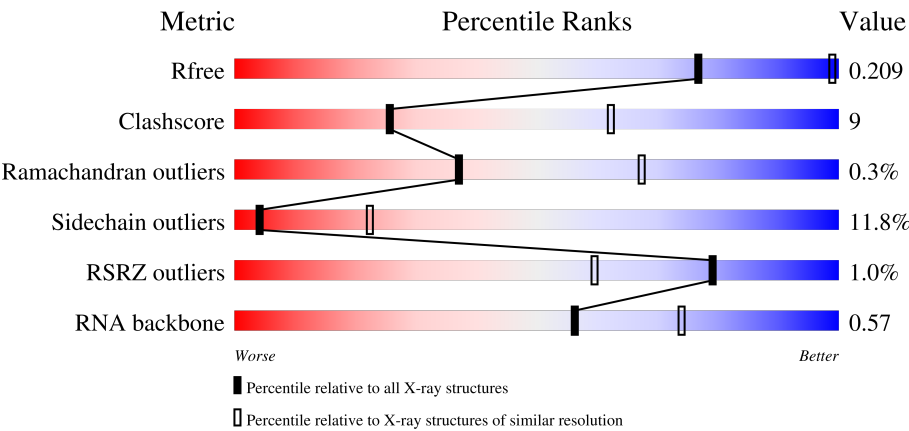
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.60 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



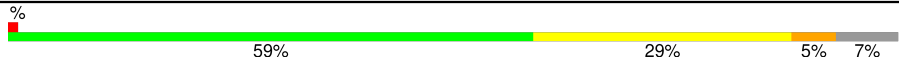







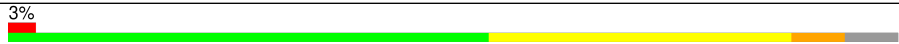

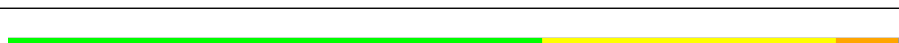


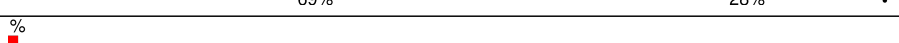
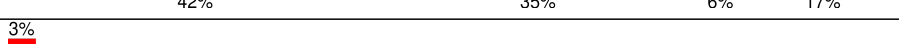
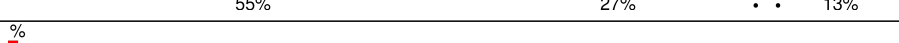
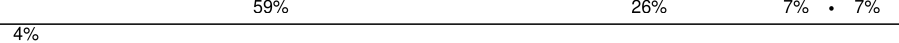
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R <sub>free</sub>	164625	1563 (3.70-3.50)
Clashscore	180529	1665 (3.70-3.50)
Ramachandran outliers	177936	1641 (3.70-3.50)
Sidechain outliers	177891	1640 (3.70-3.50)
RSRZ outliers	164620	1562 (3.70-3.50)
RNA backbone	3690	1108 (4.20-3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1522	<div><div>48%</div><div>37%</div><div>11%</div><div>• •</div></div>
2	B	256	<div><div>62%</div><div>27%</div><div>•</div><div>8%</div></div>
3	C	239	<div><div>61%</div><div>21%</div><div>•</div><div>13%</div></div>
4	D	209	<div><div>4%</div><div>67%</div><div>28%</div><div>5%</div></div>

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Mol	Chain	Length	Quality of chain
5	E	162	
6	F	101	
7	G	156	
8	H	138	
9	I	128	
10	J	105	
11	K	129	
12	L	135	
13	M	126	
14	N	61	
15	O	89	
16	P	88	
17	Q	105	
18	R	88	
19	S	93	
20	T	106	
21	U	27	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
22	MG	A	1609	-	-	-	X
22	MG	A	1610	-	-	-	X
22	MG	A	1614	-	-	-	X
22	MG	A	1661	-	-	-	X

## 2 Entry composition

There are 26 unique types of molecules in this entry. The entry contains 51888 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1512	Total	C	N	O	P	0	0	0
			32504	14477	6011	10505	1511			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1534	C	A	conflict	GB M26923.1
A	1535	A	C	conflict	GB M26923.1

- Molecule 2 is a protein called ribosomal protein S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	236	Total	C	N	O	S	0	0	1
			1874	1195	336	338	5			

- Molecule 3 is a protein called ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	207	Total	C	N	O	S	0	0	1
			1613	1016	315	281	1			

- Molecule 4 is a protein called ribosomal protein S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	208	Total	C	N	O	S	0	0	0
			1703	1066	339	291	7			

- Molecule 5 is a protein called ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	151	Total	C	N	O	S	0	0	1
			1147	724	218	201	4			

- Molecule 6 is a protein called ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			

- Molecule 7 is a protein called ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			

- Molecule 8 is a protein called ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			

- Molecule 9 is a protein called ribosomal protein S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
9	I	127	Total	C	N	O	0	0	0
			1010	639	197	174			

- Molecule 10 is a protein called ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	99	Total	C	N	O	S	0	0	1
			793	498	157	137	1			

- Molecule 11 is a protein called ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	K	119	Total	C	N	O	S	0	0	0
			885	549	168	165	3			

- Molecule 12 is a protein called ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
12	L	125	Total	C	N	O	S	0	0	1
			973	612	196	163	2			

- Molecule 13 is a protein called ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
13	M	118	Total	C	N	O	S	0	0	0
			937	579	193	163	2			

- Molecule 14 is a protein called ribosomal protein S14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	N	60	Total	C	N	O	S	0	0	0
			492	312	104	72	4			

- Molecule 15 is a protein called ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
15	O	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			

- Molecule 16 is a protein called ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
16	P	84	Total	C	N	O	S	0	0	1
			701	443	140	117	1			

- Molecule 17 is a protein called ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
17	Q	104	Total	C	N	O	S	0	0	0
			857	547	160	148	2			

- Molecule 18 is a protein called ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
18	R	73	Total	C	N	O	0	0	0
			598	381	118	99			

- Molecule 19 is a protein called ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
19	S	81	Total	C	N	O	S	0	0	1
			648	414	120	112	2			

- Molecule 20 is a protein called ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	T	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			

- Molecule 21 is a protein called ribosomal protein THX.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
21	U	25	Total	C	N	O	0	0	1
			209	128	51	30			

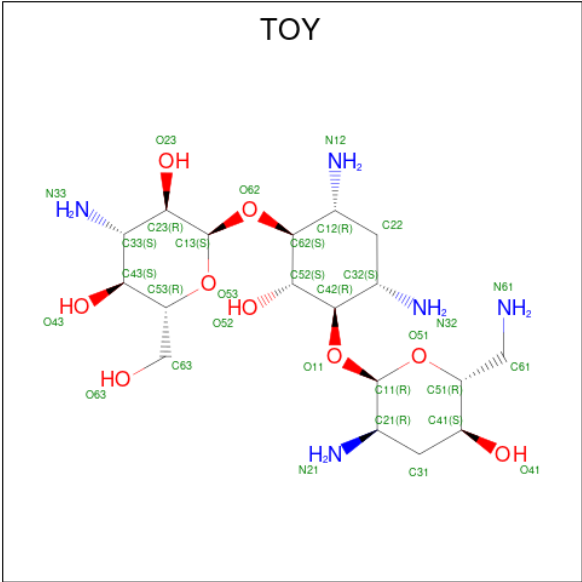
- Molecule 22 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
22	A	121	Total	Mg	0	0
			121	121		
22	B	1	Total	Mg	0	0
			1	1		
22	D	2	Total	Mg	0	0
			2	2		
22	E	1	Total	Mg	0	0
			1	1		
22	H	1	Total	Mg	0	0
			1	1		
22	J	1	Total	Mg	0	0
			1	1		
22	K	1	Total	Mg	0	0
			1	1		
22	M	1	Total	Mg	0	0
			1	1		
22	N	2	Total	Mg	0	0
			2	2		
22	Q	1	Total	Mg	0	0
			1	1		
22	S	1	Total	Mg	0	0
			1	1		

- Molecule 23 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
23	A	16	Total	K	0	0
			16	16		

- Molecule 24 is TOBRAMYCIN (three-letter code: TOY) (formula: C<sub>18</sub>H<sub>37</sub>N<sub>5</sub>O<sub>9</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
24	A	1	Total	C	N	O	0	0
			32	18	5	9		

- Molecule 25 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
25	D	1	Total	Zn	0	0
			1	1		
25	N	1	Total	Zn	0	0
			1	1		

- Molecule 26 is water.

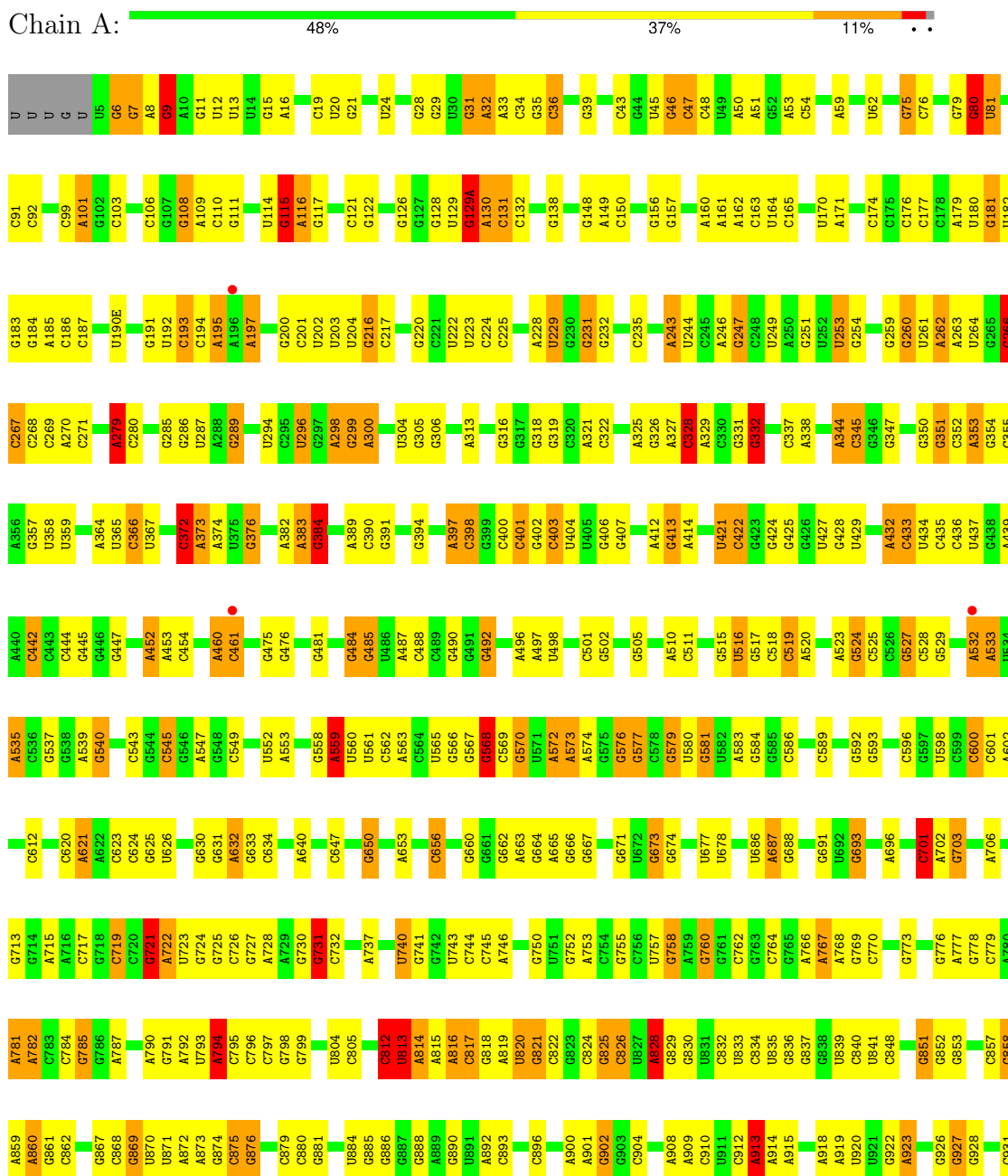
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
26	A	41	Total	O	0	0
			41	41		
26	E	6	Total	O	0	0
			6	6		
26	L	1	Total	O	0	0
			1	1		

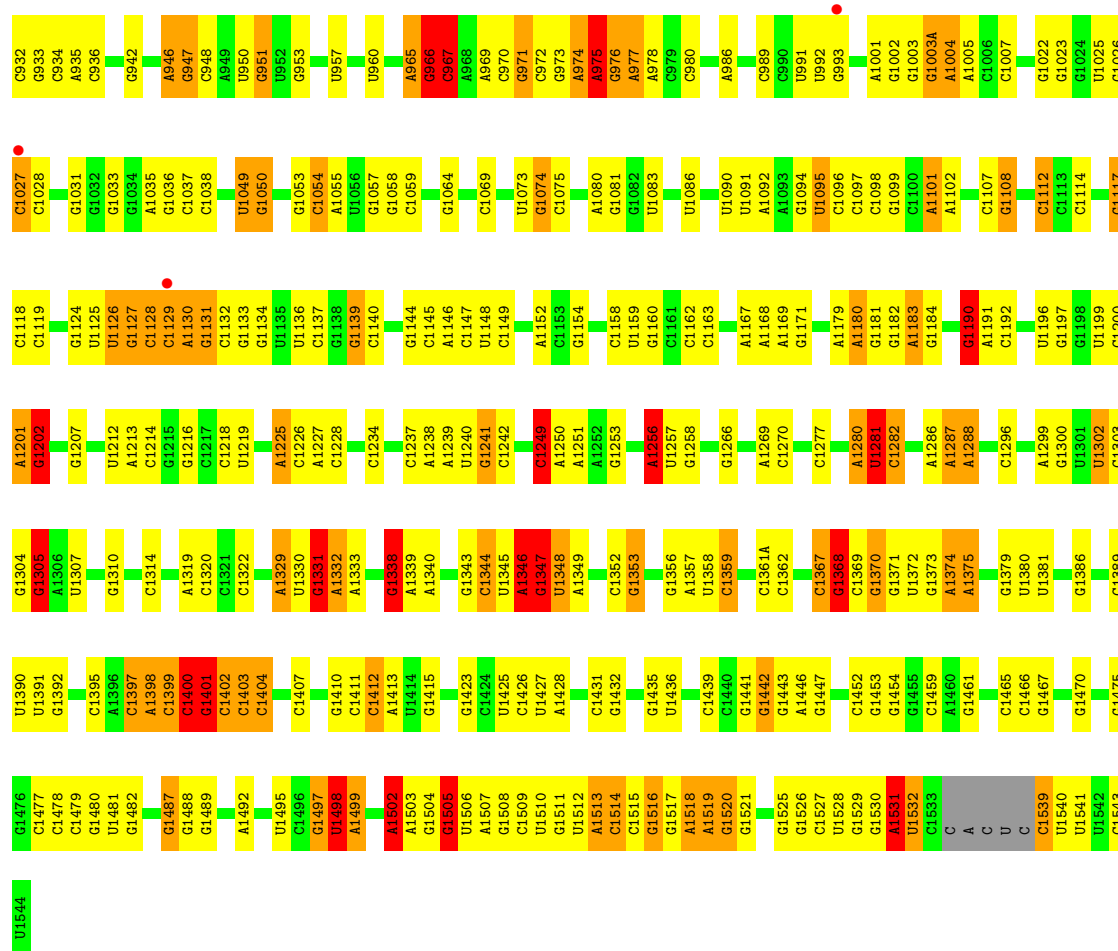


### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

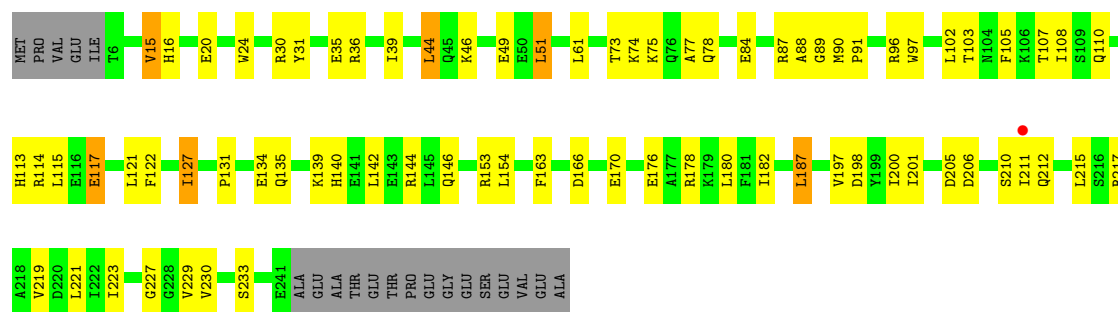
#### • Molecule 1: 16S rRNA





### • Molecule 2: ribosomal protein S2

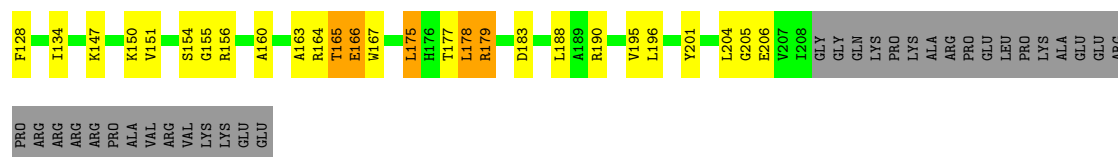
Chain B: 62% 27% 8%



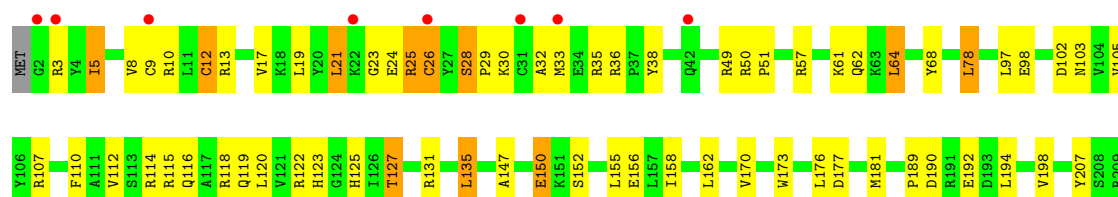
### • Molecule 3: ribosomal protein S3

Chain C: 61% 21% 13%

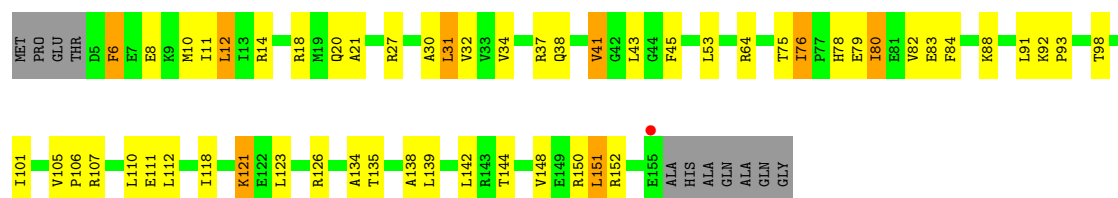




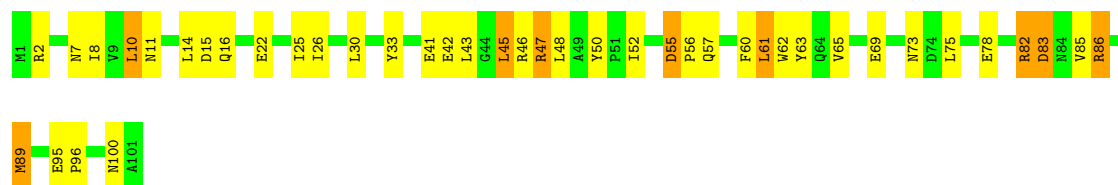
- Molecule 4: ribosomal protein S4



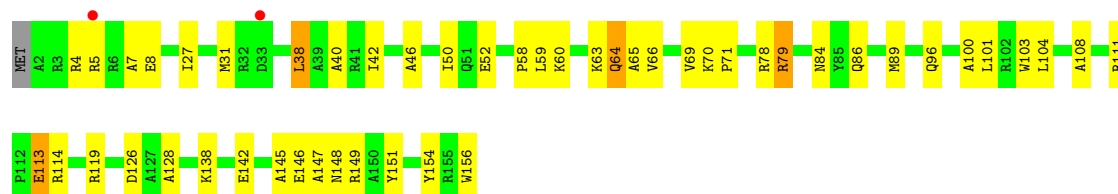
- Molecule 5: ribosomal protein S5



- Molecule 6: ribosomal protein S6

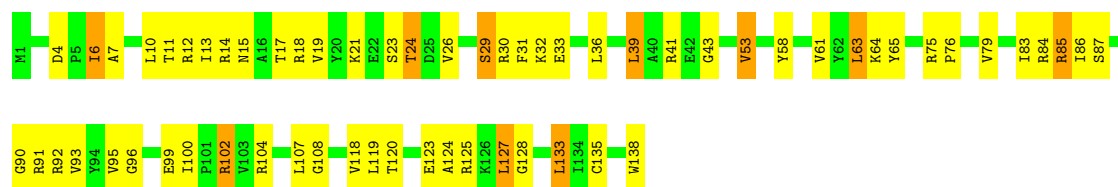


- Molecule 7: ribosomal protein S7



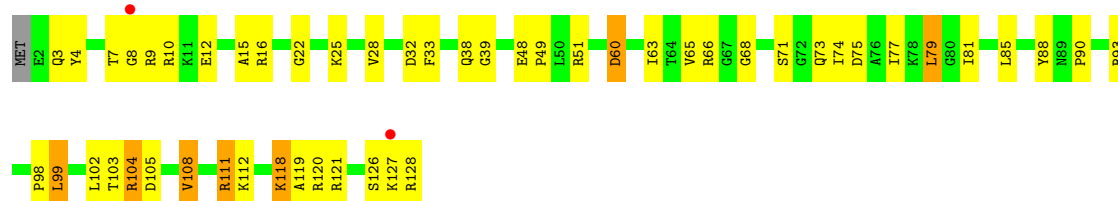
- Molecule 8: ribosomal protein S8

Chain H: 



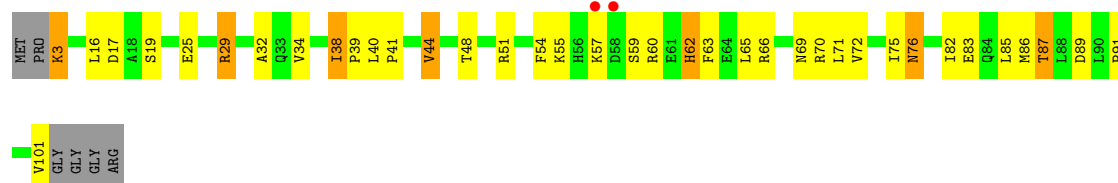
• Molecule 9: ribosomal protein S9

Chain I: 



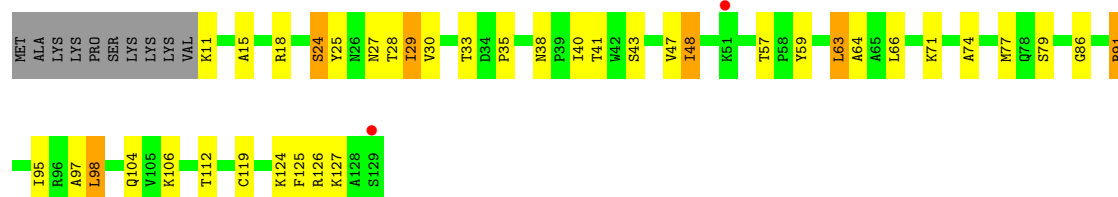
• Molecule 10: ribosomal protein S10

Chain J: 



• Molecule 11: ribosomal protein S11

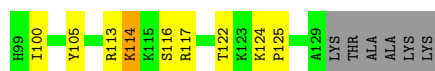
Chain K: 



• Molecule 12: ribosomal protein S12

Chain L: 

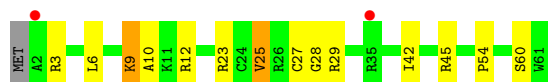
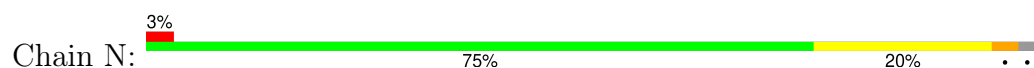




- Molecule 13: ribosomal protein S13



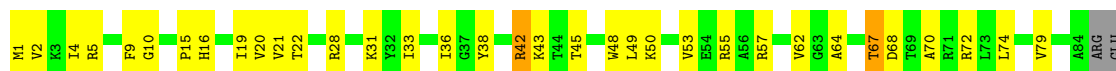
- Molecule 14: ribosomal protein S14



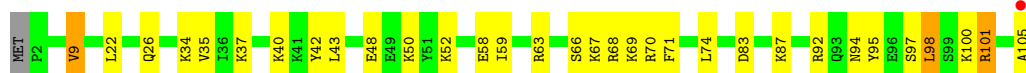
- Molecule 15: ribosomal protein S15



- Molecule 16: ribosomal protein S16

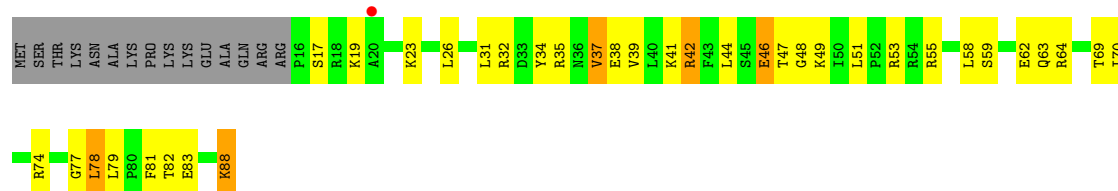


- Molecule 17: ribosomal protein S17

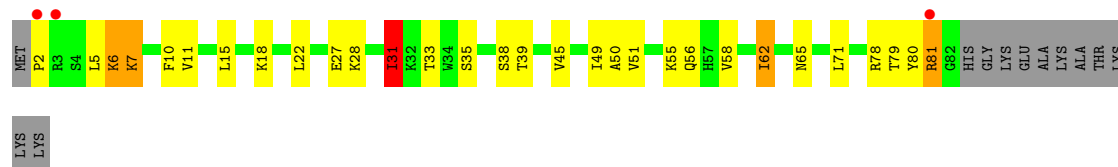


- Molecule 18: ribosomal protein S18

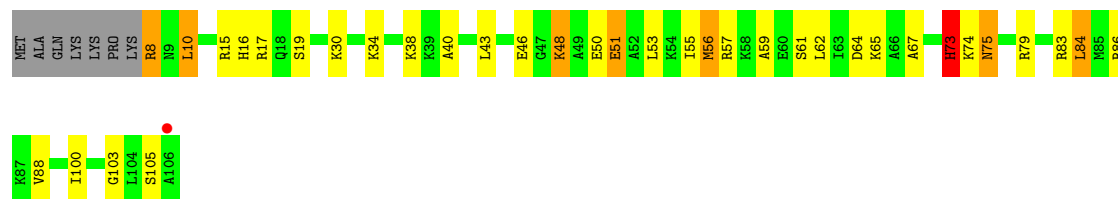




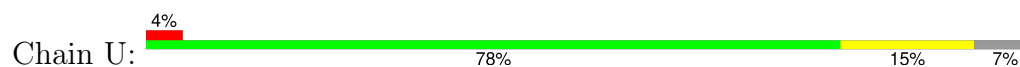
- Molecule 19: ribosomal protein S19



- Molecule 20: ribosomal protein S20



- Molecule 21: ribosomal protein THX



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	401.83Å 401.83Å 175.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.46 – 3.60 34.46 – 3.60	Depositor EDS
% Data completeness (in resolution range)	99.4 (34.46-3.60) 99.0 (34.46-3.60)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.86 (at 3.56Å)	Xtriage
Refinement program	PHENIX dev_1119	Depositor
R, $R_{free}$	0.163 , 0.209 0.163 , 0.209	Depositor DCC
$R_{free}$ test set	8183 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	125.9	Xtriage
Anisotropy	0.157	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.27 , 121.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	51888	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	133.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.57% of the height of the origin peak. No significant pseudotranslation is detected.*

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

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality ⓘ

### 5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, MA6, 2MG, ZN, M2G, 0TD, 7MG, UR3, TOY, 4OC, PSU, K, 5MC

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	0.90	35/36037 (0.1%)	1.50	604/56239 (1.1%)
2	B	0.57	0/1909	0.70	0/2579
3	C	0.44	0/1637	0.59	0/2207
4	D	0.58	2/1733 (0.1%)	0.71	1/2318 (0.0%)
5	E	0.70	0/1163	0.81	1/1566 (0.1%)
6	F	0.48	0/856	0.63	0/1154
7	G	0.47	0/1276	0.60	0/1709
8	H	0.78	0/1136	0.85	0/1527
9	I	0.44	0/1029	0.65	1/1379 (0.1%)
10	J	0.47	0/806	0.68	0/1084
11	K	0.60	0/900	0.77	0/1213
12	L	0.62	0/978	0.83	0/1308
13	M	0.48	0/947	0.65	0/1270
14	N	0.50	0/501	0.65	0/664
15	O	0.59	0/745	0.74	0/992
16	P	0.59	0/717	0.73	0/965
17	Q	0.75	0/870	0.89	1/1159 (0.1%)
18	R	0.58	0/604	0.75	2/801 (0.2%)
19	S	0.40	0/662	0.64	0/892
20	T	0.54	0/765	0.80	0/1007
21	U	0.40	0/213	0.61	0/279
All	All	0.80	37/55484 (0.1%)	1.31	610/82312 (0.7%)

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
2	B	0	1
8	H	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
9	I	0	1
10	J	0	1
All	All	0	4

All (37) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	858	G	N1-C2	8.02	1.44	1.37
1	A	722	A	N9-C4	-7.58	1.33	1.37
1	A	858	G	C5-C4	7.57	1.43	1.38
4	D	26	CYS	CB-SG	7.05	1.94	1.82
1	A	858	G	C6-N1	7.04	1.44	1.39
1	A	1227	A	N9-C4	-6.93	1.33	1.37
1	A	1509	C	N3-C4	-6.93	1.29	1.33
1	A	298	A	N3-C4	-6.83	1.30	1.34
1	A	266	G	N9-C4	-6.79	1.32	1.38
1	A	1502	A	C5-C6	-6.51	1.35	1.41
1	A	569	C	N3-C4	-6.45	1.29	1.33
1	A	313	A	N9-C4	-6.35	1.34	1.37
1	A	1509	C	N1-C6	-6.30	1.33	1.37
1	A	266	G	N7-C5	-6.22	1.35	1.39
1	A	860	A	N3-C4	-6.18	1.31	1.34
1	A	266	G	C5-C6	-6.13	1.36	1.42
1	A	574	A	C5-C6	-6.08	1.35	1.41
4	D	9	CYS	CB-SG	6.07	1.92	1.82
1	A	53	A	C6-N1	-5.98	1.31	1.35
1	A	764	C	N1-C6	-5.93	1.33	1.37
1	A	901	A	N9-C4	-5.91	1.34	1.37
1	A	1502	A	N7-C5	-5.85	1.35	1.39
1	A	931	C	N3-C4	-5.83	1.29	1.33
1	A	918	A	C5-C4	-5.80	1.34	1.38
1	A	279	A	N9-C4	-5.77	1.34	1.37
1	A	1514	C	N3-C4	-5.71	1.29	1.33
1	A	918	A	N9-C8	-5.63	1.33	1.37
1	A	569	C	N1-C6	-5.55	1.33	1.37
1	A	706	A	N9-C4	-5.53	1.34	1.37
1	A	1346	A	N9-C4	-5.53	1.34	1.37
1	A	266	G	N3-C4	-5.45	1.31	1.35
1	A	804	U	C2-N3	-5.44	1.33	1.37
1	A	722	A	C5-C6	-5.19	1.36	1.41
1	A	730	G	N3-C4	-5.16	1.31	1.35
1	A	453	A	N9-C4	-5.04	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	131	C	N1-C6	-5.02	1.34	1.37
1	A	876	G	C5-C4	-5.01	1.34	1.38

All (610) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	858	G	N1-C6-O6	26.67	135.90	119.90
1	A	858	G	C5-C6-O6	-17.37	118.18	128.60
1	A	581	G	N1-C6-O6	16.05	129.53	119.90
1	A	858	G	C5-N7-C8	-15.23	96.69	104.30
1	A	858	G	N7-C8-N9	13.88	120.04	113.10
1	A	858	G	C6-C5-N7	-13.69	122.19	130.40
1	A	1502	A	N1-C6-N6	12.95	126.37	118.60
1	A	117	G	N1-C6-O6	12.85	127.61	119.90
1	A	858	G	C4-C5-N7	12.78	115.91	110.80
1	A	858	G	N3-C2-N2	-12.15	111.39	119.90
1	A	581	G	C5-C6-O6	-11.94	121.44	128.60
1	A	1515	C	C6-N1-C2	11.29	124.82	120.30
1	A	858	G	C5-C6-N1	-11.23	105.88	111.50
1	A	869	G	C5-N7-C8	-11.11	98.75	104.30
1	A	858	G	C2-N3-C4	-11.03	106.38	111.90
1	A	581	G	N3-C4-C5	10.98	134.09	128.60
1	A	581	G	C5-N7-C8	-10.89	98.85	104.30
1	A	980	C	N1-C2-O2	10.69	125.31	118.90
1	A	581	G	C4-C5-N7	10.64	115.06	110.80
1	A	116	A	N1-C6-N6	10.63	124.98	118.60
1	A	266	G	C5-N7-C8	-10.61	99.00	104.30
1	A	266	G	N1-C6-O6	10.59	126.26	119.90
1	A	1502	A	C6-C5-N7	-10.57	124.90	132.30
1	A	769	G	N1-C6-O6	9.85	125.81	119.90
1	A	1371	G	O5'-P-OP1	-9.74	96.93	105.70
1	A	851	G	N1-C6-O6	9.72	125.73	119.90
1	A	1502	A	C5-N7-C8	-9.72	99.04	103.90
1	A	328	C	N1-C2-O2	9.58	124.65	118.90
1	A	769	G	C5-C6-O6	-9.36	122.98	128.60
1	A	569	C	C5-C6-N1	-9.32	116.34	121.00
1	A	1502	A	C2-N3-C4	-9.22	105.99	110.60
1	A	1403	C	N1-C2-O2	-9.21	113.37	118.90
1	A	725	G	C5-C6-O6	-9.16	123.11	128.60
1	A	117	G	C5-C6-O6	-9.12	123.13	128.60
1	A	298	A	N1-C2-N3	9.10	133.85	129.30
1	A	573	A	C8-N9-C4	-8.98	102.21	105.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	266	G	C4-C5-N7	8.94	114.38	110.80
1	A	931	C	C2-N3-C4	-8.94	115.43	119.90
1	A	266	G	C6-C5-N7	-8.86	125.08	130.40
1	A	328	C	N3-C2-O2	-8.85	115.71	121.90
1	A	1502	A	C4-C5-N7	8.80	115.10	110.70
1	A	1502	A	N7-C8-N9	8.77	118.18	113.80
1	A	869	G	N7-C8-N9	8.70	117.45	113.10
1	A	559	A	C6-N1-C2	-8.65	113.41	118.60
1	A	1128	C	C6-N1-C2	-8.63	116.85	120.30
1	A	1054	C	C2-N1-C1'	8.62	128.28	118.80
1	A	980	C	N3-C2-O2	-8.61	115.87	121.90
1	A	872	A	N1-C2-N3	8.59	133.60	129.30
1	A	1305	G	C5-C6-N1	-8.57	107.22	111.50
1	A	132	C	C2-N3-C4	-8.52	115.64	119.90
1	A	722	A	C2-N3-C4	-8.52	106.34	110.60
1	A	1054	C	N1-C2-O2	8.47	123.98	118.90
1	A	1415	G	N1-C6-O6	8.45	124.97	119.90
1	A	785	G	C8-N9-C4	8.41	109.77	106.40
1	A	232	G	N9-C4-C5	-8.41	102.04	105.40
1	A	266	G	N7-C8-N9	8.39	117.30	113.10
1	A	858	G	N3-C4-C5	8.35	132.77	128.60
1	A	581	G	C2-N3-C4	-8.32	107.74	111.90
1	A	816	A	O5'-P-OP2	-8.21	98.31	105.70
1	A	1074	G	C5-C6-N1	-8.21	107.40	111.50
1	A	1081	G	N1-C6-O6	8.19	124.81	119.90
1	A	299	G	C5-C6-N1	-8.18	107.41	111.50
1	A	624	C	C6-N1-C2	8.18	123.57	120.30
1	A	901	A	C2-N3-C4	-8.16	106.52	110.60
1	A	931	C	C5-C6-N1	-8.11	116.94	121.00
1	A	970	C	N1-C2-O2	8.08	123.75	118.90
1	A	725	G	C4-C5-N7	7.99	114.00	110.80
1	A	581	G	N3-C2-N2	-7.98	114.32	119.90
1	A	1502	A	C5-C6-N1	-7.97	113.72	117.70
1	A	266	G	C5-C6-O6	-7.97	123.82	128.60
1	A	931	C	N3-C4-C5	7.91	125.06	121.90
1	A	760	G	O5'-P-OP2	-7.89	98.59	105.70
1	A	280	C	C6-N1-C2	7.88	123.45	120.30
1	A	573	A	N9-C4-C5	7.84	108.94	105.80
1	A	922	G	N1-C6-O6	7.82	124.59	119.90
1	A	523	A	N1-C6-N6	7.81	123.28	118.60
1	A	232	G	N1-C6-O6	7.79	124.57	119.90
1	A	1508	G	C6-N1-C2	-7.77	120.44	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	785	G	N1-C6-O6	7.71	124.53	119.90
1	A	1505	G	P-O3'-C3'	7.71	128.95	119.70
1	A	931	C	N3-C4-N4	-7.70	112.61	118.00
1	A	552	U	C5-C6-N1	-7.67	118.87	122.70
1	A	782	A	N1-C2-N3	7.59	133.10	129.30
1	A	913	A	P-O3'-C3'	7.56	128.77	119.70
1	A	787	A	C2-N3-C4	-7.52	106.84	110.60
1	A	946	A	N1-C2-N3	7.45	133.02	129.30
1	A	183	G	N1-C6-O6	7.43	124.36	119.90
1	A	552	U	C2-N3-C4	-7.43	122.54	127.00
1	A	19	C	C6-N1-C2	-7.42	117.33	120.30
1	A	266	G	C2-N3-C4	-7.40	108.20	111.90
1	A	561	U	N1-C2-O2	7.39	127.97	122.80
1	A	872	A	C2-N3-C4	-7.39	106.90	110.60
1	A	830	G	C5-C6-N1	-7.39	107.81	111.50
1	A	1370	G	C8-N9-C4	-7.38	103.45	106.40
1	A	687	A	P-O3'-C3'	7.34	128.50	119.70
1	A	1202	G	O5'-P-OP2	7.31	119.47	110.70
1	A	858	G	C8-N9-C4	-7.29	103.48	106.40
1	A	484	G	N3-C4-C5	-7.29	124.95	128.60
1	A	558	G	N1-C6-O6	7.26	124.26	119.90
1	A	686	U	C5-C6-N1	-7.26	119.07	122.70
1	A	318	G	N1-C6-O6	7.26	124.25	119.90
1	A	782	A	C2-N3-C4	-7.23	106.98	110.60
1	A	1107	C	C6-N1-C2	-7.23	117.41	120.30
1	A	559	A	C8-N9-C4	-7.22	102.91	105.80
1	A	264	U	N1-C2-N3	7.20	119.22	114.90
1	A	1505	G	C8-N9-C4	-7.20	103.52	106.40
1	A	858	G	N1-C2-N2	7.19	122.67	116.20
1	A	758	G	C5-C6-O6	-7.18	124.29	128.60
1	A	770	C	C6-N1-C2	7.18	123.17	120.30
1	A	280	C	O5'-P-OP2	-7.17	99.24	105.70
1	A	869	G	N3-C4-N9	-7.17	121.70	126.00
1	A	1532	U	C5-C6-N1	7.17	126.28	122.70
1	A	875	C	C5-C6-N1	-7.14	117.43	121.00
1	A	928	G	N1-C6-O6	7.14	124.19	119.90
1	A	1509	C	C5-C6-N1	-7.12	117.44	121.00
1	A	869	G	C4-C5-N7	7.12	113.65	110.80
1	A	1532	U	C4-C5-C6	-7.09	115.44	119.70
1	A	821	G	C8-N9-C4	7.08	109.23	106.40
1	A	376	G	N1-C6-O6	7.07	124.14	119.90
1	A	1369	C	C6-N1-C2	-7.06	117.47	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	46	G	O5'-P-OP1	-7.04	99.36	105.70
1	A	117	G	C6-C5-N7	-7.04	126.18	130.40
1	A	366	C	N1-C2-O2	7.03	123.12	118.90
1	A	1202	G	O5'-P-OP1	-7.02	99.38	105.70
1	A	559	A	N1-C2-N3	7.01	132.80	129.30
1	A	623	C	N3-C4-C5	6.99	124.69	121.90
1	A	869	G	N3-C4-C5	6.98	132.09	128.60
1	A	9	G	O5'-P-OP2	-6.97	99.43	105.70
1	A	1374	A	N1-C6-N6	-6.96	114.43	118.60
1	A	1347	G	C8-N9-C4	6.95	109.18	106.40
1	A	881	G	C6-N1-C2	-6.94	120.94	125.10
1	A	1200	C	N1-C2-O2	6.93	123.06	118.90
1	A	552	U	N1-C2-N3	6.91	119.05	114.90
1	A	722	A	C5-N7-C8	-6.91	100.44	103.90
1	A	260	G	N3-C4-N9	-6.91	121.86	126.00
1	A	1073	U	N3-C4-C5	-6.89	110.47	114.60
1	A	918	A	C6-N1-C2	-6.88	114.47	118.60
1	A	867	G	C5-C6-O6	-6.87	124.48	128.60
1	A	325	A	N9-C4-C5	6.86	108.55	105.80
1	A	1054	C	C6-N1-C1'	-6.86	112.57	120.80
1	A	852	G	N1-C6-O6	6.86	124.02	119.90
1	A	876	G	C5-C6-N1	6.85	114.93	111.50
1	A	826	C	C5-C6-N1	-6.85	117.57	121.00
1	A	947	G	C8-N9-C4	6.85	109.14	106.40
1	A	53	A	C6-N1-C2	-6.84	114.50	118.60
1	A	851	G	C5-C6-N1	-6.79	108.10	111.50
1	A	787	A	N1-C2-N3	6.79	132.69	129.30
1	A	116	A	C5-C6-N1	-6.78	114.31	117.70
1	A	1373	G	C5-C6-O6	6.78	132.66	128.60
1	A	980	C	C2-N1-C1'	6.77	126.24	118.80
1	A	752	G	N3-C4-C5	6.76	131.98	128.60
1	A	1528	U	N1-C2-N3	-6.76	110.84	114.90
9	I	39	GLY	N-CA-C	-6.76	96.21	113.10
1	A	1081	G	C5-C6-O6	-6.75	124.55	128.60
4	D	12	CYS	CA-CB-SG	6.73	126.11	114.00
1	A	59	A	O5'-P-OP2	-6.73	99.64	105.70
1	A	535	A	O5'-P-OP2	-6.69	99.68	105.70
1	A	602	A	C2-N3-C4	-6.68	107.26	110.60
1	A	231	G	C8-N9-C4	6.66	109.06	106.40
1	A	1359	C	N1-C2-O2	6.66	122.90	118.90
1	A	725	G	C5-N7-C8	-6.66	100.97	104.30
1	A	576	G	N1-C2-N3	6.64	127.88	123.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	920	U	C5-C4-O4	6.64	129.88	125.90
1	A	1054	C	C2-N3-C4	6.64	123.22	119.90
1	A	822	C	C5-C6-N1	-6.63	117.69	121.00
1	A	106	C	OP2-P-O3'	6.61	119.75	105.20
1	A	875	C	C6-N1-C2	6.61	122.94	120.30
1	A	722	A	N1-C6-N6	6.60	122.56	118.60
1	A	1307	U	O5'-P-OP2	-6.57	99.78	105.70
1	A	481	G	N1-C6-O6	6.57	123.84	119.90
1	A	933	G	C4-C5-N7	6.56	113.42	110.80
1	A	6	G	C8-N9-C1'	-6.55	118.48	127.00
1	A	612	C	N3-C2-O2	-6.55	117.31	121.90
1	A	869	G	O5'-P-OP1	-6.54	99.81	105.70
1	A	812	C	N3-C2-O2	-6.54	117.32	121.90
1	A	1367	C	C6-N1-C2	-6.53	117.69	120.30
1	A	691	G	C4-C5-N7	6.52	113.41	110.80
1	A	1199	U	O5'-P-OP2	-6.52	99.83	105.70
1	A	29	G	N1-C6-O6	6.51	123.81	119.90
1	A	722	A	C4-C5-N7	6.50	113.95	110.70
1	A	753	A	N1-C2-N3	6.48	132.54	129.30
1	A	325	A	N1-C6-N6	-6.48	114.71	118.60
1	A	1361(A)	C	N1-C2-O2	6.48	122.79	118.90
1	A	785	G	N9-C4-C5	-6.47	102.81	105.40
1	A	1512	U	N3-C4-C5	-6.47	110.72	114.60
1	A	812	C	P-O3'-C3'	6.45	127.43	119.70
1	A	946	A	C6-N1-C2	-6.43	114.74	118.60
1	A	231	G	N7-C8-N9	-6.43	109.89	113.10
1	A	821	G	O5'-P-OP1	-6.42	99.92	105.70
1	A	656	C	N3-C4-C5	6.42	124.47	121.90
1	A	1373	G	C4-C5-N7	-6.39	108.24	110.80
1	A	581	G	N3-C4-N9	-6.37	122.18	126.00
1	A	581	G	N7-C8-N9	6.36	116.28	113.10
1	A	797	C	C5-C6-N1	-6.35	117.83	121.00
1	A	752	G	C8-N9-C4	6.34	108.94	106.40
1	A	1331	G	N3-C4-C5	-6.33	125.44	128.60
1	A	1395	C	OP2-P-O3'	6.33	119.11	105.20
1	A	1459	C	C6-N1-C2	-6.32	117.77	120.30
1	A	828	A	C6-N1-C2	-6.32	114.81	118.60
1	A	484	G	N3-C4-N9	6.31	129.79	126.00
1	A	20	U	C5-C6-N1	-6.31	119.55	122.70
1	A	884	U	C5-C6-N1	-6.30	119.55	122.70
1	A	920	U	C5-C6-N1	-6.29	119.56	122.70
1	A	825	G	C5-C6-O6	-6.29	124.83	128.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1528	U	C6-N1-C2	6.29	124.77	121.00
1	A	12	U	N3-C4-C5	-6.28	110.83	114.60
1	A	264	U	C2-N3-C4	-6.28	123.23	127.00
1	A	798	G	C6-N1-C2	-6.27	121.34	125.10
1	A	577	G	N3-C4-C5	6.26	131.73	128.60
1	A	115	G	P-O3'-C3'	6.25	127.21	119.70
1	A	1502	A	N9-C4-C5	-6.25	103.30	105.80
1	A	394	G	C5-C6-O6	6.24	132.34	128.60
1	A	662	G	N1-C6-O6	-6.23	116.16	119.90
1	A	701	C	P-O3'-C3'	6.23	127.18	119.70
1	A	1054	C	C5-C6-N1	6.23	124.11	121.00
1	A	875	C	C2-N3-C4	-6.23	116.79	119.90
1	A	376	G	C5-C6-N1	-6.22	108.39	111.50
1	A	758	G	N1-C6-O6	6.22	123.64	119.90
1	A	1073	U	N3-C4-O4	6.22	123.75	119.40
1	A	728	A	C5-C6-N6	-6.21	118.73	123.70
1	A	826	C	C2-N3-C4	-6.21	116.80	119.90
1	A	1239	A	C8-N9-C4	6.21	108.28	105.80
1	A	253	U	OP2-P-O3'	6.20	118.85	105.20
1	A	12	U	C4-C5-C6	6.20	123.42	119.70
1	A	904	C	N3-C4-C5	6.18	124.37	121.90
1	A	869	G	C8-N9-C4	-6.18	103.93	106.40
1	A	305	G	N1-C6-O6	6.18	123.61	119.90
1	A	896	C	N3-C4-C5	6.18	124.37	121.90
1	A	128	G	C5-C6-O6	-6.17	124.89	128.60
1	A	728	A	N1-C6-N6	6.17	122.31	118.60
1	A	53	A	N1-C2-N3	6.17	132.38	129.30
1	A	1374	A	N9-C4-C5	6.17	108.27	105.80
1	A	852	G	C5-C6-N1	-6.17	108.42	111.50
1	A	727	G	N1-C2-N3	6.17	127.60	123.90
1	A	484	G	P-O3'-C3'	6.16	127.10	119.70
1	A	559	A	C5-C6-N1	6.16	120.78	117.70
1	A	1305	G	C8-N9-C4	-6.15	103.94	106.40
1	A	1344	C	N3-C4-C5	6.15	124.36	121.90
1	A	673	G	N1-C6-O6	6.14	123.59	119.90
1	A	132	C	N3-C4-C5	6.14	124.36	121.90
1	A	769	G	C4-C5-N7	6.14	113.26	110.80
1	A	928	G	C5-C6-O6	-6.14	124.92	128.60
1	A	630	G	N9-C4-C5	-6.13	102.95	105.40
1	A	285	G	N1-C6-O6	6.12	123.57	119.90
1	A	1373	G	N1-C6-O6	-6.12	116.22	119.90
1	A	758	G	C4-C5-N7	6.12	113.25	110.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1374	A	C5-C6-N6	6.11	128.59	123.70
1	A	132	C	C5-C6-N1	-6.11	117.95	121.00
1	A	279	A	N1-C6-N6	6.10	122.26	118.60
1	A	570	G	OP1-P-O3'	6.10	118.61	105.20
1	A	656	C	C2-N3-C4	-6.10	116.85	119.90
1	A	266	G	C8-N9-C4	-6.09	103.96	106.40
1	A	559	A	P-O3'-C3'	6.09	127.01	119.70
1	A	403	C	C4-C5-C6	6.09	120.44	117.40
1	A	569	C	C2-N3-C4	-6.09	116.86	119.90
1	A	296	U	C5-C6-N1	-6.08	119.66	122.70
1	A	623	C	C6-N1-C2	6.08	122.73	120.30
1	A	305	G	C4-C5-N7	6.08	113.23	110.80
1	A	826	C	N3-C4-C5	6.08	124.33	121.90
1	A	401	C	C6-N1-C2	-6.07	117.87	120.30
1	A	1129	C	C6-N1-C2	-6.07	117.87	120.30
1	A	732	C	N3-C4-C5	6.07	124.33	121.90
1	A	946	A	N1-C6-N6	-6.06	114.97	118.60
1	A	715	A	N1-C6-N6	6.05	122.23	118.60
1	A	29	G	C5-C6-N1	-6.05	108.48	111.50
1	A	1508	G	C5-C6-N1	6.05	114.52	111.50
1	A	630	G	C5-C6-O6	-6.04	124.97	128.60
1	A	1401	G	C5-C6-N1	6.02	114.51	111.50
1	A	9	G	C5-C6-O6	-6.01	124.99	128.60
1	A	691	G	N1-C6-O6	6.01	123.51	119.90
1	A	328	C	N3-C4-N4	-6.00	113.80	118.00
1	A	116	A	C6-C5-N7	-6.00	128.10	132.30
1	A	355	C	C6-N1-C2	-6.00	117.90	120.30
1	A	873	A	C8-N9-C4	-6.00	103.40	105.80
1	A	1515	C	C5-C6-N1	-5.99	118.00	121.00
1	A	1370	G	N7-C8-N9	5.99	116.10	113.10
1	A	313	A	N1-C2-N3	5.99	132.29	129.30
1	A	1502	A	C4-C5-C6	5.99	120.00	117.00
1	A	673	G	C5-C6-O6	-5.99	125.01	128.60
1	A	822	C	C6-N1-C2	5.99	122.69	120.30
1	A	923	A	C2-N3-C4	-5.97	107.61	110.60
1	A	1281	U	N3-C2-O2	-5.97	118.02	122.20
1	A	942	G	N1-C6-O6	5.96	123.48	119.90
1	A	815	A	C8-N9-C4	5.96	108.19	105.80
1	A	193	C	N3-C4-C5	5.96	124.28	121.90
1	A	132	C	N3-C2-O2	-5.96	117.73	121.90
1	A	1415	G	C5-C6-N1	-5.95	108.52	111.50
1	A	1183	A	N1-C2-N3	-5.95	126.33	129.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1347	G	C5-C6-O6	-5.95	125.03	128.60
1	A	812	C	C4-C5-C6	5.95	120.37	117.40
1	A	1532	U	N3-C4-C5	5.93	118.16	114.60
1	A	581	G	C6-C5-N7	-5.92	126.85	130.40
1	A	583	A	N1-C2-N3	5.91	132.25	129.30
1	A	298	A	C6-N1-C2	-5.91	115.06	118.60
1	A	1202	G	C4-C5-N7	-5.90	108.44	110.80
1	A	1415	G	C6-C5-N7	-5.90	126.86	130.40
1	A	640	A	C5-N7-C8	-5.89	100.95	103.90
1	A	1322	C	C6-N1-C2	5.88	122.65	120.30
1	A	650	G	C8-N9-C4	5.88	108.75	106.40
1	A	598	U	N1-C2-O2	-5.87	118.69	122.80
1	A	581	G	N1-C2-N2	5.87	121.48	116.20
1	A	816	A	C2-N3-C4	-5.86	107.67	110.60
1	A	948	C	N3-C2-O2	5.86	126.00	121.90
1	A	1331	G	P-O3'-C3'	5.86	126.73	119.70
1	A	1190	G	O5'-P-OP2	-5.85	100.44	105.70
1	A	1183	A	C8-N9-C4	5.84	108.14	105.80
1	A	570	G	N1-C6-O6	-5.83	116.40	119.90
1	A	691	G	C5-C6-O6	-5.83	125.10	128.60
1	A	9	G	N3-C4-N9	5.82	129.49	126.00
1	A	785	G	C5-C6-O6	-5.82	125.11	128.60
1	A	696	A	N1-C6-N6	5.82	122.09	118.60
1	A	249	U	C5-C4-O4	5.82	129.39	125.90
1	A	819	A	N1-C6-N6	5.81	122.09	118.60
1	A	573	A	N1-C6-N6	-5.81	115.11	118.60
1	A	129(A)	G	C6-C5-N7	-5.81	126.92	130.40
1	A	971	G	C8-N9-C4	5.81	108.72	106.40
1	A	890	G	C4-C5-N7	-5.80	108.48	110.80
1	A	372	C	N1-C2-O2	5.80	122.38	118.90
1	A	1199	U	C5-C4-O4	5.80	129.38	125.90
1	A	745	C	C5-C6-N1	-5.79	118.10	121.00
1	A	874	G	N3-C4-C5	-5.79	125.71	128.60
1	A	797	C	C6-N1-C2	5.79	122.61	120.30
1	A	116	A	C2-N3-C4	-5.78	107.71	110.60
1	A	327	A	C8-N9-C4	-5.77	103.49	105.80
1	A	243	A	N1-C2-N3	5.77	132.18	129.30
1	A	332	G	OP2-P-O3'	5.76	117.88	105.20
1	A	579	G	C8-N9-C4	5.76	108.70	106.40
1	A	857	C	O5'-P-OP2	-5.76	100.52	105.70
1	A	817	C	O5'-P-OP1	-5.75	100.52	105.70
1	A	879	C	N3-C4-C5	5.75	124.20	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	886	G	N1-C6-O6	5.75	123.35	119.90
1	A	232	G	C6-C5-N7	-5.75	126.95	130.40
1	A	561	U	N1-C2-N3	-5.74	111.45	114.90
1	A	1527	C	OP2-P-O3'	5.74	117.82	105.20
1	A	592	G	C5-C6-N1	-5.73	108.63	111.50
1	A	1227	A	C2-N3-C4	-5.73	107.73	110.60
1	A	1401	G	N3-C4-N9	5.73	129.44	126.00
1	A	43	C	C5-C6-N1	-5.72	118.14	121.00
1	A	9	G	O5'-P-OP1	5.72	117.57	110.70
1	A	593	G	N1-C6-O6	5.72	123.33	119.90
1	A	490	G	C5-C6-O6	-5.71	125.17	128.60
1	A	492	G	N1-C6-O6	5.71	123.32	119.90
1	A	577	G	C5-C6-O6	-5.71	125.18	128.60
1	A	36	C	C6-N1-C2	-5.70	118.02	120.30
1	A	21	G	C5-N7-C8	5.70	107.15	104.30
1	A	1305	G	N7-C8-N9	5.69	115.95	113.10
1	A	21	G	C4-C5-N7	-5.69	108.52	110.80
1	A	350	G	C8-N9-C4	5.67	108.67	106.40
1	A	266	G	N3-C4-C5	5.66	131.43	128.60
1	A	798	G	N1-C2-N3	5.66	127.30	123.90
1	A	247	G	N1-C6-O6	5.65	123.29	119.90
1	A	328	C	C6-N1-C1'	-5.65	114.02	120.80
1	A	32	A	C6-N1-C2	-5.65	115.21	118.60
1	A	15	G	N1-C6-O6	5.65	123.29	119.90
1	A	523	A	N9-C4-C5	-5.65	103.54	105.80
1	A	857	C	C4-C5-C6	5.64	120.22	117.40
1	A	1200	C	C6-N1-C1'	-5.64	114.03	120.80
1	A	1386	G	C6-N1-C2	-5.63	121.72	125.10
1	A	183	G	C6-C5-N7	-5.63	127.02	130.40
1	A	869	G	C4-C5-C6	-5.63	115.42	118.80
1	A	1373	G	C5-N7-C8	5.62	107.11	104.30
1	A	232	G	N3-C4-N9	5.62	129.37	126.00
1	A	860	A	N1-C2-N3	5.62	132.11	129.30
1	A	1080	A	N1-C6-N6	-5.61	115.23	118.60
1	A	569	C	C4-C5-C6	5.61	120.20	117.40
1	A	933	G	N3-C4-C5	5.60	131.40	128.60
1	A	851	G	N3-C2-N2	-5.59	115.99	119.90
1	A	116	A	N9-C4-C5	-5.59	103.56	105.80
1	A	1081	G	C5-N7-C8	-5.59	101.50	104.30
1	A	565	U	C5-C6-N1	-5.58	119.91	122.70
1	A	194	C	C2-N1-C1'	5.58	124.94	118.80
1	A	570	G	C8-N9-C4	-5.58	104.17	106.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	117	G	C4-C5-N7	5.57	113.03	110.80
1	A	569	C	N1-C2-O2	-5.57	115.56	118.90
1	A	857	C	C5-C6-N1	-5.57	118.21	121.00
1	A	971	G	N1-C6-O6	5.57	123.24	119.90
1	A	16	A	OP2-P-O3'	5.57	117.44	105.20
1	A	900	A	C2-N3-C4	-5.57	107.82	110.60
1	A	325	A	C8-N9-C4	-5.56	103.57	105.80
1	A	1531	A	C8-N9-C4	-5.55	103.58	105.80
1	A	29	G	C2-N3-C4	-5.55	109.12	111.90
1	A	871	U	N3-C2-O2	-5.55	118.31	122.20
1	A	1183	A	C4-C5-C6	-5.55	114.23	117.00
1	A	428	G	C5-C6-O6	5.55	131.93	128.60
1	A	815	A	N1-C6-N6	5.55	121.93	118.60
1	A	640	A	N7-C8-N9	5.54	116.57	113.80
1	A	814	A	C8-N9-C4	5.54	108.02	105.80
1	A	1329	A	N1-C6-N6	5.53	121.92	118.60
1	A	384	G	C5-C6-N1	5.53	114.26	111.50
1	A	1305	G	C4-C5-C6	5.53	122.12	118.80
1	A	1461	G	C8-N9-C4	5.52	108.61	106.40
1	A	329	A	C2-N3-C4	-5.52	107.84	110.60
1	A	232	G	C4-C5-N7	5.52	113.01	110.80
1	A	1299	A	C5-N7-C8	-5.52	101.14	103.90
1	A	1190	G	P-O3'-C3'	5.51	126.32	119.70
1	A	784	C	N1-C2-O2	-5.51	115.59	118.90
1	A	975	A	C5-N7-C8	-5.51	101.14	103.90
1	A	881	G	N1-C2-N3	5.50	127.20	123.90
1	A	1299	A	N7-C8-N9	5.50	116.55	113.80
1	A	266	G	P-O3'-C3'	5.50	126.30	119.70
1	A	1401	G	C6-N1-C2	-5.50	121.80	125.10
1	A	820	U	N1-C2-O2	-5.50	118.95	122.80
1	A	874	G	C6-N1-C2	-5.50	121.80	125.10
1	A	403	C	N3-C2-O2	-5.49	118.06	121.90
1	A	1509	C	C2-N3-C4	-5.49	117.16	119.90
1	A	769	G	C6-C5-N7	-5.48	127.11	130.40
1	A	737	A	C5-C6-N6	-5.47	119.32	123.70
1	A	825	G	N3-C2-N2	-5.47	116.07	119.90
1	A	31	G	C8-N9-C4	5.47	108.59	106.40
1	A	80	G	C8-N9-C4	-5.47	104.21	106.40
1	A	304	U	C4-C5-C6	5.47	122.98	119.70
1	A	901	A	C5-C6-N6	5.47	128.07	123.70
1	A	529	G	N1-C6-O6	5.47	123.18	119.90
1	A	888	G	C8-N9-C4	5.46	108.59	106.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	59	A	C5-C6-N1	5.46	120.43	117.70
1	A	454	C	N1-C2-O2	5.46	122.18	118.90
1	A	1112	C	N1-C2-O2	5.46	122.18	118.90
1	A	128	G	N1-C6-O6	5.45	123.17	119.90
1	A	1375	A	C6-N1-C2	-5.45	115.33	118.60
1	A	300	A	C8-N9-C4	-5.45	103.62	105.80
1	A	1513	A	N1-C2-N3	5.45	132.02	129.30
1	A	306	G	C8-N9-C4	5.45	108.58	106.40
1	A	351	G	OP2-P-O3'	5.44	117.17	105.20
1	A	1495	U	N1-C2-N3	-5.44	111.64	114.90
1	A	540	G	N1-C6-O6	5.43	123.16	119.90
1	A	753	A	C6-N1-C2	-5.43	115.34	118.60
1	A	1081	G	N7-C8-N9	5.43	115.82	113.10
1	A	1516	G	N3-C4-C5	5.43	131.31	128.60
1	A	870	U	N1-C2-O2	5.42	126.59	122.80
1	A	693	G	C6-C5-N7	-5.42	127.15	130.40
1	A	13	U	C5-C6-N1	-5.41	119.99	122.70
1	A	691	G	C6-C5-N7	-5.41	127.15	130.40
1	A	794	A	N1-C2-N3	5.41	132.01	129.30
1	A	874	G	C5-C6-N1	5.41	114.21	111.50
1	A	1526	G	C5-C6-O6	-5.41	125.35	128.60
1	A	1527	C	N3-C4-C5	5.41	124.06	121.90
1	A	322	C	C6-N1-C2	5.41	122.46	120.30
1	A	561	U	C5-C4-O4	-5.40	122.66	125.90
1	A	776	G	C8-N9-C4	5.40	108.56	106.40
1	A	781	A	C2-N3-C4	-5.40	107.90	110.60
1	A	867	G	C4-C5-N7	5.40	112.96	110.80
1	A	1074	G	N1-C6-O6	5.40	123.14	119.90
1	A	331	G	C5-N7-C8	-5.40	101.60	104.30
1	A	881	G	C5-C6-N1	5.39	114.20	111.50
1	A	1234	C	C5-C4-N4	-5.39	116.43	120.20
1	A	1452	C	N1-C2-O2	5.39	122.13	118.90
1	A	1509	C	C4-C5-C6	5.39	120.09	117.40
1	A	740	U	C5-C6-N1	-5.38	120.01	122.70
1	A	355	C	C5-C6-N1	5.37	123.69	121.00
1	A	586	C	C2-N1-C1'	-5.37	112.89	118.80
1	A	6	G	C4-N9-C1'	5.37	133.48	126.50
1	A	364	A	N1-C6-N6	-5.37	115.38	118.60
1	A	563	A	N1-C2-N3	5.37	131.99	129.30
1	A	1281	U	C6-N1-C2	-5.37	117.78	121.00
1	A	1331	G	C4-N9-C1'	5.37	133.48	126.50
1	A	621	A	O5'-P-OP2	5.37	117.14	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
18	R	78	LEU	CA-CB-CG	-5.37	102.95	115.30
1	A	366	C	N3-C2-O2	-5.37	118.14	121.90
1	A	888	G	C5-C6-N1	-5.37	108.82	111.50
1	A	553	A	C2-N3-C4	-5.37	107.92	110.60
1	A	126	G	C5-C6-N1	-5.36	108.82	111.50
1	A	569	C	C6-N1-C2	5.36	122.44	120.30
1	A	1539	C	C6-N1-C2	-5.36	118.15	120.30
1	A	598	U	N3-C2-O2	5.36	125.95	122.20
1	A	1347	G	N9-C4-C5	-5.36	103.26	105.40
1	A	325	A	N1-C2-N3	5.36	131.98	129.30
1	A	600	C	C5-C6-N1	-5.36	118.32	121.00
1	A	1347	G	OP2-P-O3'	5.36	116.98	105.20
1	A	285	G	C2-N3-C4	-5.35	109.22	111.90
1	A	53	A	C5-C6-N1	5.35	120.38	117.70
1	A	108	G	C8-N9-C4	-5.35	104.26	106.40
1	A	328	C	C2-N1-C1'	5.34	124.68	118.80
1	A	11	G	C8-N9-C4	5.34	108.54	106.40
1	A	313	A	C2-N3-C4	-5.34	107.93	110.60
1	A	181	G	P-O3'-C3'	5.34	126.11	119.70
1	A	328	C	N3-C4-C5	5.34	124.04	121.90
1	A	584	G	C8-N9-C4	-5.34	104.26	106.40
1	A	927	G	C5-C6-N1	-5.34	108.83	111.50
1	A	1128	C	N3-C4-C5	-5.34	119.76	121.90
1	A	126	G	N1-C6-O6	5.34	123.10	119.90
1	A	784	C	C2-N3-C4	-5.34	117.23	119.90
1	A	46	G	C5-C6-N1	-5.33	108.83	111.50
1	A	559	A	N7-C8-N9	5.33	116.46	113.80
1	A	294	U	O5'-P-OP1	-5.33	100.91	105.70
1	A	117	G	C2-N3-C4	-5.32	109.24	111.90
1	A	640	A	C8-N9-C4	-5.32	103.67	105.80
1	A	400	C	C6-N1-C2	5.31	122.42	120.30
1	A	1058	G	C8-N9-C4	5.31	108.53	106.40
1	A	129(A)	G	N7-C8-N9	5.31	115.75	113.10
1	A	32	A	C5-C6-N1	5.30	120.35	117.70
1	A	965	A	C8-N9-C4	5.30	107.92	105.80
1	A	821	G	N7-C8-N9	-5.30	110.45	113.10
1	A	1412	C	C6-N1-C2	5.30	122.42	120.30
1	A	115	G	C5-C6-N1	5.29	114.14	111.50
1	A	1249	C	C6-N1-C2	-5.29	118.19	120.30
1	A	1513	A	C6-N1-C2	-5.29	115.43	118.60
1	A	1521	G	C6-N1-C2	-5.29	121.93	125.10
1	A	647	C	C6-N1-C2	5.28	122.41	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	721	G	C4-N9-C1'	5.28	133.36	126.50
1	A	592	G	C2-N3-C4	-5.27	109.26	111.90
1	A	1521	G	N3-C4-C5	-5.26	125.97	128.60
1	A	1432	G	C5-C6-N1	-5.26	108.87	111.50
1	A	630	G	N1-C6-O6	5.26	123.05	119.90
1	A	43	C	C6-N1-C2	5.25	122.40	120.30
1	A	1532	U	C5-C4-O4	-5.25	122.75	125.90
1	A	413	G	N3-C4-C5	-5.25	125.97	128.60
1	A	1505	G	OP2-P-O3'	5.25	116.75	105.20
1	A	773	G	C8-N9-C4	5.25	108.50	106.40
1	A	1482	G	N3-C4-C5	-5.25	125.98	128.60
1	A	727	G	C2-N3-C4	-5.24	109.28	111.90
1	A	1505	G	N7-C8-N9	5.24	115.72	113.10
1	A	313	A	N1-C6-N6	-5.23	115.46	118.60
1	A	216	G	O5'-P-OP2	-5.22	101.00	105.70
1	A	813	U	OP2-P-O3'	5.22	116.69	105.20
1	A	879	C	C2-N3-C4	-5.22	117.29	119.90
1	A	762	C	C6-N1-C2	5.22	122.39	120.30
1	A	717	C	O5'-P-OP1	-5.22	101.00	105.70
1	A	1525	G	OP2-P-O3'	5.22	116.68	105.20
1	A	1200	C	C2-N1-C1'	5.22	124.54	118.80
1	A	129(A)	G	P-O3'-C3'	5.21	125.95	119.70
1	A	129(A)	G	C4-N9-C1'	5.21	133.28	126.50
1	A	266	G	O4'-C1'-N9	-5.21	104.03	108.20
1	A	584	G	N1-C6-O6	5.21	123.03	119.90
1	A	561	U	C6-N1-C1'	-5.21	113.91	121.20
1	A	1498	UR3	P-O3'-C3'	5.21	125.95	119.70
1	A	122	G	N1-C6-O6	5.20	123.02	119.90
1	A	383	A	N1-C6-N6	5.20	121.72	118.60
1	A	837	G	C8-N9-C4	5.20	108.48	106.40
1	A	1237	C	C6-N1-C2	-5.20	118.22	120.30
1	A	229	U	N1-C2-N3	5.20	118.02	114.90
5	E	41	VAL	CB-CA-C	-5.19	101.53	111.40
1	A	6	G	N3-C4-N9	5.19	129.11	126.00
1	A	572	A	C5-C6-N1	5.19	120.29	117.70
1	A	737	A	N1-C6-N6	5.18	121.71	118.60
1	A	453	A	C8-N9-C4	5.18	107.87	105.80
1	A	19	C	C4-C5-C6	5.17	119.99	117.40
1	A	131	C	N3-C2-O2	-5.17	118.28	121.90
1	A	384	G	N1-C6-O6	-5.17	116.80	119.90
1	A	862	C	C6-N1-C2	5.17	122.37	120.30
1	A	858	G	C4-C5-C6	5.17	121.90	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	874	G	N3-C4-N9	5.17	129.10	126.00
1	A	1073	U	C6-N1-C2	-5.16	117.90	121.00
17	Q	9	VAL	CB-CA-C	-5.16	101.59	111.40
1	A	138	G	C8-N9-C4	5.16	108.46	106.40
1	A	325	A	C6-N1-C2	-5.16	115.50	118.60
1	A	108	G	N7-C8-N9	5.16	115.68	113.10
1	A	785	G	N7-C8-N9	-5.16	110.52	113.10
1	A	1368	G	N3-C4-C5	-5.16	126.02	128.60
1	A	33	A	C5-C6-N1	5.15	120.28	117.70
1	A	24	U	C5-C6-N1	-5.15	120.12	122.70
1	A	731	G	C5-C6-O6	-5.15	125.51	128.60
1	A	722	A	N3-C4-C5	5.15	130.40	126.80
1	A	579	G	N1-C6-O6	5.15	122.99	119.90
1	A	832	C	C2-N3-C4	-5.15	117.33	119.90
1	A	832	C	N3-C4-C5	5.15	123.96	121.90
1	A	262	A	N1-C6-N6	-5.14	115.52	118.60
1	A	562	C	N1-C2-O2	5.14	121.98	118.90
1	A	753	A	N9-C4-C5	5.14	107.86	105.80
1	A	867	G	N1-C6-O6	5.14	122.98	119.90
1	A	919	A	C8-N9-C4	5.13	107.85	105.80
1	A	174	C	OP2-P-O3'	5.13	116.49	105.20
1	A	1299	A	C2-N3-C4	-5.13	108.03	110.60
1	A	253	U	OP1-P-O3'	-5.13	93.92	105.20
1	A	725	G	N1-C6-O6	5.12	122.97	119.90
1	A	719	C	N3-C2-O2	-5.12	118.31	121.90
1	A	559	A	N3-C4-C5	-5.12	123.22	126.80
1	A	693	G	N1-C6-O6	5.11	122.97	119.90
1	A	228	A	N1-C6-N6	5.11	121.67	118.60
1	A	600	C	C6-N1-C2	5.11	122.34	120.30
1	A	767	A	C2-N3-C4	-5.11	108.04	110.60
1	A	901	A	N3-C4-N9	-5.11	123.31	127.40
1	A	568	G	N1-C6-O6	-5.11	116.83	119.90
1	A	519	C	C6-N1-C2	5.11	122.34	120.30
1	A	970	C	N3-C2-O2	-5.11	118.32	121.90
1	A	1055	A	O5'-P-OP1	-5.11	101.10	105.70
1	A	331	G	N7-C8-N9	5.10	115.65	113.10
1	A	915	A	C8-N9-C4	-5.10	103.76	105.80
1	A	869	G	C8-N9-C1'	5.09	133.62	127.00
1	A	876	G	C5-C6-O6	-5.09	125.55	128.60
1	A	951	G	C8-N9-C4	5.09	108.44	106.40
1	A	331	G	C4-C5-N7	5.09	112.83	110.80
1	A	231	G	C5-C6-N1	5.09	114.04	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1338	G	N1-C2-N3	5.09	126.95	123.90
1	A	572	A	N1-C6-N6	-5.08	115.55	118.60
1	A	1507	A	N1-C2-N3	5.08	131.84	129.30
1	A	884	U	OP1-P-OP2	5.08	127.22	119.60
1	A	1108	G	C8-N9-C4	-5.07	104.37	106.40
1	A	1543	C	C5-C4-N4	-5.07	116.65	120.20
1	A	1403	C	N3-C2-O2	5.07	125.45	121.90
1	A	16	A	N1-C2-N3	5.06	131.83	129.30
1	A	566	G	C6-C5-N7	-5.06	127.36	130.40
1	A	769	G	N9-C4-C5	-5.06	103.38	105.40
1	A	573	A	C6-N1-C2	-5.05	115.57	118.60
1	A	304	U	N1-C2-N3	5.04	117.92	114.90
1	A	364	A	N9-C4-C5	5.04	107.81	105.80
1	A	289	G	N1-C6-O6	5.03	122.92	119.90
1	A	1256	A	C8-N9-C4	5.03	107.81	105.80
1	A	299	G	N1-C6-O6	5.03	122.92	119.90
1	A	816	A	C5-N7-C8	-5.02	101.39	103.90
1	A	1083	U	N3-C2-O2	5.02	125.72	122.20
1	A	819	A	C6-C5-N7	-5.02	128.79	132.30
1	A	902	G	C8-N9-C4	5.02	108.41	106.40
1	A	1370	G	C5-C6-N1	-5.02	108.99	111.50
1	A	851	G	C6-C5-N7	-5.01	127.39	130.40
18	R	51	LEU	CB-CG-CD1	-5.01	102.48	111.00
1	A	913	A	N1-C6-N6	-5.01	115.59	118.60
1	A	1512	U	C4-C5-C6	5.01	122.71	119.70
1	A	129(A)	G	C4-C5-N7	5.01	112.80	110.80
1	A	33	A	C2-N3-C4	5.00	113.10	110.60
1	A	805	C	N3-C4-C5	5.00	123.90	121.90

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	89	GLY	Peptide
8	H	90	GLY	Peptide
9	I	38	GLN	Peptide
10	J	87	THR	Peptide



## 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	32504	0	16434	354	1
2	B	1874	0	1887	41	0
3	C	1613	0	1677	36	0
4	D	1703	0	1763	44	0
5	E	1147	0	1207	38	0
6	F	843	0	857	33	0
7	G	1257	0	1296	31	0
8	H	1116	0	1177	39	0
9	I	1010	0	1037	38	1
10	J	793	0	835	24	0
11	K	885	0	904	22	0
12	L	973	0	1058	27	0
13	M	937	0	995	37	0
14	N	492	0	529	14	0
15	O	734	0	771	23	0
16	P	701	0	720	22	0
17	Q	857	0	928	21	0
18	R	598	0	670	23	0
19	S	648	0	673	20	0
20	T	763	0	861	34	0
21	U	209	0	221	2	0
22	A	121	0	0	0	0
22	B	1	0	0	0	0
22	D	2	0	0	0	0
22	E	1	0	0	0	0
22	H	1	0	0	0	0
22	J	1	0	0	0	0
22	K	1	0	0	0	0
22	M	1	0	0	0	0
22	N	2	0	0	0	0
22	Q	1	0	0	0	0
22	S	1	0	0	0	0
23	A	16	0	0	0	0
24	A	32	0	37	0	0
25	D	1	0	0	0	0
25	N	1	0	0	0	0
26	A	41	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	E	6	0	0	0	0
26	L	1	0	0	0	0
All	All	51888	0	36537	820	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

All (820) 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)
15:O:39:LEU:HD13	15:O:56:LEU:HB2	1.56	0.88
1:A:103:C:OP1	20:T:17:ARG:NH1	2.08	0.87
11:K:57:THR:HG22	11:K:59:TYR:H	1.42	0.84
16:P:57:ARG:NH1	16:P:79:VAL:O	2.11	0.83
7:G:27:ILE:HD12	7:G:40:ALA:HA	1.62	0.80
11:K:79:SER:HB2	11:K:106:LYS:HD2	1.63	0.79
14:N:3:ARG:HH21	14:N:6:LEU:HD11	1.48	0.79
1:A:427:U:OP1	4:D:13:ARG:NH2	2.15	0.78
8:H:4:ASP:OD2	8:H:85:ARG:NH1	2.16	0.78
11:K:40:ILE:HG22	11:K:41:THR:HG23	1.67	0.77
12:L:27:LEU:O	12:L:29:GLY:N	2.17	0.77
7:G:111:ARG:NH2	7:G:126:ASP:OD2	2.18	0.77
1:A:1003(A):G:N2	1:A:1038:C:N3	2.33	0.76
1:A:951:G:OP2	13:M:102:ARG:NH2	2.19	0.76
1:A:677:U:H3	1:A:713:G:H22	1.34	0.76
1:A:1086:U:H3	1:A:1099:G:H22	1.34	0.75
15:O:87:ILE:HG22	15:O:88:ARG:H	1.50	0.75
1:A:1117:G:O3'	9:I:104:ARG:NH1	2.20	0.74
20:T:56:MET:HG3	20:T:88:VAL:HG21	1.69	0.74
1:A:975:A:H5'	1:A:975:A:H8	1.51	0.74
11:K:15:ALA:HA	11:K:77:MET:HA	1.68	0.74
9:I:48:GLU:OE2	9:I:51:ARG:NH2	2.21	0.73
13:M:10:PRO:HB2	13:M:18:ALA:HB1	1.69	0.73
1:A:1391:U:H2'	1:A:1392:G:C8	2.24	0.72
2:B:97:TRP:HZ2	2:B:102:LEU:HD13	1.55	0.72
1:A:1112:C:H1'	3:C:179:ARG:HE	1.55	0.72
1:A:835:U:OP1	18:R:64:ARG:NH2	2.23	0.71
1:A:235:C:H5'	17:Q:70:ARG:HG2	1.72	0.71
1:A:279:A:OP2	17:Q:95:TYR:OH	2.07	0.71
1:A:1004:A:N6	1:A:1036:G:N7	2.38	0.71
5:E:83:GLU:HG2	5:E:88:LYS:HG3	1.72	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:664:G:H22	1:A:741:G:H1	1.38	0.71
1:A:1392:G:H21	1:A:1502:A:H8	1.38	0.71
2:B:84:GLU:HB3	2:B:219:VAL:HG21	1.72	0.71
2:B:87:ARG:CZ	2:B:233:SER:HB2	2.21	0.70
2:B:75:LYS:HA	2:B:78:GLN:HB2	1.73	0.70
1:A:975:A:H4'	1:A:976:G:H5''	1.71	0.70
1:A:1435:G:H2'	1:A:1436:U:C6	2.26	0.70
1:A:259:G:OP2	20:T:83:ARG:NH1	2.24	0.69
5:E:144:THR:O	5:E:148:VAL:HG23	1.92	0.69
1:A:103:C:P	20:T:17:ARG:HH12	2.15	0.69
3:C:91:LEU:HB3	3:C:99:VAL:HG21	1.75	0.69
16:P:74:LEU:HD22	16:P:79:VAL:HG21	1.75	0.69
2:B:197:VAL:HB	2:B:200:ILE:HG12	1.76	0.68
6:F:25:ILE:HG21	6:F:82:ARG:HD2	1.74	0.68
1:A:1412:C:H2'	1:A:1413:A:C8	2.29	0.68
2:B:223:ILE:HD13	2:B:230:VAL:H	1.57	0.68
1:A:266:G:H5''	1:A:268:C:H41	1.59	0.68
1:A:1139:G:H4'	1:A:1140:C:H5'	1.76	0.67
4:D:98:GLU:OE2	4:D:107:ARG:NE	2.28	0.67
1:A:975:A:H5'	1:A:975:A:C8	2.30	0.67
3:C:14:ILE:HG22	3:C:15:THR:HG23	1.76	0.67
3:C:156:ARG:H	3:C:163:ALA:HA	1.60	0.67
6:F:83:ASP:OD2	6:F:83:ASP:N	2.26	0.67
18:R:47:THR:HA	18:R:83:GLU:HB2	1.75	0.67
5:E:8:GLU:HG2	5:E:34:VAL:HG22	1.77	0.67
15:O:36:ILE:HG12	15:O:59:MET:HE3	1.76	0.67
8:H:10:LEU:HD22	8:H:83:ILE:HD11	1.76	0.67
1:A:263:A:OP2	20:T:79:ARG:NH1	2.27	0.66
1:A:1130:A:O2'	9:I:3:GLN:NE2	2.18	0.66
1:A:7:G:O6	5:E:92:LYS:NZ	2.22	0.66
7:G:146:GLU:HA	7:G:149:ARG:HG3	1.76	0.66
1:A:1007:C:H42	1:A:1022:G:H1	1.41	0.66
1:A:656:C:O2'	15:O:28:GLN:NE2	2.27	0.66
1:A:1310:G:OP2	13:M:88:ARG:NH2	2.29	0.66
2:B:102:LEU:HB2	2:B:176:GLU:HG2	1.76	0.66
5:E:88:LYS:HD2	5:E:123:LEU:HD12	1.77	0.66
12:L:53:ARG:NH1	12:L:92:OTD:OD2	2.28	0.66
4:D:131:ARG:HE	4:D:131:ARG:HA	1.59	0.65
1:A:1147:C:O2	9:I:16:ARG:NH2	2.30	0.64
1:A:1338:G:H2'	1:A:1339:A:C8	2.31	0.64
4:D:5:ILE:HA	4:D:115:ARG:HH22	1.63	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1240:U:OP1	7:G:119:ARG:NH1	2.27	0.64
17:Q:66:SER:O	17:Q:70:ARG:NH1	2.31	0.64
1:A:1095:U:H2'	1:A:1096:C:C6	2.32	0.64
1:A:1202:G:H1'	14:N:29:ARG:HD2	1.78	0.64
20:T:61:SER:O	20:T:65:LYS:HG2	1.97	0.64
3:C:164:ARG:NH1	3:C:166:GLU:OE1	2.31	0.64
8:H:13:ILE:O	8:H:17:THR:HG23	1.98	0.64
1:A:427:U:OP2	4:D:36:ARG:NH2	2.32	0.63
1:A:673:G:H2'	1:A:674:G:C8	2.33	0.63
1:A:1392:G:N2	1:A:1502:A:H8	1.96	0.63
1:A:581:G:C6	1:A:758:G:N7	2.67	0.63
9:I:98:PRO:HG2	9:I:99:LEU:HD22	1.80	0.63
12:L:27:LEU:C	12:L:29:GLY:H	2.02	0.63
1:A:1347:G:H3'	9:I:108:VAL:O	1.99	0.63
16:P:4:ILE:HG12	16:P:21:VAL:HG22	1.80	0.63
4:D:61:LYS:HD2	4:D:207:TYR:OH	1.99	0.63
5:E:18:ARG:HE	5:E:27:ARG:HH12	1.47	0.63
3:C:154:SER:HA	3:C:165:THR:HG23	1.80	0.62
2:B:74:LYS:HD2	2:B:166:ASP:HB2	1.82	0.62
10:J:54:PHE:HD2	10:J:55:LYS:HG2	1.65	0.62
20:T:53:LEU:HB2	20:T:100:ILE:HG21	1.81	0.62
1:A:537:G:OP1	12:L:113:ARG:NH2	2.29	0.61
2:B:103:THR:HG23	2:B:176:GLU:HG3	1.82	0.61
5:E:151:LEU:HD22	8:H:79:VAL:HG22	1.82	0.61
8:H:86:ILE:HG21	8:H:133:LEU:HD13	1.80	0.61
19:S:31:ILE:HG22	19:S:49:ILE:HA	1.81	0.61
1:A:1003(A):G:H2'	1:A:1004:A:H4'	1.80	0.61
7:G:69:VAL:HG21	7:G:104:LEU:HD21	1.81	0.61
3:C:147:LYS:HD3	3:C:205:GLY:H	1.64	0.61
4:D:8:VAL:HB	4:D:21:LEU:HD22	1.83	0.61
1:A:372:C:H4'	1:A:373:A:O5'	2.00	0.61
1:A:750:G:N3	15:O:23:GLY:HA3	2.15	0.61
5:E:110:LEU:HD13	5:E:118:ILE:HG21	1.82	0.61
6:F:95:GLU:HG3	6:F:96:PRO:HD2	1.82	0.61
11:K:124:LYS:HG2	11:K:125:PHE:HD1	1.64	0.61
1:A:184:G:H2'	1:A:185:A:H8	1.66	0.61
1:A:1266:G:N2	1:A:1269:A:OP2	2.28	0.61
1:A:316:G:OP2	1:A:351:G:O2'	2.18	0.60
1:A:953:G:N7	13:M:104:ARG:NH2	2.49	0.60
2:B:178:ARG:NH1	2:B:198:ASP:OD1	2.33	0.60
3:C:156:ARG:NE	3:C:160:ALA:O	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1510:U:H2'	1:A:1511:G:C8	2.36	0.60
3:C:11:ARG:NH1	3:C:177:THR:O	2.34	0.60
4:D:125:HIS:ND1	4:D:152:SER:OG	2.28	0.60
1:A:667:G:H4'	15:O:51:HIS:CE1	2.35	0.60
6:F:2:ARG:NH2	6:F:69:GLU:OE2	2.34	0.60
1:A:620:C:H2'	1:A:621:A:O4'	2.01	0.60
1:A:130:A:OP2	1:A:190(E):U:O2'	2.13	0.60
2:B:103:THR:N	2:B:176:GLU:OE1	2.33	0.60
2:B:223:ILE:O	2:B:227:GLY:N	2.30	0.60
1:A:1423:G:N2	1:A:1477:C:O2	2.32	0.60
1:A:160:A:H61	1:A:347:G:H1'	1.67	0.59
10:J:51:ARG:HB2	10:J:59:SER:HB3	1.83	0.59
1:A:1502:A:H2	1:A:1505:G:H1	1.50	0.59
13:M:49:THR:HG22	13:M:51:ALA:H	1.67	0.59
1:A:633:G:H2'	1:A:634:C:C6	2.38	0.59
6:F:82:ARG:HB2	6:F:85:VAL:HG23	1.84	0.59
1:A:633:G:H2'	1:A:634:C:H6	1.67	0.59
3:C:6:HIS:NE2	3:C:8:ILE:HB	2.18	0.59
2:B:77:ALA:HB2	2:B:211:ILE:HD13	1.84	0.59
5:E:80:ILE:HD12	5:E:91:LEU:HB2	1.83	0.59
13:M:59:TYR:O	13:M:63:THR:OG1	2.16	0.59
18:R:74:ARG:HD3	18:R:81:PHE:HA	1.84	0.59
20:T:43:LEU:HD13	20:T:51:GLU:HB3	1.85	0.59
6:F:7:ASN:HB2	6:F:89:MET:HB3	1.83	0.58
19:S:11:VAL:HG13	19:S:38:SER:HB2	1.85	0.58
1:A:545:C:O2'	1:A:549:C:OP1	2.20	0.58
1:A:8:A:H5'	5:E:101:ILE:HG22	1.85	0.58
10:J:89:ASP:HB2	10:J:91:PRO:HD2	1.86	0.58
1:A:1249:C:O2'	9:I:73:GLN:NE2	2.37	0.58
1:A:1399:C:H4'	1:A:1400:5MC:H5''	1.85	0.58
16:P:74:LEU:O	16:P:79:VAL:HG23	2.02	0.58
17:Q:94:ASN:O	17:Q:97:SER:HB3	2.04	0.58
1:A:1497:G:H2'	1:A:1498:UR3:H5'	1.86	0.58
19:S:55:LYS:HG2	19:S:56:GLN:HG3	1.86	0.58
1:A:1128:C:HO2'	1:A:1130:A:H8	1.52	0.58
18:R:38:GLU:HA	18:R:41:LYS:HE3	1.86	0.57
7:G:5:ARG:HG3	7:G:7:ALA:H	1.69	0.57
18:R:46:GLU:CD	18:R:46:GLU:H	2.06	0.57
1:A:932:C:H4'	7:G:4:ARG:HH21	1.69	0.57
7:G:78:ARG:NH1	7:G:154:TYR:O	2.36	0.57
1:A:148:G:H2'	1:A:149:A:H8	1.70	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:75:THR:OG1	5:E:76:ILE:N	2.38	0.57
1:A:1112:C:N3	3:C:178:LEU:HB2	2.20	0.56
16:P:67:THR:H	16:P:70:ALA:HB3	1.70	0.56
1:A:344:A:H5'	1:A:345:C:C5	2.40	0.56
3:C:134:ILE:HG23	3:C:151:VAL:HB	1.86	0.56
12:L:70:ILE:HG12	12:L:100:ILE:HD12	1.88	0.56
1:A:279:A:C6	17:Q:98:LEU:HD12	2.41	0.56
6:F:50:TYR:CE1	18:R:77:GLY:HA2	2.40	0.56
6:F:61:LEU:HD12	6:F:63:TYR:HE2	1.70	0.56
7:G:59:LEU:HG	7:G:63:LYS:HE2	1.86	0.56
1:A:1064:G:N2	1:A:1190:G:H2'	2.20	0.56
1:A:581:G:O6	1:A:758:G:N7	2.39	0.56
9:I:10:ARG:NH1	9:I:75:ASP:OD2	2.38	0.56
13:M:22:ILE:HB	13:M:25:ILE:HD12	1.86	0.56
1:A:792:A:H1'	1:A:794:A:N7	2.21	0.56
6:F:33:TYR:HB2	6:F:75:LEU:HD12	1.88	0.56
13:M:46:LYS:H	13:M:46:LYS:HD2	1.70	0.56
3:C:58:GLU:HB2	3:C:65:ALA:HB3	1.88	0.56
3:C:150:LYS:HB3	3:C:201:TYR:HB2	1.87	0.56
3:C:150:LYS:HE3	3:C:167:TRP:HE1	1.71	0.56
9:I:7:THR:HG21	9:I:9:ARG:HH21	1.71	0.56
1:A:989:C:O2	1:A:1216:G:N2	2.30	0.56
9:I:4:TYR:CG	9:I:88:TYR:HB2	2.41	0.56
15:O:64:ARG:HG2	15:O:88:ARG:HH12	1.70	0.56
16:P:22:THR:HA	16:P:33:ILE:HG13	1.87	0.56
1:A:923:A:OP1	5:E:21:ALA:HB2	2.06	0.55
11:K:24:SER:OG	11:K:25:TYR:N	2.35	0.55
11:K:91:ARG:O	11:K:95:ILE:HG13	2.06	0.55
1:A:299:G:H2'	1:A:300:A:C8	2.40	0.55
1:A:1035:A:H2'	1:A:1036:G:C8	2.41	0.55
4:D:28:SER:O	4:D:30:LYS:N	2.33	0.55
4:D:112:VAL:HG12	4:D:116:GLN:OE1	2.06	0.55
8:H:17:THR:HG22	8:H:63:LEU:HG	1.89	0.55
10:J:44:VAL:HG12	10:J:66:ARG:HB3	1.88	0.55
13:M:96:LEU:HB3	13:M:97:PRO:HD2	1.86	0.55
6:F:11:ASN:OD1	6:F:86:ARG:NH2	2.39	0.55
12:L:60:LEU:HB3	12:L:62:SER:H	1.71	0.55
1:A:7:G:H5'	1:A:298:A:O4'	2.07	0.55
1:A:1347:G:O2'	1:A:1348:U:P	2.64	0.55
8:H:85:ARG:NE	8:H:87:SER:O	2.40	0.55
1:A:260:G:H2'	1:A:261:U:C6	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:16:HIS:HB3	2:B:44:LEU:HD23	1.88	0.55
5:E:12:LEU:HD13	5:E:31:LEU:HB2	1.88	0.55
11:K:124:LYS:HG2	11:K:125:PHE:CD1	2.40	0.55
1:A:731:G:OP1	1:A:766:A:H1'	2.07	0.55
1:A:1002:G:H2'	1:A:1003:G:C8	2.42	0.55
8:H:100:ILE:HB	8:H:125:ARG:HH12	1.71	0.55
13:M:97:PRO:HA	13:M:110:ARG:HG2	1.87	0.54
1:A:795:C:H5''	1:A:796:C:OP2	2.07	0.54
6:F:47:ARG:HA	6:F:57:GLN:HG2	1.89	0.54
1:A:47:C:C6	1:A:365:U:H2'	2.42	0.54
1:A:1287:A:H2'	1:A:1288:A:C8	2.42	0.54
12:L:49:ASN:ND2	12:L:92:0TD:SB	2.81	0.54
7:G:70:LYS:HD2	7:G:96:GLN:HB3	1.88	0.54
16:P:9:PHE:N	16:P:16:HIS:O	2.37	0.54
16:P:43:LYS:HG2	16:P:48:TRP:CG	2.43	0.54
1:A:824:C:H2'	1:A:825:G:H8	1.71	0.54
8:H:123:GLU:O	8:H:127:LEU:HB2	2.07	0.54
5:E:80:ILE:HD13	5:E:138:ALA:HB1	1.89	0.54
21:U:6:ARG:O	21:U:12:LYS:HE3	2.06	0.54
1:A:1286:A:H2'	1:A:1287:A:H4'	1.88	0.54
1:A:1497:G:C2'	1:A:1498:UR3:H5'	2.38	0.54
2:B:115:LEU:HD11	2:B:146:GLN:HG3	1.89	0.54
7:G:79:ARG:HA	7:G:84:ASN:HA	1.90	0.54
13:M:96:LEU:O	13:M:110:ARG:NH1	2.40	0.54
5:E:30:ALA:O	5:E:45:PHE:HA	2.08	0.54
1:A:580:U:H2'	1:A:581:G:O4'	2.08	0.54
1:A:1367:C:H5'	10:J:60:ARG:NH1	2.23	0.54
13:M:23:TYR:HE2	13:M:70:LEU:HB3	1.73	0.54
1:A:559:A:OP1	5:E:126:ARG:NH2	2.32	0.53
1:A:833:U:H2'	1:A:834:C:C6	2.43	0.53
1:A:908:A:H2'	1:A:909:A:C8	2.43	0.53
2:B:131:PRO:HG2	2:B:134:GLU:HG3	1.89	0.53
6:F:30:LEU:HD23	6:F:75:LEU:HD11	1.91	0.53
1:A:824:C:H2'	1:A:825:G:C8	2.43	0.53
20:T:53:LEU:HD12	20:T:100:ILE:HG23	1.90	0.53
1:A:192:U:O4'	20:T:103:GLY:HA2	2.08	0.53
2:B:122:PHE:HA	2:B:127:ILE:HG21	1.90	0.53
1:A:932:C:H4'	7:G:4:ARG:NH2	2.23	0.53
4:D:152:SER:HA	4:D:155:LEU:HG	1.90	0.53
15:O:26:GLU:OE1	15:O:77:ARG:NH1	2.34	0.53
1:A:114:U:O2'	1:A:115:G:H5'	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:858:G:C6	1:A:869:G:C8	2.97	0.53
1:A:946:A:H2'	1:A:947:G:C8	2.44	0.53
1:A:1148:U:H2'	1:A:1149:C:O4'	2.08	0.53
1:A:1518:MA6:H93	1:A:1519:MA6:H92	1.89	0.53
10:J:38:ILE:HG22	10:J:39:PRO:HD2	1.89	0.53
1:A:1128:C:OP1	9:I:66:ARG:NH1	2.42	0.53
1:A:860:A:H2'	1:A:861:G:O4'	2.09	0.53
3:C:29:TYR:OH	14:N:54:PRO:O	2.25	0.53
3:C:64:VAL:HG23	3:C:99:VAL:HA	1.89	0.53
6:F:42:GLU:HG3	6:F:61:LEU:HB3	1.90	0.53
7:G:65:ALA:HB2	7:G:128:ALA:HB2	1.91	0.53
1:A:1228:C:H4'	13:M:116:THR:HA	1.90	0.52
7:G:38:LEU:O	7:G:42:ILE:HG13	2.08	0.52
12:L:90:VAL:HG21	12:L:93:LEU:HD12	1.90	0.52
6:F:8:ILE:HG22	6:F:10:LEU:HD13	1.90	0.52
6:F:45:LEU:HD23	6:F:45:LEU:H	1.74	0.52
16:P:43:LYS:HG2	16:P:48:TRP:CD2	2.44	0.52
1:A:279:A:C5	17:Q:98:LEU:HD12	2.45	0.52
1:A:545:C:OP2	4:D:62:GLN:NE2	2.41	0.52
12:L:113:ARG:HH12	12:L:116:SER:H	1.57	0.52
7:G:138:LYS:HE2	7:G:142:GLU:OE1	2.10	0.52
9:I:8:GLY:HA3	9:I:79:LEU:HB3	1.92	0.52
4:D:36:ARG:HB3	4:D:38:TYR:CZ	2.45	0.52
16:P:2:VAL:O	16:P:64:ALA:HA	2.09	0.52
1:A:28:G:O2'	1:A:296:U:OP1	2.28	0.52
1:A:45:U:H2'	1:A:46:G:C8	2.44	0.52
1:A:1305:G:N2	1:A:1331:G:H1'	2.25	0.52
17:Q:48:GLU:HB2	17:Q:50:LYS:HG3	1.92	0.52
17:Q:67:LYS:HA	17:Q:70:ARG:HH12	1.74	0.52
1:A:35:G:H2'	1:A:36:C:C6	2.45	0.52
4:D:152:SER:O	4:D:158:ILE:HD12	2.09	0.52
8:H:29:SER:HB3	8:H:32:LYS:HG3	1.92	0.52
13:M:108:ARG:NH2	13:M:114:ARG:HA	2.24	0.52
15:O:56:LEU:HA	15:O:59:MET:HE2	1.92	0.52
1:A:966:M2G:HM13	1:A:967:5MC:H1'	1.91	0.51
8:H:19:VAL:HG23	8:H:21:LYS:HG3	1.92	0.51
2:B:51:LEU:HG	2:B:201:ILE:HG23	1.92	0.51
4:D:120:LEU:HA	4:D:125:HIS:HD2	1.74	0.51
8:H:30:ARG:O	8:H:33:GLU:HB3	2.10	0.51
16:P:15:PRO:HD2	16:P:42:ARG:HD3	1.90	0.51
17:Q:66:SER:OG	17:Q:69:LYS:HB3	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:701:C:H5''	1:A:703:G:O4'	2.11	0.51
1:A:875:C:O2'	8:H:14:ARG:NH1	2.43	0.51
1:A:1130:A:HO2'	9:I:3:GLN:HE22	1.51	0.51
12:L:78:GLN:H	12:L:81:SER:HB2	1.75	0.51
14:N:27:CYS:SG	14:N:29:ARG:HG2	2.50	0.51
1:A:62:U:O3'	1:A:384:G:N2	2.43	0.51
10:J:82:ILE:HA	10:J:85:LEU:HB2	1.93	0.51
1:A:501:C:H2'	1:A:502:G:H8	1.76	0.51
4:D:23:GLY:HA3	4:D:112:VAL:HG22	1.93	0.51
20:T:64:ASP:O	20:T:67:ALA:HB3	2.11	0.51
1:A:243:A:C2	1:A:246:A:C8	2.99	0.51
1:A:1425:U:H2'	1:A:1426:C:C6	2.46	0.51
1:A:1478:C:H2'	1:A:1479:C:H6	1.75	0.51
4:D:64:LEU:HG	4:D:198:VAL:HG11	1.93	0.51
1:A:407:G:OP1	4:D:115:ARG:NH2	2.44	0.51
1:A:524:G:H2'	1:A:525:C:C6	2.45	0.51
9:I:49:PRO:HB2	9:I:81:ILE:HG22	1.93	0.51
1:A:515:G:C6	1:A:516:PSU:C2	2.99	0.51
5:E:76:ILE:HG13	5:E:142:LEU:HD11	1.92	0.51
10:J:57:LYS:O	10:J:60:ARG:NH2	2.44	0.51
19:S:33:THR:HG22	19:S:35:SER:H	1.76	0.51
1:A:197:A:N1	1:A:220:G:O2'	2.34	0.51
1:A:757:U:H2'	1:A:758:G:O4'	2.10	0.51
1:A:812:C:H4'	1:A:813:U:H5'	1.92	0.51
2:B:20:GLU:HA	2:B:39:ILE:HG13	1.93	0.51
13:M:33:ALA:O	13:M:37:THR:OG1	2.27	0.51
1:A:1035:A:H2'	1:A:1036:G:H8	1.75	0.50
1:A:600:C:H2'	1:A:601:C:H6	1.77	0.50
1:A:1304:G:C6	1:A:1305:G:N1	2.80	0.50
8:H:24:THR:HG23	8:H:61:VAL:HB	1.94	0.50
1:A:778:G:H2'	1:A:779:C:O4'	2.10	0.50
1:A:1124:G:N7	1:A:1145:C:O2'	2.40	0.50
1:A:382:A:H2'	1:A:383:A:C8	2.46	0.50
1:A:1022:G:H2'	1:A:1023:G:C8	2.45	0.50
4:D:24:GLU:HG2	4:D:25:ARG:N	2.27	0.50
1:A:444:C:H2'	1:A:445:G:C8	2.47	0.50
10:J:29:ARG:H	10:J:29:ARG:HD2	1.76	0.50
1:A:1413:A:H2	1:A:1487:G:H22	1.59	0.50
4:D:162:LEU:HG	4:D:181:MET:HG2	1.94	0.50
6:F:8:ILE:HG21	6:F:26:ILE:HD11	1.91	0.50
1:A:880:C:OP1	12:L:8:ASN:ND2	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1356:G:H2'	1:A:1357:A:C8	2.47	0.50
8:H:41:ARG:NH1	8:H:123:GLU:OE2	2.45	0.50
10:J:19:SER:HB2	10:J:91:PRO:HG2	1.93	0.50
14:N:9:LYS:O	14:N:9:LYS:HG2	2.11	0.50
1:A:1118:C:H2'	1:A:1119:C:C6	2.46	0.50
1:A:1513:A:H2'	1:A:1514:C:C6	2.47	0.50
8:H:108:GLY:HA3	8:H:138:TRP:HB3	1.94	0.50
1:A:110:C:H2'	1:A:111:G:O4'	2.12	0.49
1:A:858:G:O6	1:A:869:G:C8	2.64	0.49
1:A:1314:C:OP2	19:S:6:LYS:HD2	2.12	0.49
12:L:27:LEU:C	12:L:29:GLY:N	2.64	0.49
16:P:19:ILE:HG22	16:P:36:ILE:HG13	1.94	0.49
1:A:1167:A:C2	1:A:1168:A:C4	3.00	0.49
3:C:3:ASN:OD1	3:C:3:ASN:N	2.45	0.49
4:D:192:GLU:OE2	4:D:192:GLU:N	2.45	0.49
19:S:27:GLU:OE2	19:S:27:GLU:N	2.45	0.49
1:A:1022:G:H2'	1:A:1023:G:H8	1.78	0.49
1:A:1101:A:H4'	1:A:1102:A:O5'	2.11	0.49
1:A:1372:U:OP1	9:I:71:SER:HB3	2.11	0.49
6:F:55:ASP:HB2	6:F:86:ARG:HH12	1.76	0.49
7:G:70:LYS:HG2	7:G:100:ALA:HB2	1.94	0.49
1:A:421:U:H5'	1:A:422:C:C5	2.47	0.49
1:A:1002:G:H2'	1:A:1003:G:H8	1.77	0.49
1:A:1410:G:H2'	1:A:1411:C:C6	2.46	0.49
1:A:1465:C:H2'	1:A:1466:C:O4'	2.13	0.49
8:H:124:ALA:O	8:H:128:GLY:N	2.43	0.49
10:J:16:LEU:HD13	10:J:70:ARG:HG2	1.94	0.49
19:S:80:TYR:CE1	19:S:81:ARG:HD3	2.47	0.49
1:A:1112:C:C2	3:C:178:LEU:HB2	2.48	0.49
1:A:1516:G:H2'	1:A:1518:MA6:OP2	2.12	0.49
10:J:3:LYS:O	10:J:101:VAL:N	2.46	0.49
19:S:18:LYS:O	19:S:22:LEU:HG	2.12	0.49
1:A:1343:G:H2'	1:A:1344:C:C6	2.47	0.49
12:L:24:VAL:HG13	12:L:98:TYR:HE2	1.77	0.49
1:A:192:U:C1'	20:T:103:GLY:HA2	2.43	0.49
1:A:376:G:H5''	16:P:5:ARG:HD2	1.94	0.49
2:B:73:THR:N	2:B:170:GLU:OE1	2.37	0.49
17:Q:83:ASP:OD1	17:Q:83:ASP:N	2.46	0.49
1:A:99:C:H2'	1:A:101:A:C8	2.47	0.49
9:I:32:ASP:OD1	9:I:33:PHE:N	2.46	0.49
1:A:501:C:H2'	1:A:502:G:C8	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:52:GLU:O	13:M:56:LEU:HB2	2.12	0.49
1:A:262:A:C6	1:A:263:A:C6	3.00	0.48
1:A:532:A:O2'	1:A:533:A:OP1	2.25	0.48
1:A:794:A:H2'	1:A:795:C:C6	2.48	0.48
4:D:12:CYS:HB3	4:D:33:MET:HG2	1.94	0.48
10:J:87:THR:HG23	10:J:89:ASP:OD1	2.13	0.48
15:O:33:THR:HG23	15:O:63:ARG:NH1	2.29	0.48
1:A:192:U:H2'	1:A:193:C:H6	1.79	0.48
1:A:344:A:H5'	1:A:345:C:H5	1.78	0.48
1:A:397:A:H5'	1:A:398:C:OP1	2.12	0.48
1:A:432:A:H2'	1:A:433:C:O4'	2.13	0.48
2:B:30:ARG:HG3	2:B:31:TYR:CD2	2.48	0.48
4:D:68:TYR:CG	4:D:97:LEU:HD22	2.49	0.48
6:F:41:GLU:HB2	6:F:62:TRP:HE3	1.77	0.48
1:A:447:G:H2'	1:A:485:G:N2	2.27	0.48
1:A:517:G:N1	1:A:533:A:OP2	2.42	0.48
1:A:1403:C:H2'	1:A:1404:5MC:HM51	1.94	0.48
18:R:42:ARG:HH11	18:R:42:ARG:HB3	1.77	0.48
1:A:444:C:H2'	1:A:445:G:H8	1.77	0.48
20:T:50:GLU:HA	20:T:100:ILE:HB	1.94	0.48
1:A:972:C:O5'	10:J:57:LYS:HD3	2.13	0.48
15:O:33:THR:HG23	15:O:63:ARG:HH12	1.78	0.48
1:A:179:A:H2'	1:A:180:U:C6	2.48	0.48
1:A:269:C:H2'	1:A:270:A:C8	2.48	0.48
6:F:46:ARG:NH2	18:R:37:VAL:HG21	2.29	0.48
8:H:21:LYS:O	8:H:65:TYR:OH	2.22	0.48
8:H:96:GLY:N	8:H:99:GLU:OE2	2.39	0.48
11:K:27:ASN:OD1	11:K:28:THR:N	2.46	0.48
1:A:424:G:H2'	1:A:425:G:H8	1.77	0.48
8:H:118:VAL:O	8:H:119:LEU:HD23	2.14	0.48
1:A:160:A:N6	1:A:347:G:H1'	2.29	0.48
1:A:912:C:O2'	1:A:913:A:H5'	2.14	0.48
4:D:150:GLU:CD	4:D:150:GLU:H	2.16	0.48
1:A:826:C:O2	8:H:15:ASN:ND2	2.47	0.48
1:A:1202:G:O2'	14:N:29:ARG:HB3	2.13	0.48
1:A:1389:C:H2'	1:A:1390:U:O4'	2.14	0.48
8:H:102:ARG:H	8:H:102:ARG:NE	2.11	0.48
12:L:24:VAL:HG13	12:L:98:TYR:CE2	2.49	0.48
18:R:17:SER:H	18:R:19:LYS:HZ1	1.61	0.48
1:A:170:U:O2'	1:A:171:A:H5'	2.14	0.47
1:A:460:A:O2'	1:A:461:C:H5'	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1218:C:H2'	1:A:1219:U:C6	2.49	0.47
1:A:1241:G:H2'	1:A:1242:C:H6	1.79	0.47
1:A:176:C:H2'	1:A:177:C:C6	2.49	0.47
1:A:286:G:H2'	1:A:287:U:O4'	2.14	0.47
1:A:1127:G:H21	1:A:1146:A:H62	1.60	0.47
3:C:94:LEU:HG	3:C:95:THR:HG23	1.96	0.47
11:K:18:ARG:NH1	11:K:35:PRO:O	2.46	0.47
19:S:51:VAL:O	19:S:58:VAL:HG22	2.14	0.47
1:A:130:A:H5'	17:Q:63:ARG:NE	2.29	0.47
1:A:176:C:H2'	1:A:177:C:H6	1.78	0.47
4:D:32:ALA:O	4:D:36:ARG:N	2.39	0.47
1:A:109:A:H2'	1:A:326:G:N2	2.28	0.47
1:A:191:G:H1'	20:T:105:SER:HA	1.97	0.47
2:B:121:LEU:HD13	2:B:127:ILE:HG22	1.95	0.47
3:C:179:ARG:NH1	3:C:206:GLU:OE1	2.47	0.47
7:G:108:ALA:O	7:G:119:ARG:HB3	2.15	0.47
1:A:760:G:H22	17:Q:105:ALA:HA	1.79	0.47
1:A:1250:A:H4'	9:I:68:GLY:N	2.29	0.47
1:A:1329:A:H5'	13:M:29:ARG:HD2	1.96	0.47
4:D:102:ASP:OD1	4:D:103:ASN:N	2.47	0.47
6:F:10:LEU:HD12	6:F:10:LEU:HA	1.60	0.47
10:J:48:THR:HA	10:J:62:HIS:HB3	1.96	0.47
1:A:195:A:OP1	20:T:65:LYS:HE3	2.15	0.47
9:I:65:VAL:HG21	9:I:77:ILE:HD11	1.96	0.47
12:L:35:GLY:HA3	12:L:60:LEU:HD13	1.95	0.47
1:A:977:A:H2'	1:A:978:A:H5''	1.96	0.47
3:C:155:GLY:HA2	3:C:164:ARG:O	2.15	0.47
5:E:11:ILE:HG21	5:E:105:VAL:HG22	1.96	0.47
5:E:37:ARG:HH12	5:E:111:GLU:HG2	1.80	0.47
5:E:84:PHE:HB3	5:E:134:ALA:HB2	1.96	0.47
11:K:48:ILE:HD11	11:K:64:ALA:HA	1.96	0.47
12:L:7:ILE:O	12:L:11:VAL:HG23	2.15	0.47
13:M:65:LYS:HG3	13:M:69:GLU:HB2	1.96	0.47
1:A:791:G:C6	1:A:792:A:N7	2.82	0.47
1:A:1401:G:C2	1:A:1402:4OC:H1'	2.49	0.47
3:C:35:GLU:HG3	3:C:95:THR:HG21	1.96	0.47
3:C:155:GLY:HA3	3:C:163:ALA:HB1	1.97	0.47
4:D:78:LEU:HA	4:D:78:LEU:HD23	1.53	0.47
9:I:15:ALA:HB1	9:I:65:VAL:HG22	1.96	0.47
14:N:27:CYS:SG	14:N:28:GLY:N	2.88	0.47
1:A:1241:G:H2'	1:A:1242:C:C6	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1425:U:H2'	1:A:1426:C:H6	1.79	0.47
4:D:3:ARG:HD2	4:D:118:ARG:HE	1.80	0.47
10:J:63:PHE:HE1	14:N:45:ARG:HA	1.79	0.47
13:M:40:ASN:ND2	13:M:43:THR:HG23	2.29	0.47
15:O:85:LEU:HD13	15:O:87:ILE:HD11	1.96	0.47
1:A:149:A:H2'	1:A:150:C:C6	2.50	0.47
1:A:1003(A):G:H1	1:A:1038:C:H42	1.63	0.47
1:A:1349:A:OP1	9:I:120:ARG:HB2	2.14	0.47
4:D:173:TRP:CE2	4:D:189:PRO:HG3	2.50	0.47
13:M:37:THR:HG21	13:M:56:LEU:HA	1.96	0.47
15:O:57:LEU:HD12	15:O:57:LEU:HA	1.52	0.47
1:A:1347:G:H22	1:A:1374:A:P	2.37	0.46
3:C:120:VAL:O	3:C:124:ILE:HG13	2.14	0.46
9:I:22:GLY:HA3	9:I:60:ASP:HB2	1.98	0.46
9:I:81:ILE:O	9:I:85:LEU:HB2	2.15	0.46
1:A:401:C:H2'	1:A:402:G:H8	1.80	0.46
1:A:693:G:C8	1:A:1539:C:H1'	2.51	0.46
2:B:36:ARG:O	2:B:39:ILE:HG22	2.15	0.46
3:C:190:ARG:HA	3:C:195:VAL:HG12	1.96	0.46
4:D:127:THR:HG23	4:D:147:ALA:HB3	1.97	0.46
6:F:8:ILE:HB	6:F:61:LEU:HG	1.96	0.46
1:A:6:G:H4'	1:A:298:A:H4'	1.96	0.46
1:A:1059:C:O3'	14:N:45:ARG:NH2	2.48	0.46
5:E:76:ILE:HG22	5:E:93:PRO:HB3	1.98	0.46
6:F:60:PHE:CZ	18:R:78:LEU:HD21	2.50	0.46
7:G:46:ALA:O	7:G:50:ILE:HG12	2.16	0.46
14:N:23:ARG:HD3	14:N:28:GLY:O	2.16	0.46
15:O:88:ARG:HD2	15:O:88:ARG:HA	1.77	0.46
16:P:10:GLY:H	16:P:16:HIS:HB2	1.80	0.46
20:T:67:ALA:O	20:T:73:HIS:ND1	2.48	0.46
1:A:34:C:H1'	12:L:32:PHE:CZ	2.50	0.46
1:A:567:G:H2'	1:A:568:G:O4'	2.15	0.46
1:A:1296:C:H4'	1:A:1302:U:C5	2.51	0.46
1:A:1516:G:N2	1:A:1519:MA6:OP2	2.41	0.46
6:F:55:ASP:HA	6:F:56:PRO:HD3	1.73	0.46
18:R:59:SER:H	18:R:62:GLU:HB2	1.81	0.46
1:A:1347:G:H1'	1:A:1348:U:H5	1.81	0.46
5:E:112:LEU:HD23	5:E:112:LEU:HA	1.70	0.46
18:R:44:LEU:HD21	18:R:70:ILE:HD13	1.98	0.46
20:T:57:ARG:HH11	20:T:100:ILE:HD11	1.81	0.46
1:A:357:G:C2	1:A:358:U:C5	3.04	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:65:VAL:HG11	9:I:73:GLN:HB3	1.98	0.46
17:Q:58:GLU:O	17:Q:59:ILE:HD13	2.16	0.46
1:A:957:U:H4'	19:S:79:THR:HB	1.97	0.46
1:A:1090:U:H2'	1:A:1091:U:H6	1.81	0.46
10:J:60:ARG:HA	10:J:60:ARG:HD3	1.73	0.46
18:R:88:LYS:NZ	18:R:88:LYS:HB3	2.31	0.46
1:A:262:A:O3'	20:T:75:ASN:ND2	2.48	0.46
1:A:1256:A:H2	1:A:1277:C:N4	2.14	0.46
1:A:1346:A:N6	1:A:1375:A:OP2	2.41	0.46
6:F:61:LEU:HD12	6:F:63:TYR:CE2	2.49	0.46
20:T:16:HIS:O	20:T:19:SER:HB3	2.16	0.46
21:U:5:ASP:O	21:U:11:GLY:HA3	2.16	0.46
1:A:1453:G:H2'	1:A:1454:G:O4'	2.16	0.46
13:M:8:GLU:HG3	13:M:22:ILE:HA	1.97	0.46
1:A:216:G:O2'	1:A:217:C:O4'	2.19	0.46
1:A:1057:G:H5''	3:C:154:SER:OG	2.16	0.46
5:E:31:LEU:HD23	5:E:31:LEU:HA	1.72	0.46
7:G:104:LEU:HD23	7:G:104:LEU:HA	1.67	0.46
1:A:539:A:H2'	1:A:540:G:C8	2.50	0.45
1:A:1131:G:H2'	1:A:1132:C:C6	2.51	0.45
1:A:1287:A:C6	1:A:1288:A:C6	3.04	0.45
1:A:1397:C:H4'	1:A:1398:A:OP2	2.15	0.45
13:M:37:THR:HG22	13:M:55:ARG:HG2	1.97	0.45
16:P:67:THR:HG22	16:P:68:ASP:H	1.81	0.45
1:A:1026:G:H3'	1:A:1027:C:H5''	1.97	0.45
1:A:1251:A:H4'	9:I:12:GLU:OE1	2.16	0.45
11:K:11:LYS:HB2	11:K:11:LYS:HE3	1.67	0.45
14:N:9:LYS:HE3	14:N:10:ALA:N	2.31	0.45
3:C:126:ARG:HE	3:C:128:PHE:HB2	1.80	0.45
11:K:33:THR:HB	11:K:38:ASN:O	2.16	0.45
13:M:86:CYS:SG	13:M:88:ARG:HB3	2.57	0.45
15:O:68:ARG:HE	15:O:68:ARG:HB2	1.53	0.45
19:S:45:VAL:HA	19:S:62:ILE:HG12	1.98	0.45
20:T:46:GLU:HB2	20:T:48:LYS:NZ	2.31	0.45
1:A:6:G:N2	5:E:98:THR:OG1	2.49	0.45
1:A:532:A:HO2'	1:A:533:A:P	2.38	0.45
1:A:1391:U:H2'	1:A:1392:G:H8	1.76	0.45
8:H:6:ILE:HA	8:H:6:ILE:HD12	1.71	0.45
1:A:973:G:H3'	1:A:974:A:H5''	1.98	0.45
1:A:1478:C:H2'	1:A:1479:C:C6	2.52	0.45
2:B:91:PRO:HG3	2:B:154:LEU:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:39:ILE:HD13	13:M:52:GLU:HB3	1.98	0.45
19:S:50:ALA:HA	19:S:58:VAL:O	2.16	0.45
1:A:253:U:H2'	1:A:254:G:C8	2.52	0.45
1:A:1410:G:H2'	1:A:1411:C:H6	1.81	0.45
10:J:32:ALA:HB2	10:J:76:ASN:HB2	1.97	0.45
17:Q:43:LEU:O	17:Q:69:LYS:HG3	2.16	0.45
1:A:47:C:H6	1:A:365:U:H2'	1.80	0.45
1:A:1180:A:OP1	9:I:103:THR:HG23	2.16	0.45
3:C:16:ARG:NH2	3:C:183:ASP:OD2	2.45	0.45
4:D:98:GLU:HG2	4:D:189:PRO:HG2	1.99	0.45
6:F:33:TYR:HE1	6:F:78:GLU:HG3	1.81	0.45
6:F:78:GLU:OE2	6:F:78:GLU:HA	2.15	0.45
13:M:15:VAL:HG21	13:M:48:LEU:HD21	1.98	0.45
18:R:48:GLY:HA3	18:R:82:THR:HA	1.99	0.45
1:A:353:A:H5'	1:A:353:A:H8	1.82	0.45
1:A:436:C:H2'	1:A:437:U:H6	1.81	0.45
1:A:1118:C:H2'	1:A:1119:C:H6	1.81	0.45
10:J:32:ALA:CB	10:J:76:ASN:HB2	2.46	0.45
12:L:6:THR:OG1	12:L:9:GLN:HG3	2.17	0.45
1:A:148:G:H2'	1:A:149:A:C8	2.50	0.45
1:A:358:U:H2'	1:A:359:U:C6	2.52	0.45
16:P:38:TYR:HE2	16:P:50:LYS:HE2	1.82	0.45
1:A:114:U:H2'	1:A:115:G:C8	2.52	0.44
1:A:229:U:H5''	16:P:33:ILE:HD13	1.99	0.44
1:A:828:A:H4'	1:A:828:A:OP1	2.16	0.44
1:A:910:C:OP1	12:L:97:ARG:NH2	2.49	0.44
1:A:1202:G:C4	14:N:42:ILE:HD12	2.52	0.44
4:D:24:GLU:O	4:D:25:ARG:HB3	2.17	0.44
1:A:376:G:H5''	16:P:5:ARG:HB2	2.00	0.44
1:A:767:A:H2'	1:A:768:A:O4'	2.18	0.44
5:E:152:ARG:HB3	8:H:43:GLY:O	2.17	0.44
7:G:60:LYS:O	7:G:64:GLN:HB2	2.17	0.44
9:I:15:ALA:HB2	9:I:65:VAL:HG13	1.99	0.44
20:T:56:MET:O	20:T:59:ALA:HB3	2.17	0.44
20:T:62:LEU:HD13	20:T:62:LEU:HA	1.68	0.44
1:A:434:U:H2'	1:A:435:C:C6	2.52	0.44
1:A:600:C:H2'	1:A:601:C:C6	2.52	0.44
1:A:836:G:C6	1:A:851:G:C6	3.05	0.44
2:B:97:TRP:HH2	2:B:176:GLU:CD	2.21	0.44
1:A:390:C:O3'	16:P:28:ARG:NH2	2.50	0.44
3:C:53:ALA:HB2	3:C:115:LEU:HD23	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:10:LEU:HD22	6:F:61:LEU:HD21	1.99	0.44
11:K:98:LEU:HD23	11:K:98:LEU:HA	1.82	0.44
13:M:31:LYS:O	13:M:35:GLU:HG3	2.17	0.44
19:S:31:ILE:CG2	19:S:49:ILE:HG23	2.48	0.44
1:A:149:A:H2'	1:A:150:C:H6	1.83	0.44
1:A:222:U:H2'	1:A:223:U:C6	2.53	0.44
1:A:1095:U:OP1	1:A:1108:G:N2	2.45	0.44
1:A:1240:U:H1'	7:G:38:LEU:HD11	1.98	0.44
1:A:1480:G:C6	1:A:1481:U:C4	3.05	0.44
8:H:100:ILE:HB	8:H:125:ARG:NH1	2.31	0.44
9:I:63:ILE:HG21	9:I:77:ILE:HG12	2.00	0.44
19:S:10:PHE:O	19:S:39:THR:OG1	2.34	0.44
1:A:1049:U:H4'	1:A:1050:G:O5'	2.17	0.44
1:A:1281:U:H5'	1:A:1282:C:H5	1.83	0.44
11:K:29:ILE:HG12	11:K:30:VAL:N	2.31	0.44
20:T:53:LEU:HB2	20:T:100:ILE:HD13	2.00	0.44
1:A:332:G:OP2	20:T:10:LEU:HD21	2.18	0.44
1:A:337:C:H2'	1:A:338:A:C8	2.53	0.44
1:A:390:C:H2'	1:A:391:G:C8	2.53	0.44
1:A:1133:G:H2'	1:A:1134:G:H8	1.83	0.44
1:A:1332:A:C2	1:A:1333:A:C4	3.05	0.44
18:R:32:ARG:HA	18:R:69:THR:HG21	2.00	0.44
19:S:7:LYS:O	19:S:7:LYS:NZ	2.45	0.44
1:A:631:G:H5'	1:A:632:A:OP1	2.18	0.44
1:A:721:G:H4'	1:A:722:A:O4'	2.18	0.44
1:A:1028:C:H42	1:A:1033:G:H1	1.66	0.44
15:O:32:LEU:HD23	15:O:32:LEU:HA	1.70	0.44
15:O:69:TYR:HA	15:O:72:ARG:NH1	2.33	0.44
20:T:55:ILE:HD13	20:T:55:ILE:HA	1.82	0.44
1:A:1168:A:H2'	1:A:1169:A:C8	2.53	0.44
2:B:15:VAL:HG13	2:B:210:SER:HB3	1.99	0.44
2:B:107:THR:O	2:B:110:GLN:HB2	2.18	0.44
4:D:119:GLN:HG3	4:D:123:HIS:ND1	2.33	0.44
12:L:53:ARG:HG3	12:L:93:LEU:HD21	2.00	0.44
20:T:48:LYS:NZ	20:T:48:LYS:HB2	2.33	0.44
1:A:1097:C:H2'	1:A:1098:C:C6	2.53	0.43
7:G:50:ILE:HG21	7:G:58:PRO:HA	1.99	0.43
8:H:120:THR:HG23	8:H:123:GLU:CD	2.39	0.43
6:F:48:LEU:HD13	6:F:52:ILE:HD12	2.00	0.43
13:M:22:ILE:CB	13:M:25:ILE:HD12	2.48	0.43
17:Q:22:LEU:HD12	17:Q:22:LEU:HA	1.71	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:161:A:H2'	1:A:162:A:C8	2.53	0.43
1:A:267:C:H2'	1:A:268:C:C6	2.53	0.43
1:A:581:G:O6	1:A:758:G:C8	2.71	0.43
1:A:589:C:H42	1:A:650:G:H1	1.65	0.43
1:A:620:C:C2	4:D:135:LEU:HD22	2.53	0.43
2:B:46:LYS:O	2:B:49:GLU:HG3	2.18	0.43
1:A:91:C:H2'	1:A:92:C:H6	1.82	0.43
1:A:200:G:H2'	1:A:201:C:O4'	2.18	0.43
1:A:1427:U:H2'	1:A:1428:A:C8	2.53	0.43
1:A:1499:A:H1'	1:A:1520:G:H5'	2.00	0.43
2:B:187:LEU:HD12	2:B:205:ASP:HB3	2.00	0.43
6:F:11:ASN:O	6:F:14:LEU:HD23	2.18	0.43
7:G:101:LEU:HD23	7:G:101:LEU:HA	1.73	0.43
2:B:97:TRP:HH2	2:B:176:GLU:OE2	2.02	0.43
10:J:25:GLU:HB3	10:J:29:ARG:NH2	2.33	0.43
17:Q:40:LYS:HD3	17:Q:42:TYR:OH	2.18	0.43
3:C:175:LEU:HD22	3:C:175:LEU:HA	1.86	0.43
12:L:82:VAL:HG12	12:L:105:TYR:HB3	2.00	0.43
17:Q:26:GLN:HB3	17:Q:37:LYS:HG2	2.00	0.43
20:T:43:LEU:HD23	20:T:43:LEU:HA	1.83	0.43
1:A:186:C:H2'	1:A:187:C:C6	2.54	0.43
1:A:253:U:H2'	1:A:254:G:H8	1.82	0.43
1:A:1466:C:H2'	1:A:1467:G:O4'	2.19	0.43
2:B:35:GLU:HA	2:B:39:ILE:O	2.19	0.43
5:E:76:ILE:HG13	5:E:142:LEU:CD1	2.49	0.43
5:E:80:ILE:CD1	5:E:91:LEU:HB2	2.49	0.43
8:H:87:SER:HA	8:H:93:VAL:HG23	2.01	0.43
20:T:30:LYS:HG2	20:T:34:LYS:HE3	2.01	0.43
1:A:519:C:H2'	1:A:520:A:C8	2.54	0.43
1:A:581:G:C6	1:A:758:G:C8	3.07	0.43
1:A:892:A:H2'	1:A:893:C:C6	2.54	0.43
1:A:1004:A:C5	1:A:1037:C:N3	2.86	0.43
5:E:78:HIS:HD2	8:H:107:LEU:HD12	1.82	0.43
9:I:128:ARG:HE	9:I:128:ARG:HB2	1.65	0.43
11:K:48:ILE:HG13	11:K:63:LEU:HD13	2.01	0.43
17:Q:100:LYS:HD2	17:Q:101:ARG:NH2	2.33	0.43
1:A:790:A:H2'	1:A:791:G:C8	2.54	0.43
1:A:976:G:OP2	1:A:1358:U:O2'	2.34	0.43
8:H:36:LEU:HD23	8:H:36:LEU:HA	1.77	0.43
17:Q:67:LYS:O	17:Q:69:LYS:N	2.52	0.43
1:A:487:A:H2'	1:A:488:C:O4'	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:660:G:C2	1:A:746:A:C2	3.07	0.43
1:A:1431:C:C2	1:A:1470:G:N2	2.87	0.43
1:A:501:C:OP1	12:L:117:ARG:NH2	2.44	0.42
11:K:57:THR:HG22	11:K:59:TYR:N	2.23	0.42
18:R:42:ARG:HB3	18:R:42:ARG:NH1	2.33	0.42
1:A:475:G:H2'	1:A:476:G:H8	1.84	0.42
11:K:66:LEU:HD21	11:K:97:ALA:HB1	2.01	0.42
19:S:71:LEU:HD12	19:S:71:LEU:H	1.83	0.42
1:A:46:G:H2'	1:A:366:C:C5	2.55	0.42
18:R:79:LEU:HD23	18:R:79:LEU:HA	1.83	0.42
20:T:40:ALA:HB2	20:T:55:ILE:HG22	2.01	0.42
1:A:442:C:H42	1:A:492:G:H1	1.67	0.42
1:A:1330:U:H2'	1:A:1331:G:H5'	2.01	0.42
1:A:1368:G:OP1	10:J:62:HIS:HE1	2.02	0.42
5:E:6:PHE:HD2	5:E:6:PHE:HA	1.71	0.42
10:J:41:PRO:O	10:J:69:ASN:ND2	2.51	0.42
1:A:9:G:OP2	5:E:121:LYS:NZ	2.36	0.42
1:A:743:U:H2'	1:A:744:C:C6	2.54	0.42
2:B:102:LEU:O	2:B:105:PHE:HB2	2.19	0.42
2:B:170:GLU:HA	2:B:170:GLU:OE2	2.18	0.42
5:E:152:ARG:O	8:H:64:LYS:NZ	2.52	0.42
12:L:68:ALA:HA	12:L:98:TYR:O	2.20	0.42
19:S:18:LYS:HE3	19:S:31:ILE:HD11	2.00	0.42
1:A:452:A:H4'	16:P:72:ARG:HE	1.83	0.42
4:D:21:LEU:HD12	4:D:21:LEU:H	1.85	0.42
5:E:105:VAL:HB	5:E:106:PRO:HD3	2.00	0.42
5:E:151:LEU:HD23	5:E:151:LEU:HA	1.75	0.42
6:F:100:ASN:HD21	18:R:23:LYS:HG2	1.85	0.42
9:I:71:SER:O	9:I:74:ILE:HB	2.19	0.42
9:I:104:ARG:HD3	9:I:105:ASP:N	2.35	0.42
12:L:33:ARG:HD2	12:L:33:ARG:HA	1.64	0.42
15:O:5:LYS:H	15:O:5:LYS:HD2	1.84	0.42
1:A:224:C:H2'	1:A:225:C:H6	1.85	0.42
1:A:1001:A:H2'	1:A:1002:G:C8	2.55	0.42
1:A:191:G:N3	20:T:105:SER:HB3	2.34	0.42
1:A:1347:G:O6	9:I:10:ARG:NH2	2.53	0.42
4:D:28:SER:HA	4:D:29:PRO:HD3	1.79	0.42
1:A:1348:U:H4'	9:I:120:ARG:HG3	2.01	0.42
1:A:1488:G:H2'	1:A:1489:G:C8	2.54	0.42
4:D:32:ALA:HA	4:D:35:ARG:CG	2.50	0.42
1:A:510:A:N3	1:A:543:C:HI'	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:539:A:OP1	12:L:114:LYS:HD2	2.19	0.42
2:B:88:ALA:HB2	2:B:219:VAL:HG13	2.02	0.42
6:F:43:LEU:HG	6:F:46:ARG:HD2	2.01	0.42
7:G:50:ILE:HD13	7:G:50:ILE:HA	1.94	0.42
11:K:43:SER:HA	11:K:47:VAL:HG21	2.02	0.42
17:Q:59:ILE:HG22	17:Q:71:PHE:CD1	2.55	0.42
20:T:8:ARG:N	20:T:8:ARG:HH11	2.18	0.42
1:A:666:G:H5'	1:A:726:C:H1'	2.01	0.41
1:A:1399:C:O2	1:A:1401:G:C5	2.73	0.41
1:A:1439:C:OP1	20:T:38:LYS:HE3	2.19	0.41
8:H:39:LEU:HD12	8:H:39:LEU:HA	1.77	0.41
11:K:126:ARG:O	11:K:127:LYS:HE2	2.20	0.41
13:M:17:VAL:O	13:M:20:THR:HB	2.20	0.41
13:M:90:LEU:O	13:M:94:ARG:HG2	2.20	0.41
15:O:36:ILE:CG1	15:O:59:MET:HE3	2.45	0.41
1:A:164:U:H2'	1:A:165:C:C6	2.54	0.41
1:A:270:A:H2'	1:A:271:C:C6	2.55	0.41
1:A:1126:U:H1'	1:A:1280:A:C5	2.55	0.41
1:A:1346:A:N1	1:A:1374:A:H5''	2.35	0.41
1:A:1352:C:H2'	1:A:1353:G:C8	2.55	0.41
1:A:1379:G:C6	1:A:1380:U:C4	3.08	0.41
7:G:66:VAL:O	7:G:70:LYS:HG3	2.21	0.41
10:J:48:THR:OG1	10:J:62:HIS:HB3	2.20	0.41
18:R:53:ARG:HD3	18:R:63:GLN:HB2	2.03	0.41
19:S:7:LYS:H	19:S:7:LYS:HG3	1.52	0.41
1:A:986:A:O2'	19:S:55:LYS:O	2.37	0.41
1:A:1069:C:O2'	1:A:1192:C:H1'	2.21	0.41
1:A:1441:G:H4'	1:A:1442:G:C5	2.55	0.41
4:D:50:ARG:HA	4:D:51:PRO:HD3	1.81	0.41
7:G:148:ASN:HB3	7:G:151:TYR:CD1	2.56	0.41
8:H:7:ALA:HB2	8:H:85:ARG:HD2	2.02	0.41
8:H:75:ARG:HA	8:H:76:PRO:HD3	1.70	0.41
1:A:1201:A:H4'	1:A:1202:G:O5'	2.20	0.41
1:A:1256:A:H2	1:A:1277:C:C4	2.39	0.41
1:A:1339:A:H2'	1:A:1340:A:O4'	2.20	0.41
7:G:71:PRO:HD3	7:G:103:TRP:HZ3	1.84	0.41
8:H:53:VAL:HB	8:H:58:TYR:CD1	2.55	0.41
11:K:86:GLY:N	11:K:112:THR:OG1	2.44	0.41
1:A:328:C:O2	1:A:328:C:H2'	2.19	0.41
1:A:951:G:O6	13:M:105:THR:HG21	2.20	0.41
1:A:1488:G:H2'	1:A:1489:G:H8	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:44:LEU:H	2:B:44:LEU:HG	1.43	0.41
3:C:34:LEU:HD22	14:N:25:VAL:HG21	2.02	0.41
4:D:105:VAL:HG13	4:D:110:PHE:HB2	2.03	0.41
6:F:7:ASN:HD21	18:R:34:TYR:HE1	1.69	0.41
8:H:84:ARG:O	8:H:135:CYS:HB2	2.19	0.41
12:L:7:ILE:HD13	12:L:7:ILE:HA	1.87	0.41
13:M:66:LEU:HB2	13:M:67:GLU:H	1.76	0.41
15:O:45:VAL:HG12	15:O:46:HIS:H	1.85	0.41
17:Q:59:ILE:HG22	17:Q:71:PHE:HD1	1.86	0.41
1:A:436:C:H2'	1:A:437:U:C6	2.56	0.41
1:A:677:U:H2'	1:A:678:U:H6	1.86	0.41
5:E:148:VAL:O	5:E:152:ARG:HG3	2.21	0.41
9:I:118:LYS:H	9:I:118:LYS:HG3	1.71	0.41
12:L:124:LYS:HA	12:L:125:PRO:HD2	1.88	0.41
15:O:81:LEU:O	15:O:85:LEU:HD12	2.20	0.41
1:A:269:C:H2'	1:A:270:A:H8	1.84	0.41
1:A:373:A:H2'	1:A:374:A:H8	1.85	0.41
1:A:740:U:O2'	1:A:741:G:H5'	2.21	0.41
1:A:1502:A:H2	1:A:1505:G:N1	2.16	0.41
2:B:84:GLU:OE1	2:B:87:ARG:NH2	2.52	0.41
5:E:139:LEU:HD23	5:E:139:LEU:HA	1.84	0.41
8:H:127:LEU:HA	8:H:127:LEU:HD22	1.67	0.41
16:P:38:TYR:O	16:P:49:LEU:HD12	2.20	0.41
18:R:58:LEU:HD22	18:R:62:GLU:HB3	2.02	0.41
20:T:8:ARG:N	20:T:8:ARG:HD2	2.36	0.41
20:T:56:MET:HG2	20:T:84:LEU:HD13	2.02	0.41
1:A:814:A:H2'	1:A:816:A:H5''	2.03	0.41
3:C:43:LEU:O	3:C:47:LEU:HB2	2.20	0.41
4:D:36:ARG:HB3	4:D:38:TYR:CE2	2.55	0.41
11:K:71:LYS:O	11:K:74:ALA:HB3	2.21	0.41
13:M:40:ASN:HD22	13:M:43:THR:HG23	1.85	0.41
1:A:35:G:C6	1:A:36:C:N4	2.88	0.41
1:A:192:U:H2'	1:A:193:C:C6	2.56	0.41
1:A:403:C:H2'	1:A:404:U:H6	1.85	0.41
1:A:1074:G:C6	1:A:1075:C:C4	3.09	0.41
1:A:1345:U:OP1	9:I:120:ARG:NH1	2.54	0.41
1:A:1403:C:H2'	1:A:1404:5MC:CM5	2.51	0.41
2:B:135:GLN:O	2:B:139:LYS:HB2	2.20	0.41
4:D:25:ARG:O	4:D:25:ARG:HG2	2.20	0.41
4:D:173:TRP:CD1	4:D:189:PRO:HG3	2.56	0.41
7:G:113:GLU:O	7:G:119:ARG:HD2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:86:ILE:HD13	8:H:86:ILE:HA	1.78	0.41
9:I:28:VAL:HG22	9:I:63:ILE:HB	2.03	0.41
9:I:111:ARG:HG2	9:I:112:LYS:N	2.35	0.41
13:M:25:ILE:HG23	13:M:29:ARG:HB2	2.03	0.41
13:M:48:LEU:HB3	13:M:53:VAL:HG23	2.02	0.41
15:O:2:PRO:HB2	15:O:3:ILE:H	1.72	0.41
1:A:79:G:C2	1:A:80:G:C8	3.09	0.41
1:A:372:C:H1'	1:A:373:A:OP2	2.21	0.41
1:A:663:A:H2'	1:A:664:G:O4'	2.21	0.41
1:A:833:U:H2'	1:A:834:C:H6	1.86	0.41
1:A:1305:G:OP2	1:A:1305:G:C8	2.74	0.41
1:A:1531:A:H2'	1:A:1532:U:C2	2.55	0.41
3:C:116:VAL:O	3:C:120:VAL:HG23	2.21	0.41
7:G:86:GLN:HB2	7:G:148:ASN:ND2	2.36	0.41
13:M:99:ARG:HH12	19:S:2:PRO:HD2	1.86	0.41
1:A:337:C:H2'	1:A:338:A:H8	1.87	0.40
1:A:570:G:H1'	1:A:820:U:C4	2.56	0.40
1:A:1092:A:H5''	7:G:4:ARG:NH1	2.36	0.40
1:A:1162:C:H2'	1:A:1163:C:C6	2.56	0.40
2:B:113:HIS:O	2:B:117:GLU:HB3	2.21	0.40
2:B:215:LEU:HD23	2:B:215:LEU:HA	1.78	0.40
3:C:33:LEU:O	3:C:37:GLN:HG2	2.21	0.40
8:H:6:ILE:HG12	8:H:31:PHE:HE2	1.86	0.40
9:I:126:SER:C	9:I:128:ARG:H	2.24	0.40
13:M:90:LEU:HA	13:M:90:LEU:HD22	1.85	0.40
13:M:108:ARG:HD3	13:M:114:ARG:HH21	1.86	0.40
1:A:1505:G:H3'	1:A:1505:G:C8	2.56	0.40
5:E:10:MET:HA	5:E:32:VAL:HA	2.01	0.40
5:E:82:VAL:HG21	5:E:138:ALA:HA	2.02	0.40
6:F:15:ASP:OD1	6:F:16:GLN:N	2.55	0.40
9:I:90:PRO:O	9:I:93:ARG:HG3	2.20	0.40
1:A:129:U:O3'	1:A:129(A):G:H3'	2.21	0.40
1:A:179:A:H2'	1:A:180:U:H6	1.86	0.40
1:A:475:G:H2'	1:A:476:G:C8	2.57	0.40
1:A:1064:G:H22	1:A:1190:G:H2'	1.86	0.40
3:C:16:ARG:HE	3:C:54:ARG:HH22	1.69	0.40
4:D:176:LEU:HD12	4:D:177:ASP:N	2.37	0.40
18:R:26:LEU:HD21	18:R:39:VAL:HG13	2.04	0.40
1:A:75:G:C6	1:A:76:C:C4	3.10	0.40
1:A:1114:C:H1'	14:N:60:SER:OG	2.22	0.40
1:A:1280:A:H5'	10:J:40:LEU:HD22	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:57:ARG:HH22	5:E:107:ARG:HD3	1.86	0.40
1:A:625:G:H2'	1:A:626:U:C6	2.56	0.40
1:A:719:C:O2'	18:R:49:LYS:HB3	2.21	0.40
1:A:1225:A:N3	1:A:1225:A:H2'	2.35	0.40
2:B:90:MET:HA	2:B:91:PRO:HD3	1.97	0.40
2:B:102:LEU:HB3	2:B:180:LEU:HD12	2.03	0.40
7:G:145:ALA:C	7:G:147:ALA:H	2.25	0.40
8:H:104:ARG:NH2	8:H:138:TRP:CH2	2.89	0.40
15:O:67:LEU:HD22	15:O:82:ILE:HD11	2.02	0.40
16:P:10:GLY:N	16:P:16:HIS:HB2	2.36	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:81:U:OP2	9:I:128:ARG:NH2[3_545]	2.19	0.01

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	B	234/256 (91%)	214 (92%)	19 (8%)	1 (0%)	30 63
3	C	205/239 (86%)	190 (93%)	15 (7%)	0	100 100
4	D	206/209 (99%)	199 (97%)	6 (3%)	1 (0%)	25 59
5	E	149/162 (92%)	143 (96%)	6 (4%)	0	100 100
6	F	99/101 (98%)	96 (97%)	3 (3%)	0	100 100
7	G	153/156 (98%)	145 (95%)	8 (5%)	0	100 100
8	H	136/138 (99%)	132 (97%)	4 (3%)	0	100 100
9	I	125/128 (98%)	113 (90%)	11 (9%)	1 (1%)	16 51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	J	97/105 (92%)	77 (79%)	18 (19%)	2 (2%)	5	33
11	K	117/129 (91%)	101 (86%)	16 (14%)	0	100	100
12	L	122/135 (90%)	113 (93%)	8 (7%)	1 (1%)	16	51
13	M	116/126 (92%)	107 (92%)	9 (8%)	0	100	100
14	N	58/61 (95%)	55 (95%)	3 (5%)	0	100	100
15	O	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
16	P	82/88 (93%)	79 (96%)	3 (4%)	0	100	100
17	Q	102/105 (97%)	95 (93%)	7 (7%)	0	100	100
18	R	71/88 (81%)	65 (92%)	6 (8%)	0	100	100
19	S	79/93 (85%)	67 (85%)	11 (14%)	1 (1%)	10	41
20	T	97/106 (92%)	89 (92%)	7 (7%)	1 (1%)	13	46
21	U	23/27 (85%)	22 (96%)	1 (4%)	0	100	100
All	All	2357/2541 (93%)	2184 (93%)	165 (7%)	8 (0%)	37	67

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	L	28	LYS
19	S	31	ILE
10	J	72	VAL
9	I	119	ALA
20	T	73	HIS
10	J	34	VAL
2	B	229	VAL
4	D	5	ILE

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	194/220 (88%)	173 (89%)	21 (11%)	5	25

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	160/188 (85%)	141 (88%)	19 (12%)	4	22
4	D	180/181 (99%)	161 (89%)	19 (11%)	5	26
5	E	115/123 (94%)	98 (85%)	17 (15%)	2	15
6	F	90/90 (100%)	78 (87%)	12 (13%)	3	18
7	G	126/127 (99%)	116 (92%)	10 (8%)	10	35
8	H	119/119 (100%)	101 (85%)	18 (15%)	2	15
9	I	98/99 (99%)	87 (89%)	11 (11%)	5	24
10	J	87/92 (95%)	75 (86%)	12 (14%)	3	17
11	K	90/99 (91%)	82 (91%)	8 (9%)	8	32
12	L	103/110 (94%)	90 (87%)	13 (13%)	3	19
13	M	94/101 (93%)	83 (88%)	11 (12%)	4	23
14	N	49/50 (98%)	46 (94%)	3 (6%)	15	44
15	O	79/80 (99%)	66 (84%)	13 (16%)	2	12
16	P	72/74 (97%)	63 (88%)	9 (12%)	3	20
17	Q	96/97 (99%)	86 (90%)	10 (10%)	5	26
18	R	64/77 (83%)	57 (89%)	7 (11%)	5	25
19	S	71/80 (89%)	61 (86%)	10 (14%)	3	17
20	T	76/82 (93%)	65 (86%)	11 (14%)	2	16
21	U	19/22 (86%)	19 (100%)	0	100	100
All	All	1982/2111 (94%)	1748 (88%)	234 (12%)	4	22

All (234) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	15	VAL
2	B	24	TRP
2	B	44	LEU
2	B	51	LEU
2	B	61	LEU
2	B	96	ARG
2	B	108	ILE
2	B	114	ARG
2	B	117	GLU
2	B	127	ILE
2	B	140	HIS

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Mol	Chain	Res	Type
2	B	142	LEU
2	B	144	ARG
2	B	153	ARG
2	B	163	PHE
2	B	182	ILE
2	B	187	LEU
2	B	206	ASP
2	B	212	GLN
2	B	217	ARG
2	B	221	LEU
3	C	3	ASN
3	C	5	ILE
3	C	16	ARG
3	C	27	LYS
3	C	33	LEU
3	C	64	VAL
3	C	72	LYS
3	C	97	LYS
3	C	108	ASN
3	C	119	ARG
3	C	126	ARG
3	C	165	THR
3	C	166	GLU
3	C	175	LEU
3	C	178	LEU
3	C	179	ARG
3	C	188	LEU
3	C	196	LEU
3	C	204	LEU
4	D	10	ARG
4	D	17	VAL
4	D	19	LEU
4	D	21	LEU
4	D	25	ARG
4	D	26	CYS
4	D	28	SER
4	D	49	ARG
4	D	64	LEU
4	D	78	LEU
4	D	114	ARG
4	D	122	ARG
4	D	127	THR

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Mol	Chain	Res	Type
4	D	135	LEU
4	D	150	GLU
4	D	156	GLU
4	D	170	VAL
4	D	190	ASP
4	D	194	LEU
5	E	6	PHE
5	E	12	LEU
5	E	14	ARG
5	E	20	GLN
5	E	31	LEU
5	E	38	GLN
5	E	41	VAL
5	E	43	LEU
5	E	53	LEU
5	E	64	ARG
5	E	76	ILE
5	E	79	GLU
5	E	80	ILE
5	E	121	LYS
5	E	135	THR
5	E	150	ARG
5	E	151	LEU
6	F	10	LEU
6	F	22	GLU
6	F	45	LEU
6	F	47	ARG
6	F	55	ASP
6	F	61	LEU
6	F	65	VAL
6	F	73	ASN
6	F	82	ARG
6	F	83	ASP
6	F	86	ARG
6	F	89	MET
7	G	8	GLU
7	G	31	MET
7	G	38	LEU
7	G	52	GLU
7	G	64	GLN
7	G	79	ARG
7	G	89	MET

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Mol	Chain	Res	Type
7	G	113	GLU
7	G	114	ARG
7	G	156	TRP
8	H	6	ILE
8	H	11	THR
8	H	12	ARG
8	H	18	ARG
8	H	23	SER
8	H	24	THR
8	H	26	VAL
8	H	29	SER
8	H	39	LEU
8	H	53	VAL
8	H	63	LEU
8	H	85	ARG
8	H	91	ARG
8	H	92	ARG
8	H	95	VAL
8	H	102	ARG
8	H	127	LEU
8	H	133	LEU
9	I	25	LYS
9	I	60	ASP
9	I	79	LEU
9	I	99	LEU
9	I	102	LEU
9	I	104	ARG
9	I	108	VAL
9	I	111	ARG
9	I	118	LYS
9	I	121	ARG
9	I	127	LYS
10	J	3	LYS
10	J	17	ASP
10	J	29	ARG
10	J	38	ILE
10	J	44	VAL
10	J	62	HIS
10	J	65	LEU
10	J	71	LEU
10	J	75	ILE
10	J	76	ASN

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Mol	Chain	Res	Type
10	J	83	GLU
10	J	86	MET
11	K	24	SER
11	K	29	ILE
11	K	48	ILE
11	K	63	LEU
11	K	91	ARG
11	K	98	LEU
11	K	104	GLN
11	K	119	CYS
12	L	18	VAL
12	L	19	ARG
12	L	20	LYS
12	L	33	ARG
12	L	42	THR
12	L	44	THR
12	L	67	THR
12	L	81	SER
12	L	90	VAL
12	L	96	VAL
12	L	97	ARG
12	L	114	LYS
12	L	122	THR
13	M	44	ARG
13	M	46	LYS
13	M	56	LEU
13	M	62	ASN
13	M	64	TRP
13	M	66	LEU
13	M	70	LEU
13	M	88	ARG
13	M	90	LEU
13	M	109	THR
13	M	110	ARG
14	N	9	LYS
14	N	12	ARG
14	N	25	VAL
15	O	5	LYS
15	O	6	GLU
15	O	11	VAL
15	O	21	ASP
15	O	34	LEU

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Mol	Chain	Res	Type
15	O	38	ARG
15	O	39	LEU
15	O	56	LEU
15	O	65	ARG
15	O	73	GLU
15	O	81	LEU
15	O	87	ILE
15	O	88	ARG
16	P	1	MET
16	P	20	VAL
16	P	31	LYS
16	P	42	ARG
16	P	45	THR
16	P	53	VAL
16	P	55	ARG
16	P	62	VAL
16	P	67	THR
17	Q	9	VAL
17	Q	34	LYS
17	Q	35	VAL
17	Q	52	LYS
17	Q	68	ARG
17	Q	74	LEU
17	Q	87	LYS
17	Q	92	ARG
17	Q	98	LEU
17	Q	101	ARG
18	R	31	LEU
18	R	35	ARG
18	R	37	VAL
18	R	42	ARG
18	R	46	GLU
18	R	55	ARG
18	R	88	LYS
19	S	5	LEU
19	S	6	LYS
19	S	7	LYS
19	S	15	LEU
19	S	28	LYS
19	S	31	ILE
19	S	62	ILE
19	S	65	ASN

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Mol	Chain	Res	Type
19	S	78	ARG
19	S	81	ARG
20	T	8	ARG
20	T	10	LEU
20	T	15	ARG
20	T	48	LYS
20	T	51	GLU
20	T	56	MET
20	T	73	HIS
20	T	74	LYS
20	T	75	ASN
20	T	84	LEU
20	T	86	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	6	HIS
6	F	73	ASN
9	I	73	GLN
10	J	62	HIS
13	M	106	ASN
15	O	28	GLN

### 5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1507/1522 (99%)	239 (15%)	27 (1%)

All (239) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	7	G
1	A	9	G
1	A	31	G
1	A	32	A
1	A	39	G
1	A	47	C
1	A	48	C
1	A	50	A

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Mol	Chain	Res	Type
1	A	51	A
1	A	54	C
1	A	75	G
1	A	80	G
1	A	81	U
1	A	101	A
1	A	108	G
1	A	116	A
1	A	121	C
1	A	129(A)	G
1	A	130	A
1	A	131	C
1	A	156	G
1	A	157	G
1	A	163	C
1	A	182	U
1	A	195	A
1	A	197	A
1	A	202	U
1	A	203	U
1	A	204	U
1	A	231	G
1	A	244	U
1	A	247	G
1	A	251	G
1	A	266	G
1	A	267	C
1	A	279	A
1	A	289	G
1	A	319	G
1	A	321	A
1	A	328	C
1	A	332	G
1	A	344	A
1	A	345	C
1	A	352	C
1	A	353	A
1	A	354	G
1	A	367	U
1	A	373	A
1	A	384	G
1	A	389	A

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Mol	Chain	Res	Type
1	A	397	A
1	A	398	C
1	A	406	G
1	A	412	A
1	A	413	G
1	A	414	A
1	A	421	U
1	A	422	C
1	A	429	U
1	A	433	C
1	A	439	A
1	A	442	C
1	A	452	A
1	A	460	A
1	A	461	C
1	A	485	G
1	A	497	A
1	A	498	U
1	A	505	G
1	A	511	C
1	A	518	C
1	A	524	G
1	A	527	7MG
1	A	528	C
1	A	532	A
1	A	533	A
1	A	535	A
1	A	545	C
1	A	547	A
1	A	559	A
1	A	560	U
1	A	568	G
1	A	572	A
1	A	573	A
1	A	576	G
1	A	577	G
1	A	579	G
1	A	596	C
1	A	632	A
1	A	653	A
1	A	665	A
1	A	671	G

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Mol	Chain	Res	Type
1	A	687	A
1	A	688	G
1	A	702	A
1	A	703	G
1	A	721	G
1	A	723	U
1	A	724	G
1	A	731	G
1	A	755	G
1	A	777	A
1	A	781	A
1	A	782	A
1	A	785	G
1	A	793	U
1	A	794	A
1	A	799	G
1	A	813	U
1	A	817	C
1	A	818	G
1	A	821	G
1	A	828	A
1	A	829	G
1	A	839	U
1	A	840	C
1	A	841	U
1	A	848	C
1	A	853	G
1	A	859	A
1	A	868	C
1	A	876	G
1	A	885	G
1	A	902	G
1	A	914	A
1	A	926	G
1	A	927	G
1	A	934	C
1	A	935	A
1	A	936	C
1	A	950	U
1	A	960	U
1	A	966	M2G
1	A	967	5MC

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Mol	Chain	Res	Type
1	A	969	A
1	A	971	G
1	A	974	A
1	A	975	A
1	A	976	G
1	A	977	A
1	A	991	U
1	A	992	U
1	A	993	G
1	A	1003(A)	G
1	A	1004	A
1	A	1005	A
1	A	1025	U
1	A	1027	C
1	A	1031	G
1	A	1050	G
1	A	1053	G
1	A	1054	C
1	A	1094	G
1	A	1095	U
1	A	1101	A
1	A	1117	G
1	A	1125	U
1	A	1126	U
1	A	1127	G
1	A	1129	C
1	A	1130	A
1	A	1131	G
1	A	1136	U
1	A	1137	C
1	A	1139	G
1	A	1144	G
1	A	1152	A
1	A	1154	G
1	A	1158	C
1	A	1159	U
1	A	1160	G
1	A	1171	G
1	A	1180	A
1	A	1181	G
1	A	1183	A
1	A	1184	G

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Mol	Chain	Res	Type
1	A	1191	A
1	A	1196	U
1	A	1197	G
1	A	1201	A
1	A	1202	G
1	A	1212	U
1	A	1213	A
1	A	1214	C
1	A	1226	C
1	A	1238	A
1	A	1241	G
1	A	1249	C
1	A	1253	G
1	A	1256	A
1	A	1257	U
1	A	1258	G
1	A	1270	C
1	A	1280	A
1	A	1281	U
1	A	1282	C
1	A	1287	A
1	A	1288	A
1	A	1300	G
1	A	1302	U
1	A	1303	C
1	A	1305	G
1	A	1319	A
1	A	1320	C
1	A	1332	A
1	A	1338	G
1	A	1346	A
1	A	1347	G
1	A	1348	U
1	A	1353	G
1	A	1359	C
1	A	1362	C
1	A	1368	G
1	A	1370	G
1	A	1381	U
1	A	1398	A
1	A	1399	C
1	A	1400	5MC

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Mol	Chain	Res	Type
1	A	1401	G
1	A	1442	G
1	A	1443	G
1	A	1446	A
1	A	1447	G
1	A	1475	G
1	A	1487	G
1	A	1492	A
1	A	1497	G
1	A	1498	UR3
1	A	1499	A
1	A	1502	A
1	A	1503	A
1	A	1504	G
1	A	1505	G
1	A	1506	U
1	A	1517	G
1	A	1520	G
1	A	1529	G
1	A	1530	G
1	A	1531	A

All (27) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	80	G
1	A	115	G
1	A	129(A)	G
1	A	181	G
1	A	266	G
1	A	372	C
1	A	432	A
1	A	484	G
1	A	496	A
1	A	559	A
1	A	687	A
1	A	701	C
1	A	812	C
1	A	913	A
1	A	965	A
1	A	1049	U
1	A	1129	C

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Mol	Chain	Res	Type
1	A	1179	A
1	A	1182	G
1	A	1190	G
1	A	1201	A
1	A	1225	A
1	A	1281	U
1	A	1331	G
1	A	1347	G
1	A	1397	C
1	A	1505	G

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

15 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
1	M2G	A	966	1	20,27,28	1.02	2 (10%)	19,40,43	1.33	2 (10%)
1	MA6	A	1518	1	19,26,27	0.95	2 (10%)	18,38,41	1.04	2 (11%)
1	2MG	A	1207	1	18,26,27	1.49	3 (16%)	16,38,41	1.53	2 (12%)
1	5MC	A	967	1	19,22,23	1.16	2 (10%)	26,32,35	1.07	2 (7%)
1	7MG	A	527	1	23,26,27	4.49	5 (21%)	27,39,42	2.69	10 (37%)
1	MA6	A	1519	1	19,26,27	1.02	2 (10%)	18,38,41	0.83	0
1	PSU	A	1541	1	18,21,22	1.03	1 (5%)	21,30,33	1.79	5 (23%)
1	5MC	A	1404	1	19,22,23	0.99	1 (5%)	26,32,35	1.01	2 (7%)
12	0TD	L	92	12	8,9,10	1.00	0	6,11,13	2.67	2 (33%)
1	4OC	A	1402	1	20,23,24	1.45	3 (15%)	25,32,35	0.80	1 (4%)
1	PSU	A	1540	1	18,21,22	1.15	1 (5%)	21,30,33	1.65	2 (9%)
1	PSU	A	516	22,1	18,21,22	1.33	1 (5%)	21,30,33	1.62	5 (23%)
1	5MC	A	1400	1	19,22,23	1.16	2 (10%)	26,32,35	1.07	2 (7%)
1	UR3	A	1498	1	19,22,23	0.93	0	26,32,35	1.10	1 (3%)
1	5MC	A	1407	1	19,22,23	1.23	2 (10%)	26,32,35	1.15	2 (7%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	M2G	A	966	1	-	3/7/29/30	0/3/3/3
1	MA6	A	1518	1	-	2/7/29/30	0/3/3/3
1	2MG	A	1207	1	-	0/5/27/28	0/3/3/3
1	5MC	A	967	1	-	2/7/25/26	0/2/2/2
1	7MG	A	527	1	-	2/7/37/38	0/3/3/3
1	MA6	A	1519	1	-	2/7/29/30	0/3/3/3
1	PSU	A	1541	1	-	1/7/25/26	0/2/2/2
1	5MC	A	1404	1	-	0/7/25/26	0/2/2/2
12	0TD	L	92	12	-	3/7/12/14	-
1	4OC	A	1402	1	-	3/9/29/30	0/2/2/2
1	PSU	A	1540	1	-	0/7/25/26	0/2/2/2
1	PSU	A	516	22,1	-	0/7/25/26	0/2/2/2
1	5MC	A	1400	1	-	2/7/25/26	0/2/2/2
1	UR3	A	1498	1	-	0/7/25/26	0/2/2/2
1	5MC	A	1407	1	-	0/7/25/26	0/2/2/2

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	527	7MG	C8-N9	-19.54	1.33	1.45
1	A	527	7MG	C5-N7	5.34	1.42	1.35
1	A	527	7MG	C2-N2	5.07	1.46	1.34
1	A	516	PSU	C6-C5	4.53	1.40	1.35
1	A	1402	4OC	C4-N4	4.11	1.44	1.36
1	A	1540	PSU	C6-C5	3.71	1.39	1.35
1	A	1407	5MC	C2-N1	3.47	1.47	1.40
1	A	967	5MC	C2-N1	3.37	1.47	1.40
1	A	1207	2MG	C2-N1	3.35	1.42	1.36
1	A	1207	2MG	C2-N2	3.31	1.40	1.33
1	A	1207	2MG	C6-N1	3.31	1.42	1.37
1	A	1541	PSU	C6-C5	3.23	1.38	1.35
1	A	1400	5MC	C2-N1	3.17	1.46	1.40
1	A	1402	4OC	O2-C2	-3.12	1.17	1.23
1	A	1404	5MC	C2-N3	3.09	1.42	1.36
1	A	527	7MG	C4-N3	3.01	1.41	1.34
1	A	1402	4OC	C6-N1	-2.83	1.31	1.38
1	A	966	M2G	C6-N1	2.76	1.42	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	967	5MC	C2-N3	2.71	1.41	1.36
1	A	1519	MA6	C6-N1	2.64	1.36	1.32
1	A	1518	MA6	C6-C5	-2.52	1.41	1.44
1	A	527	7MG	O6-C6	-2.48	1.18	1.23
1	A	966	M2G	C5-C6	-2.45	1.42	1.47
1	A	1407	5MC	C2-N3	2.23	1.40	1.36
1	A	1400	5MC	C2-N3	2.19	1.40	1.36
1	A	1518	MA6	C6-N1	2.18	1.35	1.32
1	A	1519	MA6	C2-N1	2.04	1.37	1.33

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	527	7MG	C5-C6-N1	6.34	122.11	110.94
1	A	527	7MG	C2-N3-C4	5.82	122.33	112.30
12	L	92	0TD	CSB-SB-CB	-5.42	92.62	102.36
1	A	1540	PSU	C4-N3-C2	-4.69	119.91	126.37
1	A	1541	PSU	C4-N3-C2	-4.50	120.17	126.37
1	A	527	7MG	C6-C5-N7	4.39	138.74	131.93
1	A	527	7MG	C5-C4-N3	-4.30	120.06	128.13
1	A	1207	2MG	O6-C6-N1	-4.21	115.62	120.62
1	A	527	7MG	N9-C4-N3	4.17	131.57	125.46
1	A	1541	PSU	N1-C2-N3	4.07	119.47	115.17
1	A	516	PSU	C4-N3-C2	-3.83	121.09	126.37
1	A	516	PSU	N1-C2-N3	3.81	119.18	115.17
1	A	527	7MG	C6-C5-C4	-3.79	115.74	122.40
1	A	966	M2G	O6-C6-C5	3.77	131.79	124.32
1	A	1540	PSU	N1-C2-N3	3.76	119.14	115.17
1	A	1207	2MG	O6-C6-C5	3.59	131.43	124.32
1	A	1541	PSU	O2-C2-N1	-3.50	119.18	122.79
1	A	527	7MG	N9-C8-N7	3.40	108.18	103.37
1	A	527	7MG	C2-N1-C6	-3.28	119.17	125.11
1	A	966	M2G	O6-C6-N1	-2.75	117.35	120.62
1	A	516	PSU	C6-N1-C2	-2.70	120.18	122.69
1	A	527	7MG	O6-C6-C5	-2.60	121.23	127.62
1	A	527	7MG	N2-C2-N1	2.58	122.20	116.76
1	A	1518	MA6	N1-C6-N6	-2.54	113.89	116.83
1	A	967	5MC	N4-C4-N3	-2.53	113.92	118.51
1	A	1400	5MC	N4-C4-N3	-2.52	113.95	118.51
1	A	1518	MA6	C1'-N9-C4	-2.51	122.23	126.64
1	A	967	5MC	C5-C4-N3	2.46	124.28	121.75
12	L	92	0TD	OD1-CG-CB	-2.34	117.53	122.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1404	5MC	C5-C4-N3	2.26	124.07	121.75
1	A	1400	5MC	C5-C4-N3	2.25	124.07	121.75
1	A	516	PSU	O2-C2-N1	-2.19	120.53	122.79
1	A	1402	4OC	C2'-C1'-N1	-2.18	110.10	114.24
1	A	1541	PSU	C6-N1-C2	-2.18	120.67	122.69
1	A	1407	5MC	C1'-N1-C6	-2.18	117.57	121.15
1	A	1541	PSU	O4'-C1'-C2'	2.18	108.16	105.15
1	A	1498	UR3	O3'-C3'-C2'	2.13	118.65	111.82
1	A	516	PSU	O4'-C1'-C2'	2.07	108.02	105.15
1	A	1404	5MC	C4-N3-C2	-2.05	117.96	120.81
1	A	1407	5MC	C4-N3-C2	-2.02	118.01	120.81

There are no chirality outliers.

All (20) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	527	7MG	O4'-C4'-C5'-O5'
1	A	967	5MC	O4'-C4'-C5'-O5'
1	A	967	5MC	C3'-C4'-C5'-O5'
1	A	1402	4OC	O4'-C4'-C5'-O5'
1	A	527	7MG	C3'-C4'-C5'-O5'
1	A	1400	5MC	O4'-C4'-C5'-O5'
1	A	1402	4OC	C3'-C4'-C5'-O5'
1	A	1519	MA6	C3'-C4'-C5'-O5'
1	A	966	M2G	C4'-C5'-O5'-P
1	A	966	M2G	O4'-C4'-C5'-O5'
1	A	966	M2G	C3'-C4'-C5'-O5'
1	A	1400	5MC	C3'-C4'-C5'-O5'
1	A	1519	MA6	O4'-C4'-C5'-O5'
1	A	1518	MA6	O4'-C4'-C5'-O5'
1	A	1518	MA6	C3'-C4'-C5'-O5'
12	L	92	0TD	CG-CB-SB-CSB
12	L	92	0TD	SB-CB-CG-OD1
12	L	92	0TD	SB-CB-CG-OD2
1	A	1402	4OC	C3'-C2'-O2'-CM2
1	A	1541	PSU	O4'-C4'-C5'-O5'

There are no ring outliers.

10 monomers are involved in 13 short contacts:



Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	966	M2G	1	0
1	A	1518	MA6	2	0
1	A	967	5MC	1	0
1	A	1519	MA6	2	0
1	A	1404	5MC	2	0
12	L	92	0TD	2	0
1	A	1402	4OC	1	0
1	A	516	PSU	1	0
1	A	1400	5MC	1	0
1	A	1498	UR3	2	0

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 152 ligands modelled in this entry, 151 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	$\# Z  > 2$
24	TOY	A	1738	-	33,34,34	1.14	4 (12%)	43,50,50	1.75	12 (27%)

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
24	TOY	A	1738	-	-	5/12/68/68	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
24	A	1738	TOY	C11-C21	2.71	1.57	1.52
24	A	1738	TOY	C23-C33	2.70	1.56	1.53
24	A	1738	TOY	C43-C53	2.13	1.57	1.53
24	A	1738	TOY	C41-C51	2.09	1.55	1.52

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
24	A	1738	TOY	C43-C33-C23	-3.75	102.92	111.06
24	A	1738	TOY	C62-C52-C42	3.62	116.44	109.11
24	A	1738	TOY	C13-C23-C33	-3.34	105.91	110.40
24	A	1738	TOY	O51-C51-C61	3.26	112.34	106.07
24	A	1738	TOY	O52-C52-C42	-2.98	102.29	109.94
24	A	1738	TOY	O11-C11-C21	2.59	112.24	108.10
24	A	1738	TOY	C41-C31-C21	-2.56	107.40	112.65
24	A	1738	TOY	C13-O62-C62	-2.54	111.95	117.98
24	A	1738	TOY	O53-C53-C43	2.53	114.26	109.70
24	A	1738	TOY	C31-C41-C51	-2.51	107.56	110.76
24	A	1738	TOY	O63-C63-C53	-2.50	102.84	111.33
24	A	1738	TOY	C53-C43-C33	-2.01	108.44	110.67

There are no chirality outliers.

All (5) torsion outliers are listed below:

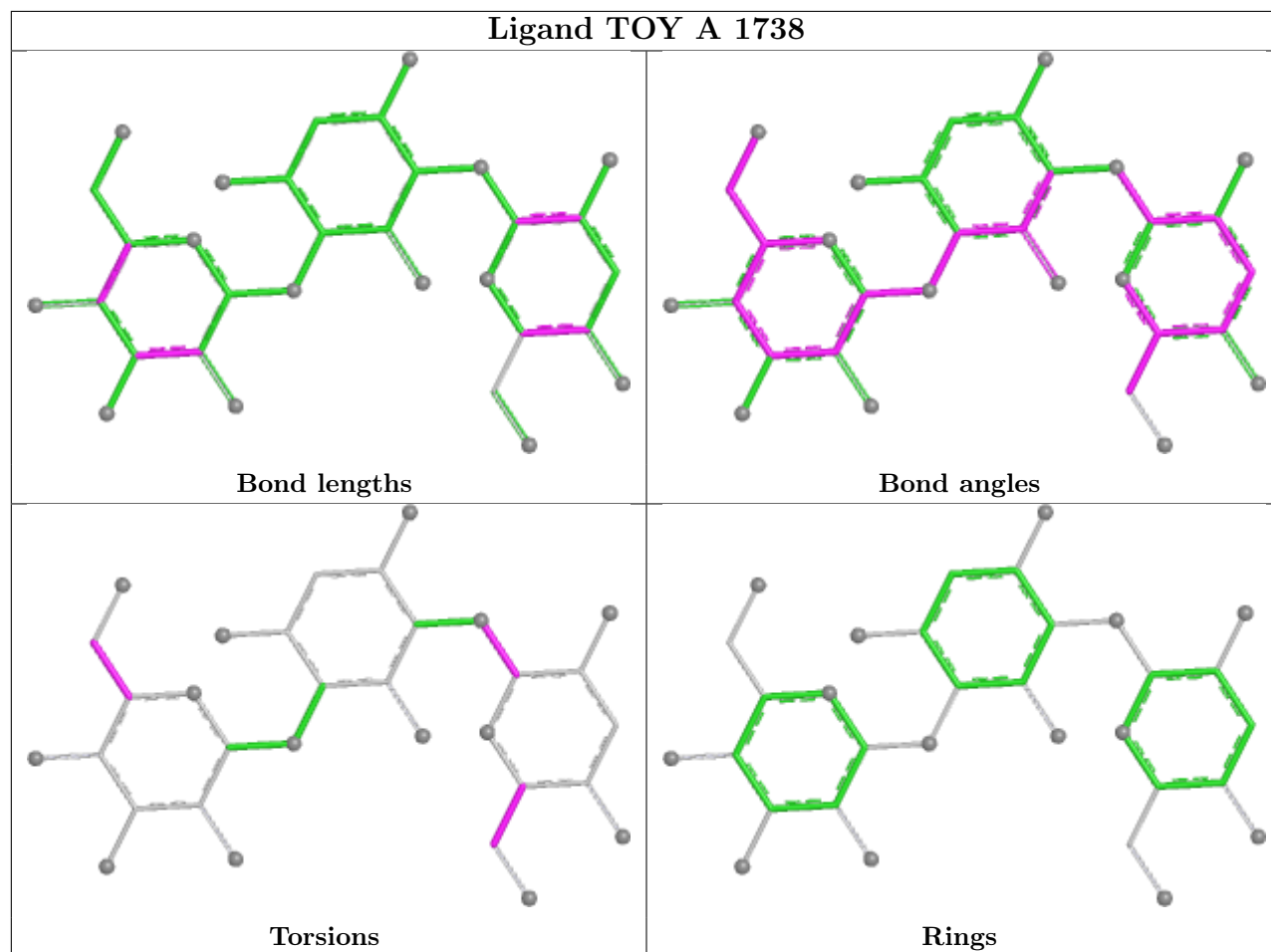
Mol	Chain	Res	Type	Atoms
24	A	1738	TOY	C41-C51-C61-N61
24	A	1738	TOY	O51-C51-C61-N61
24	A	1738	TOY	C43-C53-C63-O63
24	A	1738	TOY	O51-C11-O11-C42
24	A	1738	TOY	O53-C53-C63-O63

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	1498/1522 (98%)	-0.52	6 (0%) 89 76	67, 118, 217, 321	0
2	B	236/256 (92%)	-0.49	1 (0%) 89 76	93, 136, 229, 255	0
3	C	207/239 (86%)	-0.30	0 100 100	76, 164, 205, 222	0
4	D	208/209 (99%)	-0.27	8 (3%) 44 29	86, 126, 175, 199	0
5	E	151/162 (93%)	-0.61	1 (0%) 84 67	71, 101, 141, 191	0
6	F	101/101 (100%)	-0.64	0 100 100	94, 142, 179, 222	0
7	G	155/156 (99%)	-0.35	2 (1%) 74 53	106, 149, 219, 255	0
8	H	138/138 (100%)	-0.80	0 100 100	62, 91, 129, 155	0
9	I	127/128 (99%)	-0.04	2 (1%) 70 49	115, 170, 210, 233	0
10	J	99/105 (94%)	0.04	2 (2%) 64 44	104, 194, 292, 344	0
11	K	119/129 (92%)	-0.48	2 (1%) 69 48	82, 120, 159, 188	0
12	L	124/135 (91%)	-0.42	2 (1%) 70 49	61, 120, 159, 224	0
13	M	118/126 (93%)	-0.25	4 (3%) 48 31	124, 154, 198, 261	0
14	N	60/61 (98%)	-0.09	2 (3%) 49 32	123, 150, 188, 221	0
15	O	88/89 (98%)	-0.46	0 100 100	74, 113, 157, 200	0
16	P	84/88 (95%)	-0.33	0 100 100	89, 122, 153, 219	0
17	Q	104/105 (99%)	-0.37	1 (0%) 79 59	72, 104, 164, 222	0
18	R	73/88 (82%)	-0.34	1 (1%) 73 52	85, 122, 187, 248	0
19	S	81/93 (87%)	0.06	3 (3%) 45 29	70, 182, 244, 270	0
20	T	99/106 (93%)	-0.22	1 (1%) 79 59	94, 123, 176, 217	0
21	U	25/27 (92%)	0.27	1 (4%) 43 28	72, 154, 194, 233	0
All	All	3895/4063 (95%)	-0.41	39 (1%) 79 59	61, 130, 211, 344	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
19	S	3	ARG	7.6
1	A	1129	C	5.6
4	D	31	CYS	5.3
4	D	2	GLY	4.9
9	I	127	LYS	4.7
10	J	58	ASP	4.1
19	S	2	PRO	3.8
12	L	73	GLU	3.4
2	B	211	ILE	3.3
1	A	461	C	3.2
13	M	8	GLU	3.2
4	D	33	MET	3.2
4	D	9	CYS	3.2
7	G	5	ARG	3.2
4	D	22	LYS	3.1
13	M	7	VAL	3.0
11	K	51	LYS	3.0
9	I	8	GLY	3.0
17	Q	105	ALA	2.8
13	M	119	GLY	2.8
7	G	33	ASP	2.8
10	J	57	LYS	2.8
13	M	118	ALA	2.6
1	A	532	A	2.5
1	A	1027	C	2.5
4	D	26	CYS	2.5
4	D	3	ARG	2.3
1	A	993	G	2.3
14	N	2	ALA	2.3
20	T	106	ALA	2.3
4	D	42	GLN	2.2
21	U	24	ARG	2.1
5	E	155	GLU	2.1
14	N	35	ARG	2.1
19	S	81	ARG	2.1
11	K	129	SER	2.1
12	L	23	LYS	2.1
18	R	20	ALA	2.0
1	A	196	A	2.0

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
1	PSU	A	1540	20/21	0.89	0.14	204,217,231,234	0
1	PSU	A	1541	20/21	0.92	0.15	203,212,220,220	0
1	M2G	A	966	25/26	0.94	0.08	104,126,133,143	0
1	PSU	A	516	20/21	0.96	0.07	101,130,144,148	0
1	5MC	A	1407	21/22	0.97	0.08	93,112,121,124	0
1	UR3	A	1498	21/22	0.97	0.11	89,95,102,107	0
1	5MC	A	967	21/22	0.97	0.06	92,104,118,121	0
1	5MC	A	1400	21/22	0.97	0.12	86,107,119,121	0
12	0TD	L	92	10/11	0.97	0.13	92,125,143,316	0
1	7MG	A	527	24/25	0.98	0.06	104,111,119,126	0
1	MA6	A	1518	24/25	0.98	0.09	87,94,123,125	0
1	MA6	A	1519	24/25	0.98	0.11	83,89,94,107	0
1	4OC	A	1402	22/23	0.98	0.06	88,99,111,114	0
1	5MC	A	1404	21/22	0.98	0.06	86,89,97,102	0
1	2MG	A	1207	24/25	0.98	0.06	151,161,170,171	0

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
23	K	A	1707	1/1	0.51	0.23	148,148,148,148	0
22	MG	A	1725	1/1	0.57	0.34	129,129,129,129	0
22	MG	A	1614	1/1	0.58	0.47	107,107,107,107	0
22	MG	A	1608	1/1	0.61	0.32	93,93,93,93	0
22	MG	A	1718	1/1	0.62	0.40	86,86,86,86	0
23	K	A	1706	1/1	0.68	0.30	127,127,127,127	0
22	MG	A	1726	1/1	0.69	0.24	114,114,114,114	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
23	K	A	1701	1/1	0.71	0.21	144,144,144,144	0
22	MG	A	1724	1/1	0.72	0.25	89,89,89,89	0
22	MG	N	102	1/1	0.73	0.38	96,96,96,96	0
22	MG	A	1722	1/1	0.73	0.27	107,107,107,107	0
22	MG	A	1616	1/1	0.74	0.27	69,69,69,69	0
23	K	A	1704	1/1	0.74	0.26	114,114,114,114	0
22	MG	A	1645	1/1	0.75	0.19	88,88,88,88	0
22	MG	A	1656	1/1	0.75	0.25	102,102,102,102	0
23	K	A	1712	1/1	0.75	0.23	130,130,130,130	0
22	MG	A	1661	1/1	0.77	0.51	81,81,81,81	0
22	MG	A	1643	1/1	0.77	0.32	76,76,76,76	0
23	K	A	1714	1/1	0.77	0.18	147,147,147,147	0
22	MG	B	301	1/1	0.78	0.17	118,118,118,118	0
23	K	A	1713	1/1	0.78	0.14	162,162,162,162	0
22	MG	A	1610	1/1	0.78	0.45	67,67,67,67	0
22	MG	A	1688	1/1	0.79	0.27	69,69,69,69	0
22	MG	A	1717	1/1	0.79	0.34	88,88,88,88	0
22	MG	A	1606	1/1	0.79	0.37	97,97,97,97	0
23	K	A	1711	1/1	0.79	0.14	163,163,163,163	0
22	MG	A	1632	1/1	0.79	0.32	74,74,74,74	0
23	K	A	1700	1/1	0.79	0.21	131,131,131,131	0
22	MG	A	1609	1/1	0.79	0.83	118,118,118,118	0
22	MG	A	1730	1/1	0.80	0.22	126,126,126,126	0
22	MG	A	1650	1/1	0.80	0.33	61,61,61,61	0
22	MG	A	1652	1/1	0.81	0.35	86,86,86,86	0
23	K	A	1709	1/1	0.81	0.31	142,142,142,142	0
22	MG	A	1720	1/1	0.82	0.31	90,90,90,90	0
22	MG	A	1639	1/1	0.82	0.28	72,72,72,72	0
22	MG	A	1637	1/1	0.82	0.41	128,128,128,128	0
23	K	A	1705	1/1	0.83	0.32	160,160,160,160	0
22	MG	A	1615	1/1	0.83	0.25	69,69,69,69	0
23	K	A	1708	1/1	0.84	0.27	164,164,164,164	0
22	MG	A	1731	1/1	0.84	0.06	361,361,361,361	0
23	K	A	1710	1/1	0.84	0.10	190,190,190,190	0
22	MG	A	1734	1/1	0.84	0.09	288,288,288,288	0
22	MG	A	1633	1/1	0.84	0.28	81,81,81,81	0
22	MG	A	1647	1/1	0.84	0.25	68,68,68,68	0
22	MG	A	1613	1/1	0.84	0.42	63,63,63,63	0
22	MG	A	1636	1/1	0.85	0.45	94,94,94,94	0
22	MG	A	1681	1/1	0.85	0.17	105,105,105,105	0
23	K	A	1715	1/1	0.85	0.17	155,155,155,155	0
22	MG	S	101	1/1	0.86	0.23	99,99,99,99	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
22	MG	A	1670	1/1	0.86	0.37	100,100,100,100	0
22	MG	A	1697	1/1	0.86	0.22	79,79,79,79	0
22	MG	A	1658	1/1	0.87	0.24	99,99,99,99	0
22	MG	A	1651	1/1	0.87	0.35	100,100,100,100	0
22	MG	A	1664	1/1	0.87	0.28	103,103,103,103	0
22	MG	D	303	1/1	0.87	0.18	99,99,99,99	0
22	MG	A	1732	1/1	0.88	0.06	258,258,258,258	0
22	MG	A	1634	1/1	0.88	0.31	66,66,66,66	0
22	MG	A	1729	1/1	0.88	0.14	81,81,81,81	0
22	MG	A	1675	1/1	0.88	0.54	90,90,90,90	0
22	MG	A	1677	1/1	0.88	0.12	66,66,66,66	0
22	MG	A	1602	1/1	0.89	0.65	94,94,94,94	0
22	MG	A	1655	1/1	0.89	0.35	76,76,76,76	0
22	MG	A	1716	1/1	0.89	0.19	84,84,84,84	0
23	K	A	1702	1/1	0.89	0.26	137,137,137,137	0
22	MG	A	1622	1/1	0.90	0.38	55,55,55,55	0
22	MG	A	1699	1/1	0.90	0.31	85,85,85,85	0
22	MG	H	201	1/1	0.90	0.14	76,76,76,76	0
22	MG	M	201	1/1	0.90	0.14	123,123,123,123	0
22	MG	A	1623	1/1	0.90	0.23	123,123,123,123	0
22	MG	A	1611	1/1	0.90	0.26	75,75,75,75	0
22	MG	A	1619	1/1	0.90	0.28	72,72,72,72	0
22	MG	A	1682	1/1	0.91	0.20	70,70,70,70	0
22	MG	A	1638	1/1	0.91	0.36	62,62,62,62	0
22	MG	A	1692	1/1	0.91	0.21	118,118,118,118	0
22	MG	A	1694	1/1	0.91	0.17	77,77,77,77	0
22	MG	A	1635	1/1	0.91	0.26	76,76,76,76	0
22	MG	A	1723	1/1	0.91	0.38	99,99,99,99	0
22	MG	A	1698	1/1	0.91	0.06	119,119,119,119	0
23	K	A	1703	1/1	0.91	0.21	138,138,138,138	0
22	MG	A	1673	1/1	0.91	0.27	51,51,51,51	0
22	MG	E	201	1/1	0.91	0.08	318,318,318,318	0
22	MG	Q	201	1/1	0.92	0.14	91,91,91,91	0
22	MG	A	1695	1/1	0.92	0.11	98,98,98,98	0
22	MG	D	302	1/1	0.92	0.12	74,74,74,74	0
22	MG	A	1653	1/1	0.92	0.70	90,90,90,90	0
22	MG	A	1663	1/1	0.92	0.40	58,58,58,58	0
22	MG	A	1626	1/1	0.92	0.38	72,72,72,72	0
22	MG	A	1676	1/1	0.92	0.13	80,80,80,80	0
22	MG	A	1668	1/1	0.92	0.18	101,101,101,101	0
22	MG	N	103	1/1	0.92	0.15	100,100,100,100	0
22	MG	A	1719	1/1	0.93	0.36	74,74,74,74	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
22	MG	A	1735	1/1	0.93	0.10	324,324,324,324	0
22	MG	A	1666	1/1	0.93	0.38	82,82,82,82	0
22	MG	A	1721	1/1	0.93	0.32	83,83,83,83	0
22	MG	A	1683	1/1	0.93	0.17	57,57,57,57	0
22	MG	A	1679	1/1	0.93	0.22	49,49,49,49	0
22	MG	A	1669	1/1	0.93	0.27	78,78,78,78	0
22	MG	A	1691	1/1	0.94	0.29	81,81,81,81	0
22	MG	A	1671	1/1	0.94	0.30	71,71,71,71	0
22	MG	A	1672	1/1	0.94	0.41	77,77,77,77	0
22	MG	A	1646	1/1	0.94	0.34	71,71,71,71	0
22	MG	A	1659	1/1	0.94	0.26	78,78,78,78	0
22	MG	A	1629	1/1	0.94	0.10	55,55,55,55	0
22	MG	A	1630	1/1	0.94	0.24	55,55,55,55	0
22	MG	A	1607	1/1	0.94	0.24	70,70,70,70	0
22	MG	A	1620	1/1	0.94	0.36	70,70,70,70	0
22	MG	A	1641	1/1	0.94	0.30	54,54,54,54	0
22	MG	A	1733	1/1	0.94	0.06	267,267,267,267	0
22	MG	A	1621	1/1	0.94	0.23	41,41,41,41	0
22	MG	A	1627	1/1	0.94	0.09	80,80,80,80	0
22	MG	A	1625	1/1	0.95	0.27	52,52,52,52	0
22	MG	A	1728	1/1	0.95	0.23	116,116,116,116	0
22	MG	A	1631	1/1	0.95	0.25	74,74,74,74	0
22	MG	A	1674	1/1	0.95	0.18	72,72,72,72	0
22	MG	A	1612	1/1	0.95	0.38	67,67,67,67	0
22	MG	A	1667	1/1	0.95	0.44	70,70,70,70	0
22	MG	A	1686	1/1	0.95	0.17	69,69,69,69	0
22	MG	A	1727	1/1	0.96	0.26	99,99,99,99	0
22	MG	A	1736	1/1	0.96	0.05	238,238,238,238	0
22	MG	K	201	1/1	0.96	0.09	122,122,122,122	0
22	MG	A	1648	1/1	0.96	0.20	67,67,67,67	0
22	MG	A	1693	1/1	0.96	0.05	80,80,80,80	0
22	MG	A	1657	1/1	0.96	0.48	64,64,64,64	0
22	MG	A	1640	1/1	0.97	0.36	68,68,68,68	0
22	MG	J	201	1/1	0.97	0.12	53,53,53,53	0
22	MG	A	1680	1/1	0.97	0.22	39,39,39,39	0
22	MG	A	1628	1/1	0.97	0.17	2,2,2,2	0
22	MG	A	1642	1/1	0.97	0.10	52,52,52,52	0
22	MG	A	1696	1/1	0.97	0.06	68,68,68,68	0
22	MG	A	1662	1/1	0.97	0.07	60,60,60,60	0
22	MG	A	1684	1/1	0.97	0.20	59,59,59,59	0
22	MG	A	1605	1/1	0.97	0.14	9,9,9,9	0
22	MG	A	1687	1/1	0.97	0.31	72,72,72,72	0

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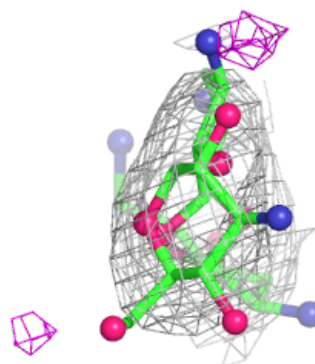
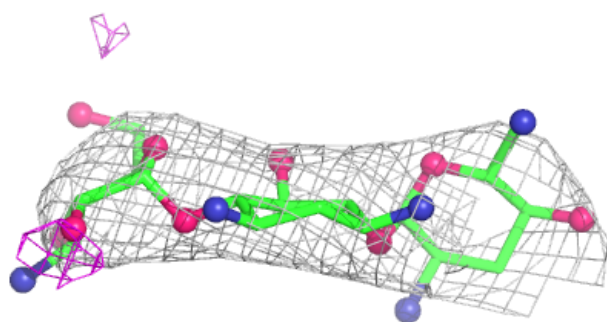
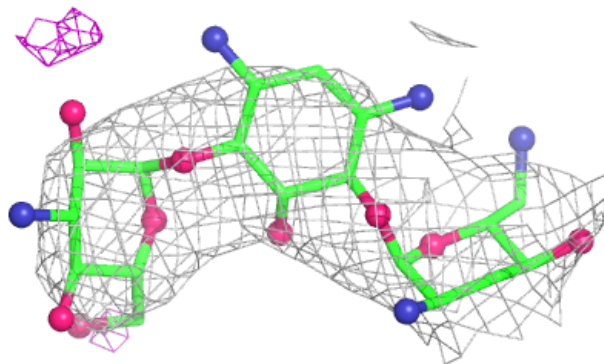
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
22	MG	A	1603	1/1	0.97	0.35	37,37,37,37	0
22	MG	A	1678	1/1	0.97	0.29	45,45,45,45	0
24	TOY	A	1738	32/32	0.97	0.08	88,105,127,131	0
25	ZN	D	301	1/1	0.97	0.29	149,149,149,149	0
22	MG	A	1685	1/1	0.98	0.16	67,67,67,67	0
22	MG	A	1617	1/1	0.98	0.25	46,46,46,46	0
22	MG	A	1660	1/1	0.98	0.15	95,95,95,95	0
22	MG	A	1649	1/1	0.98	0.09	84,84,84,84	0
22	MG	A	1737	1/1	0.98	0.06	205,205,205,205	0
22	MG	A	1604	1/1	0.98	0.38	66,66,66,66	0
22	MG	A	1654	1/1	0.98	0.04	64,64,64,64	0
22	MG	A	1689	1/1	0.99	0.09	129,129,129,129	0
22	MG	A	1690	1/1	0.99	0.06	108,108,108,108	0
22	MG	A	1644	1/1	0.99	0.11	67,67,67,67	0
22	MG	A	1665	1/1	0.99	0.11	55,55,55,55	0
22	MG	A	1601	1/1	0.99	0.12	80,80,80,80	0
22	MG	A	1624	1/1	0.99	0.10	59,59,59,59	0
22	MG	A	1618	1/1	0.99	0.37	48,48,48,48	0
25	ZN	N	101	1/1	1.00	0.05	151,151,151,151	0

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

**Electron density around TOY A 1738:**

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



## 6.5 Other polymers ⓘ

There are no such residues in this entry.