Full wwPDB EM Validation Report ⓘ

Sep 1, 2025 – 03:53 PM EDT

PDB ID	:	9B50 / pdb_00009b50
EMDB ID	:	EMD-44193
Title	:	E. coli 70S ribosome complex (unmethylated 16S A1408 + arbekacin)
Authors	:	Mattingly, J.M.; Dey, D.; Zelinskaya, N.; Dunham, C.M.; Conn, G.L.
Deposited on	:	2024-03-21
Resolution	:	2.70 Å(reported)
Based on initial models	:	7K00, 5JTE

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

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

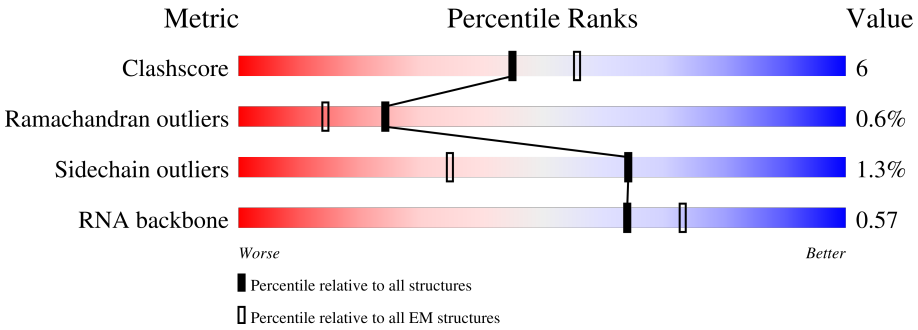
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance

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

The reported resolution of this entry is 2.70 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	1539	68% 25% 7%
2	AB	240	17% 67% 23% 9%
3	AC	233	73% 16% 12%
4	AD	206	17% 56% 38%
5	AE	167	68% 22% 10%
6	AF	135	58% 16% 26%
7	AG	179	68% 16% 16%

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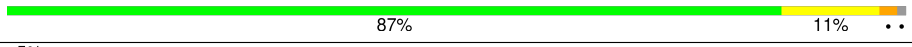
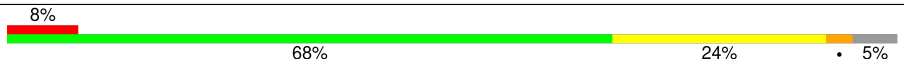
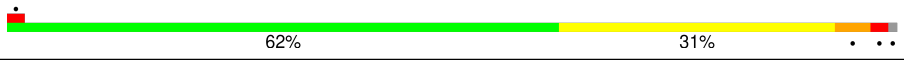
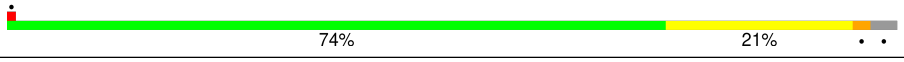
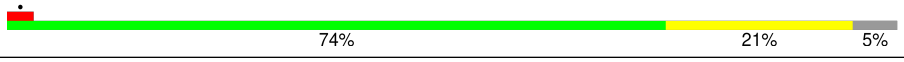
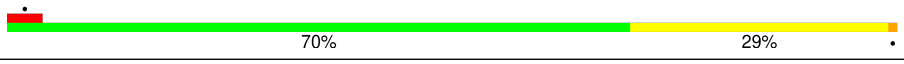
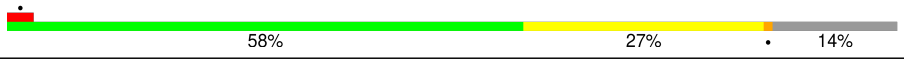
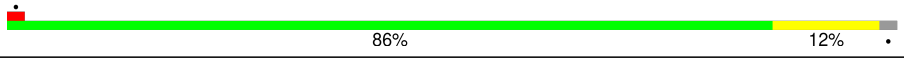
Mol	Chain	Length	Quality of chain
8	AH	130	
9	AI	130	
10	AJ	103	
11	AK	129	
12	AL	124	
13	AM	118	
14	AN	101	
15	AO	89	
16	AP	82	
17	AQ	84	
18	AR	75	
19	AS	92	
20	AT	87	
21	AU	71	
22	B0	57	
23	B1	55	
24	B2	46	
25	B3	65	
26	B4	38	
27	B5	70	
28	BA	2903	
29	BB	120	
30	BC	273	
31	BD	209	
32	BE	201	

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Mol	Chain	Length	Quality of chain
33	BF	179	82% 17%
34	BG	177	92% 8%
35	BH	149	21% 10% 68%
36	BJ	142	90% 10%
37	BK	123	89% 10%
38	BL	144	79% 19%
39	BM	136	85% 15%
40	BN	127	79% 16% 6%
41	BO	117	91% 8%
42	BP	115	87% 11%
43	BQ	118	92% 8%
44	BR	103	87% 13%
45	BS	110	92% 7%
46	BT	100	82% 9% 7%
47	BU	104	80% 18%
48	BV	94	95% 5%
49	BW	85	86% 12%
50	BX	78	86% 13%
51	BY	63	5% 86% 14%
52	BZ	59	83% 14%

2 Entry composition

There are 55 unique types of molecules in this entry. The entry contains 141469 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 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	1539	33015	14725	6052	10699	1539	0	0

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	AB	218	1704	1081	305	311	7	0	0

- Molecule 3 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	AC	206	1624	1028	305	288	3	0	0

- Molecule 4 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AD	205	1643	1026	315	298	4	0	0

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AE	150	1105	687	211	201	6	0	0

- Molecule 6 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	AF	100	817	515	148	148	6	0	0

- Molecule 7 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	AG	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

- Molecule 8 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	AH	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 9 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	AI	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 10 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	AJ	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AK	117	Total	C	N	O	S	0	0
			877	540	174	160	3		

- Molecule 12 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	AL	123	Total	C	N	O	S	0	0
			955	590	196	165	4		

- Molecule 13 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AM	114	Total	C	N	O	S	0	0
			883	546	178	156	3		

- Molecule 14 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AN	96	Total	C	N	O	S	0	0
			774	483	160	128	3		

- Molecule 15 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	AO	88	Total	C	N	O	S	0	0
			710	437	143	129	1		

- Molecule 16 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	AP	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 17 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	AQ	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	AR	55	Total	C	N	O	0	0
			455	288	86	81		

- Molecule 19 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	AS	79	Total	C	N	O	S	0	0
			637	408	120	107	2		

- Molecule 20 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	AT	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 21 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	AU	51	Total	C	N	O	S	0	0
			425	265	86	73	1		

- Molecule 22 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	B0	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 23 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	B1	50	Total	C	N	O	0	0
			409	263	75	71		

- Molecule 24 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	B2	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 25 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	B3	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 26 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	B4	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
27	B5	60	Total	C	N	O	S	0	0
			480	299	90	85	6		

- Molecule 28 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	BA	2897	Total	C	N	O	P	0	0
			62195	27745	11446	20107	2897		

- Molecule 29 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	BB	118	Total	C	N	O	P	0	0
			2529	1126	464	821	118		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BB	120	A	U	conflict	GB 1370526515

- Molecule 30 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	BC	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 31 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	BD	209	Total	C	N	O	S	0	0
			1565	979	288	294	4		

- Molecule 32 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	BE	201	Total	C	N	O	S	0	0
			1552	974	283	290	5		

- Molecule 33 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	BF	177	Total	C	N	O	S	0	0
			1410	899	249	256	6		

- Molecule 34 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	BG	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 35 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BH	47	Total	C	N	O	S	0	0
			359	233	62	63	1		

- Molecule 36 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BJ	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 37 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	BK	122	Total	C	N	O	S	0	0
			938	587	180	165	6		

- Molecule 38 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	BL	143	Total	C	N	O	S	0	0
			1045	649	206	189	1		

- Molecule 39 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BM	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 40 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	BN	120	Total	C	N	O	S	0	0
			960	593	196	166	5		

- Molecule 41 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	BO	116	Total 892	C 552	N 178	O 162	0	0

- Molecule 42 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	BP	114	Total 917	C 574	N 179	O 163	S 1	0	0

- Molecule 43 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	BQ	117	Total 947	C 604	N 192	O 151	0	0

- Molecule 44 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	BR	103	Total 816	C 516	N 153	O 145	S 2	0	0

- Molecule 45 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	BS	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 46 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BT	93	Total 738	C 466	N 139	O 131	S 2	0	0

- Molecule 47 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
47	BU	102	Total 779	C 492	N 146	O 141	0	0

- Molecule 48 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	BV	94	Total	C	N	O	S	0	0
			753	479	137	134	3		

- Molecule 49 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	BW	75	Total	C	N	O	S	0	0
			569	353	113	102	1		

- Molecule 50 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	BX	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 51 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	BY	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 52 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	BZ	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 53 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
53	AA	93	Total	Mg	0
			93	93	
53	B0	1	Total	Mg	0
			1	1	
53	BA	207	Total	Mg	0
			207	207	
53	BB	5	Total	Mg	0
			5	5	
53	BC	1	Total	Mg	0
			1	1	
53	BN	1	Total	Mg	0
			1	1	

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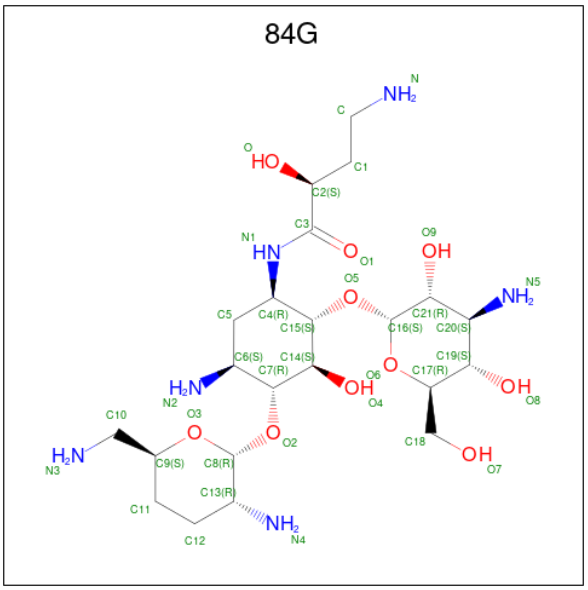
Mol	Chain	Residues	Atoms	AltConf
53	BQ	1	Total Mg 1 1	0

- Molecule 54 is Arbekacin (CCD ID: 84G) (formula: $C_{22}H_{44}N_6O_{10}$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
54	AA	1	Total C N O 38 22 6 10	0
54	AA	1	Total C N O 38 22 6 10	0

- Molecule 55 is ZINC ION (CCD ID: ZN) (formula: Zn).

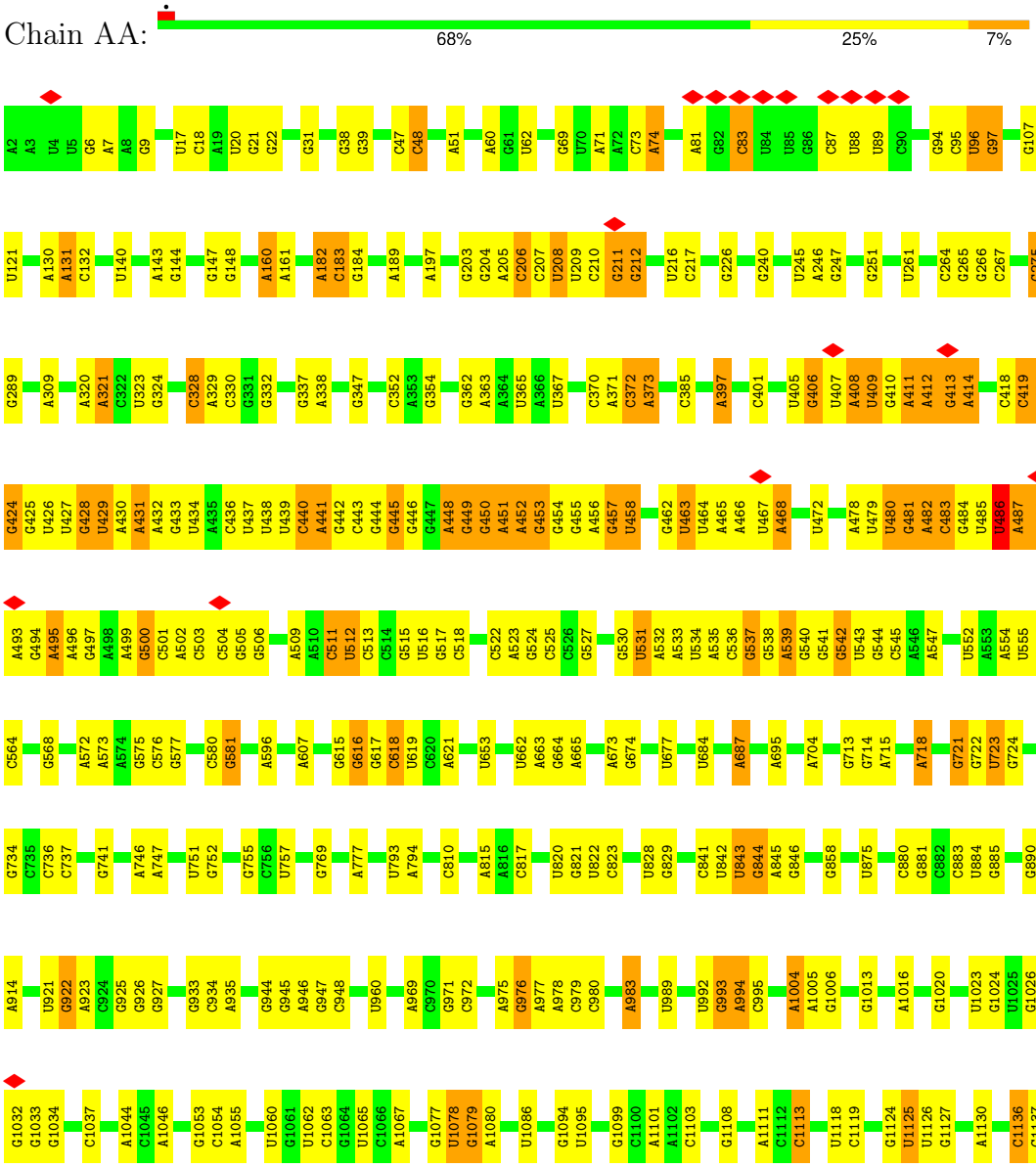
Mol	Chain	Residues	Atoms	AltConf
55	B4	1	Total Zn 1 1	0
55	B5	1	Total Zn 1 1	0

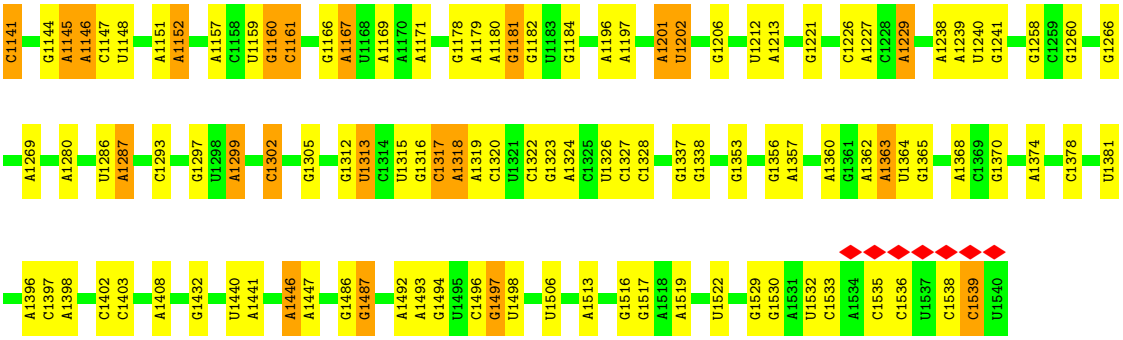
3 Residue-property plots (i)

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: 16S ribosomal RNA

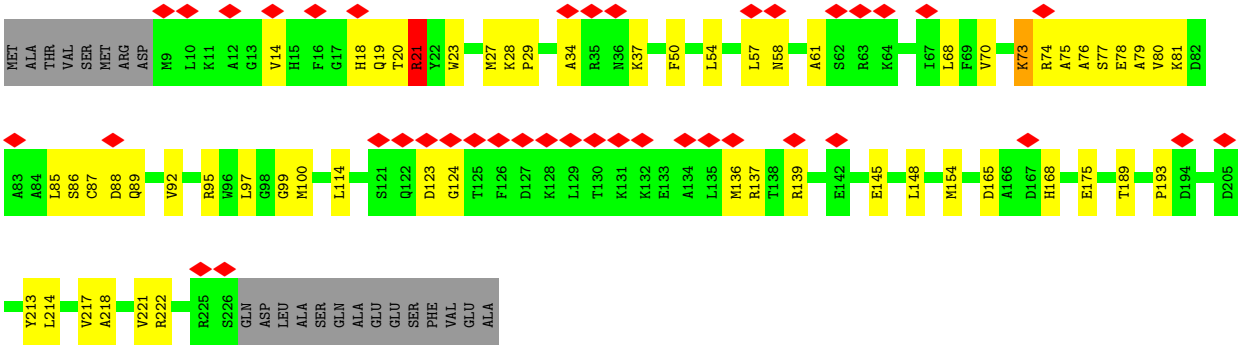
Chain AA:





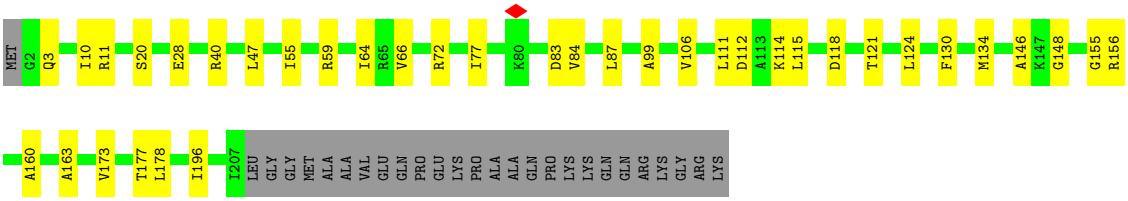
• Molecule 2: 30S ribosomal protein S2

Chain AB:



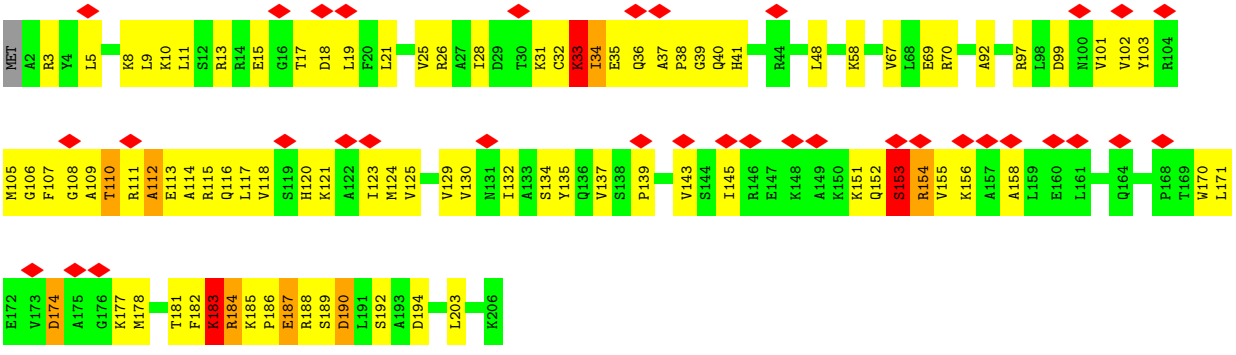
• Molecule 3: 30S ribosomal protein S3

Chain AC:



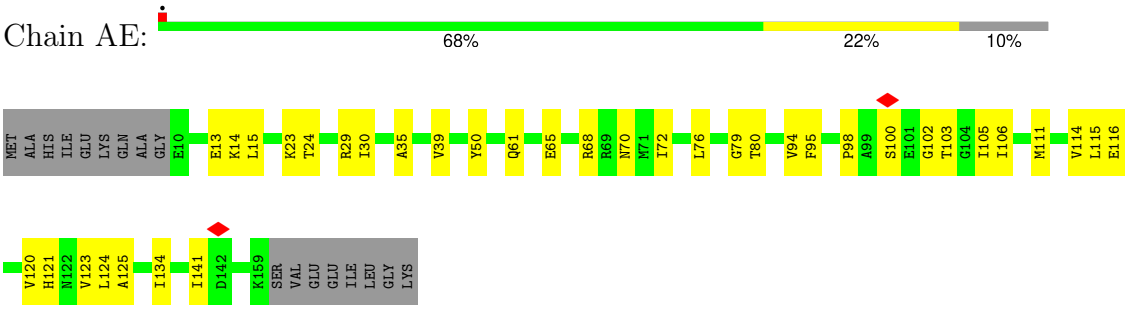
• Molecule 4: 30S ribosomal protein S4

Chain AD:



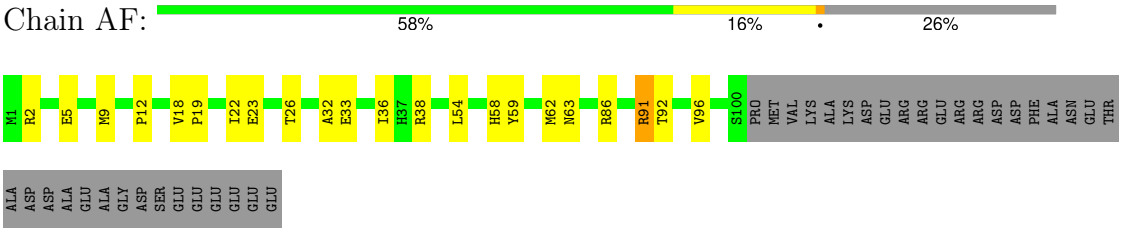
• Molecule 5: 30S ribosomal protein S5

Chain AE:



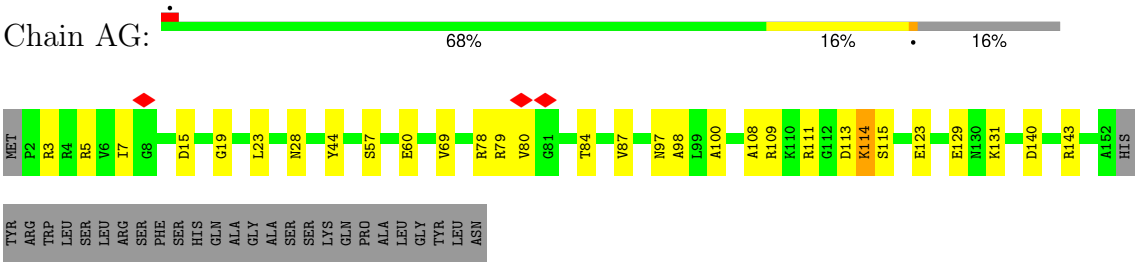
• Molecule 6: 30S ribosomal protein S6

Chain AF:



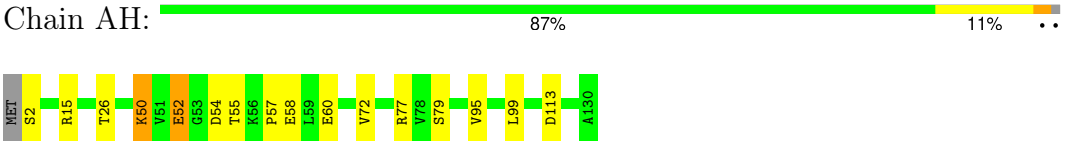
• Molecule 7: 30S ribosomal protein S7

Chain AG:



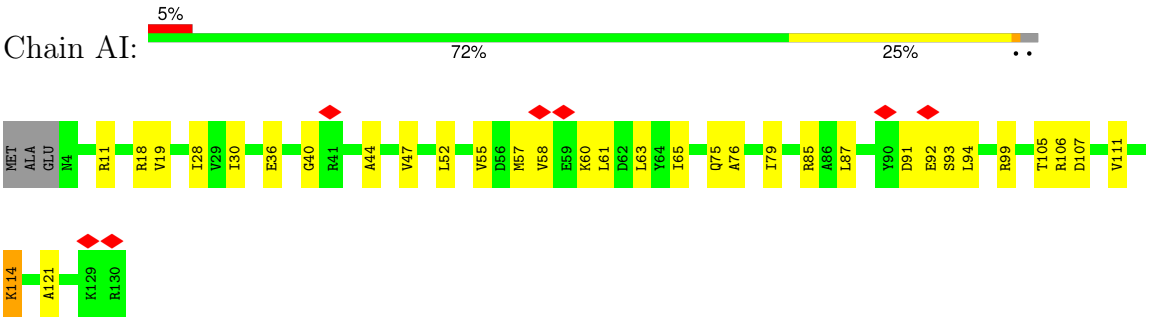
• Molecule 8: 30S ribosomal protein S8

Chain AH:



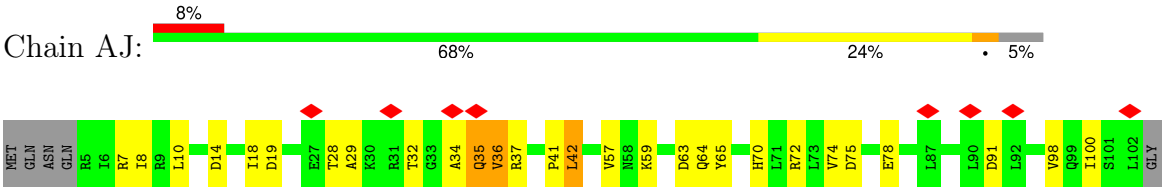
• Molecule 9: 30S ribosomal protein S9

Chain AI:



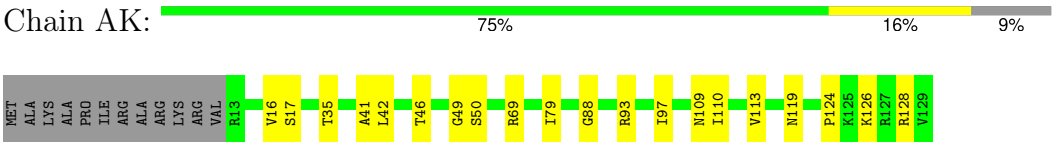
• Molecule 10: 30S ribosomal protein S10

Chain AJ:



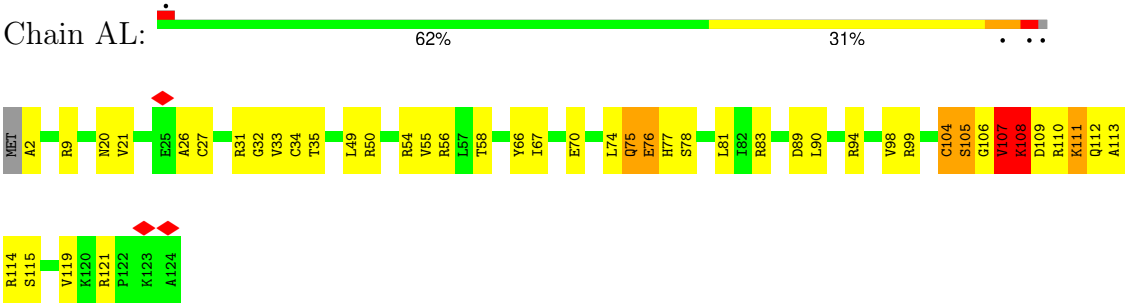
• Molecule 11: 30S ribosomal protein S11

Chain AK:



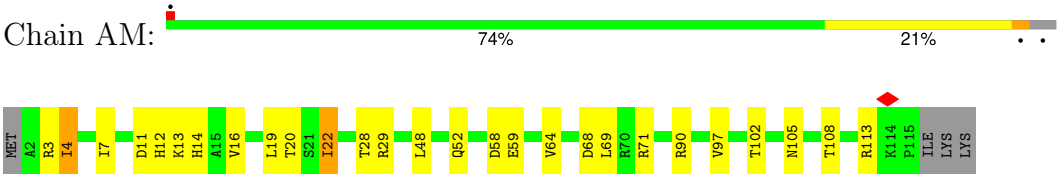
• Molecule 12: 30S ribosomal protein S12

Chain AL:



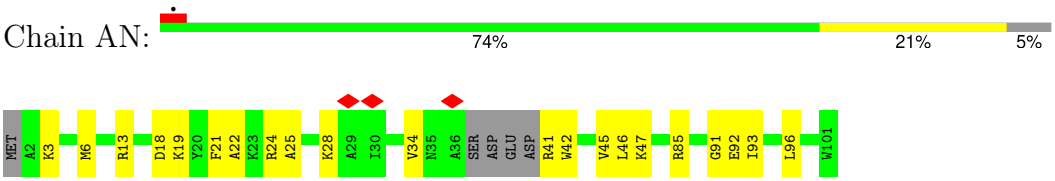
• Molecule 13: 30S ribosomal protein S13

Chain AM:



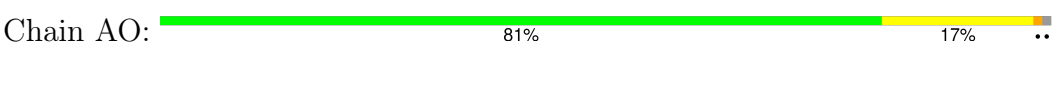
• Molecule 14: 30S ribosomal protein S14

Chain AN:



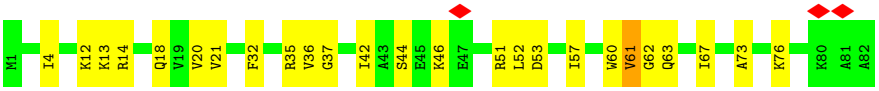
• Molecule 15: 30S ribosomal protein S15

Chain AO:



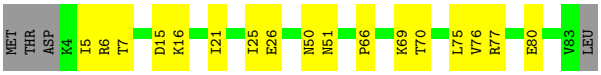
• Molecule 16: 30S ribosomal protein S16

Chain AP:



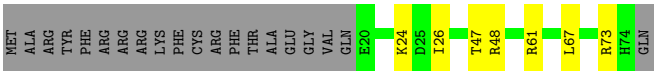
• Molecule 17: 30S ribosomal protein S17

Chain AQ:



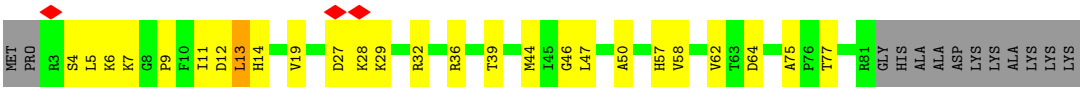
• Molecule 18: 30S ribosomal protein S18

Chain AR:



• Molecule 19: 30S ribosomal protein S19

Chain AS:

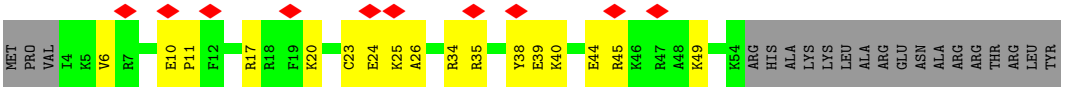


• Molecule 20: 30S ribosomal protein S20

Chain AT:

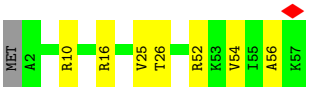
• Molecule 21: 30S ribosomal protein S21

Chain AU:



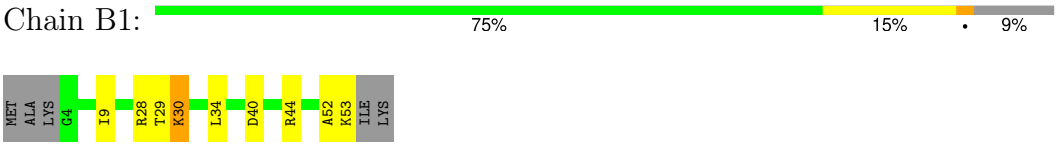
• Molecule 22: 50S ribosomal protein L32

Chain B0:



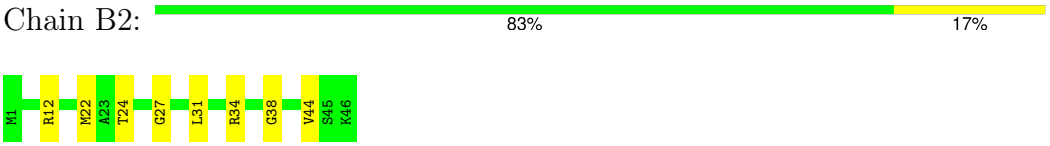
• Molecule 23: 50S ribosomal protein L33

Chain B1:



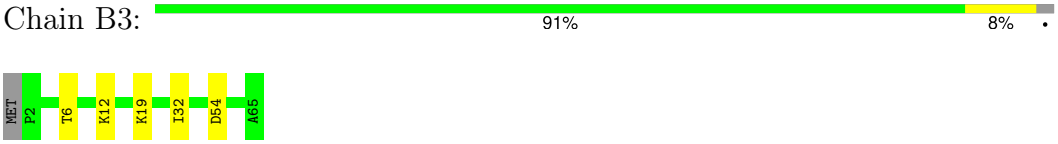
• Molecule 24: 50S ribosomal protein L34

Chain B2:



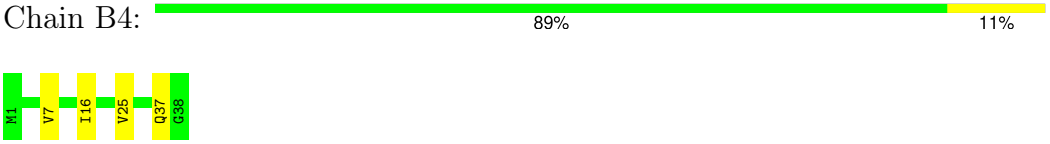
• Molecule 25: 50S ribosomal protein L35

Chain B3:



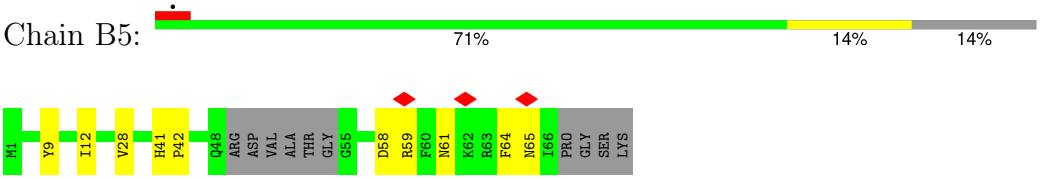
• Molecule 26: 50S ribosomal protein L36

Chain B4:



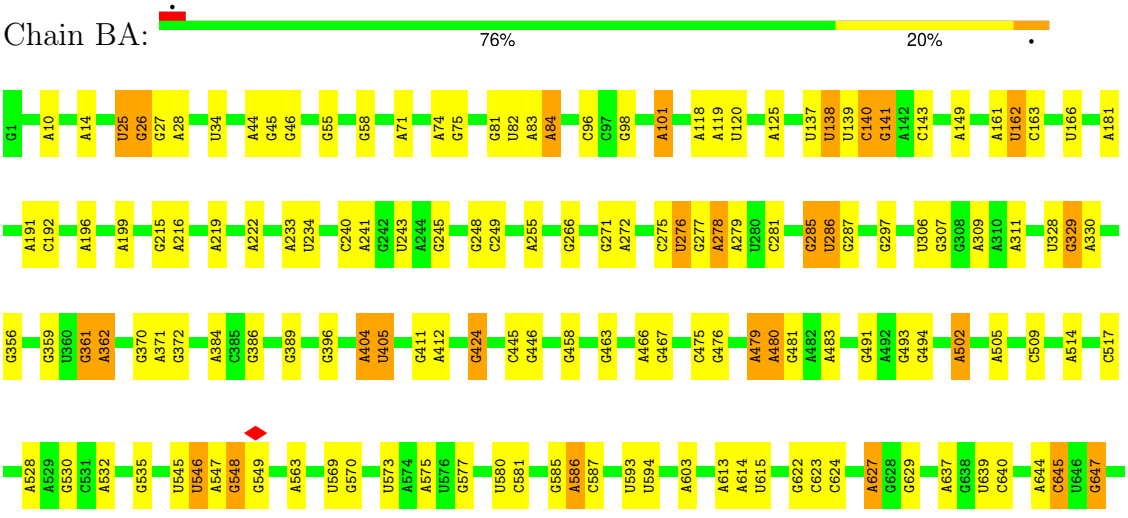
• Molecule 27: 50S ribosomal protein L31

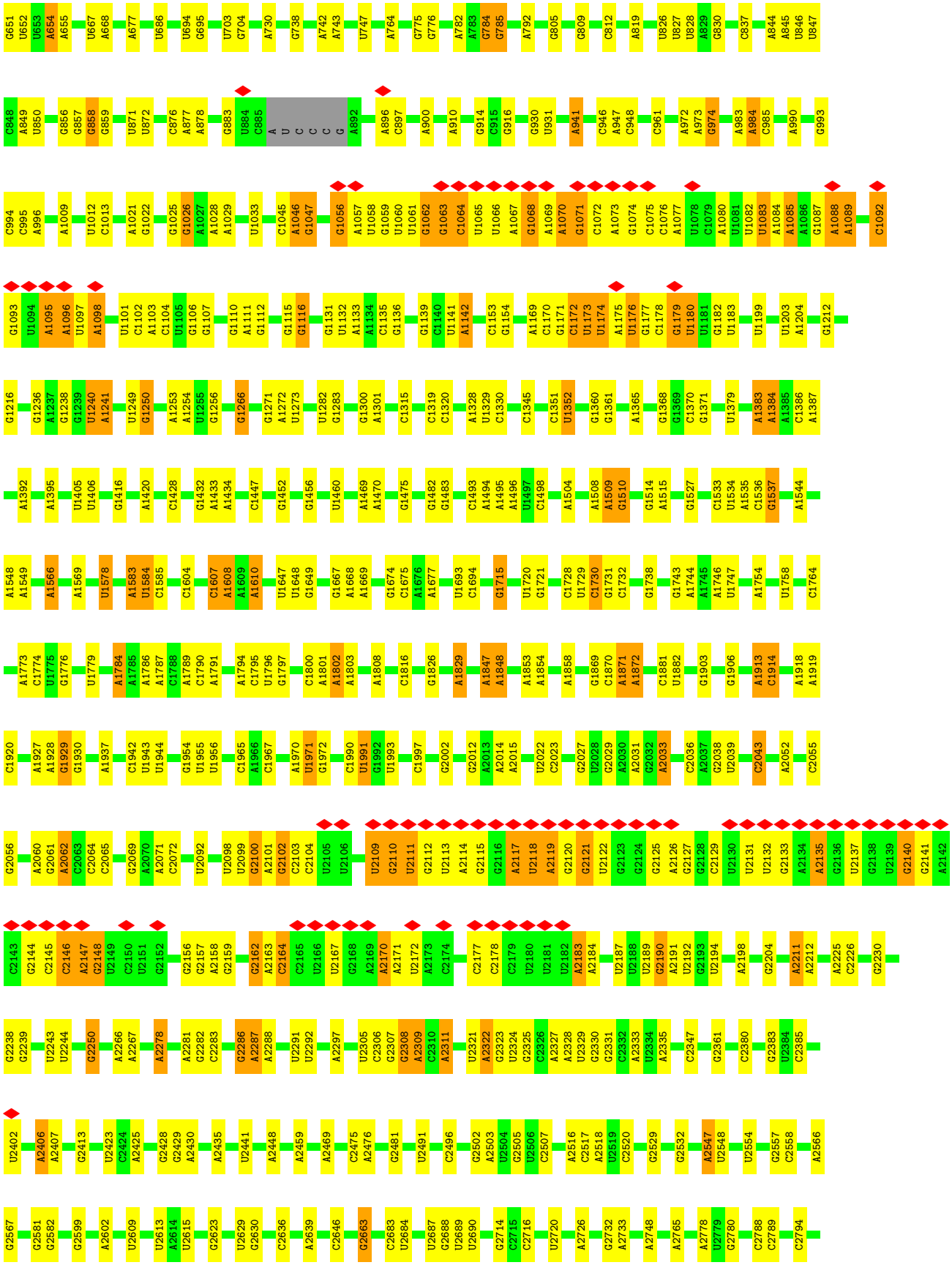
Chain B5:

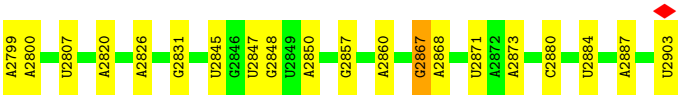


• Molecule 28: 23S ribosomal RNA

Chain BA:







• Molecule 29: 5S ribosomal RNA

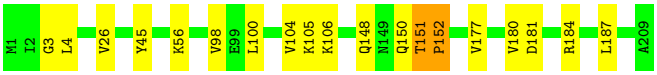
Chain BB:

• Molecule 30: 50S ribosomal protein L2

Chain BC:

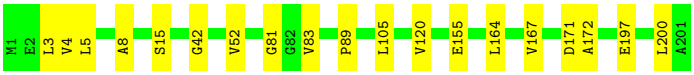
• Molecule 31: 50S ribosomal protein L3

Chain BD:



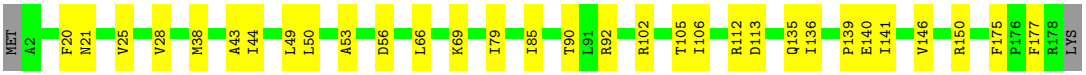
• Molecule 32: 50S ribosomal protein L4

Chain BE:



• Molecule 33: 50S ribosomal protein L5

Chain BF:

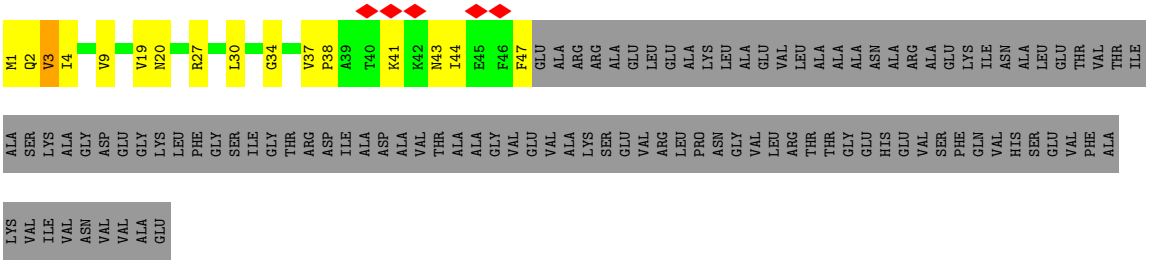


• Molecule 34: 50S ribosomal protein L6

Chain BG:

• Molecule 35: 50S ribosomal protein L9

Chain BH:

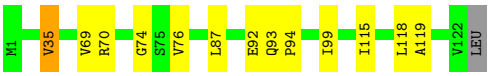


• Molecule 36: 50S ribosomal protein L13

Chain BJ:

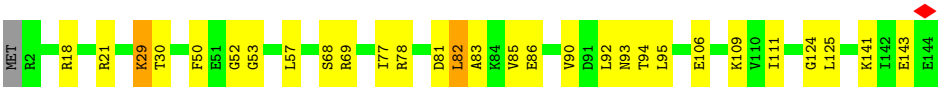
• Molecule 37: 50S ribosomal protein L14

Chain BK:



• Molecule 38: 50S ribosomal protein L15

Chain BL:

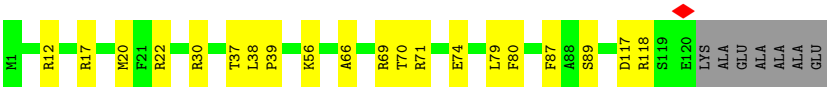


• Molecule 39: 50S ribosomal protein L16

Chain BM:

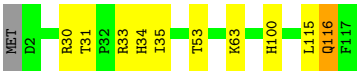
• Molecule 40: 50S ribosomal protein L17

Chain BN:



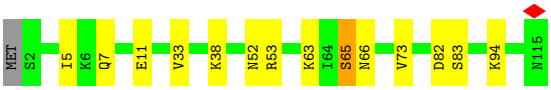
• Molecule 41: 50S ribosomal protein L18

Chain BO:



• Molecule 42: 50S ribosomal protein L19

Chain BP:



• Molecule 43: 50S ribosomal protein L20

Chain BQ:

• Molecule 44: 50S ribosomal protein L21

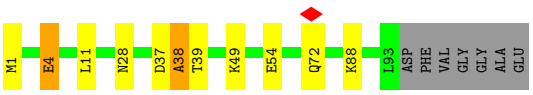
Chain BR:

• Molecule 45: 50S ribosomal protein L22

Chain BS:

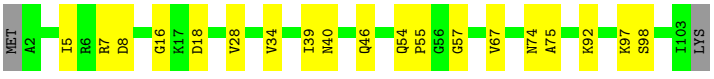
• Molecule 46: 50S ribosomal protein L23

Chain BT:



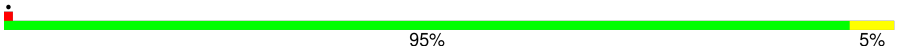
• Molecule 47: 50S ribosomal protein L24

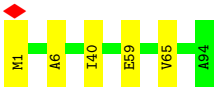
Chain BU:



• Molecule 48: 50S ribosomal protein L25

Chain BV:



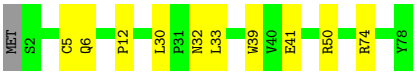


• Molecule 49: 50S ribosomal protein L27

Chain BW:

• Molecule 50: 50S ribosomal protein L28

Chain BX:

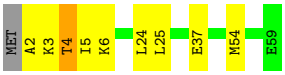


• Molecule 51: 50S ribosomal protein L29

Chain BY:

• Molecule 52: 50S ribosomal protein L30

Chain BZ:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	470397	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	52.16	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	28.698	Depositor
Minimum map value	-10.798	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2.5	Depositor
Map size (Å)	427.6, 427.6, 427.6	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.069, 1.069, 1.069	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 84G, MG, ZN

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	0.27	0/36966	0.31	1/57666 (0.0%)
2	AB	0.30	0/1735	0.48	2/2338 (0.1%)
3	AC	0.19	0/1651	0.31	0/2225
4	AD	0.39	0/1665	0.61	3/2227 (0.1%)
5	AE	0.25	0/1118	0.38	0/1504
6	AF	0.20	0/835	0.34	0/1128
7	AG	0.30	1/1195 (0.1%)	0.35	1/1602 (0.1%)
8	AH	0.31	0/989	0.36	0/1326
9	AI	0.40	0/1034	0.47	0/1375
10	AJ	0.19	0/796	0.34	0/1077
11	AK	0.32	0/893	0.42	0/1205
12	AL	0.57	0/969	0.72	3/1300 (0.2%)
13	AM	0.35	0/892	0.47	0/1193
14	AN	0.19	0/785	0.36	0/1043
15	AO	0.33	0/718	0.30	0/959
16	AP	0.41	0/659	0.47	1/884 (0.1%)
17	AQ	0.45	0/657	0.54	0/881
18	AR	0.22	0/462	0.31	0/621
19	AS	0.37	0/652	0.47	0/877
20	AT	0.58	0/671	0.42	0/888
21	AU	0.20	0/430	0.50	0/570
22	B0	0.50	0/450	0.42	0/599
23	B1	0.41	0/416	0.40	0/554
24	B2	0.32	0/380	0.32	0/498
25	B3	0.28	0/513	0.29	0/676
26	B4	0.26	0/303	0.26	0/397
27	B5	0.17	0/488	0.37	0/649
28	BA	0.32	0/69659	0.30	0/108672
29	BB	0.26	0/2828	0.25	0/4410
30	BC	0.52	0/2121	0.44	0/2852
31	BD	0.43	0/1586	0.48	3/2134 (0.1%)
32	BE	0.26	0/1571	0.29	0/2113

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	BF	0.20	0/1434	0.32	0/1926
34	BG	0.19	0/1343	0.31	0/1816
35	BH	0.20	0/364	0.41	0/490
36	BJ	0.36	0/1152	0.32	0/1551
37	BK	0.26	0/947	0.34	0/1268
38	BL	0.28	0/1054	0.39	0/1403
39	BM	0.26	0/1093	0.31	0/1460
40	BN	0.44	0/973	0.42	0/1301
41	BO	0.36	0/902	0.38	0/1209
42	BP	0.34	0/929	0.35	0/1242
43	BQ	0.30	0/960	0.28	0/1278
44	BR	0.27	0/829	0.37	0/1107
45	BS	0.27	0/864	0.30	0/1156
46	BT	0.32	0/744	0.31	0/994
47	BU	0.24	0/787	0.35	0/1051
48	BV	0.25	0/766	0.26	0/1025
49	BW	0.28	0/576	0.31	0/762
50	BX	0.28	0/635	0.28	0/848
51	BY	0.23	0/510	0.28	0/677
52	BZ	0.53	0/453	0.47	0/605
All	All	0.31	1/153402 (0.0%)	0.33	14/229612 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	AG	109	ARG	C-N	-7.08	1.22	1.33

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	AB	80	VAL	N-CA-C	-7.82	104.27	113.42
31	BD	151	THR	CA-C-N	-7.62	111.32	119.24
31	BD	151	THR	C-N-CA	-7.62	111.32	119.24
4	AD	112	ALA	CA-C-N	-7.45	110.30	120.28
4	AD	112	ALA	C-N-CA	-7.45	110.30	120.28
16	AP	63	GLN	N-CA-C	-6.73	104.28	113.30
12	AL	105	SER	N-CA-C	6.70	120.36	107.44
12	AL	76	GLU	N-CA-C	-6.13	102.01	110.35
1	AA	486	U	C2'-C3'-O3'	-6.08	104.57	113.70
7	AG	109	ARG	O-C-N	-6.05	115.14	122.22
31	BD	152	PRO	N-CA-C	-5.92	104.19	113.78
12	AL	111	LYS	N-CA-C	-5.47	107.61	114.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	AD	33	LYS	N-CA-C	-5.29	105.47	112.24
2	AB	21	ARG	N-CA-C	-5.26	106.76	114.39

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AA	33015	0	16617	415	0
2	AB	1704	0	1732	38	0
3	AC	1624	0	1696	27	0
4	AD	1643	0	1707	130	0
5	AE	1105	0	1148	32	0
6	AF	817	0	808	15	0
7	AG	1181	0	1238	20	0
8	AH	979	0	1031	10	0
9	AI	1022	0	1070	33	0
10	AJ	786	0	828	26	0
11	AK	877	0	887	17	0
12	AL	955	0	1016	47	0
13	AM	883	0	941	24	0
14	AN	774	0	824	18	0
15	AO	710	0	728	10	0
16	AP	649	0	666	21	0
17	AQ	648	0	691	12	0
18	AR	455	0	478	8	0
19	AS	637	0	665	31	0
20	AT	665	0	714	17	0
21	AU	425	0	449	16	0
22	B0	444	0	458	7	0
23	B1	409	0	440	5	0
24	B2	377	0	418	7	0
25	B3	504	0	572	5	0
26	B4	302	0	340	4	0
27	B5	480	0	478	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
28	BA	62195	0	31279	320	0
29	BB	2529	0	1281	12	0
30	BC	2082	0	2154	15	0
31	BD	1565	0	1616	15	0
32	BE	1552	0	1619	13	0
33	BF	1410	0	1444	24	0
34	BG	1323	0	1371	8	0
35	BH	359	0	381	11	0
36	BJ	1129	0	1162	10	0
37	BK	938	0	1012	12	0
38	BL	1045	0	1117	22	0
39	BM	1074	0	1157	13	0
40	BN	960	0	1000	11	0
41	BO	892	0	923	8	0
42	BP	917	0	962	13	0
43	BQ	947	0	1019	10	0
44	BR	816	0	839	13	0
45	BS	857	0	922	5	0
46	BT	738	0	807	8	0
47	BU	779	0	831	15	0
48	BV	753	0	780	4	0
49	BW	569	0	581	3	0
50	BX	625	0	652	7	0
51	BY	509	0	543	6	0
52	BZ	449	0	488	6	0
53	AA	93	0	0	0	0
53	B0	1	0	0	0	0
53	BA	207	0	0	0	0
53	BB	5	0	0	0	0
53	BC	1	0	0	0	0
53	BN	1	0	0	0	0
53	BQ	1	0	0	0	0
54	AA	76	0	0	3	0
55	B4	1	0	0	0	0
55	B5	1	0	0	0	0
All	All	141469	0	94580	1393	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (1393) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:AD:110:THR:HG22	4:AD:113:GLU:H	1.20	0.99
9:AI:65:ILE:HD12	9:AI:79:ILE:HD12	1.46	0.94
1:AA:449:G:H1	1:AA:486:U:H1'	1.34	0.92
7:AG:111:ARG:HD2	7:AG:123:GLU:HG2	1.52	0.91
1:AA:502:A:P	12:AL:113:ALA:HA	2.10	0.90
28:BA:1115:G:O2'	28:BA:1116:G:O5'	1.90	0.90
1:AA:500:G:H1	1:AA:544:G:H1	1.18	0.90
28:BA:947:A:HO2'	28:BA:984:A:H2	1.19	0.90
1:AA:442:G:H2'	1:AA:443:C:C6	2.10	0.86
4:AD:139:PRO:HB3	4:AD:183:LYS:N	1.90	0.85
1:AA:438:U:H5"	4:AD:120:HIS:CD2	2.12	0.85
1:AA:478:A:O2'	1:AA:479:U:O4'	1.95	0.84
28:BA:1096:A:O2'	28:BA:1097:U:O4'	1.94	0.83
4:AD:110:THR:HG22	4:AD:113:GLU:N	1.92	0.83
1:AA:424:G:H3'	1:AA:425:G:C8	2.14	0.83
28:BA:2109:U:O2'	28:BA:2110:G:OP1	1.96	0.83
12:AL:34:CYS:H	12:AL:55:VAL:HG13	1.46	0.81
28:BA:137:U:H5'	28:BA:138:U:C4	2.16	0.81
19:AS:13:LEU:H	19:AS:13:LEU:HD23	1.46	0.80
28:BA:1871:A:O2'	28:BA:1872:A:O5'	1.99	0.80
1:AA:449:G:N1	1:AA:486:U:H1'	1.97	0.80
40:BN:37:THR:HG22	40:BN:39:PRO:HD2	1.65	0.79
28:BA:1095:A:O2'	28:BA:1096:A:OP1	2.01	0.78
28:BA:361:G:O2'	28:BA:362:A:O5'	2.02	0.78
28:BA:1047:G:HO2'	28:BA:1110:G:H1	1.31	0.76
1:AA:424:G:H3'	1:AA:425:G:H8	1.50	0.76
1:AA:438:U:H5"	4:AD:120:HIS:HD2	1.51	0.76
4:AD:34:ILE:O	4:AD:35:GLU:HG2	1.85	0.76
1:AA:500:G:H22	1:AA:544:G:H22	1.34	0.76
1:AA:418:C:H42	1:AA:425:G:H1	1.34	0.76
28:BA:1942:C:N4	28:BA:1943:U:O4	2.18	0.76
1:AA:446:G:H1	1:AA:488:C:H42	1.31	0.76
14:AN:41:ARG:NH2	14:AN:42:TRP:O	2.19	0.75
12:AL:77:HIS:O	12:AL:78:SER:OG	2.04	0.75
1:AA:517:G:N2	1:AA:530:G:OP1	2.20	0.75
15:AO:17:ARG:NH1	15:AO:18:ASP:OD1	2.18	0.75
1:AA:449:G:H22	1:AA:486:U:H1'	1.52	0.75
28:BA:2147:A:H2'	28:BA:2148:G:H1'	1.68	0.75
45:BS:28:LYS:O	45:BS:30:SER:N	2.20	0.74
1:AA:429:U:OP1	4:AD:13:ARG:NH1	2.20	0.74
4:AD:13:ARG:NH2	4:AD:37:ALA:O	2.20	0.74
4:AD:109:ALA:N	4:AD:113:GLU:OE1	2.20	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:140:C:H6	28:BA:141:G:H1	1.35	0.74
28:BA:1067:A:OP1	28:BA:1069:A:N6	2.21	0.74
17:AQ:69:LYS:O	17:AQ:70:THR:OG1	2.02	0.74
1:AA:436:C:O3'	4:AD:152:GLN:NE2	2.20	0.73
8:AH:26:THR:HG22	8:AH:58:GLU:OE2	1.88	0.73
28:BA:137:U:H5'	28:BA:138:U:O4	1.88	0.73
4:AD:151:LYS:HA	4:AD:155:VAL:HB	1.71	0.73
30:BC:29:PRO:HG2	30:BC:34:LEU:HD11	1.71	0.73
1:AA:418:C:H2'	1:AA:419:C:C6	2.23	0.73
1:AA:1160:G:O2'	1:AA:1161:C:O5'	2.07	0.72
4:AD:112:ALA:HA	4:AD:115:ARG:HB3	1.71	0.72
12:AL:99:ARG:HH21	12:AL:106:GLY:C	1.97	0.72
4:AD:101:VAL:HG21	4:AD:182:PHE:HZ	1.54	0.72
1:AA:6:G:O6	5:AE:100:SER:N	2.22	0.72
4:AD:21:LEU:HD13	4:AD:111:ARG:HE	1.55	0.71
44:BR:25:LEU:HD13	44:BR:27:ILE:HD12	1.73	0.71
1:AA:480:U:H4'	1:AA:481:G:OP1	1.91	0.71
4:AD:170:TRP:C	4:AD:183:LYS:HZ1	2.00	0.70
5:AE:13:GLU:HG2	5:AE:39:VAL:HG12	1.74	0.70
40:BN:56:LYS:HE2	40:BN:87:PHE:O	1.91	0.70
37:BK:70:ARG:NH1	37:BK:74:GLY:O	2.24	0.70
28:BA:585:G:N7	43:BQ:6:ARG:NH2	2.40	0.69
1:AA:718:A:O5'	11:AK:119:ASN:ND2	2.26	0.69
7:AG:78:ARG:HE	7:AG:87:VAL:HG11	1.55	0.69
1:AA:1055:A:N3	3:AC:156:ARG:NH2	2.40	0.69
1:AA:617:G:O2'	16:AP:14:ARG:NH2	2.25	0.69
1:AA:449:G:N2	1:AA:486:U:H1'	2.08	0.68
4:AD:121:LYS:O	4:AD:124:MET:HE3	1.93	0.68
7:AG:129:GLU:OE1	7:AG:131:LYS:NZ	2.26	0.68
9:AI:91:ASP:OD1	9:AI:93:SER:N	2.25	0.68
15:AO:14:GLU:OE2	15:AO:84:ARG:NH2	2.26	0.68
20:AT:69:LYS:HG2	20:AT:70:ASN:HD22	1.57	0.68
21:AU:44:GLU:OE1	21:AU:45:ARG:NH1	2.27	0.68
28:BA:84:A:H62	28:BA:101:A:H2	1.42	0.68
7:AG:5:ARG:CZ	7:AG:7:ILE:HG22	2.23	0.68
28:BA:27:G:O2'	28:BA:28:A:OP2	2.12	0.68
1:AA:1111:A:N1	3:AC:177:THR:HG22	2.09	0.68
1:AA:481:G:C2	1:AA:482:A:N6	2.62	0.68
1:AA:500:G:OP1	12:AL:121:ARG:NH1	2.26	0.68
13:AM:11:ASP:OD1	13:AM:12:HIS:N	2.27	0.68
1:AA:418:C:N4	1:AA:425:G:H1	1.91	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:AD:40:GLN:OE1	4:AD:41:HIS:NE2	2.26	0.67
28:BA:2311:A:N3	33:BF:85:ILE:HD11	2.09	0.67
1:AA:502:A:OP2	12:AL:114:ARG:N	2.27	0.67
4:AD:114:ALA:O	4:AD:118:VAL:HG23	1.95	0.67
9:AI:52:LEU:HD13	9:AI:57:MET:HE3	1.75	0.67
1:AA:1152:A:OP1	10:AJ:70:HIS:ND1	2.27	0.67
28:BA:2308:G:O2'	28:BA:2309:A:OP1	2.11	0.67
1:AA:1144:G:N2	1:AA:1146:A:H62	1.92	0.66
1:AA:443:C:C4	1:AA:444:G:N7	2.64	0.66
2:AB:73:LYS:H	2:AB:73:LYS:HZ3	1.41	0.66
44:BR:25:LEU:HG	44:BR:94:THR:HG21	1.76	0.66
24:B2:12:ARG:HE	24:B2:44:VAL:HG21	1.58	0.66
28:BA:627:A:OP1	38:BL:78:ARG:NH1	2.26	0.66
36:BJ:125:TYR:HH	36:BJ:132:HIS:HE2	1.36	0.66
3:AC:3:GLN:N	3:AC:3:GLN:OE1	2.29	0.66
1:AA:408:A:H5'	4:AD:110:THR:OG1	1.95	0.66
28:BA:2147:A:H2'	28:BA:2148:G:C1'	2.26	0.66
31:BD:105:LYS:HA	31:BD:177:VAL:HG12	1.78	0.66
40:BN:12:ARG:NH1	40:BN:20:MET:SD	2.69	0.66
1:AA:439:U:C4'	4:AD:121:LYS:HE2	2.27	0.65
28:BA:1179:G:C2	28:BA:1180:U:H4'	2.31	0.65
13:AM:7:ILE:HD11	33:BF:112:ARG:HH21	1.62	0.65
28:BA:947:A:O2'	28:BA:984:A:H2	1.78	0.65
43:BQ:86:ALA:O	43:BQ:87:SER:OG	2.14	0.65
1:AA:492:C:H2'	1:AA:493:A:C8	2.31	0.65
3:AC:83:ASP:OD1	3:AC:84:VAL:N	2.29	0.65
28:BA:2162:G:O2'	28:BA:2164:C:N4	2.29	0.65
1:AA:1316:G:N1	1:AA:1319:A:OP2	2.30	0.65
16:AP:18:GLN:NE2	16:AP:37:GLY:O	2.30	0.65
28:BA:1847:A:O2'	28:BA:1848:A:O5'	2.14	0.65
32:BE:171:ASP:OD1	32:BE:172:ALA:N	2.28	0.65
27:B5:58:ASP:OD1	27:B5:59:ARG:N	2.29	0.65
28:BA:276:U:O2'	28:BA:278:A:N6	2.29	0.65
36:BJ:17:VAL:HG23	36:BJ:137:PRO:HB2	1.78	0.65
1:AA:481:G:N2	1:AA:482:A:N1	2.45	0.65
16:AP:60:TRP:C	16:AP:62:GLY:H	2.03	0.65
33:BF:105:THR:OG1	33:BF:106:ILE:HD12	1.97	0.65
1:AA:81:A:N7	1:AA:83:C:N4	2.45	0.64
8:AH:54:ASP:OD1	8:AH:55:THR:N	2.29	0.64
28:BA:1250:G:N7	38:BL:18:ARG:NH2	2.44	0.64
1:AA:31:G:O2'	1:AA:48:C:N4	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:AD:152:GLN:O	4:AD:154:ARG:N	2.30	0.64
28:BA:1154:G:OP2	43:BQ:58:ARG:NH1	2.30	0.64
1:AA:980:C:O2'	14:AN:13:ARG:NH1	2.31	0.64
20:AT:3:ASN:OD1	20:AT:4:ILE:N	2.30	0.64
28:BA:1080:A:H61	28:BA:1087:G:H5"	1.63	0.64
1:AA:373:A:C4	1:AA:482:A:N6	2.66	0.64
4:AD:181:THR:HG22	4:AD:182:PHE:N	2.12	0.64
28:BA:286:U:H2'	28:BA:287:G:H8	1.62	0.64
47:BU:16:GLY:O	47:BU:18:ASP:N	2.31	0.64
14:AN:91:GLY:O	14:AN:93:ILE:N	2.30	0.64
1:AA:540:G:H2'	1:AA:541:G:C8	2.33	0.64
36:BJ:125:TYR:OH	36:BJ:132:HIS:NE2	2.24	0.64
6:AF:5:GLU:OE2	18:AR:24:LYS:NZ	2.30	0.63
1:AA:737:C:OP1	6:AF:91:ARG:N	2.28	0.63
1:AA:736:C:OP1	18:AR:61:ARG:NH2	2.31	0.63
5:AE:105:ILE:HG22	5:AE:105:ILE:O	1.96	0.63
13:AM:19:LEU:O	13:AM:22:ILE:HG13	1.97	0.63
28:BA:140:C:H1'	28:BA:141:G:N1	2.12	0.63
16:AP:4:ILE:HG13	16:AP:21:VAL:HG22	1.80	0.63
9:AI:106:ARG:NH1	9:AI:107:ASP:O	2.32	0.63
3:AC:40:ARG:NH1	3:AC:55:ILE:O	2.31	0.63
28:BA:2119:A:H61	28:BA:2167:U:H1'	1.63	0.63
35:BH:38:PRO:O	35:BH:43:ASN:ND2	2.31	0.63
31:BD:151:THR:O	31:BD:152:PRO:C	2.39	0.62
10:AJ:34:ALA:O	10:AJ:36:VAL:N	2.32	0.62
28:BA:475:C:O2	28:BA:479:A:N6	2.31	0.62
46:BT:38:ALA:O	46:BT:39:THR:OG1	2.12	0.62
1:AA:436:C:H2'	1:AA:437:U:C6	2.34	0.62
22:B0:54:VAL:O	22:B0:56:ALA:N	2.32	0.62
1:AA:673:A:H2'	1:AA:674:G:C8	2.34	0.62
28:BA:1177:G:H2'	28:BA:1178:C:O4'	1.99	0.62
1:AA:442:G:C2	1:AA:443:C:C4	2.88	0.62
28:BA:877:A:O2'	28:BA:900:A:N6	2.32	0.62
36:BJ:49:ASP:OD1	36:BJ:121:LYS:NZ	2.26	0.62
1:AA:439:U:H4'	4:AD:121:LYS:HE2	1.81	0.62
4:AD:101:VAL:HG21	4:AD:182:PHE:CZ	2.34	0.62
30:BC:129:THR:OG1	30:BC:191:THR:HG22	2.00	0.62
1:AA:446:G:H1	1:AA:488:C:N4	1.98	0.62
9:AI:47:VAL:HG11	9:AI:76:ALA:HB1	1.80	0.62
13:AM:58:ASP:OD1	13:AM:59:GLU:N	2.33	0.62
13:AM:68:ASP:OD1	13:AM:69:LEU:N	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
40:BN:30:ARG:NH1	40:BN:74:GLU:OE1	2.33	0.61
1:AA:412:A:H62	1:AA:431:A:H2	1.46	0.61
37:BK:99:ILE:HD11	37:BK:119:ALA:HB2	1.82	0.61
5:AE:76:LEU:HD11	5:AE:120:VAL:HG12	1.82	0.61
14:AN:47:LYS:HZ3	19:AS:13:LEU:HD22	1.64	0.61
30:BC:258:ARG:NH1	30:BC:264:ASP:OD1	2.33	0.61
5:AE:115:LEU:HD13	5:AE:123:VAL:HG21	1.82	0.61
1:AA:363:A:OP2	12:AL:31:ARG:NH1	2.34	0.61
48:BV:6:ALA:HB1	48:BV:40:ILE:HG23	1.82	0.61
1:AA:204:G:H3'	1:AA:205:A:H8	1.65	0.61
28:BA:1447:C:O2'	28:BA:1544:A:N3	2.34	0.61
52:BZ:2:ALA:O	52:BZ:3:LYS:C	2.43	0.61
38:BL:81:ASP:O	38:BL:83:ALA:N	2.34	0.61
28:BA:1056:G:H21	28:BA:1103:A:H62	1.48	0.61
28:BA:1249:U:H4'	43:BQ:4:VAL:HG21	1.81	0.61
4:AD:101:VAL:HG13	4:AD:171:LEU:HD22	1.82	0.61
28:BA:137:U:C5'	28:BA:138:U:C4	2.84	0.61
1:AA:542:G:OP1	4:AD:10:LYS:NZ	2.30	0.60
1:AA:948:C:OP1	13:AM:108:THR:HG22	2.02	0.60
28:BA:1080:A:N6	28:BA:1088:A:OP2	2.35	0.60
34:BG:2:SER:OG	34:BG:3:ARG:N	2.33	0.60
50:BX:6:GLN:O	50:BX:74:ARG:NH2	2.34	0.60
7:AG:5:ARG:NH1	7:AG:7:ILE:HG22	2.15	0.60
47:BU:97:LYS:O	47:BU:98:SER:OG	2.18	0.60
1:AA:479:U:O2'	1:AA:480:U:H5'	2.00	0.60
3:AC:10:ILE:HG23	3:AC:11:ARG:HD2	1.83	0.60
52:BZ:4:THR:OG1	52:BZ:37:GLU:HG2	2.02	0.60
28:BA:137:U:H5"	28:BA:138:U:N3	2.17	0.60
28:BA:2469:A:N6	28:BA:2481:G:O2'	2.33	0.60
21:AU:6:VAL:HG23	21:AU:6:VAL:O	2.01	0.60
21:AU:17:ARG:O	21:AU:17:ARG:HG2	2.01	0.60
28:BA:140:C:H4'	28:BA:140:C:OP1	2.01	0.60
28:BA:1093:G:H21	28:BA:1098:A:H62	1.48	0.60
1:AA:481:G:H4'	1:AA:482:A:O5'	2.00	0.59
28:BA:1179:G:H3'	28:BA:1180:U:H5"	1.84	0.59
51:BY:2:LYS:HZ3	51:BY:6:LEU:HD22	1.66	0.59
4:AD:106:GLY:C	4:AD:108:GLY:H	2.10	0.59
28:BA:389:G:C8	28:BA:2413:G:H4'	2.37	0.59
28:BA:2683:C:O2	37:BK:70:ARG:NH2	2.35	0.59
1:AA:449:G:C2	1:AA:486:U:H1'	2.37	0.59
49:BW:43:THR:O	49:BW:43:THR:HG23	2.01	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:AN:3:LYS:O	14:AN:6:MET:N	2.33	0.59
33:BF:136:ILE:HA	33:BF:141:ILE:HD11	1.83	0.59
28:BA:286:U:H2'	28:BA:287:G:C8	2.37	0.59
7:AG:111:ARG:HH11	7:AG:123:GLU:HG2	1.67	0.59
28:BA:1074:G:N7	28:BA:1075:C:N4	2.51	0.59
1:AA:1126:U:OP1	10:AJ:7:ARG:NH2	2.34	0.59
1:AA:1119:C:OP2	9:AI:11:ARG:NH2	2.36	0.59
1:AA:1522:U:OP1	11:AK:128:ARG:NH1	2.36	0.59
4:AD:151:LYS:CA	4:AD:155:VAL:HB	2.32	0.59
38:BL:29:LYS:O	38:BL:30:THR:OG1	2.17	0.59
1:AA:440:C:H2'	1:AA:441:A:O4'	2.03	0.59
1:AA:442:G:H2'	1:AA:443:C:C5	2.37	0.59
1:AA:442:G:H1	1:AA:492:C:H42	1.51	0.59
1:AA:442:G:H2'	1:AA:443:C:H6	1.64	0.58
2:AB:114:LEU:HD11	2:AB:145:GLU:OE2	2.03	0.58
12:AL:21:VAL:HG23	12:AL:21:VAL:O	2.03	0.58
28:BA:1795:C:O2	30:BC:253:LYS:NZ	2.36	0.58
28:BA:2306:C:OP2	28:BA:2307:G:O2'	2.11	0.58
5:AE:115:LEU:HD22	5:AE:120:VAL:HG21	1.86	0.58
8:AH:77:ARG:NH1	8:AH:79:SER:O	2.36	0.58
1:AA:502:A:O5'	12:AL:113:ALA:HA	2.03	0.58
3:AC:28:GLU:OE1	3:AC:28:GLU:N	2.36	0.58
4:AD:120:HIS:O	4:AD:120:HIS:ND1	2.37	0.58
17:AQ:16:LYS:HD2	17:AQ:16:LYS:O	2.03	0.58
1:AA:1077:G:N2	1:AA:1080:A:OP2	2.31	0.58
50:BX:33:LEU:HD12	50:BX:50:ARG:HG2	1.85	0.58
4:AD:185:LYS:HD3	4:AD:186:PRO:HD2	1.85	0.58
7:AG:78:ARG:HG2	7:AG:80:VAL:HG13	1.86	0.58
52:BZ:24:LEU:HD11	52:BZ:54:MET:HE3	1.85	0.58
1:AA:1086:U:H3	1:AA:1099:G:H22	1.50	0.58
1:AA:478:A:O2'	1:AA:479:U:O5'	2.21	0.58
3:AC:111:LEU:HD22	3:AC:146:ALA:HB2	1.85	0.58
4:AD:143:VAL:O	4:AD:143:VAL:HG13	2.04	0.58
28:BA:219:A:N3	28:BA:234:U:O2'	2.34	0.58
28:BA:2118:U:H5"	28:BA:2147:A:H1'	1.85	0.58
2:AB:79:ALA:O	2:AB:214:LEU:HD13	2.04	0.58
1:AA:410:G:C6	1:AA:429:U:H1'	2.39	0.57
28:BA:2230:G:H1'	50:BX:32:ASN:HB3	1.86	0.57
2:AB:27:MET:HE3	2:AB:193:PRO:HD3	1.87	0.57
22:B0:25:VAL:O	22:B0:26:THR:HG22	2.05	0.57
28:BA:2135:A:N6	28:BA:2156:G:O2'	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:2144:G:H1'	28:BA:2147:A:H61	1.69	0.57
16:AP:61:VAL:HG21	16:AP:67:ILE:HD11	1.86	0.57
46:BT:11:LEU:O	51:BY:29:ARG:NH1	2.36	0.57
9:AI:30:ILE:HG12	9:AI:65:ILE:HD11	1.85	0.57
5:AE:70:ASN:ND2	5:AE:70:ASN:O	2.37	0.57
37:BK:35:VAL:HG22	37:BK:69:VAL:HG12	1.86	0.57
10:AJ:19:ASP:OD1	10:AJ:72:ARG:NH1	2.37	0.57
2:AB:97:LEU:HD12	2:AB:97:LEU:O	2.04	0.57
15:AO:7:ALA:O	15:AO:11:ILE:HD12	2.05	0.57
1:AA:204:G:H3'	1:AA:205:A:C8	2.40	0.57
1:AA:449:G:H1	1:AA:486:U:C1'	2.13	0.57
1:AA:481:G:N3	1:AA:482:A:N6	2.52	0.57
29:BB:42:C:C5	33:BF:66:LEU:HD22	2.40	0.57
1:AA:823:C:HO2'	8:AH:2:SER:N	2.02	0.57
42:BP:33:VAL:HG22	42:BP:38:LYS:HG2	1.86	0.57
1:AA:482:A:H5'	1:AA:482:A:H8	1.69	0.57
33:BF:141:ILE:HD12	33:BF:146:VAL:HG11	1.87	0.57
4:AD:121:LYS:C	4:AD:124:MET:HE3	2.30	0.56
1:AA:439:U:C5'	4:AD:121:LYS:HE2	2.36	0.56
4:AD:33:LYS:HG2	4:AD:36:GLN:OE1	2.05	0.56
6:AF:2:ARG:NH1	6:AF:92:THR:OG1	2.39	0.56
12:AL:99:ARG:NH2	12:AL:105:SER:C	2.63	0.56
25:B3:54:ASP:HB3	38:BL:57:LEU:HD22	1.86	0.56
28:BA:1062:G:O2'	28:BA:1063:G:O4'	2.18	0.56
30:BC:107:PRO:HD2	30:BC:110:LEU:HD22	1.87	0.56
9:AI:52:LEU:HD13	9:AI:57:MET:CE	2.35	0.56
28:BA:84:A:N1	28:BA:98:G:O2'	2.26	0.56
28:BA:1062:G:H2'	28:BA:1063:G:C8	2.40	0.56
28:BA:1583:A:O2'	28:BA:1584:U:O5'	2.20	0.56
1:AA:536:C:C2	1:AA:537:G:N7	2.74	0.56
4:AD:181:THR:HG22	4:AD:182:PHE:H	1.69	0.56
12:AL:81:LEU:HD23	12:AL:98:VAL:HG11	1.86	0.56
7:AG:84:THR:HG23	7:AG:84:THR:O	2.05	0.56
2:AB:27:MET:HA	2:AB:27:MET:HE2	1.87	0.56
5:AE:94:VAL:HG13	5:AE:111:MET:HE1	1.88	0.56
4:AD:117:LEU:O	4:AD:123:ILE:N	2.34	0.56
17:AQ:15:ASP:HA	17:AQ:21:ILE:HG22	1.88	0.56
40:BN:117:ASP:OD1	40:BN:118:ARG:N	2.39	0.56
28:BA:644:A:H2'	28:BA:645:C:O4'	2.06	0.56
28:BA:2720:U:OP1	42:BP:53:ARG:NH2	2.39	0.56
30:BC:61:ALA:O	30:BC:63:ARG:NH1	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:880:C:OP1	12:AL:9:ARG:NH1	2.40	0.55
4:AD:105:MET:HE2	4:AD:171:LEU:HD23	1.88	0.55
8:AH:72:VAL:O	8:AH:72:VAL:HG13	2.06	0.55
1:AA:842:U:O3'	1:AA:844:G:N2	2.40	0.55
34:BG:86:LYS:HD2	34:BG:132:VAL:HG22	1.88	0.55
1:AA:1138:G:H2'	1:AA:1140:C:H5'	1.87	0.55
4:AD:124:MET:O	4:AD:143:VAL:HG23	2.05	0.55
28:BA:297:G:OP1	47:BU:92:LYS:NZ	2.34	0.55
28:BA:2646:C:OP2	28:BA:2732:G:O2'	2.23	0.55
1:AA:1006:G:O6	1:AA:1023:U:O2	2.24	0.55
1:AA:492:C:N3	1:AA:493:A:N6	2.55	0.55
1:AA:617:G:H2'	1:AA:618:C:O4'	2.06	0.55
1:AA:1013:G:N2	1:AA:1016:A:OP2	2.35	0.55
3:AC:111:LEU:CD2	3:AC:146:ALA:HB2	2.37	0.55
28:BA:1847:A:HO2'	28:BA:1848:A:P	2.30	0.55
1:AA:309:A:O2'	1:AA:607:A:N1	2.36	0.55
1:AA:429:U:C5'	4:AD:9:LEU:HD12	2.37	0.55
2:AB:18:HIS:CD2	2:AB:19:GLN:H	2.25	0.55
10:AJ:35:GLN:O	10:AJ:36:VAL:HG12	2.07	0.55
33:BF:43:ALA:HA	33:BF:49:LEU:HD11	1.89	0.55
37:BK:99:ILE:HG12	37:BK:118:LEU:HB3	1.89	0.55
47:BU:28:VAL:HG12	47:BU:34:VAL:HG12	1.89	0.55
28:BA:2286:G:H4'	28:BA:2287:A:O5'	2.06	0.55
4:AD:139:PRO:HB3	4:AD:183:LYS:H	1.69	0.55
11:AK:16:VAL:O	11:AK:17:SER:OG	2.18	0.55
11:AK:46:THR:HG23	11:AK:49:GLY:H	1.72	0.55
31:BD:177:VAL:HG13	31:BD:177:VAL:O	2.06	0.55
38:BL:93:ASN:O	38:BL:94:THR:OG1	2.19	0.55
1:AA:1005:A:N6	1:AA:1024:G:O2'	2.40	0.54
28:BA:2190:G:H2'	28:BA:2191:A:O4'	2.07	0.54
1:AA:515:G:O2'	1:AA:516:U:O4'	2.25	0.54
1:AA:401:C:OP2	4:AD:70:ARG:NH1	2.40	0.54
13:AM:90:ARG:HB3	13:AM:97:VAL:HG12	1.89	0.54
24:B2:12:ARG:NE	24:B2:44:VAL:HG21	2.22	0.54
1:AA:442:G:C6	1:AA:443:C:N4	2.75	0.54
19:AS:9:PRO:HD3	27:B5:64:PHE:CZ	2.43	0.54
19:AS:19:VAL:HG21	19:AS:44:MET:HB3	1.89	0.54
44:BR:25:LEU:CD1	44:BR:27:ILE:HD12	2.38	0.54
4:AD:110:THR:HG22	4:AD:112:ALA:N	2.22	0.54
28:BA:2100:G:C6	28:BA:2190:G:C6	2.95	0.54
51:BY:36:GLN:N	51:BY:36:GLN:OE1	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:539:A:H2'	1:AA:540:G:C8	2.43	0.54
46:BT:28:ASN:ND2	46:BT:88:LYS:O	2.40	0.54
5:AE:102:GLY:O	5:AE:103:THR:OG1	2.19	0.54
19:AS:44:MET:O	19:AS:62:VAL:HG11	2.07	0.54
28:BA:1141:U:H4'	28:BA:1142:A:O4'	2.07	0.54
28:BA:2831:G:OP1	31:BD:56:LYS:NZ	2.37	0.54
37:BK:76:VAL:HG12	42:BP:73:VAL:CG2	2.38	0.54
47:BU:46:GLN:N	47:BU:46:GLN:OE1	2.40	0.54
1:AA:425:G:H3'	1:AA:426:U:C5	2.42	0.54
28:BA:1058:U:N3	28:BA:1059:G:N7	2.55	0.54
28:BA:1604:C:O2'	28:BA:1610:A:N1	2.39	0.54
28:BA:2162:G:HO2'	28:BA:2164:C:N4	2.05	0.54
29:BB:13:G:O2'	29:BB:15:A:OP2	2.26	0.54
32:BE:3:LEU:HD13	32:BE:120:VAL:HG21	1.88	0.54
1:AA:933:G:O6	7:AG:3:ARG:NH2	2.41	0.54
28:BA:837:C:N3	28:BA:941:A:N6	2.56	0.54
1:AA:513:C:H42	1:AA:538:G:H1	1.55	0.53
3:AC:10:ILE:HG23	3:AC:11:ARG:CD	2.38	0.53
4:AD:145:ILE:HD12	4:AD:178:MET:HE3	1.90	0.53
33:BF:56:ASP:OD2	33:BF:150:ARG:NH1	2.41	0.53
1:AA:517:G:C2	1:AA:531:U:O4'	2.61	0.53
1:AA:1408:A:N1	54:AA:1694:84G:N3	2.56	0.53
46:BT:37:ASP:OD1	46:BT:38:ALA:N	2.34	0.53
1:AA:411:A:N6	1:AA:413:G:N3	2.56	0.53
1:AA:443:C:C5	1:AA:444:G:N7	2.76	0.53
13:AM:13:LYS:O	13:AM:14:HIS:CG	2.61	0.53
28:BA:275:C:O2'	28:BA:362:A:N6	2.41	0.53
7:AG:15:ASP:OD1	7:AG:44:TYR:OH	2.20	0.53
9:AI:36:GLU:HA	9:AI:40:GLY:HA3	1.91	0.53
33:BF:44:ILE:HD11	33:BF:79:ILE:HG22	1.89	0.53
34:BG:149:ARG:HA	34:BG:162:VAL:HG13	1.90	0.53
39:BM:26:VAL:CG1	39:BM:133:LYS:HA	2.38	0.53
1:AA:410:G:H2'	1:AA:429:U:C4	2.44	0.53
26:B4:16:ILE:HD13	26:B4:25:VAL:HG22	1.90	0.53
28:BA:652:U:OP1	28:BA:654:A:N6	2.40	0.53
28:BA:1092:C:H2'	28:BA:1093:G:O4'	2.09	0.53
39:BM:34:LYS:HD2	39:BM:131:VAL:HG11	1.89	0.53
1:AA:972:C:OP2	10:AJ:59:LYS:NZ	2.38	0.53
1:AA:1060:U:OP1	14:AN:85:ARG:NH2	2.42	0.53
16:AP:57:ILE:O	16:AP:61:VAL:HG23	2.08	0.53
28:BA:1779:U:OP2	28:BA:1784:A:N6	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:2331:G:O2'	49:BW:43:THR:HG22	2.09	0.53
1:AA:501:C:OP1	12:AL:114:ARG:NH2	2.42	0.53
4:AD:34:ILE:HD12	4:AD:34:ILE:H	1.74	0.53
28:BA:577:G:O2'	28:BA:1254:A:OP1	2.27	0.53
28:BA:1871:A:O2'	28:BA:1872:A:H8	1.92	0.53
1:AA:448:A:N6	1:AA:487:A:O4'	2.41	0.53
28:BA:1942:C:C5	28:BA:1943:U:C4	2.97	0.53
28:BA:2183:A:N1	28:BA:2184:A:N6	2.57	0.53
1:AA:436:C:H1'	4:AD:154:ARG:HD3	1.91	0.53
2:AB:123:ASP:OD1	2:AB:124:GLY:N	2.42	0.53
15:AO:89:ARG:OXT	15:AO:89:ARG:CG	2.57	0.53
34:BG:42:GLU:OE2	34:BG:55:ARG:NH2	2.41	0.53
1:AA:451:A:C5	1:AA:481:G:O6	2.63	0.52
1:AA:502:A:P	12:AL:113:ALA:CA	2.92	0.52
1:AA:523:A:N6	12:AL:89:ASP:OD2	2.42	0.52
1:AA:1078:U:HO2'	1:AA:1079:G:P	2.32	0.52
1:AA:1269:A:N1	1:AA:1312:G:O2'	2.38	0.52
3:AC:124:LEU:HD21	3:AC:196:ILE:HG21	1.92	0.52
12:AL:20:ASN:O	12:AL:94:ARG:HD3	2.10	0.52
20:AT:43:ASP:OD1	20:AT:46:ALA:N	2.40	0.52
28:BA:2119:A:N6	28:BA:2167:U:H1'	2.24	0.52
45:BS:66:ILE:H	45:BS:66:ILE:HD12	1.74	0.52
1:AA:96:U:O2'	1:AA:97:G:P	2.67	0.52
1:AA:1178:G:OP2	9:AI:99:ARG:NH1	2.43	0.52
4:AD:110:THR:CG2	4:AD:112:ALA:H	2.22	0.52
28:BA:1789:A:OP2	30:BC:221:ARG:NH1	2.42	0.52
1:AA:264:C:O2'	17:AQ:66:PRO:O	2.28	0.52
28:BA:1076:C:H2'	28:BA:1077:A:C5	2.45	0.52
1:AA:1004:A:H2'	1:AA:1005:A:O4'	2.09	0.52
2:AB:87:CYS:O	2:AB:89:GLN:N	2.43	0.52
19:AS:50:ALA:HB1	19:AS:57:HIS:HB3	1.92	0.52
28:BA:1534:U:HO2'	28:BA:1537:G:H1	1.56	0.52
47:BU:8:ASP:OD1	47:BU:8:ASP:O	2.27	0.52
1:AA:451:A:N6	1:AA:481:G:C5	2.78	0.52
1:AA:454:G:C4	1:AA:455:G:C8	2.98	0.52
1:AA:1144:G:H21	1:AA:1146:A:H62	1.58	0.52
15:AO:79:THR:O	15:AO:82:ILE:N	2.43	0.52
44:BR:47:VAL:O	44:BR:47:VAL:HG13	2.09	0.52
1:AA:412:A:O2'	1:AA:414:A:H5'	2.10	0.52
22:B0:16:ARG:NH1	28:BA:1266:G:OP1	2.43	0.52
1:AA:617:G:O4'	16:AP:46:LYS:NZ	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:890:G:O2'	1:AA:906:A:N6	2.43	0.52
4:AD:110:THR:O	4:AD:113:GLU:N	2.43	0.52
28:BA:2623:G:OP1	28:BA:2826:A:O2'	2.23	0.52
38:BL:85:VAL:HG21	38:BL:90:VAL:HG12	1.91	0.52
41:BO:33:ARG:O	41:BO:34:HIS:HB2	2.09	0.52
1:AA:406:G:N3	4:AD:116:GLN:NE2	2.40	0.52
1:AA:995:C:N3	1:AA:1046:A:O2'	2.38	0.52
2:AB:14:VAL:HG23	2:AB:14:VAL:O	2.09	0.52
9:AI:57:MET:SD	9:AI:61:LEU:HB2	2.50	0.52
19:AS:9:PRO:HD3	27:B5:64:PHE:CE1	2.45	0.52
29:BB:51:G:OP1	41:BO:63:LYS:NZ	2.39	0.52
4:AD:11:LEU:HD12	4:AD:19:LEU:HD12	1.91	0.51
44:BR:49:ILE:HB	44:BR:52:PRO:HA	1.92	0.51
1:AA:204:G:H1	1:AA:206:C:H41	1.56	0.51
1:AA:1266:G:N2	1:AA:1269:A:OP2	2.38	0.51
6:AF:9:MET:HE3	6:AF:86:ARG:HB3	1.93	0.51
28:BA:645:C:H2'	28:BA:647:G:C8	2.45	0.51
28:BA:2144:G:H1'	28:BA:2147:A:N6	2.23	0.51
35:BH:2:GLN:O	35:BH:3:VAL:HG22	2.11	0.51
1:AA:993:G:O2'	1:AA:994:A:N7	2.43	0.51
2:AB:57:LEU:HD13	2:AB:217:VAL:HG23	1.91	0.51
1:AA:500:G:H22	1:AA:544:G:N2	2.07	0.51
1:AA:503:C:O2'	1:AA:504:C:H5'	2.10	0.51
1:AA:552:U:O2'	12:AL:83:ARG:O	2.28	0.51
1:AA:1221:G:O3'	19:AS:77:THR:HG21	2.11	0.51
28:BA:161:A:H3'	28:BA:162:U:H5"	1.91	0.51
33:BF:140:GLU:OE1	33:BF:140:GLU:N	2.43	0.51
38:BL:81:ASP:C	38:BL:83:ALA:N	2.67	0.51
1:AA:443:C:C4	1:AA:444:G:C5	2.99	0.51
1:AA:502:A:OP2	12:AL:113:ALA:HA	2.10	0.51
7:AG:15:ASP:OD2	7:AG:23:LEU:HD22	2.10	0.51
19:AS:36:ARG:NH2	19:AS:75:ALA:O	2.43	0.51
28:BA:1075:C:H2'	28:BA:1076:C:N1	2.24	0.51
1:AA:1287:A:N3	1:AA:1353:G:O2'	2.34	0.51
28:BA:1179:G:N3	28:BA:1180:U:H4'	2.26	0.51
28:BA:2191:A:H2'	28:BA:2192:U:O4'	2.11	0.51
28:BA:2328:A:H2'	28:BA:2329:U:C6	2.46	0.51
36:BJ:125:TYR:HH	36:BJ:132:HIS:CD2	2.27	0.51
1:AA:436:C:O2'	4:AD:152:GLN:OE1	2.28	0.51
1:AA:1125:U:P	10:AJ:37:ARG:HH22	2.33	0.51
11:AK:88:GLY:O	11:AK:93:ARG:NH1	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:856:G:H2'	28:BA:857:G:C8	2.45	0.51
1:AA:410:G:H1'	1:AA:432:A:H61	1.76	0.51
1:AA:425:G:H8	1:AA:425:G:P	2.34	0.51
2:AB:50:PHE:O	2:AB:54:LEU:HD23	2.10	0.51
4:AD:139:PRO:HB3	4:AD:183:LYS:CA	2.40	0.51
29:BB:45:A:O4'	33:BF:92:ARG:NH1	2.44	0.51
32:BE:15:SER:N	32:BE:197:GLU:OE2	2.43	0.51
1:AA:500:G:N2	1:AA:544:G:H22	2.04	0.51
1:AA:875:U:O2'	8:AH:15:ARG:NH1	2.40	0.51
4:AD:171:LEU:HD12	4:AD:181:THR:O	2.10	0.51
7:AG:69:VAL:HG23	7:AG:100:ALA:HB1	1.93	0.51
1:AA:246:A:C2	1:AA:282:A:C5	3.00	0.50
1:AA:410:G:OP2	4:AD:26:ARG:NH1	2.44	0.50
1:AA:429:U:H5"	4:AD:9:LEU:HD12	1.92	0.50
5:AE:76:LEU:CD1	5:AE:120:VAL:HG12	2.40	0.50
1:AA:466:A:C6	1:AA:468:A:C5	3.00	0.50
7:AG:97:ASN:OD1	7:AG:98:ALA:N	2.44	0.50
28:BA:137:U:H3'	28:BA:138:U:C5	2.47	0.50
28:BA:1433:A:H2'	28:BA:1434:A:O4'	2.11	0.50
28:BA:1791:A:C2	28:BA:1829:A:H4'	2.46	0.50
38:BL:77:ILE:HD11	38:BL:95:LEU:HD13	1.92	0.50
46:BT:72:GLN:O	46:BT:72:GLN:NE2	2.44	0.50
28:BA:2278:A:OP1	39:BM:10:ARG:NH2	2.44	0.50
4:AD:25:VAL:HG23	4:AD:26:ARG:N	2.26	0.50
12:AL:99:ARG:NH2	12:AL:105:SER:O	2.44	0.50
28:BA:1779:U:H5	28:BA:1784:A:N7	2.10	0.50
5:AE:61:GLN:O	5:AE:65:GLU:OE1	2.29	0.50
20:AT:69:LYS:HG2	20:AT:70:ASN:ND2	2.25	0.50
35:BH:1:MET:O	35:BH:20:ASN:ND2	2.43	0.50
45:BS:4:ILE:HG12	45:BS:106:VAL:HG22	1.93	0.50
2:AB:70:VAL:HG12	2:AB:92:VAL:HB	1.93	0.50
12:AL:35:THR:N	12:AL:54:ARG:O	2.45	0.50
28:BA:1240:U:O2'	28:BA:1241:A:O5'	2.27	0.50
1:AA:439:U:O3'	4:AD:121:LYS:HE2	2.12	0.50
1:AA:537:G:H4'	12:AL:70:GLU:OE1	2.11	0.50
16:AP:60:TRP:C	16:AP:62:GLY:N	2.67	0.50
28:BA:2146:C:OP2	28:BA:2146:C:H6	1.95	0.50
28:BA:2532:G:N2	28:BA:2663:G:O2'	2.45	0.50
37:BK:87:LEU:HB3	37:BK:92:GLU:HA	1.93	0.50
38:BL:77:ILE:N	38:BL:109:LYS:O	2.41	0.50
3:AC:64:ILE:HD11	3:AC:99:ALA:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:AJ:10:LEU:HB3	10:AJ:18:ILE:HD11	1.94	0.50
26:B4:37:GLN:O	26:B4:37:GLN:HG2	2.12	0.50
28:BA:1070:A:N7	28:BA:1096:A:O2'	2.44	0.50
1:AA:412:A:N6	1:AA:431:A:H2	2.10	0.50
4:AD:105:MET:HE2	4:AD:171:LEU:CD2	2.42	0.50
38:BL:124:GLY:O	38:BL:125:LEU:HD23	2.11	0.50
1:AA:522:C:OP2	12:AL:66:TYR:OH	2.28	0.49
28:BA:1075:C:H2'	28:BA:1076:C:C6	2.47	0.49
30:BC:207:LYS:HG3	30:BC:210:ALA:H	1.77	0.49
38:BL:141:LYS:NZ	38:BL:143:GLU:OE2	2.38	0.49
1:AA:418:C:N3	1:AA:425:G:N2	2.55	0.49
1:AA:1140:C:O2'	1:AA:1141:C:H6	1.95	0.49
2:AB:68:LEU:HD21	2:AB:154:MET:CE	2.42	0.49
28:BA:1496:A:H2'	28:BA:1498:C:C5	2.47	0.49
28:BA:1566:A:O4'	30:BC:213:TRP:CD1	2.64	0.49
28:BA:2092:U:OP2	35:BH:27:ARG:NH1	2.46	0.49
1:AA:439:U:H5"	4:AD:121:LYS:HE2	1.94	0.49
10:AJ:10:LEU:CD1	10:AJ:98:VAL:HG12	2.43	0.49
10:AJ:28:THR:O	10:AJ:32:THR:HG22	2.13	0.49
12:AL:76:GLU:O	12:AL:77:HIS:HB2	2.13	0.49
15:AO:19:ALA:O	15:AO:20:ASN:OD1	2.30	0.49
25:B3:32:ILE:HG22	25:B3:32:ILE:O	2.11	0.49
32:BE:52:VAL:HG21	32:BE:81:GLY:HA2	1.94	0.49
35:BH:2:GLN:O	35:BH:3:VAL:O	2.30	0.49
39:BM:106:ASP:OD1	39:BM:107:GLY:N	2.44	0.49
1:AA:407:U:O2'	4:AD:113:GLU:HG2	2.12	0.49
1:AA:1317:C:O2'	1:AA:1318:A:OP1	2.28	0.49
3:AC:148:GLY:O	3:AC:173:VAL:HG22	2.13	0.49
9:AI:91:ASP:OD1	9:AI:92:GLU:N	2.45	0.49
13:AM:64:VAL:HG12	13:AM:69:LEU:HB2	1.95	0.49
28:BA:1826:G:O2'	28:BA:1971:U:OP2	2.31	0.49
31:BD:26:VAL:HG21	42:BP:5:ILE:HD13	1.94	0.49
46:BT:4:GLU:HG2	46:BT:49:LYS:HE3	1.94	0.49
1:AA:505:G:OP2	1:AA:534:U:H2'	2.11	0.49
1:AA:1113:C:H1'	3:AC:178:LEU:HD13	1.94	0.49
1:AA:1226:C:OP2	13:AM:90:ARG:NH2	2.45	0.49
1:AA:1368:A:H5"	9:AI:114:LYS:HG3	1.94	0.49
12:AL:49:LEU:HD12	12:AL:49:LEU:O	2.13	0.49
28:BA:1069:A:N1	28:BA:1073:A:N6	2.60	0.49
28:BA:1071:G:OP1	28:BA:1089:A:N6	2.45	0.49
28:BA:2850:A:N7	28:BA:2868:A:O2'	2.32	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
47:BU:40:ASN:OD1	47:BU:40:ASN:O	2.31	0.49
1:AA:1239:A:H62	1:AA:1299:A:N6	2.10	0.49
3:AC:130:PHE:HD1	3:AC:134:MET:HE2	1.78	0.49
10:AJ:41:PRO:O	10:AJ:42:LEU:HG	2.13	0.49
24:B2:34:ARG:HD3	28:BA:467:G:OP2	2.12	0.49
28:BA:1179:G:H3'	28:BA:1180:U:C5'	2.41	0.49
5:AE:105:ILE:HD11	5:AE:121:HIS:HA	1.95	0.49
28:BA:2250:G:O2'	28:BA:2496:C:OP1	2.26	0.49
1:AA:140:U:O2	1:AA:183:C:N4	2.46	0.49
4:AD:111:ARG:O	4:AD:115:ARG:N	2.42	0.49
9:AI:44:ALA:O	9:AI:47:VAL:HG12	2.13	0.49
10:AJ:35:GLN:HG2	10:AJ:36:VAL:H	1.77	0.49
28:BA:476:G:N1	28:BA:479:A:OP2	2.43	0.49
38:BL:81:ASP:OD1	38:BL:82:LEU:N	2.39	0.49
1:AA:1239:A:H62	1:AA:1299:A:H61	1.61	0.49
3:AC:72:ARG:O	3:AC:72:ARG:HG3	2.12	0.49
11:AK:124:PRO:O	21:AU:35:ARG:N	2.45	0.49
20:AT:70:ASN:HD22	20:AT:70:ASN:N	2.10	0.49
24:B2:22:MET:HE2	24:B2:31:LEU:HD12	1.94	0.49
28:BA:245:G:O2'	28:BA:384:A:N1	2.41	0.49
29:BB:29:A:H2'	29:BB:30:C:O4'	2.13	0.49
1:AA:62:U:OP1	1:AA:385:C:O2'	2.31	0.48
1:AA:439:U:OP1	4:AD:120:HIS:NE2	2.46	0.48
15:AO:89:ARG:OXT	15:AO:89:ARG:HG2	2.11	0.48
28:BA:306:U:H2'	28:BA:307:G:O4'	2.13	0.48
28:BA:404:A:H1'	28:BA:405:U:OP2	2.13	0.48
28:BA:1386:C:H2'	28:BA:1387:A:C8	2.48	0.48
44:BR:49:ILE:HG22	44:BR:54:VAL:N	2.27	0.48
1:AA:401:C:O2'	1:AA:621:A:N3	2.38	0.48
1:AA:1201:A:H1'	1:AA:1202:U:OP2	2.13	0.48
1:AA:1498:U:O4	54:AA:1694:84G:N	2.46	0.48
1:AA:1532:U:O4	1:AA:1533:C:N4	2.45	0.48
28:BA:137:U:C5'	28:BA:138:U:N3	2.75	0.48
28:BA:1790:C:H2'	28:BA:1791:A:C8	2.47	0.48
45:BS:72:THR:HG21	45:BS:108:SER:OG	2.13	0.48
1:AA:203:G:N2	1:AA:204:G:N7	2.62	0.48
1:AA:438:U:OP1	1:AA:438:U:H3'	2.13	0.48
1:AA:511:C:O3'	4:AD:41:HIS:ND1	2.45	0.48
4:AD:125:VAL:HA	4:AD:143:VAL:HA	1.96	0.48
24:B2:44:VAL:HG13	24:B2:44:VAL:O	2.12	0.48
35:BH:4:ILE:N	35:BH:37:VAL:O	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:BM:42:THR:HG22	39:BM:93:VAL:HG12	1.95	0.48
1:AA:424:G:C3'	1:AA:425:G:C8	2.93	0.48
1:AA:450:G:C6	1:AA:481:G:N1	2.82	0.48
1:AA:481:G:C4	1:AA:483:C:N4	2.81	0.48
1:AA:1178:G:N2	1:AA:1181:G:OP2	2.38	0.48
4:AD:120:HIS:O	4:AD:120:HIS:CG	2.66	0.48
4:AD:154:ARG:C	4:AD:156:LYS:N	2.70	0.48
23:B1:29:THR:HG22	23:B1:30:LYS:HG2	1.94	0.48
39:BM:69:PRO:O	39:BM:70:ASP:OD2	2.31	0.48
45:BS:29:VAL:HG13	45:BS:55:ILE:HD11	1.95	0.48
47:BU:7:ARG:HG3	47:BU:8:ASP:N	2.29	0.48
1:AA:443:C:N4	1:AA:444:G:C6	2.81	0.48
1:AA:542:G:H5'	4:AD:39:GLY:HA3	1.96	0.48
1:AA:1130:A:OP1	9:AI:18:ARG:NH2	2.47	0.48
1:AA:1356:G:H2'	1:AA:1357:A:C8	2.48	0.48
1:AA:1374:A:O3'	7:AG:28:ASN:ND2	2.47	0.48
2:AB:97:LEU:HG	2:AB:100:MET:HE2	1.95	0.48
11:AK:113:VAL:HG12	18:AR:73:ARG:NH1	2.28	0.48
19:AS:27:ASP:O	19:AS:27:ASP:OD2	2.31	0.48
28:BA:2291:U:H2'	28:BA:2292:U:C6	2.48	0.48
38:BL:50:PHE:CZ	38:BL:52:GLY:O	2.65	0.48
1:AA:539:A:C8	1:AA:539:A:OP2	2.67	0.48
1:AA:820:U:H4'	1:AA:821:G:OP2	2.13	0.48
12:AL:110:ARG:HH21	12:AL:113:ALA:HB3	1.78	0.48
20:AT:25:ARG:HG3	20:AT:66:LEU:HD11	1.94	0.48
22:B0:16:ARG:HD2	28:BA:1266:G:OP1	2.14	0.48
28:BA:137:U:H2'	28:BA:138:U:C2	2.48	0.48
29:BB:37:C:O2	41:BO:100:HIS:NE2	2.43	0.48
33:BF:20:PHE:O	33:BF:21:ASN:OD1	2.32	0.48
1:AA:439:U:O4'	4:AD:120:HIS:HA	2.12	0.48
1:AA:568:G:O6	12:AL:2:ALA:HB2	2.14	0.48
1:AA:1062:U:H2'	1:AA:1063:C:C6	2.48	0.48
1:AA:1493:A:N3	28:BA:1913:A:H2	2.12	0.48
28:BA:784:G:O2'	28:BA:785:G:P	2.72	0.48
36:BJ:114:LEU:HG	36:BJ:118:MET:HE3	1.95	0.48
38:BL:68:SER:O	38:BL:69:ARG:HB3	2.13	0.48
4:AD:132:ILE:HG21	4:AD:135:TYR:HB2	1.95	0.48
22:B0:52:ARG:CZ	22:B0:54:VAL:HG12	2.43	0.48
28:BA:645:C:H2'	28:BA:647:G:N7	2.28	0.48
4:AD:34:ILE:C	4:AD:35:GLU:HG2	2.38	0.48
6:AF:32:ALA:O	6:AF:33:GLU:HG3	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:AN:21:PHE:O	14:AN:22:ALA:HB3	2.13	0.48
28:BA:1009:A:N3	28:BA:1153:C:O2'	2.43	0.48
28:BA:1199:U:H1'	43:BQ:4:VAL:HG12	1.96	0.48
28:BA:2103:C:H2'	28:BA:2104:C:C1'	2.44	0.48
32:BE:164:LEU:HB2	32:BE:167:VAL:HG22	1.96	0.48
1:AA:502:A:H2'	1:AA:503:C:O4'	2.13	0.48
1:AA:538:G:H2'	1:AA:539:A:C8	2.49	0.48
2:AB:61:ALA:HB2	2:AB:221:VAL:HG23	1.96	0.48
16:AP:53:ASP:O	16:AP:57:ILE:HD12	2.13	0.48
26:B4:7:VAL:CG1	26:B4:25:VAL:HG23	2.44	0.48
28:BA:1075:C:H2'	28:BA:1076:C:C2	2.48	0.48
28:BA:1405:U:H2'	28:BA:1406:U:C6	2.48	0.48
28:BA:2100:G:C6	28:BA:2101:A:C6	3.02	0.48
28:BA:2847:U:H2'	28:BA:2848:G:O4'	2.14	0.48
31:BD:184:ARG:NH1	42:BP:7:GLN:OE1	2.45	0.48
1:AA:502:A:OP2	12:AL:113:ALA:CA	2.62	0.47
1:AA:1226:C:H2'	13:AM:102:THR:HG22	1.94	0.47
4:AD:106:GLY:O	4:AD:158:ALA:HB1	2.14	0.47
28:BA:2117:A:H61	28:BA:2170:A:N6	2.12	0.47
29:BB:14:U:OP2	29:BB:70:C:O2'	2.31	0.47
1:AA:449:G:O6	1:AA:486:U:C2	2.66	0.47
14:AN:47:LYS:NZ	19:AS:13:LEU:HB3	2.29	0.47
47:BU:18:ASP:OD2	47:BU:39:ILE:O	2.32	0.47
1:AA:450:G:H5"	1:AA:451:A:H2'	1.96	0.47
1:AA:554:A:H5'	12:AL:26:ALA:HB1	1.96	0.47
1:AA:945:G:C2	1:AA:946:A:C8	3.02	0.47
1:AA:1145:A:HO2'	1:AA:1146:A:P	2.37	0.47
1:AA:1157:A:C2	1:AA:1181:G:C4	3.01	0.47
1:AA:1312:G:O3'	19:AS:6:LYS:HE2	2.14	0.47
2:AB:20:THR:HG23	2:AB:37:LYS:O	2.13	0.47
2:AB:136:MET:SD	2:AB:137:ARG:N	2.86	0.47
9:AI:19:VAL:HA	9:AI:65:ILE:HG22	1.95	0.47
20:AT:43:ASP:OD1	20:AT:44:LYS:N	2.47	0.47
51:BY:2:LYS:HE2	51:BY:56:LEU:HD11	1.96	0.47
1:AA:433:G:H2'	1:AA:434:U:C6	2.49	0.47
1:AA:500:G:C2'	1:AA:501:C:O5'	2.63	0.47
4:AD:109:ALA:HB3	4:AD:113:GLU:OE1	2.15	0.47
12:AL:32:GLY:HA3	12:AL:55:VAL:HG12	1.95	0.47
28:BA:285:G:C5	28:BA:356:G:C6	3.02	0.47
28:BA:2002:G:OP1	40:BN:17:ARG:NH2	2.39	0.47
28:BA:2281:A:O2'	28:BA:2282:G:H5'	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
48:BV:1:MET:N	48:BV:59:GLU:OE2	2.46	0.47
1:AA:428:G:H4'	1:AA:429:U:O5'	2.12	0.47
1:AA:1125:U:C2	1:AA:1127:G:C8	3.02	0.47
4:AD:129:VAL:HG13	4:AD:129:VAL:O	2.14	0.47
12:AL:107:VAL:HG12	12:AL:108:LYS:N	2.29	0.47
24:B2:24:THR:HG23	24:B2:27:GLY:H	1.78	0.47
32:BE:5:LEU:HD11	32:BE:8:ALA:HB3	1.97	0.47
38:BL:85:VAL:HG12	38:BL:85:VAL:O	2.14	0.47
1:AA:362:G:N2	1:AA:365:U:OP2	2.47	0.47
1:AA:411:A:H8	4:AD:31:LYS:NZ	2.12	0.47
1:AA:479:U:C2'	1:AA:480:U:H5'	2.43	0.47
1:AA:1313:U:P	19:AS:6:LYS:CE	3.02	0.47
5:AE:14:LYS:NZ	5:AE:116:GLU:OE1	2.48	0.47
14:AN:6:MET:HE2	14:AN:6:MET:HA	1.96	0.47
15:AO:79:THR:O	15:AO:83:GLU:OE1	2.33	0.47
17:AQ:76:VAL:O	17:AQ:77:ARG:C	2.57	0.47
26:B4:37:GLN:O	26:B4:37:GLN:CG	2.62	0.47
28:BA:930:G:H1'	52:BZ:25:LEU:HD21	1.96	0.47
28:BA:1068:G:H2'	28:BA:1069:A:O4'	2.14	0.47
28:BA:1942:C:OP2	28:BA:1943:U:O2'	2.17	0.47
28:BA:1942:C:H5"	28:BA:1943:U:H2'	1.95	0.47
1:AA:418:C:H2'	1:AA:419:C:H6	1.75	0.47
1:AA:1166:G:N1	1:AA:1169:A:OP2	2.47	0.47
1:AA:1229:A:OP2	13:AM:113:ARG:NH2	2.46	0.47
4:AD:102:VAL:HG12	4:AD:114:ALA:HB1	1.95	0.47
14:AN:34:VAL:O	14:AN:34:VAL:HG13	2.14	0.47
28:BA:826:U:O2'	38:BL:53:GLY:HA3	2.15	0.47
28:BA:1095:A:HO2'	28:BA:1096:A:P	2.33	0.47
28:BA:1527:G:N1	28:BA:1544:A:OP2	2.41	0.47
28:BA:2119:A:N6	28:BA:2167:U:O2'	2.48	0.47
46:BT:38:ALA:C	46:BT:39:THR:HG1	2.18	0.47
48:BV:6:ALA:HB1	48:BV:40:ILE:CG2	2.45	0.47
1:AA:677:U:H3	1:AA:713:G:H22	1.62	0.47
4:AD:105:MET:HG2	4:AD:107:PHE:CZ	2.50	0.47
4:AD:124:MET:SD	4:AD:129:VAL:HA	2.54	0.47
11:AK:126:LYS:HA	21:AU:34:ARG:HD2	1.96	0.47
19:AS:13:LEU:H	19:AS:13:LEU:CD2	2.21	0.47
1:AA:373:A:C4	1:AA:482:A:C6	3.03	0.47
11:AK:50:SER:OG	11:AK:69:ARG:NH1	2.48	0.47
11:AK:93:ARG:O	11:AK:97:ILE:HD12	2.14	0.47
23:B1:52:ALA:O	23:B1:53:LYS:C	2.58	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:514:A:N3	28:BA:581:C:O2'	2.44	0.47
28:BA:2119:A:C5	28:BA:2170:A:N1	2.83	0.47
40:BN:70:THR:O	40:BN:71:ARG:C	2.57	0.47
42:BP:65:SER:O	42:BP:66:ASN:C	2.56	0.47
1:AA:275:G:O5'	17:AQ:16:LYS:NZ	2.38	0.47
1:AA:363:A:N6	12:AL:27:CYS:SG	2.88	0.47
1:AA:1315:U:O2'	1:AA:1360:A:N3	2.46	0.47
18:AR:26:ILE:HD11	18:AR:67:LEU:HG	1.96	0.47
28:BA:2098:U:H2'	28:BA:2099:U:O4'	2.14	0.47
33:BF:49:LEU:HD12	33:BF:50:LEU:N	2.30	0.47
38:BL:81:ASP:C	38:BL:83:ALA:H	2.22	0.47
1:AA:96:U:O2'	1:AA:97:G:O5'	2.32	0.46
1:AA:409:U:H5'	4:AD:25:VAL:HG22	1.96	0.46
1:AA:757:U:OP1	1:AA:822:U:O2'	2.33	0.46
10:AJ:35:GLN:O	10:AJ:36:VAL:O	2.32	0.46
14:AN:24:ARG:O	14:AN:24:ARG:HG3	2.15	0.46
28:BA:545:U:H2'	28:BA:546:U:O3'	2.15	0.46
28:BA:2038:G:H2'	28:BA:2039:U:O4'	2.14	0.46
28:BA:2062:A:N1	28:BA:2503:A:N6	2.64	0.46
28:BA:2121:G:H2'	28:BA:2122:U:O4'	2.15	0.46
44:BR:38:VAL:HG11	44:BR:41:ILE:HD11	1.96	0.46
1:AA:328:C:H2'	1:AA:328:C:O2	2.15	0.46
1:AA:427:U:H3'	1:AA:428:G:H2'	1.97	0.46
1:AA:443:C:N4	1:AA:444:G:O6	2.49	0.46
1:AA:450:G:C3'	1:AA:451:A:H5"	2.46	0.46
1:AA:505:G:OP2	1:AA:535:A:H5'	2.15	0.46
2:AB:68:LEU:HD21	2:AB:154:MET:HE1	1.98	0.46
3:AC:112:ASP:OD2	3:AC:115:LEU:HD23	2.14	0.46
12:AL:98:VAL:O	12:AL:98:VAL:HG13	2.16	0.46
28:BA:1315:C:O2'	28:BA:1392:A:N3	2.41	0.46
28:BA:1720:U:H2'	28:BA:1721:G:O4'	2.15	0.46
41:BO:35:ILE:H	41:BO:53:THR:HG22	1.79	0.46
1:AA:60:A:N1	1:AA:107:G:O2'	2.38	0.46
1:AA:425:G:H3'	1:AA:426:U:C6	2.50	0.46
1:AA:441:A:H2'	1:AA:442:G:C8	2.50	0.46
1:AA:746:A:H2'	1:AA:747:A:C8	2.50	0.46
1:AA:1078:U:O2'	1:AA:1079:G:OP1	2.32	0.46
4:AD:130:VAL:HG23	4:AD:130:VAL:O	2.16	0.46
12:AL:109:ASP:O	12:AL:110:ARG:C	2.57	0.46
16:AP:18:GLN:NE2	16:AP:35:ARG:NE	2.64	0.46
28:BA:703:U:H2'	28:BA:704:G:O4'	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:BD:181:ASP:OD2	31:BD:184:ARG:NE	2.40	0.46
40:BN:79:LEU:O	40:BN:80:PHE:HB2	2.14	0.46
1:AA:451:A:C6	1:AA:481:G:O6	2.68	0.46
1:AA:1516:G:N2	1:AA:1519:A:OP2	2.45	0.46
17:AQ:69:LYS:O	17:AQ:70:THR:CB	2.63	0.46
28:BA:2111:U:O4	28:BA:2146:C:H5'	2.15	0.46
33:BF:38:MET:HE3	33:BF:53:ALA:HB1	1.96	0.46
1:AA:424:G:C3'	1:AA:425:G:H8	2.24	0.46
1:AA:515:G:H2'	1:AA:516:U:C6	2.50	0.46
3:AC:20:SER:OG	3:AC:40:ARG:NH2	2.48	0.46
28:BA:1176:U:H2'	28:BA:1177:G:C8	2.50	0.46
28:BA:1182:G:H2'	28:BA:1183:U:O4'	2.15	0.46
28:BA:2243:U:H2'	28:BA:2244:U:C6	2.51	0.46
34:BG:22:GLN:NE2	34:BG:38:ASN:O	2.49	0.46
44:BR:94:THR:HG23	44:BR:94:THR:O	2.14	0.46
1:AA:438:U:C2	1:AA:496:A:N7	2.84	0.46
1:AA:449:G:H22	1:AA:486:U:C1'	2.26	0.46
1:AA:1160:G:HO2'	1:AA:1161:C:P	2.39	0.46
1:AA:1368:A:OP2	9:AI:114:LYS:HG3	2.15	0.46
4:AD:9:LEU:HD22	4:AD:32:CYS:SG	2.56	0.46
4:AD:21:LEU:HD13	4:AD:111:ARG:HG3	1.98	0.46
11:AK:113:VAL:HG12	18:AR:73:ARG:HH11	1.78	0.46
12:AL:99:ARG:HH22	12:AL:105:SER:C	2.24	0.46
19:AS:64:ASP:OD2	19:AS:64:ASP:C	2.59	0.46
28:BA:587:C:OP2	38:BL:21:ARG:NH1	2.44	0.46
37:BK:99:ILE:HD13	37:BK:115:ILE:HG23	1.98	0.46
39:BM:63:ILE:HD11	39:BM:105:MET:HE2	1.98	0.46
2:AB:86:SER:OG	2:AB:87:CYS:N	2.45	0.46
4:AD:32:CYS:SG	4:AD:34:ILE:HG13	2.56	0.46
4:AD:153:SER:O	4:AD:156:LYS:HB2	2.16	0.46
9:AI:47:VAL:CG1	9:AI:76:ALA:HB1	2.46	0.46
28:BA:1047:G:O2'	28:BA:1110:G:N1	2.36	0.46
29:BB:48:U:P	41:BO:30:ARG:HH22	2.38	0.46
30:BC:260:ASN:C	30:BC:260:ASN:HD22	2.24	0.46
1:AA:411:A:C8	4:AD:31:LYS:CE	2.99	0.46
1:AA:500:G:H2'	1:AA:501:C:O5'	2.15	0.46
1:AA:533:A:C6	1:AA:536:C:C2	3.04	0.46
12:AL:75:GLN:O	12:AL:76:GLU:C	2.58	0.46
16:AP:57:ILE:HD12	16:AP:57:ILE:H	1.81	0.46
19:AS:32:ARG:O	19:AS:32:ARG:HG2	2.16	0.46
20:AT:72:ALA:O	20:AT:73:ALA:C	2.59	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:439:U:H5'	4:AD:120:HIS:O	2.16	0.46
4:AD:187:GLU:HG2	4:AD:190:ASP:OD2	2.16	0.46
1:AA:406:G:C2'	4:AD:116:GLN:HE21	2.28	0.46
1:AA:438:U:C6	1:AA:494:G:C6	3.04	0.46
1:AA:664:G:H22	1:AA:741:G:H1	1.63	0.46
1:AA:1103:C:OP1	2:AB:95:ARG:NH2	2.49	0.46
1:AA:1313:U:OP1	19:AS:6:LYS:NZ	2.42	0.46
12:AL:34:CYS:SG	12:AL:77:HIS:O	2.74	0.46
19:AS:5:LEU:O	19:AS:6:LYS:HG2	2.16	0.46
28:BA:1087:G:H22	28:BA:1102:C:H42	1.63	0.46
28:BA:1790:C:H2'	28:BA:1791:A:N7	2.31	0.46
28:BA:2144:G:N2	28:BA:2146:C:H1'	2.31	0.46
29:BB:66:A:H61	29:BB:107:G:H2'	1.81	0.46
50:BX:12:PRO:HB3	50:BX:30:LEU:HD23	1.98	0.46
1:AA:38:G:H22	1:AA:397:A:H5'	1.80	0.45
1:AA:722:G:H3'	1:AA:722:G:N3	2.31	0.45
25:B3:6:THR:HG21	28:BA:243:U:OP1	2.16	0.45
28:BA:1216:G:OP1	43:BQ:11:ARG:NH1	2.48	0.45
28:BA:1871:A:HO2'	28:BA:1872:A:H8	1.63	0.45
28:BA:2099:U:H2'	28:BA:2100:G:C8	2.51	0.45
47:BU:74:ASN:O	47:BU:75:ALA:HB3	2.15	0.45
4:AD:21:LEU:HD13	4:AD:111:ARG:NE	2.27	0.45
4:AD:103:TYR:CD2	4:AD:111:ARG:HD3	2.51	0.45
4:AD:185:LYS:HB2	4:AD:185:LYS:HE3	1.56	0.45
32:BE:52:VAL:HG11	32:BE:81:GLY:HA2	1.97	0.45
1:AA:411:A:H4'	1:AA:412:A:OP1	2.15	0.45
1:AA:451:A:C1'	1:AA:452:A:C8	2.99	0.45
1:AA:481:G:C2	1:AA:482:A:C6	3.05	0.45
1:AA:491:G:H2'	1:AA:492:C:C6	2.51	0.45
1:AA:944:G:N1	1:AA:1338:G:OP2	2.46	0.45
1:AA:1145:A:O2'	1:AA:1146:A:O5'	2.32	0.45
1:AA:1302:C:H41	13:AM:14:HIS:CD2	2.34	0.45
1:AA:1313:U:P	19:AS:6:LYS:HE3	2.56	0.45
4:AD:139:PRO:HA	4:AD:182:PHE:CB	2.46	0.45
7:AG:15:ASP:O	7:AG:19:GLY:N	2.47	0.45
9:AI:114:LYS:HE2	9:AI:114:LYS:HB2	1.46	0.45
28:BA:1383:A:O2'	28:BA:1384:A:O5'	2.28	0.45
31:BD:26:VAL:HG21	42:BP:5:ILE:CD1	2.47	0.45
39:BM:27:SER:N	39:BM:104:GLU:OE2	2.48	0.45
1:AA:1315:U:H2'	1:AA:1316:G:O4'	2.16	0.45
7:AG:140:ASP:OD1	7:AG:143:ARG:NH1	2.48	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:AJ:74:VAL:HG23	10:AJ:75:ASP:N	2.31	0.45
13:AM:3:ARG:O	13:AM:4:ILE:O	2.34	0.45
47:BU:54:GLN:N	47:BU:55:PRO:HD3	2.32	0.45
52:BZ:24:LEU:HD11	52:BZ:54:MET:CE	2.45	0.45
1:AA:478:A:C4	1:AA:479:U:N3	2.85	0.45
4:AD:187:GLU:O	4:AD:188:ARG:C	2.57	0.45
9:AI:105:THR:HG23	9:AI:105:THR:O	2.15	0.45
16:AP:51:ARG:C	16:AP:52:LEU:HD12	2.40	0.45
28:BA:25:U:HO2'	28:BA:26:G:P	2.40	0.45
28:BA:2190:G:C6	28:BA:2191:A:C6	3.05	0.45
39:BM:8:LYS:HG3	39:BM:9:PHE:CD2	2.52	0.45
1:AA:457:G:N3	1:AA:457:G:H2'	2.32	0.45
1:AA:1055:A:C6	1:AA:1206:G:C5	3.04	0.45
1:AA:1147:C:H1'	9:AI:18:ARG:NH1	2.31	0.45
1:AA:1368:A:H5"	9:AI:114:LYS:CG	2.46	0.45
33:BF:25:VAL:O	33:BF:28:VAL:HG12	2.16	0.45
35:BH:30:LEU:O	35:BH:34:GLY:O	2.35	0.45
47:BU:34:VAL:HG13	47:BU:67:VAL:HG22	1.99	0.45
12:AL:107:VAL:HB	12:AL:119:VAL:CG2	2.47	0.45
18:AR:67:LEU:HD23	18:AR:67:LEU:H	1.81	0.45
28:BA:2857:G:N2	28:BA:2860:A:OP2	2.38	0.45
32:BE:105:LEU:HD23	32:BE:200:LEU:HD21	1.98	0.45
1:AA:687:A:C2	1:AA:704:A:C5	3.05	0.45
1:AA:1160:G:C2	1:AA:1161:C:C6	3.05	0.45
14:AN:45:VAL:HG13	14:AN:46:LEU:N	2.31	0.45
27:B5:61:ASN:O	27:B5:64:PHE:O	2.35	0.45
39:BM:34:LYS:CD	39:BM:131:VAL:HG11	2.47	0.45
1:AA:411:A:H62	1:AA:413:G:H21	1.65	0.45
1:AA:428:G:H8	1:AA:428:G:OP1	2.00	0.45
1:AA:442:G:N1	1:AA:443:C:N4	2.65	0.45
1:AA:615:G:C6	1:AA:616:G:C5	3.05	0.45
1:AA:1136:C:O2	1:AA:1136:C:O4'	2.34	0.45
1:AA:1328:C:H5"	13:AM:28:THR:HG21	1.98	0.45
11:AK:109:ASN:OD1	11:AK:110:ILE:N	2.50	0.45
28:BA:947:A:H2'	28:BA:948:C:C6	2.52	0.45
44:BR:6:GLN:OE1	44:BR:10:LYS:N	2.50	0.45
1:AA:449:G:O5'	1:AA:449:G:H8	2.00	0.45
1:AA:504:C:C2	1:AA:542:G:N2	2.85	0.45
1:AA:684:U:O2	11:AK:41:ALA:HB3	2.17	0.45
1:AA:842:U:N3	1:AA:843:U:O2'	2.48	0.45
1:AA:1125:U:O2'	1:AA:1126:U:H2'	2.18	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:AQ:75:LEU:HD12	17:AQ:75:LEU:C	2.42	0.45
21:AU:25:LYS:HG3	21:AU:26:ALA:N	2.32	0.45
28:BA:528:A:C2	28:BA:2043:C:H4'	2.52	0.45
28:BA:593:U:H2'	28:BA:594:U:C6	2.51	0.45
28:BA:784:G:O2'	28:BA:785:G:OP2	2.30	0.45
28:BA:876:C:H2'	28:BA:877:A:O4'	2.17	0.45
28:BA:1199:U:C1'	43:BQ:4:VAL:HG12	2.47	0.45
28:BA:1847:A:O2'	28:BA:1848:A:H8	2.00	0.45
1:AA:411:A:H8	4:AD:31:LYS:HZ1	1.65	0.44
1:AA:1124:G:C3'	10:AJ:37:ARG:HH12	2.31	0.44
2:AB:148:LEU:O	2:AB:148:LEU:HG	2.17	0.44
4:AD:106:GLY:C	4:AD:108:GLY:N	2.73	0.44
5:AE:15:LEU:HD23	5:AE:15:LEU:H	1.82	0.44
8:AH:50:LYS:HD2	8:AH:60:GLU:HB3	1.99	0.44
11:AK:35:THR:HG22	11:AK:41:ALA:H	1.82	0.44
12:AL:90:LEU:HD23	12:AL:90:LEU:H	1.81	0.44
27:B5:9:TYR:OH	33:BF:102:ARG:NH2	2.50	0.44
28:BA:1913:A:H4'	28:BA:1914:C:O5'	2.17	0.44
28:BA:2014:A:H2'	28:BA:2015:A:C8	2.51	0.44
33:BF:175:PHE:HD2	33:BF:177:PHE:CE1	2.35	0.44
37:BK:76:VAL:HG12	42:BP:73:VAL:HG22	1.98	0.44
1:AA:407:U:H1'	4:AD:154:ARG:HH12	1.83	0.44
1:AA:440:C:H2'	1:AA:441:A:C8	2.52	0.44
1:AA:1151:A:O4'	10:AJ:41:PRO:HB2	2.17	0.44
1:AA:1381:U:O2'	7:AG:79:ARG:O	2.23	0.44
3:AC:106:VAL:HG23	3:AC:106:VAL:O	2.16	0.44
3:AC:156:ARG:HD2	3:AC:160:ALA:O	2.17	0.44
4:AD:48:LEU:H	4:AD:48:LEU:HD23	1.82	0.44
4:AD:181:THR:CG2	4:AD:182:PHE:N	2.79	0.44
4:AD:188:ARG:HA	4:AD:188:ARG:HD2	1.72	0.44
28:BA:285:G:C6	28:BA:286:U:C4	3.05	0.44
28:BA:2516:A:O2'	28:BA:2517:C:H5'	2.18	0.44
28:BA:2799:A:O2'	28:BA:2800:A:H5"	2.17	0.44
42:BP:82:ASP:O	42:BP:83:SER:C	2.60	0.44
1:AA:1319:A:OP2	19:AS:5:LEU:HD11	2.17	0.44
5:AE:80:THR:OG1	5:AE:98:PRO:O	2.30	0.44
6:AF:26:THR:HG22	6:AF:36:ILE:HD13	2.00	0.44
28:BA:2162:G:N2	28:BA:2163:A:N3	2.65	0.44
35:BH:44:ILE:HA	35:BH:47:PHE:CE2	2.52	0.44
39:BM:53:MET:HE1	39:BM:103:TYR:CD1	2.52	0.44
1:AA:426:U:H2'	1:AA:427:U:C5	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:462:G:C4	1:AA:463:U:C5	3.05	0.44
1:AA:481:G:N3	1:AA:483:C:C4	2.86	0.44
1:AA:921:U:O2	5:AE:24:THR:CG2	2.65	0.44
2:AB:21:ARG:C	2:AB:23:TRP:N	2.76	0.44
28:BA:547:A:H3'	28:BA:548:G:C5'	2.47	0.44
28:BA:613:A:H3'	28:BA:614:A:H5'	1.99	0.44
28:BA:1170:C:O2	28:BA:1171:G:N7	2.50	0.44
28:BA:1360:G:N7	28:BA:1361:G:C8	2.85	0.44
28:BA:1383:A:H2'	28:BA:1384:A:C8	2.53	0.44
28:BA:2321:U:H5'	28:BA:2322:A:OP2	2.17	0.44
28:BA:2788:C:H2'	28:BA:2789:C:C6	2.52	0.44
31:BD:104:VAL:O	31:BD:105:LYS:HG2	2.17	0.44
1:AA:419:C:OP2	1:AA:513:C:H1'	2.16	0.44
1:AA:442:G:C4	1:AA:443:C:C5	3.06	0.44
1:AA:463:U:H2'	1:AA:464:U:O4'	2.18	0.44
1:AA:713:G:H2'	1:AA:714:G:C8	2.53	0.44
1:AA:769:G:H4'	1:AA:1513:A:H4'	1.99	0.44
1:AA:1125:U:O2'	1:AA:1126:U:O5'	2.31	0.44
6:AF:63:ASN:HD21	6:AF:96:VAL:HG13	1.82	0.44
11:AK:126:LYS:HA	21:AU:34:ARG:CD	2.47	0.44
19:AS:4:SER:OG	19:AS:5:LEU:HD12	2.18	0.44
20:AT:71:LYS:HE2	20:AT:75:HIS:NE2	2.32	0.44
28:BA:1913:A:H1'	28:BA:1914:C:OP2	2.17	0.44
1:AA:441:A:H2'	1:AA:442:G:O4'	2.17	0.44
1:AA:448:A:H62	1:AA:486:U:H2'	1.81	0.44
2:AB:165:ASP:OD1	2:AB:168:HIS:N	2.41	0.44
4:AD:15:GLU:OE1	4:AD:17:THR:N	2.51	0.44
14:AN:18:ASP:C	14:AN:18:ASP:OD1	2.60	0.44
19:AS:46:GLY:H	19:AS:62:VAL:HG13	1.82	0.44
28:BA:2071:A:H2'	28:BA:2072:C:C6	2.53	0.44
28:BA:2581:G:OP2	28:BA:2581:G:N2	2.50	0.44
30:BC:9:THR:O	30:BC:10:SER:CB	2.65	0.44
39:BM:53:MET:HG3	39:BM:120:ALA:HB2	2.00	0.44
44:BR:49:ILE:HB	44:BR:51:VAL:O	2.18	0.44
1:AA:430:A:C2	1:AA:431:A:C8	3.05	0.44
1:AA:438:U:C5'	4:AD:120:HIS:HD2	2.25	0.44
1:AA:515:G:H2'	1:AA:516:U:O4'	2.17	0.44
1:AA:1147:C:H1'	9:AI:18:ARG:HH12	1.81	0.44
1:AA:1323:G:H2'	1:AA:1324:A:C8	2.53	0.44
5:AE:35:ALA:O	5:AE:50:TYR:O	2.36	0.44
12:AL:50:ARG:NH1	12:AL:89:ASP:OD2	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:AM:28:THR:HG23	13:AM:29:ARG:N	2.32	0.44
20:AT:69:LYS:HB2	20:AT:69:LYS:HE3	1.77	0.44
28:BA:1046:A:H3'	28:BA:1047:G:C5'	2.47	0.44
28:BA:1420:A:C5	28:BA:2211:A:C5	3.05	0.44
47:BU:18:ASP:N	47:BU:18:ASP:OD1	2.50	0.44
1:AA:131:A:H2'	1:AA:132:C:C6	2.53	0.44
3:AC:59:ARG:HG2	3:AC:64:ILE:HG22	2.00	0.44
4:AD:33:LYS:O	4:AD:34:ILE:C	2.60	0.44
4:AD:110:THR:CG2	4:AD:113:GLU:H	2.10	0.44
5:AE:105:ILE:O	5:AE:106:ILE:C	2.61	0.44
25:B3:12:LYS:NZ	28:BA:249:C:O2	2.48	0.44
28:BA:1329:U:OP2	28:BA:1330:C:N4	2.49	0.44
1:AA:412:A:N7	1:AA:431:A:N1	2.66	0.44
1:AA:480:U:H2'	1:AA:481:G:C8	2.53	0.44
1:AA:493:A:H2'	1:AA:494:G:O4'	2.18	0.44
1:AA:511:C:O2'	1:AA:512:U:OP2	2.30	0.44
9:AI:87:LEU:HG	9:AI:94:LEU:HD11	2.00	0.44
10:AJ:14:ASP:N	10:AJ:14:ASP:OD1	2.51	0.44
13:AM:16:VAL:O	13:AM:20:THR:HG23	2.18	0.44
28:BA:2330:G:H21	49:BW:42:GLY:HA2	1.81	0.44
32:BE:3:LEU:CD1	32:BE:120:VAL:HG21	2.47	0.44
34:BG:149:ARG:HA	34:BG:162:VAL:CG1	2.47	0.44
1:AA:211:G:C2'	1:AA:212:G:O4'	2.66	0.43
1:AA:732:C:OP2	21:AU:38:TYR:OH	2.32	0.43
1:AA:946:A:H2'	1:AA:947:G:C8	2.53	0.43
3:AC:155:GLY:O	3:AC:196:ILE:HG12	2.18	0.43
4:AD:34:ILE:O	4:AD:35:GLU:CG	2.62	0.43
28:BA:1715:G:O2'	28:BA:1743:G:O6	2.21	0.43
28:BA:2599:G:C8	30:BC:236:GLU:HG2	2.52	0.43
28:BA:2687:U:H2'	28:BA:2688:G:O4'	2.18	0.43
33:BF:135:GLN:HG2	33:BF:141:ILE:HD13	2.00	0.43
34:BG:155:GLU:OE2	34:BG:158:LYS:N	2.51	0.43
4:AD:11:LEU:CD1	4:AD:19:LEU:HD12	2.49	0.43
10:AJ:8:ILE:HB	10:AJ:74:VAL:HG22	2.00	0.43
20:AT:62:ALA:HA	20:AT:67:ILE:HG13	1.99	0.43
28:BA:44:A:H2'	28:BA:45:G:O4'	2.18	0.43
28:BA:141:G:H3'	28:BA:141:G:N3	2.33	0.43
28:BA:1171:G:N1	28:BA:1178:C:O2	2.50	0.43
28:BA:1730:C:O2'	28:BA:1731:G:C5	2.71	0.43
28:BA:1918:A:O2'	28:BA:1920:C:N4	2.51	0.43
28:BA:1954:G:O2'	28:BA:1956:U:O4	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:BA:2323:G:H2'	28:BA:2324:U:O4'	2.18	0.43
44:BR:51:VAL:HG13	44:BR:52:PRO:HD2	2.00	0.43
1:AA:616:G:C2	1:AA:617:G:C5	3.06	0.43
1:AA:948:C:P	13:AM:105:ASN:O	2.76	0.43
1:AA:1496:C:H2'	1:AA:1497:G:O4'	2.18	0.43
2:AB:58:ASN:C	2:AB:58:ASN:HD22	2.27	0.43
2:AB:74:ARG:O	2:AB:75:ALA:HB3	2.19	0.43
4:AD:181:THR:CG2	4:AD:182:PHE:H	2.32	0.43
9:AI:52:LEU:HD22	9:AI:57:MET:CE	2.48	0.43
19:AS:28:LYS:HG3	19:AS:29:LYS:N	2.31	0.43
21:AU:20:LYS:O	21:AU:25:LYS:HB2	2.19	0.43
28:BA:493:G:H2'	28:BA:494:G:O4'	2.18	0.43
28:BA:586:A:N1	28:BA:809:G:O2'	2.45	0.43
36:BJ:19:ASP:OD1	36:BJ:58:ASN:ND2	2.49	0.43
38:BL:86:GLU:O	38:BL:86:GLU:CD	2.62	0.43
1:AA:455:G:H2'	1:AA:456:A:C8	2.53	0.43
1:AA:481:G:N3	1:AA:482:A:C6	2.86	0.43
1:AA:540:G:H2'	1:AA:541:G:H8	1.81	0.43
6:AF:18:VAL:HG11	6:AF:58:HIS:CE1	2.54	0.43
12:AL:114:ARG:O	12:AL:115:SER:C	2.61	0.43
13:AM:48:LEU:HD12	13:AM:52:GLN:OE1	2.18	0.43
16:AP:36:VAL:HG12	16:AP:36:VAL:O	2.19	0.43
28:BA:137:U:H5"	28:BA:138:U:H3	1.83	0.43
28:BA:993:G:OP1	43:BQ:50:ARG:NH1	2.50	0.43
28:BA:2101:A:H3'	28:BA:2102:G:C5'	2.48	0.43
50:BX:39:TRP:NE1	50:BX:41:GLU:OE2	2.49	0.43
1:AA:445:G:N3	1:AA:445:G:H2'	2.34	0.43
1:AA:454:G:H2'	1:AA:455:G:H8	1.82	0.43
1:AA:555:U:H2'	1:AA:556:C:C6	2.53	0.43
1:AA:616:G:O2'	16:AP:46:LYS:NZ	2.42	0.43
5:AE:72:ILE:HD11	5:AE:141:ILE:HG23	1.99	0.43
5:AE:94:VAL:CG1	5:AE:111:MET:HE1	2.48	0.43
8:AH:52:GLU:O	8:AH:57:PRO:HA	2.18	0.43
10:AJ:63:ASP:OD2	10:AJ:65:TYR:OH	2.22	0.43
27:B5:64:PHE:CG	27:B5:65:ASN:N	2.86	0.43
28:BA:972:A:OP2	28:BA:973:A:O2'	2.33	0.43
28:BA:1173:U:H3'	28:BA:1174:U:H4'	1.99	0.43
28:BA:1668:A:H4'	28:BA:1669:A:O5'	2.18	0.43
1:AA:411:A:H8	4:AD:31:LYS:CE	2.31	0.43
1:AA:1538:C:O2'	1:AA:1539:C:O5'	2.33	0.43
2:AB:218:ALA:O	2:AB:221:VAL:HG12	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:AE:79:GLY:O	5:AE:121:HIS:N	2.45	0.43
5:AE:106:ILE:O	5:AE:106:ILE:HG13	2.17	0.43
12:AL:99:ARG:NH1	12:AL:104:CYS:SG	2.91	0.43
17:AQ:50:ASN:O	17:AQ:51:ASN:C	2.62	0.43
19:AS:12:ASP:HB3	19:AS:14:HIS:CD2	2.54	0.43
23:B1:40:ASP:O	23:B1:44:ARG:N	2.43	0.43
28:BA:613:A:H3'	28:BA:614:A:C5'	2.48	0.43
28:BA:1791:A:C2	28:BA:1829:A:C4'	3.02	0.43
28:BA:1853:A:H2'	28:BA:1854:A:C8	2.54	0.43
28:BA:1881:C:H2'	28:BA:1882:U:O4'	2.18	0.43
28:BA:2189:U:N3	28:BA:2190:G:N7	2.66	0.43
1:AA:407:U:O2'	4:AD:154:ARG:NH2	2.52	0.43
1:AA:492:C:C2'	1:AA:493:A:C8	3.00	0.43
1:AA:1179:A:H2'	1:AA:1180:A:O4'	2.18	0.43
4:AD:110:THR:HB	4:AD:113:GLU:HG3	2.00	0.43
4:AD:183:LYS:HZ2	4:AD:183:LYS:HG2	1.68	0.43
21:AU:23:CYS:SG	21:AU:24:GLU:OE1	2.77	0.43
28:BA:784:G:HO2'	28:BA:785:G:P	2.40	0.43
28:BA:1063:G:H2'	28:BA:1064:C:O5'	2.18	0.43
28:BA:1179:G:C4	28:BA:1180:U:H4'	2.53	0.43
28:BA:1871:A:O2'	28:BA:1872:A:P	2.77	0.43
28:BA:2848:G:O2'	28:BA:2867:G:N2	2.39	0.43
1:AA:337:G:H2'	1:AA:338:A:C8	2.54	0.43
1:AA:616:G:O2'	16:AP:46:LYS:HD2	2.19	0.43
1:AA:925:G:C2	1:AA:927:G:C8	3.07	0.43
1:AA:1146:A:N3	1:AA:1146:A:H2'	2.32	0.43
4:AD:139:PRO:HA	4:AD:182:PHE:HB3	2.01	0.43
5:AE:95:PHE:O	5:AE:125:ALA:O	2.36	0.43
6:AF:12:PRO:HD2	6:AF:54:LEU:HD11	1.99	0.43
9:AI:114:LYS:HG3	9:AI:114:LYS:O	2.18	0.43
12:AL:94:ARG:HG2	12:AL:94:ARG:O	2.19	0.43
19:AS:12:ASP:O	19:AS:13:LEU:C	2.61	0.43
28:BA:792:A:N3	28:BA:2072:C:O2'	2.46	0.43
28:BA:1802:A:H2'	28:BA:1803:A:C8	2.53	0.43
1:AA:512:U:O5'	4:AD:41:HIS:HE1	2.02	0.43
4:AD:3:ARG:NH1	4:AD:5:LEU:HG	2.34	0.43
1:AA:438:U:N3	1:AA:495:A:C8	2.86	0.43
1:AA:449:G:N2	1:AA:486:U:O2'	2.52	0.43
4:AD:183:LYS:HZ3	4:AD:184:ARG:NH1	2.16	0.43
7:AG:108:ALA:HA	7:AG:111:ARG:HG3	2.01	0.43
9:AI:87:LEU:HG	9:AI:87:LEU:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:AN:93:ILE:HG21	14:AN:96:LEU:CD1	2.49	0.43
16:AP:36:VAL:CG1	16:AP:57:ILE:HD11	2.49	0.43
28:BA:25:U:O2'	28:BA:26:G:P	2.77	0.43
28:BA:445:C:H2'	28:BA:446:G:O4'	2.18	0.43
28:BA:1282:U:H2'	28:BA:1283:G:O4'	2.18	0.43
35:BH:47:PHE:CD1	35:BH:47:PHE:C	2.96	0.43
37:BK:93:GLN:O	37:BK:94:PRO:C	2.62	0.43
50:BX:5:CYS:HA	50:BX:33:LEU:HD11	2.01	0.43
1:AA:88:U:C2	1:AA:89:U:C5	3.07	0.42
1:AA:147:G:H2'	1:AA:148:G:C8	2.54	0.42
1:AA:1229:A:P	13:AM:113:ARG:NH2	2.92	0.42
1:AA:1446:A:O2'	1:AA:1447:A:H5'	2.19	0.42
2:AB:21:ARG:C	2:AB:23:TRP:H	2.27	0.42
2:AB:213:TYR:O	2:AB:217:VAL:HG12	2.19	0.42
6:AF:5:GLU:HA	6:AF:63:ASN:HA	2.01	0.42
6:AF:9:MET:SD	6:AF:59:TYR:CZ	3.12	0.42
6:AF:26:THR:HG22	6:AF:36:ILE:CD1	2.48	0.42
12:AL:33:VAL:HG22	12:AL:56:ARG:HB3	2.01	0.42
16:AP:73:ALA:O	16:AP:76:LYS:HG2	2.19	0.42
18:AR:47:THR:O	18:AR:48:ARG:C	2.62	0.42
28:BA:2291:U:OP1	28:BA:2380:C:O2'	2.32	0.42
1:AA:275:G:C5'	17:AQ:16:LYS:NZ	2.82	0.42
1:AA:515:G:C2'	1:AA:516:U:O4'	2.67	0.42
1:AA:714:G:H2'	1:AA:715:A:C8	2.55	0.42
1:AA:1067:A:N1	1:AA:1108:G:O2'	2.27	0.42
1:AA:1124:G:O2'	1:AA:1127:G:O6	2.37	0.42
1:AA:1326:U:C2	1:AA:1327:C:C5	3.07	0.42
1:AA:1402:C:H2'	1:AA:1403:C:O4'	2.18	0.42
4:AD:13:ARG:C	4:AD:38:PRO:HG3	2.44	0.42
13:AM:3:ARG:NH2	13:AM:7:ILE:HG22	2.33	0.42
14:AN:47:LYS:NZ	19:AS:13:LEU:HD22	2.32	0.42
23:B1:34:LEU:HB3	23:B1:52:ALA:HB2	2.02	0.42
28:BA:370:G:O2'	28:BA:424:G:OP1	2.34	0.42
28:BA:1796:U:H2'	28:BA:1797:G:H8	1.84	0.42
29:BB:41:G:O6	33:BF:69:LYS:NZ	2.47	0.42
1:AA:502:A:O2'	1:AA:503:C:H5'	2.19	0.42
1:AA:505:G:H2'	1:AA:506:G:C8	2.54	0.42
28:BA:191:A:H2'	28:BA:192:C:C6	2.54	0.42
28:BA:859:G:O2'	28:BA:916:G:O6	2.35	0.42
31:BD:105:LYS:O	31:BD:106:LYS:HG3	2.20	0.42
1:AA:442:G:O2'	1:AA:443:C:H5'	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:516:U:H2'	1:AA:517:G:O4'	2.19	0.42
2:AB:99:GLY:N	2:AB:175:GLU:OE2	2.48	0.42
5:AE:111:MET:HA	5:AE:114:VAL:HG12	2.01	0.42
9:AI:28:ILE:CD1	9:AI:63:LEU:HD23	2.49	0.42
15:AO:79:THR:O	15:AO:80:GLN:C	2.63	0.42
17:AQ:80:GLU:O	17:AQ:80:GLU:OE1	2.37	0.42
20:AT:43:ASP:CG	20:AT:46:ALA:HB3	2.45	0.42
28:BA:667:U:H2'	28:BA:668:A:O4'	2.19	0.42
28:BA:1774:C:O2	28:BA:1774:C:H2'	2.18	0.42
1:AA:115:G:H4'	1:AA:116:A:O5'	2.18	0.42
1:AA:205:A:N3	1:AA:206:C:C4	2.87	0.42
1:AA:450:G:C6	1:AA:481:G:C6	3.07	0.42
1:AA:486:U:C2	1:AA:486:U:P	3.12	0.42
1:AA:1356:G:H2'	1:AA:1357:A:H8	1.84	0.42
4:AD:97:ARG:HE	4:AD:134:SER:HA	1.85	0.42
19:AS:5:LEU:C	19:AS:7:LYS:H	2.28	0.42
23:B1:9:ILE:HG22	23:B1:53:LYS:HB2	2.02	0.42
28:BA:240:C:OP2	28:BA:241:A:O2'	2.34	0.42
28:BA:623:C:H2'	28:BA:624:C:C6	2.55	0.42
28:BA:1794:A:H2'	28:BA:1795:C:C6	2.55	0.42
28:BA:2029:G:N1	28:BA:2033:A:OP2	2.39	0.42
32:BE:3:LEU:O	32:BE:3:LEU:HD12	2.19	0.42
44:BR:23:GLU:O	44:BR:94:THR:HG22	2.20	0.42
50:BX:32:ASN:OD1	50:BX:32:ASN:O	2.37	0.42
1:AA:20:U:H2'	1:AA:21:G:O4'	2.19	0.42
1:AA:216:U:H2'	1:AA:217:C:C6	2.54	0.42
1:AA:443:C:H3'	1:AA:444:G:H8	1.84	0.42
1:AA:1119:C:OP1	9:AI:85:ARG:NH1	2.52	0.42
1:AA:1396:A:H2	5:AE:24:THR:HG21	1.84	0.42
14:AN:93:ILE:HG21	14:AN:96:LEU:HD12	2.00	0.42
28:BA:1028:A:H2'	28:BA:1029:A:C8	2.54	0.42
28:BA:1171:G:O3'	28:BA:1172:C:O4'	2.37	0.42
28:BA:1203:U:OP2	28:BA:1204:A:O2'	2.27	0.42
28:BA:1754:A:C8	42:BP:94:LYS:HE3	2.54	0.42
28:BA:2064:C:H2'	28:BA:2065:C:C6	2.54	0.42
28:BA:2266:A:H4'	28:BA:2267:A:O5'	2.19	0.42
29:BB:5:U:OP1	29:BB:61:G:O2'	2.31	0.42
42:BP:73:VAL:O	42:BP:73:VAL:HG23	2.20	0.42
1:AA:751:U:H2'	1:AA:752:G:O4'	2.20	0.42
1:AA:1167:A:N6	1:AA:1169:A:N1	2.67	0.42
4:AD:154:ARG:H	4:AD:154:ARG:HG2	1.57	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:AE:23:LYS:C	5:AE:24:THR:HG22	2.44	0.42
10:AJ:10:LEU:HD11	10:AJ:98:VAL:HG12	2.01	0.42
12:AL:81:LEU:O	12:AL:98:VAL:HG12	2.18	0.42
14:AN:18:ASP:OD1	14:AN:19:LYS:N	2.53	0.42
28:BA:1328:A:H2'	28:BA:1330:C:C4	2.54	0.42
28:BA:2190:G:H2'	28:BA:2191:A:C8	2.54	0.42
28:BA:2406:A:C2	38:BL:69:ARG:NH2	2.87	0.42
31:BD:180:VAL:HG22	31:BD:187:LEU:HD12	2.02	0.42
1:AA:323:U:H2'	1:AA:324:G:O4'	2.19	0.42
1:AA:406:G:H2'	4:AD:116:GLN:NE2	2.35	0.42
1:AA:478:A:C8	1:AA:479:U:C4	3.08	0.42
1:AA:512:U:O5'	4:AD:41:HIS:CE1	2.73	0.42
1:AA:722:G:H5'	21:AU:49:LYS:HZ1	1.84	0.42
2:AB:218:ALA:O	2:AB:222:ARG:HG2	2.20	0.42
3:AC:47:LEU:HD21	3:AC:87:LEU:HD11	2.02	0.42
4:AD:67:VAL:HG22	4:AD:97:ARG:HH12	1.84	0.42
4:AD:137:VAL:HG13	4:AD:137:VAL:O	2.18	0.42
9:AI:57:MET:O	9:AI:60:LYS:HG3	2.19	0.42
16:AP:12:LYS:HG2	16:AP:13:LYS:HG2	2.02	0.42
16:AP:20:VAL:HG21	16:AP:32:PHE:CG	2.55	0.42
33:BF:20:PHE:C	33:BF:21:ASN:OD1	2.62	0.42
1:AA:17:U:H2'	1:AA:18:C:C6	2.54	0.42
1:AA:419:C:C2'	1:AA:420:U:H5'	2.50	0.42
1:AA:881:G:OP2	12:AL:9:ARG:NH2	2.53	0.42
4:AD:58:LYS:HD3	4:AD:203:LEU:HD23	2.02	0.42
5:AE:13:GLU:OE1	5:AE:68:ARG:NH2	2.49	0.42
8:AH:113:ASP:N	8:AH:113:ASP:OD1	2.50	0.42
16:AP:42:ILE:O	16:AP:44:SER:N	2.52	0.42
19:AS:13:LEU:O	19:AS:14:HIS:C	2.60	0.42
25:B3:19:LYS:HG3	28:BA:651:G:H5'	2.01	0.42
28:BA:140:C:H1'	28:BA:141:G:C2	2.55	0.42
28:BA:742:A:H2'	28:BA:743:A:C8	2.55	0.42
28:BA:2101:A:H3'	28:BA:2102:G:H5"	2.02	0.42
28:BA:2189:U:C2	28:BA:2190:G:N7	2.88	0.42
30:BC:30:PHE:HD2	30:BC:33:LEU:HD12	1.85	0.42
31:BD:3:GLY:C	31:BD:4:LEU:HD22	2.45	0.42
41:BO:34:HIS:HA	41:BO:53:THR:CG2	2.50	0.42
41:BO:116:GLN:HE21	41:BO:116:GLN:HB3	1.64	0.42
1:AA:537:G:C6	1:AA:538:G:C5	3.08	0.42
1:AA:978:A:C4	1:AA:1319:A:C2	3.08	0.42
1:AA:1486:G:H2'	1:AA:1487:G:O4'	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:AD:17:THR:HG22	4:AD:18:ASP:N	2.35	0.42
4:AD:99:ASP:N	4:AD:99:ASP:OD1	2.50	0.42
5:AE:102:GLY:C	5:AE:103:THR:HG1	2.19	0.42
6:AF:19:PRO:O	6:AF:23:GLU:OE1	2.37	0.42
9:AI:52:LEU:HB3	9:AI:57:MET:HE2	2.01	0.42
10:AJ:91:ASP:OD1	10:AJ:91:ASP:N	2.53	0.42
13:AM:64:VAL:HG13	13:AM:68:ASP:CG	2.45	0.42
20:AT:65:GLY:O	20:AT:66:LEU:C	2.61	0.42
28:BA:479:A:H4'	28:BA:480:A:OP1	2.19	0.42
28:BA:483:A:O2'	47:BU:57:GLY:N	2.46	0.42
28:BA:1583:A:HO2'	28:BA:1584:U:P	2.42	0.42
29:BB:42:C:N3	33:BF:90:THR:HG22	2.34	0.42
33:BF:106:ILE:HG21	33:BF:139:PRO:HG3	2.02	0.42
1:AA:491:G:C6	1:AA:492:C:N4	2.88	0.41
1:AA:524:G:H2'	1:AA:525:C:C6	2.54	0.41
1:AA:722:G:O3'	21:AU:49:LYS:NZ	2.47	0.41
4:AD:188:ARG:O	4:AD:189:SER:C	2.62	0.41
8:AH:95:VAL:O	8:AH:99:LEU:O	2.38	0.41
11:AK:42:LEU:CD1	11:AK:79:ILE:HD11	2.50	0.41
16:AP:61:VAL:CG2	16:AP:67:ILE:HD11	2.50	0.41
20:AT:28:MET:HE1	20:AT:67:ILE:HG21	2.02	0.41
28:BA:871:U:H2'	28:BA:872:U:C6	2.54	0.41
28:BA:1319:C:O2'	28:BA:1320:C:H5'	2.20	0.41
28:BA:1469:A:H2'	28:BA:1470:A:C8	2.55	0.41
28:BA:1548:A:H2'	28:BA:1549:A:C8	2.55	0.41
37:BK:99:ILE:CD1	37:BK:119:ALA:HB2	2.47	0.41
47:BU:5:ILE:HD11	47:BU:67:VAL:HG13	2.02	0.41
48:BV:65:VAL:O	48:BV:65:VAL:HG13	2.20	0.41
1:AA:504:C:C2	1:AA:542:G:C2	3.08	0.41
4:AD:8:LYS:HD2	4:AD:8:LYS:C	2.44	0.41
20:AT:24:ARG:HE	20:AT:27:MET:HE3	1.83	0.41
28:BA:81:G:H2'	28:BA:82:U:O4'	2.19	0.41
28:BA:1025:G:H4'	28:BA:1026:G:OP2	2.19	0.41
28:BA:1083:U:O2'	28:BA:1085:A:N6	2.51	0.41
28:BA:1746:A:H2'	28:BA:1747:U:C6	2.55	0.41
28:BA:1847:A:O2'	28:BA:1848:A:P	2.78	0.41
28:BA:1928:A:H2'	28:BA:1929:G:O4'	2.19	0.41
28:BA:2286:G:H5"	28:BA:2287:A:OP1	2.20	0.41
28:BA:2639:A:O3'	36:BJ:96:ARG:NH1	2.53	0.41
37:BK:118:LEU:O	37:BK:119:ALA:HB3	2.20	0.41
38:BL:92:LEU:HD11	38:BL:106:GLU:O	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
52:BZ:6:LYS:HD2	52:BZ:37:GLU:HG3	2.02	0.41
1:AA:182:A:C4	1:AA:184:G:C8	3.08	0.41
1:AA:371:A:H2'	1:AA:372:C:O4'	2.21	0.41
1:AA:412:A:N6	1:AA:431:A:C2	2.81	0.41
1:AA:449:G:N1	1:AA:486:U:C1'	2.78	0.41
1:AA:453:G:H2'	1:AA:454:G:C8	2.55	0.41
1:AA:580:C:H2'	1:AA:581:G:O4'	2.20	0.41
1:AA:1078:U:O2'	1:AA:1079:G:P	2.77	0.41
1:AA:1140:C:HO2'	1:AA:1141:C:H6	1.65	0.41
1:AA:1363:A:O2'	1:AA:1365:G:N7	2.46	0.41
2:AB:19:GLN:HB2	2:AB:189:THR:OG1	2.21	0.41
3:AC:155:GLY:HA2	3:AC:163:ALA:HB1	2.02	0.41
19:AS:47:LEU:O	19:AS:62:VAL:HG12	2.20	0.41
19:AS:58:VAL:HG13	19:AS:58:VAL:O	2.20	0.41
28:BA:1667:G:O2'	28:BA:1991:U:O4	2.30	0.41
30:BC:30:PHE:CE2	30:BC:32:PRO:HG2	2.55	0.41
34:BG:25:THR:CG2	34:BG:32:GLU:OE2	2.68	0.41
51:BY:26:PHE:CE1	51:BY:30:MET:HE3	2.55	0.41
1:AA:492:C:C3'	1:AA:493:A:C8	3.03	0.41
1:AA:1103:C:H4'	2:AB:97:LEU:HD13	2.02	0.41
1:AA:1160:G:O6	1:AA:1182:G:O6	2.39	0.41
5:AE:134:ILE:HD12	5:AE:134:ILE:H	1.85	0.41
9:AI:52:LEU:HD22	9:AI:57:MET:HE2	2.03	0.41
10:AJ:29:ALA:HA	10:AJ:32:THR:HG22	2.02	0.41
28:BA:1990:C:H2'	28:BA:1991:U:O4'	2.20	0.41
28:BA:2547:A:H2'	28:BA:2548:U:C6	2.54	0.41
1:AA:207:C:H2'	1:AA:208:U:O4'	2.21	0.41
1:AA:261:U:OP2	20:AT:71:LYS:HE3	2.20	0.41
1:AA:481:G:H1'	1:AA:483:C:C5	2.54	0.41
1:AA:976:G:N1	1:AA:1362:A:O2'	2.50	0.41
7:AG:57:SER:N	7:AG:60:GLU:OE2	2.54	0.41
28:BA:285:G:H2'	28:BA:285:G:N3	2.36	0.41
28:BA:629:G:N3	28:BA:639:U:O2'	2.53	0.41
28:BA:639:U:H2'	28:BA:640:C:C6	2.55	0.41
28:BA:1509:A:O2'	28:BA:1510:G:P	2.78	0.41
28:BA:1754:A:N1	28:BA:2716:C:O2'	2.41	0.41
32:BE:155:GLU:OE1	32:BE:155:GLU:N	2.41	0.41
41:BO:115:LEU:HA	41:BO:115:LEU:HD12	1.81	0.41
44:BR:41:ILE:CD1	44:BR:54:VAL:HG11	2.51	0.41
1:AA:437:U:H6	1:AA:437:U:O5'	2.03	0.41
1:AA:545:C:H5'	4:AD:69:GLU:HB2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:1125:U:C5’	10:AJ:37:ARG:NH1	2.84	0.41
2:AB:214:LEU:HA	2:AB:217:VAL:HG12	2.02	0.41
3:AC:77:ILE:O	3:AC:77:ILE:HG22	2.20	0.41
5:AE:106:ILE:HD11	5:AE:124:LEU:CD2	2.50	0.41
6:AF:22:ILE:O	6:AF:26:THR:HG23	2.20	0.41
10:AJ:8:ILE:HD12	10:AJ:100:ILE:HD13	2.01	0.41
28:BA:1495:A:N3	28:BA:1578:U:O2’	2.46	0.41
51:BY:24:GLU:HB3	51:BY:46:VAL:HG21	2.02	0.41
1:AA:536:C:O2’	1:AA:537:G:H5’	2.20	0.41
1:AA:1147:C:H2’	1:AA:1148:U:C6	2.56	0.41
1:AA:1368:A:OP1	10:AJ:64:GLN:NE2	2.51	0.41
4:AD:92:ALA:HB1	4:AD:185:LYS:HD2	2.01	0.41
4:AD:145:ILE:HD12	4:AD:178:MET:CE	2.51	0.41
28:BA:1093:G:N2	28:BA:1098:A:H62	2.16	0.41
28:BA:1432:G:H2’	28:BA:1433:A:C8	2.56	0.41
28:BA:2191:A:O2’	28:BA:2192:U:H5’	2.21	0.41
28:BA:2557:G:H2’	28:BA:2558:C:C6	2.56	0.41
28:BA:2845:U:H5”	42:BP:52:ASN:O	2.20	0.41
40:BN:38:LEU:HB3	40:BN:39:PRO:HD3	2.03	0.41
1:AA:208:U:N3	1:AA:212:G:C6	2.89	0.41
1:AA:211:G:H2’	1:AA:212:G:O4’	2.20	0.41
2:AB:70:VAL:HG23	2:AB:70:VAL:O	2.21	0.41
13:AM:71:ARG:NH2	33:BF:113:ASP:OD1	2.50	0.41
17:AQ:25:ILE:HG22	17:AQ:26:GLU:N	2.36	0.41
28:BA:463:G:N2	28:BA:466:A:OP2	2.40	0.41
28:BA:1068:G:H21	28:BA:1096:A:P	2.44	0.41
31:BD:148:GLN:HB2	31:BD:152:PRO:HG2	2.00	0.41
1:AA:264:C:H2’	1:AA:265:G:O4’	2.21	0.41
1:AA:420:U:H1’	1:AA:424:G:N2	2.36	0.41
1:AA:481:G:N2	1:AA:482:A:C6	2.89	0.41
1:AA:482:A:H2’	1:AA:483:C:O4’	2.21	0.41
1:AA:721:G:H4’	1:AA:722:G:O4’	2.21	0.41
1:AA:983:A:N3	1:AA:983:A:C2’	2.83	0.41
1:AA:1297:G:H21	7:AG:114:LYS:HG3	1.86	0.41
1:AA:1494:G:N7	54:AA:1694:84G:N2	2.68	0.41
3:AC:114:LYS:O	3:AC:118:ASP:OD1	2.39	0.41
4:AD:174:ASP:OD2	4:AD:177:LYS:HB3	2.21	0.41
4:AD:190:ASP:OD1	4:AD:190:ASP:N	2.53	0.41
5:AE:24:THR:HA	5:AE:29:ARG:HA	2.03	0.41
10:AJ:34:ALA:O	10:AJ:78:GLU:OE1	2.38	0.41
12:AL:32:GLY:HA3	12:AL:55:VAL:CG1	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:AL:110:ARG:HG3	12:AL:112:GLN:O	2.21	0.41
18:AR:48:ARG:H	18:AR:48:ARG:HD3	1.86	0.41
21:AU:6:VAL:O	21:AU:6:VAL:CG2	2.69	0.41
21:AU:38:TYR:O	21:AU:39:GLU:HG2	2.21	0.41
24:B2:38:GLY:O	28:BA:458:G:H2'	2.21	0.41
28:BA:25:U:C2'	28:BA:26:G:O5'	2.68	0.41
28:BA:569:U:H2'	28:BA:570:G:O4'	2.21	0.41
28:BA:857:G:H2'	28:BA:858:G:O4'	2.20	0.41
28:BA:1351:C:H2'	28:BA:1352:U:O4'	2.21	0.41
28:BA:1370:C:H2'	28:BA:1371:G:O4'	2.21	0.41
28:BA:1607:C:H4'	28:BA:1608:A:O5'	2.21	0.41
28:BA:2140:G:H2'	28:BA:2141:G:C8	2.56	0.41
28:BA:2636:C:O2'	31:BD:45:TYR:OH	2.34	0.41
35:BH:41:LYS:O	35:BH:44:ILE:HG12	2.20	0.41
39:BM:135:VAL:HG23	39:BM:135:VAL:O	2.21	0.41
1:AA:73:C:O2'	1:AA:74:A:O5'	2.37	0.41
1:AA:160:A:H2'	1:AA:161:A:O4'	2.20	0.41
1:AA:511:C:O2'	1:AA:512:U:P	2.79	0.41
1:AA:536:C:H2'	1:AA:537:G:H8	1.86	0.41
1:AA:1125:U:HO2'	1:AA:1126:U:H2'	1.86	0.41
2:AB:50:PHE:CE2	2:AB:54:LEU:HD21	2.55	0.41
5:AE:30:ILE:HG13	5:AE:30:ILE:O	2.20	0.41
13:AM:13:LYS:O	13:AM:14:HIS:CD2	2.74	0.41
15:AO:48:LYS:O	15:AO:48:LYS:HG2	2.21	0.41
22:B0:10:ARG:NH1	28:BA:517:C:OP2	2.53	0.41
28:BA:137:U:H3'	28:BA:138:U:C6	2.56	0.41
28:BA:849:A:H2'	28:BA:850:U:C6	2.56	0.41
28:BA:2118:U:C5'	28:BA:2147:A:H1'	2.50	0.41
36:BJ:142:ILE:OXT	36:BJ:142:ILE:HG23	2.20	0.41
1:AA:320:A:H2'	1:AA:321:A:O4'	2.21	0.40
1:AA:718:A:C5'	11:AK:119:ASN:HD21	2.34	0.40
1:AA:723:U:P	21:AU:49:LYS:HZ3	2.43	0.40
1:AA:883:C:O2'	1:AA:884:U:H5'	2.21	0.40
3:AC:118:ASP:HA	3:AC:121:THR:HG22	2.04	0.40
4:AD:152:GLN:O	4:AD:153:SER:C	2.63	0.40
6:AF:38:ARG:O	6:AF:62:MET:O	2.39	0.40
28:BA:328:U:H2'	28:BA:329:G:OP1	2.21	0.40
28:BA:476:G:H4'	28:BA:502:A:N1	2.36	0.40
28:BA:1022:G:N2	28:BA:1142:A:C2	2.89	0.40
32:BE:42:GLY:O	32:BE:89:PRO:HA	2.22	0.40
40:BN:66:ALA:O	40:BN:69:ARG:O	2.38	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:370:C:HO2'	1:AA:482:A:C4'	2.34	0.40
1:AA:451:A:C6	1:AA:481:G:N7	2.88	0.40
1:AA:662:U:H2'	1:AA:663:A:C8	2.56	0.40
1:AA:979:C:C6	1:AA:1318:A:N1	2.89	0.40
9:AI:75:GLN:O	9:AI:79:ILE:HG12	2.21	0.40
28:BA:2099:U:H2'	28:BA:2100:G:O4'	2.22	0.40
1:AA:96:U:H2'	1:AA:97:G:C8	2.56	0.40
1:AA:458:U:O2	1:AA:458:U:H2'	2.20	0.40
1:AA:922:G:H2'	1:AA:923:A:C8	2.56	0.40
1:AA:1118:U:H1'	1:AA:1179:A:C5	2.56	0.40
2:AB:28:LYS:N	2:AB:29:PRO:HD2	2.37	0.40
20:AT:39:ILE:HD12	20:AT:83:ILE:CG1	2.52	0.40
28:BA:994:C:OP2	43:BQ:54:LYS:NZ	2.54	0.40
28:BA:1131:G:OP1	36:BJ:82:GLY:HA2	2.21	0.40
28:BA:2191:A:H2'	28:BA:2192:U:C6	2.56	0.40
30:BC:91:ILE:HD12	30:BC:103:TYR:CD1	2.56	0.40
33:BF:49:LEU:HD12	33:BF:49:LEU:C	2.47	0.40
35:BH:2:GLN:O	35:BH:19:VAL:O	2.40	0.40
46:BT:54:GLU:OE1	46:BT:54:GLU:N	2.54	0.40
1:AA:456:A:H2'	1:AA:457:G:C1'	2.51	0.40
1:AA:537:G:C4	1:AA:538:G:C8	3.09	0.40
2:AB:136:MET:HA	2:AB:139:ARG:HG2	2.03	0.40
19:AS:9:PRO:HB3	19:AS:39:THR:HG21	2.03	0.40
27:B5:12:ILE:HD13	27:B5:28:VAL:CG2	2.51	0.40
27:B5:41:HIS:O	27:B5:42:PRO:C	2.63	0.40
28:BA:547:A:H3'	28:BA:548:G:H5'	2.03	0.40
28:BA:580:U:O3'	43:BQ:31:VAL:HG13	2.20	0.40
28:BA:2190:G:O2'	28:BA:2191:A:H5'	2.22	0.40
31:BD:184:ARG:NH1	42:BP:11:GLU:OE2	2.42	0.40
1:AA:1078:U:C2'	1:AA:1079:G:O5'	2.70	0.40
14:AN:25:ALA:HA	14:AN:28:LYS:HE2	2.03	0.40
21:AU:10:GLU:N	21:AU:11:PRO:CD	2.85	0.40
22:B0:25:VAL:HG23	22:B0:26:THR:N	2.37	0.40
28:BA:974:G:H8	28:BA:990:A:H62	1.66	0.40
28:BA:1169:A:H2'	28:BA:1170:C:O4'	2.22	0.40
28:BA:1266:G:O2'	28:BA:2012:G:O6	2.36	0.40
28:BA:1475:G:O2'	28:BA:1514:G:O6	2.38	0.40
32:BE:4:VAL:HG13	32:BE:4:VAL:O	2.20	0.40
40:BN:22:ARG:HG3	40:BN:70:THR:HA	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	AB	216/240 (90%)	189 (88%)	24 (11%)	3 (1%)	9 24
3	AC	204/233 (88%)	183 (90%)	20 (10%)	1 (0%)	25 49
4	AD	203/206 (98%)	175 (86%)	23 (11%)	5 (2%)	4 12
5	AE	148/167 (89%)	125 (84%)	23 (16%)	0	100 100
6	AF	98/135 (73%)	83 (85%)	14 (14%)	1 (1%)	13 33
7	AG	149/179 (83%)	143 (96%)	6 (4%)	0	100 100
8	AH	127/130 (98%)	121 (95%)	6 (5%)	0	100 100
9	AI	125/130 (96%)	103 (82%)	19 (15%)	3 (2%)	5 13
10	AJ	96/103 (93%)	86 (90%)	6 (6%)	4 (4%)	2 5
11	AK	115/129 (89%)	102 (89%)	13 (11%)	0	100 100
12	AL	121/124 (98%)	103 (85%)	16 (13%)	2 (2%)	7 20
13	AM	112/118 (95%)	99 (88%)	12 (11%)	1 (1%)	14 35
14	AN	92/101 (91%)	79 (86%)	12 (13%)	1 (1%)	12 30
15	AO	86/89 (97%)	79 (92%)	6 (7%)	1 (1%)	11 28
16	AP	80/82 (98%)	68 (85%)	11 (14%)	1 (1%)	10 26
17	AQ	78/84 (93%)	66 (85%)	12 (15%)	0	100 100
18	AR	53/75 (71%)	51 (96%)	2 (4%)	0	100 100
19	AS	77/92 (84%)	69 (90%)	8 (10%)	0	100 100
20	AT	83/87 (95%)	77 (93%)	6 (7%)	0	100 100
21	AU	49/71 (69%)	35 (71%)	13 (26%)	1 (2%)	6 16
22	B0	54/57 (95%)	50 (93%)	4 (7%)	0	100 100
23	B1	48/55 (87%)	44 (92%)	4 (8%)	0	100 100
24	B2	44/46 (96%)	42 (96%)	2 (4%)	0	100 100
25	B3	62/65 (95%)	59 (95%)	3 (5%)	0	100 100
26	B4	36/38 (95%)	34 (94%)	2 (6%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
27	B5	56/70 (80%)	49 (88%)	7 (12%)	0	100 100
30	BC	269/273 (98%)	256 (95%)	11 (4%)	2 (1%)	19 42
31	BD	207/209 (99%)	195 (94%)	12 (6%)	0	100 100
32	BE	199/201 (99%)	191 (96%)	7 (4%)	1 (0%)	25 49
33	BF	175/179 (98%)	161 (92%)	14 (8%)	0	100 100
34	BG	174/177 (98%)	169 (97%)	5 (3%)	0	100 100
35	BH	45/149 (30%)	35 (78%)	8 (18%)	2 (4%)	2 4
36	BJ	140/142 (99%)	136 (97%)	4 (3%)	0	100 100
37	BK	120/123 (98%)	108 (90%)	11 (9%)	1 (1%)	16 38
38	BL	141/144 (98%)	123 (87%)	15 (11%)	3 (2%)	5 15
39	BM	134/136 (98%)	124 (92%)	10 (8%)	0	100 100
40	BN	118/127 (93%)	107 (91%)	11 (9%)	0	100 100
41	BO	114/117 (97%)	109 (96%)	5 (4%)	0	100 100
42	BP	112/115 (97%)	101 (90%)	11 (10%)	0	100 100
43	BQ	115/118 (98%)	114 (99%)	1 (1%)	0	100 100
44	BR	101/103 (98%)	86 (85%)	15 (15%)	0	100 100
45	BS	108/110 (98%)	98 (91%)	9 (8%)	1 (1%)	14 35
46	BT	91/100 (91%)	86 (94%)	4 (4%)	1 (1%)	12 30
47	BU	100/104 (96%)	89 (89%)	11 (11%)	0	100 100
48	BV	92/94 (98%)	89 (97%)	3 (3%)	0	100 100
49	BW	73/85 (86%)	70 (96%)	3 (4%)	0	100 100
50	BX	75/78 (96%)	74 (99%)	1 (1%)	0	100 100
51	BY	61/63 (97%)	57 (93%)	4 (7%)	0	100 100
52	BZ	56/59 (95%)	55 (98%)	1 (2%)	0	100 100
All	All	5432/5912 (92%)	4947 (91%)	450 (8%)	35 (1%)	24 45

All (35) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	AB	34	ALA
2	AB	76	ALA
4	AD	153	SER
9	AI	55	VAL
10	AJ	35	GLN

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Mol	Chain	Res	Type
10	AJ	36	VAL
12	AL	107	VAL
12	AL	108	LYS
21	AU	40	LYS
35	BH	3	VAL
38	BL	82	LEU
38	BL	111	ILE
6	AF	91	ARG
10	AJ	57	VAL
13	AM	4	ILE
15	AO	88	ARG
35	BH	9	VAL
37	BK	35	VAL
38	BL	29	LYS
46	BT	38	ALA
2	AB	88	ASP
4	AD	183	LYS
9	AI	58	VAL
16	AP	61	VAL
4	AD	28	ILE
14	AN	92	GLU
30	BC	240	PHE
3	AC	66	VAL
10	AJ	42	LEU
4	AD	174	ASP
9	AI	121	ALA
32	BE	83	VAL
45	BS	29	VAL
4	AD	34	ILE
30	BC	10	SER

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
2	AB	180/198 (91%)	174 (97%)	6 (3%)	33 62

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	AC	170/190 (90%)	170 (100%)	0	100	100
4	AD	172/173 (99%)	162 (94%)	10 (6%)	17	39
5	AE	113/126 (90%)	113 (100%)	0	100	100
6	AF	87/116 (75%)	87 (100%)	0	100	100
7	AG	124/147 (84%)	121 (98%)	3 (2%)	44	73
8	AH	104/105 (99%)	102 (98%)	2 (2%)	52	79
9	AI	105/107 (98%)	103 (98%)	2 (2%)	52	79
10	AJ	86/90 (96%)	86 (100%)	0	100	100
11	AK	90/99 (91%)	90 (100%)	0	100	100
12	AL	103/104 (99%)	95 (92%)	8 (8%)	10	26
13	AM	92/96 (96%)	91 (99%)	1 (1%)	70	87
14	AN	79/84 (94%)	79 (100%)	0	100	100
15	AO	75/77 (97%)	73 (97%)	2 (3%)	40	69
16	AP	65/65 (100%)	65 (100%)	0	100	100
17	AQ	74/78 (95%)	71 (96%)	3 (4%)	26	54
18	AR	48/65 (74%)	48 (100%)	0	100	100
19	AS	70/79 (89%)	68 (97%)	2 (3%)	37	67
20	AT	65/66 (98%)	63 (97%)	2 (3%)	35	64
21	AU	44/61 (72%)	44 (100%)	0	100	100
22	B0	47/48 (98%)	47 (100%)	0	100	100
23	B1	45/49 (92%)	43 (96%)	2 (4%)	24	51
24	B2	38/38 (100%)	38 (100%)	0	100	100
25	B3	51/52 (98%)	51 (100%)	0	100	100
26	B4	34/34 (100%)	34 (100%)	0	100	100
27	B5	55/62 (89%)	55 (100%)	0	100	100
30	BC	216/218 (99%)	215 (100%)	1 (0%)	86	95
31	BD	164/164 (100%)	161 (98%)	3 (2%)	54	80
32	BE	165/165 (100%)	165 (100%)	0	100	100
33	BF	148/150 (99%)	148 (100%)	0	100	100
34	BG	137/138 (99%)	137 (100%)	0	100	100
35	BH	38/114 (33%)	38 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
36	BJ	116/116 (100%)	115 (99%)	1 (1%)	75 90
37	BK	103/104 (99%)	103 (100%)	0	100 100
38	BL	102/103 (99%)	102 (100%)	0	100 100
39	BM	109/109 (100%)	109 (100%)	0	100 100
40	BN	100/103 (97%)	99 (99%)	1 (1%)	73 89
41	BO	86/87 (99%)	84 (98%)	2 (2%)	45 74
42	BP	99/100 (99%)	97 (98%)	2 (2%)	50 78
43	BQ	89/90 (99%)	89 (100%)	0	100 100
44	BR	84/84 (100%)	84 (100%)	0	100 100
45	BS	93/93 (100%)	93 (100%)	0	100 100
46	BT	80/84 (95%)	78 (98%)	2 (2%)	42 72
47	BU	83/85 (98%)	83 (100%)	0	100 100
48	BV	78/78 (100%)	78 (100%)	0	100 100
49	BW	56/63 (89%)	56 (100%)	0	100 100
50	BX	67/68 (98%)	67 (100%)	0	100 100
51	BY	55/55 (100%)	55 (100%)	0	100 100
52	BZ	48/49 (98%)	46 (96%)	2 (4%)	25 53
All	All	4532/4829 (94%)	4475 (99%)	57 (1%)	64 85

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	AB	21	ARG
2	AB	73	LYS
2	AB	77	SER
2	AB	78	GLU
2	AB	81	LYS
2	AB	85	LEU
4	AD	33	LYS
4	AD	110	THR
4	AD	153	SER
4	AD	154	ARG
4	AD	183	LYS
4	AD	184	ARG
4	AD	187	GLU
4	AD	190	ASP

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Mol	Chain	Res	Type
4	AD	192	SER
4	AD	194	ASP
7	AG	113	ASP
7	AG	114	LYS
7	AG	115	SER
8	AH	50	LYS
8	AH	52	GLU
9	AI	111	VAL
9	AI	114	LYS
12	AL	58	THR
12	AL	67	ILE
12	AL	74	LEU
12	AL	75	GLN
12	AL	104	CYS
12	AL	107	VAL
12	AL	108	LYS
12	AL	111	LYS
13	AM	22	ILE
15	AO	87	LEU
15	AO	89	ARG
17	AQ	5	ILE
17	AQ	6	ARG
17	AQ	7	THR
19	AS	11	ILE
19	AS	13	LEU
20	AT	69	LYS
20	AT	70	ASN
23	B1	28	ARG
23	B1	30	LYS
30	BC	100	GLU
31	BD	98	VAL
31	BD	100	LEU
31	BD	150	GLN
36	BJ	37	ARG
40	BN	89	SER
41	BO	31	THR
41	BO	116	GLN
42	BP	63	LYS
42	BP	65	SER
46	BT	1	MET
46	BT	4	GLU
52	BZ	4	THR

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Mol	Chain	Res	Type
52	BZ	5	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
2	AB	18	HIS
2	AB	39	HIS
2	AB	170	HIS
2	AB	177	ASN
4	AD	71	GLN
4	AD	131	ASN
4	AD	152	GLN
9	AI	37	GLN
11	AK	118	HIS
11	AK	119	ASN
16	AP	18	GLN
16	AP	63	GLN
17	AQ	9	GLN
20	AT	61	GLN
20	AT	70	ASN
27	B5	41	HIS
27	B5	61	ASN
30	BC	243	HIS
31	BD	42	ASN
31	BD	173	GLN
32	BE	165	HIS
35	BH	2	GLN
35	BH	20	ASN
36	BJ	67	ASN
41	BO	98	GLN
41	BO	116	GLN
42	BP	52	ASN
42	BP	66	ASN
43	BQ	44	GLN
43	BQ	72	ASN
48	BV	12	GLN
50	BX	34	HIS
50	BX	36	HIS

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1538/1539 (99%)	244 (15%)	14 (0%)
28	BA	2895/2903 (99%)	408 (14%)	19 (0%)
29	BB	117/120 (97%)	12 (10%)	1 (0%)
All	All	4550/4562 (99%)	664 (14%)	34 (0%)

All (664) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	7	A
1	AA	9	G
1	AA	22	G
1	AA	39	G
1	AA	47	C
1	AA	48	C
1	AA	51	A
1	AA	69	G
1	AA	71	A
1	AA	74	A
1	AA	83	C
1	AA	87	C
1	AA	94	G
1	AA	95	C
1	AA	97	G
1	AA	108	G
1	AA	116	A
1	AA	120	A
1	AA	121	U
1	AA	130	A
1	AA	131	A
1	AA	143	A
1	AA	144	G
1	AA	160	A
1	AA	182	A
1	AA	183	C
1	AA	189	A
1	AA	197	A
1	AA	206	C
1	AA	208	U
1	AA	209	U
1	AA	210	C
1	AA	211	G
1	AA	212	G
1	AA	226	G

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Mol	Chain	Res	Type
1	AA	240	G
1	AA	245	U
1	AA	247	G
1	AA	251	G
1	AA	266	G
1	AA	267	C
1	AA	275	G
1	AA	289	G
1	AA	321	A
1	AA	328	C
1	AA	329	A
1	AA	330	C
1	AA	332	G
1	AA	347	G
1	AA	352	C
1	AA	354	G
1	AA	367	U
1	AA	372	C
1	AA	373	A
1	AA	397	A
1	AA	405	U
1	AA	406	G
1	AA	408	A
1	AA	409	U
1	AA	411	A
1	AA	412	A
1	AA	413	G
1	AA	414	A
1	AA	419	C
1	AA	420	U
1	AA	421	U
1	AA	422	C
1	AA	423	G
1	AA	424	G
1	AA	428	G
1	AA	429	U
1	AA	431	A
1	AA	440	C
1	AA	441	A
1	AA	445	G
1	AA	448	A
1	AA	449	G

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Mol	Chain	Res	Type
1	AA	450	G
1	AA	451	A
1	AA	452	A
1	AA	453	G
1	AA	457	G
1	AA	458	U
1	AA	463	U
1	AA	465	A
1	AA	467	U
1	AA	468	A
1	AA	472	U
1	AA	480	U
1	AA	481	G
1	AA	482	A
1	AA	483	C
1	AA	484	G
1	AA	485	U
1	AA	486	U
1	AA	487	A
1	AA	488	C
1	AA	495	A
1	AA	497	G
1	AA	499	A
1	AA	500	G
1	AA	509	A
1	AA	511	C
1	AA	512	U
1	AA	518	C
1	AA	527	G
1	AA	531	U
1	AA	532	A
1	AA	537	G
1	AA	539	A
1	AA	542	G
1	AA	543	U
1	AA	547	A
1	AA	559	A
1	AA	564	C
1	AA	572	A
1	AA	573	A
1	AA	576	C
1	AA	577	G

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Mol	Chain	Res	Type
1	AA	581	G
1	AA	596	A
1	AA	616	G
1	AA	618	C
1	AA	619	U
1	AA	653	U
1	AA	665	A
1	AA	687	A
1	AA	695	A
1	AA	718	A
1	AA	721	G
1	AA	723	U
1	AA	724	G
1	AA	731	G
1	AA	734	G
1	AA	755	G
1	AA	777	A
1	AA	793	U
1	AA	794	A
1	AA	810	C
1	AA	815	A
1	AA	817	C
1	AA	828	U
1	AA	829	G
1	AA	841	C
1	AA	843	U
1	AA	844	G
1	AA	845	A
1	AA	846	G
1	AA	858	G
1	AA	885	G
1	AA	914	A
1	AA	922	G
1	AA	926	G
1	AA	934	C
1	AA	935	A
1	AA	960	U
1	AA	969	A
1	AA	971	G
1	AA	975	A
1	AA	976	G
1	AA	977	A

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Mol	Chain	Res	Type
1	AA	983	A
1	AA	989	U
1	AA	992	U
1	AA	993	G
1	AA	994	A
1	AA	1004	A
1	AA	1020	G
1	AA	1026	G
1	AA	1030	U
1	AA	1032	G
1	AA	1033	G
1	AA	1034	G
1	AA	1037	C
1	AA	1044	A
1	AA	1053	G
1	AA	1054	C
1	AA	1065	U
1	AA	1079	G
1	AA	1094	G
1	AA	1095	U
1	AA	1101	A
1	AA	1113	C
1	AA	1125	U
1	AA	1136	C
1	AA	1137	C
1	AA	1139	G
1	AA	1140	C
1	AA	1141	C
1	AA	1145	A
1	AA	1146	A
1	AA	1152	A
1	AA	1159	U
1	AA	1160	G
1	AA	1161	C
1	AA	1167	A
1	AA	1171	A
1	AA	1181	G
1	AA	1184	G
1	AA	1196	A
1	AA	1197	A
1	AA	1202	U
1	AA	1212	U

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Mol	Chain	Res	Type
1	AA	1213	A
1	AA	1227	A
1	AA	1229	A
1	AA	1238	A
1	AA	1240	U
1	AA	1241	G
1	AA	1258	G
1	AA	1260	G
1	AA	1280	A
1	AA	1286	U
1	AA	1287	A
1	AA	1293	C
1	AA	1299	A
1	AA	1302	C
1	AA	1305	G
1	AA	1313	U
1	AA	1317	C
1	AA	1318	A
1	AA	1320	C
1	AA	1322	C
1	AA	1337	G
1	AA	1363	A
1	AA	1364	U
1	AA	1370	G
1	AA	1378	C
1	AA	1397	C
1	AA	1398	A
1	AA	1432	G
1	AA	1440	U
1	AA	1441	A
1	AA	1446	A
1	AA	1487	G
1	AA	1492	A
1	AA	1497	G
1	AA	1506	U
1	AA	1517	G
1	AA	1529	G
1	AA	1530	G
1	AA	1535	C
1	AA	1536	C
1	AA	1539	C
28	BA	10	A

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Mol	Chain	Res	Type
28	BA	14	A
28	BA	26	G
28	BA	34	U
28	BA	46	G
28	BA	55	G
28	BA	58	G
28	BA	71	A
28	BA	74	A
28	BA	75	G
28	BA	83	A
28	BA	84	A
28	BA	96	C
28	BA	101	A
28	BA	118	A
28	BA	119	A
28	BA	120	U
28	BA	125	A
28	BA	138	U
28	BA	139	U
28	BA	140	C
28	BA	141	G
28	BA	143	C
28	BA	149	A
28	BA	162	U
28	BA	163	C
28	BA	166	U
28	BA	181	A
28	BA	196	A
28	BA	199	A
28	BA	215	G
28	BA	216	A
28	BA	222	A
28	BA	233	A
28	BA	248	G
28	BA	255	A
28	BA	266	G
28	BA	272	A
28	BA	276	U
28	BA	277	G
28	BA	278	A
28	BA	279	A
28	BA	281	C

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Mol	Chain	Res	Type
28	BA	285	G
28	BA	286	U
28	BA	309	A
28	BA	311	A
28	BA	329	G
28	BA	330	A
28	BA	359	G
28	BA	361	G
28	BA	362	A
28	BA	371	A
28	BA	372	G
28	BA	386	G
28	BA	396	G
28	BA	405	U
28	BA	411	G
28	BA	412	A
28	BA	424	G
28	BA	480	A
28	BA	481	G
28	BA	491	G
28	BA	502	A
28	BA	505	A
28	BA	509	C
28	BA	530	G
28	BA	532	A
28	BA	535	G
28	BA	546	U
28	BA	548	G
28	BA	549	G
28	BA	563	A
28	BA	573	U
28	BA	575	A
28	BA	586	A
28	BA	603	A
28	BA	615	U
28	BA	622	G
28	BA	627	A
28	BA	637	A
28	BA	645	C
28	BA	647	G
28	BA	654	A
28	BA	655	A

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Mol	Chain	Res	Type
28	BA	677	A
28	BA	686	U
28	BA	694	U
28	BA	695	G
28	BA	730	A
28	BA	738	G
28	BA	747	U
28	BA	764	A
28	BA	775	G
28	BA	776	G
28	BA	782	A
28	BA	784	G
28	BA	785	G
28	BA	805	G
28	BA	812	C
28	BA	819	A
28	BA	827	U
28	BA	828	U
28	BA	830	G
28	BA	844	A
28	BA	845	A
28	BA	846	U
28	BA	847	U
28	BA	858	G
28	BA	878	A
28	BA	883	G
28	BA	896	A
28	BA	897	C
28	BA	910	A
28	BA	914	G
28	BA	931	U
28	BA	941	A
28	BA	946	C
28	BA	961	C
28	BA	974	G
28	BA	983	A
28	BA	984	A
28	BA	985	C
28	BA	995	C
28	BA	996	A
28	BA	1012	U
28	BA	1013	C

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Mol	Chain	Res	Type
28	BA	1021	A
28	BA	1026	G
28	BA	1033	U
28	BA	1045	C
28	BA	1046	A
28	BA	1047	G
28	BA	1056	G
28	BA	1057	A
28	BA	1060	U
28	BA	1061	U
28	BA	1062	G
28	BA	1063	G
28	BA	1064	C
28	BA	1065	U
28	BA	1066	U
28	BA	1068	G
28	BA	1070	A
28	BA	1071	G
28	BA	1072	C
28	BA	1082	U
28	BA	1083	U
28	BA	1085	A
28	BA	1088	A
28	BA	1089	A
28	BA	1092	C
28	BA	1096	A
28	BA	1098	A
28	BA	1101	U
28	BA	1104	C
28	BA	1106	G
28	BA	1107	G
28	BA	1111	A
28	BA	1112	G
28	BA	1116	G
28	BA	1132	U
28	BA	1133	A
28	BA	1135	C
28	BA	1136	G
28	BA	1139	G
28	BA	1142	A
28	BA	1172	C
28	BA	1173	U

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Mol	Chain	Res	Type
28	BA	1174	U
28	BA	1175	A
28	BA	1176	U
28	BA	1179	G
28	BA	1180	U
28	BA	1212	G
28	BA	1236	G
28	BA	1238	G
28	BA	1241	A
28	BA	1250	G
28	BA	1253	A
28	BA	1256	G
28	BA	1266	G
28	BA	1271	G
28	BA	1272	A
28	BA	1273	U
28	BA	1300	G
28	BA	1301	A
28	BA	1345	C
28	BA	1352	U
28	BA	1365	A
28	BA	1368	G
28	BA	1379	U
28	BA	1383	A
28	BA	1384	A
28	BA	1395	A
28	BA	1416	G
28	BA	1428	C
28	BA	1452	G
28	BA	1456	G
28	BA	1460	U
28	BA	1482	G
28	BA	1483	G
28	BA	1493	C
28	BA	1494	A
28	BA	1504	A
28	BA	1508	A
28	BA	1509	A
28	BA	1510	G
28	BA	1515	A
28	BA	1533	C
28	BA	1535	A

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Mol	Chain	Res	Type
28	BA	1536	C
28	BA	1537	G
28	BA	1566	A
28	BA	1569	A
28	BA	1578	U
28	BA	1584	U
28	BA	1585	C
28	BA	1607	C
28	BA	1608	A
28	BA	1610	A
28	BA	1647	U
28	BA	1648	U
28	BA	1649	G
28	BA	1674	G
28	BA	1675	C
28	BA	1677	A
28	BA	1693	U
28	BA	1694	C
28	BA	1715	G
28	BA	1728	C
28	BA	1729	U
28	BA	1730	C
28	BA	1732	C
28	BA	1738	G
28	BA	1744	A
28	BA	1758	U
28	BA	1764	C
28	BA	1773	A
28	BA	1776	G
28	BA	1784	A
28	BA	1786	A
28	BA	1787	A
28	BA	1800	C
28	BA	1801	A
28	BA	1802	A
28	BA	1808	A
28	BA	1816	C
28	BA	1829	A
28	BA	1848	A
28	BA	1858	A
28	BA	1869	G
28	BA	1870	C

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Mol	Chain	Res	Type
28	BA	1871	A
28	BA	1872	A
28	BA	1903	G
28	BA	1906	G
28	BA	1913	A
28	BA	1914	C
28	BA	1919	A
28	BA	1927	A
28	BA	1929	G
28	BA	1930	G
28	BA	1937	A
28	BA	1944	U
28	BA	1955	U
28	BA	1965	C
28	BA	1967	C
28	BA	1970	A
28	BA	1971	U
28	BA	1972	G
28	BA	1991	U
28	BA	1993	U
28	BA	1997	C
28	BA	2022	U
28	BA	2023	C
28	BA	2027	G
28	BA	2031	A
28	BA	2033	A
28	BA	2036	C
28	BA	2043	C
28	BA	2052	A
28	BA	2055	C
28	BA	2056	G
28	BA	2060	A
28	BA	2061	G
28	BA	2062	A
28	BA	2069	G
28	BA	2100	G
28	BA	2102	G
28	BA	2110	G
28	BA	2111	U
28	BA	2112	G
28	BA	2113	U
28	BA	2114	A

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Mol	Chain	Res	Type
28	BA	2115	G
28	BA	2117	A
28	BA	2118	U
28	BA	2119	A
28	BA	2120	G
28	BA	2121	G
28	BA	2125	G
28	BA	2126	A
28	BA	2127	G
28	BA	2129	C
28	BA	2131	U
28	BA	2132	U
28	BA	2133	G
28	BA	2135	A
28	BA	2137	U
28	BA	2140	G
28	BA	2145	C
28	BA	2146	C
28	BA	2147	A
28	BA	2148	G
28	BA	2157	G
28	BA	2158	A
28	BA	2159	G
28	BA	2162	G
28	BA	2164	C
28	BA	2170	A
28	BA	2171	A
28	BA	2172	U
28	BA	2177	C
28	BA	2178	C
28	BA	2183	A
28	BA	2187	U
28	BA	2190	G
28	BA	2194	U
28	BA	2198	A
28	BA	2204	G
28	BA	2211	A
28	BA	2212	A
28	BA	2225	A
28	BA	2226	C
28	BA	2238	G
28	BA	2239	G

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Mol	Chain	Res	Type
28	BA	2250	G
28	BA	2278	A
28	BA	2283	C
28	BA	2287	A
28	BA	2288	A
28	BA	2297	A
28	BA	2305	U
28	BA	2309	A
28	BA	2311	A
28	BA	2322	A
28	BA	2325	G
28	BA	2327	A
28	BA	2333	A
28	BA	2335	A
28	BA	2347	C
28	BA	2361	G
28	BA	2383	G
28	BA	2385	C
28	BA	2402	U
28	BA	2406	A
28	BA	2407	A
28	BA	2423	U
28	BA	2425	A
28	BA	2428	G
28	BA	2429	G
28	BA	2430	A
28	BA	2435	A
28	BA	2441	U
28	BA	2448	A
28	BA	2459	A
28	BA	2475	C
28	BA	2476	A
28	BA	2491	U
28	BA	2502	G
28	BA	2505	G
28	BA	2507	C
28	BA	2518	A
28	BA	2520	C
28	BA	2529	G
28	BA	2547	A
28	BA	2554	U
28	BA	2566	A

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Mol	Chain	Res	Type
28	BA	2567	G
28	BA	2582	G
28	BA	2602	A
28	BA	2609	U
28	BA	2613	U
28	BA	2615	U
28	BA	2629	U
28	BA	2630	G
28	BA	2663	G
28	BA	2684	U
28	BA	2689	U
28	BA	2690	U
28	BA	2714	G
28	BA	2726	A
28	BA	2733	A
28	BA	2748	A
28	BA	2765	A
28	BA	2778	A
28	BA	2780	G
28	BA	2794	C
28	BA	2807	U
28	BA	2820	A
28	BA	2867	G
28	BA	2871	U
28	BA	2873	A
28	BA	2880	C
28	BA	2884	U
28	BA	2887	A
28	BA	2903	U
29	BB	15	A
29	BB	35	C
29	BB	42	C
29	BB	44	G
29	BB	45	A
29	BB	56	G
29	BB	88	C
29	BB	89	U
29	BB	90	C
29	BB	91	C
29	BB	99	A
29	BB	109	A

All (34) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	AA	96	U
1	AA	115	G
1	AA	411	A
1	AA	428	G
1	AA	451	A
1	AA	480	U
1	AA	481	G
1	AA	484	G
1	AA	575	G
1	AA	1078	U
1	AA	1145	A
1	AA	1201	A
1	AA	1317	C
1	AA	1397	C
28	BA	25	U
28	BA	138	U
28	BA	271	G
28	BA	361	G
28	BA	404	A
28	BA	479	A
28	BA	784	G
28	BA	846	U
28	BA	984	A
28	BA	1084	A
28	BA	1095	A
28	BA	1240	U
28	BA	1583	A
28	BA	1847	A
28	BA	1913	A
28	BA	2109	U
28	BA	2147	A
28	BA	2286	G
28	BA	2308	G
29	BB	44	G

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 313 ligands modelled in this entry, 311 are monoatomic - leaving 2 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
54	84G	AA	1694	-	39,40,40	1.83	8 (20%)	48,57,57	1.18	5 (10%)
54	84G	AA	1695	-	39,40,40	0.55	1 (2%)	48,57,57	1.05	3 (6%)

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
54	84G	AA	1694	-	-	3/23/76/76	0/3/3/3
54	84G	AA	1695	-	-	3/23/76/76	0/3/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
54	AA	1694	84G	C3-N1	6.55	1.48	1.34
54	AA	1694	84G	C21-C20	-3.85	1.48	1.53
54	AA	1694	84G	O6-C16	3.60	1.51	1.41
54	AA	1694	84G	C11-C12	-3.10	1.45	1.52
54	AA	1694	84G	O1-C3	-3.03	1.17	1.23
54	AA	1694	84G	C19-C20	-2.82	1.50	1.53
54	AA	1694	84G	C20-N5	2.48	1.51	1.47
54	AA	1694	84G	O3-C9	2.16	1.47	1.44
54	AA	1695	84G	C2-C3	-2.10	1.50	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
54	AA	1694	84G	C-C1-C2	-3.00	108.42	112.52
54	AA	1694	84G	C5-C4-N1	-2.74	106.58	110.78

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
54	AA	1695	84G	C-C1-C2	-2.52	109.07	112.52
54	AA	1695	84G	C4-N1-C3	-2.46	118.97	123.25
54	AA	1694	84G	C4-N1-C3	-2.16	119.50	123.25
54	AA	1695	84G	C17-C19-C20	-2.15	108.29	110.67
54	AA	1694	84G	C11-C9-C10	-2.13	108.77	112.83
54	AA	1694	84G	C7-C14-C15	2.13	113.42	109.11

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
54	AA	1694	84G	N3-C10-C9-O3
54	AA	1695	84G	C14-C7-O2-C8
54	AA	1694	84G	O6-C17-C18-O7
54	AA	1694	84G	C19-C17-C18-O7
54	AA	1695	84G	N-C-C1-C2
54	AA	1695	84G	C6-C7-O2-C8

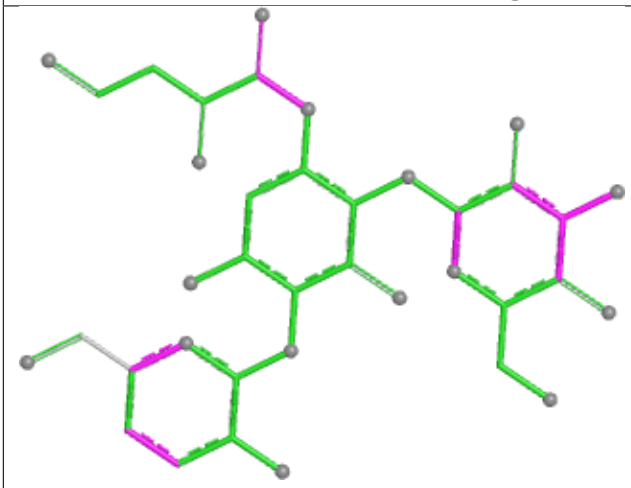
There are no ring outliers.

1 monomer is involved in 3 short contacts:

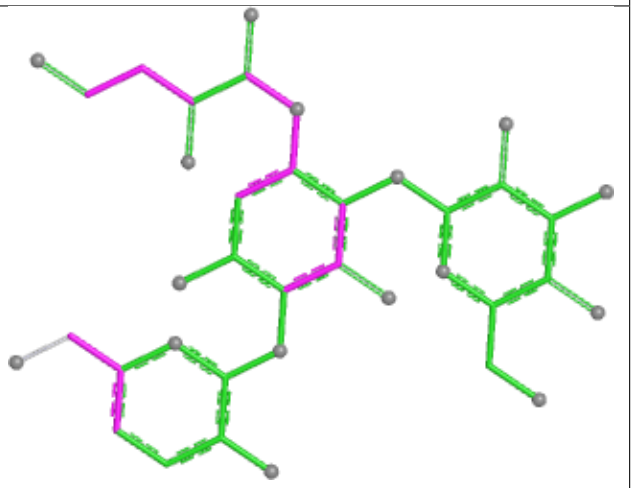
Mol	Chain	Res	Type	Clashes	Symm-Clashes
54	AA	1694	84G	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

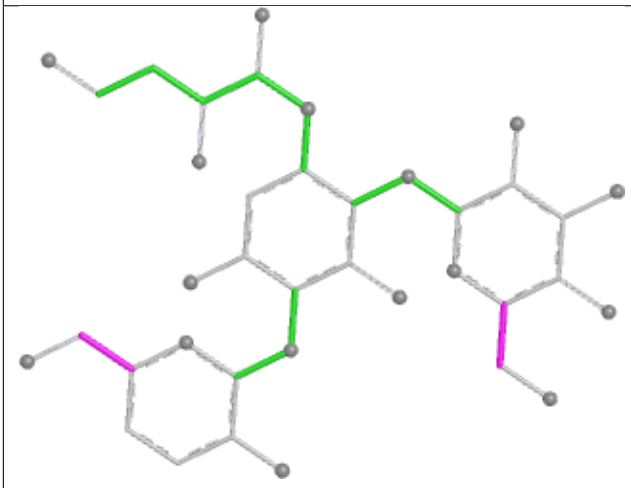
Ligand 84G AA 1694



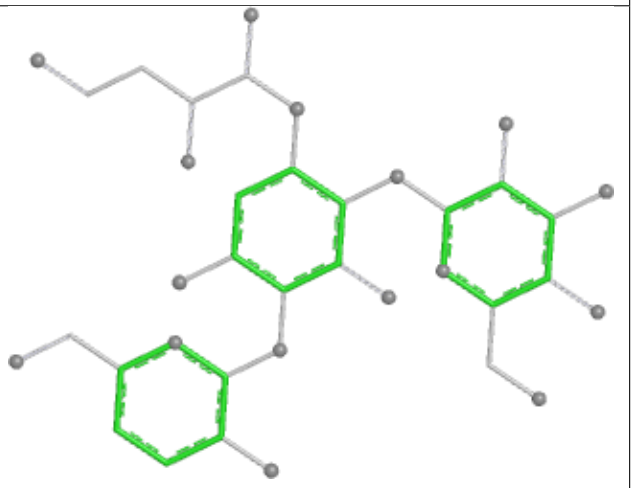
Bond lengths



Bond angles

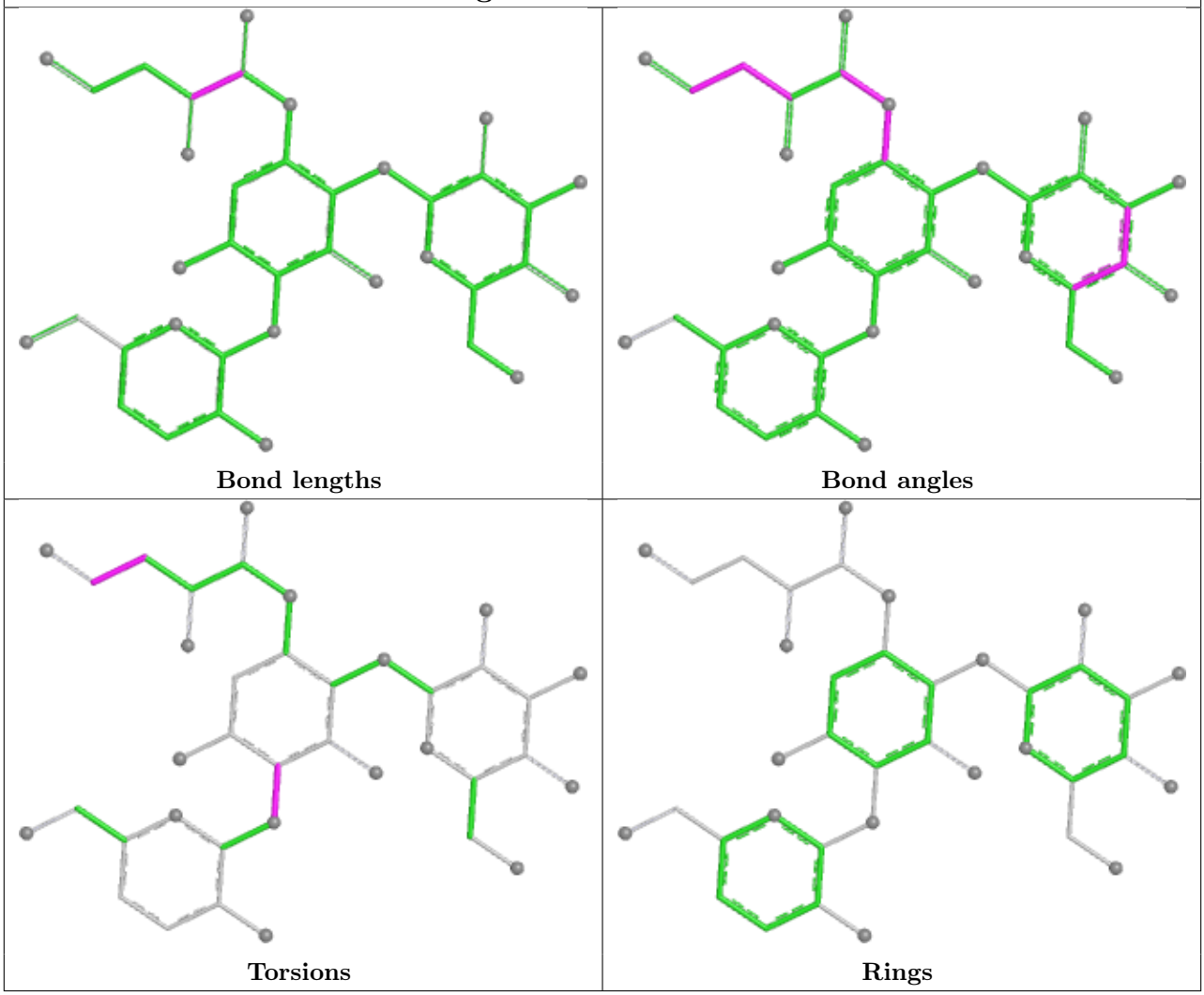


Torsions



Rings

Ligand 84G AA 1695



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

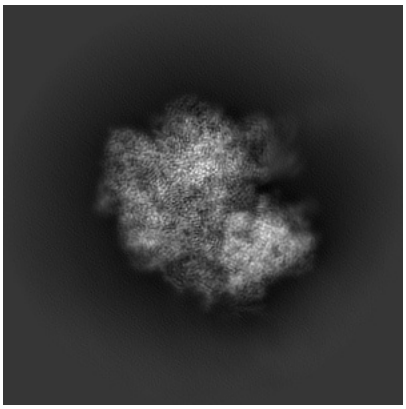
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44193. These allow visual inspection of the internal detail of the map and identification of artifacts.

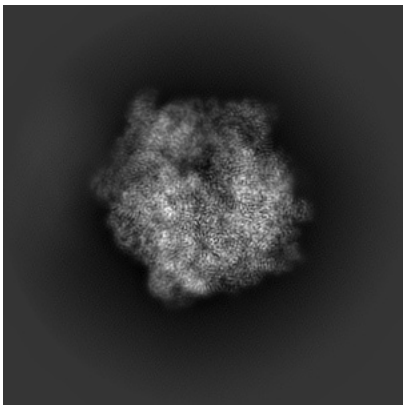
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

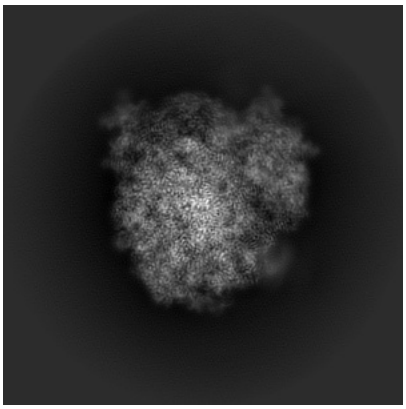
6.1.1 Primary map



X

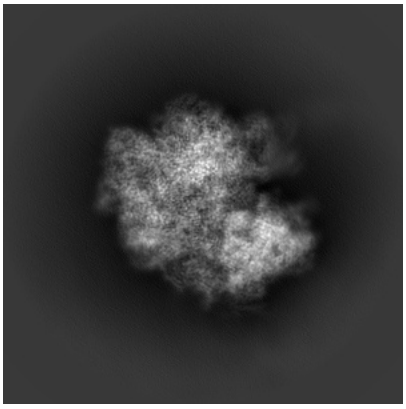


Y

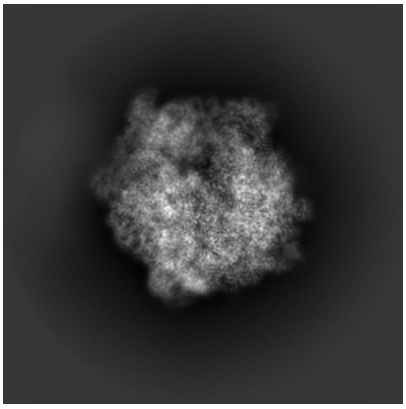


Z

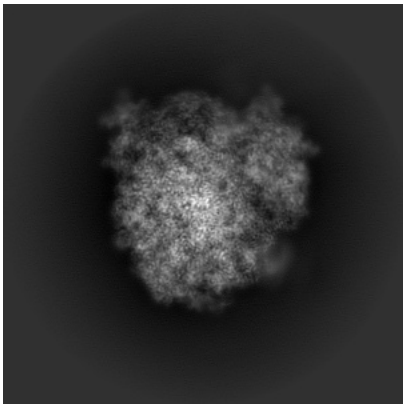
6.1.2 Raw map



X



Y

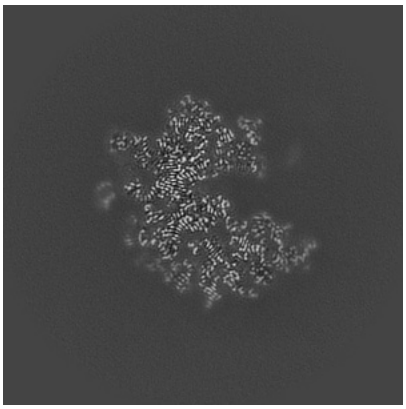


Z

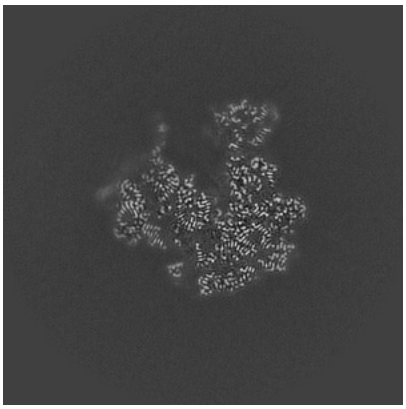
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

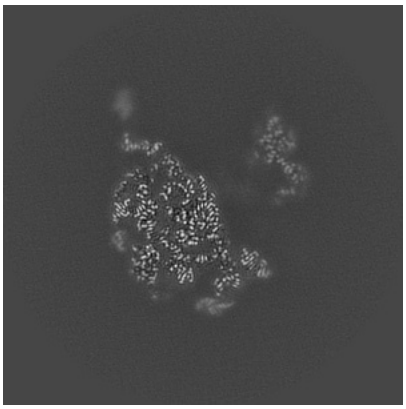
6.2.1 Primary map



X Index: 200

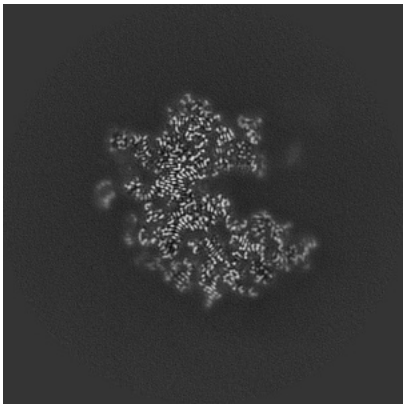


Y Index: 200

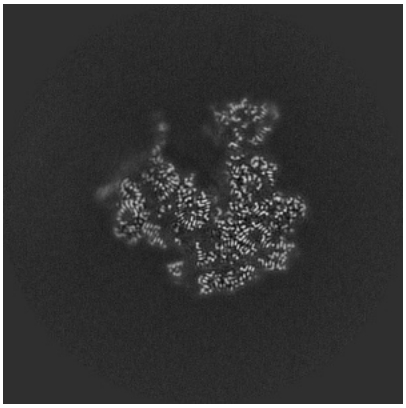


Z Index: 200

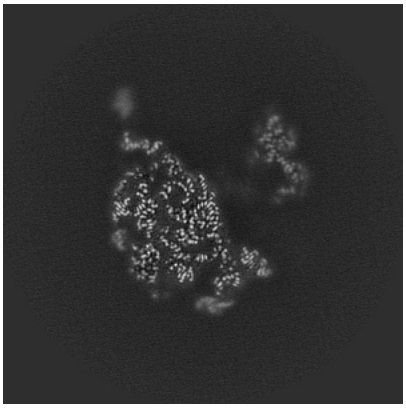
6.2.2 Raw map



X Index: 200



Y Index: 200

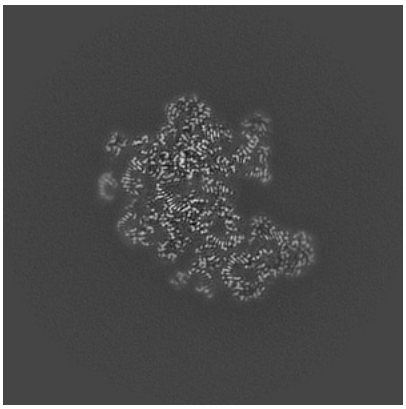


Z Index: 200

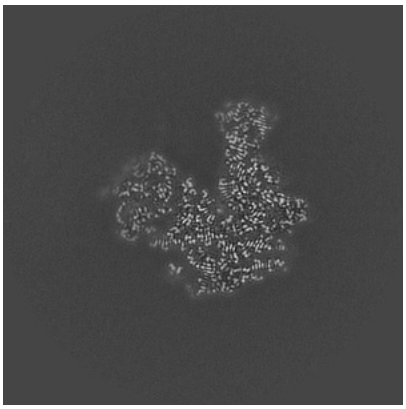
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

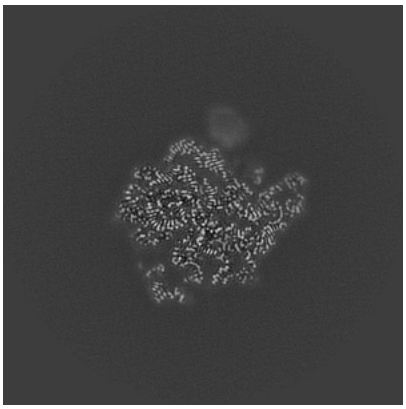
6.3.1 Primary map



X Index: 190

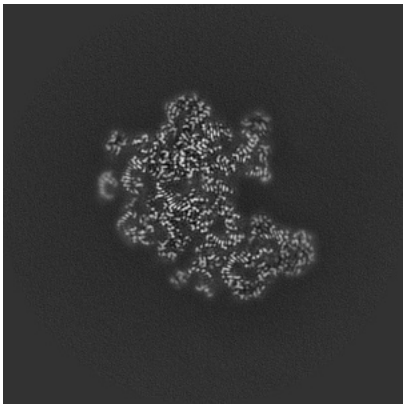


Y Index: 196

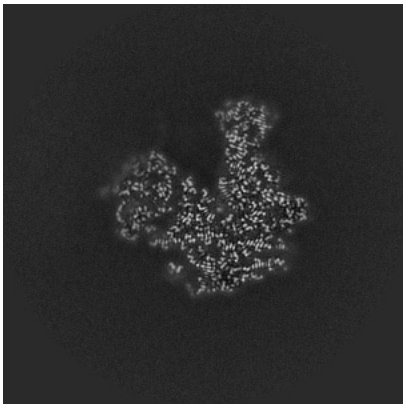


Z Index: 234

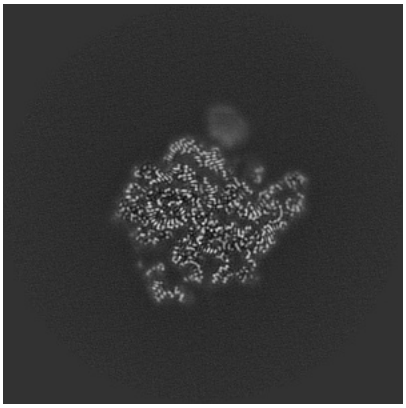
6.3.2 Raw map



X Index: 190



Y Index: 196

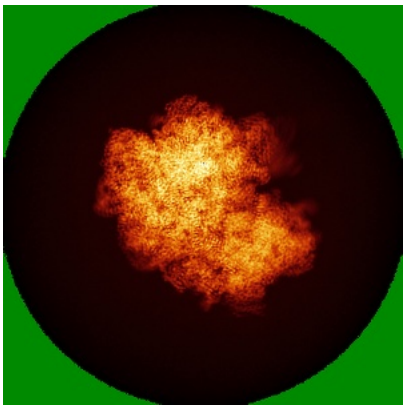


Z Index: 234

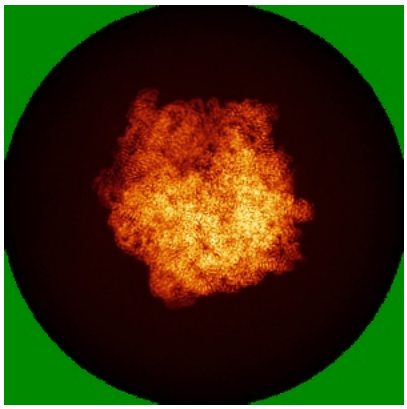
The images above show the largest variance slices of the map in three orthogonal directions.

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

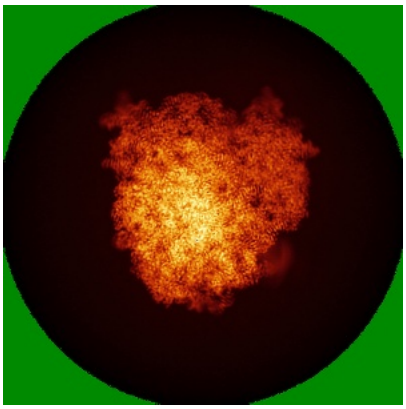
6.4.1 Primary map



X

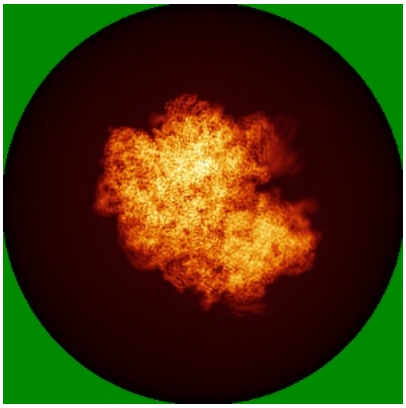


Y

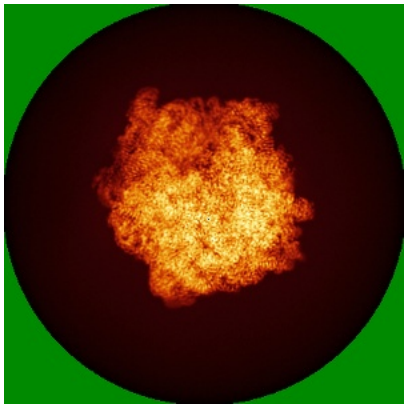


Z

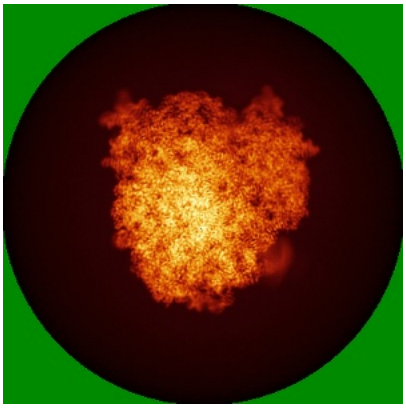
6.4.2 Raw map



X



Y

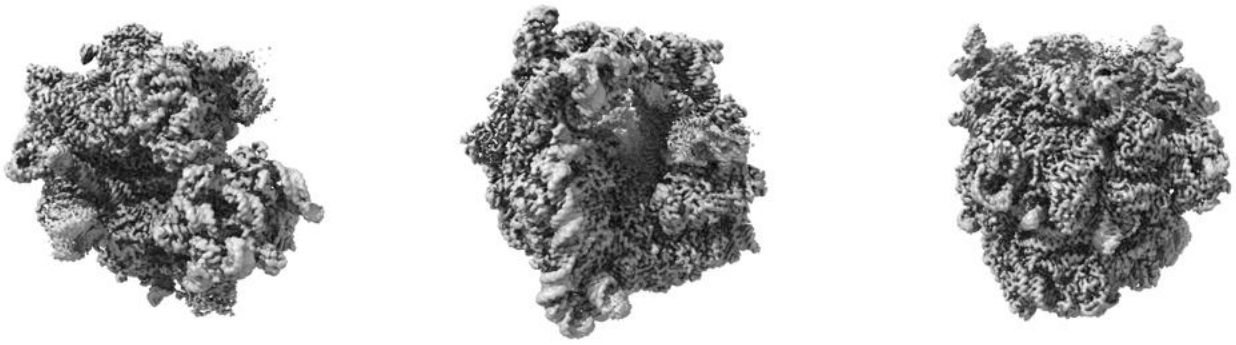


Z

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

6.5 Orthogonal surface views (i)

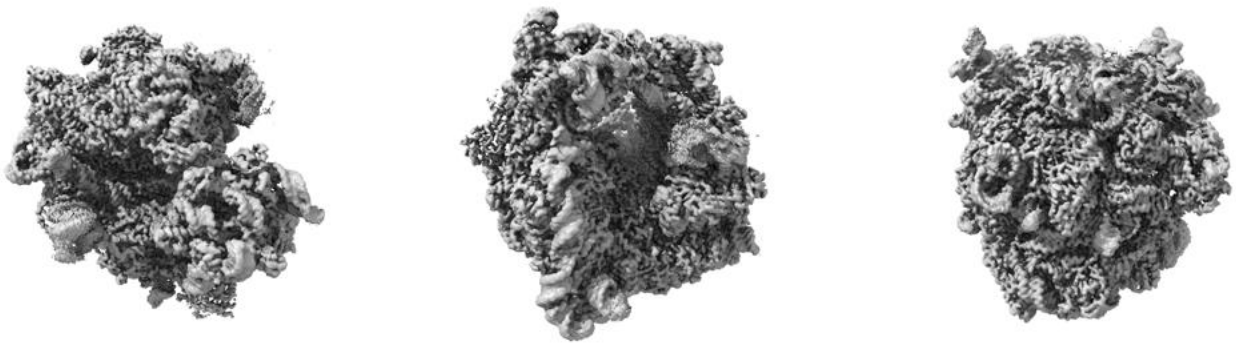
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 2.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

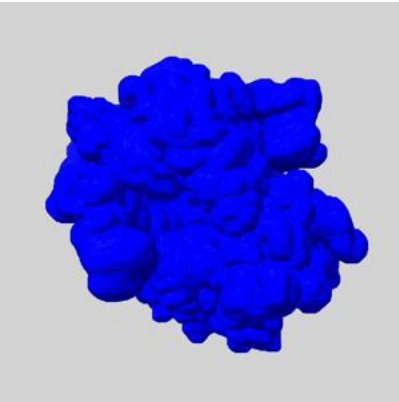
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

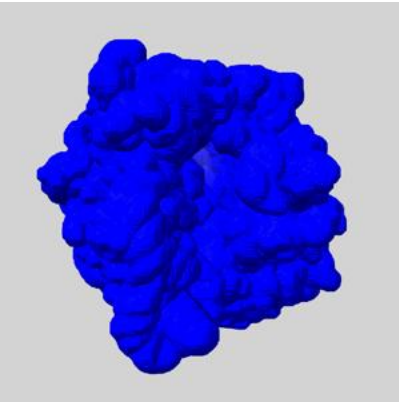
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

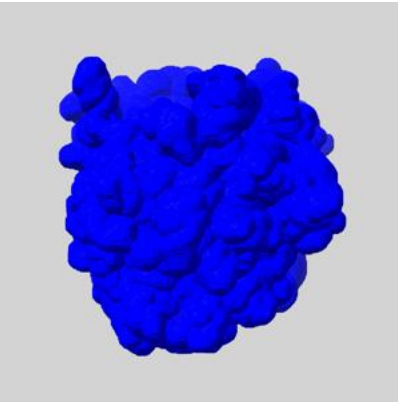
6.6.1 emd_44193_msk_1.map (i)



X



Y

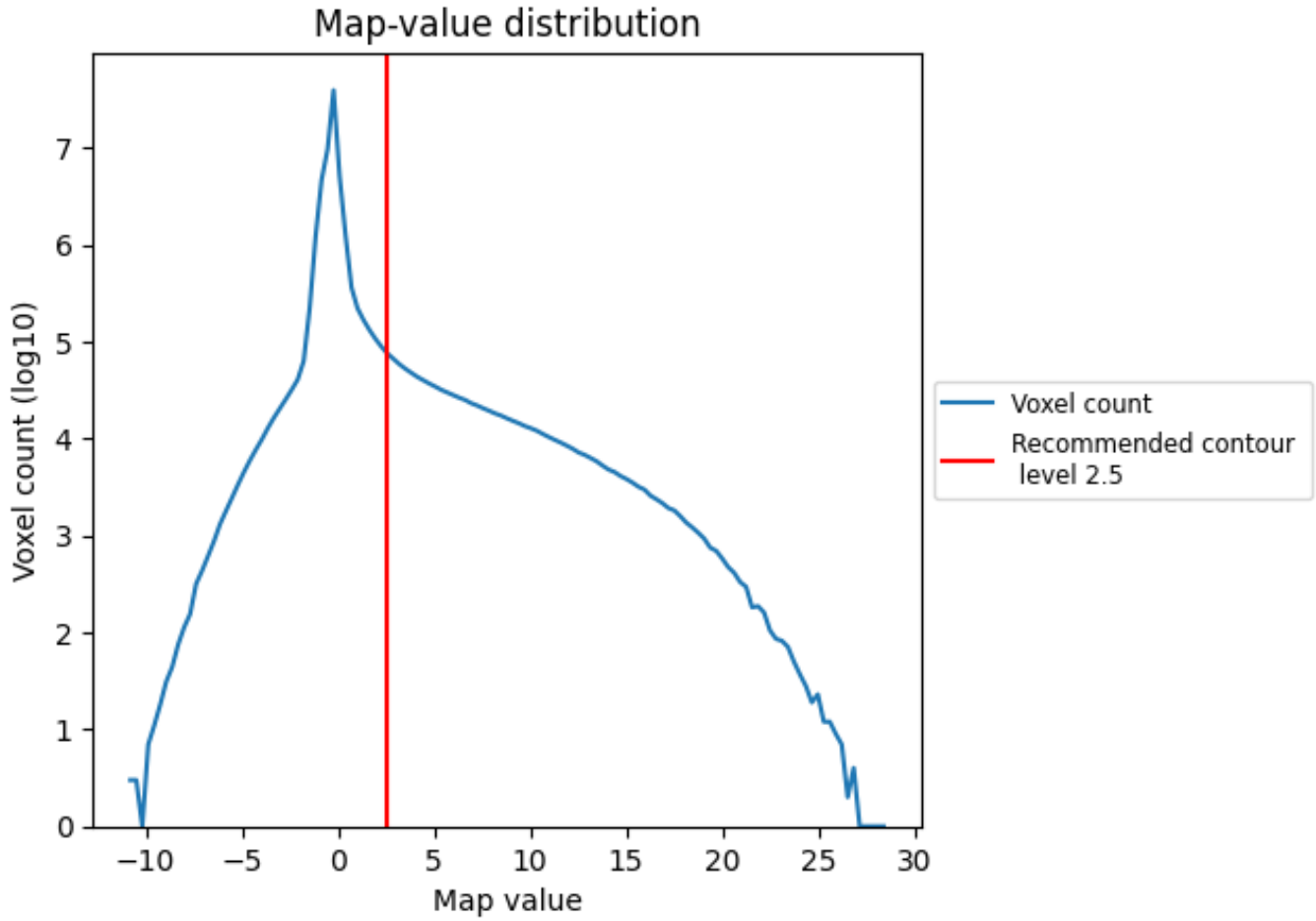


Z

7 Map analysis

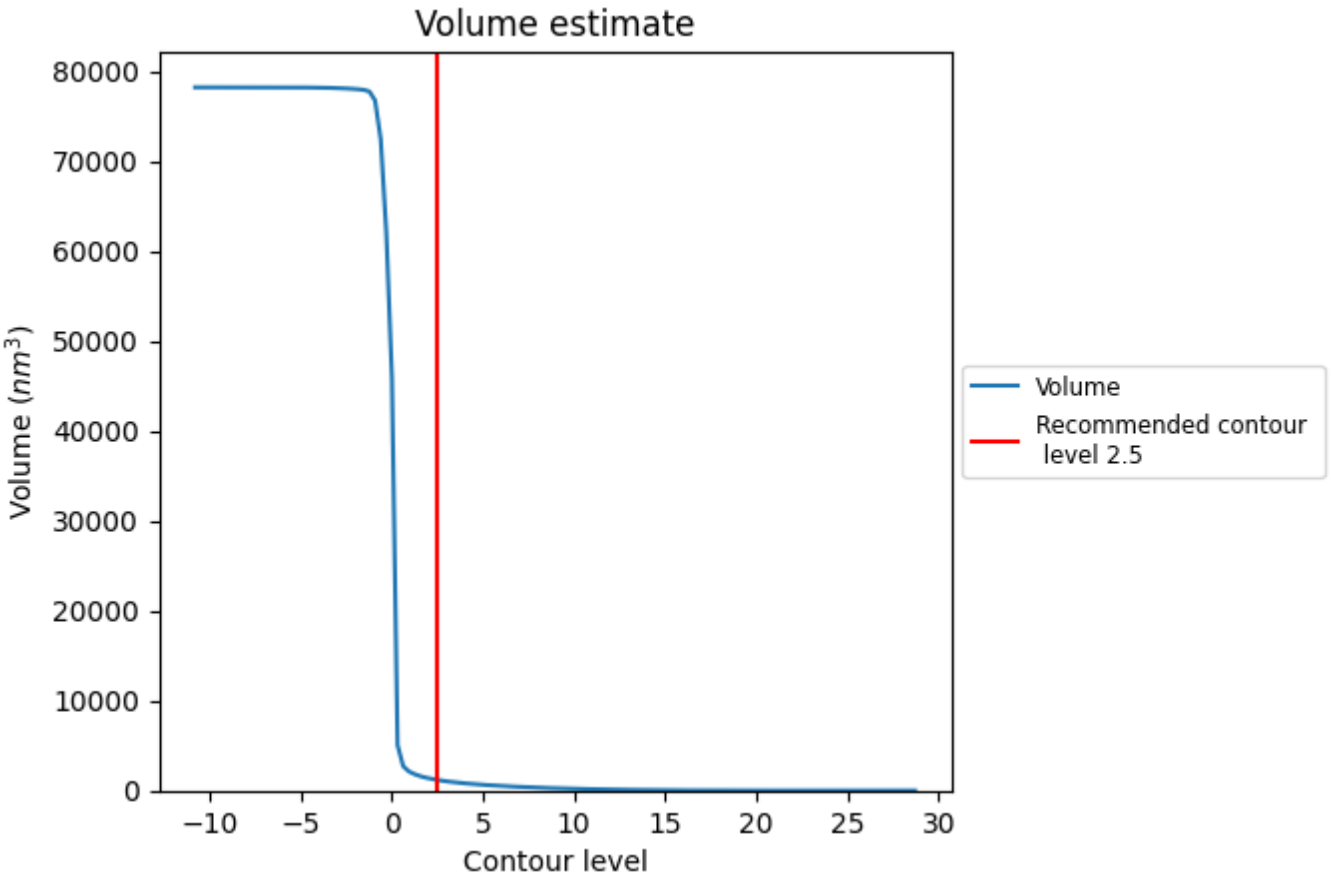
This section contains the results of statistical analysis of the map.

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.

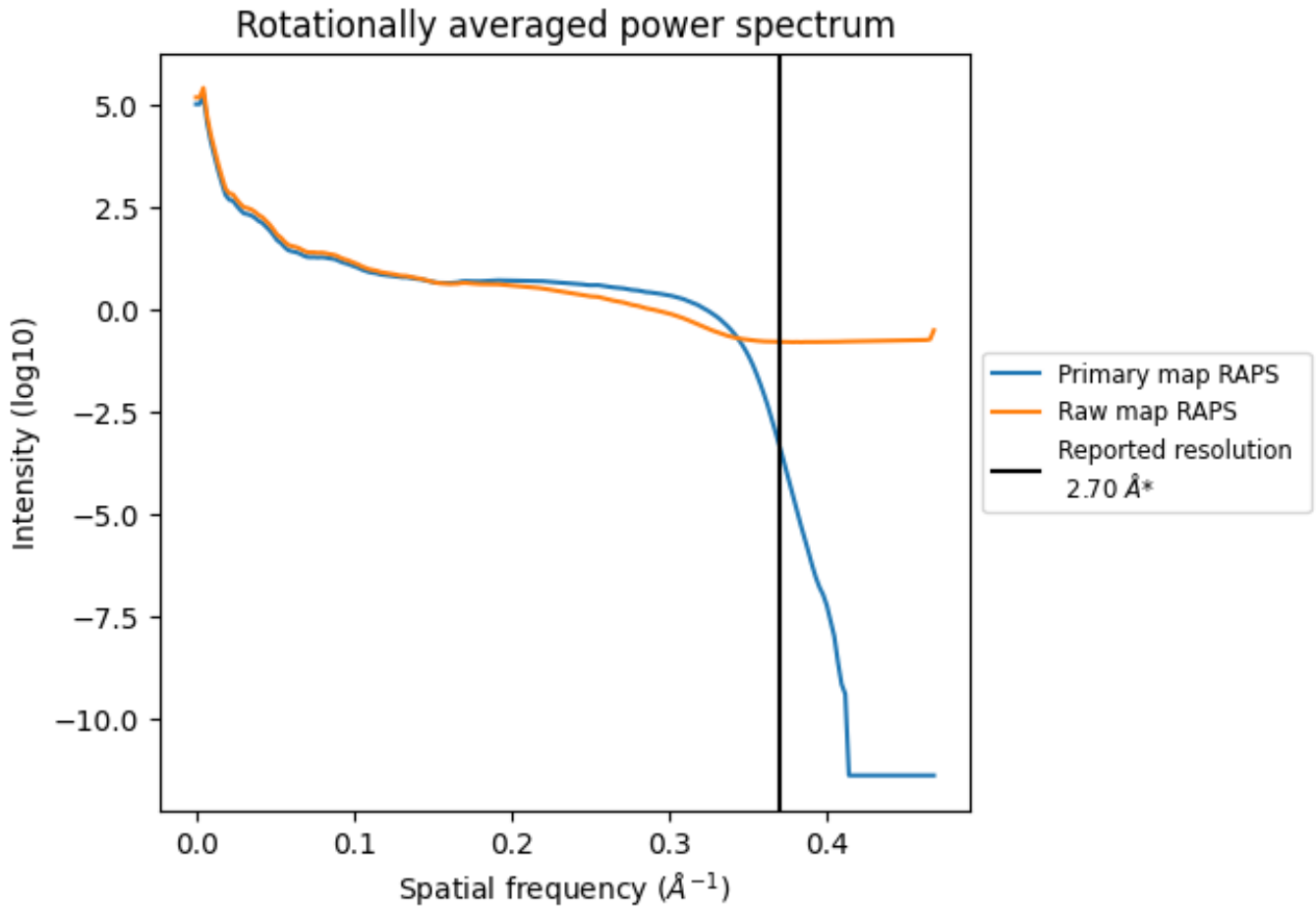
7.2 Volume estimate



The volume at the recommended contour level is 1174 nm^3; this corresponds to an approximate mass of 1060 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)

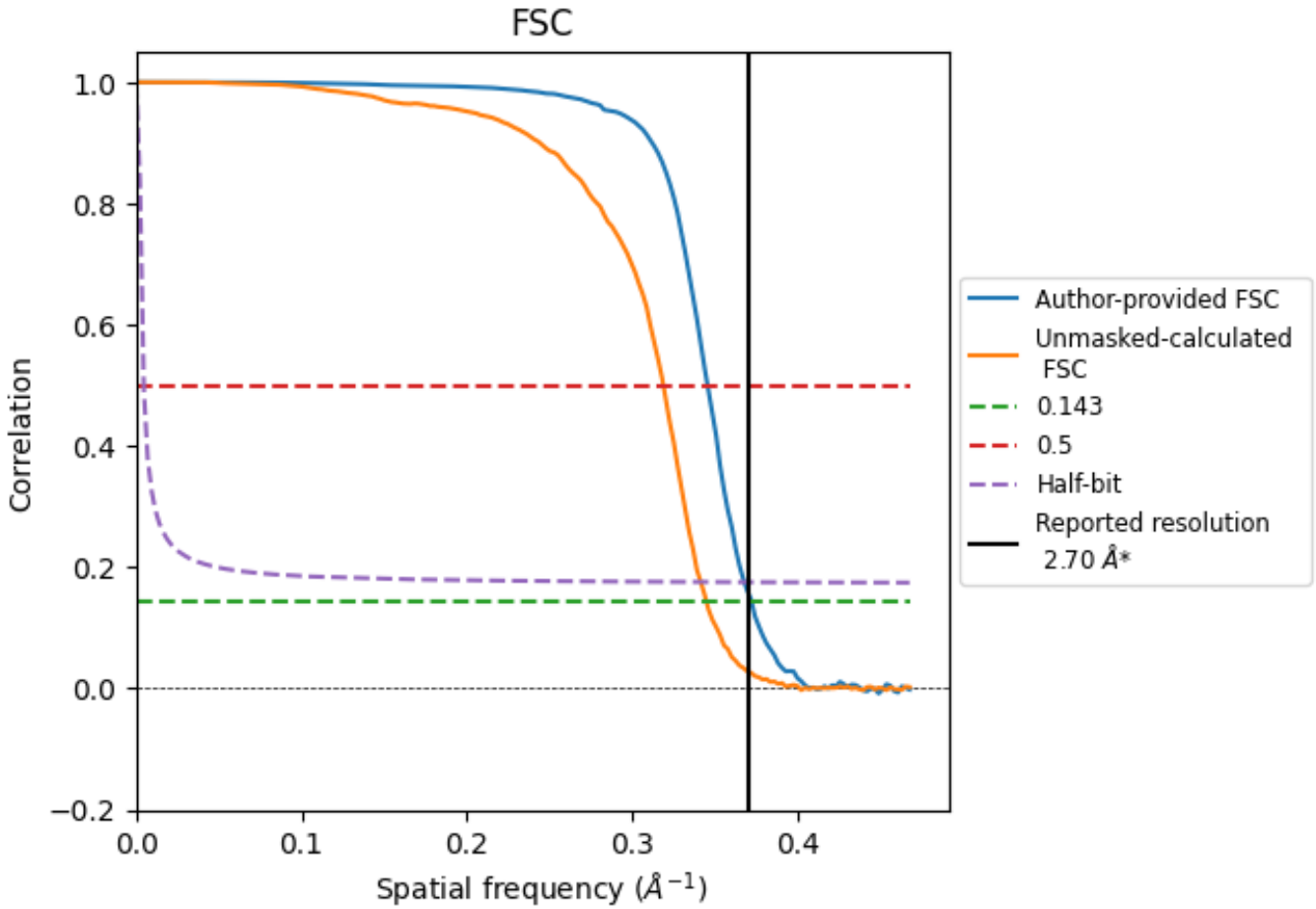


*Reported resolution corresponds to spatial frequency of 0.370 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.370 Å^{-1}

8.2 Resolution estimates (i)

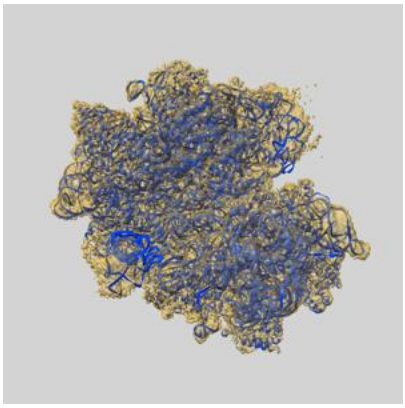
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	2.69	2.89	2.72
Unmasked-calculated*	2.90	3.14	2.93

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

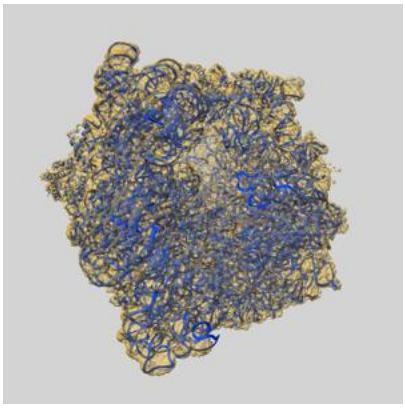
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44193 and PDB model 9B50. Per-residue inclusion information can be found in section 3 on page 14.

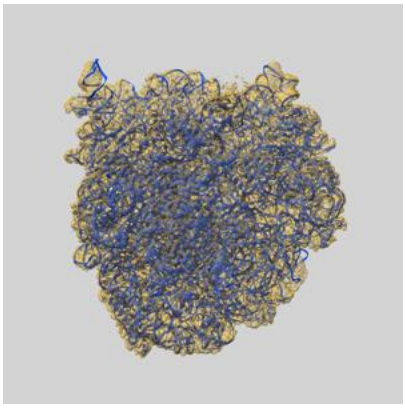
9.1 Map-model overlay



X



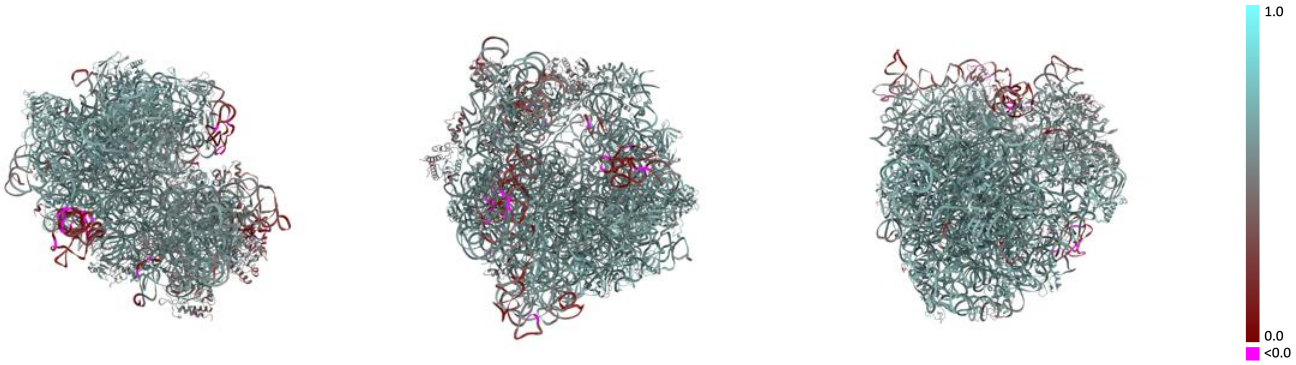
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 2.5 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.

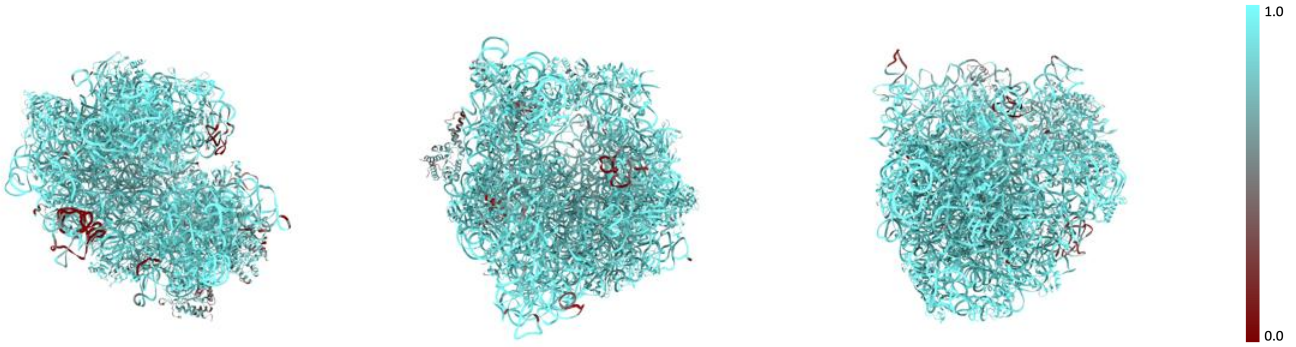
9.2 Q-score mapped to coordinate model (i)



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.

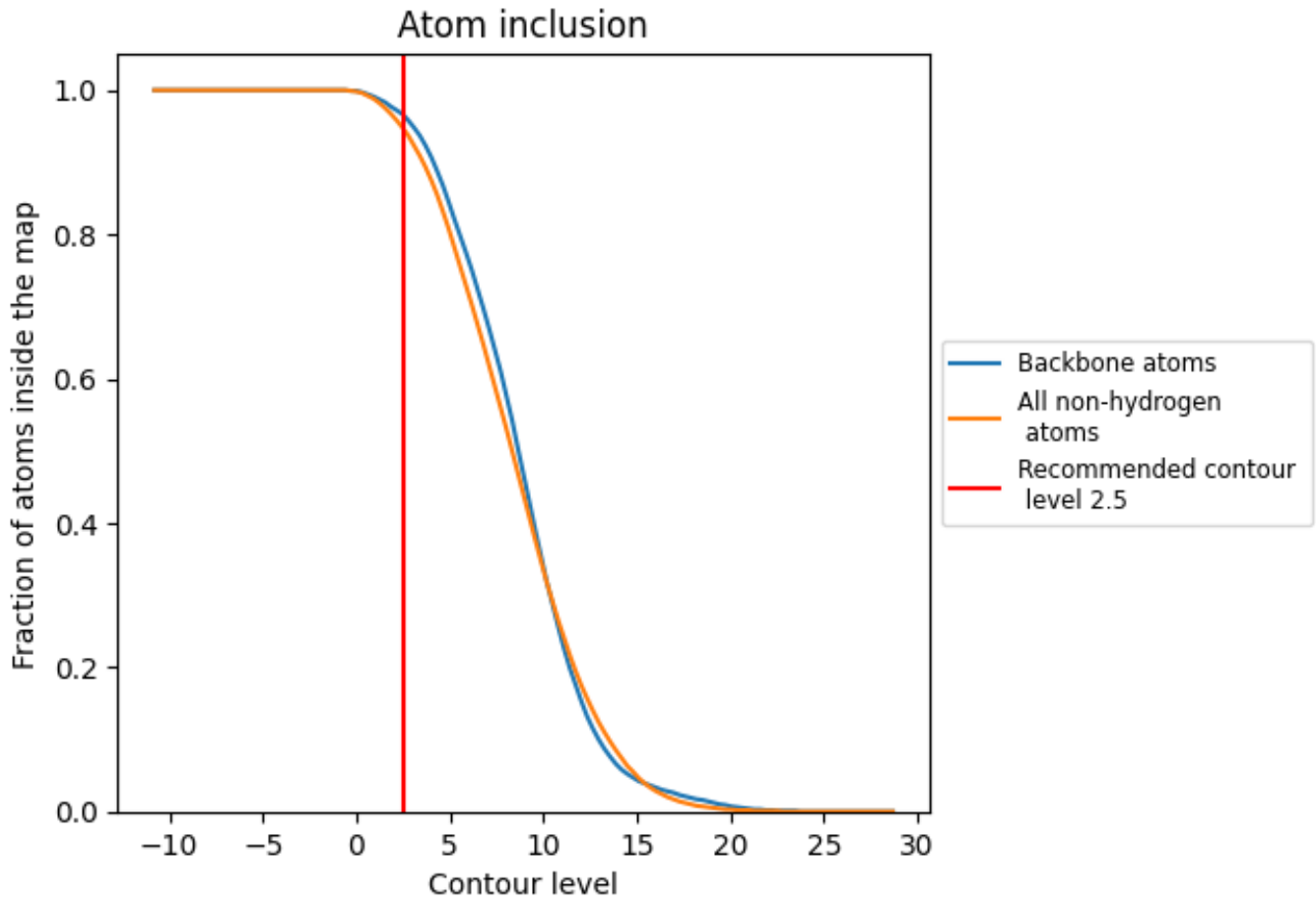
9.3 Atom inclusion mapped to coordinate model (i)



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 (2.5).

9.4 Atom inclusion (i)



At the recommended contour level, 97% of all backbone atoms, 95% 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 (2.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9470	0.5750
AA	0.9610	0.5530
AB	0.6350	0.4760
AC	0.8930	0.5430
AD	0.7380	0.3620
AE	0.9320	0.5740
AF	0.9020	0.5330
AG	0.8670	0.5060
AH	0.9530	0.6000
AI	0.8530	0.4860
AJ	0.8090	0.4680
AK	0.9340	0.5640
AL	0.9070	0.5590
AM	0.8850	0.5040
AN	0.9030	0.5170
AO	0.9530	0.5930
AP	0.9140	0.5500
AQ	0.9180	0.5550
AR	0.9540	0.5690
AS	0.8790	0.4950
AT	0.9340	0.5710
AU	0.6450	0.3900
B0	0.9530	0.6180
B1	0.9400	0.5950
B2	0.9720	0.6390
B3	0.9860	0.6410
B4	0.9690	0.6200
B5	0.8180	0.4930
BA	0.9630	0.5930
BB	0.9950	0.6040
BC	0.9790	0.6320
BD	0.9690	0.6280
BE	0.9550	0.6050
BF	0.8970	0.5420
BG	0.9110	0.5600

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Chain	Atom inclusion	Q-score
BH	0.7750	0.4790
BJ	0.9700	0.6220
BK	0.9660	0.6140
BL	0.9670	0.6110
BM	0.9650	0.6120
BN	0.9780	0.6180
BO	0.9560	0.5940
BP	0.9480	0.6130
BQ	0.9890	0.6370
BR	0.9320	0.5960
BS	0.9560	0.6160
BT	0.9330	0.5900
BU	0.9470	0.5790
BV	0.9290	0.6020
BW	0.9680	0.6260
BX	0.9670	0.6240
BY	0.9090	0.5640
BZ	0.9520	0.6150