



Full wwPDB EM Validation Report ⓘ

Apr 16, 2024 – 01:19 am BST

PDB ID : 7PWF
EMDB ID : EMD-13680
Title : Cryo-EM structure of small subunit of Giardia lamblia ribosome at 2.9 Å resolution
Authors : Hiregange, D.G.; Rivalta, A.; Bose, T.; Breiner-Goldstein, E.; Samiya, S.; Cimicata, G.; Kulakova, L.; Zimmerman, E.; Bashan, A.; Herzberg, O.; Yonath, A.
Deposited on : 2021-10-06
Resolution : 2.85 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

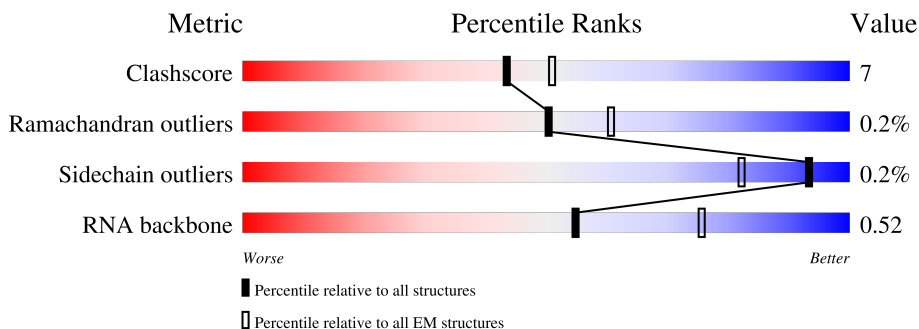
EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance i

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

The reported resolution of this entry is 2.85 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)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	d	137	35% (green), 65% (grey)
2	T	139	81% (green), 11% (yellow), 6% (grey)
3	N	154	87% (green), 10% (yellow), 3% (grey)
4	J	189	75% (green), 13% (yellow), 12% (grey)
5	D	217	63% (green), 21% (yellow), 16% (grey)
6	X	143	84% (green), 15% (yellow), 1% (grey)
7	S	154	54% (green), 32% (yellow), 14% (grey)

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Mol	Chain	Length	Quality of chain
8	Q	158	
9	C	242	
10	A	245	
11	B	248	
12	Y	132	
13	b	124	
14	a	109	
15	Z	88	
16	V	89	
17	P	145	
18	R	137	
19	K	134	
20	I	174	
21	e	69	
22	H	190	
23	n	41	
24	c	64	
25	O	145	
26	W	130	
27	E	268	
28	2	1452	
29	L	199	
30	U	126	
31	G	248	
32	F	190	

2 Entry composition [i](#)

There are 34 unique types of molecules in this entry. The entry contains 60466 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Ribosomal protein S29A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	d	48	398	253	75	65	5	0	0

- Molecule 2 is a protein called Ribosomal protein S19e.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	T	130	934	592	176	164	2	0	0

- Molecule 3 is a protein called Ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	N	152	1198	762	230	201	5	0	0

- Molecule 4 is a protein called Ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	J	166	1322	827	257	232	6	0	0

- Molecule 5 is a protein called Ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	D	182	1402	890	254	244	14	0	0

- Molecule 6 is a protein called Ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	X	142	1104	697	219	184	4	0	0

- Molecule 7 is a protein called Ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	S	133	1055	651	210	188	6	0	0

- Molecule 8 is a protein called Ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	Q	125	960	603	190	164	3	0	0

- Molecule 9 is a protein called Ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	C	212	1641	1043	298	296	4	0	0

- Molecule 10 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	A	194	1546	998	269	271	8	0	0

- Molecule 11 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	B	218	1758	1113	323	309	13	0	0

- Molecule 12 is a protein called Ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	Y	90	708	451	125	126	6	0	0

- Molecule 13 is a protein called Ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	b	79	614	389	105	114	6	0	0

- Molecule 14 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	a	97	Total	C	N	O	S	0	0
			785	484	162	131	8		

- Molecule 15 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	Z	59	Total	C	N	O	S	0	0
			419	266	73	75	5		

- Molecule 16 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	V	82	Total	C	N	O	S	0	0
			605	377	112	110	6		

- Molecule 17 is a protein called Ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	P	105	Total	C	N	O	S	0	0
			836	531	166	133	6		

- Molecule 18 is a protein called Ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	101	Total	C	N	O	S	0	0
			780	485	145	147	3		

- Molecule 19 is a protein called Ribosomal protein S10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	K	83	Total	C	N	O	S	0	0
			689	446	116	123	4		

- Molecule 20 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	I	163	Total	C	N	O	S	0	0
			1282	804	246	229	3		

- Molecule 21 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	e	37	Total	C	N	O	S	0	0
			291	185	59	46	1		

- Molecule 22 is a protein called Ribosomal protein eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	H	162	Total	C	N	O	S	0	0
			1194	772	210	207	5		

- Molecule 23 is a protein called Ribosomal protein eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	n	24	Total	C	N	O	S	0	0
			217	134	55	25	3		

- Molecule 24 is a protein called Ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	c	55	Total	C	N	O	S	0	0
			439	269	89	80	1		

- Molecule 25 is a protein called Ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	O	126	Total	C	N	O	S	0	0
			935	572	189	170	4		

- Molecule 26 is a protein called Ribosomal protein S15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	W	129	Total	C	N	O	S	0	0
			1031	659	192	177	3		

- Molecule 27 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	E	258	Total	C	N	O	S	0	0
			2058	1317	377	352	12		

- Molecule 28 is a RNA chain called rRNA 18S.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
28	2	1355	29096	12946	5388	9407	1355	0	0

- Molecule 29 is a protein called SSU ribosomal protein S17P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	L	181	1481	933	293	248	7	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	12	SER	GLY	variant	UNP V6TVJ7

- Molecule 30 is a protein called Ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	U	74	609	394	111	102	2	0	0

- Molecule 31 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	G	197	1530	961	296	263	10	0	0

- Molecule 32 is a protein called Ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	F	161	1246	771	240	227	8	0	0

- Molecule 33 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
33	d	1	Total	K	0
			1	1	
33	N	7	Total	K	0
			7	7	
33	S	2	Total	K	0
			2	2	

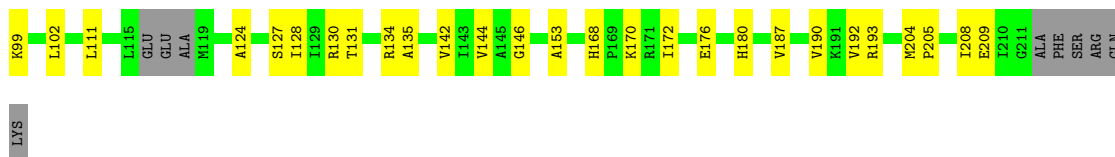
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Mol	Chain	Residues	Atoms	AltConf
33	A	1	Total K 1 1	0
33	b	1	Total K 1 1	0
33	R	1	Total K 1 1	0
33	O	6	Total K 6 6	0
33	W	1	Total K 1 1	0
33	E	3	Total K 3 3	0
33	2	239	Total K 239 239	0
33	L	3	Total K 3 3	0
33	G	1	Total K 1 1	0

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

Mol	Chain	Residues	Atoms	AltConf
34	N	1	Total Mg 1 1	0
34	I	1	Total Mg 1 1	0
34	2	35	Total Mg 35 35	0



- Molecule 6: Ribosomal protein S23

Chain X: 84% 15%



- Molecule 7: Ribosomal protein S18

Chain S: 54% 32% 14%



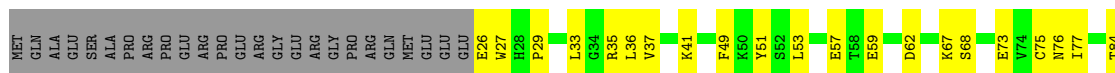
- Molecule 8: Ribosomal protein S16

Chain Q: 57% 22% 21%



- Molecule 9: Ribosomal protein S2

Chain C: 70% 17% 12%



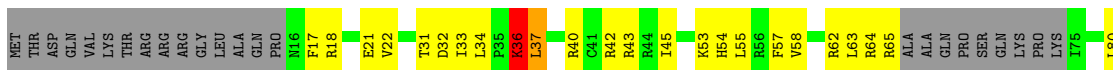
- Molecule 10: 40S ribosomal protein SA

Chain A: 67% 13% 21%

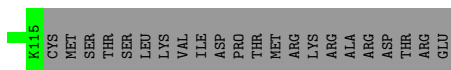
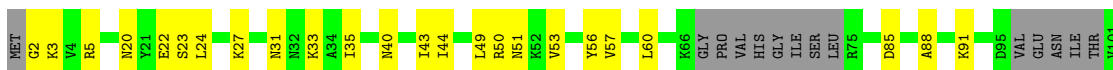




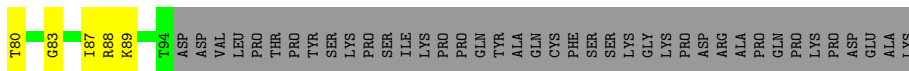
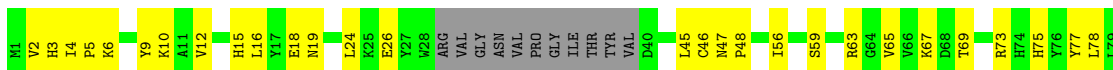
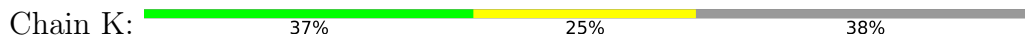
• Molecule 17: Ribosomal protein S15



• Molecule 18: Ribosomal protein S17



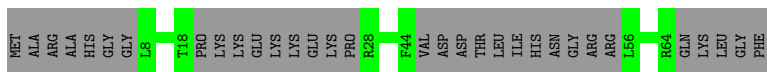
• Molecule 19: Ribosomal protein S10B



• Molecule 20: 40S ribosomal protein S8

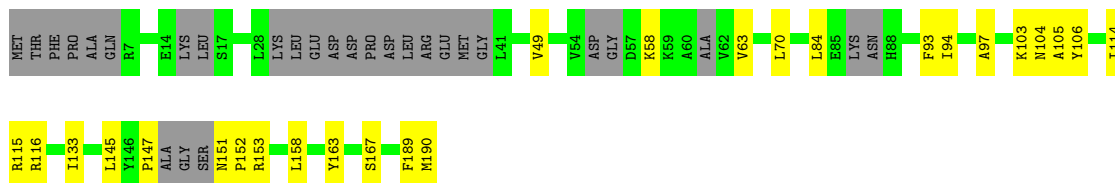


• Molecule 21: 40S ribosomal protein S30



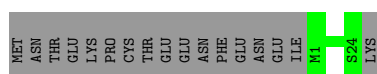
- Molecule 22: Ribosomal protein eS7

Chain H:  72% 14% 15%




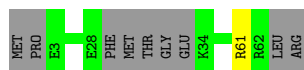
- Molecule 23: Ribosomal protein eL41

Chain n:  59% 41%




- Molecule 24: Ribosomal protein S28

Chain c:  84% 14%




- Molecule 25: Ribosomal protein S14

Chain O:  77% 10% 13%



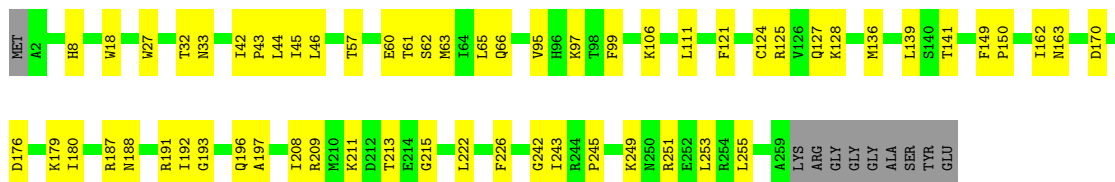
- Molecule 26: Ribosomal protein S15A

Chain W:  84% 15%



- Molecule 27: 40S ribosomal protein S4

Chain E:  74% 22%



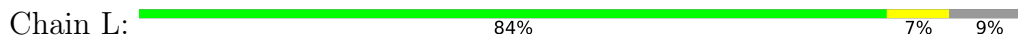
- Molecule 28: rRNA 18S



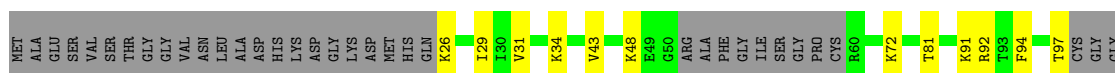
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A101	C102	C103	C104	C105	C106	C107	G108	U109	G110	G111	C112	G113	G114	U115	C116	C	C	U	A	G124	C125	G126	G127	G128	A129	C130	A131	G132	C133	G134	C135	U136	G137	A141	C142	C149	C150	A151	G152	G153	A154	C155	U157	G158	C159	G160	C161	G162	G170	G171	G172	C173		
G	C175	C176	C177	C	G	G180	G181	G182	C183	G184	A185	G186	G193	A202	C203	G204	G205	C208	A313	C314	G315	C316	C317	C318	C319	A324	A328	A329	G330	C	C	C336	G337	G338	C339	A340	G249	C250	G251	C252	G253	G256	C263	G264	A265	C266	G271	C366	G367	C370	G371	U280	C281	A282
G285	C288	G289	A290	C291	U292	G295	C393	A394	G395	U396	C397	A398	G399	C400	C401	G402	G403	C406	C407	C412	G413	A414	C415	G416	C	C	C	G	C	A	G	C426	G427	A430	G431	G438	U	C440	U441	G442	C446	C449	C454	G455	C458	U459	A460							
A461	U462	A466	G467	C468	U469	C470	G471	C472	A473	C474	A475	G476	C477	G491	C492	G500	A501	C504	C508	C519	C520	C521	C525	G526	C527	C532	G533	G534	A535	A536	G540	G541	A542	G545	C546	U547	A554	G555	G556	C	C	C	G	U561	G562	G564	A660							
G569	C570	G577	A578	A579	G582	C583	G584	C	C691	A692	G699	C702	A703	C704	G705	A706	G598	C599	G600	C601	C602	G603	C604	A618	C619	A722	G740	A744	C756	A757	A615	G621	C622	G623	G624	G625	C626	G627	G628	G637	U638	C903	G793	G794	G647	A650	G658	A659	G662					
U665	G675	A676	G677	G685	C686	C687	G688	C689	C691	A692	U699	C702	A703	C704	G705	A706	G709	C710	C711	U712	C717	A718	C719	A722	C740	A744	C756	A757	A615	G621	C622	A778	G779	C780	G784	C785	C786	C791	C903	G793	G794	G647	A650	G658	A659	G662								
C810	C811	G812	G815	C818	A828	A829	G833	G834	A835	G836	C940	C941	G942	C943	A944	C945	C946	U947	A948	C950	C951	G952	G953	A855	U857	A858	U859	G860	G866	A880	G888	A889	G892	C900	C	A902	C904	A907	C908	G909	G912	A913	G914	C921										
C924	A925	U926	U927	C928	C932	C4J933	C934	A935	U936	C937	G938	C939	G940	C941	G942	C943	A944	C945	C946	U947	A948	C950	C951	G952	G953	A855	U857	A858	U859	G860	G866	A880	G888	A889	G892	C900	C	A902	C904	A907	C908	G909	G912	A913	G914	C921								
C	U	U	U	C	C	C	C	A	U	C	C	G983	C984	G	G1005	C1006	G1007	G1008	C1009	G1010	G1011	U1012	G1013	C1014	C1020	C1025	G1026	A1027	G1028	C1031	G1032	G1035	G1041	C1042	U1045	G1048	U1054	C1057	G1058	A1059	C1060	A1061	G1068	C1075	G1076									
G1077	C1078	C1079	G1080	G1084	C	G	C1087	C1088	C1089	C1090	A1094	C1095	G1096	C1097	U1098	C1099	C1100	G1101	C1102	G	C	G	A1106	G1107	C1108	A1112	G1113	G1114	A1115	C1116	G1117	G1118	C1119	G1125	G1129	C1130	A1131	G1132	G1133	U1134	C1135	U1136	G1137	U1138	G1139	A1140	G1141	C1142	C1143	C1144	C1145	U1146	C1147	A
G	A	C1151	G1159	C1160	G1161	G1162	A1164	C1165	G1166	C1167	G1168	C1169	G1170	C1171	U1172	A1173	C1174	A1175	C1176	U1177	G1178	G1179	G1183	G1184	A1187	G1188	C1189	C1190	G1191	G1192	C1193	G1194	C1199	A1201	G1202	G1206	C1207	G1208	C	G	A1212	G1213	C1217	C1218	G1219	C1221	G1225	C1226	C1227					
C1232	C1233	G1238	G1241	G1242	A1243	C1244	C1245	G1246	C1250	C1251	G1252	C1253	C1257	C1288	G1261	A1262	G1270	G1276	C1277	C1278	C1279	G1280	C1281	C1282	C1283	A1286	C1287	C1288	G1289	C1292	G1293	C1294	C1295	G1296	G1297	G1300	C1301	C1302	U1303	C1304	C1306	U1307	C1308	C1309	U1314	A1314	G1315							
C1320	A1321	C1325	C1326	C1327	G1328	U1333	A1344	C1334	C1335	U1336	A1337	U1343	G1344	G1348	C1349	U1350	G1351	C1355	G1356	G1366	A1367	C1368	C	C	G1371	G1372	G1373	A1374	G1378	C1379	C1380	G1381	C1382	G1383	A1384	G1385	C1386	C1387	C1388	C1389	A1390	G1391	C1392	G1393	C1394	A1403	A1406	G1407	A1408	A1409				



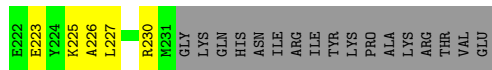
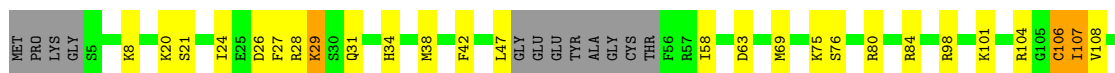
• Molecule 29: SSU ribosomal protein S17P



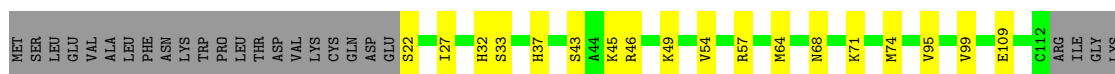
• Molecule 30: Ribosomal protein S20



• Molecule 31: 40S ribosomal protein S6



• Molecule 32: Ribosomal protein S5



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	91058	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.0	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MA6, OMU, A2M, 4OC, OMG, 7MG, MG, M7A, OMC, 4AC, K, C4J

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	d	0.30	0/406	0.53	0/539
2	T	0.29	0/955	0.52	1/1297 (0.1%)
3	N	0.33	0/1221	0.50	0/1641
4	J	0.28	0/1340	0.48	0/1796
5	D	0.31	0/1422	0.53	0/1909
6	X	0.30	0/1119	0.56	0/1498
7	S	0.28	0/1070	0.55	0/1435
8	Q	0.27	0/968	0.52	0/1295
9	C	0.31	0/1674	0.50	0/2259
10	A	0.31	0/1580	0.50	0/2149
11	B	0.29	0/1793	0.50	0/2419
12	Y	0.30	0/719	0.51	0/964
13	b	0.33	0/628	0.57	0/852
14	a	0.31	0/797	0.49	0/1072
15	Z	0.30	0/422	0.56	0/565
16	V	0.30	0/613	0.53	0/823
17	P	0.30	0/850	0.60	1/1138 (0.1%)
18	R	0.30	0/786	0.52	0/1052
19	K	0.32	0/707	0.60	0/957
20	I	0.31	0/1302	0.54	0/1746
21	e	0.27	0/294	0.53	0/392
22	H	0.29	0/1210	0.49	0/1638
23	n	0.30	0/219	0.45	0/280
24	c	0.27	0/439	0.53	0/585
25	O	0.29	0/947	0.56	0/1273
26	W	0.31	0/1048	0.49	0/1412
27	E	0.29	0/2104	0.54	0/2841
28	2	0.56	0/32117	1.01	149/50066 (0.3%)
29	L	0.31	0/1514	0.52	0/2030
30	U	0.29	0/619	0.49	0/833
31	G	0.29	0/1545	0.56	0/2061
32	F	0.29	0/1264	0.46	0/1697

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
All	All	0.45	0/63692	0.83	151/92514 (0.2%)

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
17	P	0	1
18	R	0	1
31	G	0	3
All	All	0	5

There are no bond length outliers.

All (151) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	175	C	P-O3'-C3'	-15.08	101.60	119.70
28	2	1132	G	P-O3'-C3'	-11.54	105.85	119.70
28	2	363	C	P-O3'-C3'	-10.32	107.32	119.70
28	2	1410	G	P-O3'-C3'	-10.24	107.42	119.70
28	2	366	C	P-O3'-C3'	-10.17	107.49	119.70
28	2	182	G	P-O3'-C3'	-9.98	107.73	119.70
28	2	1392	C	P-O3'-C3'	-9.57	108.22	119.70
28	2	152	A	P-O3'-C3'	-9.53	108.26	119.70
28	2	1168	G	P-O3'-C3'	-9.47	108.34	119.70
28	2	181	G	P-O3'-C3'	-9.43	108.38	119.70
28	2	156	G	P-O3'-C3'	-9.31	108.52	119.70
28	2	521	C	N1-C2-O2	9.03	124.32	118.90
28	2	295	G	P-O3'-C3'	-8.96	108.95	119.70
28	2	1388	C	P-O3'-C3'	-8.96	108.95	119.70
28	2	1137	G	P-O3'-C3'	-8.95	108.96	119.70
28	2	1007	G	P-O3'-C3'	-8.95	108.97	119.70
28	2	1035	OMG	P-O3'-C3'	-8.95	108.97	119.70
28	2	151	A	P-O3'-C3'	-8.85	109.08	119.70
28	2	1133	G	P-O3'-C3'	-8.83	109.11	119.70
28	2	1391	G	P-O3'-C3'	-8.78	109.16	119.70
28	2	521	C	C2-N1-C1'	8.71	128.38	118.80
28	2	1172	U	P-O3'-C3'	-8.71	109.25	119.70
28	2	1006	C	P-O3'-C3'	-8.70	109.27	119.70
28	2	937	C	P-O3'-C3'	-8.64	109.33	119.70
28	2	7	G	P-O3'-C3'	-8.56	109.43	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	1011	OMG	P-O3'-C3'	-8.53	109.47	119.70
28	2	367	G	P-O3'-C3'	-8.53	109.47	119.70
28	2	290	A	P-O3'-C3'	-8.51	109.49	119.70
28	2	900	C	N3-C2-O2	-8.50	115.95	121.90
28	2	104	OMC	P-O3'-C3'	-8.48	109.52	119.70
28	2	365	G	P-O3'-C3'	-8.44	109.58	119.70
28	2	1166	G	P-O3'-C3'	-8.34	109.70	119.70
28	2	159	C	P-O3'-C3'	-8.29	109.76	119.70
28	2	1408	A	P-O3'-C3'	-8.26	109.79	119.70
28	2	1412	C	P-O3'-C3'	-8.26	109.79	119.70
28	2	900	C	N1-C2-O2	8.25	123.85	118.90
28	2	1167	C	P-O3'-C3'	-8.25	109.80	119.70
28	2	939	C	P-O3'-C3'	-8.21	109.85	119.70
28	2	109	U	P-O3'-C3'	-8.18	109.89	119.70
28	2	1384	A	P-O3'-C3'	-8.09	109.99	119.70
28	2	1087	C	C2-N1-C1'	8.06	127.67	118.80
28	2	1386	C	P-O3'-C3'	-7.89	110.23	119.70
28	2	157	U	P-O3'-C3'	-7.88	110.25	119.70
28	2	110	G	P-O3'-C3'	-7.86	110.26	119.70
28	2	1164	A	P-O3'-C3'	-7.83	110.31	119.70
28	2	900	C	C2-N1-C1'	7.81	127.39	118.80
28	2	155	C	P-O3'-C3'	-7.74	110.41	119.70
28	2	158	G	P-O3'-C3'	-7.69	110.48	119.70
28	2	1131	A	P-O3'-C3'	-7.68	110.48	119.70
28	2	943	C	P-O3'-C3'	-7.66	110.50	119.70
28	2	1169	C	P-O3'-C3'	-7.56	110.62	119.70
28	2	301	C	P-O3'-C3'	-7.56	110.63	119.70
28	2	900	C	C6-N1-C2	-7.55	117.28	120.30
28	2	854	G	P-O3'-C3'	-7.55	110.64	119.70
28	2	587	G	O4'-C1'-N9	7.53	114.23	108.20
28	2	815	G	P-O3'-C3'	-7.49	110.72	119.70
28	2	1165	C	P-O3'-C3'	-7.47	110.73	119.70
28	2	853	G	P-O3'-C3'	-7.45	110.76	119.70
28	2	1138	U	P-O3'-C3'	-7.41	110.81	119.70
28	2	180	G	P-O3'-C3'	-7.34	110.89	119.70
28	2	4	C	P-O3'-C3'	-7.32	110.91	119.70
28	2	1136	U	P-O3'-C3'	-7.31	110.93	119.70
28	2	302	G	P-O3'-C3'	-7.28	110.97	119.70
28	2	1393	G	P-O3'-C3'	-7.18	111.08	119.70
28	2	1140	A	P-O3'-C3'	-7.13	111.15	119.70
28	2	1130	C	P-O3'-C3'	-7.11	111.17	119.70
28	2	1387	C	P-O3'-C3'	-7.10	111.18	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	150	C	P-O3'-C3'	-7.09	111.19	119.70
28	2	1411	U	P-O3'-C3'	-7.08	111.20	119.70
28	2	944	A	P-O3'-C3'	-7.06	111.23	119.70
28	2	938	G	P-O3'-C3'	-7.04	111.25	119.70
28	2	1009	U	P-O3'-C3'	-7.04	111.25	119.70
28	2	184	G	P-O3'-C3'	-7.03	111.26	119.70
28	2	1170	G	P-O3'-C3'	-7.03	111.27	119.70
28	2	851	G	P-O3'-C3'	-7.00	111.30	119.70
28	2	521	C	N3-C2-O2	-6.99	117.01	121.90
28	2	9	C	P-O3'-C3'	-6.98	111.33	119.70
28	2	108	G	P-O3'-C3'	-6.98	111.33	119.70
28	2	1134	U	P-O3'-C3'	-6.97	111.33	119.70
28	2	106	C	P-O3'-C3'	-6.96	111.34	119.70
28	2	1005	G	P-O3'-C3'	-6.94	111.37	119.70
28	2	1258	C	C2-N1-C1'	6.88	126.37	118.80
28	2	1258	C	N1-C2-O2	6.87	123.02	118.90
28	2	362	G	P-O3'-C3'	-6.86	111.47	119.70
28	2	852	G	P-O3'-C3'	-6.86	111.47	119.70
28	2	946	C	P-O3'-C3'	-6.77	111.58	119.70
28	2	1159	G	P-O3'-C3'	-6.75	111.60	119.70
28	2	364	G	P-O3'-C3'	-6.69	111.67	119.70
28	2	407	C	C2-N1-C1'	6.69	126.16	118.80
28	2	3	U	P-O3'-C3'	-6.65	111.72	119.70
28	2	936	A	P-O3'-C3'	-6.64	111.74	119.70
28	2	1087	C	C6-N1-C1'	-6.64	112.83	120.80
28	2	945	C	P-O3'-C3'	-6.61	111.77	119.70
28	2	319	C	P-O3'-C3'	-6.54	111.86	119.70
28	2	183	C	P-O3'-C3'	-6.52	111.88	119.70
28	2	12	U	P-O3'-C3'	-6.47	111.94	119.70
28	2	1171	C	P-O3'-C3'	-6.39	112.03	119.70
28	2	521	C	C6-N1-C1'	-6.39	113.13	120.80
28	2	1406	A	P-O3'-C3'	-6.36	112.08	119.70
28	2	105	C	P-O3'-C3'	-6.34	112.09	119.70
28	2	107	C	P-O3'-C3'	-6.26	112.19	119.70
28	2	160	G	P-O3'-C3'	-6.25	112.20	119.70
28	2	1139	G	P-O3'-C3'	-6.23	112.22	119.70
28	2	1420	G	P-O3'-C3'	-6.20	112.27	119.70
28	2	6	G	P-O3'-C3'	-6.19	112.27	119.70
28	2	82	G	P-O3'-C3'	-6.18	112.28	119.70
28	2	850	G	P-O3'-C3'	-6.18	112.29	119.70
28	2	1162	G	C4-N9-C1'	6.18	134.53	126.50
28	2	111	G	P-O3'-C3'	-6.16	112.31	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	1135	C	P-O3'-C3'	-6.14	112.33	119.70
28	2	10	G	P-O3'-C3'	-6.14	112.33	119.70
28	2	1041	G	P-O3'-C3'	-6.10	112.38	119.70
28	2	1095	C	C2-N1-C1'	6.05	125.46	118.80
28	2	280	U	N3-C2-O2	-6.02	117.99	122.20
28	2	1416	A	P-O3'-C3'	-6.01	112.48	119.70
28	2	508	C	P-O3'-C3'	-5.92	112.59	119.70
28	2	1042	C	P-O3'-C3'	-5.82	112.72	119.70
2	T	25	ILE	CG1-CB-CG2	-5.74	98.76	111.40
28	2	717	C	C2-N1-C1'	5.73	125.10	118.80
28	2	153	G	P-O3'-C3'	-5.72	112.84	119.70
28	2	491	G	C4-N9-C1'	5.71	133.93	126.50
28	2	1423	A	P-O3'-C3'	-5.66	112.91	119.70
28	2	1162	G	C8-N9-C1'	-5.66	119.65	127.00
28	2	112	C	P-O3'-C3'	-5.64	112.93	119.70
28	2	11	A	P-O3'-C3'	-5.63	112.95	119.70
28	2	709	G	P-O3'-C3'	-5.62	112.95	119.70
28	2	1258	C	N3-C2-O2	-5.59	117.99	121.90
28	2	462	U	C2-N1-C1'	5.53	124.33	117.70
28	2	370	C	C6-N1-C2	-5.52	118.09	120.30
28	2	857	U	P-O3'-C3'	-5.51	113.09	119.70
17	P	32	ASP	CB-CG-OD1	5.50	123.25	118.30
28	2	363	C	C3'-C2'-C1'	-5.46	97.14	101.50
28	2	1199	C	C2-N1-C1'	5.40	124.74	118.80
28	2	235	U	C2-N1-C1'	5.39	124.17	117.70
28	2	395	G	C5-C6-O6	-5.36	125.38	128.60
28	2	777	A	P-O3'-C3'	-5.34	113.29	119.70
28	2	370	C	C2-N1-C1'	5.33	124.66	118.80
28	2	1162	G	N3-C4-N9	5.29	129.18	126.00
28	2	1199	C	N3-C2-O2	-5.28	118.21	121.90
28	2	547	U	N3-C2-O2	-5.25	118.52	122.20
28	2	605	G	O4'-C1'-N9	5.22	112.38	108.20
28	2	1012	U	P-O3'-C3'	-5.15	113.52	119.70
28	2	491	G	C8-N9-C1'	-5.14	120.31	127.00
28	2	940	G	P-O3'-C3'	-5.11	113.57	119.70
28	2	1095	C	N1-C2-O2	5.11	121.96	118.90
28	2	858	A	P-O3'-C3'	-5.10	113.58	119.70
28	2	942	G	P-O3'-C3'	-5.07	113.61	119.70
28	2	1199	C	C6-N1-C2	-5.06	118.28	120.30
28	2	1407	G	P-O3'-C3'	-5.06	113.63	119.70
28	2	403	G	N3-C4-N9	-5.02	122.99	126.00
28	2	407	C	N1-C2-O2	5.02	121.91	118.90

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
31	G	106	CYS	Peptide
31	G	107	ILE	Peptide
31	G	29	LYS	Peptide
17	P	36	LYS	Peptide
18	R	40	ASN	Peptide

5.2 Too-close contacts [i](#)

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	d	398	0	398	0	0
2	T	934	0	882	17	0
3	N	1198	0	1266	11	0
4	J	1322	0	1378	18	0
5	D	1402	0	1424	30	0
6	X	1104	0	1194	12	0
7	S	1055	0	1076	38	0
8	Q	960	0	1037	23	0
9	C	1641	0	1687	26	0
10	A	1546	0	1575	22	0
11	B	1758	0	1797	20	0
12	Y	708	0	724	11	0
13	b	614	0	604	0	0
14	a	785	0	818	0	0
15	Z	419	0	413	13	0
16	V	605	0	606	6	0
17	P	836	0	866	31	0
18	R	780	0	782	18	0
19	K	689	0	671	26	0
20	I	1282	0	1336	23	0
21	e	291	0	306	0	0
22	H	1194	0	1169	21	0
23	n	217	0	259	0	0
24	c	439	0	473	0	0
25	O	935	0	935	11	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	W	1031	0	1082	14	0
27	E	2058	0	2135	36	0
28	2	29096	0	14778	262	0
29	L	1481	0	1496	10	0
30	U	609	0	649	9	0
31	G	1530	0	1613	42	0
32	F	1246	0	1268	25	0
33	2	239	0	0	0	0
33	A	1	0	0	0	0
33	E	3	0	0	0	0
33	G	1	0	0	0	0
33	L	3	0	0	0	0
33	N	7	0	0	0	0
33	O	6	0	0	0	0
33	R	1	0	0	0	0
33	S	2	0	0	0	0
33	W	1	0	0	0	0
33	b	1	0	0	0	0
33	d	1	0	0	0	0
34	2	35	0	0	0	0
34	I	1	0	0	0	0
34	N	1	0	0	0	0
All	All	60466	0	46697	700	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (700) 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)
31:G:27:PHE:HD1	31:G:28:ARG:H	1.23	0.85
2:T:25:ILE:HG22	2:T:26:ILE:H	1.41	0.84
28:2:593:C:H4'	28:2:594:C:H5'	1.58	0.84
28:2:124:G:H1	31:G:203:LYS:HE2	1.49	0.78
31:G:143:ARG:HB3	31:G:146:LYS:HD3	1.65	0.78
20:I:23:LYS:HE2	28:2:298:G:H5''	1.64	0.78
4:J:112:GLN:HE22	4:J:128:ARG:HD2	1.50	0.76
8:Q:25:VAL:HB	8:Q:40:VAL:HB	1.68	0.74
11:B:107:ARG:NH1	25:O:127:THR:O	2.20	0.74
12:Y:97:ILE:HG22	12:Y:99:ALA:H	1.52	0.74
28:2:599:C:H2'	28:2:600:G:C8	2.23	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:1145:C:HO2'	28:2:1146:U:H6	1.37	0.73
27:E:45:ILE:HG13	27:E:61:THR:HG21	1.71	0.72
5:D:130:ARG:HD3	5:D:134:ARG:HH22	1.54	0.72
32:F:27:ILE:HG23	32:F:54:VAL:HG11	1.71	0.71
19:K:10:LYS:HD2	19:K:56:ILE:HG21	1.73	0.71
28:2:64:A:H2	28:2:71:A:H62	1.38	0.71
27:E:163:ASN:ND2	27:E:170:ASP:OD2	2.23	0.71
28:2:127:G:H1	28:2:155:C:H5	1.36	0.71
2:T:25:ILE:O	2:T:27:LYS:N	2.21	0.70
11:B:190:ASN:HB3	11:B:192:GLU:HG2	1.74	0.70
28:2:705:G:H2'	28:2:706:A:C8	2.27	0.69
11:B:165:ARG:NH1	28:2:699:U:OP1	2.26	0.69
20:I:55:THR:HG23	20:I:63:ILE:HG23	1.75	0.69
15:Z:43:THR:HG23	32:F:152:VAL:HG12	1.75	0.69
31:G:104:ARG:HH21	31:G:107:ILE:HG22	1.58	0.69
7:S:132:LYS:HE3	28:2:1232:C:H5''	1.75	0.68
10:A:206:LEU:HD21	18:R:88:ALA:HB2	1.76	0.68
28:2:691:C:H2'	28:2:692:A:C8	2.28	0.68
19:K:46:CYS:HB2	19:K:48:PRO:HD3	1.75	0.68
29:L:185:LYS:NZ	29:L:187:GLU:OE1	2.21	0.68
31:G:221:LEU:HD11	31:G:225:LYS:HZ3	1.58	0.68
25:O:46:THR:HG21	28:2:647:G:H21	1.59	0.68
7:S:32:LEU:HB3	7:S:38:ILE:HG21	1.76	0.67
28:2:1101:G:H1	28:2:1108:C:H42	1.42	0.67
5:D:34:GLU:HG2	19:K:69:THR:HG21	1.77	0.67
5:D:209:GLU:HB3	18:R:43:ILE:HD13	1.78	0.66
28:2:109:U:H3	28:2:209:G:H1	1.41	0.66
28:2:364:G:O2'	28:2:365:G:OP2	2.13	0.65
5:D:142:VAL:HG22	5:D:192:VAL:HG22	1.79	0.65
27:E:187:ARG:NH1	28:2:532:A:OP2	2.30	0.65
32:F:142:THR:O	32:F:146:LYS:HG3	1.95	0.65
28:2:913:A:H2'	28:2:914:G:C8	2.32	0.65
8:Q:60:GLU:HA	8:Q:63:ARG:HG3	1.78	0.65
15:Z:28:ASN:HA	15:Z:31:LEU:HG	1.78	0.65
27:E:208:ILE:HD11	27:E:222:LEU:HD12	1.79	0.64
28:2:302:G:H5''	28:2:302:G:H8	1.62	0.64
28:2:1162:G:H5'	28:2:1163:C:OP2	1.98	0.64
11:B:166:ALA:O	11:B:170:GLU:HG3	1.97	0.64
7:S:38:ILE:HD13	7:S:101:LEU:HD12	1.79	0.64
15:Z:55:LEU:O	15:Z:59:VAL:HG12	1.98	0.64
19:K:26:GLU:OE2	19:K:73:ARG:NH2	2.31	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:149:C:O2	31:G:138:ARG:NH2	2.31	0.63
31:G:119:LEU:HD21	31:G:122:ALA:HA	1.78	0.63
30:U:26:LYS:HG2	30:U:97:THR:HA	1.81	0.63
4:J:48:ARG:HA	4:J:103:ILE:HD11	1.80	0.62
28:2:605:G:O2'	28:2:606:G:OP2	2.16	0.62
17:P:85:ILE:HD11	17:P:116:LEU:HG	1.81	0.62
4:J:25:ARG:O	4:J:29:GLU:HB2	1.98	0.62
27:E:106:LYS:NZ	28:2:564:G:OP1	2.33	0.62
22:H:70:LEU:HD13	22:H:97:ALA:HB2	1.80	0.62
5:D:130:ARG:HD3	5:D:134:ARG:NH2	2.12	0.62
28:2:1305:C:H2'	28:2:1306:C:H6	1.65	0.62
28:2:1241:G:N2	28:2:1243:A:H3'	2.15	0.62
8:Q:73:LEU:HD11	8:Q:124:LEU:HD11	1.81	0.62
9:C:182:LEU:HD13	9:C:190:VAL:HG11	1.82	0.62
28:2:175:C:N4	28:2:598:G:H1'	2.15	0.61
22:H:105:ALA:HB3	28:2:520:C:H42	1.65	0.61
28:2:403:G:H22	28:2:406:C:P	2.24	0.61
8:Q:65:LYS:NZ	32:F:37:HIS:O	2.25	0.61
2:T:59:ILE:HG13	2:T:107:PHE:CZ	2.36	0.61
28:2:158:G:H22	28:2:202:A:H5'	1.65	0.61
9:C:155:LYS:HD2	9:C:160:ARG:HD3	1.83	0.60
8:Q:31:LYS:HG3	8:Q:32:LYS:H	1.65	0.60
22:H:104:ASN:OD1	28:2:521:C:O2'	2.19	0.60
28:2:176:C:H5	28:2:596:G:H1	1.48	0.60
17:P:81:ARG:HG3	17:P:81:ARG:HH11	1.67	0.60
28:2:637:G:H2'	28:2:638:U:C6	2.35	0.60
31:G:141:PRO:HG2	31:G:150:LEU:HD12	1.83	0.60
22:H:147:PRO:HA	26:W:49:ASP:OD1	2.01	0.60
28:2:431:G:H1	28:2:469:U:H3	1.49	0.60
28:2:1112:A:H2'	28:2:1113:G:C8	2.36	0.60
32:F:109:GLU:HG2	32:F:186:ALA:HB1	1.82	0.60
17:P:124:LYS:NZ	28:2:924:C:H5''	2.16	0.60
20:I:52:LYS:HD2	20:I:69:ARG:HH12	1.66	0.60
27:E:245:PRO:HB3	27:E:249:LYS:HD3	1.84	0.60
18:R:2:GLY:N	28:2:1108:C:OP1	2.35	0.60
27:E:125:ARG:HB2	27:E:226:PHE:CE2	2.36	0.60
28:2:1372:G:H2'	28:2:1373:G:O4'	2.02	0.60
31:G:141:PRO:HB3	31:G:146:LYS:HB3	1.84	0.60
2:T:40:SER:OG	2:T:81:SER:OG	2.15	0.59
28:2:1118:G:H4'	28:2:1119:C:O5'	2.02	0.59
11:B:30:VAL:HG12	11:B:41:ILE:HD12	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:1288:C:H2'	28:2:1289:G:C8	2.37	0.59
28:2:158:G:H5''	28:2:158:G:H8	1.67	0.59
28:2:472:G:H2'	28:2:473:C:C6	2.36	0.59
8:Q:116:ALA:HA	8:Q:119:GLU:HG2	1.84	0.59
17:P:17:PHE:HZ	17:P:37:LEU:HD21	1.66	0.59
28:2:430:A:H61	28:2:470:C:H42	1.51	0.59
28:2:351:U:H3	28:2:374:G:H1	1.50	0.59
6:X:48:ARG:HH12	6:X:75:THR:HG21	1.68	0.59
17:P:55:LEU:HA	17:P:58:VAL:HG22	1.85	0.59
8:Q:57:VAL:HG21	8:Q:66:VAL:HG21	1.83	0.59
22:H:163:TYR:O	22:H:167:SER:OG	2.20	0.59
28:2:926:A:HO2'	28:2:950:C:HO2'	1.49	0.59
29:L:27:PRO:HG2	29:L:30:GLU:HG3	1.85	0.59
7:S:141:THR:HG21	28:2:1166:G:N7	2.17	0.58
28:2:130:C:H2'	28:2:131:A:H8	1.68	0.58
11:B:205:THR:HG22	11:B:206:MET:H	1.69	0.58
18:R:44:ILE:HG21	18:R:50:ARG:HB2	1.85	0.58
25:O:115:ARG:HG2	25:O:115:ARG:HH11	1.68	0.58
26:W:53:VAL:O	26:W:59:ASN:HB3	2.03	0.58
12:Y:7:LYS:NZ	12:Y:9:ARG:HD2	2.18	0.58
10:A:182:LEU:O	10:A:186:GLU:HG2	2.03	0.58
28:2:1261:7MG:H2'	28:2:1262:A:C8	2.38	0.58
31:G:104:ARG:NH2	31:G:107:ILE:HG22	2.17	0.58
7:S:36:LYS:HG3	28:2:1253:C:H5''	1.85	0.58
7:S:54:VAL:HG23	7:S:55:HIS:CD2	2.38	0.58
28:2:141:A:HO2'	28:2:142:C:H6	1.51	0.58
3:N:88:LEU:O	3:N:92:ILE:HG13	2.04	0.58
22:H:106:TYR:HA	22:H:114:ILE:O	2.04	0.58
9:C:49:PHE:HE2	9:C:104:PHE:HE1	1.51	0.58
17:P:31:THR:HB	17:P:34:LEU:HD12	1.86	0.57
28:2:175:C:H5'	28:2:176:C:O2	2.03	0.57
5:D:144:VAL:HG22	5:D:190:VAL:HG12	1.84	0.57
28:2:398:A:H61	28:2:412:C:H42	1.50	0.57
28:2:413:G:H2'	28:2:414:A:C8	2.39	0.57
10:A:33:ARG:HG3	10:A:33:ARG:HH11	1.69	0.57
32:F:45:LYS:HG2	32:F:46:ARG:H	1.69	0.57
28:2:137:G:O5'	31:G:8:LYS:NZ	2.35	0.57
28:2:177:C:H42	28:2:595:G:H1	1.51	0.57
10:A:90:ARG:NH1	18:R:85:ASP:OD1	2.36	0.57
27:E:62:SER:O	27:E:66:GLN:HG3	2.04	0.57
28:2:621:G:H2'	28:2:622:C:C6	2.40	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:1250:C:H2'	28:2:1251:C:C6	2.39	0.57
8:Q:129:ARG:HE	8:Q:133:VAL:HG21	1.69	0.57
28:2:948:C:H42	28:2:1160:C:H5	1.52	0.57
6:X:107:ARG:HD3	6:X:112:VAL:HG12	1.85	0.57
19:K:6:LYS:O	19:K:10:LYS:HG3	2.05	0.57
27:E:249:LYS:HE3	27:E:253:LEU:HD11	1.85	0.57
6:X:70:VAL:HG11	6:X:94:ILE:HG21	1.85	0.57
19:K:16:LEU:HD21	19:K:87:ILE:HG21	1.87	0.57
9:C:151:LYS:NZ	26:W:94:LEU:O	2.38	0.57
17:P:90:ILE:HD11	17:P:109:PRO:HA	1.86	0.57
12:Y:11:VAL:HG23	12:Y:22:CYS:SG	2.44	0.57
17:P:124:LYS:HZ2	28:2:924:C:H5''	1.69	0.57
22:H:105:ALA:HB3	28:2:520:C:N4	2.20	0.56
28:2:587:G:O2'	28:2:588:C:H6	1.88	0.56
27:E:211:LYS:HE2	27:E:215:GLY:HA2	1.87	0.56
28:2:364:G:O2'	28:2:365:G:P	2.63	0.56
28:2:902:A:H2'	28:2:903:C:C6	2.40	0.56
28:2:941:C:O2	28:2:941:C:H2'	2.05	0.56
2:T:58:VAL:HG11	2:T:103:ILE:HG21	1.87	0.56
19:K:88:ARG:HG2	19:K:88:ARG:HH11	1.69	0.56
28:2:1011:OMG:H2'	28:2:1012:U:C6	2.39	0.56
30:U:43:VAL:HG21	30:U:92:ARG:HG3	1.85	0.56
31:G:26:ASP:HA	31:G:31:GLN:HE21	1.70	0.56
28:2:133:C:H2'	28:2:134:G:H8	1.71	0.56
28:2:1175:A:OP1	32:F:150:ARG:NH2	2.35	0.56
19:K:77:TYR:O	19:K:78:LEU:HD23	2.06	0.56
28:2:1187:A:H2'	28:2:1188:G:C8	2.41	0.56
28:2:658:A:H2'	28:2:659:A:C8	2.41	0.55
11:B:123:VAL:HG11	11:B:168:ILE:HG21	1.86	0.55
12:Y:82:LEU:O	12:Y:86:GLU:HB2	2.06	0.55
5:D:99:LYS:HE3	5:D:135:ALA:HA	1.89	0.55
28:2:1301:C:P	32:F:46:ARG:HE	2.29	0.55
19:K:80:THR:HG23	19:K:83:GLY:H	1.72	0.55
28:2:91:C:H5''	28:2:92:A:C2	2.40	0.55
32:F:154:PRO:HG2	32:F:157:GLU:HB3	1.88	0.55
9:C:76:ASN:HB2	9:C:201:LEU:HD22	1.88	0.55
28:2:305:C:H2'	28:2:306:C:C6	2.41	0.55
9:C:36:LEU:HD22	9:C:41:LYS:HG3	1.89	0.55
3:N:92:ILE:O	3:N:96:VAL:HG23	2.07	0.54
18:R:51:ASN:ND2	28:2:1094:A:H5''	2.22	0.54
31:G:69:MET:HA	31:G:104:ARG:HA	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:31:U:H3	28:2:378:C:H5	1.54	0.54
28:2:900:C:H5	28:2:904:C:H41	1.55	0.54
18:R:51:ASN:HD22	28:2:1094:A:H5''	1.72	0.54
9:C:160:ARG:NH2	28:2:839:U:O2	2.41	0.54
4:J:80:ARG:O	4:J:84:MET:HG3	2.08	0.54
28:2:130:C:H2'	28:2:131:A:C8	2.42	0.54
25:O:23:ALA:HB2	25:O:84:ILE:HD12	1.90	0.54
28:2:818:C:N4	28:2:833:G:O6	2.31	0.54
28:2:329:A:H4'	28:2:330:G:O5'	2.06	0.54
2:T:25:ILE:CG2	2:T:26:ILE:H	2.17	0.54
8:Q:127:TYR:HH	32:F:33:SER:HG	1.54	0.54
9:C:67:LYS:O	9:C:68:SER:OG	2.23	0.54
17:P:21:GLU:OE1	17:P:22:VAL:HG13	2.08	0.54
25:O:72:THR:O	25:O:76:ILE:HG12	2.08	0.53
20:I:38:LEU:HD12	20:I:39:ILE:H	1.73	0.53
28:2:102:C:OP2	29:L:173:ARG:NH1	2.42	0.53
7:S:100:ILE:HD12	7:S:105:ILE:HG23	1.90	0.53
10:A:168:CYS:HB2	10:A:179:ILE:HD11	1.89	0.53
2:T:25:ILE:HG22	2:T:26:ILE:N	2.18	0.53
3:N:35:GLU:O	3:N:39:LYS:HG3	2.09	0.53
5:D:77:TYR:CE2	19:K:19:ASN:HB2	2.43	0.53
7:S:30:CYS:SG	7:S:40:ARG:NH1	2.79	0.53
5:D:111:LEU:HD13	5:D:128:ILE:HG13	1.91	0.53
28:2:907:A:H4'	28:2:1297:G:H22	1.74	0.53
3:N:3:ARG:HD2	3:N:9:LYS:HE3	1.91	0.53
7:S:47:LEU:HD23	7:S:52:ILE:HG22	1.91	0.53
10:A:85:ARG:HG3	10:A:85:ARG:HH11	1.74	0.53
28:2:1278:C:H2'	28:2:1279:C:C6	2.44	0.53
9:C:33:LEU:O	9:C:37:VAL:HG23	2.09	0.52
17:P:81:ARG:HD3	17:P:97:TYR:O	2.09	0.52
22:H:163:TYR:HA	22:H:189:PHE:CE2	2.44	0.52
27:E:43:PRO:HG2	27:E:46:LEU:HD13	1.91	0.52
27:E:197:ALA:HB3	27:E:209:ARG:HB3	1.91	0.52
3:N:8:GLY:O	3:N:9:LYS:HB2	2.08	0.52
10:A:19:ASP:N	10:A:19:ASP:OD1	2.43	0.52
10:A:203:LYS:NZ	18:R:91:LYS:O	2.41	0.52
31:G:84:ARG:HE	31:G:98:ARG:HE	1.57	0.52
4:J:112:GLN:NE2	4:J:128:ARG:HD2	2.21	0.52
26:W:2:VAL:N	28:2:786:C:HO2'	2.07	0.52
28:2:393:G:O2'	28:2:394:A:H8	1.93	0.52
28:2:624:G:H2'	28:2:625:G:C8	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:A:83:ALA:HB3	10:A:92:ILE:HD13	1.91	0.52
22:H:94:ILE:HG21	22:H:133:ILE:HD12	1.91	0.52
27:E:213:THR:HG22	27:E:243:ILE:HD11	1.92	0.52
28:2:1178:G:H2'	28:2:1179:G:C8	2.44	0.52
28:2:1300:G:H2'	28:2:1301:C:O4'	2.10	0.52
28:2:127:G:O2'	28:2:128:G:H5'	2.10	0.52
7:S:116:LEU:HD11	7:S:123:ARG:HH21	1.75	0.52
17:P:108:LYS:O	17:P:111:MET:HG2	2.09	0.52
28:2:1206:G:H2'	28:2:1207:C:C6	2.45	0.52
29:L:36:ARG:NH1	29:L:93:ILE:O	2.43	0.52
17:P:81:ARG:HB3	17:P:117:ARG:HB3	1.92	0.51
19:K:15:HIS:HB3	19:K:18:GLU:HB3	1.92	0.51
19:K:16:LEU:HD11	19:K:87:ILE:HB	1.90	0.51
7:S:43:ALA:O	7:S:47:LEU:HD12	2.10	0.51
27:E:176:ASP:HB2	27:E:179:LYS:HE3	1.93	0.51
28:2:605:G:HO2'	28:2:606:G:P	2.34	0.51
2:T:40:SER:HG	2:T:81:SER:HG	1.43	0.51
15:Z:43:THR:HG21	32:F:153:ARG:HA	1.91	0.51
22:H:158:LEU:O	22:H:190:MET:N	2.38	0.51
10:A:82:VAL:HG22	10:A:104:PHE:HB2	1.93	0.51
28:2:69:G:H8	31:G:186:LEU:HD22	1.75	0.51
12:Y:5:THR:HB	12:Y:27:LEU:HB3	1.92	0.51
28:2:1170:G:O2'	28:2:1288:C:OP1	2.29	0.51
31:G:226:ALA:O	31:G:230:ARG:HG3	2.11	0.51
5:D:204:MET:SD	5:D:205:PRO:HD2	2.50	0.51
28:2:1178:G:H2'	28:2:1179:G:H8	1.76	0.51
19:K:67:LYS:HE3	19:K:78:LEU:HB2	1.93	0.51
28:2:1336:U:H2'	28:2:1337:A:C8	2.46	0.51
29:L:28:ASP:OD1	29:L:28:ASP:N	2.43	0.51
9:C:27:TRP:CD2	9:C:59:GLU:HG3	2.47	0.50
6:X:4:THR:HG21	6:X:12:LYS:HG2	1.93	0.50
8:Q:137:ARG:O	8:Q:138:ARG:HD3	2.11	0.50
15:Z:29:GLU:O	15:Z:33:PHE:N	2.43	0.50
27:E:18:TRP:CD1	27:E:42:ILE:HD12	2.45	0.50
28:2:828:A:H2'	28:2:829:A:C8	2.46	0.50
28:2:62:U:H2'	28:2:63:C:C6	2.46	0.50
12:Y:34:GLU:O	12:Y:35:SER:OG	2.25	0.50
17:P:53:LYS:HD3	17:P:83:MET:HG2	1.93	0.50
5:D:61:PRO:HD2	5:D:96:LYS:HE2	1.93	0.50
5:D:146:GLY:O	5:D:153:ALA:HA	2.12	0.50
15:Z:41:THR:O	15:Z:45:ILE:HG22	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:P:95:SER:HB3	17:P:102:PHE:HB3	1.92	0.50
5:D:99:LYS:HG2	5:D:102:LEU:HD12	1.94	0.50
26:W:103:ILE:HD11	26:W:129:PHE:CE1	2.46	0.50
7:S:56:LYS:HE3	7:S:60:GLU:OE1	2.11	0.50
18:R:3:LYS:NZ	28:2:1119:C:OP1	2.37	0.50
18:R:33:LYS:HD2	18:R:33:LYS:O	2.12	0.50
19:K:47:ASN:N	19:K:48:PRO:HD3	2.27	0.50
22:H:145:LEU:HD13	22:H:153:ARG:HH21	1.77	0.50
28:2:983:G:H5'	28:2:984:C:H5	1.77	0.50
32:F:153:ARG:HG2	32:F:154:PRO:HD2	1.94	0.50
2:T:60:ARG:O	2:T:64:ILE:HG13	2.12	0.49
9:C:73:GLU:OE1	9:C:97:ILE:HD11	2.12	0.49
10:A:59:VAL:HG22	10:A:167:PRO:HG2	1.93	0.49
10:A:140:LEU:O	10:A:143:SER:OG	2.30	0.49
27:E:188:ASN:HB3	27:E:191:ARG:HE	1.76	0.49
28:2:983:G:H3'	28:2:984:C:C6	2.47	0.49
28:2:1408:A:H5'	28:2:1409:A:C6	2.47	0.49
4:J:80:ARG:HH11	27:E:255:LEU:HD21	1.76	0.49
9:C:57:GLU:HB3	9:C:59:GLU:OE1	2.12	0.49
20:I:67:ALA:HB2	20:I:153:GLY:HA2	1.94	0.49
28:2:925:A:N3	28:2:951:C:O2'	2.40	0.49
7:S:42:PHE:HA	7:S:45:VAL:HG12	1.94	0.49
8:Q:48:LEU:HD13	8:Q:51:ASN:HA	1.94	0.49
28:2:154:A:H2'	28:2:155:C:O4'	2.11	0.49
28:2:348:A2M:O5'	28:2:348:A2M:H8	2.12	0.49
30:U:43:VAL:HG13	30:U:94:PHE:HZ	1.76	0.49
6:X:87:ARG:O	6:X:90:SER:OG	2.16	0.49
15:Z:52:SER:OG	15:Z:53:VAL:N	2.45	0.49
28:2:173:C:H1'	29:L:36:ARG:HH21	1.77	0.49
11:B:139:VAL:HG21	11:B:172:LEU:HD11	1.94	0.49
11:B:226:GLU:O	11:B:230:THR:HG23	2.12	0.49
29:L:63:PHE:HB3	29:L:66:ARG:HG3	1.95	0.49
32:F:95:VAL:O	32:F:99:VAL:HG23	2.13	0.49
31:G:219:GLN:O	31:G:223:GLU:HG2	2.12	0.49
9:C:178:VAL:HG13	9:C:208:VAL:HG21	1.94	0.49
18:R:20:ASN:O	18:R:24:LEU:HG	2.13	0.49
32:F:131:ARG:O	32:F:135:ILE:HG12	2.13	0.49
4:J:55:ARG:HE	4:J:99:LEU:HD22	1.77	0.49
5:D:65:MET:HG3	5:D:72:LEU:HD22	1.95	0.49
20:I:51:GLN:HA	20:I:69:ARG:O	2.12	0.49
25:O:20:GLU:N	25:O:85:THR:HG1	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:60:GLU:HG2	5:D:63:VAL:HG12	1.94	0.49
17:P:94:VAL:O	17:P:104:PRO:HA	2.13	0.49
26:W:3:ARG:HH12	26:W:28:ARG:NH1	2.10	0.49
28:2:302:G:H5''	28:2:302:G:C8	2.45	0.49
28:2:1058:G:H2'	28:2:1059:A:C8	2.48	0.49
11:B:44:THR:HG21	11:B:64:TYR:OH	2.12	0.49
28:2:280:U:H5	28:2:285:G:O6	1.96	0.49
28:2:9:C:H2'	28:2:11:A:OP2	2.13	0.48
28:2:69:G:H2'	28:2:70:G:C8	2.48	0.48
28:2:1027:A:H4'	28:2:1028:G:OP1	2.13	0.48
7:S:49:LYS:HD2	7:S:79:HIS:O	2.13	0.48
10:A:95:PHE:O	10:A:99:THR:OG1	2.26	0.48
27:E:57:THR:O	27:E:61:THR:OG1	2.21	0.48
5:D:94:VAL:HG12	5:D:95:ASP:O	2.14	0.48
17:P:53:LYS:HE3	17:P:80:LEU:HD13	1.96	0.48
22:H:106:TYR:CE1	22:H:115:ARG:HD3	2.48	0.48
28:2:62:U:H5''	28:2:153:G:C5	2.48	0.48
20:I:164:GLU:HG3	29:L:56:TYR:CD2	2.48	0.48
28:2:913:A:H2'	28:2:914:G:H8	1.79	0.48
28:2:1407:G:H2'	28:2:1408:A:H1'	1.94	0.48
7:S:15:LEU:HB2	7:S:22:ILE:HB	1.96	0.48
18:R:56:TYR:CZ	18:R:60:LEU:HD21	2.49	0.48
2:T:59:ILE:HG13	2:T:107:PHE:CE1	2.48	0.48
25:O:51:SER:O	25:O:54:MET:HG2	2.13	0.48
5:D:71:ARG:O	5:D:75:ILE:HG12	2.14	0.48
27:E:192:ILE:HG13	27:E:242:GLY:HA3	1.95	0.48
26:W:113:HIS:O	26:W:117:GLN:HG2	2.12	0.48
28:2:606:G:O2'	28:2:607:C:H5'	2.14	0.48
5:D:124:ALA:O	5:D:128:ILE:HG12	2.14	0.48
5:D:170:LYS:NZ	28:2:1125:G:OP1	2.46	0.47
6:X:74:LEU:HD11	6:X:81:ILE:HG12	1.95	0.47
10:A:33:ARG:HG3	10:A:33:ARG:NH1	2.28	0.47
17:P:17:PHE:CE2	17:P:18:ARG:HG2	2.49	0.47
31:G:197:ASP:OD1	31:G:198:GLU:N	2.46	0.47
6:X:93:TYR:HB3	6:X:140:LYS:HD2	1.97	0.47
7:S:24:GLY:HA2	7:S:58:ALA:HB3	1.97	0.47
8:Q:153:ARG:HD3	28:2:1169:C:O3'	2.14	0.47
28:2:441:U:H2'	28:2:442:G:H8	1.78	0.47
28:2:942:G:H8	28:2:1281:C:H2'	1.78	0.47
31:G:130:LEU:HD23	31:G:131:THR:N	2.29	0.47
28:2:208:C:H2'	28:2:209:G:C8	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
20:I:37:LYS:HA	20:I:37:LYS:HD3	1.76	0.47
22:H:49:VAL:HG22	22:H:63:VAL:HG13	1.95	0.47
27:E:196:GLN:OE1	27:E:211:LYS:HB3	2.15	0.47
28:2:626:C:H2'	28:2:627:G:C8	2.49	0.47
28:2:1163:C:H4'	28:2:1164:A:OP1	2.15	0.47
28:2:1314:OMU:H2'	28:2:1315:G:C8	2.50	0.47
31:G:42:PHE:CE2	31:G:47:LEU:HD21	2.48	0.47
7:S:47:LEU:HD23	7:S:52:ILE:CG2	2.45	0.47
15:Z:30:ALA:HA	15:Z:34:ILE:HD12	1.96	0.47
18:R:53:VAL:O	18:R:57:VAL:HG23	2.14	0.47
28:2:587:G:O2'	28:2:588:C:O5'	2.27	0.47
18:R:22:GLU:OE1	18:R:23:SER:OG	2.27	0.47
18:R:49:LEU:O	18:R:53:VAL:HG23	2.15	0.47
20:I:52:LYS:HD2	20:I:69:ARG:NH1	2.29	0.47
22:H:84:LEU:HB3	22:H:93:PHE:CE2	2.50	0.47
28:2:208:C:H2'	28:2:209:G:H8	1.78	0.47
2:T:77:ARG:NH2	28:2:1212:A:H5'	2.30	0.47
7:S:57:ARG:HB2	7:S:60:GLU:OE1	2.15	0.47
9:C:131:VAL:HG11	9:C:213:LYS:HG3	1.96	0.47
19:K:45:LEU:HG	19:K:46:CYS:H	1.79	0.47
20:I:131:GLU:O	20:I:135:GLN:HG3	2.14	0.47
28:2:51:U:H2'	28:2:52:G:C8	2.49	0.47
28:2:859:U:H2'	28:2:860:G:C8	2.50	0.47
7:S:47:LEU:HD22	7:S:54:VAL:HA	1.97	0.47
12:Y:7:LYS:HZ1	12:Y:9:ARG:HD2	1.78	0.47
12:Y:36:LYS:HB2	12:Y:36:LYS:HE3	1.72	0.47
20:I:91:VAL:HA	20:I:112:VAL:HG12	1.97	0.47
28:2:1199:C:H2'	28:2:1200:G:O4'	2.14	0.47
5:D:60:GLU:HG2	5:D:60:GLU:O	2.14	0.47
9:C:164:ILE:HB	9:C:191:PHE:HB2	1.97	0.47
28:2:115:U:OP1	28:2:160:G:O2'	2.32	0.47
28:2:1409:A:H4'	28:2:1410:G:OP2	2.14	0.47
32:F:176:ILE:HG23	32:F:179:ARG:HH21	1.80	0.47
7:S:119:THR:HG23	17:P:111:MET:SD	2.55	0.46
8:Q:42:ALA:HA	8:Q:81:LEU:HD22	1.98	0.46
28:2:393:G:HO2'	28:2:394:A:C5'	2.28	0.46
28:2:1212:A:H2'	28:2:1213:G:C8	2.50	0.46
28:2:625:G:O2'	28:2:799:G:OP1	2.30	0.46
31:G:38:MET:SD	31:G:104:ARG:NH1	2.88	0.46
7:S:74:GLU:O	7:S:99:HIS:NE2	2.43	0.46
11:B:124:PHE:HA	11:B:137:VAL:O	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:C:220:THR:HG22	9:C:222:ASP:H	1.80	0.46
27:E:136:MET:HG2	27:E:149:PHE:HE1	1.80	0.46
28:2:370:C:H3'	28:2:371:OMG:H8	1.80	0.46
31:G:31:GLN:HB3	31:G:34:HIS:ND1	2.31	0.46
31:G:58:ILE:HD12	31:G:58:ILE:H	1.80	0.46
31:G:221:LEU:HD11	31:G:225:LYS:NZ	2.30	0.46
16:V:64:CYS:O	16:V:67:ILE:HG22	2.16	0.46
27:E:95:VAL:HG12	27:E:97:LYS:HG2	1.97	0.46
9:C:26:GLU:HG3	9:C:27:TRP:N	2.30	0.46
17:P:42:ARG:NH1	28:2:1238:G:OP2	2.49	0.46
28:2:1281:C:H42	28:2:1286:A:H2	1.64	0.46
27:E:8:HIS:HB3	27:E:27:TRP:CZ3	2.50	0.46
28:2:127:G:OP1	31:G:149:ARG:NH2	2.49	0.46
32:F:49:LYS:HE3	32:F:57:ARG:HH12	1.80	0.46
3:N:15:ALA:O	28:2:711:C:H5'	2.16	0.46
19:K:2:VAL:HG12	19:K:3:HIS:CE1	2.51	0.46
25:O:115:ARG:HG2	25:O:115:ARG:NH1	2.30	0.46
28:2:1009:U:H2'	28:2:1136:U:C5	2.51	0.46
28:2:1258:C:H2'	28:2:1258:C:O2	2.16	0.46
31:G:29:LYS:O	31:G:31:GLN:HB2	2.16	0.46
4:J:152:ILE:O	4:J:155:THR:HG22	2.16	0.46
8:Q:155:LYS:HD3	8:Q:157:TYR:CZ	2.51	0.46
9:C:77:ILE:HD11	9:C:119:ILE:HD11	1.98	0.46
27:E:128:LYS:HB2	27:E:128:LYS:HE3	1.81	0.46
8:Q:58:ARG:NH2	28:2:1184:G:H1'	2.30	0.45
11:B:175:GLU:HG3	11:B:196:LYS:NZ	2.30	0.45
19:K:9:TYR:O	19:K:12:VAL:HB	2.16	0.45
4:J:19:LYS:O	4:J:25:ARG:NH2	2.49	0.45
20:I:97:SER:HB3	20:I:100:LEU:HD23	1.98	0.45
28:2:80:A:H5'	28:2:81:C:C5	2.51	0.45
32:F:178:GLN:O	32:F:182:VAL:HG23	2.16	0.45
2:T:55:ALA:HB1	2:T:107:PHE:HE2	1.82	0.45
3:N:145:GLN:O	3:N:149:LEU:HD13	2.15	0.45
11:B:131:ASP:OD1	11:B:131:ASP:N	2.49	0.45
19:K:45:LEU:CG	19:K:46:CYS:H	2.29	0.45
19:K:89:LYS:HA	19:K:89:LYS:HD2	1.75	0.45
20:I:165:LEU:O	20:I:169:GLN:HG3	2.15	0.45
22:H:115:ARG:HH22	28:2:519:C:H5	1.64	0.45
28:2:952:A:H2'	28:2:953:G:O4'	2.16	0.45
28:2:1088:C:HO2'	28:2:1089:G:H8	1.60	0.45
5:D:127:SER:HA	5:D:130:ARG:HG2	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:S:50:ALA:HB2	7:S:72:VAL:HG11	1.97	0.45
26:W:103:ILE:HD11	26:W:129:PHE:HE1	1.81	0.45
28:2:72:C:H2'	28:2:73:G:O4'	2.16	0.45
28:2:112:C:H3'	28:2:113:G:N2	2.31	0.45
28:2:363:C:H2'	28:2:363:C:O2	2.16	0.45
28:2:857:U:H2'	28:2:858:A:H8	1.81	0.45
28:2:1378:G:H2'	28:2:1379:C:C6	2.52	0.45
10:A:21:LYS:HA	10:A:24:LEU:HD12	1.98	0.45
28:2:1348:G:H2'	28:2:1349:C:C6	2.52	0.45
28:2:1407:G:H2'	28:2:1408:A:C1'	2.47	0.45
2:T:55:ALA:HA	2:T:58:VAL:HG12	1.98	0.45
8:Q:131:LEU:HD23	8:Q:131:LEU:HA	1.78	0.45
10:A:62:LYS:HE2	10:A:62:LYS:HA	1.99	0.45
17:P:34:LEU:HD11	17:P:45:ILE:HG21	1.99	0.45
28:2:676:A:H2'	28:2:677:G:C8	2.51	0.45
31:G:63:ASP:HA	31:G:112:LEU:HA	1.99	0.45
16:V:22:PRO:HB2	16:V:31:LEU:HD22	1.99	0.45
3:N:89:TYR:CE2	3:N:93:LYS:HD2	2.52	0.45
4:J:63:THR:HB	26:W:87:GLU:OE1	2.17	0.45
18:R:31:ASN:O	18:R:35:ILE:HG12	2.17	0.45
27:E:121:PHE:HA	27:E:162:ILE:O	2.16	0.45
27:E:180:ILE:HD12	27:E:193:GLY:O	2.15	0.45
28:2:158:G:H5''	28:2:158:G:C8	2.48	0.45
28:2:613:C:H2'	28:2:614:G:O4'	2.16	0.45
28:2:1035:OMG:H1'	28:2:1035:OMG:HM23	1.50	0.45
28:2:1333:U:H2'	28:2:1334:C:C6	2.52	0.45
32:F:22:SER:O	32:F:22:SER:OG	2.25	0.45
19:K:88:ARG:HG2	19:K:88:ARG:NH1	2.31	0.45
28:2:857:U:H2'	28:2:858:A:C8	2.51	0.45
28:2:1382:C:H2'	28:2:1383:G:O4'	2.17	0.45
7:S:102:VAL:O	7:S:105:ILE:HG13	2.17	0.45
26:W:16:ASN:OD1	26:W:19:ARG:NH2	2.50	0.45
28:2:80:A:H5'	28:2:81:C:H5	1.82	0.45
28:2:675:G:H2'	28:2:676:A:C8	2.52	0.45
31:G:80:ARG:HA	31:G:101:LYS:O	2.16	0.45
4:J:93:ASP:OD1	4:J:93:ASP:N	2.46	0.44
5:D:180:HIS:HB3	5:D:187:VAL:CG1	2.46	0.44
28:2:1117:G:H4'	28:2:1118:G:H5'	1.99	0.44
9:C:29:PRO:HB2	9:C:35:ARG:HG3	1.99	0.44
28:2:466:A:H2'	28:2:467:G:H8	1.82	0.44
2:T:101:ARG:HA	2:T:104:VAL:HG22	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:S:40:ARG:O	7:S:44:ASN:ND2	2.50	0.44
9:C:53:LEU:HD23	9:C:53:LEU:HA	2.46	0.44
10:A:85:ARG:HG3	10:A:85:ARG:NH1	2.32	0.44
30:U:72:LYS:HD3	30:U:81:THR:OG1	2.16	0.44
4:J:99:LEU:HD23	4:J:99:LEU:HA	1.81	0.44
6:X:1:MET:N	28:2:845:C:H41	2.15	0.44
16:V:9:MET:HE2	16:V:17:VAL:HG23	1.99	0.44
16:V:52:LYS:HE3	16:V:52:LYS:HB2	1.77	0.44
28:2:364:G:HO2'	28:2:365:G:P	2.36	0.44
28:2:1094:A:H4'	28:2:1095:C:O4'	2.18	0.44
28:2:1217:C:H2'	28:2:1218:C:C6	2.52	0.44
28:2:171:G:O2'	28:2:172:G:C8	2.66	0.44
28:2:1173:A:H2'	28:2:1174:C:C6	2.53	0.44
28:2:1295:C:H2'	28:2:1296:G:O4'	2.17	0.44
5:D:76:GLU:OE2	5:D:91:ASN:HA	2.17	0.44
27:E:139:LEU:HD23	27:E:150:PRO:HB3	2.00	0.44
28:2:92:A:H3'	28:2:93:A:H8	1.82	0.44
28:2:170:G:P	29:L:66:ARG:HH21	2.40	0.44
28:2:1305:C:H2'	28:2:1306:C:C6	2.48	0.44
32:F:43:SER:O	32:F:43:SER:OG	2.32	0.44
15:Z:43:THR:HG21	32:F:154:PRO:HD3	1.99	0.44
27:E:127:GLN:HA	27:E:127:GLN:OE1	2.18	0.44
28:2:364:G:H1'	28:2:365:G:C5	2.52	0.44
28:2:466:A:H2'	28:2:467:G:C8	2.53	0.44
6:X:61:GLN:HB3	6:X:62:PRO:HD3	2.00	0.44
7:S:28:LEU:HA	7:S:31:ALA:HB3	2.00	0.44
7:S:100:ILE:O	7:S:100:ILE:HG13	2.17	0.44
20:I:31:ARG:NH1	28:2:244:U:OP1	2.45	0.44
10:A:146:ASN:ND2	16:V:39:ALA:O	2.43	0.44
11:B:22:TYR:HA	11:B:25:LYS:CG	2.48	0.44
18:R:27:LYS:HB3	18:R:27:LYS:HE3	1.84	0.44
27:E:180:ILE:HD11	27:E:192:ILE:HG22	1.99	0.44
27:E:187:ARG:HH11	28:2:532:A:P	2.41	0.44
28:2:110:G:H8	28:2:110:G:H5''	1.83	0.44
28:2:1303:U:H2'	28:2:1304:C:C6	2.53	0.44
28:2:1355:C:H2'	28:2:1356:G:O4'	2.18	0.44
7:S:129:HIS:CE1	17:P:125:ILE:HG21	2.53	0.43
28:2:329:A:H5'	28:2:330:G:C4	2.52	0.43
28:2:413:G:H2'	28:2:414:A:H8	1.80	0.43
28:2:446:C:H5	28:2:458:G:OP2	2.01	0.43
31:G:20:LYS:HG3	31:G:21:SER:N	2.32	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:S:81:ILE:HA	7:S:82:PRO:HD3	1.88	0.43
17:P:40:ARG:HH12	28:2:1241:G:H1	1.64	0.43
17:P:81:ARG:HG3	17:P:81:ARG:NH1	2.30	0.43
19:K:26:GLU:HG3	19:K:26:GLU:O	2.18	0.43
31:G:24:ILE:HD11	31:G:31:GLN:HE22	1.83	0.43
32:F:181:SER:O	32:F:185:ILE:HG13	2.18	0.43
3:N:100:LYS:HE2	3:N:104:ARG:HH22	1.83	0.43
26:W:28:ARG:HB3	26:W:60:ARG:HG3	2.00	0.43
27:E:32:THR:HG22	27:E:33:ASN:O	2.18	0.43
28:2:156:G:O2'	28:2:157:U:H5'	2.18	0.43
28:2:1031:C:H2'	28:2:1032:G:H8	1.82	0.43
31:G:76:SER:HA	31:G:106:CYS:HA	2.00	0.43
7:S:26:VAL:HG23	7:S:31:ALA:HB2	2.00	0.43
9:C:84:THR:HB	9:C:87:GLY:O	2.18	0.43
17:P:64:ARG:HG2	17:P:65:ARG:NH2	2.33	0.43
28:2:242:G:H2'	28:2:243:G:C8	2.53	0.43
28:2:1005:G:H2'	28:2:1005:G:N3	2.33	0.43
31:G:108:VAL:HG23	31:G:112:LEU:HD12	2.00	0.43
8:Q:28:LEU:HD23	8:Q:28:LEU:HA	1.87	0.43
17:P:33:ILE:O	17:P:36:LYS:HB2	2.19	0.43
17:P:62:ARG:HG3	17:P:63:LEU:HD12	2.00	0.43
20:I:16:ALA:HB2	28:2:266:C:H5''	2.00	0.43
28:2:16:G:H2'	28:2:17:C:C6	2.53	0.43
28:2:124:G:N1	31:G:203:LYS:HE2	2.27	0.43
28:2:288:C:H2'	28:2:289:G:O4'	2.18	0.43
28:2:393:G:HO2'	28:2:394:A:P	2.41	0.43
28:2:868:OMG:H1'	28:2:868:OMG:HM23	1.77	0.43
28:2:1075:C:O2'	28:2:1076:G:H5'	2.18	0.43
7:S:27:VAL:HG12	7:S:29:GLU:HB2	2.01	0.43
20:I:89:LEU:O	20:I:90:GLN:HG2	2.18	0.43
28:2:52:G:H2'	28:2:53:C:C6	2.53	0.43
28:2:621:G:H2'	28:2:622:C:H6	1.83	0.43
28:2:702:C:H2'	28:2:703:A:C8	2.53	0.43
20:I:117:ALA:HA	20:I:120:LYS:NZ	2.33	0.43
22:H:103:LYS:O	22:H:116:ARG:NH2	2.52	0.43
28:2:1031:C:H2'	28:2:1032:G:C8	2.54	0.43
28:2:1221:C:H4'	28:2:1227:C:H42	1.83	0.43
32:F:68:ASN:HA	32:F:71:LYS:HD2	2.00	0.43
4:J:65:ASP:O	4:J:71:ARG:HD3	2.19	0.43
9:C:59:GLU:HA	9:C:62:ASP:HB2	2.00	0.43
11:B:98:THR:O	11:B:232:HIS:NE2	2.42	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:E:251:ARG:HG3	28:2:542:A:O2'	2.18	0.43
28:2:1279:C:H2'	28:2:1280:G:C8	2.54	0.43
32:F:64:MET:O	32:F:64:MET:HG2	2.19	0.43
5:D:17:TYR:HE2	30:U:34:LYS:HB3	1.83	0.43
31:G:150:LEU:HD22	31:G:151:PHE:CD1	2.53	0.43
9:C:75:CYS:SG	9:C:97:ILE:HG12	2.59	0.43
9:C:193:ARG:HD3	28:2:2:A:N3	2.33	0.43
22:H:84:LEU:HB3	22:H:93:PHE:CD2	2.54	0.43
28:2:945:C:H6	28:2:945:C:O5'	2.02	0.43
28:2:1145:C:O2'	28:2:1146:U:H6	1.99	0.43
5:D:208:ILE:O	5:D:208:ILE:HG23	2.19	0.42
11:B:90:LEU:HD23	11:B:97:LEU:HD12	2.01	0.42
15:Z:68:ASP:HB3	15:Z:80:ILE:HG22	2.01	0.42
19:K:24:LEU:HB3	19:K:75:HIS:HB2	2.01	0.42
26:W:71:LYS:HE3	28:2:841:C:OP1	2.19	0.42
27:E:44:LEU:HD23	27:E:65:LEU:HD21	2.01	0.42
28:2:366:C:C2	28:2:367:G:C8	3.07	0.42
28:2:1292:C:H2'	28:2:1293:G:C8	2.54	0.42
30:U:29:ILE:HG13	30:U:120:VAL:HG12	2.01	0.42
32:F:32:HIS:HE1	32:F:54:VAL:HG22	1.84	0.42
9:C:236:ARG:HE	9:C:236:ARG:HB2	1.66	0.42
11:B:34:ALA:HB2	11:B:232:HIS:O	2.19	0.42
28:2:155:C:O4'	28:2:155:C:O2	2.36	0.42
28:2:908:C:H2'	28:2:909:G:O4'	2.18	0.42
4:J:26:LEU:HD12	4:J:26:LEU:HA	1.87	0.42
6:X:134:PHE:CD2	6:X:135:LEU:HD23	2.54	0.42
18:R:27:LYS:O	18:R:31:ASN:ND2	2.52	0.42
28:2:935:A:H8	28:2:935:A:OP1	2.02	0.42
4:J:127:ALA:O	4:J:131:ILE:HG12	2.18	0.42
5:D:130:ARG:HG3	5:D:131:THR:N	2.34	0.42
6:X:74:LEU:CD1	6:X:81:ILE:HG12	2.50	0.42
8:Q:100:ARG:NH1	8:Q:131:LEU:HD21	2.33	0.42
17:P:33:ILE:HD12	17:P:33:ILE:H	1.84	0.42
25:O:39:THR:HG22	25:O:46:THR:HA	2.02	0.42
28:2:365:G:C2	28:2:366:C:N3	2.87	0.42
19:K:59:SER:O	19:K:63:ARG:HG2	2.18	0.42
20:I:169:GLN:HE21	20:I:169:GLN:HB3	1.60	0.42
28:2:141:A:O2'	28:2:142:C:H6	2.01	0.42
28:2:1146:U:H2'	28:2:1147:C:O4'	2.20	0.42
28:2:1434:MA6:H8	28:2:1434:MA6:O5'	2.19	0.42
3:N:144:ASP:OD1	3:N:145:GLN:N	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:Y:92:ILE:HG23	12:Y:98:GLU:HA	2.01	0.42
28:2:1097:G:C2	28:2:1098:C:C6	3.07	0.42
28:2:1288:C:H2'	28:2:1289:G:H8	1.82	0.42
5:D:168:HIS:CD2	5:D:172:ILE:HD11	2.55	0.42
7:S:121:CYS:O	7:S:125:VAL:HG23	2.19	0.42
11:B:205:THR:HG22	11:B:206:MET:N	2.32	0.42
17:P:54:HIS:HA	17:P:57:PHE:CD2	2.54	0.42
27:E:124:CYS:HB3	27:E:141:THR:HB	2.01	0.42
28:2:125:C:H5	31:G:199:LYS:HZ1	1.66	0.42
28:2:252:C:H2'	28:2:253:G:C8	2.55	0.42
28:2:1133:G:H2'	28:2:1134:U:C6	2.55	0.42
28:2:1232:C:H2'	28:2:1233:C:O4'	2.20	0.42
5:D:176:GLU:HG3	5:D:193:ARG:HG2	2.02	0.42
8:Q:66:VAL:HG13	8:Q:96:ILE:HG23	2.01	0.42
11:B:129:THR:OG1	11:B:133:TYR:HB2	2.20	0.42
20:I:132:ILE:O	20:I:136:ILE:HG13	2.18	0.42
28:2:1407:G:C4	28:2:1408:A:H1'	2.55	0.42
20:I:79:SER:HB2	20:I:161:GLU:OE1	2.19	0.42
31:G:227:LEU:HA	31:G:230:ARG:HE	1.85	0.42
7:S:73:LEU:HD23	7:S:73:LEU:HA	1.91	0.41
8:Q:59:PRO:HB2	8:Q:96:ILE:HD11	2.02	0.41
22:H:151:ASN:HA	22:H:152:PRO:HD2	1.97	0.41
22:H:163:TYR:HA	22:H:189:PHE:HE2	1.84	0.41
26:W:52:VAL:HG22	26:W:61:ILE:HG12	2.02	0.41
28:2:112:C:H3'	28:2:113:G:H21	1.83	0.41
28:2:1286:A:O2'	28:2:1287:C:OP2	2.30	0.41
31:G:26:ASP:HA	31:G:31:GLN:NE2	2.33	0.41
4:J:18:LYS:HE3	4:J:18:LYS:HB3	1.90	0.41
8:Q:119:GLU:HG3	8:Q:120:LEU:N	2.35	0.41
28:2:70:G:H2'	28:2:71:A:C8	2.56	0.41
28:2:87:A2M:H1'	28:2:87:A2M:HM'3	1.77	0.41
3:N:47:PRO:HA	3:N:50:ILE:HD12	2.03	0.41
8:Q:31:LYS:HG2	8:Q:94:SER:HA	2.01	0.41
10:A:23:MET:SD	10:A:56:LEU:HD22	2.60	0.41
15:Z:59:VAL:O	15:Z:63:LEU:HG	2.19	0.41
28:2:810:C:H2'	28:2:811:C:C6	2.55	0.41
28:2:912:G:C2	28:2:913:A:C8	3.08	0.41
28:2:1327:C:H2'	28:2:1328:G:C8	2.54	0.41
28:2:1380:C:O2'	28:2:1381:G:OP1	2.37	0.41
31:G:84:ARG:HE	31:G:98:ARG:NE	2.19	0.41
7:S:44:ASN:O	7:S:48:LYS:HE3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:Q:122:ALA:HA	8:Q:125:VAL:HG22	2.02	0.41
11:B:136:ARG:HG2	11:B:138:PHE:CE1	2.55	0.41
15:Z:62:GLN:HA	15:Z:65:LYS:NZ	2.36	0.41
19:K:65:VAL:O	19:K:80:THR:HG22	2.20	0.41
28:2:475:A:H4'	28:2:476:G:H5'	2.03	0.41
28:2:587:G:O2'	28:2:588:C:P	2.78	0.41
28:2:859:U:H2'	28:2:860:G:H8	1.84	0.41
31:G:29:LYS:HD3	31:G:29:LYS:HA	1.65	0.41
2:T:6:ARG:HB2	2:T:6:ARG:NH1	2.35	0.41
6:X:101:LEU:HB3	6:X:124:LYS:HB2	2.00	0.41
7:S:76:PRO:HA	7:S:81:ILE:HD12	2.02	0.41
7:S:81:ILE:H	7:S:81:ILE:HG13	1.72	0.41
19:K:4:ILE:N	19:K:5:PRO:HD2	2.36	0.41
25:O:66:TYR:O	25:O:70:GLN:HG3	2.20	0.41
26:W:104:LEU:HD23	26:W:125:VAL:HA	2.02	0.41
28:2:110:G:H3'	28:2:111:G:H5''	2.01	0.41
28:2:111:G:H2'	28:2:112:C:O4'	2.20	0.41
22:H:106:TYR:CZ	22:H:115:ARG:HD3	2.55	0.41
28:2:363:C:H6	28:2:363:C:O5'	2.04	0.41
28:2:364:G:H1'	28:2:365:G:C4	2.56	0.41
28:2:1142:G:H2'	28:2:1143:C:O4'	2.21	0.41
28:2:1373:G:OP2	28:2:1373:G:H8	2.03	0.41
29:L:72:ASN:OD1	29:L:72:ASN:O	2.38	0.41
9:C:51:TYR:O	9:C:53:LEU:HG	2.21	0.41
17:P:45:ILE:HD13	17:P:45:ILE:HA	1.90	0.41
28:2:306:C:H4'	31:G:98:ARG:NH2	2.36	0.41
2:T:34:TYR:HB2	7:S:85:MET:SD	2.61	0.41
5:D:78:LEU:HD23	5:D:78:LEU:HA	1.96	0.41
28:2:426:C:H5''	28:2:427:G:N7	2.35	0.41
28:2:577:G:H2'	28:2:578:G:O4'	2.21	0.41
31:G:75:LYS:O	31:G:107:ILE:HG23	2.20	0.41
4:J:115:ILE:HG21	4:J:136:ILE:HD13	2.03	0.41
10:A:163:ASP:OD1	16:V:68:ARG:NH1	2.53	0.41
12:Y:14:ASN:OD1	12:Y:17:LEU:HB2	2.20	0.41
12:Y:60:PHE:O	28:2:401:C:O2'	2.35	0.41
17:P:43:ARG:NE	28:2:1241:G:O6	2.49	0.41
20:I:52:LYS:HD2	20:I:69:ARG:HH22	1.86	0.41
25:O:127:THR:HA	25:O:128:PRO:HD3	1.94	0.41
27:E:99:PHE:HB3	27:E:111:LEU:HB3	2.03	0.41
28:2:156:G:H2'	28:2:157:U:C6	2.56	0.41
28:2:1098:C:H2'	28:2:1099:C:C6	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
30:U:48:LYS:O	30:U:48:LYS:HG3	2.20	0.41
31:G:148:ARG:HD2	31:G:154:PRO:O	2.21	0.41
20:I:130:LYS:HE2	20:I:130:LYS:HB3	1.91	0.41
22:H:58:LYS:HE3	22:H:58:LYS:HB2	1.87	0.41
28:2:395:G:H2'	28:2:396:U:H5'	2.02	0.41
4:J:20:PRO:HA	4:J:25:ARG:HH22	1.85	0.40
7:S:102:VAL:HG22	7:S:103:ASN:N	2.36	0.40
15:Z:69:PHE:CE2	15:Z:83:ASN:HA	2.56	0.40
28:2:1286:A:N3	28:2:1286:A:H2'	2.36	0.40
30:U:31:VAL:O	30:U:91:LYS:HA	2.21	0.40
2:T:43:TYR:CD1	7:S:40:ARG:HD3	2.56	0.40
10:A:145:VAL:O	10:A:146:ASN:HB2	2.21	0.40
19:K:45:LEU:HG	19:K:46:CYS:N	2.37	0.40
27:E:60:GLU:HA	27:E:63:MET:HG2	2.04	0.40
28:2:1013:G:O6	28:2:1134:U:H2'	2.22	0.40
28:2:1177:U:H4'	32:F:74:MET:CE	2.51	0.40
28:2:1308:G:H2'	28:2:1309:C:H6	1.85	0.40
17:P:87:PRO:HG3	17:P:112:VAL:HG11	2.02	0.40
28:2:888:G:H2'	28:2:889:A:C8	2.56	0.40
28:2:1301:C:H5''	28:2:1302:G:O5'	2.21	0.40
28:2:1392:C:H2'	28:2:1393:G:C8	2.56	0.40
5:D:58:CYS:O	5:D:97:ILE:N	2.46	0.40
10:A:78:GLU:OE1	10:A:125:ARG:HD3	2.21	0.40
28:2:471:G:H2'	28:2:472:G:C8	2.56	0.40
28:2:638:U:C2	28:2:639:A:C8	3.09	0.40
28:2:791:C:H2'	28:2:792:G:O4'	2.20	0.40
28:2:912:G:N3	28:2:912:G:H2'	2.36	0.40
28:2:1006:C:H2'	28:2:1007:G:O4'	2.22	0.40
28:2:1078:C:H1'	28:2:1115:A:C4	2.57	0.40
28:2:1380:C:H2'	28:2:1381:G:H8	1.85	0.40
30:U:26:LYS:HZ1	30:U:97:THR:HB	1.86	0.40
20:I:25:ARG:HA	28:2:312:G:H5''	2.03	0.40
28:2:316:G:H2'	28:2:317:C:C6	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	d	46/137 (34%)	43 (94%)	3 (6%)	0	100	100
2	T	128/139 (92%)	116 (91%)	10 (8%)	2 (2%)	9	28
3	N	150/154 (97%)	145 (97%)	3 (2%)	2 (1%)	12	33
4	J	164/189 (87%)	162 (99%)	2 (1%)	0	100	100
5	D	174/217 (80%)	160 (92%)	14 (8%)	0	100	100
6	X	140/143 (98%)	133 (95%)	6 (4%)	1 (1%)	22	50
7	S	131/154 (85%)	116 (88%)	15 (12%)	0	100	100
8	Q	119/158 (75%)	110 (92%)	9 (8%)	0	100	100
9	C	210/242 (87%)	201 (96%)	9 (4%)	0	100	100
10	A	192/245 (78%)	185 (96%)	7 (4%)	0	100	100
11	B	216/248 (87%)	210 (97%)	6 (3%)	0	100	100
12	Y	86/132 (65%)	82 (95%)	4 (5%)	0	100	100
13	b	77/124 (62%)	74 (96%)	3 (4%)	0	100	100
14	a	95/109 (87%)	91 (96%)	4 (4%)	0	100	100
15	Z	57/88 (65%)	52 (91%)	5 (9%)	0	100	100
16	V	80/89 (90%)	73 (91%)	7 (9%)	0	100	100
17	P	101/145 (70%)	88 (87%)	11 (11%)	2 (2%)	7	23
18	R	95/137 (69%)	91 (96%)	4 (4%)	0	100	100
19	K	79/134 (59%)	69 (87%)	10 (13%)	0	100	100
20	I	159/174 (91%)	155 (98%)	4 (2%)	0	100	100
21	e	31/69 (45%)	31 (100%)	0	0	100	100
22	H	148/190 (78%)	137 (93%)	11 (7%)	0	100	100
23	n	22/41 (54%)	22 (100%)	0	0	100	100
24	c	51/64 (80%)	48 (94%)	3 (6%)	0	100	100
25	O	124/145 (86%)	121 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	W	127/130 (98%)	118 (93%)	9 (7%)	0	100	100
27	E	256/268 (96%)	246 (96%)	10 (4%)	0	100	100
29	L	179/199 (90%)	169 (94%)	10 (6%)	0	100	100
30	U	68/126 (54%)	66 (97%)	2 (3%)	0	100	100
31	G	187/248 (75%)	170 (91%)	17 (9%)	0	100	100
32	F	157/190 (83%)	154 (98%)	3 (2%)	0	100	100
All	All	3849/4828 (80%)	3638 (94%)	204 (5%)	7 (0%)	50	75

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	T	26	ILE
17	P	37	LEU
2	T	27	LYS
3	N	8	GLY
17	P	36	LYS
3	N	9	LYS
6	X	88	ASP

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	d	42/116 (36%)	42 (100%)	0	100	100
2	T	86/115 (75%)	86 (100%)	0	100	100
3	N	124/130 (95%)	123 (99%)	1 (1%)	81	93
4	J	141/164 (86%)	141 (100%)	0	100	100
5	D	142/182 (78%)	142 (100%)	0	100	100
6	X	113/114 (99%)	113 (100%)	0	100	100
7	S	112/131 (86%)	112 (100%)	0	100	100
8	Q	101/130 (78%)	101 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
9	C	176/201 (88%)	175 (99%)	1 (1%)	86	95
10	A	168/217 (77%)	167 (99%)	1 (1%)	86	95
11	B	196/220 (89%)	196 (100%)	0	100	100
12	Y	77/113 (68%)	77 (100%)	0	100	100
13	b	70/112 (62%)	70 (100%)	0	100	100
14	a	90/103 (87%)	90 (100%)	0	100	100
15	Z	41/79 (52%)	40 (98%)	1 (2%)	49	77
16	V	62/72 (86%)	62 (100%)	0	100	100
17	P	87/128 (68%)	87 (100%)	0	100	100
18	R	82/123 (67%)	81 (99%)	1 (1%)	71	89
19	K	73/119 (61%)	73 (100%)	0	100	100
20	I	138/148 (93%)	137 (99%)	1 (1%)	84	94
21	e	30/58 (52%)	30 (100%)	0	100	100
22	H	116/170 (68%)	116 (100%)	0	100	100
23	n	21/38 (55%)	21 (100%)	0	100	100
24	c	49/57 (86%)	48 (98%)	1 (2%)	55	80
25	O	91/113 (80%)	91 (100%)	0	100	100
26	W	114/115 (99%)	114 (100%)	0	100	100
27	E	224/232 (97%)	224 (100%)	0	100	100
29	L	154/173 (89%)	153 (99%)	1 (1%)	86	95
30	U	68/110 (62%)	68 (100%)	0	100	100
31	G	162/213 (76%)	162 (100%)	0	100	100
32	F	132/157 (84%)	132 (100%)	0	100	100
All	All	3282/4153 (79%)	3274 (100%)	8 (0%)	93	98

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	N	3	ARG
9	C	135	ARG
10	A	38	ARG
15	Z	74	LYS
18	R	5	ARG
20	I	23	LYS

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Mol	Chain	Res	Type
24	c	61	ARG
29	L	111	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
4	J	112	GLN
27	E	163	ASN
29	L	136	HIS
31	G	31	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
28	2	1329/1452 (91%)	283 (21%)	15 (1%)

All (283) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
28	2	4	C
28	2	9	C
28	2	17	C
28	2	33	U
28	2	41	G
28	2	42	A
28	2	44	G
28	2	46	A
28	2	56	G
28	2	64	A
28	2	87	A2M
28	2	91	C
28	2	92	A
28	2	101	A
28	2	111	G
28	2	116	C
28	2	125	C
28	2	128	G
28	2	129	A
28	2	130	C
28	2	134	G

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Mol	Chain	Res	Type
28	2	136	U
28	2	137	G
28	2	142	C
28	2	149	C
28	2	150	C
28	2	154	A
28	2	155	C
28	2	158	G
28	2	159	C
28	2	161	C
28	2	162	G
28	2	170	G
28	2	171	G
28	2	172	G
28	2	173	C
28	2	176	C
28	2	183	C
28	2	184	G
28	2	186	G
28	2	193	G
28	2	202	A
28	2	203	C
28	2	204	G
28	2	205	G
28	2	209	G
28	2	216	C
28	2	223	G
28	2	228	C
28	2	229	A
28	2	230	C
28	2	234	G
28	2	241	C
28	2	249	G
28	2	250	C
28	2	256	G
28	2	263	C
28	2	264	G
28	2	271	G
28	2	272	G
28	2	273	C
28	2	282	A
28	2	289	G

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Mol	Chain	Res	Type
28	2	290	A
28	2	292	U
28	2	302	G
28	2	303	G
28	2	312	G
28	2	313	A
28	2	314	C
28	2	316	G
28	2	324	A
28	2	328	A
28	2	329	A
28	2	330	G
28	2	336	C
28	2	337	A
28	2	338	G
28	2	340	A
28	2	351	U
28	2	353	G
28	2	356	C
28	2	362	G
28	2	363	C
28	2	365	G
28	2	378	C
28	2	387	G
28	2	389	G
28	2	390	C
28	2	391	G
28	2	393	G
28	2	394	A
28	2	396	U
28	2	400	G
28	2	438	G
28	2	446	C
28	2	449	G
28	2	454	C
28	2	455	G
28	2	458	G
28	2	459	U
28	2	460	A
28	2	461	A
28	2	475	A
28	2	476	G

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Mol	Chain	Res	Type
28	2	477	C
28	2	492	C
28	2	500	G
28	2	501	A
28	2	504	C
28	2	519	C
28	2	520	C
28	2	521	C
28	2	525	C
28	2	526	G
28	2	527	C
28	2	534	G
28	2	535	A
28	2	536	A
28	2	540	G
28	2	545	G
28	2	546	C
28	2	554	A
28	2	555	G
28	2	562	U
28	2	569	G
28	2	570	C
28	2	579	A
28	2	582	G
28	2	588	C
28	2	593	C
28	2	594	C
28	2	595	G
28	2	601	C
28	2	602	C
28	2	603	G
28	2	604	C
28	2	606	G
28	2	608	A
28	2	611	C
28	2	615	A
28	2	625	G
28	2	628	G
28	2	650	A
28	2	659	A
28	2	662	G
28	2	665	U

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Mol	Chain	Res	Type
28	2	685	G
28	2	687	C
28	2	704	A
28	2	712	U
28	2	718	A
28	2	722	A
28	2	740	C
28	2	744	A
28	2	756	C
28	2	757	A
28	2	778	A
28	2	780	C
28	2	784	G
28	2	791	C
28	2	792	G
28	2	794	G
28	2	804	C
28	2	812	G
28	2	833	G
28	2	834	G
28	2	836	G
28	2	839	U
28	2	840	C
28	2	842	G
28	2	850	G
28	2	851	G
28	2	856	G
28	2	868	OMG
28	2	880	A
28	2	888	G
28	2	892	G
28	2	900	C
28	2	903	C
28	2	909	G
28	2	921	G
28	2	927	U
28	2	928	C
28	2	932	C
28	2	934	C
28	2	936	A
28	2	938	G
28	2	942	G

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Mol	Chain	Res	Type
28	2	949	A
28	2	951	C
28	2	984	C
28	2	1009	U
28	2	1010	G
28	2	1013	G
28	2	1014	C
28	2	1020	C
28	2	1025	C
28	2	1027	A
28	2	1028	G
28	2	1041	G
28	2	1054	U
28	2	1057	C
28	2	1059	A
28	2	1061	A
28	2	1068	G
28	2	1076	G
28	2	1077	G
28	2	1080	G
28	2	1088	C
28	2	1089	G
28	2	1090	C
28	2	1096	G
28	2	1099	C
28	2	1102	C
28	2	1112	A
28	2	1119	C
28	2	1129	G
28	2	1131	A
28	2	1132	G
28	2	1135	C
28	2	1139	G
28	2	1140	A
28	2	1146	U
28	2	1147	C
28	2	1162	G
28	2	1163	C
28	2	1164	A
28	2	1175	A
28	2	1183	G
28	2	1190	C

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Mol	Chain	Res	Type
28	2	1191	G
28	2	1192	G
28	2	1194	G
28	2	1200	G
28	2	1202	G
28	2	1208	G
28	2	1225	G
28	2	1244	A
28	2	1245	C
28	2	1246	G
28	2	1257	C
28	2	1262	A
28	2	1270	G
28	2	1276	G
28	2	1283	C
28	2	1287	C
28	2	1293	G
28	2	1305	C
28	2	1320	C
28	2	1321	A
28	2	1343	U
28	2	1344	G
28	2	1350	U
28	2	1351	G
28	2	1366	G
28	2	1367	A
28	2	1374	A
28	2	1380	C
28	2	1381	G
28	2	1384	A
28	2	1392	C
28	2	1393	G
28	2	1394	C
28	2	1403	A
28	2	1406	A
28	2	1408	A
28	2	1409	A
28	2	1410	G
28	2	1412	C
28	2	1413	G
28	2	1415	A
28	2	1419	A

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Mol	Chain	Res	Type
28	2	1421	G
28	2	1422	U
28	2	1433	G
28	2	1436	C
28	2	1445	G
28	2	1446	G
28	2	1447	A
28	2	1448	U
28	2	1449	C
28	2	1452	U

All (15) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
28	2	8	U
28	2	158	G
28	2	204	G
28	2	302	G
28	2	329	A
28	2	600	G
28	2	603	G
28	2	850	G
28	2	941	C
28	2	948	C
28	2	1118	G
28	2	1135	C
28	2	1199	C
28	2	1380	C
28	2	1421	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
28	C4J	2	933	28	24,29,30	3.28	9 (37%)	29,42,45	1.38	5 (17%)
28	OMG	2	1011	28	18,26,27	1.00	1 (5%)	19,38,41	1.19	2 (10%)
28	7MG	2	1261	28	22,26,27	3.73	10 (45%)	29,39,42	2.07	9 (31%)
28	4AC	2	1426	28,33	21,24,25	4.43	16 (76%)	29,34,37	1.30	2 (6%)
28	MA6	2	1435	28	18,26,27	1.03	2 (11%)	19,38,41	3.64	2 (10%)
28	OMG	2	1035	28,33	18,26,27	1.00	1 (5%)	19,38,41	1.14	2 (10%)
28	OMG	2	868	28	18,26,27	2.36	8 (44%)	19,38,41	1.43	3 (15%)
28	A2M	2	348	34,28	18,25,26	3.64	8 (44%)	18,36,39	3.40	4 (22%)
28	OMU	2	1314	28	19,22,23	2.94	8 (42%)	26,31,34	1.69	4 (15%)
28	OMC	2	104	28	19,22,23	0.85	0	26,31,34	0.89	2 (7%)
28	A2M	2	87	28,33	18,25,26	3.60	7 (38%)	18,36,39	3.26	4 (22%)
28	OMG	2	371	28,33	18,26,27	2.47	8 (44%)	19,38,41	1.60	4 (21%)
28	M7A	2	1390	28	20,25,26	0.41	0	28,37,40	0.69	1 (3%)
28	MA6	2	1434	28	18,26,27	1.05	2 (11%)	19,38,41	3.45	2 (10%)
28	4OC	2	1325	28	20,23,24	3.12	8 (40%)	26,32,35	1.00	1 (3%)

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
28	C4J	2	933	28	-	4/16/34/35	0/2/2/2
28	OMG	2	1011	28	-	3/5/27/28	0/3/3/3
28	7MG	2	1261	28	-	0/7/37/38	0/3/3/3
28	4AC	2	1426	28,33	-	2/11/29/30	0/2/2/2
28	MA6	2	1435	28	-	2/7/29/30	0/3/3/3
28	OMG	2	1035	28,33	-	1/5/27/28	0/3/3/3
28	OMG	2	868	28	-	3/5/27/28	0/3/3/3
28	A2M	2	348	34,28	-	0/5/27/28	0/3/3/3
28	OMU	2	1314	28	-	0/9/27/28	0/2/2/2
28	OMC	2	104	28	-	0/9/27/28	0/2/2/2
28	A2M	2	87	28,33	-	3/5/27/28	0/3/3/3
28	OMG	2	371	28,33	-	1/5/27/28	0/3/3/3
28	M7A	2	1390	28	-	0/7/37/38	0/3/3/3
28	MA6	2	1434	28	-	0/7/29/30	0/3/3/3
28	4OC	2	1325	28	-	0/9/29/30	0/2/2/2

All (88) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	2	933	C4J	C6-C5	11.76	1.51	1.34
28	2	1261	7MG	C8-N9	9.39	1.51	1.46
28	2	1426	4AC	O4'-C1'	8.76	1.62	1.42
28	2	87	A2M	C3'-C4'	-8.74	1.30	1.53
28	2	348	A2M	C3'-C4'	-8.63	1.30	1.53
28	2	87	A2M	O4'-C4'	7.73	1.62	1.45
28	2	348	A2M	O4'-C4'	7.63	1.62	1.45
28	2	348	A2M	O4'-C1'	-7.51	1.30	1.41
28	2	1261	7MG	C5-N7	7.26	1.44	1.35
28	2	87	A2M	O4'-C1'	-7.12	1.31	1.41
28	2	1314	OMU	C2-N1	6.91	1.49	1.38
28	2	1426	4AC	C2'-C1'	-6.86	1.31	1.53
28	2	1325	4OC	C4-N3	6.84	1.44	1.32
28	2	1426	4AC	C4-N3	6.79	1.44	1.32
28	2	1426	4AC	C6-C5	6.64	1.50	1.35
28	2	1314	OMU	C2-N3	6.30	1.49	1.38
28	2	1325	4OC	C2-N3	6.13	1.48	1.36
28	2	933	C4J	C2-N3	6.12	1.49	1.38
28	2	1325	4OC	C6-C5	5.99	1.49	1.35
28	2	1261	7MG	C2-N3	5.86	1.47	1.33
28	2	1261	7MG	C4-N9	5.77	1.44	1.37
28	2	1261	7MG	C4-N3	5.55	1.47	1.34
28	2	1314	OMU	C6-C5	5.44	1.47	1.35
28	2	371	OMG	C2-N3	5.42	1.46	1.33
28	2	1426	4AC	C2-N1	5.41	1.51	1.40
28	2	1426	4AC	O4'-C4'	-5.11	1.33	1.45
28	2	868	OMG	C2-N3	5.09	1.45	1.33
28	2	1325	4OC	C4-N4	4.84	1.45	1.35
28	2	1426	4AC	C2-N3	4.81	1.46	1.36
28	2	1426	4AC	C7-N4	4.80	1.46	1.37
28	2	1261	7MG	C2-N2	4.72	1.45	1.34
28	2	371	OMG	C4-N3	4.71	1.48	1.37
28	2	868	OMG	C4-N3	4.24	1.47	1.37
28	2	1325	4OC	C2-N1	4.17	1.49	1.40
28	2	1426	4AC	C4-N4	4.08	1.45	1.39
28	2	868	OMG	C2-N2	4.01	1.43	1.34
28	2	933	C4J	C1'-C5	-3.97	1.41	1.50
28	2	1314	OMU	C4-N3	3.90	1.45	1.38
28	2	371	OMG	C2-N2	3.87	1.43	1.34
28	2	1426	4AC	C5-C4	3.84	1.49	1.40
28	2	1325	4OC	C5-C4	3.67	1.48	1.40
28	2	1426	4AC	O3'-C3'	-3.63	1.34	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	2	1426	4AC	CM7-C7	3.61	1.58	1.50
28	2	1261	7MG	C2-N1	3.60	1.46	1.37
28	2	933	C4J	C2-N1	3.51	1.49	1.39
28	2	933	C4J	C6-N1	3.50	1.45	1.36
28	2	1261	7MG	C5-C6	3.40	1.52	1.43
28	2	1426	4AC	O5'-C5'	-3.36	1.36	1.44
28	2	371	OMG	C6-N1	3.36	1.42	1.37
28	2	1314	OMU	O4-C4	-3.27	1.18	1.24
28	2	933	C4J	C4-N3	3.26	1.46	1.40
28	2	868	OMG	C6-N1	3.22	1.42	1.37
28	2	933	C4J	O4-C4	-3.08	1.16	1.23
28	2	868	OMG	O6-C6	-3.06	1.17	1.23
28	2	1325	4OC	O2-C2	-3.04	1.18	1.23
28	2	371	OMG	C5-C6	3.01	1.53	1.47
28	2	348	A2M	C6-N6	3.00	1.45	1.34
28	2	87	A2M	C6-N6	3.00	1.45	1.34
28	2	1325	4OC	C6-N1	3.00	1.45	1.38
28	2	348	A2M	O3'-C3'	2.99	1.50	1.43
28	2	1261	7MG	C6-N1	2.95	1.44	1.38
28	2	1435	MA6	C5-C4	-2.92	1.33	1.40
28	2	348	A2M	C5-C4	-2.82	1.33	1.40
28	2	1426	4AC	O7-C7	-2.80	1.16	1.23
28	2	1434	MA6	C5-C4	-2.78	1.33	1.40
28	2	1426	4AC	O2'-C2'	2.75	1.49	1.43
28	2	371	OMG	C5-C4	-2.74	1.36	1.43
28	2	371	OMG	O6-C6	-2.74	1.17	1.23
28	2	87	A2M	O3'-C3'	2.73	1.49	1.43
28	2	933	C4J	O4'-C1'	-2.73	1.40	1.43
28	2	868	OMG	C2-N1	2.72	1.44	1.37
28	2	1035	OMG	C6-N1	-2.72	1.33	1.37
28	2	1314	OMU	C6-N1	2.71	1.44	1.38
28	2	87	A2M	C5-C4	-2.70	1.33	1.40
28	2	1011	OMG	C6-N1	-2.70	1.33	1.37
28	2	1314	OMU	O2-C2	-2.69	1.18	1.23
28	2	348	A2M	O2'-C2'	-2.67	1.35	1.42
28	2	87	A2M	O2'-C2'	-2.57	1.36	1.42
28	2	1261	7MG	O6-C6	-2.57	1.18	1.23
28	2	1426	4AC	C6-N1	2.54	1.44	1.38
28	2	868	OMG	C5-C4	-2.51	1.36	1.43
28	2	348	A2M	C2-N3	2.30	1.35	1.32
28	2	1434	MA6	C2-N3	2.28	1.35	1.32
28	2	371	OMG	C2-N1	2.26	1.43	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	2	933	C4J	O2-C2	-2.22	1.18	1.22
28	2	1314	OMU	C5-C4	2.17	1.48	1.43
28	2	868	OMG	C5-C6	2.10	1.51	1.47
28	2	1435	MA6	C2-N3	2.02	1.35	1.32

All (47) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	1435	MA6	N1-C6-N6	-14.40	101.90	117.06
28	2	1434	MA6	N1-C6-N6	-13.76	102.57	117.06
28	2	348	A2M	C5-C6-N6	10.45	136.24	120.35
28	2	87	A2M	C5-C6-N6	10.16	135.79	120.35
28	2	348	A2M	N6-C6-N1	-7.21	103.60	118.57
28	2	87	A2M	N6-C6-N1	-6.72	104.62	118.57
28	2	1435	MA6	N3-C2-N1	-5.82	119.59	128.68
28	2	348	A2M	N3-C2-N1	-5.56	119.99	128.68
28	2	1434	MA6	N3-C2-N1	-5.49	120.11	128.68
28	2	87	A2M	N3-C2-N1	-5.30	120.39	128.68
28	2	1314	OMU	C4-N3-C2	-5.21	119.71	126.58
28	2	1261	7MG	C5-C6-N1	4.86	119.55	110.99
28	2	1261	7MG	C2-N3-C4	4.45	120.22	112.30
28	2	1261	7MG	C5-C4-N3	-4.41	119.73	128.13
28	2	933	C4J	C4-N3-C2	-4.04	120.36	125.46
28	2	1314	OMU	C5-C4-N3	3.65	120.31	114.84
28	2	371	OMG	C5-C6-N1	3.61	120.33	113.95
28	2	1314	OMU	N3-C2-N1	3.58	119.64	114.89
28	2	1261	7MG	C4-C5-N7	3.25	110.05	105.53
28	2	868	OMG	C5-C6-N1	3.16	119.54	113.95
28	2	1426	4AC	C5'-C4'-C3'	-3.14	103.42	115.18
28	2	371	OMG	C2-N1-C6	-3.13	119.33	125.10
28	2	1261	7MG	N9-C4-N3	3.04	130.01	125.47
28	2	1261	7MG	C5-C4-N9	3.02	110.27	106.35
28	2	1314	OMU	O4-C4-C5	-2.88	120.09	125.16
28	2	371	OMG	C8-N7-C5	2.87	108.47	102.99
28	2	1325	4OC	C6-C5-C4	2.82	120.41	116.96
28	2	933	C4J	C3-N3-C4	2.75	121.36	117.31
28	2	87	A2M	C1'-N9-C4	2.73	131.44	126.64
28	2	1261	7MG	C2-N1-C6	-2.70	120.17	125.10
28	2	1426	4AC	O2-C2-N3	-2.67	117.99	122.33
28	2	1261	7MG	O6-C6-C5	-2.65	121.03	127.54
28	2	1261	7MG	N9-C8-N7	2.64	107.16	103.38
28	2	868	OMG	C2-N1-C6	-2.58	120.36	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	2	1035	OMG	C5-C6-N1	2.57	118.49	113.95
28	2	1035	OMG	C8-N7-C5	2.54	107.83	102.99
28	2	1011	OMG	C8-N7-C5	2.50	107.75	102.99
28	2	1011	OMG	C5-C6-N1	2.46	118.29	113.95
28	2	933	C4J	N3-C2-N1	2.37	120.10	116.76
28	2	868	OMG	O6-C6-C5	-2.22	120.03	124.37
28	2	104	OMC	C2'-C1'-N1	-2.21	109.93	114.22
28	2	348	A2M	C1'-N9-C4	2.19	130.48	126.64
28	2	371	OMG	O6-C6-C5	-2.17	120.13	124.37
28	2	104	OMC	O2-C2-N3	-2.07	118.96	122.33
28	2	933	C4J	O35-C34-C32	2.04	120.32	113.38
28	2	1390	M7A	C5-C4-N9	2.01	109.26	106.44
28	2	933	C4J	C5-C4-N3	2.01	119.89	116.17

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
28	2	87	A2M	C1'-C2'-O2'-CM1
28	2	371	OMG	C1'-C2'-O2'-CM2
28	2	868	OMG	C1'-C2'-O2'-CM2
28	2	933	C4J	C3'-C4'-C5'-O5'
28	2	933	C4J	C4'-C5'-O5'-P
28	2	1011	OMG	C1'-C2'-O2'-CM2
28	2	1035	OMG	C1'-C2'-O2'-CM2
28	2	1426	4AC	C3'-C4'-C5'-O5'
28	2	87	A2M	O4'-C4'-C5'-O5'
28	2	1426	4AC	O4'-C4'-C5'-O5'
28	2	1435	MA6	O4'-C4'-C5'-O5'
28	2	87	A2M	C3'-C4'-C5'-O5'
28	2	933	C4J	O4'-C4'-C5'-O5'
28	2	1435	MA6	C3'-C4'-C5'-O5'
28	2	868	OMG	C3'-C4'-C5'-O5'
28	2	868	OMG	O4'-C4'-C5'-O5'
28	2	1011	OMG	C3'-C2'-O2'-CM2
28	2	933	C4J	N3-C3-C31-C32
28	2	1011	OMG	O4'-C4'-C5'-O5'

There are no ring outliers.

9 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
28	2	1011	OMG	1	0
28	2	1261	7MG	1	0
28	2	1035	OMG	1	0
28	2	868	OMG	1	0
28	2	348	A2M	1	0
28	2	1314	OMU	1	0
28	2	87	A2M	1	0
28	2	371	OMG	1	0
28	2	1434	MA6	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 303 ligands modelled in this entry, 303 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 Map visualisation

This section contains visualisations of the EMDB entry EMD-13680. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal standard-deviation projections (False-color)

This section was not generated.

6.5 Orthogonal surface views

This section was not generated.

6.6 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

This section contains the results of statistical analysis of the map.

7.1 Map-value distribution

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit

This section was not generated.