Full wwPDB EM Validation Report

Dec 10, 2022 – 09:32 am GMT

PDB ID	:	5A9Z
EMDB ID	:	EMD-6396
Title	:	Complex of Thermous thermophilus ribosome bound to BipA-GDPCP
Authors	:	Kumar, V.; Chen, Y.; Ahmed, T.; Tan, J.; Ero, R.; Bhushan, S.; Gao, Y.-G.
Deposited on	:	2015-07-23
Resolution	:	4.70 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

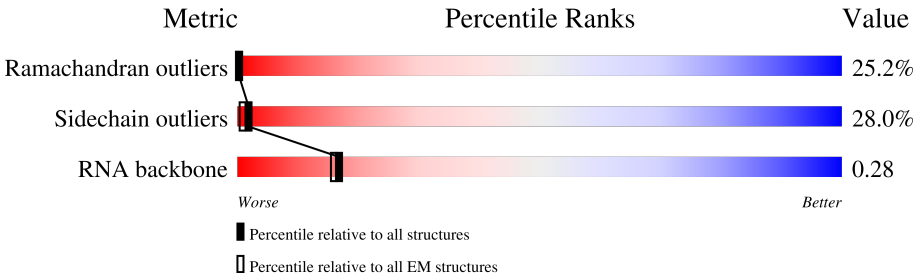
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.70 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)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	AA	2889	44% 43% 10%
2	AB	123	50% 41% 7%
3	AC	228	92% 75% 23%
4	AD	272	6% 53% 36% 11%
5	AE	206	9% 48% 39% 13%
6	AF	208	13% 54% 37% 9%
7	AG	182	27% 53% 38% 8%
8	AH	174	18% 59% 34% 6%

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Mol	Chain	Length	Quality of chain
9	AI	153	12% 80% 20%
10	AJ	134	20% 59% 30% 11%
11	AK	139	41% 50% 9%
12	AL	122	11% 45% 44% 11%
13	AM	145	17% 44% 47% 8%
14	AN	136	38% 50% 11%
15	AO	117	6% 66% 26% 9%
16	AP	110	14% 54% 40% 5%
17	AQ	117	7% 42% 44% 14%
18	AR	117	57% 35% 8%
19	AS	101	8% 50% 39% 11%
20	AT	110	60% 36%
21	AU	94	10% 63% 34%
22	AV	110	17% 53% 45%
23	AW	180	13% 59% 34% 7%
24	AX	85	16% 71% 27%
25	AY	67	6% 64% 31%
26	AZ	59	51% 44% 5%
27	Aa	71	7% 38% 45% 15%
28	Ab	57	9% 37% 49% 12%
29	Ac	49	10% 27% 51% 22%
30	Ad	49	6% 53% 37% 10%
31	Ae	64	5% 52% 41% 8%
32	Af	37	11% 62% 32% 5%
33	Ag	128	50% 100%

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Mol	Chain	Length	Quality of chain
34	BA	1515	56% 37% 6%
35	BF	234	15% 51% 37% 12%
36	BG	206	12% 60% 35%
37	BH	208	10% 55% 38% 6%
38	BI	150	65% 33%
39	BJ	101	25% 55% 38% 7%
40	BK	155	17% 63% 29% 8%
41	BL	138	58% 34% 8%
42	BM	127	24% 62% 32% 6%
43	BN	98	26% 57% 39%
44	BO	119	24% 71% 24% 5%
45	BP	124	9% 52% 40% 7%
46	BQ	114	15% 67% 26% 7%
47	BR	60	8% 58% 30% 10%
48	BS	88	7% 68% 30%
49	BT	83	5% 58% 36% 6%
50	BU	104	9% 59% 36% 6%
51	BV	73	32% 62% 27% 11%
52	BW	80	14% 51% 42% 6%
53	BX	99	24% 58% 38%
54	BY	24	8% 71% 21% 8%
55	CA	593	15% 63% 31% 5%

2 Entry composition (i)

There are 57 unique types of molecules in this entry. The entry contains 150547 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	2889	62218	27691	11629	20009	2889	0	0

There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AA	?	-	C	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	A	deletion	GB 37223181
AA	?	-	A	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	A	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	G	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	?	-	C	deletion	GB 37223181
AA	1134	G	UNK	conflict	GB 37223181

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	AB	123	Total	C	N	O	P	0	0
			2641	1175	488	855	123		

- Molecule 3 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	AC	228	Total	C	N	O	S	0	0
			1742	1102	318	319	3		

- Molecule 4 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	AD	272	Total	C	N	O	S	0	0
			2124	1339	424	358	3		

- Molecule 5 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	AE	206	Total	C	N	O	S	0	0
			1578	997	302	273	6		

- Molecule 6 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	AF	208	Total	C	N	O	S	0	0
			1625	1034	303	286	2		

- Molecule 7 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	AG	182	Total	C	N	O	S	0	0
			1482	947	269	261	5		

- Molecule 8 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	AH	174	Total	C	N	O	S	0	0
			1328	844	248	235	1		

- Molecule 9 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	AI	153	Total 752	C 446	N 153	O 153	0	0

- Molecule 10 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	AJ	134	Total 993	C 632	N 175	O 181	S 5	0	0

- Molecule 11 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AK	139	Total 1113	C 717	N 207	O 186	S 3	0	0

- Molecule 12 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	AL	122	Total 932	C 587	N 171	O 170	S 4	0	0

- Molecule 13 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AM	145	Total 1106	C 688	N 226	O 190	S 2	0	0

- Molecule 14 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AN	136	Total 1080	C 688	N 204	O 183	S 5	0	0

- Molecule 15 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	AO	117	Total 960	C 599	N 202	O 159	0	0

- Molecule 16 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	AP	110	Total 877	C 553	N 175	O 149	0	0

- Molecule 17 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	AQ	117	Total 976	C 614	N 197	O 164	S 1	0	0

- Molecule 18 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	AR	117	Total 964	C 610	N 202	O 151	S 1	0	0

- Molecule 19 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	AS	101	Total 779	C 501	N 142	O 135	S 1	0	0

- Molecule 20 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	AT	110	Total 876	C 552	N 171	O 151	S 2	0	0

- Molecule 21 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	AU	94	Total 742	C 483	N 133	O 126	0	0

- Molecule 22 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	AV	110	Total 844	C 539	N 158	O 141	S 6	0	0

- Molecule 23 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	AW	180	Total	C	N	O	S	0	0
			1435	916	256	260	3		

- Molecule 24 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	AX	85	Total	C	N	O	S	0	0
			670	415	141	112	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
25	AY	67	Total	C	N	O	S	0	0
			567	350	116	99	2		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
26	AZ	59	Total	C	N	O	0	0
			469	298	90	81		

- Molecule 27 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Aa	71	Total	C	N	O	S	0	0
			581	364	108	104	5		

- Molecule 28 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Ab	57	Total	C	N	O	S	0	0
			445	279	87	74	5		

- Molecule 29 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Ac	49	Total	C	N	O	S	0	0
			426	265	87	70	4		

- Molecule 30 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Ad	49	Total	C	N	O	S	0	0
			430	263	108	57	2		

- Molecule 31 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Ae	64	Total	C	N	O	S	0	0
			515	331	102	79	3		

- Molecule 32 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Af	37	Total	C	N	O	S	0	0
			307	188	68	47	4		

- Molecule 33 is a protein called Unknown peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	Ag	128	Total	C	N	O	0	5
			620	369	128	123		

- Molecule 34 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	BA	1515	Total	C	N	O	P	0	0
			32554	14490	6022	10527	1515		

- Molecule 35 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BF	234	Total	C	N	O	S	0	0
			1900	1213	341	341	5		

- Molecule 36 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BG	206	Total	C	N	O	S	0	0
			1612	1016	314	281	1		

- Molecule 37 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	BH	208	Total	C	N	O	S	0	0
			1703	1066	339	291	7		

- Molecule 38 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	BI	150	Total	C	N	O	S	0	0
			1146	724	217	201	4		

- Molecule 39 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BJ	101	Total	C	N	O	S	0	0
			843	531	155	154	3		

- Molecule 40 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	BK	155	Total	C	N	O	S	0	0
			1257	781	252	218	6		

- Molecule 41 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	BL	138	Total	C	N	O	S	0	0
			1116	705	215	193	3		

- Molecule 42 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	BM	127	Total	C	N	O	0	0
			1010	639	197	174		

- Molecule 43 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	BN	98	Total	C	N	O	S	0	0
			794	499	156	138	1		

- Molecule 44 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	BO	119	Total	C	N	O	S	0	0
			885	549	168	165	3		

- Molecule 45 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	BP	124	Total	C	N	O	S	0	0
			970	611	195	163	1		

- Molecule 46 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BQ	114	Total	C	N	O	S	0	0
			914	565	189	158	2		

- Molecule 47 is a protein called 30S ribosomal protein S14 type Z.

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

- Molecule 48 is a protein called 30S ribosomal protein S15.

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

- Molecule 49 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	BT	83	Total	C	N	O	S	0	0
			700	443	139	117	1		

- Molecule 50 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	BU	104	Total	C	N	O	S	0	0
			857	547	161	147	2		

- Molecule 51 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
51	BV	73	Total	C	N	O	0	0
			597	380	118	99		

- Molecule 52 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	BW	80	Total	C	N	O	S	0	0
			647	414	119	112	2		

- Molecule 53 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	BX	99	Total	C	N	O	S	0	0
			763	470	162	129	2		

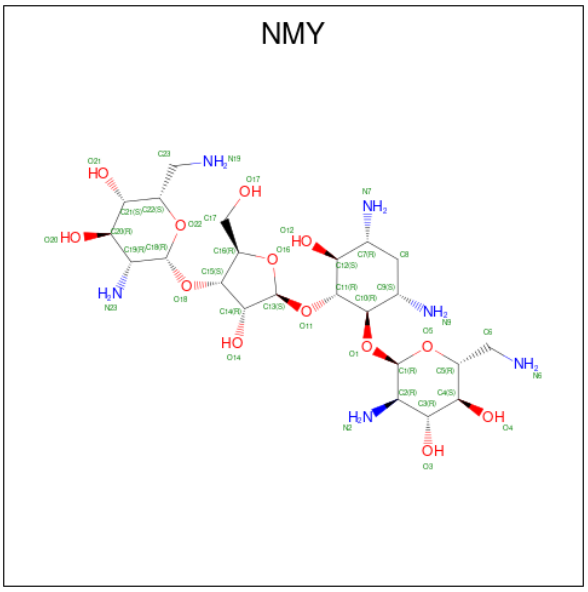
- Molecule 54 is a protein called 30S ribosomal protein Thx.

Mol	Chain	Residues	Atoms				AltConf	Trace
54	BY	24	Total	C	N	O	0	0
			208	128	50	30		

- Molecule 55 is a protein called BipA.

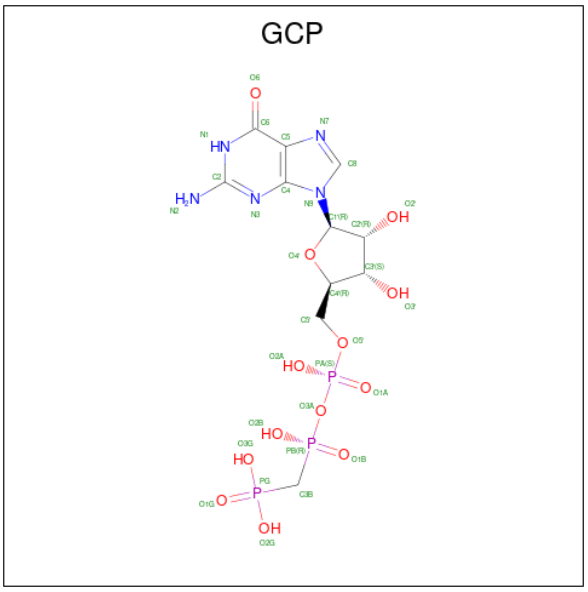
Mol	Chain	Residues	Atoms					AltConf	Trace
55	CA	593	Total	C	N	O	S	0	0
			4532	2856	791	868	17		

- Molecule 56 is NEOMYCIN (three-letter code: NMY) (formula: $C_{23}H_{46}N_6O_{13}$).



Mol	Chain	Residues	Atoms				AltConf
56	AA	1	Total	C	N	O	0
			42	23	6	13	
56	BA	1	Total	C	N	O	0
			42	23	6	13	

- Molecule 57 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (three-letter code: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$).



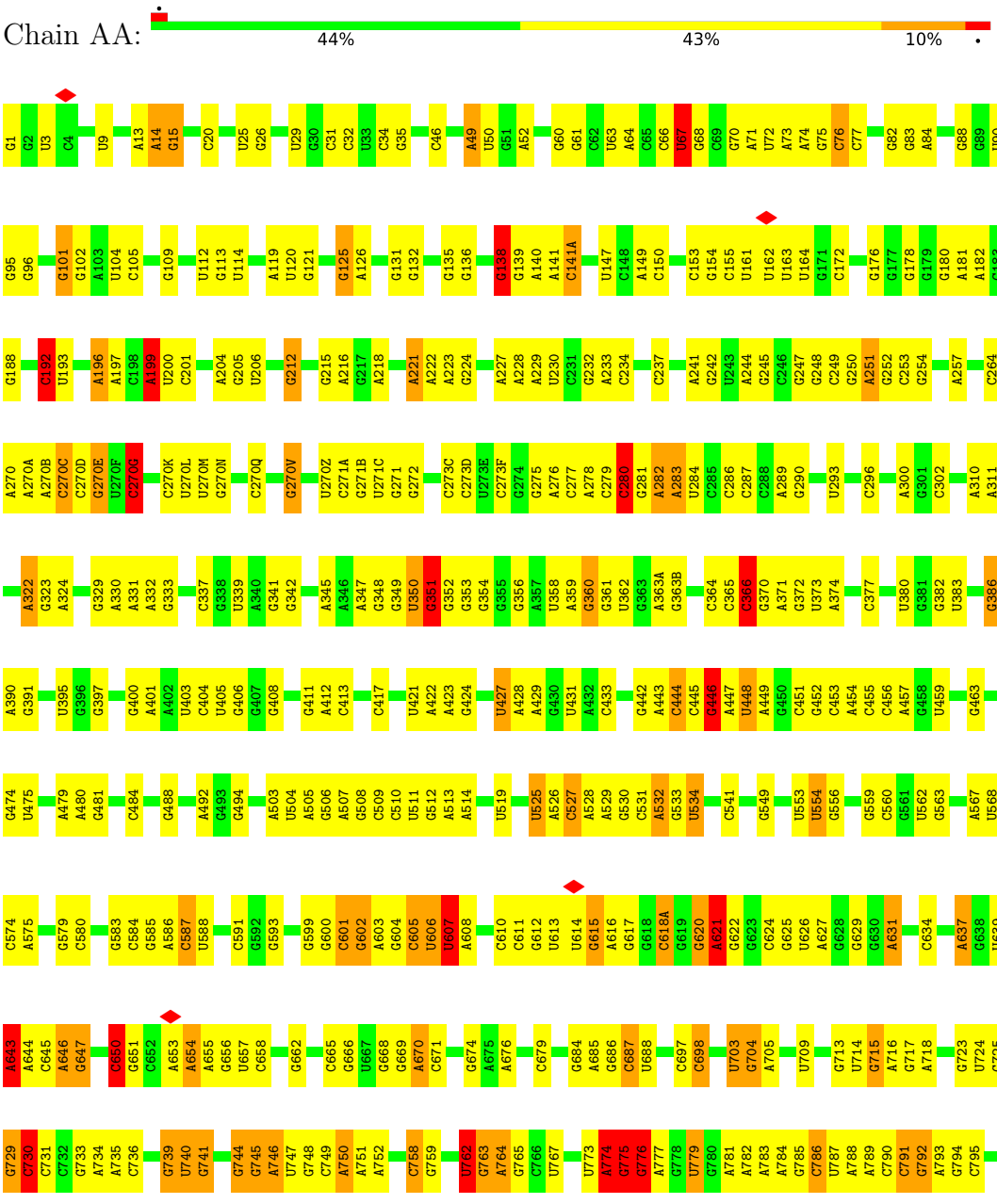
Mol	Chain	Residues	Atoms					AltConf
57	CA	1	Total	C	N	O	P	0
			32	11	5	13	3	

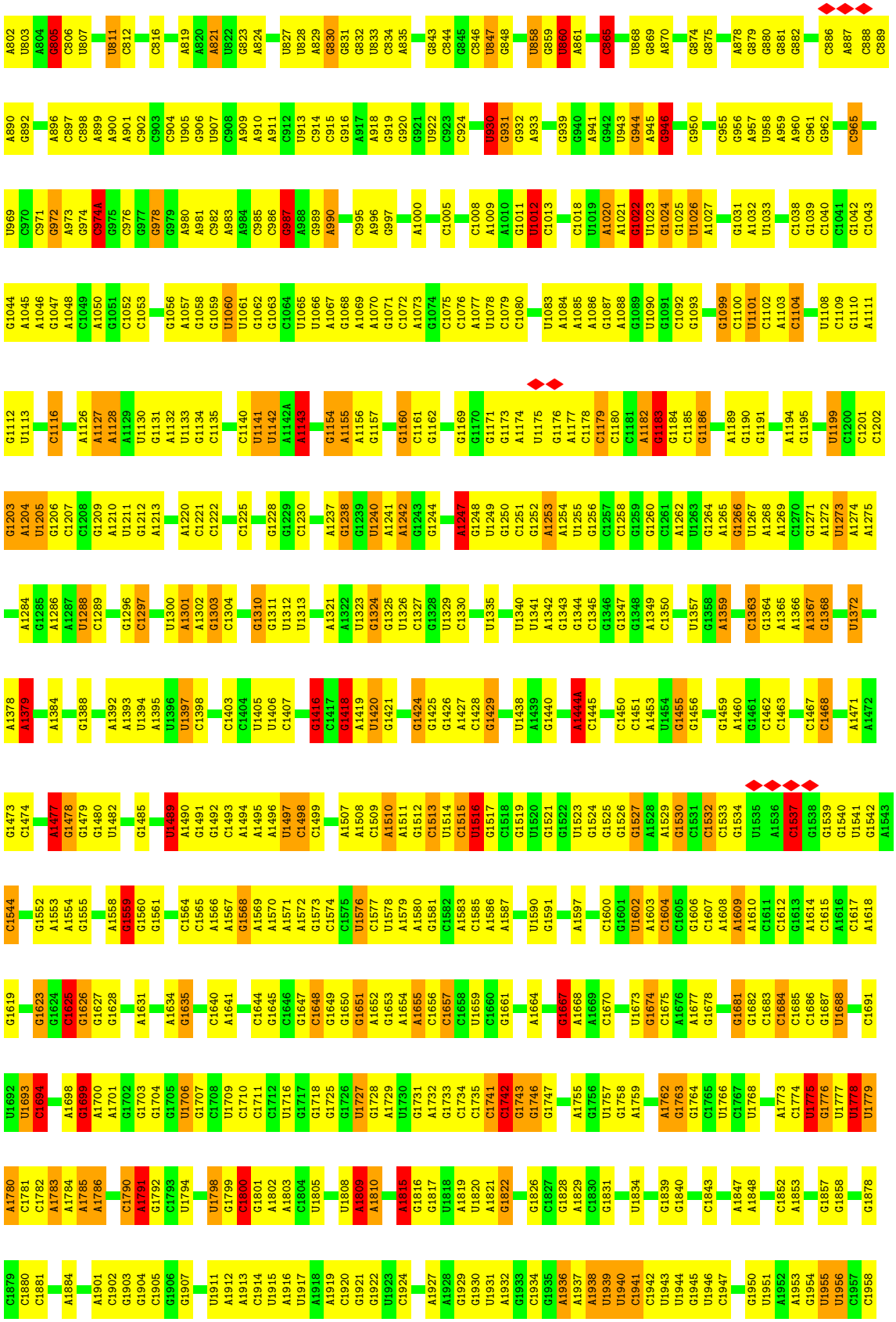
3 Residue-property plots (i)

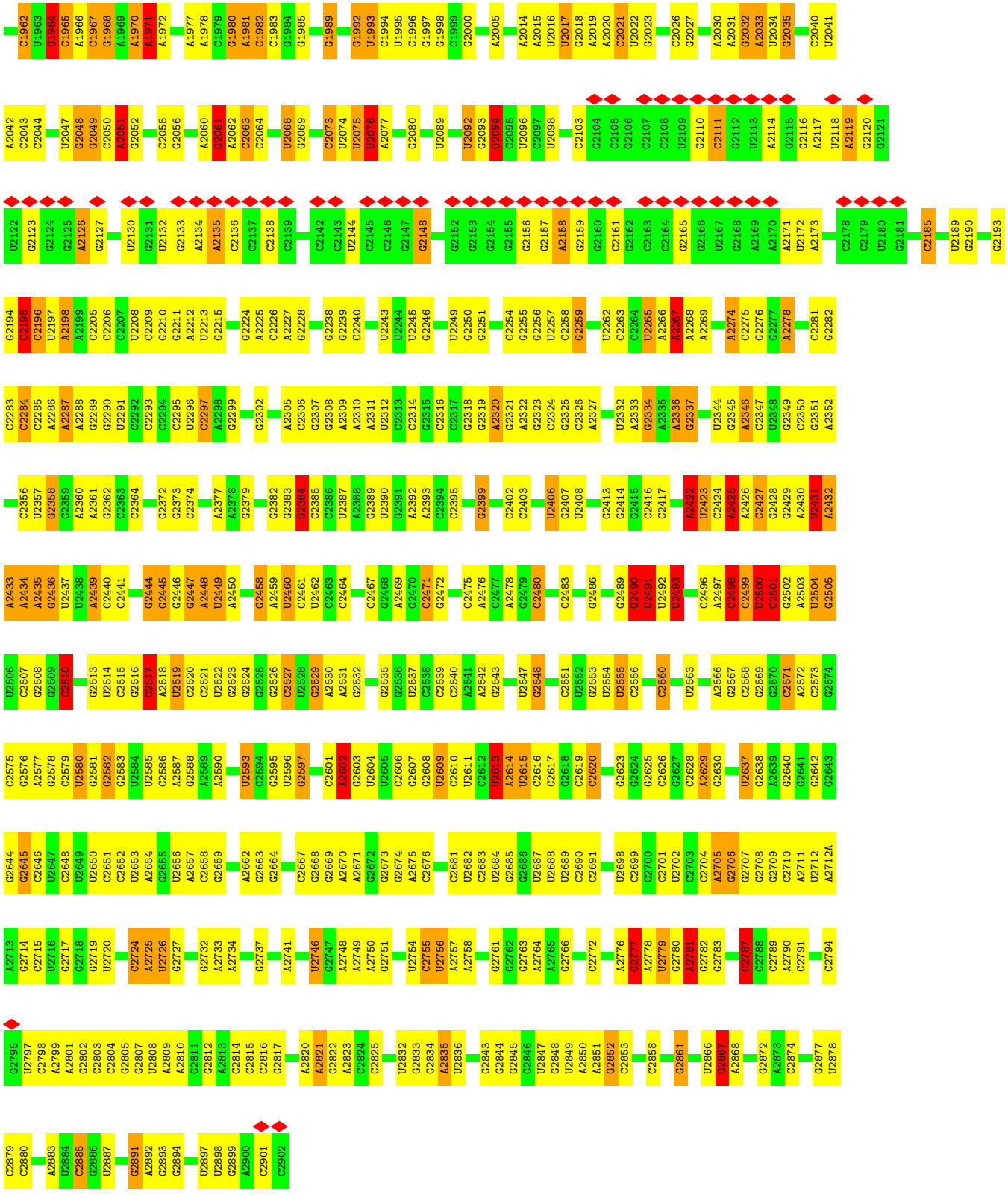
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 23S ribosomal RNA

Chain AA:

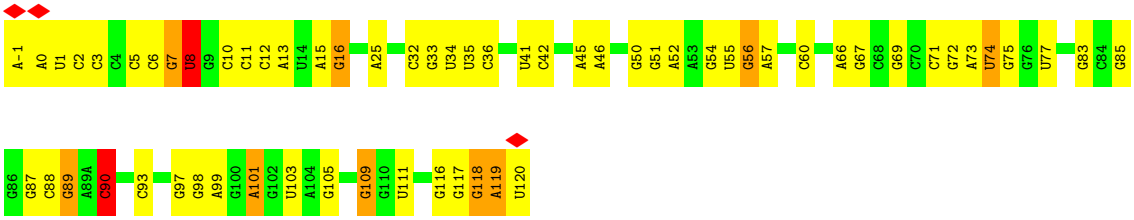




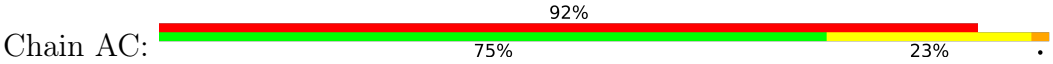


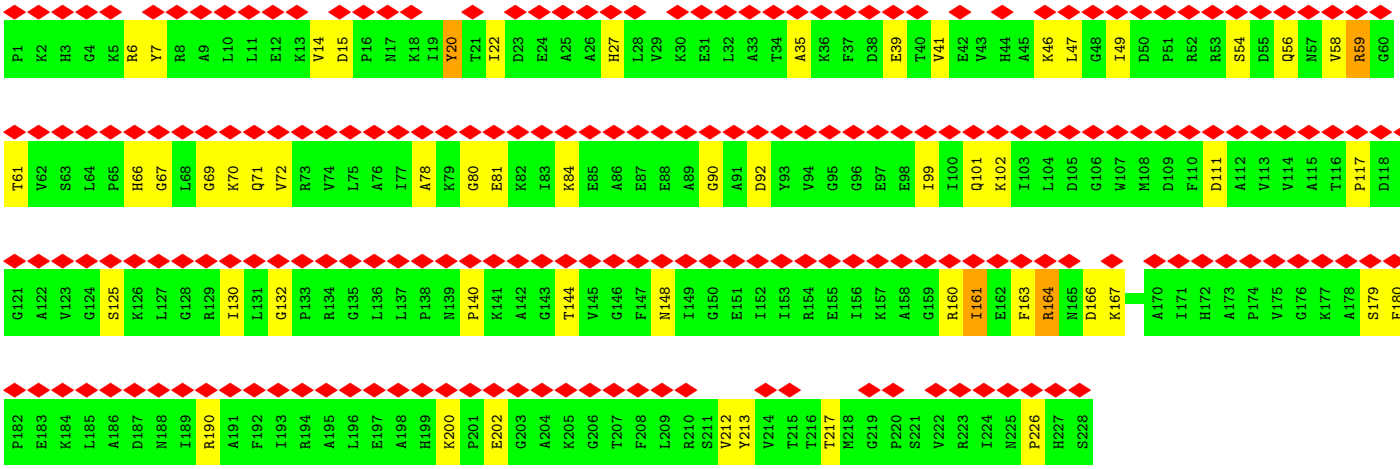
• Molecule 2: 5S ribosomal RNA

Chain AB:

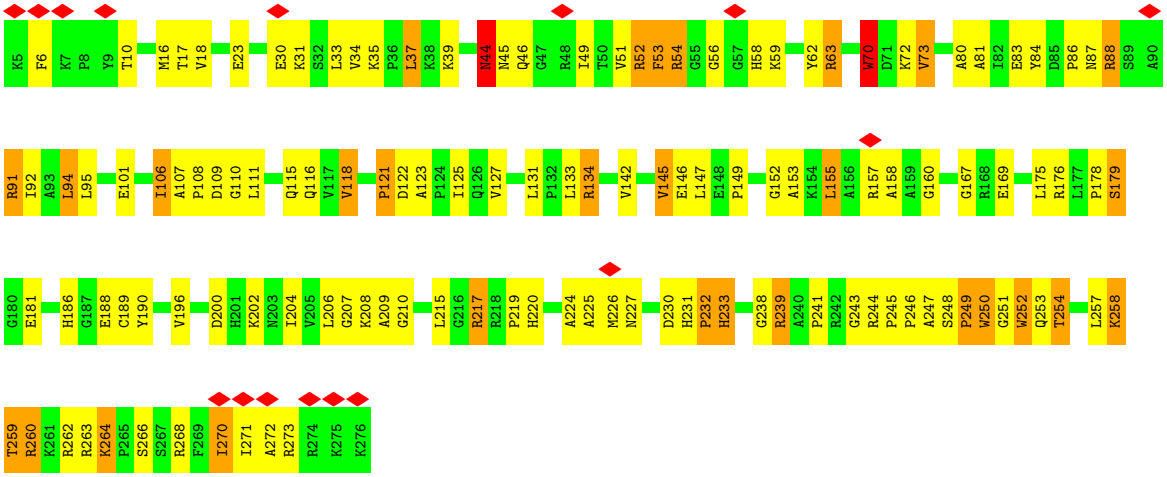


• Molecule 3: 50S ribosomal protein L1

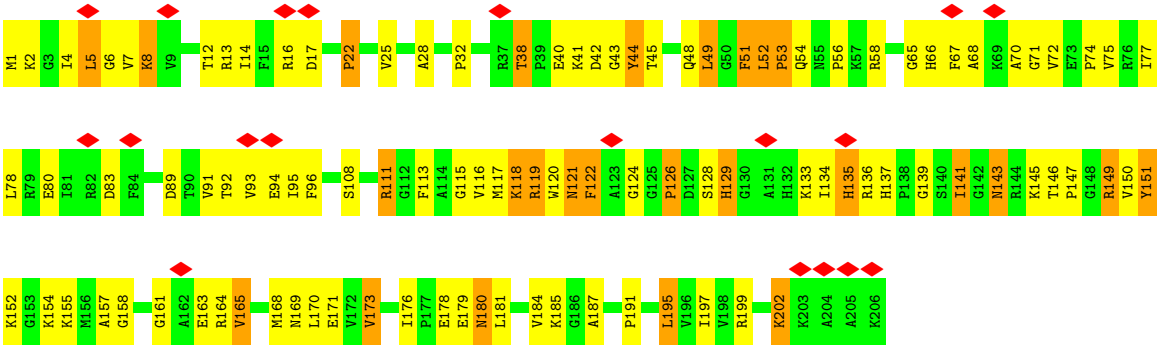




• Molecule 4: 50S ribosomal protein L2

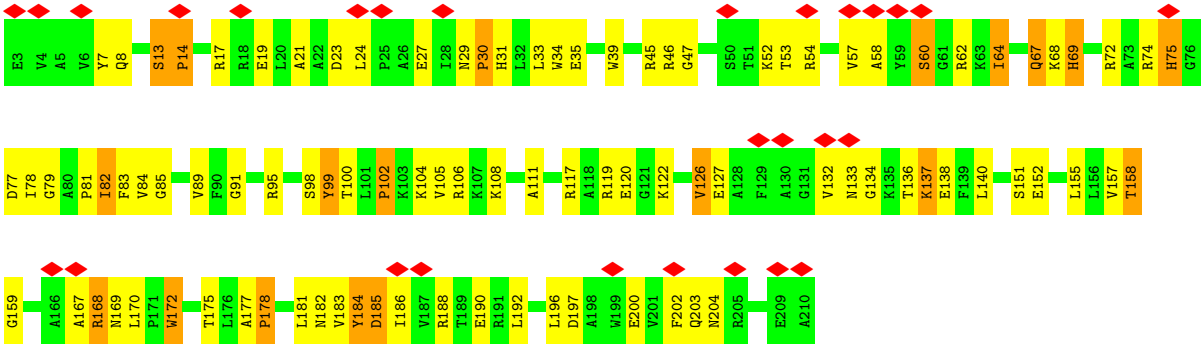


• Molecule 5: 50S ribosomal protein L3



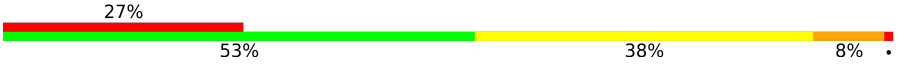
• Molecule 6: 50S ribosomal protein L4

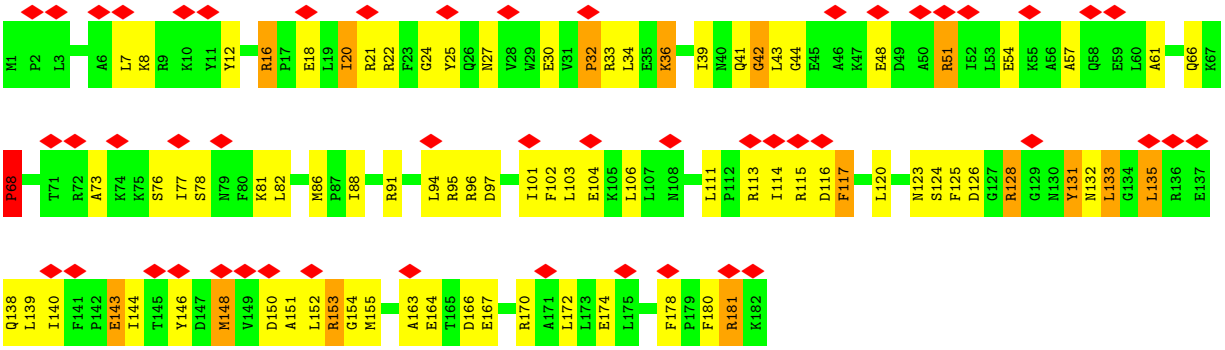
Chain AF:



• Molecule 7: 50S ribosomal protein L5

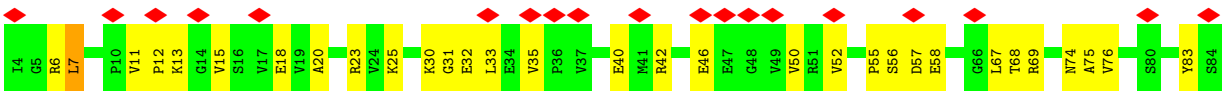
Chain AG:

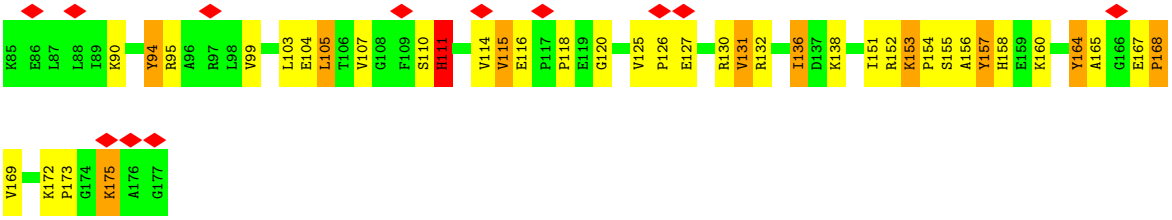




• Molecule 8: 50S ribosomal protein L6

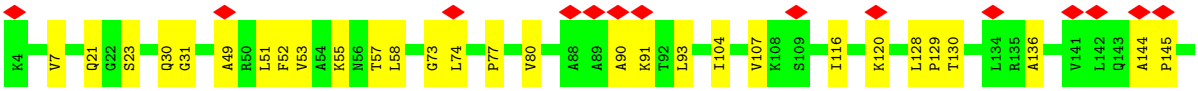
Chain AH:





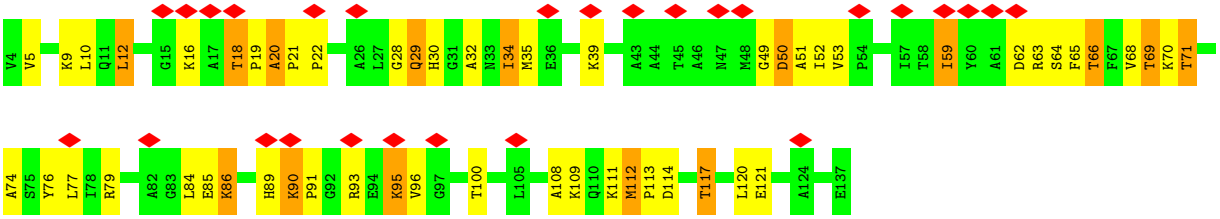
• Molecule 9: 50S ribosomal protein L10

Chain AI:



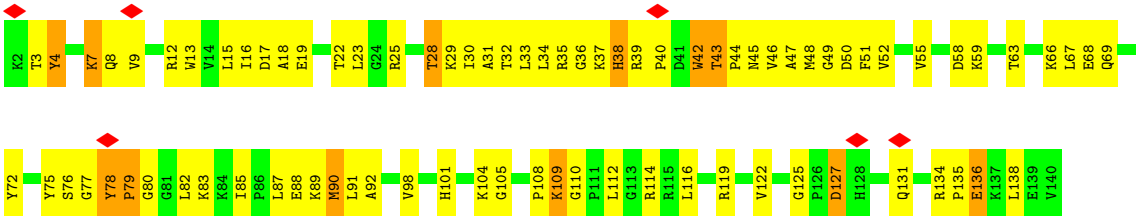
• Molecule 10: 50S ribosomal protein L11

Chain AJ:



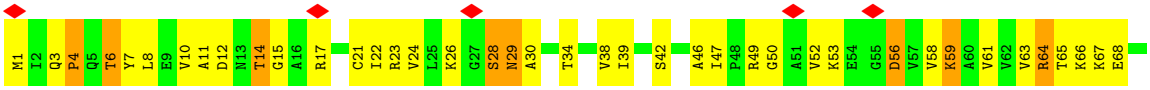
• Molecule 11: 50S ribosomal protein L13

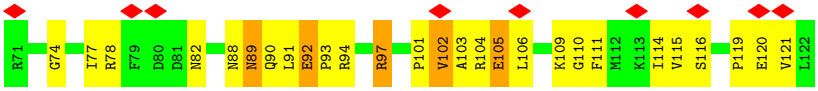
Chain AK:



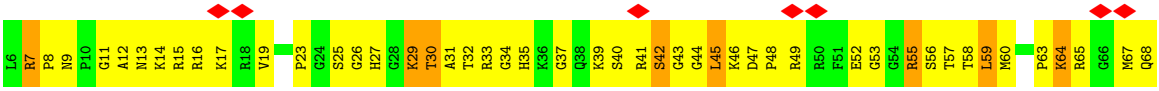
• Molecule 12: 50S ribosomal protein L14

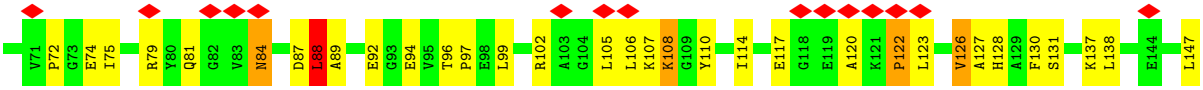
Chain AL:



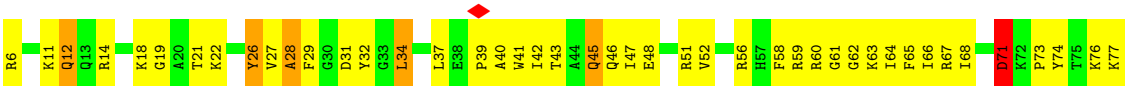


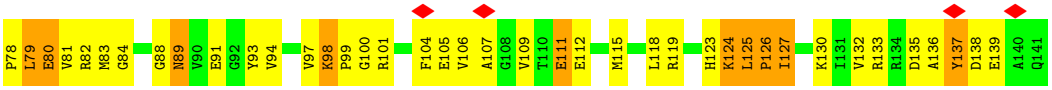
• Molecule 13: 50S ribosomal protein L15



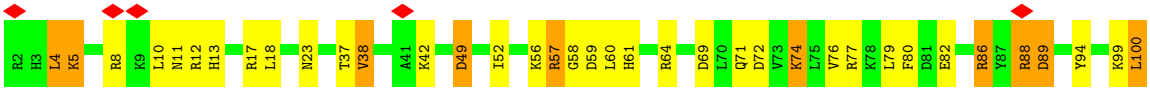


• Molecule 14: 50S ribosomal protein L16

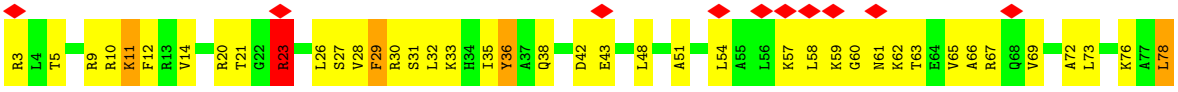


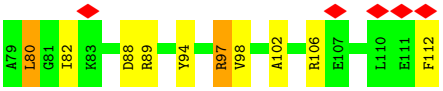


• Molecule 15: 50S ribosomal protein L17

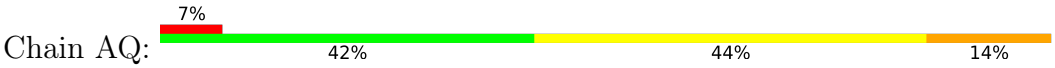


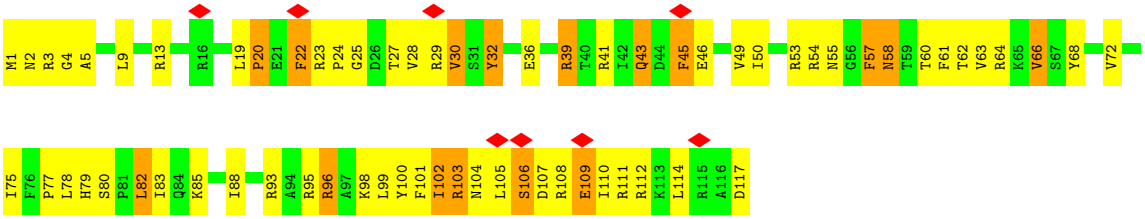
• Molecule 16: 50S ribosomal protein L18





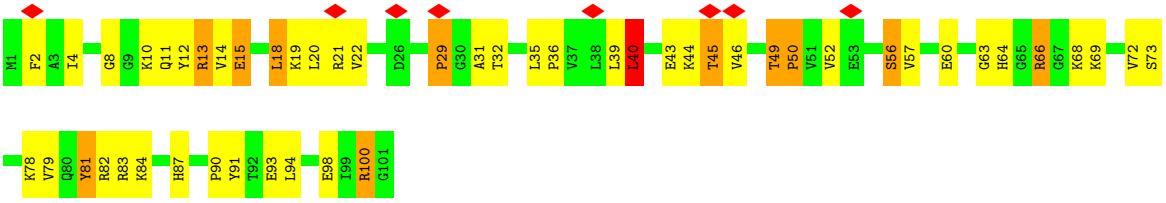
• Molecule 17: 50S ribosomal protein L19



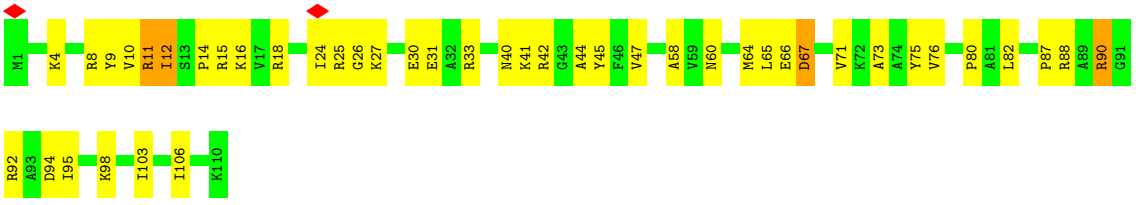


• Molecule 18: 50S ribosomal protein L20

• Molecule 19: 50S ribosomal protein L21

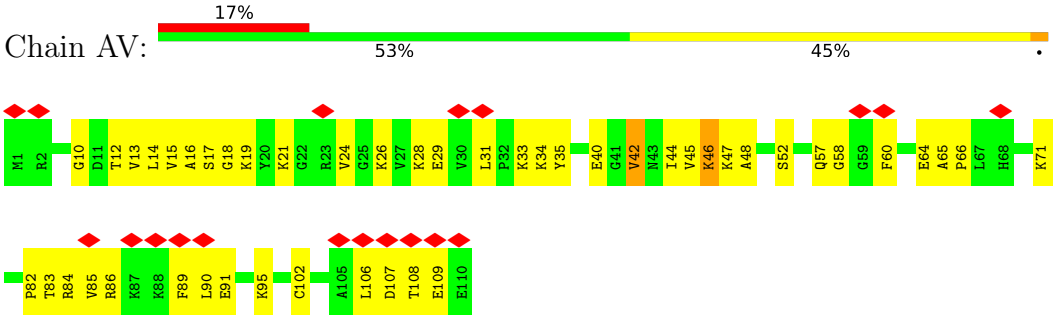


• Molecule 20: 50S ribosomal protein L22

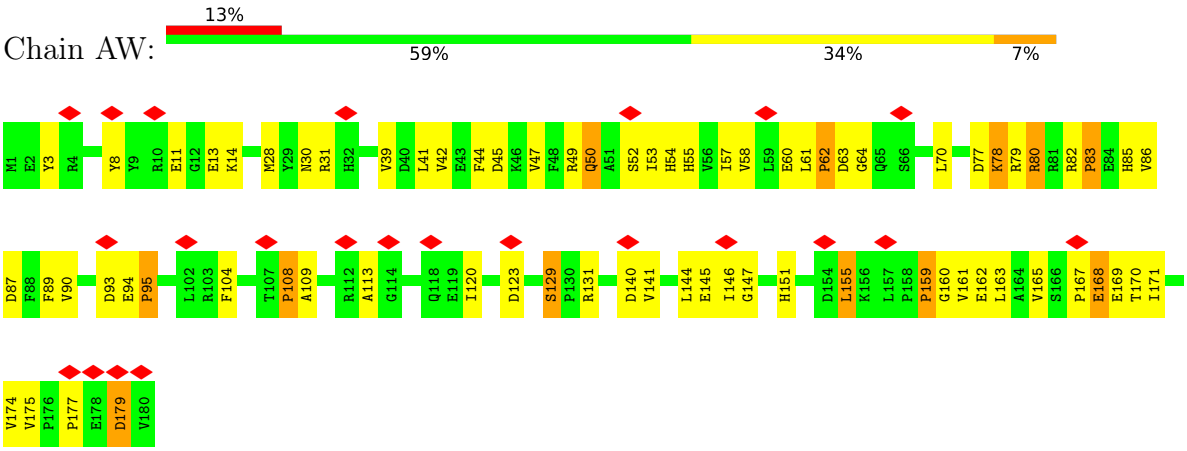


• Molecule 21: 50S ribosomal protein L23

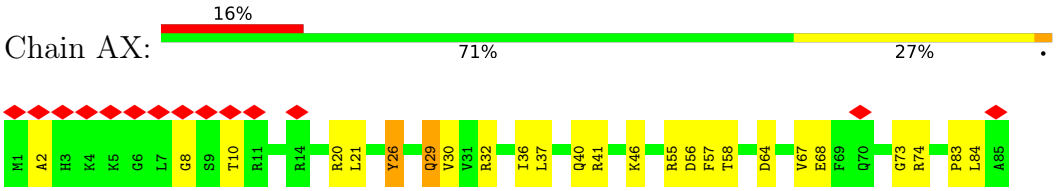
• Molecule 22: 50S ribosomal protein L24



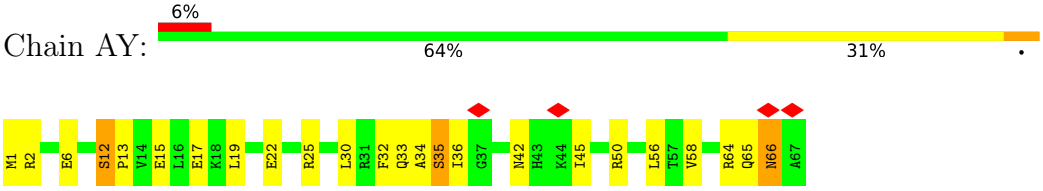
• Molecule 23: 50S ribosomal protein L25



• Molecule 24: 50S ribosomal protein L27

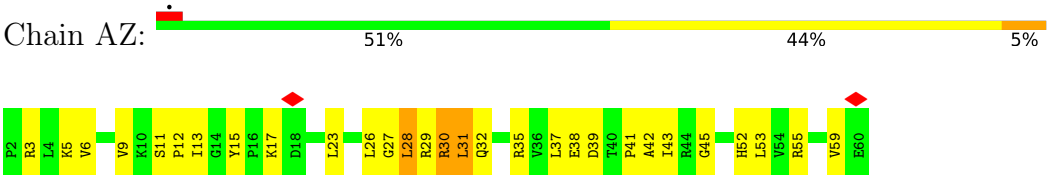


• Molecule 25: 50S ribosomal protein L29



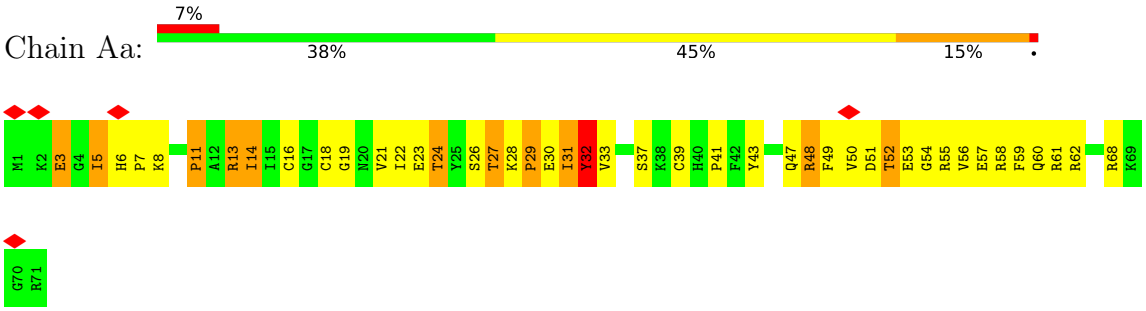
• Molecule 26: 50S ribosomal protein L30

Chain AZ:



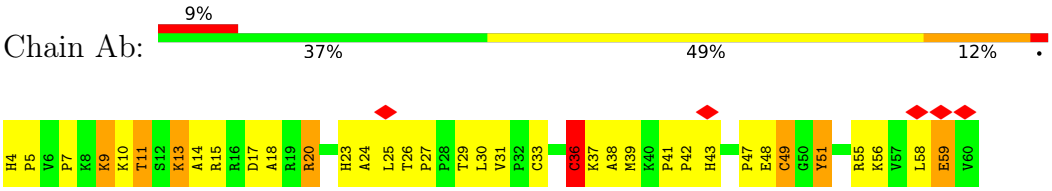
• Molecule 27: 50S ribosomal protein L31

Chain Aa:



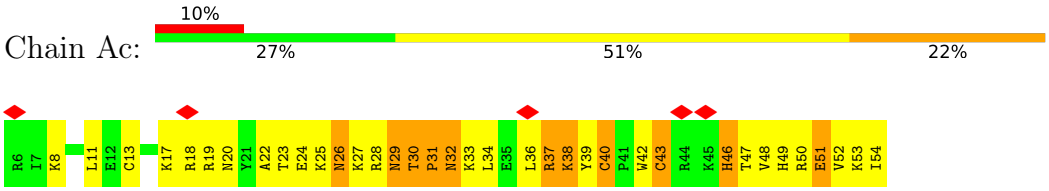
• Molecule 28: 50S ribosomal protein L32

Chain Ab:



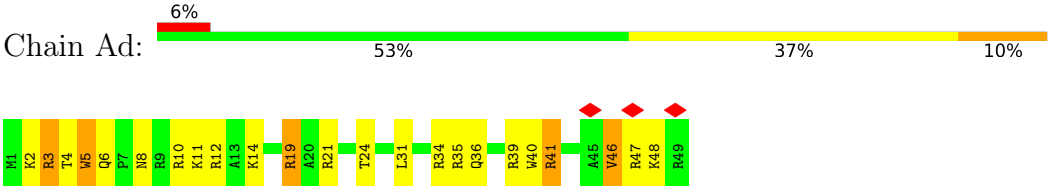
• Molecule 29: 50S ribosomal protein L33

Chain Ac:



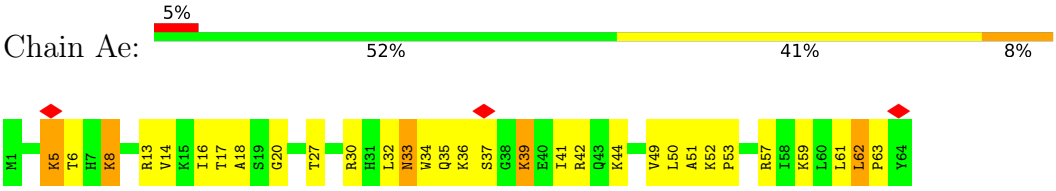
• Molecule 30: 50S ribosomal protein L34

Chain Ad:



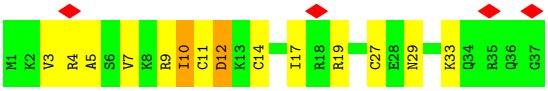
• Molecule 31: 50S ribosomal protein L35

Chain Ae:



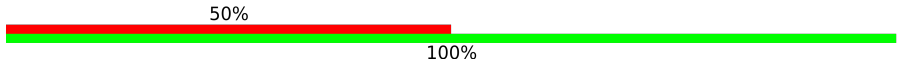
• Molecule 32: 50S ribosomal protein L36

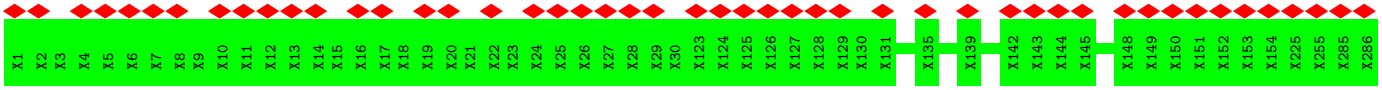
Chain Af:

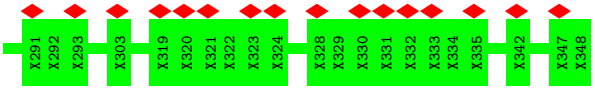


• Molecule 33: Unknown peptide

Chain Ag:

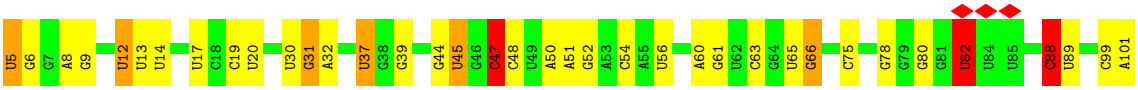


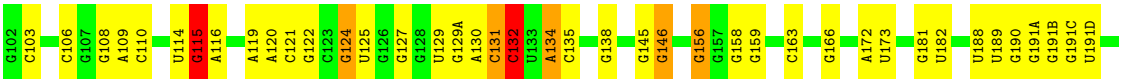


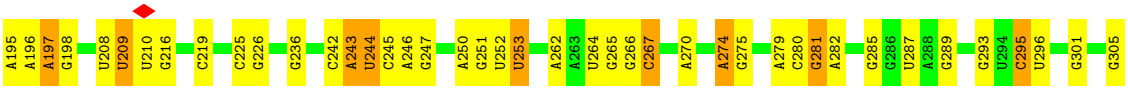


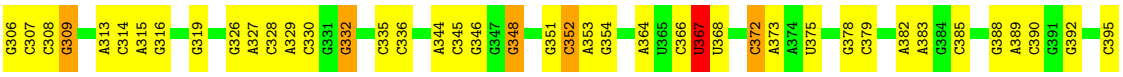
• Molecule 34: 16S ribosomal RNA

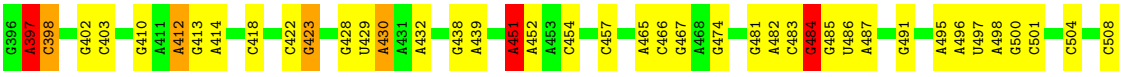
Chain BA:

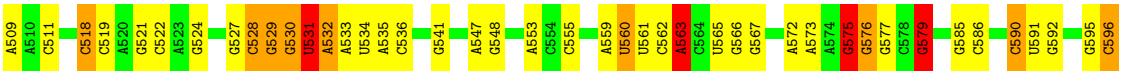


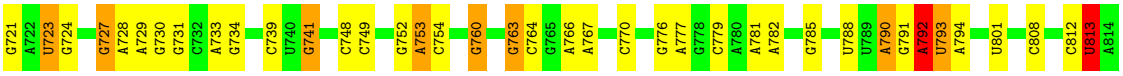


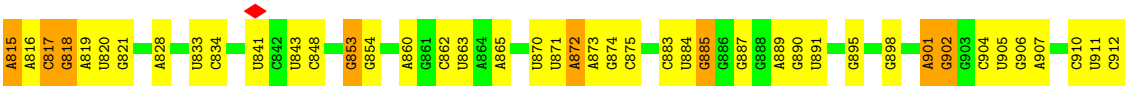


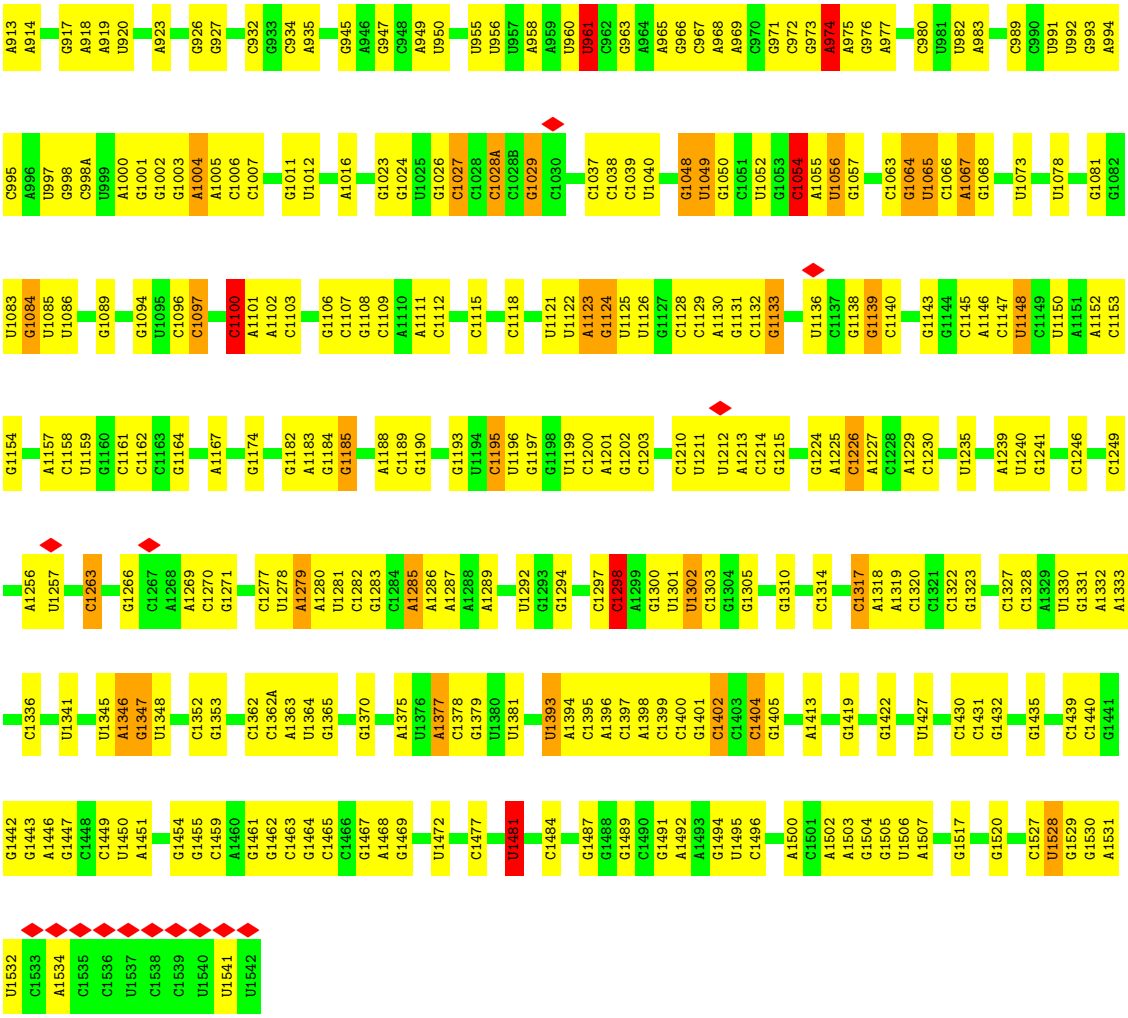






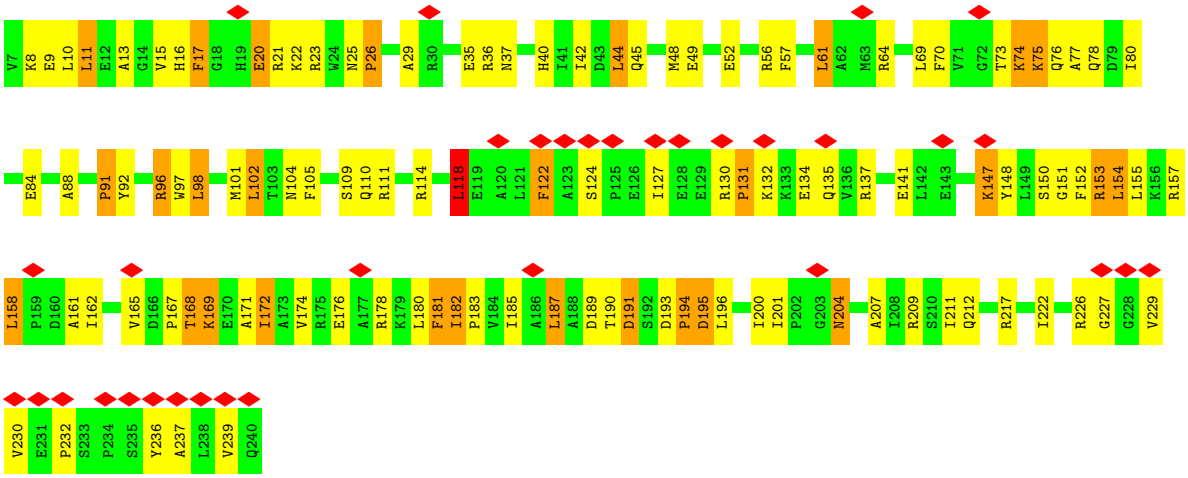






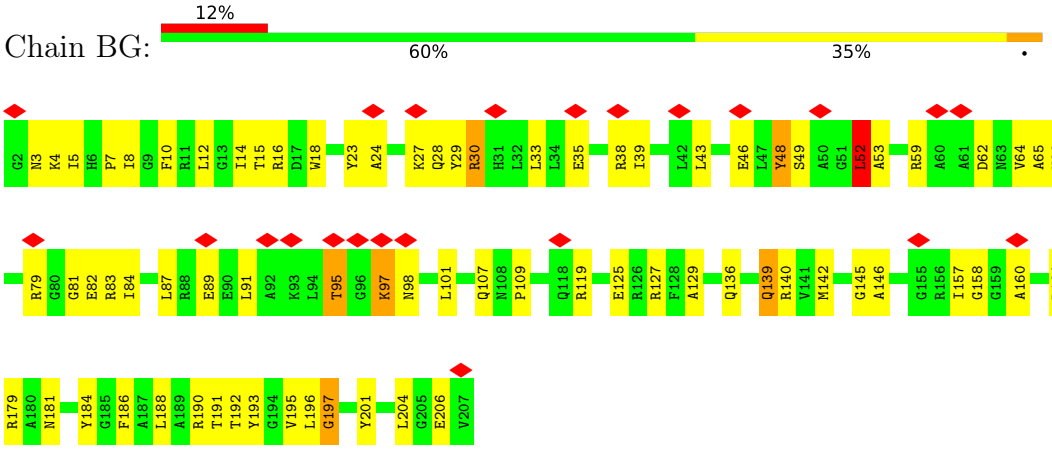
• Molecule 35: 30S ribosomal protein S2

Chain BF:



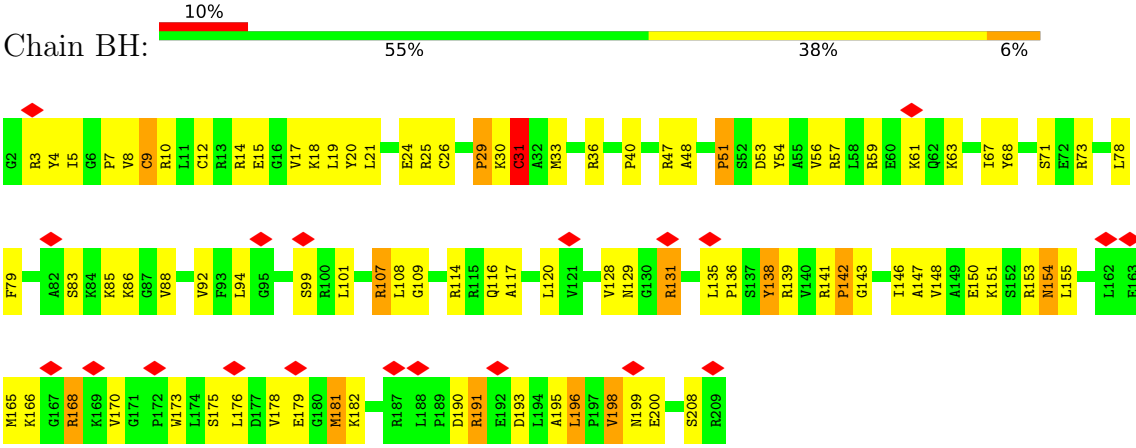
• Molecule 36: 30S ribosomal protein S3

Chain BG:



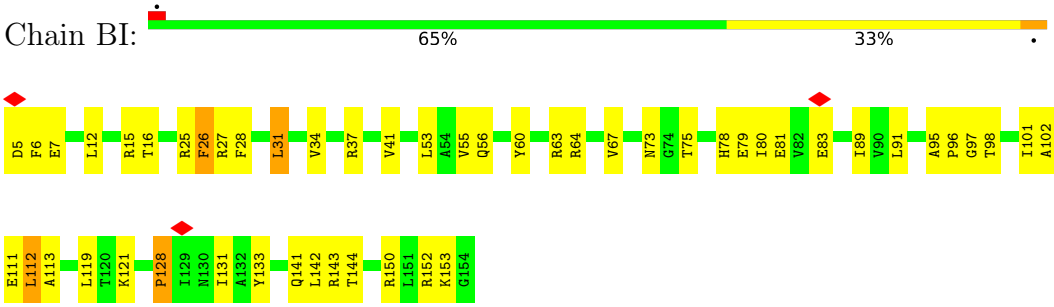
• Molecule 37: 30S ribosomal protein S4

Chain BH:



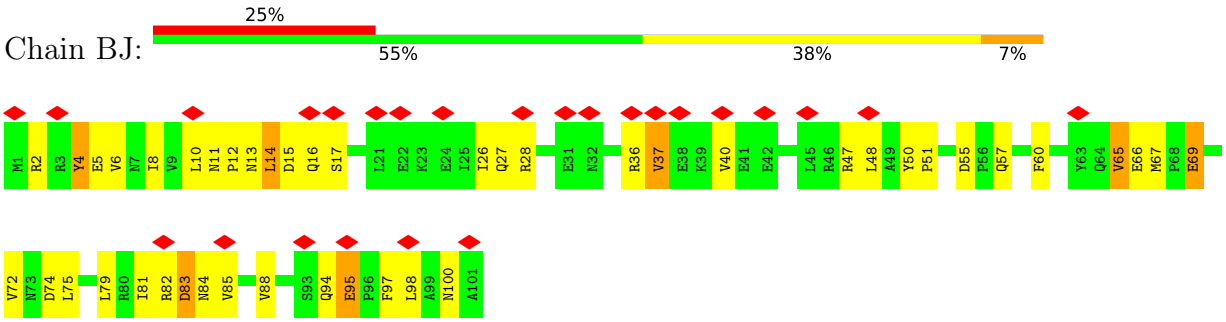
• Molecule 38: 30S ribosomal protein S5

Chain BI:



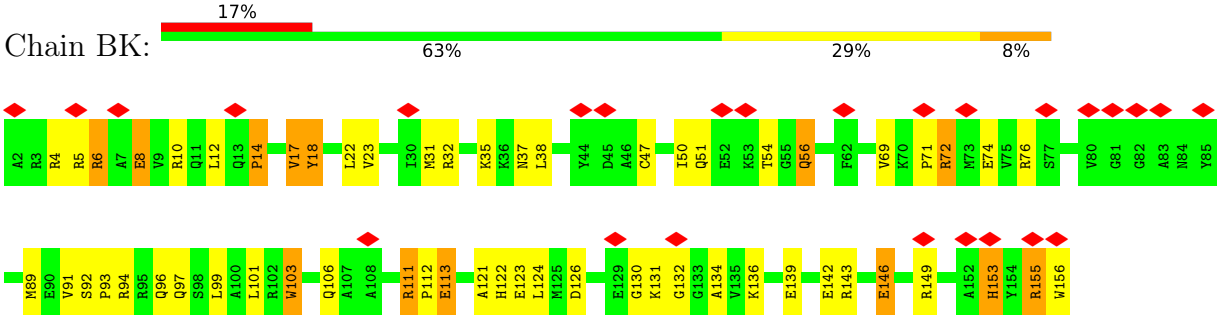
• Molecule 39: 30S ribosomal protein S6

Chain BJ:



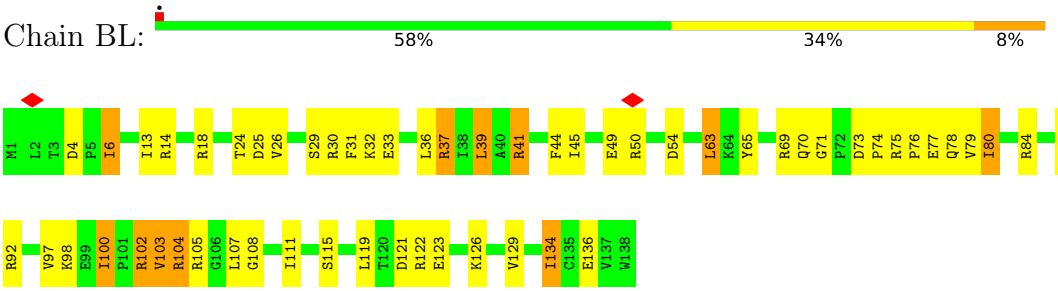
• Molecule 40: 30S ribosomal protein S7

Chain BK:



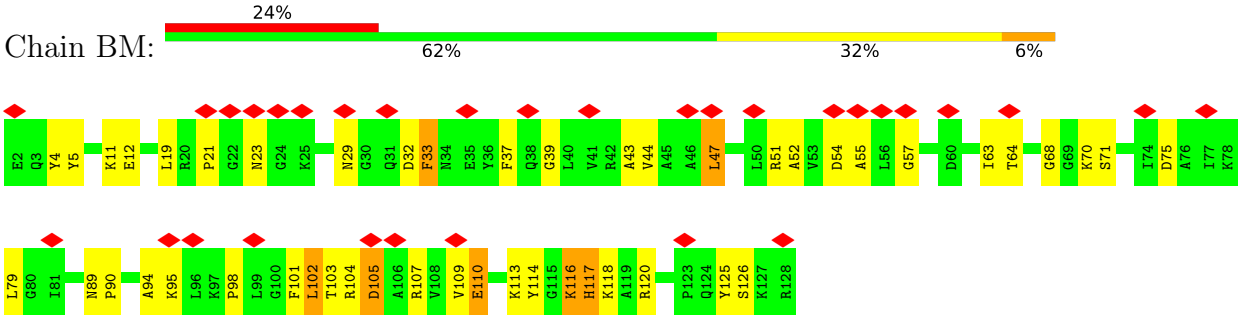
• Molecule 41: 30S ribosomal protein S8

Chain BL:



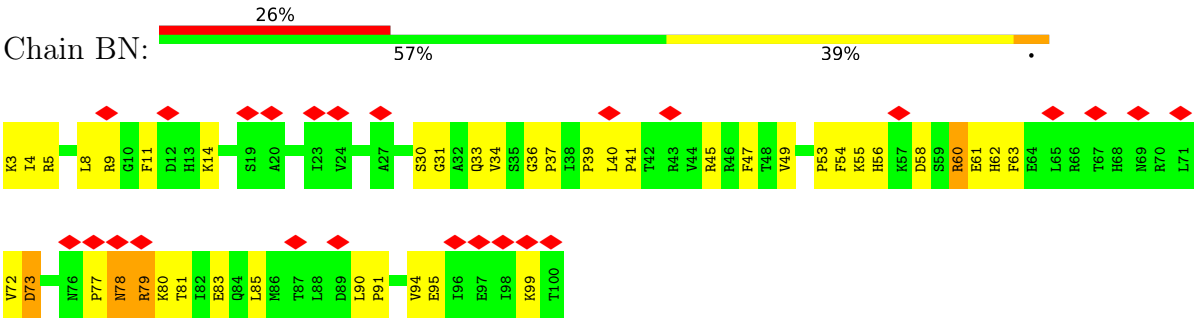
• Molecule 42: 30S ribosomal protein S9

Chain BM:



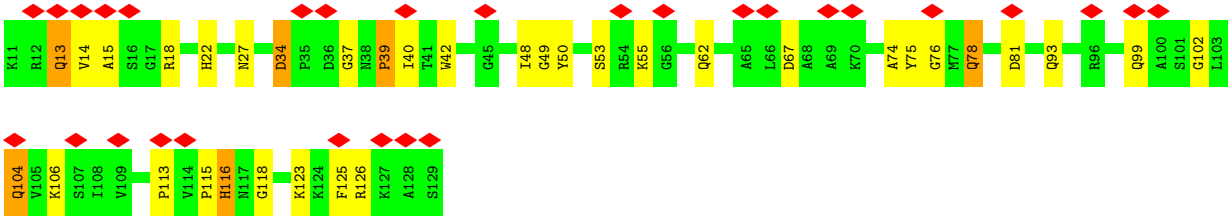
• Molecule 43: 30S ribosomal protein S10

Chain BN:

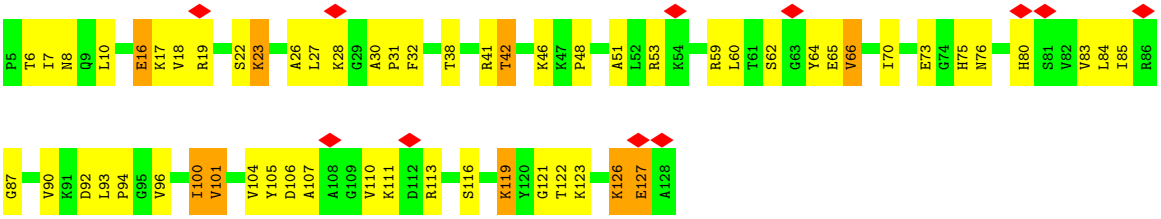


• Molecule 44: 30S ribosomal protein S11

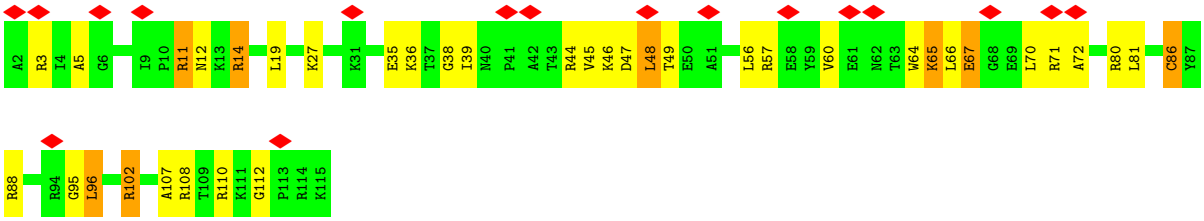
Chain BO:



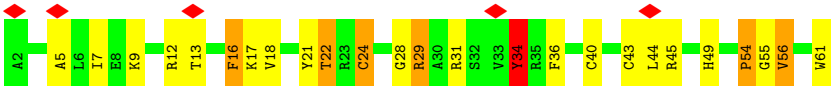
• Molecule 45: 30S ribosomal protein S12



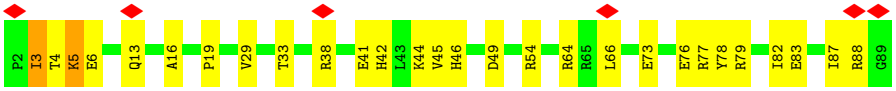
• Molecule 46: 30S ribosomal protein S13



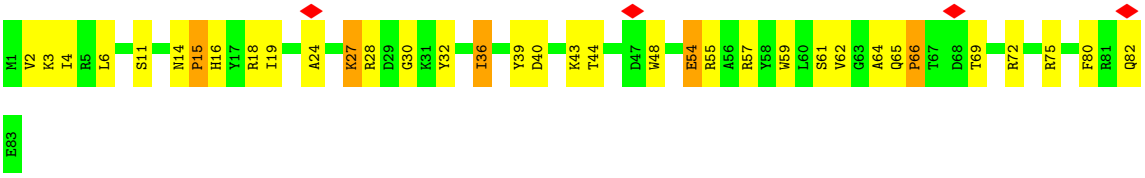
• Molecule 47: 30S ribosomal protein S14 type Z



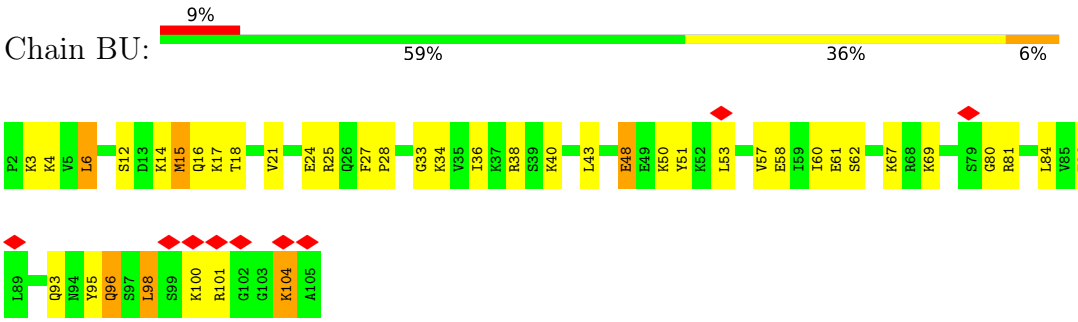
• Molecule 48: 30S ribosomal protein S15



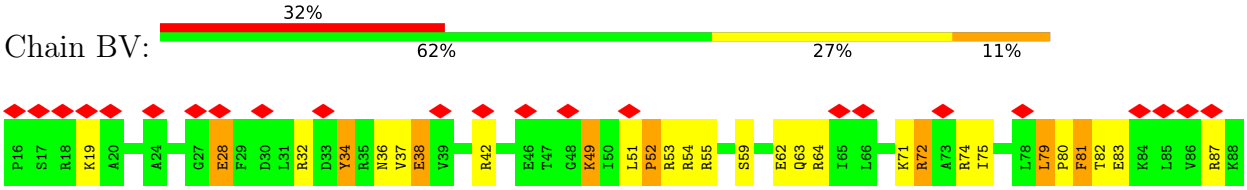
• Molecule 49: 30S ribosomal protein S16



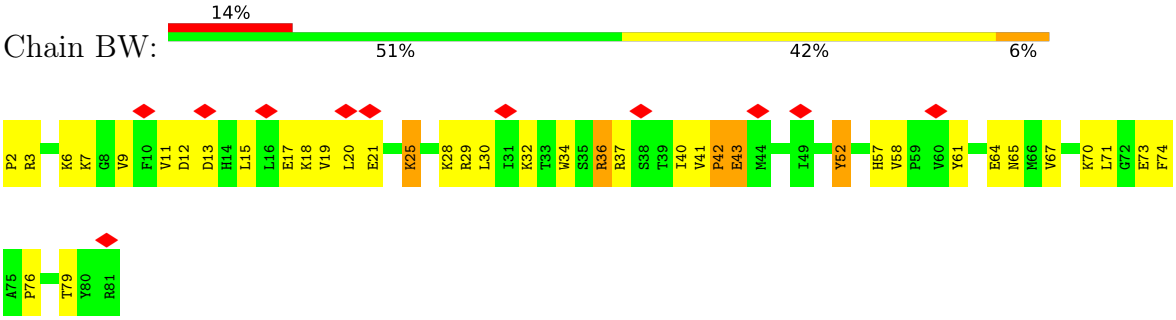
• Molecule 50: 30S ribosomal protein S17



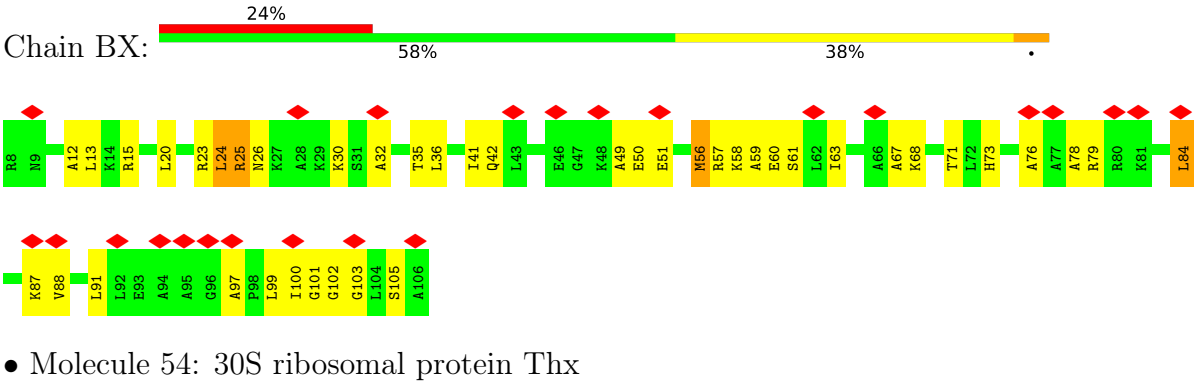
• Molecule 51: 30S ribosomal protein S18



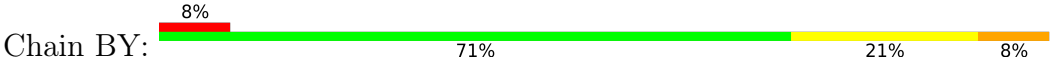
• Molecule 52: 30S ribosomal protein S19

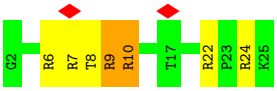


• Molecule 53: 30S ribosomal protein S20



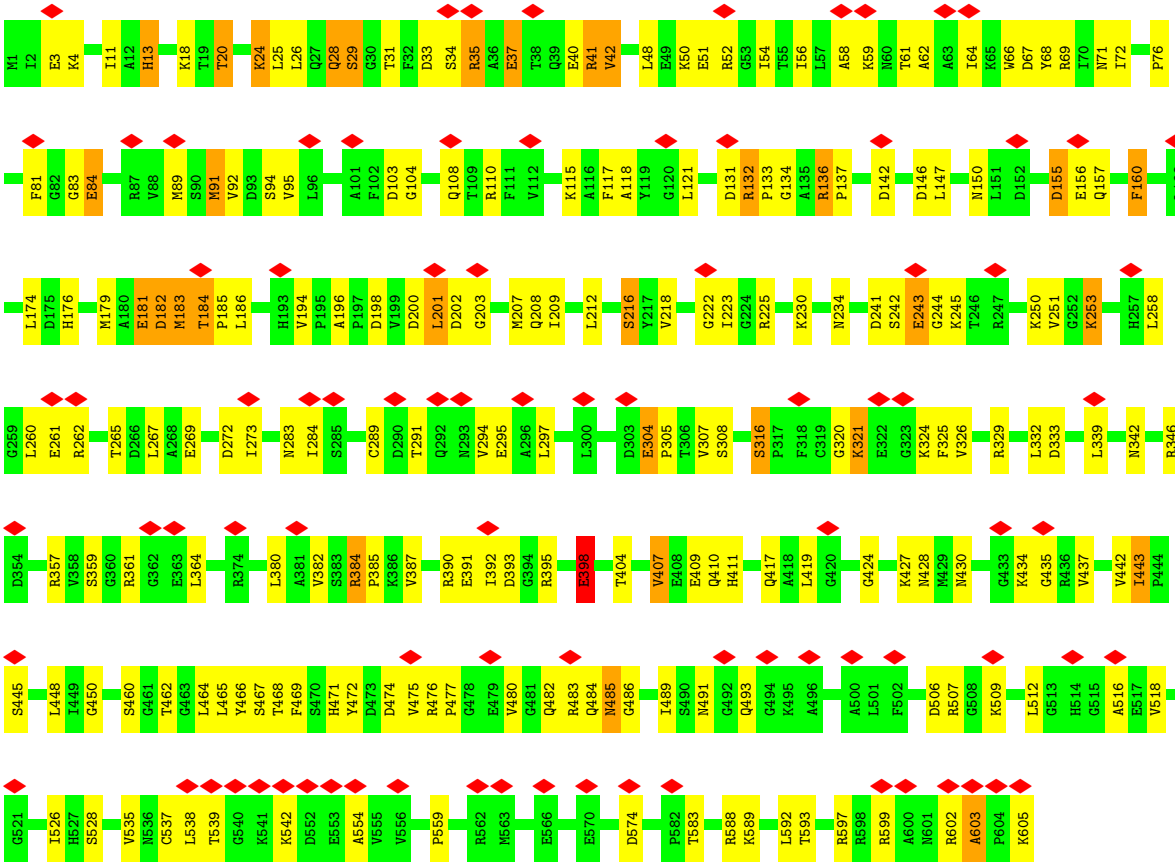
• Molecule 54: 30S ribosomal protein Thx





• Molecule 55: BipA

Chain CA:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	61165	Depositor
Resolution determination method	Not provided	
CTF correction method	CTFFIND3	Depositor
Microscope	FEI TECNAI F20	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	20	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2700	Depositor
Magnification	53000	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.975	Depositor
Minimum map value	-0.416	Depositor
Average map value	0.009	Depositor
Map value standard deviation	0.049	Depositor
Recommended contour level	0.109	Depositor
Map size (Å)	364.56, 364.56, 364.56	wwPDB
Map dimensions	294, 294, 294	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.24, 1.24, 1.24	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GCP, NMY

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	AA	1.00	106/69677 (0.2%)	1.08	349/108754 (0.3%)
2	AB	0.83	4/2954 (0.1%)	0.99	7/4606 (0.2%)
3	AC	0.54	0/1775	0.86	0/2393
4	AD	0.72	2/2174 (0.1%)	1.19	13/2927 (0.4%)
5	AE	0.75	0/1611	1.16	13/2171 (0.6%)
6	AF	0.64	0/1660	1.03	4/2247 (0.2%)
7	AG	0.62	0/1507	1.06	4/2027 (0.2%)
8	AH	0.59	0/1354	0.98	4/1831 (0.2%)
9	AI	0.50	1/751 (0.1%)	0.82	4/1042 (0.4%)
10	AJ	0.52	0/1012	0.64	8/1373 (0.6%)
11	AK	0.78	1/1140 (0.1%)	1.16	8/1537 (0.5%)
12	AL	0.92	1/942 (0.1%)	1.31	10/1268 (0.8%)
13	AM	0.71	0/1123	1.12	5/1493 (0.3%)
14	AN	0.72	0/1100	1.19	8/1470 (0.5%)
15	AO	0.70	0/974	1.06	2/1302 (0.2%)
16	AP	0.72	0/887	1.06	4/1180 (0.3%)
17	AQ	0.85	0/990	1.31	9/1325 (0.7%)
18	AR	0.76	0/982	1.08	0/1306
19	AS	0.87	1/790 (0.1%)	1.28	9/1057 (0.9%)
20	AT	0.66	0/886	1.04	1/1189 (0.1%)
21	AU	0.57	0/756	0.93	0/1015
22	AV	0.54	0/857	1.04	2/1142 (0.2%)
23	AW	0.66	0/1467	1.11	7/1992 (0.4%)
24	AX	0.65	0/679	1.04	1/902 (0.1%)
25	AY	0.59	0/569	0.88	0/751
26	AZ	0.59	0/474	1.09	2/635 (0.3%)
27	Aa	0.84	1/594 (0.2%)	1.31	8/795 (1.0%)
28	Ab	0.72	0/459	1.16	3/621 (0.5%)
29	Ac	0.85	1/433 (0.2%)	1.36	5/576 (0.9%)
30	Ad	0.73	0/438	1.01	0/575
31	Ae	0.60	0/523	1.14	5/690 (0.7%)
32	Af	0.59	0/310	1.08	1/407 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
34	BA	0.92	25/36437 (0.1%)	1.09	139/56865 (0.2%)
35	BF	0.64	0/1935	1.00	4/2609 (0.2%)
36	BG	0.55	0/1636	0.92	4/2205 (0.2%)
37	BH	0.64	1/1733 (0.1%)	0.98	3/2318 (0.1%)
38	BI	0.63	0/1162	1.01	3/1564 (0.2%)
39	BJ	0.60	0/856	0.95	0/1154
40	BK	0.57	0/1276	0.90	3/1709 (0.2%)
41	BL	0.62	0/1136	1.01	3/1527 (0.2%)
42	BM	0.54	0/1029	0.83	0/1379
43	BN	0.48	0/807	0.89	1/1085 (0.1%)
44	BO	0.63	0/900	0.98	0/1213
45	BP	0.60	0/986	1.00	3/1320 (0.2%)
46	BQ	0.33	0/924	0.45	2/1238 (0.2%)
47	BR	0.55	0/501	0.97	1/664 (0.2%)
48	BS	0.62	0/745	0.95	0/992
49	BT	0.62	0/716	0.95	2/963 (0.2%)
50	BU	0.68	1/870 (0.1%)	0.99	2/1159 (0.2%)
51	BV	0.59	0/603	1.01	1/799 (0.1%)
52	BW	0.53	1/661 (0.2%)	1.34	5/890 (0.6%)
53	BX	0.65	0/765	1.00	2/1007 (0.2%)
54	BY	0.45	0/212	0.80	0/277
55	CA	0.36	0/4598	0.49	15/6200 (0.2%)
All	All	0.87	146/162336 (0.1%)	1.06	689/241736 (0.3%)

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
1	AA	0	430
2	AB	0	17
3	AC	0	1
5	AE	0	1
6	AF	0	1
9	AI	0	2
11	AK	0	1
14	AN	0	1
17	AQ	0	1
19	AS	0	1
27	Aa	0	1
28	Ab	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
34	BA	0	170
37	BH	0	1
39	BJ	0	1
44	BO	0	1
47	BR	0	1
55	CA	0	1
All	All	0	633

All (146) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	AA	1060	U	O3'-P	-80.27	0.64	1.61
34	BA	1317	C	O3'-P	-70.09	0.77	1.61
1	AA	1203	G	O3'-P	-34.69	1.19	1.61
34	BA	1167	A	O3'-P	20.86	1.86	1.61
1	AA	2500	U	C4-O4	18.53	1.38	1.23
1	AA	2500	U	O3'-P	-15.11	1.43	1.61
1	AA	607	U	N3-C4	-14.47	1.25	1.38
1	AA	2448	A	O3'-P	-14.43	1.43	1.61
1	AA	621	A	C6-N6	14.11	1.45	1.33
1	AA	1240	U	O3'-P	-13.45	1.45	1.61
1	AA	2756	U	O3'-P	13.32	1.77	1.61
1	AA	607	U	C2-N3	-13.22	1.28	1.37
9	AI	153	LEU	C-N	-12.13	1.11	1.33
1	AA	1993	U	N1-C2	11.42	1.48	1.38
1	AA	607	U	C5-C6	-10.65	1.24	1.34
1	AA	2491	U	N1-C2	10.57	1.48	1.38
1	AA	1202	C	O3'-P	-9.82	1.49	1.61
34	BA	1064	G	C5-C6	-9.67	1.32	1.42
34	BA	530	G	N9-C4	-9.59	1.30	1.38
1	AA	2499	C	O3'-P	9.42	1.72	1.61
1	AA	2755	C	O3'-P	8.88	1.71	1.61
1	AA	607	U	C4-O4	-8.64	1.16	1.23
1	AA	2460	U	N1-C2	8.55	1.46	1.38
1	AA	1956	U	N1-C2	8.35	1.46	1.38
1	AA	2035	G	N9-C4	7.84	1.44	1.38
1	AA	2447	G	O3'-P	-7.81	1.51	1.61
11	AK	42	TRP	CB-CG	7.78	1.64	1.50
1	AA	1	G	OP3-P	-7.76	1.51	1.61
34	BA	1064	G	C2-N3	7.76	1.39	1.32
1	AA	687	C	N1-C2	7.68	1.47	1.40
19	AS	81	TYR	CB-CG	7.54	1.62	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	AA	1204	A	O3'-P	7.52	1.70	1.61
1	AA	775	G	N9-C4	7.51	1.44	1.38
1	AA	607	U	N1-C6	7.43	1.44	1.38
2	AB	-1	A	OP3-P	-7.36	1.52	1.61
34	BA	974	A	C2-N3	7.34	1.40	1.33
34	BA	974	A	C6-N1	7.29	1.40	1.35
1	AA	607	U	C2-O2	-7.03	1.16	1.22
1	AA	2448	A	C5'-C4'	6.98	1.59	1.51
1	AA	1763	G	C6-O6	6.96	1.30	1.24
1	AA	1313	U	N1-C2	6.95	1.44	1.38
1	AA	621	A	N7-C5	-6.83	1.35	1.39
1	AA	1956	U	N3-C4	6.76	1.44	1.38
1	AA	2491	U	C2-N3	6.73	1.42	1.37
1	AA	726	G	N9-C4	6.65	1.43	1.38
1	AA	688	U	N1-C2	6.62	1.44	1.38
34	BA	37	U	C4-O4	-6.56	1.18	1.23
1	AA	2522	U	N1-C2	6.48	1.44	1.38
1	AA	640	C	N1-C2	-6.43	1.33	1.40
1	AA	1240	U	N3-C4	-6.40	1.32	1.38
34	BA	132	C	N1-C2	-6.34	1.33	1.40
1	AA	1785	A	C6-N1	-6.32	1.31	1.35
1	AA	2460	U	C4-O4	6.28	1.28	1.23
34	BA	1064	G	N1-C2	6.26	1.42	1.37
34	BA	1064	G	C5-C4	-6.24	1.33	1.38
34	BA	397	A	C5-C6	-6.20	1.35	1.41
1	AA	2588	G	C6-N1	-6.15	1.35	1.39
1	AA	1775	U	C5-C6	-6.14	1.28	1.34
34	BA	974	A	N9-C4	6.09	1.41	1.37
1	AA	930	U	N1-C2	-6.09	1.33	1.38
1	AA	1994	C	C2-N3	-6.07	1.30	1.35
1	AA	1674	G	N9-C4	-6.05	1.33	1.38
1	AA	1303	G	C5-C6	6.03	1.48	1.42
1	AA	1993	U	C2-N3	5.91	1.41	1.37
52	BW	2	PRO	CA-C	5.89	1.64	1.52
1	AA	1786	A	N9-C4	5.88	1.41	1.37
34	BA	579	G	C3'-O3'	5.87	1.50	1.42
2	AB	16	G	N9-C4	-5.86	1.33	1.38
34	BA	196	A	O3'-P	-5.84	1.54	1.61
1	AA	1626	G	C5'-C4'	5.80	1.58	1.51
1	AA	621	A	C5-C4	5.79	1.42	1.38
2	AB	72	G	N9-C4	5.78	1.42	1.38
1	AA	2073	C	C2-O2	-5.77	1.19	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
50	BU	21	VAL	CA-CB	-5.74	1.42	1.54
1	AA	2195	C	C3'-O3'	5.73	1.50	1.42
34	BA	579	G	O3'-P	5.66	1.68	1.61
1	AA	2445	G	C6-O6	-5.66	1.19	1.24
34	BA	173	U	O3'-P	5.66	1.68	1.61
1	AA	2548	G	C2-N2	-5.64	1.28	1.34
1	AA	2460	U	N3-C4	5.63	1.43	1.38
1	AA	1786	A	C2-N3	5.63	1.38	1.33
1	AA	775	G	C2-N3	5.59	1.37	1.32
34	BA	309	G	N9-C4	-5.58	1.33	1.38
1	AA	1775	U	N1-C6	-5.58	1.32	1.38
34	BA	37	U	C5-C6	-5.55	1.29	1.34
1	AA	2491	U	N3-C4	5.55	1.43	1.38
34	BA	697	U	C2-N3	5.54	1.41	1.37
1	AA	2063	C	N1-C2	5.52	1.45	1.40
1	AA	270(V)	G	N9-C4	-5.52	1.33	1.38
1	AA	860	U	C5-C6	-5.52	1.29	1.34
1	AA	2255	G	N1-C2	5.52	1.42	1.37
1	AA	717	G	N9-C4	-5.52	1.33	1.38
1	AA	2460	U	C2-N3	5.51	1.41	1.37
34	BA	651	C	N1-C2	5.50	1.45	1.40
1	AA	916	G	N9-C4	5.46	1.42	1.38
1	AA	1359	A	C5-C6	-5.45	1.36	1.41
1	AA	2358	G	N9-C4	-5.44	1.33	1.38
34	BA	697	U	N3-C4	5.43	1.43	1.38
1	AA	1468	C	N1-C2	-5.42	1.34	1.40
1	AA	2489	G	C6-O6	-5.38	1.19	1.24
1	AA	2852	G	N1-C2	-5.38	1.33	1.37
1	AA	1778	U	N1-C2	5.37	1.43	1.38
1	AA	1938	A	O3'-P	5.36	1.67	1.61
1	AA	1994	C	C5-C6	-5.36	1.30	1.34
1	AA	950	G	N9-C4	-5.35	1.33	1.38
1	AA	1426	G	N9-C4	-5.34	1.33	1.38
4	AD	54	ARG	CG-CD	5.33	1.65	1.51
1	AA	860	U	N1-C6	-5.32	1.33	1.38
1	AA	1524	G	C2-N3	-5.32	1.28	1.32
12	AL	105	GLU	CB-CG	5.32	1.62	1.52
1	AA	2620	C	C2-O2	-5.32	1.19	1.24
1	AA	1956	U	C2-N3	5.31	1.41	1.37
1	AA	2334	G	N9-C4	5.31	1.42	1.38
1	AA	2604	U	N3-C4	-5.30	1.33	1.38
1	AA	1524	G	N9-C4	-5.25	1.33	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	AA	1372	U	C5-C6	-5.23	1.29	1.34
2	AB	8	U	N1-C2	-5.23	1.33	1.38
1	AA	1785	A	C6-N6	-5.21	1.29	1.33
34	BA	592	G	N9-C4	5.20	1.42	1.38
1	AA	2459	A	N9-C4	5.19	1.41	1.37
29	Ac	43	CYS	CB-SG	-5.18	1.73	1.81
1	AA	1950	G	N1-C2	-5.18	1.33	1.37
1	AA	2604	U	N1-C2	-5.18	1.33	1.38
1	AA	1778	U	C4-O4	-5.17	1.19	1.23
1	AA	985	C	C2-O2	-5.16	1.19	1.24
1	AA	1951	U	N1-C2	5.16	1.43	1.38
1	AA	2548	G	C6-N1	-5.16	1.35	1.39
1	AA	2560	C	C2-O2	-5.14	1.19	1.24
1	AA	1776	G	C6-O6	-5.13	1.19	1.24
34	BA	697	U	N1-C2	5.12	1.43	1.38
1	AA	2593	U	N1-C2	-5.12	1.33	1.38
1	AA	978	G	C2-N3	-5.12	1.28	1.32
37	BH	12	CYS	CA-CB	5.10	1.65	1.53
1	AA	2491	U	O4'-C1'	5.09	1.48	1.41
1	AA	2462	U	C4-O4	-5.09	1.19	1.23
1	AA	1516	U	N1-C2	-5.07	1.33	1.38
1	AA	1742	C	N1-C2	-5.07	1.35	1.40
34	BA	114	U	N3-C4	-5.06	1.33	1.38
1	AA	2571	C	C2-O2	-5.06	1.19	1.24
1	AA	2461	C	C2-N3	-5.05	1.31	1.35
1	AA	2553	G	C2-N2	-5.05	1.29	1.34
4	AD	250	TRP	CB-CG	-5.05	1.41	1.50
1	AA	1628	G	N9-C4	-5.04	1.33	1.38
1	AA	1994	C	C2-O2	-5.02	1.20	1.24
27	Aa	48	ARG	CG-CD	5.01	1.64	1.51
1	AA	764	A	C5-C6	-5.00	1.36	1.41

All (689) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	BA	1064	G	N1-C2-N2	-71.66	51.71	116.20
34	BA	1064	G	N3-C2-N2	57.69	160.28	119.90
34	BA	1317	C	P-O3'-C3'	-48.76	61.18	119.70
34	BA	1317	C	O3'-P-O5'	30.59	162.12	104.00
1	AA	1060	U	O3'-P-O5'	28.66	158.46	104.00
1	AA	1203	G	P-O3'-C3'	27.64	152.87	119.70
1	AA	2448	A	C5'-C4'-O4'	-27.28	76.36	109.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	BA	1064	G	N1-C2-N3	-25.54	108.58	123.90
34	BA	1317	C	OP2-P-O3'	-23.49	53.51	105.20
1	AA	1060	U	OP1-P-O3'	-23.00	54.60	105.20
52	BW	2	PRO	CA-C-N	-19.26	74.82	117.20
52	BW	2	PRO	CA-C-O	-18.95	74.72	120.20
52	BW	2	PRO	O-C-N	16.78	149.54	122.70
9	AI	153	LEU	O-C-N	-15.14	97.46	123.20
34	BA	1064	G	C2-N3-C4	14.64	119.22	111.90
1	AA	1204	A	N9-C1'-C2'	14.61	132.99	114.00
1	AA	1060	U	OP2-P-O3'	-13.65	75.16	105.20
34	BA	172	A	OP1-P-O3'	12.60	132.92	105.20
1	AA	607	U	C5-C6-N1	-12.54	116.43	122.70
1	AA	2384	G	N9-C1'-C2'	12.19	129.84	114.00
9	AI	153	LEU	C-N-CA	11.99	147.48	122.30
34	BA	973	G	O3'-P-O5'	11.52	125.88	104.00
34	BA	1317	C	OP1-P-O3'	-11.51	79.88	105.20
34	BA	1064	G	C6-N1-C2	11.34	131.90	125.10
1	AA	2459	A	N9-C1'-C2'	11.32	128.72	114.00
1	AA	2500	U	N3-C4-O4	11.21	127.25	119.40
34	BA	173	U	P-O3'-C3'	11.03	132.94	119.70
9	AI	153	LEU	CA-C-N	10.79	137.77	116.20
1	AA	2500	U	C5-C4-O4	-10.79	119.43	125.90
1	AA	2446	G	P-O3'-C3'	10.73	132.57	119.70
1	AA	1800	C	N1-C1'-C2'	-10.70	100.09	114.00
1	AA	2490	G	N9-C1'-C2'	10.66	127.85	114.00
17	AQ	66	VAL	N-CA-C	-10.58	82.43	111.00
1	AA	1938	A	N9-C1'-C2'	10.42	127.55	114.00
1	AA	1203	G	O3'-P-O5'	10.02	123.04	104.00
1	AA	607	U	N3-C4-O4	-9.92	112.46	119.40
1	AA	1992	G	N9-C1'-C2'	9.89	126.85	114.00
1	AA	1240	U	P-O3'-C3'	9.88	131.55	119.70
1	AA	2501	C	P-O3'-C3'	-9.87	107.86	119.70
34	BA	88	C	O4'-C1'-N1	9.85	116.08	108.20
34	BA	974	A	N9-C1'-C2'	9.77	126.70	114.00
1	AA	1809	A	O4'-C1'-N9	9.75	116.00	108.20
1	AA	1205	U	O4'-C1'-N1	9.70	115.96	108.20
1	AA	2460	U	N1-C1'-C2'	9.65	126.55	114.00
1	AA	2581	G	N9-C1'-C2'	9.63	126.52	114.00
1	AA	2779	U	N1-C1'-C2'	-9.63	101.41	112.00
1	AA	2522	U	N1-C1'-C2'	9.62	126.50	114.00
34	BA	727	G	N9-C1'-C2'	-9.48	101.57	112.00
1	AA	2032	G	N9-C1'-C2'	9.46	126.29	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	BA	37	U	C5-C4-O4	-9.45	120.23	125.90
1	AA	1625	C	N1-C1'-C2'	9.43	126.26	114.00
1	AA	801	G	N9-C1'-C2'	9.43	126.26	114.00
1	AA	2755	C	OP1-P-O3'	-9.38	84.55	105.20
34	BA	793	U	N1-C1'-C2'	9.37	126.18	114.00
17	AQ	29	ARG	N-CA-C	-9.35	85.75	111.00
29	Ac	24	GLU	N-CA-C	9.34	136.22	111.00
1	AA	138	G	N9-C1'-C2'	-9.30	101.77	112.00
1	AA	776	G	N9-C1'-C2'	9.28	126.06	114.00
1	AA	974(A)	C	N1-C1'-C2'	9.26	126.04	114.00
34	BA	1528	U	N1-C1'-C2'	9.22	125.98	114.00
36	BG	48	TYR	N-CA-C	-9.20	86.15	111.00
1	AA	1363	C	N1-C1'-C2'	-9.12	101.97	112.00
2	AB	119	A	N9-C1'-C2'	-9.11	101.98	112.00
1	AA	2756	U	P-O3'-C3'	9.07	130.58	119.70
1	AA	2459	A	C4-N9-C1'	8.98	142.46	126.30
1	AA	978	G	O4'-C1'-N9	8.97	115.38	108.20
1	AA	199	A	N9-C1'-C2'	8.96	125.66	114.00
1	AA	607	U	N3-C2-O2	-8.88	115.99	122.20
1	AA	280	C	N1-C1'-C2'	8.87	125.53	114.00
34	BA	397	A	C4-N9-C1'	8.86	142.25	126.30
1	AA	1951	U	N1-C1'-C2'	8.84	125.49	114.00
34	BA	1133	G	N9-C1'-C2'	-8.73	102.39	112.00
1	AA	2756	U	N1-C1'-C2'	8.71	125.33	114.00
1	AA	1939	U	O5'-P-OP1	-8.70	97.87	105.70
1	AA	1313	U	N1-C1'-C2'	8.68	125.28	114.00
34	BA	397	A	C8-N9-C1'	-8.64	112.15	127.70
1	AA	1786	A	C5-C6-N6	-8.63	116.80	123.70
1	AA	2459	A	C8-N9-C1'	-8.54	112.33	127.70
1	AA	1240	U	O3'-P-O5'	8.47	120.10	104.00
29	Ac	39	TYR	N-CA-C	8.47	133.87	111.00
1	AA	621	A	N9-C1'-C2'	-8.46	102.69	112.00
1	AA	2755	C	OP2-P-O3'	8.45	123.79	105.20
1	AA	2501	C	O3'-P-O5'	8.43	120.02	104.00
12	AL	74	GLY	N-CA-C	-8.38	92.14	113.10
34	BA	974	A	O3'-P-O5'	8.36	119.89	104.00
34	BA	451	A	N9-C1'-C2'	8.35	124.85	114.00
1	AA	1970	A	O4'-C1'-N9	8.28	114.82	108.20
1	AA	1489	U	O4'-C1'-N1	8.24	114.79	108.20
4	AD	63	ARG	N-CA-C	8.19	133.12	111.00
1	AA	1455	G	N9-C1'-C2'	-8.16	103.03	112.00
34	BA	530	G	C4-N9-C1'	-8.08	116.00	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1498	C	N1-C1'-C2'	8.07	124.50	114.00
1	AA	775	G	N9-C1'-C2'	8.03	124.44	114.00
1	AA	2051	A	N9-C1'-C2'	7.96	124.35	114.00
1	AA	730	C	N1-C1'-C2'	7.96	124.35	114.00
1	AA	2491	U	C2'-C3'-O3'	7.90	126.88	109.50
1	AA	2491	U	C5-C4-O4	-7.89	121.16	125.90
1	AA	2491	U	O4'-C4'-C3'	-7.81	96.19	104.00
34	BA	792	A	N9-C1'-C2'	7.79	124.12	114.00
1	AA	1778	U	C5-C4-O4	-7.77	121.24	125.90
34	BA	1167	A	P-O3'-C3'	7.75	128.99	119.70
13	AM	45	LEU	CA-CB-CG	-7.73	97.52	115.30
34	BA	974	A	C5-C6-N6	-7.72	117.52	123.70
1	AA	2076	U	N1-C1'-C2'	7.71	124.03	114.00
12	AL	15	GLY	N-CA-C	-7.65	93.98	113.10
6	AF	79	GLY	N-CA-C	-7.64	94.01	113.10
1	AA	2491	U	O4'-C1'-C2'	-7.63	98.17	105.80
1	AA	196	A	N9-C1'-C2'	7.62	123.90	114.00
4	AD	251	GLY	N-CA-C	-7.60	94.09	113.10
1	AA	1667	G	O4'-C1'-N9	7.60	114.28	108.20
1	AA	2035	G	N9-C1'-C2'	7.58	123.86	114.00
1	AA	1786	A	C6-N1-C2	-7.51	114.10	118.60
34	BA	1054	C	N1-C1'-C2'	-7.51	103.74	112.00
7	AG	95	ARG	N-CA-C	7.50	131.26	111.00
1	AA	1189	A	N9-C1'-C2'	-7.50	103.75	112.00
28	Ab	36	CYS	CA-CB-SG	7.48	127.47	114.00
1	AA	607	U	C5-C4-O4	-7.46	121.42	125.90
34	BA	457	C	N1-C1'-C2'	-7.42	103.84	112.00
1	AA	2587	A	N9-C1'-C2'	7.41	123.64	114.00
34	BA	974	A	C6-N1-C2	-7.38	114.17	118.60
1	AA	1203	G	OP2-P-O3'	-7.37	88.98	105.20
4	AD	49	ILE	N-CA-C	-7.35	91.16	111.00
23	AW	77	ASP	N-CA-C	7.34	130.83	111.00
19	AS	50	PRO	N-CA-C	7.34	131.18	112.10
1	AA	2510	C	N1-C1'-C2'	-7.32	103.95	112.00
34	BA	563	A	N9-C1'-C2'	7.31	123.50	114.00
1	AA	1786	A	C4-N9-C1'	7.29	139.43	126.30
1	AA	2422	A	N9-C1'-C2'	7.29	123.47	114.00
1	AA	1537	C	N1-C1'-C2'	-7.28	103.99	112.00
1	AA	184	C	N1-C1'-C2'	7.26	123.44	114.00
34	BA	790	A	N9-C1'-C2'	-7.25	104.02	112.00
4	AD	45	ASN	N-CA-C	-7.25	91.43	111.00
34	BA	397	A	C5-C6-N6	-7.24	117.91	123.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1778	U	C2-N3-C4	-7.19	122.69	127.00
1	AA	265	A	N1-C6-N6	7.18	122.91	118.60
53	BX	36	LEU	CA-CB-CG	-7.18	98.80	115.30
29	Ac	26	ASN	N-CA-C	7.17	130.35	111.00
1	AA	2259	G	N9-C1'-C2'	-7.17	104.12	112.00
1	AA	2582	G	O4'-C1'-N9	-7.12	102.51	108.20
1	AA	1604	C	N1-C1'-C2'	7.06	123.18	114.00
34	BA	367	U	N1-C1'-C2'	7.05	123.17	114.00
1	AA	2448	A	O5'-C5'-C4'	-7.05	98.31	111.70
1	AA	2491	U	C3'-C2'-C1'	-7.03	95.87	101.50
1	AA	654	A	N9-C1'-C2'	-7.02	104.28	112.00
1	AA	1205	U	C5'-C4'-O4'	7.02	117.53	109.10
1	AA	1372	U	C5-C4-O4	-7.02	121.69	125.90
1	AA	1786	A	C8-N9-C1'	-7.00	115.09	127.70
34	BA	530	G	C5'-C4'-O4'	-7.00	100.70	109.10
1	AA	2602	A	N9-C1'-C2'	6.99	123.09	114.00
1	AA	1792	G	N9-C1'-C2'	-6.98	104.33	112.00
1	AA	282	A	N9-C1'-C2'	-6.96	104.35	112.00
4	AD	16	MET	N-CA-C	-6.96	92.22	111.00
1	AA	1699	G	N9-C1'-C2'	6.95	123.03	114.00
11	AK	36	GLY	N-CA-C	-6.94	95.74	113.10
1	AA	620	G	N9-C1'-C2'	6.94	123.03	114.00
1	AA	1971	A	N9-C1'-C2'	-6.94	104.37	112.00
1	AA	554	U	N1-C1'-C2'	6.93	123.01	114.00
53	BX	24	LEU	CA-CB-CG	6.92	131.21	115.30
1	AA	1205	U	C1'-O4'-C4'	-6.91	104.37	109.90
1	AA	2346	A	O4'-C1'-N9	6.91	113.73	108.20
1	AA	2459	A	C6-N1-C2	-6.91	114.46	118.60
1	AA	1240	U	OP2-P-O3'	-6.90	90.01	105.20
1	AA	527	C	N1-C1'-C2'	6.90	122.97	114.00
1	AA	1694	C	N1-C1'-C2'	6.89	122.96	114.00
1	AA	911	A	N9-C1'-C2'	6.89	122.96	114.00
19	AS	63	GLY	N-CA-C	-6.89	95.88	113.10
19	AS	94	LEU	N-CA-C	-6.89	92.40	111.00
1	AA	1359	A	N9-C1'-C2'	-6.89	104.42	112.00
1	AA	2596	U	N1-C1'-C2'	-6.88	104.43	112.00
5	AE	6	GLY	N-CA-C	-6.87	95.92	113.10
34	BA	1402	C	N1-C1'-C2'	-6.86	104.45	112.00
34	BA	1393	U	N1-C1'-C2'	-6.84	104.47	112.00
28	Ab	13	LYS	N-CA-C	-6.84	92.54	111.00
1	AA	2501	C	OP2-P-O3'	-6.81	90.22	105.20
1	AA	607	U	N3-C4-C5	6.80	118.68	114.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	607	U	N1-C2-O2	6.78	127.55	122.80
1	AA	865	C	N1-C1'-C2'	6.78	122.81	114.00
34	BA	197	A	P-O3'-C3'	-6.78	111.57	119.70
1	AA	387	U	N1-C1'-C2'	6.77	122.80	114.00
34	BA	885	G	N9-C1'-C2'	-6.76	104.57	112.00
1	AA	534	U	O4'-C1'-N1	6.75	113.60	108.20
34	BA	530	G	C8-N9-C1'	6.74	135.77	127.00
1	AA	1775	U	C5-C4-O4	-6.73	121.86	125.90
1	AA	2447	G	N9-C1'-C2'	6.71	122.72	114.00
1	AA	762	U	N1-C1'-C2'	6.70	122.71	114.00
34	BA	1123	A	N9-C1'-C2'	6.70	122.71	114.00
1	AA	2498	C	C5'-C4'-C3'	-6.68	105.31	116.00
1	AA	615	G	N9-C1'-C2'	6.68	122.68	114.00
34	BA	813	U	N1-C1'-C2'	6.67	122.67	114.00
34	BA	531	U	N1-C1'-C2'	6.65	122.65	114.00
27	Aa	32	TYR	N-CA-C	6.65	128.95	111.00
34	BA	397	A	O4'-C1'-N9	-6.65	102.88	108.20
16	AP	63	THR	N-CA-C	-6.64	93.06	111.00
34	BA	1279	A	N9-C1'-C2'	6.64	122.64	114.00
1	AA	1635	G	C5'-C4'-C3'	-6.63	105.38	116.00
34	BA	12	U	O4'-C1'-N1	6.63	113.50	108.20
1	AA	1626	G	C5'-C4'-O4'	6.63	117.05	109.10
1	AA	2073	C	O4'-C1'-N1	-6.62	102.90	108.20
1	AA	1938	A	C4-N9-C1'	6.62	138.21	126.30
34	BA	47	C	N1-C1'-C2'	6.61	122.59	114.00
1	AA	650	C	O4'-C1'-N1	6.61	113.48	108.20
23	AW	52	SER	N-CA-C	-6.60	93.17	111.00
31	Ae	6	THR	N-CA-C	-6.60	93.18	111.00
13	AM	30	THR	N-CA-C	6.59	128.81	111.00
1	AA	1444(A)	A	N9-C1'-C2'	6.59	122.57	114.00
34	BA	397	A	N9-C1'-C2'	6.59	122.56	114.00
1	AA	1247	A	N9-C1'-C2'	6.56	122.53	114.00
4	AD	250	TRP	N-CA-C	6.56	128.71	111.00
1	AA	1667	G	C5'-C4'-C3'	6.55	126.48	116.00
1	AA	2336	A	N9-C1'-C2'	6.55	122.52	114.00
1	AA	431	U	N1-C1'-C2'	-6.55	104.80	112.00
2	AB	118	G	N9-C1'-C2'	-6.54	104.80	112.00
1	AA	1143	A	N9-C1'-C2'	6.54	122.50	114.00
1	AA	1822	G	N9-C1'-C2'	-6.54	104.81	112.00
1	AA	703	U	O4'-C1'-N1	6.53	113.42	108.20
1	AA	1955	U	N1-C1'-C2'	6.53	122.49	114.00
34	BA	644	G	N9-C1'-C2'	-6.53	104.82	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1786	A	N1-C6-N6	6.52	122.51	118.60
4	AD	215	LEU	CA-CB-CG	-6.50	100.34	115.30
1	AA	2447	G	OP2-P-O3'	6.50	119.50	105.20
34	BA	974	A	N1-C6-N6	6.50	122.50	118.60
34	BA	172	A	O3'-P-O5'	-6.49	91.67	104.00
1	AA	270(G)	C	O4'-C1'-N1	6.48	113.39	108.20
1	AA	2320	A	N9-C1'-C2'	6.47	122.41	114.00
1	AA	1815	A	N9-C1'-C2'	6.47	122.41	114.00
1	AA	1604	C	O4'-C1'-N1	6.46	113.37	108.20
1	AA	725	G	N9-C1'-C2'	6.46	122.40	114.00
14	AN	82	ARG	N-CA-C	-6.44	93.61	111.00
1	AA	2726	U	N1-C1'-C2'	6.40	122.32	114.00
34	BA	37	U	N3-C4-O4	-6.40	114.92	119.40
34	BA	1341	U	N1-C1'-C2'	-6.40	104.96	112.00
34	BA	1193	G	N9-C1'-C2'	-6.40	104.96	112.00
17	AQ	60	THR	N-CA-C	-6.39	93.74	111.00
1	AA	2196	C	N1-C1'-C2'	6.39	122.31	114.00
34	BA	397	A	N1-C6-N6	6.39	122.43	118.60
34	BA	172	A	OP2-P-O3'	-6.38	91.16	105.20
34	BA	818	G	N9-C1'-C2'	6.36	122.27	114.00
1	AA	1367	A	N9-C1'-C2'	-6.35	105.01	112.00
34	BA	82	U	N3-C4-O4	-6.35	114.95	119.40
1	AA	265	A	C5-C6-N6	-6.34	118.62	123.70
7	AG	42	GLY	N-CA-C	6.34	128.96	113.10
34	BA	1100	C	N1-C1'-C2'	6.32	122.22	114.00
1	AA	2448	A	P-O3'-C3'	-6.32	112.11	119.70
1	AA	2522	U	C2-N1-C1'	6.32	125.28	117.70
29	Ac	37	ARG	N-CA-C	6.32	128.06	111.00
34	BA	1049	U	C2'-C3'-O3'	6.31	123.80	113.70
1	AA	1204	A	C4-N9-C1'	6.31	137.66	126.30
11	AK	51	PHE	N-CA-C	-6.31	93.97	111.00
1	AA	828	U	N1-C1'-C2'	6.30	122.19	114.00
34	BA	974	A	C4-N9-C1'	6.30	137.65	126.30
19	AS	98	GLU	N-CA-C	6.30	128.00	111.00
1	AA	101	G	N9-C1'-C2'	6.28	122.16	114.00
1	AA	607	U	C2-N1-C1'	-6.28	110.17	117.70
34	BA	760	G	N9-C1'-C2'	-6.27	105.10	112.00
37	BH	19	LEU	N-CA-C	-6.27	94.06	111.00
1	AA	488	G	N9-C1'-C2'	-6.27	105.11	112.00
1	AA	1060	U	P-O3'-C3'	-6.27	112.18	119.70
8	AH	111	HIS	N-CA-C	6.26	127.90	111.00
17	AQ	43	GLN	N-CA-C	-6.26	94.10	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	2460	U	C2-N1-C1'	6.25	125.21	117.70
1	AA	1956	U	C2-N1-C1'	6.25	125.20	117.70
4	AD	94	LEU	N-CA-C	-6.25	94.13	111.00
1	AA	265	A	C4-N9-C1'	6.24	137.54	126.30
11	AK	125	GLY	N-CA-C	-6.23	97.52	113.10
34	BA	1298	C	N1-C1'-C2'	6.23	122.10	114.00
1	AA	1950	G	O4'-C1'-N9	6.23	113.18	108.20
14	AN	125	LEU	CA-CB-CG	-6.23	100.98	115.30
34	BA	372	C	N1-C1'-C2'	6.22	122.09	114.00
1	AA	1941	C	O4'-C4'-C3'	-6.22	97.78	104.00
13	AM	59	LEU	CA-CB-CG	6.22	129.61	115.30
1	AA	1169	G	N9-C1'-C2'	-6.22	105.16	112.00
1	AA	745	G	N9-C1'-C2'	6.19	122.05	114.00
1	AA	1559	G	O4'-C1'-N9	-6.18	103.25	108.20
34	BA	528	C	N1-C1'-C2'	-6.18	105.20	112.00
52	BW	2	PRO	N-CA-C	6.17	128.16	112.10
14	AN	28	ALA	N-CA-C	-6.16	94.37	111.00
1	AA	494	G	N9-C1'-C2'	-6.16	105.23	112.00
31	Ae	35	GLN	N-CA-C	-6.15	94.39	111.00
1	AA	676	A	N9-C1'-C2'	6.15	121.99	114.00
4	AD	272	ALA	N-CA-C	6.15	127.59	111.00
1	AA	739	G	O4'-C1'-N9	6.14	113.11	108.20
34	BA	1054	C	O4'-C4'-C3'	-6.14	97.86	104.00
34	BA	1167	A	OP1-P-O3'	6.14	118.71	105.20
1	AA	2835	A	N9-C1'-C2'	6.14	121.98	114.00
1	AA	2198	A	N9-C1'-C2'	6.13	121.97	114.00
1	AA	2447	G	P-O3'-C3'	6.13	127.06	119.70
34	BA	530	G	N3-C4-N9	-6.13	122.32	126.00
1	AA	67	U	N1-C2-O2	6.13	127.09	122.80
34	BA	88	C	C1'-O4'-C4'	-6.11	105.01	109.90
5	AE	141	ILE	N-CA-C	6.10	127.47	111.00
34	BA	173	U	O3'-P-O5'	-6.10	92.42	104.00
34	BA	961	U	C5-C4-O4	-6.10	122.24	125.90
5	AE	5	LEU	N-CA-C	6.09	127.45	111.00
34	BA	974	A	C8-N9-C1'	-6.09	116.73	127.70
1	AA	562	U	N1-C1'-C2'	6.09	121.92	114.00
1	AA	741	G	C5'-C4'-C3'	6.09	125.74	116.00
1	AA	621	A	C5-C6-N1	-6.08	114.66	117.70
1	AA	1786	A	C4-C5-C6	6.08	120.04	117.00
1	AA	1324	G	N9-C1'-C2'	6.08	121.91	114.00
1	AA	1626	G	O4'-C1'-N9	6.08	113.07	108.20
34	BA	191(B)	G	N9-C1'-C2'	-6.08	105.31	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1418	G	N9-C1'-C2'	-6.07	105.32	112.00
38	BI	83	GLU	N-CA-C	-6.07	94.61	111.00
1	AA	2478	A	N9-C1'-C2'	-6.07	105.33	112.00
1	AA	1022	G	N9-C1'-C2'	6.07	121.89	114.00
1	AA	1161	C	N1-C1'-C2'	-6.05	105.34	112.00
34	BA	1481	U	O4'-C1'-N1	6.05	113.04	108.20
34	BA	319	G	N9-C1'-C2'	-6.04	105.36	112.00
23	AW	147	GLY	N-CA-C	-6.03	98.01	113.10
1	AA	1941	C	O4'-C1'-N1	6.03	113.02	108.20
1	AA	2092	U	N1-C1'-C2'	6.02	121.83	114.00
1	AA	1938	A	C8-N9-C1'	-6.01	116.88	127.70
1	AA	1626	G	N9-C1'-C2'	6.01	121.81	114.00
34	BA	973	G	OP1-P-O3'	-6.00	91.99	105.20
1	AA	787	U	C5'-C4'-O4'	6.00	116.31	109.10
1	AA	1809	A	C1'-O4'-C4'	-6.00	105.10	109.90
34	BA	397	A	C5'-C4'-C3'	-6.00	106.40	116.00
1	AA	1936	A	N9-C1'-C2'	6.00	121.80	114.00
1	AA	1746	G	N9-C1'-C2'	-5.99	105.42	112.00
5	AE	49	LEU	CA-CB-CG	5.99	129.07	115.30
1	AA	1602	U	N1-C1'-C2'	-5.97	105.43	112.00
1	AA	2597	G	N9-C1'-C2'	5.97	121.76	114.00
1	AA	265	A	C8-N9-C1'	-5.97	116.95	127.70
1	AA	637	A	N9-C1'-C2'	5.97	121.76	114.00
1	AA	2471	C	N1-C1'-C2'	-5.97	105.44	112.00
34	BA	853	G	O4'-C1'-N9	5.96	112.97	108.20
1	AA	1310	G	C5'-C4'-O4'	5.95	116.24	109.10
1	AA	746	A	N9-C1'-C2'	-5.95	105.46	112.00
1	AA	607	U	C6-N1-C1'	5.94	129.52	121.20
1	AA	791	C	O4'-C1'-N1	5.92	112.94	108.20
34	BA	301	G	N9-C1'-C2'	-5.92	105.49	112.00
35	BF	98	LEU	CA-CB-CG	5.92	128.90	115.30
1	AA	1947	C	C5'-C4'-C3'	-5.91	106.54	116.00
9	AI	145	PRO	N-CA-CB	5.91	110.39	103.30
1	AA	730	C	C5'-C4'-O4'	5.90	116.18	109.10
1	AA	1533	C	N1-C1'-C2'	-5.90	105.51	112.00
34	BA	402	G	N9-C1'-C2'	-5.90	105.51	112.00
34	BA	484	G	C2'-C3'-O3'	5.90	123.14	113.70
35	BF	118	LEU	CA-CB-CG	5.90	128.87	115.30
1	AA	49	A	N9-C1'-C2'	-5.90	105.51	112.00
1	AA	2431	U	O4'-C1'-N1	5.89	112.92	108.20
5	AE	146	THR	N-CA-C	-5.89	95.10	111.00
1	AA	1791	A	N9-C1'-C2'	5.89	121.65	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1625	C	C2-N1-C1'	5.88	125.27	118.80
1	AA	2821	A	N9-C1'-C2'	-5.88	105.53	112.00
1	AA	1379	A	N9-C1'-C2'	5.88	121.64	114.00
1	AA	2681	C	N1-C1'-C2'	5.87	121.63	114.00
1	AA	1128	A	C5'-C4'-C3'	5.87	125.39	116.00
5	AE	195	LEU	N-CA-C	5.86	126.83	111.00
1	AA	1786	A	C6-C5-N7	-5.86	128.20	132.30
36	BG	188	LEU	CA-CB-CG	5.86	128.77	115.30
2	AB	50	G	N9-C1'-C2'	-5.85	105.57	112.00
1	AA	2255	G	C5'-C4'-O4'	5.84	116.11	109.10
43	BN	8	LEU	CA-CB-CG	5.83	128.72	115.30
34	BA	1294	G	N9-C1'-C2'	-5.83	105.59	112.00
6	AF	60	SER	N-CA-C	-5.83	95.26	111.00
1	AA	2781	A	N9-C1'-C2'	-5.82	105.59	112.00
34	BA	872	A	O4'-C1'-N9	5.82	112.86	108.20
34	BA	80	G	N9-C1'-C2'	5.82	121.57	114.00
5	AE	158	GLY	N-CA-C	5.82	127.64	113.10
16	AP	65	VAL	N-CA-C	-5.81	95.31	111.00
41	BL	134	ILE	CB-CA-C	-5.81	99.98	111.60
1	AA	650	C	N1-C1'-C2'	5.81	121.55	114.00
1	AA	1313	U	C2-N1-C1'	5.81	124.67	117.70
1	AA	2614	A	N9-C1'-C2'	5.80	121.55	114.00
34	BA	590	C	N1-C1'-C2'	-5.80	105.62	112.00
5	AE	25	VAL	CB-CA-C	-5.80	100.39	111.40
11	AK	77	GLY	N-CA-C	-5.80	98.61	113.10
34	BA	397	A	C6-N1-C2	-5.80	115.12	118.60
34	BA	1029	G	N9-C1'-C2'	-5.79	105.63	112.00
1	AA	196	A	O4'-C1'-N9	5.79	112.83	108.20
1	AA	2613	U	N1-C1'-C2'	5.79	121.53	114.00
23	AW	144	LEU	CA-CB-CG	5.78	128.60	115.30
12	AL	4	PRO	N-CA-C	-5.77	97.09	112.10
1	AA	427	U	C5-C4-O4	-5.76	122.44	125.90
26	AZ	27	GLY	N-CA-C	-5.76	98.70	113.10
1	AA	2746	U	N1-C1'-C2'	-5.75	105.68	112.00
34	BA	1336	C	O4'-C1'-N1	5.75	112.80	108.20
1	AA	1440	G	N9-C1'-C2'	-5.75	105.68	112.00
1	AA	1530	G	C5-C6-O6	5.75	132.05	128.60
1	AA	446	G	N9-C1'-C2'	5.73	121.45	114.00
1	AA	687	C	N1-C2-O2	5.73	122.34	118.90
1	AA	2491	U	C4'-C3'-O3'	5.73	124.46	113.00
23	AW	39	VAL	N-CA-C	5.72	126.44	111.00
34	BA	115	G	N9-C1'-C2'	5.72	121.43	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
31	Ae	49	VAL	CB-CA-C	-5.71	100.54	111.40
41	BL	100	ILE	N-CA-C	-5.71	95.58	111.00
5	AE	195	LEU	CA-CB-CG	-5.71	102.17	115.30
1	AA	662	G	N9-C1'-C2'	-5.71	105.72	112.00
34	BA	372	C	C2'-C3'-O3'	5.70	122.83	113.70
1	AA	1204	A	C8-N9-C1'	-5.69	117.45	127.70
1	AA	1980	G	N9-C1'-C2'	5.69	121.40	114.00
34	BA	1139	G	N9-C1'-C2'	5.69	121.39	114.00
1	AA	2267	A	O4'-C1'-N9	5.68	112.75	108.20
38	BI	31	LEU	CA-CB-CG	5.68	128.37	115.30
34	BA	833	U	C2-N3-C4	-5.68	123.59	127.00
14	AN	111	GLU	N-CA-C	5.67	126.32	111.00
1	AA	946	G	N9-C1'-C2'	-5.67	105.76	112.00
1	AA	1786	A	C5-C6-N1	5.67	120.53	117.70
1	AA	740	U	O5'-P-OP1	-5.67	100.60	105.70
1	AA	1420	U	N1-C1'-C2'	5.67	121.37	114.00
34	BA	146	G	N9-C1'-C2'	-5.67	105.77	112.00
1	AA	1489	U	C5'-C4'-O4'	5.66	115.90	109.10
34	BA	638	G	N9-C1'-C2'	-5.66	105.77	112.00
1	AA	687	C	N1-C1'-C2'	5.66	121.36	114.00
17	AQ	57	PHE	N-CA-C	5.66	126.28	111.00
1	AA	2761	G	C5'-C4'-C3'	5.64	125.03	116.00
14	AN	71	ASP	N-CA-C	5.64	126.23	111.00
1	AA	1786	A	N3-C4-N9	5.64	131.91	127.40
1	AA	2517	C	N1-C1'-C2'	5.63	121.32	114.00
1	AA	2256	G	O4'-C1'-N9	-5.63	103.70	108.20
1	AA	1359	A	C5-C6-N6	-5.62	119.20	123.70
34	BA	1004	A	C2'-C3'-O3'	5.61	122.68	113.70
1	AA	1625	C	O4'-C1'-N1	-5.61	103.72	108.20
34	BA	13	U	C5'-C4'-O4'	5.61	115.83	109.10
34	BA	1185	G	N9-C1'-C2'	-5.61	105.83	112.00
11	AK	49	GLY	N-CA-C	-5.60	99.10	113.10
8	AH	165	ALA	N-CA-C	-5.60	95.89	111.00
34	BA	209	U	N1-C1'-C2'	5.60	121.28	114.00
16	AP	62	LYS	N-CA-C	5.59	126.09	111.00
1	AA	2861	G	O4'-C1'-N9	5.59	112.67	108.20
1	AA	606	U	C5-C4-O4	-5.59	122.55	125.90
1	AA	2491	U	C2-N3-C4	-5.58	123.65	127.00
5	AE	52	LEU	CA-CB-CG	5.58	128.14	115.30
1	AA	444	C	N1-C1'-C2'	-5.58	105.86	112.00
1	AA	2458	G	N9-C1'-C2'	5.57	121.25	114.00
1	AA	978	G	C8-N9-C1'	5.57	134.24	127.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1183	G	N9-C1'-C2'	5.57	121.24	114.00
6	AF	13	SER	N-CA-C	-5.57	95.96	111.00
40	BK	132	GLY	N-CA-C	5.57	127.02	113.10
1	AA	587	C	N1-C1'-C2'	5.57	121.24	114.00
1	AA	602	G	N9-C1'-C2'	5.57	121.23	114.00
34	BA	853	G	C5-C6-O6	5.56	131.94	128.60
1	AA	1667	G	C1'-O4'-C4'	-5.56	105.45	109.90
1	AA	2414	G	N9-C1'-C2'	-5.56	105.89	112.00
1	AA	2472	G	C5'-C4'-C3'	-5.56	107.11	116.00
19	AS	56	SER	N-CA-C	5.56	126.00	111.00
34	BA	767	A	N9-C1'-C2'	-5.55	105.89	112.00
1	AA	1424	G	N9-C1'-C2'	-5.55	105.90	112.00
29	Ac	22	ALA	N-CA-C	5.54	125.97	111.00
27	Aa	5	ILE	CB-CA-C	-5.54	100.52	111.60
31	Ae	17	THR	N-CA-C	-5.54	96.05	111.00
6	AF	47	GLY	N-CA-C	5.53	126.92	113.10
19	AS	49	THR	C-N-CD	-5.53	108.44	120.60
1	AA	834	C	N1-C1'-C2'	-5.52	105.92	112.00
1	AA	1191	G	N9-C1'-C2'	-5.52	105.92	112.00
34	BA	723	U	N1-C1'-C2'	5.52	121.18	114.00
1	AA	791	C	N1-C1'-C2'	5.52	121.18	114.00
1	AA	1559	G	N9-C1'-C2'	-5.52	105.92	112.00
1	AA	2111	C	N1-C1'-C2'	5.52	121.18	114.00
1	AA	1253	A	N9-C1'-C2'	5.52	121.18	114.00
1	AA	805	G	N9-C1'-C2'	-5.52	105.93	112.00
34	BA	156	G	N9-C1'-C2'	-5.52	105.93	112.00
17	AQ	72	VAL	N-CA-C	-5.52	96.11	111.00
34	BA	1124	G	N9-C1'-C2'	5.52	121.17	114.00
1	AA	1785	A	N9-C1'-C2'	5.51	121.16	114.00
12	AL	6	THR	N-CA-C	5.51	125.87	111.00
51	BV	52	PRO	N-CA-C	5.51	126.42	112.10
1	AA	1800	C	O4'-C4'-C3'	-5.50	98.50	104.00
4	AD	44	ASN	N-CA-C	-5.50	96.14	111.00
34	BA	833	U	N1-C2-O2	-5.50	118.95	122.80
34	BA	242	C	N1-C1'-C2'	-5.50	105.95	112.00
1	AA	631	A	N9-C1'-C2'	-5.50	105.95	112.00
34	BA	1028(A)	C	N1-C1'-C2'	-5.50	105.95	112.00
27	Aa	52	THR	N-CA-C	5.49	125.83	111.00
1	AA	141	A	N9-C1'-C2'	-5.49	105.96	112.00
45	BP	119	LYS	N-CA-C	-5.48	96.21	111.00
37	BH	9	CYS	CA-CB-SG	5.48	123.86	114.00
1	AA	2158	A	N9-C1'-C2'	5.47	121.11	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	2491	U	C2-N1-C1'	5.47	124.27	117.70
35	BF	61	LEU	CA-CB-CG	5.47	127.88	115.30
1	AA	2285	C	N1-C1'-C2'	-5.47	105.98	112.00
34	BA	243	A	N9-C1'-C2'	5.46	121.10	114.00
34	BA	1084	G	N9-C1'-C2'	5.45	121.08	114.00
1	AA	1970	A	C5'-C4'-O4'	5.45	115.64	109.10
16	AP	23	ARG	N-CA-C	5.45	125.70	111.00
1	AA	763	G	O4'-C4'-C3'	-5.44	98.56	104.00
22	AV	52	SER	N-CA-C	-5.43	96.34	111.00
34	BA	682	G	N9-C1'-C2'	-5.42	106.04	112.00
41	BL	80	ILE	N-CA-C	-5.42	96.37	111.00
15	AO	38	VAL	C-N-CD	5.41	139.76	128.40
1	AA	1142	U	O4'-C1'-N1	5.41	112.53	108.20
13	AM	88	LEU	N-CA-C	5.41	125.60	111.00
27	Aa	19	GLY	N-CA-C	-5.41	99.58	113.10
1	AA	2040	C	N1-C1'-C2'	-5.41	106.05	112.00
34	BA	106	C	N1-C1'-C2'	-5.40	106.06	112.00
27	Aa	13	ARG	N-CA-C	5.40	125.58	111.00
8	AH	111	HIS	C-N-CD	5.39	139.73	128.40
1	AA	2885	C	N1-C1'-C2'	-5.39	106.07	112.00
1	AA	2867	G	N9-C1'-C2'	5.39	121.00	114.00
1	AA	1600	C	N1-C1'-C2'	-5.39	106.07	112.00
1	AA	1544	C	N1-C1'-C2'	5.37	120.99	114.00
1	AA	192	C	O4'-C1'-N1	5.37	112.50	108.20
1	AA	1416	G	N9-C1'-C2'	5.37	120.98	114.00
34	BA	88	C	C2-N1-C1'	-5.37	112.90	118.80
34	BA	753	A	N9-C1'-C2'	5.36	120.96	114.00
34	BA	13	U	O4'-C1'-N1	-5.35	103.92	108.20
40	BK	76	ARG	N-CA-C	-5.35	96.55	111.00
1	AA	2705	A	N9-C1'-C2'	-5.35	106.12	112.00
34	BA	1011	G	N9-C1'-C2'	-5.35	106.12	112.00
1	AA	1186	G	O4'-C1'-N9	-5.34	103.93	108.20
1	AA	688	U	C2-N3-C4	-5.34	123.80	127.00
19	AS	66	ARG	N-CA-C	5.34	125.41	111.00
12	AL	68	GLU	N-CA-C	-5.33	96.60	111.00
1	AA	2399	G	N9-C1'-C2'	-5.33	106.14	112.00
17	AQ	45	PHE	N-CA-C	-5.33	96.61	111.00
1	AA	2777	G	O4'-C1'-N9	-5.33	103.94	108.20
1	AA	366	C	N1-C1'-C2'	-5.33	106.14	112.00
5	AE	43	GLY	N-CA-C	-5.33	99.78	113.10
1	AA	1534	G	N9-C1'-C2'	-5.33	106.14	112.00
1	AA	532	A	N9-C1'-C2'	5.32	120.92	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1956	U	C5-C4-O4	-5.32	122.71	125.90
1	AA	2500	U	P-O3'-C3'	5.32	126.09	119.70
34	BA	529	G	N9-C1'-C2'	-5.32	106.15	112.00
1	AA	987	G	N9-C1'-C2'	-5.32	106.15	112.00
1	AA	400	G	N9-C1'-C2'	-5.32	106.15	112.00
1	AA	2787	C	O4'-C1'-N1	5.32	112.45	108.20
1	AA	15	G	N9-C1'-C2'	-5.31	106.15	112.00
34	BA	88	C	N1-C1'-C2'	5.31	120.90	114.00
50	BU	61	GLU	N-CA-C	-5.31	96.67	111.00
1	AA	1968	G	N9-C1'-C2'	-5.31	106.16	112.00
4	AD	70	TRP	N-CA-C	-5.30	96.70	111.00
26	AZ	38	GLU	N-CA-C	-5.29	96.70	111.00
1	AA	1020	A	N9-C1'-C2'	-5.29	106.18	112.00
1	AA	1127	A	N9-C1'-C2'	-5.29	106.18	112.00
1	AA	1762	A	N9-C1'-C2'	-5.29	106.18	112.00
36	BG	52	LEU	CA-CB-CG	5.28	127.44	115.30
1	AA	2448	A	OP1-P-O3'	5.27	116.80	105.20
1	AA	1230	C	N1-C1'-C2'	-5.27	106.20	112.00
1	AA	2461	C	N1-C2-O2	5.27	122.06	118.90
1	AA	774	A	N9-C1'-C2'	5.27	120.85	114.00
1	AA	2094	G	O4'-C1'-N9	5.27	112.41	108.20
32	Af	14	CYS	CA-CB-SG	-5.27	104.52	114.00
1	AA	1964	G	N9-C1'-C2'	5.27	120.85	114.00
12	AL	120	GLU	N-CA-C	5.26	125.21	111.00
11	AK	116	LEU	CA-CB-CG	-5.26	103.19	115.30
1	AA	698	C	N1-C1'-C2'	5.26	120.84	114.00
1	AA	2358	G	N9-C1'-C2'	-5.26	106.21	112.00
34	BA	37	U	N1-C1'-C2'	-5.26	106.22	112.00
34	BA	815	A	C1'-O4'-C4'	-5.26	105.69	109.90
1	AA	1005	C	N1-C1'-C2'	5.25	120.83	114.00
1	AA	2249	U	N1-C1'-C2'	5.25	120.83	114.00
34	BA	575	G	N9-C1'-C2'	5.25	120.83	114.00
11	AK	80	GLY	N-CA-C	-5.25	99.98	113.10
1	AA	2464	C	N1-C1'-C2'	-5.24	106.23	112.00
1	AA	1359	A	N1-C6-N6	5.24	121.75	118.60
14	AN	125	LEU	C-N-CA	-5.24	100.00	122.00
49	BT	16	HIS	N-CA-C	-5.24	96.86	111.00
1	AA	351	G	N9-C1'-C2'	5.23	120.80	114.00
10	AJ	21	PRO	C-N-CD	5.23	139.38	128.40
15	AO	69	ASP	N-CA-C	5.23	125.11	111.00
50	BU	104	LYS	N-CA-C	5.22	125.11	111.00
34	BA	226	G	C1'-O4'-C4'	-5.22	105.72	109.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	2724	C	O4'-C1'-N1	5.22	112.37	108.20
12	AL	102	VAL	N-CA-C	5.21	125.08	111.00
1	AA	463	G	N9-C1'-C2'	-5.21	106.27	112.00
22	AV	46	LYS	N-CA-C	5.21	125.08	111.00
1	AA	2195	C	N1-C1'-C2'	5.21	120.77	114.00
1	AA	2243	U	N1-C1'-C2'	5.21	120.78	114.00
12	AL	61	VAL	N-CA-C	5.21	125.07	111.00
45	BP	59	ARG	N-CA-C	-5.21	96.93	111.00
34	BA	1271	G	N9-C1'-C2'	-5.21	106.27	112.00
1	AA	1956	U	C6-N1-C1'	-5.21	113.91	121.20
1	AA	1993	U	C2-N1-C1'	5.20	123.94	117.70
1	AA	2493	U	N1-C1'-C2'	-5.20	106.28	112.00
34	BA	1310	G	N9-C1'-C2'	-5.20	106.28	112.00
4	AD	260	ARG	N-CA-C	-5.19	96.98	111.00
27	Aa	43	TYR	CA-CB-CG	5.19	123.27	113.40
28	Ab	41	PRO	N-CA-C	-5.19	98.60	112.10
2	AB	90	C	C5'-C4'-O4'	5.19	115.33	109.10
34	BA	5	U	OP1-P-OP2	-5.19	111.81	119.60
1	AA	1635	G	C2'-C3'-O3'	5.19	122.00	113.70
31	Ae	51	ALA	N-CA-C	-5.18	97.01	111.00
1	AA	1510	A	N9-C1'-C2'	5.18	120.73	114.00
1	AA	2491	U	C6-N1-C2	-5.18	117.89	121.00
8	AH	130	ARG	N-CA-C	-5.17	97.03	111.00
19	AS	12	TYR	N-CA-C	5.17	124.97	111.00
1	AA	1694	C	O4'-C1'-N1	5.17	112.33	108.20
27	Aa	31	ILE	N-CA-C	5.17	124.96	111.00
1	AA	860	U	C5-C4-O4	-5.17	122.80	125.90
17	AQ	63	VAL	N-CA-C	-5.17	97.05	111.00
1	AA	2431	U	O4'-C4'-C3'	-5.16	98.84	104.00
1	AA	2027	G	C5'-C4'-C3'	5.16	124.25	116.00
7	AG	48	GLU	N-CA-C	-5.15	97.09	111.00
34	BA	173	U	OP1-P-O3'	5.15	116.53	105.20
1	AA	1012	U	O4'-C4'-C3'	-5.15	98.85	104.00
17	AQ	49	VAL	N-CA-C	-5.14	97.11	111.00
23	AW	179	ASP	N-CA-C	5.14	124.88	111.00
34	BA	307	C	O4'-C1'-N1	-5.14	104.09	108.20
20	AT	76	VAL	N-CA-C	5.14	124.87	111.00
34	BA	586	C	N1-C1'-C2'	-5.14	106.35	112.00
34	BA	1148	U	N1-C1'-C2'	5.14	120.68	114.00
1	AA	775	G	C4-N9-C1'	5.13	133.18	126.50
12	AL	56	ASP	N-CA-CB	-5.13	101.36	110.60
14	AN	34	LEU	CA-CB-CG	-5.13	103.49	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
24	AX	26	TYR	N-CA-C	5.13	124.86	111.00
5	AE	147	PRO	N-CA-C	-5.13	98.76	112.10
1	AA	930	U	C5'-C4'-O4'	-5.13	102.95	109.10
12	AL	22	ILE	N-CA-C	-5.12	97.16	111.00
27	Aa	30	GLU	N-CA-C	-5.12	97.16	111.00
1	AA	212	G	N9-C1'-C2'	-5.12	106.37	112.00
34	BA	1210	C	O4'-C1'-N1	5.12	112.30	108.20
1	AA	643	A	N9-C1'-C2'	5.12	120.66	114.00
1	AA	1477	A	N9-C1'-C2'	5.12	120.65	114.00
1	AA	1706	U	N1-C1'-C2'	5.12	120.65	114.00
1	AA	283	A	O4'-C1'-N9	-5.12	104.11	108.20
35	BF	187	LEU	N-CA-C	-5.11	97.19	111.00
5	AE	65	GLY	N-CA-C	-5.11	100.32	113.10
40	BK	8	GLU	N-CA-C	5.11	124.80	111.00
1	AA	2510	C	C5'-C4'-O4'	5.11	115.23	109.10
7	AG	68	PRO	N-CA-C	5.11	125.38	112.10
1	AA	1746	G	O4'-C4'-C3'	-5.11	98.89	104.00
55	CA	559	PRO	C-N-CD	5.11	139.13	128.40
1	AA	1956	U	C5'-C4'-C3'	-5.11	107.83	116.00
2	AB	56	G	C2'-C3'-O3'	5.10	121.86	113.70
11	AK	104	LYS	N-CA-C	-5.10	97.23	111.00
10	AJ	53	VAL	C-N-CD	5.09	139.10	128.40
34	BA	423	G	N9-C1'-C2'	5.09	120.62	114.00
10	AJ	12	LEU	C-N-CD	5.09	139.09	128.40
1	AA	728	G	N9-C1'-C2'	5.09	120.61	114.00
46	BQ	96	LEU	C-N-CD	5.08	139.07	128.40
1	AA	2894	G	N9-C1'-C2'	5.08	120.61	114.00
19	AS	40	LEU	N-CA-C	-5.08	97.28	111.00
55	CA	136	ARG	C-N-CD	5.08	139.07	128.40
1	AA	265	A	C4-C5-C6	5.08	119.54	117.00
1	AA	2302	G	N9-C1'-C2'	-5.08	106.41	112.00
55	CA	196	ALA	C-N-CD	5.08	139.06	128.40
55	CA	184	THR	C-N-CD	5.08	139.06	128.40
1	AA	2061	G	N9-C1'-C2'	5.07	120.60	114.00
1	AA	1240	U	N3-C4-O4	-5.07	115.85	119.40
55	CA	194	VAL	C-N-CD	5.07	139.05	128.40
1	AA	573	G	N9-C1'-C2'	5.07	120.59	114.00
1	AA	1266	G	C5'-C4'-C3'	5.07	124.11	116.00
1	AA	2425	A	O4'-C1'-N9	5.07	112.25	108.20
2	AB	-1	A	OP1-P-OP2	-5.07	112.00	119.60
52	BW	58	VAL	C-N-CD	5.07	139.04	128.40
55	CA	104	GLY	C-N-CD	5.07	139.04	128.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	2448	A	C5'-C4'-C3'	-5.07	107.90	116.00
34	BA	906	G	N9-C1'-C2'	-5.07	106.43	112.00
34	BA	1230	C	N1-C1'-C2'	-5.07	106.43	112.00
38	BI	97	GLY	N-CA-C	-5.07	100.44	113.10
55	CA	203	GLY	C-N-CD	5.07	139.04	128.40
55	CA	398	GLU	C-N-CD	5.07	139.04	128.40
55	CA	430	ASN	C-N-CD	5.07	139.04	128.40
1	AA	1559	G	C3'-C2'-C1'	-5.06	97.45	101.50
55	CA	316	SER	C-N-CD	5.06	139.03	128.40
34	BA	741	G	N9-C1'-C2'	-5.06	106.43	112.00
1	AA	270(E)	G	O4'-C1'-N9	5.06	112.25	108.20
10	AJ	71	THR	C-N-CD	5.06	139.03	128.40
34	BA	491	G	N9-C1'-C2'	-5.06	106.44	112.00
46	BQ	112	GLY	C-N-CD	5.06	139.03	128.40
1	AA	647	G	N9-C1'-C2'	5.06	120.58	114.00
14	AN	123	HIS	N-CA-C	-5.06	97.35	111.00
45	BP	27	LEU	CA-CB-CG	5.06	126.94	115.30
55	CA	304	GLU	C-N-CD	5.06	139.02	128.40
55	CA	443	ILE	C-N-CD	5.06	139.02	128.40
55	CA	603	ALA	C-N-CD	5.06	139.02	128.40
1	AA	66	C	N1-C1'-C2'	-5.06	106.44	112.00
1	AA	150	C	N1-C1'-C2'	5.06	120.57	114.00
23	AW	61	LEU	C-N-CD	-5.05	109.48	120.60
1	AA	1429	G	N9-C1'-C2'	5.05	120.57	114.00
37	BH	31	CYS	CA-CB-SG	5.05	123.09	114.00
47	BR	24	CYS	CA-CB-SG	5.05	123.09	114.00
1	AA	95	G	N9-C1'-C2'	-5.05	106.45	112.00
10	AJ	20	ALA	C-N-CD	5.05	139.00	128.40
10	AJ	90	LYS	C-N-CD	5.05	139.00	128.40
13	AM	42	SER	N-CA-C	5.04	124.62	111.00
55	CA	297	LEU	C-N-CD	5.04	138.99	128.40
10	AJ	112	MET	C-N-CD	5.04	138.99	128.40
55	CA	384	ARG	C-N-CD	5.04	138.99	128.40
1	AA	1516	U	N3-C4-O4	-5.04	115.87	119.40
2	AB	74	U	N1-C1'-C2'	-5.04	106.46	112.00
10	AJ	18	THR	C-N-CD	5.04	138.97	128.40
1	AA	1199	U	N1-C1'-C2'	5.03	120.54	114.00
34	BA	166	G	N9-C1'-C2'	-5.03	106.46	112.00
1	AA	2447	G	O5'-P-OP1	-5.03	101.17	105.70
36	BG	197	GLY	N-CA-C	5.03	125.68	113.10
34	BA	13	U	C2-N1-C1'	5.03	123.73	117.70
1	AA	1778	U	C2'-C3'-O3'	5.03	121.74	113.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	125	G	N9-C1'-C2'	5.02	120.53	114.00
34	BA	13	U	N1-C1'-C2'	5.02	120.53	114.00
34	BA	226	G	N9-C1'-C2'	-5.02	106.48	112.00
34	BA	1346	A	C5'-C4'-O4'	5.02	115.12	109.10
34	BA	1048	G	N9-C1'-C2'	-5.01	106.49	112.00
1	AA	2135	A	O4'-C1'-N9	-5.01	104.19	108.20
49	BT	19	ILE	N-CA-C	-5.00	97.49	111.00
1	AA	869	G	C5'-C4'-C3'	5.00	124.00	116.00
1	AA	1667	G	C4'-C3'-C2'	-5.00	97.60	102.60
4	AD	80	ALA	N-CA-C	-5.00	97.50	111.00

There are no chirality outliers.

All (633) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	1000	A	Sidechain
1	AA	1012	U	Sidechain
1	AA	1018	C	Sidechain
1	AA	1020	A	Sidechain
1	AA	1022	G	Sidechain
1	AA	1024	G	Sidechain
1	AA	1026	U	Sidechain
1	AA	1092	C	Sidechain
1	AA	1099	G	Sidechain
1	AA	1101	U	Sidechain
1	AA	1102	C	Sidechain
1	AA	1104	C	Sidechain
1	AA	1113	U	Sidechain
1	AA	1116	C	Sidechain
1	AA	1133	U	Sidechain
1	AA	114	U	Sidechain
1	AA	1141	U	Sidechain
1	AA	1142	U	Sidechain
1	AA	1143	A	Sidechain
1	AA	1154	G	Sidechain
1	AA	1155	A	Sidechain
1	AA	1160	G	Sidechain
1	AA	1179	C	Sidechain
1	AA	1182	A	Sidechain
1	AA	1183	G	Sidechain
1	AA	1194	A	Sidechain
1	AA	1195	G	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	1206	G	Sidechain
1	AA	1238	G	Sidechain
1	AA	1240	U	Sidechain
1	AA	1242	A	Sidechain
1	AA	1247	A	Sidechain
1	AA	1262	A	Sidechain
1	AA	1269	A	Sidechain
1	AA	1273	U	Sidechain
1	AA	1284	A	Sidechain
1	AA	1288	U	Sidechain
1	AA	1297	C	Sidechain
1	AA	1301	A	Sidechain
1	AA	1310	G	Sidechain
1	AA	135	G	Sidechain
1	AA	1357	U	Sidechain
1	AA	1359	A	Sidechain
1	AA	1363	C	Sidechain
1	AA	1367	A	Sidechain
1	AA	1368	G	Sidechain
1	AA	1372	U	Sidechain
1	AA	1379	A	Sidechain
1	AA	138	G	Sidechain
1	AA	1384	A	Sidechain
1	AA	1392	A	Sidechain
1	AA	1393	A	Sidechain
1	AA	1397	U	Sidechain
1	AA	14	A	Sidechain
1	AA	1405	U	Sidechain
1	AA	141(A)	C	Sidechain
1	AA	1416	G	Sidechain
1	AA	1418	G	Sidechain
1	AA	1444(A)	A	Sidechain
1	AA	1450	C	Sidechain
1	AA	1473	G	Sidechain
1	AA	1474	C	Sidechain
1	AA	1477	A	Sidechain
1	AA	1478	G	Sidechain
1	AA	1479	G	Sidechain
1	AA	1489	U	Sidechain
1	AA	1497	U	Sidechain
1	AA	1513	C	Sidechain
1	AA	1515	C	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	1516	U	Sidechain
1	AA	1523	U	Sidechain
1	AA	1525	G	Sidechain
1	AA	1527	G	Sidechain
1	AA	1532	C	Sidechain
1	AA	1537	C	Sidechain
1	AA	1539	G	Sidechain
1	AA	1541	U	Sidechain
1	AA	1559	G	Sidechain
1	AA	1564	C	Sidechain
1	AA	1565	C	Sidechain
1	AA	1568	G	Sidechain
1	AA	1574	C	Sidechain
1	AA	1576	U	Sidechain
1	AA	1590	U	Sidechain
1	AA	1597	A	Sidechain
1	AA	1604	C	Sidechain
1	AA	1606	G	Sidechain
1	AA	1609	A	Sidechain
1	AA	1623	G	Sidechain
1	AA	1625	C	Sidechain
1	AA	1648	C	Sidechain
1	AA	1651	G	Sidechain
1	AA	1655	A	Sidechain
1	AA	1657	C	Sidechain
1	AA	1659	U	Sidechain
1	AA	1661	G	Sidechain
1	AA	1667	G	Sidechain
1	AA	1677	A	Sidechain
1	AA	1681	G	Sidechain
1	AA	1684	C	Sidechain
1	AA	1685	C	Sidechain
1	AA	1686	C	Sidechain
1	AA	1687	G	Sidechain
1	AA	1688	U	Sidechain
1	AA	1691	C	Sidechain
1	AA	1693	U	Sidechain
1	AA	1694	C	Sidechain
1	AA	1699	G	Sidechain
1	AA	1704	G	Sidechain
1	AA	1711	C	Sidechain
1	AA	1716	U	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	1718	G	Sidechain
1	AA	1727	U	Sidechain
1	AA	1735	C	Sidechain
1	AA	1741	C	Sidechain
1	AA	1742	C	Sidechain
1	AA	1743	G	Sidechain
1	AA	176	G	Sidechain
1	AA	1766	U	Sidechain
1	AA	1768	U	Sidechain
1	AA	1774	C	Sidechain
1	AA	1775	U	Sidechain
1	AA	1776	G	Sidechain
1	AA	1777	U	Sidechain
1	AA	1778	U	Sidechain
1	AA	1779	U	Sidechain
1	AA	1780	A	Sidechain
1	AA	1783	A	Sidechain
1	AA	1786	A	Sidechain
1	AA	1790	C	Sidechain
1	AA	1791	A	Sidechain
1	AA	1794	U	Sidechain
1	AA	1798	U	Sidechain
1	AA	1800	C	Sidechain
1	AA	1808	U	Sidechain
1	AA	1809	A	Sidechain
1	AA	1810	A	Sidechain
1	AA	1815	A	Sidechain
1	AA	1822	G	Sidechain
1	AA	1831	G	Sidechain
1	AA	1843	C	Sidechain
1	AA	185	U	Sidechain
1	AA	188	G	Sidechain
1	AA	1902	C	Sidechain
1	AA	192	C	Sidechain
1	AA	1940	U	Sidechain
1	AA	1962	C	Sidechain
1	AA	1964	G	Sidechain
1	AA	1965	C	Sidechain
1	AA	1967	C	Sidechain
1	AA	1971	A	Sidechain
1	AA	1981	A	Sidechain
1	AA	1982	C	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	1983	C	Sidechain
1	AA	1985	G	Sidechain
1	AA	1989	G	Sidechain
1	AA	199	A	Sidechain
1	AA	1998	G	Sidechain
1	AA	2017	U	Sidechain
1	AA	2021	C	Sidechain
1	AA	2026	C	Sidechain
1	AA	2033	A	Sidechain
1	AA	2042	A	Sidechain
1	AA	2048	G	Sidechain
1	AA	2049	G	Sidechain
1	AA	2051	A	Sidechain
1	AA	2061	G	Sidechain
1	AA	2068	U	Sidechain
1	AA	2075	U	Sidechain
1	AA	2076	U	Sidechain
1	AA	2089	U	Sidechain
1	AA	2094	G	Sidechain
1	AA	2096	U	Sidechain
1	AA	2098	U	Sidechain
1	AA	2103	C	Sidechain
1	AA	2119	A	Sidechain
1	AA	212	G	Sidechain
1	AA	2126	A	Sidechain
1	AA	2130	U	Sidechain
1	AA	2138	C	Sidechain
1	AA	2148	G	Sidechain
1	AA	2161	C	Sidechain
1	AA	2185	C	Sidechain
1	AA	2189	U	Sidechain
1	AA	2190	G	Sidechain
1	AA	2193	G	Sidechain
1	AA	2195	C	Sidechain
1	AA	221	A	Sidechain
1	AA	2215	G	Sidechain
1	AA	224	G	Sidechain
1	AA	2246	G	Sidechain
1	AA	2259	G	Sidechain
1	AA	2262	U	Sidechain
1	AA	2263	C	Sidechain
1	AA	2265	U	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	2267	A	Sidechain
1	AA	2274	A	Sidechain
1	AA	2278	A	Sidechain
1	AA	2284	C	Sidechain
1	AA	2287	A	Sidechain
1	AA	2293	C	Sidechain
1	AA	2295	C	Sidechain
1	AA	2296	U	Sidechain
1	AA	2297	C	Sidechain
1	AA	2299	G	Sidechain
1	AA	2314	C	Sidechain
1	AA	2326	C	Sidechain
1	AA	2332	U	Sidechain
1	AA	2336	A	Sidechain
1	AA	2337	G	Sidechain
1	AA	2352	A	Sidechain
1	AA	2364	C	Sidechain
1	AA	237	C	Sidechain
1	AA	2384	G	Sidechain
1	AA	2395	C	Sidechain
1	AA	2399	G	Sidechain
1	AA	2406	U	Sidechain
1	AA	2408	U	Sidechain
1	AA	2413	G	Sidechain
1	AA	2422	A	Sidechain
1	AA	2423	U	Sidechain
1	AA	2425	A	Sidechain
1	AA	2427	C	Sidechain
1	AA	2431	U	Sidechain
1	AA	2432	A	Sidechain
1	AA	2433	A	Sidechain
1	AA	2434	A	Sidechain
1	AA	2435	A	Sidechain
1	AA	2436	G	Sidechain
1	AA	2439	A	Sidechain
1	AA	2444	G	Sidechain
1	AA	2449	U	Sidechain
1	AA	2450	A	Sidechain
1	AA	2458	G	Sidechain
1	AA	2467	C	Sidechain
1	AA	2471	C	Sidechain
1	AA	2480	C	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	2483	C	Sidechain
1	AA	2486	G	Sidechain
1	AA	2490	G	Sidechain
1	AA	2491	U	Sidechain
1	AA	2493	U	Sidechain
1	AA	2498	C	Sidechain
1	AA	25	U	Sidechain
1	AA	2500	U	Sidechain
1	AA	2501	C	Sidechain
1	AA	2504	U	Sidechain
1	AA	2505	G	Sidechain
1	AA	2507	C	Sidechain
1	AA	2508	G	Sidechain
1	AA	251	A	Sidechain
1	AA	2510	C	Sidechain
1	AA	2514	U	Sidechain
1	AA	2515	C	Sidechain
1	AA	2516	G	Sidechain
1	AA	2517	C	Sidechain
1	AA	2519	U	Sidechain
1	AA	2521	C	Sidechain
1	AA	2524	G	Sidechain
1	AA	2527	C	Sidechain
1	AA	2529	G	Sidechain
1	AA	253	C	Sidechain
1	AA	2530	A	Sidechain
1	AA	2537	U	Sidechain
1	AA	2540	C	Sidechain
1	AA	2555	U	Sidechain
1	AA	2560	C	Sidechain
1	AA	2568	C	Sidechain
1	AA	2569	G	Sidechain
1	AA	257	A	Sidechain
1	AA	2579	C	Sidechain
1	AA	2580	U	Sidechain
1	AA	2583	G	Sidechain
1	AA	2590	A	Sidechain
1	AA	2595	G	Sidechain
1	AA	2597	G	Sidechain
1	AA	2601	C	Sidechain
1	AA	2602	A	Sidechain
1	AA	2607	G	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	2608	G	Sidechain
1	AA	2609	U	Sidechain
1	AA	2613	U	Sidechain
1	AA	2615	U	Sidechain
1	AA	2619	C	Sidechain
1	AA	2623	G	Sidechain
1	AA	2629	A	Sidechain
1	AA	2637	U	Sidechain
1	AA	2642	G	Sidechain
1	AA	2645	G	Sidechain
1	AA	2684	U	Sidechain
1	AA	2687	U	Sidechain
1	AA	2698	U	Sidechain
1	AA	270(C)	C	Sidechain
1	AA	270(D)	C	Sidechain
1	AA	270(G)	C	Sidechain
1	AA	270(Q)	C	Sidechain
1	AA	2706	G	Sidechain
1	AA	2724	C	Sidechain
1	AA	2725	A	Sidechain
1	AA	273(C)	C	Sidechain
1	AA	273(D)	C	Sidechain
1	AA	2737	G	Sidechain
1	AA	2741	A	Sidechain
1	AA	2746	U	Sidechain
1	AA	2763	G	Sidechain
1	AA	2764	A	Sidechain
1	AA	2777	G	Sidechain
1	AA	2781	A	Sidechain
1	AA	2787	C	Sidechain
1	AA	280	C	Sidechain
1	AA	2816	C	Sidechain
1	AA	2817	G	Sidechain
1	AA	2825	C	Sidechain
1	AA	2853	C	Sidechain
1	AA	2867	G	Sidechain
1	AA	2885	C	Sidechain
1	AA	2887	U	Sidechain
1	AA	2891	G	Sidechain
1	AA	2897	U	Sidechain
1	AA	2898	U	Sidechain
1	AA	2901	C	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	296	C	Sidechain
1	AA	3	U	Sidechain
1	AA	31	C	Sidechain
1	AA	32	C	Sidechain
1	AA	322	A	Sidechain
1	AA	337	C	Sidechain
1	AA	350	U	Sidechain
1	AA	351	G	Sidechain
1	AA	353	G	Sidechain
1	AA	358	U	Sidechain
1	AA	360	G	Sidechain
1	AA	362	U	Sidechain
1	AA	366	C	Sidechain
1	AA	380	U	Sidechain
1	AA	383	U	Sidechain
1	AA	386	G	Sidechain
1	AA	417	C	Sidechain
1	AA	427	U	Sidechain
1	AA	433	C	Sidechain
1	AA	445	C	Sidechain
1	AA	446	G	Sidechain
1	AA	448	U	Sidechain
1	AA	459	U	Sidechain
1	AA	474	G	Sidechain
1	AA	511	U	Sidechain
1	AA	513	A	Sidechain
1	AA	514	A	Sidechain
1	AA	525	U	Sidechain
1	AA	534	U	Sidechain
1	AA	553	U	Sidechain
1	AA	584	C	Sidechain
1	AA	585	G	Sidechain
1	AA	601	C	Sidechain
1	AA	605	C	Sidechain
1	AA	606	U	Sidechain
1	AA	607	U	Sidechain
1	AA	608	A	Sidechain
1	AA	610	C	Sidechain
1	AA	611	C	Sidechain
1	AA	618(A)	C	Sidechain
1	AA	621	A	Sidechain
1	AA	639	U	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	641	C	Sidechain
1	AA	643	A	Sidechain
1	AA	646	A	Sidechain
1	AA	647	G	Sidechain
1	AA	650	C	Sidechain
1	AA	658	C	Sidechain
1	AA	67	U	Sidechain
1	AA	670	A	Sidechain
1	AA	679	C	Sidechain
1	AA	697	C	Sidechain
1	AA	703	U	Sidechain
1	AA	704	G	Sidechain
1	AA	709	U	Sidechain
1	AA	715	G	Sidechain
1	AA	724	U	Sidechain
1	AA	729	G	Sidechain
1	AA	730	C	Sidechain
1	AA	733	G	Sidechain
1	AA	744	G	Sidechain
1	AA	750	A	Sidechain
1	AA	758	C	Sidechain
1	AA	76	C	Sidechain
1	AA	762	U	Sidechain
1	AA	767	U	Sidechain
1	AA	774	A	Sidechain
1	AA	775	G	Sidechain
1	AA	776	G	Sidechain
1	AA	779	U	Sidechain
1	AA	786	C	Sidechain
1	AA	792	G	Sidechain
1	AA	795	C	Sidechain
1	AA	800	A	Sidechain
1	AA	801	G	Sidechain
1	AA	805	G	Sidechain
1	AA	807	U	Sidechain
1	AA	811	U	Sidechain
1	AA	821	A	Sidechain
1	AA	830	G	Sidechain
1	AA	832	G	Sidechain
1	AA	835	A	Sidechain
1	AA	843	G	Sidechain
1	AA	847	U	Sidechain

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Mol	Chain	Res	Type	Group
1	AA	848	G	Sidechain
1	AA	858	U	Sidechain
1	AA	860	U	Sidechain
1	AA	865	C	Sidechain
1	AA	9	U	Sidechain
1	AA	913	U	Sidechain
1	AA	915	C	Sidechain
1	AA	922	U	Sidechain
1	AA	924	C	Sidechain
1	AA	930	U	Sidechain
1	AA	931	G	Sidechain
1	AA	944	G	Sidechain
1	AA	946	G	Sidechain
1	AA	955	C	Sidechain
1	AA	965	C	Sidechain
1	AA	969	U	Sidechain
1	AA	971	C	Sidechain
1	AA	972	G	Sidechain
1	AA	974(A)	C	Sidechain
1	AA	978	G	Sidechain
1	AA	980	A	Sidechain
1	AA	981	A	Sidechain
1	AA	986	C	Sidechain
1	AA	987	G	Sidechain
1	AA	990	A	Sidechain
2	AB	10	C	Sidechain
2	AB	101	A	Sidechain
2	AB	109	G	Sidechain
2	AB	11	C	Sidechain
2	AB	33	G	Sidechain
2	AB	34	U	Sidechain
2	AB	55	U	Sidechain
2	AB	60	C	Sidechain
2	AB	7	G	Sidechain
2	AB	71	C	Sidechain
2	AB	77	U	Sidechain
2	AB	8	U	Sidechain
2	AB	89	G	Sidechain
2	AB	90	C	Sidechain
2	AB	93	C	Sidechain
2	AB	97	G	Sidechain
2	AB	98	G	Sidechain

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Mol	Chain	Res	Type	Group
3	AC	179	SER	Mainchain
5	AE	151	TYR	Sidechain
6	AF	7	TYR	Sidechain
9	AI	153	LEU	Peptide,Mainchain
11	AK	4	TYR	Sidechain
14	AN	93	TYR	Sidechain
17	AQ	32	TYR	Sidechain
19	AS	91	TYR	Sidechain
27	Aa	32	TYR	Sidechain
28	Ab	29	THR	Mainchain
34	BA	1012	U	Sidechain
34	BA	1027	C	Sidechain
34	BA	1028(A)	C	Sidechain
34	BA	1037	C	Sidechain
34	BA	1038	C	Sidechain
34	BA	1039	C	Sidechain
34	BA	1040	U	Sidechain
34	BA	1048	G	Sidechain
34	BA	1052	U	Sidechain
34	BA	1054	C	Sidechain
34	BA	1056	U	Sidechain
34	BA	1065	U	Sidechain
34	BA	1067	A	Sidechain
34	BA	1073	U	Sidechain
34	BA	1078	U	Sidechain
34	BA	1083	U	Sidechain
34	BA	1097	C	Sidechain
34	BA	1100	C	Sidechain
34	BA	1121	U	Sidechain
34	BA	1122	U	Sidechain
34	BA	1124	G	Sidechain
34	BA	1128	C	Sidechain
34	BA	1133	G	Sidechain
34	BA	1143	G	Sidechain
34	BA	115	G	Sidechain
34	BA	1150	U	Sidechain
34	BA	1195	C	Sidechain
34	BA	1199	U	Sidechain
34	BA	12	U	Sidechain
34	BA	1226	C	Sidechain
34	BA	1235	U	Sidechain
34	BA	124	G	Sidechain

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Mol	Chain	Res	Type	Group
34	BA	1246	C	Sidechain
34	BA	125	U	Sidechain
34	BA	1263	C	Sidechain
34	BA	1266	G	Sidechain
34	BA	1277	C	Sidechain
34	BA	1285	A	Sidechain
34	BA	129	U	Sidechain
34	BA	1298	C	Sidechain
34	BA	1302	U	Sidechain
34	BA	131	C	Sidechain
34	BA	1314	C	Sidechain
34	BA	132	C	Sidechain
34	BA	1327	C	Sidechain
34	BA	1328	C	Sidechain
34	BA	1330	U	Sidechain
34	BA	134	A	Sidechain
34	BA	1347	G	Sidechain
34	BA	135	C	Sidechain
34	BA	1352	C	Sidechain
34	BA	1362	C	Sidechain
34	BA	1370	G	Sidechain
34	BA	1377	A	Sidechain
34	BA	138	G	Sidechain
34	BA	1402	C	Sidechain
34	BA	1404	C	Sidechain
34	BA	1405	G	Sidechain
34	BA	1422	G	Sidechain
34	BA	1427	U	Sidechain
34	BA	145	G	Sidechain
34	BA	146	G	Sidechain
34	BA	1472	U	Sidechain
34	BA	1477	C	Sidechain
34	BA	1481	U	Sidechain
34	BA	1541	U	Sidechain
34	BA	156	G	Sidechain
34	BA	158	G	Sidechain
34	BA	159	G	Sidechain
34	BA	17	U	Sidechain
34	BA	191(C)	G	Sidechain
34	BA	191(D)	U	Sidechain
34	BA	219	C	Sidechain
34	BA	225	C	Sidechain

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Mol	Chain	Res	Type	Group
34	BA	244	U	Sidechain
34	BA	253	U	Sidechain
34	BA	267	C	Sidechain
34	BA	274	A	Sidechain
34	BA	281	G	Sidechain
34	BA	285	G	Sidechain
34	BA	287	U	Sidechain
34	BA	295	C	Sidechain
34	BA	31	G	Sidechain
34	BA	332	G	Sidechain
34	BA	335	C	Sidechain
34	BA	348	G	Sidechain
34	BA	352	C	Sidechain
34	BA	367	U	Sidechain
34	BA	37	U	Sidechain
34	BA	375	U	Sidechain
34	BA	385	C	Sidechain
34	BA	395	C	Sidechain
34	BA	397	A	Sidechain
34	BA	398	C	Sidechain
34	BA	403	C	Sidechain
34	BA	412	A	Sidechain
34	BA	418	C	Sidechain
34	BA	430	A	Sidechain
34	BA	432	A	Sidechain
34	BA	45	U	Sidechain
34	BA	451	A	Sidechain
34	BA	47	C	Sidechain
34	BA	484	G	Sidechain
34	BA	501	C	Sidechain
34	BA	504	C	Sidechain
34	BA	518	C	Sidechain
34	BA	529	G	Sidechain
34	BA	531	U	Sidechain
34	BA	532	A	Sidechain
34	BA	54	C	Sidechain
34	BA	56	U	Sidechain
34	BA	560	U	Sidechain
34	BA	563	A	Sidechain
34	BA	575	G	Sidechain
34	BA	576	G	Sidechain
34	BA	579	G	Sidechain

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Mol	Chain	Res	Type	Group
34	BA	590	C	Sidechain
34	BA	591	U	Sidechain
34	BA	596	C	Sidechain
34	BA	610	G	Sidechain
34	BA	616	G	Sidechain
34	BA	63	C	Sidechain
34	BA	634	C	Sidechain
34	BA	644	G	Sidechain
34	BA	66	G	Sidechain
34	BA	661	G	Sidechain
34	BA	666	G	Sidechain
34	BA	672	U	Sidechain
34	BA	689	C	Sidechain
34	BA	690	G	Sidechain
34	BA	717	C	Sidechain
34	BA	727	G	Sidechain
34	BA	729	A	Sidechain
34	BA	734	G	Sidechain
34	BA	739	C	Sidechain
34	BA	741	G	Sidechain
34	BA	75	C	Sidechain
34	BA	760	G	Sidechain
34	BA	763	G	Sidechain
34	BA	770	C	Sidechain
34	BA	779	C	Sidechain
34	BA	792	A	Sidechain
34	BA	808	C	Sidechain
34	BA	813	U	Sidechain
34	BA	817	C	Sidechain
34	BA	82	U	Sidechain
34	BA	834	C	Sidechain
34	BA	853	G	Sidechain
34	BA	862	C	Sidechain
34	BA	863	U	Sidechain
34	BA	875	C	Sidechain
34	BA	88	C	Sidechain
34	BA	883	C	Sidechain
34	BA	887	G	Sidechain
34	BA	895	G	Sidechain
34	BA	898	G	Sidechain
34	BA	901	A	Sidechain
34	BA	902	G	Sidechain

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Mol	Chain	Res	Type	Group
34	BA	904	C	Sidechain
34	BA	905	U	Sidechain
34	BA	911	U	Sidechain
34	BA	912	C	Sidechain
34	BA	923	A	Sidechain
34	BA	947	G	Sidechain
34	BA	955	U	Sidechain
34	BA	961	U	Sidechain
34	BA	974	A	Sidechain
34	BA	983	A	Sidechain
34	BA	989	C	Sidechain
34	BA	998(A)	C	Sidechain
37	BH	54	TYR	Sidechain
39	BJ	4	TYR	Sidechain
44	BO	75	TYR	Sidechain
47	BR	34	TYR	Sidechain
55	CA	132	ARG	Sidechain

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	AC	226/228 (99%)	155 (69%)	41 (18%)	30 (13%)	0 5
4	AD	270/272 (99%)	125 (46%)	59 (22%)	86 (32%)	0 0
5	AE	204/206 (99%)	117 (57%)	31 (15%)	56 (28%)	0 0
6	AF	206/208 (99%)	109 (53%)	46 (22%)	51 (25%)	0 1
7	AG	180/182 (99%)	79 (44%)	47 (26%)	54 (30%)	0 0

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	AH	172/174 (99%)	80 (46%)	46 (27%)	46 (27%)	0	0
9	AI	151/153 (99%)	89 (59%)	33 (22%)	29 (19%)	0	2
10	AJ	132/134 (98%)	56 (42%)	44 (33%)	32 (24%)	0	1
11	AK	137/139 (99%)	64 (47%)	28 (20%)	45 (33%)	0	0
12	AL	120/122 (98%)	59 (49%)	23 (19%)	38 (32%)	0	0
13	AM	143/145 (99%)	57 (40%)	36 (25%)	50 (35%)	0	0
14	AN	134/136 (98%)	49 (37%)	33 (25%)	52 (39%)	0	0
15	AO	115/117 (98%)	57 (50%)	39 (34%)	19 (16%)	0	4
16	AP	108/110 (98%)	48 (44%)	29 (27%)	31 (29%)	0	0
17	AQ	115/117 (98%)	52 (45%)	26 (23%)	37 (32%)	0	0
18	AR	115/117 (98%)	35 (30%)	50 (44%)	30 (26%)	0	1
19	AS	99/101 (98%)	52 (52%)	19 (19%)	28 (28%)	0	0
20	AT	108/110 (98%)	63 (58%)	24 (22%)	21 (19%)	0	2
21	AU	92/94 (98%)	57 (62%)	16 (17%)	19 (21%)	0	2
22	AV	108/110 (98%)	43 (40%)	32 (30%)	33 (31%)	0	0
23	AW	178/180 (99%)	96 (54%)	43 (24%)	39 (22%)	0	1
24	AX	83/85 (98%)	52 (63%)	21 (25%)	10 (12%)	0	6
25	AY	65/67 (97%)	36 (55%)	20 (31%)	9 (14%)	0	5
26	AZ	57/59 (97%)	34 (60%)	8 (14%)	15 (26%)	0	1
27	Aa	69/71 (97%)	23 (33%)	16 (23%)	30 (44%)	0	0
28	Ab	55/57 (96%)	14 (26%)	19 (34%)	22 (40%)	0	0
29	Ac	47/49 (96%)	14 (30%)	7 (15%)	26 (55%)	0	0
30	Ad	47/49 (96%)	20 (43%)	12 (26%)	15 (32%)	0	0
31	Ae	62/64 (97%)	23 (37%)	18 (29%)	21 (34%)	0	0
32	Af	35/37 (95%)	20 (57%)	5 (14%)	10 (29%)	0	0
35	BF	232/234 (99%)	114 (49%)	41 (18%)	77 (33%)	0	0
36	BG	204/206 (99%)	107 (52%)	46 (22%)	51 (25%)	0	1
37	BH	206/208 (99%)	95 (46%)	57 (28%)	54 (26%)	0	1
38	BI	148/150 (99%)	93 (63%)	38 (26%)	17 (12%)	0	7
39	BJ	99/101 (98%)	58 (59%)	19 (19%)	22 (22%)	0	1
40	BK	153/155 (99%)	73 (48%)	45 (29%)	35 (23%)	0	1

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
41	BL	136/138 (99%)	68 (50%)	35 (26%)	33 (24%)	0	1
42	BM	125/127 (98%)	62 (50%)	33 (26%)	30 (24%)	0	1
43	BN	96/98 (98%)	52 (54%)	20 (21%)	24 (25%)	0	1
44	BO	117/119 (98%)	65 (56%)	29 (25%)	23 (20%)	0	2
45	BP	122/124 (98%)	50 (41%)	30 (25%)	42 (34%)	0	0
46	BQ	112/114 (98%)	64 (57%)	29 (26%)	19 (17%)	0	3
47	BR	58/60 (97%)	24 (41%)	16 (28%)	18 (31%)	0	0
48	BS	86/88 (98%)	36 (42%)	35 (41%)	15 (17%)	0	3
49	BT	81/83 (98%)	42 (52%)	24 (30%)	15 (18%)	0	2
50	BU	102/104 (98%)	62 (61%)	23 (22%)	17 (17%)	0	3
51	BV	71/73 (97%)	26 (37%)	26 (37%)	19 (27%)	0	0
52	BW	78/80 (98%)	30 (38%)	25 (32%)	23 (30%)	0	0
53	BX	97/99 (98%)	38 (39%)	32 (33%)	27 (28%)	0	0
54	BY	22/24 (92%)	9 (41%)	6 (27%)	7 (32%)	0	0
55	CA	587/593 (99%)	313 (53%)	170 (29%)	104 (18%)	0	3
All	All	6565/6671 (98%)	3259 (50%)	1650 (25%)	1656 (25%)	0	1

All (1656) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	AC	35	ALA
3	AC	39	GLU
3	AC	54	SER
3	AC	61	THR
3	AC	66	HIS
3	AC	72	VAL
3	AC	217	THR
4	AD	6	PHE
4	AD	10	THR
4	AD	17	THR
4	AD	18	VAL
4	AD	30	GLU
4	AD	33	LEU
4	AD	35	LYS
4	AD	44	ASN
4	AD	53	PHE
4	AD	54	ARG

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Mol	Chain	Res	Type
4	AD	58	HIS
4	AD	70	TRP
4	AD	72	LYS
4	AD	73	VAL
4	AD	81	ALA
4	AD	91	ARG
4	AD	106	ILE
4	AD	107	ALA
4	AD	108	PRO
4	AD	118	VAL
4	AD	121	PRO
4	AD	122	ASP
4	AD	125	ILE
4	AD	133	LEU
4	AD	134	ARG
4	AD	145	VAL
4	AD	153	ALA
4	AD	155	LEU
4	AD	157	ARG
4	AD	158	ALA
4	AD	160	GLY
4	AD	167	GLY
4	AD	178	PRO
4	AD	179	SER
4	AD	219	PRO
4	AD	224	ALA
4	AD	225	ALA
4	AD	232	PRO
4	AD	239	ARG
4	AD	241	PRO
4	AD	244	ARG
4	AD	247	ALA
4	AD	249	PRO
4	AD	252	TRP
4	AD	258	LYS
4	AD	264	LYS
4	AD	268	ARG
4	AD	270	ILE
4	AD	271	ILE
5	AE	16	ARG
5	AE	38	THR
5	AE	42	ASP

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Mol	Chain	Res	Type
5	AE	54	GLN
5	AE	68	ALA
5	AE	70	ALA
5	AE	74	PRO
5	AE	92	THR
5	AE	111	ARG
5	AE	117	MET
5	AE	122	PHE
5	AE	128	SER
5	AE	133	LYS
5	AE	134	ILE
5	AE	145	LYS
5	AE	149	ARG
5	AE	151	TYR
5	AE	157	ALA
5	AE	168	MET
5	AE	173	VAL
5	AE	180	ASN
5	AE	191	PRO
5	AE	202	LYS
6	AF	13	SER
6	AF	14	PRO
6	AF	30	PRO
6	AF	45	ARG
6	AF	52	LYS
6	AF	53	THR
6	AF	57	VAL
6	AF	58	ALA
6	AF	62	ARG
6	AF	67	GLN
6	AF	68	LYS
6	AF	69	HIS
6	AF	75	HIS
6	AF	82	ILE
6	AF	84	VAL
6	AF	85	GLY
6	AF	89	VAL
6	AF	91	GLY
6	AF	99	TYR
6	AF	100	THR
6	AF	104	LYS
6	AF	132	VAL

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Mol	Chain	Res	Type
6	AF	151	SER
6	AF	169	ASN
6	AF	172	TRP
6	AF	186	ILE
6	AF	196	LEU
7	AG	16	ARG
7	AG	18	GLU
7	AG	27	ASN
7	AG	32	PRO
7	AG	36	LYS
7	AG	42	GLY
7	AG	43	LEU
7	AG	51	ARG
7	AG	66	GLN
7	AG	68	PRO
7	AG	73	ALA
7	AG	76	SER
7	AG	78	SER
7	AG	86	MET
7	AG	104	GLU
7	AG	111	LEU
7	AG	114	ILE
7	AG	115	ARG
7	AG	116	ASP
7	AG	117	PHE
7	AG	123	ASN
7	AG	124	SER
7	AG	128	ARG
7	AG	131	TYR
7	AG	132	ASN
7	AG	133	LEU
7	AG	138	GLN
7	AG	140	ILE
7	AG	143	GLU
7	AG	144	ILE
7	AG	148	MET
7	AG	164	GLU
7	AG	172	LEU
7	AG	181	ARG
8	AH	6	ARG
8	AH	7	LEU
8	AH	12	PRO

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Mol	Chain	Res	Type
8	AH	15	VAL
8	AH	20	ALA
8	AH	30	LYS
8	AH	56	SER
8	AH	99	VAL
8	AH	104	GLU
8	AH	107	VAL
8	AH	111	HIS
8	AH	127	GLU
8	AH	136	ILE
8	AH	152	ARG
8	AH	153	LYS
8	AH	155	SER
8	AH	157	TYR
8	AH	160	LYS
8	AH	164	TYR
8	AH	168	PRO
9	AI	7	VAL
9	AI	30	GLN
9	AI	52	PHE
9	AI	53	VAL
9	AI	57	THR
9	AI	58	LEU
9	AI	74	LEU
9	AI	77	PRO
9	AI	80	VAL
9	AI	90	ALA
9	AI	93	LEU
9	AI	107	VAL
10	AJ	20	ALA
10	AJ	29	GLN
10	AJ	34	ILE
10	AJ	50	ASP
10	AJ	51	ALA
10	AJ	68	VAL
10	AJ	71	THR
10	AJ	84	LEU
10	AJ	93	ARG
10	AJ	108	ALA
10	AJ	111	LYS
10	AJ	113	PRO
11	AK	3	THR

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Mol	Chain	Res	Type
11	AK	4	TYR
11	AK	7	LYS
11	AK	9	VAL
11	AK	23	LEU
11	AK	31	ALA
11	AK	35	ARG
11	AK	43	THR
11	AK	46	VAL
11	AK	48	MET
11	AK	50	ASP
11	AK	58	ASP
11	AK	59	LYS
11	AK	66	LYS
11	AK	68	GLU
11	AK	76	SER
11	AK	79	PRO
11	AK	83	LYS
11	AK	127	ASP
11	AK	135	PRO
11	AK	136	GLU
12	AL	4	PRO
12	AL	11	ALA
12	AL	14	THR
12	AL	17	ARG
12	AL	26	LYS
12	AL	28	SER
12	AL	29	ASN
12	AL	30	ALA
12	AL	46	ALA
12	AL	53	LYS
12	AL	63	VAL
12	AL	64	ARG
12	AL	66	LYS
12	AL	89	ASN
12	AL	93	PRO
12	AL	97	ARG
12	AL	101	PRO
12	AL	103	ALA
12	AL	105	GLU
12	AL	110	GLY
12	AL	111	PHE
12	AL	119	PRO

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Mol	Chain	Res	Type
13	AM	8	PRO
13	AM	12	ALA
13	AM	14	LYS
13	AM	27	HIS
13	AM	29	LYS
13	AM	42	SER
13	AM	44	GLY
13	AM	47	ASP
13	AM	55	ARG
13	AM	56	SER
13	AM	57	THR
13	AM	58	THR
13	AM	64	LYS
13	AM	72	PRO
13	AM	88	LEU
13	AM	96	THR
13	AM	102	ARG
13	AM	106	LEU
13	AM	107	LYS
13	AM	122	PRO
13	AM	127	ALA
14	AN	11	LYS
14	AN	21	THR
14	AN	27	VAL
14	AN	29	PHE
14	AN	39	PRO
14	AN	40	ALA
14	AN	58	PHE
14	AN	59	ARG
14	AN	66	ILE
14	AN	67	ARG
14	AN	68	ILE
14	AN	71	ASP
14	AN	77	LYS
14	AN	78	PRO
14	AN	80	GLU
14	AN	81	VAL
14	AN	111	GLU
14	AN	124	LYS
14	AN	125	LEU
14	AN	126	PRO
14	AN	132	VAL

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Mol	Chain	Res	Type
14	AN	138	ASP
15	AO	4	LEU
15	AO	38	VAL
15	AO	57	ARG
15	AO	72	ASP
15	AO	76	VAL
15	AO	88	ARG
15	AO	89	ASP
16	AP	5	THR
16	AP	14	VAL
16	AP	28	VAL
16	AP	29	PHE
16	AP	30	ARG
16	AP	31	SER
16	AP	32	LEU
16	AP	35	ILE
16	AP	36	TYR
16	AP	48	LEU
16	AP	51	ALA
16	AP	54	LEU
16	AP	58	LEU
16	AP	61	ASN
17	AQ	2	ASN
17	AQ	3	ARG
17	AQ	5	ALA
17	AQ	19	LEU
17	AQ	20	PRO
17	AQ	22	PHE
17	AQ	25	GLY
17	AQ	27	THR
17	AQ	39	ARG
17	AQ	45	PHE
17	AQ	58	ASN
17	AQ	83	ILE
17	AQ	98	LYS
17	AQ	100	TYR
17	AQ	103	ARG
17	AQ	105	LEU
17	AQ	106	SER
17	AQ	109	GLU
18	AR	3	ARG
18	AR	4	ALA

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Mol	Chain	Res	Type
18	AR	8	VAL
18	AR	22	LYS
18	AR	31	SER
18	AR	32	PHE
18	AR	33	ARG
18	AR	62	ILE
18	AR	75	ASN
18	AR	94	ASN
19	AS	10	LYS
19	AS	11	GLN
19	AS	13	ARG
19	AS	15	GLU
19	AS	19	LYS
19	AS	22	VAL
19	AS	31	ALA
19	AS	32	THR
19	AS	39	LEU
19	AS	40	LEU
19	AS	46	VAL
19	AS	50	PRO
19	AS	57	VAL
19	AS	68	LYS
19	AS	69	LYS
19	AS	73	SER
19	AS	82	ARG
19	AS	100	ARG
20	AT	9	TYR
20	AT	11	ARG
20	AT	12	ILE
20	AT	14	PRO
20	AT	25	ARG
20	AT	27	LYS
20	AT	41	LYS
20	AT	44	ALA
20	AT	58	ALA
20	AT	64	MET
20	AT	65	LEU
20	AT	73	ALA
20	AT	92	ARG
21	AU	4	ALA
21	AU	6	ASP
21	AU	63	LYS

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Mol	Chain	Res	Type
21	AU	73	ARG
21	AU	89	ILE
21	AU	90	GLU
21	AU	95	LEU
22	AV	10	GLY
22	AV	15	VAL
22	AV	31	LEU
22	AV	40	GLU
22	AV	42	VAL
22	AV	45	VAL
22	AV	46	LYS
22	AV	47	LYS
22	AV	57	GLN
22	AV	58	GLY
22	AV	65	ALA
22	AV	71	LYS
22	AV	72	VAL
22	AV	77	PRO
22	AV	82	PRO
22	AV	108	THR
23	AW	41	LEU
23	AW	42	VAL
23	AW	57	ILE
23	AW	62	PRO
23	AW	78	LYS
23	AW	79	ARG
23	AW	83	PRO
23	AW	93	ASP
23	AW	94	GLU
23	AW	108	PRO
23	AW	109	ALA
23	AW	146	ILE
23	AW	155	LEU
23	AW	159	PRO
23	AW	161	VAL
23	AW	162	GLU
23	AW	165	VAL
24	AX	2	ALA
24	AX	29	GLN
24	AX	55	ARG
24	AX	84	LEU
25	AY	12	SER

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Mol	Chain	Res	Type
25	AY	13	PRO
25	AY	15	GLU
25	AY	34	ALA
25	AY	35	SER
25	AY	42	ASN
26	AZ	9	VAL
26	AZ	11	SER
26	AZ	13	ILE
26	AZ	28	LEU
26	AZ	29	ARG
26	AZ	30	ARG
26	AZ	31	LEU
26	AZ	52	HIS
27	Aa	6	HIS
27	Aa	8	LYS
27	Aa	11	PRO
27	Aa	13	ARG
27	Aa	14	ILE
27	Aa	18	CYS
27	Aa	32	TYR
27	Aa	33	VAL
27	Aa	39	CYS
27	Aa	53	GLU
27	Aa	55	ARG
28	Ab	7	PRO
28	Ab	10	LYS
28	Ab	11	THR
28	Ab	18	ALA
28	Ab	23	HIS
28	Ab	36	CYS
28	Ab	38	ALA
28	Ab	42	PRO
29	Ac	8	LYS
29	Ac	17	LYS
29	Ac	20	ASN
29	Ac	23	THR
29	Ac	26	ASN
29	Ac	27	LYS
29	Ac	29	ASN
29	Ac	30	THR
29	Ac	36	LEU
29	Ac	37	ARG

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Mol	Chain	Res	Type
29	Ac	38	LYS
29	Ac	46	HIS
29	Ac	49	HIS
29	Ac	50	ARG
29	Ac	51	GLU
29	Ac	53	LYS
30	Ad	2	LYS
30	Ad	10	ARG
30	Ad	41	ARG
30	Ad	47	ARG
31	Ae	5	LYS
31	Ae	27	THR
31	Ae	30	ARG
31	Ae	36	LYS
31	Ae	37	SER
31	Ae	39	LYS
31	Ae	62	LEU
31	Ae	63	PRO
32	Af	5	ALA
32	Af	9	ARG
32	Af	10	ILE
32	Af	11	CYS
35	BF	8	LYS
35	BF	11	LEU
35	BF	13	ALA
35	BF	15	VAL
35	BF	16	HIS
35	BF	17	PHE
35	BF	22	LYS
35	BF	26	PRO
35	BF	37	ASN
35	BF	42	ILE
35	BF	44	LEU
35	BF	45	GLN
35	BF	76	GLN
35	BF	77	ALA
35	BF	78	GLN
35	BF	97	TRP
35	BF	104	ASN
35	BF	109	SER
35	BF	122	PHE
35	BF	124	SER

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Mol	Chain	Res	Type
35	BF	127	ILE
35	BF	131	PRO
35	BF	147	LYS
35	BF	153	ARG
35	BF	154	LEU
35	BF	155	LEU
35	BF	161	ALA
35	BF	165	VAL
35	BF	168	THR
35	BF	169	LYS
35	BF	171	ALA
35	BF	172	ILE
35	BF	181	PHE
35	BF	191	ASP
35	BF	194	PRO
35	BF	195	ASP
35	BF	200	ILE
35	BF	201	ILE
35	BF	204	ASN
35	BF	207	ALA
35	BF	211	ILE
35	BF	226	ARG
35	BF	230	VAL
35	BF	232	PRO
35	BF	236	TYR
36	BG	4	LYS
36	BG	12	LEU
36	BG	14	ILE
36	BG	18	TRP
36	BG	24	ALA
36	BG	28	GLN
36	BG	39	ILE
36	BG	43	LEU
36	BG	52	LEU
36	BG	53	ALA
36	BG	64	VAL
36	BG	65	ALA
36	BG	79	ARG
36	BG	83	ARG
36	BG	84	ILE
36	BG	95	THR
36	BG	97	LYS

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Mol	Chain	Res	Type
36	BG	98	ASN
36	BG	119	ARG
36	BG	129	ALA
36	BG	157	ILE
36	BG	160	ALA
36	BG	176	HIS
36	BG	177	THR
36	BG	179	ARG
36	BG	191	THR
36	BG	192	THR
37	BH	3	ARG
37	BH	17	VAL
37	BH	18	LYS
37	BH	21	LEU
37	BH	29	PRO
37	BH	30	LYS
37	BH	31	CYS
37	BH	48	ALA
37	BH	56	VAL
37	BH	71	SER
37	BH	86	LYS
37	BH	88	VAL
37	BH	99	SER
37	BH	109	GLY
37	BH	131	ARG
37	BH	142	PRO
37	BH	148	VAL
37	BH	150	GLU
37	BH	151	LYS
37	BH	154	ASN
37	BH	166	LYS
37	BH	168	ARG
37	BH	170	VAL
37	BH	179	GLU
37	BH	191	ARG
37	BH	195	ALA
37	BH	198	VAL
37	BH	199	ASN
38	BI	12	LEU
38	BI	55	VAL
38	BI	75	THR
38	BI	128	PRO

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Mol	Chain	Res	Type
38	BI	144	THR
39	BJ	11	ASN
39	BJ	16	GLN
39	BJ	27	GLN
39	BJ	72	VAL
39	BJ	81	ILE
39	BJ	82	ARG
39	BJ	84	ASN
39	BJ	85	VAL
39	BJ	95	GLU
39	BJ	97	PHE
40	BK	4	ARG
40	BK	8	GLU
40	BK	14	PRO
40	BK	17	VAL
40	BK	31	MET
40	BK	35	LYS
40	BK	37	ASN
40	BK	71	PRO
40	BK	91	VAL
40	BK	111	ARG
40	BK	134	ALA
40	BK	142	GLU
41	BL	6	ILE
41	BL	13	ILE
41	BL	29	SER
41	BL	30	ARG
41	BL	63	LEU
41	BL	74	PRO
41	BL	75	ARG
41	BL	76	PRO
41	BL	77	GLU
41	BL	79	VAL
41	BL	103	VAL
41	BL	105	ARG
41	BL	115	SER
41	BL	121	ASP
41	BL	129	VAL
42	BM	29	ASN
42	BM	33	PHE
42	BM	44	VAL
42	BM	70	LYS

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Mol	Chain	Res	Type
42	BM	98	PRO
42	BM	109	VAL
42	BM	116	LYS
42	BM	118	LYS
43	BN	34	VAL
43	BN	36	GLY
43	BN	39	PRO
43	BN	40	LEU
43	BN	55	LYS
43	BN	56	HIS
43	BN	60	ARG
43	BN	72	VAL
43	BN	79	ARG
43	BN	80	LYS
43	BN	90	LEU
44	BO	14	VAL
44	BO	15	ALA
44	BO	27	ASN
44	BO	39	PRO
44	BO	74	ALA
44	BO	78	GLN
44	BO	106	LYS
44	BO	113	PRO
44	BO	116	HIS
45	BP	6	THR
45	BP	7	ILE
45	BP	18	VAL
45	BP	19	ARG
45	BP	22	SER
45	BP	28	LYS
45	BP	30	ALA
45	BP	46	LYS
45	BP	48	PRO
45	BP	51	ALA
45	BP	62	SER
45	BP	66	VAL
45	BP	83	VAL
45	BP	92	ASP
45	BP	101	VAL
45	BP	110	VAL
45	BP	116	SER
45	BP	127	GLU

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Mol	Chain	Res	Type
46	BQ	12	ASN
46	BQ	47	ASP
46	BQ	48	LEU
46	BQ	102	ARG
46	BQ	107	ALA
47	BR	12	ARG
47	BR	18	VAL
47	BR	29	ARG
47	BR	31	ARG
47	BR	34	TYR
47	BR	36	PHE
47	BR	44	LEU
47	BR	54	PRO
47	BR	55	GLY
48	BS	3	ILE
48	BS	16	ALA
49	BT	11	SER
49	BT	15	PRO
49	BT	24	ALA
49	BT	27	LYS
49	BT	61	SER
50	BU	3	LYS
50	BU	4	LYS
50	BU	15	MET
50	BU	34	LYS
50	BU	48	GLU
50	BU	50	LYS
50	BU	81	ARG
50	BU	104	LYS
51	BV	42	ARG
51	BV	49	LYS
51	BV	52	PRO
51	BV	59	SER
51	BV	75	ILE
51	BV	79	LEU
51	BV	82	THR
51	BV	87	ARG
52	BW	9	VAL
52	BW	21	GLU
52	BW	28	LYS
52	BW	32	LYS
52	BW	40	ILE

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Mol	Chain	Res	Type
52	BW	42	PRO
52	BW	43	GLU
52	BW	64	GLU
52	BW	70	LYS
52	BW	79	THR
53	BX	12	ALA
53	BX	99	LEU
53	BX	105	SER
54	BY	6	ARG
54	BY	9	ARG
55	CA	11	ILE
55	CA	18	LYS
55	CA	28	GLN
55	CA	42	VAL
55	CA	56	ILE
55	CA	58	ALA
55	CA	71	ASN
55	CA	103	ASP
55	CA	133	PRO
55	CA	155	ASP
55	CA	160	PHE
55	CA	183	MET
55	CA	209	ILE
55	CA	218	VAL
55	CA	243	GLU
55	CA	307	VAL
55	CA	316	SER
55	CA	395	ARG
55	CA	424	GLY
55	CA	437	VAL
55	CA	442	VAL
55	CA	475	VAL
55	CA	476	ARG
55	CA	477	PRO
55	CA	537	CYS
55	CA	583	THR
55	CA	603	ALA
3	AC	22	ILE
3	AC	67	GLY
3	AC	80	GLY
3	AC	132	GLY
3	AC	140	PRO

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Mol	Chain	Res	Type
3	AC	161	ILE
3	AC	164	ARG
4	AD	52	ARG
4	AD	62	TYR
4	AD	110	GLY
4	AD	111	LEU
4	AD	123	ALA
4	AD	149	PRO
4	AD	152	GLY
4	AD	189	CYS
4	AD	196	VAL
4	AD	204	ILE
4	AD	207	GLY
4	AD	217	ARG
4	AD	243	GLY
4	AD	262	ARG
4	AD	263	ARG
4	AD	266	SER
5	AE	22	PRO
5	AE	44	TYR
5	AE	72	VAL
5	AE	93	VAL
5	AE	95	ILE
5	AE	115	GLY
5	AE	118	LYS
5	AE	121	ASN
5	AE	124	GLY
5	AE	139	GLY
5	AE	155	LYS
5	AE	178	GLU
5	AE	187	ALA
6	AF	54	ARG
6	AF	81	PRO
6	AF	98	SER
6	AF	102	PRO
6	AF	126	VAL
6	AF	136	THR
6	AF	158	THR
6	AF	167	ALA
6	AF	177	ALA
6	AF	184	TYR
6	AF	190	GLU

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Mol	Chain	Res	Type
7	AG	20	ILE
7	AG	24	GLY
7	AG	61	ALA
7	AG	88	ILE
7	AG	151	ALA
7	AG	154	GLY
7	AG	163	ALA
8	AH	31	GLY
8	AH	33	LEU
8	AH	42	ARG
8	AH	57	ASP
8	AH	105	LEU
8	AH	110	SER
8	AH	118	PRO
8	AH	120	GLY
8	AH	151	ILE
8	AH	156	ALA
8	AH	169	VAL
9	AI	23	SER
9	AI	55	LYS
9	AI	73	GLY
9	AI	91	LYS
9	AI	116	ILE
9	AI	136	ALA
9	AI	154	GLY
10	AJ	66	THR
10	AJ	69	THR
10	AJ	74	ALA
10	AJ	86	LYS
10	AJ	90	LYS
11	AK	19	GLU
11	AK	30	ILE
11	AK	34	LEU
11	AK	38	HIS
11	AK	40	PRO
11	AK	47	ALA
11	AK	63	THR
11	AK	67	LEU
11	AK	88	GLU
11	AK	92	ALA
11	AK	105	GLY
11	AK	110	GLY

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Mol	Chain	Res	Type
11	AK	114	ARG
12	AL	49	ARG
12	AL	50	GLY
12	AL	52	VAL
12	AL	88	ASN
12	AL	90	GLN
12	AL	102	VAL
12	AL	104	ARG
12	AL	121	VAL
13	AM	7	ARG
13	AM	11	GLY
13	AM	23	PRO
13	AM	32	THR
13	AM	34	GLY
13	AM	39	LYS
13	AM	43	GLY
13	AM	67	MET
13	AM	84	ASN
13	AM	87	ASP
13	AM	92	GLU
14	AN	12	GLN
14	AN	45	GLN
14	AN	88	GLY
14	AN	94	VAL
14	AN	100	GLY
14	AN	107	ALA
14	AN	127	ILE
14	AN	136	ALA
14	AN	137	TYR
15	AO	8	ARG
15	AO	71	GLN
15	AO	86	ARG
15	AO	94	TYR
16	AP	11	LYS
16	AP	23	ARG
16	AP	33	LYS
16	AP	43	GLU
16	AP	67	ARG
16	AP	78	LEU
16	AP	82	ILE
16	AP	97	ARG
17	AQ	24	PRO

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Mol	Chain	Res	Type
17	AQ	30	VAL
17	AQ	36	GLU
17	AQ	41	ARG
17	AQ	82	LEU
17	AQ	99	LEU
17	AQ	104	ASN
17	AQ	114	LEU
18	AR	26	GLY
18	AR	27	LEU
18	AR	47	TYR
18	AR	53	ARG
18	AR	78	THR
18	AR	88	ILE
18	AR	90	VAL
18	AR	93	LYS
18	AR	110	VAL
19	AS	8	GLY
19	AS	14	VAL
19	AS	18	LEU
19	AS	45	THR
19	AS	72	VAL
19	AS	81	TYR
20	AT	15	ARG
20	AT	26	GLY
20	AT	30	GLU
20	AT	75	TYR
20	AT	90	ARG
21	AU	8	ILE
21	AU	15	GLU
21	AU	33	LYS
21	AU	49	VAL
21	AU	53	LYS
21	AU	67	GLY
21	AU	74	PRO
21	AU	85	PRO
22	AV	21	LYS
22	AV	29	GLU
22	AV	33	LYS
22	AV	34	LYS
22	AV	48	ALA
22	AV	66	PRO
22	AV	83	THR

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Mol	Chain	Res	Type
22	AV	86	ARG
22	AV	95	LYS
22	AV	106	LEU
23	AW	11	GLU
23	AW	31	ARG
23	AW	50	GLN
23	AW	54	HIS
23	AW	123	ASP
23	AW	169	GLU
23	AW	170	THR
24	AX	21	LEU
24	AX	67	VAL
25	AY	17	GLU
25	AY	66	ASN
26	AZ	39	ASP
26	AZ	53	LEU
27	Aa	3	GLU
27	Aa	7	PRO
27	Aa	21	VAL
27	Aa	48	ARG
27	Aa	50	VAL
27	Aa	51	ASP
27	Aa	56	VAL
28	Ab	20	ARG
29	Ac	18	ARG
29	Ac	28	ARG
29	Ac	31	PRO
29	Ac	32	ASN
29	Ac	48	VAL
29	Ac	52	VAL
30	Ad	3	ARG
30	Ad	5	TRP
30	Ad	14	LYS
30	Ad	19	ARG
31	Ae	32	LEU
31	Ae	34	TRP
31	Ae	52	LYS
32	Af	3	VAL
32	Af	7	VAL
32	Af	33	LYS
35	BF	9	GLU
35	BF	29	ALA

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Mol	Chain	Res	Type
35	BF	73	THR
35	BF	102	LEU
35	BF	151	GLY
35	BF	178	ARG
35	BF	190	THR
35	BF	227	GLY
36	BG	27	LYS
36	BG	30	ARG
36	BG	66	VAL
36	BG	74	GLY
36	BG	101	LEU
36	BG	158	GLY
36	BG	206	GLU
37	BH	4	TYR
37	BH	67	ILE
37	BH	73	ARG
37	BH	101	LEU
37	BH	107	ARG
37	BH	138	TYR
37	BH	139	ARG
37	BH	165	MET
37	BH	181	MET
37	BH	200	GLU
37	BH	208	SER
38	BI	37	ARG
38	BI	98	THR
38	BI	102	ALA
38	BI	104	ALA
39	BJ	13	ASN
39	BJ	14	LEU
39	BJ	51	PRO
39	BJ	83	ASP
40	BK	23	VAL
40	BK	56	GLN
40	BK	72	ARG
40	BK	92	SER
40	BK	94	ARG
40	BK	112	PRO
40	BK	113	GLU
40	BK	146	GLU
40	BK	153	HIS
41	BL	37	ARG

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Mol	Chain	Res	Type
41	BL	78	GLN
41	BL	97	VAL
41	BL	102	ARG
41	BL	108	GLY
41	BL	123	GLU
41	BL	134	ILE
42	BM	39	GLY
42	BM	68	GLY
42	BM	71	SER
42	BM	94	ALA
42	BM	104	ARG
42	BM	114	TYR
42	BM	120	ARG
42	BM	125	TYR
43	BN	31	GLY
43	BN	58	ASP
43	BN	61	GLU
43	BN	78	ASN
43	BN	94	VAL
44	BO	13	GLN
44	BO	55	LYS
44	BO	76	GLY
44	BO	102	GLY
44	BO	104	GLN
44	BO	115	PRO
45	BP	31	PRO
45	BP	41	ARG
45	BP	42	THR
45	BP	76	ASN
45	BP	87	GLY
45	BP	94	PRO
45	BP	126	LYS
46	BQ	46	LYS
46	BQ	64	TRP
46	BQ	65	LYS
46	BQ	86	CYS
47	BR	5	ALA
47	BR	9	LYS
47	BR	17	LYS
47	BR	22	THR
47	BR	28	GLY
47	BR	56	VAL

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Mol	Chain	Res	Type
48	BS	6	GLU
48	BS	46	HIS
48	BS	76	GLU
48	BS	83	GLU
48	BS	87	ILE
49	BT	30	GLY
49	BT	43	LYS
49	BT	82	GLN
50	BU	16	GLN
50	BU	33	GLY
50	BU	96	GLN
50	BU	98	LEU
51	BV	28	GLU
51	BV	34	TYR
51	BV	37	VAL
51	BV	38	GLU
51	BV	54	ARG
51	BV	64	ARG
52	BW	13	ASP
52	BW	20	LEU
52	BW	36	ARG
52	BW	65	ASN
52	BW	71	LEU
53	BX	49	ALA
53	BX	56	MET
53	BX	68	LYS
53	BX	101	GLY
53	BX	102	GLY
53	BX	103	GLY
54	BY	7	ARG
55	CA	13	HIS
55	CA	54	ILE
55	CA	62	ALA
55	CA	91	MET
55	CA	156	GLU
55	CA	185	PRO
55	CA	244	GLY
55	CA	253	LYS
55	CA	284	ILE
55	CA	291	THR
55	CA	294	VAL
55	CA	321	LYS

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Mol	Chain	Res	Type
55	CA	392	ILE
55	CA	462	THR
55	CA	468	THR
55	CA	485	ASN
55	CA	516	ALA
3	AC	59	ARG
3	AC	69	GLY
3	AC	78	ALA
3	AC	90	GLY
3	AC	167	LYS
3	AC	226	PRO
4	AD	56	GLY
4	AD	86	PRO
4	AD	226	MET
4	AD	227	ASN
4	AD	233	HIS
4	AD	245	PRO
4	AD	246	PRO
4	AD	259	THR
5	AE	51	PHE
5	AE	67	PHE
5	AE	75	VAL
5	AE	126	PRO
6	AF	21	ALA
6	AF	24	LEU
6	AF	72	ARG
6	AF	159	GLY
7	AG	30	GLU
7	AG	57	ALA
7	AG	81	LYS
7	AG	106	LEU
7	AG	125	PHE
7	AG	167	GLU
7	AG	178	PHE
8	AH	67	LEU
8	AH	94	TYR
8	AH	114	VAL
9	AI	49	ALA
9	AI	104	ILE
10	AJ	22	PRO
10	AJ	32	ALA
10	AJ	117	THR

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Mol	Chain	Res	Type
11	AK	18	ALA
11	AK	29	LYS
11	AK	109	LYS
11	AK	138	LEU
12	AL	10	VAL
12	AL	59	LYS
12	AL	91	LEU
12	AL	92	GLU
12	AL	109	LYS
13	AM	16	ARG
13	AM	26	GLY
13	AM	37	GLY
13	AM	81	GLN
14	AN	26	TYR
14	AN	31	ASP
14	AN	46	GLN
14	AN	73	PRO
14	AN	115	MET
15	AO	5	LYS
15	AO	49	ASP
15	AO	58	GLY
15	AO	100	LEU
16	AP	10	ARG
16	AP	60	GLY
16	AP	66	ALA
16	AP	72	ALA
16	AP	102	ALA
17	AQ	4	GLY
17	AQ	28	VAL
17	AQ	102	ILE
18	AR	6	THR
18	AR	96	ALA
18	AR	97	ASP
19	AS	29	PRO
20	AT	66	GLU
20	AT	67	ASP
21	AU	48	LYS
22	AV	16	ALA
22	AV	74	PRO
23	AW	64	GLY
23	AW	80	ARG
23	AW	82	ARG

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Mol	Chain	Res	Type
23	AW	95	PRO
23	AW	131	ARG
23	AW	145	GLU
23	AW	160	GLY
24	AX	56	ASP
24	AX	83	PRO
27	Aa	27	THR
27	Aa	58	ARG
27	Aa	61	ARG
28	Ab	5	PRO
28	Ab	9	LYS
28	Ab	14	ALA
28	Ab	47	PRO
28	Ab	59	GLU
29	Ac	25	LYS
29	Ac	34	LEU
30	Ad	4	THR
30	Ad	11	LYS
30	Ad	31	LEU
30	Ad	39	ARG
30	Ad	40	TRP
30	Ad	46	VAL
31	Ae	13	ARG
31	Ae	18	ALA
31	Ae	41	ILE
31	Ae	53	PRO
31	Ae	57	ARG
31	Ae	61	LEU
35	BF	88	ALA
35	BF	96	ARG
35	BF	110	GLN
35	BF	141	GLU
35	BF	157	ARG
35	BF	180	LEU
35	BF	183	PRO
35	BF	237	ALA
36	BG	7	PRO
36	BG	49	SER
36	BG	62	ASP
36	BG	81	GLY
36	BG	127	ARG
36	BG	139	GLN

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Mol	Chain	Res	Type
36	BG	145	GLY
36	BG	178	LEU
36	BG	181	ASN
37	BH	7	PRO
37	BH	40	PRO
37	BH	51	PRO
37	BH	53	ASP
37	BH	153	ARG
38	BI	26	PHE
38	BI	96	PRO
38	BI	112	LEU
39	BJ	12	PRO
39	BJ	15	ASP
39	BJ	69	GLU
40	BK	6	ARG
40	BK	38	LEU
40	BK	103	TRP
40	BK	121	ALA
41	BL	24	THR
41	BL	39	LEU
41	BL	41	ARG
41	BL	44	PHE
41	BL	69	ARG
41	BL	73	ASP
41	BL	90	GLY
42	BM	43	ALA
42	BM	47	LEU
42	BM	102	LEU
42	BM	103	THR
42	BM	105	ASP
42	BM	117	HIS
43	BN	77	PRO
44	BO	37	GLY
44	BO	53	SER
44	BO	93	GLN
44	BO	123	LYS
45	BP	23	LYS
45	BP	26	ALA
45	BP	80	HIS
45	BP	100	ILE
45	BP	105	TYR
45	BP	106	ASP

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Mol	Chain	Res	Type
45	BP	107	ALA
45	BP	121	GLY
45	BP	122	THR
46	BQ	11	ARG
46	BQ	14	ARG
46	BQ	38	GLY
46	BQ	67	GLU
46	BQ	72	ALA
46	BQ	96	LEU
48	BS	19	PRO
48	BS	88	ARG
49	BT	28	ARG
49	BT	44	THR
49	BT	54	GLU
49	BT	66	PRO
50	BU	14	LYS
51	BV	71	LYS
51	BV	72	ARG
51	BV	81	PHE
52	BW	25	LYS
52	BW	30	LEU
52	BW	52	TYR
53	BX	15	ARG
53	BX	24	LEU
53	BX	32	ALA
53	BX	50	GLU
53	BX	57	ARG
53	BX	59	ALA
53	BX	76	ALA
53	BX	84	LEU
55	CA	37	GLU
55	CA	64	ILE
55	CA	179	MET
55	CA	181	GLU
55	CA	182	ASP
55	CA	212	LEU
55	CA	242	SER
55	CA	267	LEU
55	CA	409	GLU
55	CA	428	ASN
55	CA	471	HIS
55	CA	486	GLY

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Mol	Chain	Res	Type
55	CA	535	VAL
55	CA	539	THR
3	AC	56	GLN
3	AC	71	GLN
3	AC	148	ASN
4	AD	37	LEU
4	AD	209	ALA
4	AD	248	SER
4	AD	257	LEU
5	AE	28	ALA
5	AE	32	PRO
5	AE	53	PRO
5	AE	89	ASP
5	AE	94	GLU
5	AE	119	ARG
5	AE	135	HIS
5	AE	143	ASN
5	AE	165	VAL
6	AF	64	ILE
6	AF	111	ALA
6	AF	137	LYS
6	AF	168	ARG
6	AF	183	VAL
7	AG	153	ARG
7	AG	166	ASP
8	AH	58	GLU
8	AH	138	LYS
8	AH	154	PRO
9	AI	21	GLN
9	AI	129	PRO
9	AI	144	ALA
10	AJ	28	GLY
10	AJ	95	LYS
11	AK	28	THR
11	AK	90	MET
11	AK	108	PRO
12	AL	106	LEU
13	AM	9	ASN
13	AM	15	ARG
13	AM	25	SER
13	AM	35	HIS
13	AM	63	PRO

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Mol	Chain	Res	Type
13	AM	89	ALA
13	AM	108	LYS
14	AN	22	LYS
14	AN	37	LEU
14	AN	79	LEU
14	AN	84	GLY
14	AN	89	ASN
14	AN	98	LYS
15	AO	12	ARG
15	AO	42	LYS
16	AP	59	LYS
16	AP	80	LEU
16	AP	89	ARG
17	AQ	9	LEU
17	AQ	77	PRO
17	AQ	96	ARG
17	AQ	110	ILE
17	AQ	111	ARG
17	AQ	112	ARG
18	AR	41	ALA
18	AR	60	LEU
18	AR	72	HIS
18	AR	111	GLU
19	AS	2	PHE
21	AU	32	PRO
22	AV	85	VAL
23	AW	47	VAL
23	AW	113	ALA
25	AY	36	ILE
26	AZ	42	ALA
27	Aa	26	SER
27	Aa	41	PRO
27	Aa	52	THR
28	Ab	24	ALA
28	Ab	48	GLU
28	Ab	56	LYS
28	Ab	58	LEU
29	Ac	40	CYS
29	Ac	47	THR
30	Ad	35	ARG
32	Af	4	ARG
32	Af	12	ASP

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Mol	Chain	Res	Type
32	Af	29	ASN
35	BF	74	LYS
35	BF	91	PRO
35	BF	98	LEU
35	BF	150	SER
35	BF	158	LEU
35	BF	167	PRO
35	BF	174	VAL
35	BF	193	ASP
35	BF	229	VAL
36	BG	3	ASN
36	BG	16	ARG
36	BG	109	PRO
37	BH	36	ARG
37	BH	147	ALA
37	BH	196	LEU
38	BI	53	LEU
38	BI	153	LYS
39	BJ	17	SER
40	BK	32	ARG
40	BK	93	PRO
40	BK	97	GLN
40	BK	131	LYS
40	BK	155	ARG
41	BL	71	GLY
42	BM	55	ALA
42	BM	95	LYS
42	BM	110	GLU
42	BM	126	SER
43	BN	30	SER
43	BN	53	PRO
43	BN	54	PHE
44	BO	118	GLY
45	BP	16	GLU
45	BP	17	LYS
45	BP	70	ILE
46	BQ	5	ALA
47	BR	16	PHE
48	BS	5	LYS
48	BS	33	THR
48	BS	44	LYS
49	BT	57	ARG

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Mol	Chain	Res	Type
49	BT	64	ALA
50	BU	6	LEU
50	BU	53	LEU
52	BW	76	PRO
53	BX	58	LYS
53	BX	61	SER
53	BX	78	ALA
53	BX	97	ALA
54	BY	8	THR
54	BY	24	ARG
55	CA	20	THR
55	CA	24	LYS
55	CA	51	GLU
55	CA	84	GLU
55	CA	134	GLY
55	CA	137	PRO
55	CA	176	HIS
55	CA	216	SER
55	CA	269	GLU
55	CA	295	GLU
55	CA	427	LYS
55	CA	434	LYS
55	CA	484	GLN
55	CA	518	VAL
55	CA	592	LEU
3	AC	20	TYR
3	AC	84	LYS
3	AC	117	PRO
3	AC	200	LYS
4	AD	88	ARG
4	AD	208	LYS
4	AD	210	GLY
4	AD	231	HIS
5	AE	8	LYS
5	AE	58	ARG
5	AE	129	HIS
5	AE	179	GLU
6	AF	178	PRO
6	AF	182	ASN
6	AF	185	ASP
7	AG	7	LEU
7	AG	113	ARG

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Mol	Chain	Res	Type
7	AG	135	LEU
8	AH	75	ALA
8	AH	175	LYS
9	AI	51	LEU
9	AI	120	LYS
9	AI	128	LEU
9	AI	130	THR
10	AJ	12	LEU
10	AJ	100	THR
11	AK	78	TYR
11	AK	87	LEU
11	AK	112	LEU
12	AL	67	LYS
13	AM	19	VAL
13	AM	31	ALA
13	AM	120	ALA
13	AM	131	SER
14	AN	47	ILE
14	AN	62	GLY
14	AN	119	ARG
15	AO	74	LYS
17	AQ	13	ARG
18	AR	9	VAL
19	AS	66	ARG
21	AU	24	GLY
22	AV	17	SER
23	AW	85	HIS
23	AW	168	GLU
26	AZ	17	LYS
26	AZ	23	LEU
27	Aa	24	THR
28	Ab	51	TYR
35	BF	75	LYS
36	BG	146	ALA
36	BG	174	PRO
38	BI	95	ALA
38	BI	113	ALA
39	BJ	36	ARG
40	BK	122	HIS
41	BL	65	TYR
41	BL	104	ARG
42	BM	52	ALA

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Mol	Chain	Res	Type
42	BM	107	ARG
43	BN	73	ASP
45	BP	111	LYS
45	BP	123	LYS
46	BQ	45	VAL
47	BR	13	THR
48	BS	29	VAL
49	BT	36	ILE
51	BV	19	LYS
52	BW	11	VAL
52	BW	29	ARG
52	BW	67	VAL
52	BW	73	GLU
53	BX	25	ARG
53	BX	60	GLU
54	BY	10	ARG
54	BY	22	ARG
55	CA	25	LEU
55	CA	29	SER
55	CA	35	ARG
55	CA	69	ARG
55	CA	118	ALA
55	CA	157	GLN
55	CA	201	LEU
55	CA	223	ILE
55	CA	339	LEU
55	CA	398	GLU
55	CA	407	VAL
55	CA	467	SER
55	CA	469	PHE
55	CA	554	ALA
3	AC	49	ILE
4	AD	83	GLU
4	AD	238	GLY
4	AD	254	THR
6	AF	134	GLY
7	AG	44	GLY
8	AH	125	VAL
8	AH	131	VAL
8	AH	173	PRO
10	AJ	52	ILE
10	AJ	89	HIS

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Mol	Chain	Res	Type
10	AJ	91	PRO
12	AL	115	VAL
14	AN	28	ALA
14	AN	91	GLU
15	AO	61	HIS
17	AQ	80	SER
18	AR	7	GLY
27	Aa	22	ILE
27	Aa	29	PRO
28	Ab	27	PRO
28	Ab	31	VAL
28	Ab	49	CYS
31	Ae	8	LYS
31	Ae	14	VAL
31	Ae	20	GLY
31	Ae	33	ASN
35	BF	20	GLU
35	BF	118	LEU
35	BF	176	GLU
36	BG	87	LEU
37	BH	92	VAL
37	BH	94	LEU
37	BH	117	ALA
37	BH	129	ASN
38	BI	142	LEU
39	BJ	37	VAL
40	BK	18	TYR
40	BK	50	ILE
40	BK	96	GLN
40	BK	130	GLY
41	BL	80	ILE
42	BM	57	GLY
43	BN	37	PRO
43	BN	41	PRO
44	BO	34	ASP
45	BP	90	VAL
50	BU	17	LYS
50	BU	80	GLY
53	BX	20	LEU
53	BX	67	ALA
55	CA	41	ARG
55	CA	66	TRP

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Mol	Chain	Res	Type
55	CA	184	THR
55	CA	198	ASP
55	CA	251	VAL
55	CA	305	PRO
3	AC	41	VAL
4	AD	127	VAL
9	AI	31	GLY
10	AJ	19	PRO
10	AJ	96	VAL
13	AM	53	GLY
14	AN	19	GLY
14	AN	61	GLY
18	AR	87	GLY
18	AR	105	VAL
22	AV	24	VAL
23	AW	141	VAL
26	AZ	43	ILE
35	BF	130	ARG
36	BG	70	VAL
44	BO	49	GLY
46	BQ	60	VAL
47	BR	7	ILE
48	BS	82	ILE
55	CA	92	VAL
55	CA	435	GLY
5	AE	71	GLY
5	AE	116	VAL
5	AE	161	GLY
8	AH	76	VAL
10	AJ	49	GLY
11	AK	44	PRO
13	AM	97	PRO
14	AN	99	PRO
21	AU	43	VAL
24	AX	8	GLY
24	AX	73	GLY
26	AZ	45	GLY
37	BH	128	VAL
37	BH	143	GLY
39	BJ	26	ILE
46	BQ	95	GLY
48	BS	45	VAL

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Mol	Chain	Res	Type
51	BV	51	LEU
53	BX	100	ILE
55	CA	76	PRO
55	CA	222	GLY
55	CA	326	VAL
55	CA	385	PRO
4	AD	142	VAL
8	AH	55	PRO
8	AH	126	PRO
14	AN	106	VAL
23	AW	167	PRO
36	BG	197	GLY
37	BH	136	PRO
45	BP	104	VAL
55	CA	83	GLY
55	CA	450	GLY
55	CA	480	VAL
3	AC	14	VAL
8	AH	115	VAL
10	AJ	59	ILE
10	AJ	112	MET
14	AN	52	VAL
16	AP	69	VAL
19	AS	90	PRO
22	AV	44	ILE
23	AW	129	SER
23	AW	177	PRO
27	Aa	5	ILE
27	Aa	28	LYS
27	Aa	54	GLY
35	BF	239	VAL
39	BJ	65	VAL
43	BN	91	PRO
45	BP	96	VAL
53	BX	41	ILE
55	CA	304	GLU
55	CA	320	GLY
13	AM	126	VAL
20	AT	80	PRO
22	AV	18	GLY
35	BF	182	ILE
42	BM	90	PRO

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Mol	Chain	Res	Type
44	BO	48	ILE

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
3	AC	180/180 (100%)	151 (84%)	29 (16%)	2 15
4	AD	215/215 (100%)	153 (71%)	62 (29%)	0 3
5	AE	166/166 (100%)	102 (61%)	64 (39%)	0 0
6	AF	164/164 (100%)	105 (64%)	59 (36%)	0 1
7	AG	156/156 (100%)	112 (72%)	44 (28%)	0 3
8	AH	143/143 (100%)	108 (76%)	35 (24%)	0 4
10	AJ	101/101 (100%)	71 (70%)	30 (30%)	0 2
11	AK	118/118 (100%)	79 (67%)	39 (33%)	0 2
12	AL	100/100 (100%)	69 (69%)	31 (31%)	0 2
13	AM	111/111 (100%)	71 (64%)	40 (36%)	0 1
14	AN	106/106 (100%)	65 (61%)	41 (39%)	0 0
15	AO	100/100 (100%)	71 (71%)	29 (29%)	0 3
16	AP	87/87 (100%)	63 (72%)	24 (28%)	0 3
17	AQ	105/105 (100%)	68 (65%)	37 (35%)	0 1
18	AR	93/93 (100%)	64 (69%)	29 (31%)	0 2
19	AS	82/82 (100%)	57 (70%)	25 (30%)	0 2
20	AT	90/90 (100%)	64 (71%)	26 (29%)	0 3
21	AU	76/76 (100%)	57 (75%)	19 (25%)	0 4
22	AV	91/91 (100%)	72 (79%)	19 (21%)	1 7
23	AW	159/159 (100%)	120 (76%)	39 (24%)	0 4
24	AX	67/67 (100%)	51 (76%)	16 (24%)	0 5
25	AY	62/62 (100%)	44 (71%)	18 (29%)	0 3
26	AZ	51/51 (100%)	36 (71%)	15 (29%)	0 2

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
27	Aa	63/63 (100%)	45 (71%)	18 (29%)	0 3
28	Ab	50/50 (100%)	31 (62%)	19 (38%)	0 0
29	Ac	48/48 (100%)	33 (69%)	15 (31%)	0 2
30	Ad	42/42 (100%)	29 (69%)	13 (31%)	0 2
31	Ae	54/54 (100%)	44 (82%)	10 (18%)	1 10
32	Af	34/34 (100%)	29 (85%)	5 (15%)	3 17
35	BF	202/202 (100%)	138 (68%)	64 (32%)	0 2
36	BG	160/160 (100%)	123 (77%)	37 (23%)	1 5
37	BH	180/180 (100%)	131 (73%)	49 (27%)	0 4
38	BI	115/115 (100%)	78 (68%)	37 (32%)	0 2
39	BJ	90/90 (100%)	61 (68%)	29 (32%)	0 2
40	BK	126/126 (100%)	93 (74%)	33 (26%)	0 4
41	BL	119/119 (100%)	86 (72%)	33 (28%)	0 3
42	BM	98/98 (100%)	73 (74%)	25 (26%)	0 4
43	BN	88/88 (100%)	67 (76%)	21 (24%)	0 5
44	BO	90/90 (100%)	73 (81%)	17 (19%)	1 9
45	BP	104/104 (100%)	81 (78%)	23 (22%)	1 6
46	BQ	92/92 (100%)	67 (73%)	25 (27%)	0 4
47	BR	49/49 (100%)	36 (74%)	13 (26%)	0 4
48	BS	79/79 (100%)	64 (81%)	15 (19%)	1 9
49	BT	72/72 (100%)	49 (68%)	23 (32%)	0 2
50	BU	96/96 (100%)	67 (70%)	29 (30%)	0 2
51	BV	64/64 (100%)	48 (75%)	16 (25%)	0 4
52	BW	71/71 (100%)	52 (73%)	19 (27%)	0 4
53	BX	76/76 (100%)	59 (78%)	17 (22%)	1 6
54	BY	19/19 (100%)	17 (90%)	2 (10%)	7 26
55	CA	479/507 (94%)	349 (73%)	130 (27%)	0 4
All	All	5383/5411 (100%)	3876 (72%)	1507 (28%)	2 3

All (1507) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	AC	6	ARG

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Mol	Chain	Res	Type
3	AC	7	TYR
3	AC	15	ASP
3	AC	20	TYR
3	AC	27	HIS
3	AC	46	LYS
3	AC	47	LEU
3	AC	58	VAL
3	AC	59	ARG
3	AC	70	LYS
3	AC	81	GLU
3	AC	92	ASP
3	AC	99	ILE
3	AC	101	GLN
3	AC	102	LYS
3	AC	111	ASP
3	AC	125	SER
3	AC	130	ILE
3	AC	144	THR
3	AC	160	ARG
3	AC	161	ILE
3	AC	163	PHE
3	AC	164	ARG
3	AC	166	ASP
3	AC	180	PHE
3	AC	190	ARG
3	AC	202	GLU
3	AC	212	VAL
3	AC	213	TYR
4	AD	23	GLU
4	AD	31	LYS
4	AD	34	VAL
4	AD	37	LEU
4	AD	39	LYS
4	AD	44	ASN
4	AD	46	GLN
4	AD	51	VAL
4	AD	52	ARG
4	AD	53	PHE
4	AD	59	LYS
4	AD	63	ARG
4	AD	70	TRP
4	AD	73	VAL

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Mol	Chain	Res	Type
4	AD	84	TYR
4	AD	87	ASN
4	AD	88	ARG
4	AD	91	ARG
4	AD	92	ILE
4	AD	94	LEU
4	AD	95	LEU
4	AD	101	GLU
4	AD	106	ILE
4	AD	109	ASP
4	AD	115	GLN
4	AD	116	GLN
4	AD	118	VAL
4	AD	121	PRO
4	AD	131	LEU
4	AD	134	ARG
4	AD	145	VAL
4	AD	146	GLU
4	AD	147	LEU
4	AD	155	LEU
4	AD	169	GLU
4	AD	175	LEU
4	AD	176	ARG
4	AD	179	SER
4	AD	181	GLU
4	AD	186	HIS
4	AD	188	GLU
4	AD	190	TYR
4	AD	200	ASP
4	AD	202	LYS
4	AD	206	LEU
4	AD	217	ARG
4	AD	220	HIS
4	AD	230	ASP
4	AD	232	PRO
4	AD	233	HIS
4	AD	239	ARG
4	AD	249	PRO
4	AD	250	TRP
4	AD	252	TRP
4	AD	253	GLN
4	AD	254	THR

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Mol	Chain	Res	Type
4	AD	258	LYS
4	AD	259	THR
4	AD	260	ARG
4	AD	264	LYS
4	AD	270	ILE
4	AD	273	ARG
5	AE	1	MET
5	AE	2	LYS
5	AE	4	ILE
5	AE	5	LEU
5	AE	7	VAL
5	AE	8	LYS
5	AE	12	THR
5	AE	13	ARG
5	AE	14	ILE
5	AE	17	ASP
5	AE	22	PRO
5	AE	38	THR
5	AE	40	GLU
5	AE	41	LYS
5	AE	44	TYR
5	AE	45	THR
5	AE	48	GLN
5	AE	49	LEU
5	AE	51	PHE
5	AE	52	LEU
5	AE	53	PRO
5	AE	56	PRO
5	AE	66	HIS
5	AE	77	ILE
5	AE	78	LEU
5	AE	80	GLU
5	AE	83	ASP
5	AE	91	VAL
5	AE	96	PHE
5	AE	108	SER
5	AE	111	ARG
5	AE	113	PHE
5	AE	118	LYS
5	AE	119	ARG
5	AE	120	TRP
5	AE	121	ASN

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Mol	Chain	Res	Type
5	AE	122	PHE
5	AE	126	PRO
5	AE	129	HIS
5	AE	135	HIS
5	AE	136	ARG
5	AE	137	HIS
5	AE	141	ILE
5	AE	143	ASN
5	AE	149	ARG
5	AE	150	VAL
5	AE	152	LYS
5	AE	154	LYS
5	AE	163	GLU
5	AE	164	ARG
5	AE	165	VAL
5	AE	169	ASN
5	AE	170	LEU
5	AE	171	GLU
5	AE	173	VAL
5	AE	176	ILE
5	AE	180	ASN
5	AE	181	LEU
5	AE	184	VAL
5	AE	185	LYS
5	AE	195	LEU
5	AE	197	ILE
5	AE	199	ARG
5	AE	202	LYS
6	AF	8	GLN
6	AF	14	PRO
6	AF	17	ARG
6	AF	19	GLU
6	AF	23	ASP
6	AF	27	GLU
6	AF	29	ASN
6	AF	30	PRO
6	AF	31	HIS
6	AF	33	LEU
6	AF	34	TRP
6	AF	35	GLU
6	AF	39	TRP
6	AF	46	ARG

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Mol	Chain	Res	Type
6	AF	60	SER
6	AF	64	ILE
6	AF	67	GLN
6	AF	69	HIS
6	AF	74	ARG
6	AF	75	HIS
6	AF	77	ASP
6	AF	78	ILE
6	AF	82	ILE
6	AF	83	PHE
6	AF	95	ARG
6	AF	99	TYR
6	AF	102	PRO
6	AF	105	VAL
6	AF	106	ARG
6	AF	108	LYS
6	AF	117	ARG
6	AF	119	ARG
6	AF	120	GLU
6	AF	122	LYS
6	AF	126	VAL
6	AF	127	GLU
6	AF	133	ASN
6	AF	137	LYS
6	AF	138	GLU
6	AF	140	LEU
6	AF	152	GLU
6	AF	155	LEU
6	AF	157	VAL
6	AF	158	THR
6	AF	168	ARG
6	AF	170	LEU
6	AF	172	TRP
6	AF	175	THR
6	AF	178	PRO
6	AF	181	LEU
6	AF	184	TYR
6	AF	185	ASP
6	AF	188	ARG
6	AF	192	LEU
6	AF	197	ASP
6	AF	200	GLU

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Mol	Chain	Res	Type
6	AF	202	PHE
6	AF	203	GLN
6	AF	204	ASN
7	AG	8	LYS
7	AG	12	TYR
7	AG	16	ARG
7	AG	20	ILE
7	AG	21	ARG
7	AG	22	ARG
7	AG	25	TYR
7	AG	32	PRO
7	AG	33	ARG
7	AG	34	LEU
7	AG	36	LYS
7	AG	39	ILE
7	AG	41	GLN
7	AG	51	ARG
7	AG	54	GLU
7	AG	68	PRO
7	AG	77	ILE
7	AG	82	LEU
7	AG	91	ARG
7	AG	94	LEU
7	AG	96	ARG
7	AG	97	ASP
7	AG	101	ILE
7	AG	102	PHE
7	AG	103	LEU
7	AG	117	PHE
7	AG	120	LEU
7	AG	126	ASP
7	AG	128	ARG
7	AG	131	TYR
7	AG	133	LEU
7	AG	135	LEU
7	AG	139	LEU
7	AG	143	GLU
7	AG	146	TYR
7	AG	148	MET
7	AG	150	ASP
7	AG	152	LEU
7	AG	153	ARG

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Mol	Chain	Res	Type
7	AG	155	MET
7	AG	170	ARG
7	AG	174	GLU
7	AG	180	PHE
7	AG	181	ARG
8	AH	7	LEU
8	AH	11	VAL
8	AH	13	LYS
8	AH	18	GLU
8	AH	23	ARG
8	AH	25	LYS
8	AH	32	GLU
8	AH	35	VAL
8	AH	40	GLU
8	AH	46	GLU
8	AH	50	VAL
8	AH	52	VAL
8	AH	68	THR
8	AH	69	ARG
8	AH	74	ASN
8	AH	83	TYR
8	AH	90	LYS
8	AH	94	TYR
8	AH	95	ARG
8	AH	103	LEU
8	AH	105	LEU
8	AH	111	HIS
8	AH	115	VAL
8	AH	116	GLU
8	AH	131	VAL
8	AH	132	ARG
8	AH	136	ILE
8	AH	153	LYS
8	AH	157	TYR
8	AH	158	HIS
8	AH	164	TYR
8	AH	167	GLU
8	AH	168	PRO
8	AH	172	LYS
8	AH	175	LYS
10	AJ	5	VAL
10	AJ	9	LYS

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Mol	Chain	Res	Type
10	AJ	10	LEU
10	AJ	16	LYS
10	AJ	18	THR
10	AJ	29	GLN
10	AJ	30	HIS
10	AJ	34	ILE
10	AJ	35	MET
10	AJ	39	LYS
10	AJ	50	ASP
10	AJ	59	ILE
10	AJ	62	ASP
10	AJ	63	ARG
10	AJ	64	SER
10	AJ	65	PHE
10	AJ	66	THR
10	AJ	69	THR
10	AJ	70	LYS
10	AJ	76	TYR
10	AJ	77	LEU
10	AJ	79	ARG
10	AJ	85	GLU
10	AJ	86	LYS
10	AJ	95	LYS
10	AJ	109	LYS
10	AJ	114	ASP
10	AJ	117	THR
10	AJ	120	LEU
10	AJ	121	GLU
11	AK	7	LYS
11	AK	8	GLN
11	AK	12	ARG
11	AK	13	TRP
11	AK	15	LEU
11	AK	16	ILE
11	AK	17	ASP
11	AK	22	THR
11	AK	25	ARG
11	AK	28	THR
11	AK	32	THR
11	AK	33	LEU
11	AK	37	LYS
11	AK	38	HIS

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Mol	Chain	Res	Type
11	AK	39	ARG
11	AK	42	TRP
11	AK	43	THR
11	AK	45	ASN
11	AK	52	VAL
11	AK	55	VAL
11	AK	69	GLN
11	AK	72	TYR
11	AK	75	TYR
11	AK	78	TYR
11	AK	79	PRO
11	AK	82	LEU
11	AK	85	ILE
11	AK	89	LYS
11	AK	90	MET
11	AK	91	LEU
11	AK	98	VAL
11	AK	101	HIS
11	AK	109	LYS
11	AK	119	ARG
11	AK	122	VAL
11	AK	127	ASP
11	AK	131	GLN
11	AK	134	ARG
11	AK	136	GLU
12	AL	1	MET
12	AL	3	GLN
12	AL	6	THR
12	AL	7	TYR
12	AL	8	LEU
12	AL	12	ASP
12	AL	14	THR
12	AL	21	CYS
12	AL	23	ARG
12	AL	24	VAL
12	AL	28	SER
12	AL	29	ASN
12	AL	34	THR
12	AL	38	VAL
12	AL	39	ILE
12	AL	42	SER
12	AL	47	ILE

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Mol	Chain	Res	Type
12	AL	56	ASP
12	AL	58	VAL
12	AL	59	LYS
12	AL	64	ARG
12	AL	65	THR
12	AL	77	ILE
12	AL	78	ARG
12	AL	82	ASN
12	AL	89	ASN
12	AL	92	GLU
12	AL	94	ARG
12	AL	97	ARG
12	AL	114	ILE
12	AL	116	SER
13	AM	7	ARG
13	AM	13	ASN
13	AM	17	LYS
13	AM	29	LYS
13	AM	30	THR
13	AM	33	ARG
13	AM	40	SER
13	AM	41	ARG
13	AM	45	LEU
13	AM	46	LYS
13	AM	48	PRO
13	AM	49	ARG
13	AM	52	GLU
13	AM	55	ARG
13	AM	59	LEU
13	AM	60	MET
13	AM	64	LYS
13	AM	65	ARG
13	AM	68	GLN
13	AM	74	GLU
13	AM	75	ILE
13	AM	79	ARG
13	AM	84	ASN
13	AM	88	LEU
13	AM	94	GLU
13	AM	99	LEU
13	AM	105	LEU
13	AM	108	LYS

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Mol	Chain	Res	Type
13	AM	110	TYR
13	AM	114	ILE
13	AM	117	GLU
13	AM	122	PRO
13	AM	123	LEU
13	AM	126	VAL
13	AM	128	HIS
13	AM	130	PHE
13	AM	137	LYS
13	AM	138	LEU
13	AM	147	LEU
13	AM	149	GLU
14	AN	6	ARG
14	AN	12	GLN
14	AN	14	ARG
14	AN	18	LYS
14	AN	26	TYR
14	AN	32	TYR
14	AN	34	LEU
14	AN	41	TRP
14	AN	42	ILE
14	AN	43	THR
14	AN	45	GLN
14	AN	48	GLU
14	AN	51	ARG
14	AN	56	ARG
14	AN	60	ARG
14	AN	63	LYS
14	AN	64	ILE
14	AN	65	PHE
14	AN	71	ASP
14	AN	74	TYR
14	AN	76	LYS
14	AN	79	LEU
14	AN	80	GLU
14	AN	83	MET
14	AN	89	ASN
14	AN	97	VAL
14	AN	98	LYS
14	AN	101	ARG
14	AN	104	PHE
14	AN	105	GLU

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Mol	Chain	Res	Type
14	AN	109	VAL
14	AN	112	GLU
14	AN	118	LEU
14	AN	124	LYS
14	AN	126	PRO
14	AN	127	ILE
14	AN	130	LYS
14	AN	133	ARG
14	AN	135	ASP
14	AN	137	TYR
14	AN	139	GLU
15	AO	4	LEU
15	AO	5	LYS
15	AO	10	LEU
15	AO	11	ASN
15	AO	13	HIS
15	AO	17	ARG
15	AO	18	LEU
15	AO	23	ASN
15	AO	37	THR
15	AO	49	ASP
15	AO	52	ILE
15	AO	56	LYS
15	AO	57	ARG
15	AO	59	ASP
15	AO	60	LEU
15	AO	64	ARG
15	AO	74	LYS
15	AO	77	ARG
15	AO	79	LEU
15	AO	80	PHE
15	AO	82	GLU
15	AO	86	ARG
15	AO	88	ARG
15	AO	89	ASP
15	AO	99	LYS
15	AO	100	LEU
15	AO	105	ARG
15	AO	113	LEU
15	AO	116	LEU
16	AP	3	ARG
16	AP	9	ARG

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Mol	Chain	Res	Type
16	AP	11	LYS
16	AP	12	PHE
16	AP	20	ARG
16	AP	21	THR
16	AP	23	ARG
16	AP	26	LEU
16	AP	27	SER
16	AP	29	PHE
16	AP	36	TYR
16	AP	38	GLN
16	AP	42	ASP
16	AP	57	LYS
16	AP	73	LEU
16	AP	76	LYS
16	AP	78	LEU
16	AP	80	LEU
16	AP	88	ASP
16	AP	94	TYR
16	AP	97	ARG
16	AP	98	VAL
16	AP	106	ARG
16	AP	112	PHE
17	AQ	1	MET
17	AQ	20	PRO
17	AQ	22	PHE
17	AQ	23	ARG
17	AQ	30	VAL
17	AQ	32	TYR
17	AQ	39	ARG
17	AQ	43	GLN
17	AQ	46	GLU
17	AQ	50	ILE
17	AQ	53	ARG
17	AQ	54	ARG
17	AQ	55	ASN
17	AQ	57	PHE
17	AQ	58	ASN
17	AQ	61	PHE
17	AQ	62	THR
17	AQ	64	ARG
17	AQ	66	VAL
17	AQ	68	TYR

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Mol	Chain	Res	Type
17	AQ	75	ILE
17	AQ	78	LEU
17	AQ	79	HIS
17	AQ	82	LEU
17	AQ	85	LYS
17	AQ	88	ILE
17	AQ	93	ARG
17	AQ	95	ARG
17	AQ	96	ARG
17	AQ	101	PHE
17	AQ	102	ILE
17	AQ	103	ARG
17	AQ	106	SER
17	AQ	107	ASP
17	AQ	108	ARG
17	AQ	109	GLU
17	AQ	117	ASP
18	AR	6	THR
18	AR	13	LYS
18	AR	16	LYS
18	AR	19	LYS
18	AR	25	TRP
18	AR	27	LEU
18	AR	32	PHE
18	AR	36	ARG
18	AR	38	THR
18	AR	50	ARG
18	AR	52	ARG
18	AR	53	ARG
18	AR	54	LYS
18	AR	55	ARG
18	AR	58	ARG
18	AR	65	ILE
18	AR	70	ARG
18	AR	75	ASN
18	AR	77	SER
18	AR	81	HIS
18	AR	83	LEU
18	AR	88	ILE
18	AR	92	ARG
18	AR	93	LYS
18	AR	97	ASP

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Mol	Chain	Res	Type
18	AR	105	VAL
18	AR	106	PHE
18	AR	108	GLU
18	AR	114	LYS
19	AS	4	ILE
19	AS	13	ARG
19	AS	15	GLU
19	AS	18	LEU
19	AS	20	LEU
19	AS	21	ARG
19	AS	29	PRO
19	AS	35	LEU
19	AS	36	PRO
19	AS	40	LEU
19	AS	43	GLU
19	AS	44	LYS
19	AS	45	THR
19	AS	49	THR
19	AS	52	VAL
19	AS	56	SER
19	AS	60	GLU
19	AS	64	HIS
19	AS	78	LYS
19	AS	79	VAL
19	AS	83	ARG
19	AS	84	LYS
19	AS	87	HIS
19	AS	93	GLU
19	AS	100	ARG
20	AT	4	LYS
20	AT	8	ARG
20	AT	10	VAL
20	AT	11	ARG
20	AT	12	ILE
20	AT	16	LYS
20	AT	18	ARG
20	AT	24	ILE
20	AT	31	GLU
20	AT	33	ARG
20	AT	40	ASN
20	AT	42	ARG
20	AT	45	TYR

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Mol	Chain	Res	Type
20	AT	47	VAL
20	AT	60	ASN
20	AT	67	ASP
20	AT	71	VAL
20	AT	82	LEU
20	AT	87	PRO
20	AT	88	ARG
20	AT	90	ARG
20	AT	94	ASP
20	AT	95	ILE
20	AT	98	LYS
20	AT	103	ILE
20	AT	106	ILE
21	AU	8	ILE
21	AU	9	LEU
21	AU	13	LEU
21	AU	14	SER
21	AU	16	LYS
21	AU	23	GLU
21	AU	28	PHE
21	AU	36	LYS
21	AU	37	THR
21	AU	38	GLU
21	AU	45	THR
21	AU	47	PHE
21	AU	50	LYS
21	AU	55	ASN
21	AU	63	LYS
21	AU	65	ARG
21	AU	73	ARG
21	AU	83	VAL
21	AU	92	LEU
22	AV	12	THR
22	AV	13	VAL
22	AV	14	LEU
22	AV	19	LYS
22	AV	26	LYS
22	AV	28	LYS
22	AV	35	TYR
22	AV	42	VAL
22	AV	60	PHE
22	AV	64	GLU

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Mol	Chain	Res	Type
22	AV	73	ARG
22	AV	75	ILE
22	AV	84	ARG
22	AV	89	PHE
22	AV	90	LEU
22	AV	91	GLU
22	AV	102	CYS
22	AV	107	ASP
22	AV	109	GLU
23	AW	3	TYR
23	AW	8	TYR
23	AW	13	GLU
23	AW	14	LYS
23	AW	28	MET
23	AW	30	ASN
23	AW	44	PHE
23	AW	45	ASP
23	AW	49	ARG
23	AW	50	GLN
23	AW	53	ILE
23	AW	55	HIS
23	AW	58	VAL
23	AW	60	GLU
23	AW	62	PRO
23	AW	63	ASP
23	AW	70	LEU
23	AW	78	LYS
23	AW	80	ARG
23	AW	83	PRO
23	AW	86	VAL
23	AW	87	ASP
23	AW	89	PHE
23	AW	90	VAL
23	AW	95	PRO
23	AW	104	PHE
23	AW	108	PRO
23	AW	120	ILE
23	AW	129	SER
23	AW	140	ASP
23	AW	151	HIS
23	AW	155	LEU
23	AW	159	PRO

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Mol	Chain	Res	Type
23	AW	163	LEU
23	AW	168	GLU
23	AW	171	ILE
23	AW	174	VAL
23	AW	175	VAL
23	AW	179	ASP
24	AX	10	THR
24	AX	20	ARG
24	AX	26	TYR
24	AX	29	GLN
24	AX	30	VAL
24	AX	32	ARG
24	AX	36	ILE
24	AX	37	LEU
24	AX	40	GLN
24	AX	41	ARG
24	AX	46	LYS
24	AX	57	PHE
24	AX	58	THR
24	AX	64	ASP
24	AX	68	GLU
24	AX	74	ARG
25	AY	1	MET
25	AY	2	ARG
25	AY	6	GLU
25	AY	12	SER
25	AY	19	LEU
25	AY	22	GLU
25	AY	25	ARG
25	AY	30	LEU
25	AY	32	PHE
25	AY	33	GLN
25	AY	35	SER
25	AY	45	ILE
25	AY	50	ARG
25	AY	56	LEU
25	AY	58	VAL
25	AY	64	ARG
25	AY	65	GLN
25	AY	66	ASN
26	AZ	3	ARG
26	AZ	5	LYS

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Mol	Chain	Res	Type
26	AZ	6	VAL
26	AZ	12	PRO
26	AZ	15	TYR
26	AZ	26	LEU
26	AZ	28	LEU
26	AZ	30	ARG
26	AZ	31	LEU
26	AZ	32	GLN
26	AZ	35	ARG
26	AZ	37	LEU
26	AZ	41	PRO
26	AZ	55	ARG
26	AZ	59	VAL
27	Aa	3	GLU
27	Aa	11	PRO
27	Aa	14	ILE
27	Aa	16	CYS
27	Aa	23	GLU
27	Aa	24	THR
27	Aa	27	THR
27	Aa	29	PRO
27	Aa	31	ILE
27	Aa	32	TYR
27	Aa	37	SER
27	Aa	47	GLN
27	Aa	49	PHE
27	Aa	57	GLU
27	Aa	59	PHE
27	Aa	60	GLN
27	Aa	62	ARG
27	Aa	68	ARG
28	Ab	4	HIS
28	Ab	9	LYS
28	Ab	11	THR
28	Ab	13	LYS
28	Ab	15	ARG
28	Ab	17	ASP
28	Ab	20	ARG
28	Ab	25	LEU
28	Ab	26	THR
28	Ab	30	LEU
28	Ab	33	CYS

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Mol	Chain	Res	Type
28	Ab	36	CYS
28	Ab	37	LYS
28	Ab	39	MET
28	Ab	43	HIS
28	Ab	49	CYS
28	Ab	51	TYR
28	Ab	55	ARG
28	Ab	59	GLU
29	Ac	11	LEU
29	Ac	13	CYS
29	Ac	19	ARG
29	Ac	29	ASN
29	Ac	30	THR
29	Ac	31	PRO
29	Ac	32	ASN
29	Ac	33	LYS
29	Ac	38	LYS
29	Ac	40	CYS
29	Ac	42	TRP
29	Ac	43	CYS
29	Ac	46	HIS
29	Ac	51	GLU
29	Ac	54	ILE
30	Ad	3	ARG
30	Ad	5	TRP
30	Ad	6	GLN
30	Ad	8	ASN
30	Ad	12	ARG
30	Ad	19	ARG
30	Ad	21	ARG
30	Ad	24	THR
30	Ad	34	ARG
30	Ad	36	GLN
30	Ad	41	ARG
30	Ad	46	VAL
30	Ad	48	LYS
31	Ae	5	LYS
31	Ae	8	LYS
31	Ae	16	ILE
31	Ae	33	ASN
31	Ae	39	LYS
31	Ae	42	ARG

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Mol	Chain	Res	Type
31	Ae	44	LYS
31	Ae	50	LEU
31	Ae	59	LYS
31	Ae	62	LEU
32	Af	10	ILE
32	Af	12	ASP
32	Af	17	ILE
32	Af	19	ARG
32	Af	27	CYS
35	BF	10	LEU
35	BF	11	LEU
35	BF	17	PHE
35	BF	20	GLU
35	BF	21	ARG
35	BF	23	ARG
35	BF	25	ASN
35	BF	26	PRO
35	BF	35	GLU
35	BF	36	ARG
35	BF	40	HIS
35	BF	44	LEU
35	BF	48	MET
35	BF	49	GLU
35	BF	52	GLU
35	BF	56	ARG
35	BF	57	PHE
35	BF	61	LEU
35	BF	64	ARG
35	BF	69	LEU
35	BF	70	PHE
35	BF	74	LYS
35	BF	75	LYS
35	BF	80	ILE
35	BF	84	GLU
35	BF	91	PRO
35	BF	92	TYR
35	BF	96	ARG
35	BF	101	MET
35	BF	102	LEU
35	BF	105	PHE
35	BF	111	ARG
35	BF	114	ARG

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Mol	Chain	Res	Type
35	BF	118	LEU
35	BF	122	PHE
35	BF	131	PRO
35	BF	132	LYS
35	BF	134	GLU
35	BF	135	GLN
35	BF	137	ARG
35	BF	147	LYS
35	BF	148	TYR
35	BF	152	PHE
35	BF	153	ARG
35	BF	154	LEU
35	BF	158	LEU
35	BF	162	ILE
35	BF	168	THR
35	BF	169	LYS
35	BF	172	ILE
35	BF	181	PHE
35	BF	182	ILE
35	BF	185	ILE
35	BF	187	LEU
35	BF	189	ASP
35	BF	191	ASP
35	BF	194	PRO
35	BF	195	ASP
35	BF	196	LEU
35	BF	204	ASN
35	BF	209	ARG
35	BF	212	GLN
35	BF	217	ARG
35	BF	222	ILE
36	BG	5	ILE
36	BG	8	ILE
36	BG	10	PHE
36	BG	15	THR
36	BG	23	TYR
36	BG	29	TYR
36	BG	30	ARG
36	BG	33	LEU
36	BG	35	GLU
36	BG	38	ARG
36	BG	46	GLU

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Mol	Chain	Res	Type
36	BG	48	TYR
36	BG	52	LEU
36	BG	59	ARG
36	BG	67	THR
36	BG	82	GLU
36	BG	89	GLU
36	BG	91	LEU
36	BG	95	THR
36	BG	97	LYS
36	BG	107	GLN
36	BG	125	GLU
36	BG	136	GLN
36	BG	139	GLN
36	BG	140	ARG
36	BG	142	MET
36	BG	164	ARG
36	BG	176	HIS
36	BG	178	LEU
36	BG	184	TYR
36	BG	186	PHE
36	BG	190	ARG
36	BG	193	TYR
36	BG	195	VAL
36	BG	196	LEU
36	BG	201	TYR
36	BG	204	LEU
37	BH	5	ILE
37	BH	8	VAL
37	BH	9	CYS
37	BH	10	ARG
37	BH	14	ARG
37	BH	15	GLU
37	BH	20	TYR
37	BH	24	GLU
37	BH	25	ARG
37	BH	26	CYS
37	BH	29	PRO
37	BH	31	CYS
37	BH	33	MET
37	BH	47	ARG
37	BH	51	PRO
37	BH	57	ARG

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Mol	Chain	Res	Type
37	BH	59	ARG
37	BH	61	LYS
37	BH	63	LYS
37	BH	68	TYR
37	BH	78	LEU
37	BH	79	PHE
37	BH	83	SER
37	BH	85	LYS
37	BH	107	ARG
37	BH	108	LEU
37	BH	114	ARG
37	BH	116	GLN
37	BH	120	LEU
37	BH	131	ARG
37	BH	135	LEU
37	BH	138	TYR
37	BH	141	ARG
37	BH	142	PRO
37	BH	146	ILE
37	BH	154	ASN
37	BH	155	LEU
37	BH	168	ARG
37	BH	173	TRP
37	BH	175	SER
37	BH	176	LEU
37	BH	178	VAL
37	BH	181	MET
37	BH	182	LYS
37	BH	190	ASP
37	BH	191	ARG
37	BH	193	ASP
37	BH	196	LEU
37	BH	198	VAL
38	BI	5	ASP
38	BI	6	PHE
38	BI	7	GLU
38	BI	15	ARG
38	BI	16	THR
38	BI	25	ARG
38	BI	26	PHE
38	BI	27	ARG
38	BI	28	PHE

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Mol	Chain	Res	Type
38	BI	31	LEU
38	BI	34	VAL
38	BI	41	VAL
38	BI	56	GLN
38	BI	60	TYR
38	BI	63	ARG
38	BI	64	ARG
38	BI	67	VAL
38	BI	73	ASN
38	BI	78	HIS
38	BI	79	GLU
38	BI	80	ILE
38	BI	81	GLU
38	BI	89	ILE
38	BI	91	LEU
38	BI	101	ILE
38	BI	105	VAL
38	BI	111	GLU
38	BI	112	LEU
38	BI	119	LEU
38	BI	121	LYS
38	BI	128	PRO
38	BI	131	ILE
38	BI	133	TYR
38	BI	141	GLN
38	BI	143	ARG
38	BI	150	ARG
38	BI	152	ARG
39	BJ	2	ARG
39	BJ	4	TYR
39	BJ	5	GLU
39	BJ	6	VAL
39	BJ	8	ILE
39	BJ	10	LEU
39	BJ	14	LEU
39	BJ	28	ARG
39	BJ	37	VAL
39	BJ	40	VAL
39	BJ	47	ARG
39	BJ	48	LEU
39	BJ	50	TYR
39	BJ	55	ASP

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Mol	Chain	Res	Type
39	BJ	57	GLN
39	BJ	60	PHE
39	BJ	65	VAL
39	BJ	66	GLU
39	BJ	67	MET
39	BJ	69	GLU
39	BJ	74	ASP
39	BJ	75	LEU
39	BJ	79	LEU
39	BJ	83	ASP
39	BJ	88	VAL
39	BJ	94	GLN
39	BJ	95	GLU
39	BJ	98	LEU
39	BJ	100	ASN
40	BK	5	ARG
40	BK	6	ARG
40	BK	10	ARG
40	BK	12	LEU
40	BK	14	PRO
40	BK	17	VAL
40	BK	18	TYR
40	BK	22	LEU
40	BK	47	CYS
40	BK	51	GLN
40	BK	54	THR
40	BK	56	GLN
40	BK	69	VAL
40	BK	72	ARG
40	BK	74	GLU
40	BK	89	MET
40	BK	99	LEU
40	BK	101	LEU
40	BK	103	TRP
40	BK	106	GLN
40	BK	111	ARG
40	BK	113	GLU
40	BK	123	GLU
40	BK	124	LEU
40	BK	126	ASP
40	BK	136	LYS
40	BK	139	GLU

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Mol	Chain	Res	Type
40	BK	143	ARG
40	BK	146	GLU
40	BK	149	ARG
40	BK	153	HIS
40	BK	155	ARG
40	BK	156	TRP
41	BL	4	ASP
41	BL	6	ILE
41	BL	14	ARG
41	BL	18	ARG
41	BL	25	ASP
41	BL	26	VAL
41	BL	31	PHE
41	BL	32	LYS
41	BL	33	GLU
41	BL	36	LEU
41	BL	37	ARG
41	BL	39	LEU
41	BL	41	ARG
41	BL	45	ILE
41	BL	49	GLU
41	BL	50	ARG
41	BL	54	ASP
41	BL	63	LEU
41	BL	70	GLN
41	BL	84	ARG
41	BL	88	LYS
41	BL	92	ARG
41	BL	98	LYS
41	BL	100	ILE
41	BL	102	ARG
41	BL	103	VAL
41	BL	104	ARG
41	BL	107	LEU
41	BL	111	ILE
41	BL	119	LEU
41	BL	122	ARG
41	BL	126	LYS
41	BL	136	GLU
42	BM	4	TYR
42	BM	5	TYR
42	BM	11	LYS

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Mol	Chain	Res	Type
42	BM	12	GLU
42	BM	19	LEU
42	BM	21	PRO
42	BM	23	ASN
42	BM	32	ASP
42	BM	33	PHE
42	BM	37	PHE
42	BM	47	LEU
42	BM	51	ARG
42	BM	54	ASP
42	BM	63	ILE
42	BM	64	THR
42	BM	75	ASP
42	BM	79	LEU
42	BM	89	ASN
42	BM	101	PHE
42	BM	102	LEU
42	BM	105	ASP
42	BM	110	GLU
42	BM	113	LYS
42	BM	116	LYS
42	BM	117	HIS
43	BN	3	LYS
43	BN	4	ILE
43	BN	5	ARG
43	BN	9	ARG
43	BN	11	PHE
43	BN	14	LYS
43	BN	33	GLN
43	BN	45	ARG
43	BN	47	PHE
43	BN	49	VAL
43	BN	60	ARG
43	BN	62	HIS
43	BN	63	PHE
43	BN	73	ASP
43	BN	78	ASN
43	BN	79	ARG
43	BN	81	THR
43	BN	83	GLU
43	BN	85	LEU
43	BN	95	GLU

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Mol	Chain	Res	Type
43	BN	99	LYS
44	BO	13	GLN
44	BO	18	ARG
44	BO	22	HIS
44	BO	34	ASP
44	BO	39	PRO
44	BO	40	ILE
44	BO	42	TRP
44	BO	50	TYR
44	BO	62	GLN
44	BO	67	ASP
44	BO	78	GLN
44	BO	81	ASP
44	BO	99	GLN
44	BO	104	GLN
44	BO	116	HIS
44	BO	125	PHE
44	BO	126	ARG
45	BP	8	ASN
45	BP	10	LEU
45	BP	16	GLU
45	BP	23	LYS
45	BP	32	PHE
45	BP	38	THR
45	BP	42	THR
45	BP	53	ARG
45	BP	60	LEU
45	BP	64	TYR
45	BP	65	GLU
45	BP	66	VAL
45	BP	73	GLU
45	BP	75	HIS
45	BP	84	LEU
45	BP	85	ILE
45	BP	93	LEU
45	BP	100	ILE
45	BP	101	VAL
45	BP	113	ARG
45	BP	119	LYS
45	BP	126	LYS
45	BP	127	GLU
46	BQ	3	ARG

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Mol	Chain	Res	Type
46	BQ	11	ARG
46	BQ	14	ARG
46	BQ	19	LEU
46	BQ	27	LYS
46	BQ	35	GLU
46	BQ	36	LYS
46	BQ	39	ILE
46	BQ	44	ARG
46	BQ	48	LEU
46	BQ	49	THR
46	BQ	56	LEU
46	BQ	57	ARG
46	BQ	65	LYS
46	BQ	66	LEU
46	BQ	67	GLU
46	BQ	70	LEU
46	BQ	71	ARG
46	BQ	80	ARG
46	BQ	81	LEU
46	BQ	86	CYS
46	BQ	88	ARG
46	BQ	102	ARG
46	BQ	108	ARG
46	BQ	110	ARG
47	BR	16	PHE
47	BR	21	TYR
47	BR	22	THR
47	BR	24	CYS
47	BR	29	ARG
47	BR	34	TYR
47	BR	40	CYS
47	BR	43	CYS
47	BR	45	ARG
47	BR	49	HIS
47	BR	54	PRO
47	BR	56	VAL
47	BR	61	TRP
48	BS	3	ILE
48	BS	4	THR
48	BS	5	LYS
48	BS	13	GLN
48	BS	38	ARG

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Mol	Chain	Res	Type
48	BS	41	GLU
48	BS	42	HIS
48	BS	49	ASP
48	BS	54	ARG
48	BS	64	ARG
48	BS	66	LEU
48	BS	73	GLU
48	BS	77	ARG
48	BS	78	TYR
48	BS	79	ARG
49	BT	2	VAL
49	BT	3	LYS
49	BT	4	ILE
49	BT	6	LEU
49	BT	14	ASN
49	BT	15	PRO
49	BT	18	ARG
49	BT	27	LYS
49	BT	32	TYR
49	BT	36	ILE
49	BT	39	TYR
49	BT	40	ASP
49	BT	48	TRP
49	BT	54	GLU
49	BT	55	ARG
49	BT	59	TRP
49	BT	62	VAL
49	BT	65	GLN
49	BT	66	PRO
49	BT	69	THR
49	BT	72	ARG
49	BT	75	ARG
49	BT	80	PHE
50	BU	6	LEU
50	BU	12	SER
50	BU	15	MET
50	BU	18	THR
50	BU	24	GLU
50	BU	25	ARG
50	BU	27	PHE
50	BU	28	PRO
50	BU	36	ILE

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Mol	Chain	Res	Type
50	BU	38	ARG
50	BU	40	LYS
50	BU	43	LEU
50	BU	48	GLU
50	BU	51	TYR
50	BU	57	VAL
50	BU	58	GLU
50	BU	60	ILE
50	BU	62	SER
50	BU	67	LYS
50	BU	69	LYS
50	BU	84	LEU
50	BU	86	GLU
50	BU	87	LYS
50	BU	93	GLN
50	BU	95	TYR
50	BU	96	GLN
50	BU	98	LEU
50	BU	100	LYS
50	BU	101	ARG
51	BV	28	GLU
51	BV	32	ARG
51	BV	34	TYR
51	BV	36	ASN
51	BV	38	GLU
51	BV	49	LYS
51	BV	53	ARG
51	BV	55	ARG
51	BV	62	GLU
51	BV	63	GLN
51	BV	72	ARG
51	BV	74	ARG
51	BV	79	LEU
51	BV	80	PRO
51	BV	81	PHE
51	BV	83	GLU
52	BW	3	ARG
52	BW	6	LYS
52	BW	7	LYS
52	BW	12	ASP
52	BW	15	LEU
52	BW	17	GLU

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Mol	Chain	Res	Type
52	BW	18	LYS
52	BW	19	VAL
52	BW	25	LYS
52	BW	34	TRP
52	BW	36	ARG
52	BW	37	ARG
52	BW	41	VAL
52	BW	42	PRO
52	BW	43	GLU
52	BW	52	TYR
52	BW	57	HIS
52	BW	61	TYR
52	BW	74	PHE
53	BX	13	LEU
53	BX	23	ARG
53	BX	25	ARG
53	BX	26	ASN
53	BX	30	LYS
53	BX	35	THR
53	BX	42	GLN
53	BX	51	GLU
53	BX	56	MET
53	BX	63	ILE
53	BX	71	THR
53	BX	73	HIS
53	BX	79	ARG
53	BX	84	LEU
53	BX	87	LYS
53	BX	88	VAL
53	BX	91	LEU
54	BY	9	ARG
54	BY	10	ARG
55	CA	3	GLU
55	CA	4	LYS
55	CA	13	HIS
55	CA	20	THR
55	CA	24	LYS
55	CA	26	LEU
55	CA	28	GLN
55	CA	29	SER
55	CA	31	THR
55	CA	33	ASP

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Mol	Chain	Res	Type
55	CA	34	SER
55	CA	35	ARG
55	CA	37	GLU
55	CA	40	GLU
55	CA	41	ARG
55	CA	42	VAL
55	CA	48	LEU
55	CA	50	LYS
55	CA	52	ARG
55	CA	59	LYS
55	CA	61	THR
55	CA	67	ASP
55	CA	68	TYR
55	CA	72	ILE
55	CA	81	PHE
55	CA	84	GLU
55	CA	89	MET
55	CA	91	MET
55	CA	94	SER
55	CA	95	VAL
55	CA	108	GLN
55	CA	110	ARG
55	CA	115	LYS
55	CA	117	PHE
55	CA	121	LEU
55	CA	131	ASP
55	CA	132	ARG
55	CA	136	ARG
55	CA	142	ASP
55	CA	146	ASP
55	CA	147	LEU
55	CA	150	ASN
55	CA	155	ASP
55	CA	160	PHE
55	CA	174	LEU
55	CA	181	GLU
55	CA	182	ASP
55	CA	183	MET
55	CA	186	LEU
55	CA	200	ASP
55	CA	201	LEU
55	CA	202	ASP

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Mol	Chain	Res	Type
55	CA	207	MET
55	CA	208	GLN
55	CA	216	SER
55	CA	225	ARG
55	CA	230	LYS
55	CA	234	ASN
55	CA	241	ASP
55	CA	243	GLU
55	CA	245	LYS
55	CA	250	LYS
55	CA	253	LYS
55	CA	258	LEU
55	CA	260	LEU
55	CA	261	GLU
55	CA	262	ARG
55	CA	265	THR
55	CA	272	ASP
55	CA	273	ILE
55	CA	283	ASN
55	CA	289	CYS
55	CA	308	SER
55	CA	321	LYS
55	CA	324	LYS
55	CA	325	PHE
55	CA	329	ARG
55	CA	332	LEU
55	CA	333	ASP
55	CA	342	ASN
55	CA	346	ARG
55	CA	357	ARG
55	CA	359	SER
55	CA	361	ARG
55	CA	364	LEU
55	CA	380	LEU
55	CA	382	VAL
55	CA	384	ARG
55	CA	387	VAL
55	CA	390	ARG
55	CA	391	GLU
55	CA	393	ASP
55	CA	398	GLU
55	CA	404	THR

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Mol	Chain	Res	Type
55	CA	407	VAL
55	CA	410	GLN
55	CA	411	HIS
55	CA	417	GLN
55	CA	419	LEU
55	CA	443	ILE
55	CA	445	SER
55	CA	448	LEU
55	CA	460	SER
55	CA	464	LEU
55	CA	465	LEU
55	CA	466	TYR
55	CA	472	TYR
55	CA	474	ASP
55	CA	482	GLN
55	CA	483	ARG
55	CA	485	ASN
55	CA	489	ILE
55	CA	491	ASN
55	CA	493	GLN
55	CA	506	ASP
55	CA	507	ARG
55	CA	509	LYS
55	CA	512	LEU
55	CA	526	ILE
55	CA	528	SER
55	CA	538	LEU
55	CA	542	LYS
55	CA	574	ASP
55	CA	588	ARG
55	CA	589	LYS
55	CA	593	THR
55	CA	597	ARG
55	CA	599	ARG
55	CA	602	ARG
55	CA	605	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (186) such sidechains are listed below:

Mol	Chain	Res	Type
3	AC	56	GLN
3	AC	148	ASN

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Mol	Chain	Res	Type
3	AC	165	ASN
3	AC	188	ASN
4	AD	45	ASN
4	AD	87	ASN
4	AD	115	GLN
4	AD	166	GLN
4	AD	198	ASN
4	AD	201	HIS
5	AE	35	GLN
5	AE	85	ASN
5	AE	121	ASN
5	AE	129	HIS
5	AE	169	ASN
6	AF	67	GLN
6	AF	133	ASN
6	AF	169	ASN
7	AG	26	GLN
7	AG	40	ASN
7	AG	41	GLN
7	AG	130	ASN
8	AH	74	ASN
8	AH	143	GLN
10	AJ	11	GLN
10	AJ	33	ASN
10	AJ	116	ASN
11	AK	38	HIS
11	AK	94	HIS
12	AL	5	GLN
12	AL	89	ASN
12	AL	90	GLN
13	AM	13	ASN
13	AM	35	HIS
13	AM	38	GLN
13	AM	68	GLN
13	AM	81	GLN
13	AM	84	ASN
14	AN	12	GLN
14	AN	89	ASN
14	AN	113	GLN
15	AO	24	GLN
15	AO	31	HIS
16	AP	38	GLN

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Mol	Chain	Res	Type
16	AP	84	GLN
17	AQ	55	ASN
17	AQ	58	ASN
18	AR	44	ASN
18	AR	71	GLN
18	AR	94	ASN
18	AR	117	GLN
19	AS	11	GLN
19	AS	87	HIS
19	AS	89	GLN
20	AT	34	ASN
20	AT	61	ASN
20	AT	62	HIS
20	AT	102	HIS
21	AU	31	HIS
21	AU	55	ASN
21	AU	82	GLN
21	AU	87	GLN
22	AV	6	HIS
22	AV	43	ASN
23	AW	32	HIS
23	AW	34	ASN
23	AW	75	ASN
23	AW	118	GLN
24	AX	3	HIS
24	AX	35	ASN
24	AX	80	HIS
25	AY	33	GLN
25	AY	41	GLN
25	AY	51	GLN
25	AY	65	GLN
26	AZ	32	GLN
27	Aa	46	GLN
28	Ab	23	HIS
29	Ac	20	ASN
29	Ac	26	ASN
29	Ac	29	ASN
29	Ac	32	ASN
30	Ad	6	GLN
30	Ad	16	HIS
30	Ad	36	GLN
31	Ae	31	HIS

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Mol	Chain	Res	Type
31	Ae	33	ASN
31	Ae	35	GLN
31	Ae	43	GLN
32	Af	32	HIS
32	Af	36	GLN
35	BF	40	HIS
35	BF	78	GLN
35	BF	94	ASN
35	BF	135	GLN
35	BF	204	ASN
35	BF	224	GLN
36	BG	3	ASN
36	BG	6	HIS
36	BG	28	GLN
36	BG	102	ASN
36	BG	108	ASN
36	BG	110	ASN
36	BG	136	GLN
36	BG	139	GLN
36	BG	170	GLN
37	BH	42	GLN
37	BH	62	GLN
37	BH	74	GLN
37	BH	77	ASN
37	BH	154	ASN
37	BH	161	ASN
37	BH	201	GLN
38	BI	56	GLN
38	BI	65	ASN
38	BI	72	GLN
38	BI	78	HIS
39	BJ	7	ASN
39	BJ	13	ASN
39	BJ	18	GLN
39	BJ	32	ASN
39	BJ	64	GLN
39	BJ	84	ASN
39	BJ	100	ASN
40	BK	56	GLN
40	BK	68	ASN
40	BK	96	GLN
40	BK	97	GLN

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Mol	Chain	Res	Type
40	BK	106	GLN
40	BK	109	ASN
40	BK	110	GLN
40	BK	148	ASN
40	BK	153	HIS
41	BL	15	ASN
41	BL	70	GLN
42	BM	23	ASN
42	BM	58	HIS
42	BM	73	GLN
42	BM	87	GLN
42	BM	89	ASN
42	BM	117	HIS
43	BN	56	HIS
43	BN	62	HIS
43	BN	68	HIS
43	BN	76	ASN
43	BN	78	ASN
44	BO	26	ASN
44	BO	27	ASN
44	BO	38	ASN
44	BO	104	GLN
44	BO	117	ASN
45	BP	8	ASN
45	BP	9	GLN
45	BP	49	ASN
45	BP	80	HIS
45	BP	99	HIS
46	BQ	40	ASN
46	BQ	101	GLN
48	BS	9	GLN
48	BS	13	GLN
48	BS	37	ASN
48	BS	53	HIS
48	BS	62	GLN
49	BT	82	GLN
50	BU	93	GLN
52	BW	53	ASN
52	BW	65	ASN
52	BW	69	HIS
53	BX	16	HIS
53	BX	42	GLN

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Mol	Chain	Res	Type
53	BX	45	GLN
53	BX	73	HIS
53	BX	75	ASN
55	CA	78	HIS
55	CA	128	ASN
55	CA	150	ASN
55	CA	206	GLN
55	CA	211	GLN
55	CA	215	ASN
55	CA	248	ASN
55	CA	410	GLN
55	CA	412	GLN
55	CA	417	GLN
55	CA	485	ASN
55	CA	491	ASN
55	CA	527	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	2880/2889 (99%)	1261 (43%)	253 (8%)
2	AB	122/123 (99%)	46 (37%)	3 (2%)
34	BA	1514/1515 (99%)	484 (31%)	140 (9%)
All	All	4516/4527 (99%)	1791 (39%)	396 (8%)

All (1791) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	13	A
1	AA	14	A
1	AA	15	G
1	AA	20	C
1	AA	26	G
1	AA	29	U
1	AA	34	C
1	AA	35	G
1	AA	46	C
1	AA	49	A
1	AA	50	U
1	AA	52	A
1	AA	60	G

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Mol	Chain	Res	Type
1	AA	61	G
1	AA	63	U
1	AA	64	A
1	AA	68	G
1	AA	71	A
1	AA	72	U
1	AA	73	A
1	AA	74	A
1	AA	75	G
1	AA	76	C
1	AA	77	C
1	AA	82	G
1	AA	84	A
1	AA	88	G
1	AA	90	U
1	AA	91	A
1	AA	92	G
1	AA	96	G
1	AA	101	G
1	AA	102	G
1	AA	104	U
1	AA	105	C
1	AA	109	G
1	AA	112	U
1	AA	113	G
1	AA	119	A
1	AA	120	U
1	AA	121	G
1	AA	125	G
1	AA	126	A
1	AA	131	G
1	AA	132	G
1	AA	136	G
1	AA	138	G
1	AA	139	G
1	AA	140	A
1	AA	141(A)	C
1	AA	147	U
1	AA	149	A
1	AA	153	C
1	AA	154	G
1	AA	155	C

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Mol	Chain	Res	Type
1	AA	161	U
1	AA	162	U
1	AA	163	U
1	AA	164	U
1	AA	172	C
1	AA	178	G
1	AA	180	G
1	AA	181	A
1	AA	182	A
1	AA	192	C
1	AA	193	U
1	AA	196	A
1	AA	197	A
1	AA	199	A
1	AA	200	U
1	AA	201	C
1	AA	204	A
1	AA	205	G
1	AA	206	U
1	AA	216	A
1	AA	218	A
1	AA	221	A
1	AA	222	A
1	AA	223	A
1	AA	228	A
1	AA	229	A
1	AA	230	U
1	AA	232	G
1	AA	233	A
1	AA	234	C
1	AA	241	A
1	AA	242	G
1	AA	244	A
1	AA	245	G
1	AA	247	G
1	AA	248	G
1	AA	249	C
1	AA	250	G
1	AA	251	A
1	AA	252	G
1	AA	254	G
1	AA	264	C

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Mol	Chain	Res	Type
1	AA	265	A
1	AA	266	G
1	AA	270	A
1	AA	270(A)	A
1	AA	270(B)	A
1	AA	270(C)	C
1	AA	270(E)	G
1	AA	270(G)	C
1	AA	270(K)	C
1	AA	270(L)	U
1	AA	270(M)	U
1	AA	270(N)	G
1	AA	270(V)	G
1	AA	270(Z)	U
1	AA	271(A)	C
1	AA	271(B)	G
1	AA	271(C)	U
1	AA	271	G
1	AA	272	G
1	AA	273(F)	C
1	AA	275	G
1	AA	276	A
1	AA	277	C
1	AA	278	A
1	AA	279	C
1	AA	280	C
1	AA	281	G
1	AA	282	A
1	AA	283	A
1	AA	284	U
1	AA	286	C
1	AA	287	C
1	AA	289	A
1	AA	290	G
1	AA	293	U
1	AA	300	A
1	AA	302	C
1	AA	310	A
1	AA	311	A
1	AA	312	G
1	AA	316	C
1	AA	322	A

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Mol	Chain	Res	Type
1	AA	323	G
1	AA	324	A
1	AA	329	G
1	AA	330	A
1	AA	332	A
1	AA	333	G
1	AA	339	U
1	AA	341	G
1	AA	342	G
1	AA	345	A
1	AA	347	A
1	AA	348	G
1	AA	349	G
1	AA	350	U
1	AA	351	G
1	AA	352	G
1	AA	354	G
1	AA	356	G
1	AA	359	A
1	AA	360	G
1	AA	361	G
1	AA	363(A)	A
1	AA	363(B)	G
1	AA	364	C
1	AA	365	C
1	AA	366	C
1	AA	370	G
1	AA	372	G
1	AA	373	U
1	AA	374	A
1	AA	377	C
1	AA	382	G
1	AA	386	G
1	AA	387	U
1	AA	388	G
1	AA	390	A
1	AA	391	G
1	AA	395	U
1	AA	397	G
1	AA	401	A
1	AA	404	C
1	AA	405	U

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Mol	Chain	Res	Type
1	AA	406	G
1	AA	408	G
1	AA	411	G
1	AA	412	A
1	AA	413	C
1	AA	421	U
1	AA	422	A
1	AA	423	A
1	AA	424	G
1	AA	428	A
1	AA	429	A
1	AA	443	A
1	AA	444	C
1	AA	446	G
1	AA	447	A
1	AA	448	U
1	AA	449	A
1	AA	451	C
1	AA	452	G
1	AA	453	C
1	AA	454	A
1	AA	455	C
1	AA	456	C
1	AA	457	A
1	AA	470	A
1	AA	471	A
1	AA	475	U
1	AA	479	A
1	AA	480	A
1	AA	481	G
1	AA	484	C
1	AA	492	A
1	AA	503	A
1	AA	504	U
1	AA	505	A
1	AA	506	G
1	AA	507	A
1	AA	508	G
1	AA	509	C
1	AA	510	C
1	AA	512	G
1	AA	519	U

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Mol	Chain	Res	Type
1	AA	525	U
1	AA	527	C
1	AA	528	A
1	AA	529	A
1	AA	530	G
1	AA	531	C
1	AA	532	A
1	AA	533	G
1	AA	541	C
1	AA	549	G
1	AA	554	U
1	AA	556	G
1	AA	559	G
1	AA	560	C
1	AA	563	G
1	AA	567	A
1	AA	568	U
1	AA	572	A
1	AA	573	G
1	AA	574	C
1	AA	575	A
1	AA	579	G
1	AA	580	C
1	AA	583	G
1	AA	586	A
1	AA	588	U
1	AA	591	C
1	AA	593	G
1	AA	599	G
1	AA	600	G
1	AA	601	C
1	AA	603	A
1	AA	604	G
1	AA	605	C
1	AA	607	U
1	AA	612	G
1	AA	613	U
1	AA	614	U
1	AA	615	G
1	AA	616	A
1	AA	617	G
1	AA	618(A)	C

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Mol	Chain	Res	Type
1	AA	620	G
1	AA	621	A
1	AA	622	G
1	AA	624	C
1	AA	625	G
1	AA	626	U
1	AA	627	A
1	AA	629	G
1	AA	631	A
1	AA	634	C
1	AA	637	A
1	AA	641	C
1	AA	643	A
1	AA	644	A
1	AA	646	A
1	AA	650	C
1	AA	651	G
1	AA	653	A
1	AA	654	A
1	AA	655	A
1	AA	656	G
1	AA	657	U
1	AA	665	C
1	AA	666	G
1	AA	668	G
1	AA	669	G
1	AA	670	A
1	AA	671	C
1	AA	674	G
1	AA	684	G
1	AA	686	G
1	AA	687	C
1	AA	698	C
1	AA	704	G
1	AA	705	A
1	AA	713	G
1	AA	714	U
1	AA	715	G
1	AA	716	A
1	AA	718	A
1	AA	723	G
1	AA	727	A

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Mol	Chain	Res	Type
1	AA	728	G
1	AA	729	G
1	AA	730	C
1	AA	731	C
1	AA	734	A
1	AA	735	A
1	AA	736	C
1	AA	739	G
1	AA	740	U
1	AA	741	G
1	AA	744	G
1	AA	745	G
1	AA	746	A
1	AA	747	U
1	AA	748	G
1	AA	749	C
1	AA	750	A
1	AA	751	A
1	AA	752	A
1	AA	758	C
1	AA	759	G
1	AA	762	U
1	AA	763	G
1	AA	764	A
1	AA	765	G
1	AA	774	A
1	AA	775	G
1	AA	776	G
1	AA	777	A
1	AA	779	U
1	AA	781	A
1	AA	782	A
1	AA	783	A
1	AA	784	A
1	AA	785	G
1	AA	786	C
1	AA	789	A
1	AA	790	C
1	AA	791	C
1	AA	792	G
1	AA	793	A
1	AA	794	G

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Mol	Chain	Res	Type
1	AA	799	G
1	AA	800	A
1	AA	801	G
1	AA	802	A
1	AA	803	U
1	AA	805	G
1	AA	806	C
1	AA	812	C
1	AA	816	C
1	AA	819	A
1	AA	821	A
1	AA	823	G
1	AA	824	A
1	AA	827	U
1	AA	829	A
1	AA	830	G
1	AA	831	G
1	AA	833	U
1	AA	844	C
1	AA	846	C
1	AA	847	U
1	AA	858	U
1	AA	859	G
1	AA	860	U
1	AA	861	A
1	AA	865	C
1	AA	868	U
1	AA	870	A
1	AA	874	G
1	AA	875	G
1	AA	878	A
1	AA	879	G
1	AA	880	G
1	AA	881	G
1	AA	882	G
1	AA	886	C
1	AA	887	A
1	AA	888	C
1	AA	889	C
1	AA	890	A
1	AA	892	G
1	AA	896	A

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Mol	Chain	Res	Type
1	AA	897	C
1	AA	898	C
1	AA	899	A
1	AA	900	A
1	AA	901	A
1	AA	902	C
1	AA	904	C
1	AA	905	U
1	AA	906	G
1	AA	907	U
1	AA	909	A
1	AA	910	A
1	AA	914	C
1	AA	918	A
1	AA	919	G
1	AA	920	G
1	AA	930	U
1	AA	931	G
1	AA	932	G
1	AA	933	A
1	AA	939	G
1	AA	941	A
1	AA	943	U
1	AA	944	G
1	AA	945	A
1	AA	946	G
1	AA	956	G
1	AA	957	A
1	AA	958	U
1	AA	959	A
1	AA	961	C
1	AA	962	G
1	AA	965	C
1	AA	972	G
1	AA	973	A
1	AA	974	G
1	AA	974(A)	C
1	AA	976	C
1	AA	982	C
1	AA	983	A
1	AA	987	G
1	AA	990	A

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Mol	Chain	Res	Type
1	AA	995	C
1	AA	996	A
1	AA	997	G
1	AA	1008	C
1	AA	1009	A
1	AA	1011	G
1	AA	1012	U
1	AA	1013	C
1	AA	1021	A
1	AA	1022	G
1	AA	1023	U
1	AA	1024	G
1	AA	1025	G
1	AA	1026	U
1	AA	1027	A
1	AA	1031	G
1	AA	1032	A
1	AA	1033	U
1	AA	1039	G
1	AA	1040	C
1	AA	1042	G
1	AA	1043	C
1	AA	1044	G
1	AA	1045	A
1	AA	1046	A
1	AA	1047	G
1	AA	1048	A
1	AA	1050	A
1	AA	1052	C
1	AA	1053	C
1	AA	1056	G
1	AA	1057	A
1	AA	1058	G
1	AA	1059	G
1	AA	1060	U
1	AA	1061	U
1	AA	1062	G
1	AA	1063	G
1	AA	1065	U
1	AA	1066	U
1	AA	1067	A
1	AA	1068	G

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Mol	Chain	Res	Type
1	AA	1069	A
1	AA	1070	A
1	AA	1071	G
1	AA	1072	C
1	AA	1073	A
1	AA	1075	C
1	AA	1076	C
1	AA	1077	A
1	AA	1078	U
1	AA	1079	C
1	AA	1080	C
1	AA	1083	U
1	AA	1084	A
1	AA	1085	A
1	AA	1086	A
1	AA	1087	G
1	AA	1088	A
1	AA	1090	U
1	AA	1093	G
1	AA	1099	G
1	AA	1101	U
1	AA	1103	A
1	AA	1104	C
1	AA	1108	U
1	AA	1109	C
1	AA	1110	G
1	AA	1111	A
1	AA	1112	G
1	AA	1116	C
1	AA	1126	A
1	AA	1127	A
1	AA	1128	A
1	AA	1130	U
1	AA	1131	G
1	AA	1132	A
1	AA	1134	G
1	AA	1135	C
1	AA	1140	C
1	AA	1141	U
1	AA	1143	A
1	AA	1154	G
1	AA	1155	A

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Mol	Chain	Res	Type
1	AA	1156	A
1	AA	1157	G
1	AA	1160	G
1	AA	1162	G
1	AA	1171	G
1	AA	1173	G
1	AA	1174	A
1	AA	1175	U
1	AA	1176	G
1	AA	1177	A
1	AA	1179	C
1	AA	1180	C
1	AA	1182	A
1	AA	1183	G
1	AA	1184	G
1	AA	1185	C
1	AA	1186	G
1	AA	1190	G
1	AA	1199	U
1	AA	1201	C
1	AA	1203	G
1	AA	1204	A
1	AA	1205	U
1	AA	1207	C
1	AA	1209	G
1	AA	1211	U
1	AA	1212	G
1	AA	1213	A
1	AA	1220	A
1	AA	1221	C
1	AA	1222	C
1	AA	1225	C
1	AA	1228	G
1	AA	1238	G
1	AA	1241	A
1	AA	1242	A
1	AA	1244	G
1	AA	1247	A
1	AA	1248	G
1	AA	1249	U
1	AA	1251	C
1	AA	1252	G

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Mol	Chain	Res	Type
1	AA	1253	A
1	AA	1254	A
1	AA	1255	U
1	AA	1256	G
1	AA	1258	C
1	AA	1260	G
1	AA	1264	G
1	AA	1265	A
1	AA	1266	G
1	AA	1267	U
1	AA	1268	A
1	AA	1271	G
1	AA	1272	A
1	AA	1273	U
1	AA	1274	A
1	AA	1275	A
1	AA	1286	A
1	AA	1289	C
1	AA	1296	G
1	AA	1297	C
1	AA	1301	A
1	AA	1302	A
1	AA	1303	G
1	AA	1304	C
1	AA	1311	G
1	AA	1312	U
1	AA	1321	A
1	AA	1324	G
1	AA	1325	G
1	AA	1326	U
1	AA	1327	C
1	AA	1329	U
1	AA	1330	C
1	AA	1335	U
1	AA	1340	U
1	AA	1341	U
1	AA	1342	A
1	AA	1343	G
1	AA	1344	G
1	AA	1345	C
1	AA	1347	G
1	AA	1350	C

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Mol	Chain	Res	Type
1	AA	1364	G
1	AA	1365	A
1	AA	1366	A
1	AA	1368	G
1	AA	1378	A
1	AA	1379	A
1	AA	1388	G
1	AA	1394	U
1	AA	1395	A
1	AA	1397	U
1	AA	1398	C
1	AA	1403	C
1	AA	1407	C
1	AA	1416	G
1	AA	1418	G
1	AA	1419	A
1	AA	1420	U
1	AA	1421	G
1	AA	1424	G
1	AA	1425	G
1	AA	1427	A
1	AA	1428	C
1	AA	1429	G
1	AA	1438	U
1	AA	1444(A)	A
1	AA	1445	C
1	AA	1451	C
1	AA	1453	A
1	AA	1455	G
1	AA	1456	G
1	AA	1459	G
1	AA	1460	A
1	AA	1462	C
1	AA	1463	C
1	AA	1467	C
1	AA	1468	C
1	AA	1471	A
1	AA	1477	A
1	AA	1478	G
1	AA	1480	G
1	AA	1482	U
1	AA	1485	G

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Mol	Chain	Res	Type
1	AA	1489	U
1	AA	1490	A
1	AA	1491	G
1	AA	1492	G
1	AA	1493	C
1	AA	1494	A
1	AA	1495	A
1	AA	1496	A
1	AA	1497	U
1	AA	1498	C
1	AA	1499	C
1	AA	1507	A
1	AA	1508	A
1	AA	1509	C
1	AA	1510	A
1	AA	1511	A
1	AA	1512	G
1	AA	1513	C
1	AA	1514	U
1	AA	1515	C
1	AA	1516	U
1	AA	1517	G
1	AA	1519	G
1	AA	1521	G
1	AA	1526	G
1	AA	1527	G
1	AA	1529	A
1	AA	1530	G
1	AA	1532	C
1	AA	1537	C
1	AA	1540	G
1	AA	1542	G
1	AA	1544	C
1	AA	1552	G
1	AA	1553	A
1	AA	1554	A
1	AA	1555	G
1	AA	1558	A
1	AA	1559	G
1	AA	1560	G
1	AA	1561	G
1	AA	1566	A

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Mol	Chain	Res	Type
1	AA	1567	A
1	AA	1569	A
1	AA	1570	A
1	AA	1571	A
1	AA	1572	A
1	AA	1573	G
1	AA	1576	U
1	AA	1577	C
1	AA	1578	U
1	AA	1579	A
1	AA	1580	A
1	AA	1581	G
1	AA	1583	A
1	AA	1585	C
1	AA	1586	A
1	AA	1587	A
1	AA	1591	G
1	AA	1602	U
1	AA	1603	A
1	AA	1607	C
1	AA	1608	A
1	AA	1609	A
1	AA	1610	A
1	AA	1612	C
1	AA	1614	A
1	AA	1615	C
1	AA	1617	C
1	AA	1618	A
1	AA	1619	G
1	AA	1623	G
1	AA	1625	C
1	AA	1626	G
1	AA	1627	G
1	AA	1631	A
1	AA	1634	A
1	AA	1635	G
1	AA	1640	C
1	AA	1641	A
1	AA	1644	C
1	AA	1645	G
1	AA	1647	G
1	AA	1648	C

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Mol	Chain	Res	Type
1	AA	1649	G
1	AA	1651	G
1	AA	1652	A
1	AA	1653	G
1	AA	1654	A
1	AA	1655	A
1	AA	1656	C
1	AA	1657	C
1	AA	1664	A
1	AA	1667	G
1	AA	1668	A
1	AA	1670	C
1	AA	1673	U
1	AA	1674	G
1	AA	1675	C
1	AA	1678	G
1	AA	1681	G
1	AA	1682	G
1	AA	1683	C
1	AA	1684	C
1	AA	1688	U
1	AA	1694	C
1	AA	1698	A
1	AA	1699	G
1	AA	1700	A
1	AA	1701	A
1	AA	1703	G
1	AA	1706	U
1	AA	1707	G
1	AA	1709	U
1	AA	1710	C
1	AA	1725	G
1	AA	1728	G
1	AA	1729	A
1	AA	1731	G
1	AA	1732	A
1	AA	1733	G
1	AA	1734	C
1	AA	1741	C
1	AA	1742	C
1	AA	1743	G
1	AA	1746	G

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Mol	Chain	Res	Type
1	AA	1747	G
1	AA	1755	A
1	AA	1757	U
1	AA	1758	G
1	AA	1759	A
1	AA	1762	A
1	AA	1763	G
1	AA	1764	G
1	AA	1773	A
1	AA	1775	U
1	AA	1779	U
1	AA	1780	A
1	AA	1781	C
1	AA	1782	C
1	AA	1783	A
1	AA	1784	A
1	AA	1785	A
1	AA	1790	C
1	AA	1791	A
1	AA	1798	U
1	AA	1799	G
1	AA	1800	C
1	AA	1801	G
1	AA	1802	A
1	AA	1803	A
1	AA	1805	U
1	AA	1809	A
1	AA	1810	A
1	AA	1815	A
1	AA	1816	G
1	AA	1817	G
1	AA	1819	A
1	AA	1820	U
1	AA	1821	A
1	AA	1826	G
1	AA	1828	G
1	AA	1829	A
1	AA	1834	U
1	AA	1839	G
1	AA	1840	G
1	AA	1847	A
1	AA	1848	A

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Mol	Chain	Res	Type
1	AA	1852	C
1	AA	1853	A
1	AA	1857	G
1	AA	1858	G
1	AA	1878	G
1	AA	1880	C
1	AA	1881	C
1	AA	1884	A
1	AA	1901	A
1	AA	1903	G
1	AA	1904	G
1	AA	1905	C
1	AA	1907	G
1	AA	1911	U
1	AA	1912	A
1	AA	1913	A
1	AA	1914	C
1	AA	1915	U
1	AA	1916	A
1	AA	1917	U
1	AA	1919	A
1	AA	1920	C
1	AA	1921	G
1	AA	1922	G
1	AA	1924	C
1	AA	1927	A
1	AA	1929	G
1	AA	1930	G
1	AA	1931	U
1	AA	1932	A
1	AA	1934	C
1	AA	1936	A
1	AA	1937	A
1	AA	1938	A
1	AA	1939	U
1	AA	1940	U
1	AA	1941	C
1	AA	1942	C
1	AA	1943	U
1	AA	1944	U
1	AA	1945	G
1	AA	1946	U

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Mol	Chain	Res	Type
1	AA	1953	A
1	AA	1954	G
1	AA	1955	U
1	AA	1956	U
1	AA	1958	C
1	AA	1962	C
1	AA	1964	G
1	AA	1965	C
1	AA	1966	A
1	AA	1967	C
1	AA	1968	G
1	AA	1970	A
1	AA	1971	A
1	AA	1972	A
1	AA	1977	A
1	AA	1978	A
1	AA	1981	A
1	AA	1982	C
1	AA	1989	G
1	AA	1992	G
1	AA	1993	U
1	AA	1995	U
1	AA	1996	C
1	AA	1997	G
1	AA	2000	G
1	AA	2005	A
1	AA	2014	A
1	AA	2015	A
1	AA	2016	U
1	AA	2018	G
1	AA	2019	A
1	AA	2020	A
1	AA	2021	C
1	AA	2022	U
1	AA	2023	G
1	AA	2030	A
1	AA	2031	A
1	AA	2032	G
1	AA	2033	A
1	AA	2034	U
1	AA	2035	G
1	AA	2041	U

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Mol	Chain	Res	Type
1	AA	2043	C
1	AA	2044	C
1	AA	2048	G
1	AA	2050	C
1	AA	2051	A
1	AA	2052	G
1	AA	2055	C
1	AA	2056	G
1	AA	2060	A
1	AA	2061	G
1	AA	2062	A
1	AA	2063	C
1	AA	2064	C
1	AA	2068	U
1	AA	2069	G
1	AA	2073	C
1	AA	2074	U
1	AA	2075	U
1	AA	2076	U
1	AA	2077	A
1	AA	2080	G
1	AA	2092	U
1	AA	2093	G
1	AA	2094	G
1	AA	2110	G
1	AA	2111	C
1	AA	2114	A
1	AA	2116	G
1	AA	2117	A
1	AA	2119	A
1	AA	2120	G
1	AA	2123	G
1	AA	2126	A
1	AA	2127	G
1	AA	2132	U
1	AA	2133	G
1	AA	2134	A
1	AA	2135	A
1	AA	2136	C
1	AA	2144	U
1	AA	2148	G
1	AA	2156	G

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Mol	Chain	Res	Type
1	AA	2157	G
1	AA	2158	A
1	AA	2159	G
1	AA	2165	G
1	AA	2172	U
1	AA	2173	A
1	AA	2185	C
1	AA	2194	G
1	AA	2195	C
1	AA	2196	C
1	AA	2197	U
1	AA	2198	A
1	AA	2205	C
1	AA	2206	C
1	AA	2208	U
1	AA	2209	C
1	AA	2210	G
1	AA	2211	G
1	AA	2212	A
1	AA	2213	U
1	AA	2224	G
1	AA	2225	A
1	AA	2226	C
1	AA	2227	A
1	AA	2228	G
1	AA	2238	G
1	AA	2239	G
1	AA	2240	C
1	AA	2245	U
1	AA	2250	G
1	AA	2251	G
1	AA	2254	C
1	AA	2257	U
1	AA	2258	C
1	AA	2265	U
1	AA	2266	A
1	AA	2267	A
1	AA	2268	A
1	AA	2269	A
1	AA	2274	A
1	AA	2275	C
1	AA	2276	G

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Mol	Chain	Res	Type
1	AA	2278	A
1	AA	2281	C
1	AA	2283	C
1	AA	2284	C
1	AA	2286	A
1	AA	2287	A
1	AA	2288	A
1	AA	2289	G
1	AA	2290	G
1	AA	2291	U
1	AA	2297	C
1	AA	2305	A
1	AA	2306	C
1	AA	2307	G
1	AA	2308	G
1	AA	2309	A
1	AA	2310	A
1	AA	2311	A
1	AA	2312	U
1	AA	2316	C
1	AA	2318	G
1	AA	2319	G
1	AA	2320	A
1	AA	2321	G
1	AA	2322	A
1	AA	2323	G
1	AA	2325	G
1	AA	2327	A
1	AA	2333	A
1	AA	2334	G
1	AA	2337	G
1	AA	2344	U
1	AA	2345	G
1	AA	2346	A
1	AA	2347	C
1	AA	2349	G
1	AA	2350	C
1	AA	2351	G
1	AA	2356	C
1	AA	2357	U
1	AA	2358	G
1	AA	2360	A

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Mol	Chain	Res	Type
1	AA	2361	A
1	AA	2362	G
1	AA	2372	G
1	AA	2373	G
1	AA	2374	C
1	AA	2377	A
1	AA	2379	G
1	AA	2382	G
1	AA	2383	G
1	AA	2384	G
1	AA	2385	C
1	AA	2387	U
1	AA	2389	G
1	AA	2390	U
1	AA	2393	A
1	AA	2402	C
1	AA	2403	C
1	AA	2406	U
1	AA	2407	G
1	AA	2416	C
1	AA	2417	C
1	AA	2423	U
1	AA	2424	C
1	AA	2425	A
1	AA	2426	A
1	AA	2427	C
1	AA	2428	G
1	AA	2429	G
1	AA	2430	A
1	AA	2431	U
1	AA	2432	A
1	AA	2433	A
1	AA	2434	A
1	AA	2435	A
1	AA	2437	U
1	AA	2439	A
1	AA	2440	C
1	AA	2441	C
1	AA	2444	G
1	AA	2445	G
1	AA	2447	G
1	AA	2448	A

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Mol	Chain	Res	Type
1	AA	2449	U
1	AA	2460	U
1	AA	2469	A
1	AA	2475	C
1	AA	2476	A
1	AA	2480	C
1	AA	2490	G
1	AA	2491	U
1	AA	2492	U
1	AA	2493	U
1	AA	2496	C
1	AA	2497	A
1	AA	2498	C
1	AA	2499	C
1	AA	2500	U
1	AA	2501	C
1	AA	2502	G
1	AA	2503	A
1	AA	2504	U
1	AA	2505	G
1	AA	2510	C
1	AA	2513	G
1	AA	2518	A
1	AA	2519	U
1	AA	2520	C
1	AA	2523	G
1	AA	2526	G
1	AA	2527	C
1	AA	2529	G
1	AA	2531	A
1	AA	2532	G
1	AA	2535	G
1	AA	2539	C
1	AA	2542	A
1	AA	2543	G
1	AA	2547	U
1	AA	2548	G
1	AA	2551	C
1	AA	2554	U
1	AA	2555	U
1	AA	2556	C
1	AA	2563	U

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Mol	Chain	Res	Type
1	AA	2566	A
1	AA	2567	G
1	AA	2572	A
1	AA	2573	C
1	AA	2575	C
1	AA	2576	G
1	AA	2577	A
1	AA	2578	G
1	AA	2580	U
1	AA	2582	G
1	AA	2585	U
1	AA	2586	C
1	AA	2593	U
1	AA	2602	A
1	AA	2603	G
1	AA	2606	C
1	AA	2609	U
1	AA	2610	C
1	AA	2611	U
1	AA	2613	U
1	AA	2614	A
1	AA	2615	U
1	AA	2616	C
1	AA	2617	C
1	AA	2620	C
1	AA	2625	G
1	AA	2626	C
1	AA	2628	C
1	AA	2629	A
1	AA	2630	G
1	AA	2637	U
1	AA	2638	G
1	AA	2640	G
1	AA	2644	G
1	AA	2645	G
1	AA	2646	C
1	AA	2648	C
1	AA	2650	U
1	AA	2651	C
1	AA	2652	C
1	AA	2653	U
1	AA	2654	A

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Mol	Chain	Res	Type
1	AA	2656	U
1	AA	2657	A
1	AA	2658	C
1	AA	2659	G
1	AA	2662	A
1	AA	2663	G
1	AA	2664	G
1	AA	2667	C
1	AA	2668	G
1	AA	2669	G
1	AA	2670	A
1	AA	2671	A
1	AA	2673	G
1	AA	2674	G
1	AA	2675	A
1	AA	2676	C
1	AA	2682	U
1	AA	2683	C
1	AA	2685	G
1	AA	2689	U
1	AA	2690	C
1	AA	2691	C
1	AA	2699	C
1	AA	2701	C
1	AA	2702	U
1	AA	2704	C
1	AA	2706	G
1	AA	2708	G
1	AA	2709	G
1	AA	2710	C
1	AA	2711	A
1	AA	2712	U
1	AA	2712(A)	A
1	AA	2714	G
1	AA	2715	C
1	AA	2717	G
1	AA	2719	G
1	AA	2720	U
1	AA	2725	A
1	AA	2726	U
1	AA	2727	G
1	AA	2732	G

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Mol	Chain	Res	Type
1	AA	2733	A
1	AA	2734	A
1	AA	2748	A
1	AA	2749	A
1	AA	2750	A
1	AA	2751	G
1	AA	2754	U
1	AA	2756	U
1	AA	2757	A
1	AA	2758	A
1	AA	2766	G
1	AA	2772	C
1	AA	2777	G
1	AA	2778	A
1	AA	2779	U
1	AA	2780	G
1	AA	2781	A
1	AA	2782	G
1	AA	2783	G
1	AA	2787	C
1	AA	2789	C
1	AA	2790	A
1	AA	2791	C
1	AA	2794	C
1	AA	2797	U
1	AA	2798	C
1	AA	2799	A
1	AA	2801	A
1	AA	2802	G
1	AA	2803	C
1	AA	2804	C
1	AA	2805	G
1	AA	2807	G
1	AA	2808	U
1	AA	2809	A
1	AA	2810	A
1	AA	2812	G
1	AA	2814	C
1	AA	2815	C
1	AA	2820	A
1	AA	2821	A
1	AA	2822	G

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Mol	Chain	Res	Type
1	AA	2823	A
1	AA	2832	U
1	AA	2833	G
1	AA	2834	G
1	AA	2835	A
1	AA	2836	U
1	AA	2843	G
1	AA	2844	G
1	AA	2845	G
1	AA	2847	U
1	AA	2849	U
1	AA	2850	A
1	AA	2851	A
1	AA	2852	G
1	AA	2858	C
1	AA	2861	G
1	AA	2866	U
1	AA	2867	G
1	AA	2868	A
1	AA	2872	G
1	AA	2874	C
1	AA	2877	G
1	AA	2878	U
1	AA	2879	C
1	AA	2880	C
1	AA	2883	A
1	AA	2891	G
1	AA	2892	A
1	AA	2893	G
1	AA	2899	G
2	AB	0	A
2	AB	1	U
2	AB	2	C
2	AB	3	C
2	AB	5	C
2	AB	6	C
2	AB	8	U
2	AB	12	C
2	AB	13	A
2	AB	15	A
2	AB	16	G
2	AB	25	A

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Mol	Chain	Res	Type
2	AB	32	C
2	AB	35	U
2	AB	36	C
2	AB	41	U
2	AB	42	C
2	AB	45	A
2	AB	46	A
2	AB	51	G
2	AB	52	A
2	AB	54	G
2	AB	57	A
2	AB	66	A
2	AB	67	G
2	AB	69	G
2	AB	73	A
2	AB	74	U
2	AB	75	G
2	AB	83	G
2	AB	85	G
2	AB	87	G
2	AB	88	C
2	AB	89	G
2	AB	90	C
2	AB	99	A
2	AB	101	A
2	AB	103	U
2	AB	105	G
2	AB	109	G
2	AB	111	U
2	AB	116	G
2	AB	117	G
2	AB	118	G
2	AB	119	A
2	AB	120	U
34	BA	6	G
34	BA	8	A
34	BA	9	G
34	BA	14	U
34	BA	19	C
34	BA	20	U
34	BA	31	G
34	BA	32	A

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Mol	Chain	Res	Type
34	BA	39	G
34	BA	44	G
34	BA	45	U
34	BA	48	C
34	BA	50	A
34	BA	51	A
34	BA	52	G
34	BA	61	G
34	BA	65	U
34	BA	66	G
34	BA	78	G
34	BA	82	U
34	BA	89	U
34	BA	101	A
34	BA	103	C
34	BA	108	G
34	BA	110	C
34	BA	115	G
34	BA	116	A
34	BA	120	A
34	BA	121	C
34	BA	122	G
34	BA	124	G
34	BA	127	G
34	BA	129(A)	G
34	BA	130	A
34	BA	131	C
34	BA	132	C
34	BA	134	A
34	BA	163	C
34	BA	182	U
34	BA	188	U
34	BA	189	U
34	BA	190	G
34	BA	191(A)	G
34	BA	195	A
34	BA	197	A
34	BA	198	G
34	BA	209	U
34	BA	210	U
34	BA	216	G
34	BA	236	G

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Mol	Chain	Res	Type
34	BA	243	A
34	BA	244	U
34	BA	245	C
34	BA	247	G
34	BA	251	G
34	BA	252	U
34	BA	253	U
34	BA	262	A
34	BA	264	U
34	BA	265	G
34	BA	266	G
34	BA	267	C
34	BA	270	A
34	BA	275	G
34	BA	279	A
34	BA	280	C
34	BA	281	G
34	BA	282	A
34	BA	289	G
34	BA	293	G
34	BA	295	C
34	BA	296	U
34	BA	306	G
34	BA	308	C
34	BA	309	G
34	BA	313	A
34	BA	314	C
34	BA	315	A
34	BA	316	G
34	BA	326	G
34	BA	328	C
34	BA	329	A
34	BA	330	C
34	BA	332	G
34	BA	336	C
34	BA	345	C
34	BA	346	G
34	BA	348	G
34	BA	351	G
34	BA	352	C
34	BA	353	A
34	BA	354	G

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Mol	Chain	Res	Type
34	BA	364	A
34	BA	367	U
34	BA	368	U
34	BA	372	C
34	BA	373	A
34	BA	378	G
34	BA	379	C
34	BA	382	A
34	BA	383	A
34	BA	388	G
34	BA	389	A
34	BA	390	C
34	BA	392	G
34	BA	397	A
34	BA	398	C
34	BA	410	G
34	BA	412	A
34	BA	413	G
34	BA	414	A
34	BA	422	C
34	BA	423	G
34	BA	428	G
34	BA	429	U
34	BA	430	A
34	BA	438	G
34	BA	439	A
34	BA	451	A
34	BA	452	A
34	BA	454	C
34	BA	465	A
34	BA	466	C
34	BA	467	G
34	BA	474	G
34	BA	481	G
34	BA	482	A
34	BA	483	C
34	BA	484	G
34	BA	485	G
34	BA	486	U
34	BA	487	A
34	BA	496	A
34	BA	497	U

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Mol	Chain	Res	Type
34	BA	500	G
34	BA	508	C
34	BA	509	A
34	BA	511	C
34	BA	518	C
34	BA	519	C
34	BA	521	G
34	BA	522	C
34	BA	524	G
34	BA	527	G
34	BA	528	C
34	BA	530	G
34	BA	531	U
34	BA	532	A
34	BA	533	A
34	BA	534	U
34	BA	535	A
34	BA	536	C
34	BA	541	G
34	BA	548	G
34	BA	553	A
34	BA	555	C
34	BA	559	A
34	BA	560	U
34	BA	561	U
34	BA	563	A
34	BA	565	U
34	BA	566	G
34	BA	567	G
34	BA	572	A
34	BA	573	A
34	BA	575	G
34	BA	577	G
34	BA	579	G
34	BA	585	G
34	BA	595	G
34	BA	596	C
34	BA	598	U
34	BA	607	A
34	BA	609	A
34	BA	623	C
34	BA	642	A

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Mol	Chain	Res	Type
34	BA	650	G
34	BA	653	A
34	BA	655	A
34	BA	665	A
34	BA	672	U
34	BA	673	G
34	BA	679	C
34	BA	687	A
34	BA	688	G
34	BA	690	G
34	BA	691	G
34	BA	693	G
34	BA	694	A
34	BA	697	U
34	BA	702	A
34	BA	703	G
34	BA	704	A
34	BA	718	G
34	BA	719	C
34	BA	721	G
34	BA	723	U
34	BA	724	G
34	BA	728	A
34	BA	730	G
34	BA	731	G
34	BA	733	A
34	BA	749	C
34	BA	752	G
34	BA	753	A
34	BA	754	C
34	BA	763	G
34	BA	764	C
34	BA	766	A
34	BA	776	G
34	BA	777	A
34	BA	781	A
34	BA	782	A
34	BA	785	G
34	BA	788	U
34	BA	790	A
34	BA	791	G
34	BA	793	U

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Mol	Chain	Res	Type
34	BA	794	A
34	BA	801	U
34	BA	812	C
34	BA	813	U
34	BA	815	A
34	BA	816	A
34	BA	817	C
34	BA	818	G
34	BA	819	A
34	BA	820	U
34	BA	821	G
34	BA	828	A
34	BA	841	U
34	BA	843	U
34	BA	848	C
34	BA	854	G
34	BA	860	A
34	BA	865	A
34	BA	870	U
34	BA	871	U
34	BA	872	A
34	BA	873	A
34	BA	874	G
34	BA	884	U
34	BA	885	G
34	BA	889	A
34	BA	890	G
34	BA	891	U
34	BA	901	A
34	BA	902	G
34	BA	907	A
34	BA	910	C
34	BA	913	A
34	BA	914	A
34	BA	917	G
34	BA	919	A
34	BA	920	U
34	BA	926	G
34	BA	927	G
34	BA	932	C
34	BA	934	C
34	BA	935	A

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Mol	Chain	Res	Type
34	BA	945	G
34	BA	949	A
34	BA	950	U
34	BA	956	U
34	BA	958	A
34	BA	960	U
34	BA	961	U
34	BA	963	G
34	BA	965	A
34	BA	966	G
34	BA	967	C
34	BA	968	A
34	BA	969	A
34	BA	971	G
34	BA	972	C
34	BA	974	A
34	BA	975	A
34	BA	976	G
34	BA	977	A
34	BA	980	C
34	BA	982	U
34	BA	991	U
34	BA	993	G
34	BA	994	A
34	BA	995	C
34	BA	997	U
34	BA	998	G
34	BA	1000	A
34	BA	1001	G
34	BA	1002	G
34	BA	1003	G
34	BA	1004	A
34	BA	1005	A
34	BA	1006	C
34	BA	1007	C
34	BA	1016	A
34	BA	1023	G
34	BA	1024	G
34	BA	1026	G
34	BA	1027	C
34	BA	1029	G
34	BA	1049	U

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Mol	Chain	Res	Type
34	BA	1050	G
34	BA	1054	C
34	BA	1056	U
34	BA	1057	G
34	BA	1063	C
34	BA	1064	G
34	BA	1065	U
34	BA	1066	C
34	BA	1067	A
34	BA	1068	G
34	BA	1081	G
34	BA	1084	G
34	BA	1085	U
34	BA	1086	U
34	BA	1089	G
34	BA	1094	G
34	BA	1096	C
34	BA	1097	C
34	BA	1100	C
34	BA	1101	A
34	BA	1102	A
34	BA	1103	C
34	BA	1106	G
34	BA	1107	C
34	BA	1108	G
34	BA	1109	C
34	BA	1111	A
34	BA	1112	C
34	BA	1115	C
34	BA	1118	C
34	BA	1123	A
34	BA	1125	U
34	BA	1126	U
34	BA	1129	C
34	BA	1130	A
34	BA	1131	G
34	BA	1132	C
34	BA	1136	U
34	BA	1138	G
34	BA	1139	G
34	BA	1140	C
34	BA	1145	C

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Mol	Chain	Res	Type
34	BA	1146	A
34	BA	1147	C
34	BA	1148	U
34	BA	1152	A
34	BA	1153	C
34	BA	1154	G
34	BA	1157	A
34	BA	1158	C
34	BA	1159	U
34	BA	1161	C
34	BA	1162	C
34	BA	1164	G
34	BA	1174	G
34	BA	1182	G
34	BA	1183	A
34	BA	1184	G
34	BA	1185	G
34	BA	1188	A
34	BA	1189	C
34	BA	1190	G
34	BA	1195	C
34	BA	1196	U
34	BA	1197	G
34	BA	1200	C
34	BA	1201	A
34	BA	1202	G
34	BA	1203	C
34	BA	1211	U
34	BA	1212	U
34	BA	1213	A
34	BA	1215	G
34	BA	1225	A
34	BA	1226	C
34	BA	1227	A
34	BA	1229	A
34	BA	1240	U
34	BA	1241	G
34	BA	1249	C
34	BA	1256	A
34	BA	1257	U
34	BA	1263	C
34	BA	1269	A

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Mol	Chain	Res	Type
34	BA	1270	C
34	BA	1278	U
34	BA	1279	A
34	BA	1280	A
34	BA	1281	U
34	BA	1282	C
34	BA	1283	G
34	BA	1285	A
34	BA	1286	A
34	BA	1287	A
34	BA	1289	A
34	BA	1292	U
34	BA	1297	C
34	BA	1298	C
34	BA	1301	U
34	BA	1302	U
34	BA	1303	C
34	BA	1305	G
34	BA	1317	C
34	BA	1318	A
34	BA	1319	A
34	BA	1320	C
34	BA	1322	C
34	BA	1323	G
34	BA	1331	G
34	BA	1332	A
34	BA	1333	A
34	BA	1345	U
34	BA	1346	A
34	BA	1347	G
34	BA	1348	U
34	BA	1353	G
34	BA	1362(A)	C
34	BA	1363	A
34	BA	1364	U
34	BA	1365	G
34	BA	1375	A
34	BA	1378	C
34	BA	1379	G
34	BA	1381	U
34	BA	1393	U
34	BA	1394	A

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Mol	Chain	Res	Type
34	BA	1395	C
34	BA	1396	A
34	BA	1397	C
34	BA	1398	A
34	BA	1399	C
34	BA	1400	C
34	BA	1401	G
34	BA	1404	C
34	BA	1413	A
34	BA	1419	G
34	BA	1430	C
34	BA	1431	C
34	BA	1432	G
34	BA	1435	G
34	BA	1439	C
34	BA	1440	C
34	BA	1442	G
34	BA	1443	G
34	BA	1446	A
34	BA	1447	G
34	BA	1449	C
34	BA	1450	U
34	BA	1451	A
34	BA	1454	G
34	BA	1455	G
34	BA	1459	C
34	BA	1461	G
34	BA	1462	G
34	BA	1463	C
34	BA	1464	G
34	BA	1465	C
34	BA	1467	G
34	BA	1469	G
34	BA	1481	U
34	BA	1484	C
34	BA	1487	G
34	BA	1489	G
34	BA	1491	G
34	BA	1492	A
34	BA	1494	G
34	BA	1495	U
34	BA	1496	C

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Mol	Chain	Res	Type
34	BA	1500	A
34	BA	1502	A
34	BA	1503	A
34	BA	1504	G
34	BA	1505	G
34	BA	1506	U
34	BA	1507	A
34	BA	1517	G
34	BA	1520	G
34	BA	1527	C
34	BA	1530	G
34	BA	1531	A
34	BA	1532	U
34	BA	1534	A

All (396) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	AA	13	A
1	AA	60	G
1	AA	67	U
1	AA	70	G
1	AA	71	A
1	AA	83	G
1	AA	90	U
1	AA	119	A
1	AA	125	G
1	AA	196	A
1	AA	199	A
1	AA	204	A
1	AA	205	G
1	AA	215	G
1	AA	221	A
1	AA	227	A
1	AA	251	A
1	AA	270(B)	A
1	AA	270(L)	U
1	AA	270(M)	U
1	AA	270(Z)	U
1	AA	271(B)	G
1	AA	280	C
1	AA	283	A

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Mol	Chain	Res	Type
1	AA	311	A
1	AA	323	G
1	AA	329	G
1	AA	331	A
1	AA	332	A
1	AA	351	G
1	AA	371	A
1	AA	403	U
1	AA	442	G
1	AA	455	C
1	AA	470	A
1	AA	503	A
1	AA	504	U
1	AA	506	G
1	AA	508	G
1	AA	526	A
1	AA	530	G
1	AA	559	G
1	AA	573	G
1	AA	574	C
1	AA	587	C
1	AA	602	G
1	AA	616	A
1	AA	620	G
1	AA	637	A
1	AA	643	A
1	AA	645	C
1	AA	669	G
1	AA	670	A
1	AA	685	A
1	AA	686	G
1	AA	730	C
1	AA	740	U
1	AA	745	G
1	AA	746	A
1	AA	747	U
1	AA	750	A
1	AA	762	U
1	AA	773	U
1	AA	774	A
1	AA	776	G
1	AA	782	A

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Mol	Chain	Res	Type
1	AA	783	A
1	AA	785	G
1	AA	788	A
1	AA	789	A
1	AA	800	A
1	AA	801	G
1	AA	811	U
1	AA	829	A
1	AA	830	G
1	AA	846	C
1	AA	858	U
1	AA	888	C
1	AA	897	C
1	AA	930	U
1	AA	944	G
1	AA	945	A
1	AA	957	A
1	AA	958	U
1	AA	960	A
1	AA	961	C
1	AA	973	A
1	AA	974(A)	C
1	AA	989	G
1	AA	1008	C
1	AA	1011	G
1	AA	1022	G
1	AA	1024	G
1	AA	1038	C
1	AA	1047	G
1	AA	1062	G
1	AA	1069	A
1	AA	1085	A
1	AA	1100	C
1	AA	1126	A
1	AA	1130	U
1	AA	1131	G
1	AA	1154	G
1	AA	1178	C
1	AA	1179	C
1	AA	1183	G
1	AA	1204	A
1	AA	1210	A

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Mol	Chain	Res	Type
1	AA	1212	G
1	AA	1221	C
1	AA	1237	A
1	AA	1241	A
1	AA	1247	A
1	AA	1248	G
1	AA	1250	G
1	AA	1253	A
1	AA	1267	U
1	AA	1272	A
1	AA	1288	U
1	AA	1300	U
1	AA	1302	A
1	AA	1323	U
1	AA	1342	A
1	AA	1349	A
1	AA	1378	A
1	AA	1379	A
1	AA	1406	U
1	AA	1420	U
1	AA	1427	A
1	AA	1428	C
1	AA	1444(A)	A
1	AA	1477	A
1	AA	1489	U
1	AA	1515	C
1	AA	1554	A
1	AA	1558	A
1	AA	1566	A
1	AA	1568	G
1	AA	1572	A
1	AA	1585	C
1	AA	1603	A
1	AA	1608	A
1	AA	1610	A
1	AA	1625	C
1	AA	1626	G
1	AA	1634	A
1	AA	1647	G
1	AA	1650	G
1	AA	1693	U
1	AA	1694	C

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Mol	Chain	Res	Type
1	AA	1698	A
1	AA	1699	G
1	AA	1727	U
1	AA	1758	G
1	AA	1778	U
1	AA	1780	A
1	AA	1784	A
1	AA	1791	A
1	AA	1800	C
1	AA	1801	G
1	AA	1819	A
1	AA	1820	U
1	AA	1828	G
1	AA	1919	A
1	AA	1920	C
1	AA	1936	A
1	AA	1937	A
1	AA	1938	A
1	AA	1940	U
1	AA	1943	U
1	AA	1962	C
1	AA	1964	G
1	AA	1966	A
1	AA	1970	A
1	AA	1977	A
1	AA	1980	G
1	AA	1981	A
1	AA	1992	G
1	AA	1996	C
1	AA	2017	U
1	AA	2021	C
1	AA	2022	U
1	AA	2030	A
1	AA	2032	G
1	AA	2033	A
1	AA	2047	U
1	AA	2049	G
1	AA	2051	A
1	AA	2055	C
1	AA	2073	C
1	AA	2076	U
1	AA	2110	G

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Mol	Chain	Res	Type
1	AA	2111	C
1	AA	2118	U
1	AA	2126	A
1	AA	2157	G
1	AA	2158	A
1	AA	2171	A
1	AA	2172	U
1	AA	2210	G
1	AA	2213	U
1	AA	2225	A
1	AA	2240	C
1	AA	2275	C
1	AA	2282	G
1	AA	2319	G
1	AA	2324	C
1	AA	2345	G
1	AA	2350	C
1	AA	2384	G
1	AA	2392	A
1	AA	2416	C
1	AA	2422	A
1	AA	2427	C
1	AA	2428	G
1	AA	2436	G
1	AA	2439	A
1	AA	2447	G
1	AA	2490	G
1	AA	2491	U
1	AA	2497	A
1	AA	2500	U
1	AA	2501	C
1	AA	2503	A
1	AA	2517	C
1	AA	2519	U
1	AA	2542	A
1	AA	2571	C
1	AA	2572	A
1	AA	2602	A
1	AA	2609	U
1	AA	2610	C
1	AA	2613	U
1	AA	2615	U

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Mol	Chain	Res	Type
1	AA	2637	U
1	AA	2652	C
1	AA	2688	U
1	AA	2689	U
1	AA	2690	C
1	AA	2705	A
1	AA	2707	G
1	AA	2726	U
1	AA	2755	C
1	AA	2756	U
1	AA	2776	A
1	AA	2777	G
1	AA	2778	A
1	AA	2790	A
1	AA	2835	A
1	AA	2848	G
1	AA	2849	U
1	AA	2866	U
1	AA	2879	C
2	AB	7	G
2	AB	15	A
2	AB	56	G
34	BA	5	U
34	BA	8	A
34	BA	30	U
34	BA	31	G
34	BA	47	C
34	BA	51	A
34	BA	60	A
34	BA	65	U
34	BA	88	C
34	BA	99	C
34	BA	109	A
34	BA	115	G
34	BA	119	A
34	BA	129(A)	G
34	BA	181	G
34	BA	190	G
34	BA	208	U
34	BA	210	U
34	BA	243	A
34	BA	244	U

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Mol	Chain	Res	Type
34	BA	246	A
34	BA	250	A
34	BA	251	G
34	BA	266	G
34	BA	274	A
34	BA	279	A
34	BA	280	C
34	BA	281	G
34	BA	305	G
34	BA	308	C
34	BA	327	A
34	BA	328	C
34	BA	329	A
34	BA	344	A
34	BA	345	C
34	BA	351	G
34	BA	366	C
34	BA	367	U
34	BA	372	C
34	BA	413	G
34	BA	428	G
34	BA	429	U
34	BA	451	A
34	BA	484	G
34	BA	495	A
34	BA	496	A
34	BA	498	A
34	BA	508	C
34	BA	518	C
34	BA	531	U
34	BA	535	A
34	BA	547	A
34	BA	559	A
34	BA	560	U
34	BA	562	C
34	BA	563	A
34	BA	566	G
34	BA	576	G
34	BA	652	U
34	BA	686	U
34	BA	687	A
34	BA	701	C

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Mol	Chain	Res	Type
34	BA	702	A
34	BA	703	G
34	BA	717	C
34	BA	721	G
34	BA	723	U
34	BA	748	C
34	BA	753	A
34	BA	781	A
34	BA	792	A
34	BA	793	U
34	BA	812	C
34	BA	815	A
34	BA	816	A
34	BA	817	C
34	BA	818	G
34	BA	819	A
34	BA	820	U
34	BA	871	U
34	BA	872	A
34	BA	873	A
34	BA	889	A
34	BA	890	G
34	BA	901	A
34	BA	913	A
34	BA	918	A
34	BA	960	U
34	BA	965	A
34	BA	968	A
34	BA	974	A
34	BA	975	A
34	BA	992	U
34	BA	993	G
34	BA	1004	A
34	BA	1049	U
34	BA	1055	A
34	BA	1065	U
34	BA	1067	A
34	BA	1084	G
34	BA	1085	U
34	BA	1101	A
34	BA	1129	C
34	BA	1145	C

Continued on next page...

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Mol	Chain	Res	Type
34	BA	1157	A
34	BA	1182	G
34	BA	1183	A
34	BA	1196	U
34	BA	1212	U
34	BA	1214	C
34	BA	1224	G
34	BA	1226	C
34	BA	1239	A
34	BA	1240	U
34	BA	1285	A
34	BA	1297	C
34	BA	1300	G
34	BA	1302	U
34	BA	1317	C
34	BA	1322	C
34	BA	1331	G
34	BA	1345	U
34	BA	1346	A
34	BA	1347	G
34	BA	1363	A
34	BA	1364	U
34	BA	1377	A
34	BA	1394	A
34	BA	1399	C
34	BA	1400	C
34	BA	1442	G
34	BA	1443	G
34	BA	1446	A
34	BA	1468	A
34	BA	1494	G
34	BA	1504	G
34	BA	1506	U
34	BA	1528	U
34	BA	1529	G
34	BA	1531	A

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

3 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	$\#\|Z\| > 2$
57	GCP	CA	701	-	27,34,34	1.53	6 (22%)	34,54,54	1.98	8 (23%)
56	NMY	BA	1601	-	45,45,45	0.51	0	63,67,67	1.07	6 (9%)
56	NMY	AA	3001	-	45,45,45	0.52	0	63,67,67	1.19	6 (9%)

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
57	GCP	CA	701	-	-	6/15/38/38	0/3/3/3
56	NMY	BA	1601	-	-	5/18/94/94	0/4/4/4
56	NMY	AA	3001	-	-	4/18/94/94	1/4/4/4

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	CA	701	GCP	C5-C6	4.22	1.48	1.41
57	CA	701	GCP	PG-O2G	2.85	1.61	1.54
57	CA	701	GCP	PG-O3G	2.84	1.61	1.54
57	CA	701	GCP	PB-O3A	2.75	1.61	1.58
57	CA	701	GCP	C5-C4	2.50	1.47	1.40
57	CA	701	GCP	PB-O2B	2.16	1.61	1.56

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
57	CA	701	GCP	C2-N3-C4	4.97	121.03	115.36
57	CA	701	GCP	C2-N1-C6	4.00	122.29	115.93
57	CA	701	GCP	C5-C6-N1	-3.95	118.03	123.43
57	CA	701	GCP	PB-O3A-PA	-3.80	120.51	132.56
57	CA	701	GCP	C4-C5-C6	-3.74	117.22	120.80
57	CA	701	GCP	C3'-C2'-C1'	3.52	106.28	100.98
56	BA	1601	NMY	C13-C14-C15	3.49	106.30	102.10
56	AA	3001	NMY	C13-C14-C15	3.49	106.30	102.10
57	CA	701	GCP	N3-C2-N1	-3.27	122.86	127.22
57	CA	701	GCP	C4-C5-N7	-2.71	106.57	109.40
56	BA	1601	NMY	O22-C22-C23	2.51	110.67	106.01
56	AA	3001	NMY	C18-O18-C15	-2.50	111.77	117.96
56	BA	1601	NMY	C1-O1-C10	-2.50	111.78	117.96
56	AA	3001	NMY	O22-C22-C23	2.50	110.66	106.01
56	AA	3001	NMY	C13-O11-C11	-2.50	111.78	117.96
56	AA	3001	NMY	C1-O1-C10	-2.49	111.79	117.96
56	BA	1601	NMY	C18-O18-C15	-2.49	111.80	117.96
56	BA	1601	NMY	C13-O11-C11	-2.47	111.84	117.96
56	BA	1601	NMY	O16-C13-C14	2.24	107.87	104.98
56	AA	3001	NMY	O16-C13-C14	2.21	107.83	104.98

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
56	AA	3001	NMY	C19-C18-O18-C15
56	BA	1601	NMY	O5-C5-C6-N6
56	BA	1601	NMY	C14-C13-O11-C11
57	CA	701	GCP	PG-C3B-PB-O1B
57	CA	701	GCP	PG-C3B-PB-O2B
57	CA	701	GCP	PG-C3B-PB-O3A
57	CA	701	GCP	C5'-O5'-PA-O1A
56	BA	1601	NMY	O16-C16-C17-O17
56	BA	1601	NMY	C15-C16-C17-O17
56	AA	3001	NMY	O22-C18-O18-C15
56	BA	1601	NMY	O16-C13-O11-C11
57	CA	701	GCP	C5'-O5'-PA-O3A
56	AA	3001	NMY	O22-C22-C23-N19
57	CA	701	GCP	PB-C3B-PG-O1G
56	AA	3001	NMY	C2-C1-O1-C10

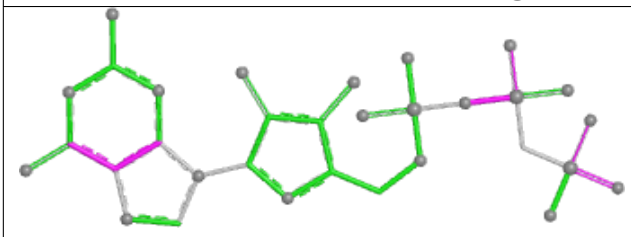
All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
56	AA	3001	NMY	C10-C11-C12-C7-C8-C9

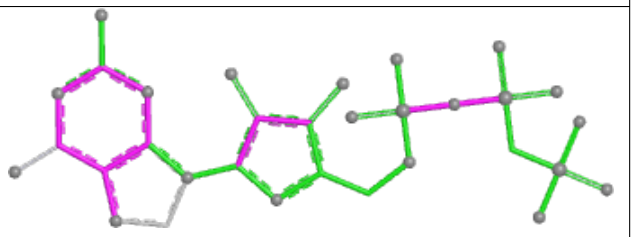
No monomer is involved in short contacts.

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

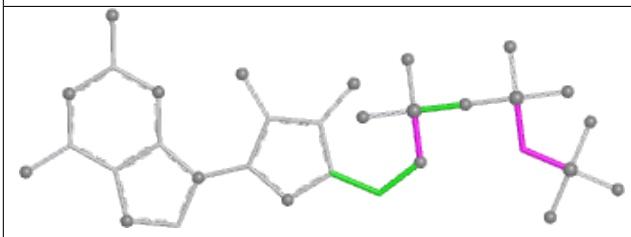
Ligand GCP CA 701



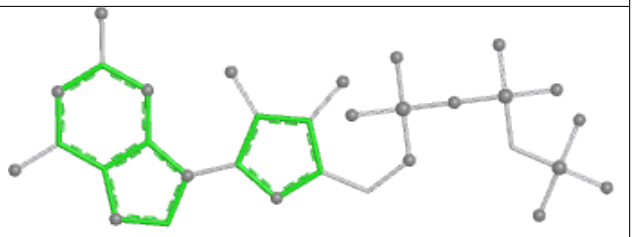
Bond lengths



Bond angles

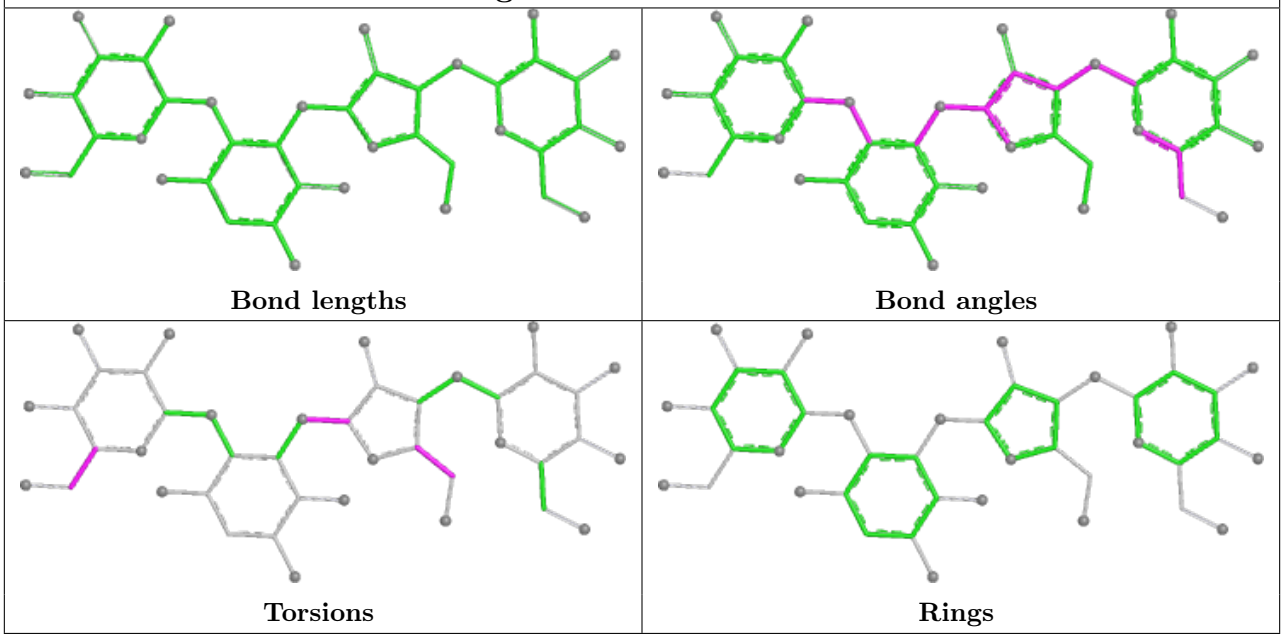


Torsions

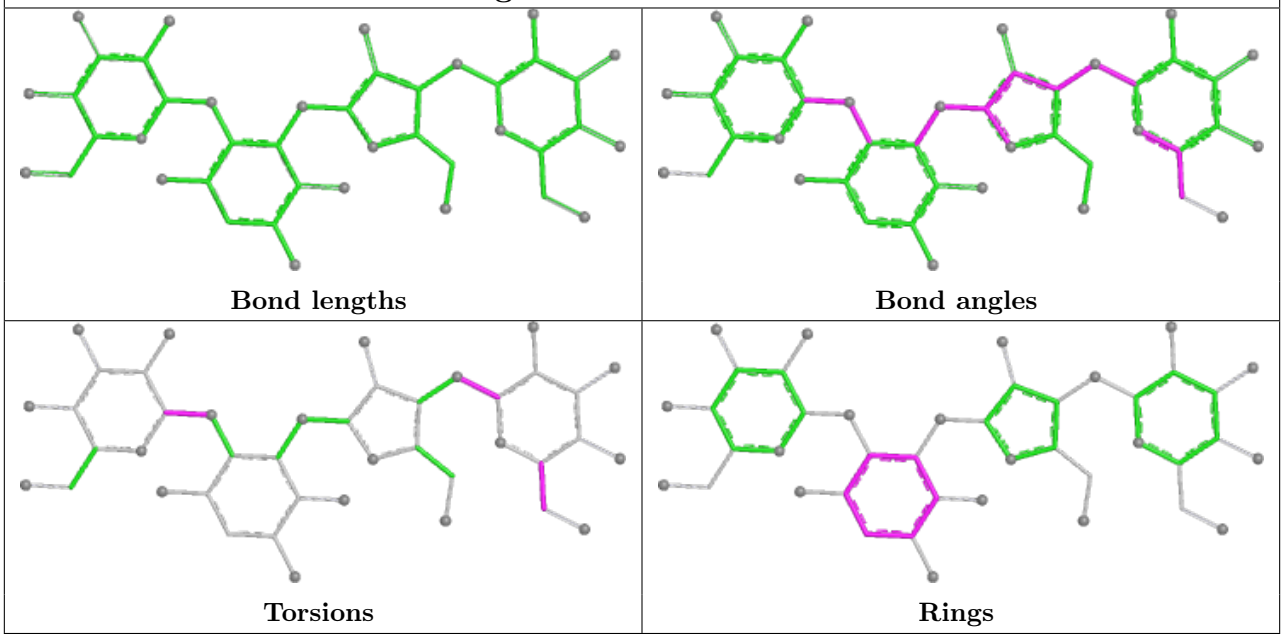


Rings

Ligand NMY BA 1601



Ligand NMY AA 3001



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	AA	11
33	Ag	3
34	BA	3
55	CA	2
9	AI	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	Ag	30:UNK	C	123:UNK	N	31.39
1	CA	542:LYS	C	552:ASP	N	16.28
1	AA	164:U	O3'	171:G	P	7.69
1	AA	2893:G	O3'	2894:G	P	5.34
1	CA	277:THR	C	281:GLU	N	5.08
1	AA	1105:U	O3'	1106:G	P	4.46
1	BA	1308:U	O3'	1309:G	P	3.99
1	AA	884:C	O3'	885:C	P	3.55
1	Ag	153:UNK	C	154:UNK	N	3.23
1	Ag	323:UNK	C	324:UNK	N	3.05
1	AA	1073:A	O3'	1074:G	P	2.79
1	AA	883:G	O3'	884:C	P	2.68
1	AA	1033:U	O3'	1034:G	P	2.34
1	AA	882:G	O3'	883:G	P	2.22
1	BA	1167:A	O3'	1169:A	P	1.86
1	AA	2756:U	O3'	2757:A	P	1.77
1	AA	1203:G	O3'	1204:A	P	1.19
1	AI	153:LEU	C	154:GLY	N	1.11
1	BA	1317:C	O3'	1318:A	P	0.77
1	AA	1060:U	O3'	1061:U	P	0.64

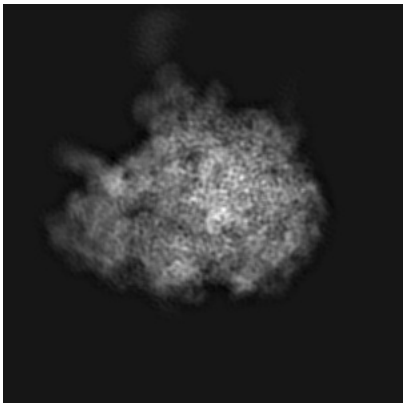
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-6396. These allow visual inspection of the internal detail of the map and identification of artifacts.

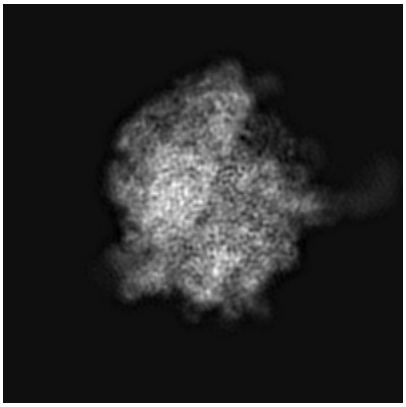
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

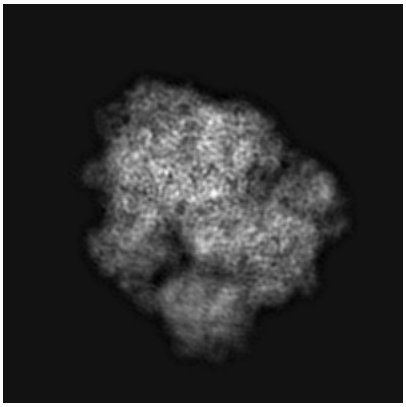
6.1.1 Primary map



X



Y

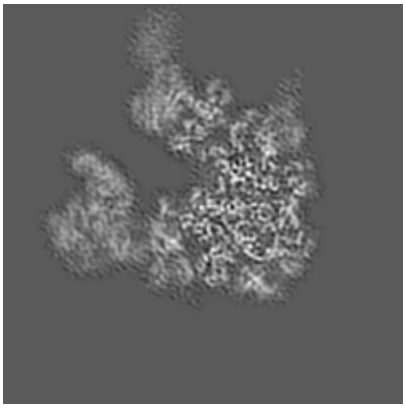


Z

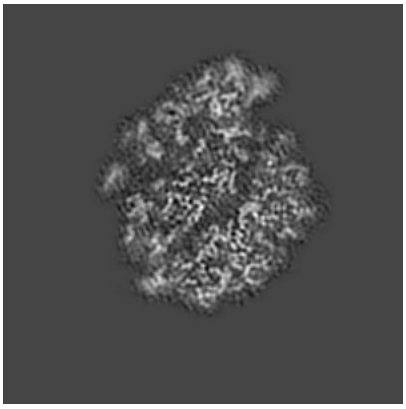
The images above show the map projected in three orthogonal directions.

6.2 Central slices

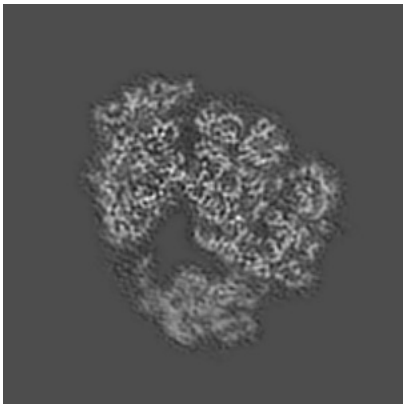
6.2.1 Primary map



X Index: 147



Y Index: 147

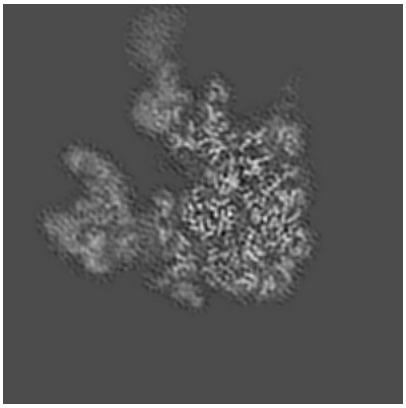


Z Index: 147

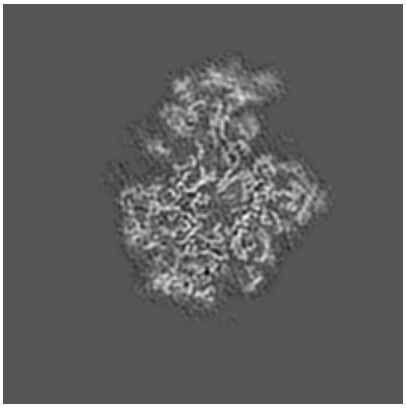
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

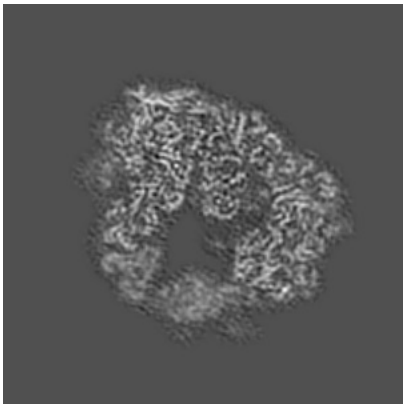
6.3.1 Primary map



X Index: 153



Y Index: 153



Z Index: 157

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.109. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

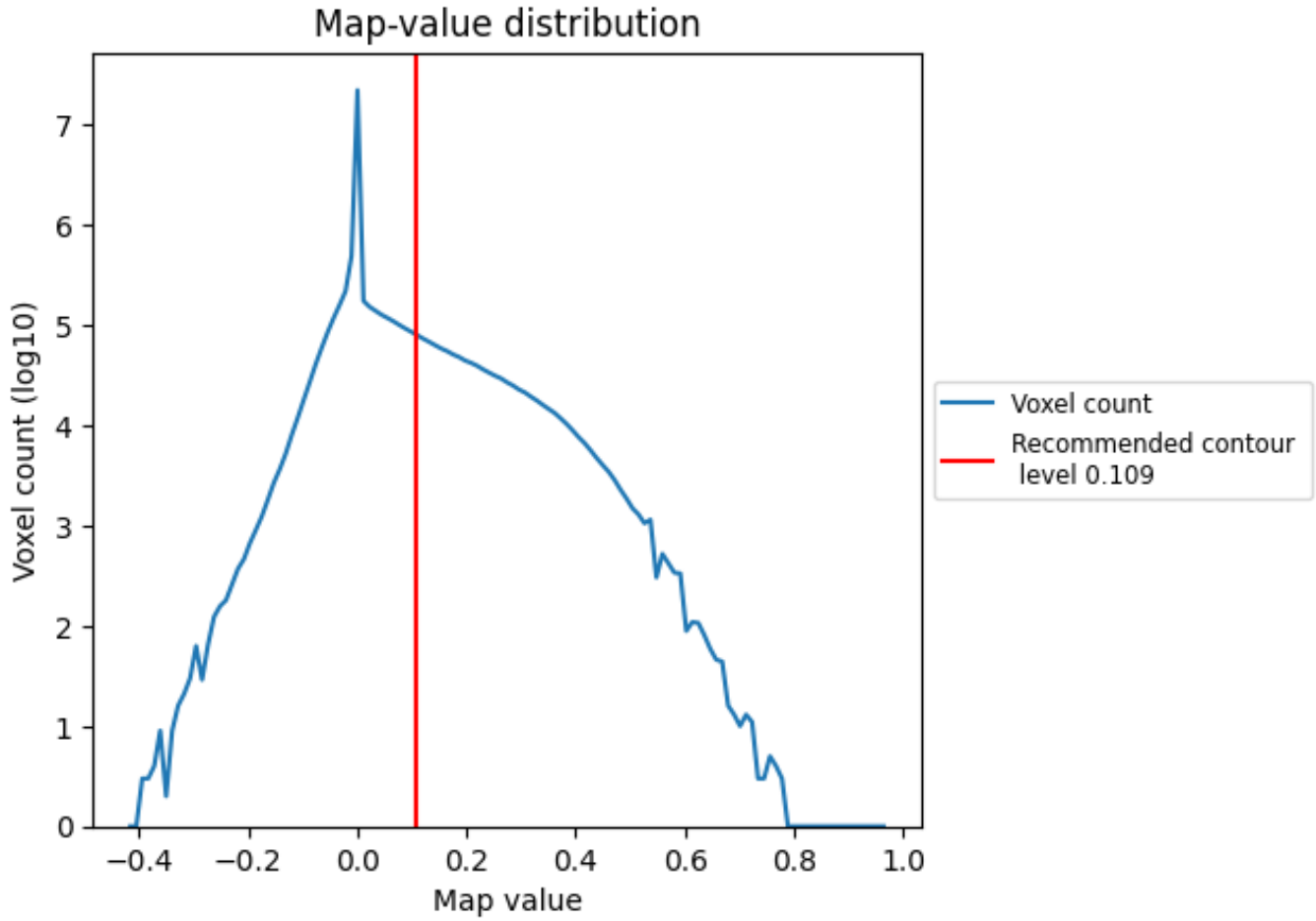
6.5 Mask visualisation (i)

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

7 Map analysis

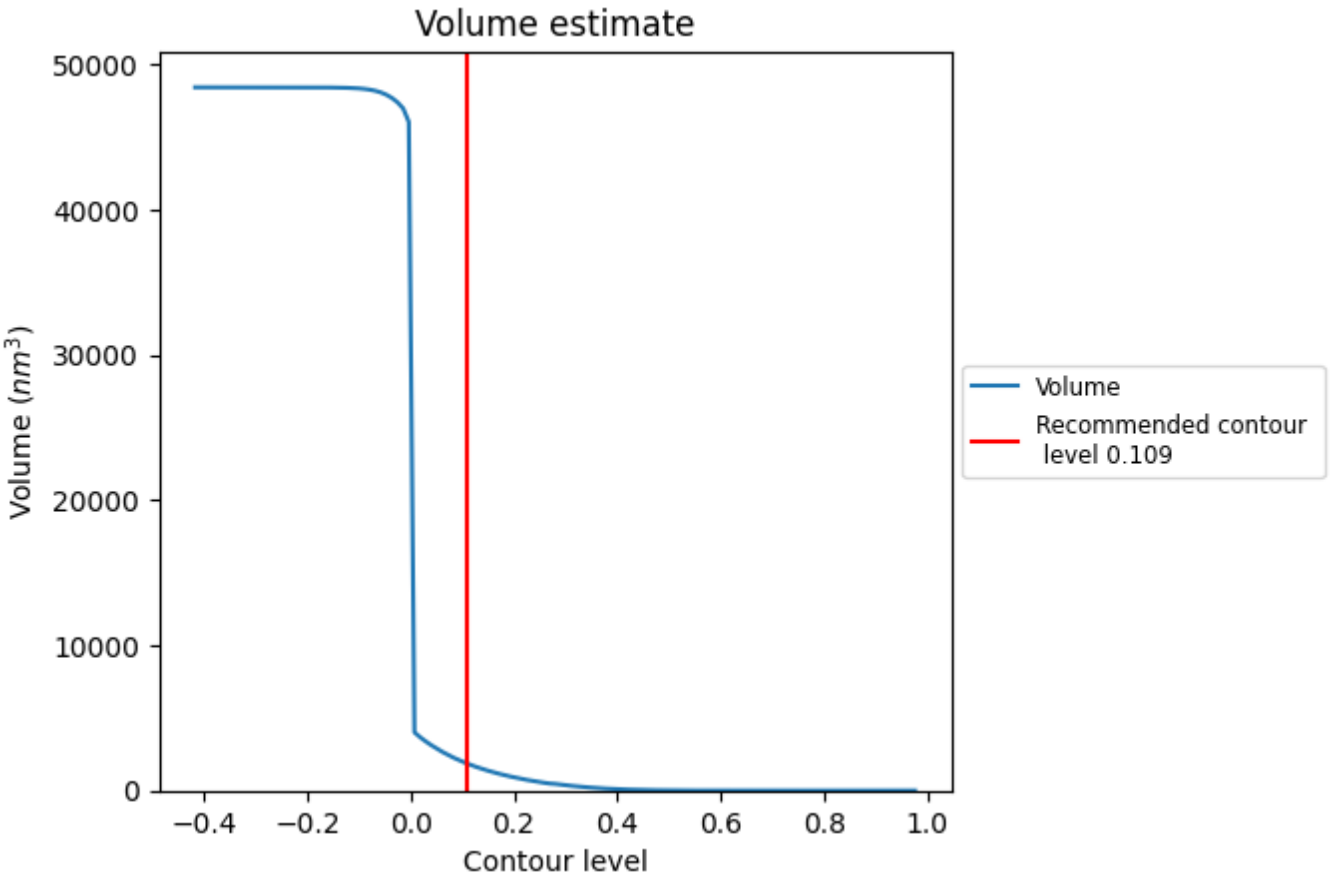
This section contains the results of statistical analysis of the map.

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.

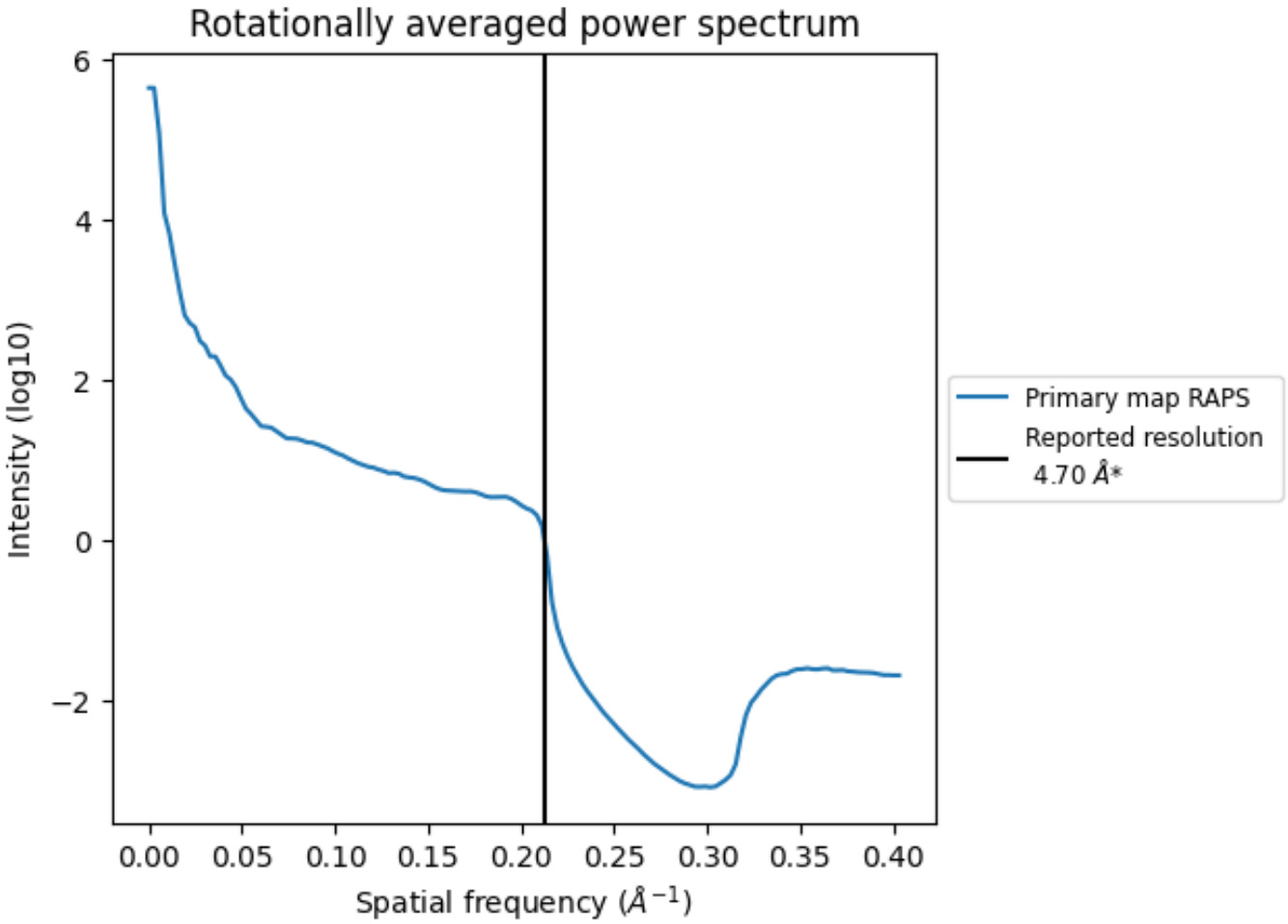
7.2 Volume estimate



The volume at the recommended contour level is 1869 nm^3; this corresponds to an approximate mass of 1688 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 0.213 Å^{-1}

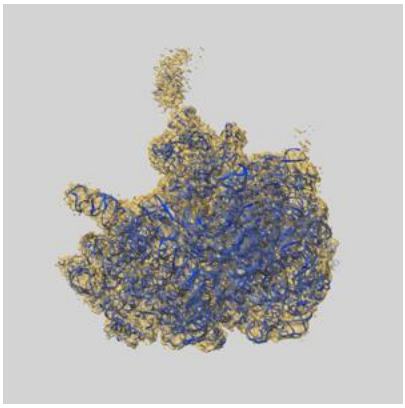
8 Fourier-Shell correlation

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

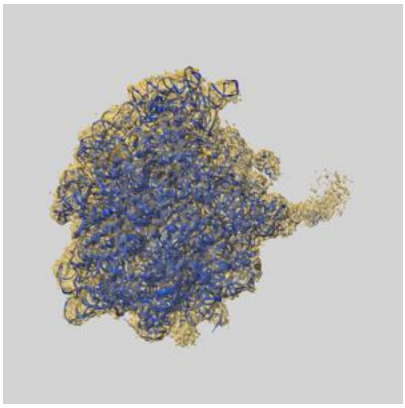
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-6396 and PDB model 5A9Z. Per-residue inclusion information can be found in section 3 on page 15.

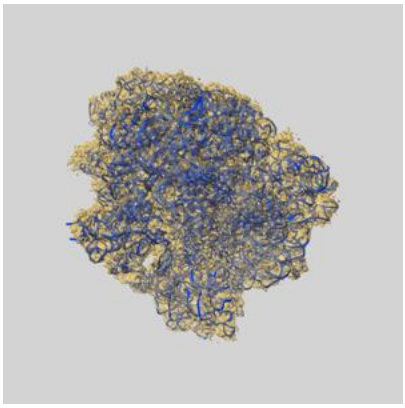
9.1 Map-model overlay



X



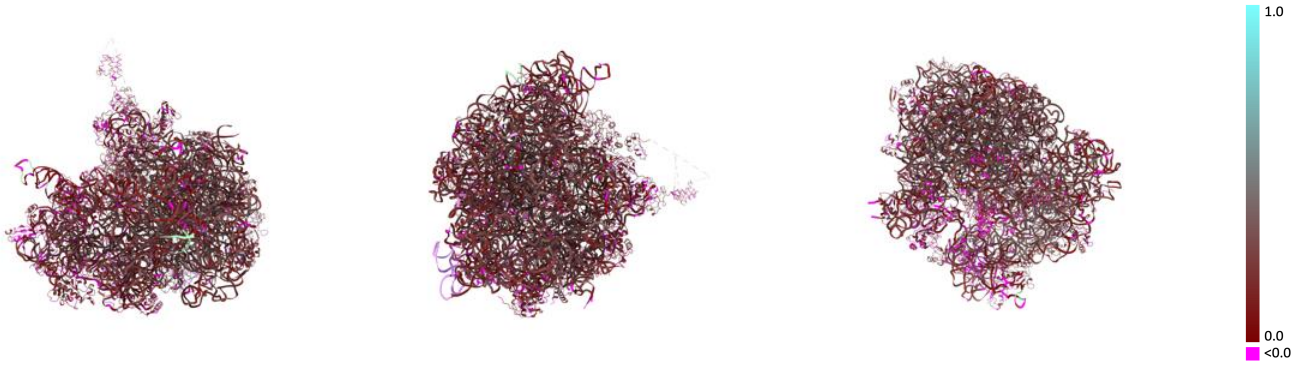
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.109 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.

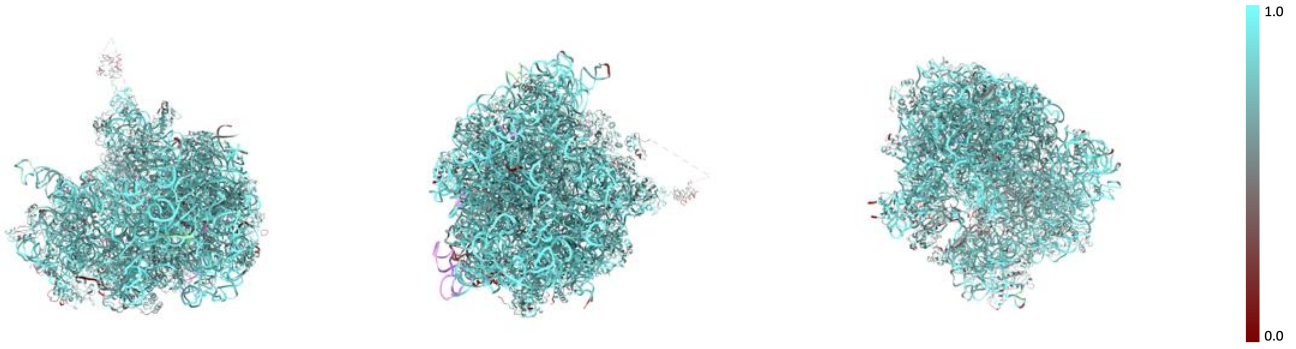
9.2 Q-score mapped to coordinate model (i)



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.

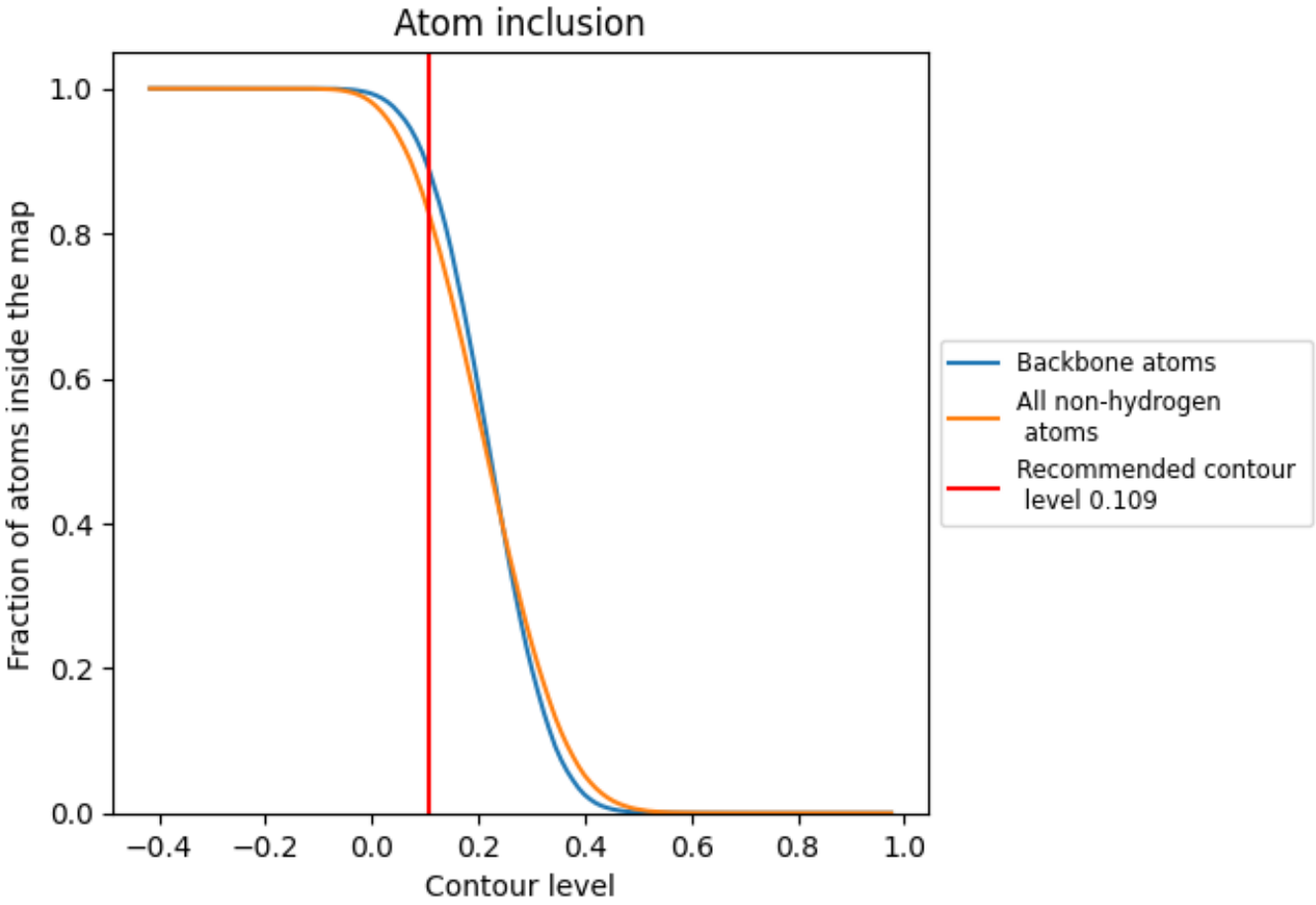
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.109).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 82% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.109) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8231	0.2090
AA	0.9004	0.2540
AB	0.9106	0.2090
AC	0.1008	0.0200
AD	0.7450	0.2320
AE	0.7536	0.2100
AF	0.7046	0.1700
AG	0.6139	0.0710
AH	0.6886	0.1350
AI	0.7965	0.1740
AJ	0.6544	0.1090
AK	0.7380	0.1860
AL	0.6967	0.1970
AM	0.6822	0.1460
AN	0.7550	0.2400
AO	0.7584	0.2040
AP	0.7070	0.1120
AQ	0.7215	0.2100
AR	0.7809	0.2180
AS	0.7192	0.1630
AT	0.7699	0.2100
AU	0.7098	0.1650
AV	0.6735	0.1470
AW	0.6872	0.1320
AX	0.6838	0.1650
AY	0.6984	0.1930
AZ	0.7325	0.1930
Aa	0.7018	0.1870
Ab	0.7621	0.2390
Ac	0.7579	0.1800
Ad	0.7337	0.2120
Ae	0.7117	0.2070
Af	0.7075	0.2050
Ag	0.4935	0.1580
BA	0.8930	0.1970

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Chain	Atom inclusion	Q-score
BF	0.6791	0.1570
BG	0.7058	0.1770
BH	0.7256	0.1570
BI	0.7768	0.2330
BJ	0.6494	0.1300
BK	0.6763	0.1180
BL	0.8241	0.2200
BM	0.6502	0.0560
BN	0.6078	0.0600
BO	0.6454	0.1070
BP	0.6820	0.1980
BQ	0.6935	0.1170
BR	0.7045	0.0950
BS	0.7331	0.1700
BT	0.7766	0.1550
BU	0.7410	0.1690
BV	0.5889	0.0870
BW	0.7290	0.0650
BX	0.6198	0.1290
BY	0.7330	0.0190
CA	0.6443	0.2160