



Full wwPDB EM Validation Report ⓘ

Sep 17, 2025 – 06:27 PM JST

PDB ID : 8X15 / pdb_00008x15
EMDB ID : EMD-37984
Title : Structure of nucleosome-bound SRCAP-C in the apo state
Authors : Yu, J.; Wang, Q.; Yu, Z.; Li, W.; Wang, L.; Xu, Y.
Deposited on : 2023-11-06
Resolution : 3.20 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 : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.45.1

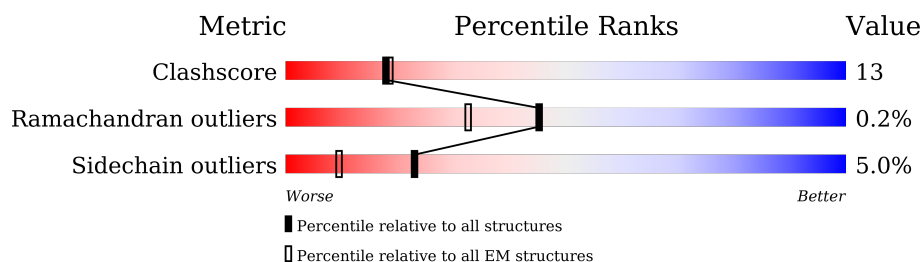
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.20 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.



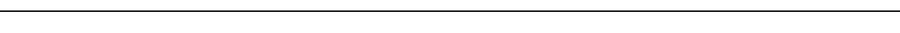
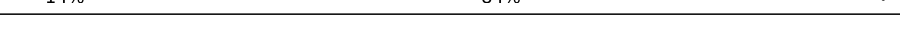
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	A	130	63% 18% . 17%
1	E	130	66% 13% . 19%
2	B	126	58% 18% 24%
2	F	126	66% 6% . . 25%
3	C	136	52% 16% . 30%
3	G	136	60% 12% 29%
4	D	103	63% 16% 21%
4	H	103	59% 17% . 22%
5	I	3230	19% 5% 75%

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Mol	Chain	Length	Quality of chain
6	J	364	
7	K	396	
8	L	154	
9	M	456	
9	O	456	
9	Q	456	
10	N	463	
10	P	463	
10	R	463	
11	S	375	
11	U	375	
12	T	429	
13	V	467	
14	W	227	
15	X	137	
16	Y	137	

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
17	ADP	M	501	-	-	X	-
17	ADP	N	501	-	-	X	-
17	ADP	O	501	-	-	X	-
17	ADP	P	501	-	-	X	-
17	ADP	Q	501	-	-	X	-
17	ADP	R	501	-	-	X	-
18	ATP	U	401	-	-	X	-

2 Entry composition

There are 18 unique types of molecules in this entry. The entry contains 55488 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 Histone H2A type 1-C.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	A	108	Total	C	N	O	0	0
			833	525	165	143		
1	E	105	Total	C	N	O	0	0
			808	510	158	140		

- Molecule 2 is a protein called Histone H2B type 1-C/E/F/G/I.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	96	Total	C	N	O	S	0	0
			755	473	138	142	2		
2	F	94	Total	C	N	O	S	0	0
			736	461	134	139	2		

- Molecule 3 is a protein called Histone H3.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	95	Total	C	N	O	S	0	0
			779	491	148	136	4		
3	G	97	Total	C	N	O	S	0	0
			801	505	155	137	4		

- Molecule 4 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	81	Total	C	N	O	S	0	0
			646	407	126	112	1		
4	H	80	Total	C	N	O	S	0	0
			638	401	125	111	1		

- Molecule 5 is a protein called Helicase SRCAP.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	792	Total	C	N	O	S	0	0
			6519	4147	1202	1134	36		

- Molecule 6 is a protein called Vacuolar protein sorting-associated protein 72 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	158	Total	C	N	O	S	0	0
			1316	826	252	234	4		

- Molecule 7 is a protein called Actin-related protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	K	394	Total	C	N	O	S	0	0
			3209	2054	526	611	18		

- Molecule 8 is a protein called Zinc finger HIT domain-containing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L	113	Total	C	N	O	S	0	0
			893	546	173	165	9		

- Molecule 9 is a protein called RuvB-like 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	M	418	Total	C	N	O	S	0	0
			3213	2026	557	614	16		
9	O	435	Total	C	N	O	S	0	0
			3339	2105	571	646	17		
9	Q	440	Total	C	N	O	S	0	0
			3368	2121	579	651	17		

- Molecule 10 is a protein called RuvB-like 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	N	411	Total	C	N	O	S	0	0
			3185	1988	560	622	15		
10	P	427	Total	C	N	O	S	0	0
			3287	2054	576	642	15		
10	R	424	Total	C	N	O	S	0	0
			3293	2057	578	642	16		

- Molecule 11 is a protein called Actin, cytoplasmic 1, N-terminally processed.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	S	375	Total	C	N	O	S	0	0
			2925	1850	491	561	23		
11	U	359	Total	C	N	O	S	0	0
			2802	1775	468	540	19		

- Molecule 12 is a protein called Actin-like protein 6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	T	403	Total	C	N	O	S	0	0
			3146	1988	535	599	24		

- Molecule 13 is a protein called DNA methyltransferase 1-associated protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	V	187	Total	C	N	O	S	0	0
			1617	1032	299	282	4		

- Molecule 14 is a protein called YEATS domain-containing protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	W	187	Total	C	N	O	S	0	0
			1542	998	255	284	5		

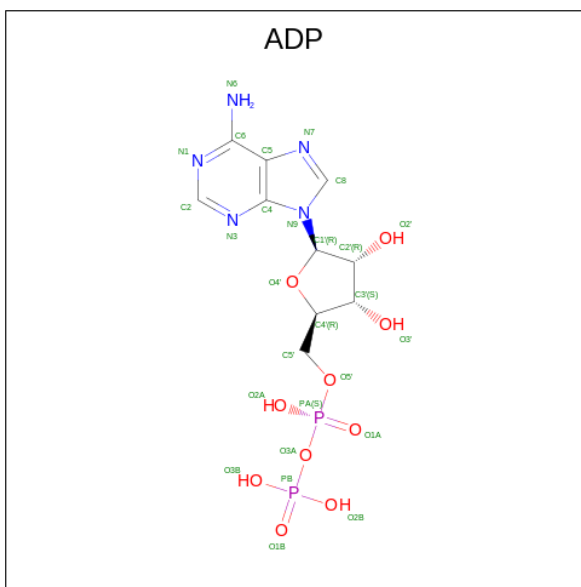
- Molecule 15 is a DNA chain called DNA (137-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
15	X	137	Total	C	N	O	P	0	0
			2829	1338	537	818	136		

- Molecule 16 is a DNA chain called DNA (137-MER).

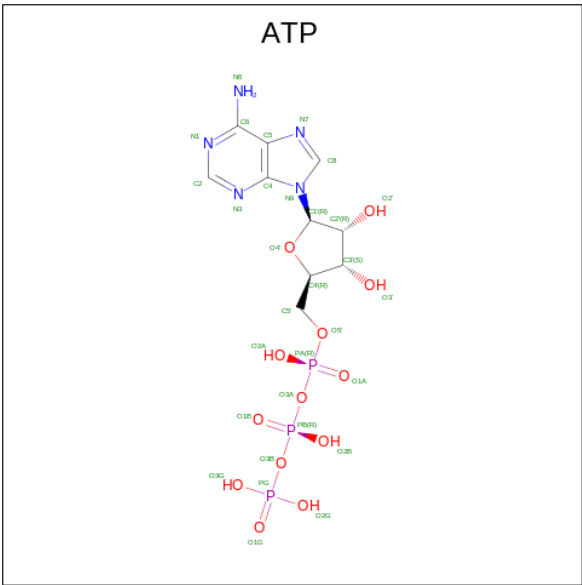
Mol	Chain	Residues	Atoms					AltConf	Trace
16	Y	137	Total	C	N	O	P	0	0
			2785	1323	501	824	137		

- Molecule 17 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
17	M	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	N	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	O	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	P	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	Q	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	R	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 18 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

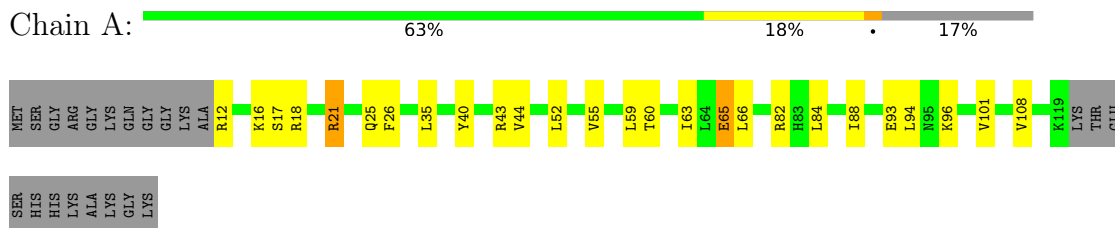


Mol	Chain	Residues	Atoms					AltConf
18	T	1	Total	C	N	O	P	0
			31	10	5	13	3	
18	U	1	Total	C	N	O	P	0
			31	10	5	13	3	

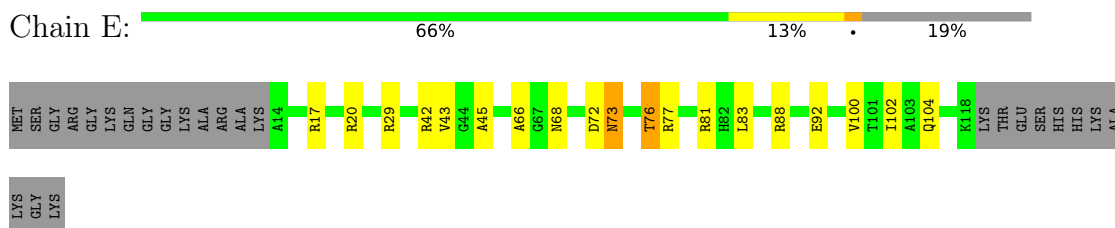
3 Residue-property plots

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

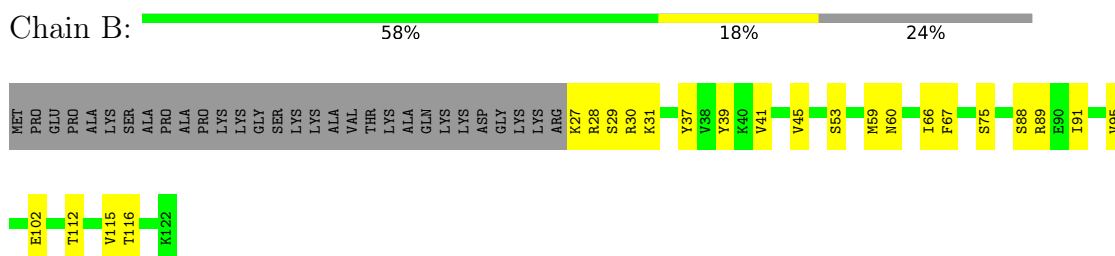
- Molecule 1: Histone H2A type 1-C



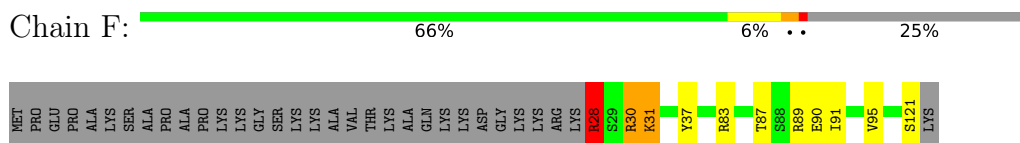
- Molecule 1: Histone H2A type 1-C



- Molecule 2: Histone H2B type 1-C/E/F/G/I

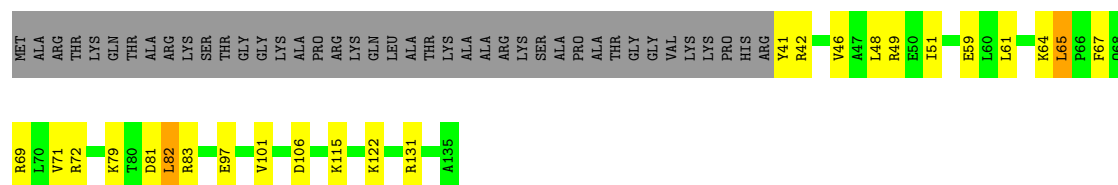


- Molecule 2: Histone H2B type 1-C/E/F/G/I



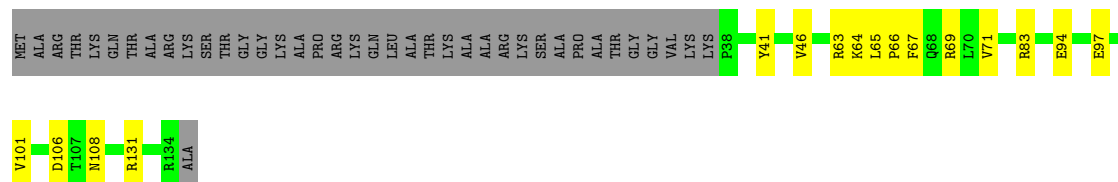
- Molecule 3: Histone H3.1





• Molecule 3: Histone H3.1

Chain G: 60% 12% 29%



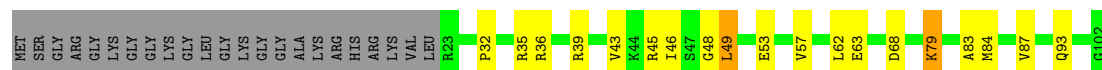
• Molecule 4: Histone H4

Chain D: 63% 16% 21%



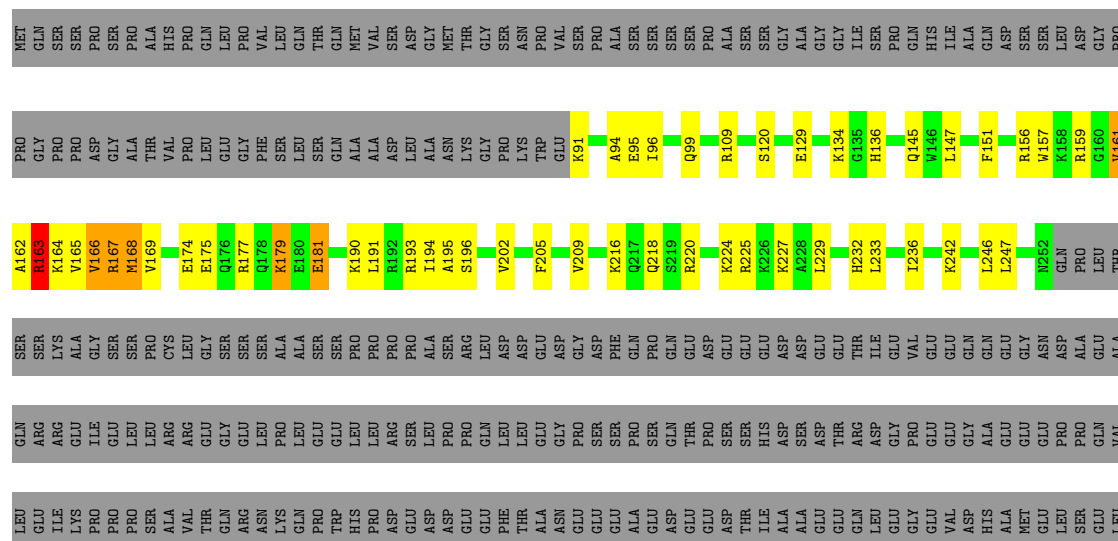
• Molecule 4: Histone H4

Chain H: 59% 17% 22%



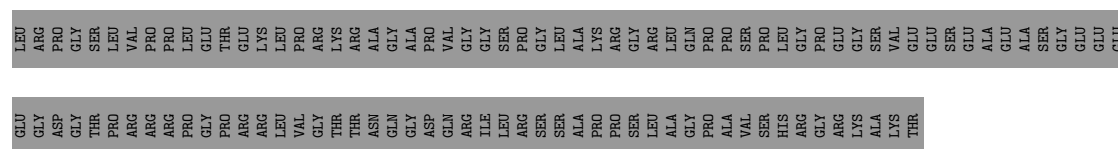
• Molecule 5: Helicase SRCAP

Chain I: 19% 5% 75%



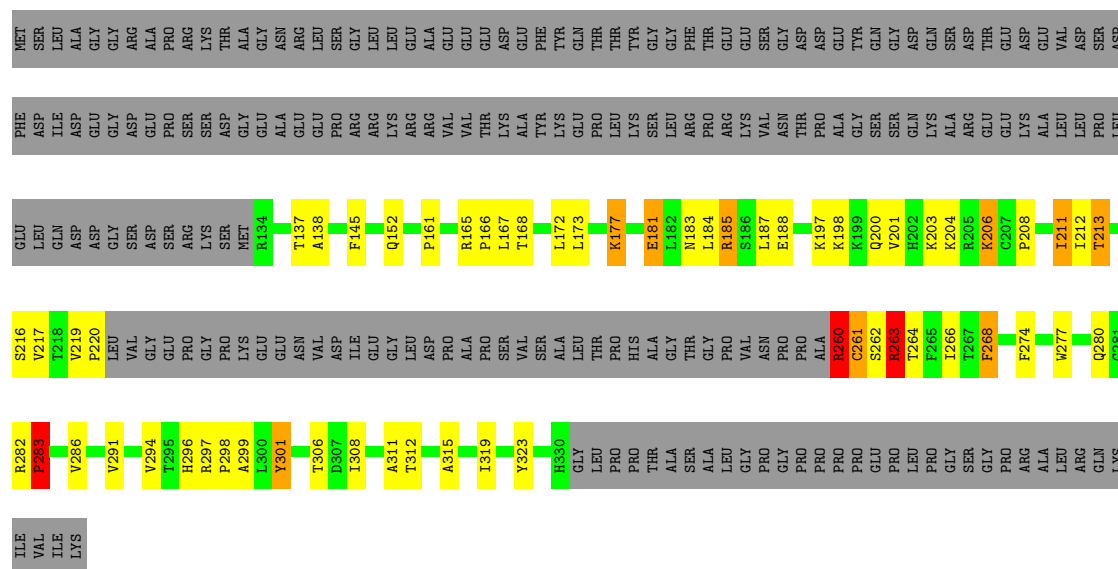






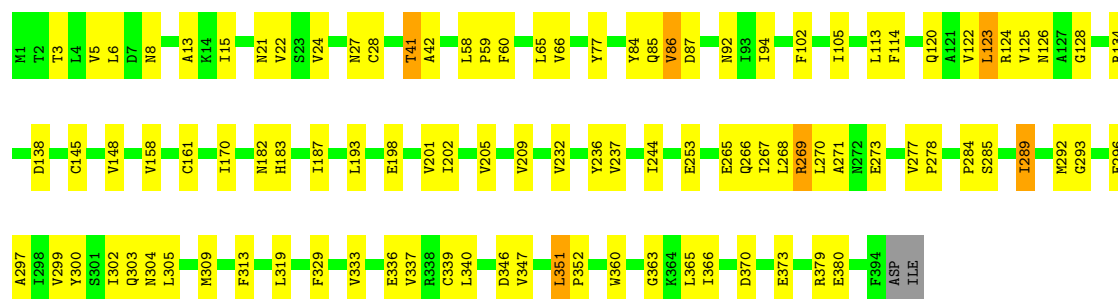
• Molecule 6: Vacuolar protein sorting-associated protein 72 homolog

Chain J: 27% 13% 57%



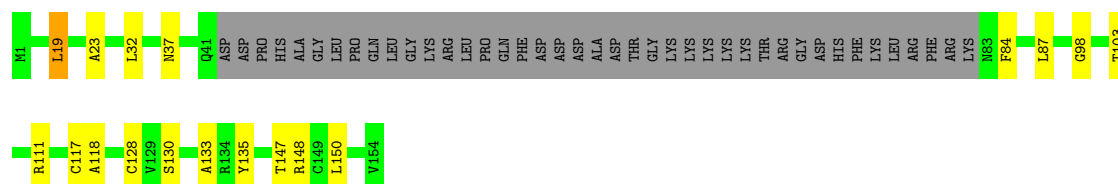
• Molecule 7: Actin-related protein 6

Chain K: 74% 24%

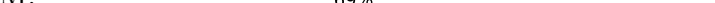


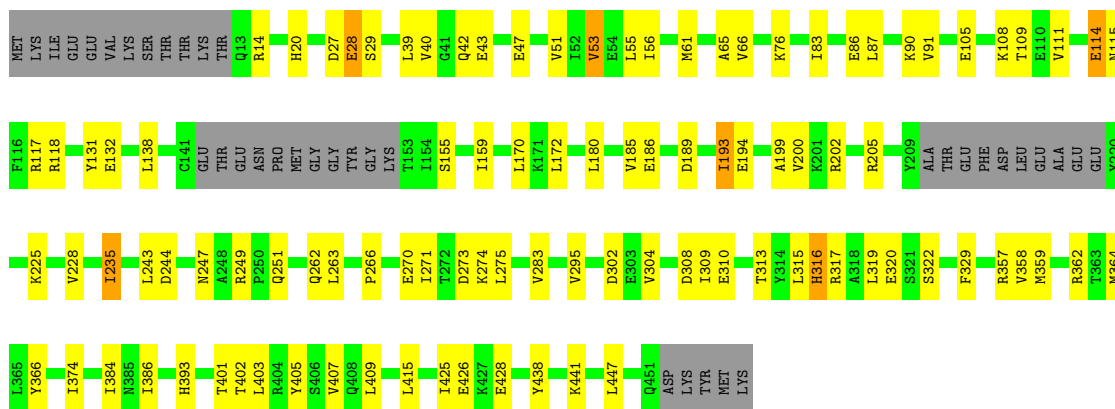
• Molecule 8: Zinc finger HIT domain-containing protein 1

Chain L: 62% 11% 27%



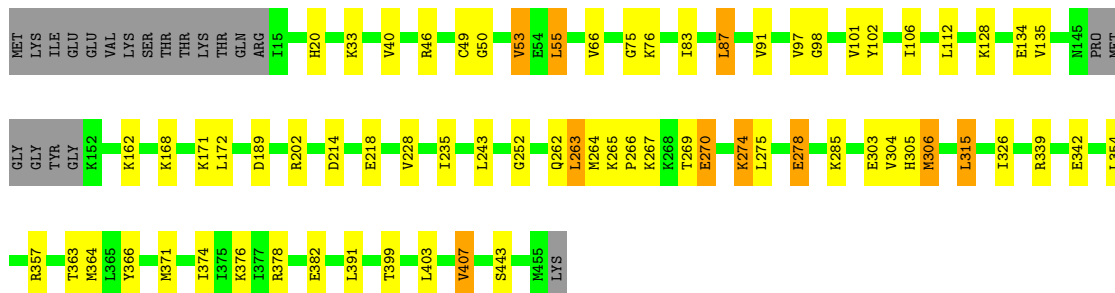
• Molecule 9: RuvB-like 1

Chain M:  69% 21% 8%



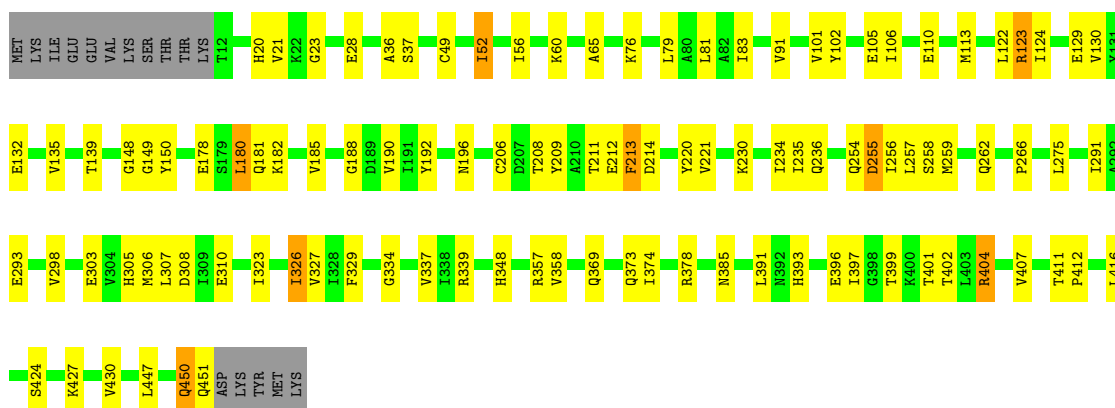
- Molecule 9: RuvB-like 1

Chain 0: 80% 13% 5%



- Molecule 9: RuvB-like 1

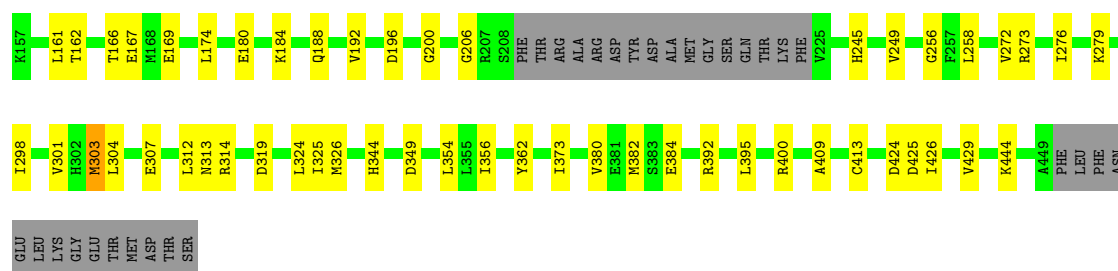
Chain Q: 73% 21% . .



- Molecule 10: RuvB-like 2

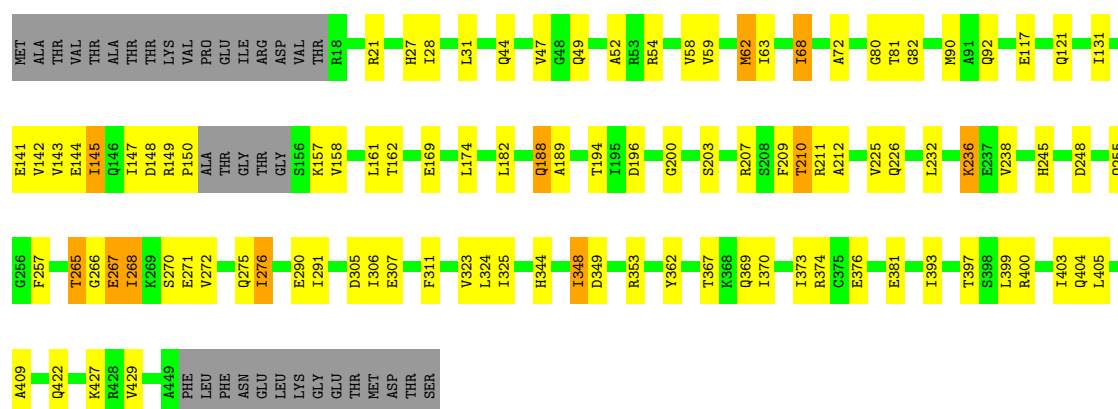
Chain N: 73% 15% 11%





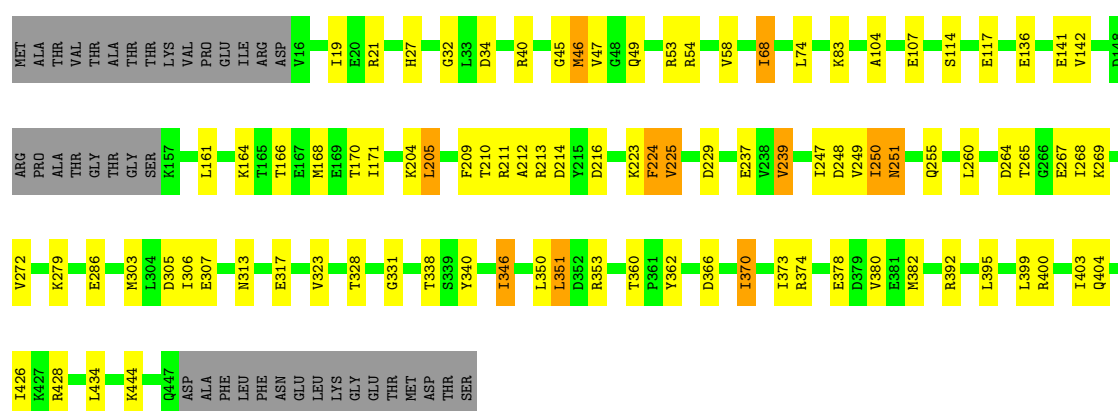
• Molecule 10: RuvB-like 2

Chain P: 71% 19% 8%



• Molecule 10: RuvB-like 2

Chain R: 71% 18% 8%

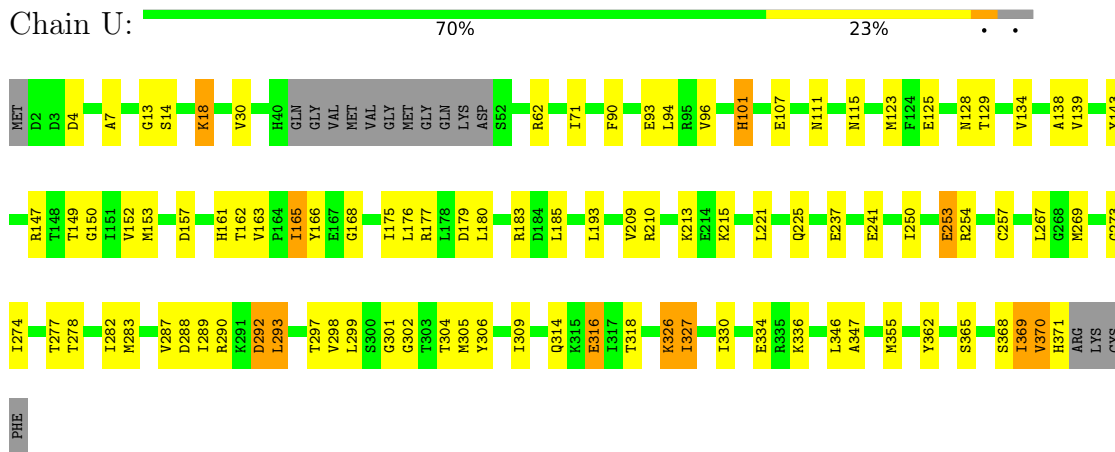


• Molecule 11: Actin, cytoplasmic 1, N-terminally processed

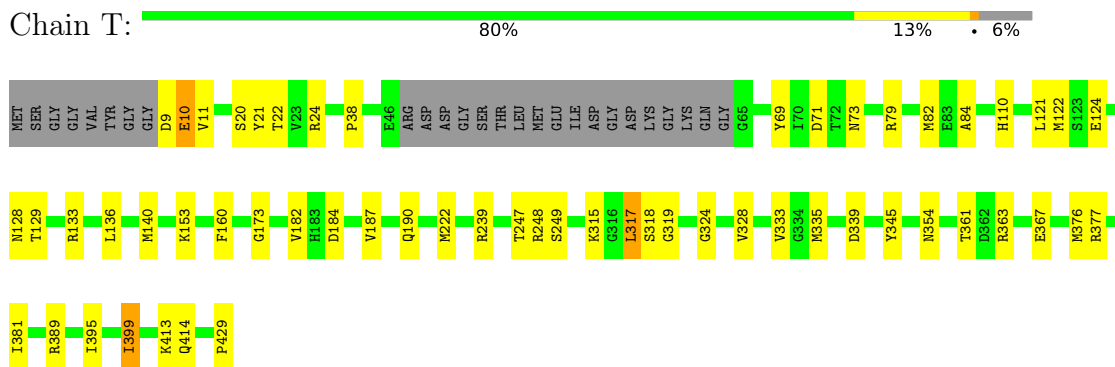
Chain S: 94% 6%



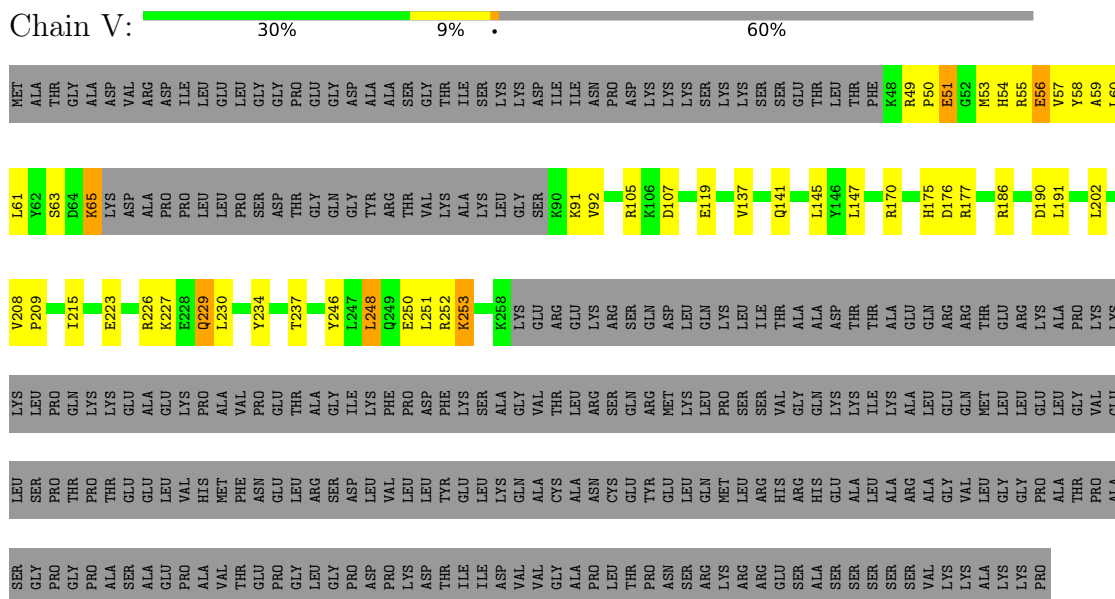
• Molecule 11: Actin, cytoplasmic 1, N-terminally processed



- Molecule 12: Actin-like protein 6A

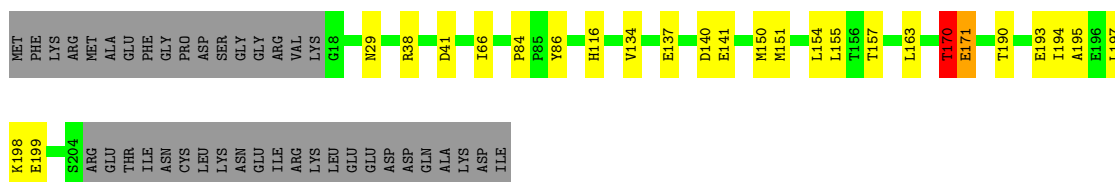


- Molecule 13: DNA methyltransferase 1-associated protein 1

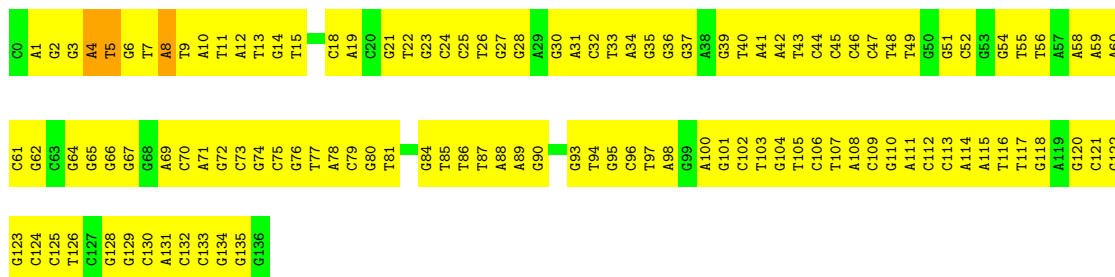


- Molecule 14: YEATS domain-containing protein 4

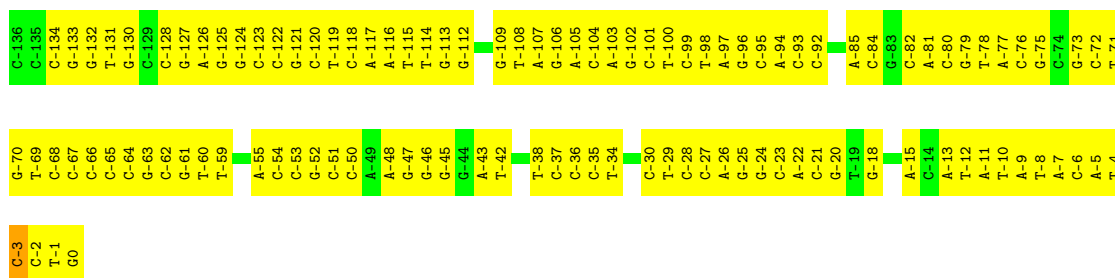




• Molecule 15: DNA (137-MER)



• Molecule 16: DNA (137-MER)



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	1092654	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 ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	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: ATP, ADP

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	0.14	0/843	0.38	0/1136
1	E	0.15	0/818	0.36	0/1104
2	B	0.15	0/766	0.41	0/1026
2	F	0.22	0/747	0.43	0/1004
3	C	0.15	0/789	0.41	0/1057
3	G	0.12	0/813	0.36	0/1090
4	D	0.15	0/653	0.42	0/873
4	H	0.16	0/645	0.41	0/862
5	I	0.21	0/6675	0.43	4/9019 (0.0%)
6	J	0.34	0/1347	0.58	1/1818 (0.1%)
7	K	0.15	0/3283	0.40	0/4445
8	L	0.16	0/909	0.39	0/1227
9	M	0.14	0/3253	0.38	0/4382
9	O	0.13	0/3382	0.37	0/4559
9	Q	0.13	0/3413	0.36	0/4603
10	N	0.13	0/3217	0.37	0/4328
10	P	0.22	0/3324	0.43	0/4477
10	R	0.14	0/3329	0.38	0/4479
11	S	0.11	0/2988	0.29	0/4045
11	U	0.16	0/2863	0.41	0/3882
12	T	0.12	0/3217	0.30	0/4362
13	V	0.14	0/1661	0.37	0/2234
14	W	0.33	0/1578	0.45	0/2128
15	X	0.37	0/3179	0.56	3/4911 (0.1%)
16	Y	0.35	0/3118	0.54	1/4804 (0.0%)
All	All	0.20	0/56810	0.42	9/77855 (0.0%)

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	F	0	1
5	I	0	2
6	J	0	2
9	Q	0	1
11	U	0	1
14	W	0	1
All	All	0	8

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	J	283	PRO	CA-N-CD	-8.80	99.68	112.00
16	Y	-3	DC	P-O3'-C3'	-8.71	107.14	120.20
5	I	667	TRP	N-CA-C	-7.86	91.89	107.69
15	X	5	DT	P-O3'-C3'	-7.86	108.41	120.20
5	I	669	PRO	N-CA-C	-7.61	103.88	114.98
15	X	8	DA	P-O3'-C3'	-6.90	109.86	120.20
5	I	669	PRO	CA-C-N	5.91	132.83	121.54
5	I	669	PRO	C-N-CA	5.91	132.83	121.54
15	X	4	DA	P-O3'-C3'	-5.55	111.88	120.20

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	F	28	ARG	Sidechain
5	I	163	ARG	Sidechain
5	I	167	ARG	Sidechain
6	J	260	ARG	Sidechain
6	J	263	ARG	Sidechain
9	Q	255	ASP	Peptide
11	U	257	CYS	Peptide
14	W	170	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	833	0	890	44	0
1	E	808	0	864	24	0
2	B	755	0	780	58	0
2	F	736	0	755	24	0
3	C	779	0	816	29	0
3	G	801	0	839	22	0
4	D	646	0	687	14	0
4	H	638	0	676	24	0
5	I	6519	0	6602	173	0
6	J	1316	0	1330	56	0
7	K	3209	0	3132	65	0
8	L	893	0	880	15	0
9	M	3213	0	3331	85	0
9	O	3339	0	3425	50	0
9	Q	3368	0	3452	80	0
10	N	3185	0	3271	59	0
10	P	3287	0	3335	91	0
10	R	3293	0	3373	78	0
11	S	2925	0	2891	15	0
11	U	2802	0	2760	88	0
12	T	3146	0	3086	41	0
13	V	1617	0	1584	58	0
14	W	1542	0	1556	30	0
15	X	2829	0	1537	292	0
16	Y	2785	0	1538	289	0
17	M	27	0	12	13	0
17	N	27	0	12	11	0
17	O	27	0	12	12	0
17	P	27	0	12	27	0
17	Q	27	0	12	18	0
17	R	27	0	11	17	0
18	T	31	0	12	6	0
18	U	31	0	12	27	0
All	All	55488	0	53485	1422	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 13.

All (1422) 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)
5:I:711:GLY:H	15:X:135:DG:P	1.29	1.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:ARG:NE	16:Y:-34:DT:H5''	1.20	1.51
2:B:30:ARG:HH11	16:Y:-24:DG:C4'	1.31	1.44
2:B:89:ARG:HE	13:V:63:SER:CB	1.33	1.39
15:X:27:DG:N2	16:Y:-26:DA:H2	0.91	1.38
1:A:43:ARG:CZ	16:Y:-34:DT:H5''	1.52	1.37
16:Y:-35:DC:C2'	16:Y:-34:DT:H73	1.55	1.36
16:Y:-35:DC:N1	16:Y:-34:DT:H72	1.40	1.34
5:I:711:GLY:CA	15:X:135:DG:OP1	1.76	1.33
1:A:43:ARG:NH1	16:Y:-34:DT:C5'	1.89	1.31
15:X:74:DG:C2	16:Y:-73:DG:N2	1.97	1.31
16:Y:-35:DC:C2'	16:Y:-34:DT:C7	2.10	1.30
6:J:277:TRP:O	6:J:280:GLN:HG3	1.32	1.29
5:I:711:GLY:N	15:X:135:DG:P	2.06	1.28
10:P:47:VAL:O	17:P:501:ADP:N6	1.62	1.28
16:Y:-35:DC:C6	16:Y:-34:DT:H72	1.68	1.28
6:J:282:ARG:NH2	9:Q:139:THR:HG22	1.43	1.28
1:A:43:ARG:NE	16:Y:-34:DT:C5'	1.94	1.28
1:A:43:ARG:HH22	16:Y:-35:DC:C4'	1.43	1.28
5:I:736:ARG:NE	16:Y:-130:DG:P	2.07	1.27
15:X:21:DG:C2	16:Y:-20:DG:N2	2.00	1.27
1:A:43:ARG:NH1	16:Y:-34:DT:H5'	1.49	1.26
11:U:302:GLY:N	18:U:401:ATP:O2A	1.66	1.25
12:T:377:ARG:NH1	15:X:24:DC:OP1	1.68	1.24
1:A:43:ARG:CZ	16:Y:-34:DT:C5'	2.12	1.24
2:B:30:ARG:NH1	16:Y:-24:DG:O4'	1.71	1.24
10:P:27:HIS:CE1	17:P:501:ADP:O2'	1.89	1.24
1:A:43:ARG:HE	16:Y:-34:DT:C5'	1.48	1.23
2:B:28:ARG:NH2	16:Y:-22:DA:H5''	1.54	1.23
11:U:13:GLY:HA2	18:U:401:ATP:O1G	1.33	1.22
15:X:39:DG:C2'	15:X:40:DT:H71	1.70	1.22
1:A:18:ARG:N	15:X:30:DG:OP1	1.71	1.22
1:A:16:LYS:O	15:X:30:DG:H5''	1.36	1.21
15:X:110:DG:C2	16:Y:-109:DG:N2	2.08	1.20
12:T:20:SER:HB2	18:T:501:ATP:O3G	1.45	1.16
6:J:161:PRO:HG3	16:Y:-133:DG:OP1	1.46	1.16
13:V:49:ARG:NH2	15:X:41:DA:OP1	1.79	1.16
5:I:711:GLY:N	15:X:135:DG:OP1	1.77	1.14
1:A:43:ARG:NH2	16:Y:-35:DC:H4'	1.39	1.14
15:X:27:DG:N2	16:Y:-26:DA:C2	1.82	1.14
15:X:74:DG:C2	16:Y:-73:DG:C2	2.34	1.13
2:B:29:SER:OG	15:X:102:DC:OP1	1.66	1.12

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:74:DG:N2	16:Y:-73:DG:C2	2.17	1.12
5:I:156:ARG:NH2	16:Y:-27:DC:OP1	1.82	1.12
11:U:13:GLY:CA	18:U:401:ATP:O1G	1.97	1.12
2:B:89:ARG:HE	13:V:63:SER:HB3	1.03	1.10
3:C:81:ASP:OD2	14:W:163:LEU:HD11	1.50	1.10
2:B:89:ARG:NE	13:V:63:SER:HB3	1.65	1.10
2:B:28:ARG:NH2	16:Y:-22:DA:C5'	2.16	1.08
10:N:400:ARG:NH2	17:N:501:ADP:O3A	1.86	1.08
11:U:157:ASP:OD1	18:U:401:ATP:O3'	1.70	1.07
16:Y:-35:DC:H2''	16:Y:-34:DT:H73	1.15	1.07
15:X:39:DG:H2''	15:X:40:DT:C7	1.84	1.07
2:F:83:ARG:NH2	16:Y:-106:DG:O5'	1.87	1.06
16:Y:-35:DC:H2'	16:Y:-34:DT:C7	1.86	1.06
2:B:89:ARG:NE	13:V:63:SER:CB	2.17	1.06
4:D:23:ARG:HD2	14:W:84:PRO:O	1.55	1.06
5:I:736:ARG:NH2	16:Y:-130:DG:H3'	1.69	1.06
15:X:8:DA:H2'	15:X:9:DT:H71	1.34	1.05
13:V:49:ARG:CZ	15:X:41:DA:OP1	2.06	1.04
15:X:21:DG:C2	16:Y:-20:DG:C2	2.46	1.03
10:R:47:VAL:O	17:R:501:ADP:N6	1.91	1.03
6:J:161:PRO:CG	16:Y:-133:DG:OP1	2.06	1.03
2:B:30:ARG:NH1	16:Y:-24:DG:C4'	2.16	1.03
5:I:96:ILE:HD11	14:W:197:LEU:HD21	1.38	1.02
11:U:306:TYR:HE1	18:U:401:ATP:C2	1.76	1.02
15:X:76:DG:N2	16:Y:-75:DG:C2	2.28	1.02
16:Y:-35:DC:C1'	16:Y:-34:DT:H72	1.90	1.01
3:C:49:ARG:HD3	15:X:7:DT:P	2.00	1.01
3:G:63:ARG:NH2	16:Y:-55:DA:O3'	1.93	1.01
6:J:277:TRP:HE3	6:J:280:GLN:HE21	1.04	1.00
5:I:711:GLY:HA2	15:X:135:DG:OP1	1.59	1.00
4:D:79:LYS:HB2	15:X:100:DA:OP1	1.61	1.00
1:A:43:ARG:HB2	16:Y:-34:DT:OP1	1.60	0.99
9:O:374:ILE:HG23	17:O:501:ADP:N3	1.78	0.99
9:Q:374:ILE:HG23	17:Q:501:ADP:N3	1.77	0.99
2:F:83:ARG:CD	16:Y:-106:DG:OP1	2.12	0.98
11:U:306:TYR:CE1	18:U:401:ATP:H2	1.82	0.98
2:F:83:ARG:NH2	16:Y:-106:DG:H3'	1.79	0.97
5:I:736:ARG:NE	16:Y:-130:DG:OP2	1.97	0.97
5:I:737:ARG:NH1	15:X:132:DC:O2	1.98	0.97
3:C:69:ARG:NH1	15:X:89:DA:OP2	1.98	0.96
10:P:80:GLY:HA2	17:P:501:ADP:O3B	1.64	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:74:DG:N3	16:Y:-73:DG:N2	2.13	0.95
2:B:30:ARG:HH11	16:Y:-24:DG:H4'	1.32	0.95
6:J:282:ARG:NH2	9:Q:139:THR:CG2	2.30	0.94
5:I:711:GLY:N	15:X:135:DG:OP2	1.92	0.94
4:H:45:ARG:HG3	16:Y:-64:DC:OP1	1.66	0.94
9:M:20:HIS:HE1	17:M:501:ADP:O2'	1.49	0.94
6:J:260:ARG:HA	10:P:210:THR:HA	1.47	0.94
5:I:736:ARG:HD3	16:Y:-130:DG:O5'	1.63	0.94
15:X:6:DG:C2	15:X:7:DT:C2	2.56	0.94
11:U:306:TYR:CE1	18:U:401:ATP:C2	2.56	0.93
2:B:27:LYS:HG3	15:X:103:DT:OP1	1.67	0.93
6:J:282:ARG:HH22	9:Q:139:THR:HG22	1.29	0.93
9:M:76:LYS:NZ	17:M:501:ADP:O2B	2.00	0.93
9:O:374:ILE:HG12	17:O:501:ADP:C2	2.02	0.93
16:Y:-35:DC:H2'	16:Y:-34:DT:H73	1.39	0.92
16:Y:-35:DC:C6	16:Y:-34:DT:C7	2.52	0.92
10:P:27:HIS:CE1	17:P:501:ADP:HO2'	1.81	0.91
5:I:96:ILE:CD1	14:W:197:LEU:HD21	2.01	0.91
16:Y:-115:DT:H2'	16:Y:-114:DT:H72	1.51	0.91
2:F:83:ARG:HD2	16:Y:-106:DG:OP1	1.70	0.90
16:Y:-115:DT:C2'	16:Y:-114:DT:H72	2.01	0.90
16:Y:-5:DA:H2''	16:Y:-4:DT:H5'	1.54	0.90
15:X:110:DG:N2	16:Y:-109:DG:N2	2.18	0.90
1:E:42:ARG:HG3	15:X:111:DA:H5'	1.52	0.90
2:B:116:THR:HG22	13:V:57:VAL:CG1	2.02	0.90
5:I:737:ARG:CZ	16:Y:-132:DG:H21	1.85	0.90
15:X:39:DG:H2''	15:X:40:DT:H71	0.91	0.89
16:Y:-35:DC:N1	16:Y:-34:DT:C7	2.33	0.89
16:Y:-35:DC:H2''	16:Y:-34:DT:C7	1.85	0.89
17:N:501:ADP:O3B	9:O:357:ARG:NH1	2.05	0.89
3:C:49:ARG:HD3	15:X:6:DG:O3'	1.72	0.89
16:Y:-10:DT:H2''	16:Y:-9:DA:H5''	1.53	0.89
3:G:63:ARG:HG2	16:Y:-55:DA:H5''	1.52	0.88
10:R:362:TYR:OH	17:R:501:ADP:N7	2.06	0.88
9:Q:404:ARG:NH1	17:Q:501:ADP:O3B	2.07	0.87
1:A:12:ARG:NH1	16:Y:-29:DT:H1'	1.90	0.87
2:F:83:ARG:HH21	16:Y:-106:DG:P	1.98	0.87
10:P:47:VAL:C	17:P:501:ADP:HN62	1.81	0.87
5:I:167:ARG:HB3	15:X:33:DT:OP1	1.75	0.87
11:U:215:LYS:O	11:U:254:ARG:NH2	2.07	0.87
15:X:76:DG:C2	16:Y:-75:DG:C2	2.63	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:O:270:GLU:OE2	9:O:274:LYS:NZ	2.09	0.86
2:F:83:ARG:HH22	16:Y:-106:DG:C3'	1.88	0.86
15:X:98:DA:C2	16:Y:-97:DA:H2	1.93	0.86
5:I:730:GLN:NE2	15:X:56:DT:OP1	2.10	0.85
5:I:737:ARG:CZ	16:Y:-132:DG:N2	2.40	0.85
2:B:37:TYR:OH	16:Y:-25:DG:H5''	1.76	0.85
15:X:125:DC:H2''	15:X:126:DT:H71	1.59	0.84
16:Y:-35:DC:C2'	16:Y:-34:DT:H72	1.92	0.84
2:F:83:ARG:HD3	16:Y:-106:DG:OP1	1.76	0.84
12:T:20:SER:CB	18:T:501:ATP:O3G	2.25	0.84
4:D:23:ARG:CD	14:W:84:PRO:O	2.26	0.83
6:J:161:PRO:CB	16:Y:-133:DG:OP1	2.25	0.83
9:M:20:HIS:CE1	17:M:501:ADP:O2'	2.32	0.83
9:M:76:LYS:HZ3	17:M:501:ADP:PB	2.02	0.83
5:I:711:GLY:CA	15:X:135:DG:P	2.61	0.83
15:X:95:DG:C6	15:X:96:DC:N4	2.47	0.82
11:U:283:MET:SD	11:U:290:ARG:NH2	2.53	0.82
3:G:63:ARG:CZ	16:Y:-55:DA:H4'	2.09	0.82
5:I:711:GLY:C	15:X:135:DG:OP1	2.23	0.82
16:Y:-48:DA:C2	16:Y:-47:DG:C2	2.68	0.82
6:J:185:ARG:NH2	6:J:188:GLU:OE1	2.13	0.81
2:B:89:ARG:CZ	13:V:63:SER:HB3	2.09	0.81
15:X:98:DA:C2	16:Y:-97:DA:C2	2.69	0.81
15:X:21:DG:N1	16:Y:-20:DG:C2	2.49	0.81
10:N:400:ARG:NH2	17:N:501:ADP:PA	2.53	0.81
10:P:27:HIS:NE2	17:P:501:ADP:O2'	2.01	0.81
2:B:29:SER:HG	15:X:102:DC:P	2.04	0.80
15:X:6:DG:N2	15:X:7:DT:C2	2.50	0.80
9:M:76:LYS:NZ	17:M:501:ADP:PB	2.55	0.80
7:K:15:ILE:O	7:K:21:ASN:ND2	2.14	0.80
5:I:96:ILE:HD11	14:W:197:LEU:CD2	2.12	0.80
6:J:277:TRP:HE3	6:J:280:GLN:NE2	1.79	0.80
10:R:47:VAL:H	17:R:501:ADP:HN62	1.29	0.80
3:C:81:ASP:OD2	14:W:163:LEU:CD1	2.28	0.79
7:K:134:ARG:NH2	7:K:138:ASP:OD1	2.16	0.79
8:L:98:GLY:O	8:L:103:THR:OG1	2.00	0.79
15:X:21:DG:N3	16:Y:-20:DG:N2	2.29	0.79
16:Y:-10:DT:H2''	16:Y:-9:DA:C5'	2.11	0.79
10:R:313:ASN:O	10:R:353:ARG:NH2	2.15	0.79
5:I:166:VAL:HG21	11:U:168:GLY:HA3	1.63	0.79
15:X:98:DA:N1	16:Y:-97:DA:C2	2.50	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:400:ARG:HH22	17:N:501:ADP:PA	2.05	0.79
5:I:96:ILE:CG1	14:W:197:LEU:HD21	2.12	0.79
15:X:34:DA:C6	15:X:35:DG:C6	2.72	0.78
10:R:45:GLY:O	17:R:501:ADP:H2	1.66	0.78
15:X:48:DT:C6	15:X:49:DT:H72	2.19	0.78
9:M:322:SER:OG	10:R:21:ARG:O	2.00	0.78
15:X:97:DT:O2	16:Y:-96:DG:N2	2.17	0.78
2:B:28:ARG:CZ	16:Y:-22:DA:H5''	2.14	0.77
15:X:78:DA:H2''	15:X:79:DC:C5	2.20	0.77
2:B:116:THR:HG22	13:V:57:VAL:HG11	1.65	0.77
3:C:49:ARG:NH2	15:X:6:DG:O3'	2.18	0.77
6:J:277:TRP:O	6:J:280:GLN:CG	2.23	0.77
2:B:112:THR:CG2	13:V:61:LEU:HD21	2.15	0.76
6:J:282:ARG:HH21	9:Q:139:THR:HG22	1.44	0.76
5:I:96:ILE:HG12	14:W:197:LEU:CD2	2.15	0.76
10:P:27:HIS:HE1	17:P:501:ADP:O2'	1.62	0.76
5:I:736:ARG:CD	16:Y:-130:DG:O5'	2.28	0.76
15:X:21:DG:N2	16:Y:-20:DG:C2	2.52	0.76
15:X:125:DC:H2''	15:X:126:DT:C7	2.14	0.76
15:X:108:DA:H2''	15:X:109:DC:C5	2.21	0.76
16:Y:-10:DT:C2'	16:Y:-9:DA:H5''	2.16	0.76
5:I:1945:HIS:NE2	5:I:1947:THR:OG1	2.19	0.76
6:J:260:ARG:CA	10:P:210:THR:HA	2.17	0.75
3:C:49:ARG:HD3	15:X:7:DT:OP1	1.84	0.75
6:J:217:VAL:HA	10:P:144:GLU:HG3	1.67	0.75
5:I:906:LEU:HD13	5:I:2068:MET:HE1	1.67	0.75
2:F:83:ARG:HH22	16:Y:-106:DG:C2'	1.99	0.75
10:N:400:ARG:NH2	17:N:501:ADP:O5'	2.19	0.75
9:O:366:TYR:OH	17:O:501:ADP:N7	2.18	0.75
15:X:27:DG:H2''	15:X:28:DG:H5''	1.68	0.75
15:X:6:DG:N2	15:X:7:DT:O2	2.20	0.75
15:X:44:DC:H2''	15:X:45:DC:C5	2.21	0.75
9:M:357:ARG:O	10:R:404:GLN:NE2	2.20	0.75
10:R:114:SER:OG	10:R:117:GLU:OE1	2.05	0.75
5:I:736:ARG:HH22	16:Y:-130:DG:H3'	1.51	0.74
10:P:149:ARG:NH2	10:P:150:PRO:O	2.19	0.74
5:I:159:ARG:O	5:I:163:ARG:HB2	1.86	0.74
10:P:82:GLY:HA2	17:P:501:ADP:O1A	1.87	0.74
1:A:63:ILE:CG2	2:B:59:MET:HE1	2.18	0.74
10:P:194:THR:OG1	10:P:203:SER:OG	2.05	0.74
16:Y:-35:DC:C1'	16:Y:-34:DT:C7	2.59	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:21:DG:N1	16:Y:-20:DG:N1	2.36	0.73
10:P:63:ILE:HG12	10:P:323:VAL:HG21	1.69	0.73
1:A:16:LYS:O	15:X:30:DG:C5'	2.27	0.73
3:C:49:ARG:NH2	15:X:6:DG:H4'	2.04	0.73
5:I:711:GLY:HA2	15:X:135:DG:P	2.26	0.73
16:Y:-115:DT:C6	16:Y:-114:DT:H72	2.23	0.73
5:I:736:ARG:CZ	16:Y:-130:DG:O5'	2.36	0.73
9:O:278:GLU:OE1	9:O:278:GLU:N	2.22	0.73
9:M:76:LYS:HG2	17:M:501:ADP:O3B	1.88	0.73
2:B:31:LYS:O	16:Y:-23:DC:OP1	2.06	0.73
2:F:83:ARG:NH2	16:Y:-106:DG:C3'	2.46	0.73
15:X:39:DG:C2'	15:X:40:DT:C7	2.54	0.73
9:Q:20:HIS:CE1	17:Q:501:ADP:O2'	2.42	0.72
2:B:39:TYR:HH	15:X:19:DA:P	2.13	0.71
12:T:339:ASP:OD2	13:V:227:LYS:NZ	2.17	0.71
2:B:89:ARG:NH1	13:V:63:SER:HB3	2.04	0.71
11:U:302:GLY:CA	18:U:401:ATP:O2A	2.38	0.71
9:Q:211:THR:HG21	9:Q:214:ASP:HB2	1.70	0.71
4:D:79:LYS:CB	15:X:100:DA:OP1	2.38	0.71
9:M:304:VAL:HG21	9:M:329:PHE:HB3	1.72	0.71
1:A:43:ARG:HH22	16:Y:-35:DC:H4'	0.60	0.71
10:N:80:GLY:HA2	17:N:501:ADP:O3A	1.89	0.71
5:I:96:ILE:CD1	14:W:197:LEU:CD2	2.69	0.70
5:I:881:THR:O	5:I:884:THR:OG1	2.08	0.70
15:X:125:DC:H2''	15:X:126:DT:C5	2.26	0.70
10:P:142:VAL:HG22	10:P:161:LEU:HD11	1.72	0.70
9:Q:255:ASP:O	9:Q:257:LEU:N	2.24	0.70
10:R:209:PHE:O	10:R:210:THR:OG1	2.09	0.70
3:G:63:ARG:CG	16:Y:-55:DA:H5''	2.20	0.70
2:F:30:ARG:HD3	15:X:122:DG:H5'	1.72	0.70
3:G:64:LYS:HB3	16:Y:-54:DC:OP2	1.92	0.70
15:X:133:DC:H2''	15:X:134:DG:N7	2.07	0.70
5:I:166:VAL:CG2	11:U:168:GLY:HA3	2.21	0.70
11:S:324:THR:HG21	15:X:117:DT:H73	1.72	0.70
16:Y:-115:DT:C2'	16:Y:-114:DT:C7	2.70	0.70
5:I:736:ARG:CZ	16:Y:-130:DG:P	2.79	0.70
1:A:43:ARG:NH1	16:Y:-35:DC:C1'	2.50	0.69
3:C:49:ARG:CZ	15:X:6:DG:H4'	2.22	0.69
5:I:247:LEU:HD11	5:I:631:THR:HG22	1.74	0.69
7:K:265:GLU:OE1	7:K:265:GLU:N	2.25	0.69
15:X:74:DG:N2	16:Y:-73:DG:N3	2.40	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:74:DG:N1	16:Y:-73:DG:N1	2.41	0.69
5:I:96:ILE:CG1	14:W:197:LEU:CD2	2.70	0.69
16:Y:-30:DC:H2'	16:Y:-29:DT:H72	1.75	0.69
15:X:106:DC:C6	15:X:107:DT:H72	2.27	0.69
1:E:77:ARG:HH11	15:X:129:DG:H4'	1.58	0.68
10:R:370:ILE:HD11	10:R:399:LEU:HD11	1.76	0.68
15:X:76:DG:C2	16:Y:-75:DG:N1	2.61	0.68
11:S:156:GLY:O	11:S:303:THR:OG1	2.11	0.68
9:M:117:ARG:NH2	9:M:244:ASP:OD2	2.26	0.68
9:O:374:ILE:CG2	17:O:501:ADP:N3	2.56	0.68
9:Q:374:ILE:HG23	17:Q:501:ADP:C2	2.28	0.68
12:T:173:GLY:O	12:T:354:ASN:ND2	2.27	0.68
15:X:116:DT:H2'	15:X:117:DT:H72	1.74	0.68
10:R:366:ASP:O	10:R:370:ILE:HG23	1.92	0.68
12:T:21:TYR:CD2	18:T:501:ATP:H5'2	2.28	0.68
13:V:250:GLU:OE1	13:V:253:LYS:NZ	2.22	0.68
15:X:118:DG:N2	16:Y:-117:DA:C2	2.60	0.68
11:U:250:ILE:HG23	11:U:253:GLU:OE2	1.93	0.68
9:M:28:GLU:N	9:M:28:GLU:OE1	2.27	0.67
2:B:89:ARG:HH11	13:V:63:SER:HB3	1.60	0.67
5:I:730:GLN:CD	15:X:56:DT:OP1	2.37	0.67
9:M:186:GLU:OE2	9:M:205:ARG:NH2	2.27	0.67
9:O:49:CYS:O	9:O:53:VAL:HG13	1.95	0.67
12:T:395:ILE:O	12:T:399:ILE:HG23	1.94	0.67
15:X:74:DG:N2	16:Y:-73:DG:N2	2.28	0.67
15:X:76:DG:C2	16:Y:-75:DG:N2	2.63	0.67
1:A:21:ARG:NH1	15:X:31:DA:OP1	2.28	0.67
10:N:362:TYR:OH	17:N:501:ADP:N6	2.18	0.67
12:T:184:ASP:OD2	13:V:170:ARG:NH2	2.28	0.67
10:R:47:VAL:H	17:R:501:ADP:N6	1.93	0.67
2:F:83:ARG:HH22	16:Y:-106:DG:H2'	1.58	0.67
5:I:674:VAL:HG12	5:I:746:ASP:CB	2.25	0.67
5:I:736:ARG:NE	16:Y:-130:DG:O5'	2.28	0.67
9:Q:20:HIS:HE1	17:Q:501:ADP:O2'	1.79	0.66
15:X:21:DG:N1	16:Y:-20:DG:N2	2.43	0.66
14:W:29:ASN:OD1	14:W:116:HIS:NE2	2.29	0.66
5:I:669:PRO:HB2	5:I:740:TRP:CZ3	2.30	0.66
5:I:2145:ASP:OD2	5:I:2184:ARG:NH1	2.29	0.66
10:P:80:GLY:CA	17:P:501:ADP:O3B	2.41	0.66
11:S:188:TYR:HB2	11:S:267:LEU:HD21	1.78	0.66
5:I:2118:THR:HG21	5:I:2139:ASP:OD2	1.96	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:46:VAL:HG21	16:Y:-63:DG:H3'	1.77	0.66
10:N:384:GLU:OE1	10:N:384:GLU:N	2.28	0.66
15:X:116:DT:C2'	15:X:117:DT:H72	2.26	0.66
5:I:710:GLN:HA	15:X:135:DG:OP2	1.95	0.66
12:T:10:GLU:OE1	12:T:11:VAL:N	2.28	0.66
11:U:305:MET:HB2	18:U:401:ATP:C6	2.30	0.66
3:C:83:ARG:NH2	16:Y:-96:DG:H4'	2.11	0.66
15:X:21:DG:H2'	15:X:22:DT:H71	1.78	0.66
15:X:98:DA:N1	16:Y:-97:DA:H2	1.92	0.66
2:B:31:LYS:N	16:Y:-23:DC:OP1	2.29	0.65
4:D:45:ARG:CZ	15:X:79:DC:H4'	2.26	0.65
3:G:63:ARG:NE	16:Y:-55:DA:H4'	2.11	0.65
5:I:161:VAL:O	5:I:165:VAL:HG23	1.96	0.65
2:B:112:THR:HG21	13:V:61:LEU:CD2	2.27	0.65
10:P:271:GLU:O	10:P:275:GLN:N	2.24	0.65
16:Y:-5:DA:C2'	16:Y:-4:DT:H5'	2.25	0.65
10:P:47:VAL:H	17:P:501:ADP:N6	1.93	0.65
12:T:222:MET:HE3	12:T:239:ARG:HH22	1.62	0.65
15:X:48:DT:C2'	15:X:49:DT:H72	2.27	0.65
10:P:47:VAL:H	17:P:501:ADP:HN62	1.44	0.65
16:Y:-121:DG:H2''	16:Y:-120:DC:C5	2.31	0.65
1:E:43:VAL:N	15:X:111:DA:OP1	2.28	0.65
5:I:736:ARG:CZ	16:Y:-130:DG:OP2	2.44	0.65
10:N:121:GLN:OE1	10:N:273:ARG:NH1	2.30	0.65
15:X:107:DT:H2''	15:X:108:DA:N7	2.12	0.65
4:H:45:ARG:CG	16:Y:-64:DC:OP1	2.42	0.65
6:J:283:PRO:HD2	6:J:283:PRO:O	1.96	0.65
2:B:112:THR:CG2	13:V:61:LEU:CD2	2.76	0.64
2:B:115:VAL:HG11	13:V:60:LEU:CD1	2.27	0.64
3:C:51:ILE:HD11	4:D:44:LYS:HA	1.78	0.64
10:R:247:ILE:HG12	10:R:272:VAL:HG22	1.79	0.64
15:X:110:DG:N2	16:Y:-109:DG:C2	2.64	0.64
15:X:128:DG:N2	16:Y:-127:DG:N2	2.45	0.64
5:I:162:ALA:O	5:I:166:VAL:HG23	1.97	0.64
9:O:135:VAL:HG12	9:O:189:ASP:O	1.97	0.64
1:E:92:GLU:OE1	1:E:92:GLU:N	2.31	0.64
5:I:881:THR:HG22	5:I:889:SER:HB3	1.79	0.64
15:X:112:DC:C4	15:X:113:DC:N4	2.65	0.64
2:F:28:ARG:HD3	15:X:122:DG:H4'	1.79	0.64
4:H:79:LYS:N	16:Y:-45:DG:OP1	2.31	0.64
10:P:80:GLY:HA2	17:P:501:ADP:PB	2.37	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:36:ARG:NH1	15:X:59:DA:OP1	2.30	0.64
11:U:162:THR:HG21	11:U:277:THR:HG22	1.80	0.64
5:I:927:SER:HB3	5:I:930:LEU:HD23	1.80	0.64
16:Y:-115:DT:H2'	16:Y:-114:DT:C7	2.26	0.64
15:X:42:DA:H2''	15:X:43:DT:H5''	1.79	0.64
5:I:730:GLN:OE1	15:X:56:DT:OP1	2.15	0.64
12:T:190:GLN:OE1	12:T:190:GLN:N	2.31	0.64
16:Y:-13:DA:H2''	16:Y:-12:DT:H5'	1.78	0.64
3:C:49:ARG:CG	15:X:7:DT:OP1	2.46	0.64
10:P:362:TYR:OH	17:P:501:ADP:N7	2.31	0.64
7:K:85:GLN:O	7:K:87:ASP:N	2.31	0.63
9:M:415:LEU:HD21	10:N:61:GLU:HB2	1.79	0.63
10:N:180:GLU:OE2	10:N:184:LYS:NZ	2.27	0.63
9:M:108:LYS:NZ	9:M:310:GLU:OE2	2.17	0.63
10:R:117:GLU:OE1	10:R:117:GLU:N	2.31	0.63
11:U:157:ASP:HB2	18:U:401:ATP:H4'	1.81	0.63
5:I:737:ARG:HG2	16:Y:-131:DT:H4'	1.81	0.63
10:R:305:ASP:OD1	10:R:306:ILE:N	2.30	0.63
11:U:125:GLU:O	13:V:91:LYS:NZ	2.32	0.63
5:I:1984:GLU:OE2	9:O:252:GLY:N	2.30	0.63
7:K:5:VAL:HG21	7:K:363:GLY:HA3	1.80	0.63
9:Q:374:ILE:HG12	17:Q:501:ADP:N1	2.13	0.63
10:R:268:ILE:O	10:R:272:VAL:HG23	1.97	0.63
3:G:83:ARG:HH21	16:Y:-46:DG:H4'	1.64	0.63
9:M:39:LEU:HA	17:M:501:ADP:N1	2.14	0.63
11:U:152:VAL:HG22	11:U:298:VAL:HB	1.79	0.63
10:R:370:ILE:HD11	10:R:399:LEU:HD21	1.78	0.63
16:Y:-132:DG:H2''	16:Y:-131:DT:C6	2.34	0.63
16:Y:-65:DC:H2''	16:Y:-64:DC:C6	2.33	0.63
3:C:65:LEU:HB2	15:X:90:DG:OP2	1.99	0.63
5:I:2068:MET:HB3	5:I:2071:MET:HB2	1.79	0.63
15:X:84:DG:H2'	15:X:85:DT:H72	1.81	0.63
6:J:299:ALA:HA	6:J:311:ALA:HB2	1.81	0.63
7:K:284:PRO:O	7:K:285:SER:OG	2.11	0.63
5:I:91:LYS:N	14:W:197:LEU:HD11	2.14	0.62
9:M:438:TYR:N	10:N:356:ILE:O	2.32	0.62
9:Q:65:ALA:HB3	9:Q:358:VAL:HG12	1.81	0.62
10:P:267:GLU:OE1	10:P:267:GLU:N	2.31	0.62
12:T:21:TYR:CG	18:T:501:ATP:H5'2	2.34	0.62
12:T:24:ARG:NH1	18:T:501:ATP:O1A	2.32	0.62
14:W:190:THR:HG22	14:W:194:ILE:HD12	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:116:THR:HG22	13:V:57:VAL:HG13	1.81	0.62
9:M:428:GLU:N	9:M:428:GLU:OE1	2.32	0.62
5:I:91:LYS:HG2	5:I:96:ILE:HD11	1.81	0.62
9:Q:212:GLU:N	9:Q:212:GLU:OE1	2.31	0.62
16:Y:-96:DG:C8	16:Y:-95:DC:C5	2.87	0.62
9:Q:206:CYS:SG	9:Q:208:THR:HG22	2.39	0.62
2:B:116:THR:CG2	13:V:57:VAL:HG13	2.30	0.62
10:R:370:ILE:CD1	10:R:399:LEU:HD21	2.30	0.62
10:P:400:ARG:NH1	17:P:501:ADP:O2A	2.33	0.62
3:G:66:PRO:HD3	16:Y:-55:DA:O5'	1.99	0.62
10:N:196:ASP:O	10:N:200:GLY:N	2.33	0.62
1:E:76:THR:O	1:E:76:THR:OG1	2.18	0.62
10:R:45:GLY:O	17:R:501:ADP:C2	2.51	0.61
10:R:223:LYS:O	10:R:225:VAL:N	2.33	0.61
3:G:97:GLU:O	3:G:101:VAL:HG23	2.01	0.61
6:J:219:VAL:HB	6:J:261:CYS:HB3	1.82	0.61
9:Q:404:ARG:NH1	17:Q:501:ADP:O2A	2.33	0.61
10:P:47:VAL:N	17:P:501:ADP:N1	2.48	0.61
5:I:175:GLU:O	5:I:179:LYS:N	2.33	0.61
6:J:277:TRP:CE3	6:J:280:GLN:NE2	2.60	0.61
9:M:189:ASP:OD2	9:M:202:ARG:NH1	2.33	0.61
9:M:313:THR:HG21	10:R:303:MET:HG3	1.83	0.61
10:R:136:GLU:N	10:R:136:GLU:OE1	2.34	0.61
11:U:157:ASP:HB2	18:U:401:ATP:C5'	2.30	0.61
15:X:114:DA:C2	16:Y:-113:DG:N2	2.69	0.61
16:Y:-72:DC:C6	16:Y:-71:DT:H72	2.35	0.61
2:B:29:SER:CB	15:X:102:DC:OP1	2.48	0.61
9:M:270:GLU:N	9:M:270:GLU:OE1	2.33	0.61
10:R:362:TYR:CZ	17:R:501:ADP:N7	2.67	0.61
15:X:122:DG:C2	16:Y:-121:DG:N2	2.69	0.61
16:Y:-100:DT:H2''	16:Y:-99:DC:C5	2.36	0.61
3:C:49:ARG:CD	15:X:7:DT:OP1	2.48	0.61
1:E:20:ARG:CG	2:F:121:SER:OG	2.48	0.61
2:F:87:THR:OG1	2:F:90:GLU:OE1	2.19	0.61
16:Y:-79:DG:H2''	16:Y:-78:DT:C5	2.36	0.61
5:I:1973:ILE:HG23	5:I:1977:ILE:HD12	1.82	0.61
6:J:301:TYR:CE1	10:R:168:MET:HE1	2.36	0.61
9:O:97:VAL:HG11	10:P:311:PHE:HA	1.82	0.61
9:Q:374:ILE:HG12	17:Q:501:ADP:C2	2.36	0.61
15:X:4:DA:N6	16:Y:-5:DA:N6	2.48	0.61
1:A:43:ARG:NH1	16:Y:-35:DC:H1'	2.16	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:T:182:VAL:HG22	12:T:187:VAL:HG22	1.81	0.60
16:Y:-13:DA:H2''	16:Y:-12:DT:C5'	2.31	0.60
5:I:156:ARG:HG3	16:Y:-28:DC:OP1	2.00	0.60
9:O:339:ARG:NH1	10:P:307:GLU:OE2	2.33	0.60
15:X:76:DG:H2''	15:X:77:DT:C6	2.36	0.60
15:X:80:DG:C2	16:Y:-79:DG:N2	2.69	0.60
16:Y:-132:DG:H2''	16:Y:-131:DT:C5	2.35	0.60
9:Q:374:ILE:CG2	17:Q:501:ADP:N3	2.59	0.60
15:X:110:DG:C2	16:Y:-109:DG:C2	2.88	0.60
5:I:164:LYS:O	5:I:168:MET:HG2	2.01	0.60
5:I:957:ARG:N	5:I:1921:GLU:OE2	2.32	0.60
8:L:135:TYR:OH	10:N:169:GLU:O	2.18	0.60
10:P:47:VAL:N	17:P:501:ADP:HN62	1.99	0.60
1:A:60:THR:HG22	2:B:59:MET:HE3	1.83	0.60
4:H:45:ARG:HA	16:Y:-64:DC:OP1	2.00	0.60
5:I:166:VAL:O	5:I:169:VAL:HB	2.01	0.60
5:I:736:ARG:NH2	16:Y:-130:DG:O5'	2.35	0.60
12:T:69:TYR:OH	12:T:79:ARG:NH2	2.34	0.60
4:H:48:GLY:HA3	16:Y:-65:DC:OP2	2.01	0.60
15:X:64:DG:C2	15:X:65:DG:N2	2.69	0.60
4:D:75:HIS:O	2:F:89:ARG:NH2	2.33	0.60
7:K:148:VAL:HB	7:K:319:LEU:HD23	1.82	0.60
9:Q:404:ARG:CZ	17:Q:501:ADP:O3B	2.50	0.60
15:X:10:DA:C8	15:X:11:DT:C7	2.85	0.60
16:Y:-96:DG:C8	16:Y:-95:DC:H5	2.19	0.60
16:Y:-124:DG:C4	16:Y:-123:DC:C5	2.90	0.60
10:N:74:LEU:HD23	10:N:75:ILE:N	2.17	0.60
13:V:141:GLN:N	13:V:141:GLN:OE1	2.34	0.60
10:P:31:LEU:O	10:P:44:GLN:NE2	2.35	0.59
9:Q:190:VAL:HG11	9:Q:221:VAL:HG11	1.84	0.59
11:U:138:ALA:CB	11:U:163:VAL:HG21	2.32	0.59
14:W:38:ARG:NH2	14:W:41:ASP:OD2	2.36	0.59
2:B:39:TYR:CE2	15:X:19:DA:OP2	2.55	0.59
7:K:201:VAL:O	7:K:205:VAL:HG23	2.03	0.59
12:T:73:ASN:ND2	11:U:277:THR:HG23	2.17	0.59
15:X:44:DC:H2''	15:X:45:DC:H5	1.63	0.59
2:B:30:ARG:NH1	16:Y:-24:DG:H4'	2.03	0.59
4:H:68:ASP:OD2	4:H:93:GLN:NE2	2.34	0.59
5:I:151:PHE:CD2	12:T:399:ILE:HG22	2.38	0.59
5:I:674:VAL:HG12	5:I:746:ASP:HB3	1.83	0.59
15:X:8:DA:H61	16:Y:-8:DT:H3	1.50	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-2:DC:H2''	16:Y:-1:DT:C5	2.38	0.59
10:P:381:GLU:N	10:P:381:GLU:OE1	2.34	0.59
10:R:370:ILE:HD12	17:R:501:ADP:N9	2.17	0.59
5:I:181:GLU:N	5:I:181:GLU:OE1	2.36	0.59
7:K:299:VAL:O	7:K:303:GLN:NE2	2.36	0.59
15:X:25:DC:H2''	15:X:26:DT:C5	2.37	0.59
7:K:60:PHE:CZ	7:K:65:LEU:HD13	2.38	0.59
12:T:333:VAL:HG11	12:T:345:TYR:CZ	2.38	0.59
5:I:157:TRP:CZ2	5:I:161:VAL:HG21	2.38	0.59
5:I:174:GLU:OE1	15:X:34:DA:OP2	2.20	0.59
10:P:349:ASP:OD1	10:P:353:ARG:NH2	2.32	0.59
12:T:124:GLU:OE2	12:T:133:ARG:NH2	2.35	0.59
16:Y:-34:DT:H5'	16:Y:-34:DT:H6	1.67	0.59
9:M:386:ILE:HG22	9:M:425:ILE:HB	1.85	0.59
16:Y:-67:DC:H2''	16:Y:-66:DC:C5	2.38	0.59
2:F:83:ARG:CZ	16:Y:-106:DG:H3'	2.32	0.58
7:K:289:ILE:HG22	8:L:32:LEU:HD13	1.84	0.58
9:Q:123:ARG:HE	9:Q:235:ILE:HD11	1.68	0.58
13:V:176:ASP:OD2	13:V:177:ARG:NH2	2.36	0.58
1:A:59:LEU:HD12	2:B:66:ILE:HG21	1.84	0.58
7:K:380:GLU:OE1	7:K:380:GLU:N	2.36	0.58
10:P:68:ILE:HD13	10:P:68:ILE:H	1.69	0.58
1:A:66:LEU:HD12	1:A:94:LEU:HD12	1.86	0.58
9:Q:451:GLN:N	9:Q:451:GLN:OE1	2.35	0.58
11:U:157:ASP:HB2	18:U:401:ATP:C4'	2.34	0.58
3:C:46:VAL:HB	15:X:81:DT:OP1	2.03	0.58
6:J:206:LYS:C	6:J:208:PRO:HD3	2.28	0.58
10:P:21:ARG:NH1	9:Q:323:ILE:O	2.36	0.58
10:P:145:ILE:HG23	10:P:161:LEU:HD13	1.86	0.58
13:V:190:ASP:OD1	13:V:191:LEU:N	2.36	0.58
16:Y:-54:DC:C2	16:Y:-53:DC:C5	2.92	0.58
16:Y:-9:DA:H2''	16:Y:-8:DT:C6	2.39	0.58
5:I:669:PRO:HB2	5:I:740:TRP:CE3	2.38	0.58
10:P:362:TYR:CZ	17:P:501:ADP:N7	2.71	0.58
11:U:111:ASN:ND2	11:U:115:ASN:OD1	2.37	0.58
15:X:54:DG:H2'	15:X:55:DT:H71	1.86	0.58
16:Y:-38:DT:H2''	16:Y:-37:DC:C5	2.39	0.58
2:B:39:TYR:OH	15:X:19:DA:OP2	2.22	0.58
11:U:306:TYR:HB2	11:U:309:ILE:HG23	1.85	0.58
10:R:237:GLU:OE2	10:R:239:VAL:HG13	2.04	0.57
13:V:51:GLU:HB3	13:V:58:TYR:CZ	2.39	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:55:VAL:HG21	2:B:95:VAL:HG21	1.86	0.57
2:B:89:ARG:HE	13:V:63:SER:HB2	1.53	0.57
2:B:116:THR:CG2	13:V:57:VAL:CG1	2.78	0.57
3:C:97:GLU:O	3:C:101:VAL:HG23	2.04	0.57
3:G:65:LEU:HD23	16:Y:-55:DA:OP2	2.05	0.57
5:I:906:LEU:HD13	5:I:2068:MET:CE	2.33	0.57
15:X:74:DG:N1	16:Y:-73:DG:C2	2.71	0.57
4:H:36:ARG:HH22	15:X:59:DA:P	2.27	0.57
10:P:47:VAL:HG23	17:P:501:ADP:N1	2.19	0.57
13:V:105:ARG:NH1	13:V:107:ASP:OD2	2.38	0.57
15:X:125:DC:H2''	15:X:126:DT:C6	2.39	0.57
3:C:82:LEU:HD22	4:D:81:VAL:HG23	1.87	0.57
2:F:90:GLU:OE1	2:F:90:GLU:N	2.37	0.57
10:R:204:LYS:HB3	10:R:205:LEU:HD22	1.87	0.57
13:V:50:PRO:C	13:V:51:GLU:HG3	2.28	0.57
1:E:42:ARG:HG3	15:X:111:DA:C5'	2.30	0.57
5:I:2176:ILE:HA	5:I:2179:LYS:HD2	1.85	0.57
10:N:97:ASP:OD1	10:N:130:ARG:NH1	2.37	0.57
10:P:142:VAL:HG12	10:P:189:ALA:HA	1.86	0.57
9:Q:293:GLU:OE1	9:Q:293:GLU:N	2.37	0.57
11:U:149:THR:HG21	11:U:293:LEU:HD22	1.86	0.57
11:U:292:ASP:N	11:U:292:ASP:OD1	2.37	0.57
10:P:196:ASP:O	10:P:200:GLY:N	2.33	0.57
2:B:89:ARG:NE	13:V:63:SER:OG	2.36	0.57
5:I:705:ARG:NH2	5:I:730:GLN:OE1	2.36	0.57
7:K:158:VAL:HG13	7:K:170:ILE:HD13	1.87	0.57
5:I:2110:ARG:NH2	9:O:214:ASP:O	2.38	0.57
9:M:47:GLU:O	9:M:51:VAL:HG23	2.04	0.57
12:T:414:GLN:N	12:T:414:GLN:OE1	2.38	0.57
10:R:49:GLN:NE2	10:R:360:THR:O	2.35	0.56
10:R:249:VAL:C	10:R:250:ILE:HD13	2.30	0.56
5:I:737:ARG:HH22	15:X:133:DC:C1'	2.18	0.56
9:M:55:LEU:HD21	9:M:61:MET:HB3	1.86	0.56
11:U:93:GLU:OE1	11:U:93:GLU:N	2.36	0.56
11:U:149:THR:HG21	11:U:293:LEU:CD2	2.36	0.56
16:Y:-35:DC:C2	16:Y:-34:DT:H72	2.33	0.56
5:I:674:VAL:HG12	5:I:746:ASP:HB2	1.88	0.56
9:O:235:ILE:HG23	9:O:235:ILE:O	2.05	0.56
1:E:20:ARG:HG2	2:F:121:SER:OG	2.05	0.56
5:I:1980:MET:HE2	5:I:1980:MET:HA	1.87	0.56
7:K:182:ASN:ND2	8:L:37:ASN:O	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:L:19:LEU:CD2	8:L:150:LEU:HD22	2.35	0.56
9:O:53:VAL:HG12	9:O:83:ILE:HG23	1.88	0.56
13:V:50:PRO:O	13:V:51:GLU:HG3	2.06	0.56
16:Y:-7:DA:H1'	16:Y:-6:DC:H5''	1.86	0.56
7:K:114:PHE:O	7:K:379:ARG:NH2	2.38	0.56
9:Q:378:ARG:HG3	9:Q:407:VAL:HG21	1.87	0.56
4:H:84:MET:HE3	4:H:84:MET:HA	1.87	0.56
5:I:928:LEU:HD13	5:I:928:LEU:N	2.21	0.56
1:E:88:ARG:NH1	1:E:100:VAL:O	2.36	0.56
9:M:53:VAL:HA	9:M:56:ILE:HD12	1.87	0.56
3:C:41:TYR:OH	15:X:6:DG:H5'	2.05	0.56
3:G:69:ARG:NH1	16:Y:-55:DA:OP2	2.39	0.56
5:I:129:GLU:N	5:I:129:GLU:OE1	2.37	0.56
9:Q:129:GLU:OE2	9:Q:196:ASN:N	2.36	0.56
10:R:83:LYS:N	17:R:501:ADP:O3B	2.39	0.56
10:R:317:GLU:OE2	10:R:353:ARG:NH2	2.38	0.56
5:I:246:LEU:O	5:I:246:LEU:HD23	2.06	0.55
10:P:47:VAL:CG2	10:P:373:ILE:HD12	2.36	0.55
14:W:137:GLU:HG2	14:W:170:THR:HB	1.88	0.55
15:X:128:DG:C2	16:Y:-127:DG:N2	2.74	0.55
16:Y:-11:DA:H2''	16:Y:-10:DT:H5'	1.86	0.55
5:I:229:LEU:O	5:I:233:LEU:HD23	2.05	0.55
5:I:737:ARG:NH1	16:Y:-132:DG:N2	2.53	0.55
5:I:902:ASN:ND2	5:I:2137:ASP:OD2	2.39	0.55
9:O:378:ARG:NH2	9:O:382:GLU:OE2	2.38	0.55
2:F:83:ARG:NH2	16:Y:-106:DG:C5'	2.67	0.55
3:G:106:ASP:OD2	3:G:131:ARG:NE	2.40	0.55
8:L:128:CYS:N	8:L:133:ALA:O	2.38	0.55
10:N:362:TYR:CE2	17:N:501:ADP:N7	2.75	0.55
9:O:55:LEU:HD12	9:O:55:LEU:O	2.07	0.55
16:Y:-100:DT:H2''	16:Y:-99:DC:C6	2.42	0.55
5:I:2068:MET:CB	5:I:2071:MET:HB2	2.36	0.55
9:Q:235:ILE:HG23	9:Q:235:ILE:O	2.06	0.55
2:B:39:TYR:OH	15:X:19:DA:P	2.65	0.55
7:K:41:THR:HG22	7:K:42:ALA:H	1.72	0.55
9:O:112:LEU:HD21	9:O:315:LEU:CD1	2.36	0.55
3:G:108:ASN:HB2	4:H:43:VAL:HG22	1.88	0.55
5:I:169:VAL:HG21	11:U:143:TYR:CD1	2.41	0.55
15:X:10:DA:C8	15:X:11:DT:H73	2.41	0.55
15:X:125:DC:C2'	15:X:126:DT:H71	2.33	0.55
12:T:82:MET:O	12:T:247:THR:OG1	2.15	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:180:LEU:HD13	9:Q:185:VAL:CG2	2.36	0.55
9:Q:374:ILE:HD13	17:Q:501:ADP:C5	2.42	0.55
11:U:365:SER:O	11:U:368:SER:OG	2.18	0.55
15:X:114:DA:C2	16:Y:-113:DG:C2	2.94	0.55
7:K:253:GLU:N	7:K:253:GLU:OE1	2.38	0.55
3:G:83:ARG:NH2	16:Y:-46:DG:H4'	2.21	0.55
5:I:2095:VAL:HG12	5:I:2099:GLN:HE21	1.72	0.55
10:N:192:VAL:HG12	10:N:206:GLY:O	2.07	0.55
11:U:326:LYS:C	11:U:327:ILE:HD13	2.31	0.55
1:E:42:ARG:HG2	15:X:110:DG:H4'	1.90	0.54
10:R:54:ARG:O	10:R:58:VAL:HG23	2.08	0.54
10:R:370:ILE:HD12	17:R:501:ADP:C1'	2.37	0.54
15:X:54:DG:C2'	15:X:55:DT:H71	2.37	0.54
1:E:77:ARG:HH11	15:X:129:DG:C4'	2.20	0.54
5:I:930:LEU:HD21	10:N:131:ILE:CD1	2.37	0.54
5:I:2062:VAL:HG13	5:I:2132:THR:OG1	2.07	0.54
7:K:289:ILE:H	7:K:289:ILE:HD13	1.73	0.54
9:M:426:GLU:N	9:M:426:GLU:OE1	2.39	0.54
10:P:210:THR:C	10:P:212:ALA:H	2.14	0.54
12:T:153:LYS:NZ	12:T:429:PRO:OXT	2.39	0.54
13:V:54:HIS:O	13:V:58:TYR:HB3	2.07	0.54
16:Y:-23:DC:H2''	16:Y:-22:DA:C8	2.42	0.54
16:Y:-12:DT:H2''	16:Y:-11:DA:H5'	1.89	0.54
2:B:27:LYS:N	15:X:103:DT:OP1	2.39	0.54
10:P:409:ALA:HA	10:P:429:VAL:HG21	1.88	0.54
10:R:286:GLU:OE1	10:R:286:GLU:N	2.40	0.54
15:X:10:DA:H1'	15:X:11:DT:H5'	1.90	0.54
5:I:164:LYS:O	5:I:167:ARG:HB2	2.07	0.54
12:T:317:LEU:O	12:T:319:GLY:N	2.41	0.54
11:U:128:ASN:O	11:U:128:ASN:ND2	2.41	0.54
15:X:8:DA:H2''	15:X:9:DT:H6	1.71	0.54
16:Y:-43:DA:H2'	16:Y:-42:DT:H71	1.90	0.54
16:Y:-11:DA:H1'	16:Y:-10:DT:H5''	1.88	0.54
7:K:232:VAL:HG23	7:K:271:ALA:HB1	1.89	0.54
10:N:301:VAL:HG21	10:N:326:MET:CB	2.37	0.54
10:N:301:VAL:HG21	10:N:326:MET:HB2	1.88	0.54
9:Q:148:GLY:O	9:Q:150:TYR:N	2.38	0.54
9:M:366:TYR:OH	17:M:501:ADP:N7	2.33	0.54
10:P:47:VAL:CA	17:P:501:ADP:HN62	2.20	0.54
11:S:324:THR:HG21	15:X:117:DT:C7	2.36	0.54
11:U:316:GLU:N	11:U:316:GLU:OE1	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:23:DG:C6	15:X:24:DC:N4	2.75	0.54
15:X:87:DT:H2''	15:X:88:DA:C8	2.42	0.54
15:X:95:DG:C6	15:X:96:DC:C4	2.96	0.54
16:Y:-124:DG:C5	16:Y:-123:DC:N4	2.76	0.54
7:K:205:VAL:HG22	7:K:236:TYR:CE2	2.43	0.54
9:Q:396:GLU:O	9:Q:399:THR:OG1	2.24	0.54
15:X:34:DA:N1	15:X:35:DG:C6	2.76	0.54
5:I:768:GLN:O	5:I:769:ARG:NH2	2.39	0.54
6:J:173:LEU:O	6:J:177:LYS:NZ	2.30	0.54
7:K:266:GLN:N	7:K:266:GLN:OE1	2.41	0.54
8:L:128:CYS:SG	8:L:130:SER:OG	2.65	0.54
11:S:9:VAL:HG21	11:S:344:SER:HA	1.90	0.54
13:V:49:ARG:NH1	15:X:41:DA:OP1	2.41	0.54
2:B:112:THR:HG21	13:V:61:LEU:HD21	1.89	0.53
4:H:32:PRO:HG3	15:X:59:DA:H3'	1.90	0.53
10:P:147:ILE:HD11	10:P:157:LYS:HB2	1.89	0.53
11:U:138:ALA:CB	11:U:163:VAL:HG11	2.39	0.53
15:X:13:DT:H2''	15:X:14:DG:C8	2.44	0.53
16:Y:-35:DC:C2	16:Y:-34:DT:C5	2.97	0.53
10:P:370:ILE:HG12	17:P:501:ADP:C2	2.44	0.53
9:Q:450:GLN:OE1	9:Q:450:GLN:N	2.41	0.53
11:U:306:TYR:CD1	18:U:401:ATP:H2	2.26	0.53
3:C:72:ARG:NH2	16:Y:-95:DC:OP1	2.41	0.53
9:O:366:TYR:CZ	17:O:501:ADP:N7	2.75	0.53
7:K:333:VAL:O	7:K:337:VAL:HG22	2.09	0.53
8:L:147:THR:OG1	8:L:148:ARG:NH2	2.42	0.53
11:U:7:ALA:HB1	11:U:347:ALA:HB1	1.91	0.53
1:A:17:SER:HA	15:X:30:DG:OP1	2.08	0.53
9:O:374:ILE:HG12	17:O:501:ADP:N1	2.22	0.53
5:I:96:ILE:HG12	14:W:197:LEU:HD22	1.87	0.53
10:P:207:ARG:O	10:P:225:VAL:HG12	2.09	0.53
13:V:248:LEU:HD13	13:V:252:ARG:HD3	1.90	0.53
15:X:47:DC:H2''	15:X:48:DT:C6	2.44	0.53
15:X:76:DG:H2''	15:X:77:DT:C5	2.43	0.53
7:K:187:ILE:HG21	7:K:273:GLU:HG3	1.90	0.53
10:R:74:LEU:HD11	10:R:328:THR:HG22	1.91	0.53
16:Y:-60:DT:C6	16:Y:-59:DT:H72	2.44	0.53
5:I:247:LEU:HD22	5:I:637:LEU:HD12	1.89	0.53
16:Y:-30:DC:H2'	16:Y:-29:DT:C7	2.38	0.53
6:J:212:ILE:HG23	6:J:268:PHE:CD2	2.44	0.53
6:J:306:THR:HG22	6:J:323:TYR:CB	2.38	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:P:255:GLN:OE1	10:P:255:GLN:N	2.42	0.53
2:B:115:VAL:HG11	13:V:60:LEU:HD11	1.90	0.53
4:H:48:GLY:H	16:Y:-65:DC:P	2.31	0.53
10:P:47:VAL:HG11	10:P:369:GLN:HB3	1.90	0.53
10:P:210:THR:C	10:P:212:ALA:N	2.67	0.53
11:U:210:ARG:CZ	18:U:401:ATP:H2'	2.38	0.53
15:X:1:DA:N1	15:X:2:DG:N1	2.57	0.53
5:I:166:VAL:HG13	11:U:143:TYR:HE1	1.73	0.52
10:N:47:VAL:O	17:N:501:ADP:N6	2.39	0.52
15:X:7:DT:H2''	15:X:8:DA:H5''	1.91	0.52
15:X:71:DA:C2	16:Y:-70:DG:C2	2.98	0.52
9:O:40:VAL:H	17:O:501:ADP:HN62	1.54	0.52
10:P:370:ILE:HG23	17:P:501:ADP:N3	2.25	0.52
11:S:62:ARG:NH1	11:S:207:GLU:OE2	2.42	0.52
16:Y:-12:DT:H1'	16:Y:-11:DA:H5''	1.90	0.52
5:I:930:LEU:N	5:I:930:LEU:HD22	2.24	0.52
9:M:320:GLU:OE2	9:M:357:ARG:NH2	2.42	0.52
10:N:307:GLU:OE1	10:N:307:GLU:N	2.42	0.52
10:N:424:ASP:OD1	10:N:425:ASP:N	2.42	0.52
9:Q:404:ARG:NE	17:Q:501:ADP:H5'2	2.24	0.52
15:X:74:DG:H2''	15:X:75:DC:C5	2.44	0.52
16:Y:-26:DA:H2''	16:Y:-25:DG:C8	2.44	0.52
15:X:34:DA:C2	15:X:35:DG:C4	2.96	0.52
15:X:84:DG:C2'	15:X:85:DT:H72	2.39	0.52
2:F:37:TYR:OH	15:X:120:DG:H5''	2.08	0.52
10:P:80:GLY:CA	17:P:501:ADP:PB	2.98	0.52
7:K:41:THR:HG21	7:K:77:TYR:HB2	1.90	0.52
11:U:14:SER:N	18:U:401:ATP:O1G	2.43	0.52
15:X:66:DG:H2''	15:X:67:DG:C8	2.45	0.52
16:Y:-69:DT:H2''	16:Y:-68:DC:C6	2.45	0.52
1:A:43:ARG:NE	16:Y:-34:DT:O5'	2.19	0.52
5:I:156:ARG:NH2	16:Y:-27:DC:P	2.83	0.52
6:J:137:THR:HG22	6:J:138:ALA:H	1.75	0.52
7:K:205:VAL:O	7:K:209:VAL:HG22	2.09	0.52
16:Y:-94:DA:C4	16:Y:-93:DC:C5	2.98	0.52
2:F:91:ILE:O	2:F:95:VAL:HG23	2.10	0.52
4:H:79:LYS:HB2	16:Y:-45:DG:P	2.49	0.52
9:O:371:MET:HG3	9:O:403:LEU:HD13	1.91	0.52
15:X:76:DG:N3	16:Y:-75:DG:N2	2.58	0.52
1:A:26:PHE:HZ	1:A:60:THR:HG21	1.74	0.52
8:L:19:LEU:HD23	8:L:150:LEU:HD22	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-115:DT:H2''	16:Y:-114:DT:C7	2.39	0.52
3:C:67:PHE:O	3:C:71:VAL:HG23	2.10	0.52
6:J:286:VAL:HG22	6:J:286:VAL:O	2.10	0.52
7:K:28:CYS:HB3	7:K:58:LEU:HD23	1.92	0.52
10:N:382:MET:HE3	10:N:426:ILE:HD11	1.92	0.52
9:Q:337:VAL:HG22	10:R:340:TYR:OH	2.10	0.52
15:X:106:DC:H2'	15:X:107:DT:H72	1.92	0.52
5:I:940:ARG:NH1	9:M:194:GLU:OE1	2.41	0.51
15:X:76:DG:N2	16:Y:-75:DG:N1	2.58	0.51
9:M:65:ALA:HB3	9:M:358:VAL:HG22	1.92	0.51
9:O:443:SER:OG	10:P:344:HIS:NE2	2.40	0.51
11:U:193:LEU:HD22	11:U:209:VAL:HG22	1.93	0.51
15:X:36:DG:N2	16:Y:-35:DC:O2	2.42	0.51
15:X:64:DG:C2	15:X:65:DG:C2	2.98	0.51
16:Y:-77:DA:H2''	16:Y:-76:DC:C5	2.45	0.51
9:M:42:GLN:NE2	9:M:364:MET:O	2.39	0.51
9:M:415:LEU:HD23	10:N:58:VAL:HG13	1.93	0.51
15:X:1:DA:N1	15:X:2:DG:C6	2.78	0.51
5:I:164:LYS:HA	5:I:167:ARG:HB2	1.93	0.51
5:I:653:THR:HG21	5:I:744:ILE:HD13	1.91	0.51
10:N:409:ALA:HA	10:N:429:VAL:HG21	1.93	0.51
9:O:76:LYS:HG2	17:O:501:ADP:O2B	2.10	0.51
9:O:267:LYS:HE2	10:P:268:ILE:HG22	1.93	0.51
10:R:382:MET:HE2	10:R:426:ILE:HD11	1.91	0.51
3:G:63:ARG:NH2	16:Y:-54:DC:P	2.83	0.51
4:H:36:ARG:NH2	15:X:59:DA:OP1	2.44	0.51
5:I:917:ILE:HG23	5:I:917:ILE:O	2.11	0.51
10:R:166:THR:HG22	10:R:229:ASP:HA	1.91	0.51
11:U:18:LYS:HA	11:U:30:VAL:HG12	1.92	0.51
15:X:3:DG:H1'	15:X:4:DA:H5'	1.91	0.51
15:X:8:DA:C2	16:Y:-7:DA:C2	2.99	0.51
2:B:88:SER:HB2	13:V:60:LEU:HD21	1.92	0.51
5:I:712:TRP:N	15:X:135:DG:OP1	2.44	0.51
5:I:736:ARG:HE	16:Y:-130:DG:P	2.19	0.51
10:R:370:ILE:HD12	17:R:501:ADP:C8	2.46	0.51
15:X:8:DA:H2''	15:X:9:DT:C6	2.46	0.51
3:C:106:ASP:OD2	3:C:131:ARG:NH1	2.41	0.51
9:M:283:VAL:HG11	10:R:19:ILE:HD11	1.90	0.51
9:Q:327:VAL:HG11	9:Q:329:PHE:CZ	2.45	0.51
15:X:47:DC:H2''	15:X:48:DT:C5	2.45	0.51
16:Y:-65:DC:H2''	16:Y:-64:DC:C5	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:63:ILE:HG21	2:B:59:MET:HE1	1.92	0.51
1:A:93:GLU:OE2	2:B:102:GLU:N	2.44	0.51
5:I:710:GLN:CA	15:X:135:DG:OP2	2.59	0.51
5:I:736:ARG:HD3	16:Y:-130:DG:C5'	2.41	0.51
9:O:264:MET:C	9:O:266:PRO:HD3	2.36	0.51
16:Y:-67:DC:H2''	16:Y:-66:DC:C6	2.45	0.51
4:D:53:GLU:O	4:D:57:VAL:HG23	2.10	0.51
9:Q:36:ALA:O	9:Q:37:SER:OG	2.27	0.51
10:R:214:ASP:OD1	10:R:214:ASP:N	2.44	0.51
5:I:2038:ILE:HD12	5:I:2038:ILE:H	1.76	0.51
8:L:87:LEU:C	8:L:87:LEU:HD13	2.35	0.51
9:M:76:LYS:HZ2	17:M:501:ADP:PB	2.31	0.51
15:X:11:DT:H2''	15:X:12:DA:H5'	1.93	0.51
13:V:92:VAL:O	13:V:92:VAL:HG13	2.11	0.50
15:X:1:DA:C2	15:X:2:DG:C2	2.99	0.50
16:Y:-124:DG:H2''	16:Y:-123:DC:C6	2.46	0.50
16:Y:-96:DG:C5	16:Y:-95:DC:C5	2.98	0.50
9:Q:76:LYS:NZ	17:Q:501:ADP:O2B	2.44	0.50
1:A:59:LEU:CD1	2:B:66:ILE:HG21	2.41	0.50
1:E:42:ARG:CG	15:X:111:DA:H5'	2.34	0.50
5:I:202:VAL:HG21	11:S:143:TYR:CD1	2.46	0.50
6:J:137:THR:HG22	6:J:138:ALA:N	2.26	0.50
9:O:106:ILE:HG23	9:O:267:LYS:HB2	1.93	0.50
11:S:124:PHE:O	11:S:359:LYS:NZ	2.41	0.50
18:U:401:ATP:O2B	18:U:401:ATP:H5'1	2.11	0.50
6:J:263:ARG:CZ	6:J:264:THR:H	2.25	0.50
7:K:41:THR:HG21	7:K:77:TYR:CB	2.41	0.50
9:Q:208:THR:HG23	9:Q:209:TYR:CD1	2.46	0.50
16:Y:-106:DG:H2''	16:Y:-105:DA:C8	2.46	0.50
16:Y:-27:DC:H1'	16:Y:-26:DA:H5'	1.94	0.50
5:I:930:LEU:HD21	10:N:131:ILE:HD12	1.93	0.50
9:M:14:ARG:NH2	10:N:319:ASP:O	2.40	0.50
10:N:144:GLU:N	10:N:162:THR:OG1	2.44	0.50
15:X:6:DG:C2	15:X:7:DT:N3	2.78	0.50
15:X:60:DA:C4	15:X:61:DC:C5	2.99	0.50
6:J:306:THR:HG21	6:J:319:ILE:HG22	1.93	0.50
10:P:82:GLY:N	17:P:501:ADP:O3A	2.36	0.50
10:R:400:ARG:NH2	17:R:501:ADP:O1A	2.44	0.50
11:U:305:MET:HB2	18:U:401:ATP:N1	2.27	0.50
11:U:369:ILE:O	11:U:371:HIS:N	2.44	0.50
13:V:49:ARG:CZ	15:X:41:DA:P	3.00	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-8:DT:H2''	16:Y:-7:DA:H8	1.77	0.50
16:Y:-3:DC:H2'	16:Y:-2:DC:C5	2.46	0.50
5:I:933:THR:O	10:N:279:LYS:NZ	2.45	0.50
6:J:277:TRP:C	6:J:280:GLN:HG3	2.24	0.50
9:O:75:GLY:HA2	17:O:501:ADP:O1A	2.12	0.50
10:R:47:VAL:N	17:R:501:ADP:N1	2.60	0.50
15:X:96:DC:C2'	15:X:97:DT:H72	2.42	0.50
15:X:128:DG:N2	16:Y:-127:DG:H21	2.10	0.50
5:I:156:ARG:CD	16:Y:-28:DC:OP1	2.60	0.50
6:J:219:VAL:O	6:J:261:CYS:HB2	2.11	0.50
15:X:3:DG:H2''	15:X:4:DA:H5'	1.94	0.50
15:X:105:DT:H2''	15:X:106:DC:C6	2.47	0.50
5:I:2021:LEU:O	5:I:2025:VAL:HG23	2.11	0.50
9:O:303:GLU:OE1	9:O:305:HIS:NE2	2.44	0.50
12:T:363:ARG:NE	12:T:367:GLU:OE2	2.45	0.50
16:Y:-43:DA:C4	16:Y:-42:DT:C5	3.00	0.50
1:E:76:THR:HG23	15:X:130:DC:OP2	2.12	0.49
3:G:63:ARG:HG2	16:Y:-55:DA:C5'	2.33	0.49
5:I:1983:VAL:HG11	9:O:243:LEU:HD23	1.93	0.49
11:U:162:THR:CG2	11:U:277:THR:HG22	2.41	0.49
13:V:56:GLU:CD	13:V:56:GLU:H	2.19	0.49
15:X:2:DG:H2''	15:X:3:DG:N7	2.27	0.49
15:X:48:DT:H2''	15:X:49:DT:C7	2.42	0.49
2:B:27:LYS:N	15:X:103:DT:P	2.86	0.49
9:M:273:ASP:OD1	9:M:274:LYS:N	2.45	0.49
10:R:142:VAL:HG13	10:R:161:LEU:HD11	1.94	0.49
10:R:211:ARG:O	10:R:212:ALA:HB3	2.12	0.49
12:T:324:GLY:O	12:T:328:VAL:HG23	2.11	0.49
9:M:249:ARG:NH1	9:M:266:PRO:O	2.45	0.49
10:P:47:VAL:HG23	17:P:501:ADP:C2	2.47	0.49
10:P:374:ARG:HG2	10:P:403:ILE:HG23	1.94	0.49
9:Q:306:MET:HE2	10:R:307:GLU:HA	1.94	0.49
10:R:32:GLY:O	10:R:53:ARG:NH2	2.44	0.49
12:T:9:ASP:OD1	12:T:10:GLU:N	2.45	0.49
11:U:175:ILE:O	11:U:176:LEU:HD23	2.12	0.49
15:X:8:DA:C8	15:X:9:DT:C7	2.95	0.49
5:I:163:ARG:O	5:I:167:ARG:HG3	2.13	0.49
9:O:202:ARG:NH1	9:O:218:GLU:OE1	2.40	0.49
9:Q:28:GLU:OE1	9:Q:28:GLU:N	2.44	0.49
15:X:1:DA:C6	15:X:2:DG:C6	3.00	0.49
1:A:17:SER:C	15:X:30:DG:OP1	2.50	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:52:LEU:HD21	2:B:67:PHE:CD2	2.48	0.49
10:R:249:VAL:HG12	10:R:249:VAL:O	2.12	0.49
12:T:173:GLY:HA3	18:T:501:ATP:O2G	2.13	0.49
15:X:10:DA:H2''	15:X:11:DT:OP2	2.12	0.49
15:X:48:DT:C2	15:X:49:DT:C4	3.01	0.49
15:X:76:DG:N1	16:Y:-75:DG:N1	2.61	0.49
16:Y:-109:DG:H2''	16:Y:-108:DT:C5	2.48	0.49
16:Y:-5:DA:C2	16:Y:-4:DT:C2	3.01	0.49
9:M:109:THR:HG21	10:R:107:GLU:HG2	1.95	0.49
1:A:35:LEU:HB3	1:A:44:VAL:HG21	1.94	0.49
9:O:306:MET:SD	9:O:306:MET:N	2.85	0.49
11:U:306:TYR:HE1	18:U:401:ATP:N3	2.07	0.49
10:R:346:ILE:HD11	10:R:351:LEU:HD13	1.94	0.49
10:R:378:GLU:HG2	10:R:380:VAL:HG23	1.95	0.49
11:S:283:MET:O	11:S:290:ARG:NH1	2.46	0.49
2:B:53:SER:HB3	15:X:18:DC:OP2	2.13	0.49
3:C:69:ARG:HH12	15:X:89:DA:P	2.35	0.49
5:I:903:HIS:O	5:I:905:ASN:N	2.45	0.49
6:J:308:ILE:HD12	6:J:319:ILE:HG23	1.94	0.49
10:P:268:ILE:H	10:P:268:ILE:HD13	1.78	0.49
11:U:163:VAL:O	11:U:163:VAL:HG13	2.13	0.49
15:X:60:DA:C4	15:X:61:DC:C4	3.00	0.49
3:C:83:ARG:HH21	16:Y:-96:DG:H4'	1.75	0.49
10:P:404:GLN:NE2	9:Q:357:ARG:O	2.40	0.49
11:U:157:ASP:HB2	18:U:401:ATP:H5'1	1.95	0.49
2:F:83:ARG:NH1	16:Y:-105:DA:OP2	2.46	0.48
6:J:260:ARG:HH21	10:P:209:PHE:HB2	1.77	0.48
6:J:283:PRO:O	6:J:283:PRO:CD	2.61	0.48
7:K:292:MET:HE1	7:K:297:ALA:HB2	1.95	0.48
9:Q:49:CYS:HB2	9:Q:83:ILE:HD11	1.94	0.48
9:Q:385:ASN:O	9:Q:424:SER:OG	2.14	0.48
15:X:123:DG:C5	15:X:124:DC:C4	3.01	0.48
2:B:39:TYR:CZ	15:X:19:DA:OP2	2.66	0.48
7:K:86:VAL:O	7:K:87:ASP:C	2.55	0.48
9:M:131:TYR:HB2	9:M:193:ILE:HG23	1.94	0.48
9:M:235:ILE:HG23	9:M:235:ILE:O	2.12	0.48
9:M:317:ARG:HG2	10:R:104:ALA:HB2	1.95	0.48
9:O:134:GLU:N	9:O:162:LYS:O	2.46	0.48
10:P:81:THR:N	17:P:501:ADP:O2B	2.36	0.48
9:Q:56:ILE:CG1	9:Q:326:ILE:HD13	2.43	0.48
11:U:139:VAL:HG12	11:U:143:TYR:CE2	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:8:DA:C2'	15:X:9:DT:H71	2.25	0.48
1:A:17:SER:CA	15:X:30:DG:OP1	2.62	0.48
1:E:42:ARG:HA	15:X:111:DA:OP1	2.13	0.48
9:Q:339:ARG:HE	10:R:306:ILE:HD11	1.78	0.48
15:X:80:DG:N1	16:Y:-79:DG:N2	2.61	0.48
5:I:710:GLN:C	15:X:135:DG:OP2	2.56	0.48
5:I:906:LEU:CD1	5:I:2068:MET:HE1	2.40	0.48
9:Q:132:GLU:OE2	9:Q:230:LYS:NZ	2.39	0.48
9:Q:259:MET:O	9:Q:262:GLN:NE2	2.47	0.48
10:R:47:VAL:HG21	10:R:373:ILE:HD12	1.96	0.48
10:R:141:GLU:N	10:R:164:LYS:O	2.46	0.48
3:G:67:PHE:O	3:G:71:VAL:HG23	2.12	0.48
9:M:308:ASP:OD1	9:M:309:ILE:N	2.43	0.48
11:U:157:ASP:CB	18:U:401:ATP:H4'	2.44	0.48
16:Y:-64:DC:H2''	16:Y:-63:DG:C8	2.48	0.48
5:I:91:LYS:HG3	14:W:193:GLU:HG3	1.96	0.48
5:I:729:LEU:HD11	5:I:758:ARG:HG2	1.95	0.48
6:J:208:PRO:HD2	6:J:211:ILE:CG2	2.43	0.48
9:M:76:LYS:HG2	17:M:501:ADP:PB	2.53	0.48
9:Q:101:VAL:HG21	9:Q:307:LEU:CD2	2.43	0.48
10:R:47:VAL:N	17:R:501:ADP:HN62	2.06	0.48
12:T:160:PHE:O	12:T:399:ILE:HD11	2.13	0.48
11:U:71:ILE:N	11:U:71:ILE:HD12	2.28	0.48
11:U:297:THR:HG23	11:U:297:THR:O	2.14	0.48
15:X:121:DC:H2''	15:X:122:DG:C8	2.49	0.48
1:A:82:ARG:NH1	1:A:108:VAL:O	2.44	0.48
5:I:2046:GLN:O	5:I:2050:VAL:HG23	2.13	0.48
12:T:128:ASN:OD1	12:T:129:THR:N	2.47	0.48
15:X:21:DG:C4	16:Y:-20:DG:N2	2.80	0.48
9:M:111:VAL:O	9:M:115:ASN:ND2	2.43	0.48
12:T:190:GLN:O	12:T:335:MET:HE2	2.14	0.48
1:E:68:ASN:O	1:E:68:ASN:ND2	2.46	0.48
7:K:113:LEU:HD12	7:K:122:VAL:HG11	1.96	0.48
16:Y:-134:DC:H2''	16:Y:-133:DG:C8	2.48	0.48
1:A:101:VAL:HG22	4:D:96:THR:HB	1.95	0.48
6:J:308:ILE:HD12	6:J:319:ILE:CG2	2.44	0.48
7:K:161:CYS:SG	7:K:309:MET:HE3	2.54	0.48
9:M:316:HIS:O	9:M:357:ARG:NH2	2.47	0.48
10:P:59:VAL:HG23	10:P:62:MET:HE3	1.95	0.48
9:M:315:LEU:HD21	9:M:329:PHE:CZ	2.48	0.47
9:M:415:LEU:HD21	10:N:61:GLU:CB	2.42	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:U:138:ALA:HB2	11:U:163:VAL:HG11	1.96	0.47
15:X:4:DA:H2''	15:X:5:DT:H5''	1.95	0.47
4:H:32:PRO:CG	15:X:59:DA:H3'	2.44	0.47
4:H:53:GLU:O	4:H:57:VAL:HG23	2.14	0.47
5:I:1986:PRO:O	5:I:1987:PRO:C	2.57	0.47
6:J:212:ILE:HG23	6:J:268:PHE:CE2	2.49	0.47
15:X:66:DG:H2''	15:X:67:DG:N7	2.29	0.47
2:F:31:LYS:H	2:F:31:LYS:HD3	1.80	0.47
5:I:617:GLN:OE1	5:I:617:GLN:N	2.43	0.47
9:M:53:VAL:HG11	9:M:86:GLU:OE1	2.15	0.47
10:P:265:THR:HG22	10:P:266:GLY:H	1.78	0.47
13:V:175:HIS:NE2	13:V:186:ARG:O	2.46	0.47
16:Y:-48:DA:C2	16:Y:-47:DG:N2	2.82	0.47
7:K:126:ASN:OD1	7:K:128:GLY:N	2.47	0.47
9:M:172:LEU:HD11	10:R:216:ASP:OD2	2.15	0.47
10:N:188:GLN:N	10:N:188:GLN:OE1	2.46	0.47
11:U:301:GLY:O	11:U:304:THR:OG1	2.32	0.47
16:Y:-10:DT:H2''	16:Y:-9:DA:H5'	1.95	0.47
16:Y:-9:DA:H2'	16:Y:-8:DT:C7	2.44	0.47
1:A:25:GLN:OE1	1:A:25:GLN:N	2.47	0.47
3:C:42:ARG:NH1	16:Y:-77:DA:H5''	2.29	0.47
3:C:49:ARG:CD	15:X:6:DG:O3'	2.56	0.47
6:J:294:VAL:HG21	6:J:315:ALA:HB1	1.96	0.47
10:N:362:TYR:HE2	17:N:501:ADP:N7	2.13	0.47
16:Y:-7:DA:H2''	16:Y:-6:DC:H5'	1.95	0.47
5:I:164:LYS:HG2	15:X:32:DC:OP1	2.15	0.47
6:J:219:VAL:HG13	6:J:220:PRO:HD2	1.97	0.47
7:K:292:MET:CE	7:K:293:GLY:O	2.62	0.47
10:N:298:ILE:HG22	10:N:301:VAL:HG22	1.95	0.47
9:Q:374:ILE:HG12	17:Q:501:ADP:C6	2.50	0.47
10:R:46:MET:HA	17:R:501:ADP:N1	2.30	0.47
5:I:2013:GLU:N	5:I:2013:GLU:OE1	2.48	0.47
7:K:346:ASP:OD1	7:K:347:VAL:N	2.48	0.47
9:M:43:GLU:OE1	9:M:43:GLU:N	2.44	0.47
9:M:180:LEU:HD23	9:M:200:VAL:HG11	1.96	0.47
11:U:153:MET:CG	11:U:274:ILE:HD11	2.45	0.47
11:U:177:ARG:NH1	11:U:179:ASP:OD1	2.48	0.47
15:X:73:DC:H2''	15:X:74:DG:C8	2.50	0.47
16:Y:-1:DT:H2''	16:Y:0:DG:H5''	1.97	0.47
6:J:172:LEU:HD12	6:J:172:LEU:O	2.15	0.47
15:X:2:DG:H2''	15:X:3:DG:C8	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:3:DG:C2'	15:X:4:DA:H5'	2.45	0.47
15:X:65:DG:H2''	15:X:66:DG:C8	2.50	0.47
4:H:62:LEU:O	4:H:63:GLU:C	2.57	0.47
5:I:974:LEU:HD21	5:I:1904:ILE:HG23	1.97	0.47
7:K:351:LEU:HD23	7:K:352:PRO:O	2.15	0.47
9:M:362:ARG:HD2	10:R:434:LEU:HD11	1.97	0.47
10:R:248:ASP:OD1	10:R:251:ASN:ND2	2.48	0.47
16:Y:-115:DT:N1	16:Y:-114:DT:H72	2.30	0.47
1:E:45:ALA:HB2	15:X:110:DG:OP2	2.15	0.47
5:I:196:SER:OG	11:S:169:TYR:OH	2.31	0.47
16:Y:-102:DG:H1'	16:Y:-101:DC:H5'	1.96	0.47
2:B:89:ARG:HH11	13:V:63:SER:CB	2.27	0.46
9:M:53:VAL:HG22	9:M:87:LEU:HD21	1.96	0.46
9:O:106:ILE:HG22	9:O:269:THR:HG22	1.97	0.46
10:P:72:ALA:HB1	10:P:324:LEU:HD11	1.97	0.46
15:X:75:DC:H2''	15:X:76:DG:C8	2.49	0.46
15:X:95:DG:C5	15:X:96:DC:C4	3.03	0.46
15:X:95:DG:C5	15:X:96:DC:N4	2.83	0.46
15:X:126:DT:H6	15:X:126:DT:OP2	1.98	0.46
16:Y:-99:DC:H2''	16:Y:-98:DT:C7	2.44	0.46
9:Q:56:ILE:HG13	9:Q:326:ILE:HD13	1.97	0.46
10:R:68:ILE:HD13	10:R:68:ILE:H	1.80	0.46
11:U:336:LYS:HE3	18:U:401:ATP:N7	2.30	0.46
15:X:19:DA:N3	16:Y:-18:DG:N2	2.63	0.46
15:X:72:DG:C6	15:X:73:DC:N4	2.83	0.46
5:I:1930:GLN:HB3	5:I:1931:PRO:HD3	1.97	0.46
5:I:2172:VAL:HG12	5:I:2172:VAL:O	2.15	0.46
9:M:316:HIS:C	9:M:316:HIS:CD2	2.93	0.46
9:Q:334:GLY:O	9:Q:348:HIS:N	2.47	0.46
10:R:382:MET:CE	10:R:426:ILE:HD11	2.45	0.46
13:V:59:ALA:O	13:V:63:SER:HB2	2.15	0.46
13:V:202:LEU:HD23	13:V:202:LEU:O	2.14	0.46
15:X:133:DC:H2''	15:X:134:DG:C8	2.51	0.46
16:Y:-96:DG:C4	16:Y:-95:DC:C5	3.04	0.46
5:I:608:THR:HG21	5:I:630:VAL:HG11	1.97	0.46
8:L:19:LEU:HD23	8:L:150:LEU:HD13	1.96	0.46
15:X:77:DT:H2''	15:X:78:DA:C8	2.49	0.46
16:Y:-128:DC:H2''	16:Y:-127:DG:N7	2.30	0.46
5:I:737:ARG:NH2	15:X:133:DC:O4'	2.45	0.46
9:M:114:GLU:N	9:M:114:GLU:OE1	2.49	0.46
9:M:132:GLU:O	9:M:228:VAL:HG23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:47:VAL:CG2	10:N:373:ILE:HD12	2.46	0.46
10:P:49:GLN:HG3	10:P:52:ALA:HB3	1.97	0.46
12:T:21:TYR:CD2	12:T:22:THR:HG23	2.50	0.46
15:X:14:DG:H2''	15:X:15:DT:C5	2.51	0.46
7:K:86:VAL:O	7:K:86:VAL:HG12	2.16	0.46
9:M:170:LEU:HB3	10:R:216:ASP:HB2	1.98	0.46
10:N:272:VAL:O	10:N:276:ILE:HD13	2.16	0.46
9:O:40:VAL:O	17:O:501:ADP:N6	2.49	0.46
10:P:54:ARG:O	10:P:58:VAL:HG23	2.16	0.46
9:Q:255:ASP:OD1	9:Q:258:SER:CB	2.64	0.46
12:T:381:ILE:N	12:T:381:ILE:HD12	2.30	0.46
15:X:131:DA:C6	16:Y:-130:DG:N2	2.83	0.46
1:A:17:SER:HA	15:X:30:DG:C5'	2.46	0.46
7:K:292:MET:HE1	7:K:297:ALA:CB	2.46	0.46
15:X:85:DT:C2'	15:X:86:DT:H71	2.45	0.46
5:I:1936:ILE:HG22	5:I:1956:HIS:HA	1.97	0.46
7:K:6:LEU:C	7:K:6:LEU:HD23	2.41	0.46
11:U:185:LEU:HD13	11:U:185:LEU:O	2.15	0.46
15:X:116:DT:H2''	15:X:117:DT:C7	2.46	0.46
16:Y:-124:DG:C4	16:Y:-123:DC:C4	3.04	0.46
4:H:43:VAL:HG12	4:H:45:ARG:H	1.81	0.46
5:I:156:ARG:CG	16:Y:-28:DC:OP1	2.64	0.46
7:K:102:PHE:CG	7:K:105:ILE:HD12	2.51	0.46
9:M:115:ASN:OD1	9:M:118:ARG:NH1	2.49	0.46
9:M:159:ILE:HG22	9:M:172:LEU:HD13	1.98	0.46
10:N:166:THR:HG23	10:N:167:GLU:HG3	1.97	0.46
16:Y:-126:DA:H2''	16:Y:-125:DG:C8	2.51	0.46
16:Y:-93:DC:C2	16:Y:-92:DC:C5	3.04	0.46
4:H:79:LYS:HB2	16:Y:-45:DG:OP1	2.15	0.46
5:I:120:SER:OG	13:V:229:GLN:NE2	2.49	0.46
9:M:403:LEU:O	9:M:407:VAL:HG23	2.16	0.46
10:P:144:GLU:O	10:P:161:LEU:HD12	2.16	0.46
12:T:84:ALA:HB2	12:T:249:SER:CB	2.46	0.46
11:U:241:GLU:N	11:U:241:GLU:OE1	2.48	0.46
15:X:96:DC:H2''	15:X:97:DT:C7	2.46	0.46
16:Y:-80:DC:H2''	16:Y:-79:DG:C8	2.50	0.46
1:A:40:TYR:O	2:B:75:SER:OG	2.28	0.45
9:M:53:VAL:HG23	9:M:83:ILE:HG23	1.98	0.45
10:N:119:LEU:HD21	10:N:312:LEU:HD21	1.98	0.45
9:Q:374:ILE:CG2	17:Q:501:ADP:C4	2.99	0.45
9:Q:397:ILE:O	9:Q:401:THR:HG22	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:76:DG:N2	16:Y:-75:DG:N3	2.63	0.45
16:Y:-104:DC:H2''	16:Y:-103:DA:C8	2.51	0.45
9:O:315:LEU:HD23	9:O:354:LEU:HD21	1.98	0.45
10:R:141:GLU:O	10:R:164:LYS:N	2.49	0.45
16:Y:-124:DG:N9	16:Y:-123:DC:C5	2.84	0.45
7:K:24:VAL:HG22	7:K:24:VAL:O	2.16	0.45
10:R:224:PHE:O	10:R:225:VAL:C	2.60	0.45
11:U:267:LEU:C	11:U:267:LEU:HD23	2.41	0.45
13:V:55:ARG:HB2	16:Y:-36:DC:OP1	2.17	0.45
15:X:64:DG:C5	15:X:65:DG:N1	2.85	0.45
1:A:108:VAL:HG11	3:C:101:VAL:HG11	1.98	0.45
7:K:123:LEU:HG	7:K:125:VAL:HG13	1.98	0.45
10:N:313:ASN:ND2	10:N:349:ASP:OD2	2.45	0.45
9:O:326:ILE:N	9:O:326:ILE:HD12	2.32	0.45
13:V:56:GLU:N	13:V:56:GLU:OE1	2.49	0.45
15:X:21:DG:N2	16:Y:-20:DG:N3	2.65	0.45
7:K:269:ARG:NE	7:K:270:LEU:O	2.47	0.45
7:K:289:ILE:HG23	8:L:32:LEU:HD22	1.97	0.45
9:Q:303:GLU:OE1	9:Q:305:HIS:NE2	2.45	0.45
9:Q:369:GLN:OE1	9:Q:373:GLN:NE2	2.48	0.45
11:U:210:ARG:NE	18:U:401:ATP:H2'	2.32	0.45
15:X:64:DG:H2''	15:X:65:DG:C8	2.52	0.45
15:X:89:DA:H2''	15:X:90:DG:H8	1.80	0.45
16:Y:-23:DC:H2''	16:Y:-22:DA:H8	1.81	0.45
2:B:116:THR:HG22	13:V:57:VAL:CG2	2.47	0.45
5:I:151:PHE:HD2	12:T:399:ILE:HG22	1.79	0.45
6:J:291:VAL:HG13	6:J:296:HIS:HA	1.98	0.45
9:O:102:TYR:OH	9:O:306:MET:O	2.23	0.45
11:U:101:HIS:CG	11:U:129:THR:HG22	2.52	0.45
15:X:72:DG:C5	15:X:73:DC:C4	3.04	0.45
5:I:928:LEU:HD13	5:I:928:LEU:H	1.81	0.45
9:O:98:GLY:O	9:O:101:VAL:HG22	2.16	0.45
10:P:403:ILE:CD1	17:P:501:ADP:H4'	2.47	0.45
10:R:170:THR:OG1	10:R:171:ILE:N	2.49	0.45
12:T:121:LEU:C	12:T:121:LEU:HD23	2.42	0.45
15:X:10:DA:C5	15:X:11:DT:C4	3.05	0.45
1:E:17:ARG:NH1	16:Y:-115:DT:OP2	2.49	0.45
3:G:41:TYR:HD2	16:Y:-62:DC:OP1	2.00	0.45
5:I:737:ARG:HG2	16:Y:-131:DT:C4'	2.46	0.45
5:I:737:ARG:NH2	16:Y:-132:DG:N2	2.64	0.45
7:K:13:ALA:HB2	7:K:27:ASN:HB2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:P:210:THR:O	10:P:212:ALA:N	2.50	0.45
10:P:268:ILE:HD13	10:P:268:ILE:N	2.31	0.45
9:Q:106:ILE:HD11	9:Q:110:GLU:CG	2.47	0.45
11:S:107:GLU:OE1	11:S:111:ASN:ND2	2.48	0.45
11:U:162:THR:HG22	11:U:278:THR:HG22	1.99	0.45
11:U:163:VAL:HG22	11:U:165:ILE:HG23	1.99	0.45
15:X:6:DG:N1	15:X:7:DT:N3	2.65	0.45
15:X:49:DT:H5''	15:X:49:DT:H6	1.81	0.45
4:H:83:ALA:O	4:H:87:VAL:HG23	2.17	0.45
5:I:2062:VAL:HG22	5:I:2132:THR:OG1	2.17	0.45
5:I:2171:THR:OG1	5:I:2172:VAL:N	2.50	0.45
9:Q:404:ARG:NH2	17:Q:501:ADP:O3B	2.50	0.45
11:U:149:THR:HG22	11:U:150:GLY:N	2.32	0.45
15:X:46:DC:H2''	15:X:47:DC:C5	2.51	0.45
15:X:86:DT:C2'	15:X:87:DT:H72	2.46	0.45
16:Y:-9:DA:H2''	16:Y:-8:DT:C5	2.52	0.45
5:I:949:ILE:HD13	5:I:949:ILE:O	2.17	0.45
7:K:237:VAL:HG22	7:K:267:ILE:HD12	1.99	0.45
11:U:13:GLY:C	18:U:401:ATP:O1G	2.58	0.45
16:Y:-35:DC:H2''	16:Y:-34:DT:C6	2.52	0.45
16:Y:-1:DT:C2'	16:Y:0:DG:H5''	2.47	0.45
7:K:302:ILE:HD12	7:K:313:PHE:HB3	1.99	0.44
15:X:54:DG:C6	16:Y:-55:DA:N6	2.85	0.44
5:I:941:ILE:HD12	5:I:941:ILE:N	2.32	0.44
7:K:296:GLU:OE1	7:K:296:GLU:N	2.47	0.44
10:P:236:LYS:HE3	10:P:238:VAL:HG13	1.99	0.44
16:Y:-43:DA:C6	16:Y:-42:DT:C4	3.05	0.44
16:Y:-35:DC:H2''	16:Y:-34:DT:C5	2.50	0.44
9:O:20:HIS:CE1	17:O:501:ADP:O2'	2.70	0.44
13:V:223:GLU:OE2	13:V:226:ARG:NH1	2.43	0.44
15:X:51:DG:C5	15:X:52:DC:N4	2.85	0.44
6:J:308:ILE:CG2	6:J:319:ILE:HD13	2.47	0.44
9:M:401:THR:HG22	9:M:402:THR:HG22	1.98	0.44
10:P:348:ILE:HD13	10:P:348:ILE:N	2.32	0.44
9:Q:21:VAL:HG21	9:Q:81:LEU:HD11	1.99	0.44
14:W:140:ASP:OD1	14:W:141:GLU:N	2.47	0.44
1:E:29:ARG:HA	16:Y:-116:DA:OP1	2.17	0.44
4:H:48:GLY:N	16:Y:-65:DC:O5'	2.50	0.44
5:I:904:PRO:O	5:I:907:PHE:N	2.51	0.44
5:I:971:ARG:NH2	5:I:1902:GLU:OE1	2.50	0.44
9:Q:401:THR:OG1	9:Q:402:THR:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:T:22:THR:HG22	12:T:38:PRO:HA	1.98	0.44
15:X:96:DC:H2''	15:X:97:DT:C6	2.53	0.44
1:E:73:ASN:O	1:E:73:ASN:ND2	2.45	0.44
5:I:869:TYR:CE2	5:I:897:LEU:HD22	2.53	0.44
13:V:65:LYS:O	13:V:65:LYS:HG2	2.17	0.44
15:X:36:DG:H2''	15:X:37:DG:C8	2.53	0.44
15:X:108:DA:H2''	15:X:109:DC:C6	2.52	0.44
16:Y:-34:DT:H5'	16:Y:-34:DT:C6	2.50	0.44
5:I:737:ARG:NH1	16:Y:-132:DG:H22	2.15	0.44
9:O:168:LYS:CG	9:O:228:VAL:HG11	2.47	0.44
10:R:264:ASP:OD1	10:R:265:THR:N	2.51	0.44
15:X:69:DA:H2''	15:X:70:DC:C6	2.52	0.44
16:Y:-96:DG:H2''	16:Y:-95:DC:H6	1.82	0.44
16:Y:-12:DT:H1'	16:Y:-11:DA:C5'	2.48	0.44
4:D:49:LEU:H	4:D:49:LEU:HD12	1.81	0.44
5:I:109:ARG:HB2	13:V:246:TYR:CZ	2.52	0.44
5:I:692:SER:OG	6:J:181:GLU:OE1	2.35	0.44
6:J:260:ARG:HA	6:J:260:ARG:HD3	1.38	0.44
8:L:84:PHE:CE2	8:L:87:LEU:HD12	2.52	0.44
10:N:119:LEU:HD21	10:N:312:LEU:CD2	2.48	0.44
15:X:51:DG:C6	15:X:52:DC:N4	2.86	0.44
5:I:619:ARG:NH2	5:I:621:TYR:OH	2.43	0.44
5:I:1999:LEU:HD13	5:I:1999:LEU:C	2.43	0.44
9:O:33:LYS:O	9:O:46:ARG:NH1	2.48	0.44
9:O:87:LEU:HD12	9:O:91:VAL:HG21	1.99	0.44
11:U:149:THR:HG23	11:U:166:TYR:HA	1.99	0.44
15:X:15:DT:H3	16:Y:-15:DA:H61	1.66	0.44
16:Y:-51:DC:H2''	16:Y:-50:DC:C6	2.53	0.44
7:K:198:GLU:OE2	7:K:202:ILE:N	2.50	0.43
7:K:277:VAL:HG22	7:K:278:PRO:HD3	2.00	0.43
9:M:40:VAL:O	17:M:501:ADP:N6	2.51	0.43
9:M:405:TYR:CE2	9:M:409:LEU:HD11	2.53	0.43
10:N:324:LEU:C	10:N:324:LEU:HD12	2.43	0.43
9:Q:81:LEU:C	9:Q:81:LEU:HD12	2.43	0.43
12:T:122:MET:SD	12:T:136:LEU:HD21	2.57	0.43
15:X:112:DC:H2''	15:X:113:DC:H6	1.83	0.43
16:Y:-3:DC:H2'	16:Y:-2:DC:C6	2.53	0.43
3:C:81:ASP:CG	14:W:163:LEU:CD1	2.91	0.43
6:J:262:SER:N	10:P:212:ALA:O	2.50	0.43
9:M:275:LEU:HD22	10:R:260:LEU:O	2.18	0.43
16:Y:-15:DA:O5'	16:Y:-15:DA:H8	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:83:ARG:HH22	16:Y:-106:DG:H3'	1.46	0.43
5:I:147:LEU:HD11	5:I:151:PHE:CE1	2.53	0.43
5:I:157:TRP:CE2	5:I:161:VAL:HG21	2.53	0.43
5:I:1976:PHE:CZ	10:P:131:ILE:HD12	2.53	0.43
9:Q:49:CYS:O	9:Q:52:ILE:HG13	2.18	0.43
15:X:95:DG:C4	15:X:96:DC:C5	3.07	0.43
16:Y:-113:DG:C6	16:Y:-112:DG:O6	2.71	0.43
16:Y:-47:DG:H2''	16:Y:-46:DG:C8	2.53	0.43
3:C:81:ASP:CG	14:W:163:LEU:HD11	2.35	0.43
1:E:29:ARG:HH12	15:X:121:DC:P	2.41	0.43
7:K:329:PHE:O	7:K:333:VAL:HG23	2.17	0.43
11:U:273:GLY:O	11:U:274:ILE:C	2.59	0.43
11:U:327:ILE:HD13	11:U:327:ILE:N	2.34	0.43
5:I:990:VAL:HG12	5:I:990:VAL:O	2.18	0.43
7:K:124:ARG:HG3	7:K:124:ARG:O	2.18	0.43
9:M:319:LEU:C	9:M:319:LEU:HD12	2.43	0.43
11:U:107:GLU:OE2	11:U:134:VAL:HG12	2.19	0.43
7:K:21:ASN:ND2	7:K:21:ASN:O	2.50	0.43
9:M:55:LEU:HD23	9:M:55:LEU:C	2.43	0.43
9:Q:105:GLU:OE1	9:Q:105:GLU:N	2.51	0.43
9:Q:393:HIS:HD2	9:Q:430:VAL:HG13	1.83	0.43
12:T:222:MET:HE3	12:T:239:ARG:NH2	2.30	0.43
11:U:346:LEU:HD13	11:U:346:LEU:C	2.44	0.43
13:V:147:LEU:N	13:V:147:LEU:HD22	2.34	0.43
15:X:8:DA:C8	15:X:9:DT:H73	2.53	0.43
15:X:85:DT:H2'	15:X:86:DT:H71	1.99	0.43
15:X:125:DC:C2'	15:X:126:DT:C7	2.89	0.43
1:E:104:GLN:NE2	3:G:94:GLU:OE2	2.52	0.43
5:I:875:GLN:OE1	5:I:878:THR:HG23	2.19	0.43
5:I:906:LEU:HD22	5:I:2070:ARG:HB3	2.00	0.43
7:K:3:THR:HG22	7:K:92:ASN:OD1	2.18	0.43
7:K:277:VAL:N	7:K:278:PRO:CD	2.81	0.43
8:L:19:LEU:CD1	8:L:23:ALA:HB3	2.49	0.43
9:Q:447:LEU:HD22	10:R:331:GLY:HA2	2.00	0.43
11:U:149:THR:CG2	11:U:293:LEU:HD22	2.49	0.43
11:U:306:TYR:CD1	18:U:401:ATP:C2	3.03	0.43
5:I:638:ASN:ND2	5:I:792:LEU:O	2.48	0.43
5:I:888:MET:SD	5:I:888:MET:N	2.91	0.43
7:K:267:ILE:O	7:K:268:LEU:C	2.61	0.43
9:M:302:ASP:OD2	10:N:314:ARG:NE	2.48	0.43
9:M:447:LEU:HD11	10:N:344:HIS:CE1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:298:ILE:CG2	10:N:301:VAL:HG22	2.49	0.43
10:N:409:ALA:CA	10:N:429:VAL:HG21	2.49	0.43
10:P:270:SER:O	10:P:271:GLU:C	2.62	0.43
12:T:333:VAL:HG11	12:T:345:TYR:CE2	2.54	0.43
13:V:137:VAL:O	13:V:137:VAL:HG13	2.19	0.43
15:X:1:DA:C2	15:X:2:DG:C6	3.07	0.43
15:X:44:DC:C2'	15:X:45:DC:C5	2.97	0.43
15:X:131:DA:C5	16:Y:-130:DG:N2	2.87	0.43
5:I:610:ILE:HD12	5:I:610:ILE:N	2.34	0.43
6:J:216:SER:HB3	10:P:145:ILE:HG13	2.00	0.43
7:K:347:VAL:HG13	7:K:347:VAL:O	2.19	0.43
9:M:295:VAL:HG23	9:M:295:VAL:O	2.19	0.43
11:U:221:LEU:O	11:U:225:GLN:N	2.50	0.43
15:X:112:DC:H2''	15:X:113:DC:C6	2.54	0.43
16:Y:-124:DG:H2''	16:Y:-123:DC:H6	1.84	0.43
5:I:957:ARG:NH2	5:I:1916:PRO:O	2.52	0.43
5:I:2068:MET:HE3	5:I:2070:ARG:HB2	2.01	0.43
10:N:245:HIS:O	10:N:249:VAL:HG23	2.18	0.43
14:W:195:ALA:O	14:W:199:GLU:HG2	2.19	0.43
15:X:110:DG:N1	16:Y:-109:DG:N2	2.60	0.43
15:X:115:DA:C8	15:X:116:DT:H72	2.54	0.43
1:A:84:LEU:O	1:A:88:ILE:HD12	2.19	0.42
9:M:243:LEU:O	9:M:247:ASN:ND2	2.44	0.42
10:N:161:LEU:HD12	10:N:162:THR:H	1.84	0.42
10:P:90:MET:HE1	10:P:325:ILE:HD11	2.01	0.42
15:X:8:DA:C5	15:X:9:DT:C4	3.07	0.42
16:Y:-85:DA:C4	16:Y:-84:DC:C5	3.07	0.42
7:K:22:VAL:HG22	7:K:360:TRP:CE2	2.53	0.42
9:M:27:ASP:OD1	9:M:29:SER:OG	2.28	0.42
10:N:161:LEU:HB2	10:N:174:LEU:HD11	2.00	0.42
13:V:215:ILE:N	13:V:215:ILE:HD12	2.34	0.42
7:K:59:PRO:O	7:K:66:VAL:N	2.51	0.42
9:M:66:VAL:HG22	9:M:359:MET:HE3	2.01	0.42
10:P:188:GLN:HE21	10:P:188:GLN:HB3	1.57	0.42
9:Q:404:ARG:NE	17:Q:501:ADP:C5'	2.82	0.42
11:U:289:ILE:HG22	11:U:293:LEU:HD21	2.01	0.42
14:W:150:MET:O	14:W:154:LEU:HG	2.19	0.42
14:W:194:ILE:CG2	14:W:198:LYS:HE2	2.49	0.42
15:X:8:DA:C2'	15:X:9:DT:C6	3.01	0.42
15:X:48:DT:N1	15:X:49:DT:H72	2.34	0.42
15:X:84:DG:C8	15:X:85:DT:H72	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-132:DG:H2''	16:Y:-131:DT:C7	2.48	0.42
1:E:66:ALA:HB2	1:E:83:LEU:HD23	2.01	0.42
5:I:165:VAL:HG22	11:U:355:MET:SD	2.59	0.42
5:I:166:VAL:HG21	11:U:168:GLY:CA	2.43	0.42
6:J:308:ILE:HG21	6:J:319:ILE:HD13	2.01	0.42
10:N:354:LEU:C	10:N:354:LEU:HD12	2.44	0.42
9:O:304:VAL:HG22	9:O:304:VAL:O	2.19	0.42
10:P:169:GLU:N	10:P:169:GLU:OE1	2.52	0.42
10:P:270:SER:O	10:P:272:VAL:N	2.52	0.42
11:S:43:VAL:O	11:S:43:VAL:HG12	2.18	0.42
13:V:250:GLU:HA	13:V:253:LYS:HD2	2.02	0.42
15:X:106:DC:C2'	15:X:107:DT:H72	2.49	0.42
16:Y:-1:DT:H2''	16:Y:0:DG:C5'	2.50	0.42
9:M:20:HIS:CE1	17:M:501:ADP:HO2'	2.36	0.42
10:N:22:ILE:HD12	10:N:22:ILE:N	2.34	0.42
10:N:303:MET:HA	10:N:303:MET:HE2	2.02	0.42
9:O:171:LYS:C	9:O:172:LEU:HD22	2.45	0.42
10:P:367:THR:HG23	10:P:399:LEU:HD13	2.01	0.42
10:R:306:ILE:HD13	10:R:338:THR:CG2	2.50	0.42
14:W:190:THR:HG22	14:W:194:ILE:CD1	2.47	0.42
15:X:77:DT:H2''	15:X:78:DA:N7	2.35	0.42
15:X:100:DA:C6	15:X:101:DG:C6	3.07	0.42
16:Y:-119:DT:H2''	16:Y:-118:DC:C5	2.54	0.42
16:Y:-66:DC:H2''	16:Y:-65:DC:C6	2.55	0.42
16:Y:-30:DC:H2''	16:Y:-29:DT:C6	2.55	0.42
5:I:1949:TRP:O	9:Q:234:ILE:HG23	2.19	0.42
5:I:2140:TRP:CH2	5:I:2176:ILE:HG23	2.55	0.42
9:M:199:ALA:O	9:M:200:VAL:C	2.62	0.42
9:M:384:ILE:HG21	9:M:425:ILE:HD12	2.01	0.42
10:P:245:HIS:HA	10:P:248:ASP:OD1	2.20	0.42
13:V:57:VAL:O	13:V:61:LEU:HG	2.19	0.42
13:V:208:VAL:N	13:V:209:PRO:CD	2.83	0.42
14:W:66:ILE:HD12	14:W:86:TYR:CG	2.55	0.42
15:X:34:DA:N6	15:X:35:DG:O6	2.51	0.42
15:X:54:DG:H2''	15:X:55:DT:H5'	2.01	0.42
15:X:129:DG:H2''	15:X:130:DC:C6	2.55	0.42
5:I:951:LEU:HD11	5:I:1914:LEU:HD13	2.01	0.42
9:M:105:GLU:OE1	9:M:105:GLU:N	2.51	0.42
9:Q:106:ILE:HD11	9:Q:110:GLU:HG2	2.02	0.42
12:T:376:MET:HE1	13:V:234:TYR:CD1	2.54	0.42
5:I:216:LYS:O	5:I:220:ARG:HG2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:I:927:SER:OG	5:I:928:LEU:N	2.53	0.42
6:J:297:ARG:HB3	6:J:298:PRO:HD2	2.02	0.42
9:M:270:GLU:HB3	9:M:275:LEU:HD23	2.02	0.42
10:P:348:ILE:HD13	10:P:348:ILE:H	1.84	0.42
12:T:247:THR:HG22	12:T:248:ARG:N	2.34	0.42
11:U:302:GLY:HA3	18:U:401:ATP:O2A	2.18	0.42
15:X:114:DA:C6	15:X:115:DA:C6	3.08	0.42
16:Y:-8:DT:H2''	16:Y:-7:DA:C8	2.53	0.42
1:A:43:ARG:NH2	16:Y:-35:DC:C4'	2.20	0.42
2:B:41:VAL:O	2:B:45:VAL:HG22	2.19	0.42
2:B:91:ILE:O	2:B:95:VAL:HG23	2.20	0.42
6:J:165:ARG:N	6:J:166:PRO:HD3	2.35	0.42
10:N:256:GLY:O	10:N:258:LEU:N	2.45	0.42
9:Q:135:VAL:HG13	9:Q:188:GLY:H	1.85	0.42
9:Q:308:ASP:OD1	9:Q:310:GLU:N	2.53	0.42
11:S:151:ILE:HD13	11:S:278:THR:HG23	2.02	0.42
14:W:157:THR:HG22	14:W:157:THR:O	2.20	0.42
15:X:72:DG:C4	15:X:73:DC:C5	3.08	0.42
15:X:103:DT:H2''	15:X:104:DG:C8	2.55	0.42
16:Y:-107:DA:C6	16:Y:-106:DG:C6	3.08	0.42
16:Y:-102:DG:C5	16:Y:-101:DC:N4	2.88	0.42
16:Y:-65:DC:C2'	16:Y:-64:DC:C5	3.03	0.42
5:I:161:VAL:HG12	5:I:162:ALA:N	2.34	0.42
5:I:672:ILE:HG22	5:I:674:VAL:HG13	2.02	0.42
10:R:27:HIS:NE2	17:R:501:ADP:N3	2.68	0.42
14:W:194:ILE:CG2	14:W:198:LYS:HD2	2.50	0.42
15:X:88:DA:H1'	15:X:89:DA:C8	2.55	0.42
16:Y:-1:DT:H1'	16:Y:0:DG:H5''	2.01	0.42
1:A:55:VAL:O	1:A:59:LEU:HG	2.20	0.41
1:A:65:GLU:N	1:A:65:GLU:OE1	2.53	0.41
5:I:1928:LEU:HD22	10:R:279:LYS:CD	2.50	0.41
7:K:123:LEU:CD1	7:K:125:VAL:HG13	2.50	0.41
9:O:378:ARG:HG2	9:O:407:VAL:HG22	2.01	0.41
10:P:174:LEU:HD13	10:P:182:LEU:CD1	2.50	0.41
11:U:96:VAL:O	11:U:96:VAL:HG13	2.18	0.41
14:W:194:ILE:HG23	14:W:198:LYS:CE	2.50	0.41
15:X:10:DA:C4	15:X:11:DT:C5	3.08	0.41
16:Y:-132:DG:H2''	16:Y:-131:DT:H71	2.02	0.41
9:M:90:LYS:HG3	9:M:91:VAL:HG13	2.03	0.41
10:N:37:LEU:HD21	10:N:61:GLU:HG3	2.02	0.41
9:O:50:GLY:O	9:O:53:VAL:HG22	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:213:PHE:O	9:Q:214:ASP:C	2.63	0.41
14:W:151:MET:HE3	14:W:155:LEU:HD21	2.02	0.41
15:X:13:DT:H2''	15:X:14:DG:N7	2.35	0.41
15:X:72:DG:C6	15:X:73:DC:C4	3.08	0.41
16:Y:-125:DG:C2	16:Y:-124:DG:C6	3.08	0.41
16:Y:-82:DC:H2''	16:Y:-81:DA:C8	2.56	0.41
4:D:83:ALA:O	4:D:87:VAL:HG23	2.20	0.41
5:I:163:ARG:HB3	5:I:167:ARG:NH1	2.36	0.41
5:I:653:THR:CG2	5:I:744:ILE:HD13	2.51	0.41
9:Q:56:ILE:HG12	9:Q:326:ILE:HG21	2.01	0.41
9:Q:130:VAL:HG13	9:Q:192:TYR:CD2	2.56	0.41
11:S:139:VAL:HG12	11:S:143:TYR:CE2	2.56	0.41
11:U:369:ILE:HG23	11:U:370:VAL:N	2.35	0.41
16:Y:-122:DC:C4	16:Y:-121:DG:C6	3.09	0.41
4:H:49:LEU:HD12	4:H:49:LEU:N	2.36	0.41
6:J:167:LEU:O	6:J:168:THR:HG23	2.19	0.41
9:M:374:ILE:HG12	17:M:501:ADP:C2	2.55	0.41
11:U:289:ILE:CG2	11:U:293:LEU:HD21	2.51	0.41
11:U:289:ILE:N	11:U:289:ILE:HD12	2.35	0.41
15:X:10:DA:C2'	15:X:11:DT:H71	2.50	0.41
15:X:21:DG:N2	16:Y:-20:DG:N2	2.53	0.41
16:Y:-52:DG:H2''	16:Y:-51:DC:C6	2.56	0.41
16:Y:-7:DA:H2''	16:Y:-6:DC:C5'	2.51	0.41
10:P:143:VAL:HG23	10:P:162:THR:O	2.20	0.41
9:Q:124:ILE:HG13	9:Q:291:ILE:HG22	2.02	0.41
9:Q:255:ASP:OD1	9:Q:258:SER:HB3	2.21	0.41
9:Q:411:THR:N	9:Q:412:PRO:HD2	2.36	0.41
15:X:89:DA:H2''	15:X:90:DG:C8	2.55	0.41
15:X:131:DA:C6	16:Y:-130:DG:C2	3.09	0.41
5:I:195:ALA:HB3	11:S:169:TYR:CE1	2.56	0.41
5:I:1960:LEU:N	5:I:1960:LEU:HD22	2.36	0.41
6:J:216:SER:O	10:P:144:GLU:HA	2.20	0.41
7:K:84:TYR:O	7:K:84:TYR:CG	2.74	0.41
7:K:183:HIS:CD2	7:K:187:ILE:HD11	2.55	0.41
9:M:263:LEU:HD12	9:O:263:LEU:O	2.20	0.41
10:N:301:VAL:HG13	10:N:304:LEU:CD1	2.49	0.41
15:X:5:DT:H2''	15:X:6:DG:O5'	2.20	0.41
16:Y:-9:DA:C2'	16:Y:-8:DT:H71	2.51	0.41
5:I:661:ALA:HB1	5:I:667:TRP:CE2	2.56	0.41
9:M:172:LEU:HD12	9:M:172:LEU:N	2.36	0.41
9:M:180:LEU:HD22	9:M:185:VAL:HG21	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:94:LEU:HD21	10:N:98:THR:CG2	2.50	0.41
10:R:346:ILE:HD12	10:R:350:LEU:HD23	2.01	0.41
15:X:60:DA:C5	15:X:61:DC:N4	2.88	0.41
16:Y:-100:DT:H6	16:Y:-100:DT:H2'	1.74	0.41
6:J:183:ASN:O	6:J:187:LEU:HD23	2.20	0.41
8:L:117:CYS:SG	8:L:118:ALA:N	2.94	0.41
9:M:47:GLU:OE2	10:R:428:ARG:NH2	2.49	0.41
9:M:155:SER:O	10:R:213:ARG:NH1	2.54	0.41
9:O:76:LYS:HG3	17:O:501:ADP:O1B	2.20	0.41
9:Q:102:TYR:OH	9:Q:339:ARG:NH2	2.54	0.41
11:U:210:ARG:CZ	18:U:401:ATP:C2'	2.98	0.41
11:U:299:LEU:HD13	11:U:309:ILE:HD12	2.02	0.41
3:C:61:LEU:HD12	4:D:37:LEU:HD23	2.02	0.41
4:D:61:PHE:O	4:D:65:VAL:HG23	2.20	0.41
1:E:68:ASN:HB2	6:J:145:PHE:CZ	2.56	0.41
3:G:41:TYR:O	16:Y:-63:DG:H4'	2.21	0.41
4:H:36:ARG:CZ	15:X:59:DA:OP1	2.69	0.41
5:I:1977:ILE:HD13	5:I:2024:ILE:HG23	2.03	0.41
6:J:268:PHE:CD1	6:J:268:PHE:N	2.89	0.41
7:K:292:MET:SD	7:K:296:GLU:HB2	2.61	0.41
7:K:302:ILE:HB	7:K:303:GLN:OE1	2.20	0.41
9:M:262:GLN:O	9:M:263:LEU:HB3	2.21	0.41
10:N:47:VAL:HG23	10:N:373:ILE:HD12	2.02	0.41
10:P:147:ILE:HD12	10:P:158:VAL:O	2.21	0.41
10:P:393:ILE:O	10:P:397:THR:OG1	2.35	0.41
9:Q:374:ILE:CD1	17:Q:501:ADP:C5	3.04	0.41
10:R:34:ASP:OD1	10:R:40:ARG:NE	2.48	0.41
11:U:153:MET:SD	11:U:274:ILE:HD11	2.61	0.41
11:U:287:VAL:HG13	11:U:288:ASP:N	2.35	0.41
11:U:293:LEU:N	11:U:293:LEU:HD23	2.35	0.41
15:X:12:DA:H2''	15:X:13:DT:C6	2.56	0.41
15:X:24:DC:H6	15:X:24:DC:H2'	1.74	0.41
15:X:93:DG:C6	15:X:94:DT:C4	3.08	0.41
15:X:116:DT:C2'	15:X:117:DT:C7	2.96	0.41
16:Y:-25:DG:H2''	16:Y:-24:DG:C8	2.56	0.41
9:Q:122:LEU:C	9:Q:122:LEU:HD13	2.46	0.41
16:Y:-102:DG:C5	16:Y:-101:DC:C4	3.09	0.41
1:E:102:ILE:HD12	1:E:102:ILE:N	2.35	0.40
7:K:13:ALA:HB2	7:K:27:ASN:CB	2.52	0.40
15:X:58:DA:H2''	15:X:59:DA:C8	2.56	0.40
15:X:110:DG:N2	16:Y:-109:DG:H21	2.08	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-22:DA:H1'	16:Y:-21:DC:H5'	2.04	0.40
1:A:63:ILE:HG23	2:B:59:MET:HE1	2.02	0.40
4:H:35:ARG:O	4:H:39:ARG:HG2	2.21	0.40
10:P:117:GLU:OE1	10:P:121:GLN:NE2	2.54	0.40
10:P:225:VAL:HG22	10:P:226:GLN:N	2.36	0.40
11:U:157:ASP:CG	18:U:401:ATP:O3'	2.58	0.40
15:X:25:DC:H2''	15:X:26:DT:C4	2.56	0.40
5:I:873:MET:SD	5:I:897:LEU:HD21	2.60	0.40
6:J:213:THR:O	6:J:266:ILE:HG23	2.22	0.40
10:N:80:GLY:HA2	17:N:501:ADP:PA	2.62	0.40
15:X:22:DT:C4	15:X:23:DG:C6	3.10	0.40
3:G:66:PRO:HG3	16:Y:-55:DA:OP1	2.22	0.40
7:K:285:SER:H	7:K:289:ILE:HD11	1.86	0.40
10:N:49:GLN:HG2	10:N:86:ILE:HD11	2.02	0.40
10:N:119:LEU:HD21	10:N:312:LEU:HG	2.03	0.40
10:P:47:VAL:CB	17:P:501:ADP:N1	2.85	0.40
10:P:305:ASP:OD1	10:P:306:ILE:N	2.48	0.40
10:P:349:ASP:O	10:P:353:ARG:NH2	2.48	0.40
9:Q:23:GLY:O	9:Q:37:SER:OG	2.38	0.40
10:R:204:LYS:O	10:R:223:LYS:HE2	2.21	0.40
15:X:62:DG:C2	16:Y:-61:DG:C2	3.10	0.40
15:X:86:DT:H2''	15:X:87:DT:H72	2.03	0.40
5:I:205:PHE:O	5:I:209:VAL:HG23	2.21	0.40
6:J:200:GLN:O	6:J:201:VAL:C	2.64	0.40
9:O:275:LEU:C	9:O:275:LEU:HD23	2.47	0.40
10:P:272:VAL:O	10:P:276:ILE:HD13	2.22	0.40
10:R:403:ILE:CD1	17:R:501:ADP:H4'	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	106/130 (82%)	104 (98%)	2 (2%)	0	100	100
1	E	103/130 (79%)	100 (97%)	3 (3%)	0	100	100
2	B	94/126 (75%)	93 (99%)	1 (1%)	0	100	100
2	F	92/126 (73%)	87 (95%)	5 (5%)	0	100	100
3	C	93/136 (68%)	92 (99%)	1 (1%)	0	100	100
3	G	95/136 (70%)	95 (100%)	0	0	100	100
4	D	79/103 (77%)	79 (100%)	0	0	100	100
4	H	78/103 (76%)	76 (97%)	2 (3%)	0	100	100
5	I	782/3230 (24%)	742 (95%)	38 (5%)	2 (0%)	37	69
6	J	154/364 (42%)	129 (84%)	24 (16%)	1 (1%)	22	57
7	K	392/396 (99%)	359 (92%)	32 (8%)	1 (0%)	37	69
8	L	109/154 (71%)	105 (96%)	4 (4%)	0	100	100
9	M	412/456 (90%)	399 (97%)	13 (3%)	0	100	100
9	O	431/456 (94%)	412 (96%)	19 (4%)	0	100	100
9	Q	438/456 (96%)	416 (95%)	19 (4%)	3 (1%)	19	54
10	N	405/463 (88%)	396 (98%)	9 (2%)	0	100	100
10	P	423/463 (91%)	402 (95%)	20 (5%)	1 (0%)	44	75
10	R	420/463 (91%)	393 (94%)	25 (6%)	2 (0%)	25	60
11	S	373/375 (100%)	369 (99%)	4 (1%)	0	100	100
11	U	355/375 (95%)	311 (88%)	43 (12%)	1 (0%)	37	69
12	T	399/429 (93%)	389 (98%)	9 (2%)	1 (0%)	37	69
13	V	183/467 (39%)	174 (95%)	9 (5%)	0	100	100
14	W	185/227 (82%)	182 (98%)	2 (1%)	1 (0%)	25	60
All	All	6201/9764 (64%)	5904 (95%)	284 (5%)	13 (0%)	45	75

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
10	R	224	PHE
5	I	670	HIS
7	K	86	VAL
9	Q	256	ILE
6	J	283	PRO
14	W	171	GLU
10	P	211	ARG

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Mol	Chain	Res	Type
9	Q	149	GLY
12	T	318	SER
5	I	94	ALA
9	Q	266	PRO
10	R	225	VAL
11	U	370	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	A	84/99 (85%)	81 (96%)	3 (4%)	30	62
1	E	82/99 (83%)	78 (95%)	4 (5%)	21	54
2	B	83/106 (78%)	82 (99%)	1 (1%)	67	85
2	F	81/106 (76%)	78 (96%)	3 (4%)	29	62
3	C	82/111 (74%)	74 (90%)	8 (10%)	6	27
3	G	85/111 (77%)	85 (100%)	0	100	100
4	D	66/79 (84%)	65 (98%)	1 (2%)	60	81
4	H	65/79 (82%)	62 (95%)	3 (5%)	23	56
5	I	710/2721 (26%)	665 (94%)	45 (6%)	15	46
6	J	144/312 (46%)	125 (87%)	19 (13%)	3	16
7	K	359/361 (99%)	338 (94%)	21 (6%)	17	49
8	L	98/133 (74%)	96 (98%)	2 (2%)	50	75
9	M	353/387 (91%)	341 (97%)	12 (3%)	32	63
9	O	364/387 (94%)	343 (94%)	21 (6%)	17	49
9	Q	366/387 (95%)	344 (94%)	22 (6%)	16	48
10	N	347/390 (89%)	338 (97%)	9 (3%)	41	70
10	P	352/390 (90%)	329 (94%)	23 (6%)	14	45
10	R	358/390 (92%)	341 (95%)	17 (5%)	22	55
11	S	318/318 (100%)	318 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
11	U	305/318 (96%)	277 (91%)	28 (9%)	7	29
12	T	346/364 (95%)	336 (97%)	10 (3%)	37	67
13	V	168/400 (42%)	156 (93%)	12 (7%)	12	42
14	W	168/203 (83%)	165 (98%)	3 (2%)	54	77
All	All	5384/8251 (65%)	5117 (95%)	267 (5%)	23	54

All (267) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	ARG
1	A	65	GLU
1	A	96	LYS
2	B	60	ASN
3	C	48	LEU
3	C	59	GLU
3	C	64	LYS
3	C	65	LEU
3	C	79	LYS
3	C	82	LEU
3	C	115	LYS
3	C	122	LYS
4	D	92	ARG
1	E	72	ASP
1	E	73	ASN
1	E	76	THR
1	E	81	ARG
2	F	28	ARG
2	F	30	ARG
2	F	31	LYS
4	H	46	ILE
4	H	49	LEU
4	H	79	LYS
5	I	95	GLU
5	I	99	GLN
5	I	134	LYS
5	I	136	HIS
5	I	145	GLN
5	I	161	VAL
5	I	163	ARG
5	I	166	VAL
5	I	168	MET

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Mol	Chain	Res	Type
5	I	177	ARG
5	I	179	LYS
5	I	181	GLU
5	I	190	LYS
5	I	191	LEU
5	I	193	ARG
5	I	194	ILE
5	I	218	GLN
5	I	224	LYS
5	I	225	ARG
5	I	227	LYS
5	I	232	HIS
5	I	236	ILE
5	I	242	LYS
5	I	702	GLN
5	I	857	ILE
5	I	876	THR
5	I	898	ARG
5	I	928	LEU
5	I	936	HIS
5	I	949	ILE
5	I	969	LEU
5	I	988	LYS
5	I	1885	TYR
5	I	1914	LEU
5	I	1921	GLU
5	I	1990	LEU
5	I	2013	GLU
5	I	2035	LEU
5	I	2038	ILE
5	I	2048	LEU
5	I	2067	GLN
5	I	2068	MET
5	I	2075	LEU
5	I	2138	SER
5	I	2139	ASP
6	J	152	GLN
6	J	177	LYS
6	J	181	GLU
6	J	184	LEU
6	J	185	ARG
6	J	197	LYS

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Mol	Chain	Res	Type
6	J	198	LYS
6	J	203	LYS
6	J	204	LYS
6	J	206	LYS
6	J	211	ILE
6	J	213	THR
6	J	260	ARG
6	J	261	CYS
6	J	263	ARG
6	J	268	PHE
6	J	274	PHE
6	J	301	TYR
6	J	312	THR
7	K	8	ASN
7	K	41	THR
7	K	94	ILE
7	K	120	GLN
7	K	123	LEU
7	K	145	CYS
7	K	193	LEU
7	K	244	ILE
7	K	269	ARG
7	K	289	ILE
7	K	300	TYR
7	K	304	ASN
7	K	305	LEU
7	K	336	GLU
7	K	339	CYS
7	K	340	LEU
7	K	351	LEU
7	K	365	LEU
7	K	366	ILE
7	K	370	ASP
7	K	373	GLU
8	L	19	LEU
8	L	111	ARG
9	M	28	GLU
9	M	53	VAL
9	M	114	GLU
9	M	138	LEU
9	M	193	ILE
9	M	225	LYS

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Mol	Chain	Res	Type
9	M	235	ILE
9	M	251	GLN
9	M	271	ILE
9	M	316	HIS
9	M	393	HIS
9	M	441	LYS
10	N	83	LYS
10	N	120	THR
10	N	303	MET
10	N	325	ILE
10	N	380	VAL
10	N	392	ARG
10	N	395	LEU
10	N	413	CYS
10	N	444	LYS
9	O	53	VAL
9	O	55	LEU
9	O	66	VAL
9	O	87	LEU
9	O	128	LYS
9	O	262	GLN
9	O	263	LEU
9	O	265	LYS
9	O	270	GLU
9	O	274	LYS
9	O	278	GLU
9	O	285	LYS
9	O	306	MET
9	O	315	LEU
9	O	342	GLU
9	O	363	THR
9	O	364	MET
9	O	376	LYS
9	O	391	LEU
9	O	399	THR
9	O	407	VAL
10	P	28	ILE
10	P	62	MET
10	P	68	ILE
10	P	92	GLN
10	P	141	GLU
10	P	145	ILE

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Mol	Chain	Res	Type
10	P	148	ASP
10	P	188	GLN
10	P	210	THR
10	P	232	LEU
10	P	236	LYS
10	P	257	PHE
10	P	265	THR
10	P	267	GLU
10	P	268	ILE
10	P	276	ILE
10	P	290	GLU
10	P	291	ILE
10	P	348	ILE
10	P	376	GLU
10	P	405	LEU
10	P	422	GLN
10	P	427	LYS
9	Q	52	ILE
9	Q	60	LYS
9	Q	79	LEU
9	Q	91	VAL
9	Q	113	MET
9	Q	123	ARG
9	Q	178	GLU
9	Q	180	LEU
9	Q	181	GLN
9	Q	182	LYS
9	Q	213	PHE
9	Q	220	TYR
9	Q	236	GLN
9	Q	254	GLN
9	Q	275	LEU
9	Q	298	VAL
9	Q	326	ILE
9	Q	391	LEU
9	Q	404	ARG
9	Q	416	LEU
9	Q	427	LYS
9	Q	450	GLN
10	R	46	MET
10	R	68	ILE
10	R	205	LEU

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Mol	Chain	Res	Type
10	R	239	VAL
10	R	250	ILE
10	R	251	ASN
10	R	255	GLN
10	R	267	GLU
10	R	269	LYS
10	R	323	VAL
10	R	346	ILE
10	R	351	LEU
10	R	370	ILE
10	R	374	ARG
10	R	392	ARG
10	R	395	LEU
10	R	444	LYS
12	T	10	GLU
12	T	71	ASP
12	T	110	HIS
12	T	140	MET
12	T	315	LYS
12	T	317	LEU
12	T	361	THR
12	T	389	ARG
12	T	399	ILE
12	T	413	LYS
11	U	4	ASP
11	U	18	LYS
11	U	62	ARG
11	U	90	PHE
11	U	94	LEU
11	U	101	HIS
11	U	123	MET
11	U	147	ARG
11	U	161	HIS
11	U	165	ILE
11	U	180	LEU
11	U	183	ARG
11	U	213	LYS
11	U	237	GLU
11	U	253	GLU
11	U	269	MET
11	U	282	ILE
11	U	292	ASP

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Mol	Chain	Res	Type
11	U	293	LEU
11	U	314	GLN
11	U	316	GLU
11	U	318	THR
11	U	326	LYS
11	U	327	ILE
11	U	330	ILE
11	U	334	GLU
11	U	362	TYR
11	U	369	ILE
13	V	51	GLU
13	V	53	MET
13	V	56	GLU
13	V	65	LYS
13	V	119	GLU
13	V	145	LEU
13	V	229	GLN
13	V	230	LEU
13	V	237	THR
13	V	248	LEU
13	V	251	LEU
13	V	253	LYS
14	W	134	VAL
14	W	170	THR
14	W	171	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (63) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	44	GLN
2	B	64	ASN
3	C	76	GLN
4	D	75	HIS
1	E	104	GLN
2	F	46	HIS
2	F	81	ASN
2	F	92	GLN
3	G	76	GLN
4	H	75	HIS
5	I	145	GLN
5	I	172	HIS
5	I	178	GLN

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Mol	Chain	Res	Type
5	I	204	GLN
5	I	214	GLN
5	I	239	GLN
5	I	936	HIS
5	I	2009	GLN
5	I	2027	ASN
5	I	2099	GLN
6	J	169	GLN
7	K	174	ASN
7	K	200	HIS
7	K	204	GLN
7	K	283	ASN
7	K	323	ASN
7	K	387	HIS
9	M	18	HIS
9	M	20	HIS
9	M	181	GLN
9	M	229	HIS
9	M	316	HIS
9	M	429	HIS
10	N	275	GLN
10	N	344	HIS
10	N	447	GLN
9	O	20	HIS
9	O	156	HIS
9	O	181	GLN
9	O	241	HIS
9	O	251	GLN
9	O	262	GLN
9	O	289	GLN
10	P	27	HIS
10	P	121	GLN
10	P	240	HIS
10	P	369	GLN
9	Q	20	HIS
9	Q	115	ASN
9	Q	196	ASN
9	Q	262	GLN
9	Q	393	HIS
10	R	245	HIS
11	S	40	HIS
12	T	73	ASN

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Mol	Chain	Res	Type
12	T	143	HIS
12	T	256	ASN
11	U	40	HIS
11	U	78	ASN
11	U	111	ASN
11	U	263	GLN
11	U	371	HIS
13	V	54	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

8 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
17	ADP	M	501	-	24,29,29	0.98	1 (4%)	29,45,45	1.39	4 (13%)
17	ADP	R	501	-	24,29,29	0.96	1 (4%)	29,45,45	1.47	4 (13%)
17	ADP	Q	501	-	24,29,29	0.93	1 (4%)	29,45,45	1.48	4 (13%)
18	ATP	T	501	-	26,33,33	0.99	1 (3%)	31,52,52	1.85	5 (16%)
17	ADP	N	501	-	24,29,29	0.95	1 (4%)	29,45,45	1.49	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
17	ADP	P	501	-	24,29,29	0.94	1 (4%)	29,45,45	1.46	4 (13%)
18	ATP	U	401	-	26,33,33	0.88	1 (3%)	31,52,52	1.97	5 (16%)
17	ADP	O	501	-	24,29,29	0.92	1 (4%)	29,45,45	1.54	4 (13%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
17	ADP	M	501	-	-	4/12/32/32	0/3/3/3
17	ADP	R	501	-	-	3/12/32/32	0/3/3/3
17	ADP	Q	501	-	-	4/12/32/32	0/3/3/3
18	ATP	T	501	-	-	5/18/38/38	0/3/3/3
17	ADP	N	501	-	-	5/12/32/32	0/3/3/3
17	ADP	P	501	-	-	7/12/32/32	0/3/3/3
18	ATP	U	401	-	-	6/18/38/38	0/3/3/3
17	ADP	O	501	-	-	3/12/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	T	501	ATP	C2'-C1'	-2.72	1.49	1.53
17	M	501	ADP	C5-C4	2.45	1.47	1.40
17	N	501	ADP	C5-C4	2.37	1.47	1.40
17	R	501	ADP	C5-C4	2.36	1.47	1.40
17	P	501	ADP	C5-C4	2.35	1.47	1.40
17	O	501	ADP	C5-C4	2.30	1.47	1.40
17	Q	501	ADP	C5-C4	2.20	1.46	1.40
18	U	401	ATP	C5-C4	2.02	1.46	1.40

All (34) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
18	U	401	ATP	PA-O3A-PB	-5.73	113.16	132.83
18	U	401	ATP	PB-O3B-PG	-5.54	113.82	132.83
18	T	501	ATP	PA-O3A-PB	-5.39	114.34	132.83
18	T	501	ATP	PB-O3B-PG	-4.80	116.37	132.83
17	O	501	ADP	PA-O3A-PB	-3.92	119.37	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	Q	501	ADP	PA-O3A-PB	-3.81	119.75	132.83
17	N	501	ADP	PA-O3A-PB	-3.78	119.84	132.83
17	R	501	ADP	PA-O3A-PB	-3.76	119.94	132.83
17	P	501	ADP	PA-O3A-PB	-3.63	120.37	132.83
18	U	401	ATP	C3'-C2'-C1'	3.53	106.29	100.98
17	R	501	ADP	C3'-C2'-C1'	3.48	106.22	100.98
18	T	501	ATP	N3-C2-N1	-3.39	123.37	128.68
17	O	501	ADP	C3'-C2'-C1'	3.37	106.06	100.98
17	M	501	ADP	N3-C2-N1	-3.36	123.43	128.68
17	M	501	ADP	PA-O3A-PB	-3.29	121.55	132.83
17	O	501	ADP	N3-C2-N1	-3.28	123.55	128.68
17	Q	501	ADP	N3-C2-N1	-3.14	123.76	128.68
17	N	501	ADP	N3-C2-N1	-3.11	123.81	128.68
17	P	501	ADP	N3-C2-N1	-3.11	123.81	128.68
17	R	501	ADP	N3-C2-N1	-3.03	123.95	128.68
17	Q	501	ADP	C3'-C2'-C1'	3.02	105.52	100.98
18	U	401	ATP	N3-C2-N1	-2.92	124.12	128.68
17	N	501	ADP	C3'-C2'-C1'	2.86	105.28	100.98
17	P	501	ADP	C4-C5-N7	-2.85	106.43	109.40
18	U	401	ATP	C4-C5-N7	-2.85	106.43	109.40
17	M	501	ADP	C3'-C2'-C1'	2.75	105.12	100.98
17	O	501	ADP	C4-C5-N7	-2.70	106.58	109.40
17	Q	501	ADP	C4-C5-N7	-2.66	106.63	109.40
17	P	501	ADP	C3'-C2'-C1'	2.63	104.94	100.98
17	R	501	ADP	C4-C5-N7	-2.61	106.68	109.40
17	N	501	ADP	C4-C5-N7	-2.54	106.75	109.40
18	T	501	ATP	C3'-C2'-C1'	2.35	104.51	100.98
17	M	501	ADP	C4-C5-N7	-2.26	107.04	109.40
18	T	501	ATP	C4-C5-N7	-2.16	107.14	109.40

There are no chirality outliers.

All (37) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	M	501	ADP	PA-O3A-PB-O2B
17	N	501	ADP	PA-O3A-PB-O2B
17	N	501	ADP	C5'-O5'-PA-O1A
17	N	501	ADP	C5'-O5'-PA-O2A
17	O	501	ADP	C5'-O5'-PA-O1A
17	O	501	ADP	C5'-O5'-PA-O2A
17	P	501	ADP	C5'-O5'-PA-O3A
17	Q	501	ADP	C5'-O5'-PA-O1A

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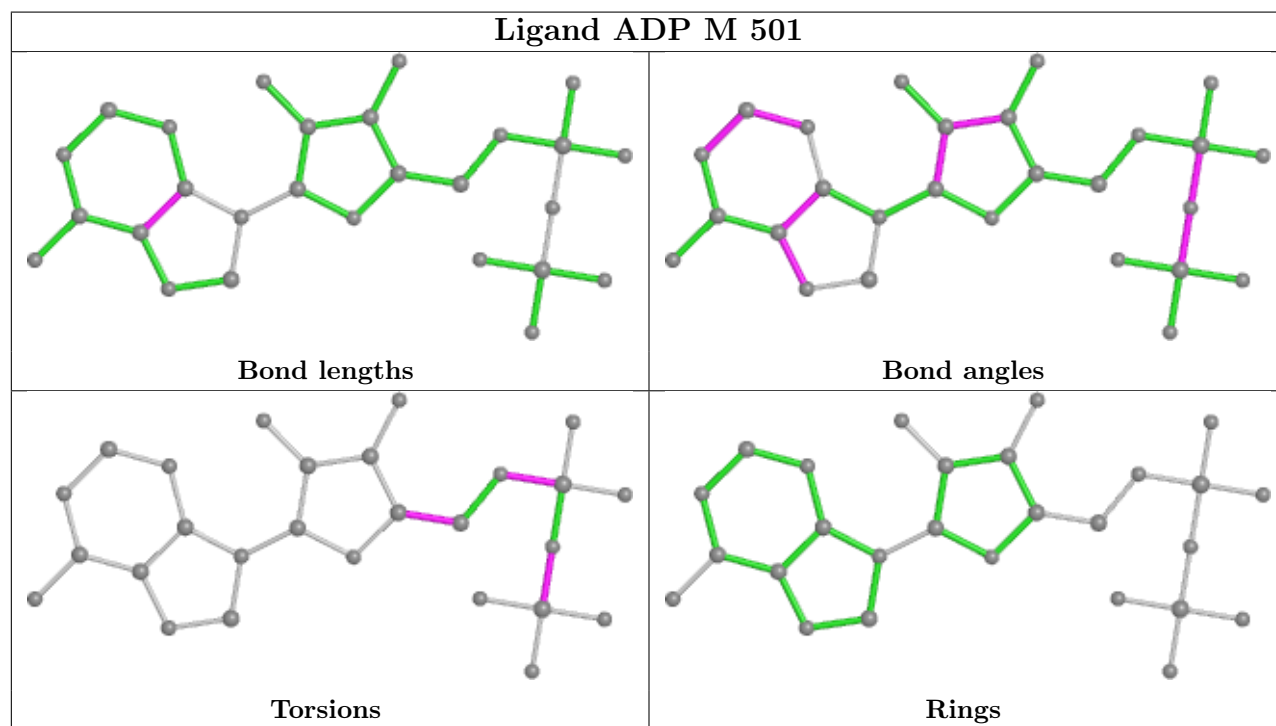
Mol	Chain	Res	Type	Atoms
17	Q	501	ADP	C5'-O5'-PA-O2A
17	R	501	ADP	C5'-O5'-PA-O1A
17	R	501	ADP	C5'-O5'-PA-O2A
18	T	501	ATP	C5'-O5'-PA-O3A
18	U	401	ATP	C5'-O5'-PA-O1A
18	U	401	ATP	C5'-O5'-PA-O2A
17	M	501	ADP	O4'-C4'-C5'-O5'
17	P	501	ADP	O4'-C4'-C5'-O5'
18	T	501	ATP	O4'-C4'-C5'-O5'
17	P	501	ADP	C3'-C4'-C5'-O5'
18	T	501	ATP	C3'-C4'-C5'-O5'
17	Q	501	ADP	C5'-O5'-PA-O3A
18	U	401	ATP	PG-O3B-PB-O1B
17	P	501	ADP	C5'-O5'-PA-O1A
18	T	501	ATP	C5'-O5'-PA-O1A
18	T	501	ATP	C5'-O5'-PA-O2A
17	M	501	ADP	C3'-C4'-C5'-O5'
17	P	501	ADP	PB-O3A-PA-O2A
17	P	501	ADP	C4'-C5'-O5'-PA
17	Q	501	ADP	PB-O3A-PA-O2A
17	M	501	ADP	C5'-O5'-PA-O3A
17	N	501	ADP	C5'-O5'-PA-O3A
17	O	501	ADP	C5'-O5'-PA-O3A
17	R	501	ADP	C5'-O5'-PA-O3A
18	U	401	ATP	C5'-O5'-PA-O3A
17	N	501	ADP	O4'-C4'-C5'-O5'
17	P	501	ADP	PB-O3A-PA-O1A
18	U	401	ATP	PG-O3B-PB-O2B
18	U	401	ATP	PA-O3A-PB-O2B

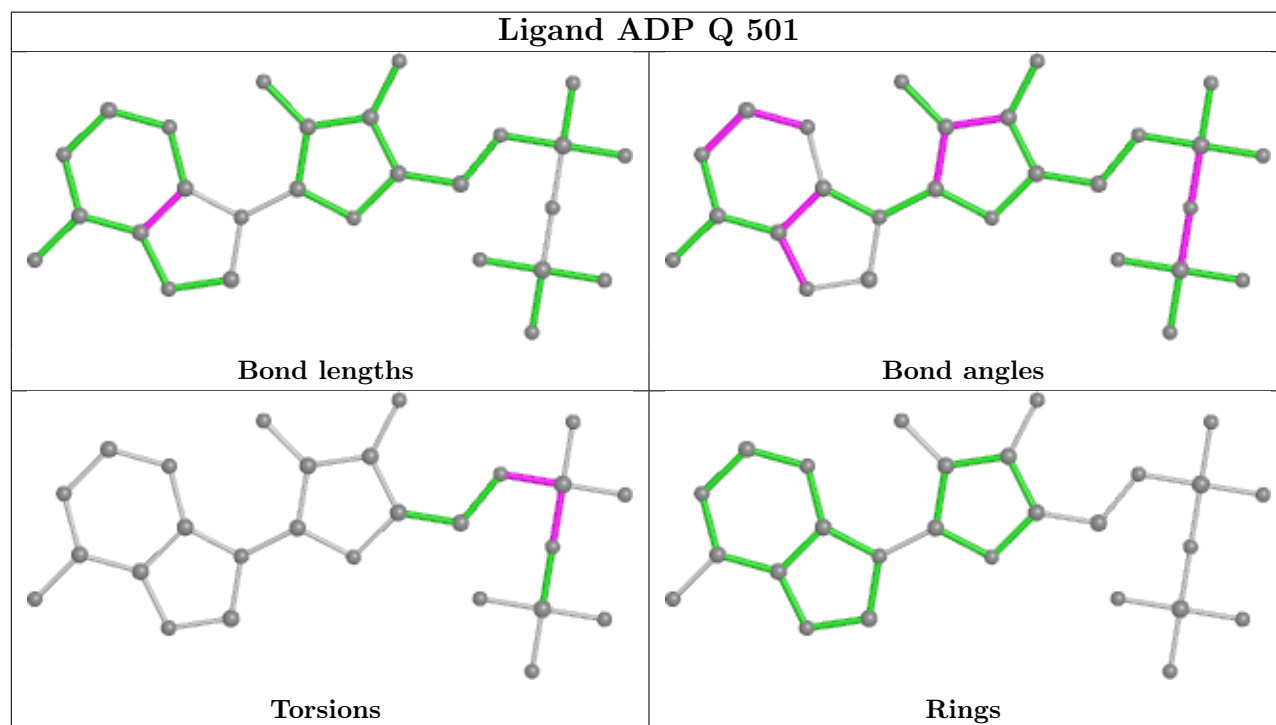
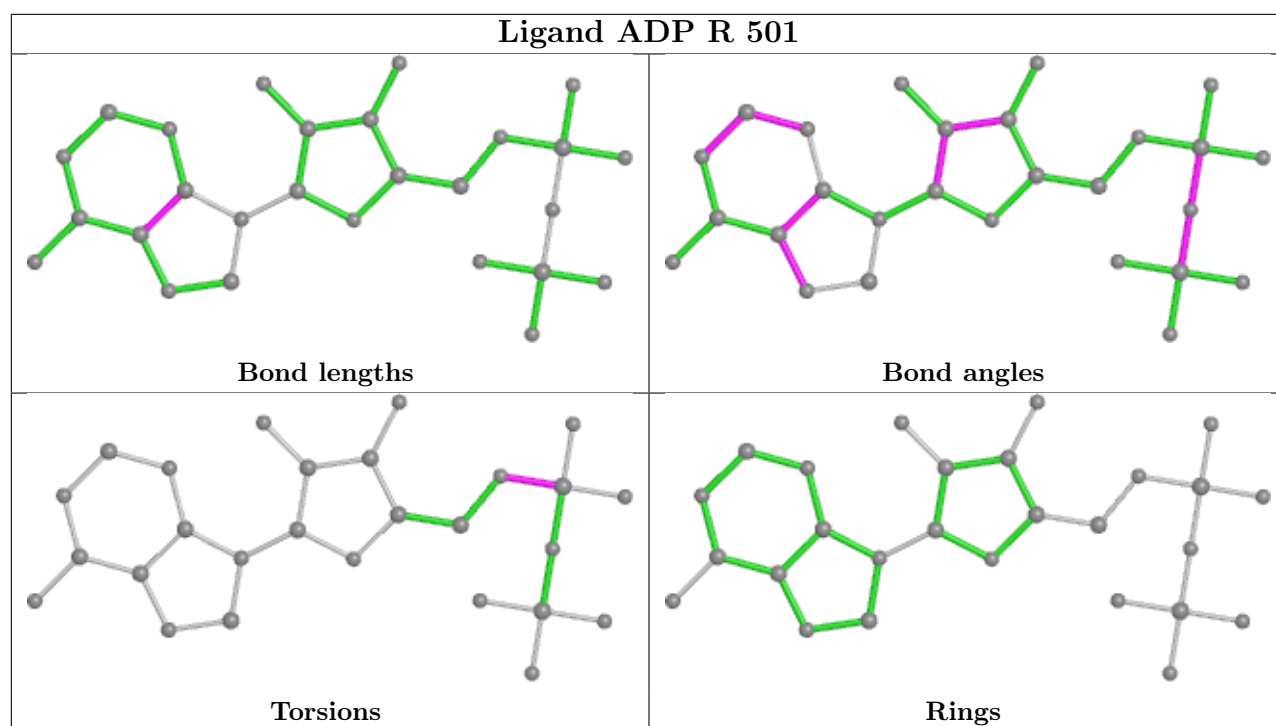
There are no ring outliers.

8 monomers are involved in 131 short contacts:

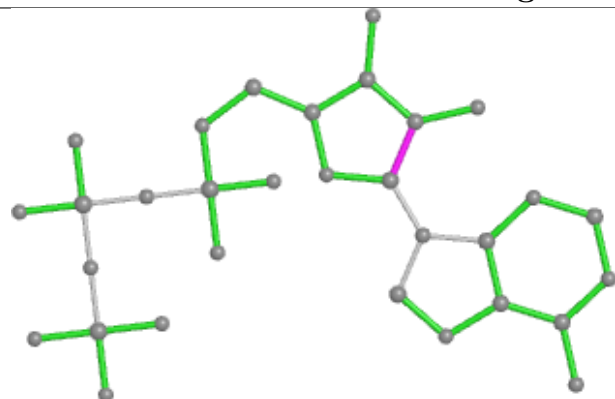
Mol	Chain	Res	Type	Clashes	Symm-Clashes
17	M	501	ADP	13	0
17	R	501	ADP	17	0
17	Q	501	ADP	18	0
18	T	501	ATP	6	0
17	N	501	ADP	11	0
17	P	501	ADP	27	0
18	U	401	ATP	27	0
17	O	501	ADP	12	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

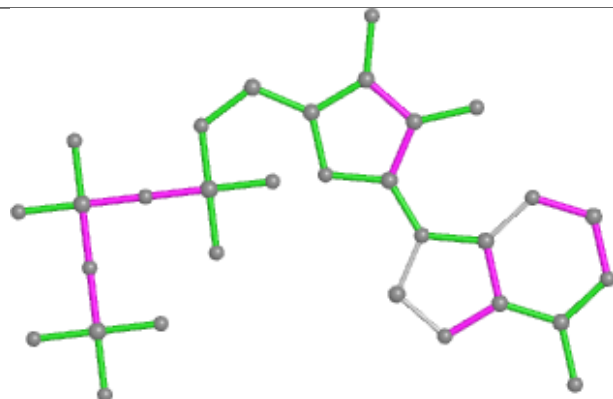




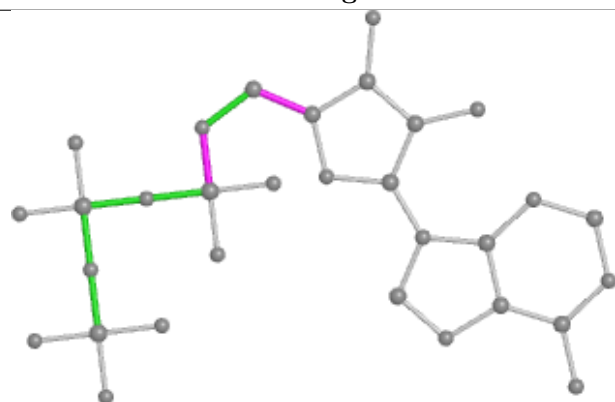
Ligand ATP T 501



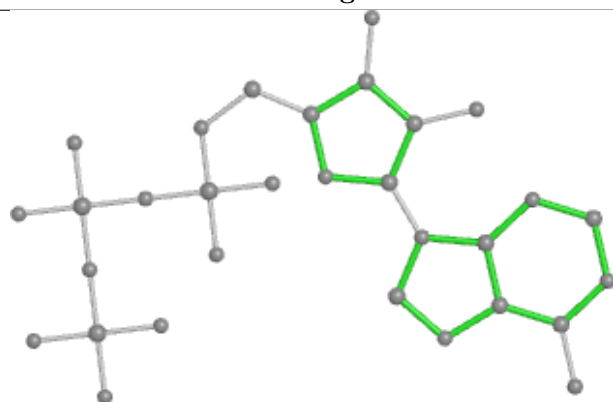
Bond lengths



Bond angles

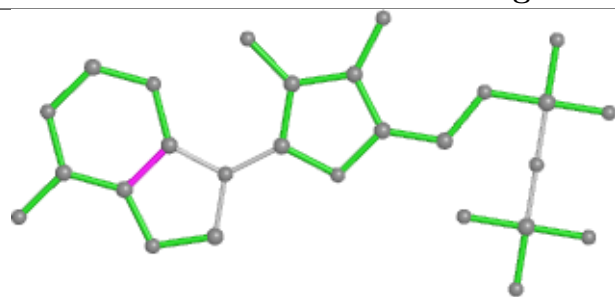


Torsions

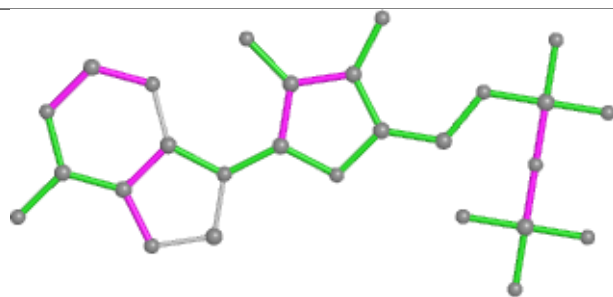


Rings

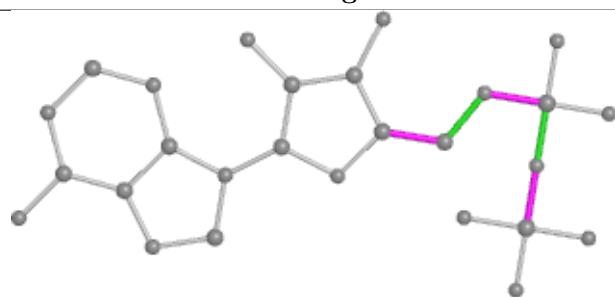
Ligand ADP N 501



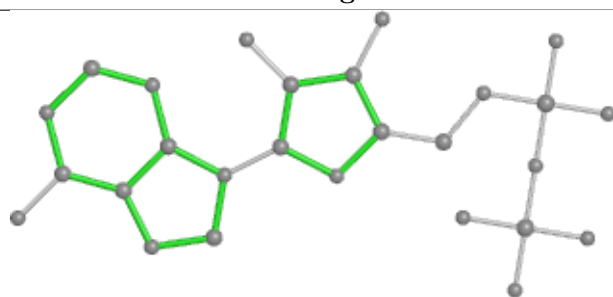
Bond lengths



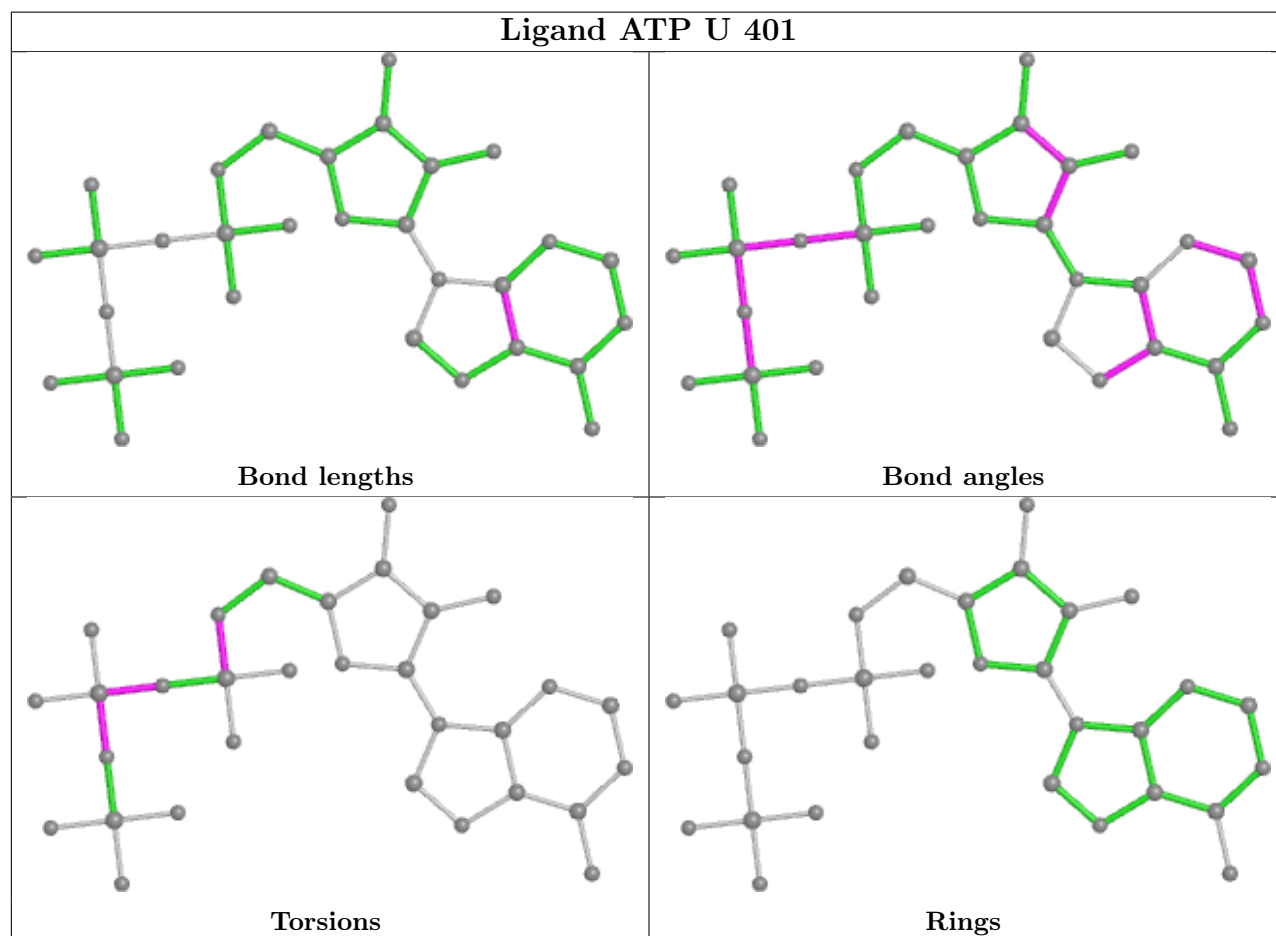
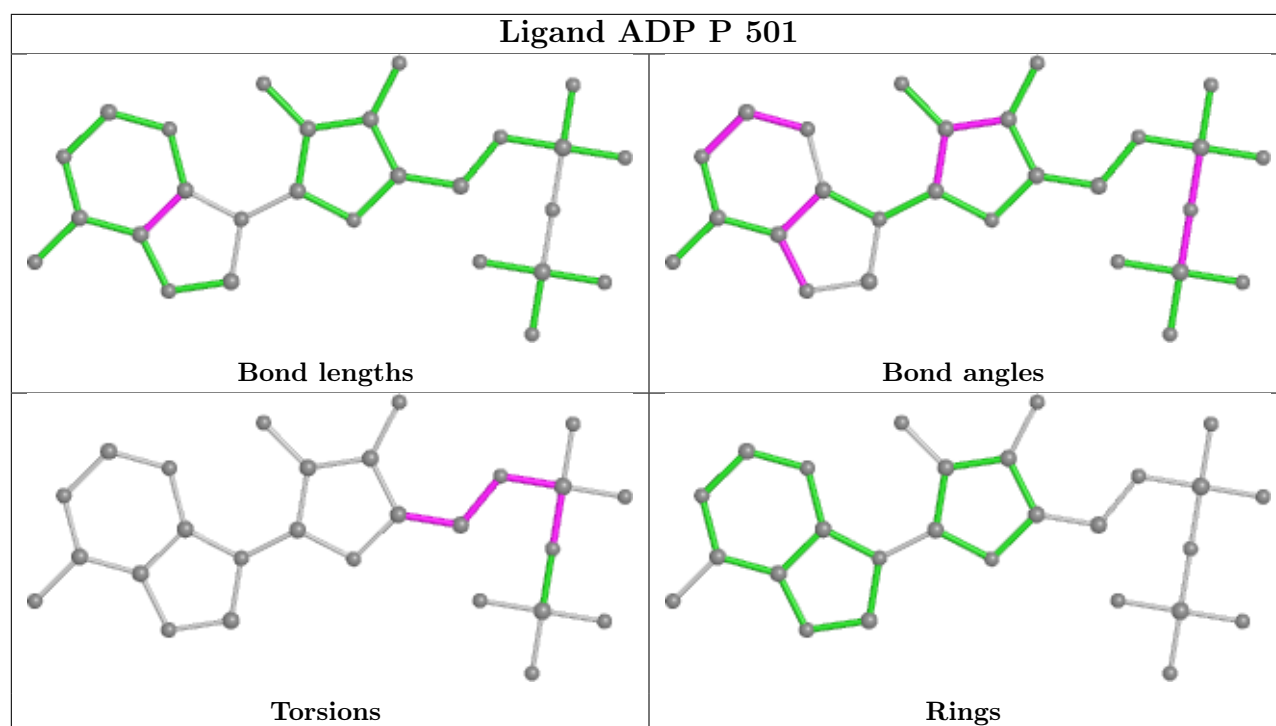
Bond angles

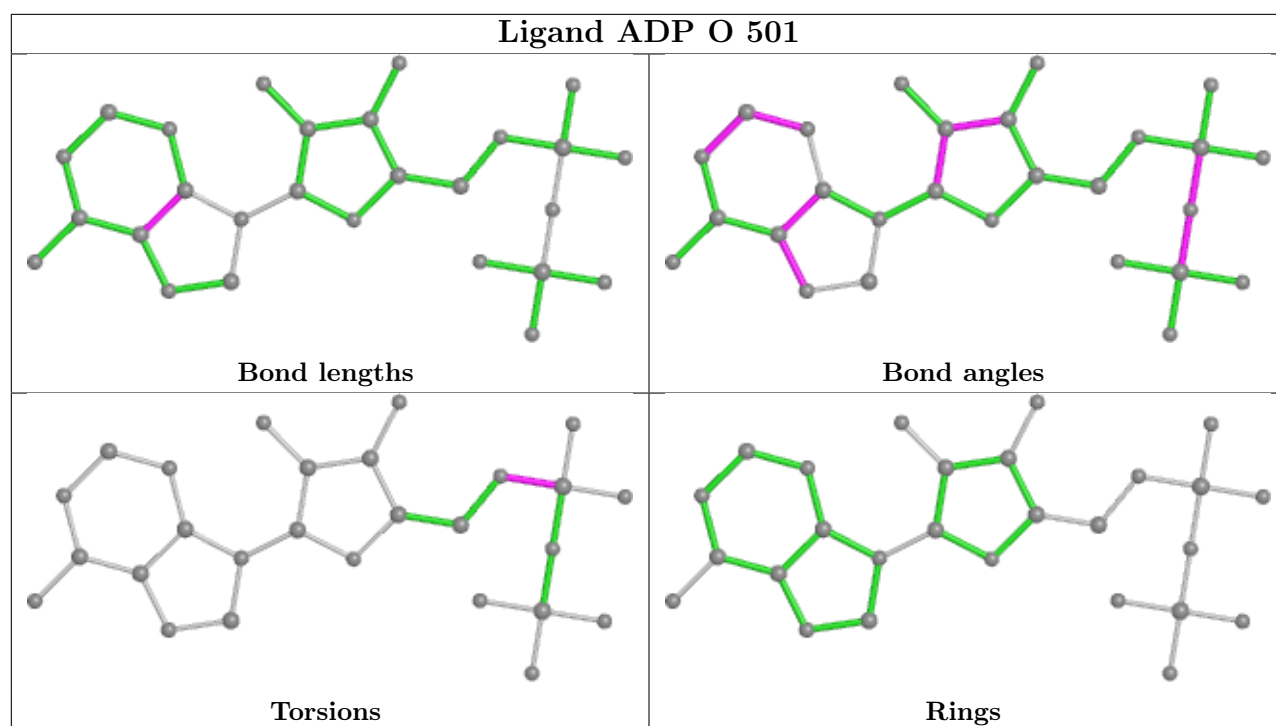


Torsions



Rings





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.