Full wwPDB EM Validation Report ⓘ

Feb 26, 2024 – 01:02 PM JST

PDB ID	:	8X1C
EMDB ID	:	EMD-37990
Title	:	Structure of nucleosome-bound SRCAP-C in the ADP-bound 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:

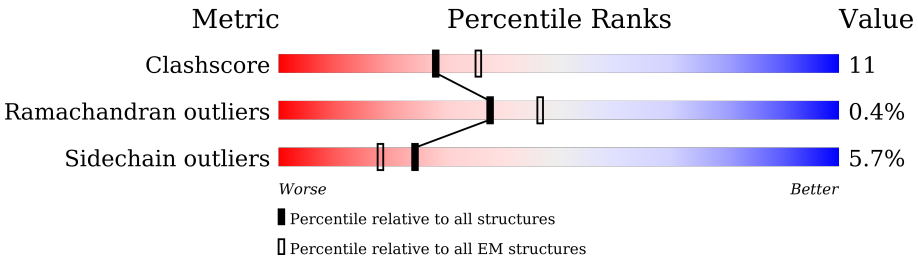
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance

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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	130	8% 72% 17% 11%
1	E	130	68% 12% 19%
2	B	126	56% 20% 24%
2	F	126	62% 11% 25%
3	C	136	7% 53% 15% 30%
3	G	136	65% 6% 29%
4	D	103	68% 11% 21%
4	H	103	73% 5% 22%

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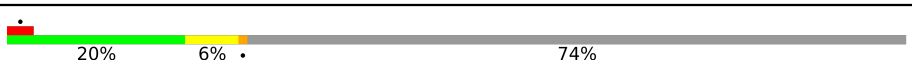
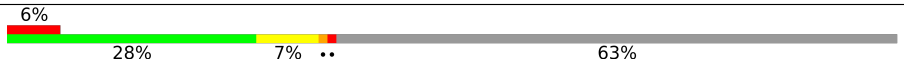
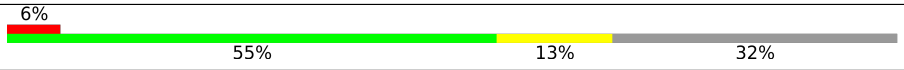
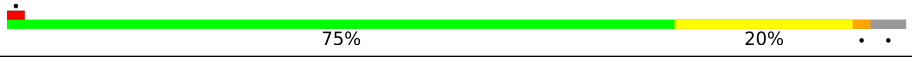
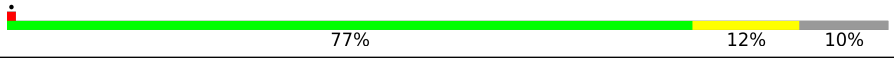
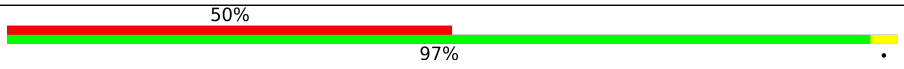
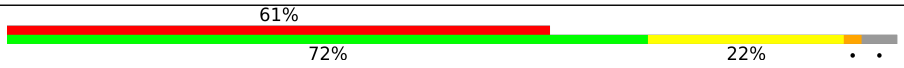
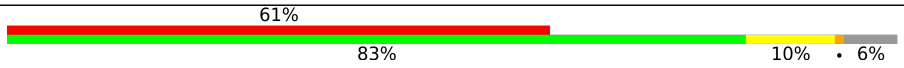
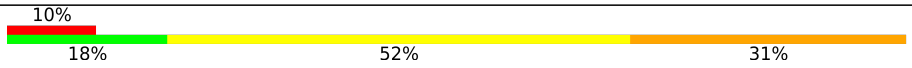
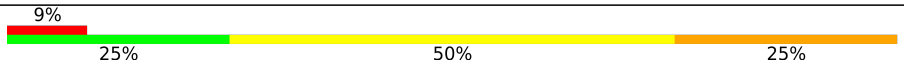
Mol	Chain	Length	Quality of chain
5	I	3230	
6	J	364	
7	K	396	
8	L	154	
9	M	456	
9	O	456	
9	Q	456	
10	N	463	
10	P	463	
10	R	463	
11	S	375	
11	U	375	
12	T	429	
13	V	467	
14	W	227	
15	X	147	
16	Y	147	

2 Entry composition

There are 18 unique types of molecules in this entry. The entry contains 56519 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	116	Total 898	C 564	N 179	O 155	0	0
1	E	105	Total 808	C 510	N 158	O 140	0	0

- 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 755	C 473	N 138	O 142	S 2	0	0
2	F	94	Total 736	C 461	N 134	O 139	S 2	0	0

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

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

- Molecule 4 is a protein called Histone H4.

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

- Molecule 5 is a protein called Helicase SRCAP.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	852	Total	C	N	O	S	0	0
			7031	4476	1299	1217	39		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	135	Total	C	N	O	S	0	0
			1114	708	203	199	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	105	Total	C	N	O	S	0	0
			823	506	157	152	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	M	428	Total	C	N	O	S	0	0
			3293	2075	567	635	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	415	Total	C	N	O	S	0	0
			3223	2016	565	627	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.

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	204	Total	C	N	O	S	0	0
			1757	1117	327	309	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		

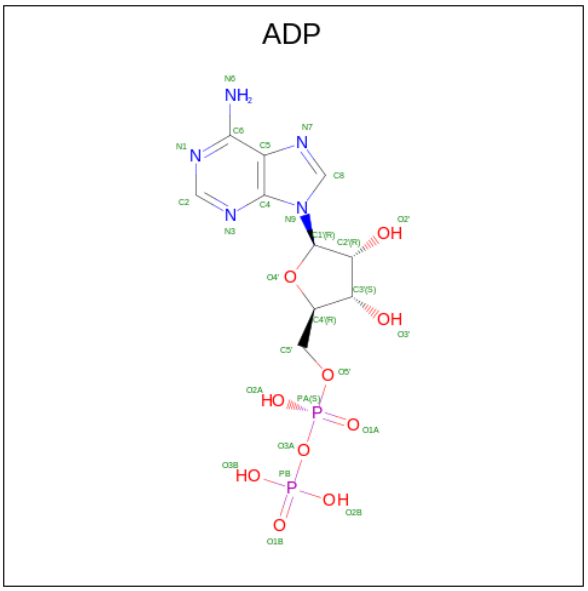
- Molecule 15 is a DNA chain called DNA (147-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
15	X	147	Total	C	N	O	P	0	0
			3034	1435	572	880	147		

- Molecule 16 is a DNA chain called DNA (147-MER).

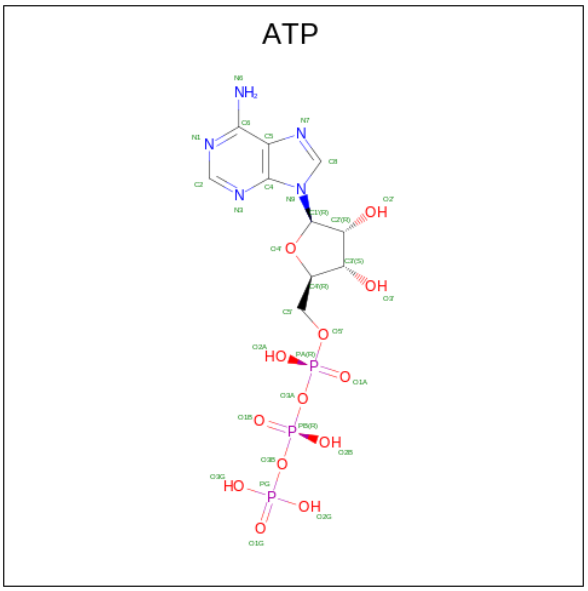
Mol	Chain	Residues	Atoms					AltConf	Trace
16	Y	147	Total	C	N	O	P	0	0
			2990	1422	540	882	146		

- Molecule 17 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
17	I	1	Total	C	N	O	P	0
			27	10	5	10	2	
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 (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



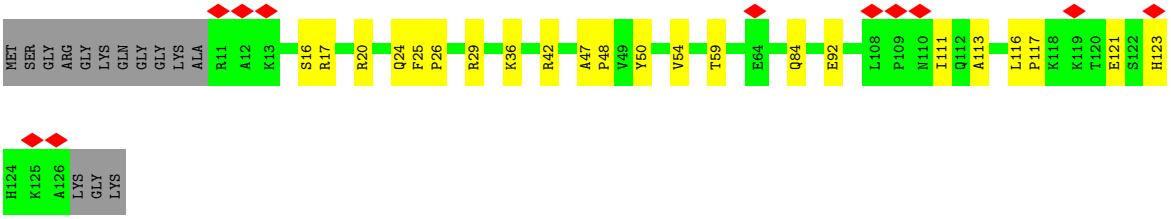
Mol	Chain	Residues	Atoms					AltConf
18	K	1	Total	C	N	O	P	0
			31	10	5	13	3	
18	T	1	Total	C	N	O	P	0
			31	10	5	13	3	
18	U	1	Total	C	N	O	P	0
			31	10	5	13	3	

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

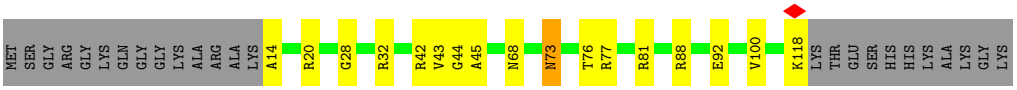
• Molecule 1: Histone H2A type 1-C

Chain A:



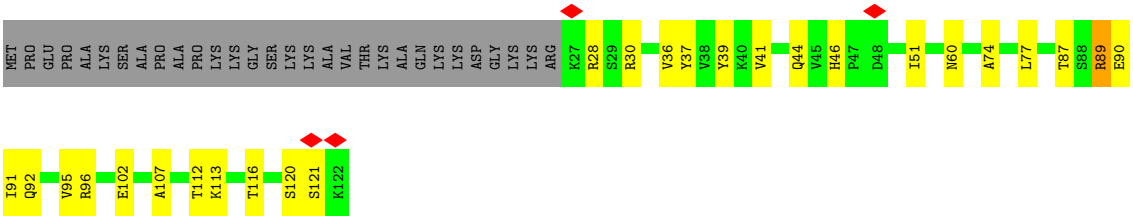
• Molecule 1: Histone H2A type 1-C

Chain E:



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

Chain B:

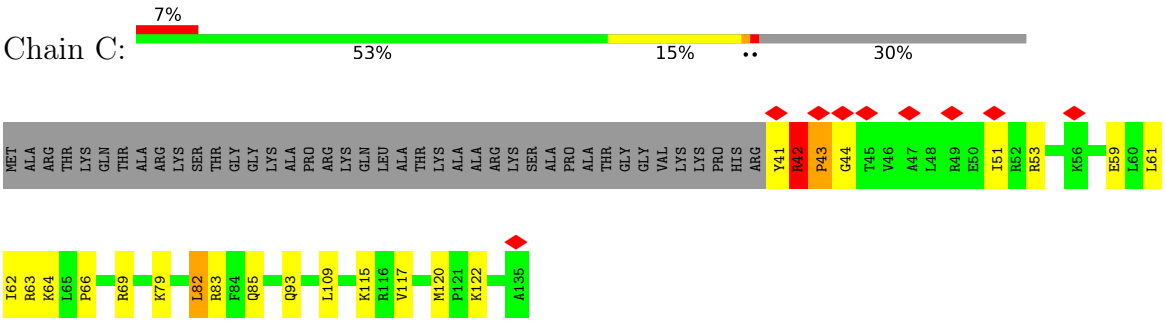


• Molecule 2: Histone H2B type 1-C/E/F/G/I

Chain F:

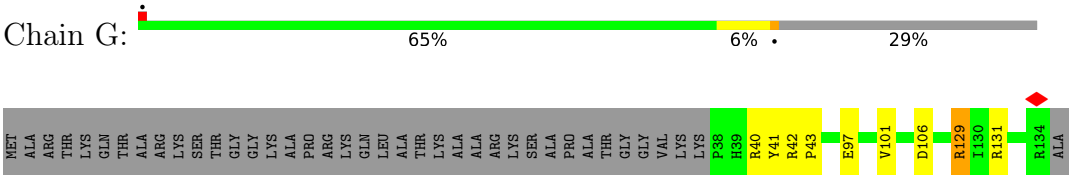
• Molecule 3: Histone H3.1

Chain C:



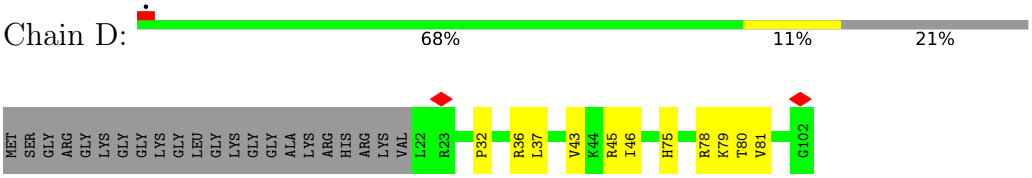
• Molecule 3: Histone H3.1

Chain G:



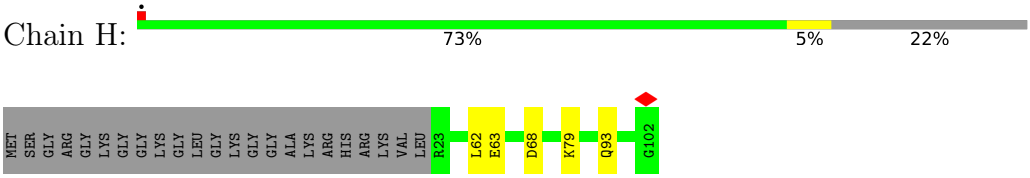
• Molecule 4: Histone H4

Chain D:



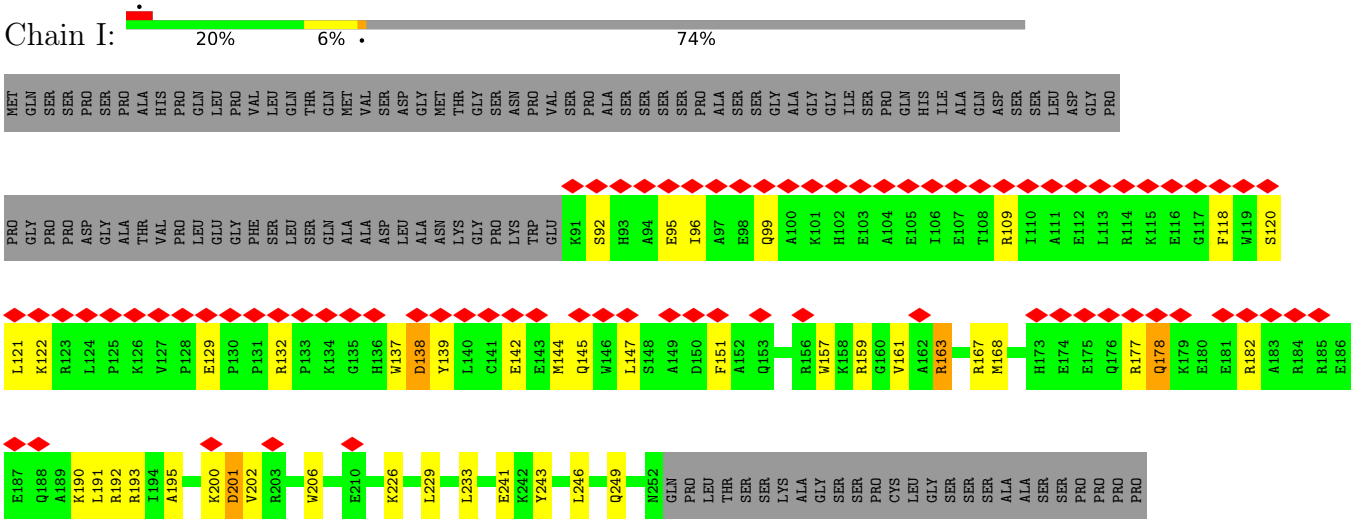
• Molecule 4: Histone H4

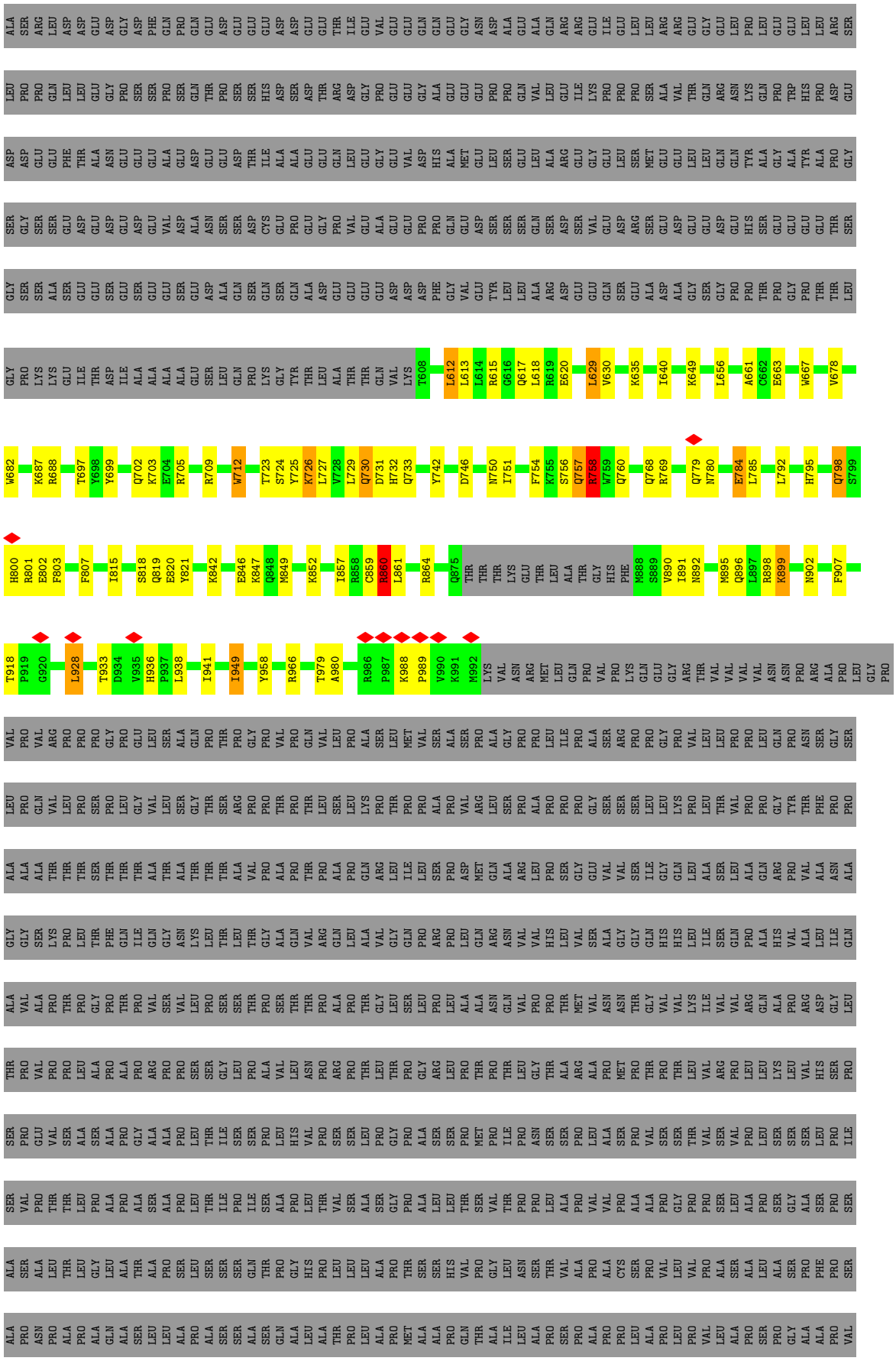
Chain H:

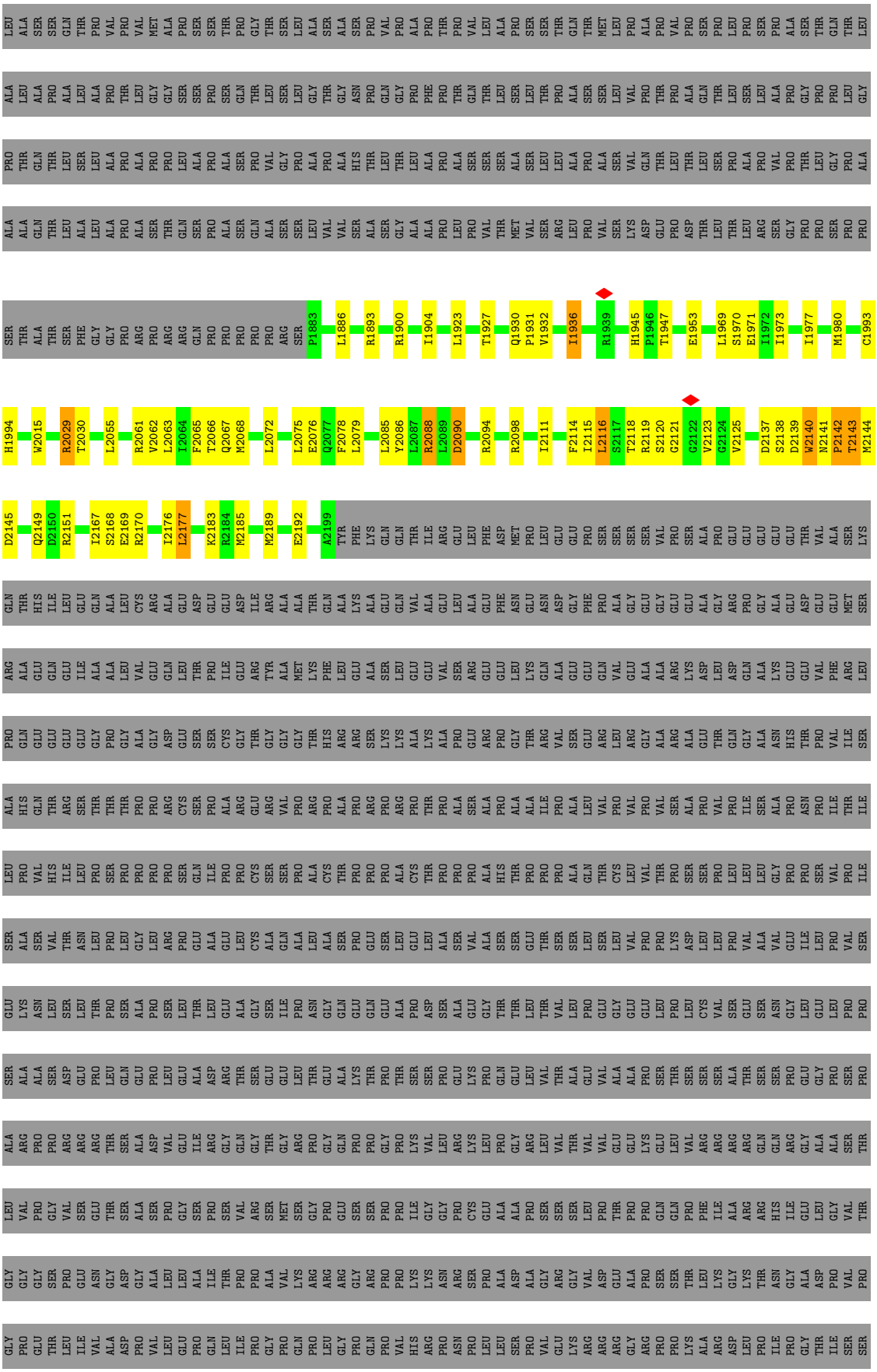


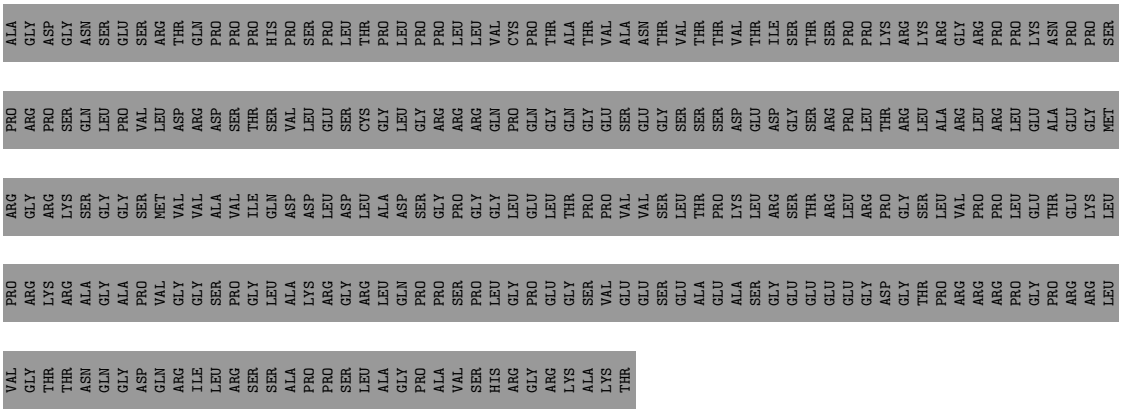
• Molecule 5: Helicase SRCAP

Chain I:



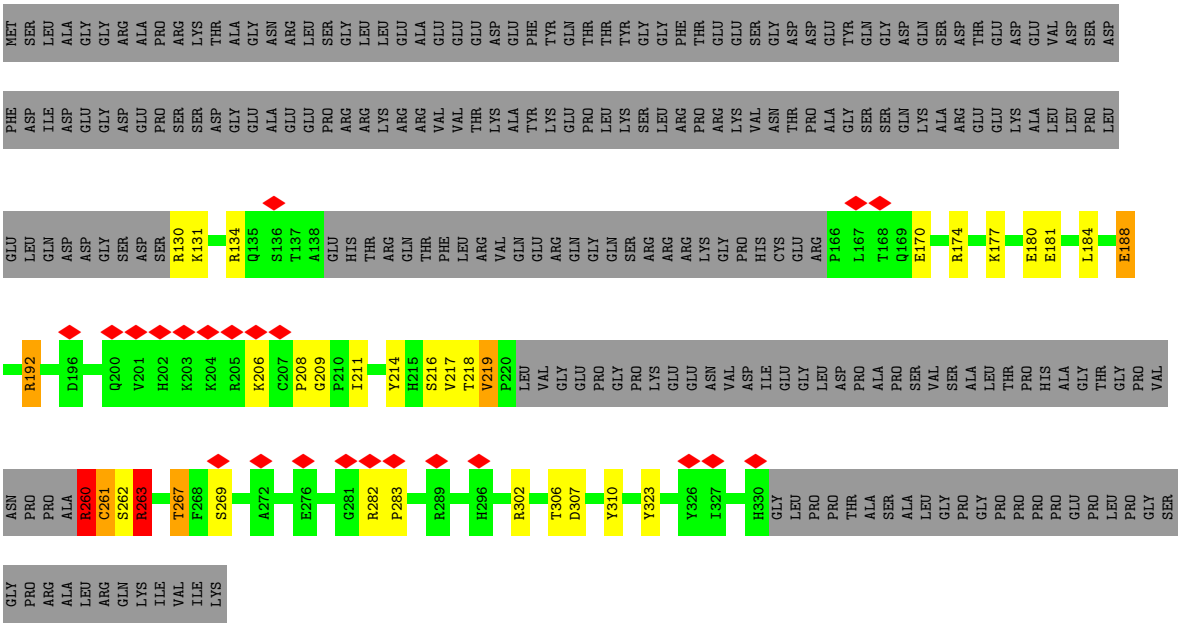



P1883 L1886 R1893 R1900 I1904 L1923 T1927 Q1930 P1931 V1932 I1936 R1939 H1945 P1946 T1947 E1963 L1969 S1970 E1971 I1972 I1973 I1977 M1980 C1993
H1994 W2015 R2029 T2030 L2055 R2061 V2062 L2063 I2064 F2065 T2066 Q2067 M2068 L2072 L2075 E2076 Q2077 F2078 L2079 L2085 Y2086 L2087 R2088 L2089 D2090 R2094 R2098 I2111 F2114 I2115 L2116 S2117 T2118 R2119 S2120 G2121 G2122 V2123 G2124 V2125 D2137 S2138 D2139 W2140 N2141 P2142 T2143 N2144
D2145 Q2149 D2150 R2151 I2167 S2168 E2169 R2170 I2176 L2177 K2183 R2184 M2185 M2189 E2192 A2199



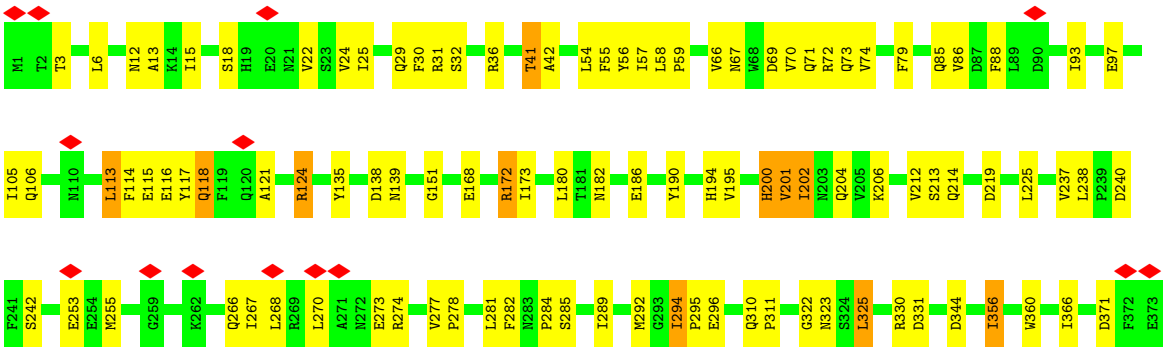
• Molecule 6: Vacuolar protein sorting-associated protein 72 homolog

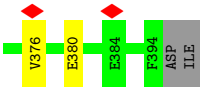
Chain J:



• Molecule 7: Actin-related protein 6

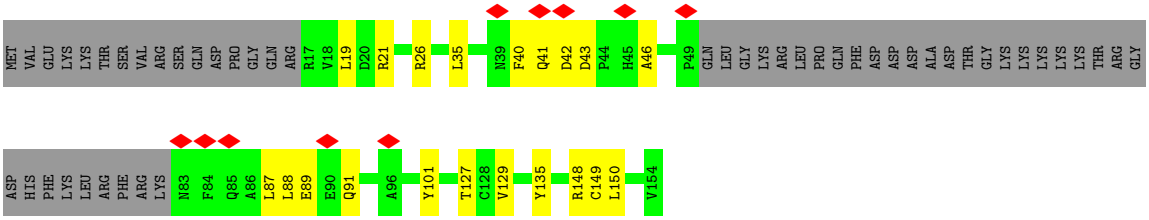
Chain K:





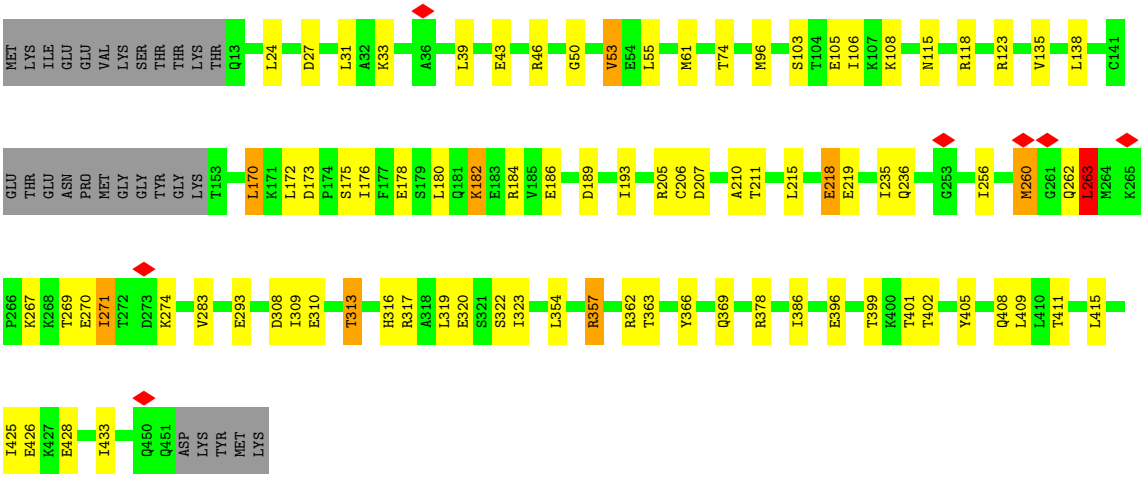
• Molecule 8: Zinc finger HIT domain-containing protein 1

Chain L:



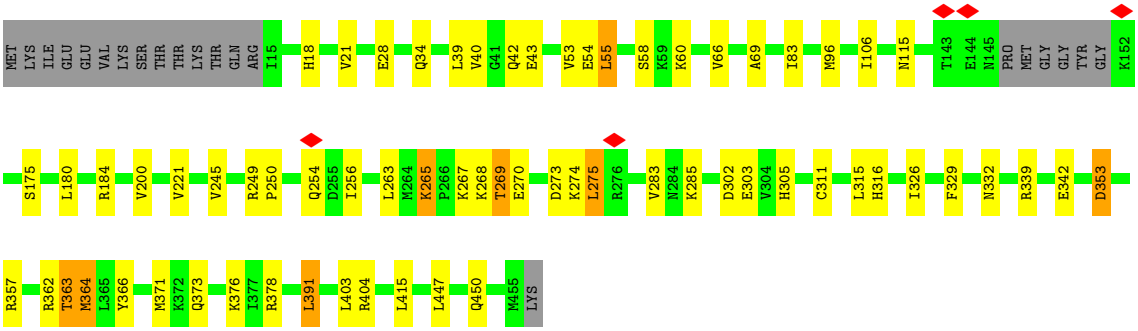
• Molecule 9: RuvB-like 1

Chain M:



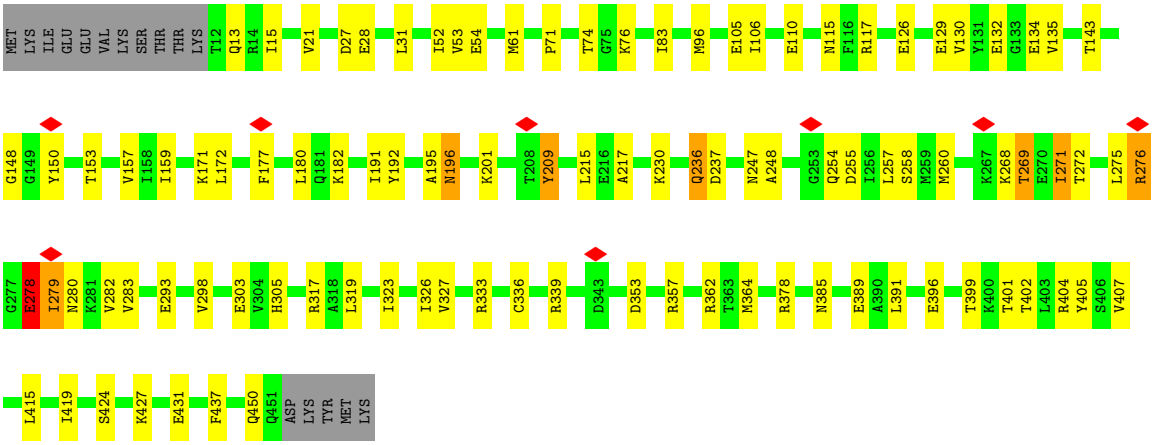
• Molecule 9: RuvB-like 1

Chain O:



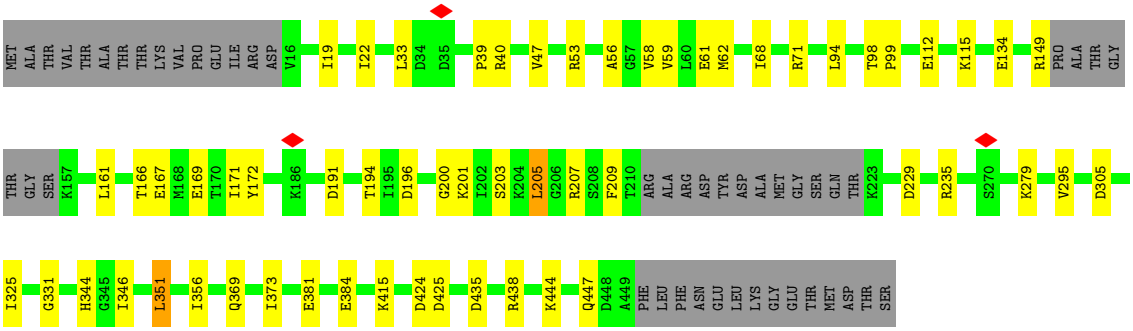
• Molecule 9: RuvB-like 1

Chain Q:



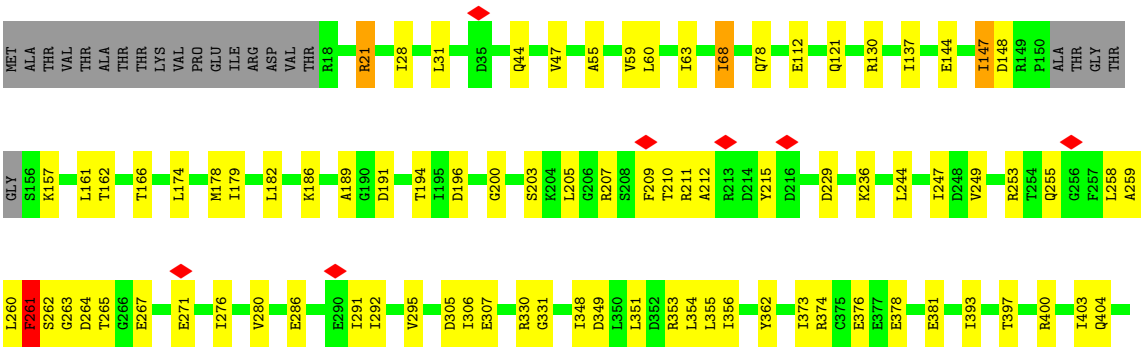
• Molecule 10: RuvB-like 2

Chain N:



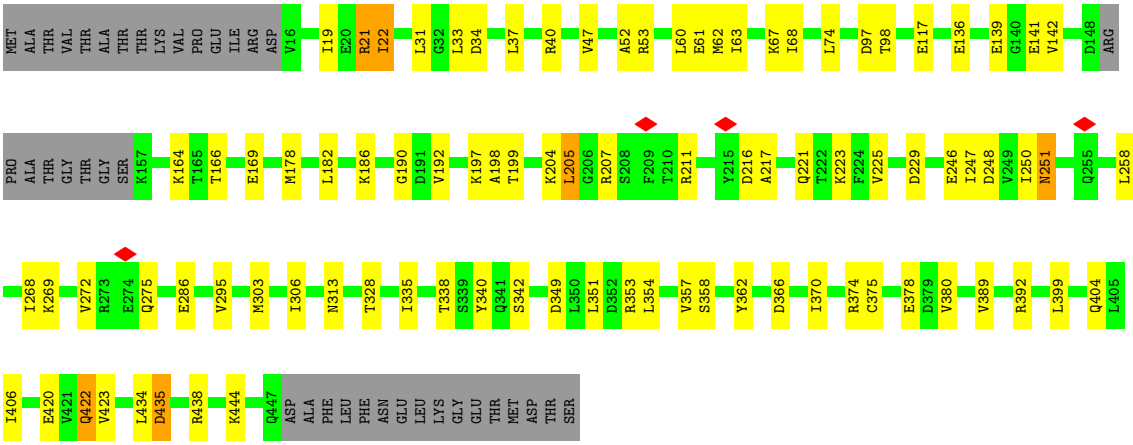
• Molecule 10: RuvB-like 2

Chain P:



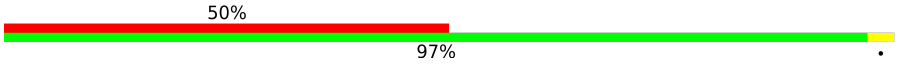
• Molecule 10: RuvB-like 2

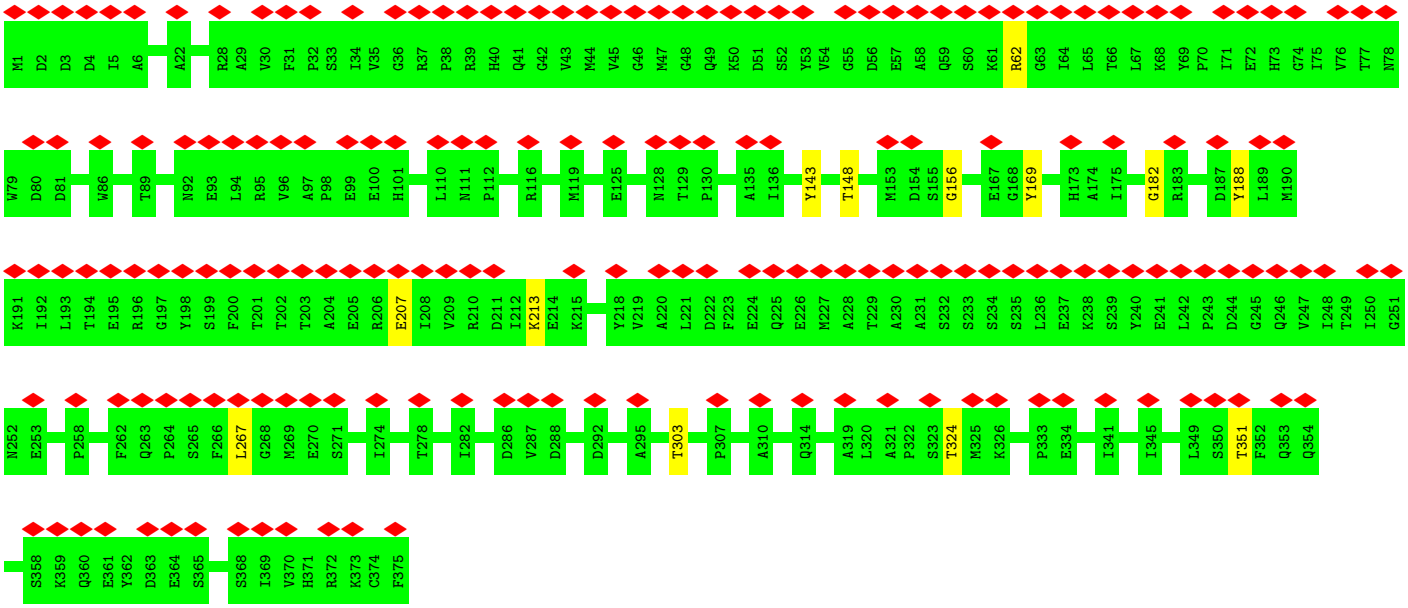
Chain R:



• Molecule 11: Actin, cytoplasmic 1

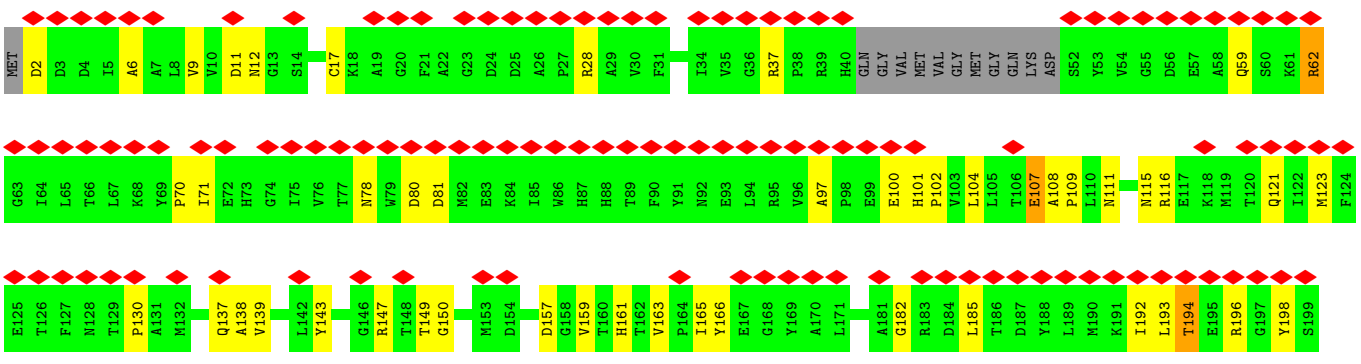
Chain S:

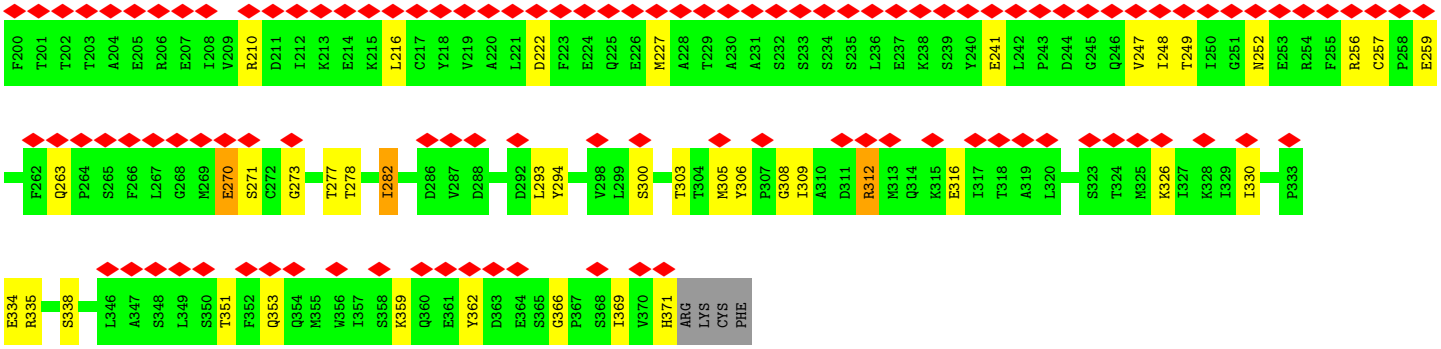




• Molecule 11: Actin, cytoplasmic 1

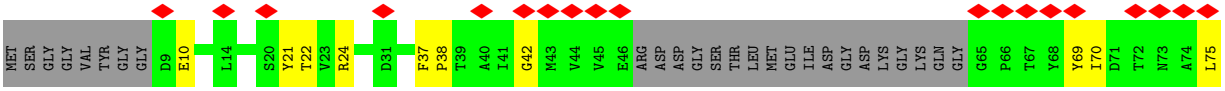
Chain U:

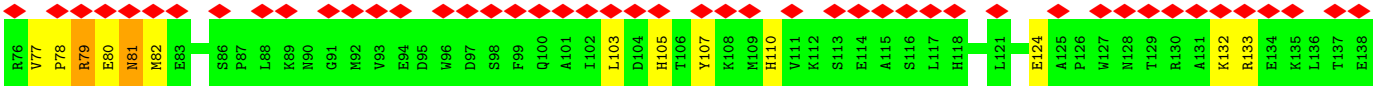


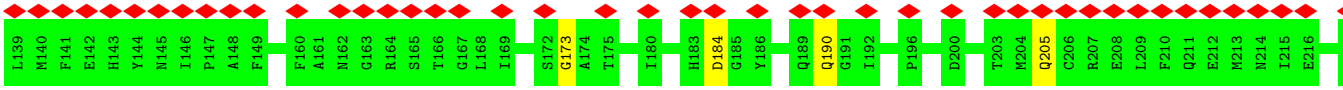


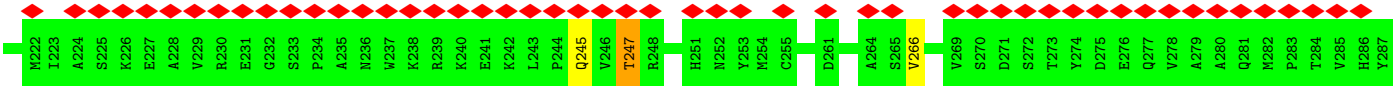
• Molecule 12: Actin-like protein 6A

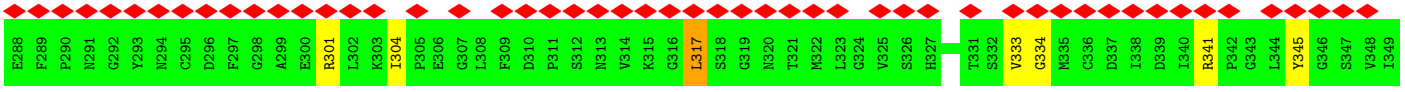
Chain T:

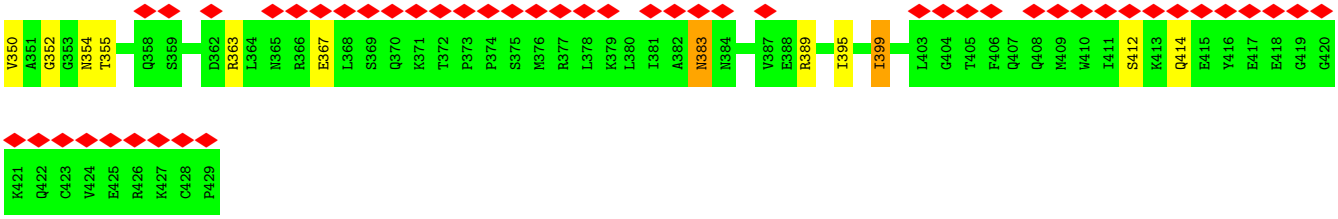






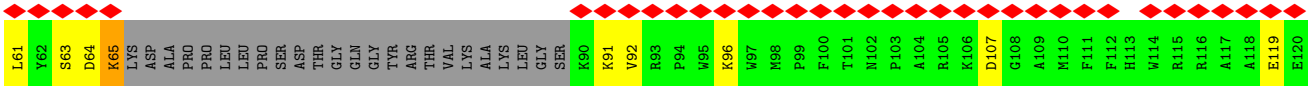


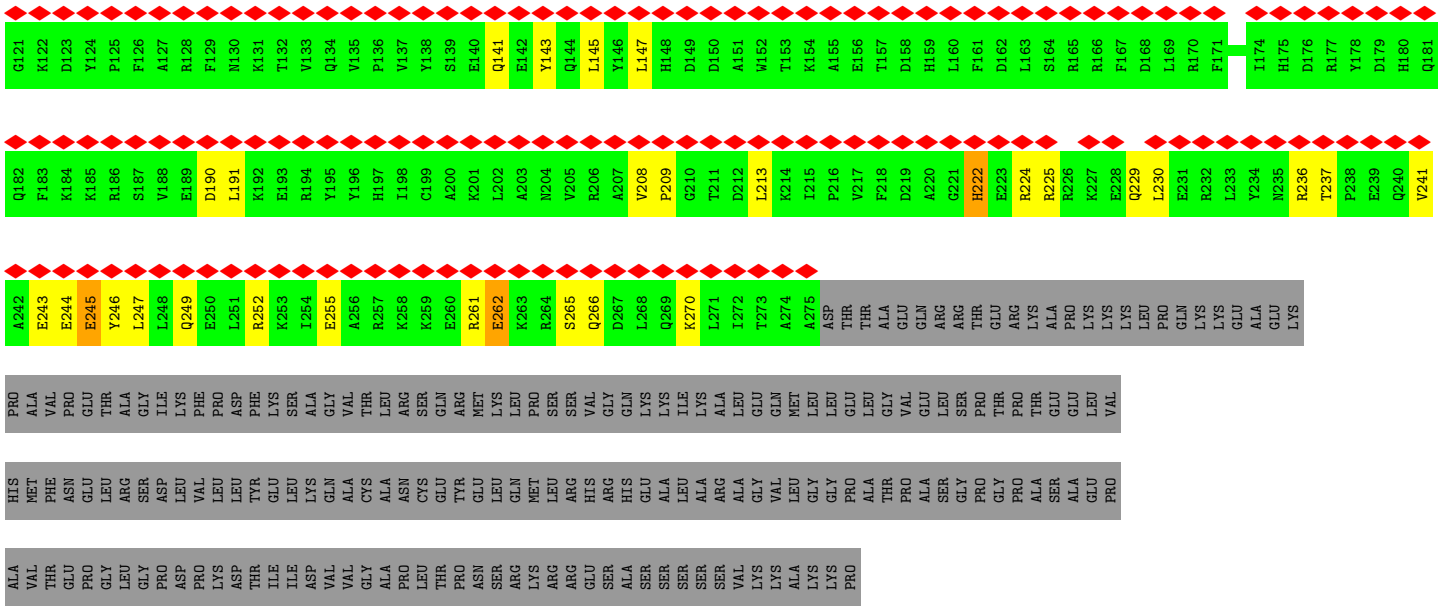




• Molecule 13: DNA methyltransferase 1-associated protein 1

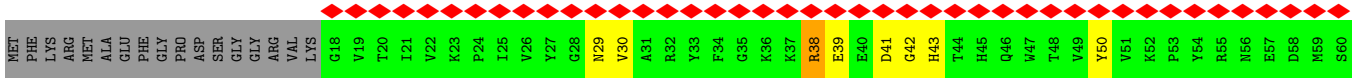
Chain V:

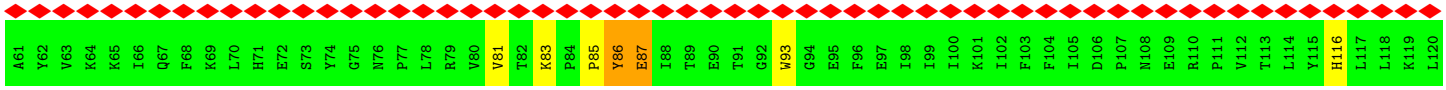


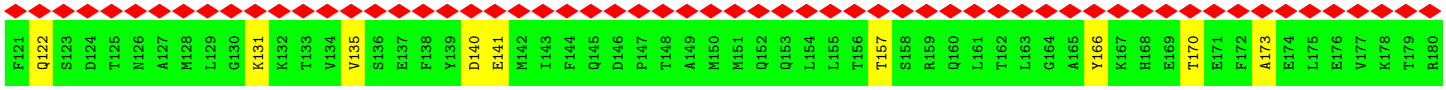


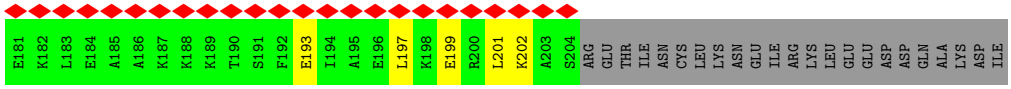
• Molecule 14: YEATS domain-containing protein 4

Chain W:



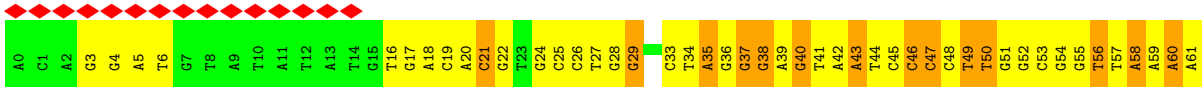


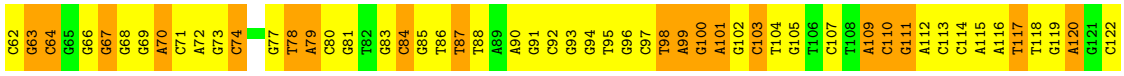




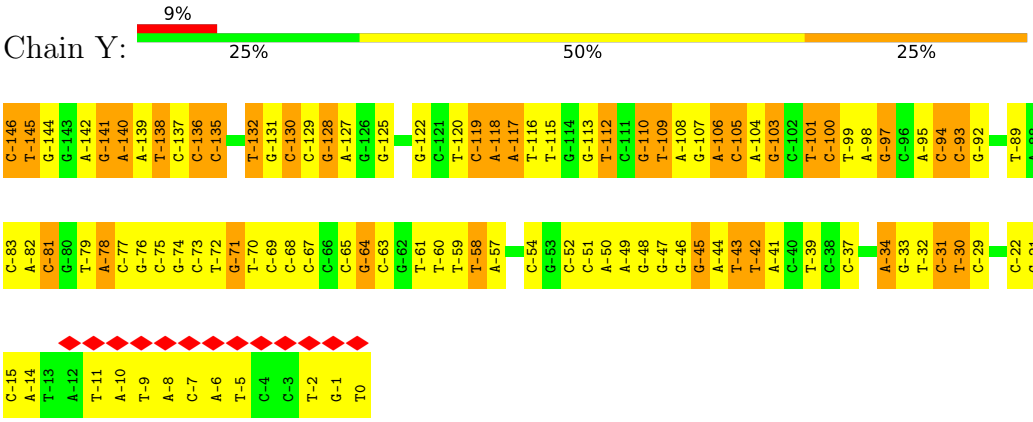
• Molecule 15: DNA (147-MER)

Chain X:





• Molecule 16: DNA (147-MER)



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	555303	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 ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.222	Depositor
Minimum map value	-0.080	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.026	Depositor
Map size (Å)	533.6, 533.6, 533.6	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.334, 1.334, 1.334	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	0.23	0/910	0.39	0/1225
1	E	0.24	0/818	0.38	0/1104
2	B	0.29	0/766	0.41	0/1026
2	F	0.24	0/747	0.37	0/1004
3	C	0.24	0/789	0.39	0/1057
3	G	0.23	0/813	0.39	0/1090
4	D	0.24	0/653	0.41	0/873
4	H	0.24	0/645	0.42	0/862
5	I	0.25	0/7202	0.41	0/9725
6	J	0.29	0/1140	0.42	0/1539
7	K	0.24	0/3283	0.42	0/4445
8	L	0.24	0/841	0.41	0/1141
9	M	0.24	0/3335	0.43	0/4495
9	O	0.24	0/3382	0.41	0/4559
9	Q	0.24	0/3413	0.42	0/4603
10	N	0.24	0/3257	0.41	0/4381
10	P	0.24	0/3324	0.43	0/4477
10	R	0.24	0/3329	0.42	0/4479
11	S	0.24	0/2988	0.39	0/4045
11	U	0.25	0/2863	0.43	0/3882
12	T	0.24	0/3217	0.40	0/4362
13	V	0.24	0/1801	0.39	0/2419
14	W	0.26	0/1578	0.44	0/2128
15	X	0.96	8/3408 (0.2%)	1.38	62/5263 (1.2%)
16	Y	0.81	6/3349 (0.2%)	1.35	42/5162 (0.8%)
All	All	0.38	14/57851 (0.0%)	0.63	104/79346 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
5	I	0	2
6	J	0	2
9	M	0	1
9	Q	0	1
11	U	0	1
All	All	0	7

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	X	21	DC	C3'-C2'	27.13	1.84	1.52
15	X	60	DA	O3'-P	-14.98	1.43	1.61
15	X	130	DG	C1'-N9	-8.87	1.34	1.47
16	Y	-45	DG	C1'-N9	-7.60	1.36	1.47
16	Y	-71	DG	C1'-N9	-7.59	1.36	1.47
15	X	69	DG	C1'-N9	-7.37	1.36	1.47
16	Y	-122	DG	C1'-N9	-7.34	1.36	1.47
16	Y	-103	DG	C1'-N9	-6.72	1.37	1.47
16	Y	-34	DA	C1'-N9	-6.45	1.38	1.47
15	X	70	DA	C1'-N9	-6.24	1.38	1.47
15	X	132	DA	C1'-N9	-6.13	1.38	1.47
16	Y	-78	DA	C1'-N9	-6.12	1.38	1.47
15	X	35	DA	C1'-N9	-6.04	1.38	1.47
15	X	43	DA	C1'-N9	-5.89	1.39	1.47

All (104) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	Y	-78	DA	O5'-P-OP2	-19.21	87.64	110.70
16	Y	-78	DA	O5'-P-OP1	18.91	133.39	110.70
15	X	21	DC	C3'-C2'-C1'	-11.27	88.98	102.50
15	X	141	DC	P-O3'-C3'	-10.40	107.22	119.70
16	Y	-110	DG	P-O3'-C3'	-10.24	107.41	119.70
15	X	138	DA	P-O3'-C3'	-10.13	107.54	119.70
15	X	115	DA	P-O3'-C3'	-9.45	108.36	119.70
15	X	143	DC	P-O3'-C3'	-9.44	108.37	119.70
15	X	40	DG	P-O3'-C3'	-9.38	108.44	119.70
15	X	49	DT	P-O3'-C3'	-9.36	108.47	119.70
15	X	111	DG	P-O3'-C3'	-9.31	108.53	119.70
15	X	122	DC	P-O3'-C3'	-9.30	108.55	119.70
15	X	107	DC	P-O3'-C3'	-9.27	108.57	119.70
15	X	140	DT	P-O3'-C3'	-9.26	108.58	119.70
15	X	78	DT	P-O3'-C3'	-9.25	108.60	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	Y	-145	DT	P-O3'-C3'	-9.23	108.62	119.70
15	X	110	DC	P-O3'-C3'	-8.93	108.99	119.70
16	Y	-141	DG	P-O3'-C3'	-8.89	109.04	119.70
15	X	94	DG	P-O3'-C3'	-8.86	109.06	119.70
15	X	83	DG	P-O3'-C3'	-8.77	109.18	119.70
15	X	125	DC	P-O3'-C3'	-8.72	109.24	119.70
15	X	48	DC	P-O3'-C3'	-8.71	109.25	119.70
15	X	93	DG	P-O3'-C3'	-8.65	109.32	119.70
16	Y	-30	DT	P-O3'-C3'	-8.63	109.34	119.70
15	X	136	DG	P-O3'-C3'	-8.59	109.40	119.70
15	X	77	DG	P-O3'-C3'	-8.58	109.41	119.70
15	X	144	DC	P-O3'-C3'	-8.53	109.46	119.70
16	Y	-132	DT	P-O3'-C3'	-8.52	109.47	119.70
16	Y	-31	DC	P-O3'-C3'	-8.49	109.52	119.70
15	X	98	DT	P-O3'-C3'	-8.45	109.56	119.70
16	Y	-94	DC	P-O3'-C3'	-8.38	109.65	119.70
15	X	101	DA	P-O3'-C3'	-8.33	109.71	119.70
15	X	118	DT	P-O3'-C3'	-8.29	109.75	119.70
15	X	21	DC	C4'-C3'-C2'	-8.13	95.78	103.10
15	X	103	DC	P-O3'-C3'	-8.10	109.98	119.70
16	Y	-37	DC	P-O3'-C3'	-8.09	110.00	119.70
15	X	135	DG	P-O3'-C3'	-8.03	110.07	119.70
16	Y	-89	DT	P-O3'-C3'	-8.02	110.07	119.70
16	Y	-140	DA	P-O3'-C3'	-8.00	110.10	119.70
16	Y	-146	DC	P-O3'-C3'	-7.99	110.12	119.70
15	X	145	DA	P-O3'-C3'	-7.97	110.13	119.70
16	Y	-81	DC	P-O3'-C3'	-7.96	110.15	119.70
16	Y	-58	DT	P-O3'-C3'	-7.89	110.23	119.70
16	Y	-105	DC	P-O3'-C3'	-7.88	110.24	119.70
15	X	117	DT	P-O3'-C3'	-7.85	110.28	119.70
15	X	124	DG	P-O3'-C3'	-7.77	110.38	119.70
16	Y	-138	DT	P-O3'-C3'	-7.72	110.43	119.70
15	X	114	DC	P-O3'-C3'	-7.50	110.70	119.70
15	X	84	DC	P-O3'-C3'	-7.42	110.80	119.70
16	Y	-119	DC	P-O3'-C3'	-7.29	110.95	119.70
16	Y	-142	DA	P-O3'-C3'	-7.20	111.06	119.70
15	X	119	DG	P-O3'-C3'	-7.17	111.10	119.70
15	X	47	DC	P-O3'-C3'	-7.08	111.20	119.70
15	X	67	DG	P-O3'-C3'	-7.00	111.30	119.70
15	X	137	DG	P-O3'-C3'	-6.99	111.31	119.70
16	Y	-117	DA	P-O3'-C3'	-6.84	111.49	119.70
16	Y	-64	DG	P-O3'-C3'	-6.78	111.56	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	X	128	DC	P-O3'-C3'	-6.78	111.57	119.70
15	X	105	DG	P-O3'-C3'	-6.73	111.62	119.70
15	X	109	DA	P-O3'-C3'	-6.72	111.63	119.70
15	X	63	DG	P-O3'-C3'	-6.63	111.74	119.70
15	X	38	DG	P-O3'-C3'	-6.48	111.92	119.70
16	Y	-77	DC	P-O3'-C3'	6.48	127.47	119.70
16	Y	-52	DC	P-O3'-C3'	6.46	127.45	119.70
15	X	37	DG	P-O3'-C3'	-6.43	111.98	119.70
16	Y	-136	DC	P-O3'-C3'	-6.40	112.02	119.70
15	X	69	DG	O5'-P-OP2	-6.39	99.94	105.70
15	X	66	DG	P-O3'-C3'	-6.34	112.09	119.70
16	Y	-100	DC	P-O3'-C3'	-6.30	112.14	119.70
15	X	74	DC	P-O3'-C3'	-6.27	112.17	119.70
15	X	58	DA	P-O3'-C3'	-6.21	112.25	119.70
15	X	50	DT	P-O3'-C3'	-6.06	112.43	119.70
16	Y	-93	DC	P-O3'-C3'	-6.03	112.46	119.70
16	Y	-101	DT	P-O3'-C3'	-6.01	112.49	119.70
15	X	100	DG	P-O3'-C3'	-6.00	112.50	119.70
15	X	99	DA	P-O3'-C3'	-6.00	112.50	119.70
15	X	96	DG	P-O3'-C3'	-5.99	112.51	119.70
16	Y	-84	DG	P-O3'-C3'	-5.94	112.58	119.70
16	Y	-106	DA	P-O3'-C3'	-5.92	112.59	119.70
15	X	102	DG	P-O3'-C3'	-5.91	112.61	119.70
16	Y	-125	DG	P-O3'-C3'	-5.90	112.62	119.70
16	Y	-42	DT	P-O3'-C3'	-5.88	112.64	119.70
15	X	79	DA	P-O3'-C3'	-5.86	112.67	119.70
16	Y	-43	DT	P-O3'-C3'	-5.83	112.71	119.70
15	X	87	DT	P-O3'-C3'	-5.78	112.76	119.70
16	Y	-130	DC	O5'-P-OP1	5.78	117.64	110.70
16	Y	-95	DA	P-O3'-C3'	-5.77	112.78	119.70
15	X	64	DC	P-O3'-C3'	-5.74	112.81	119.70
16	Y	-87	DA	P-O3'-C3'	-5.72	112.84	119.70
16	Y	-97	DG	P-O3'-C3'	-5.69	112.87	119.70
15	X	62	DC	P-O3'-C3'	-5.67	112.90	119.70
15	X	21	DC	P-O3'-C3'	-5.64	112.93	119.70
16	Y	-109	DT	P-O3'-C3'	-5.57	113.02	119.70
16	Y	-112	DT	P-O3'-C3'	-5.53	113.07	119.70
16	Y	-135	DC	P-O3'-C3'	-5.51	113.09	119.70
16	Y	-118	DA	P-O3'-C3'	-5.49	113.11	119.70
15	X	46	DC	P-O3'-C3'	-5.38	113.24	119.70
15	X	56	DT	P-O3'-C3'	-5.37	113.26	119.70
15	X	29	DG	P-O3'-C3'	-5.30	113.34	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	X	95	DT	P-O3'-C3'	-5.29	113.35	119.70
16	Y	-65	DC	P-O3'-C3'	-5.25	113.40	119.70
15	X	120	DA	P-O3'-C3'	-5.17	113.49	119.70
16	Y	-128	DG	P-O3'-C3'	-5.15	113.52	119.70
15	X	100	DG	OP1-P-O3'	5.00	116.20	105.20

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	I	2029	ARG	Sidechain
5	I	860	ARG	Sidechain
6	J	260	ARG	Sidechain
6	J	263	ARG	Sidechain
9	M	263	LEU	Peptide
9	Q	278	GLU	Peptide
11	U	257	CYS	Peptide

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	898	0	958	35	0
1	E	808	0	863	22	0
2	B	755	0	782	39	0
2	F	736	0	755	15	0
3	C	779	0	816	63	0
3	G	801	0	839	20	0
4	D	646	0	686	31	0
4	H	638	0	676	3	0
5	I	7031	0	7121	218	0
6	J	1114	0	1136	27	0
7	K	3209	0	3132	66	0
8	L	823	0	793	11	0
9	M	3293	0	3397	65	0
9	O	3339	0	3425	41	0
9	Q	3368	0	3453	82	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	N	3223	0	3309	41	0
10	P	3287	0	3335	61	0
10	R	3293	0	3373	58	0
11	S	2925	0	2891	17	0
11	U	2802	0	2760	51	0
12	T	3146	0	3086	35	0
13	V	1757	0	1736	43	0
14	W	1542	0	1553	53	0
15	X	3034	0	1648	227	0
16	Y	2990	0	1651	207	0
17	I	27	0	12	0	0
17	M	27	0	12	1	0
17	N	27	0	12	0	0
17	O	27	0	12	2	0
17	P	27	0	12	2	0
17	Q	27	0	12	0	0
17	R	27	0	12	2	0
18	K	31	0	12	1	0
18	T	31	0	12	0	0
18	U	31	0	12	1	0
All	All	56519	0	54294	1168	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 11.

All (1168) 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:898:ARG:CZ	5:I:2140:TRP:CH2	1.82	1.59
3:C:43:PRO:HG2	16:Y:-78:DA:C4'	1.33	1.54
15:X:21:DC:N4	16:Y:-21:DG:N1	1.63	1.47
15:X:21:DC:C2'	15:X:21:DC:C3'	1.84	1.43
3:C:42:ARG:HH22	15:X:81:DG:C1'	1.33	1.39
15:X:6:DT:N3	16:Y:-6:DA:N1	1.69	1.39
3:C:42:ARG:NH2	15:X:81:DG:C1'	1.84	1.39
3:C:42:ARG:NH2	15:X:81:DG:H1'	1.36	1.36
1:E:14:ALA:N	16:Y:-115:DT:OP1	1.58	1.34
3:C:43:PRO:CG	16:Y:-78:DA:H4'	1.57	1.33
3:C:42:ARG:HD3	3:C:43:PRO:CD	1.59	1.32
5:I:898:ARG:HD2	5:I:2140:TRP:CZ2	1.68	1.28
14:W:38:ARG:CZ	16:Y:-83:DC:OP1	1.82	1.26

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:21:DC:N4	16:Y:-21:DG:C6	2.01	1.26
1:A:42:ARG:NH2	16:Y:-34:DA:H4'	1.49	1.25
5:I:891:ILE:CD1	16:Y:-49:DA:N3	2.01	1.23
15:X:5:DA:N1	16:Y:-5:DT:N3	1.86	1.22
3:C:42:ARG:CD	3:C:43:PRO:HD3	1.69	1.21
5:I:891:ILE:HD11	16:Y:-49:DA:N3	1.52	1.21
5:I:898:ARG:NH1	5:I:2140:TRP:CH2	2.08	1.21
3:C:42:ARG:HD3	3:C:43:PRO:HD3	1.19	1.19
1:E:14:ALA:N	16:Y:-115:DT:H5"	1.55	1.18
5:I:898:ARG:CD	5:I:2140:TRP:HZ2	1.57	1.18
5:I:99:GLN:CB	14:W:201:LEU:CD2	2.20	1.17
1:A:42:ARG:NH2	16:Y:-34:DA:C4'	2.06	1.17
4:D:45:ARG:HE	15:X:80:DC:C4'	1.56	1.17
3:C:43:PRO:CG	16:Y:-78:DA:C4'	2.18	1.16
3:C:42:ARG:HB3	3:C:43:PRO:HD2	1.17	1.15
5:I:779:GLN:HB3	5:I:2142:PRO:HG2	1.19	1.14
5:I:891:ILE:HD11	16:Y:-49:DA:C4	1.83	1.13
5:I:99:GLN:HB3	14:W:201:LEU:HD23	1.18	1.12
5:I:92:SER:O	14:W:193:GLU:OE2	1.67	1.12
4:D:45:ARG:NE	15:X:80:DC:H4'	1.28	1.11
1:E:77:ARG:NH1	16:Y:-127:DA:H5"	1.65	1.11
5:I:99:GLN:HB2	14:W:201:LEU:HD21	1.23	1.09
1:A:42:ARG:CZ	16:Y:-34:DA:H4'	1.83	1.09
3:C:42:ARG:CB	3:C:43:PRO:HD2	1.84	1.07
5:I:898:ARG:CD	5:I:2140:TRP:CZ2	2.33	1.07
3:C:42:ARG:CD	3:C:43:PRO:CD	2.26	1.07
4:D:79:LYS:HB2	15:X:101:DA:OP1	1.55	1.06
1:E:43:VAL:O	15:X:111:DG:H5'	1.54	1.04
4:D:79:LYS:N	15:X:101:DA:OP2	1.90	1.04
5:I:99:GLN:CB	14:W:201:LEU:HD23	1.87	1.03
3:C:42:ARG:HG3	16:Y:-79:DT:C4'	1.89	1.03
1:E:14:ALA:N	16:Y:-115:DT:C5'	2.20	1.03
5:I:99:GLN:HB2	14:W:201:LEU:CD2	1.82	1.03
5:I:702:GLN:OE1	15:X:58:DA:H5"	1.56	1.02
5:I:898:ARG:HD2	5:I:2140:TRP:HZ2	1.00	1.02
5:I:898:ARG:NE	5:I:2140:TRP:CH2	2.25	1.02
14:W:38:ARG:NE	16:Y:-83:DC:OP1	1.91	1.02
3:C:42:ARG:HG3	16:Y:-79:DT:O4'	1.60	1.01
3:C:42:ARG:NE	3:C:43:PRO:HD3	1.75	0.99
13:V:262:GLU:OE2	14:W:202:LYS:HD3	1.62	0.99
14:W:39:GLU:CB	16:Y:-82:DA:H5"	1.92	0.99

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:42:ARG:HD3	3:C:43:PRO:HD2	1.45	0.99
15:X:21:DC:C4	16:Y:-21:DG:N1	2.30	0.99
4:D:45:ARG:NE	15:X:80:DC:C4'	2.18	0.98
6:J:261:CYS:HA	10:P:211:ARG:H	1.25	0.98
5:I:891:ILE:HD13	16:Y:-49:DA:N3	1.79	0.97
5:I:898:ARG:CZ	5:I:2140:TRP:HH2	1.41	0.96
15:X:21:DC:N4	16:Y:-21:DG:O6	1.97	0.95
3:C:63:ARG:HD2	15:X:90:DA:H4'	1.48	0.95
5:I:898:ARG:CZ	5:I:2140:TRP:CZ2	2.49	0.95
15:X:21:DC:N3	16:Y:-21:DG:N2	2.13	0.95
3:C:42:ARG:CZ	3:C:43:PRO:HD3	1.96	0.95
5:I:99:GLN:HB3	14:W:201:LEU:CD2	1.88	0.94
5:I:2141:ASN:OD1	5:I:2142:PRO:HD2	1.67	0.94
7:K:138:ASP:OD1	7:K:139:ASN:ND2	1.99	0.94
16:Y:-54:DC:H6	16:Y:-54:DC:H5"	1.33	0.94
3:C:42:ARG:HB3	3:C:43:PRO:CD	1.95	0.93
11:S:324:THR:HG23	15:X:117:DT:P	2.08	0.93
5:I:896:GLN:HA	5:I:899:LYS:HE3	1.50	0.93
15:X:28:DG:H5'	15:X:28:DG:C8	2.03	0.93
1:A:26:PRO:HD3	2:B:37:TYR:CD2	2.03	0.93
5:I:726:LYS:HG2	15:X:56:DT:H4'	1.47	0.92
5:I:891:ILE:CD1	16:Y:-49:DA:C2	2.52	0.92
5:I:705:ARG:NH2	15:X:58:DA:OP1	2.03	0.91
5:I:895:MET:HE1	15:X:51:DG:N3	1.85	0.91
5:I:779:GLN:O	5:I:2142:PRO:HD2	1.70	0.91
15:X:70:DA:H61	16:Y:-70:DT:H3	1.17	0.91
5:I:896:GLN:HA	5:I:899:LYS:CE	2.00	0.91
9:O:106:ILE:HD11	9:O:269:THR:HG23	1.50	0.91
15:X:28:DG:H5'	15:X:28:DG:H8	1.36	0.91
15:X:6:DT:O2	16:Y:-6:DA:H2	1.54	0.90
5:I:891:ILE:HD13	16:Y:-49:DA:C2	2.06	0.90
2:B:28:ARG:NH1	16:Y:-21:DG:OP1	2.04	0.90
5:I:898:ARG:NH1	5:I:2140:TRP:CZ2	2.40	0.88
5:I:726:LYS:HG2	15:X:56:DT:C4'	2.04	0.88
6:J:269:SER:OG	9:Q:150:TYR:CD1	2.26	0.88
5:I:712:TRP:CZ2	15:X:135:DG:OP1	2.27	0.88
4:D:78:ARG:HG2	15:X:101:DA:H5'	1.55	0.87
5:I:898:ARG:NH2	5:I:2140:TRP:CH2	2.42	0.87
9:M:96:MET:SD	9:M:115:ASN:ND2	2.48	0.87
1:A:42:ARG:HH22	16:Y:-34:DA:C4'	1.87	0.87
15:X:5:DA:N6	16:Y:-5:DT:O4	2.08	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:79:LYS:H	15:X:101:DA:P	1.98	0.86
3:C:69:ARG:NH2	15:X:90:DA:OP2	2.08	0.85
4:D:45:ARG:HG3	15:X:81:DG:OP1	1.77	0.85
5:I:898:ARG:NE	5:I:2140:TRP:CZ2	2.42	0.85
13:V:262:GLU:OE2	14:W:202:LYS:CD	2.23	0.85
5:I:895:MET:HG2	15:X:51:DG:O4'	1.76	0.85
15:X:6:DT:O4	16:Y:-6:DA:N6	2.08	0.84
2:B:92:GLN:HE22	13:V:64:ASP:HB2	1.41	0.84
3:C:42:ARG:CD	3:C:43:PRO:HD2	2.02	0.84
5:I:92:SER:OG	14:W:193:GLU:HG2	1.78	0.84
1:A:42:ARG:NH2	16:Y:-34:DA:O4'	2.11	0.84
3:C:42:ARG:HH21	15:X:81:DG:H1'	1.03	0.83
10:R:313:ASN:O	10:R:353:ARG:NH1	2.11	0.83
5:I:895:MET:CE	15:X:51:DG:N3	2.41	0.83
10:N:19:ILE:HD11	9:O:283:VAL:HG11	1.60	0.83
1:A:42:ARG:HB2	16:Y:-33:DG:OP1	1.79	0.83
2:B:30:ARG:HA	16:Y:-22:DC:OP1	1.78	0.83
10:N:435:ASP:OD2	10:N:438:ARG:NH1	2.13	0.82
15:X:41:DT:H2"	15:X:42:DA:H5'	1.60	0.82
5:I:2167:ILE:HD11	5:I:2177:LEU:HG	1.62	0.82
6:J:269:SER:HA	9:Q:150:TYR:HB3	1.62	0.82
5:I:750:ASN:HD21	5:I:758:ARG:NE	1.77	0.81
5:I:779:GLN:HB3	5:I:2142:PRO:CG	2.05	0.81
3:C:43:PRO:HG2	16:Y:-78:DA:C5'	2.09	0.81
15:X:46:DC:H4'	15:X:46:DC:OP1	1.77	0.81
5:I:702:GLN:OE1	15:X:58:DA:C5'	2.28	0.81
16:Y:-130:DC:OP2	16:Y:-130:DC:H6	1.62	0.81
15:X:43:DA:H2"	15:X:44:DT:H5"	1.63	0.81
5:I:779:GLN:CB	5:I:2142:PRO:HG2	2.07	0.80
14:W:39:GLU:HB3	16:Y:-82:DA:H5"	1.61	0.80
15:X:44:DT:H2"	15:X:45:DC:H5"	1.63	0.80
3:C:42:ARG:HG3	16:Y:-79:DT:H4'	1.64	0.80
4:D:78:ARG:CG	15:X:101:DA:H5'	2.11	0.79
2:F:30:ARG:NH2	16:Y:-119:DC:H4'	1.97	0.79
1:A:29:ARG:NH2	2:B:37:TYR:HE2	1.79	0.79
5:I:899:LYS:NZ	5:I:907:PHE:CZ	2.50	0.79
6:J:310:TYR:OH	10:R:169:GLU:O	2.01	0.79
15:X:72:DA:C2	16:Y:-71:DG:C2	2.71	0.79
15:X:136:DG:H2'	15:X:137:DG:C8	2.17	0.79
3:C:42:ARG:CB	3:C:43:PRO:CD	2.54	0.78
5:I:898:ARG:NE	5:I:2140:TRP:HH2	1.71	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:20:DA:C2	15:X:21:DC:C5	2.71	0.78
16:Y:-131:DG:H2”	16:Y:-130:DC:C5	2.19	0.78
9:M:322:SER:OG	10:R:21:ARG:O	2.02	0.78
9:O:249:ARG:NH1	9:O:250:PRO:O	2.16	0.78
3:C:69:ARG:HH22	15:X:90:DA:P	2.07	0.78
15:X:6:DT:O2	16:Y:-6:DA:C2	2.37	0.78
16:Y:-76:DG:H1’	16:Y:-75:DC:H5’	1.66	0.77
4:D:79:LYS:CB	15:X:101:DA:OP1	2.31	0.77
1:E:77:ARG:HH11	16:Y:-127:DA:H5”	1.48	0.77
9:Q:336:CYS:HG	10:R:340:TYR:HH	1.31	0.77
2:B:92:GLN:HE22	13:V:64:ASP:CB	1.98	0.77
3:G:41:TYR:HD1	15:X:142:DT:O3’	1.68	0.77
5:I:750:ASN:HD21	5:I:758:ARG:HE	1.32	0.76
16:Y:-51:DC:H2”	16:Y:-50:DA:H5”	1.66	0.76
5:I:192:ARG:O	11:S:169:TYR:OH	2.03	0.76
15:X:6:DT:N3	16:Y:-6:DA:C2	2.46	0.76
7:K:214:GLN:NE2	7:K:331:ASP:OD2	2.19	0.76
7:K:172:ARG:NH1	8:L:101:TYR:O	2.18	0.76
10:P:194:THR:OG1	10:P:203:SER:OG	2.01	0.76
4:D:32:PRO:HG2	16:Y:-86:DA:H2’	1.68	0.76
9:M:210:ALA:O	9:M:211:THR:OG1	2.02	0.76
5:I:750:ASN:ND2	5:I:758:ARG:HE	1.82	0.76
6:J:269:SER:CA	9:Q:150:TYR:HB3	2.16	0.76
14:W:38:ARG:NH1	16:Y:-83:DC:OP1	2.19	0.76
13:V:55:ARG:NH2	15:X:39:DA:H5”	2.01	0.75
3:C:42:ARG:NH2	15:X:81:DG:N9	2.35	0.75
9:Q:254:GLN:O	9:Q:258:SER:OG	2.05	0.75
3:C:42:ARG:NH1	3:C:43:PRO:HD3	2.02	0.75
15:X:72:DA:C2	16:Y:-71:DG:N2	2.55	0.75
11:S:324:THR:HG23	15:X:117:DT:OP2	1.86	0.75
2:B:116:THR:HG22	13:V:57:VAL:CG1	2.17	0.74
2:F:31:LYS:HA	2:F:31:LYS:HZ2	1.50	0.74
7:K:115:GLU:OE2	7:K:117:TYR:OH	2.05	0.74
15:X:6:DT:C2	16:Y:-6:DA:C2	2.75	0.74
10:R:247:ILE:HG12	10:R:272:VAL:HG22	1.68	0.74
1:A:17:ARG:NE	15:X:29:DG:OP2	2.20	0.74
1:A:26:PRO:HG3	2:B:37:TYR:CE2	2.22	0.74
3:C:66:PRO:HG3	15:X:90:DA:H5”	1.69	0.74
5:I:898:ARG:NH2	5:I:2140:TRP:HH2	1.79	0.74
4:D:45:ARG:HE	15:X:80:DC:H4’	0.81	0.74
3:G:41:TYR:CE1	15:X:142:DT:H4’	2.23	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:J:269:SER:OG	9:Q:150:TYR:CG	2.39	0.74
5:I:933:THR:O	10:N:279:LYS:NZ	2.20	0.74
6:J:269:SER:O	9:Q:150:TYR:HB3	1.88	0.74
10:R:248:ASP:O	10:R:251:ASN:ND2	2.21	0.74
5:I:891:ILE:HG23	16:Y:-50:DA:C2	2.23	0.74
3:C:83:ARG:HD2	15:X:100:DG:H5"	1.70	0.74
5:I:712:TRP:HZ2	15:X:135:DG:OP1	1.69	0.74
11:S:324:THR:CG2	15:X:117:DT:P	2.74	0.74
5:I:842:LYS:NZ	5:I:849:MET:SD	2.60	0.73
3:C:59:GLU:OE1	3:C:59:GLU:N	2.22	0.73
15:X:129:DG:H1	16:Y:-129:DC:H42	1.36	0.73
16:Y:-85:DC:H2"	16:Y:-84:DG:C8	2.24	0.73
2:F:35:SER:HA	2:F:56:MET:SD	2.29	0.72
5:I:92:SER:C	14:W:193:GLU:OE2	2.27	0.72
10:P:249:VAL:HG11	10:P:259:ALA:HA	1.71	0.72
5:I:750:ASN:HD21	5:I:758:ARG:CZ	2.01	0.72
5:I:2169:GLU:OE1	5:I:2170:ARG:HG3	1.88	0.72
5:I:1993:CYS:SG	5:I:1994:HIS:N	2.62	0.72
8:L:129:VAL:HA	10:N:171:ILE:HD11	1.71	0.72
10:P:191:ASP:OD1	10:P:207:ARG:NH1	2.23	0.72
15:X:6:DT:C4	16:Y:-6:DA:N1	2.58	0.72
14:W:39:GLU:HB2	16:Y:-82:DA:H5"	1.71	0.72
1:A:26:PRO:HB3	2:B:37:TYR:CZ	2.25	0.72
12:T:334:GLY:O	12:T:341:ARG:NH2	2.23	0.72
16:Y:-107:DG:H1'	16:Y:-106:DA:C8	2.25	0.71
10:N:194:THR:OG1	10:N:203:SER:OG	2.08	0.71
12:T:70:ILE:HD13	12:T:105:HIS:CG	2.26	0.71
1:E:20:ARG:HG2	2:F:121:SER:OG	1.91	0.71
9:M:178:GLU:OE2	10:R:186:LYS:NZ	2.19	0.71
3:C:42:ARG:CG	3:C:43:PRO:HD2	2.19	0.71
12:T:70:ILE:HG22	12:T:70:ILE:O	1.91	0.71
9:O:366:TYR:OH	17:O:501:ADP:N7	2.24	0.71
5:I:842:LYS:NZ	5:I:846:GLU:OE2	2.13	0.71
5:I:750:ASN:HD21	5:I:758:ARG:NH2	1.88	0.70
15:X:35:DA:H2"	15:X:36:DG:H5'	1.72	0.70
7:K:380:GLU:OE1	7:K:380:GLU:N	2.24	0.70
9:O:96:MET:SD	9:O:115:ASN:ND2	2.64	0.70
6:J:269:SER:HA	9:Q:150:TYR:CB	2.22	0.70
6:J:302:ARG:NH1	6:J:307:ASP:OD1	2.24	0.70
10:P:262:SER:OG	9:Q:248:ALA:HB1	1.91	0.70
5:I:784:GLU:N	5:I:784:GLU:OE1	2.24	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-54:DC:H6	16:Y:-54:DC:C5'	2.05	0.70
1:A:26:PRO:HB3	2:B:37:TYR:OH	1.91	0.70
1:E:14:ALA:N	16:Y:-115:DT:P	2.64	0.70
9:Q:268:LYS:O	9:Q:269:THR:HG22	1.92	0.70
12:T:69:TYR:OH	12:T:80:GLU:OE2	2.09	0.70
5:I:2167:ILE:CD1	5:I:2177:LEU:HG	2.21	0.70
5:I:899:LYS:NZ	5:I:907:PHE:CE2	2.60	0.69
9:Q:269:THR:HG23	9:Q:269:THR:O	1.91	0.69
1:A:26:PRO:HD3	2:B:37:TYR:CE2	2.26	0.69
3:C:66:PRO:CG	15:X:90:DA:H5"	2.22	0.69
5:I:195:ALA:HB3	11:S:169:TYR:CE1	2.27	0.69
9:Q:362:ARG:NH1	9:Q:364:MET:SD	2.66	0.69
12:T:173:GLY:O	12:T:354:ASN:ND2	2.24	0.69
9:Q:106:ILE:HD12	9:Q:268:LYS:HB2	1.74	0.69
4:H:68:ASP:OD2	4:H:93:GLN:NE2	2.25	0.69
5:I:201:ASP:OD1	11:S:351:THR:OG1	2.11	0.69
7:K:322:GLY:O	7:K:325:LEU:HD22	1.92	0.69
11:U:111:ASN:ND2	11:U:115:ASN:OD1	2.25	0.69
9:O:404:ARG:NH1	17:O:501:ADP:O2A	2.26	0.69
15:X:111:DG:H2'	15:X:112:DA:C8	2.28	0.69
5:I:750:ASN:ND2	5:I:758:ARG:HH21	1.90	0.68
5:I:892:ASN:HD21	15:X:50:DT:H4'	1.58	0.68
5:I:2119:ARG:O	15:X:54:DG:H4'	1.93	0.68
16:Y:-50:DA:H5"	16:Y:-50:DA:C8	2.28	0.68
2:B:87:THR:OG1	2:B:90:GLU:OE1	2.10	0.68
12:T:81:ASN:ND2	12:T:245:GLN:O	2.26	0.68
16:Y:-82:DA:H1'	16:Y:-81:DC:H5'	1.75	0.68
3:G:41:TYR:CD1	15:X:142:DT:O3'	2.45	0.68
15:X:20:DA:C2	15:X:21:DC:C6	2.81	0.68
10:P:55:ALA:O	10:P:59:VAL:HG13	1.93	0.68
3:C:42:ARG:NH2	15:X:81:DG:O4'	2.13	0.68
5:I:726:LYS:HB3	15:X:57:DT:H5'	1.74	0.68
10:N:161:LEU:O	10:N:172:TYR:N	2.27	0.68
4:D:78:ARG:HG2	15:X:101:DA:C5'	2.23	0.68
10:P:253:ARG:NH2	10:P:264:ASP:OD2	2.27	0.68
2:B:90:GLU:OE1	2:B:90:GLU:N	2.27	0.67
7:K:30:PHE:HB3	7:K:54:LEU:HD22	1.76	0.67
11:U:107:GLU:OE1	11:U:108:ALA:N	2.27	0.67
15:X:20:DA:H1'	15:X:21:DC:H5'	1.75	0.67
10:R:139:GLU:OE1	10:R:204:LYS:NZ	2.28	0.67
5:I:2067:GLN:HG2	5:I:2137:ASP:HB3	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:96:MET:SD	9:Q:115:ASN:ND2	2.68	0.67
16:Y:-139:DA:H2"	16:Y:-138:DT:H5"	1.76	0.67
4:D:45:ARG:HE	15:X:80:DC:C3'	2.08	0.67
2:F:31:LYS:HA	2:F:31:LYS:CE	2.25	0.67
5:I:705:ARG:HD3	5:I:727:LEU:HD21	1.75	0.67
9:O:42:GLN:NE2	9:O:364:MET:O	2.28	0.67
10:P:21:ARG:NH1	9:Q:61:MET:O	2.28	0.67
1:E:88:ARG:NH2	1:E:100:VAL:O	2.28	0.67
5:I:2121:GLY:N	15:X:55:DG:OP1	2.27	0.67
5:I:712:TRP:CE2	15:X:135:DG:OP1	2.48	0.66
11:U:11:ASP:OD1	11:U:137:GLN:NE2	2.27	0.66
3:G:41:TYR:HE1	15:X:142:DT:H4'	1.60	0.66
5:I:898:ARG:NH1	5:I:2140:TRP:CZ3	2.63	0.66
4:D:79:LYS:HB2	15:X:101:DA:P	2.35	0.66
5:I:705:ARG:HH21	15:X:58:DA:P	2.18	0.66
5:I:2140:TRP:HE3	5:I:2140:TRP:H	1.39	0.66
7:K:356:ILE:HD13	7:K:356:ILE:H	1.60	0.66
9:M:135:VAL:HG12	9:M:189:ASP:O	1.94	0.66
15:X:21:DC:N3	16:Y:-21:DG:C2	2.64	0.66
7:K:121:ALA:HB2	7:K:376:VAL:HG12	1.77	0.66
11:U:12:ASN:ND2	11:U:17:CYS:SG	2.68	0.66
13:V:265:SER:HB3	14:W:199:GLU:OE2	1.95	0.66
16:Y:-70:DT:H4'	16:Y:-69:DC:H5'	1.77	0.66
5:I:768:GLN:O	5:I:769:ARG:NH1	2.28	0.66
16:Y:-85:DC:H2"	16:Y:-84:DG:H8	1.60	0.66
10:P:260:LEU:O	10:P:262:SER:N	2.29	0.66
16:Y:-39:DT:H4'	16:Y:-39:DT:OP1	1.95	0.66
2:B:51:ILE:O	15:X:19:DC:OP1	2.14	0.65
2:B:116:THR:HG22	13:V:57:VAL:HG11	1.77	0.65
15:X:35:DA:C2	16:Y:-34:DA:C2	2.85	0.65
3:C:42:ARG:HB3	16:Y:-78:DA:H5"	1.77	0.65
1:E:77:ARG:CZ	16:Y:-127:DA:H4'	2.27	0.65
5:I:898:ARG:CZ	5:I:2140:TRP:CZ3	2.73	0.65
2:B:39:TYR:OH	15:X:19:DC:H3'	1.97	0.65
5:I:898:ARG:HH12	5:I:2067:GLN:HE22	1.43	0.65
15:X:73:DG:H1'	15:X:74:DC:H5'	1.77	0.65
1:E:77:ARG:NH1	16:Y:-127:DA:C5'	2.53	0.65
15:X:5:DA:N1	16:Y:-5:DT:C4	2.64	0.65
3:C:42:ARG:NH2	15:X:81:DG:C4	2.64	0.65
5:I:1932:VAL:HG12	10:R:275:GLN:HG3	1.79	0.65
11:U:138:ALA:HB1	11:U:163:VAL:HG11	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:U:241:GLU:OE2	11:U:241:GLU:N	2.30	0.65
2:F:31:LYS:HZ2	2:F:31:LYS:CA	2.09	0.64
12:T:190:GLN:OE1	12:T:190:GLN:N	2.30	0.64
15:X:87:DT:H1'	15:X:88:DT:C6	2.32	0.64
9:M:428:GLU:N	9:M:428:GLU:OE1	2.30	0.64
3:C:43:PRO:CG	16:Y:-78:DA:O4'	2.45	0.64
10:N:134:GLU:O	10:N:235:ARG:NH1	2.30	0.64
14:W:81:VAL:HG11	14:W:86:TYR:HA	1.79	0.64
16:Y:-84:DG:H1'	16:Y:-83:DC:H5'	1.80	0.64
3:C:42:ARG:CG	16:Y:-79:DT:H4'	2.28	0.64
3:C:42:ARG:NE	3:C:43:PRO:CD	2.54	0.64
7:K:59:PRO:O	7:K:66:VAL:N	2.28	0.64
10:N:384:GLU:OE1	10:N:384:GLU:N	2.30	0.63
13:V:49:ARG:NH2	15:X:40:DG:OP1	2.31	0.63
9:M:270:GLU:N	9:M:270:GLU:OE1	2.31	0.63
2:B:37:TYR:O	2:B:41:VAL:HG23	1.98	0.63
5:I:898:ARG:NH1	5:I:2067:GLN:HE22	1.96	0.63
12:T:395:ILE:O	12:T:399:ILE:HG23	1.99	0.63
5:I:712:TRP:NE1	15:X:135:DG:OP1	2.31	0.63
15:X:97:DC:H5"	15:X:97:DC:H6	1.63	0.63
9:Q:279:ILE:HD12	9:Q:279:ILE:H	1.64	0.63
9:Q:339:ARG:HE	10:R:306:ILE:HD11	1.63	0.63
16:Y:-50:DA:H8	16:Y:-50:DA:C5'	2.12	0.62
1:A:29:ARG:HH21	2:B:37:TYR:HE2	1.47	0.62
2:F:31:LYS:HA	2:F:31:LYS:NZ	2.14	0.62
12:T:352:GLY:O	12:T:355:THR:OG1	2.16	0.62
15:X:18:DA:H61	16:Y:-18:DT:H3	1.46	0.62
3:C:69:ARG:NH2	15:X:90:DA:P	2.72	0.62
5:I:1953:GLU:N	9:Q:126:GLU:OE1	2.31	0.62
7:K:113:LEU:O	7:K:113:LEU:HD13	1.99	0.62
7:K:284:PRO:O	7:K:285:SER:OG	2.09	0.62
15:X:112:DA:H61	16:Y:-112:DT:H3	1.47	0.62
15:X:137:DG:H2"	15:X:138:DA:C8	2.34	0.62
16:Y:-83:DC:H1'	16:Y:-82:DA:H5'	1.82	0.62
14:W:38:ARG:CD	16:Y:-83:DC:OP1	2.46	0.62
1:A:25:PHE:CZ	1:A:59:THR:HG21	2.35	0.62
9:Q:450:GLN:OE1	9:Q:450:GLN:N	2.33	0.62
5:I:620:GLU:OE1	5:I:620:GLU:N	2.33	0.62
9:M:103:SER:OG	9:M:105:GLU:OE1	2.17	0.62
5:I:617:GLN:OE1	5:I:617:GLN:N	2.33	0.62
9:Q:129:GLU:OE2	9:Q:195:ALA:N	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:419:ILE:HD13	10:R:37:LEU:HD13	1.82	0.62
1:A:24:GLN:O	2:B:37:TYR:CD1	2.53	0.61
9:Q:279:ILE:HA	9:Q:282:VAL:HG22	1.82	0.61
5:I:725:TYR:HB3	5:I:758:ARG:HD2	1.80	0.61
16:Y:-47:DG:H8	16:Y:-47:DG:OP2	1.82	0.61
5:I:629:LEU:HD13	5:I:630:VAL:N	2.15	0.61
5:I:750:ASN:CG	5:I:758:ARG:HH21	2.03	0.61
14:W:38:ARG:CZ	16:Y:-83:DC:P	2.88	0.61
15:X:21:DC:O2	15:X:22:DG:O4'	2.18	0.61
5:I:2141:ASN:OD1	5:I:2183:LYS:HD3	2.00	0.61
10:R:435:ASP:N	10:R:435:ASP:OD1	2.34	0.61
1:A:26:PRO:CG	2:B:37:TYR:CE2	2.84	0.61
16:Y:-58:DT:H2"	16:Y:-57:DA:C8	2.36	0.61
3:G:40:ARG:NH2	16:Y:-64:DG:O4'	2.34	0.61
9:M:260:MET:SD	9:M:260:MET:N	2.74	0.61
10:P:349:ASP:O	10:P:353:ARG:NH1	2.33	0.61
7:K:201:VAL:O	7:K:204:GLN:N	2.33	0.61
15:X:36:DG:H1'	15:X:37:DG:C8	2.36	0.61
5:I:2098:ARG:NH2	15:X:55:DG:OP2	2.33	0.61
9:Q:385:ASN:O	9:Q:424:SER:OG	2.10	0.61
15:X:98:DT:H3	16:Y:-98:DA:H61	1.48	0.61
10:R:34:ASP:OD1	10:R:40:ARG:NE	2.31	0.61
13:V:243:GLU:OE1	13:V:243:GLU:N	2.34	0.61
2:F:90:GLU:N	2:F:90:GLU:OE1	2.34	0.60
10:P:393:ILE:O	10:P:397:THR:OG1	2.08	0.60
15:X:60:DA:H1'	15:X:61:DA:H5'	1.83	0.60
16:Y:-50:DA:C8	16:Y:-50:DA:C5'	2.84	0.60
16:Y:-7:DC:H2"	16:Y:-6:DA:H5'	1.82	0.60
10:R:286:GLU:OE1	10:R:286:GLU:N	2.35	0.60
5:I:730:GLN:NE2	5:I:731:ASP:OD1	2.34	0.60
5:I:754:PHE:O	5:I:760:GLN:NE2	2.34	0.60
6:J:188:GLU:OE2	6:J:192:ARG:NH2	2.34	0.60
7:K:29:GLN:NE2	7:K:73:GLN:OE1	2.35	0.60
7:K:270:LEU:HD13	7:K:270:LEU:O	2.02	0.60
9:M:366:TYR:OH	17:M:501:ADP:N7	2.24	0.60
11:S:156:GLY:O	11:S:303:THR:OG1	2.18	0.60
13:V:262:GLU:CD	14:W:202:LYS:HG3	2.22	0.60
5:I:729:LEU:CD2	5:I:757:GLN:O	2.49	0.60
5:I:2141:ASN:OD1	5:I:2142:PRO:CD	2.46	0.60
9:M:357:ARG:O	10:R:404:GLN:NE2	2.34	0.60
10:P:404:GLN:NE2	9:Q:357:ARG:O	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:43:PRO:HG2	16:Y:-78:DA:H4'	0.64	0.60
3:C:43:PRO:HG3	16:Y:-78:DA:O4'	2.01	0.60
5:I:92:SER:HG	14:W:193:GLU:HG2	1.64	0.60
5:I:726:LYS:CG	15:X:56:DT:H4'	2.26	0.60
9:O:66:VAL:O	9:O:329:PHE:N	2.34	0.60
14:W:39:GLU:HB2	16:Y:-83:DC:O3'	2.01	0.60
16:Y:-70:DT:C4'	16:Y:-69:DC:H5'	2.32	0.60
16:Y:-6:DA:H2"	16:Y:-5:DT:H71	1.84	0.60
7:K:200:HIS:O	7:K:202:ILE:N	2.35	0.59
15:X:20:DA:N3	15:X:21:DC:C6	2.69	0.59
9:Q:192:TYR:N	9:Q:201:LYS:O	2.35	0.59
5:I:122:LYS:O	13:V:225:ARG:NH2	2.35	0.59
9:O:371:MET:HG3	9:O:403:LEU:HD13	1.85	0.59
11:S:324:THR:CG2	15:X:116:DA:O3'	2.51	0.59
16:Y:-98:DA:H2"	16:Y:-97:DG:H8	1.67	0.59
5:I:709:ARG:NH1	15:X:135:DG:OP2	2.36	0.59
6:J:260:ARG:O	6:J:261:CYS:HB3	2.01	0.59
9:M:27:ASP:OD1	9:M:31:LEU:N	2.34	0.59
13:V:141:GLN:N	13:V:141:GLN:OE1	2.35	0.59
5:I:661:ALA:O	5:I:667:TRP:NE1	2.35	0.59
3:G:42:ARG:N	15:X:143:DC:OP1	2.32	0.59
5:I:96:ILE:HG12	14:W:201:LEU:HD11	1.84	0.59
10:P:381:GLU:N	10:P:381:GLU:OE1	2.35	0.59
9:M:182:LYS:O	9:M:184:ARG:NH1	2.36	0.59
15:X:84:DC:H2"	15:X:85:DG:C8	2.37	0.59
3:C:117:VAL:N	16:Y:-76:DG:OP1	2.33	0.59
9:Q:236:GLN:OE1	9:Q:237:ASP:N	2.35	0.59
10:R:136:GLU:N	10:R:136:GLU:OE1	2.35	0.59
15:X:16:DT:H1'	15:X:17:DG:H5'	1.82	0.59
15:X:140:DT:H3	16:Y:-140:DA:H61	1.51	0.59
16:Y:-146:DC:H2"	16:Y:-145:DT:H5"	1.85	0.59
15:X:70:DA:H1'	15:X:71:DC:H5"	1.85	0.58
5:I:168:MET:SD	11:U:351:THR:HG23	2.43	0.58
5:I:891:ILE:HD11	16:Y:-49:DA:C2	2.28	0.58
11:U:9:VAL:HG13	11:U:104:LEU:HD11	1.84	0.58
13:V:51:GLU:HB3	13:V:58:TYR:CZ	2.39	0.58
16:Y:-2:DT:H2"	16:Y:-1:DG:C8	2.38	0.58
6:J:170:GLU:N	6:J:170:GLU:OE1	2.34	0.58
7:K:56:TYR:OH	7:K:200:HIS:N	2.36	0.58
9:Q:271:ILE:HD13	9:Q:272:THR:H	1.69	0.58
10:R:306:ILE:HD13	10:R:338:THR:CG2	2.34	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:I:895:MET:HE3	15:X:51:DG:N3	2.18	0.58
5:I:629:LEU:HD11	5:I:656:LEU:HG	1.85	0.58
11:U:139:VAL:HG12	11:U:143:TYR:CZ	2.39	0.58
15:X:6:DT:C2	16:Y:-6:DA:N1	2.62	0.58
4:D:36:ARG:NH1	16:Y:-86:DA:OP1	2.34	0.58
4:H:79:LYS:HB2	16:Y:-44:DA:OP1	2.04	0.58
5:I:779:GLN:O	5:I:2141:ASN:OD1	2.21	0.58
10:N:112:GLU:OE2	9:O:269:THR:HG21	2.03	0.58
2:B:112:THR:HG21	13:V:61:LEU:CD2	2.34	0.58
7:K:296:GLU:OE1	7:K:296:GLU:N	2.36	0.57
9:M:173:ASP:OD2	9:M:175:SER:OG	2.22	0.57
9:O:42:GLN:OE1	9:O:364:MET:N	2.37	0.57
10:R:370:ILE:HD11	10:R:399:LEU:HD11	1.86	0.57
2:B:112:THR:CG2	13:V:61:LEU:HD21	2.34	0.57
5:I:899:LYS:HZ1	5:I:907:PHE:HZ	1.49	0.57
9:Q:134:GLU:OE2	9:Q:209:TYR:OH	2.18	0.57
1:A:111:ILE:HG22	1:A:113:ALA:H	1.69	0.57
4:D:79:LYS:C	15:X:101:DA:OP1	2.43	0.57
1:E:14:ALA:CA	16:Y:-115:DT:OP1	2.51	0.57
1:E:92:GLU:OE1	1:E:92:GLU:N	2.38	0.57
16:Y:-130:DC:OP2	16:Y:-130:DC:C6	2.51	0.57
3:C:42:ARG:CG	16:Y:-79:DT:C4'	2.76	0.57
8:L:89:GLU:N	8:L:89:GLU:OE1	2.36	0.57
9:M:115:ASN:OD1	9:M:118:ARG:NH1	2.37	0.57
16:Y:-60:DT:H1'	16:Y:-59:DT:H5'	1.87	0.57
9:O:53:VAL:HG12	9:O:83:ILE:HG23	1.86	0.57
1:A:29:ARG:NH2	2:B:37:TYR:CE2	2.69	0.57
1:E:28:GLY:HA3	16:Y:-117:DA:H3'	1.86	0.57
5:I:895:MET:HE1	15:X:51:DG:C2	2.38	0.57
9:M:426:GLU:N	9:M:426:GLU:OE1	2.38	0.57
11:U:248:ILE:O	11:U:249:THR:OG1	2.18	0.57
3:G:40:ARG:HH22	16:Y:-64:DG:C1'	2.18	0.57
5:I:705:ARG:NH2	15:X:58:DA:P	2.78	0.57
14:W:39:GLU:HB3	16:Y:-82:DA:C5'	2.34	0.57
15:X:111:DG:H2'	15:X:112:DA:H8	1.69	0.57
4:D:79:LYS:CA	15:X:101:DA:OP1	2.53	0.57
10:P:262:SER:CB	9:Q:248:ALA:HB1	2.35	0.57
10:R:205:LEU:HD13	10:R:225:VAL:HB	1.86	0.57
16:Y:-98:DA:H2"	16:Y:-97:DG:C8	2.40	0.57
5:I:629:LEU:HD21	5:I:656:LEU:HG	1.86	0.57
9:Q:247:ASN:ND2	9:Q:279:ILE:HD11	2.19	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:U:222:ASP:OD1	11:U:312:ARG:NH1	2.37	0.57
15:X:110:DC:H2"	15:X:111:DG:C8	2.39	0.57
1:A:17:ARG:NH2	15:X:29:DG:OP2	2.38	0.56
5:I:760:GLN:N	5:I:760:GLN:OE1	2.38	0.56
5:I:2141:ASN:CG	5:I:2142:PRO:HD2	2.26	0.56
11:U:138:ALA:CB	11:U:163:VAL:HG11	2.35	0.56
2:B:89:ARG:NH2	13:V:63:SER:HB3	2.20	0.56
9:Q:117:ARG:NH2	9:Q:280:ASN:OD1	2.37	0.56
9:Q:278:GLU:O	9:Q:280:ASN:N	2.37	0.56
5:I:629:LEU:HD22	5:I:629:LEU:O	2.06	0.56
12:T:414:GLN:N	12:T:414:GLN:OE1	2.38	0.56
1:E:42:ARG:O	2:F:85:THR:OG1	2.18	0.56
5:I:726:LYS:CG	15:X:56:DT:C4'	2.81	0.56
5:I:780:ASN:HA	5:I:2141:ASN:OD1	2.06	0.56
1:A:121:GLU:HG3	3:C:41:TYR:OH	2.06	0.56
7:K:3:THR:HG23	7:K:18:SER:HB3	1.88	0.56
11:S:188:TYR:HB2	11:S:267:LEU:HD21	1.87	0.56
16:Y:-54:DC:H5"	16:Y:-54:DC:C6	2.26	0.56
5:I:2079:LEU:CD1	5:I:2115:ILE:HD11	2.36	0.56
11:U:300:SER:OG	11:U:338:SER:OG	2.20	0.56
11:U:305:MET:O	11:U:335:ARG:NH2	2.37	0.56
9:M:411:THR:HG21	10:N:68:ILE:HG21	1.88	0.55
10:P:63:ILE:HD13	10:P:295:VAL:HG21	1.88	0.55
11:S:324:THR:CG2	15:X:117:DT:O5'	2.54	0.55
11:S:324:THR:HG21	15:X:116:DA:O3'	2.06	0.55
16:Y:-104:DA:H2"	16:Y:-103:DG:O5'	2.06	0.55
1:A:17:ARG:CZ	15:X:29:DG:OP2	2.55	0.55
9:Q:106:ILE:HD11	9:Q:110:GLU:HG3	1.87	0.55
9:M:172:LEU:HD11	9:M:193:ILE:HD13	1.87	0.55
9:M:401:THR:HG22	9:M:402:THR:H	1.72	0.55
15:X:41:DT:C2'	15:X:42:DA:H5'	2.33	0.55
16:Y:-145:DT:H2"	16:Y:-144:DG:H5"	1.88	0.55
15:X:72:DA:H2	16:Y:-71:DG:C2	2.24	0.55
10:R:268:ILE:O	10:R:272:VAL:HG23	2.07	0.55
5:I:780:ASN:HB2	5:I:2141:ASN:HD21	1.72	0.55
10:R:142:VAL:O	10:R:190:GLY:N	2.39	0.55
1:A:54:VAL:HG21	2:B:95:VAL:HG21	1.87	0.55
5:I:729:LEU:HD21	5:I:757:GLN:O	2.07	0.55
9:O:28:GLU:OE1	9:O:28:GLU:N	2.38	0.55
12:T:333:VAL:HG11	12:T:345:TYR:CE2	2.41	0.55
16:Y:-58:DT:H2"	16:Y:-57:DA:N7	2.22	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:101:GLY:O	2:F:104:ALA:N	2.39	0.55
13:V:50:PRO:O	13:V:51:GLU:HG3	2.06	0.55
15:X:87:DT:H4'	15:X:88:DT:H5'	1.89	0.55
2:B:112:THR:HG21	13:V:61:LEU:HD21	1.87	0.55
11:U:259:GLU:O	11:U:263:GLN:N	2.38	0.55
13:V:54:HIS:O	13:V:58:TYR:HB3	2.07	0.55
16:Y:-137:DC:H4'	16:Y:-136:DC:OP2	2.07	0.54
8:L:127:THR:O	10:N:171:ILE:HD12	2.07	0.54
8:L:149:CYS:SG	8:L:150:LEU:N	2.80	0.54
9:M:43:GLU:N	9:M:43:GLU:OE1	2.37	0.54
4:D:80:THR:N	15:X:101:DA:OP1	2.40	0.54
10:P:400:ARG:NH2	17:P:501:ADP:O2A	2.41	0.54
9:Q:148:GLY:O	9:Q:150:TYR:N	2.39	0.54
9:M:415:LEU:HD21	10:N:61:GLU:HB2	1.90	0.54
9:M:108:LYS:NZ	9:M:310:GLU:OE2	2.28	0.54
16:Y:-44:DA:H2'	16:Y:-43:DT:H71	1.89	0.54
10:P:264:ASP:OD1	10:P:264:ASP:N	2.41	0.54
10:R:31:LEU:HG	10:R:33:LEU:HD13	1.90	0.54
11:U:270:GLU:OE1	11:U:271:SER:N	2.41	0.54
11:U:316:GLU:N	11:U:316:GLU:OE1	2.41	0.54
16:Y:-87:DA:H2"	16:Y:-86:DA:C8	2.43	0.54
16:Y:-74:DG:H1'	16:Y:-73:DC:H5'	1.88	0.54
1:A:24:GLN:O	2:B:37:TYR:HD1	1.91	0.54
5:I:802:GLU:OE2	5:I:802:GLU:N	2.41	0.54
15:X:5:DA:H2	16:Y:-5:DT:O2	1.91	0.54
9:O:106:ILE:CD1	9:O:269:THR:HG23	2.29	0.54
3:C:66:PRO:HD3	15:X:90:DA:H3'	1.90	0.53
5:I:138:ASP:OD1	5:I:139:TYR:N	2.42	0.53
5:I:902:ASN:ND2	5:I:2137:ASP:OD2	2.41	0.53
9:Q:415:LEU:HD13	10:R:61:GLU:HB3	1.90	0.53
15:X:51:DG:H1	16:Y:-51:DC:H42	1.53	0.53
7:K:253:GLU:N	7:K:253:GLU:OE1	2.40	0.53
1:E:45:ALA:HB2	15:X:111:DG:OP2	2.08	0.53
5:I:151:PHE:CD2	12:T:399:ILE:HG22	2.44	0.53
5:I:229:LEU:O	5:I:233:LEU:HD23	2.08	0.53
14:W:39:GLU:CB	16:Y:-82:DA:C5'	2.79	0.53
5:I:750:ASN:HD21	5:I:758:ARG:HH21	1.49	0.53
9:M:173:ASP:O	9:M:175:SER:N	2.41	0.53
1:A:16:SER:HA	15:X:29:DG:H5"	1.90	0.53
9:Q:275:LEU:O	9:Q:280:ASN:HB3	2.09	0.53
11:S:182:GLY:O	11:S:213:LYS:NZ	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:141:DC:H5”	15:X:141:DC:H6	1.73	0.53
1:A:42:ARG:CB	16:Y:-33:DG:OP1	2.54	0.53
5:I:2063:LEU:HD23	5:I:2114:PHE:HB3	1.90	0.53
15:X:72:DA:C2	16:Y:-71:DG:N1	2.76	0.53
1:A:26:PRO:CD	2:B:37:TYR:CE2	2.91	0.53
4:D:45:ARG:CG	15:X:81:DG:OP1	2.52	0.53
11:U:116:ARG:NH1	11:U:371:HIS:O	2.41	0.53
13:V:50:PRO:C	13:V:51:GLU:HG3	2.28	0.53
13:V:190:ASP:OD1	13:V:191:LEU:N	2.42	0.53
13:V:262:GLU:OE2	14:W:202:LYS:CE	2.57	0.53
14:W:38:ARG:NH1	16:Y:-83:DC:P	2.82	0.53
5:I:157:TRP:O	5:I:161:VAL:HG23	2.07	0.53
10:R:97:ASP:OD1	10:R:98:THR:HG23	2.08	0.53
14:W:39:GLU:HB2	16:Y:-82:DA:P	2.49	0.53
16:Y:-103:DG:H4’	16:Y:-103:DG:OP1	2.09	0.53
2:B:116:THR:HG22	13:V:57:VAL:HG13	1.91	0.53
9:Q:396:GLU:O	9:Q:399:THR:OG1	2.27	0.53
14:W:131:LYS:NZ	14:W:173:ALA:O	2.40	0.53
5:I:92:SER:O	14:W:193:GLU:CD	2.44	0.52
7:K:97:GLU:OE1	7:K:124:ARG:NH1	2.39	0.52
9:Q:293:GLU:OE1	9:Q:293:GLU:N	2.42	0.52
15:X:70:DA:N6	16:Y:-70:DT:H3	1.97	0.52
10:N:196:ASP:O	10:N:200:GLY:N	2.38	0.52
10:R:117:GLU:OE2	10:R:269:LYS:NZ	2.42	0.52
15:X:28:DG:C8	15:X:28:DG:C5’	2.85	0.52
5:I:779:GLN:O	5:I:2142:PRO:CD	2.51	0.52
12:T:70:ILE:N	12:T:70:ILE:HD12	2.24	0.52
6:J:218:THR:OG1	10:P:189:ALA:HB1	2.09	0.52
10:P:68:ILE:HD13	10:P:68:ILE:H	1.73	0.52
11:U:59:GLN:O	11:U:62:ARG:NE	2.37	0.52
15:X:129:DG:H2”	15:X:130:DG:C8	2.44	0.52
14:W:29:ASN:OD1	14:W:116:HIS:NE2	2.41	0.52
16:Y:-54:DC:C5’	16:Y:-54:DC:C6	2.91	0.52
3:C:42:ARG:NH2	15:X:81:DG:N3	2.57	0.52
4:D:75:HIS:O	2:F:89:ARG:NH1	2.36	0.52
9:O:106:ILE:HD13	9:O:267:LYS:O	2.09	0.52
14:W:39:GLU:CB	16:Y:-82:DA:OP1	2.58	0.52
15:X:67:DG:H2”	15:X:68:DG:C8	2.45	0.52
16:Y:-94:DC:H2’	16:Y:-93:DC:C6	2.45	0.52
12:T:37:PHE:CE2	12:T:70:ILE:HG23	2.45	0.52
13:V:262:GLU:OE1	14:W:202:LYS:HG3	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:X:5:DA:C2	16:Y:-5:DT:N3	2.60	0.52
5:I:2079:LEU:HD12	5:I:2115:ILE:HD11	1.92	0.51
9:M:283:VAL:HG11	10:R:19:ILE:HD11	1.92	0.51
9:O:21:VAL:HG12	9:O:39:LEU:HD21	1.92	0.51
9:Q:132:GLU:OE2	9:Q:230:LYS:NZ	2.30	0.51
10:R:366:ASP:O	10:R:370:ILE:HG23	2.10	0.51
12:T:317:LEU:HD13	12:T:317:LEU:O	2.09	0.51
15:X:45:DC:H2"	15:X:46:DC:H5"	1.92	0.51
15:X:120:DA:H5"	15:X:120:DA:H8	1.75	0.51
16:Y:-132:DT:H2"	16:Y:-131:DG:C8	2.44	0.51
3:C:43:PRO:HD2	16:Y:-78:DA:H5"	1.92	0.51
4:D:32:PRO:HG2	16:Y:-86:DA:C2'	2.40	0.51
3:G:40:ARG:NH1	16:Y:-63:DC:C5'	2.73	0.51
5:I:705:ARG:HD3	5:I:727:LEU:CD2	2.40	0.51
9:O:43:GLU:N	9:O:43:GLU:OE1	2.40	0.51
15:X:20:DA:C2	15:X:21:DC:C4	2.98	0.51
15:X:26:DC:H2"	15:X:27:DT:C6	2.45	0.51
6:J:269:SER:C	9:Q:150:TYR:HB3	2.30	0.51
16:Y:-1:DG:H1'	16:Y:0:DT:H5'	1.91	0.51
5:I:2066:THR:OG1	5:I:2072:LEU:HD21	2.11	0.51
9:Q:71:PRO:HD2	9:Q:74:THR:HG21	1.92	0.51
16:Y:-73:DC:H1'	16:Y:-72:DT:H5'	1.92	0.51
5:I:2185:MET:O	5:I:2189:MET:HG2	2.11	0.51
9:Q:71:PRO:O	9:Q:76:LYS:NZ	2.41	0.51
9:Q:255:ASP:O	9:Q:257:LEU:N	2.44	0.51
9:Q:303:GLU:OE1	9:Q:305:HIS:NE2	2.44	0.51
5:I:750:ASN:ND2	5:I:758:ARG:NH2	2.53	0.51
15:X:141:DC:H2'	15:X:142:DT:H71	1.91	0.51
3:G:40:ARG:HA	16:Y:-63:DC:OP1	2.11	0.51
10:P:182:LEU:O	10:P:186:LYS:N	2.44	0.51
10:R:40:ARG:O	10:R:53:ARG:NH2	2.44	0.51
10:R:74:LEU:HD11	10:R:328:THR:HG22	1.92	0.51
12:T:363:ARG:NE	12:T:367:GLU:OE2	2.43	0.51
5:I:896:GLN:CA	5:I:899:LYS:HE3	2.31	0.51
5:I:941:ILE:HD12	5:I:941:ILE:H	1.76	0.51
10:P:430:TYR:O	10:P:438:ARG:NH2	2.41	0.51
7:K:69:ASP:OD1	7:K:70:VAL:N	2.44	0.51
9:O:69:ALA:O	9:O:363:THR:OG1	2.28	0.51
15:X:33:DC:H2'	15:X:34:DT:H71	1.92	0.51
1:E:32:ARG:HE	16:Y:-117:DA:P	2.34	0.50
9:M:323:ILE:O	10:R:21:ARG:NH2	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:T:383:ASN:ND2	12:T:383:ASN:O	2.44	0.50
14:W:140:ASP:OD1	14:W:141:GLU:N	2.43	0.50
16:Y:-47:DG:H2"	16:Y:-46:DG:N7	2.26	0.50
10:R:141:GLU:N	10:R:164:LYS:O	2.41	0.50
15:X:35:DA:H4'	15:X:35:DA:OP1	2.12	0.50
1:E:44:GLY:HA2	15:X:111:DG:O5'	2.10	0.50
5:I:137:TRP:NE1	12:T:184:ASP:O	2.43	0.50
12:T:79:ARG:NH2	12:T:80:GLU:OE1	2.44	0.50
5:I:629:LEU:HD11	5:I:656:LEU:CG	2.41	0.50
5:I:899:LYS:NZ	5:I:899:LYS:CB	2.75	0.50
10:R:306:ILE:HD13	10:R:338:THR:HG21	1.93	0.50
11:U:282:ILE:HD11	11:U:294:TYR:CZ	2.47	0.50
15:X:79:DA:H2"	15:X:80:DC:C5	2.46	0.50
15:X:112:DA:N6	16:Y:-112:DT:H3	2.09	0.50
9:M:308:ASP:OD1	9:M:309:ILE:N	2.42	0.50
7:K:15:ILE:C	7:K:15:ILE:HD12	2.32	0.50
7:K:58:LEU:H	7:K:58:LEU:HD23	1.76	0.50
7:K:114:PHE:O	7:K:118:GLN:NE2	2.42	0.50
1:E:20:ARG:CG	2:F:121:SER:OG	2.59	0.50
5:I:890:VAL:HG13	5:I:891:ILE:HD12	1.93	0.50
6:J:302:ARG:NH1	6:J:307:ASP:O	2.45	0.50
11:U:303:THR:HG22	11:U:303:THR:O	2.11	0.50
7:K:32:SER:HB2	7:K:54:LEU:HD23	1.94	0.49
14:W:50:TYR:HB3	14:W:87:GLU:HB3	1.94	0.49
15:X:123:DG:H2"	15:X:124:DG:H8	1.77	0.49
16:Y:-48:DG:H2"	16:Y:-47:DG:C8	2.47	0.49
9:Q:28:GLU:OE1	9:Q:28:GLU:N	2.44	0.49
9:Q:52:ILE:HD11	9:Q:83:ILE:HD13	1.94	0.49
9:Q:279:ILE:HG22	9:Q:283:VAL:HG23	1.94	0.49
4:D:79:LYS:N	15:X:101:DA:P	2.76	0.49
3:G:40:ARG:HH22	16:Y:-64:DG:H1'	1.77	0.49
5:I:1980:MET:SD	5:I:2030:THR:HA	2.51	0.49
10:N:33:LEU:HD21	10:N:53:ARG:HG2	1.94	0.49
9:Q:405:TYR:OH	9:Q:437:PHE:O	2.30	0.49
11:U:193:LEU:O	11:U:194:THR:HB	2.11	0.49
3:C:43:PRO:HD2	16:Y:-78:DA:C5'	2.42	0.49
5:I:129:GLU:OE1	5:I:129:GLU:N	2.41	0.49
7:K:105:ILE:HG23	7:K:106:GLN:N	2.27	0.49
7:K:266:GLN:OE1	7:K:266:GLN:N	2.44	0.49
9:M:172:LEU:HD23	9:M:180:LEU:HD11	1.94	0.49
15:X:98:DT:H2"	15:X:99:DA:C8	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:79:LYS:HB2	15:X:100:DG:H3'	1.94	0.49
11:U:306:TYR:HB3	11:U:309:ILE:HG23	1.95	0.49
5:I:895:MET:O	5:I:899:LYS:HE3	2.12	0.49
10:P:378:GLU:OE1	10:P:407:THR:OG1	2.29	0.49
11:U:108:ALA:HB1	11:U:109:PRO:HD2	1.92	0.49
16:Y:-101:DT:H2"	16:Y:-100:DC:C6	2.48	0.49
5:I:733:GLN:HE21	15:X:133:DC:H4'	1.78	0.49
10:P:249:VAL:HG13	10:P:261:PHE:HE2	1.77	0.49
5:I:725:TYR:HB3	5:I:758:ARG:CD	2.42	0.49
5:I:949:ILE:HD13	5:I:949:ILE:O	2.12	0.49
10:N:19:ILE:HD11	9:O:283:VAL:CG1	2.36	0.49
1:A:92:GLU:OE2	2:B:102:GLU:N	2.46	0.49
5:I:96:ILE:CG1	14:W:197:LEU:HD11	2.42	0.49
10:N:47:VAL:CG2	10:N:373:ILE:HD12	2.43	0.49
9:O:339:ARG:NH2	10:P:307:GLU:OE2	2.45	0.49
15:X:4:DG:H2"	15:X:5:DA:C8	2.47	0.49
3:C:43:PRO:CG	16:Y:-78:DA:C5'	2.81	0.49
5:I:795:HIS:O	5:I:798:GLN:NE2	2.44	0.49
10:R:74:LEU:O	10:R:357:VAL:N	2.39	0.49
11:U:362:TYR:O	11:U:366:GLY:N	2.46	0.49
5:I:615:ARG:NH2	5:I:687:LYS:O	2.46	0.48
10:P:449:ALA:O	9:Q:333:ARG:NH2	2.45	0.48
15:X:129:DG:N2	16:Y:-128:DG:N2	2.61	0.48
10:P:196:ASP:O	10:P:200:GLY:N	2.45	0.48
9:M:405:TYR:CE2	9:M:409:LEU:HD11	2.49	0.48
9:O:311:CYS:O	9:O:315:LEU:HD23	2.13	0.48
12:T:69:TYR:C	12:T:70:ILE:HD12	2.34	0.48
11:U:252:ASN:O	11:U:256:ARG:N	2.45	0.48
13:V:213:LEU:HD22	13:V:213:LEU:H	1.77	0.48
3:C:82:LEU:HD22	4:D:81:VAL:HG23	1.93	0.48
2:F:102:GLU:OE1	2:F:102:GLU:N	2.42	0.48
9:M:386:ILE:HG22	9:M:425:ILE:HB	1.94	0.48
10:R:362:TYR:OH	17:R:501:ADP:N7	2.27	0.48
15:X:57:DT:H2"	15:X:58:DA:C8	2.48	0.48
15:X:101:DA:H61	16:Y:-101:DT:H3	1.62	0.48
16:Y:-130:DC:OP2	16:Y:-130:DC:H2'	2.14	0.48
3:C:42:ARG:HE	3:C:42:ARG:HA	1.78	0.48
6:J:219:VAL:HG11	6:J:263:ARG:CZ	2.43	0.48
7:K:67:ASN:O	7:K:69:ASP:N	2.47	0.48
15:X:98:DT:H3	16:Y:-98:DA:N6	2.11	0.48
16:Y:-43:DT:H1'	16:Y:-42:DT:H5'	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:P:31:LEU:O	10:P:44:GLN:NE2	2.47	0.48
10:P:276:ILE:O	10:P:280:VAL:HG23	2.13	0.48
9:Q:110:GLU:HG2	9:Q:269:THR:HA	1.94	0.48
15:X:43:DA:H2'	15:X:44:DT:H72	1.95	0.48
3:C:51:ILE:HD11	4:D:43:VAL:O	2.13	0.48
6:J:282:ARG:N	6:J:283:PRO:HD3	2.28	0.48
9:Q:279:ILE:HD12	9:Q:279:ILE:N	2.29	0.48
9:M:105:GLU:OE1	9:M:105:GLU:N	2.47	0.48
10:N:22:ILE:HD12	10:N:22:ILE:N	2.29	0.48
9:O:180:LEU:HD21	9:O:200:VAL:HG11	1.96	0.48
15:X:138:DA:H2"	15:X:139:DT:H5"	1.96	0.48
16:Y:-116:DT:H5'	16:Y:-116:DT:H6	1.77	0.48
5:I:2141:ASN:OD1	5:I:2183:LYS:CD	2.62	0.48
7:K:31:ARG:O	7:K:55:PHE:N	2.36	0.48
14:W:42:GLY:O	14:W:93:TRP:HB3	2.13	0.48
15:X:112:DA:H2"	15:X:113:DC:C6	2.49	0.48
9:O:302:ASP:OD1	9:O:303:GLU:N	2.47	0.48
5:I:202:VAL:HG11	11:S:143:TYR:CD1	2.49	0.47
5:I:899:LYS:NZ	5:I:899:LYS:HB2	2.27	0.47
5:I:1936:ILE:HD13	5:I:1936:ILE:H	1.78	0.47
5:I:891:ILE:CG2	16:Y:-50:DA:C2	2.95	0.47
7:K:186:GLU:OE2	8:L:41:GLN:NE2	2.48	0.47
9:O:303:GLU:OE1	9:O:305:HIS:NE2	2.47	0.47
9:Q:105:GLU:OE1	9:Q:105:GLU:N	2.47	0.47
11:U:163:VAL:O	11:U:163:VAL:HG13	2.14	0.47
15:X:43:DA:H61	16:Y:-43:DT:H3	1.62	0.47
15:X:49:DT:C6	15:X:50:DT:H72	2.49	0.47
7:K:237:VAL:HG12	7:K:267:ILE:HD11	1.96	0.47
9:M:316:HIS:HB3	9:M:354:LEU:HD13	1.95	0.47
10:N:40:ARG:O	10:N:53:ARG:NH2	2.48	0.47
8:L:42:ASP:OD1	8:L:43:ASP:N	2.48	0.47
10:P:362:TYR:OH	17:P:501:ADP:N7	2.32	0.47
11:U:159:VAL:HG22	18:U:401:ATP:O1G	2.14	0.47
10:N:115:LYS:NZ	10:N:305:ASP:OD2	2.24	0.47
11:U:6:ALA:HB2	11:U:100:GLU:OE1	2.15	0.47
15:X:140:DT:H3	16:Y:-140:DA:N6	2.12	0.47
4:D:46:ILE:N	15:X:81:DG:OP1	2.39	0.47
5:I:859:CYS:SG	5:I:860:ARG:N	2.88	0.47
11:U:248:ILE:O	11:U:248:ILE:HG22	2.14	0.47
16:Y:-136:DC:H6	16:Y:-136:DC:H5"	1.80	0.47
16:Y:-46:DG:C6	16:Y:-45:DG:C6	3.03	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:I:726:LYS:HG2	15:X:56:DT:O4'	2.13	0.47
5:I:727:LEU:HD12	5:I:730:GLN:OE1	2.14	0.47
6:J:209:GLY:O	6:J:211:ILE:N	2.47	0.47
7:K:12:ASN:CG	7:K:24:VAL:HG22	2.35	0.47
10:N:205:LEU:HD22	10:N:205:LEU:N	2.30	0.47
12:T:21:TYR:CD2	12:T:22:THR:HG23	2.49	0.47
3:C:42:ARG:CG	16:Y:-79:DT:O4'	2.48	0.47
9:M:74:THR:HB	9:M:363:THR:HG22	1.97	0.47
9:M:123:ARG:O	9:M:293:GLU:N	2.48	0.47
9:Q:401:THR:OG1	9:Q:402:THR:N	2.48	0.47
11:U:273:GLY:O	11:U:277:THR:N	2.36	0.47
15:X:5:DA:C2	16:Y:-5:DT:C2	3.03	0.47
6:J:261:CYS:H	10:P:210:THR:HA	1.80	0.47
7:K:6:LEU:HD12	7:K:79:PHE:CZ	2.50	0.47
9:M:316:HIS:CB	9:M:354:LEU:HD13	2.45	0.47
9:M:415:LEU:HD23	10:N:58:VAL:HG13	1.96	0.47
13:V:59:ALA:O	13:V:63:SER:HB2	2.15	0.47
16:Y:-109:DT:H2"	16:Y:-108:DA:C8	2.50	0.47
5:I:918:THR:HG23	5:I:918:THR:O	2.15	0.47
10:P:244:LEU:HD11	10:P:280:VAL:HG21	1.97	0.47
9:Q:54:GLU:N	9:Q:54:GLU:OE1	2.48	0.47
7:K:6:LEU:HG	7:K:15:ILE:HG22	1.97	0.46
9:Q:129:GLU:OE2	9:Q:196:ASN:N	2.40	0.46
1:A:26:PRO:HD3	2:B:37:TYR:CG	2.49	0.46
7:K:57:ILE:HG22	7:K:70:VAL:CG2	2.45	0.46
9:M:218:GLU:OE1	9:M:219:GLU:N	2.42	0.46
10:N:346:ILE:HB	10:N:351:LEU:HD23	1.97	0.46
10:N:424:ASP:OD1	10:N:425:ASP:N	2.48	0.46
15:X:37:DG:H2"	15:X:38:DG:C8	2.51	0.46
7:K:24:VAL:O	7:K:24:VAL:HG13	2.15	0.46
9:M:33:LYS:O	9:M:46:ARG:NH1	2.49	0.46
10:P:262:SER:HB2	9:Q:248:ALA:HB1	1.97	0.46
5:I:206:TRP:HE1	11:S:148:THR:HG23	1.79	0.46
5:I:815:ILE:HD12	5:I:815:ILE:N	2.31	0.46
14:W:38:ARG:HG2	14:W:41:ASP:HB3	1.97	0.46
16:Y:-42:DT:H1'	16:Y:-41:DA:H5'	1.97	0.46
3:C:109:LEU:HD13	3:G:129:ARG:HG2	1.97	0.46
2:F:60:ASN:O	2:F:64:ASN:ND2	2.44	0.46
7:K:13:ALA:N	7:K:25:ILE:O	2.46	0.46
7:K:331:ASP:OD1	7:K:331:ASP:N	2.48	0.46
9:Q:129:GLU:OE1	9:Q:129:GLU:N	2.41	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:269:THR:O	9:Q:269:THR:CG2	2.59	0.46
16:Y:-68:DC:H2"	16:Y:-67:DC:C6	2.50	0.46
4:D:45:ARG:HG3	15:X:81:DG:P	2.55	0.46
5:I:2145:ASP:OD1	5:I:2149:GLN:NE2	2.46	0.46
7:K:22:VAL:HG12	7:K:360:TRP:CE3	2.51	0.46
9:O:55:LEU:O	9:O:58:SER:OG	2.26	0.46
9:Q:53:VAL:HG22	9:Q:83:ILE:HG23	1.97	0.46
13:V:56:GLU:H	13:V:56:GLU:CD	2.19	0.46
15:X:46:DC:H2'	15:X:47:DC:C6	2.51	0.46
16:Y:-108:DA:C5	16:Y:-107:DG:C6	3.03	0.46
3:C:85:GLN:HA	16:Y:-97:DG:OP1	2.15	0.46
6:J:219:VAL:HG21	6:J:263:ARG:NH2	2.30	0.46
8:L:26:ARG:NH2	15:X:73:DG:H5"	2.31	0.46
9:Q:21:VAL:HG23	9:Q:21:VAL:O	2.16	0.46
9:Q:27:ASP:OD1	9:Q:31:LEU:N	2.45	0.46
15:X:19:DC:H2"	15:X:20:DA:H8	1.80	0.46
5:I:629:LEU:HD22	5:I:629:LEU:C	2.36	0.46
5:I:191:LEU:C	5:I:191:LEU:HD23	2.36	0.46
7:K:195:VAL:HG22	7:K:195:VAL:O	2.16	0.46
9:M:135:VAL:HG21	9:M:138:LEU:HD11	1.97	0.46
10:P:258:LEU:O	10:P:259:ALA:HB3	2.16	0.46
10:R:192:VAL:HB	10:R:205:LEU:HD12	1.97	0.46
12:T:81:ASN:OD1	12:T:247:THR:HG23	2.16	0.46
12:T:350:VAL:O	12:T:389:ARG:NH1	2.48	0.46
11:U:278:THR:O	11:U:282:ILE:HG23	2.16	0.46
1:E:42:ARG:HD2	16:Y:-108:DA:H4'	1.98	0.46
10:P:147:ILE:HD13	10:P:179:ILE:HG21	1.98	0.46
14:W:122:GLN:NE2	14:W:131:LYS:O	2.46	0.46
15:X:52:DG:H1'	15:X:53:DC:H5'	1.97	0.46
9:M:74:THR:O	9:M:366:TYR:OH	2.34	0.45
10:P:147:ILE:HD12	10:P:148:ASP:N	2.31	0.45
16:Y:-136:DC:H1'	16:Y:-135:DC:H5'	1.98	0.45
3:G:41:TYR:HE1	15:X:142:DT:C4'	2.26	0.45
5:I:979:THR:HG22	5:I:980:ALA:N	2.31	0.45
7:K:135:TYR:O	7:K:139:ASN:N	2.49	0.45
10:P:291:ILE:O	10:P:292:ILE:HG23	2.15	0.45
11:U:97:ALA:O	11:U:101:HIS:ND1	2.50	0.45
11:U:222:ASP:O	11:U:312:ARG:NH2	2.48	0.45
13:V:208:VAL:N	13:V:209:PRO:CD	2.79	0.45
15:X:87:DT:C4'	15:X:88:DT:H5'	2.45	0.45
3:C:42:ARG:NE	3:C:42:ARG:HA	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:K:57:ILE:HG22	7:K:70:VAL:HG22	1.98	0.45
9:Q:415:LEU:HD11	10:R:62:MET:HB3	1.97	0.45
15:X:24:DG:H2"	15:X:25:DC:C5	2.52	0.45
3:C:62:ILE:O	3:C:93:GLN:NE2	2.50	0.45
15:X:21:DC:H1'	15:X:22:DG:H5'	1.97	0.45
15:X:109:DA:H2"	15:X:110:DC:C6	2.51	0.45
1:E:73:ASN:O	1:E:73:ASN:ND2	2.44	0.45
5:I:2067:GLN:HG3	5:I:2068:MET:HG3	1.97	0.45
6:J:180:GLU:O	6:J:184:LEU:HD23	2.16	0.45
9:M:61:MET:CE	10:R:22:ILE:HD11	2.45	0.45
9:M:320:GLU:OE2	9:M:357:ARG:NH1	2.49	0.45
10:N:191:ASP:OD1	10:N:207:ARG:NE	2.44	0.45
14:W:39:GLU:CB	16:Y:-82:DA:P	3.05	0.45
16:Y:-113:DG:H2"	16:Y:-112:DT:OP2	2.16	0.45
3:G:40:ARG:NH1	16:Y:-63:DC:H5'	2.32	0.45
5:I:859:CYS:SG	5:I:860:ARG:NH1	2.90	0.45
10:P:205:LEU:H	10:P:205:LEU:HD22	1.80	0.45
9:Q:378:ARG:HG3	9:Q:407:VAL:HG21	1.99	0.45
11:U:37:ARG:NH2	11:U:81:ASP:OD1	2.45	0.45
13:V:56:GLU:N	13:V:56:GLU:OE1	2.49	0.45
2:B:96:ARG:NH2	13:V:64:ASP:HB3	2.31	0.45
5:I:121:LEU:O	13:V:225:ARG:NH2	2.50	0.45
9:Q:171:LYS:C	9:Q:172:LEU:HD22	2.37	0.45
9:Q:217:ALA:CB	10:R:199:THR:HG23	2.47	0.45
9:Q:255:ASP:O	9:Q:258:SER:N	2.40	0.45
10:R:351:LEU:HD13	10:R:354:LEU:HD12	1.97	0.45
11:U:80:ASP:OD1	11:U:81:ASP:N	2.49	0.45
15:X:63:DG:H1'	15:X:64:DC:H5'	1.99	0.45
2:B:89:ARG:CZ	13:V:63:SER:HB3	2.47	0.45
3:G:43:PRO:HG2	15:X:68:DG:C5'	2.45	0.45
7:K:86:VAL:HG21	7:K:116:GLU:HB3	1.99	0.45
7:K:325:LEU:HD21	18:K:401:ATP:C6	2.51	0.45
9:M:189:ASP:OD1	9:M:205:ARG:NH1	2.50	0.45
16:Y:-139:DA:C2'	16:Y:-138:DT:H5"	2.46	0.45
3:G:40:ARG:NH2	16:Y:-64:DG:C1'	2.80	0.45
4:H:62:LEU:O	4:H:63:GLU:C	2.56	0.45
11:U:71:ILE:N	11:U:71:ILE:HD12	2.31	0.45
5:I:1923:LEU:HD22	5:I:1923:LEU:H	1.82	0.45
15:X:101:DA:N6	16:Y:-101:DT:H3	2.15	0.45
16:Y:-47:DG:H2"	16:Y:-46:DG:C8	2.52	0.45
3:G:43:PRO:HG2	15:X:68:DG:H5'	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:M:271:ILE:HD13	9:M:271:ILE:H	1.81	0.44
12:T:42:GLY:H	12:T:75:LEU:HD13	1.81	0.44
15:X:99:DA:C2	16:Y:-98:DA:C2	3.05	0.44
16:Y:-100:DC:H2"	16:Y:-99:DT:H71	1.99	0.44
9:M:313:THR:HG21	10:R:303:MET:HG3	1.99	0.44
9:O:316:HIS:NE2	9:O:353:ASP:OD2	2.44	0.44
9:Q:130:VAL:HG13	9:Q:192:TYR:CE2	2.52	0.44
11:S:324:THR:HG23	15:X:117:DT:O5'	2.14	0.44
5:I:896:GLN:HA	5:I:899:LYS:NZ	2.32	0.44
9:Q:15:ILE:HD12	9:Q:15:ILE:H	1.83	0.44
11:U:101:HIS:CG	11:U:101:HIS:O	2.69	0.44
13:V:236:ARG:O	13:V:241:VAL:HG12	2.17	0.44
7:K:182:ASN:ND2	8:L:35:LEU:O	2.43	0.44
9:M:369:GLN:OE1	9:M:369:GLN:N	2.47	0.44
10:N:356:ILE:N	10:N:356:ILE:HD12	2.32	0.44
10:P:166:THR:HG22	10:P:229:ASP:HA	1.99	0.44
11:U:101:HIS:NE2	11:U:130:PRO:HD2	2.32	0.44
11:U:149:THR:HG21	11:U:293:LEU:CD2	2.47	0.44
15:X:51:DG:H1	16:Y:-51:DC:N4	2.14	0.44
1:A:116:LEU:HB3	1:A:117:PRO:HD3	1.98	0.44
4:D:32:PRO:CB	16:Y:-86:DA:OP2	2.66	0.44
5:I:726:LYS:HA	5:I:726:LYS:HD2	1.39	0.44
5:I:729:LEU:HD23	5:I:757:GLN:O	2.16	0.44
6:J:214:TYR:HB3	10:P:147:ILE:HG23	1.99	0.44
10:N:94:LEU:HD21	10:N:98:THR:CG2	2.48	0.44
12:T:80:GLU:O	12:T:81:ASN:C	2.55	0.44
15:X:50:DT:H1'	15:X:51:DG:H5'	1.98	0.44
15:X:90:DA:C6	15:X:91:DG:C6	3.06	0.44
1:A:121:GLU:N	3:C:41:TYR:OH	2.51	0.44
5:I:640:ILE:HG13	5:I:792:LEU:HD22	2.00	0.44
9:M:319:LEU:C	9:M:319:LEU:HD12	2.37	0.44
10:N:166:THR:HG22	10:N:229:ASP:HA	2.00	0.44
9:O:447:LEU:HD13	10:P:331:GLY:HA2	1.98	0.44
15:X:132:DA:H61	16:Y:-132:DT:H3	1.66	0.44
5:I:96:ILE:HG12	14:W:197:LEU:HD11	1.98	0.44
5:I:178:GLN:O	5:I:178:GLN:NE2	2.50	0.44
5:I:1971:GLU:OE1	5:I:1971:GLU:N	2.45	0.44
5:I:2125:VAL:HG21	5:I:2151:ARG:HG2	2.00	0.44
9:O:326:ILE:N	9:O:326:ILE:HD12	2.32	0.44
9:O:353:ASP:O	9:O:357:ARG:NH1	2.51	0.44
10:P:112:GLU:OE2	9:Q:269:THR:HG21	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:135:VAL:HG13	9:Q:135:VAL:O	2.18	0.44
9:Q:353:ASP:OD1	9:Q:357:ARG:NH1	2.47	0.44
10:R:435:ASP:OD1	10:R:438:ARG:NH1	2.51	0.44
15:X:36:DG:H2"	15:X:37:DG:OP2	2.16	0.44
15:X:72:DA:H2"	15:X:73:DG:H5'	2.00	0.44
5:I:92:SER:CA	14:W:193:GLU:HG2	2.47	0.44
5:I:751:ILE:HG22	5:I:751:ILE:O	2.18	0.44
10:R:166:THR:HG22	10:R:229:ASP:HA	1.99	0.44
15:X:3:DG:H2"	15:X:4:DG:C8	2.53	0.44
16:Y:-138:DT:H2"	16:Y:-137:DC:C6	2.53	0.44
16:Y:-118:DA:H2"	16:Y:-117:DA:C8	2.53	0.44
16:Y:-64:DG:H1'	16:Y:-63:DC:H5'	2.00	0.44
4:D:78:ARG:CD	15:X:101:DA:H5'	2.48	0.44
9:M:206:CYS:SG	9:M:207:ASP:N	2.90	0.44
10:R:178:MET:O	10:R:182:LEU:HD23	2.18	0.44
12:T:77:VAL:HG12	12:T:78:PRO:HD2	2.00	0.44
11:U:157:ASP:HA	11:U:182:GLY:HA3	2.00	0.44
10:R:378:GLU:HG2	10:R:380:VAL:HG23	2.00	0.43
11:U:306:TYR:O	11:U:308:GLY:N	2.50	0.43
2:B:120:SER:O	2:B:121:SER:OG	2.32	0.43
3:C:61:LEU:HD12	4:D:37:LEU:HD23	2.00	0.43
5:I:678:VAL:CG2	5:I:2123:VAL:HG11	2.48	0.43
10:P:374:ARG:HG2	10:P:403:ILE:HG23	2.01	0.43
11:U:149:THR:HG23	11:U:166:TYR:HA	2.00	0.43
15:X:141:DC:H5"	15:X:141:DC:C6	2.53	0.43
5:I:861:LEU:CD2	5:I:2168:SER:HB2	2.49	0.43
5:I:899:LYS:HE3	5:I:899:LYS:HB2	1.66	0.43
5:I:2088:ARG:NH1	5:I:2090:ASP:OD2	2.51	0.43
8:L:87:LEU:N	8:L:87:LEU:HD22	2.33	0.43
9:M:176:ILE:C	9:M:176:ILE:HD12	2.38	0.43
2:F:31:LYS:HD3	2:F:32:GLU:HG3	1.99	0.43
7:K:115:GLU:O	7:K:117:TYR:N	2.52	0.43
9:O:376:LYS:HG2	9:O:391:LEU:HD11	2.00	0.43
10:P:355:LEU:HD12	10:P:355:LEU:O	2.19	0.43
11:U:70:PRO:HG3	11:U:81:ASP:HB3	2.01	0.43
15:X:78:DT:C2'	15:X:79:DA:C8	3.01	0.43
16:Y:-106:DA:H2"	16:Y:-105:DC:C6	2.53	0.43
16:Y:-11:DT:H2"	16:Y:-10:DA:N7	2.33	0.43
7:K:173:ILE:HG21	7:K:292:MET:O	2.19	0.43
7:K:180:LEU:HD11	7:K:281:LEU:HD21	2.01	0.43
8:L:135:TYR:OH	10:N:169:GLU:O	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:R:420:GLU:O	10:R:422:GLN:NE2	2.52	0.43
15:X:72:DA:N3	16:Y:-71:DG:N2	2.66	0.43
5:I:1923:LEU:O	5:I:1927:THR:N	2.48	0.43
7:K:213:SER:OG	7:K:219:ASP:OD2	2.35	0.43
7:K:294:ILE:HG23	7:K:295:PRO:HD3	2.00	0.43
5:I:99:GLN:CG	14:W:201:LEU:CD2	2.92	0.43
5:I:618:LEU:HD22	5:I:618:LEU:N	2.34	0.43
6:J:219:VAL:HG11	6:J:263:ARG:NH1	2.34	0.43
9:Q:143:THR:N	9:Q:153:THR:O	2.51	0.43
10:R:60:LEU:HA	10:R:63:ILE:HD12	2.00	0.43
13:V:245:GLU:OE2	13:V:246:TYR:N	2.50	0.43
1:E:14:ALA:C	16:Y:-115:DT:OP1	2.56	0.43
5:I:2066:THR:O	5:I:2118:THR:N	2.44	0.43
10:N:447:GLN:NE2	9:O:332:ASN:O	2.52	0.43
10:P:130:ARG:HH12	10:P:292:ILE:HG21	1.83	0.43
9:Q:271:ILE:HD13	9:Q:272:THR:N	2.32	0.43
16:Y:-30:DT:H3'	16:Y:-29:DC:C6	2.52	0.43
2:B:28:ARG:NH1	16:Y:-21:DG:P	2.91	0.43
5:I:243:TYR:O	5:I:635:LYS:NZ	2.52	0.43
5:I:682:TRP:NE1	5:I:746:ASP:OD2	2.48	0.43
6:J:170:GLU:O	6:J:174:ARG:NH2	2.52	0.43
10:P:247:ILE:HG22	10:P:276:ILE:HD12	2.00	0.43
10:R:63:ILE:HD13	10:R:295:VAL:HG21	2.01	0.43
16:Y:-116:DT:H5'	16:Y:-116:DT:C6	2.54	0.43
9:M:310:GLU:O	9:M:313:THR:HG22	2.19	0.43
10:P:212:ALA:HB2	10:P:215:TYR:CD1	2.54	0.43
6:J:211:ILE:HG23	6:J:269:SER:HB3	2.01	0.42
7:K:325:LEU:C	7:K:325:LEU:HD23	2.39	0.42
9:M:173:ASP:HB2	10:R:217:ALA:O	2.19	0.42
10:N:166:THR:HG23	10:N:167:GLU:HG3	2.00	0.42
12:T:22:THR:HG22	12:T:38:PRO:HA	2.01	0.42
11:U:2:ASP:OD1	11:U:2:ASP:N	2.52	0.42
13:V:65:LYS:O	13:V:65:LYS:HG2	2.17	0.42
1:A:121:GLU:CG	3:C:41:TYR:OH	2.66	0.42
5:I:2055:LEU:HD23	5:I:2062:VAL:HG12	2.01	0.42
9:O:245:VAL:HG11	10:P:271:GLU:OE2	2.19	0.42
10:P:351:LEU:HD11	10:P:356:ILE:HD11	2.01	0.42
12:T:80:GLU:O	12:T:82:MET:N	2.52	0.42
1:A:54:VAL:HG22	2:B:107:ALA:HB1	2.01	0.42
5:I:697:THR:HG22	5:I:699:TYR:CD1	2.54	0.42
9:M:50:GLY:O	9:M:53:VAL:HG12	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:P:161:LEU:HB2	10:P:174:LEU:HD11	2.00	0.42
12:T:132:LYS:O	12:T:133:ARG:C	2.58	0.42
10:N:68:ILE:HG23	10:N:68:ILE:O	2.19	0.42
10:R:313:ASN:ND2	10:R:349:ASP:OD2	2.52	0.42
3:G:40:ARG:HH12	16:Y:-63:DC:C5'	2.32	0.42
5:I:99:GLN:CB	14:W:201:LEU:HD21	1.99	0.42
5:I:615:ARG:NE	5:I:688:ARG:O	2.53	0.42
10:P:60:LEU:HA	10:P:63:ILE:HD12	2.01	0.42
10:R:375:CYS:SG	10:R:406:ILE:HD13	2.59	0.42
11:U:149:THR:HG22	11:U:150:GLY:N	2.35	0.42
15:X:125:DC:H2"	15:X:126:DC:H5'	2.01	0.42
5:I:902:ASN:HD21	5:I:2137:ASP:CG	2.22	0.42
7:K:277:VAL:HB	7:K:278:PRO:HD3	2.02	0.42
9:O:40:VAL:HG21	9:O:373:GLN:CD	2.40	0.42
9:O:256:ILE:N	9:O:256:ILE:HD12	2.34	0.42
10:P:63:ILE:HD13	10:P:295:VAL:CG2	2.49	0.42
9:Q:192:TYR:O	9:Q:201:LYS:N	2.51	0.42
12:T:124:GLU:OE2	12:T:133:ARG:NH1	2.53	0.42
15:X:86:DT:H2"	15:X:87:DT:O5'	2.18	0.42
15:X:90:DA:H2"	15:X:91:DG:O5'	2.20	0.42
15:X:140:DT:H2"	15:X:141:DC:C5	2.53	0.42
16:Y:-119:DC:H2"	16:Y:-118:DA:C8	2.55	0.42
2:B:116:THR:CG2	13:V:57:VAL:HG13	2.48	0.42
5:I:159:ARG:O	5:I:163:ARG:NH1	2.52	0.42
5:I:928:LEU:HD22	5:I:928:LEU:C	2.39	0.42
9:Q:157:VAL:HG13	9:Q:157:VAL:O	2.20	0.42
11:S:62:ARG:NH2	11:S:207:GLU:OE2	2.53	0.42
5:I:941:ILE:HD11	9:M:236:GLN:HB3	2.02	0.42
10:N:47:VAL:HG11	10:N:369:GLN:HB3	2.02	0.42
10:R:389:VAL:HG21	10:R:423:VAL:HG23	2.02	0.42
3:C:85:GLN:CB	16:Y:-97:DG:OP1	2.68	0.42
5:I:726:LYS:CB	15:X:56:DT:O3'	2.68	0.42
5:I:2141:ASN:HB3	16:Y:-51:DC:H5"	2.02	0.42
7:K:366:ILE:HG23	7:K:371:ASP:OD2	2.20	0.42
10:N:33:LEU:HD23	10:N:39:PRO:HA	2.01	0.42
10:P:147:ILE:HD11	10:P:157:LYS:HB2	2.02	0.42
12:T:79:ARG:HG2	12:T:80:GLU:HB2	2.01	0.42
15:X:92:DC:H42	16:Y:-92:DG:H1	1.67	0.42
15:X:97:DC:H5"	15:X:97:DC:C6	2.49	0.42
5:I:147:LEU:HD11	5:I:151:PHE:CE1	2.55	0.41
7:K:212:VAL:HG11	7:K:282:PHE:CE1	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:V:57:VAL:O	13:V:61:LEU:HG	2.19	0.41
13:V:222:HIS:O	13:V:225:ARG:HG3	2.20	0.41
14:W:157:THR:HG22	14:W:157:THR:O	2.21	0.41
16:Y:-120:DT:H1'	16:Y:-119:DC:O4'	2.20	0.41
5:I:818:SER:O	5:I:819:GLN:C	2.58	0.41
9:M:262:GLN:O	9:M:263:LEU:O	2.38	0.41
9:M:319:LEU:HD11	9:M:357:ARG:CD	2.50	0.41
10:N:56:ALA:HA	10:N:59:VAL:HG12	2.02	0.41
9:Q:298:VAL:HG13	9:Q:326:ILE:CG2	2.50	0.41
12:T:266:VAL:O	12:T:301:ARG:NH1	2.53	0.41
11:U:185:LEU:HD13	11:U:185:LEU:O	2.20	0.41
13:V:143:TYR:HA	13:V:147:LEU:HD23	2.01	0.41
15:X:25:DC:H1'	15:X:26:DC:C6	2.55	0.41
15:X:103:DC:C6	15:X:104:DT:H72	2.55	0.41
15:X:134:DC:H5'	15:X:134:DC:C6	2.55	0.41
5:I:895:MET:HE1	15:X:51:DG:N2	2.35	0.41
5:I:988:LYS:N	5:I:989:PRO:HD3	2.35	0.41
5:I:2111:ILE:HD12	5:I:2111:ILE:H	1.85	0.41
7:K:3:THR:HG23	7:K:18:SER:CB	2.49	0.41
12:T:205:GLN:CB	12:T:304:ILE:HG23	2.50	0.41
11:U:247:VAL:O	11:U:249:THR:N	2.53	0.41
14:W:38:ARG:NE	14:W:43:HIS:HB2	2.36	0.41
15:X:145:DA:H1'	15:X:146:DG:O4'	2.20	0.41
16:Y:-18:DT:H2'	16:Y:-17:DC:C5	2.55	0.41
5:I:233:LEU:HD22	5:I:803:PHE:CZ	2.56	0.41
5:I:612:LEU:HD13	5:I:613:LEU:H	1.85	0.41
5:I:898:ARG:NH2	5:I:2140:TRP:CZ3	2.87	0.41
5:I:2065:PHE:CE1	5:I:2116:LEU:HD21	2.55	0.41
6:J:267:THR:HG22	9:Q:153:THR:CB	2.51	0.41
9:O:265:LYS:O	9:O:265:LYS:HG2	2.19	0.41
10:R:47:VAL:H	17:R:501:ADP:HN62	1.69	0.41
11:U:305:MET:O	11:U:306:TYR:C	2.58	0.41
16:Y:-9:DT:H2"	16:Y:-8:DA:N7	2.35	0.41
5:I:99:GLN:HG3	14:W:201:LEU:HD22	2.01	0.41
5:I:1930:GLN:HB3	5:I:1931:PRO:HD3	2.02	0.41
5:I:1973:ILE:HG23	5:I:1977:ILE:HD12	2.01	0.41
7:K:70:VAL:O	7:K:74:VAL:HG23	2.21	0.41
9:M:106:ILE:HG23	9:M:269:THR:HG23	2.03	0.41
10:N:59:VAL:HG23	10:N:62:MET:CE	2.51	0.41
9:O:106:ILE:HD12	9:O:106:ILE:HA	1.96	0.41
10:P:305:ASP:OD1	10:P:306:ILE:N	2.47	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:319:LEU:HD21	9:Q:327:VAL:HG21	2.02	0.41
15:X:20:DA:N1	15:X:21:DC:C4	2.88	0.41
15:X:59:DA:H2"	15:X:60:DA:H5"	2.02	0.41
1:A:123:HIS:HB3	7:K:238:LEU:HD12	2.03	0.41
7:K:69:ASP:OD1	7:K:70:VAL:HG23	2.21	0.41
9:M:408:GLN:OE1	10:N:71:ARG:NH1	2.54	0.41
10:P:137:ILE:HG22	10:P:196:ASP:HA	2.02	0.41
10:R:197:LYS:O	10:R:198:ALA:HB3	2.21	0.41
10:R:335:ILE:HD11	10:R:342:SER:OG	2.20	0.41
11:U:6:ALA:O	11:U:102:PRO:HD2	2.21	0.41
15:X:110:DC:H2"	15:X:111:DG:H8	1.85	0.41
15:X:123:DG:H2"	15:X:124:DG:C8	2.55	0.41
5:I:1900:ARG:O	5:I:1904:ILE:HG23	2.20	0.41
7:K:41:THR:HG22	7:K:42:ALA:H	1.86	0.41
10:N:415:LYS:NZ	9:O:54:GLU:OE2	2.53	0.41
13:V:92:VAL:HG22	13:V:92:VAL:O	2.20	0.41
15:X:43:DA:C8	15:X:44:DT:H72	2.56	0.41
16:Y:-85:DC:C2'	16:Y:-84:DG:C8	2.99	0.41
3:C:66:PRO:HG3	15:X:90:DA:C5'	2.45	0.41
3:G:41:TYR:HA	15:X:143:DC:OP1	2.20	0.41
5:I:95:GLU:HB3	14:W:197:LEU:CD2	2.51	0.41
6:J:209:GLY:O	6:J:211:ILE:HG22	2.20	0.41
10:P:249:VAL:HG11	10:P:259:ALA:CA	2.47	0.41
10:P:261:PHE:CZ	10:P:264:ASP:O	2.74	0.41
14:W:39:GLU:HB2	16:Y:-82:DA:C5'	2.45	0.41
16:Y:-110:DG:H2"	16:Y:-109:DT:C6	2.56	0.41
16:Y:-15:DC:H2"	16:Y:-14:DA:H8	1.85	0.41
7:K:225:LEU:HD23	7:K:225:LEU:H	1.85	0.41
7:K:310:GLN:N	7:K:311:PRO:HD2	2.36	0.41
9:M:263:LEU:O	9:M:263:LEU:HD12	2.21	0.41
9:M:396:GLU:O	9:M:399:THR:OG1	2.27	0.41
10:N:59:VAL:HG23	10:N:62:MET:HE3	2.02	0.41
10:N:331:GLY:O	10:N:344:HIS:N	2.50	0.41
9:O:180:LEU:CD2	9:O:200:VAL:HG11	2.51	0.41
10:P:47:VAL:CG2	10:P:373:ILE:HD12	2.51	0.41
10:P:121:GLN:NE2	10:P:265:THR:OG1	2.51	0.41
10:P:260:LEU:O	10:P:261:PHE:CD1	2.74	0.41
9:Q:247:ASN:CG	9:Q:279:ILE:HD11	2.41	0.41
10:R:52:ALA:HB2	10:R:358:SER:O	2.21	0.41
14:W:30:VAL:HG12	14:W:135:VAL:HG22	2.03	0.41
15:X:78:DT:H2"	15:X:79:DA:C8	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Y:-120:DT:H2”	16:Y:-119:DC:OP2	2.20	0.41
16:Y:-32:DT:H1’	16:Y:-31:DC:H5’	2.03	0.41
3:G:97:GLU:O	3:G:101:VAL:HG23	2.21	0.41
5:I:1969:LEU:O	5:I:1970:SER:C	2.60	0.41
5:I:2142:PRO:C	5:I:2144:MET:H	2.24	0.41
9:O:175:SER:O	9:O:254:GLN:NE2	2.50	0.41
9:O:270:GLU:HG3	9:O:275:LEU:HD12	2.02	0.41
10:P:144:GLU:N	10:P:162:THR:OG1	2.54	0.41
12:T:412:SER:OG	13:V:107:ASP:OD2	2.29	0.41
11:U:216:LEU:HD22	11:U:216:LEU:N	2.35	0.41
15:X:43:DA:H2’	15:X:44:DT:C7	2.51	0.41
15:X:120:DA:H5”	15:X:120:DA:C8	2.56	0.41
15:X:139:DT:H2”	15:X:140:DT:C6	2.56	0.41
3:G:106:ASP:OD2	3:G:131:ARG:NE	2.54	0.40
7:K:6:LEU:HD13	7:K:93:ILE:HD11	2.03	0.40
9:M:170:LEU:HD12	10:R:216:ASP:CG	2.42	0.40
9:M:170:LEU:N	9:M:170:LEU:HD22	2.36	0.40
9:Q:276:ARG:HA	9:Q:276:ARG:NE	2.36	0.40
15:X:52:DG:C2’	15:X:53:DC:H5’	2.52	0.40
16:Y:-141:DG:H2”	16:Y:-140:DA:C8	2.56	0.40
16:Y:-61:DT:H2”	16:Y:-60:DT:C6	2.56	0.40
1:A:47:ALA:N	1:A:48:PRO:HD2	2.37	0.40
2:B:74:ALA:HB2	2:B:91:ILE:HD13	2.03	0.40
5:I:92:SER:OG	14:W:193:GLU:CG	2.58	0.40
5:I:1893:ARG:NH2	7:K:344:ASP:OD2	2.52	0.40
5:I:2061:ARG:NH1	5:I:2111:ILE:O	2.54	0.40
9:M:55:LEU:HD21	9:M:61:MET:HB3	2.03	0.40
9:M:61:MET:HE1	10:R:22:ILE:HD11	2.03	0.40
9:O:450:GLN:OE1	10:P:78:GLN:NE2	2.54	0.40
11:S:324:THR:HG21	15:X:116:DA:C3’	2.51	0.40
16:Y:-50:DA:C4’	16:Y:-50:DA:OP1	2.69	0.40
2:B:91:ILE:O	2:B:95:VAL:HG23	2.21	0.40
7:K:151:GLY:O	7:K:323:ASN:ND2	2.54	0.40
9:M:415:LEU:HD21	10:N:61:GLU:CB	2.50	0.40
12:T:70:ILE:HD13	12:T:105:HIS:CD2	2.56	0.40
13:V:266:GLN:O	13:V:270:LYS:HG2	2.21	0.40
7:K:240:ASP:OD1	7:K:242:SER:OG	2.24	0.40
9:M:106:ILE:HG23	9:M:269:THR:CG2	2.51	0.40
10:N:99:PRO:O	10:N:295:VAL:N	2.52	0.40
9:Q:323:ILE:HD12	9:Q:323:ILE:N	2.37	0.40
15:X:39:DA:H2”	15:X:40:DG:H8	1.86	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:I:723:THR:OG1	5:I:724:SER:N	2.55	0.40
5:I:780:ASN:O	5:I:2183:LYS:NZ	2.51	0.40
5:I:2076:GLU:OE1	5:I:2086:TYR:OH	2.40	0.40
9:M:24:LEU:HA	9:M:39:LEU:HD12	2.02	0.40
9:Q:159:ILE:HD11	9:Q:191:ILE:HD11	2.02	0.40
10:R:378:GLU:CG	10:R:380:VAL:HG23	2.52	0.40
15:X:3:DG:H2"	15:X:4:DG:H8	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	114/130 (88%)	110 (96%)	4 (4%)	0	100	100
1	E	103/130 (79%)	102 (99%)	1 (1%)	0	100	100
2	B	94/126 (75%)	93 (99%)	1 (1%)	0	100	100
2	F	92/126 (73%)	86 (94%)	4 (4%)	2 (2%)	6	35
3	C	93/136 (68%)	88 (95%)	2 (2%)	3 (3%)	4	26
3	G	95/136 (70%)	93 (98%)	2 (2%)	0	100	100
4	D	79/103 (77%)	78 (99%)	1 (1%)	0	100	100
4	H	78/103 (76%)	75 (96%)	3 (4%)	0	100	100
5	I	844/3230 (26%)	808 (96%)	32 (4%)	4 (0%)	29	67
6	J	129/364 (35%)	120 (93%)	8 (6%)	1 (1%)	19	58
7	K	392/396 (99%)	353 (90%)	36 (9%)	3 (1%)	19	58
8	L	101/154 (66%)	95 (94%)	5 (5%)	1 (1%)	15	54
9	M	424/456 (93%)	406 (96%)	17 (4%)	1 (0%)	47	79
9	O	431/456 (94%)	417 (97%)	14 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
9	Q	438/456 (96%)	409 (93%)	26 (6%)	3 (1%)	22 61
10	N	409/463 (88%)	394 (96%)	15 (4%)	0	100 100
10	P	423/463 (91%)	401 (95%)	20 (5%)	2 (0%)	29 67
10	R	420/463 (91%)	406 (97%)	14 (3%)	0	100 100
11	S	373/375 (100%)	370 (99%)	3 (1%)	0	100 100
11	U	355/375 (95%)	311 (88%)	44 (12%)	0	100 100
12	T	399/429 (93%)	387 (97%)	11 (3%)	1 (0%)	41 74
13	V	200/467 (43%)	190 (95%)	10 (5%)	0	100 100
14	W	185/227 (82%)	177 (96%)	6 (3%)	2 (1%)	14 51
All	All	6271/9764 (64%)	5969 (95%)	279 (4%)	23 (0%)	38 69

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
10	P	261	PHE
9	Q	278	GLU
9	Q	279	ILE
7	K	201	VAL
9	M	263	LEU
2	F	29	SER
5	I	757	GLN
5	I	758	ARG
5	I	2143	THR
7	K	194	HIS
8	L	46	ALA
14	W	85	PRO
2	F	30	ARG
5	I	2142	PRO
7	K	200	HIS
9	Q	269	THR
3	C	42	ARG
10	P	263	GLY
12	T	81	ASN
14	W	86	TYR
6	J	208	PRO
3	C	44	GLY
3	C	43	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	91/99 (92%)	87 (96%)	4 (4%)	28 64
1	E	82/99 (83%)	77 (94%)	5 (6%)	18 54
2	B	83/106 (78%)	76 (92%)	7 (8%)	11 39
2	F	81/106 (76%)	78 (96%)	3 (4%)	34 68
3	C	82/111 (74%)	74 (90%)	8 (10%)	8 31
3	G	85/111 (77%)	84 (99%)	1 (1%)	71 88
4	D	66/79 (84%)	66 (100%)	0	100 100
4	H	65/79 (82%)	65 (100%)	0	100 100
5	I	765/2721 (28%)	691 (90%)	74 (10%)	8 31
6	J	123/312 (39%)	105 (85%)	18 (15%)	3 15
7	K	359/361 (99%)	336 (94%)	23 (6%)	17 52
8	L	89/133 (67%)	83 (93%)	6 (7%)	16 50
9	M	361/387 (93%)	342 (95%)	19 (5%)	22 58
9	O	364/387 (94%)	342 (94%)	22 (6%)	19 54
9	Q	366/387 (95%)	349 (95%)	17 (5%)	27 63
10	N	351/390 (90%)	343 (98%)	8 (2%)	50 78
10	P	352/390 (90%)	334 (95%)	18 (5%)	24 60
10	R	358/390 (92%)	339 (95%)	19 (5%)	22 58
11	S	318/318 (100%)	318 (100%)	0	100 100
11	U	305/318 (96%)	281 (92%)	24 (8%)	12 43
12	T	346/364 (95%)	336 (97%)	10 (3%)	42 74
13	V	183/400 (46%)	162 (88%)	21 (12%)	5 24
14	W	168/203 (83%)	163 (97%)	5 (3%)	41 73
All	All	5443/8251 (66%)	5131 (94%)	312 (6%)	24 56

All (312) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	ARG
1	A	36	LYS
1	A	50	TYR
1	A	84	GLN
2	B	36	VAL
2	B	44	GLN
2	B	46	HIS
2	B	60	ASN
2	B	77	LEU
2	B	89	ARG
2	B	113	LYS
3	C	42	ARG
3	C	53	ARG
3	C	64	LYS
3	C	79	LYS
3	C	82	LEU
3	C	115	LYS
3	C	120	MET
3	C	122	LYS
1	E	68	ASN
1	E	73	ASN
1	E	76	THR
1	E	81	ARG
1	E	118	LYS
2	F	28	ARG
2	F	30	ARG
2	F	31	LYS
3	G	129	ARG
5	I	109	ARG
5	I	118	PHE
5	I	120	SER
5	I	132	ARG
5	I	138	ASP
5	I	142	GLU
5	I	144	MET
5	I	145	GLN
5	I	163	ARG
5	I	167	ARG
5	I	177	ARG
5	I	178	GLN
5	I	182	ARG
5	I	190	LYS
5	I	193	ARG

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Mol	Chain	Res	Type
5	I	200	LYS
5	I	201	ASP
5	I	226	LYS
5	I	241	GLU
5	I	246	LEU
5	I	249	GLN
5	I	612	LEU
5	I	629	LEU
5	I	649	LYS
5	I	663	GLU
5	I	703	LYS
5	I	712	TRP
5	I	726	LYS
5	I	730	GLN
5	I	732	HIS
5	I	742	TYR
5	I	756	SER
5	I	758	ARG
5	I	784	GLU
5	I	785	LEU
5	I	798	GLN
5	I	800	HIS
5	I	801	ARG
5	I	807	PHE
5	I	820	GLU
5	I	821	TYR
5	I	847	LYS
5	I	852	LYS
5	I	857	ILE
5	I	860	ARG
5	I	864	ARG
5	I	899	LYS
5	I	928	LEU
5	I	936	HIS
5	I	938	LEU
5	I	949	ILE
5	I	958	TYR
5	I	966	ARG
5	I	1886	LEU
5	I	1936	ILE
5	I	1945	HIS
5	I	1947	THR

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Mol	Chain	Res	Type
5	I	2015	TRP
5	I	2029	ARG
5	I	2075	LEU
5	I	2078	PHE
5	I	2085	LEU
5	I	2088	ARG
5	I	2090	ASP
5	I	2094	ARG
5	I	2116	LEU
5	I	2120	SER
5	I	2138	SER
5	I	2139	ASP
5	I	2140	TRP
5	I	2143	THR
5	I	2176	ILE
5	I	2177	LEU
5	I	2192	GLU
6	J	130	ARG
6	J	131	LYS
6	J	134	ARG
6	J	177	LYS
6	J	181	GLU
6	J	188	GLU
6	J	192	ARG
6	J	206	LYS
6	J	216	SER
6	J	217	VAL
6	J	219	VAL
6	J	260	ARG
6	J	261	CYS
6	J	262	SER
6	J	263	ARG
6	J	267	THR
6	J	306	THR
6	J	323	TYR
7	K	36	ARG
7	K	41	THR
7	K	71	GLN
7	K	72	ARG
7	K	85	GLN
7	K	88	PHE
7	K	113	LEU

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Mol	Chain	Res	Type
7	K	118	GLN
7	K	124	ARG
7	K	168	GLU
7	K	172	ARG
7	K	190	TYR
7	K	202	ILE
7	K	206	LYS
7	K	255	MET
7	K	268	LEU
7	K	273	GLU
7	K	274	ARG
7	K	289	ILE
7	K	294	ILE
7	K	325	LEU
7	K	330	ARG
7	K	356	ILE
8	L	19	LEU
8	L	21	ARG
8	L	40	PHE
8	L	88	LEU
8	L	91	GLN
8	L	148	ARG
9	M	53	VAL
9	M	170	LEU
9	M	182	LYS
9	M	186	GLU
9	M	215	LEU
9	M	218	GLU
9	M	235	ILE
9	M	256	ILE
9	M	260	MET
9	M	263	LEU
9	M	267	LYS
9	M	271	ILE
9	M	274	LYS
9	M	313	THR
9	M	317	ARG
9	M	357	ARG
9	M	362	ARG
9	M	378	ARG
9	M	433	ILE
10	N	149	ARG

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Mol	Chain	Res	Type
10	N	201	LYS
10	N	205	LEU
10	N	209	PHE
10	N	325	ILE
10	N	351	LEU
10	N	381	GLU
10	N	444	LYS
9	O	18	HIS
9	O	34	GLN
9	O	55	LEU
9	O	60	LYS
9	O	184	ARG
9	O	221	VAL
9	O	263	LEU
9	O	265	LYS
9	O	268	LYS
9	O	269	THR
9	O	273	ASP
9	O	274	LYS
9	O	275	LEU
9	O	285	LYS
9	O	342	GLU
9	O	353	ASP
9	O	362	ARG
9	O	363	THR
9	O	364	MET
9	O	378	ARG
9	O	391	LEU
9	O	415	LEU
10	P	21	ARG
10	P	28	ILE
10	P	68	ILE
10	P	147	ILE
10	P	178	MET
10	P	209	PHE
10	P	236	LYS
10	P	255	GLN
10	P	261	PHE
10	P	267	GLU
10	P	286	GLU
10	P	330	ARG
10	P	348	ILE

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Mol	Chain	Res	Type
10	P	354	LEU
10	P	376	GLU
10	P	428	ARG
10	P	429	VAL
10	P	448	ASP
9	Q	13	GLN
9	Q	177	PHE
9	Q	180	LEU
9	Q	182	LYS
9	Q	196	ASN
9	Q	209	TYR
9	Q	215	LEU
9	Q	236	GLN
9	Q	260	MET
9	Q	271	ILE
9	Q	276	ARG
9	Q	317	ARG
9	Q	389	GLU
9	Q	391	LEU
9	Q	404	ARG
9	Q	427	LYS
9	Q	431	GLU
10	R	21	ARG
10	R	22	ILE
10	R	67	LYS
10	R	68	ILE
10	R	205	LEU
10	R	207	ARG
10	R	211	ARG
10	R	221	GLN
10	R	223	LYS
10	R	246	GLU
10	R	250	ILE
10	R	251	ASN
10	R	258	LEU
10	R	374	ARG
10	R	392	ARG
10	R	422	GLN
10	R	434	LEU
10	R	435	ASP
10	R	444	LYS
12	T	10	GLU

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Mol	Chain	Res	Type
12	T	24	ARG
12	T	79	ARG
12	T	103	LEU
12	T	107	TYR
12	T	110	HIS
12	T	247	THR
12	T	317	LEU
12	T	383	ASN
12	T	399	ILE
11	U	28	ARG
11	U	62	ARG
11	U	78	ASN
11	U	107	GLU
11	U	121	GLN
11	U	123	MET
11	U	147	ARG
11	U	161	HIS
11	U	165	ILE
11	U	192	ILE
11	U	194	THR
11	U	196	ARG
11	U	198	TYR
11	U	210	ARG
11	U	227	MET
11	U	270	GLU
11	U	282	ILE
11	U	312	ARG
11	U	326	LYS
11	U	330	ILE
11	U	334	GLU
11	U	353	GLN
11	U	359	LYS
11	U	369	ILE
13	V	51	GLU
13	V	53	MET
13	V	56	GLU
13	V	65	LYS
13	V	91	LYS
13	V	96	LYS
13	V	119	GLU
13	V	145	LEU
13	V	222	HIS

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Mol	Chain	Res	Type
13	V	224	ARG
13	V	229	GLN
13	V	230	LEU
13	V	237	THR
13	V	244	GLU
13	V	245	GLU
13	V	247	LEU
13	V	249	GLN
13	V	252	ARG
13	V	255	GLU
13	V	261	ARG
13	V	262	GLU
14	W	38	ARG
14	W	83	LYS
14	W	87	GLU
14	W	166	TYR
14	W	170	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (46) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	44	GLN
2	B	92	GLN
4	D	75	HIS
2	F	46	HIS
3	G	76	GLN
5	I	136	HIS
5	I	145	GLN
5	I	178	GLN
5	I	249	GLN
5	I	252	ASN
5	I	652	GLN
5	I	733	GLN
5	I	750	ASN
5	I	892	ASN
5	I	936	HIS
5	I	2067	GLN
6	J	202	HIS
7	K	139	ASN
7	K	214	GLN
7	K	304	ASN
7	K	310	GLN

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Mol	Chain	Res	Type
9	M	203	GLN
9	M	236	GLN
10	N	240	HIS
10	N	245	HIS
10	N	302	HIS
9	O	156	HIS
9	O	241	HIS
9	O	408	GLN
9	O	451	GLN
10	P	25	HIS
10	P	44	GLN
10	P	121	GLN
10	P	275	GLN
10	R	422	GLN
12	T	143	HIS
12	T	327	HIS
12	T	383	ASN
12	T	408	GLN
11	U	12	ASN
11	U	78	ASN
11	U	111	ASN
11	U	280	ASN
11	U	371	HIS
13	V	235	ASN
13	V	249	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

10 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	$\#\|Z\| > 2$
18	ATP	K	401	-	26,33,33	0.92	1 (3%)	31,52,52	1.59	6 (19%)
17	ADP	N	501	-	24,29,29	0.95	1 (4%)	29,45,45	1.55	4 (13%)
17	ADP	M	501	-	24,29,29	0.95	1 (4%)	29,45,45	1.53	5 (17%)
18	ATP	U	401	-	26,33,33	0.93	1 (3%)	31,52,52	1.61	6 (19%)
17	ADP	O	501	-	24,29,29	0.94	1 (4%)	29,45,45	1.54	5 (17%)
17	ADP	I	3301	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
17	ADP	Q	501	-	24,29,29	0.96	1 (4%)	29,45,45	1.46	5 (17%)
17	ADP	R	501	-	24,29,29	0.95	1 (4%)	29,45,45	1.49	4 (13%)
18	ATP	T	501	-	26,33,33	0.93	1 (3%)	31,52,52	1.62	6 (19%)
17	ADP	P	501	-	24,29,29	0.95	1 (4%)	29,45,45	1.56	5 (17%)

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
18	ATP	K	401	-	-	4/18/38/38	0/3/3/3
17	ADP	N	501	-	-	4/12/32/32	0/3/3/3
17	ADP	M	501	-	-	3/12/32/32	0/3/3/3
18	ATP	U	401	-	-	4/18/38/38	0/3/3/3
17	ADP	O	501	-	-	5/12/32/32	0/3/3/3
17	ADP	I	3301	-	-	6/12/32/32	0/3/3/3
17	ADP	Q	501	-	-	5/12/32/32	0/3/3/3
17	ADP	R	501	-	-	1/12/32/32	0/3/3/3
18	ATP	T	501	-	-	3/18/38/38	0/3/3/3
17	ADP	P	501	-	-	4/12/32/32	0/3/3/3

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	R	501	ADP	C5-C4	2.47	1.47	1.40
17	I	3301	ADP	C5-C4	2.45	1.47	1.40
17	Q	501	ADP	C5-C4	2.45	1.47	1.40
18	T	501	ATP	C5-C4	2.44	1.47	1.40
18	U	401	ATP	C5-C4	2.44	1.47	1.40
18	K	401	ATP	C5-C4	2.43	1.47	1.40
17	N	501	ADP	C5-C4	2.42	1.47	1.40
17	M	501	ADP	C5-C4	2.40	1.47	1.40
17	P	501	ADP	C5-C4	2.39	1.47	1.40
17	O	501	ADP	C5-C4	2.34	1.47	1.40

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
17	P	501	ADP	PA-O3A-PB	-3.85	119.60	132.83
18	U	401	ATP	PB-O3B-PG	-3.73	120.03	132.83
17	N	501	ADP	PA-O3A-PB	-3.70	120.13	132.83
17	P	501	ADP	N3-C2-N1	-3.70	122.90	128.68
17	O	501	ADP	PA-O3A-PB	-3.69	120.15	132.83
18	K	401	ATP	N3-C2-N1	-3.69	122.91	128.68
17	O	501	ADP	N3-C2-N1	-3.69	122.92	128.68
17	M	501	ADP	N3-C2-N1	-3.67	122.94	128.68
18	T	501	ATP	N3-C2-N1	-3.66	122.95	128.68
17	Q	501	ADP	N3-C2-N1	-3.65	122.97	128.68
17	N	501	ADP	N3-C2-N1	-3.64	122.99	128.68
17	I	3301	ADP	N3-C2-N1	-3.63	123.00	128.68
18	U	401	ATP	N3-C2-N1	-3.63	123.01	128.68
17	R	501	ADP	PA-O3A-PB	-3.61	120.42	132.83
18	T	501	ATP	PA-O3A-PB	-3.54	120.68	132.83
17	N	501	ADP	C3'-C2'-C1'	3.54	106.30	100.98
18	T	501	ATP	PB-O3B-PG	-3.52	120.74	132.83
17	M	501	ADP	C3'-C2'-C1'	3.51	106.27	100.98
18	K	401	ATP	PB-O3B-PG	-3.49	120.85	132.83
17	P	501	ADP	C3'-C2'-C1'	3.44	106.16	100.98
17	R	501	ADP	C3'-C2'-C1'	3.42	106.13	100.98
17	M	501	ADP	PA-O3A-PB	-3.36	121.29	132.83
17	O	501	ADP	C3'-C2'-C1'	3.36	106.04	100.98
17	Q	501	ADP	C3'-C2'-C1'	3.36	106.03	100.98
18	K	401	ATP	PA-O3A-PB	-3.34	121.37	132.83
18	T	501	ATP	C3'-C2'-C1'	3.29	105.92	100.98
18	U	401	ATP	C3'-C2'-C1'	3.24	105.86	100.98
17	I	3301	ADP	PA-O3A-PB	-3.22	121.77	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
18	K	401	ATP	C3'-C2'-C1'	3.20	105.79	100.98
18	U	401	ATP	PA-O3A-PB	-3.18	121.90	132.83
17	I	3301	ADP	C3'-C2'-C1'	3.17	105.75	100.98
17	R	501	ADP	N3-C2-N1	-3.15	123.75	128.68
17	Q	501	ADP	PA-O3A-PB	-3.01	122.50	132.83
18	K	401	ATP	C4-C5-N7	-2.79	106.50	109.40
17	P	501	ADP	C4-C5-N7	-2.77	106.51	109.40
17	I	3301	ADP	C4-C5-N7	-2.76	106.52	109.40
18	T	501	ATP	C4-C5-N7	-2.75	106.53	109.40
17	O	501	ADP	C4-C5-N7	-2.69	106.60	109.40
17	R	501	ADP	C4-C5-N7	-2.68	106.61	109.40
17	Q	501	ADP	C4-C5-N7	-2.67	106.61	109.40
17	M	501	ADP	C4-C5-N7	-2.65	106.64	109.40
18	U	401	ATP	C4-C5-N7	-2.59	106.70	109.40
17	N	501	ADP	C4-C5-N7	-2.58	106.71	109.40
17	M	501	ADP	C2-N1-C6	2.07	122.30	118.75
18	U	401	ATP	C2-N1-C6	2.04	122.25	118.75
18	T	501	ATP	C2-N1-C6	2.04	122.25	118.75
18	K	401	ATP	C2-N1-C6	2.04	122.24	118.75
17	Q	501	ADP	C2-N1-C6	2.03	122.23	118.75
17	O	501	ADP	C2-N1-C6	2.03	122.22	118.75
17	P	501	ADP	C2-N1-C6	2.02	122.20	118.75

There are no chirality outliers.

All (39) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	I	3301	ADP	C5'-O5'-PA-O3A
17	M	501	ADP	PA-O3A-PB-O2B
17	M	501	ADP	PA-O3A-PB-O3B
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-O2A
18	K	401	ATP	C5'-O5'-PA-O2A
18	K	401	ATP	C5'-O5'-PA-O3A
18	K	401	ATP	C3'-C4'-C5'-O5'
18	T	501	ATP	C5'-O5'-PA-O2A
18	T	501	ATP	C5'-O5'-PA-O3A
18	U	401	ATP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
18	U	401	ATP	C3'-C4'-C5'-O5'
17	P	501	ADP	O4'-C4'-C5'-O5'
17	P	501	ADP	C3'-C4'-C5'-O5'
17	I	3301	ADP	O4'-C4'-C5'-O5'
17	I	3301	ADP	C3'-C4'-C5'-O5'
18	U	401	ATP	O4'-C4'-C5'-O5'
18	K	401	ATP	O4'-C4'-C5'-O5'
17	O	501	ADP	O4'-C4'-C5'-O5'
17	Q	501	ADP	PA-O3A-PB-O3B
17	N	501	ADP	C5'-O5'-PA-O3A
17	Q	501	ADP	C5'-O5'-PA-O3A
17	I	3301	ADP	C5'-O5'-PA-O1A
17	I	3301	ADP	C5'-O5'-PA-O2A
17	P	501	ADP	C5'-O5'-PA-O1A
17	Q	501	ADP	C5'-O5'-PA-O1A
18	U	401	ATP	C5'-O5'-PA-O2A
18	T	501	ATP	C3'-C4'-C5'-O5'
17	O	501	ADP	C3'-C4'-C5'-O5'
17	Q	501	ADP	PA-O3A-PB-O2B
17	O	501	ADP	C5'-O5'-PA-O3A
17	I	3301	ADP	PB-O3A-PA-O2A
17	M	501	ADP	O4'-C4'-C5'-O5'
17	N	501	ADP	O4'-C4'-C5'-O5'
17	R	501	ADP	O4'-C4'-C5'-O5'

There are no ring outliers.

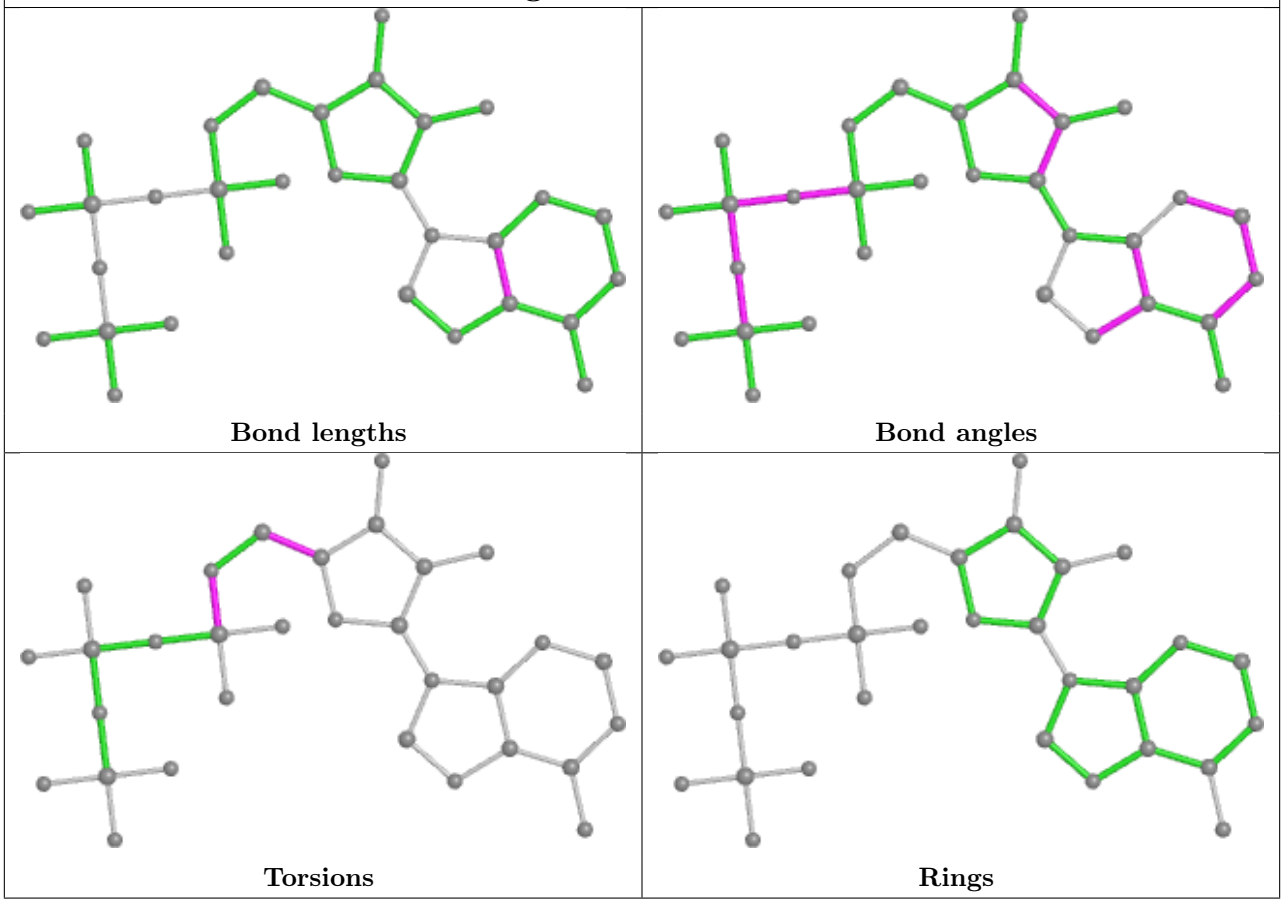
6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	K	401	ATP	1	0
17	M	501	ADP	1	0
18	U	401	ATP	1	0
17	O	501	ADP	2	0
17	R	501	ADP	2	0
17	P	501	ADP	2	0

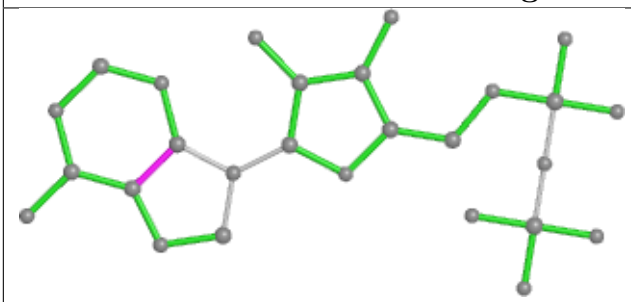
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be

highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

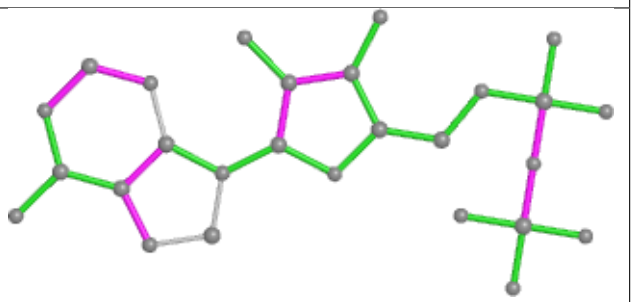
Ligand ATP K 401



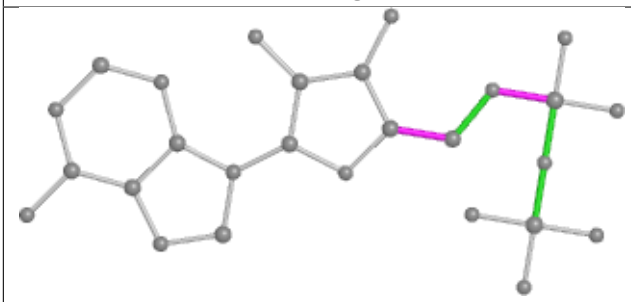
Ligand ADP N 501



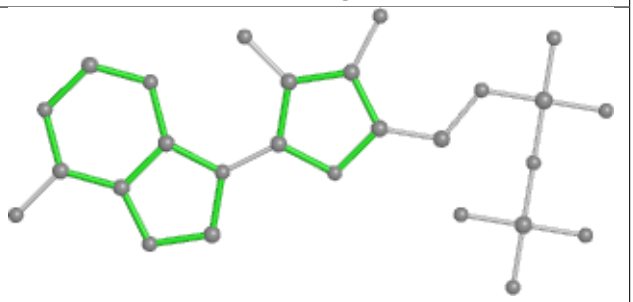
Bond lengths



Bond angles

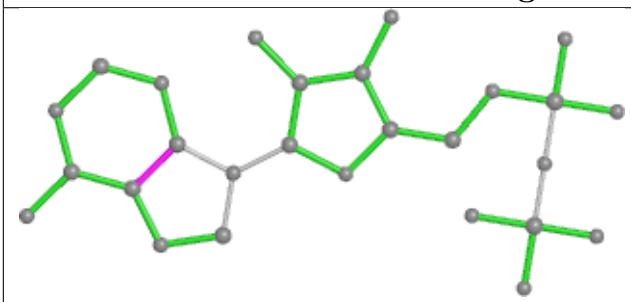


Torsions

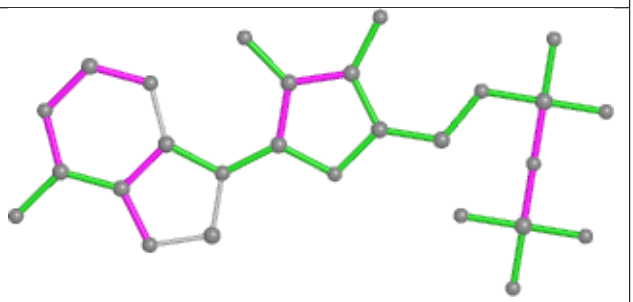


Rings

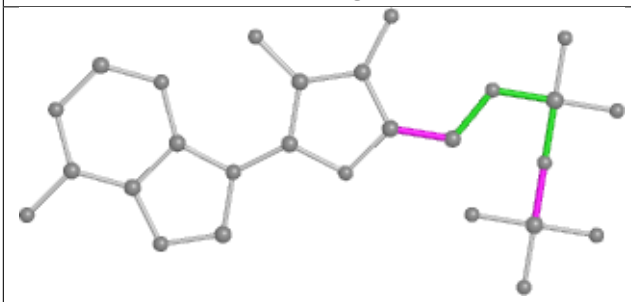
Ligand ADP M 501



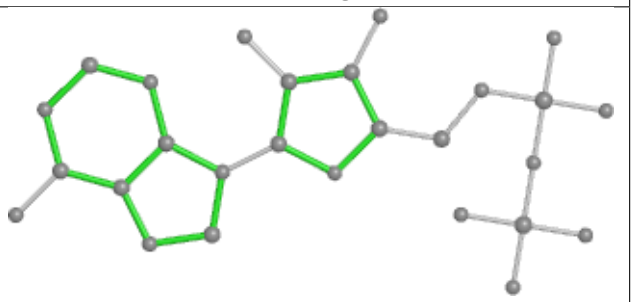
Bond lengths



Bond angles

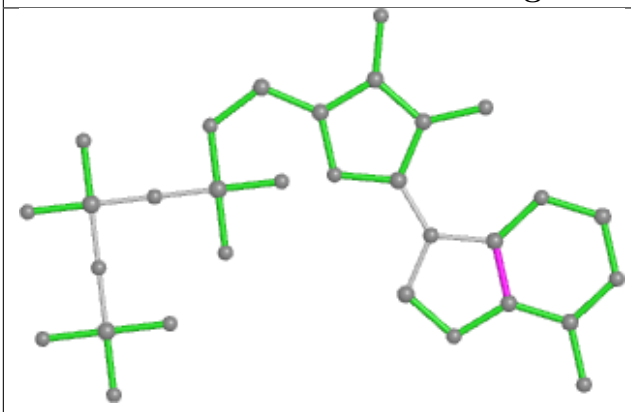


Torsions

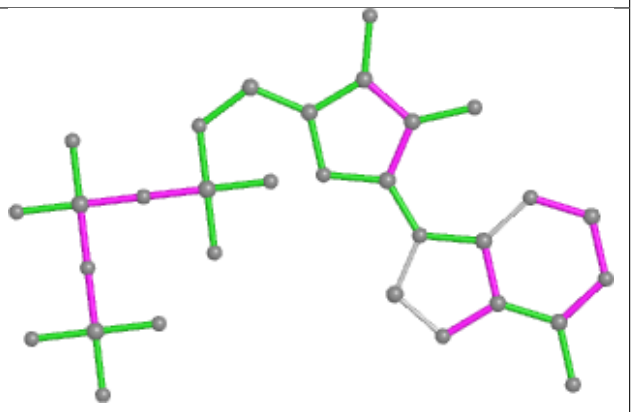


Rings

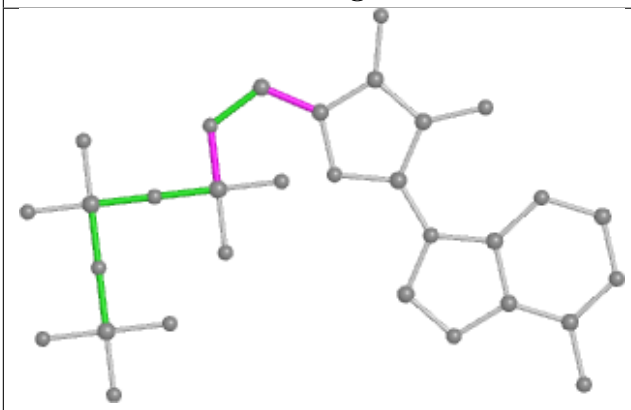
Ligand ATP U 401



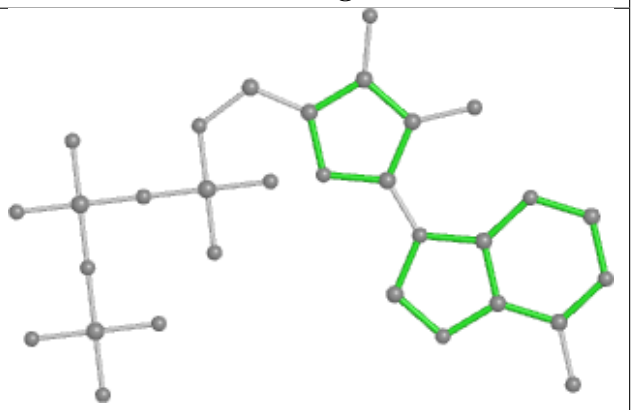
Bond lengths



Bond angles

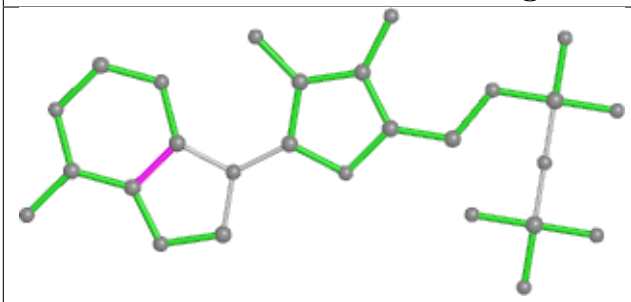


Torsions

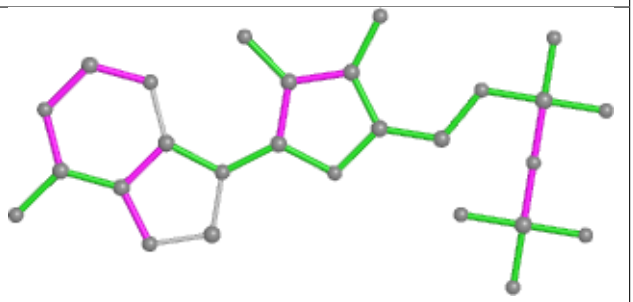


Rings

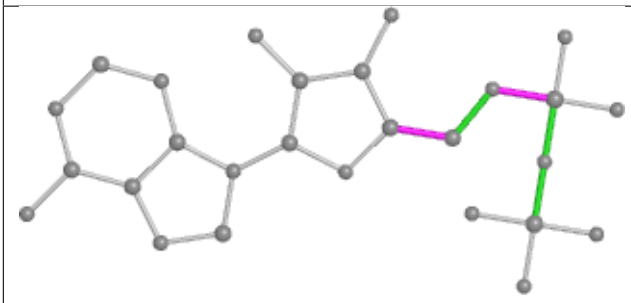
Ligand ADP O 501



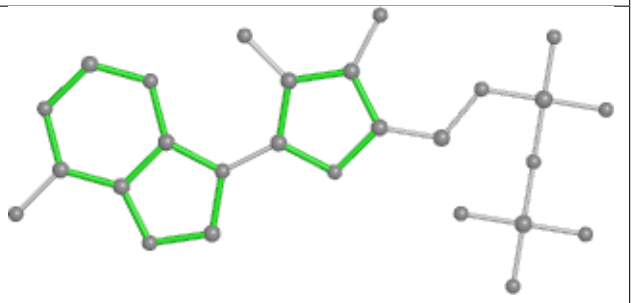
Bond lengths



Bond angles

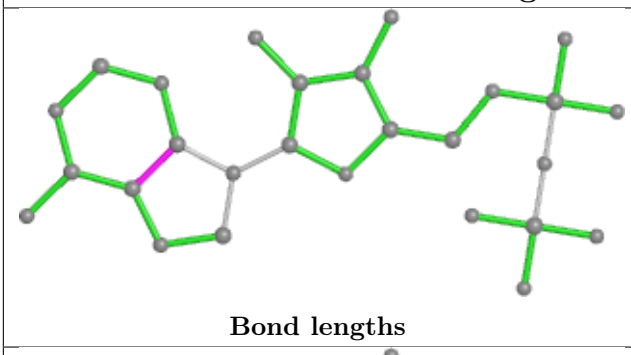


Torsions

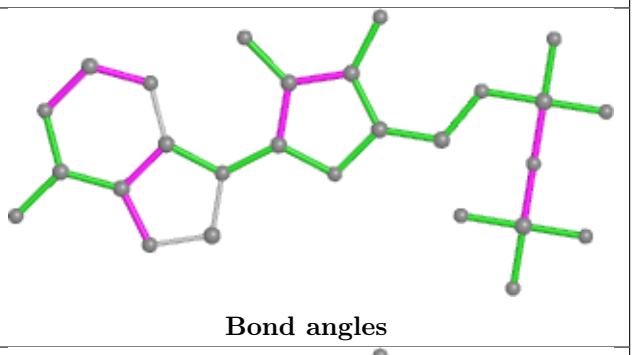


Rings

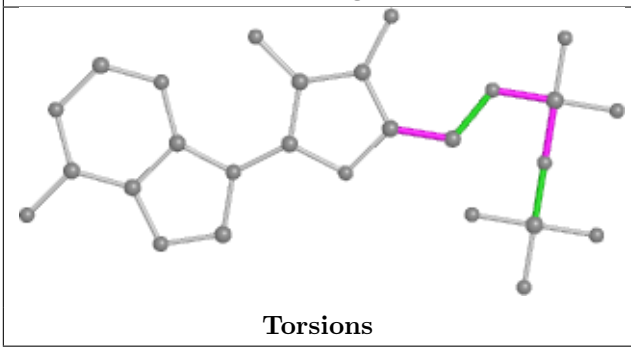
Ligand ADP I 3301



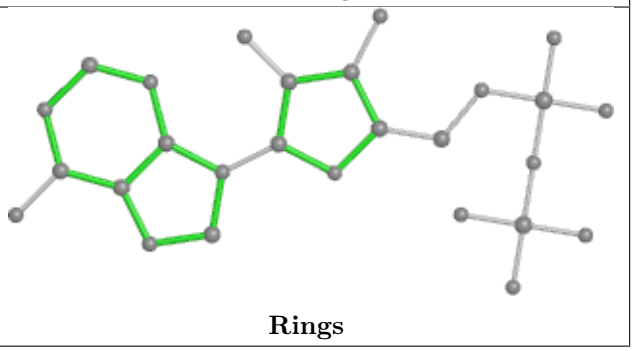
Bond lengths



Bond angles

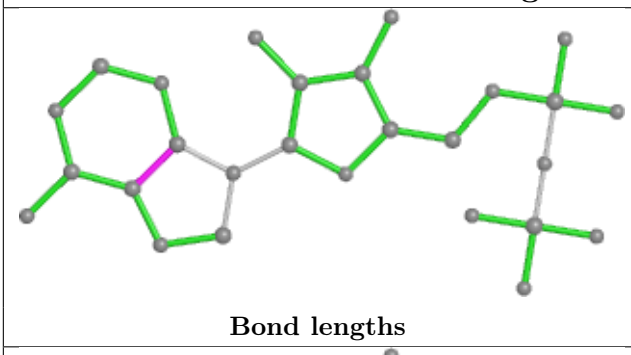


Torsions

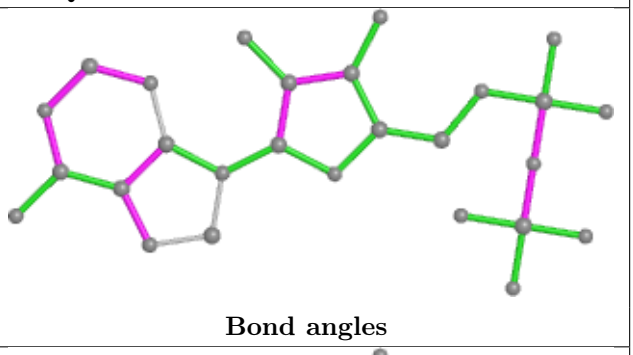


Rings

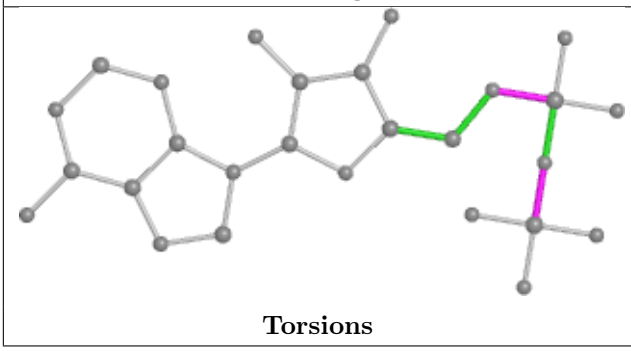
Ligand ADP Q 501



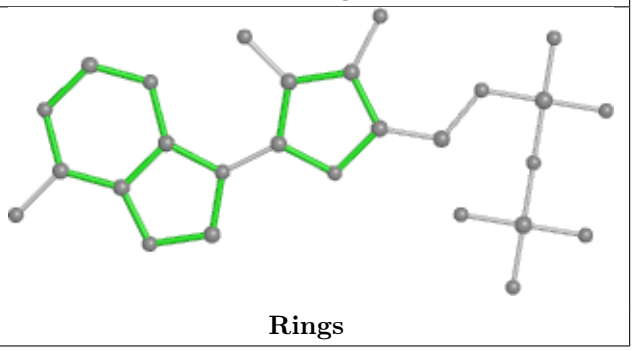
Bond lengths



Bond angles

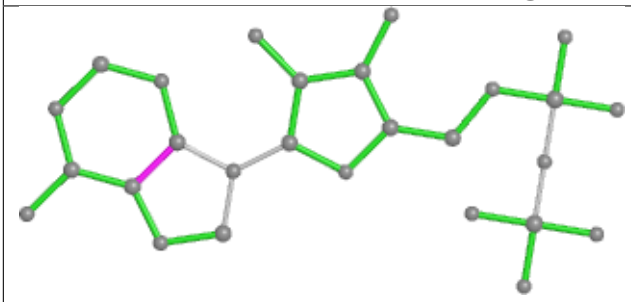


Torsions

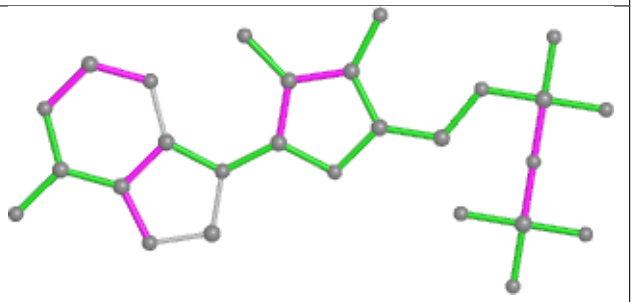


Rings

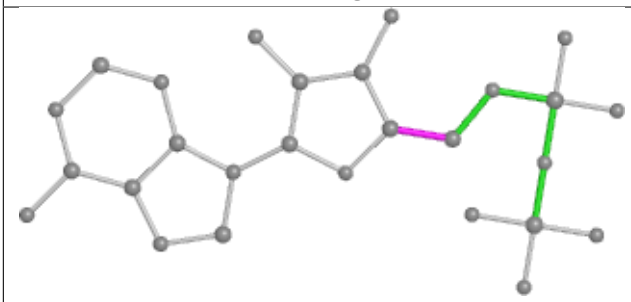
Ligand ADP R 501



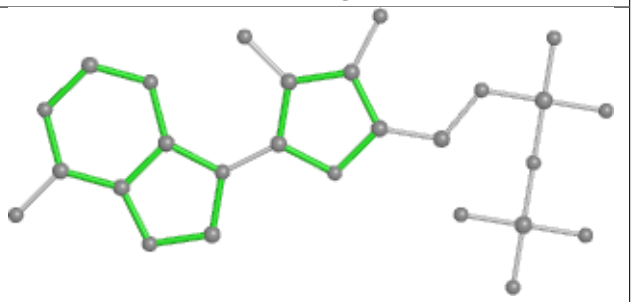
Bond lengths



Bond angles

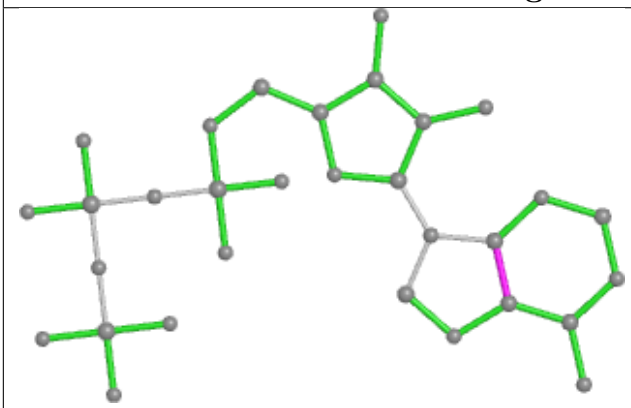


Torsions

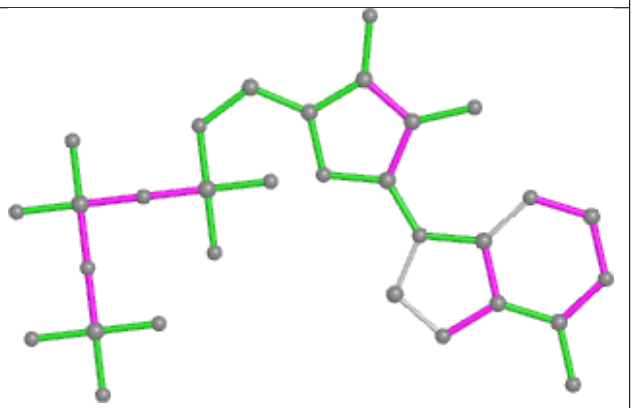


Rings

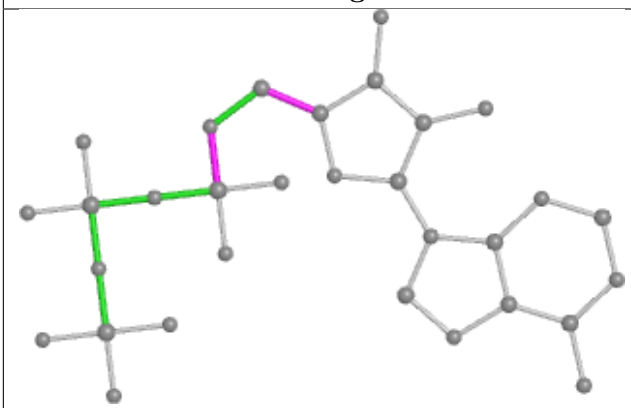
Ligand ATP T 501



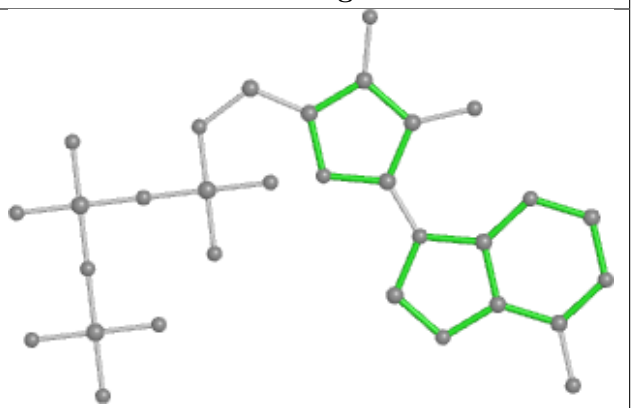
Bond lengths



Bond angles

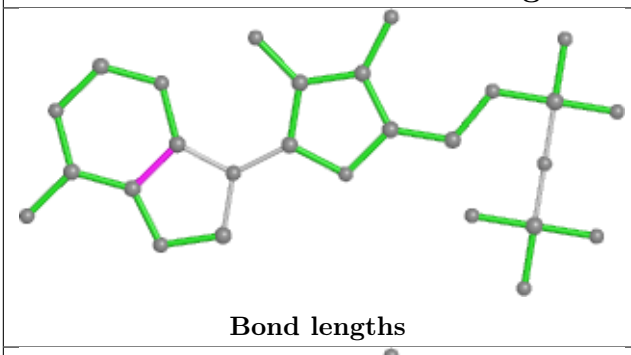


Torsions

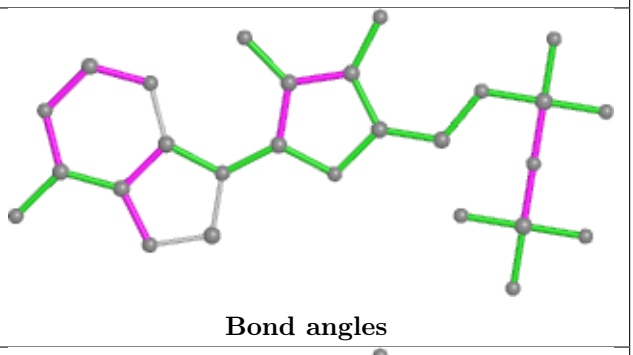


Rings

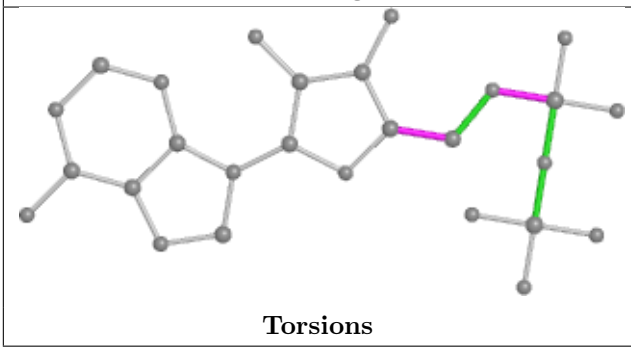
Ligand ADP P 501



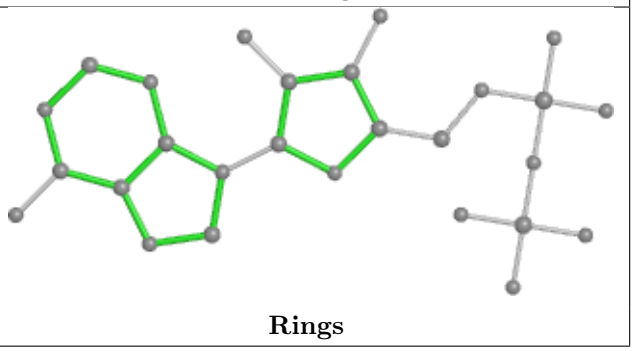
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

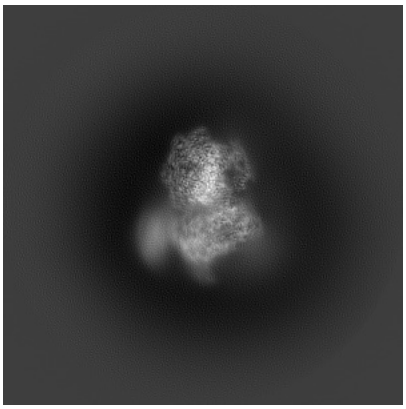
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-37990. These allow visual inspection of the internal detail of the map and identification of artifacts.

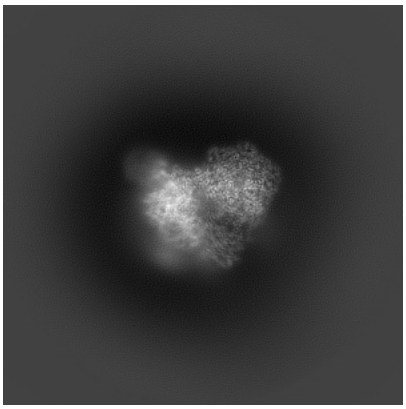
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

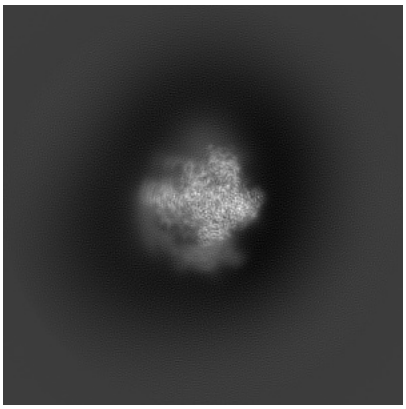
6.1.1 Primary map



X

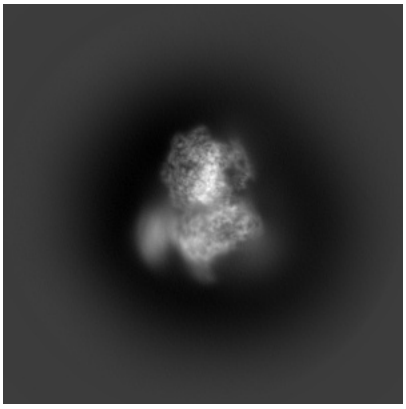


Y

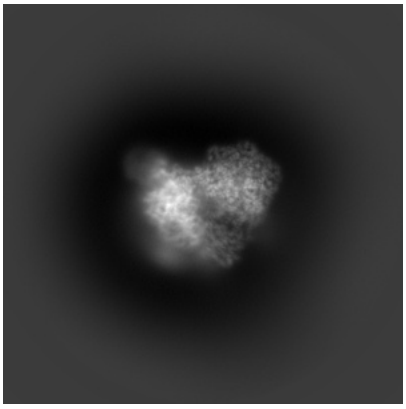


Z

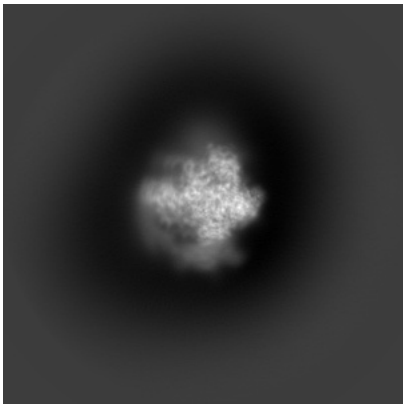
6.1.2 Raw map



X



Y

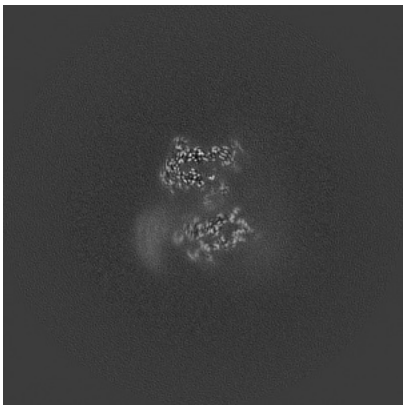


Z

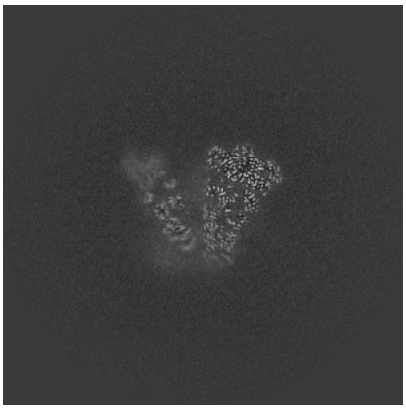
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

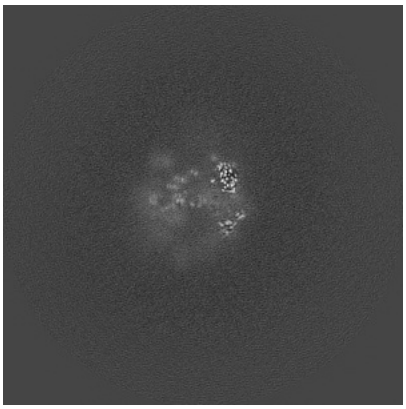
6.2.1 Primary map



X Index: 200

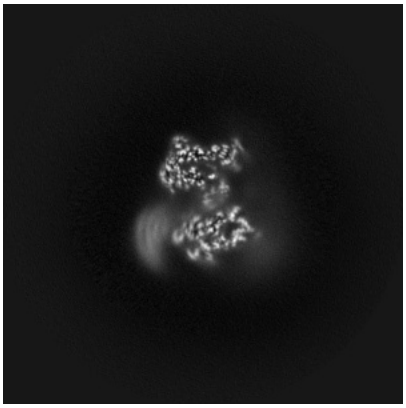


Y Index: 200

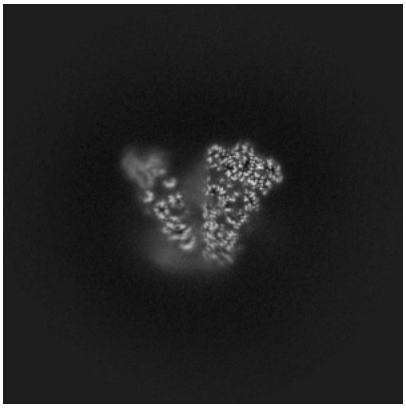


Z Index: 200

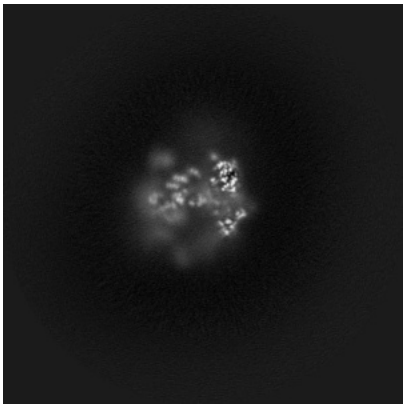
6.2.2 Raw map



X Index: 200



Y Index: 200

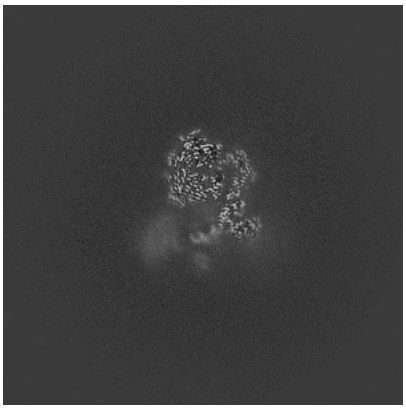


Z Index: 200

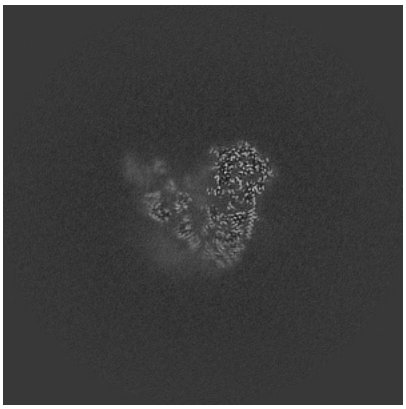
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

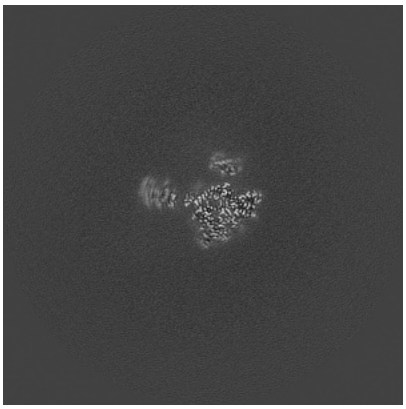
6.3.1 Primary map



X Index: 218

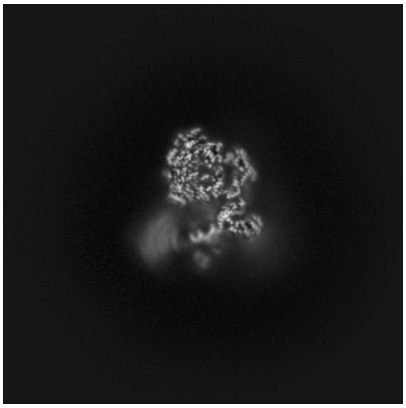


Y Index: 206

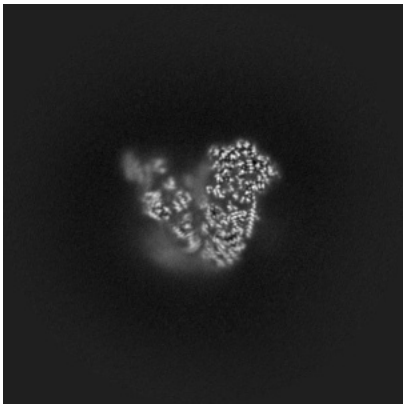


Z Index: 226

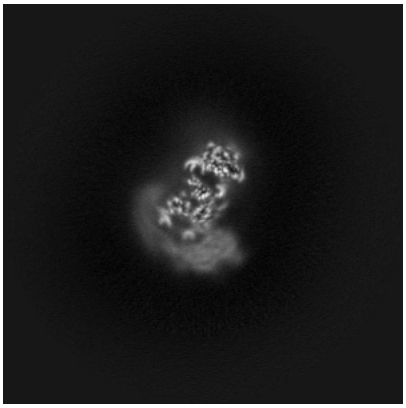
6.3.2 Raw map



X Index: 217



Y Index: 205

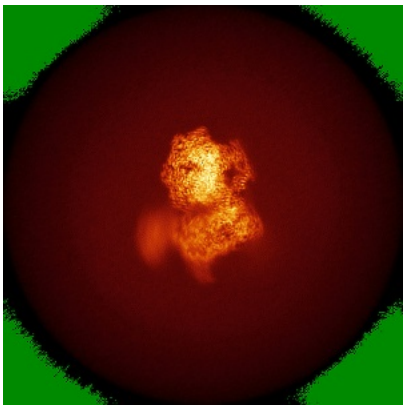


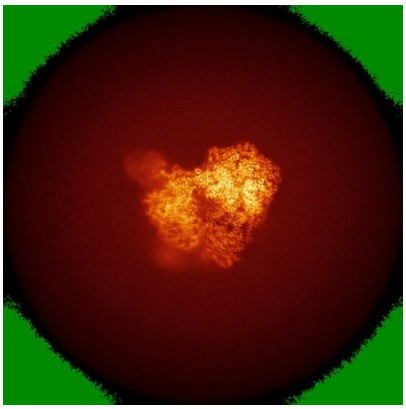
Z Index: 173

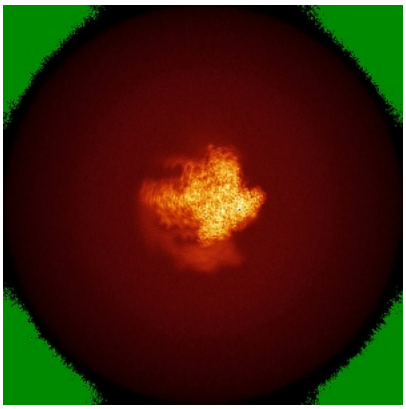
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

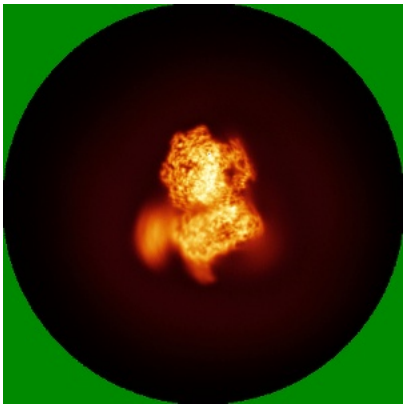
6.4.1 Primary map

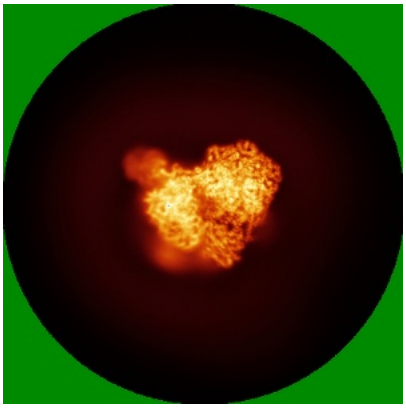

X

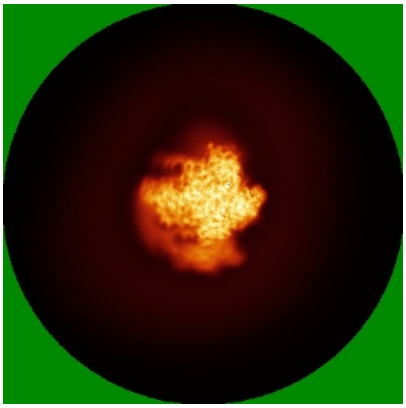

Y


Z

6.4.2 Raw map


X


Y


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.026. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

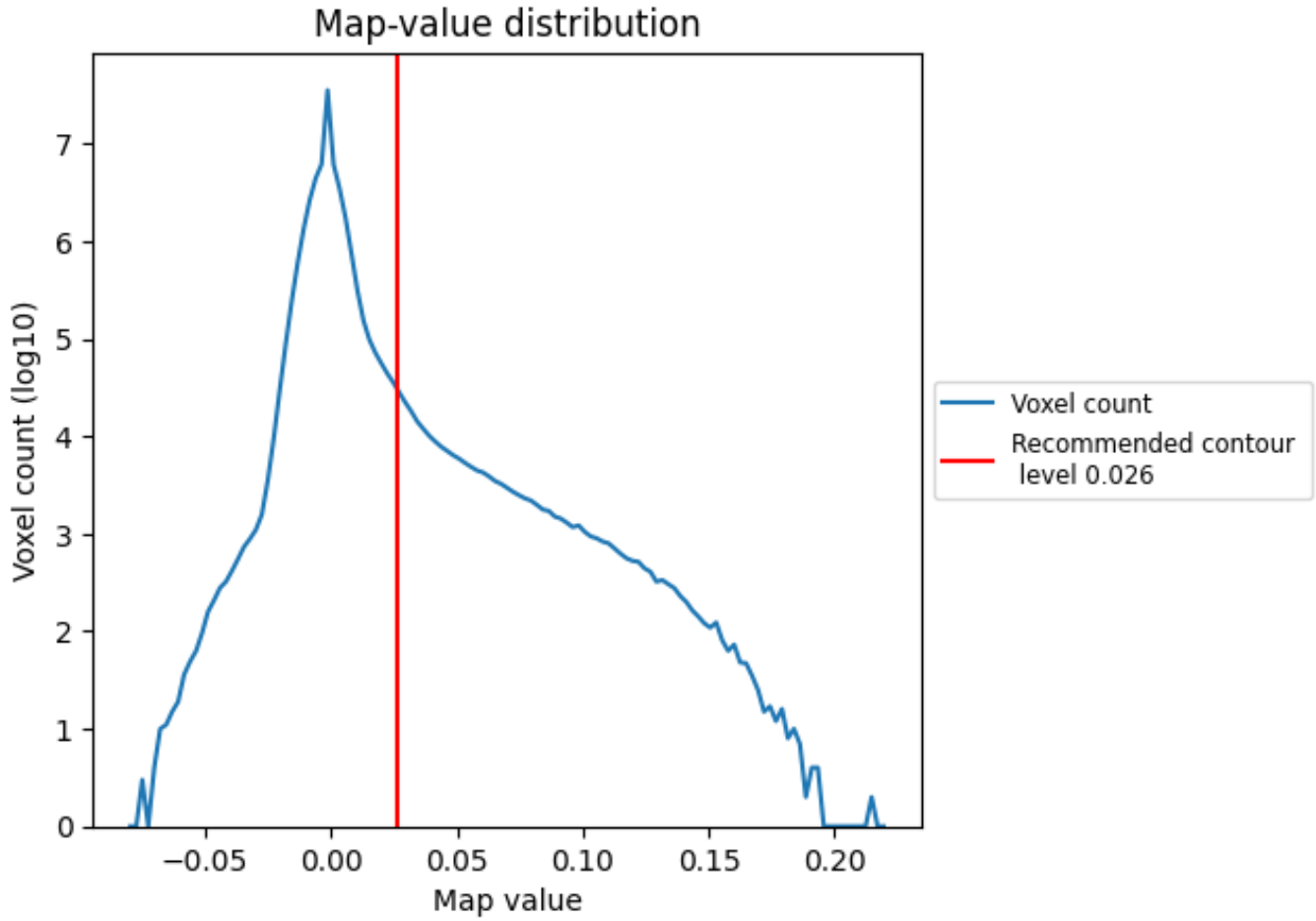
6.6 Mask visualisation (i)

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

7 Map analysis

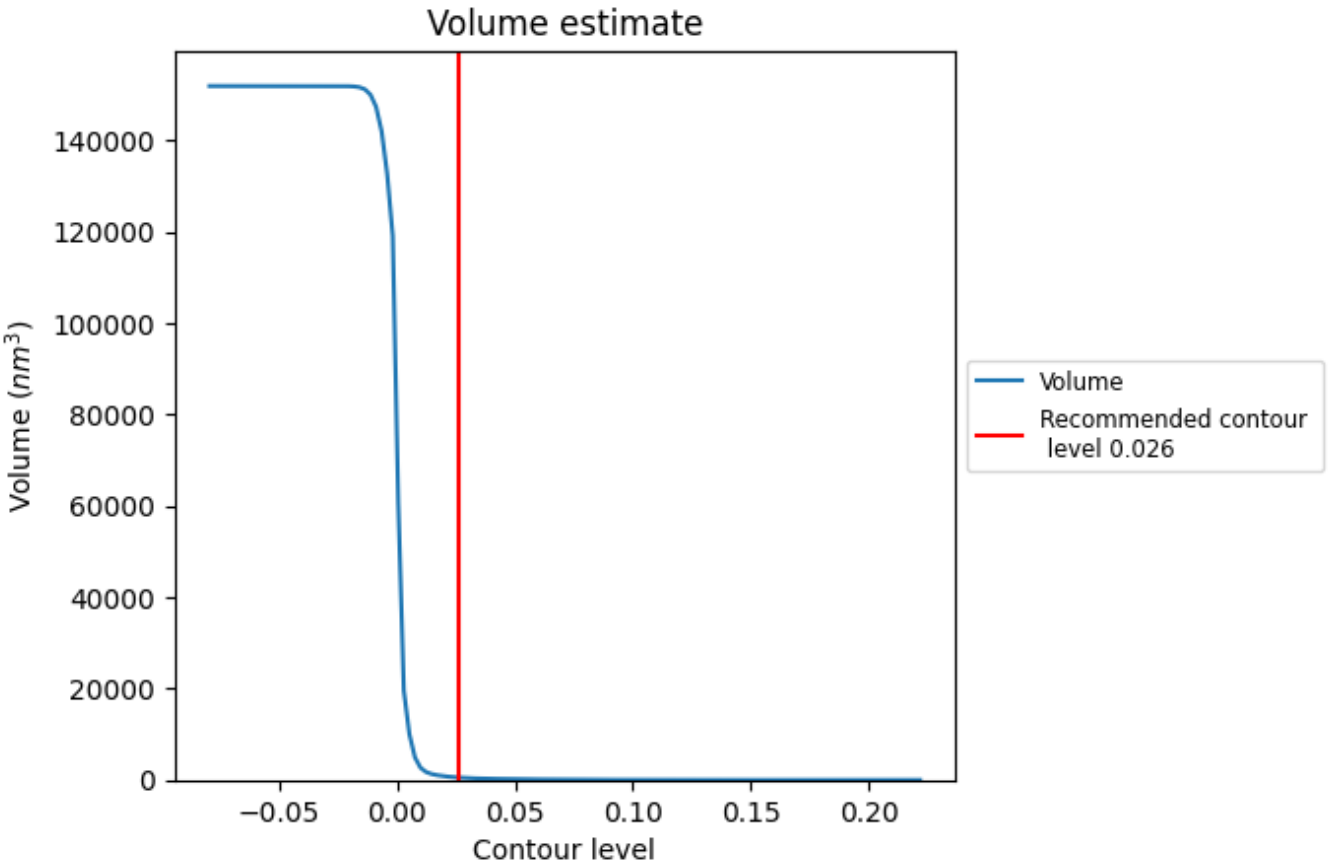
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

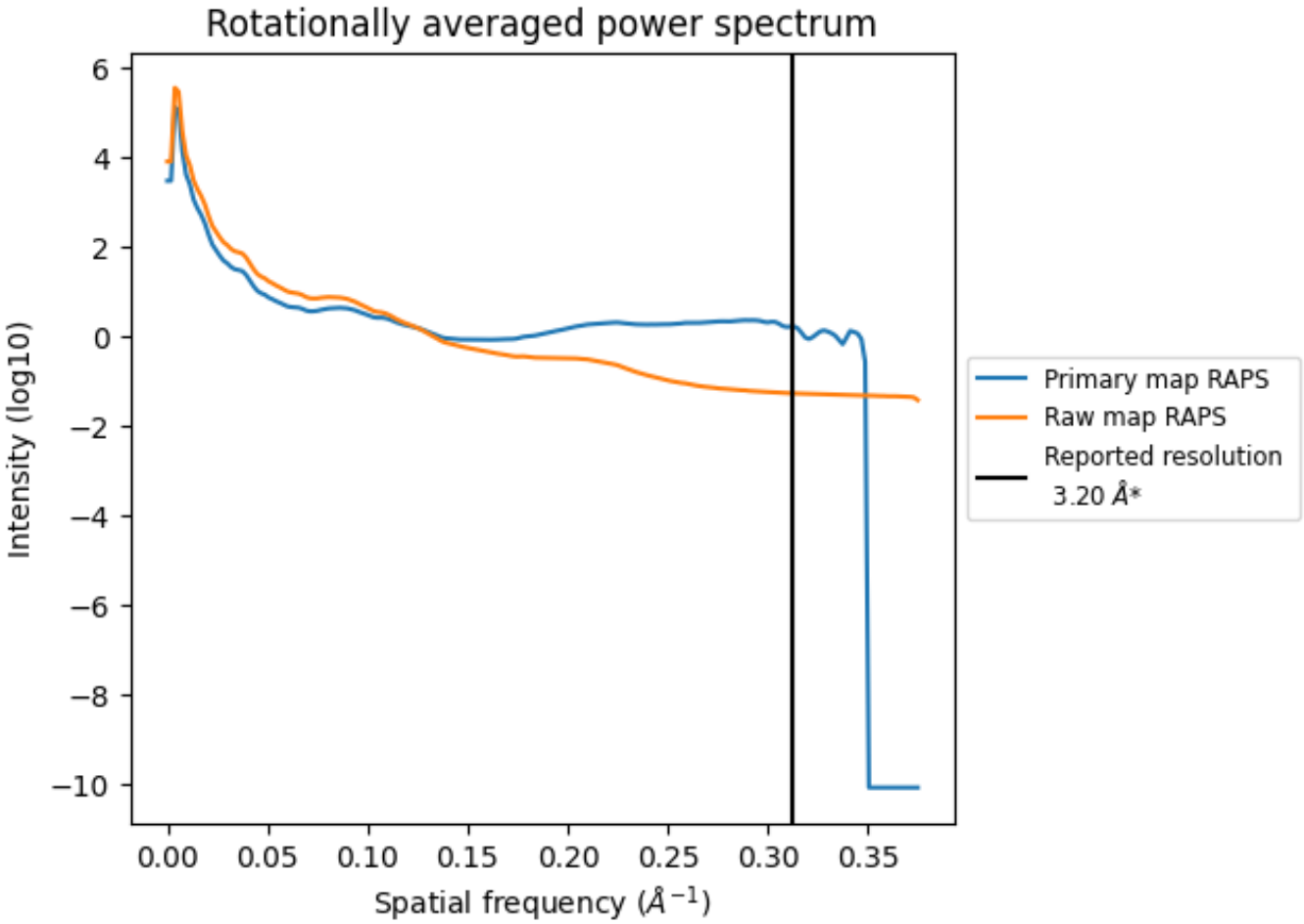
7.2 Volume estimate



The volume at the recommended contour level is 528 nm^3; this corresponds to an approximate mass of 477 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

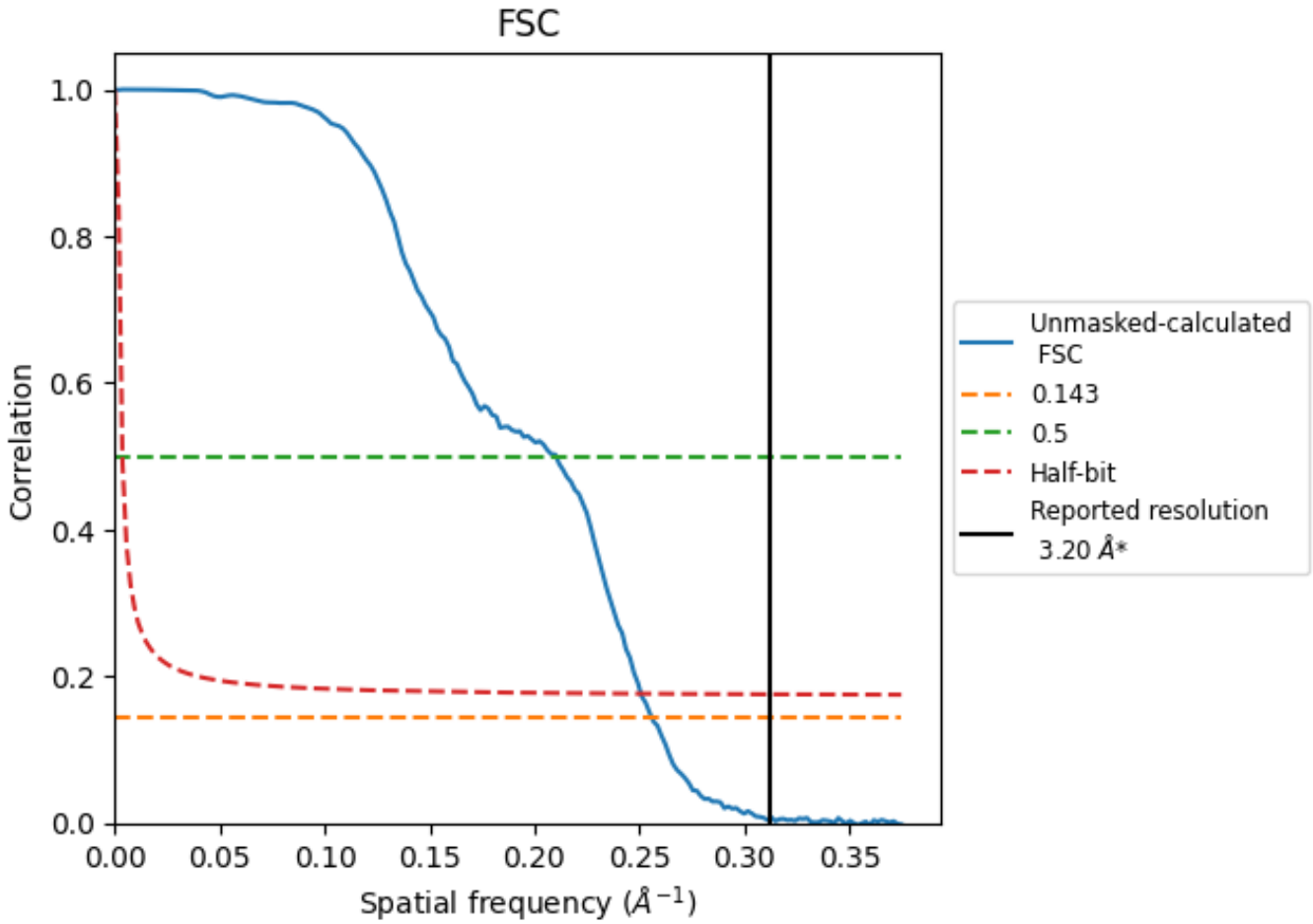


*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2 Resolution estimates (i)

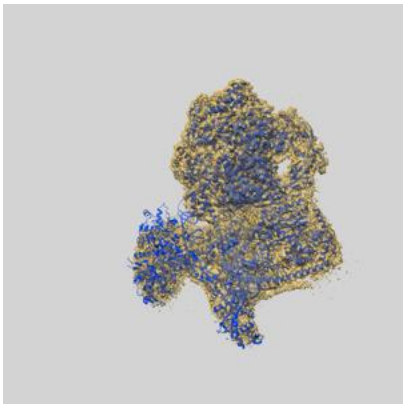
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.91	4.76	3.99

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.91 differs from the reported value 3.2 by more than 10 %

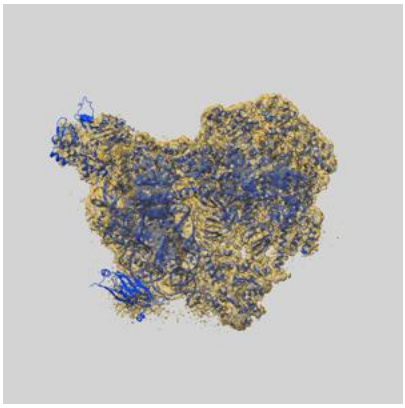
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-37990 and PDB model 8X1C. Per-residue inclusion information can be found in section 3 on page 9.

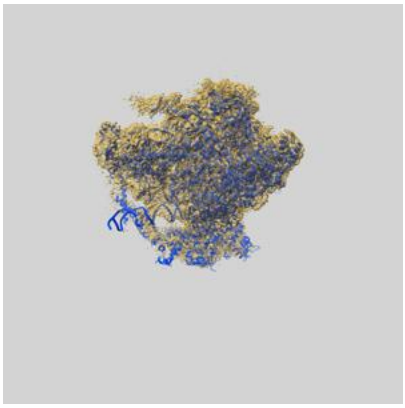
9.1 Map-model overlay



X



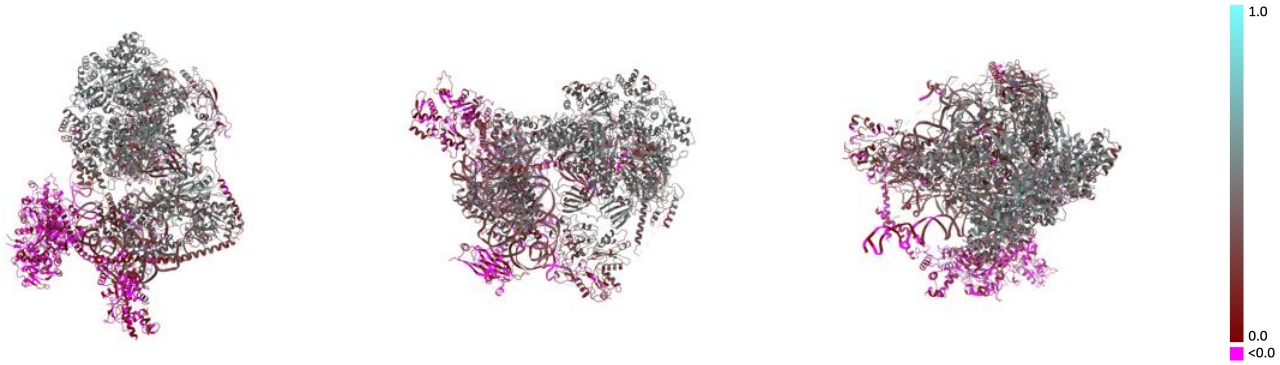
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.026 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

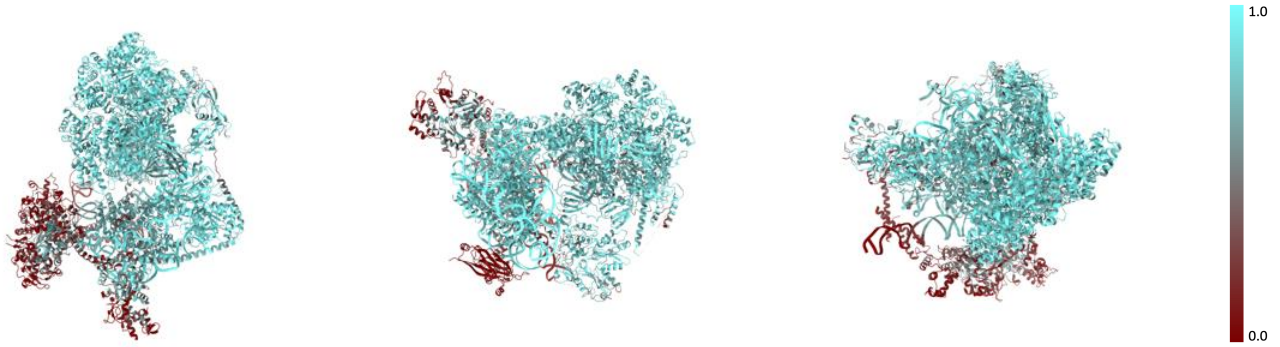
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

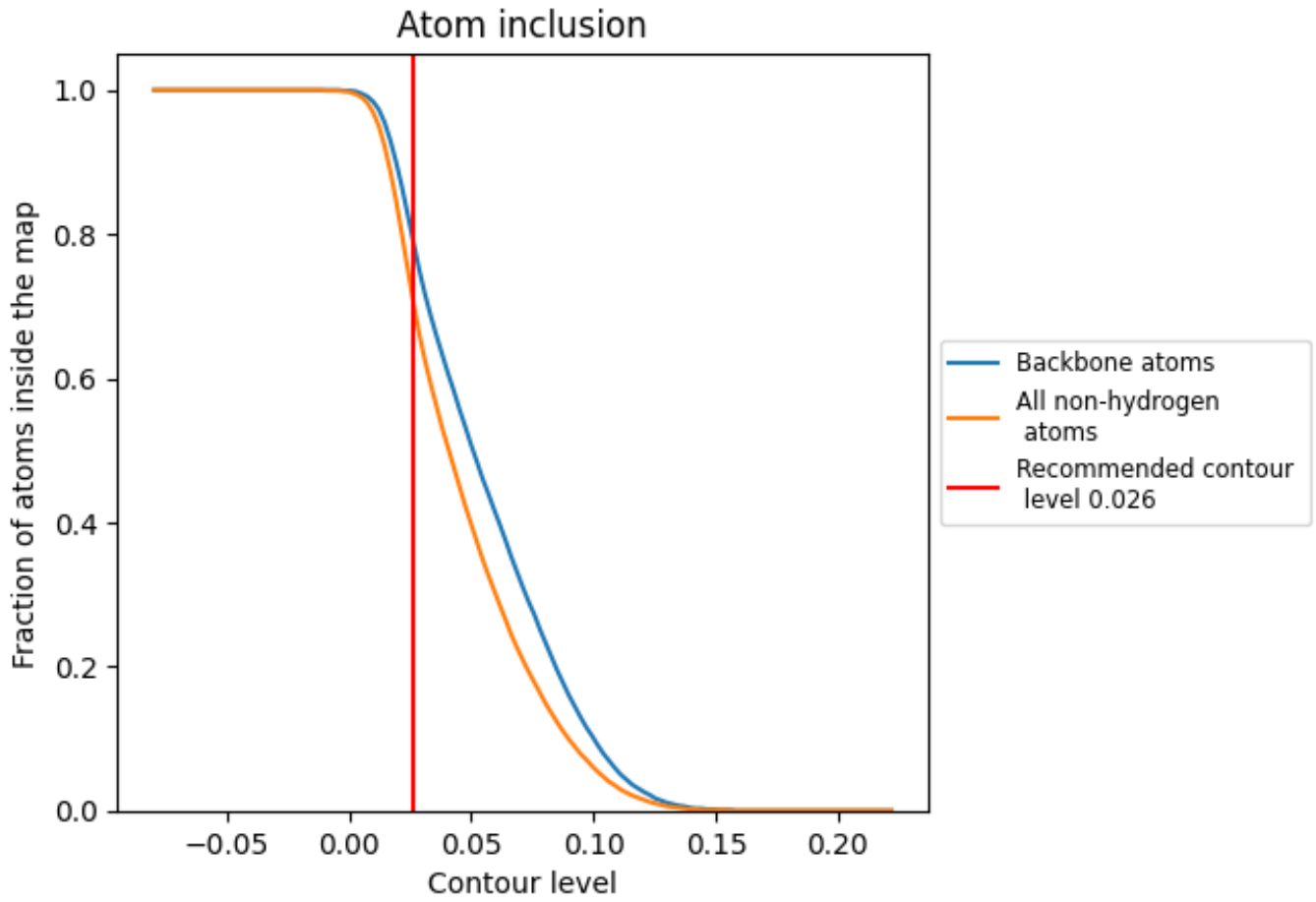
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.026).

9.4 Atom inclusion (i)



At the recommended contour level, 79% of all backbone atoms, 71% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.026) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7110	0.2970
A	0.7730	0.2670
B	0.8080	0.3070
C	0.7840	0.3120
D	0.8610	0.3610
E	0.8790	0.4280
F	0.8790	0.4090
G	0.8930	0.4450
H	0.8840	0.4420
I	0.7900	0.3700
J	0.6860	0.2640
K	0.7880	0.2910
L	0.7790	0.2790
M	0.8560	0.4210
N	0.8710	0.4260
O	0.8390	0.3980
P	0.8630	0.4380
Q	0.8590	0.4330
R	0.8660	0.4580
S	0.4050	0.0600
T	0.3090	0.0010
U	0.3030	0.0140
V	0.0750	0.0230
W	0.0190	-0.0010
X	0.8550	0.2750
Y	0.8720	0.2790