



Full wwPDB EM Validation Report ⓘ

Mar 28, 2026 – 05:40 AM UTC

PDB ID : 9QLO / pdb_00009qlo
EMDB ID : EMD-53230
Title : NMT1-NAC bound human RNC with full length ARF1 - State 1
Authors : Denk, T.; Berninghausen, O.; Beckmann, R.
Deposited on : 2025-03-21
Resolution : 2.47 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

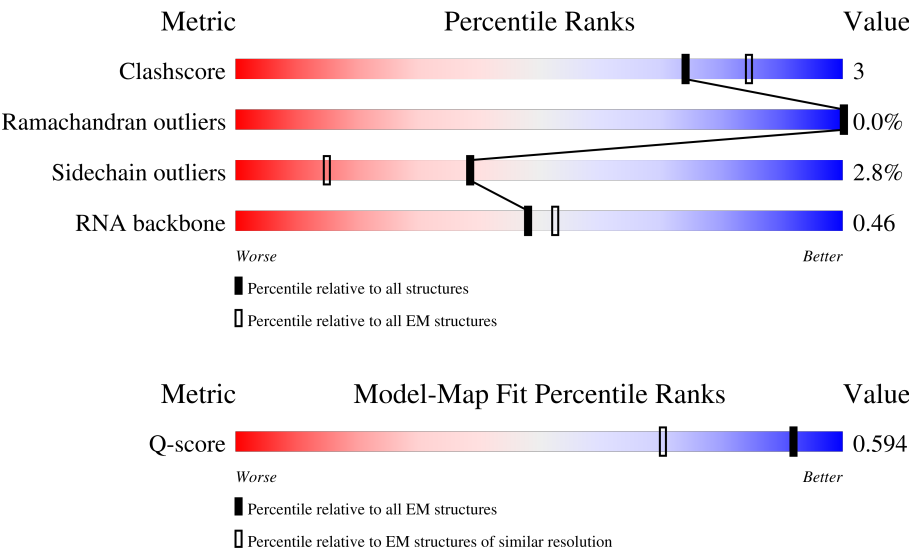
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 2.47 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	6086 (1.98 - 2.97)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	CM	952	
2	CP	75	
3	CR	437	



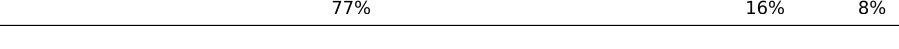
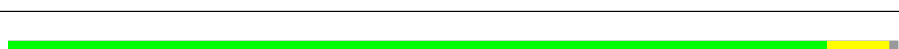



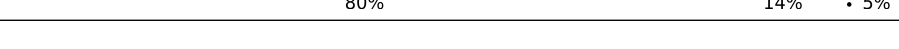


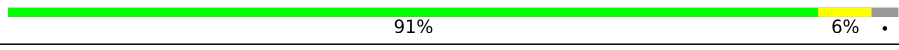
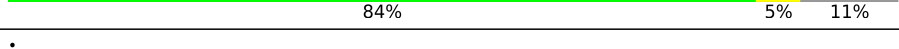



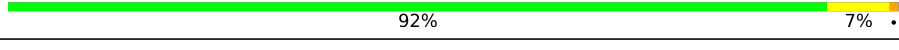
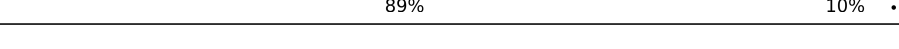







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Mol	Chain	Length	Quality of chain
4	CZ	217	
5	L5	5070	
6	L7	121	
7	L8	157	
8	LA	257	
9	LB	403	
10	LC	427	
11	LD	297	
12	LE	288	
13	LF	248	
14	LG	266	
15	LH	192	
16	LI	214	
17	LJ	178	
18	LL	211	
19	LM	215	
20	LN	204	
21	LO	203	
22	LP	184	
23	LQ	188	
24	LR	196	
25	LS	176	
26	LT	160	
27	LU	128	
28	LV	140	

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Mol	Chain	Length	Quality of chain
29	LW	157	
30	LX	156	
31	LY	145	
32	LZ	136	
33	La	148	
34	Lb	159	
35	Lc	115	
36	Ld	125	
37	Le	135	
38	Lf	110	
39	Lg	117	
40	Lh	123	
41	Li	105	
42	Lj	97	
43	Lk	70	
44	Ll	51	
45	Lm	128	
46	Ln	25	
47	Lo	106	
48	Lp	92	
49	Lr	137	
50	Ls	317	
51	Lt	165	
52	NA	215	
53	NB	162	





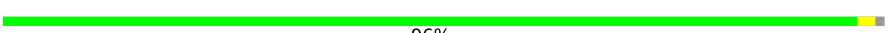





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Mol	Chain	Length	Quality of chain
54	NM	496	
55	S2	1869	
56	SA	295	
57	SB	264	
58	SC	293	
59	SD	243	
60	SE	263	
61	SF	204	
62	SG	249	
63	SH	194	
64	SI	208	
65	SJ	194	
66	SK	165	
67	SL	158	
68	SM	132	
69	SN	151	
70	SO	151	
71	SP	145	
72	SQ	146	
73	SR	135	
74	SS	152	
75	ST	145	
76	SU	119	
77	SV	83	
78	SW	130	

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Mol	Chain	Length	Quality of chain
79	SX	143	 86% 12% ..
80	SY	133	 81% 10% • 8%
81	SZ	125	 53% 7% 40%
82	Sa	115	 74% 12% 14%
83	Sb	84	 96% ..
84	Sc	69	 75% 16% 9%
85	Sd	56	 84% 9% • 5%
86	Se	133	 37% • • 59%
87	Sf	156	 34% 6% • 60%
88	Sg	317	 83% 14% •

2 Entry composition

There are 92 unique types of molecules in this entry. The entry contains 223461 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 full length ARF1-V5-hCMV staller mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	CM	12	Total	C	N	O	P	0	0
			247	111	37	87	12		

- Molecule 2 is a RNA chain called prolyl-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	CP	75	Total	C	N	O	P	0	0
			1602	713	284	530	75		

- Molecule 3 is a protein called Eukaryotic peptide chain release factor subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	CR	414	Total	C	N	O	S	0	0
			3269	2080	557	621	11		

- Molecule 4 is a protein called ADP-ribosylation factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	CZ	205	Total	C	N	O	S	0	0
			1488	943	248	289	8		

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CZ	1	GLN	-	expression tag	UNP P84077
CZ	4	SER	ILE	conflict	UNP P84077
CZ	6	SER	ALA	conflict	UNP P84077
CZ	7	LYS	ASN	conflict	UNP P84077
CZ	8	PRO	LEU	conflict	UNP P84077
CZ	9	ARG	PHE	conflict	UNP P84077
CZ	182	GLY	-	expression tag	UNP P84077
CZ	183	LYS	-	expression tag	UNP P84077
CZ	184	PRO	-	expression tag	UNP P84077

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Chain	Residue	Modelled	Actual	Comment	Reference
CZ	185	ILE	-	expression tag	UNP P84077
CZ	186	PRO	-	expression tag	UNP P84077
CZ	187	ASN	-	expression tag	UNP P84077
CZ	188	PRO	-	expression tag	UNP P84077
CZ	189	LEU	-	expression tag	UNP P84077
CZ	190	LEU	-	expression tag	UNP P84077
CZ	191	GLY	-	expression tag	UNP P84077
CZ	192	LEU	-	expression tag	UNP P84077
CZ	193	ASP	-	expression tag	UNP P84077
CZ	194	SER	-	expression tag	UNP P84077
CZ	195	THR	-	expression tag	UNP P84077
CZ	196	MET	-	expression tag	UNP P84077
CZ	197	GLU	-	expression tag	UNP P84077
CZ	198	PRO	-	expression tag	UNP P84077
CZ	199	LEU	-	expression tag	UNP P84077
CZ	200	VAL	-	expression tag	UNP P84077
CZ	201	LEU	-	expression tag	UNP P84077
CZ	202	SER	-	expression tag	UNP P84077
CZ	203	ALA	-	expression tag	UNP P84077
CZ	204	LYS	-	expression tag	UNP P84077
CZ	205	LYS	-	expression tag	UNP P84077
CZ	206	LEU	-	expression tag	UNP P84077
CZ	207	SER	-	expression tag	UNP P84077
CZ	208	SER	-	expression tag	UNP P84077
CZ	209	LEU	-	expression tag	UNP P84077
CZ	210	LEU	-	expression tag	UNP P84077
CZ	211	THR	-	expression tag	UNP P84077
CZ	212	CYS	-	expression tag	UNP P84077
CZ	213	LYS	-	expression tag	UNP P84077
CZ	214	TYR	-	expression tag	UNP P84077
CZ	215	ILE	-	expression tag	UNP P84077
CZ	216	PRO	-	expression tag	UNP P84077
CZ	217	PRO	-	expression tag	UNP P84077

- Molecule 5 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	L5	3648	Total	C	N	O	P	0	0
			78199	34823	14307	25422	3647		

- Molecule 6 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	L7	120	Total	C	N	O	P	0	0
			2558	1141	456	842	119		

- Molecule 7 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L8	156	Total	C	N	O	P	0	0
			3314	1480	585	1094	155		

- Molecule 8 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	LA	248	Total	C	N	O	S	0	0
			1898	1189	389	314	6		

- Molecule 9 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	LB	395	Total	C	N	O	S	0	0
			3183	2027	597	545	14		

- Molecule 10 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	LC	364	Total	C	N	O	S	0	0
			2884	1814	576	479	15		

- Molecule 11 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	LD	293	Total	C	N	O	S	0	0
			2361	1496	430	421	14		

- Molecule 12 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LE	219	Total	C	N	O	S	0	0
			1754	1129	334	287	4		

- Molecule 13 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LF	225	Total	C	N	O	S	0	0
			1870	1202	358	301	9		

- Molecule 14 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LG	229	Total	C	N	O	S	0	0
			1818	1157	351	306	4		

- Molecule 15 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LH	190	Total	C	N	O	S	0	0
			1510	950	282	272	6		

- Molecule 16 is a protein called Ribosomal protein uL16-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	LI	207	Total	C	N	O	S	0	0
			1666	1059	323	270	14		

- Molecule 17 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LJ	169	Total	C	N	O	S	0	0
			1329	841	250	232	6		

- Molecule 18 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LL	205	Total	C	N	O	S	0	0
			1630	1020	340	266	4		

- Molecule 19 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LM	139	Total	C	N	O	S	0	0
			1122	720	216	179	7		

- Molecule 20 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LN	203	Total	C	N	O	S	0	0
			1701	1072	359	266	4		

- Molecule 21 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LO	200	Total	C	N	O	S	0	0
			1633	1053	318	257	5		

- Molecule 22 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LP	153	Total	C	N	O	S	0	0
			1234	771	240	214	9		

- Molecule 23 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LQ	187	Total	C	N	O	S	0	0
			1502	939	313	245	5		

- Molecule 24 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	LR	176	Total	C	N	O	S	0	0
			1452	898	318	227	9		

- Molecule 25 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LS	175	Total	C	N	O	S	0	0
			1452	925	283	234	10		

- Molecule 26 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LT	159	Total	C	N	O	S	0	0
			1282	813	250	213	6		

- Molecule 27 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LU	101	Total	C	N	O	S	0	0
			806	520	141	143	2		

- Molecule 28 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LV	131	Total	C	N	O	S	0	0
			971	613	183	170	5		

- Molecule 29 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	LW	115	Total	C	N	O	S	0	0
			808	506	160	139	3		

- Molecule 30 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	LX	120	Total	C	N	O	S	0	0
			981	627	184	169	1		

- Molecule 31 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	LY	134	Total	C	N	O	S	0	0
			1111	697	225	186	3		

- Molecule 32 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	LZ	135	Total	C	N	O	S	0	0
			1107	714	208	182	3		

- Molecule 33 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	La	147	Total	C	N	O	S	0	0
			1154	731	236	184	3		

- Molecule 34 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Lb	75	Total	C	N	O	S	0	0
			590	367	123	97	3		

- Molecule 35 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Lc	97	Total	C	N	O	S	0	0
			742	473	130	133	6		

- Molecule 36 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Ld	107	Total	C	N	O	S	0	0
			874	554	171	147	2		

- Molecule 37 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Le	128	Total	C	N	O	S	0	0
			1049	664	215	165	5		

- Molecule 38 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Lf	109	Total	C	N	O	S	0	0
			872	552	173	144	3		

- Molecule 39 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Lg	114	Total	C	N	O	S	0	0
			889	557	184	142	6		

- Molecule 40 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Lh	121	Total	C	N	O	S	0	0
			1006	635	203	167	1		

- Molecule 41 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Li	102	Total	C	N	O	S	0	0
			813	510	176	123	4		

- Molecule 42 is a protein called Large ribosomal subunit protein eL37.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Lj	86	Total	C	N	O	S	0	0
			705	434	155	111	5		

- Molecule 43 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lk	69	Total	C	N	O	S	0	0
			542	350	100	91	1		

- Molecule 44 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Ll	50	Total	C	N	O	S	0	0
			444	281	98	64	1		

- Molecule 45 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Lm	52	Total	C	N	O	S	0	0
			425	264	90	65	6		

- Molecule 46 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Ln	24	Total	C	N	O	S	0	0
			230	139	62	26	3		

- Molecule 47 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lo	105	Total	C	N	O	S	0	0
			862	542	175	139	6		

- Molecule 48 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Lp	91	Total	C	N	O	S	0	0
			696	440	135	114	7		

- Molecule 49 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Lr	125	Total	C	N	O	S	0	0
			997	618	207	168	4		

- Molecule 50 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Ls	212	Total	C	N	O	S	0	0
			1640	1042	284	305	9		

- Molecule 51 is a protein called Large ribosomal subunit protein uL11.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Lt	160	Total	C	N	O	S	0	0
			1208	749	226	229	4		

- Molecule 52 is a protein called Nascent polypeptide-associated complex subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	NA	73	Total	C	N	O	S	0	0
			573	361	105	106	1		

- Molecule 53 is a protein called Isoform 2 of Transcription factor BTF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	NB	133	Total	C	N	O	S	0	0
			1026	634	187	202	3		

- Molecule 54 is a protein called Glycylpeptide N-tetradecanoyltransferase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	NM	380	Total	C	N	O	S	3	0
			3122	2024	527	555	16		

- Molecule 55 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	S2	1713	Total	C	N	O	P	0	0
			36562	16320	6564	11966	1712		

- Molecule 56 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SA	216	Total	C	N	O	S	0	0
			1671	1068	297	298	8		

- Molecule 57 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SB	213	Total	C	N	O	S	0	0
			1718	1092	308	304	14		

- Molecule 58 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	SC	219	Total	C	N	O	S	0	0
			1661	1076	284	291	10		

- Molecule 59 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SD	223	Total	C	N	O	S	0	0
			1594	1023	291	273	7		

- Molecule 60 is a protein called Small ribosomal subunit protein eS4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SE	262	Total	C	N	O	S	0	0
			1972	1270	370	324	8		

- Molecule 61 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	SF	181	Total	C	N	O	S	0	0
			1403	879	269	248	7		

- Molecule 62 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	SG	231	Total	C	N	O	S	0	0
			1634	1026	332	269	7		

- Molecule 63 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	SH	183	Total	C	N	O		0	0
			1274	819	242	213			

- Molecule 64 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	SI	206	Total	C	N	O	S	0	0
			1574	989	308	272	5		

- Molecule 65 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	SJ	179	Total	C	N	O	S	0	0
			1431	915	290	224	2		

- Molecule 66 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SK	96	Total	C	N	O	S	0	0
			726	479	127	115	5		

- Molecule 67 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	SL	144	Total	C	N	O	S	0	0
			1143	730	213	194	6		

- Molecule 68 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	SM	122	Total	C	N	O	S	0	0
			950	596	168	177	9		

- Molecule 69 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	SN	150	Total	C	N	O	S	0	0
			1182	758	226	197	1		

- Molecule 70 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	SO	134	Total	C	N	O	S	0	0
			969	596	194	173	6		

- Molecule 71 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	SP	129	Total	C	N	O	S	0	0
			990	626	190	168	6		

- Molecule 72 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	SQ	142	Total	C	N	O	S	0	0
			1075	689	204	179	3		

- Molecule 73 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	SR	131	Total	C	N	O	S	0	0
			942	600	179	159	4		

- Molecule 74 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	SS	141	Total	C	N	O	S	0	0
			1130	712	232	185	1		

- Molecule 75 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	ST	143	Total	C	N	O	S	0	0
			1081	679	210	189	3		

- Molecule 76 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	SU	101	Total	C	N	O	S	0	0
			713	447	137	125	4		

- Molecule 77 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	SV	83	Total	C	N	O	S	0	0
			618	385	115	113	5		

- Molecule 78 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	SW	129	Total	C	N	O	S	0	0
			1026	655	193	172	6		

- Molecule 79 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	SX	141	Total	C	N	O	S	0	0
			1078	682	212	181	3		

- Molecule 80 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	SY	123	Total	C	N	O	S	0	0
			927	588	183	152	4		

- Molecule 81 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	SZ	75	Total	C	N	O	S	0	0
			559	361	105	92	1		

- Molecule 82 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	Sa	99	Total	C	N	O	S	0	0
			781	487	165	124	5		

- Molecule 83 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	Sb	83	Total	C	N	O	S	0	0
			618	386	118	107	7		

- Molecule 84 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	Sc	63	Total	C	N	O	S	0	0
			472	289	92	89	2		

- Molecule 85 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
85	Sd	53	Total	C	N	O	S	0	0
			433	271	87	70	5		

- Molecule 86 is a protein called Ubiquitin-like FUBI-ribosomal protein eS30 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
86	Se	55	Total	C	N	O	S	0	0
			416	254	93	68	1		

- Molecule 87 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					AltConf	Trace
87	Sf	63	Total	C	N	O	S	0	0
			515	324	98	86	7		

- Molecule 88 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
88	Sg	308	Total	C	N	O	S	0	0
			2180	1393	381	395	11		

- Molecule 89 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

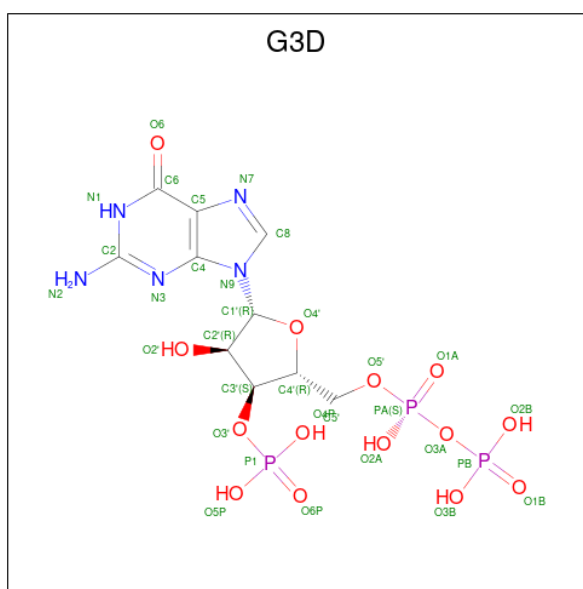
Mol	Chain	Residues	Atoms		AltConf
89	CM	1	Total	Mg	0
			1	1	
89	L5	126	Total	Mg	0
			126	126	
89	L7	3	Total	Mg	0
			3	3	

Continued on next page...

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Mol	Chain	Residues	Atoms		AltConf
89	L8	3	Total	Mg	0
			3	3	
89	LA	1	Total	Mg	0
			1	1	
89	LC	1	Total	Mg	0
			1	1	
89	LI	1	Total	Mg	0
			1	1	
89	LN	1	Total	Mg	0
			1	1	
89	LP	1	Total	Mg	0
			1	1	
89	LV	1	Total	Mg	0
			1	1	
89	S2	52	Total	Mg	0
			52	52	

- Molecule 90 is GUANOSINE-3'-MONOPHOSPHATE-5'-DIPHOSPHATE (CCD ID: G3D) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



Mol	Chain	Residues	Atoms				AltConf
90	CZ	1	Total	C	N	O P	0
			32	10	5	14 3	

- Molecule 91 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
91	Lg	1	Total 1	Zn 1	0
91	Lj	1	Total 1	Zn 1	0
91	Lm	1	Total 1	Zn 1	0
91	Lo	1	Total 1	Zn 1	0
91	Lp	1	Total 1	Zn 1	0
91	Sa	1	Total 1	Zn 1	0
91	Sd	1	Total 1	Zn 1	0
91	Sf	1	Total 1	Zn 1	0

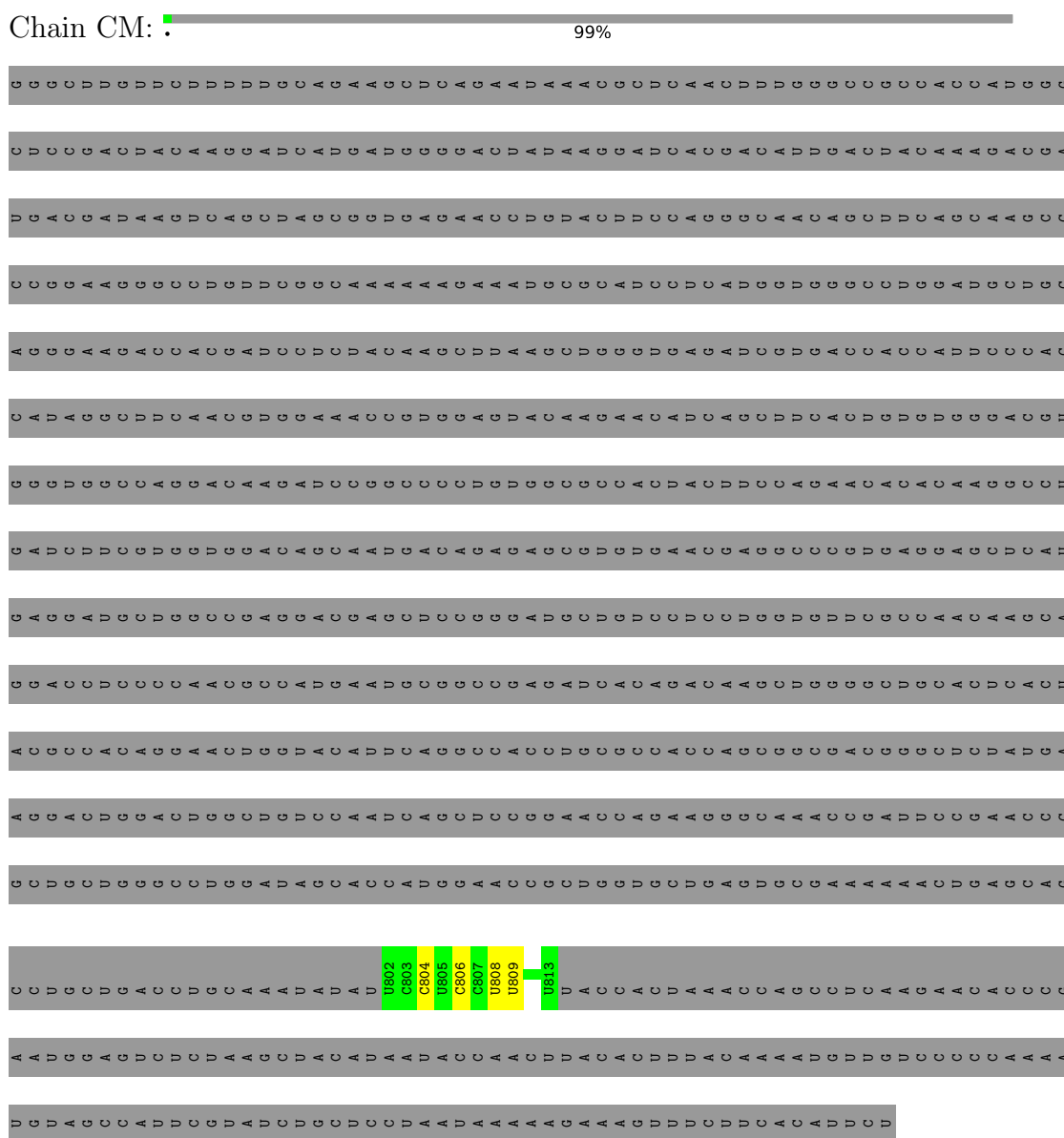
- Molecule 92 is water.

Mol	Chain	Residues	Atoms		AltConf
92	L5	2	Total 2	O 2	0
92	L7	1	Total 1	O 1	0
92	LI	1	Total 1	O 1	0
92	LN	1	Total 1	O 1	0
92	La	1	Total 1	O 1	0
92	Li	1	Total 1	O 1	0
92	Lp	1	Total 1	O 1	0
92	S2	3	Total 3	O 3	0

3 Residue-property plots

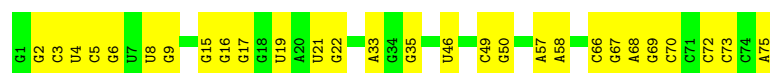
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: full length ARF1-V5-hCMV staller mRNA




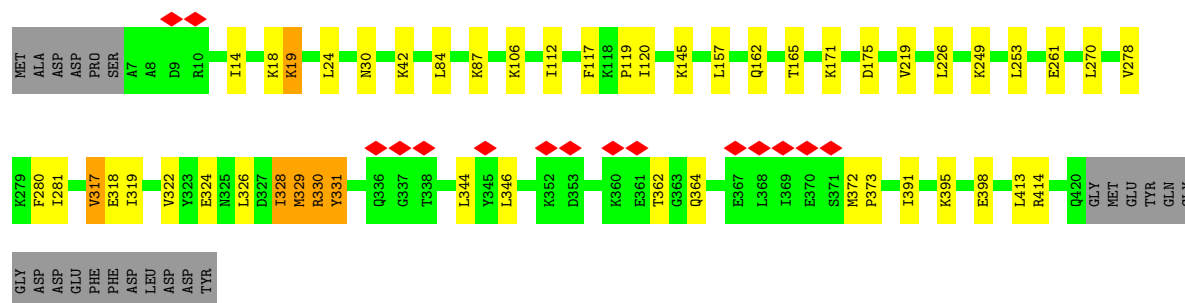
- Molecule 2: prolyl-tRNA

Chain CP:  63% 37%




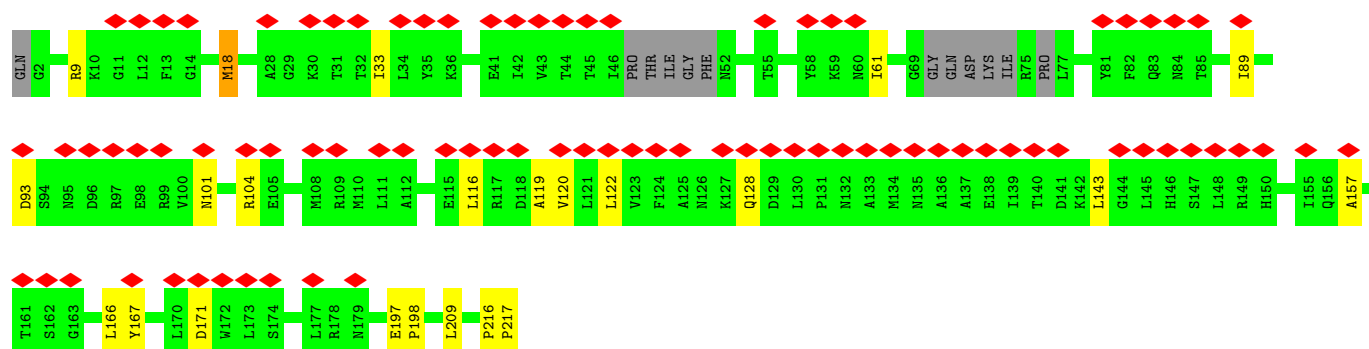
- Molecule 3: Eukaryotic peptide chain release factor subunit 1

Chain CR:  84% 10% 5%



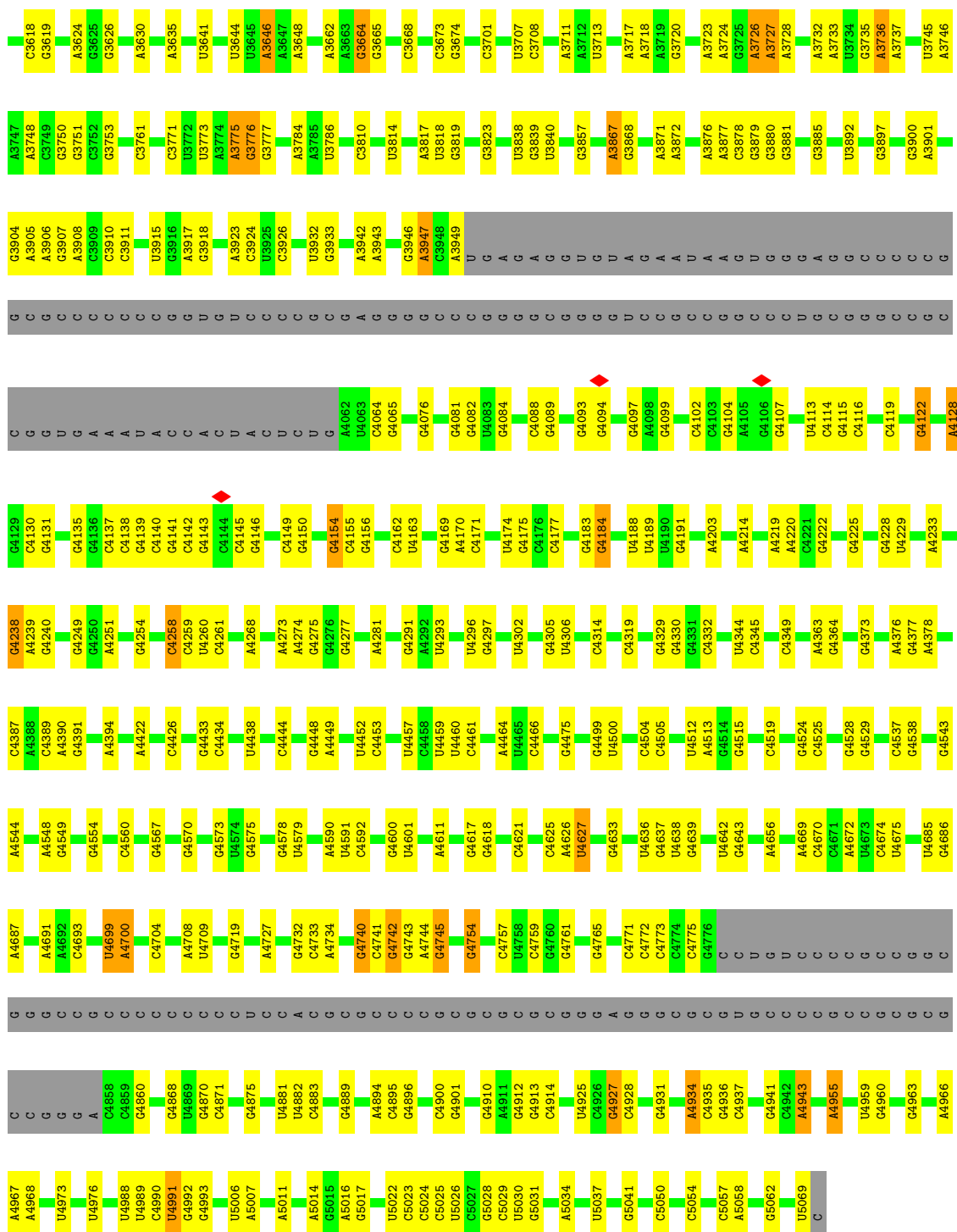
- Molecule 4: ADP-ribosylation factor 1

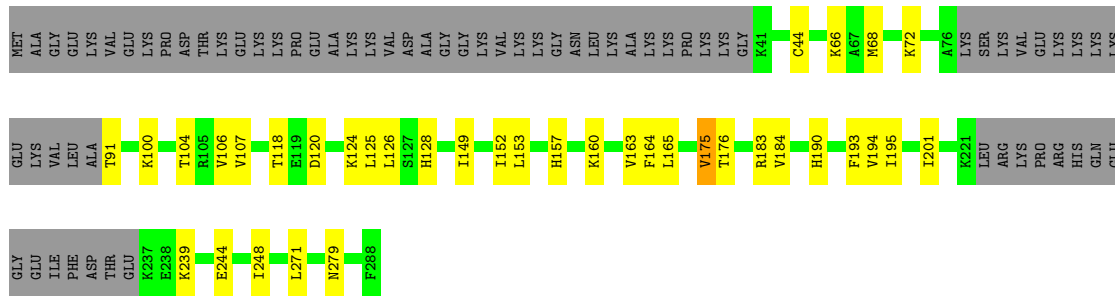
Chain CZ:  39% 84% 10% 6%



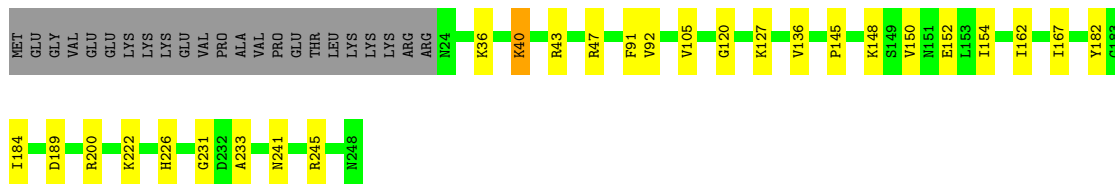




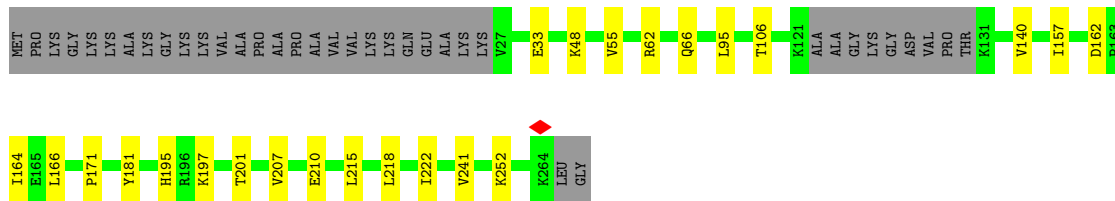




- Molecule 13: Large ribosomal subunit protein uL30



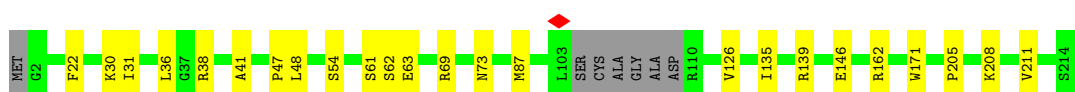
- Molecule 14: 60S ribosomal protein L7a



- Molecule 15: 60S ribosomal protein L9



- Molecule 16: Ribosomal protein uL16-like



- Molecule 17: 60S ribosomal protein L11

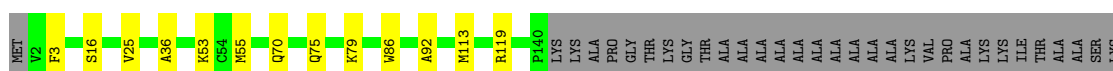




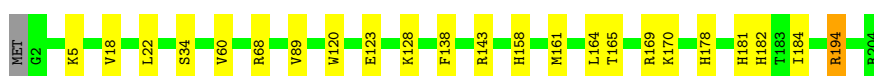
- Molecule 18: 60S ribosomal protein L13



- Molecule 19: 60S ribosomal protein L14



- Molecule 20: 60S ribosomal protein L15



- Molecule 21: 60S ribosomal protein L13a

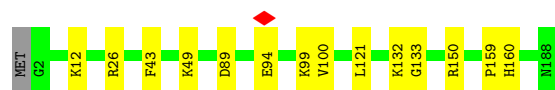


- Molecule 22: 60S ribosomal protein L17

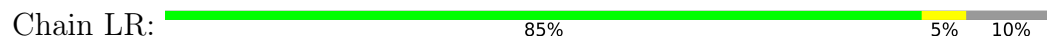


- Molecule 23: 60S ribosomal protein L18

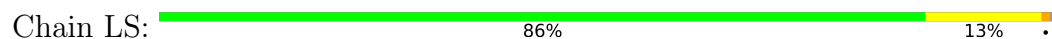




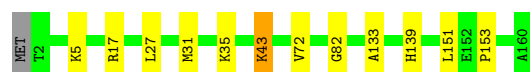
- Molecule 24: 60S ribosomal protein L19



- Molecule 25: 60S ribosomal protein L18a



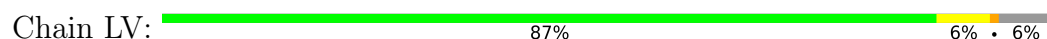
- Molecule 26: 60S ribosomal protein L21



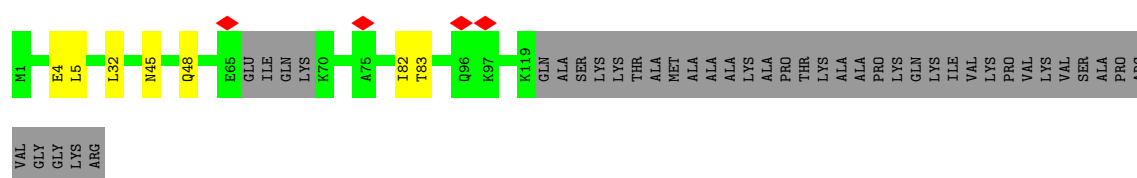
- Molecule 27: 60S ribosomal protein L22



- Molecule 28: 60S ribosomal protein L23



- Molecule 29: 60S ribosomal protein L24



- Molecule 30: 60S ribosomal protein L23a

MET	ALA	PRO	LYS	ALA	LYS	LYS	GLU	ALA	PRO	ALA	PRO	PRO	LYS	GLU	ALA	LYS	ALA	ALA	LEU	LYS	ALA	LYS	LYS	ALA	VAL	LEU	LYS	GLY	VAL	HIS	SER	HIS	LYS	R37	T42	L81	T82	T83	E84	S85	N93	D145	D148	V149	A150	I155	I156
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- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| M1 | K2 | D10 | R11 | S12 | K13 | R17 | P22 | I25 | R26 | M30 | I49 | R50 | K51 | R59 | Q66 | K69 | R84 | H100 | P101 | S102 | K103 | L109 | K110 | L111 | L119 | K134 | TVR | LYS | GLU | GLU | THR | ILE | GLU | LYS | MET | GLN | GLU |
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

-
- | Category | Count |
|----------|-------|
| MET | 1 |
| G2 | 1 |
| K27 | 1 |
| N28 | 1 |
| I29 | 1 |
| A41 | 1 |
| P50 | 1 |
| M57 | 1 |
| G58 | 1 |
| K59 | 1 |
| K60 | 1 |
| K61 | 1 |
| I68 | 1 |
| Y77 | 1 |
| V100 | 1 |
| F136 | 1 |


-
- MET P2 K7 S16 H17 R32 P71 T72 I100 Y108 Y109 K110 K114 V140 A148

- [illegible]


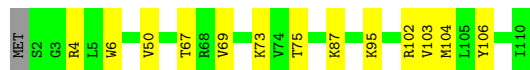
- MET VAL ALA ALA LYS LYS THR LYS K9 **K23** V28 L35 I38 I47 I48 I60 Y63 T93 L94 **I105** ARG SER MET PRO GLU GLN THR THR GLY GLU LYS

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-----|
| NET | ALA | PRO | ALA | LYS | GLY | GLY | GLU | LYS | LYS | LYS | GLY | ARG | SER | ALA | ILE | N18 | E24 | L46 | R63 | I64 | L68 | R87 | R90 | K101 | L102 | T112 | E124 | ASN |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-----|


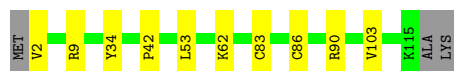
• Molecule 37: 60S ribosomal protein L32

Chain Le:  80% 14% 5%

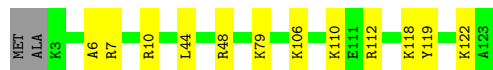
• Molecule 38: 60S ribosomal protein L35a

Chain Lf:  87% 12% .

• Molecule 39: 60S ribosomal protein L34

Chain Lg:  89% 9% .


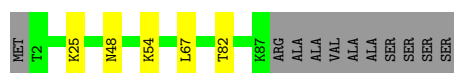
• Molecule 40: 60S ribosomal protein L35

Chain Lh:  89% 10% .


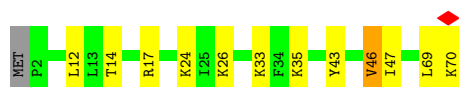
• Molecule 41: 60S ribosomal protein L36

Chain Li:  91% 6% .


• Molecule 42: Large ribosomal subunit protein eL37

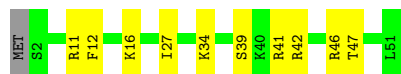
Chain Lj:  84% 5% 11%

• Molecule 43: 60S ribosomal protein L38

Chain Lk:  81% 16% ..

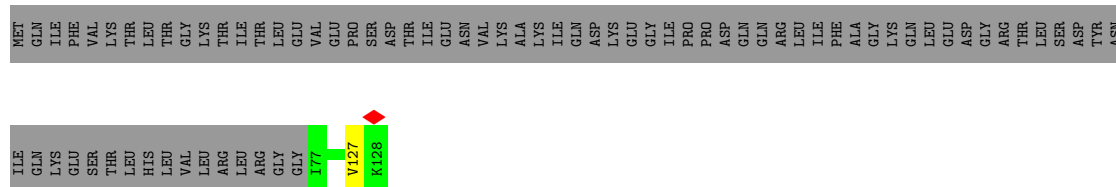
- Molecule 44: 60S ribosomal protein L39

Chain Ll:  78% 20% .




- Molecule 45: Ubiquitin-60S ribosomal protein L40

Chain Lm:  40% . 59%



- Molecule 46: 60S ribosomal protein L41

Chain Ln:  80% 16% .



- Molecule 47: 60S ribosomal protein L36a

Chain Lo:  92% 7% ..




- Molecule 48: 60S ribosomal protein L37a

Chain Lp:  89% 10% .



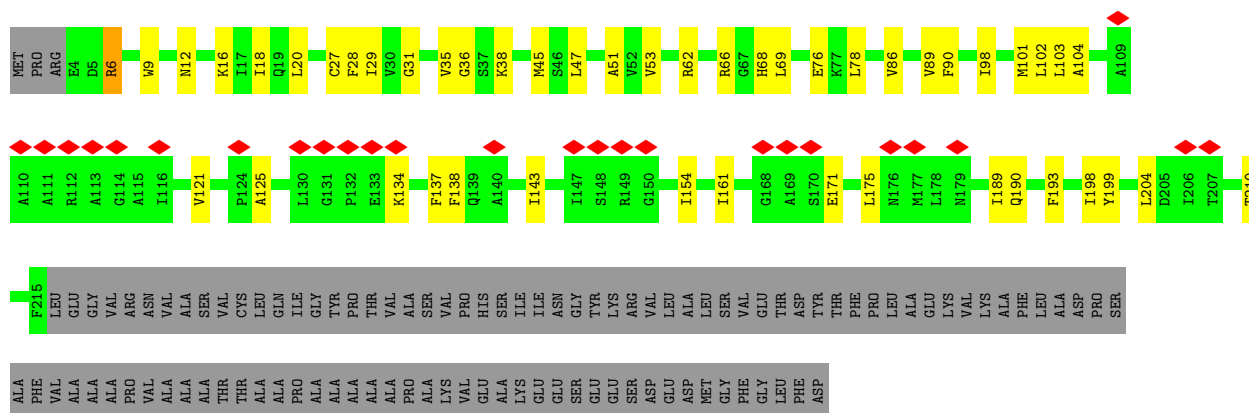
- Molecule 49: 60S ribosomal protein L28

Chain Lr:  84% 7% 9%

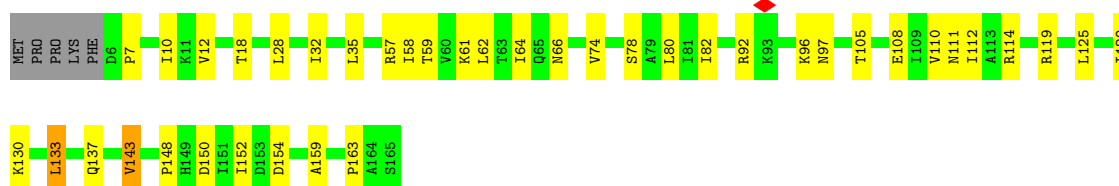


- Molecule 50: 60S acidic ribosomal protein P0

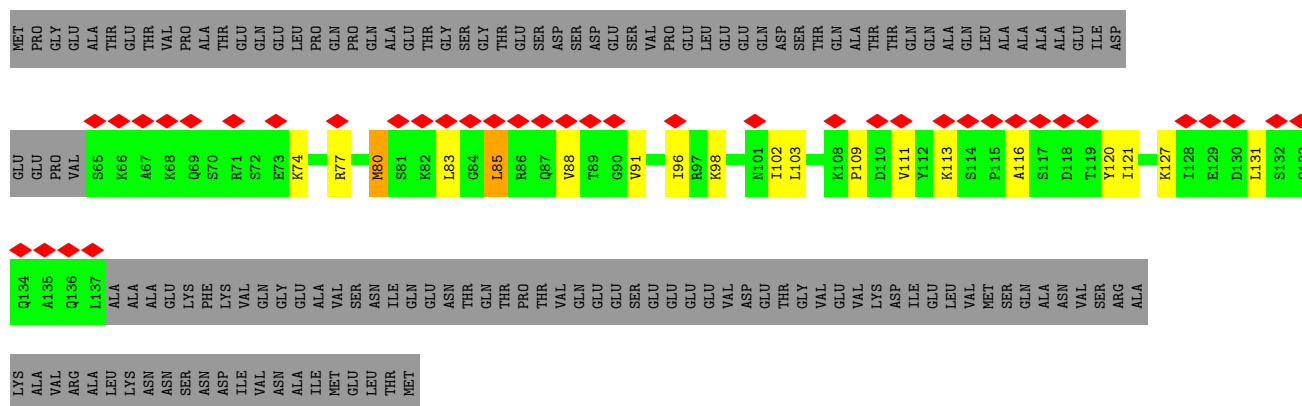
Chain Ls:  8% 52% 15% 33%



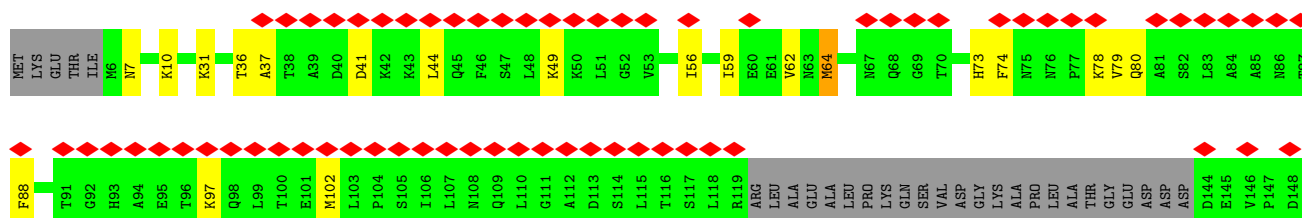
- Molecule 51: Large ribosomal subunit protein uL11

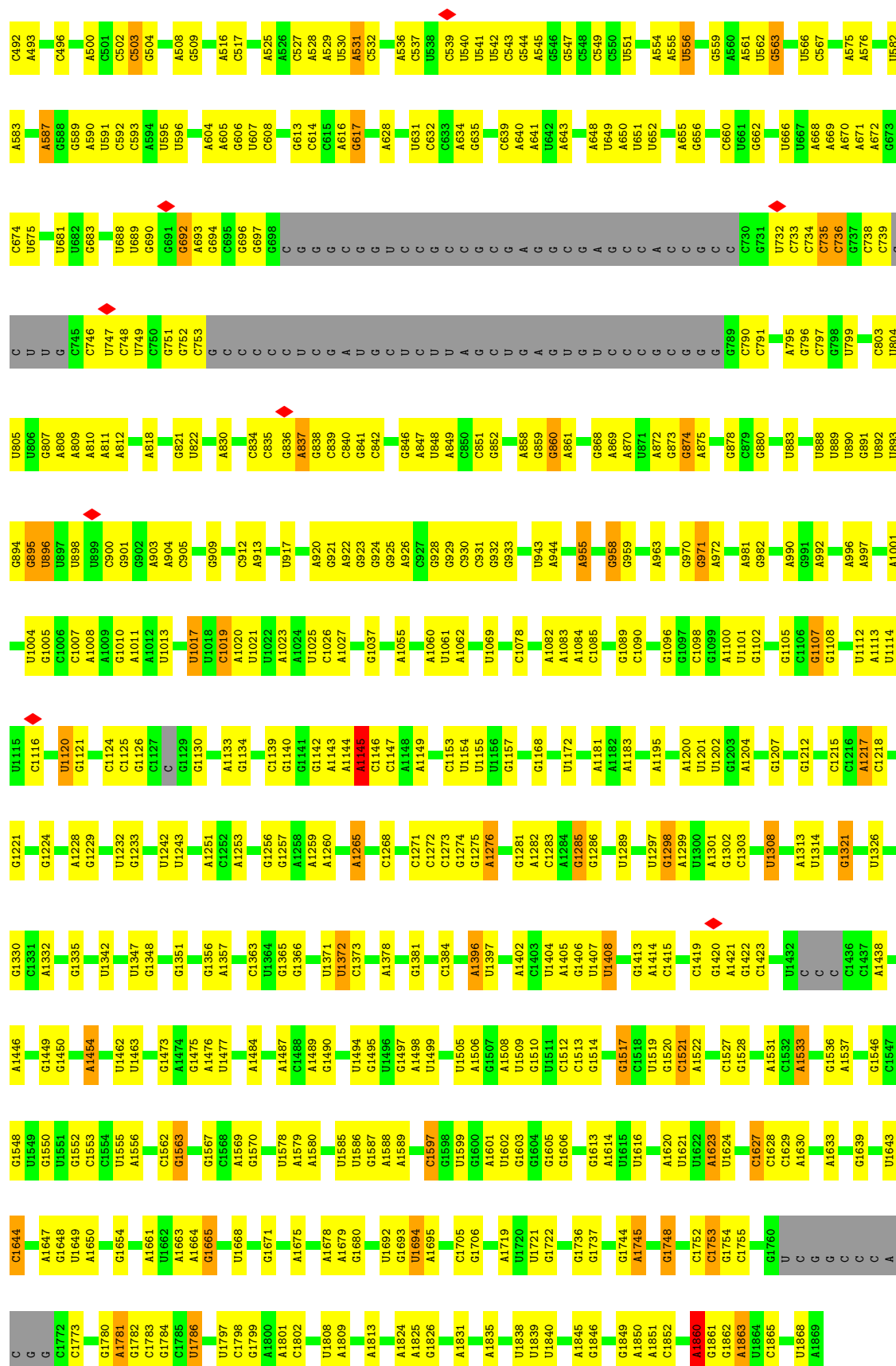


- Molecule 52: Nascent polypeptide-associated complex subunit alpha



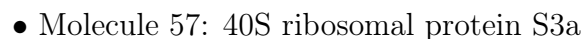
- Molecule 53: Isoform 2 of Transcription factor BTF3





- Molecule 56: 40S ribosomal protein SA

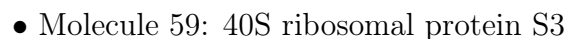
Device Type	Percentage
Smartphone	61%
Tablet	12%
Feature phone	27%



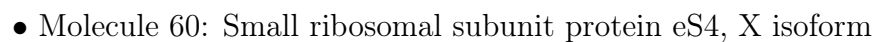
Digital Tool	Percentage
Mobile app	70%
Website	10%
Social media platform	19%



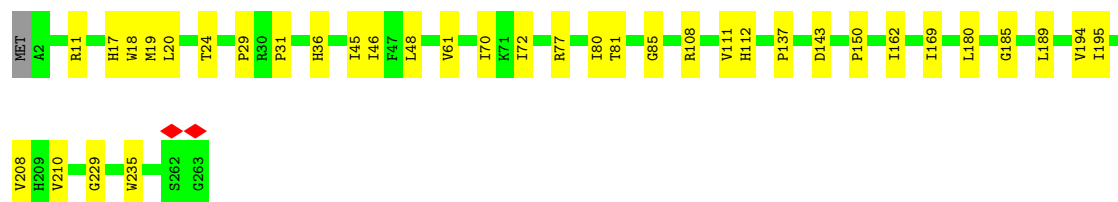
Response	Percentage
Doing a good job	65%
Not doing a good job	10%
Don't know	25%



Response	Percentage
Best for the country	79%
Not the best for the country	13%
Don't know	8%

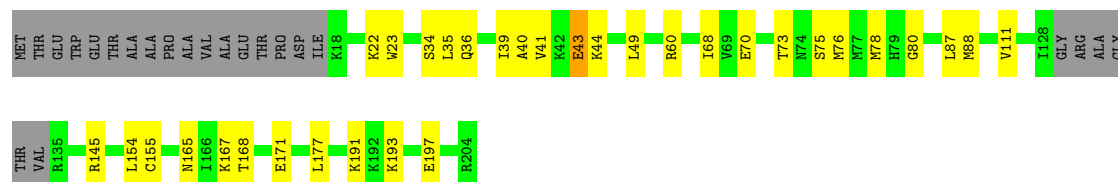


Response	Percentage
Doing a good job	86%
Doing a bad job	14%



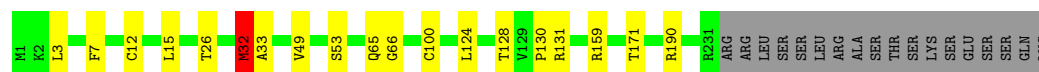
- Molecule 61: 40S ribosomal protein S5

Chain SF: 73% 16% 11%



- Molecule 62: 40S ribosomal protein S6

Chain SG: 85% 7% 7%



- Molecule 63: 40S ribosomal protein S7

Chain SH: 87% 8% 6%



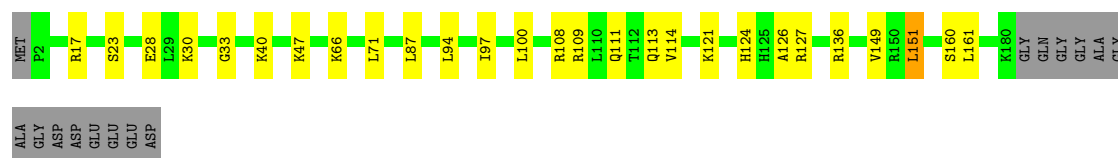
- Molecule 64: 40S ribosomal protein S8

Chain SI: 90% 9% 1%



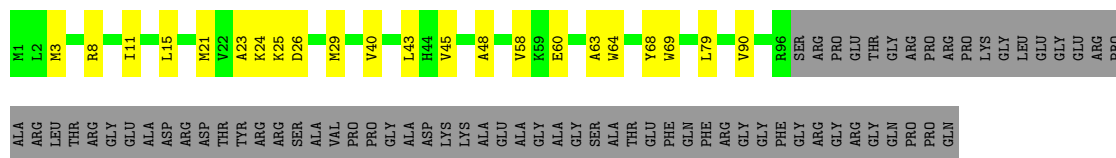
- Molecule 65: 40S ribosomal protein S9

Chain SJ: 78% 13% 8%




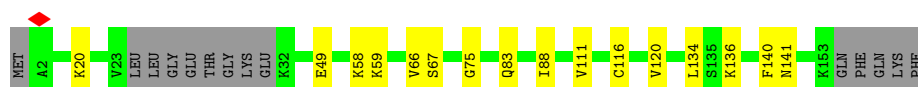
- Molecule 66: 40S ribosomal protein S10

Chain SK:  45% 13% 42%



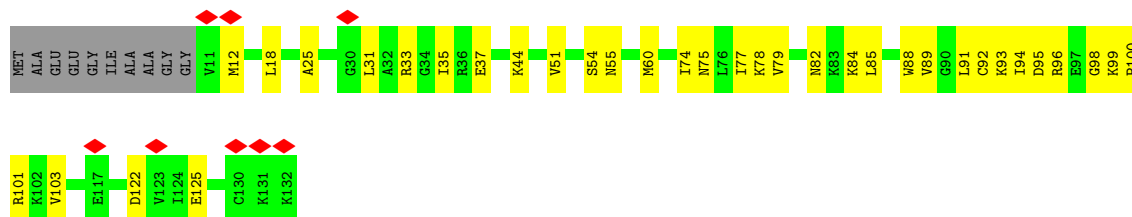
- Molecule 67: 40S ribosomal protein S11

Chain SL:  81% 10% 9%



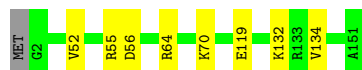
- Molecule 68: 40S ribosomal protein S12

Chain SM:  6% 66% 27% 8%




- Molecule 69: 40S ribosomal protein S13

Chain SN:  94% 5%




- Molecule 70: 40S ribosomal protein S14

Chain SO:  78% 11% 11%




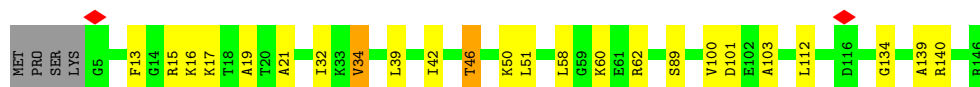
- Molecule 71: 40S ribosomal protein S15

Chain SP:  76% 12% 11%




- Molecule 72: 40S ribosomal protein S16

Chain SQ:  81% 15%



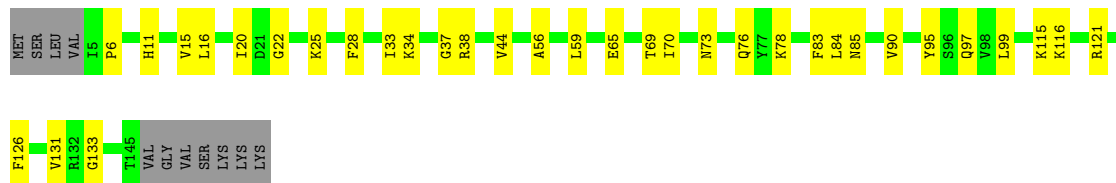
- Molecule 73: 40S ribosomal protein S17

Chain SR:  85% 11%




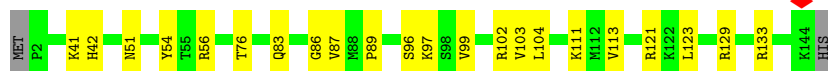
- Molecule 74: 40S ribosomal protein S18

Chain SS:  70% 22% 7%




- Molecule 75: 40S ribosomal protein S19

Chain ST:  83% 15%




- Molecule 76: 40S ribosomal protein S20

Chain SU:  75% 10% 15%



- Molecule 77: 40S ribosomal protein S21

Chain SV:  88% 11%



- Molecule 78: 40S ribosomal protein S15a

Chain SW:  89% 10%



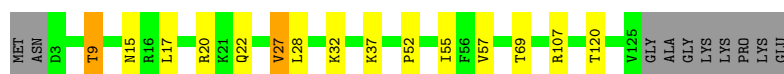
- Molecule 79: 40S ribosomal protein S23

Chain SX: 86% 12% ..



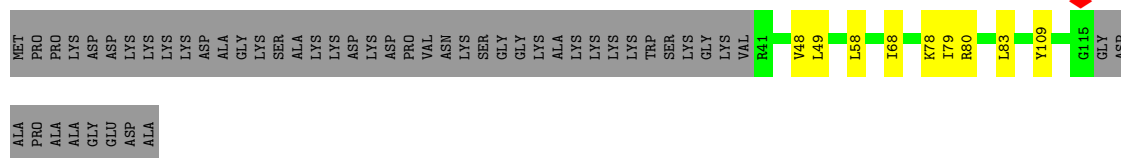
- Molecule 80: 40S ribosomal protein S24

Chain SY: 81% 10% 8%



- Molecule 81: 40S ribosomal protein S25

Chain SZ: 53% 7% 40%



- Molecule 82: 40S ribosomal protein S26

Chain Sa: 74% 12% 14%



- Molecule 83: 40S ribosomal protein S27

Chain Sb: 96% ..



- Molecule 84: 40S ribosomal protein S28

Chain Sc: 75% 16% 9%



- Molecule 85: 40S ribosomal protein S29

Sequence logo for the 10th position. The y-axis represents information content in bits, ranging from 0 to 1.5. The x-axis shows amino acids: MET, GLY, HIS, Q4, Q5, W8, L30, L36, R44, F52, and D56. MET, GLY, and HIS are in grey boxes with 0 bits. Q4 is in a green box with ~0.4 bits. Q5 is in an orange box with ~0.4 bits. W8, L30, L36, R44, F52, and D56 are in yellow boxes with ~0.4 bits each.

- Chain Se:

[illegible]

- Chain Sf:

MET	GLN	PHE	VAL	LYS	THR	LEU	THR	GLY	LYS	THR	ILE	THR	LEU	GLU	VAL	GLU	PRO	SER	ASP	ILE	LYS	ASN	VAL	LYS	ALA	LYS	GLN	ASP	GLN	ARG	LEU	ILE	PHE	ALA	GLY	LYS	GLN	LEU	GLU	ASP	GLY	ARG	THR	LEU	SER	ASP	Tyr	ASN
ILE	GLN	LYS	GLU	SER	THR	LEU	HIS	LEU	VAL	LEU	ARG	LEU	ARG	GLY	ALA	LYS	LYS	ARG	LYS	LYS	THR	SER	Tyr	THR	THR	PRO	K89	N91	V93	K107	E110	K113	L117	E120	C121	F122	G129	M132	H135	L146	M151	LYS	PRO	GLU	ASP	LYS		

- Chain Sg: 83% 14% .

Figure 1: Schematic representation of the 150 amino acid residues of the protein. The protein is shown as a horizontal bar divided into 150 segments, each representing an amino acid residue. The residues are color-coded: MET (grey), THR (light blue), GLU (green), Q4 (yellow), L7 (orange), L11 (light blue), W17 (green), V18 (yellow), T24 (yellow), I31 (light blue), L32 (yellow), R36 (green), D37 (red), K38 (green), T39 (yellow), M42 (yellow), L45 (light blue), I54 (yellow), R57 (yellow), R60 (light blue), H64 (yellow), I71 (light blue), L87 (light blue), L92 (yellow), F101 (light blue), S110 (yellow), F113 (yellow), V121 (light blue), I129 (yellow), V142 (yellow), F145 (green), S146 (green), H147 (yellow), S152 (yellow), C153 (green), and V154 (yellow). A red diamond is placed above the K264 residue, and a red arrow points to the F145 residue.

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	62249	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 ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	6.597	Depositor
Minimum map value	-3.195	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.142	Depositor
Recommended contour level	0.1	Depositor
Map size (\AA)	465.28, 465.28, 465.28	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.727, 0.727, 0.727	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LYO, G3D, ZN, MG

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	CM	0.23	0/273	0.43	0/421
2	CP	0.20	0/1789	0.45	0/2788
3	CR	0.20	0/3311	0.49	3/4452 (0.1%)
4	CZ	0.23	0/1508	0.56	1/2050 (0.0%)
5	L5	0.21	0/87471	0.37	1/136443 (0.0%)
6	L7	0.20	0/2858	0.34	0/4455
7	L8	0.21	0/3701	0.35	0/5766
8	LA	0.25	0/1936	0.59	0/2596
9	LB	0.23	0/3251	0.52	0/4352
10	LC	0.21	0/2938	0.49	0/3947
11	LD	0.21	0/2407	0.53	0/3227
12	LE	0.24	0/1788	0.59	1/2399 (0.0%)
13	LF	0.22	0/1905	0.51	0/2539
14	LG	0.23	0/1849	0.57	0/2496
15	LH	0.20	0/1529	0.50	0/2058
16	LI	0.21	0/1705	0.52	0/2277
17	LJ	0.21	0/1352	0.54	0/1813
18	LL	0.20	0/1661	0.47	0/2229
19	LM	0.18	0/1145	0.43	0/1536
20	LN	0.21	0/1746	0.45	0/2338
21	LO	0.22	0/1665	0.47	0/2229
22	LP	0.24	0/1260	0.54	1/1692 (0.1%)
23	LQ	0.20	0/1526	0.46	0/2038
24	LR	0.19	0/1468	0.44	0/1945
25	LS	0.20	0/1492	0.42	0/2003
26	LT	0.19	0/1310	0.50	0/1752
27	LU	0.24	0/820	0.62	1/1102 (0.1%)
28	LV	0.21	0/985	0.48	0/1323
29	LW	0.19	0/820	0.43	0/1104
30	LX	0.25	0/998	0.54	0/1341
31	LY	0.22	0/1128	0.47	0/1500
32	LZ	0.20	0/1130	0.48	0/1507

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	La	0.20	0/1183	0.43	0/1582
34	Lb	0.22	0/600	0.51	0/796
35	Lc	0.19	0/752	0.41	0/1011
36	Ld	0.19	0/889	0.42	0/1198
37	Le	0.22	0/1067	0.52	0/1425
38	Lf	0.23	0/891	0.54	0/1194
39	Lg	0.20	0/899	0.48	0/1200
40	Lh	0.17	0/1014	0.39	0/1340
41	Li	0.16	0/824	0.39	0/1093
42	Lj	0.23	0/720	0.52	0/952
43	Lk	0.24	0/548	0.51	0/730
44	Ll	0.22	0/454	0.45	0/599
45	Lm	0.18	0/431	0.42	0/570
46	Ln	0.26	0/231	0.54	0/294
47	Lo	0.18	0/876	0.45	0/1156
48	Lp	0.20	0/706	0.52	0/939
49	Lr	0.23	0/1012	0.52	0/1358
50	Ls	0.27	0/1666	0.69	1/2250 (0.0%)
51	Lt	0.27	0/1224	0.77	2/1651 (0.1%)
52	NA	0.25	0/578	0.69	2/771 (0.3%)
53	NB	0.26	0/1035	0.65	0/1389
54	NM	0.24	0/3211	0.64	4/4365 (0.1%)
55	S2	0.22	0/40882	0.41	3/63715 (0.0%)
56	SA	0.24	0/1708	0.55	0/2324
57	SB	0.18	0/1745	0.46	0/2337
58	SC	0.20	0/1697	0.46	0/2301
59	SD	0.19	0/1620	0.47	0/2198
60	SE	0.19	0/2014	0.51	0/2726
61	SF	0.22	0/1423	0.60	5/1913 (0.3%)
62	SG	0.20	0/1657	0.51	0/2247
63	SH	0.19	0/1295	0.46	0/1763
64	SI	0.19	0/1603	0.46	0/2161
65	SJ	0.19	0/1456	0.46	0/1957
66	SK	0.22	0/750	0.52	0/1026
67	SL	0.21	0/1163	0.47	0/1562
68	SM	0.32	0/960	0.76	2/1286 (0.2%)
69	SN	0.21	0/1206	0.46	0/1626
70	SO	0.22	0/982	0.59	1/1320 (0.1%)
71	SP	0.18	0/1010	0.51	0/1362
72	SQ	0.20	0/1093	0.57	0/1470
73	SR	0.21	0/955	0.57	0/1294
74	SS	0.25	0/1148	0.67	0/1542
75	ST	0.17	0/1100	0.39	0/1479

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
76	SU	0.18	0/722	0.49	0/983
77	SV	0.17	0/625	0.39	0/837
78	SW	0.21	0/1043	0.47	0/1396
79	SX	0.22	0/1096	0.57	0/1467
80	SY	0.20	0/944	0.56	0/1271
81	SZ	0.23	0/565	0.58	0/764
82	Sa	0.22	0/794	0.51	0/1065
83	Sb	0.23	0/632	0.56	0/851
84	Sc	0.22	0/474	0.63	0/638
85	Sd	0.20	0/443	0.51	0/589
86	Se	0.19	0/420	0.51	0/554
87	Sf	0.26	0/525	0.66	1/695 (0.1%)
88	Sg	0.22	0/2235	0.61	0/3068
All	All	0.22	0/239521	0.44	29/351368 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	CZ	0	1
14	LG	0	1
18	LL	0	1
23	LQ	0	1
38	Lf	0	1
50	Ls	0	1
51	Lt	0	1
62	SG	0	1
72	SQ	0	1
74	SS	0	1
88	Sg	0	1
All	All	0	11

There are no bond length outliers.

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
55	S2	1145	A	O4'-C1'-N9	9.72	123.08	108.50
61	SF	88	MET	CA-CB-CG	6.76	127.62	114.10
54	NM	435	MET	CA-CB-CG	6.36	126.82	114.10
61	SF	88	MET	CB-CG-SD	6.33	131.71	112.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
61	SF	88	MET	CG-SD-CE	-6.00	87.69	100.90
52	NA	85	LEU	CA-CB-CG	5.85	136.77	116.30
61	SF	43	GLU	CA-C-N	5.83	132.68	121.54
61	SF	43	GLU	C-N-CA	5.83	132.68	121.54
54	NM	434	LEU	CA-C-N	-5.80	110.26	121.58
54	NM	434	LEU	C-N-CA	-5.80	110.26	121.58
3	CR	329	MET	CA-CB-CG	5.74	125.58	114.10
54	NM	435	MET	N-CA-CB	5.71	120.00	110.41
52	NA	80	MET	CA-CB-CG	5.69	125.47	114.10
3	CR	19	LYS	CB-CG-CD	5.58	124.13	111.30
3	CR	324	GLU	CA-CB-CG	5.58	125.26	114.10
68	SM	60	MET	CB-CG-SD	5.51	129.23	112.70
50	Ls	45	MET	CB-CG-SD	5.46	129.09	112.70
51	Lt	96	LYS	CA-CB-CG	5.39	124.88	114.10
55	S2	1860	A	P-O3'-C3'	5.30	128.15	120.20
27	LU	44	GLN	CA-CB-CG	5.28	124.66	114.10
51	Lt	133	LEU	CA-CB-CG	5.24	134.63	116.30
87	Sf	110	GLU	CA-CB-CG	5.21	124.53	114.10
5	L5	2117	G	P-O3'-C3'	5.21	128.01	120.20
55	S2	1145	A	N9-C1'-C2'	5.21	119.81	112.00
68	SM	12	MET	CB-CG-SD	5.19	128.28	112.70
4	CZ	18	MET	CA-CB-CG	5.12	124.35	114.10
12	LE	100	LYS	CA-CB-CG	5.06	124.22	114.10
22	LP	135	ARG	N-CA-C	5.05	116.82	110.91
70	SO	43	HIS	N-CA-C	5.00	116.76	110.91

There are no chirality outliers.

All (11) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	CZ	9	ARG	Peptide
14	LG	164	ILE	Peptide
18	LL	47	ALA	Peptide
23	LQ	94	GLU	Peptide
38	Lf	103	VAL	Peptide
50	Ls	6	ARG	Sidechain
51	Lt	150	ASP	Peptide
62	SG	32	MET	Peptide
72	SQ	17	LYS	Peptide
74	SS	11	HIS	Peptide
88	Sg	280	LYS	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	CM	247	0	128	1	0
2	CP	1602	0	809	2	0
3	CR	3269	0	3312	27	0
4	CZ	1488	0	1379	12	0
5	L5	78199	0	39524	278	0
6	L7	2558	0	1296	2	0
7	L8	3314	0	1683	16	0
8	LA	1898	0	1993	26	0
9	LB	3183	0	3316	22	0
10	LC	2884	0	3050	18	0
11	LD	2361	0	2378	13	0
12	LE	1754	0	1899	18	0
13	LF	1870	0	1996	15	0
14	LG	1818	0	1911	10	0
15	LH	1510	0	1579	15	0
16	LI	1666	0	1711	14	0
17	LJ	1329	0	1348	13	0
18	LL	1630	0	1715	14	0
19	LM	1122	0	1174	7	0
20	LN	1701	0	1749	13	0
21	LO	1633	0	1771	14	0
22	LP	1234	0	1254	17	0
23	LQ	1502	0	1616	7	0
24	LR	1452	0	1580	7	0
25	LS	1452	0	1490	13	0
26	LT	1282	0	1336	10	0
27	LU	806	0	826	6	0
28	LV	971	0	1024	6	0
29	LW	808	0	726	4	0
30	LX	981	0	1055	6	0
31	LY	1111	0	1194	14	0
32	LZ	1107	0	1182	5	0
33	La	1154	0	1198	5	0
34	Lb	590	0	613	3	0
35	Lc	742	0	774	4	0
36	Ld	874	0	918	4	0
37	Le	1049	0	1136	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	Lf	872	0	901	7	0
39	Lg	889	0	968	5	0
40	Lh	1006	0	1132	7	0
41	Li	813	0	887	1	0
42	Lj	705	0	737	4	0
43	Lk	542	0	590	6	0
44	Ll	444	0	483	6	0
45	Lm	425	0	461	0	0
46	Ln	230	0	276	3	0
47	Lo	862	0	929	3	0
48	Lp	696	0	744	6	0
49	Lr	997	0	1054	4	0
50	Ls	1640	0	1687	27	0
51	Lt	1208	0	1257	23	0
52	NA	573	0	620	13	0
53	NB	1026	0	1046	14	0
54	NM	3122	0	3103	47	0
55	S2	36562	0	18471	174	0
56	SA	1671	0	1672	22	0
57	SB	1718	0	1786	15	0
58	SC	1661	0	1710	15	0
59	SD	1594	0	1568	21	0
60	SE	1972	0	2012	16	0
61	SF	1403	0	1421	19	0
62	SG	1634	0	1568	12	0
63	SH	1274	0	1196	9	0
64	SI	1574	0	1540	10	0
65	SJ	1431	0	1497	14	0
66	SK	726	0	674	12	0
67	SL	1143	0	1177	8	0
68	SM	950	0	987	21	0
69	SN	1182	0	1249	3	0
70	SO	969	0	982	9	0
71	SP	990	0	974	12	0
72	SQ	1075	0	1110	14	0
73	SR	942	0	913	8	0
74	SS	1130	0	1167	18	0
75	ST	1081	0	1093	12	0
76	SU	713	0	692	7	0
77	SV	618	0	617	6	0
78	SW	1026	0	1072	8	0
79	SX	1078	0	1130	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
80	SY	927	0	914	6	0
81	SZ	559	0	594	5	0
82	Sa	781	0	831	9	0
83	Sb	618	0	604	1	0
84	Sc	472	0	484	7	0
85	Sd	433	0	415	6	0
86	Se	416	0	439	6	0
87	Sf	515	0	521	6	0
88	Sg	2180	0	1968	24	0
89	CM	1	0	0	0	0
89	L5	126	0	0	0	0
89	L7	3	0	0	0	0
89	L8	3	0	0	0	0
89	LA	1	0	0	0	0
89	LC	1	0	0	0	0
89	LI	1	0	0	0	0
89	LN	1	0	0	0	0
89	LP	1	0	0	0	0
89	LV	1	0	0	0	0
89	S2	52	0	0	0	0
90	CZ	32	0	10	0	0
91	Lg	1	0	0	0	0
91	Lj	1	0	0	0	0
91	Lm	1	0	0	0	0
91	Lo	1	0	0	0	0
91	Lp	1	0	0	0	0
91	Sa	1	0	0	0	0
91	Sd	1	0	0	0	0
91	Sf	1	0	0	0	0
92	L5	2	0	0	0	0
92	L7	1	0	0	0	0
92	LI	1	0	0	0	0
92	LN	1	0	0	0	0
92	La	1	0	0	0	0
92	Li	1	0	0	0	0
92	Lp	1	0	0	0	0
92	S2	3	0	0	0	0
All	All	223461	0	165576	1224	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 3.

All (1224) 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)
69:SN:52:VAL:O	69:SN:56:ASP:HB2	1.78	0.84
5:L5:3751:G:H21	5:L5:3775:A:H8	1.24	0.83
5:L5:4745:G:H1	5:L5:4955:A:H61	1.33	0.77
5:L5:1443:A:H62	5:L5:2104:G:N2	1.82	0.76
5:L5:1443:A:N6	5:L5:2103:G:C6	2.52	0.76
55:S2:529:A:H61	55:S2:556:U:H3	1.31	0.76
7:L8:45:C:H4'	44:LI:11:ARG:HD3	1.67	0.75
16:LI:48:LEU:O	16:LI:139:ARG:HA	1.85	0.75
1:CM:808:U:H3	2:CP:33:A:H61	1.31	0.74
3:CR:329:MET:O	3:CR:346:LEU:HB2	1.86	0.74
55:S2:1107:G:H1	55:S2:1125:C:H5	1.35	0.73
7:L8:55:U:H3	7:L8:62:A:H2	1.38	0.72
60:SE:185:GLY:H	60:SE:189:LEU:HD13	1.56	0.71
8:LA:117:GLU:HB2	8:LA:162:ASN:HB2	1.73	0.71
63:SH:63:PHE:HA	63:SH:95:ILE:O	1.91	0.71
5:L5:1443:A:N6	5:L5:2104:G:C2	2.59	0.71
79:SX:49:GLY:O	79:SX:99:GLU:HA	1.91	0.71
55:S2:155:G:H4'	62:SG:15:LEU:HD11	1.72	0.70
55:S2:1748:G:H1	55:S2:1786:U:H3	1.39	0.70
55:S2:1098:C:H5	55:S2:1134:G:H1	1.38	0.69
15:LH:93:ARG:HD2	15:LH:143:GLU:HG3	1.73	0.69
55:S2:1679:A:H2'	61:SF:60:ARG:HD3	1.74	0.69
4:CZ:101:ASN:HA	4:CZ:104:ARG:HD3	1.73	0.69
5:L5:1732:C:H5''	26:LT:43:LYS:HD3	1.75	0.68
88:Sg:42:MET:HG3	88:Sg:57:ARG:HB3	1.75	0.68
5:L5:2469:C:H5	5:L5:2471:G:H1	1.42	0.67
5:L5:2611:A:H5'	5:L5:2688:G:H4'	1.76	0.67
37:Le:21:ILE:HG13	37:Le:33:ARG:HG2	1.76	0.67
55:S2:1265:A:H2	55:S2:1517:G:H22	1.41	0.67
54:NM:191:ASP:HB3	54:NM:404:PRO:HB2	1.76	0.67
82:Sa:51:ARG:HH12	84:Sc:39:SER:HB2	1.60	0.67
9:LB:305:THR:HG23	9:LB:307:TYR:H	1.60	0.66
54:NM:278:GLN:HG3	54:NM:480:ASN:HB3	1.77	0.66
55:S2:587:A:H5'	55:S2:592:C:H42	1.60	0.66
52:NA:91:VAL:HG12	52:NA:109:PRO:HG2	1.76	0.66
56:SA:81:ASN:HA	56:SA:84:GLN:HG3	1.78	0.66
56:SA:184:ARG:HD3	56:SA:191:ARG:HD3	1.78	0.66
6:L7:30:C:H5	6:L7:47:G:H1	1.43	0.65
8:LA:137:ILE:HD11	8:LA:149:LYS:HB2	1.77	0.65
5:L5:1443:A:N6	5:L5:2103:G:N1	2.43	0.65
60:SE:45:ILE:HA	60:SE:61:VAL:HG11	1.79	0.65
5:L5:958:G:H21	12:LE:125:LEU:H	1.45	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:CR:328:ILE:HA	3:CR:346:LEU:O	1.97	0.65
5:L5:468:U:H3	5:L5:688:U:H3	1.44	0.65
5:L5:2838:G:H5'	9:LB:247:GLY:HA2	1.77	0.65
8:LA:120:PRO:HA	8:LA:162:ASN:HB3	1.78	0.64
5:L5:74:G:H5'	18:LL:59:VAL:HB	1.80	0.64
55:S2:145:G:H2'	55:S2:146:G:C8	2.33	0.64
55:S2:1649:U:H3	55:S2:1675:A:H2	1.44	0.64
54:NM:353:LEU:HG	54:NM:366:MET:HE2	1.79	0.64
71:SP:18:ARG:HD3	74:SS:90:VAL:HA	1.78	0.64
28:LV:13:LYS:HD2	28:LV:128:LEU:HD11	1.79	0.64
57:SB:152:LYS:HB2	73:SR:131:PRO:HB3	1.80	0.64
17:LJ:95:ARG:O	17:LJ:98:ASN:HB2	1.98	0.63
81:SZ:68:ILE:HB	81:SZ:109:TYR:HB2	1.79	0.63
50:Ls:138:PHE:HB2	50:Ls:143:ILE:HB	1.80	0.63
57:SB:36:PRO:HD3	57:SB:98:THR:HG22	1.79	0.63
59:SD:163:PRO:O	59:SD:167:TYR:HB2	1.99	0.63
55:S2:433:A:H5''	64:SI:22:HIS:HB3	1.80	0.63
22:LP:94:MET:HG2	22:LP:148:MET:HE3	1.81	0.63
3:CR:318:GLU:HG3	3:CR:319:ILE:HG13	1.79	0.63
15:LH:102:ASN:HB2	15:LH:115:ARG:HB2	1.79	0.63
24:LR:105:LEU:HD22	24:LR:135:LYS:HG2	1.80	0.63
55:S2:1745:A:H1'	62:SG:66:GLY:HA2	1.81	0.62
62:SG:159:ARG:HE	62:SG:171:THR:HB	1.64	0.62
70:SO:91:THR:HG22	70:SO:92:ALA:H	1.62	0.62
55:S2:1228:A:H2'	55:S2:1229:G:C8	2.35	0.62
5:L5:3868:G:H22	5:L5:3900:G:H1'	1.64	0.62
55:S2:1616:U:H3	55:S2:1620:A:H2	1.46	0.62
55:S2:923:G:H1	55:S2:1019:C:H5	1.47	0.61
88:Sg:11:LEU:HB2	88:Sg:307:VAL:HB	1.82	0.61
5:L5:1702:C:H4'	10:LC:308:LYS:HD2	1.82	0.61
27:LU:24:ASP:HB3	27:LU:111:GLU:HA	1.82	0.61
55:S2:1276:A:H62	55:S2:1321:G:H8	1.47	0.61
55:S2:1550:G:H3'	55:S2:1579:A:H61	1.64	0.61
61:SF:49:LEU:HD12	72:SQ:50:LYS:HG2	1.83	0.61
55:S2:563:G:H1	55:S2:592:C:H5	1.48	0.61
55:S2:617:G:H4'	79:SX:88:ASP:HB3	1.83	0.61
5:L5:4618:G:H5''	28:LV:15:ARG:HB2	1.83	0.61
31:LY:10:ASP:HB3	31:LY:13:LYS:HB2	1.82	0.61
52:NA:113:LYS:HA	52:NA:120:TYR:HB3	1.83	0.61
54:NM:408:MET:HE3	54:NM:408:MET:H	1.66	0.61
55:S2:1308:U:H1'	87:Sf:135:HIS:HE1	1.64	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
68:SM:33:ARG:H	68:SM:37:GLU:HB2	1.66	0.60
88:Sg:31:ILE:HG23	88:Sg:45:LEU:HD11	1.83	0.60
5:L5:952:G:H5''	38:Lf:73:LYS:HD2	1.84	0.60
5:L5:2557:G:H1	5:L5:2570:U:H3	1.50	0.60
50:Ls:27:CYS:HB2	50:Ls:193:PHE:HB3	1.82	0.60
31:LY:30:MET:HB3	31:LY:101:PRO:HG2	1.83	0.60
5:L5:5011:A:H62	5:L5:5037:U:H3	1.49	0.60
51:Lt:133:LEU:HB2	51:Lt:152:ILE:HD11	1.83	0.60
38:Lf:102:ARG:HB2	38:Lf:104:MET:HE1	1.83	0.60
51:Lt:12:VAL:HG22	51:Lt:61:LYS:HZ3	1.66	0.60
13:LF:43:ARG:HH21	13:LF:47:ARG:HD3	1.66	0.60
20:LN:184:ILE:HG23	20:LN:194:ARG:HH22	1.67	0.60
55:S2:1536:G:H2'	55:S2:1537:A:C8	2.38	0.59
68:SM:54:SER:HB3	68:SM:78:LYS:HD2	1.83	0.59
62:SG:3:LEU:O	62:SG:15:LEU:HA	2.03	0.59
13:LF:105:VAL:HG13	13:LF:136:VAL:HG12	1.85	0.59
55:S2:1017:U:H5'	69:SN:55:ARG:HD3	1.85	0.59
55:S2:165:G:H4'	62:SG:53:SER:HB3	1.85	0.59
29:LW:45:ASN:HB3	29:LW:48:GLN:HG3	1.83	0.59
53:NB:41:ASP:HA	53:NB:44:LEU:HD12	1.84	0.59
59:SD:8:LYS:HG2	76:SU:61:LEU:HD11	1.84	0.59
25:LS:80:ILE:HG12	25:LS:129:VAL:HG13	1.84	0.59
25:LS:127:MET:HB3	26:LT:153:PRO:HG2	1.84	0.59
51:Lt:35:LEU:HD12	51:Lt:64:ILE:HG21	1.85	0.59
33:La:72:THR:HG22	33:La:110:LYS:HB3	1.86	0.58
63:SH:72:PHE:O	63:SH:75:ILE:O	2.20	0.58
5:L5:966:A:H5''	5:L5:2092:G:H22	1.69	0.58
28:LV:45:ILE:HG21	28:LV:53:PRO:HB3	1.85	0.58
55:S2:508:A:H3'	55:S2:509:G:H8	1.69	0.58
32:LZ:59:LYS:HE2	32:LZ:59:LYS:H	1.68	0.58
43:Lk:14:THR:HA	43:Lk:17:ARG:HG3	1.84	0.58
5:L5:4699:U:H1'	5:L5:4700:A:H5''	1.85	0.58
55:S2:144:U:H2'	55:S2:145:G:C8	2.38	0.58
32:LZ:50:PRO:HD3	32:LZ:68:ILE:HG12	1.85	0.58
88:Sg:87:LEU:HB2	88:Sg:101:PHE:HB2	1.86	0.58
71:SP:34:MET:HB3	71:SP:42:ARG:HG3	1.86	0.57
5:L5:1332:C:H2'	5:L5:1333:A:H8	1.69	0.57
5:L5:1443:A:N6	5:L5:2104:G:N2	2.52	0.57
5:L5:1479:G:H21	18:LL:184:MET:HE3	1.69	0.57
55:S2:192:C:H41	55:S2:207:G:H21	1.50	0.57
53:NB:56:ILE:HB	53:NB:79:VAL:HG23	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:LI:73:ASN:HB2	16:LI:87:MET:HE1	1.87	0.57
8:LA:172:GLY:HA3	48:Lp:68:ALA:H	1.70	0.57
19:LM:119:ARG:HG3	21:LO:189:ILE:HG13	1.85	0.57
66:SK:23:ALA:HB3	66:SK:69:TRP:HZ3	1.68	0.57
60:SE:162:ILE:HG22	60:SE:169:ILE:HA	1.87	0.57
3:CR:24:LEU:HD21	3:CR:112:ILE:HD12	1.85	0.57
17:LJ:15:LEU:HD13	17:LJ:134:LEU:HD13	1.86	0.57
62:SG:32:MET:HB2	62:SG:100:CYS:HB2	1.86	0.57
54:NM:228:ALA:HA	54:NM:244:GLU:O	2.04	0.57
66:SK:24:LYS:HD3	66:SK:26:ASP:HB2	1.85	0.57
68:SM:94:ILE:HD11	68:SM:98:GLY:HA2	1.87	0.57
51:Lt:154:ASP:HB3	51:Lt:159:ALA:HB3	1.86	0.56
55:S2:925:G:H1	55:S2:1017:U:H3	1.53	0.56
26:LT:82:GLY:HA3	34:Lb:16:TRP:HB2	1.86	0.56
21:LO:61:ARG:HA	21:LO:70:PRO:HD2	1.87	0.56
54:NM:179:ASN:HA	54:NM:252:LYS:HE3	1.86	0.56
37:Le:8:VAL:HG23	37:Le:10:PRO:HD3	1.88	0.56
56:SA:77:ILE:HB	56:SA:124:VAL:HG12	1.87	0.56
5:L5:1464:C:H5''	34:Lb:32:LEU:HD12	1.88	0.56
26:LT:27:LEU:HB3	26:LT:31:MET:HE3	1.87	0.56
52:NA:116:ALA:HB1	53:NB:37:ALA:HA	1.88	0.56
55:S2:666:U:H3	55:S2:1145:A:H61	1.52	0.56
68:SM:100:PRO:HB2	68:SM:103:VAL:HG22	1.85	0.56
76:SU:80:PHE:HB3	85:Sd:52:PHE:HB3	1.87	0.56
5:L5:4691:A:H4'	15:LH:71:ARG:HG2	1.87	0.56
51:Lt:28:LEU:HD13	51:Lt:32:ILE:HG13	1.88	0.56
55:S2:377:G:H5'	64:SI:98:LYS:HB3	1.88	0.56
5:L5:4927:G:H5'	5:L5:4928:C:H5	1.70	0.56
55:S2:1630:A:H5''	74:SS:37:GLY:H	1.71	0.56
75:ST:96:SER:HB3	75:ST:99:VAL:HB	1.86	0.56
12:LE:279:ASN:H	38:Lf:4:ARG:HH12	1.53	0.56
12:LE:153:LEU:HD11	12:LE:195:ILE:HG13	1.88	0.56
21:LO:34:VAL:HG22	21:LO:103:LYS:HB2	1.86	0.56
3:CR:317:VAL:HA	3:CR:413:LEU:HA	1.86	0.55
5:L5:137:G:H2'	5:L5:138:G:H8	1.71	0.55
88:Sg:38:LYS:HD3	88:Sg:64:HIS:H	1.71	0.55
9:LB:56:ILE:O	9:LB:73:VAL:HA	2.07	0.55
12:LE:244:GLU:O	12:LE:248:ILE:HD12	2.07	0.55
51:Lt:59:THR:HG23	51:Lt:74:VAL:HB	1.89	0.55
55:S2:895:G:H8	55:S2:896:U:H4'	1.72	0.55
64:SI:67:TRP:HE1	64:SI:162:LEU:HD21	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:CR:84:LEU:HD13	71:SP:131:PRO:HA	1.89	0.55
52:NA:98:LYS:HB3	52:NA:102:ILE:HB	1.87	0.55
60:SE:180:LEU:HA	60:SE:194:VAL:HA	1.87	0.55
5:L5:3664:G:H2'	5:L5:3665:G:H8	1.72	0.55
5:L5:3717:A:H2'	5:L5:3718:A:C8	2.42	0.55
56:SA:137:ALA:HB1	56:SA:142:LEU:HB3	1.88	0.55
80:SY:20:ARG:HE	80:SY:22:GLN:HE21	1.52	0.55
16:LI:31:ILE:HG22	16:LI:62:SER:HB2	1.89	0.55
88:Sg:39:THR:HG22	88:Sg:60:ARG:HG3	1.89	0.55
5:L5:4139:G:H4'	5:L5:4146:G:H22	1.72	0.55
16:LI:205:PRO:HD2	16:LI:208:LYS:HE2	1.89	0.55
56:SA:89:LYS:HD2	56:SA:201:LEU:HG	1.89	0.55
57:SB:198:GLU:HG2	57:SB:210:VAL:HB	1.89	0.55
78:SW:14:ILE:HG13	78:SW:27:ILE:HD11	1.89	0.55
13:LF:226:HIS:HA	13:LF:233:ALA:HB3	1.88	0.55
50:Ls:199:TYR:HE2	50:Ls:204:LEU:HB2	1.72	0.55
57:SB:60:ASP:HA	57:SB:63:LYS:HD2	1.88	0.55
70:SO:34:PHE:HB3	70:SO:41:PHE:HB2	1.88	0.55
5:L5:4537:C:H2'	5:L5:4538:G:C8	2.42	0.54
8:LA:101:VAL:HG22	8:LA:165:VAL:HG22	1.89	0.54
55:S2:5:U:H2'	55:S2:6:G:H8	1.72	0.54
59:SD:116:ARG:HG2	59:SD:150:MET:HE1	1.89	0.54
51:Lt:80:LEU:HB3	51:Lt:112:ILE:HD13	1.89	0.54
70:SO:92:ALA:HB2	70:SO:125:LYS:HB2	1.88	0.54
50:Ls:101:MET:HE3	50:Ls:101:MET:H	1.73	0.54
14:LG:48:LYS:HD2	30:LX:42:THR:HG23	1.89	0.54
13:LF:222:LYS:HB3	13:LF:231:GLY:HA2	1.90	0.54
50:Ls:53:VAL:HG12	50:Ls:89:VAL:HG22	1.90	0.54
55:S2:1348:G:H1	55:S2:1381:G:H22	1.55	0.54
60:SE:17:HIS:HB2	60:SE:108:ARG:HA	1.88	0.54
4:CZ:116:LEU:HD22	4:CZ:119:ALA:HB2	1.89	0.54
25:LS:69:GLU:HG3	25:LS:101:THR:HA	1.89	0.54
68:SM:55:ASN:HB2	68:SM:82:ASN:HB2	1.89	0.54
4:CZ:89:ILE:HG12	4:CZ:122:LEU:HB3	1.89	0.54
11:LD:209:ARG:HH12	11:LD:234:ASP:HB3	1.72	0.54
25:LS:15:ARG:HD2	25:LS:25:PRO:HG2	1.90	0.54
35:Lc:48:LEU:HD21	35:Lc:60:ILE:HG21	1.89	0.54
3:CR:145:LYS:HG2	3:CR:162:GLN:HG2	1.89	0.54
5:L5:2337:C:H4'	49:Lr:19:LYS:HB2	1.89	0.54
20:LN:5:LYS:HG3	41:Li:40:VAL:HG11	1.88	0.54
68:SM:95:ASP:HB2	68:SM:96:ARG:HE	1.73	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:L5:1940:G:H22	5:L5:4434:C:H5'	1.73	0.54
5:L5:4745:G:H1	5:L5:4955:A:N6	2.02	0.54
58:SC:191:VAL:HG11	58:SC:236:PHE:HA	1.90	0.54
59:SD:105:LEU:HB2	59:SD:122:VAL:HG21	1.90	0.54
75:ST:104:LEU:HD22	75:ST:121:ARG:HG3	1.90	0.54
5:L5:2520:C:H2'	5:L5:2521:G:C8	2.43	0.53
30:LX:82:THR:HG22	30:LX:155:ILE:HG23	1.90	0.53
59:SD:56:GLN:O	59:SD:60:GLY:HA3	2.08	0.53
62:SG:7:PHE:HB3	62:SG:12:CYS:HB2	1.90	0.53
88:Sg:32:LEU:HD11	88:Sg:92:LEU:HD21	1.90	0.53
3:CR:362:THR:HG23	3:CR:364:GLN:H	1.73	0.53
8:LA:5:ILE:HG12	8:LA:8:GLN:HB2	1.91	0.53
15:LH:105:ILE:HG12	15:LH:112:VAL:HG22	1.90	0.53
48:Lp:6:LYS:HG2	48:Lp:7:LYS:HG2	1.91	0.53
63:SH:145:ARG:HG3	63:SH:147:LYS:HG2	1.91	0.53
5:L5:4626:A:H62	5:L5:4669:A:H2	1.57	0.53
5:L5:4992:G:H2'	5:L5:4993:G:C8	2.42	0.53
57:SB:163:GLN:HB3	57:SB:204:ILE:HD13	1.91	0.53
3:CR:119:PRO:HB2	3:CR:165:THR:HG21	1.91	0.53
56:SA:84:GLN:HB3	56:SA:100:ALA:HB1	1.91	0.53
76:SU:54:VAL:HB	76:SU:88:LEU:HB2	1.91	0.53
5:L5:1952:G:H4'	25:LS:93:MET:HG2	1.90	0.53
59:SD:56:GLN:O	59:SD:60:GLY:CA	2.57	0.53
51:Lt:130:LYS:HG2	51:Lt:152:ILE:HG23	1.91	0.53
5:L5:452:A:H4'	5:L5:453:G:H5'	1.90	0.53
5:L5:703:G:H2'	5:L5:704:C:H4'	1.90	0.53
57:SB:192:SER:HA	57:SB:195:LYS:HG3	1.91	0.53
35:Lc:38:ILE:HG21	35:Lc:63:TYR:HB3	1.89	0.53
54:Nm:319:THR:H	54:Nm:322:ARG:HB2	1.74	0.53
5:L5:1914:C:H4'	21:LO:89:PRO:HD3	1.91	0.52
55:S2:562:U:H2'	55:S2:563:G:C8	2.43	0.52
5:L5:1942:A:H2'	5:L5:1943:A:C8	2.43	0.52
5:L5:4274:A:H2'	5:L5:4275:G:C8	2.44	0.52
5:L5:4627:U:H4'	9:LB:373:LYS:HE2	1.91	0.52
88:Sg:168:CYS:HB2	88:Sg:195:LEU:HG	1.91	0.52
88:Sg:195:LEU:HA	88:Sg:211:GLY:HA3	1.91	0.52
5:L5:1994:C:H2'	5:L5:1995:G:H8	1.75	0.52
12:LE:190:HIS:HB3	12:LE:193:PHE:HD2	1.74	0.52
18:LL:46:ILE:HD11	18:LL:51:ALA:HA	1.91	0.52
46:Ln:10:MET:HE2	55:S2:1172:U:H4'	1.90	0.52
51:Lt:18:THR:HA	51:Lt:57:ARG:HA	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:Lt:133:LEU:HD23	51:Lt:143:VAL:HG11	1.90	0.52
54:Nm:192:TYR:HD2	54:Nm:196:PHE:HE2	1.57	0.52
55:S2:1228:A:H2'	55:S2:1229:G:H8	1.75	0.52
50:Ls:102:LEU:HD23	50:Ls:189:ILE:HD11	1.91	0.52
5:L5:4363:A:H5''	47:Lo:36:GLN:HG2	1.91	0.52
68:SM:96:ARG:NE	68:SM:96:ARG:H	2.08	0.52
5:L5:1824:G:H5''	26:LT:35:LYS:HE2	1.92	0.52
9:LB:57:VAL:HG22	9:LB:73:VAL:HG12	1.90	0.52
50:Ls:101:MET:HA	50:Ls:104:ALA:HB3	1.92	0.52
55:S2:1101:U:H2'	55:S2:1102:G:C8	2.44	0.52
55:S2:1536:G:H2'	55:S2:1537:A:H8	1.74	0.52
81:SZ:48:VAL:HG23	81:SZ:80:ARG:HD2	1.92	0.52
11:LD:223:PHE:HB3	11:LD:226:TYR:HB2	1.91	0.52
17:LJ:15:LEU:HD22	17:LJ:157:ILE:HG12	1.92	0.52
55:S2:147:A:H2'	55:S2:148:U:C6	2.45	0.52
5:L5:3946:G:H21	5:L5:3947:A:H62	1.57	0.51
55:S2:981:A:H2'	55:S2:982:G:C8	2.45	0.51
70:SO:28:PHE:HA	70:SO:92:ALA:O	2.10	0.51
3:CR:322:VAL:O	3:CR:391:ILE:HA	2.10	0.51
55:S2:496:C:H5'	60:SE:29:PRO:HA	1.92	0.51
5:L5:4291:G:H5'	5:L5:4293:U:C6	2.45	0.51
5:L5:2335:C:H2'	5:L5:2336:G:H8	1.75	0.51
5:L5:2520:C:H2'	5:L5:2521:G:H8	1.75	0.51
54:Nm:152:LEU:HD13	54:Nm:157:THR:HA	1.91	0.51
74:SS:73:ASN:HB3	74:SS:76:GLN:HE21	1.74	0.51
74:SS:85:ASN:HB2	74:SS:97:GLN:HA	1.91	0.51
38:Lf:50:VAL:HG22	38:Lf:69:VAL:HG22	1.92	0.51
57:SB:124:HIS:HA	57:SB:137:LEU:O	2.10	0.51
59:SD:132:LYS:HB3	59:SD:189:MET:HG2	1.92	0.51
67:SL:59:LYS:HB3	67:SL:134:LEU:HD13	1.93	0.51
13:LF:127:LYS:HB2	26:LT:133:ALA:HB3	1.91	0.51
24:LR:105:LEU:HD23	24:LR:138:LEU:HD23	1.93	0.51
55:S2:503:C:H3'	55:S2:504:G:H8	1.75	0.51
66:SK:3:MET:HE1	66:SK:48:ALA:HB2	1.91	0.51
87:Sf:121:CYS:HB2	87:Sf:146:LEU:HD11	1.93	0.51
9:LB:92:TYR:HB3	9:LB:99:LEU:HD22	1.93	0.51
80:SY:27:VAL:HG22	80:SY:69:THR:HB	1.93	0.51
5:L5:4260:U:H2'	5:L5:4261:C:C6	2.45	0.51
42:Lj:48:ASN:HA	42:Lj:54:LYS:HE2	1.93	0.51
55:S2:874:G:H2'	55:S2:875:A:H8	1.76	0.51
55:S2:1665:G:H5''	75:ST:89:PRO:HD2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
66:SK:60:GLU:HB2	66:SK:69:TRP:CD1	2.46	0.51
27:LU:28:PRO:HB2	27:LU:34:MET:HB3	1.92	0.51
68:SM:44:LYS:HE2	87:Sf:129:GLY:H	1.76	0.51
4:CZ:18:MET:HE1	4:CZ:61:ILE:HD13	1.93	0.50
13:LF:148:LYS:O	13:LF:152:GLU:HG2	2.11	0.50
54:NM:441:LEU:HA	54:NM:444:MET:HE1	1.92	0.50
55:S2:1217:A:H2'	55:S2:1218:C:H6	1.75	0.50
14:LG:95:LEU:HG	14:LG:218:LEU:HD22	1.93	0.50
88:Sg:238:ALA:H	88:Sg:251:ALA:HB3	1.75	0.50
5:L5:1306:C:H2'	5:L5:1307:A:H8	1.76	0.50
5:L5:2411:C:H2'	5:L5:2412:A:C8	2.46	0.50
21:LO:185:VAL:O	21:LO:189:ILE:HB	2.10	0.50
55:S2:848:U:H2'	55:S2:849:A:H8	1.77	0.50
55:S2:928:G:H2'	55:S2:929:G:C8	2.45	0.50
71:SP:28:MET:HE1	71:SP:36:LEU:HD22	1.94	0.50
5:L5:4499:G:C2	5:L5:4529:G:H1'	2.47	0.50
60:SE:137:PRO:HB2	60:SE:150:PRO:HD2	1.92	0.50
4:CZ:128:GLN:HG3	4:CZ:157:ALA:HB1	1.93	0.50
5:L5:518:G:H1	5:L5:643:C:H2'	1.74	0.50
5:L5:1538:U:H2'	5:L5:1539:G:H8	1.76	0.50
5:L5:4740:G:O6	5:L5:4959:U:O2	2.29	0.50
5:L5:5006:U:H4'	5:L5:5007:A:H5'	1.94	0.50
74:SS:22:GLY:HA2	74:SS:56:ALA:HB3	1.93	0.50
5:L5:515:C:H41	5:L5:647:G:H21	1.60	0.50
21:LO:154:ALA:O	21:LO:158:GLU:HG3	2.12	0.50
56:SA:134:LEU:HD11	56:SA:144:THR:HG21	1.93	0.50
52:NA:83:LEU:HD13	53:NB:44:LEU:HD23	1.94	0.50
55:S2:530:U:H2'	55:S2:531:A:H8	1.77	0.50
60:SE:72:ILE:HB	60:SE:77:ARG:HD3	1.92	0.50
82:Sa:24:THR:HG21	82:Sa:71:LEU:HD22	1.93	0.50
5:L5:496:G:H2'	5:L5:498:C:H5''	1.93	0.50
7:L8:106:G:H4'	7:L8:137:A:H5'	1.93	0.50
38:Lf:75:THR:HG21	38:Lf:87:LYS:HG3	1.94	0.50
47:Lo:33:LEU:HA	47:Lo:38:LYS:HG2	1.94	0.50
54:NM:245:ILE:HB	54:NM:281:TYR:HB3	1.93	0.50
55:S2:28:U:H2'	55:S2:29:G:H8	1.76	0.50
55:S2:528:A:H2'	55:S2:529:A:C8	2.46	0.50
59:SD:80:PRO:HD2	59:SD:83:SER:HB3	1.91	0.50
80:SY:37:LYS:HD2	80:SY:57:VAL:HG23	1.94	0.50
5:L5:2664:G:H4'	5:L5:2677:G:H4'	1.94	0.50
5:L5:2745:A:H2'	5:L5:2746:A:C8	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:L5:4128:A:H2	5:L5:4156:G:H21	1.60	0.50
5:L5:4258:C:H5'	17:LJ:68:ILE:HD11	1.93	0.50
52:NA:88:VAL:HB	52:NA:111:VAL:HG13	1.94	0.50
55:S2:1705:C:H2'	55:S2:1706:G:C8	2.47	0.50
5:L5:46:U:H5''	18:LL:16:LYS:HG3	1.94	0.49
5:L5:1332:C:H2'	5:L5:1333:A:C8	2.47	0.49
5:L5:4093:G:H2'	5:L5:4094:G:C8	2.47	0.49
8:LA:28:ARG:HG3	8:LA:123:ARG:HH11	1.77	0.49
12:LE:165:LEU:HD11	12:LE:176:THR:HG22	1.94	0.49
24:LR:105:LEU:HD13	24:LR:135:LYS:HE3	1.93	0.49
31:LY:22:PRO:O	31:LY:26:ARG:HB2	2.11	0.49
55:S2:1627:C:H5''	75:ST:41:LYS:HD3	1.94	0.49
55:S2:1748:G:O6	55:S2:1786:U:O4	2.30	0.49
55:S2:1845:A:H2'	55:S2:1846:G:C8	2.47	0.49
5:L5:420:A:H61	7:L8:15:G:H1'	1.76	0.49
5:L5:2487:G:H22	5:L5:2492:C:H1'	1.76	0.49
50:Ls:125:ALA:HA	50:Ls:154:ILE:HG23	1.95	0.49
21:LO:9:LEU:HD23	21:LO:118:MET:HB3	1.94	0.49
87:Sf:121:CYS:HB3	87:Sf:132:MET:HE1	1.94	0.49
3:CR:157:LEU:HD12	3:CR:171:LYS:HG2	1.93	0.49
52:NA:96:ILE:HG23	53:NB:62:VAL:HG22	1.93	0.49
55:S2:1752:C:H42	55:S2:1781:A:H2	1.59	0.49
9:LB:168:MET:HG2	9:LB:178:ALA:HA	1.95	0.49
13:LF:182:TYR:HB3	13:LF:200:ARG:HG3	1.93	0.49
20:LN:158:HIS:HB3	20:LN:161:MET:HG3	1.93	0.49
25:LS:13:VAL:HG22	25:LS:29:ARG:HB2	1.94	0.49
72:SQ:134:GLY:HA3	72:SQ:140:ARG:HA	1.94	0.49
5:L5:1468:C:H2'	5:L5:1469:C:H6	1.77	0.49
22:LP:27:LYS:HG2	22:LP:63:TYR:CG	2.48	0.49
55:S2:928:G:H1	55:S2:1013:U:H3	1.59	0.49
55:S2:1860:A:H3'	82:Sa:8:ASN:HB3	1.95	0.49
5:L5:184:U:H1'	5:L5:254:G:H22	1.77	0.49
5:L5:1553:A:N6	5:L5:1574:G:H1'	2.27	0.49
20:LN:68:ARG:HE	20:LN:128:LYS:HE3	1.77	0.49
46:Ln:1:MET:HB2	55:S2:1706:G:H5'	1.94	0.49
54:Nm:431:LEU:HD12	54:Nm:432:LEU:HD22	1.94	0.49
9:LB:29:VAL:HA	9:LB:220:ILE:HD13	1.93	0.49
11:LD:218:ALA:HA	11:LD:221:LYS:HG2	1.95	0.49
20:LN:178:HIS:HA	20:LN:181:HIS:CE1	2.48	0.49
53:NB:73:HIS:HB3	53:NB:97:LYS:HZ2	1.78	0.49
55:S2:1204:A:H62	55:S2:1694:U:H3	1.61	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
56:SA:77:ILE:HD13	56:SA:99:ILE:HB	1.93	0.49
58:SC:252:THR:HG22	58:SC:254:ASP:H	1.76	0.49
5:L5:1994:C:H2'	5:L5:1995:G:C8	2.48	0.49
39:Lg:42:PRO:HB2	39:Lg:53:LEU:HD12	1.94	0.49
55:S2:1351:G:H4'	56:SA:110:ASN:HA	1.95	0.49
61:SF:167:LYS:HG3	61:SF:171:GLU:HG3	1.95	0.49
66:SK:3:MET:HG2	66:SK:8:ARG:HH21	1.77	0.49
22:LP:125:MET:HE2	22:LP:143:PRO:HG3	1.94	0.49
54:NM:203:PRO:HD2	54:NM:206:TRP:HB3	1.95	0.49
55:S2:860:G:H21	78:SW:107:SER:HB3	1.78	0.49
5:L5:1539:G:H4'	8:LA:194:ASN:HB2	1.95	0.48
5:L5:1558:A:H2'	5:L5:1559:G:C8	2.48	0.48
5:L5:2765:A:H2'	5:L5:2766:A:C8	2.48	0.48
55:S2:1113:A:H62	55:S2:1120:U:H3	1.60	0.48
55:S2:1454:A:H5''	73:SR:3:ARG:HD2	1.96	0.48
3:CR:19:LYS:HE2	3:CR:19:LYS:HA	1.95	0.48
17:LJ:19:LYS:HG2	17:LJ:133:VAL:HB	1.94	0.48
50:Ls:47:LEU:HD12	50:Ls:51:ALA:HB3	1.94	0.48
8:LA:234:LYS:HG2	8:LA:238:ILE:HG12	1.95	0.48
55:S2:1372:U:HO2'	55:S2:1373:C:H6	1.61	0.48
84:Sc:17:VAL:HG13	84:Sc:30:VAL:HG12	1.95	0.48
3:CR:280:PHE:HZ	3:CR:395:LYS:HB2	1.77	0.48
5:L5:1662:C:H2'	5:L5:1663:C:C6	2.49	0.48
5:L5:3917:A:H2'	5:L5:3918:G:H8	1.78	0.48
14:LG:207:VAL:HG21	14:LG:215:LEU:HD13	1.95	0.48
43:Lk:35:LYS:HA	43:Lk:43:TYR:O	2.13	0.48
54:NM:444:MET:HE3	54:NM:444:MET:H	1.79	0.48
55:S2:640:A:H2'	55:S2:641:A:C8	2.48	0.48
5:L5:300:A:H2'	5:L5:301:G:H8	1.77	0.48
5:L5:1503:A:H4'	5:L5:1504:G:H5'	1.95	0.48
7:L8:86:U:H5'	40:Lh:7:ARG:HH22	1.79	0.48
36:Ld:64:ILE:HG23	36:Ld:68:LEU:HD23	1.95	0.48
55:S2:1217:A:H2'	55:S2:1218:C:C6	2.48	0.48
56:SA:57:LYS:HE3	56:SA:60:LEU:HD23	1.96	0.48
20:LN:138:PHE:HA	20:LN:143:ARG:HD2	1.96	0.48
54:NM:341:MET:HE2	54:NM:345:ASP:HB2	1.96	0.48
56:SA:143:PRO:HG3	77:SV:32:ILE:HG13	1.96	0.48
8:LA:28:ARG:HB2	8:LA:123:ARG:HG3	1.95	0.48
55:S2:106:C:H2'	55:S2:107:A:H8	1.79	0.48
79:SX:100:VAL:HG12	79:SX:125:VAL:HA	1.96	0.48
10:LC:301:ALA:HB1	23:LQ:132:LYS:HD3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:LD:62:CYS:HB3	11:LD:105:LEU:HD22	1.95	0.48
14:LG:62:ARG:O	14:LG:66:GLN:HG3	2.13	0.48
50:Ls:31:GLY:HA3	50:Ls:190:GLN:HE22	1.78	0.48
55:S2:323:C:H2'	55:S2:327:G:H22	1.79	0.48
55:S2:996:A:H2'	55:S2:997:A:C8	2.48	0.48
65:SJ:87:LEU:HD13	65:SJ:100:LEU:HD21	1.96	0.48
10:LC:221:PHE:HB3	10:LC:227:ILE:HG21	1.96	0.48
31:LY:13:LYS:O	31:LY:17:ARG:HD3	2.13	0.48
54:NM:270:ARG:HA	54:NM:273:LEU:HD12	1.95	0.48
61:SF:35:LEU:O	61:SF:39:ILE:HG12	2.14	0.48
68:SM:51:VAL:HG22	68:SM:77:ILE:HB	1.94	0.48
73:SR:6:THR:HG22	73:SR:8:THR:HG22	1.95	0.48
73:SR:14:ARG:HG2	73:SR:69:ILE:HD11	1.96	0.48
5:L5:1478:C:H2'	5:L5:1479:G:H8	1.79	0.48
17:LJ:35:ARG:HB3	17:LJ:123:ILE:HG23	1.95	0.48
31:LY:109:LEU:HD13	31:LY:119:LEU:HD11	1.96	0.48
50:Ls:20:LEU:HB3	50:Ls:90:PHE:CE1	2.49	0.48
5:L5:1308:C:H2'	5:L5:1309:C:C6	2.49	0.47
5:L5:2744:A:H2'	5:L5:2745:A:C8	2.49	0.47
5:L5:4238:G:H2'	5:L5:4239:A:C8	2.49	0.47
54:NM:453:LEU:HB3	54:NM:455:LEU:HD22	1.96	0.47
74:SS:115:LYS:HD2	74:SS:126:PHE:HB2	1.96	0.47
5:L5:1077:C:H4'	5:L5:1215:C:C4	2.49	0.47
5:L5:1176:C:H42	5:L5:1184:A:H61	1.60	0.47
5:L5:2705:G:H1	5:L5:2710:C:H5	1.62	0.47
8:LA:173:GLY:O	8:LA:176:ASP:HB2	2.14	0.47
39:Lg:83:CYS:SG	39:Lg:86:CYS:HB2	2.53	0.47
65:SJ:136:ARG:HD3	65:SJ:160:SER:HA	1.95	0.47
74:SS:15:VAL:HG23	74:SS:16:LEU:HD23	1.96	0.47
5:L5:3612:C:H1'	5:L5:5016:A:C8	2.49	0.47
7:L8:19:C:H2'	7:L8:20:A:C8	2.49	0.47
55:S2:455:A:H2'	55:S2:456:C:C6	2.50	0.47
61:SF:34:SER:HA	84:Sc:55:VAL:HB	1.97	0.47
63:SH:79:LEU:H	63:SH:79:LEU:HD23	1.79	0.47
64:SI:87:ASN:HB3	64:SI:90:LEU:HG	1.95	0.47
73:SR:34:VAL:O	73:SR:38:ILE:HG13	2.14	0.47
5:L5:37:U:H4'	33:La:32:ARG:HG2	1.95	0.47
50:Ls:12:ASN:O	50:Ls:16:LYS:HB2	2.14	0.47
52:NA:103:LEU:HD22	52:NA:131:LEU:HD21	1.96	0.47
55:S2:527:C:H2'	55:S2:528:A:C8	2.50	0.47
56:SA:34:MET:HE3	56:SA:34:MET:HB3	1.72	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
56:SA:66:VAL:HG21	56:SA:185:MET:HB2	1.96	0.47
70:SO:117:ARG:HD2	82:Sa:49:ALA:HB2	1.97	0.47
18:LL:120:TYR:HA	18:LL:155:MET:HE1	1.97	0.47
27:LU:117:ILE:HG23	53:NB:31:LYS:HB3	1.96	0.47
55:S2:1348:G:H5'	58:SC:145:LYS:HE3	1.96	0.47
66:SK:26:ASP:HB3	66:SK:29:MET:HG2	1.96	0.47
71:SP:93:MET:HE1	71:SP:106:GLU:OE1	2.15	0.47
5:L5:257:C:H2'	5:L5:258:G:C8	2.49	0.47
8:LA:28:ARG:HE	8:LA:123:ARG:HG3	1.80	0.47
9:LB:220:ILE:HG12	9:LB:278:THR:HG23	1.97	0.47
55:S2:846:G:H2'	60:SE:19:MET:HG2	1.97	0.47
55:S2:1808:U:H2'	55:S2:1809:A:C8	2.49	0.47
68:SM:84:LYS:O	68:SM:88:TRP:HB2	2.14	0.47
5:L5:1175:A:H2	5:L5:1185:G:H22	1.63	0.47
5:L5:3612:C:H1'	5:L5:5016:A:H8	1.79	0.47
6:L7:58:A:H2'	6:L7:59:G:C8	2.49	0.47
9:LB:231:VAL:HG11	9:LB:251:VAL:HG23	1.96	0.47
11:LD:278:ASP:O	11:LD:282:GLN:HG3	2.14	0.47
13:LF:40:LYS:HE3	13:LF:40:LYS:HB2	1.68	0.47
46:Ln:12:ARG:HG3	46:Ln:15:ARG:HH22	1.78	0.47
54:NM:119:PHE:HB2	54:NM:258:ARG:NH2	2.30	0.47
55:S2:649:U:H5''	79:SX:108:LYS:HD2	1.97	0.47
55:S2:1102:G:H1	55:S2:1130:G:H1	1.63	0.47
59:SD:16:ILE:HD11	85:Sd:36:LEU:HD23	1.97	0.47
59:SD:223:ILE:HG13	88:Sg:189:ILE:HD11	1.97	0.47
67:SL:49:GLU:HG3	67:SL:116:CYS:HA	1.96	0.47
5:L5:2411:C:H2'	5:L5:2412:A:H8	1.80	0.47
16:LI:54:SER:HB2	16:LI:135:ILE:HD11	1.97	0.47
17:LJ:41:GLU:HG3	17:LJ:48:PRO:HD3	1.95	0.47
31:LY:59:ARG:HG3	31:LY:103:LYS:HD2	1.96	0.47
44:Ll:34:LYS:HE3	44:Ll:34:LYS:HB2	1.66	0.47
50:Ls:6:ARG:HA	50:Ls:9:TRP:HB3	1.97	0.47
54:NM:216:VAL:HG21	54:NM:221:LYS:HZ3	1.79	0.47
54:NM:387:VAL:HB	54:NM:396:ASP:HB2	1.97	0.47
55:S2:1513:C:H2'	55:S2:1514:G:H8	1.80	0.47
55:S2:1124:C:H5''	57:SB:150:ILE:HG12	1.97	0.47
63:SH:98:ARG:HB3	63:SH:125:VAL:HG22	1.97	0.47
88:Sg:129:ILE:H	88:Sg:142:VAL:HG22	1.79	0.47
5:L5:3773:U:H1'	5:L5:3775:A:H2	1.79	0.47
5:L5:4935:C:H2'	5:L5:4936:G:C8	2.49	0.47
13:LF:91:PHE:HB2	13:LF:145:PRO:HG3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:943:U:H2'	55:S2:944:A:H8	1.80	0.47
55:S2:1010:G:H2'	55:S2:1011:A:C8	2.50	0.47
55:S2:1512:C:H5''	85:Sd:8:TRP:HZ3	1.78	0.47
61:SF:36:GLN:O	61:SF:40:ALA:HB2	2.15	0.47
61:SF:78:MET:HE3	61:SF:78:MET:HB3	1.71	0.47
68:SM:33:ARG:HD3	68:SM:89:VAL:HG21	1.96	0.47
68:SM:74:ILE:HD12	68:SM:75:ASN:H	1.80	0.47
5:L5:1590:C:H4'	5:L5:2857:A:H5'	1.96	0.46
9:LB:378:ARG:HG2	29:LW:32:LEU:HD21	1.97	0.46
14:LG:106:THR:HG22	14:LG:195:HIS:CD2	2.50	0.46
21:LO:194:GLU:O	21:LO:198:THR:HG23	2.15	0.46
54:NM:127:LYS:HB2	54:NM:130:GLU:HG2	1.96	0.46
63:SH:72:PHE:O	63:SH:76:GLN:HB2	2.15	0.46
75:ST:76:THR:HG21	75:ST:97:LYS:HG3	1.96	0.46
3:CR:318:GLU:HB3	3:CR:414:ARG:HG3	1.96	0.46
5:L5:1298:C:H2'	5:L5:1299:G:C8	2.50	0.46
5:L5:3923:A:H2'	5:L5:3924:C:C6	2.51	0.46
5:L5:4239:A:H2'	5:L5:4240:G:C8	2.51	0.46
5:L5:4274:A:H2'	5:L5:4275:G:H8	1.80	0.46
7:L8:141:C:H2'	7:L8:142:U:C6	2.51	0.46
55:S2:1347:U:H2'	55:S2:1348:G:C8	2.49	0.46
57:SB:117:TRP:HB3	57:SB:153:THR:HG22	1.96	0.46
58:SC:108:LYS:HB2	58:SC:108:LYS:HE3	1.66	0.46
59:SD:106:ARG:HG3	59:SD:175:VAL:HG22	1.97	0.46
82:Sa:12:LYS:HG3	82:Sa:15:ARG:HB2	1.97	0.46
5:L5:153:G:H2'	5:L5:154:G:H8	1.79	0.46
55:S2:1839:U:H2'	55:S2:1840:U:C6	2.50	0.46
59:SD:64:ARG:O	59:SD:68:GLU:HG3	2.14	0.46
75:ST:51:ASN:HB3	75:ST:54:TYR:HD1	1.80	0.46
5:L5:229:G:H5''	31:LY:11:ARG:HG3	1.98	0.46
5:L5:2082:G:H5''	23:LQ:12:LYS:HE3	1.97	0.46
5:L5:2676:A:H8	5:L5:2676:A:OP2	1.98	0.46
11:LD:60:ILE:HD11	11:LD:93:THR:HA	1.98	0.46
24:LR:42:ARG:HA	24:LR:45:ILE:HD12	1.98	0.46
55:S2:5:U:H2'	55:S2:6:G:C8	2.51	0.46
55:S2:1396:A:H4'	55:S2:1396:A:OP1	2.14	0.46
64:SI:174:CYS:HB2	64:SI:190:LEU:HD21	1.97	0.46
5:L5:1755:C:H1'	11:LD:2:GLY:HA3	1.97	0.46
5:L5:1971:C:H5	5:L5:2000:G:H2'	1.80	0.46
5:L5:2020:U:H2'	5:L5:2021:G:H8	1.80	0.46
5:L5:4219:A:H2'	5:L5:4220:A:C8	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:LY:66:GLN:CD	31:LY:66:GLN:H	2.23	0.46
32:LZ:57:MET:HG2	32:LZ:61:LYS:HD3	1.97	0.46
44:LI:42:ARG:HG3	44:LI:47:THR:HG23	1.98	0.46
54:NM:119:PHE:HB2	54:NM:258:ARG:HH22	1.80	0.46
55:S2:66:G:N2	55:S2:82:G:H21	2.14	0.46
65:SJ:30:LYS:HE2	65:SJ:30:LYS:HB2	1.73	0.46
68:SM:44:LYS:HA	68:SM:44:LYS:HD3	1.77	0.46
5:L5:1327:C:H2'	5:L5:1328:G:C8	2.50	0.46
8:LA:54:ARG:HG2	8:LA:56:ALA:H	1.81	0.46
29:LW:83:THR:HA	62:SG:131:ARG:HB3	1.97	0.46
55:S2:616:A:H5'	86:Se:8:ARG:HG3	1.96	0.46
5:L5:2493:G:H21	7:L8:126:C:H5''	1.80	0.46
7:L8:70:G:H22	7:L8:87:G:H1'	1.81	0.46
54:NM:242:MET:HE1	54:NM:278:GLN:HB3	1.97	0.46
55:S2:955:A:N6	55:S2:971:G:H1'	2.31	0.46
56:SA:122:LEU:O	56:SA:144:THR:HA	2.16	0.46
88:Sg:121:VAL:HG21	88:Sg:165:ILE:HG21	1.98	0.46
88:Sg:206:LEU:HD12	88:Sg:218:LEU:HD22	1.98	0.46
3:CR:330:ARG:NH1	3:CR:344:LEU:H	2.14	0.46
5:L5:662:C:H2'	5:L5:663:G:C8	2.51	0.46
60:SE:195:ILE:HA	60:SE:210:VAL:HG22	1.97	0.46
63:SH:53:VAL:HG23	63:SH:55:GLY:H	1.81	0.46
76:SU:67:LYS:HA	85:Sd:44:ARG:HD2	1.97	0.46
80:SY:15:ASN:HD22	80:SY:22:GLN:NE2	2.14	0.46
5:L5:223:G:H4'	5:L5:225:G:N7	2.31	0.46
5:L5:4389:C:H2'	5:L5:4390:A:C8	2.51	0.46
5:L5:4459:U:H2'	5:L5:4460:U:C6	2.50	0.46
10:LC:138:MET:HE3	10:LC:138:MET:HB3	1.79	0.46
14:LG:157:ILE:HG23	14:LG:201:THR:HG22	1.98	0.46
19:LM:3:PHE:H	25:LS:175:PHE:HZ	1.63	0.46
43:Lk:70:LYS:HA	43:Lk:70:LYS:HD3	1.78	0.46
55:S2:804:U:H5	55:S2:859:G:H1	1.62	0.46
55:S2:1679:A:C8	61:SF:60:ARG:HB2	2.50	0.46
56:SA:183:LEU:HB3	56:SA:189:ILE:HG12	1.98	0.46
8:LA:108:PRO:HB2	48:Lp:86:LEU:HD22	1.98	0.46
12:LE:149:ILE:HD12	12:LE:271:LEU:HD21	1.98	0.46
37:Le:63:ASN:HB3	37:Le:66:THR:HG22	1.98	0.46
37:Le:89:LEU:HD13	37:Le:118:LEU:HD22	1.96	0.46
53:NB:73:HIS:HB3	53:NB:97:LYS:NZ	2.31	0.46
54:NM:288:PRO:HA	54:NM:289:LYS:HA	1.60	0.46
56:SA:8:LEU:HD11	77:SV:39:VAL:HG21	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
75:ST:42:HIS:HB2	75:ST:83:GLN:HA	1.98	0.46
76:SU:56:MET:HB2	76:SU:86:LYS:HB3	1.98	0.46
84:Sc:34:PHE:HE2	84:Sc:42:ILE:HG12	1.80	0.46
88:Sg:17:TRP:HB2	88:Sg:36:ARG:HD2	1.98	0.46
5:L5:960:A:H8	12:LE:126:LEU:HD12	1.81	0.45
5:L5:1339:U:H2'	5:L5:1340:C:C6	2.51	0.45
10:LC:134:PRO:HA	10:LC:150:LEU:HD22	1.98	0.45
18:LL:47:ALA:HB1	40:Lh:118:LYS:HE3	1.99	0.45
54:Nm:138:VAL:HG22	54:Nm:482:LYS:HG3	1.98	0.45
54:Nm:334:LYS:H	54:Nm:334:LYS:HD3	1.81	0.45
62:SG:190:ARG:HA	62:SG:190:ARG:HD2	1.78	0.45
72:SQ:16:LYS:H	72:SQ:19:ALA:HB3	1.80	0.45
5:L5:1631:A:C2	8:LA:204:MET:HG2	2.50	0.45
5:L5:4611:A:H2	15:LH:120:GLU:HG2	1.79	0.45
24:LR:76:MET:HE3	24:LR:76:MET:HB3	1.85	0.45
62:SG:33:ALA:H	62:SG:65:GLN:HE22	1.63	0.45
78:SW:42:MET:HE2	78:SW:42:MET:HB3	1.76	0.45
5:L5:2764:A:H2'	5:L5:2765:A:H8	1.81	0.45
5:L5:4457:U:H1'	9:LB:252:ALA:HB3	1.98	0.45
25:LS:70:LYS:HA	25:LS:70:LYS:HD3	1.63	0.45
40:Lh:6:ALA:O	40:Lh:10:ARG:HG2	2.17	0.45
52:NA:127:LYS:HE2	52:NA:127:LYS:HB2	1.75	0.45
5:L5:4174:U:H2'	5:L5:4175:G:H8	1.82	0.45
5:L5:4943:A:H4'	38:Lf:106:TYR:HE2	1.81	0.45
5:L5:4991:U:H2'	5:L5:4992:G:C8	2.51	0.45
15:LH:53:LYS:HA	15:LH:53:LYS:HD3	1.73	0.45
53:NB:153:PHE:HD1	54:Nm:259:VAL:HA	1.82	0.45
55:S2:115:U:H2'	55:S2:116:U:C6	2.52	0.45
55:S2:1597:C:H4'	55:S2:1603:G:C6	2.51	0.45
58:SC:86:LEU:HD11	58:SC:265:PRO:HG2	1.98	0.45
60:SE:80:ILE:HG23	60:SE:81:THR:HG23	1.98	0.45
67:SL:58:LYS:HE2	67:SL:59:LYS:HE3	1.97	0.45
67:SL:75:GLY:HA3	67:SL:88:ILE:HD12	1.98	0.45
68:SM:25:ALA:HB1	68:SM:31:LEU:HD21	1.97	0.45
5:L5:462:G:H2'	5:L5:463:A:C8	2.51	0.45
5:L5:1558:A:H2'	5:L5:1559:G:H8	1.80	0.45
5:L5:2708:U:H4'	5:L5:2709:C:H5''	1.98	0.45
5:L5:3599:A:H2'	5:L5:3600:G:C8	2.52	0.45
5:L5:4088:C:H2'	5:L5:4089:G:H8	1.81	0.45
27:LU:67:LYS:HB2	27:LU:67:LYS:HE2	1.68	0.45
55:S2:385:G:H3'	67:SL:136:LYS:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:681:U:H4'	79:SX:9:THR:HG22	1.99	0.45
55:S2:921:G:C6	78:SW:28:ARG:HG3	2.51	0.45
5:L5:1306:C:H2'	5:L5:1307:A:C8	2.51	0.45
5:L5:1604:G:H2'	5:L5:1605:G:C8	2.52	0.45
5:L5:3707:U:H2'	5:L5:3708:C:C6	2.51	0.45
5:L5:3880:G:H2'	5:L5:3881:G:C8	2.52	0.45
9:LB:77:THR:HG21	9:LB:337:VAL:HG22	1.99	0.45
14:LG:140:VAL:HG21	14:LG:166:LEU:O	2.16	0.45
17:LJ:85:LYS:HD3	17:LJ:115:LEU:HB2	1.98	0.45
59:SD:123:LEU:HD21	59:SD:154:ASP:HB2	1.99	0.45
66:SK:15:LEU:HD23	66:SK:79:LEU:HD11	1.98	0.45
88:Sg:154:VAL:HG23	88:Sg:167:SER:HB3	1.98	0.45
3:CR:87:LYS:HB3	3:CR:87:LYS:HE3	1.62	0.45
5:L5:1857:C:H2'	5:L5:1858:A:H8	1.81	0.45
5:L5:3932:U:H2'	5:L5:3933:G:C8	2.52	0.45
5:L5:4704:C:H4'	15:LH:129:ARG:HH21	1.81	0.45
50:Ls:20:LEU:HD12	50:Ls:90:PHE:HD1	1.82	0.45
58:SC:78:LEU:HD12	58:SC:81:ILE:HD11	1.98	0.45
74:SS:78:LYS:HA	74:SS:78:LYS:HD3	1.73	0.45
5:L5:4302:U:H4'	26:LT:5:LYS:HD2	1.98	0.45
47:Lo:100:LYS:HB2	47:Lo:100:LYS:HE2	1.76	0.45
53:NB:59:ILE:HG13	53:NB:79:VAL:HG21	1.97	0.45
55:S2:107:A:H2'	55:S2:108:G:C8	2.52	0.45
55:S2:382:C:H2'	55:S2:383:G:H8	1.81	0.45
68:SM:33:ARG:NH1	68:SM:91:LEU:HD23	2.31	0.45
3:CR:106:LYS:HD3	3:CR:106:LYS:HA	1.76	0.45
5:L5:2045:G:C6	21:LO:62:MET:HA	2.52	0.45
5:L5:4991:U:H2'	5:L5:4992:G:H8	1.81	0.45
7:L8:82:A:H62	7:L8:84:A:H3'	1.82	0.45
12:LE:239:LYS:HA	12:LE:239:LYS:HD2	1.81	0.45
17:LJ:60:PHE:HB2	17:LJ:62:ILE:HG12	1.98	0.45
55:S2:921:G:C2	83:Sb:22:LYS:HG2	2.52	0.45
55:S2:1499:U:H4'	59:SD:176:LEU:HD13	1.99	0.45
61:SF:76:MET:HG2	61:SF:155:CYS:SG	2.57	0.45
68:SM:79:VAL:HG21	68:SM:85:LEU:HG	1.98	0.45
72:SQ:13:PHE:HA	72:SQ:21:ALA:O	2.17	0.45
73:SR:21:TYR:CD1	73:SR:58:MET:HE1	2.52	0.45
74:SS:25:LYS:HB3	74:SS:25:LYS:HE2	1.73	0.45
74:SS:121:ARG:HG3	74:SS:131:VAL:HB	1.98	0.45
5:L5:150:U:H3	14:LG:162:ASP:HB2	1.80	0.45
5:L5:1751:A:H2'	5:L5:1752:G:C8	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:L5:4743:G:H2'	5:L5:4744:A:C8	2.52	0.45
7:L8:141:C:H5''	20:LN:60:VAL:HG11	1.99	0.45
31:LY:50:ARG:HD3	31:LY:51:LYS:H	1.82	0.45
37:Le:108:ARG:HA	37:Le:111:ILE:HD12	1.99	0.45
51:Lt:78:SER:O	51:Lt:82:ILE:HG13	2.17	0.45
53:NB:78:LYS:HG2	53:NB:80:GLN:HE22	1.82	0.45
55:S2:1413:G:H2'	55:S2:1414:A:H8	1.81	0.45
64:SI:117:TYR:HD1	64:SI:152:ARG:HB3	1.81	0.45
72:SQ:32:ILE:HG21	72:SQ:39:LEU:HD22	1.99	0.45
5:L5:258:G:H2'	5:L5:259:C:C6	2.52	0.44
5:L5:679:C:H2'	5:L5:680:G:C8	2.52	0.44
5:L5:4258:C:H2'	5:L5:4259:C:H6	1.82	0.44
5:L5:4389:C:H2'	5:L5:4390:A:H8	1.81	0.44
19:LM:36:ALA:HB3	19:LM:55:MET:HE1	1.99	0.44
51:Lt:148:PRO:O	51:Lt:152:ILE:HG12	2.16	0.44
54:NM:163:LEU:HD11	54:NM:202:ARG:HG3	1.99	0.44
55:S2:527:C:H2'	55:S2:528:A:H8	1.82	0.44
65:SJ:161:LEU:HD23	65:SJ:161:LEU:HA	1.88	0.44
72:SQ:58:LEU:HB3	72:SQ:62:ARG:HD3	1.98	0.44
5:L5:3910:C:H2'	5:L5:3911:C:C6	2.52	0.44
35:Lc:47:ILE:HB	35:Lc:94:LEU:HG	1.99	0.44
50:Ls:16:LYS:HD2	50:Ls:20:LEU:HD23	1.99	0.44
55:S2:223:C:H2'	55:S2:224:A:C8	2.52	0.44
55:S2:1201:U:H2'	55:S2:1202:U:C6	2.52	0.44
55:S2:1356:G:H2'	55:S2:1357:A:C8	2.53	0.44
60:SE:36:HIS:CG	60:SE:85:GLY:HA3	2.52	0.44
64:SI:41:ARG:HD3	64:SI:43:ILE:HD12	1.99	0.44
72:SQ:103:ALA:HB2	88:Sg:54:ILE:HD11	1.99	0.44
74:SS:6:PRO:HD3	81:SZ:49:LEU:HB3	1.99	0.44
77:SV:41:LYS:HB2	77:SV:41:LYS:HE2	1.78	0.44
5:L5:268:G:H2'	5:L5:269:G:H8	1.81	0.44
5:L5:2539:C:H2'	5:L5:2540:C:C6	2.52	0.44
5:L5:3610:A:H2'	5:L5:3611:A:C8	2.52	0.44
5:L5:3610:A:H2'	5:L5:3611:A:H8	1.83	0.44
5:L5:3727:A:H2'	5:L5:3728:A:C8	2.52	0.44
13:LF:36:LYS:HB3	13:LF:36:LYS:HE3	1.64	0.44
16:LI:61:SER:HA	16:LI:126:VAL:HG12	1.97	0.44
18:LL:49:ARG:HG2	40:Lh:119:TYR:CZ	2.53	0.44
28:LV:48:ARG:HH21	28:LV:49:LEU:HB3	1.82	0.44
54:NM:297:TRP:CE2	54:NM:462:LEU:HD13	2.53	0.44
55:S2:1082:A:H2'	55:S2:1084:A:H5''	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:1623:A:O5'	74:SS:133:GLY:HA3	2.18	0.44
59:SD:223:ILE:H	88:Sg:189:ILE:HD11	1.83	0.44
61:SF:193:LYS:O	61:SF:197:GLU:HG2	2.17	0.44
66:SK:63:ALA:HB2	66:SK:68:TYR:HE1	1.83	0.44
72:SQ:100:VAL:HG12	72:SQ:101:ASP:H	1.81	0.44
3:CR:24:LEU:HA	3:CR:24:LEU:HD23	1.68	0.44
5:L5:418:A:N6	7:L8:16:G:H1'	2.32	0.44
5:L5:1399:G:H2'	5:L5:1400:G:H8	1.82	0.44
9:LB:107:ALA:HB2	9:LB:201:LEU:HD22	1.99	0.44
16:LI:30:LYS:HG2	16:LI:63:GLU:HA	1.99	0.44
54:NM:459:LYS:HE2	54:NM:459:LYS:HB2	1.80	0.44
55:S2:837:A:H61	80:SY:9:THR:H	1.65	0.44
55:S2:1405:A:H2'	55:S2:1406:G:O4'	2.17	0.44
55:S2:1736:G:H2'	55:S2:1737:G:C8	2.53	0.44
65:SJ:28:GLU:HB2	65:SJ:40:LYS:HE3	1.99	0.44
65:SJ:47:LYS:HE2	65:SJ:47:LYS:HB3	1.63	0.44
4:CZ:104:ARG:HG2	4:CZ:143:LEU:HA	2.00	0.44
17:LJ:20:LEU:HD13	17:LJ:132:VAL:HG22	2.00	0.44
51:Lt:92:ARG:HA	51:Lt:92:ARG:HD2	1.74	0.44
55:S2:1531:A:H4'	55:S2:1605:G:H4'	1.98	0.44
72:SQ:51:LEU:HD23	72:SQ:51:LEU:HA	1.82	0.44
88:Sg:7:LEU:HD21	88:Sg:308:ARG:HB3	2.00	0.44
5:L5:3857:G:H5''	22:LP:86:LYS:HB2	2.00	0.44
15:LH:111:LEU:HD11	15:LH:125:ARG:HD3	2.00	0.44
16:LI:87:MET:HE2	16:LI:87:MET:HB2	1.71	0.44
56:SA:123:VAL:HA	56:SA:145:ILE:O	2.16	0.44
57:SB:137:LEU:HG	57:SB:215:VAL:HG22	1.99	0.44
58:SC:183:LYS:HG2	58:SC:197:PRO:HD2	2.00	0.44
5:L5:1199:G:H2'	5:L5:1200:G:C8	2.53	0.44
13:LF:162:ILE:HD13	13:LF:167:ILE:HB	1.99	0.44
22:LP:137:ASN:HD22	22:LP:137:ASN:HA	1.63	0.44
37:Le:82:VAL:HG13	37:Le:114:ARG:HG2	1.99	0.44
54:NM:161:LEU:HD11	54:NM:222:LEU:HD11	1.99	0.44
55:S2:683:G:H4'	78:SW:4:MET:HG2	2.00	0.44
55:S2:1606:G:H5''	75:ST:86:GLY:C	2.41	0.44
56:SA:198:MET:HG2	56:SA:200:ASP:H	1.83	0.44
5:L5:3732:A:H2'	5:L5:3733:A:C8	2.52	0.44
12:LE:163:VAL:HG11	12:LE:201:ILE:HD11	1.99	0.44
22:LP:22:LEU:HB3	22:LP:90:PHE:CE2	2.53	0.44
25:LS:147:ASP:HB3	25:LS:150:ILE:HB	1.99	0.44
48:Lp:3:LYS:HE3	48:Lp:3:LYS:HB2	1.76	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:145:G:H2'	55:S2:146:G:H8	1.81	0.44
55:S2:1801:A:H2'	55:S2:1802:C:C6	2.53	0.44
61:SF:145:ARG:HB2	84:Sc:48:GLY:HA3	2.00	0.44
66:SK:11:ILE:HG21	66:SK:45:VAL:HG22	1.98	0.44
5:L5:10:A:H2'	5:L5:11:G:C8	2.52	0.44
5:L5:4591:U:H2'	5:L5:4592:C:C6	2.53	0.44
54:NM:216:VAL:HG12	54:NM:218:SER:H	1.83	0.44
55:S2:150:A:H2'	55:S2:151:C:C6	2.52	0.44
57:SB:30:TRP:HH2	70:SO:90:ILE:HD11	1.83	0.44
67:SL:66:VAL:HG11	67:SL:141:ASN:HD22	1.82	0.44
70:SO:101:GLY:HA3	70:SO:134:PRO:HG2	2.00	0.44
5:L5:2745:A:H2'	5:L5:2746:A:H8	1.82	0.43
5:L5:3932:U:H2'	5:L5:3933:G:H8	1.83	0.43
15:LH:59:LYS:HE3	15:LH:66:GLU:HB3	2.00	0.43
30:LX:156:ILE:HG21	54:NM:318:MET:HE2	1.99	0.43
36:Ld:101:LYS:HB2	36:Ld:101:LYS:HE2	1.81	0.43
43:Lk:26:LYS:HB2	43:Lk:69:LEU:HD12	1.99	0.43
44:Ll:12:PHE:O	44:Ll:16:LYS:HG2	2.17	0.43
52:NA:113:LYS:HG3	52:NA:120:TYR:HD1	1.83	0.43
54:NM:318:MET:SD	54:NM:322:ARG:HB3	2.58	0.43
56:SA:134:LEU:HA	56:SA:134:LEU:HD12	1.73	0.43
59:SD:72:VAL:HB	66:SK:68:TYR:HD2	1.82	0.43
60:SE:18:TRP:HH2	60:SE:31:PRO:HD3	1.83	0.43
61:SF:154:LEU:HD22	61:SF:177:LEU:HD23	1.99	0.43
5:L5:99:A:H4'	20:LN:181:HIS:CE1	2.54	0.43
5:L5:469:C:H2'	5:L5:470:A:H8	1.83	0.43
9:LB:254:ILE:HG23	9:LB:266:VAL:HG11	2.00	0.43
18:LL:146:LEU:HD11	40:Lh:122:LYS:HG2	1.98	0.43
22:LP:20:SER:O	22:LP:22:LEU:HG	2.18	0.43
36:Ld:90:ARG:HD3	36:Ld:102:LEU:HD13	2.00	0.43
54:NM:453:LEU:HD12	54:NM:455:LEU:HB3	2.00	0.43
65:SJ:127:ARG:HD2	86:Se:31:ARG:HD3	2.00	0.43
68:SM:92:CYS:HB2	68:SM:100:PRO:HB3	2.01	0.43
5:L5:3736:A:H2'	5:L5:3737:A:C8	2.53	0.43
5:L5:4088:C:H2'	5:L5:4089:G:C8	2.53	0.43
5:L5:4169:G:H4'	5:L5:4171:C:C2	2.52	0.43
5:L5:4344:U:H2'	5:L5:4345:C:C6	2.54	0.43
5:L5:4504:C:H2'	5:L5:4505:C:C6	2.52	0.43
42:Lj:67:LEU:HD23	42:Lj:67:LEU:HA	1.89	0.43
55:S2:1628:C:H2'	55:S2:1629:C:C6	2.54	0.43
58:SC:176:LYS:HD2	58:SC:176:LYS:HA	1.79	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
65:SJ:151:LEU:HD12	65:SJ:151:LEU:HA	1.85	0.43
3:CR:326:LEU:HG	3:CR:328:ILE:HG23	1.99	0.43
5:L5:4184:G:H5'	8:LA:233:ARG:HB2	1.99	0.43
10:LC:230:LEU:HD23	10:LC:230:LEU:HA	1.92	0.43
17:LJ:18:ARG:H	17:LJ:134:LEU:HA	1.83	0.43
21:LO:47:PHE:HA	21:LO:136:ALA:HB2	2.00	0.43
50:Ls:18:ILE:HD12	50:Ls:68:HIS:HD1	1.82	0.43
53:NB:49:LYS:HD2	53:NB:49:LYS:HA	1.79	0.43
55:S2:12:U:H2'	55:S2:13:C:C6	2.54	0.43
55:S2:1004:U:H2'	55:S2:1005:G:C8	2.54	0.43
55:S2:1232:U:H2'	55:S2:1233:G:C8	2.54	0.43
74:SS:34:LYS:HB3	74:SS:34:LYS:HE2	1.85	0.43
2:CP:66:C:H2'	2:CP:67:G:H8	1.82	0.43
5:L5:433:A:C2	5:L5:3867:A:H4'	2.53	0.43
5:L5:2894:A:H62	5:L5:3607:U:H3	1.65	0.43
5:L5:4130:C:H41	5:L5:4154:G:H1	1.65	0.43
5:L5:4460:U:H2'	5:L5:4461:C:H6	1.83	0.43
20:LN:165:THR:O	20:LN:169:ARG:HB3	2.18	0.43
21:LO:130:LYS:HB2	21:LO:133:ARG:HG2	1.99	0.43
55:S2:186:C:H2'	55:S2:187:G:H8	1.83	0.43
55:S2:441:C:H2'	55:S2:442:C:C6	2.53	0.43
74:SS:65:GLU:O	74:SS:69:THR:HG23	2.19	0.43
84:Sc:32:VAL:O	84:Sc:41:SER:HA	2.18	0.43
3:CR:42:LYS:HB2	3:CR:42:LYS:HE2	1.73	0.43
3:CR:329:MET:HE3	3:CR:331:TYR:N	2.33	0.43
5:L5:513:U:H3'	5:L5:514:U:H4'	2.01	0.43
5:L5:1468:C:H2'	5:L5:1469:C:C6	2.54	0.43
5:L5:4188:U:H2'	5:L5:4189:U:C6	2.53	0.43
5:L5:4537:C:H2'	5:L5:4538:G:H8	1.81	0.43
43:Lk:33:LYS:HG2	43:Lk:46:VAL:HB	1.99	0.43
48:Lp:46:LYS:HB3	48:Lp:46:LYS:HE3	1.67	0.43
50:Ls:161:ILE:HD11	50:Ls:171:GLU:HB3	2.00	0.43
51:Lt:7:PRO:HB2	51:Lt:66:ASN:HA	2.00	0.43
52:NA:91:VAL:HG13	53:NB:64:MET:HE1	2.00	0.43
55:S2:28:U:H2'	55:S2:29:G:C8	2.53	0.43
55:S2:51:U:H2'	55:S2:52:G:C8	2.54	0.43
55:S2:455:A:H2'	55:S2:456:C:H6	1.83	0.43
63:SH:72:PHE:O	63:SH:75:ILE:C	2.62	0.43
74:SS:28:PHE:HE2	74:SS:38:ARG:HD3	1.83	0.43
84:Sc:10:LYS:HD3	84:Sc:34:PHE:HE1	1.84	0.43
7:L8:78:G:H2'	7:L8:79:G:C8	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:LD:117:LYS:HE3	11:LD:117:LYS:HA	2.00	0.43
25:LS:9:GLU:HG2	25:LS:67:VAL:HB	2.00	0.43
42:Lj:25:LYS:HE3	42:Lj:25:LYS:HB3	1.75	0.43
51:Lt:111:ASN:HA	51:Lt:114:ARG:HD2	2.01	0.43
54:NM:175:LEU:HD22	54:NM:222:LEU:HG	2.01	0.43
55:S2:692:G:H2'	55:S2:693:A:C4	2.53	0.43
55:S2:1407:U:H2'	55:S2:1408:U:C6	2.54	0.43
82:Sa:44:ILE:H	82:Sa:44:ILE:HG12	1.70	0.43
5:L5:162:A:H2'	5:L5:163:A:C8	2.54	0.43
5:L5:453:G:H4'	5:L5:454:U:H5'	2.01	0.43
5:L5:662:C:H2'	5:L5:663:G:H8	1.83	0.43
5:L5:2029:A:H2'	5:L5:2030:A:C8	2.53	0.43
5:L5:3641:U:H5	5:L5:3646:A:N7	2.17	0.43
5:L5:3746:A:H5''	8:LA:244:GLY:HA3	2.01	0.43
5:L5:4934:A:H2'	5:L5:4935:C:C6	2.53	0.43
9:LB:286:LYS:HE3	9:LB:286:LYS:HB2	1.84	0.43
12:LE:152:ILE:HA	12:LE:194:VAL:HG12	2.01	0.43
13:LF:92:VAL:O	13:LF:120:GLY:HA2	2.19	0.43
22:LP:125:MET:HE3	22:LP:141:SER:OG	2.19	0.43
23:LQ:49:LYS:HE3	23:LQ:49:LYS:HB3	1.79	0.43
54:NM:319:THR:H	54:NM:322:ARG:HD2	1.84	0.43
61:SF:22:LYS:HG3	61:SF:23:TRP:N	2.34	0.43
65:SJ:66:LYS:HA	65:SJ:71:LEU:HD11	2.01	0.43
78:SW:111:MET:HE2	78:SW:111:MET:HB3	1.87	0.43
4:CZ:216:PRO:HA	4:CZ:217:PRO:HD3	1.84	0.43
5:L5:4927:G:H5'	5:L5:4928:C:C5	2.52	0.43
8:LA:150:LEU:HD11	8:LA:156:LYS:HD2	1.99	0.43
33:La:7:LYS:HB3	33:La:7:LYS:HE2	1.77	0.43
51:Lt:110:VAL:HG11	51:Lt:163:PRO:HG2	2.01	0.43
54:NM:248:LEU:HD21	54:NM:260:ALA:HB1	1.99	0.43
82:Sa:51:ARG:O	82:Sa:55:GLU:HG2	2.19	0.43
3:CR:14:ILE:HG12	3:CR:117:PHE:CG	2.54	0.43
5:L5:163:A:H2'	5:L5:164:G:H8	1.84	0.43
5:L5:1333:A:H2'	5:L5:1334:A:C8	2.53	0.43
5:L5:1461:C:H2'	5:L5:1462:A:C8	2.54	0.43
5:L5:1577:G:O2'	5:L5:1612:G:H4'	2.18	0.43
5:L5:1645:C:H2'	5:L5:1646:A:C8	2.54	0.43
5:L5:2667:C:O4'	24:LR:96:MET:HG3	2.19	0.43
5:L5:4122:G:H4'	39:Lg:90:ARG:HG2	2.00	0.43
5:L5:4625:C:H5'	9:LB:338:VAL:HA	2.01	0.43
5:L5:4742:G:H2'	5:L5:4743:G:H8	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:LC:152:LEU:HD23	10:LC:251:ILE:HG12	2.01	0.43
12:LE:183:ARG:HD2	12:LE:183:ARG:HA	1.79	0.43
16:LI:47:PRO:HB3	16:LI:171:TRP:CE2	2.54	0.43
16:LI:146:GLU:H	16:LI:146:GLU:CD	2.26	0.43
17:LJ:167:GLN:HA	17:LJ:172:GLY:H	1.84	0.43
33:La:71:PRO:HG2	33:La:108:TYR:HA	1.99	0.43
50:Ls:69:LEU:HD11	50:Ls:76:GLU:HB3	2.01	0.43
54:Nm:431:LEU:HA	54:Nm:434:LEU:HG	2.00	0.43
55:S2:1335:G:H5''	59:SD:185:LYS:HE2	2.01	0.43
55:S2:1406:G:H2'	55:S2:1407:U:C6	2.54	0.43
55:S2:1606:G:H1'	55:S2:1633:A:N6	2.34	0.43
55:S2:1863:A:H8	82:Sa:79:ILE:HG21	1.84	0.43
58:SC:194:ARG:O	58:SC:224:THR:HA	2.18	0.43
73:SR:41:ILE:HD13	73:SR:50:ILE:HD12	2.01	0.43
77:SV:32:ILE:HB	77:SV:60:ARG:HD2	2.01	0.43
5:L5:424:U:H2'	5:L5:425:U:C6	2.54	0.42
5:L5:1719:A:H2'	5:L5:1720:C:C6	2.54	0.42
10:LC:73:VAL:HB	10:LC:78:ARG:NH2	2.34	0.42
23:LQ:43:PHE:CD2	23:LQ:133:GLY:HA3	2.54	0.42
23:LQ:159:PRO:HA	23:LQ:160:HIS:HA	1.58	0.42
24:LR:144:LYS:HB2	24:LR:144:LYS:HE2	1.73	0.42
34:Lb:56:LYS:H	34:Lb:56:LYS:HG2	1.57	0.42
54:Nm:166:ARG:HA	54:Nm:169:LEU:HG	2.01	0.42
55:S2:118:C:H1'	55:S2:445:A:C5	2.53	0.42
55:S2:958:G:H2'	55:S2:959:G:C8	2.54	0.42
55:S2:1798:C:H2'	55:S2:1799:G:O4'	2.19	0.42
58:SC:194:ARG:HD3	58:SC:196:ILE:HD11	2.01	0.42
62:SG:12:CYS:HB3	62:SG:124:LEU:HA	2.01	0.42
71:SP:18:ARG:H	71:SP:18:ARG:HG2	1.60	0.42
71:SP:107:ILE:HA	71:SP:111:MET:HE2	2.01	0.42
79:SX:41:PHE:HZ	79:SX:102:VAL:HG12	1.84	0.42
5:L5:1933:G:H2'	5:L5:1934:A:C8	2.54	0.42
10:LC:159:GLU:HA	10:LC:217:ILE:HB	2.01	0.42
11:LD:211:LEU:HB3	11:LD:219:TYR:HB2	2.02	0.42
18:LL:46:ILE:HB	18:LL:49:ARG:HD2	2.00	0.42
32:LZ:27:LYS:HG2	32:LZ:29:ILE:HD11	2.01	0.42
36:Ld:24:GLU:HG2	36:Ld:87:ARG:HD3	2.00	0.42
54:Nm:318:MET:HA	54:Nm:322:ARG:HD2	2.00	0.42
55:S2:1533:A:H2	55:S2:1536:G:N3	2.17	0.42
55:S2:1562:C:H2'	55:S2:1563:G:H8	1.83	0.42
57:SB:183:GLU:O	57:SB:187:LYS:HG2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
61:SF:87:LEU:HD22	72:SQ:46:THR:HB	2.00	0.42
72:SQ:89:SER:HB3	72:SQ:112:LEU:HD13	2.01	0.42
80:SY:52:PRO:HA	80:SY:55:ILE:HG12	2.01	0.42
3:CR:372:MET:HA	3:CR:373:PRO:HD3	1.84	0.42
5:L5:136:C:H42	40:Lh:79:LYS:HE3	1.84	0.42
5:L5:717:U:H2'	5:L5:718:C:C6	2.54	0.42
5:L5:4621:C:OP1	28:LV:48:ARG:HD2	2.19	0.42
5:L5:4967:A:H2'	5:L5:4968:A:C8	2.54	0.42
15:LH:106:GLN:HG3	15:LH:107:GLU:HG3	2.01	0.42
19:LM:53:LYS:HA	25:LS:157:ARG:HH22	1.84	0.42
55:S2:1101:U:H2'	55:S2:1102:G:H8	1.84	0.42
55:S2:1736:G:H2'	55:S2:1737:G:H8	1.83	0.42
66:SK:21:MET:HE2	66:SK:21:MET:HB2	1.89	0.42
75:ST:129:ARG:O	75:ST:133:ARG:HG2	2.19	0.42
5:L5:500:G:H1'	5:L5:504:G:H3'	2.01	0.42
5:L5:1846:G:H2'	5:L5:1847:C:C6	2.53	0.42
5:L5:4642:U:H2'	5:L5:4643:G:C8	2.54	0.42
10:LC:150:LEU:HD12	10:LC:150:LEU:HA	1.78	0.42
10:LC:255:SER:O	10:LC:259:LYS:HG3	2.20	0.42
12:LE:66:LYS:HB3	12:LE:68:MET:HE3	2.02	0.42
18:LL:19:GLN:HA	18:LL:22:VAL:HG23	2.00	0.42
18:LL:42:LYS:O	18:LL:46:ILE:HG12	2.19	0.42
22:LP:17:SER:HB2	22:LP:98:ALA:HB2	2.00	0.42
30:LX:145:ASP:HB3	30:LX:148:ASP:OD1	2.19	0.42
37:Le:66:THR:HA	37:Le:69:MET:HE3	2.01	0.42
51:Lt:10:ILE:HA	51:Lt:64:ILE:O	2.19	0.42
4:CZ:167:TYR:O	4:CZ:171:ASP:HB3	2.19	0.42
5:L5:318:A:H2'	5:L5:319:A:C8	2.55	0.42
5:L5:512:U:H2'	5:L5:513:U:H4'	2.02	0.42
5:L5:1502:G:H1	23:LQ:89:ASP:HA	1.84	0.42
5:L5:1973:G:H5''	51:Lt:119:ARG:CZ	2.50	0.42
5:L5:4174:U:H2'	5:L5:4175:G:C8	2.54	0.42
13:LF:241:ASN:O	13:LF:245:ARG:HG2	2.19	0.42
20:LN:120:TRP:HZ2	20:LN:123:GLU:HB2	1.85	0.42
35:Lc:47:ILE:HD12	35:Lc:94:LEU:HD11	2.01	0.42
51:Lt:80:LEU:HD23	51:Lt:112:ILE:HG23	2.01	0.42
65:SJ:33:GLY:HA3	86:Se:38:TYR:CG	2.54	0.42
65:SJ:94:LEU:HA	65:SJ:97:ILE:HG13	2.01	0.42
74:SS:84:LEU:HD12	74:SS:95:TYR:HB3	2.00	0.42
77:SV:62:MET:HE2	77:SV:64:GLU:HG3	2.01	0.42
88:Sg:179:LEU:HD23	88:Sg:179:LEU:HA	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:L5:2517:A:H5'	39:Lg:62:LYS:HD3	2.02	0.42
5:L5:4674:C:H2'	5:L5:4675:U:C6	2.55	0.42
5:L5:4727:A:H4'	9:LB:128:LYS:O	2.20	0.42
26:LT:27:LEU:O	26:LT:31:MET:HG3	2.19	0.42
37:Le:93:LYS:HA	37:Le:93:LYS:HD2	1.91	0.42
52:NA:74:LYS:HE3	52:NA:74:LYS:HB3	1.86	0.42
55:S2:17:C:H2'	55:S2:18:C:C6	2.54	0.42
55:S2:1446:A:H1'	76:SU:55:ARG:HD3	2.02	0.42
58:SC:73:MET:HE3	58:SC:73:MET:HB3	1.92	0.42
60:SE:229:GLY:HA2	60:SE:235:TRP:CD1	2.54	0.42
61:SF:191:LYS:HB2	61:SF:191:LYS:HE2	1.80	0.42
71:SP:35:GLN:HA	71:SP:42:ARG:HH11	1.84	0.42
3:CR:219:VAL:HG21	3:CR:249:LYS:HG3	2.01	0.42
5:L5:3720:G:H22	5:L5:3733:A:H2	1.66	0.42
5:L5:3917:A:H2'	5:L5:3918:G:C8	2.54	0.42
5:L5:4754:G:N7	12:LE:279:ASN:HB2	2.34	0.42
55:S2:804:U:H2'	55:S2:805:U:C6	2.54	0.42
64:SI:103:LEU:HD22	64:SI:170:LYS:HB3	2.01	0.42
67:SL:20:LYS:HE2	67:SL:20:LYS:HB3	1.93	0.42
75:ST:56:ARG:HG3	75:ST:103:VAL:HG21	2.01	0.42
5:L5:1397:A:C8	33:La:114:LYS:HD2	2.55	0.42
5:L5:4081:G:H2'	5:L5:4082:G:C8	2.55	0.42
5:L5:4685:U:H2'	5:L5:4686:G:C8	2.55	0.42
12:LE:164:PHE:HA	12:LE:175:VAL:HG23	2.01	0.42
15:LH:12:ILE:HB	15:LH:53:LYS:HB3	2.01	0.42
50:Ls:121:VAL:HG11	50:Ls:175:LEU:HD11	2.02	0.42
55:S2:656:G:H5'	55:S2:662:G:N2	2.35	0.42
55:S2:803:C:H5	55:S2:860:G:H1	1.68	0.42
55:S2:1365:G:H2'	55:S2:1366:G:C8	2.55	0.42
68:SM:93:LYS:HE2	68:SM:101:ARG:HH12	1.85	0.42
79:SX:28:LYS:O	79:SX:32:LEU:HB2	2.20	0.42
5:L5:1298:C:H2'	5:L5:1299:G:H8	1.82	0.42
5:L5:1725:U:H2'	5:L5:1726:U:H6	1.85	0.42
8:LA:108:PRO:HD3	48:Lp:90:LYS:HD2	2.01	0.42
17:LJ:141:ILE:HG22	17:LJ:144:LYS:HE2	2.02	0.42
22:LP:54:GLN:HA	22:LP:83:TRP:CD1	2.55	0.42
28:LV:21:PRO:HA	28:LV:54:ALA:HA	2.02	0.42
30:LX:150:ALA:HB1	30:LX:155:ILE:HB	2.01	0.42
37:Le:38:PRO:HG2	37:Le:46:ARG:HB3	2.01	0.42
50:Ls:28:PHE:HB2	50:Ls:89:VAL:HB	2.00	0.42
51:Lt:111:ASN:HA	51:Lt:114:ARG:HB2	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:144:U:H2'	55:S2:145:G:H8	1.83	0.42
55:S2:1285:G:H5'	68:SM:35:ILE:HG23	2.02	0.42
55:S2:1808:U:H2'	55:S2:1809:A:H8	1.85	0.42
56:SA:52:LYS:HE3	56:SA:52:LYS:HB2	1.90	0.42
59:SD:31:GLU:HG3	59:SD:107:TYR:CZ	2.55	0.42
59:SD:137:VAL:HG22	59:SD:151:LYS:HG3	2.01	0.42
88:Sg:24:THR:HB	88:Sg:71:ILE:HG21	2.01	0.42
88:Sg:152:SER:H	88:Sg:169:GLY:HA2	1.85	0.42
3:CR:226:LEU:O	3:CR:253:LEU:HA	2.20	0.42
5:L5:71:C:H1'	18:LL:62:PRO:O	2.20	0.42
5:L5:1317:U:H2'	5:L5:1318:C:C6	2.55	0.42
9:LB:29:VAL:HG12	9:LB:31:SER:H	1.85	0.42
16:LI:36:LEU:HD21	16:LI:69:ARG:NH1	2.35	0.42
22:LP:94:MET:HE2	22:LP:148:MET:HG2	2.01	0.42
37:Le:19:LYS:HE3	37:Le:19:LYS:HB3	1.95	0.42
55:S2:329:G:H2'	55:S2:330:G:C8	2.54	0.42
55:S2:1007:C:H2'	55:S2:1008:A:C8	2.55	0.42
55:S2:1644:C:H4'	72:SQ:140:ARG:HB2	2.02	0.42
55:S2:1692:U:H2'	55:S2:1693:G:C8	2.55	0.42
57:SB:34:LYS:O	57:SB:98:THR:HB	2.20	0.42
67:SL:111:VAL:HG12	67:SL:140:PHE:HB2	2.02	0.42
82:Sa:64:LEU:HD23	82:Sa:64:LEU:HA	1.92	0.42
88:Sg:147:HIS:CE1	88:Sg:175:LYS:HG3	2.55	0.42
5:L5:231:U:H4'	31:LY:100:HIS:CD2	2.55	0.41
5:L5:1346:C:H2'	5:L5:1347:G:H8	1.85	0.41
5:L5:2640:G:H2'	5:L5:2641:A:C8	2.55	0.41
9:LB:58:ARG:HD2	9:LB:363:ILE:HG23	2.02	0.41
10:LC:1:MET:HB2	10:LC:2:ALA:H	1.56	0.41
19:LM:113:MET:HE3	19:LM:113:MET:HB3	1.76	0.41
22:LP:116:HIS:HB3	22:LP:149:ILE:HB	2.02	0.41
54:NM:126:PRO:HG3	54:NM:482:LYS:HG2	2.02	0.41
55:S2:1298:G:H5''	71:SP:102:PHE:CZ	2.55	0.41
65:SJ:114:VAL:HG23	65:SJ:126:ALA:HB1	2.02	0.41
68:SM:122:ASP:HA	68:SM:125:GLU:HG3	2.02	0.41
72:SQ:34:VAL:HG13	72:SQ:42:ILE:HD11	2.02	0.41
5:L5:190:G:H2'	5:L5:191:G:H8	1.86	0.41
5:L5:4260:U:H2'	5:L5:4261:C:H6	1.86	0.41
5:L5:4642:U:H2'	5:L5:4643:G:H8	1.85	0.41
8:LA:158:ILE:HB	8:LA:162:ASN:HD21	1.85	0.41
52:NA:77:ARG:O	52:NA:80:MET:HB3	2.20	0.41
55:S2:1037:G:H4'	55:S2:1845:A:H4'	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:1521:C:H5'	71:SP:126:VAL:HB	2.01	0.41
63:SH:154:ILE:O	63:SH:185:VAL:HA	2.19	0.41
71:SP:56:LEU:O	71:SP:60:LEU:HG	2.20	0.41
74:SS:44:VAL:HG22	74:SS:70:ILE:HG22	2.01	0.41
4:CZ:89:ILE:HA	4:CZ:122:LEU:O	2.21	0.41
5:L5:679:C:H2'	5:L5:680:G:H8	1.85	0.41
5:L5:1097:C:H2'	5:L5:1098:G:H8	1.84	0.41
5:L5:2090:U:H4'	5:L5:2091:C:H3'	2.02	0.41
5:L5:5057:C:H2'	5:L5:5058:A:C8	2.55	0.41
7:L8:23:C:H5''	31:LY:12:SER:HB3	2.02	0.41
8:LA:123:ARG:HA	8:LA:123:ARG:HD3	1.76	0.41
15:LH:44:GLU:HG3	15:LH:58:ASP:HB2	2.03	0.41
21:LO:177:LEU:HD23	21:LO:177:LEU:HA	1.92	0.41
22:LP:126:ARG:HH12	22:LP:138:PRO:HB3	1.84	0.41
50:Ls:38:LYS:HB3	50:Ls:38:LYS:HE2	1.81	0.41
55:S2:367:U:H4'	55:S2:371:A:C8	2.55	0.41
55:S2:674:C:H2'	55:S2:675:U:C6	2.55	0.41
55:S2:851:C:H5''	55:S2:852:G:H5'	2.01	0.41
56:SA:40:LYS:HD3	73:SR:101:ASP:OD2	2.21	0.41
58:SC:203:GLY:O	58:SC:221:ASP:HA	2.20	0.41
68:SM:96:ARG:HE	68:SM:96:ARG:H	1.67	0.41
5:L5:10:A:H2'	5:L5:11:G:H8	1.85	0.41
5:L5:123:C:H2'	5:L5:124:C:H6	1.86	0.41
5:L5:287:U:H2'	5:L5:288:G:C8	2.56	0.41
5:L5:325:U:H2'	5:L5:326:C:C6	2.55	0.41
5:L5:4935:C:H2'	5:L5:4936:G:H8	1.85	0.41
19:LM:79:LYS:HE2	19:LM:79:LYS:HB2	1.74	0.41
32:LZ:41:ALA:HB2	32:LZ:77:TYR:HE1	1.85	0.41
54:NM:246:ASN:HD22	54:NM:247:PHE:HD2	1.64	0.41
55:S2:634:A:H2'	55:S2:635:G:C8	2.54	0.41
55:S2:1797:U:H2'	55:S2:1798:C:C6	2.56	0.41
59:SD:23:GLU:HG2	66:SK:64:TRP:NE1	2.35	0.41
81:SZ:78:LYS:HD3	81:SZ:78:LYS:HA	1.82	0.41
5:L5:1266:G:H5''	5:L5:2121:C:H41	1.86	0.41
5:L5:1788:A:H2'	16:LI:22:PHE:CZ	2.55	0.41
10:LC:60:HIS:HA	10:LC:92:PHE:HE1	1.85	0.41
14:LG:252:LYS:HE3	14:LG:252:LYS:HB2	1.68	0.41
19:LM:86:TRP:CE2	19:LM:92:ALA:HB2	2.56	0.41
22:LP:91:LEU:HD23	22:LP:91:LEU:HA	1.91	0.41
49:Lr:56:ASP:HB2	49:Lr:58:LYS:NZ	2.36	0.41
50:Ls:62:ARG:HB3	50:Ls:66:ARG:HH11	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:S2:1650:A:H5''	72:SQ:139:ALA:HB2	2.03	0.41
74:SS:20:ILE:HD11	74:SS:33:ILE:HG13	2.02	0.41
78:SW:83:LEU:HD23	78:SW:83:LEU:HA	1.89	0.41
5:L5:3726:A:H2'	5:L5:3727:A:C8	2.55	0.41
55:S2:1232:U:H2'	55:S2:1233:G:H8	1.84	0.41
65:SJ:113:GLN:HG3	65:SJ:149:VAL:HG21	2.02	0.41
75:ST:102:ARG:HD3	75:ST:102:ARG:HA	1.89	0.41
4:CZ:33:ILE:HG12	4:CZ:166:LEU:HD11	2.02	0.41
5:L5:1973:G:H2'	5:L5:1974:U:C5	2.56	0.41
8:LA:247:ARG:HD3	55:S2:1069:U:H4'	2.02	0.41
11:LD:146:LEU:HB2	11:LD:163:LEU:HD12	2.01	0.41
15:LH:121:LYS:H	15:LH:121:LYS:HG3	1.55	0.41
25:LS:45:TRP:O	25:LS:49:SER:HB2	2.20	0.41
27:LU:80:LYS:HD2	27:LU:108:GLU:HA	2.03	0.41
50:Ls:29:ILE:HD11	50:Ls:78:LEU:HD23	2.01	0.41
55:S2:666:U:H3	55:S2:1145:A:N6	2.19	0.41
58:SC:121:ARG:HH22	58:SC:123:ARG:HH21	1.67	0.41
61:SF:41:VAL:HG11	61:SF:68:ILE:HG22	2.01	0.41
70:SO:78:ALA:HB1	70:SO:119:LEU:HG	2.02	0.41
5:L5:1344:C:H1'	18:LL:10:LEU:HD11	2.02	0.41
5:L5:3619:G:H22	5:L5:3624:A:H1'	1.85	0.41
5:L5:3701:C:N4	5:L5:3745:U:H2'	2.36	0.41
5:L5:3775:A:H5'	5:L5:3776:G:OP2	2.20	0.41
20:LN:22:LEU:HD23	20:LN:22:LEU:HA	1.86	0.41
30:LX:81:LEU:HG	30:LX:83:THR:HG23	2.03	0.41
54:Nm:437:ASP:O	54:Nm:441:LEU:HD22	2.21	0.41
54:Nm:464:LYS:HB2	54:Nm:464:LYS:HE2	1.83	0.41
55:S2:1025:U:H2'	55:S2:1026:C:O4'	2.21	0.41
57:SB:57:ILE:HG22	57:SB:59:SER:H	1.86	0.41
64:SI:19:LYS:HA	64:SI:20:PRO:HD3	1.96	0.41
77:SV:56:CYS:SG	77:SV:59:ILE:HG12	2.61	0.41
4:CZ:197:GLU:HA	4:CZ:198:PRO:HD3	1.94	0.41
5:L5:501:C:H42	5:L5:506:C:H41	1.69	0.41
5:L5:1346:C:H2'	5:L5:1347:G:C8	2.56	0.41
5:L5:2079:G:H2'	5:L5:2080:U:C6	2.56	0.41
5:L5:3871:A:H2'	5:L5:3872:A:C8	2.55	0.41
5:L5:4543:G:H2'	5:L5:4544:A:C8	2.56	0.41
5:L5:4578:G:H2'	5:L5:4579:U:C6	2.55	0.41
14:LG:171:PRO:HB3	14:LG:181:TYR:CE2	2.55	0.41
15:LH:187:VAL:HG12	15:LH:188:GLN:H	1.86	0.41
16:LI:208:LYS:HA	16:LI:211:VAL:HG22	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:LP:20:SER:HB3	22:LP:21:ASN:H	1.70	0.41
38:Lf:6:TRP:CE2	38:Lf:102:ARG:HD3	2.56	0.41
43:Lk:24:LYS:HD2	43:Lk:69:LEU:HD21	2.03	0.41
49:Lr:51:VAL:HG12	49:Lr:117:ILE:HD12	2.02	0.41
53:NB:7:ASN:H	53:NB:10:LYS:HE2	1.85	0.41
54:NM:204:PRO:HG2	54:NM:369:GLU:HG2	2.02	0.41
55:S2:51:U:H2'	55:S2:52:G:H8	1.86	0.41
55:S2:1513:C:H2'	55:S2:1514:G:C8	2.56	0.41
59:SD:79:PHE:HA	59:SD:80:PRO:HD3	1.90	0.41
61:SF:43:GLU:O	61:SF:44:LYS:HG2	2.20	0.41
61:SF:76:MET:HE3	61:SF:76:MET:HB3	1.84	0.41
64:SI:23:LYS:H	64:SI:23:LYS:HG3	1.73	0.41
76:SU:61:LEU:HB2	76:SU:82:MET:HB3	2.02	0.41
79:SX:90:CYS:HA	79:SX:93:PHE:CD2	2.56	0.41
85:Sd:5:GLN:H	85:Sd:5:GLN:HG3	1.64	0.41
5:L5:18:C:H4'	20:LN:138:PHE:CD2	2.56	0.41
5:L5:172:C:H4'	5:L5:173:C:H5'	2.03	0.41
5:L5:1194:G:H2'	5:L5:1195:G:C8	2.56	0.41
5:L5:1194:G:H2'	5:L5:1195:G:H8	1.86	0.41
8:LA:66:PRO:HG2	8:LA:67:TYR:CE2	2.56	0.41
8:LA:175:ILE:H	8:LA:175:ILE:HG13	1.61	0.41
10:LC:209:ILE:HB	10:LC:229:LEU:HD13	2.02	0.41
10:LC:240:LEU:HD23	10:LC:240:LEU:HA	1.94	0.41
11:LD:204:VAL:O	11:LD:208:MET:HG3	2.21	0.41
13:LF:184:ILE:HG23	13:LF:189:ASP:HB2	2.03	0.41
25:LS:51:LEU:HD13	26:LT:151:LEU:HB3	2.03	0.41
44:Ll:41:ARG:HA	44:Ll:41:ARG:HD2	1.89	0.41
50:Ls:134:LYS:HB3	50:Ls:137:PHE:HE2	1.86	0.41
51:Lt:129:ILE:O	51:Lt:133:LEU:HD12	2.21	0.41
55:S2:931:C:H2'	55:S2:932:G:C8	2.56	0.41
78:SW:3:ARG:HD2	78:SW:6:VAL:HG12	2.03	0.41
79:SX:68:LYS:HB3	79:SX:91:LEU:HD13	2.02	0.41
5:L5:960:A:C8	12:LE:126:LEU:HD12	2.56	0.40
5:L5:1278:C:H2'	5:L5:1279:A:O4'	2.21	0.40
5:L5:1399:G:H2'	5:L5:1400:G:C8	2.56	0.40
5:L5:1969:G:H4'	50:Ls:36:GLY:HA2	2.03	0.40
5:L5:2123:C:H1'	12:LE:72:LYS:HD2	2.03	0.40
5:L5:4277:G:H5''	26:LT:17:ARG:HG2	2.02	0.40
9:LB:181:MET:HG2	9:LB:183:ILE:HG13	2.03	0.40
10:LC:109:ARG:HD3	10:LC:111:TRP:CZ2	2.56	0.40
27:LU:56:LEU:HD12	27:LU:56:LEU:HA	1.84	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:LY:2:LYS:HE3	31:LY:2:LYS:HB3	1.69	0.40
51:Lt:108:GLU:HA	51:Lt:111:ASN:ND2	2.36	0.40
55:S2:186:C:H2'	55:S2:187:G:C8	2.56	0.40
55:S2:1643:U:H2'	55:S2:1644:C:C6	2.56	0.40
57:SB:28:LYS:HD3	57:SB:48:LEU:HG	2.03	0.40
58:SC:66:LEU:HD11	58:SC:81:ILE:HG21	2.02	0.40
58:SC:253:PRO:HA	58:SC:256:TRP:CD1	2.57	0.40
61:SF:70:GLU:HA	61:SF:73:THR:HG22	2.03	0.40
70:SO:94:HIS:HA	70:SO:127:GLY:O	2.20	0.40
3:CR:331:TYR:HD1	3:CR:331:TYR:HA	1.79	0.40
4:CZ:116:LEU:HD23	4:CZ:116:LEU:HA	1.93	0.40
5:L5:61:A:H5''	20:LN:164:LEU:HD21	2.03	0.40
5:L5:481:G:H2'	5:L5:482:G:C8	2.56	0.40
5:L5:1754:U:H1'	11:LD:3:PHE:HE2	1.86	0.40
5:L5:2568:C:H2'	5:L5:2569:G:H8	1.85	0.40
5:L5:4967:A:H2'	5:L5:4968:A:H8	1.86	0.40
9:LB:194:LEU:HD23	9:LB:194:LEU:HA	1.91	0.40
10:LC:346:ASN:O	10:LC:350:ARG:HG3	2.21	0.40
16:LI:38:ARG:HG2	16:LI:41:ALA:HB2	2.03	0.40
29:LW:82:ILE:O	62:SG:130:PRO:HB2	2.21	0.40
40:Lh:106:LYS:O	40:Lh:110:LYS:HE2	2.21	0.40
55:S2:735:C:H5'	55:S2:736:C:H5	1.87	0.40
55:S2:1753:C:H4'	55:S2:1780:G:H1	1.87	0.40
5:L5:286:U:H2'	5:L5:287:U:C6	2.57	0.40
5:L5:1392:A:H2'	5:L5:1393:G:C8	2.55	0.40
5:L5:1733:G:N3	5:L5:4214:A:H2'	2.36	0.40
5:L5:2292:C:H2'	5:L5:2293:U:C6	2.57	0.40
11:LD:125:VAL:HG23	11:LD:126:THR:H	1.86	0.40
21:LO:125:LYS:HG2	21:LO:129:LEU:HD12	2.04	0.40
21:LO:181:ALA:O	21:LO:185:VAL:HG22	2.22	0.40
39:Lg:9:ARG:HD2	39:Lg:34:TYR:CZ	2.55	0.40
49:Lr:47:LYS:HB3	49:Lr:102:TYR:CZ	2.56	0.40
50:Ls:198:ILE:HD13	50:Ls:198:ILE:HA	1.89	0.40
51:Lt:137:GLN:HB2	51:Lt:148:PRO:HB2	2.02	0.40
55:S2:106:C:H2'	55:S2:107:A:C8	2.54	0.40
55:S2:639:C:H2'	55:S2:640:A:H8	1.87	0.40
56:SA:24:HIS:HA	56:SA:49:ILE:HB	2.03	0.40
60:SE:11:ARG:HE	60:SE:20:LEU:HB3	1.86	0.40
60:SE:48:LEU:HD11	60:SE:70:ILE:HG13	2.04	0.40
71:SP:37:TYR:HB2	71:SP:38:SER:H	1.79	0.40
75:ST:113:VAL:HG12	75:ST:123:LEU:HD23	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
86:Se:36:MET:HE3	86:Se:36:MET:HB3	1.75	0.40
88:Sg:42:MET:HE1	88:Sg:92:LEU:HB3	2.02	0.40
5:L5:106:A:H2'	5:L5:107:G:O4'	2.22	0.40
5:L5:362:A:N1	44:Ll:39:SER:HB3	2.36	0.40
5:L5:746:A:H2'	5:L5:747:A:C8	2.57	0.40
5:L5:1725:U:H2'	5:L5:1726:U:C6	2.56	0.40
5:L5:2864:A:H2'	5:L5:2865:U:C6	2.56	0.40
5:L5:3723:A:H2'	5:L5:3724:A:C8	2.56	0.40
7:L8:94:G:H21	42:Lj:82:THR:HB	1.85	0.40
7:L8:148:A:H2'	7:L8:149:G:C8	2.56	0.40
8:LA:20:VAL:HA	8:LA:23:ARG:HG3	2.03	0.40
12:LE:157:HIS:HB3	12:LE:160:LYS:HD2	2.03	0.40
22:LP:8:PRO:HD3	22:LP:149:ILE:HD13	2.03	0.40
22:LP:84:PRO:HB2	22:LP:87:SER:OG	2.22	0.40
23:LQ:99:LYS:HE2	23:LQ:121:LEU:HD11	2.03	0.40
31:LY:30:MET:HE2	31:LY:49:ILE:HD11	2.03	0.40
54:NM:246:ASN:ND2	54:NM:247:PHE:CD2	2.86	0.40
55:S2:433:A:H2'	55:S2:434:G:C8	2.56	0.40
69:SN:64:ARG:HD3	69:SN:70:LYS:HD3	2.04	0.40
81:SZ:79:ILE:HG23	81:SZ:83:LEU:HD23	2.04	0.40
85:Sd:30:LEU:HD23	85:Sd:30:LEU:HA	1.88	0.40
3:CR:278:VAL:HA	3:CR:281:ILE:HG12	2.03	0.40
5:L5:3668:C:H5'	8:LA:8:GLN:O	2.22	0.40
10:LC:207:PRO:HG2	10:LC:227:ILE:HD13	2.03	0.40
13:LF:150:VAL:O	13:LF:154:ILE:HG12	2.21	0.40
15:LH:27:VAL:HG12	15:LH:84:VAL:HG21	2.04	0.40
18:LL:5:ARG:H	18:LL:5:ARG:HG2	1.54	0.40
31:LY:69:LYS:HB3	31:LY:69:LYS:HE3	1.85	0.40
50:Ls:98:ILE:O	50:Ls:102:LEU:HB2	2.21	0.40
55:S2:352:U:H2'	55:S2:353:C:C6	2.56	0.40
65:SJ:124:HIS:CE1	86:Se:35:ARG:HB2	2.56	0.40
86:Se:21:LYS:H	86:Se:21:LYS:HG2	1.64	0.40
87:Sf:90:LYS:NZ	87:Sf:91:ASN:H	2.19	0.40
87:Sf:107:LYS:HB2	87:Sf:107:LYS:HE2	1.72	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	CR	411/437 (94%)	399 (97%)	12 (3%)	0	100	100
4	CZ	198/217 (91%)	191 (96%)	7 (4%)	0	100	100
8	LA	246/257 (96%)	229 (93%)	17 (7%)	0	100	100
9	LB	393/403 (98%)	375 (95%)	18 (5%)	0	100	100
10	LC	362/427 (85%)	341 (94%)	20 (6%)	1 (0%)	36	53
11	LD	291/297 (98%)	273 (94%)	18 (6%)	0	100	100
12	LE	213/288 (74%)	191 (90%)	22 (10%)	0	100	100
13	LF	223/248 (90%)	213 (96%)	10 (4%)	0	100	100
14	LG	225/266 (85%)	214 (95%)	11 (5%)	0	100	100
15	LH	188/192 (98%)	178 (95%)	10 (5%)	0	100	100
16	LI	203/214 (95%)	192 (95%)	11 (5%)	0	100	100
17	LJ	167/178 (94%)	162 (97%)	5 (3%)	0	100	100
18	LL	203/211 (96%)	191 (94%)	12 (6%)	0	100	100
19	LM	137/215 (64%)	132 (96%)	5 (4%)	0	100	100
20	LN	201/204 (98%)	194 (96%)	7 (4%)	0	100	100
21	LO	198/203 (98%)	195 (98%)	3 (2%)	0	100	100
22	LP	151/184 (82%)	141 (93%)	9 (6%)	1 (1%)	18	32
23	LQ	185/188 (98%)	179 (97%)	6 (3%)	0	100	100
24	LR	174/196 (89%)	173 (99%)	1 (1%)	0	100	100
25	LS	173/176 (98%)	163 (94%)	10 (6%)	0	100	100
26	LT	157/160 (98%)	148 (94%)	8 (5%)	1 (1%)	21	35
27	LU	99/128 (77%)	94 (95%)	5 (5%)	0	100	100
28	LV	129/140 (92%)	120 (93%)	9 (7%)	0	100	100
29	LW	111/157 (71%)	104 (94%)	7 (6%)	0	100	100
30	LX	118/156 (76%)	115 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
31	LY	132/145 (91%)	128 (97%)	4 (3%)	0	100	100
32	LZ	133/136 (98%)	126 (95%)	7 (5%)	0	100	100
33	La	145/148 (98%)	134 (92%)	11 (8%)	0	100	100
34	Lb	73/159 (46%)	71 (97%)	2 (3%)	0	100	100
35	Lc	95/115 (83%)	91 (96%)	4 (4%)	0	100	100
36	Ld	105/125 (84%)	103 (98%)	2 (2%)	0	100	100
37	Le	126/135 (93%)	124 (98%)	2 (2%)	0	100	100
38	Lf	107/110 (97%)	102 (95%)	5 (5%)	0	100	100
39	Lg	112/117 (96%)	105 (94%)	7 (6%)	0	100	100
40	Lh	119/123 (97%)	117 (98%)	2 (2%)	0	100	100
41	Li	100/105 (95%)	96 (96%)	4 (4%)	0	100	100
42	Lj	84/97 (87%)	81 (96%)	3 (4%)	0	100	100
43	Lk	67/70 (96%)	63 (94%)	4 (6%)	0	100	100
44	Ll	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
45	Lm	50/128 (39%)	50 (100%)	0	0	100	100
46	Ln	22/25 (88%)	22 (100%)	0	0	100	100
47	Lo	103/106 (97%)	98 (95%)	5 (5%)	0	100	100
48	Lp	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
49	Lr	123/137 (90%)	116 (94%)	7 (6%)	0	100	100
50	Ls	210/317 (66%)	201 (96%)	9 (4%)	0	100	100
51	Lt	158/165 (96%)	153 (97%)	5 (3%)	0	100	100
52	NA	71/215 (33%)	69 (97%)	2 (3%)	0	100	100
53	NB	129/162 (80%)	129 (100%)	0	0	100	100
54	NM	381/496 (77%)	363 (95%)	18 (5%)	0	100	100
56	SA	214/295 (72%)	202 (94%)	11 (5%)	1 (0%)	24	40
57	SB	211/264 (80%)	206 (98%)	5 (2%)	0	100	100
58	SC	217/293 (74%)	209 (96%)	8 (4%)	0	100	100
59	SD	219/243 (90%)	207 (94%)	12 (6%)	0	100	100
60	SE	260/263 (99%)	252 (97%)	8 (3%)	0	100	100
61	SF	177/204 (87%)	167 (94%)	9 (5%)	1 (1%)	21	35
62	SG	229/249 (92%)	210 (92%)	19 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
63	SH	179/194 (92%)	167 (93%)	12 (7%)	0	100	100
64	SI	204/208 (98%)	198 (97%)	6 (3%)	0	100	100
65	SJ	177/194 (91%)	173 (98%)	4 (2%)	0	100	100
66	SK	94/165 (57%)	89 (95%)	5 (5%)	0	100	100
67	SL	140/158 (89%)	132 (94%)	8 (6%)	0	100	100
68	SM	120/132 (91%)	114 (95%)	6 (5%)	0	100	100
69	SN	148/151 (98%)	143 (97%)	5 (3%)	0	100	100
70	SO	132/151 (87%)	117 (89%)	15 (11%)	0	100	100
71	SP	127/145 (88%)	121 (95%)	6 (5%)	0	100	100
72	SQ	140/146 (96%)	131 (94%)	9 (6%)	0	100	100
73	SR	129/135 (96%)	115 (89%)	14 (11%)	0	100	100
74	SS	139/152 (91%)	120 (86%)	19 (14%)	0	100	100
75	ST	141/145 (97%)	137 (97%)	4 (3%)	0	100	100
76	SU	99/119 (83%)	92 (93%)	7 (7%)	0	100	100
77	SV	81/83 (98%)	77 (95%)	4 (5%)	0	100	100
78	SW	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
79	SX	139/143 (97%)	130 (94%)	8 (6%)	1 (1%)	18	32
80	SY	121/133 (91%)	116 (96%)	5 (4%)	0	100	100
81	SZ	73/125 (58%)	67 (92%)	6 (8%)	0	100	100
82	Sa	97/115 (84%)	89 (92%)	8 (8%)	0	100	100
83	Sb	81/84 (96%)	72 (89%)	9 (11%)	0	100	100
84	Sc	61/69 (88%)	52 (85%)	9 (15%)	0	100	100
85	Sd	51/56 (91%)	50 (98%)	1 (2%)	0	100	100
86	Se	53/133 (40%)	50 (94%)	3 (6%)	0	100	100
87	Sf	61/156 (39%)	55 (90%)	6 (10%)	0	100	100
88	Sg	304/317 (96%)	273 (90%)	31 (10%)	0	100	100
All	All	12683/14771 (86%)	12035 (95%)	642 (5%)	6 (0%)	100	100

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
56	SA	196	GLU
61	SF	80	GLY

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Mol	Chain	Res	Type
10	LC	186	SER
22	LP	20	SER
26	LT	139	HIS
79	SX	10	ALA

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	CR	356/375 (95%)	345 (97%)	11 (3%)	35	60
4	CZ	142/189 (75%)	139 (98%)	3 (2%)	47	71
8	LA	190/199 (96%)	180 (95%)	10 (5%)	20	39
9	LB	343/349 (98%)	337 (98%)	6 (2%)	53	75
10	LC	299/348 (86%)	293 (98%)	6 (2%)	48	72
11	LD	241/250 (96%)	239 (99%)	2 (1%)	73	87
12	LE	191/252 (76%)	180 (94%)	11 (6%)	18	35
13	LF	194/215 (90%)	193 (100%)	1 (0%)	81	91
14	LG	188/223 (84%)	182 (97%)	6 (3%)	34	58
15	LH	167/171 (98%)	161 (96%)	6 (4%)	31	55
16	LI	174/181 (96%)	173 (99%)	1 (1%)	78	90
17	LJ	136/149 (91%)	133 (98%)	3 (2%)	45	70
18	LL	164/177 (93%)	161 (98%)	3 (2%)	51	74
19	LM	114/161 (71%)	110 (96%)	4 (4%)	32	55
20	LN	171/172 (99%)	165 (96%)	6 (4%)	32	55
21	LO	170/174 (98%)	165 (97%)	5 (3%)	37	62
22	LP	132/163 (81%)	129 (98%)	3 (2%)	44	69
23	LQ	161/165 (98%)	158 (98%)	3 (2%)	50	73
24	LR	150/175 (86%)	149 (99%)	1 (1%)	76	88
25	LS	156/157 (99%)	151 (97%)	5 (3%)	34	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	LT	135/140 (96%)	133 (98%)	2 (2%)	57	78
27	LU	86/115 (75%)	83 (96%)	3 (4%)	32	55
28	LV	99/107 (92%)	98 (99%)	1 (1%)	68	84
29	LW	61/126 (48%)	59 (97%)	2 (3%)	33	58
30	LX	107/133 (80%)	104 (97%)	3 (3%)	38	63
31	LY	123/135 (91%)	120 (98%)	3 (2%)	43	67
32	LZ	117/118 (99%)	116 (99%)	1 (1%)	70	86
33	La	118/121 (98%)	114 (97%)	4 (3%)	32	57
34	Lb	59/126 (47%)	57 (97%)	2 (3%)	32	57
35	Lc	79/97 (81%)	76 (96%)	3 (4%)	29	53
36	Ld	94/110 (86%)	91 (97%)	3 (3%)	34	58
37	Le	113/121 (93%)	109 (96%)	4 (4%)	32	55
38	Lf	87/89 (98%)	85 (98%)	2 (2%)	44	69
39	Lg	93/100 (93%)	91 (98%)	2 (2%)	45	70
40	Lh	108/110 (98%)	105 (97%)	3 (3%)	38	63
41	Li	81/89 (91%)	76 (94%)	5 (6%)	16	32
42	Lj	73/80 (91%)	73 (100%)	0	100	100
43	Lk	57/65 (88%)	54 (95%)	3 (5%)	20	39
44	Ll	47/48 (98%)	45 (96%)	2 (4%)	26	48
45	Lm	47/116 (40%)	46 (98%)	1 (2%)	47	71
46	Ln	23/24 (96%)	23 (100%)	0	100	100
47	Lo	93/94 (99%)	88 (95%)	5 (5%)	20	38
48	Lp	71/75 (95%)	69 (97%)	2 (3%)	38	63
49	Lr	107/121 (88%)	104 (97%)	3 (3%)	38	63
50	Ls	180/258 (70%)	176 (98%)	4 (2%)	45	70
51	Lt	132/137 (96%)	126 (96%)	6 (4%)	24	46
52	NA	64/183 (35%)	62 (97%)	2 (3%)	35	60
53	NB	113/136 (83%)	108 (96%)	5 (4%)	25	47
54	NM	345/443 (78%)	336 (97%)	9 (3%)	40	65
56	SA	170/243 (70%)	166 (98%)	4 (2%)	43	67
57	SB	191/231 (83%)	188 (98%)	3 (2%)	55	77

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
58	SC	175/225 (78%)	168 (96%)	7 (4%)	28	51
59	SD	148/202 (73%)	147 (99%)	1 (1%)	76	88
60	SE	196/225 (87%)	190 (97%)	6 (3%)	35	60
61	SF	142/170 (84%)	138 (97%)	4 (3%)	38	63
62	SG	138/218 (63%)	134 (97%)	4 (3%)	37	62
63	SH	109/174 (63%)	108 (99%)	1 (1%)	70	86
64	SI	149/180 (83%)	147 (99%)	2 (1%)	61	80
65	SJ	143/168 (85%)	136 (95%)	7 (5%)	22	42
66	SK	65/136 (48%)	60 (92%)	5 (8%)	12	23
67	SL	121/142 (85%)	118 (98%)	3 (2%)	42	66
68	SM	104/108 (96%)	102 (98%)	2 (2%)	50	73
69	SN	123/131 (94%)	120 (98%)	3 (2%)	43	67
70	SO	95/119 (80%)	94 (99%)	1 (1%)	65	83
71	SP	98/130 (75%)	94 (96%)	4 (4%)	27	50
72	SQ	103/121 (85%)	99 (96%)	4 (4%)	28	52
73	SR	84/122 (69%)	80 (95%)	4 (5%)	23	43
74	SS	112/132 (85%)	108 (96%)	4 (4%)	31	55
75	ST	105/115 (91%)	103 (98%)	2 (2%)	50	73
76	SU	68/107 (64%)	65 (96%)	3 (4%)	25	47
77	SV	62/67 (92%)	59 (95%)	3 (5%)	23	43
78	SW	110/113 (97%)	107 (97%)	3 (3%)	39	64
79	SX	109/115 (95%)	106 (97%)	3 (3%)	38	63
80	SY	86/115 (75%)	79 (92%)	7 (8%)	11	21
81	SZ	56/103 (54%)	55 (98%)	1 (2%)	51	74
82	Sa	83/98 (85%)	80 (96%)	3 (4%)	31	55
83	Sb	65/76 (86%)	64 (98%)	1 (2%)	57	78
84	Sc	51/62 (82%)	50 (98%)	1 (2%)	48	72
85	Sd	44/49 (90%)	43 (98%)	1 (2%)	44	69
86	Se	39/104 (38%)	37 (95%)	2 (5%)	21	40
87	Sf	56/140 (40%)	54 (96%)	2 (4%)	31	55
88	Sg	201/275 (73%)	195 (97%)	6 (3%)	36	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	10352/12578 (82%)	10064 (97%)	288 (3%)	38 63

All (288) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	CR	18	LYS
3	CR	30	ASN
3	CR	120	ILE
3	CR	175	ASP
3	CR	261	GLU
3	CR	270	LEU
3	CR	317	VAL
3	CR	328	ILE
3	CR	330	ARG
3	CR	331	TYR
3	CR	398	GLU
4	CZ	93	ASP
4	CZ	120	VAL
4	CZ	209	LEU
8	LA	15	VAL
8	LA	75	LEU
8	LA	80	GLU
8	LA	102	LEU
8	LA	123	ARG
8	LA	128	ARG
8	LA	138	SER
8	LA	207	VAL
8	LA	208	GLU
8	LA	249	THR
9	LB	59	GLU
9	LB	67	VAL
9	LB	73	VAL
9	LB	101	THR
9	LB	159	VAL
9	LB	231	VAL
10	LC	1	MET
10	LC	65	GLU
10	LC	69	THR
10	LC	189	MET
10	LC	328	LEU
10	LC	334	THR
11	LD	56	THR

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Mol	Chain	Res	Type
11	LD	75	VAL
12	LE	44	CYS
12	LE	91	THR
12	LE	104	THR
12	LE	106	VAL
12	LE	107	VAL
12	LE	118	THR
12	LE	120	ASP
12	LE	124	LYS
12	LE	128	HIS
12	LE	175	VAL
12	LE	184	VAL
13	LF	40	LYS
14	LG	33	GLU
14	LG	55	VAL
14	LG	197	LYS
14	LG	210	GLU
14	LG	222	ILE
14	LG	241	VAL
15	LH	16	VAL
15	LH	17	ASP
15	LH	46	SER
15	LH	147	GLU
15	LH	161	ILE
15	LH	169	ASN
16	LI	162	ARG
17	LJ	49	VAL
17	LJ	115	LEU
17	LJ	148	THR
18	LL	37	LYS
18	LL	64	VAL
18	LL	70	VAL
19	LM	16	SER
19	LM	25	VAL
19	LM	70	GLN
19	LM	75	GLN
20	LN	18	VAL
20	LN	34	SER
20	LN	89	VAL
20	LN	170	LYS
20	LN	182	HIS
20	LN	194	ARG

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Mol	Chain	Res	Type
21	LO	22	ILE
21	LO	119	VAL
21	LO	127	VAL
21	LO	132	THR
21	LO	189	ILE
22	LP	2	VAL
22	LP	21	ASN
22	LP	79	THR
23	LQ	26	ARG
23	LQ	100	VAL
23	LQ	150	ARG
24	LR	29	THR
25	LS	69	GLU
25	LS	90	THR
25	LS	98	ARG
25	LS	124	ILE
25	LS	173	ASN
26	LT	43	LYS
26	LT	72	VAL
27	LU	43	LEU
27	LU	44	GLN
27	LU	113	ARG
28	LV	48	ARG
29	LW	4	GLU
29	LW	5	LEU
30	LX	42	THR
30	LX	85	SER
30	LX	93	ASN
31	LY	25	ILE
31	LY	84	ARG
31	LY	111	LEU
32	LZ	100	VAL
33	La	16	SER
33	La	17	HIS
33	La	100	ILE
33	La	140	VAL
34	Lb	11	ASN
34	Lb	30	GLU
35	Lc	28	VAL
35	Lc	35	LEU
35	Lc	93	THR
36	Ld	46	LEU

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Mol	Chain	Res	Type
36	Ld	63	ARG
36	Ld	112	THR
37	Le	21	ILE
37	Le	86	GLU
37	Le	94	SER
37	Le	117	GLN
38	Lf	67	THR
38	Lf	95	LYS
39	Lg	2	VAL
39	Lg	103	VAL
40	Lh	44	LEU
40	Lh	48	ARG
40	Lh	112	ARG
41	Li	12	ASN
41	Li	17	VAL
41	Li	18	THR
41	Li	32	ARG
41	Li	64	SER
43	Lk	12	LEU
43	Lk	46	VAL
43	Lk	47	ILE
44	Ll	27	ILE
44	Ll	46	ARG
45	Lm	127	VAL
47	Lo	2	VAL
47	Lo	33	LEU
47	Lo	68	LEU
47	Lo	72	CYS
47	Lo	103	VAL
48	Lp	26	VAL
48	Lp	30	GLU
49	Lr	37	SER
49	Lr	44	ILE
49	Lr	67	ARG
50	Ls	35	VAL
50	Ls	86	VAL
50	Ls	103	LEU
50	Ls	210	THR
51	Lt	58	ILE
51	Lt	62	LEU
51	Lt	97	ASN
51	Lt	105	THR

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Mol	Chain	Res	Type
51	Lt	125	LEU
51	Lt	143	VAL
52	NA	85	LEU
52	NA	121	ILE
53	NB	36	THR
53	NB	64	MET
53	NB	74	PHE
53	NB	88	PHE
53	NB	102	MET
54	NM	172	LEU
54	NM	240	LYS
54	NM	243	VAL
54	NM	254	LEU
54	NM	285	VAL
54	NM	313	HIS
54	NM	397	PHE
54	NM	474	LEU
54	NM	486	MET
56	SA	104	THR
56	SA	112	ILE
56	SA	134	LEU
56	SA	157	VAL
57	SB	88	THR
57	SB	98	THR
57	SB	106	THR
58	SC	137	VAL
58	SC	146	GLU
58	SC	184	VAL
58	SC	249	SER
58	SC	252	THR
58	SC	259	THR
58	SC	270	THR
59	SD	35	SER
60	SE	24	THR
60	SE	46	ILE
60	SE	111	VAL
60	SE	112	HIS
60	SE	143	ASP
60	SE	208	VAL
61	SF	75	SER
61	SF	111	VAL
61	SF	165	ASN

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Mol	Chain	Res	Type
61	SF	168	THR
62	SG	26	THR
62	SG	32	MET
62	SG	49	VAL
62	SG	128	THR
63	SH	106	ARG
64	SI	29	LEU
64	SI	114	GLU
65	SJ	17	ARG
65	SJ	23	SER
65	SJ	108	ARG
65	SJ	109	ARG
65	SJ	111	GLN
65	SJ	121	LYS
65	SJ	151	LEU
66	SK	25	LYS
66	SK	40	VAL
66	SK	43	LEU
66	SK	58	VAL
66	SK	90	VAL
67	SL	67	SER
67	SL	83	GLN
67	SL	120	VAL
68	SM	18	LEU
68	SM	99	LYS
69	SN	119	GLU
69	SN	132	LYS
69	SN	134	VAL
70	SO	97	LEU
71	SP	37	TYR
71	SP	78	THR
71	SP	93	MET
71	SP	100	LYS
72	SQ	15	ARG
72	SQ	34	VAL
72	SQ	46	THR
72	SQ	60	LYS
73	SR	8	THR
73	SR	62	GLN
73	SR	106	LEU
73	SR	126	MET
74	SS	59	LEU

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Mol	Chain	Res	Type
74	SS	83	PHE
74	SS	99	LEU
74	SS	116	LYS
75	ST	87	VAL
75	ST	111	LYS
76	SU	65	THR
76	SU	66	ARG
76	SU	111	GLU
77	SV	32	ILE
77	SV	33	GLN
77	SV	52	THR
78	SW	43	LYS
78	SW	71	LYS
78	SW	74	VAL
79	SX	96	GLU
79	SX	123	VAL
79	SX	125	VAL
80	SY	9	THR
80	SY	17	LEU
80	SY	27	VAL
80	SY	28	LEU
80	SY	32	LYS
80	SY	107	ARG
80	SY	120	THR
81	SZ	58	LEU
82	Sa	2	THR
82	Sa	30	VAL
82	Sa	45	VAL
83	Sb	55	LEU
84	Sc	50	VAL
85	Sd	5	GLN
86	Se	21	LYS
86	Se	36	MET
87	Sf	98	VAL
87	Sf	132	MET
88	Sg	7	LEU
88	Sg	18	VAL
88	Sg	110	SER
88	Sg	113	PHE
88	Sg	174	VAL
88	Sg	241	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (93)

such sidechains are listed below:

Mol	Chain	Res	Type
3	CR	44	GLN
3	CR	79	GLN
3	CR	247	GLN
3	CR	262	ASN
3	CR	401	GLN
8	LA	205	ASN
10	LC	38	ASN
10	LC	50	GLN
10	LC	329	ASN
11	LD	111	ASN
11	LD	131	ASN
11	LD	175	HIS
11	LD	202	GLN
13	LF	80	ASN
13	LF	239	GLN
14	LG	43	GLN
14	LG	94	GLN
15	LH	78	GLN
15	LH	98	HIS
15	LH	102	ASN
15	LH	156	ASN
16	LI	73	ASN
16	LI	100	ASN
17	LJ	65	ASN
18	LL	87	HIS
19	LM	20	HIS
19	LM	44	GLN
19	LM	48	GLN
20	LN	181	HIS
21	LO	167	HIS
22	LP	28	ASN
22	LP	34	GLN
22	LP	116	HIS
22	LP	133	HIS
23	LQ	162	HIS
24	LR	40	GLN
26	LT	3	ASN
27	LU	94	ASN
27	LU	116	GLN
29	LW	33	ASN
29	LW	50	ASN
31	LY	14	ASN

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Mol	Chain	Res	Type
31	LY	72	GLN
31	LY	96	HIS
32	LZ	97	ASN
33	La	120	GLN
34	Lb	6	ASN
34	Lb	11	ASN
36	Ld	100	ASN
37	Le	107	ASN
38	Lf	21	GLN
41	Li	12	ASN
42	Lj	13	ASN
42	Lj	30	GLN
42	Lj	66	HIS
44	Ll	25	GLN
47	Lo	19	GLN
47	Lo	102	GLN
49	Lr	85	ASN
50	Ls	159	GLN
51	Lt	100	HIS
51	Lt	142	ASN
53	NB	55	ASN
54	NM	179	ASN
54	NM	451	ASN
56	SA	33	GLN
57	SB	186	ASN
58	SC	113	GLN
60	SE	98	ASN
60	SE	142	HIS
60	SE	188	ASN
61	SF	110	GLN
61	SF	165	ASN
61	SF	186	ASN
62	SG	65	GLN
64	SI	52	ASN
67	SL	11	GLN
67	SL	39	ASN
67	SL	141	ASN
68	SM	46	GLN
69	SN	62	GLN
71	SP	114	HIS
72	SQ	142	GLN
74	SS	73	ASN

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Mol	Chain	Res	Type
74	SS	76	GLN
80	SY	22	GLN
80	SY	89	HIS
82	Sa	86	ASN
83	Sb	51	GLN
84	Sc	7	GLN
85	Sd	5	GLN
85	Sd	37	ASN
85	Sd	45	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	CM	11/952 (1%)	3 (27%)	0
2	CP	74/75 (98%)	23 (31%)	2 (2%)
5	L5	3633/5070 (71%)	749 (20%)	16 (0%)
55	S2	1704/1869 (91%)	465 (27%)	19 (1%)
6	L7	119/121 (98%)	14 (11%)	0
7	L8	155/157 (98%)	28 (18%)	1 (0%)
All	All	5696/8244 (69%)	1282 (22%)	38 (0%)

All (1282) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	CM	804	C
1	CM	806	C
1	CM	809	U
2	CP	2	G
2	CP	4	U
2	CP	5	C
2	CP	6	G
2	CP	8	U
2	CP	9	G
2	CP	15	G
2	CP	16	G
2	CP	17	G
2	CP	19	U
2	CP	22	G
2	CP	35	G
2	CP	46	U
2	CP	49	C

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Mol	Chain	Res	Type
2	CP	50	G
2	CP	57	A
2	CP	58	A
2	CP	68	A
2	CP	69	G
2	CP	70	C
2	CP	72	C
2	CP	73	C
2	CP	75	A
5	L5	17	A
5	L5	21	G
5	L5	30	C
5	L5	39	A
5	L5	42	A
5	L5	48	G
5	L5	56	A
5	L5	59	A
5	L5	64	A
5	L5	65	A
5	L5	69	A
5	L5	72	C
5	L5	73	A
5	L5	74	G
5	L5	91	G
5	L5	98	A
5	L5	104	G
5	L5	108	A
5	L5	109	G
5	L5	110	C
5	L5	119	G
5	L5	120	A
5	L5	133	C
5	L5	134	G
5	L5	135	G
5	L5	136	C
5	L5	137	G
5	L5	144	G
5	L5	152	U
5	L5	159	C
5	L5	165	A
5	L5	172	C
5	L5	183	C

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Mol	Chain	Res	Type
5	L5	184	U
5	L5	185	C
5	L5	188	G
5	L5	189	G
5	L5	200	U
5	L5	210	C
5	L5	216	C
5	L5	217	C
5	L5	218	A
5	L5	233	U
5	L5	234	G
5	L5	254	G
5	L5	255	C
5	L5	261	G
5	L5	266	C
5	L5	267	G
5	L5	269	G
5	L5	280	G
5	L5	297	U
5	L5	306	A
5	L5	315	G
5	L5	316	U
5	L5	340	C
5	L5	350	C
5	L5	357	U
5	L5	387	G
5	L5	388	A
5	L5	399	G
5	L5	401	G
5	L5	407	A
5	L5	409	G
5	L5	410	A
5	L5	411	G
5	L5	412	G
5	L5	414	C
5	L5	440	U
5	L5	449	C
5	L5	450	G
5	L5	452	A
5	L5	453	G
5	L5	454	U
5	L5	456	C

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Mol	Chain	Res	Type
5	L5	457	G
5	L5	461	G
5	L5	467	U
5	L5	474	C
5	L5	485	C
5	L5	486	C
5	L5	489	C
5	L5	493	G
5	L5	494	U
5	L5	497	G
5	L5	498	C
5	L5	500	G
5	L5	501	C
5	L5	502	C
5	L5	503	C
5	L5	504	G
5	L5	505	G
5	L5	509	A
5	L5	510	U
5	L5	512	U
5	L5	513	U
5	L5	514	U
5	L5	515	C
5	L5	517	C
5	L5	518	G
5	L5	643	C
5	L5	644	G
5	L5	646	G
5	L5	655	C
5	L5	657	C
5	L5	658	C
5	L5	660	A
5	L5	666	G
5	L5	667	A
5	L5	668	C
5	L5	669	C
5	L5	673	C
5	L5	674	G
5	L5	675	C
5	L5	676	C
5	L5	684	G
5	L5	685	C

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Mol	Chain	Res	Type
5	L5	686	A
5	L5	687	U
5	L5	688	U
5	L5	692	A
5	L5	696	C
5	L5	697	G
5	L5	703	G
5	L5	704	C
5	L5	706	C
5	L5	708	G
5	L5	730	G
5	L5	731	G
5	L5	738	C
5	L5	739	G
5	L5	740	G
5	L5	742	G
5	L5	746	A
5	L5	747	A
5	L5	758	G
5	L5	904	C
5	L5	912	G
5	L5	913	U
5	L5	914	U
5	L5	915	A
5	L5	916	C
5	L5	917	A
5	L5	918	G
5	L5	923	C
5	L5	924	C
5	L5	926	G
5	L5	929	A
5	L5	932	A
5	L5	933	G
5	L5	934	C
5	L5	936	C
5	L5	941	C
5	L5	943	A
5	L5	945	U
5	L5	946	C
5	L5	958	G
5	L5	959	G
5	L5	960	A

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Mol	Chain	Res	Type
5	L5	961	G
5	L5	962	C
5	L5	965	G
5	L5	966	A
5	L5	967	C
5	L5	970	G
5	L5	977	C
5	L5	988	C
5	L5	989	U
5	L5	990	C
5	L5	991	C
5	L5	992	C
5	L5	993	G
5	L5	1069	G
5	L5	1070	G
5	L5	1075	G
5	L5	1076	C
5	L5	1083	U
5	L5	1168	G
5	L5	1173	G
5	L5	1178	G
5	L5	1179	U
5	L5	1180	C
5	L5	1181	C
5	L5	1182	C
5	L5	1183	C
5	L5	1184	A
5	L5	1187	G
5	L5	1193	C
5	L5	1196	G
5	L5	1202	C
5	L5	1203	G
5	L5	1209	U
5	L5	1211	G
5	L5	1214	C
5	L5	1215	C
5	L5	1218	G
5	L5	1235	G
5	L5	1238	A
5	L5	1241	C
5	L5	1253	G
5	L5	1258	G

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Mol	Chain	Res	Type
5	L5	1259	G
5	L5	1260	G
5	L5	1266	G
5	L5	1269	G
5	L5	1270	A
5	L5	1271	G
5	L5	1272	C
5	L5	1273	G
5	L5	1274	A
5	L5	1275	G
5	L5	1277	G
5	L5	1280	C
5	L5	1284	G
5	L5	1285	U
5	L5	1287	G
5	L5	1293	G
5	L5	1294	A
5	L5	1295	C
5	L5	1296	G
5	L5	1301	C
5	L5	1302	U
5	L5	1303	A
5	L5	1304	C
5	L5	1326	A
5	L5	1337	A
5	L5	1344	C
5	L5	1354	A
5	L5	1358	G
5	L5	1359	G
5	L5	1365	C
5	L5	1366	G
5	L5	1378	C
5	L5	1379	C
5	L5	1387	A
5	L5	1393	G
5	L5	1394	G
5	L5	1397	A
5	L5	1404	G
5	L5	1405	C
5	L5	1408	G
5	L5	1410	U
5	L5	1411	C

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Mol	Chain	Res	Type
5	L5	1420	A
5	L5	1425	G
5	L5	1435	G
5	L5	1437	C
5	L5	1439	C
5	L5	1441	C
5	L5	1442	C
5	L5	1443	A
5	L5	1444	G
5	L5	1447	C
5	L5	1454	G
5	L5	1457	G
5	L5	1466	G
5	L5	1480	C
5	L5	1483	C
5	L5	1493	G
5	L5	1497	A
5	L5	1498	G
5	L5	1501	C
5	L5	1502	G
5	L5	1514	U
5	L5	1534	A
5	L5	1547	A
5	L5	1552	G
5	L5	1564	A
5	L5	1566	C
5	L5	1578	U
5	L5	1591	U
5	L5	1596	U
5	L5	1613	A
5	L5	1624	G
5	L5	1625	G
5	L5	1631	A
5	L5	1633	G
5	L5	1634	A
5	L5	1640	C
5	L5	1641	G
5	L5	1642	A
5	L5	1654	G
5	L5	1661	C
5	L5	1663	C
5	L5	1676	C

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Mol	Chain	Res	Type
5	L5	1677	U
5	L5	1685	G
5	L5	1697	G
5	L5	1699	A
5	L5	1700	G
5	L5	1705	G
5	L5	1707	C
5	L5	1734	G
5	L5	1740	C
5	L5	1742	A
5	L5	1750	G
5	L5	1753	G
5	L5	1756	U
5	L5	1758	G
5	L5	1760	G
5	L5	1765	A
5	L5	1767	A
5	L5	1781	U
5	L5	1787	A
5	L5	1792	U
5	L5	1803	G
5	L5	1804	A
5	L5	1806	G
5	L5	1810	G
5	L5	1815	G
5	L5	1820	C
5	L5	1821	G
5	L5	1822	U
5	L5	1834	U
5	L5	1836	G
5	L5	1837	A
5	L5	1842	G
5	L5	1855	G
5	L5	1869	G
5	L5	1883	G
5	L5	1891	A
5	L5	1897	A
5	L5	1898	C
5	L5	1912	G
5	L5	1918	U
5	L5	1919	G
5	L5	1920	C

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Mol	Chain	Res	Type
5	L5	1921	C
5	L5	1922	G
5	L5	1924	C
5	L5	1925	G
5	L5	1930	U
5	L5	1931	C
5	L5	1932	A
5	L5	1936	C
5	L5	1940	G
5	L5	1948	G
5	L5	1961	G
5	L5	1962	A
5	L5	1965	G
5	L5	1976	G
5	L5	1980	U
5	L5	1981	G
5	L5	1983	A
5	L5	1984	A
5	L5	1985	G
5	L5	1986	U
5	L5	1987	C
5	L5	1997	U
5	L5	2001	G
5	L5	2002	A
5	L5	2004	U
5	L5	2007	G
5	L5	2016	C
5	L5	2017	A
5	L5	2018	C
5	L5	2024	G
5	L5	2025	A
5	L5	2026	A
5	L5	2046	G
5	L5	2048	U
5	L5	2055	G
5	L5	2056	G
5	L5	2062	C
5	L5	2069	A
5	L5	2084	C
5	L5	2085	G
5	L5	2092	G
5	L5	2094	G

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Mol	Chain	Res	Type
5	L5	2095	A
5	L5	2098	G
5	L5	2101	C
5	L5	2103	G
5	L5	2106	G
5	L5	2107	C
5	L5	2108	G
5	L5	2116	C
5	L5	2117	G
5	L5	2118	G
5	L5	2119	C
5	L5	2120	G
5	L5	2121	C
5	L5	2123	C
5	L5	2250	C
5	L5	2252	G
5	L5	2253	A
5	L5	2254	G
5	L5	2255	C
5	L5	2256	C
5	L5	2258	C
5	L5	2269	C
5	L5	2289	C
5	L5	2300	A
5	L5	2301	G
5	L5	2306	G
5	L5	2313	A
5	L5	2316	G
5	L5	2333	G
5	L5	2348	G
5	L5	2351	C
5	L5	2360	A
5	L5	2395	A
5	L5	2397	G
5	L5	2417	A
5	L5	2421	G
5	L5	2422	C
5	L5	2424	G
5	L5	2425	U
5	L5	2441	C
5	L5	2450	G
5	L5	2453	A

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Mol	Chain	Res	Type
5	L5	2463	G
5	L5	2464	C
5	L5	2465	C
5	L5	2469	C
5	L5	2475	G
5	L5	2483	G
5	L5	2484	A
5	L5	2487	G
5	L5	2488	C
5	L5	2489	C
5	L5	2490	U
5	L5	2491	C
5	L5	2493	G
5	L5	2503	G
5	L5	2504	C
5	L5	2505	C
5	L5	2506	G
5	L5	2513	A
5	L5	2519	U
5	L5	2520	C
5	L5	2529	A
5	L5	2537	A
5	L5	2544	G
5	L5	2545	U
5	L5	2546	G
5	L5	2547	G
5	L5	2554	U
5	L5	2555	G
5	L5	2573	A
5	L5	2583	C
5	L5	2587	A
5	L5	2589	C
5	L5	2601	A
5	L5	2618	G
5	L5	2627	C
5	L5	2638	G
5	L5	2653	C
5	L5	2662	G
5	L5	2669	C
5	L5	2673	G
5	L5	2675	G
5	L5	2676	A

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Mol	Chain	Res	Type
5	L5	2686	G
5	L5	2687	U
5	L5	2694	G
5	L5	2695	A
5	L5	2696	A
5	L5	2703	G
5	L5	2710	C
5	L5	2711	G
5	L5	2721	G
5	L5	2724	G
5	L5	2726	G
5	L5	2739	C
5	L5	2742	G
5	L5	2743	A
5	L5	2754	G
5	L5	2761	U
5	L5	2763	U
5	L5	2764	A
5	L5	2769	U
5	L5	2770	C
5	L5	2788	U
5	L5	2790	U
5	L5	2814	C
5	L5	2815	A
5	L5	2826	U
5	L5	2827	G
5	L5	2838	G
5	L5	2842	G
5	L5	2846	G
5	L5	2848	G
5	L5	2850	A
5	L5	2855	G
5	L5	2856	C
5	L5	2867	C
5	L5	2877	G
5	L5	2890	C
5	L5	2891	U
5	L5	2892	C
5	L5	2894	A
5	L5	2897	G
5	L5	2900	U
5	L5	2902	G

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Mol	Chain	Res	Type
5	L5	2903	G
5	L5	2904	U
5	L5	2905	C
5	L5	2906	G
5	L5	2907	G
5	L5	2908	U
5	L5	3585	G
5	L5	3586	G
5	L5	3588	C
5	L5	3591	C
5	L5	3593	C
5	L5	3594	C
5	L5	3595	U
5	L5	3596	A
5	L5	3597	G
5	L5	3604	A
5	L5	3605	C
5	L5	3615	G
5	L5	3618	C
5	L5	3626	G
5	L5	3630	A
5	L5	3635	A
5	L5	3644	U
5	L5	3646	A
5	L5	3648	A
5	L5	3662	A
5	L5	3664	G
5	L5	3673	C
5	L5	3674	G
5	L5	3711	A
5	L5	3713	U
5	L5	3726	A
5	L5	3727	A
5	L5	3735	G
5	L5	3736	A
5	L5	3748	A
5	L5	3750	G
5	L5	3753	G
5	L5	3761	C
5	L5	3771	C
5	L5	3775	A
5	L5	3776	G

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Mol	Chain	Res	Type
5	L5	3777	G
5	L5	3784	A
5	L5	3786	U
5	L5	3810	C
5	L5	3814	U
5	L5	3817	A
5	L5	3818	U
5	L5	3819	G
5	L5	3823	G
5	L5	3838	U
5	L5	3839	G
5	L5	3840	U
5	L5	3867	A
5	L5	3876	A
5	L5	3877	A
5	L5	3878	C
5	L5	3879	G
5	L5	3885	G
5	L5	3892	U
5	L5	3897	G
5	L5	3901	A
5	L5	3905	A
5	L5	3906	A
5	L5	3907	G
5	L5	3908	A
5	L5	3915	U
5	L5	3926	C
5	L5	3942	A
5	L5	3943	A
5	L5	3947	A
5	L5	3949	A
5	L5	4064	C
5	L5	4065	G
5	L5	4076	G
5	L5	4084	G
5	L5	4097	G
5	L5	4099	G
5	L5	4102	C
5	L5	4104	G
5	L5	4107	G
5	L5	4113	U
5	L5	4114	C

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Mol	Chain	Res	Type
5	L5	4115	G
5	L5	4116	C
5	L5	4119	C
5	L5	4122	G
5	L5	4128	A
5	L5	4131	G
5	L5	4135	G
5	L5	4137	C
5	L5	4138	C
5	L5	4140	C
5	L5	4141	G
5	L5	4142	C
5	L5	4143	G
5	L5	4145	C
5	L5	4149	C
5	L5	4150	G
5	L5	4154	G
5	L5	4155	C
5	L5	4162	C
5	L5	4163	U
5	L5	4170	A
5	L5	4177	C
5	L5	4183	G
5	L5	4184	G
5	L5	4191	G
5	L5	4203	A
5	L5	4222	G
5	L5	4225	G
5	L5	4228	G
5	L5	4229	U
5	L5	4233	A
5	L5	4238	G
5	L5	4249	G
5	L5	4251	A
5	L5	4254	G
5	L5	4258	C
5	L5	4268	A
5	L5	4273	A
5	L5	4281	A
5	L5	4296	U
5	L5	4297	G
5	L5	4305	G

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Mol	Chain	Res	Type
5	L5	4306	U
5	L5	4314	C
5	L5	4319	C
5	L5	4329	G
5	L5	4330	G
5	L5	4332	C
5	L5	4349	C
5	L5	4364	G
5	L5	4373	G
5	L5	4376	A
5	L5	4377	G
5	L5	4378	A
5	L5	4387	C
5	L5	4391	G
5	L5	4394	A
5	L5	4422	A
5	L5	4426	C
5	L5	4433	G
5	L5	4438	U
5	L5	4444	C
5	L5	4448	G
5	L5	4449	A
5	L5	4452	U
5	L5	4453	C
5	L5	4464	A
5	L5	4466	C
5	L5	4475	G
5	L5	4500	U
5	L5	4512	U
5	L5	4513	A
5	L5	4515	G
5	L5	4519	C
5	L5	4524	G
5	L5	4525	C
5	L5	4528	G
5	L5	4548	A
5	L5	4549	G
5	L5	4554	G
5	L5	4560	C
5	L5	4567	G
5	L5	4570	G
5	L5	4573	G

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Mol	Chain	Res	Type
5	L5	4575	G
5	L5	4590	A
5	L5	4600	G
5	L5	4601	U
5	L5	4617	G
5	L5	4627	U
5	L5	4636	U
5	L5	4637	G
5	L5	4638	U
5	L5	4639	G
5	L5	4656	A
5	L5	4670	C
5	L5	4672	A
5	L5	4687	A
5	L5	4693	C
5	L5	4700	A
5	L5	4708	A
5	L5	4709	U
5	L5	4719	G
5	L5	4732	G
5	L5	4733	C
5	L5	4734	A
5	L5	4740	G
5	L5	4741	C
5	L5	4742	G
5	L5	4745	G
5	L5	4754	G
5	L5	4757	C
5	L5	4759	C
5	L5	4761	G
5	L5	4765	G
5	L5	4771	C
5	L5	4772	C
5	L5	4773	C
5	L5	4775	C
5	L5	4860	G
5	L5	4868	G
5	L5	4870	G
5	L5	4871	C
5	L5	4875	G
5	L5	4881	U
5	L5	4882	U

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Mol	Chain	Res	Type
5	L5	4883	C
5	L5	4889	G
5	L5	4894	A
5	L5	4895	C
5	L5	4896	G
5	L5	4900	C
5	L5	4901	G
5	L5	4910	G
5	L5	4912	G
5	L5	4914	C
5	L5	4925	U
5	L5	4927	G
5	L5	4931	G
5	L5	4934	A
5	L5	4937	C
5	L5	4941	G
5	L5	4943	A
5	L5	4955	A
5	L5	4960	G
5	L5	4963	G
5	L5	4966	A
5	L5	4973	U
5	L5	4976	U
5	L5	4988	U
5	L5	4989	U
5	L5	4990	C
5	L5	4991	U
5	L5	5014	A
5	L5	5017	G
5	L5	5022	U
5	L5	5023	C
5	L5	5024	C
5	L5	5025	C
5	L5	5026	U
5	L5	5028	G
5	L5	5029	C
5	L5	5030	U
5	L5	5031	G
5	L5	5034	A
5	L5	5041	G
5	L5	5050	C
5	L5	5054	C

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Mol	Chain	Res	Type
5	L5	5062	G
5	L5	5069	U
6	L7	23	A
6	L7	27	G
6	L7	33	U
6	L7	41	G
6	L7	53	U
6	L7	63	C
6	L7	64	G
6	L7	97	G
6	L7	100	A
6	L7	102	U
6	L7	110	G
6	L7	111	C
6	L7	117	G
6	L7	120	U
7	L8	23	C
7	L8	34	U
7	L8	35	C
7	L8	39	G
7	L8	48	A
7	L8	52	A
7	L8	59	A
7	L8	62	A
7	L8	63	U
7	L8	80	A
7	L8	82	A
7	L8	83	C
7	L8	84	A
7	L8	86	U
7	L8	87	G
7	L8	88	A
7	L8	94	G
7	L8	103	A
7	L8	105	C
7	L8	111	U
7	L8	112	G
7	L8	114	G
7	L8	124	U
7	L8	125	C
7	L8	126	C
7	L8	127	U

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Mol	Chain	Res	Type
7	L8	150	C
7	L8	153	C
55	S2	7	G
55	S2	17	C
55	S2	27	A
55	S2	33	G
55	S2	42	A
55	S2	44	U
55	S2	46	A
55	S2	56	G
55	S2	58	C
55	S2	59	U
55	S2	66	G
55	S2	67	C
55	S2	68	A
55	S2	71	G
55	S2	72	C
55	S2	73	C
55	S2	75	G
55	S2	76	U
55	S2	80	G
55	S2	84	A
55	S2	85	A
55	S2	86	C
55	S2	96	C
55	S2	101	U
55	S2	103	A
55	S2	113	G
55	S2	114	G
55	S2	121	U
55	S2	126	G
55	S2	127	C
55	S2	128	U
55	S2	130	G
55	S2	143	U
55	S2	144	U
55	S2	145	G
55	S2	149	A
55	S2	150	A
55	S2	151	C
55	S2	161	U
55	S2	162	C

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Mol	Chain	Res	Type
55	S2	163	U
55	S2	167	G
55	S2	168	C
55	S2	170	A
55	S2	182	C
55	S2	193	C
55	S2	198	U
55	S2	202	G
55	S2	207	G
55	S2	210	U
55	S2	214	U
55	S2	219	U
55	S2	290	U
55	S2	295	C
55	S2	302	A
55	S2	306	C
55	S2	308	G
55	S2	309	G
55	S2	311	C
55	S2	312	G
55	S2	313	A
55	S2	319	C
55	S2	322	C
55	S2	323	C
55	S2	324	C
55	S2	325	C
55	S2	326	C
55	S2	328	U
55	S2	329	G
55	S2	332	G
55	S2	340	C
55	S2	360	A
55	S2	362	C
55	S2	364	A
55	S2	368	U
55	S2	370	G
55	S2	380	G
55	S2	381	C
55	S2	385	G
55	S2	386	C
55	S2	398	A
55	S2	400	C

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Mol	Chain	Res	Type
55	S2	409	C
55	S2	413	G
55	S2	428	U
55	S2	434	G
55	S2	438	G
55	S2	448	A
55	S2	450	C
55	S2	452	G
55	S2	464	A
55	S2	465	A
55	S2	466	G
55	S2	471	G
55	S2	472	C
55	S2	473	A
55	S2	474	G
55	S2	482	G
55	S2	483	C
55	S2	485	A
55	S2	487	U
55	S2	488	U
55	S2	489	A
55	S2	492	C
55	S2	493	A
55	S2	500	A
55	S2	502	C
55	S2	503	C
55	S2	516	A
55	S2	517	C
55	S2	525	A
55	S2	531	A
55	S2	532	C
55	S2	536	A
55	S2	537	C
55	S2	539	C
55	S2	540	U
55	S2	541	U
55	S2	542	U
55	S2	543	C
55	S2	544	G
55	S2	545	A
55	S2	547	G
55	S2	549	C

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Mol	Chain	Res	Type
55	S2	551	U
55	S2	554	A
55	S2	555	A
55	S2	556	U
55	S2	559	G
55	S2	561	A
55	S2	563	G
55	S2	566	U
55	S2	567	C
55	S2	575	A
55	S2	576	A
55	S2	582	U
55	S2	583	A
55	S2	587	A
55	S2	589	G
55	S2	590	A
55	S2	591	U
55	S2	593	C
55	S2	595	U
55	S2	596	U
55	S2	604	A
55	S2	605	A
55	S2	606	G
55	S2	607	U
55	S2	608	C
55	S2	613	G
55	S2	614	C
55	S2	617	G
55	S2	628	A
55	S2	631	U
55	S2	632	C
55	S2	643	A
55	S2	648	A
55	S2	650	A
55	S2	651	U
55	S2	652	U
55	S2	655	A
55	S2	660	C
55	S2	668	A
55	S2	669	A
55	S2	670	A
55	S2	671	A

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Mol	Chain	Res	Type
55	S2	672	A
55	S2	688	U
55	S2	689	U
55	S2	690	G
55	S2	692	G
55	S2	694	G
55	S2	696	G
55	S2	697	G
55	S2	732	U
55	S2	733	C
55	S2	734	C
55	S2	735	C
55	S2	736	C
55	S2	738	C
55	S2	739	C
55	S2	746	C
55	S2	747	U
55	S2	748	C
55	S2	749	U
55	S2	751	G
55	S2	752	G
55	S2	753	C
55	S2	790	C
55	S2	791	C
55	S2	795	A
55	S2	796	G
55	S2	797	C
55	S2	799	U
55	S2	807	G
55	S2	808	A
55	S2	809	A
55	S2	810	A
55	S2	811	A
55	S2	812	A
55	S2	818	A
55	S2	821	G
55	S2	822	U
55	S2	830	A
55	S2	834	C
55	S2	835	C
55	S2	836	G
55	S2	837	A

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Mol	Chain	Res	Type
55	S2	838	G
55	S2	839	C
55	S2	840	C
55	S2	841	G
55	S2	842	C
55	S2	847	A
55	S2	858	A
55	S2	860	G
55	S2	861	A
55	S2	868	G
55	S2	869	A
55	S2	870	A
55	S2	872	A
55	S2	873	G
55	S2	874	G
55	S2	878	G
55	S2	880	G
55	S2	883	U
55	S2	888	U
55	S2	889	U
55	S2	890	U
55	S2	891	G
55	S2	892	U
55	S2	893	U
55	S2	894	G
55	S2	895	G
55	S2	896	U
55	S2	898	U
55	S2	900	C
55	S2	901	G
55	S2	903	A
55	S2	904	A
55	S2	905	C
55	S2	909	G
55	S2	913	A
55	S2	917	U
55	S2	920	A
55	S2	922	A
55	S2	924	G
55	S2	926	A
55	S2	930	C
55	S2	933	G

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Mol	Chain	Res	Type
55	S2	955	A
55	S2	958	G
55	S2	963	A
55	S2	970	G
55	S2	971	G
55	S2	972	A
55	S2	990	A
55	S2	992	A
55	S2	1001	A
55	S2	1017	U
55	S2	1019	C
55	S2	1020	A
55	S2	1021	U
55	S2	1023	A
55	S2	1027	A
55	S2	1055	A
55	S2	1061	U
55	S2	1062	A
55	S2	1078	C
55	S2	1083	A
55	S2	1085	C
55	S2	1089	G
55	S2	1090	C
55	S2	1096	G
55	S2	1100	A
55	S2	1105	G
55	S2	1107	G
55	S2	1108	G
55	S2	1112	U
55	S2	1114	U
55	S2	1116	C
55	S2	1120	U
55	S2	1121	G
55	S2	1126	G
55	S2	1133	A
55	S2	1139	C
55	S2	1140	G
55	S2	1142	G
55	S2	1143	A
55	S2	1144	A
55	S2	1145	A
55	S2	1146	C

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Mol	Chain	Res	Type
55	S2	1147	C
55	S2	1149	A
55	S2	1153	C
55	S2	1154	U
55	S2	1155	U
55	S2	1157	G
55	S2	1168	G
55	S2	1181	A
55	S2	1183	A
55	S2	1195	A
55	S2	1200	A
55	S2	1207	G
55	S2	1212	G
55	S2	1215	C
55	S2	1217	A
55	S2	1221	G
55	S2	1224	G
55	S2	1242	U
55	S2	1243	U
55	S2	1251	A
55	S2	1253	A
55	S2	1256	G
55	S2	1257	G
55	S2	1259	A
55	S2	1260	A
55	S2	1265	A
55	S2	1268	C
55	S2	1271	C
55	S2	1272	C
55	S2	1273	C
55	S2	1274	G
55	S2	1275	G
55	S2	1276	A
55	S2	1281	G
55	S2	1282	A
55	S2	1283	C
55	S2	1285	G
55	S2	1286	G
55	S2	1289	U
55	S2	1297	U
55	S2	1298	G
55	S2	1299	A

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Mol	Chain	Res	Type
55	S2	1301	A
55	S2	1302	G
55	S2	1303	C
55	S2	1308	U
55	S2	1313	A
55	S2	1314	U
55	S2	1321	G
55	S2	1326	U
55	S2	1330	G
55	S2	1332	A
55	S2	1342	U
55	S2	1363	C
55	S2	1371	U
55	S2	1372	U
55	S2	1378	A
55	S2	1384	C
55	S2	1396	A
55	S2	1397	U
55	S2	1402	A
55	S2	1404	U
55	S2	1408	U
55	S2	1415	C
55	S2	1419	C
55	S2	1420	G
55	S2	1421	A
55	S2	1422	G
55	S2	1423	C
55	S2	1438	A
55	S2	1449	G
55	S2	1450	G
55	S2	1454	A
55	S2	1462	U
55	S2	1463	U
55	S2	1473	G
55	S2	1475	G
55	S2	1476	A
55	S2	1477	U
55	S2	1484	A
55	S2	1487	A
55	S2	1489	A
55	S2	1490	G
55	S2	1494	U

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Mol	Chain	Res	Type
55	S2	1495	G
55	S2	1497	G
55	S2	1498	A
55	S2	1505	U
55	S2	1506	A
55	S2	1508	A
55	S2	1509	U
55	S2	1510	G
55	S2	1517	G
55	S2	1519	U
55	S2	1520	G
55	S2	1521	C
55	S2	1522	A
55	S2	1527	C
55	S2	1528	G
55	S2	1533	A
55	S2	1546	G
55	S2	1548	G
55	S2	1552	G
55	S2	1553	C
55	S2	1555	U
55	S2	1556	A
55	S2	1563	G
55	S2	1567	G
55	S2	1569	A
55	S2	1570	G
55	S2	1578	U
55	S2	1580	A
55	S2	1585	U
55	S2	1586	U
55	S2	1587	G
55	S2	1588	A
55	S2	1589	A
55	S2	1599	U
55	S2	1601	A
55	S2	1602	U
55	S2	1613	G
55	S2	1614	A
55	S2	1621	U
55	S2	1623	A
55	S2	1624	U
55	S2	1627	C

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Mol	Chain	Res	Type
55	S2	1639	G
55	S2	1644	C
55	S2	1647	A
55	S2	1648	G
55	S2	1654	G
55	S2	1661	A
55	S2	1663	A
55	S2	1664	A
55	S2	1665	G
55	S2	1668	U
55	S2	1671	G
55	S2	1678	A
55	S2	1680	G
55	S2	1694	U
55	S2	1695	A
55	S2	1719	A
55	S2	1721	U
55	S2	1722	G
55	S2	1744	G
55	S2	1745	A
55	S2	1748	G
55	S2	1753	C
55	S2	1754	G
55	S2	1755	C
55	S2	1773	C
55	S2	1781	A
55	S2	1782	G
55	S2	1783	C
55	S2	1784	G
55	S2	1786	U
55	S2	1813	A
55	S2	1824	A
55	S2	1825	A
55	S2	1826	G
55	S2	1831	A
55	S2	1835	A
55	S2	1838	U
55	S2	1849	G
55	S2	1850	A
55	S2	1851	A
55	S2	1852	C
55	S2	1860	A

Continued on next page...

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Mol	Chain	Res	Type
55	S2	1861	G
55	S2	1862	G
55	S2	1863	A
55	S2	1865	C
55	S2	1868	U

All (38) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	CP	3	C
2	CP	21	U
5	L5	406	C
5	L5	504	G
5	L5	914	U
5	L5	1082	C
5	L5	1633	G
5	L5	2117	G
5	L5	2416	G
5	L5	2675	G
5	L5	2760	G
5	L5	3614	G
5	L5	3673	C
5	L5	3904	G
5	L5	4600	G
5	L5	4633	G
5	L5	4699	U
5	L5	4913	G
7	L8	87	G
55	S2	85	A
55	S2	144	U
55	S2	150	A
55	S2	213	G
55	S2	465	A
55	S2	604	A
55	S2	688	U
55	S2	912	C
55	S2	971	G
55	S2	1060	A
55	S2	1120	U
55	S2	1145	A
55	S2	1273	C
55	S2	1519	U

Continued on next page...

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Mol	Chain	Res	Type
55	S2	1585	U
55	S2	1597	C
55	S2	1601	A
55	S2	1664	A
55	S2	1860	A

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	LYO	CR	63	3	7,9,10	0.80	0	7,10,12	1.10	0

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
3	LYO	CR	63	3	-	4/8/9/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	CR	63	LYO	N-CA-CB-CG
3	CR	63	LYO	C-CA-CB-CG
3	CR	63	LYO	CA-CB-CG-OG
3	CR	63	LYO	CA-CB-CG-CD

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 200 ligands modelled in this entry, 199 are monoatomic - leaving 1 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	$\# Z > 2$
90	G3D	CZ	301	-	33,34,34	3.27	15 (45%)	52,54,54	1.85	11 (21%)

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
90	G3D	CZ	301	-	-	1/21/37/37	0/3/3/3

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
90	CZ	301	G3D	C3'-C4'	-8.33	1.31	1.52
90	CZ	301	G3D	O4'-C4'	7.84	1.62	1.45
90	CZ	301	G3D	C4-N3	6.67	1.49	1.34
90	CZ	301	G3D	C2-N3	5.60	1.46	1.33
90	CZ	301	G3D	PA-O3A	5.43	1.65	1.59
90	CZ	301	G3D	C2-N2	4.78	1.45	1.34
90	CZ	301	G3D	O4'-C1'	-4.77	1.31	1.42
90	CZ	301	G3D	P1-O3'	3.28	1.65	1.59
90	CZ	301	G3D	C2-N1	2.84	1.44	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
90	CZ	301	G3D	O2'-C2'	-2.83	1.36	1.43
90	CZ	301	G3D	C5-C6	2.59	1.54	1.44
90	CZ	301	G3D	O6-C6	-2.57	1.18	1.23
90	CZ	301	G3D	C6-N1	2.51	1.43	1.38
90	CZ	301	G3D	C5-N7	-2.42	1.34	1.39
90	CZ	301	G3D	C4-N9	-2.19	1.32	1.38

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
90	CZ	301	G3D	C1'-N9-C8	-5.59	110.86	126.73
90	CZ	301	G3D	C5-C4-N3	-4.55	121.16	128.39
90	CZ	301	G3D	N9-C8-N7	-4.18	105.65	113.40
90	CZ	301	G3D	C2-N3-C4	4.06	119.29	112.30
90	CZ	301	G3D	C1'-N9-C4	3.99	138.26	126.49
90	CZ	301	G3D	N9-C4-N3	3.11	132.16	125.95
90	CZ	301	G3D	C2-N1-C6	-2.96	119.75	125.11
90	CZ	301	G3D	C8-N7-C5	2.66	108.99	104.26
90	CZ	301	G3D	C5-C6-N1	2.61	119.89	113.25
90	CZ	301	G3D	C8-N9-C4	2.59	110.88	106.03
90	CZ	301	G3D	O6-C6-C5	-2.45	120.08	126.53

There are no chirality outliers.

All (1) torsion outliers are listed below:

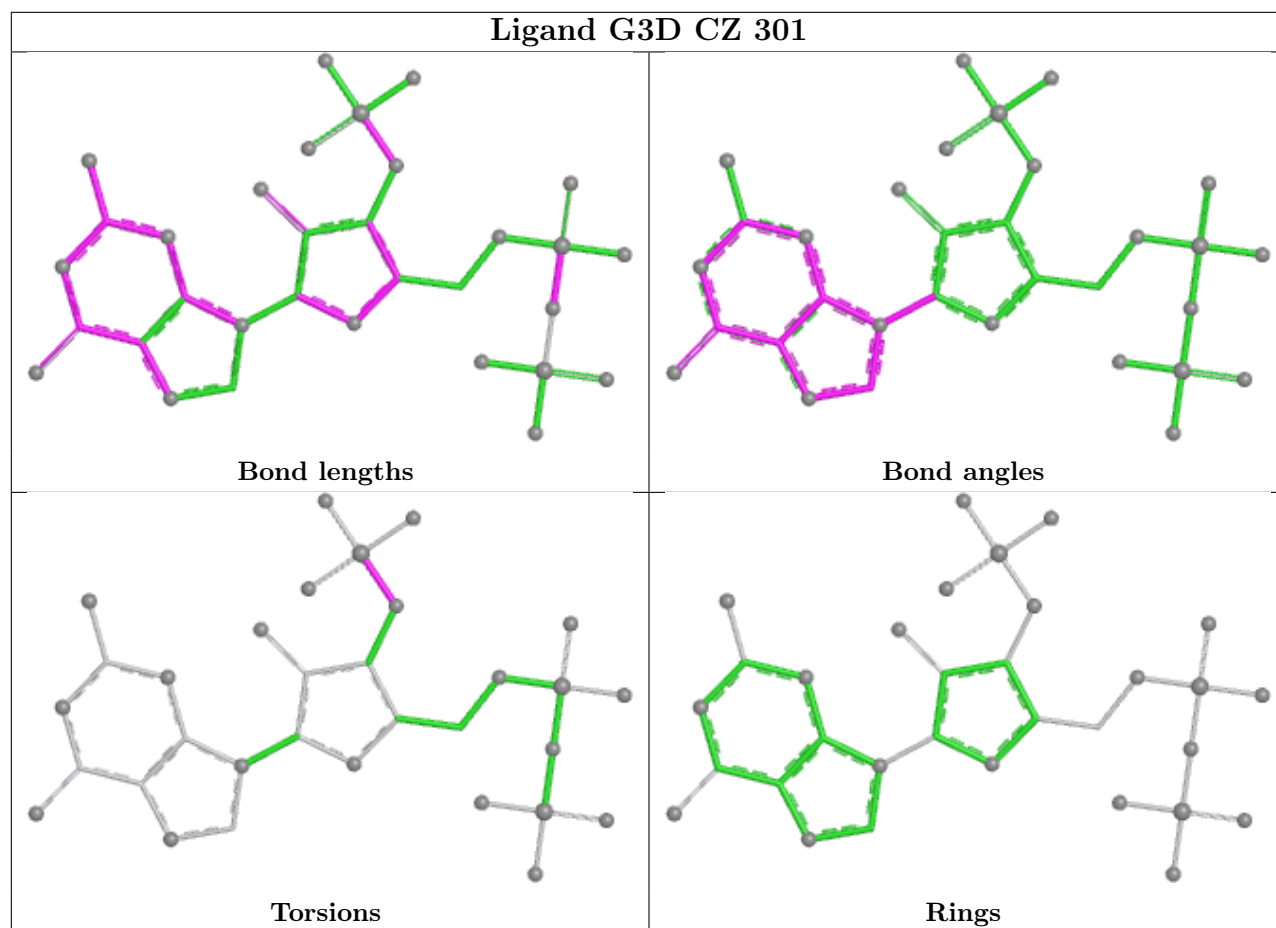
Mol	Chain	Res	Type	Atoms
90	CZ	301	G3D	C3'-O3'-P1-O5P

There are no ring outliers.

No monomer is involved in short contacts.

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

equivalents in the CSD to analyse the geometry.



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.

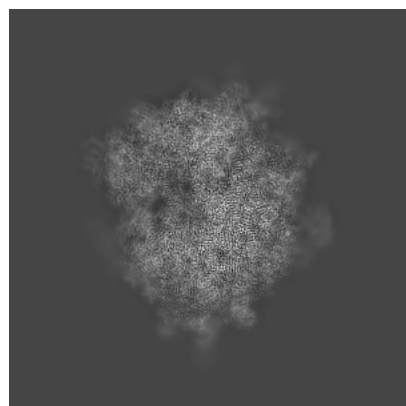
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-53230. These allow visual inspection of the internal detail of the map and identification of artifacts.

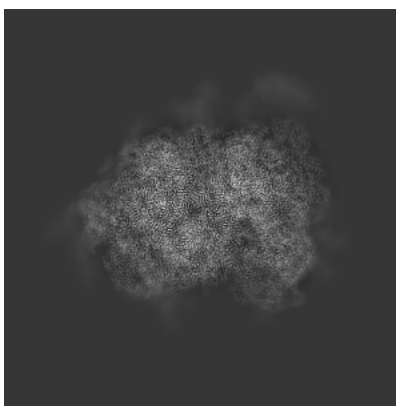
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

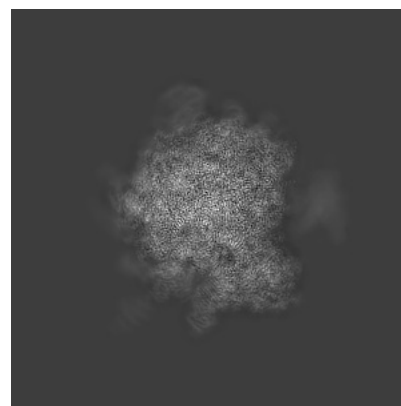
6.1.1 Primary map



X

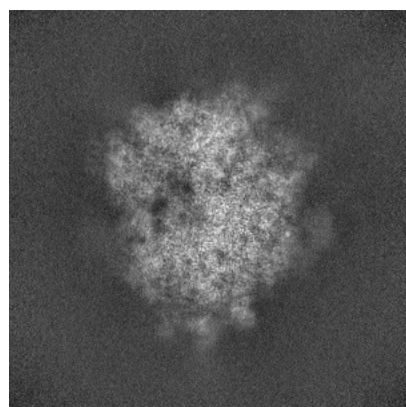


Y

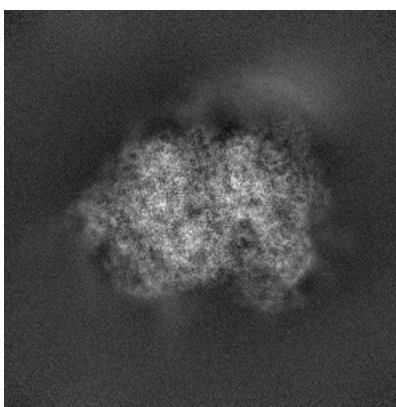


Z

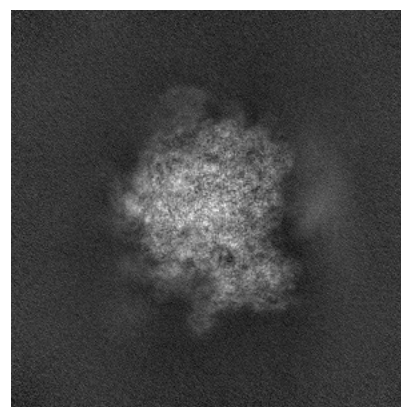
6.1.2 Raw map



X



Y

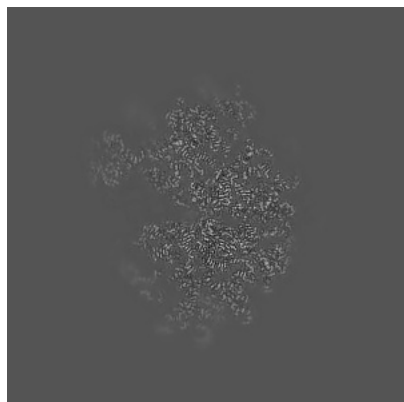


Z

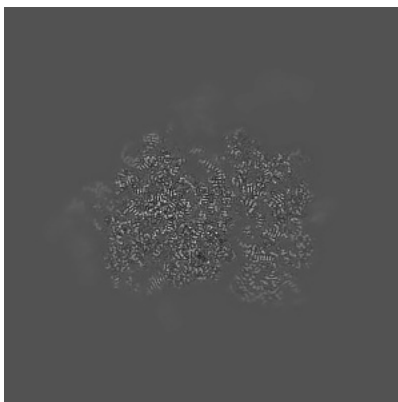
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

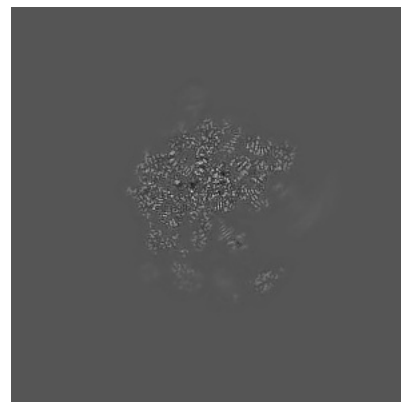
6.2.1 Primary map



X Index: 320

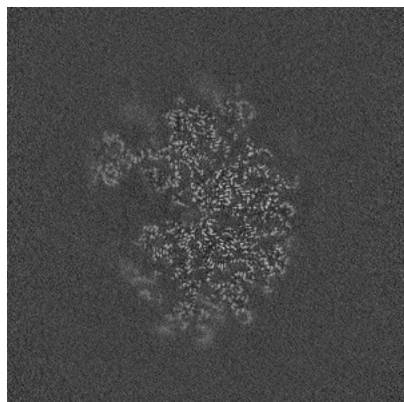


Y Index: 320

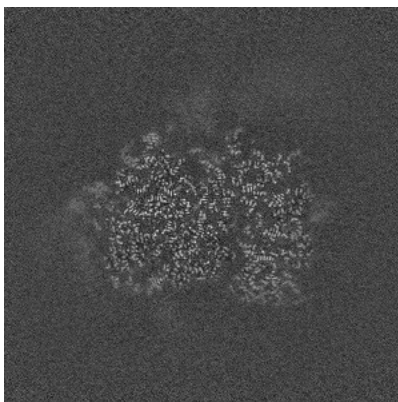


Z Index: 320

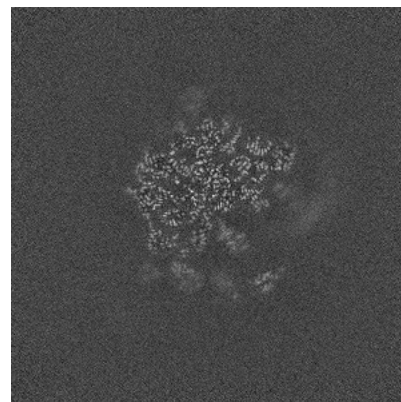
6.2.2 Raw map



X Index: 320



Y Index: 320

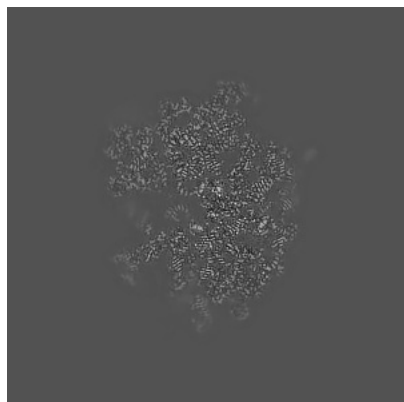


Z Index: 320

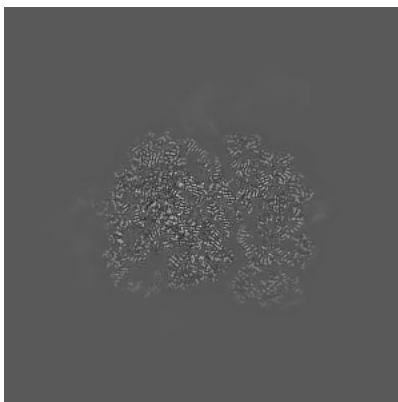
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

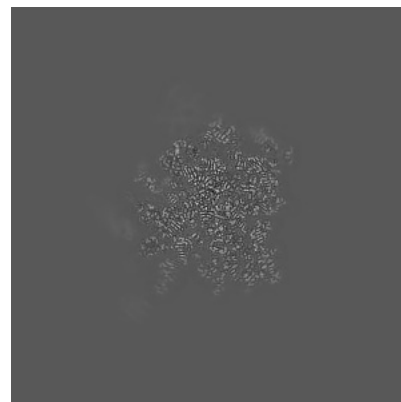
6.3.1 Primary map



X Index: 344

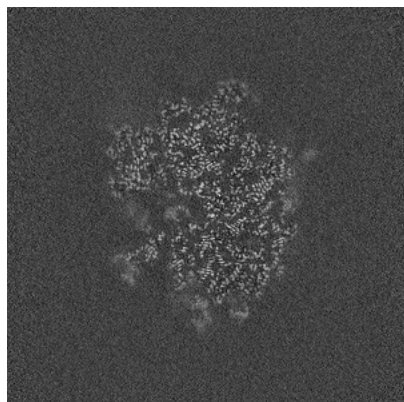


Y Index: 328

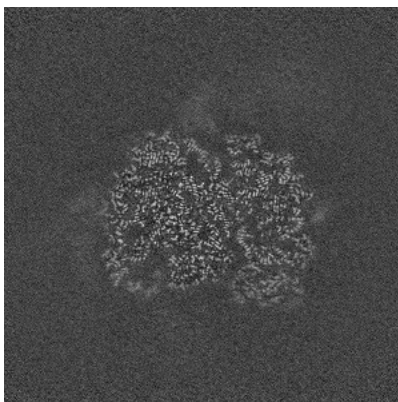


Z Index: 257

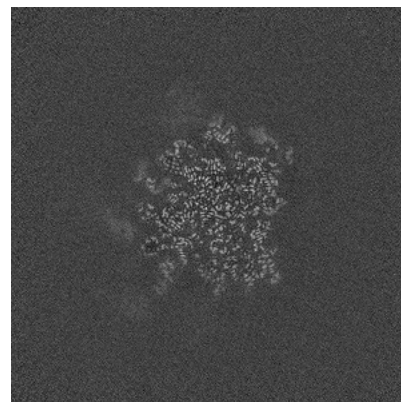
6.3.2 Raw map



X Index: 345



Y Index: 328

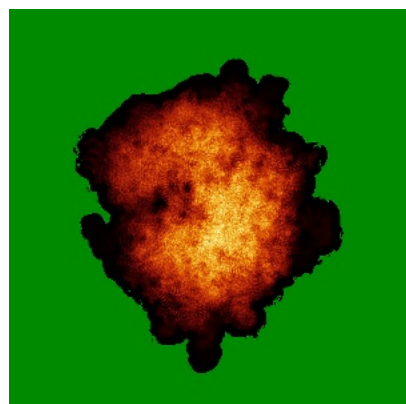


Z Index: 257

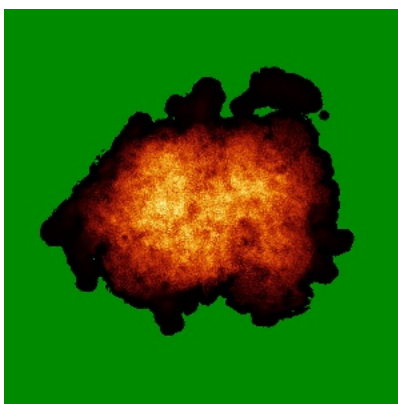
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

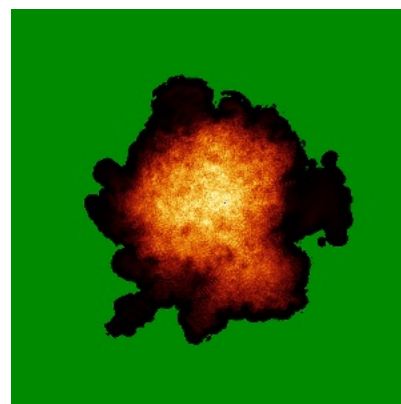
6.4.1 Primary map



X

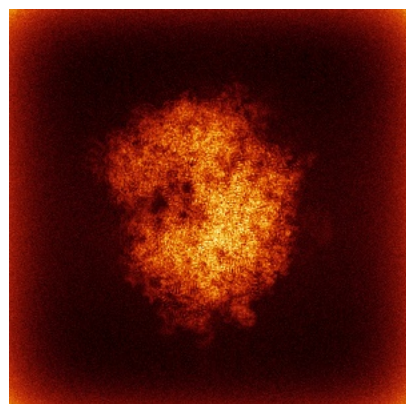


Y

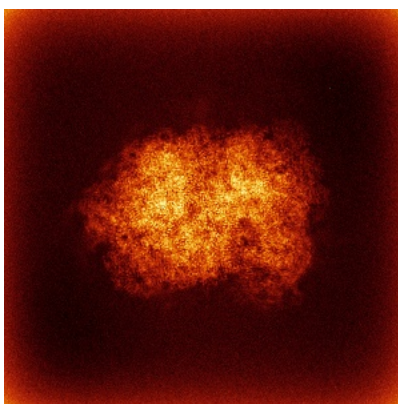


Z

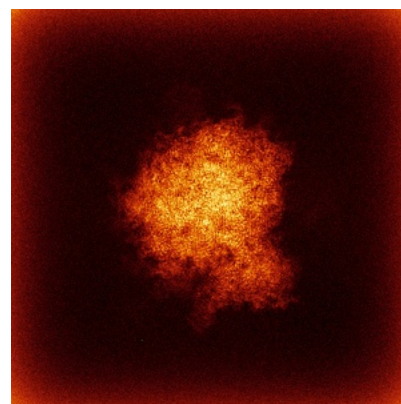
6.4.2 Raw map



X



Y

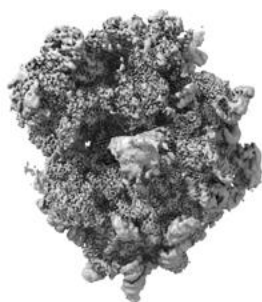


Z

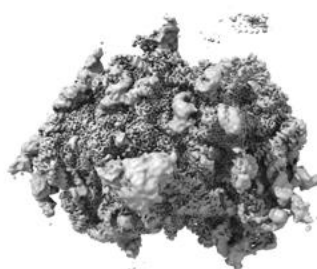
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

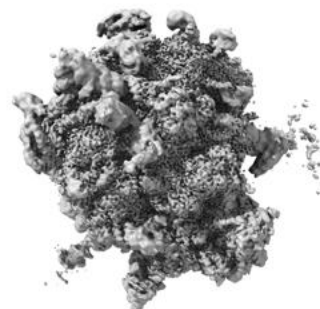
6.5.1 Primary map



X



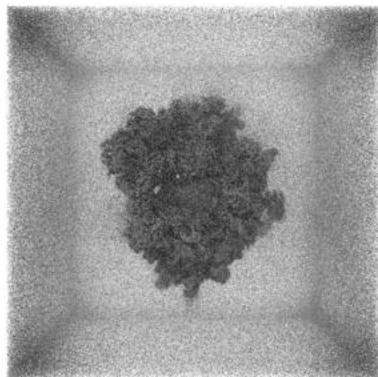
Y



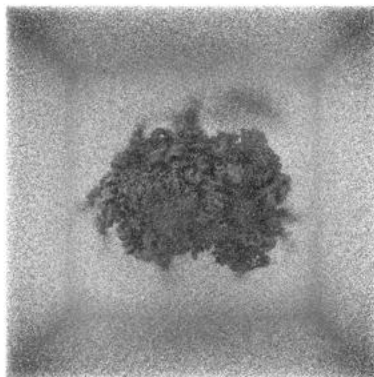
Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

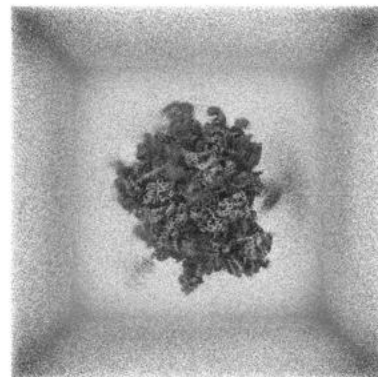
6.5.2 Raw map



X



Y



Z

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

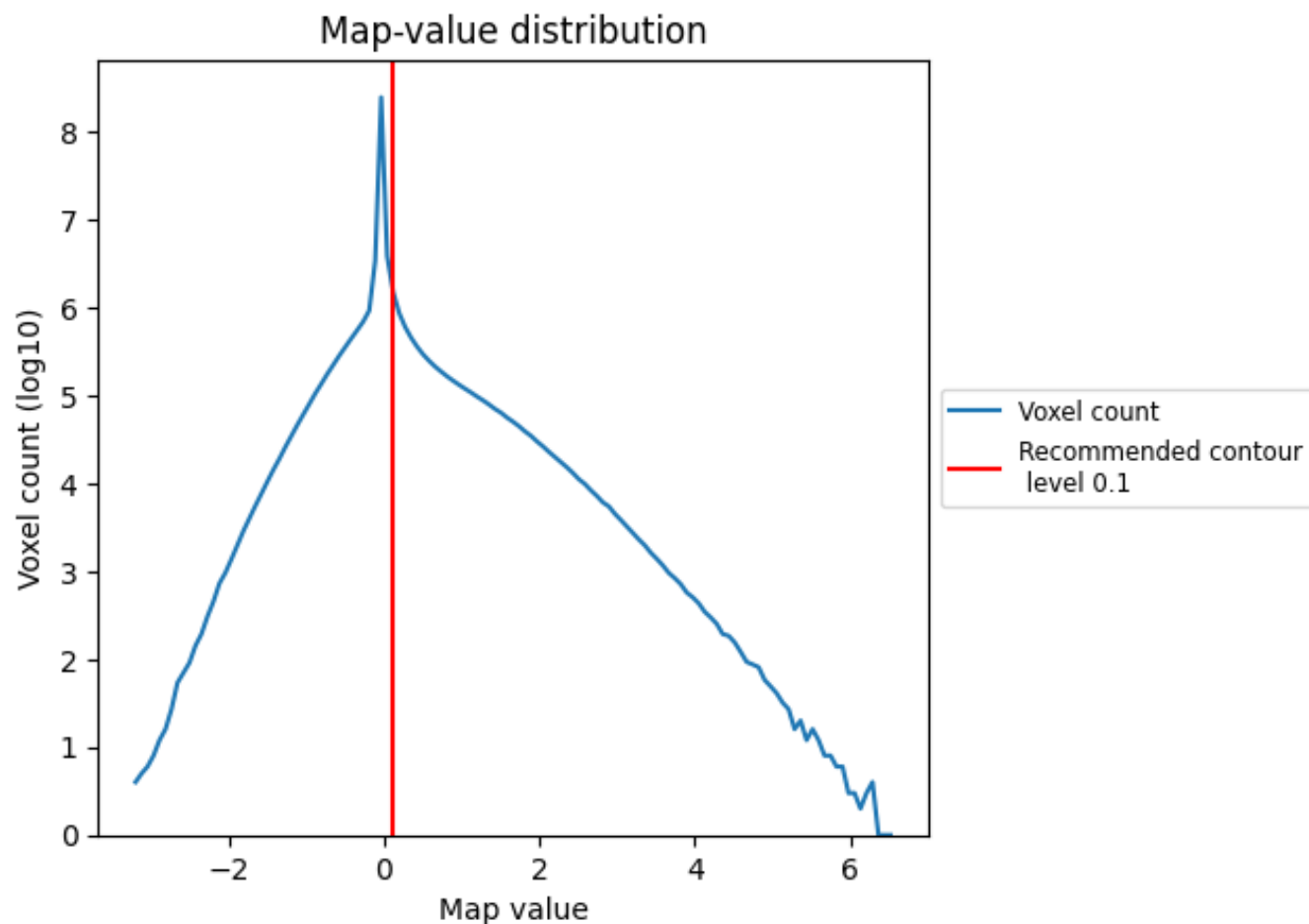
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

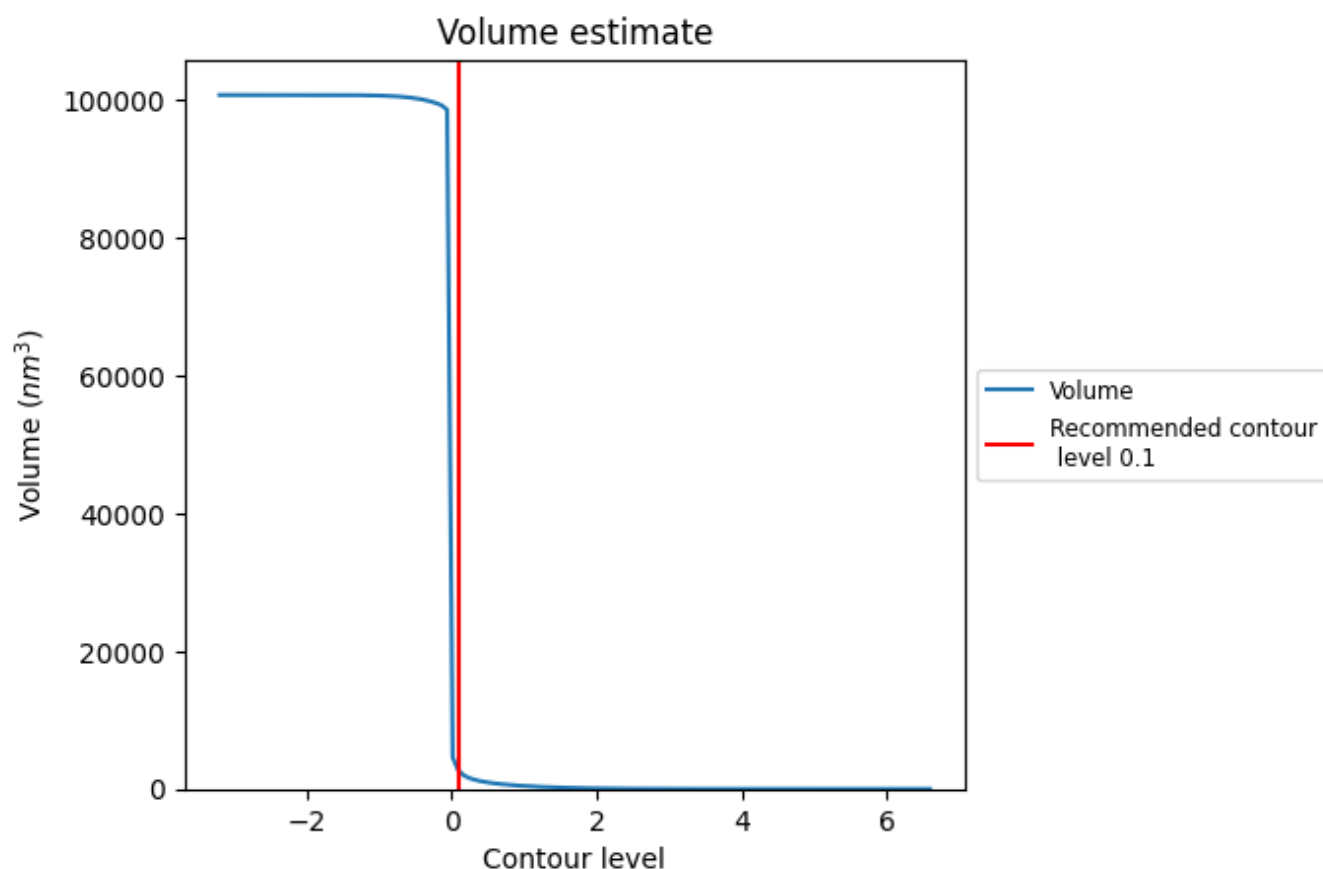
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

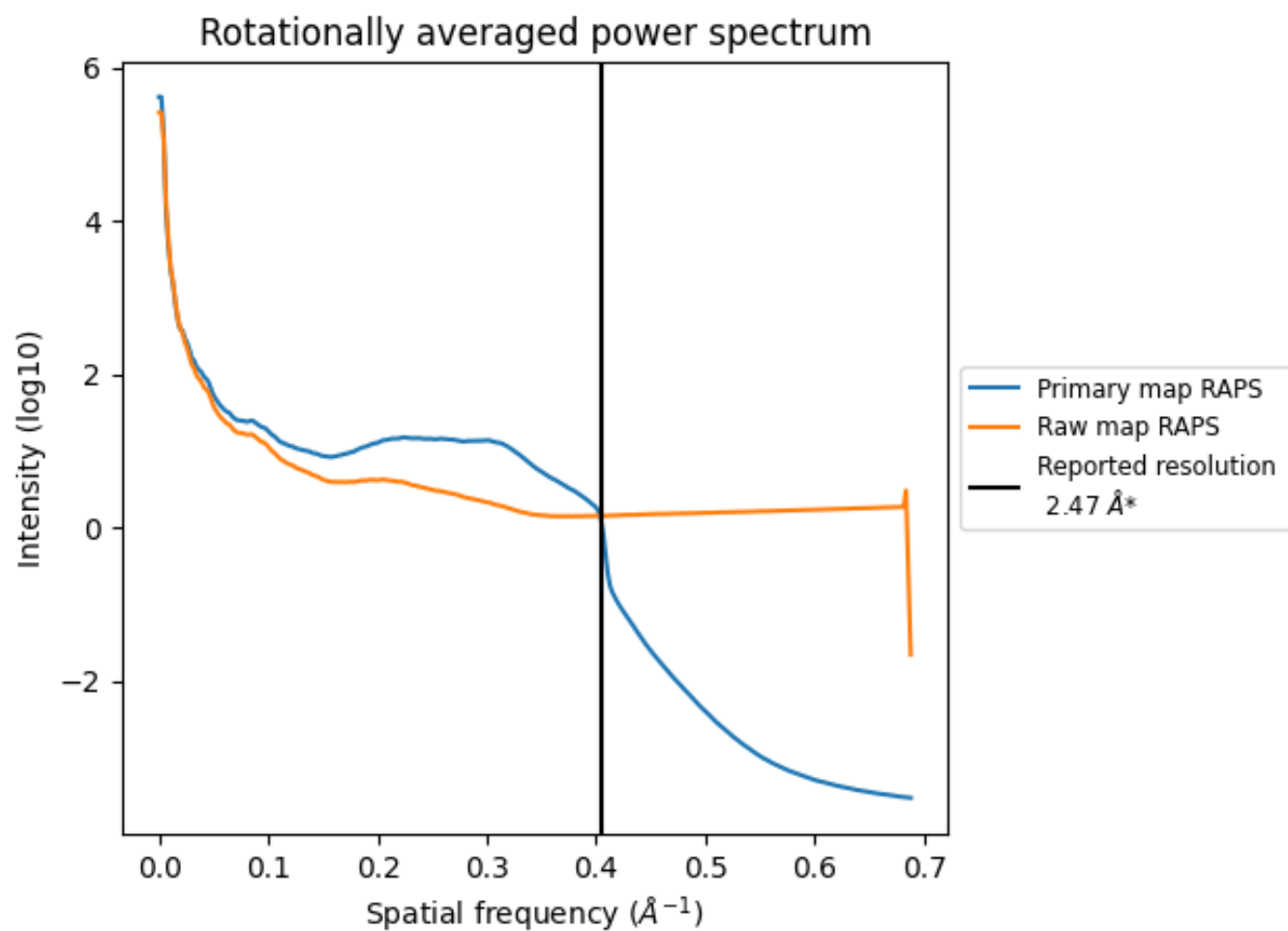
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2645 nm^3 ; this corresponds to an approximate mass of 2389 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 ⓘ

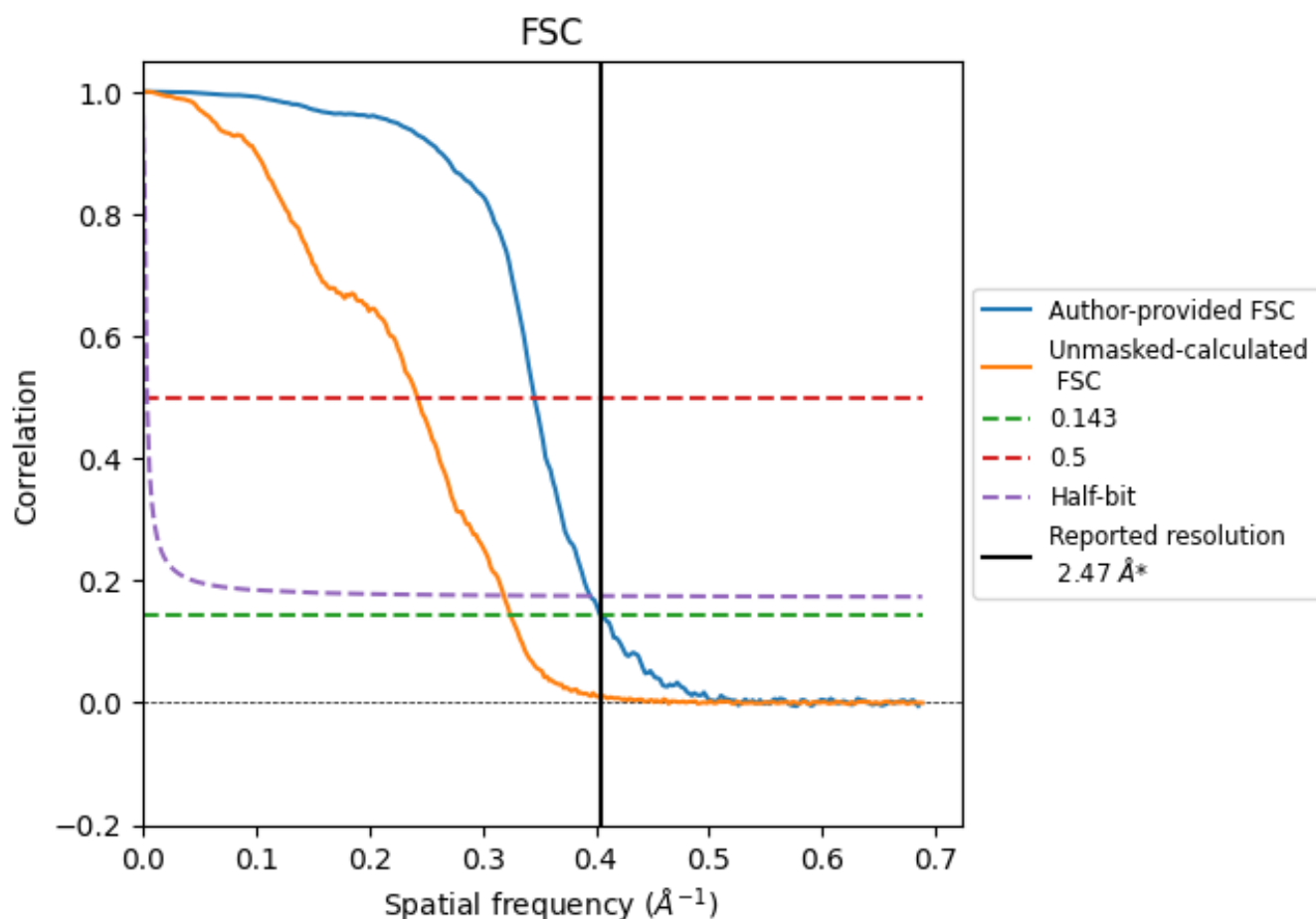


*Reported resolution corresponds to spatial frequency of 0.405 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.405 \AA^{-1}

8.2 Resolution estimates [i](#)

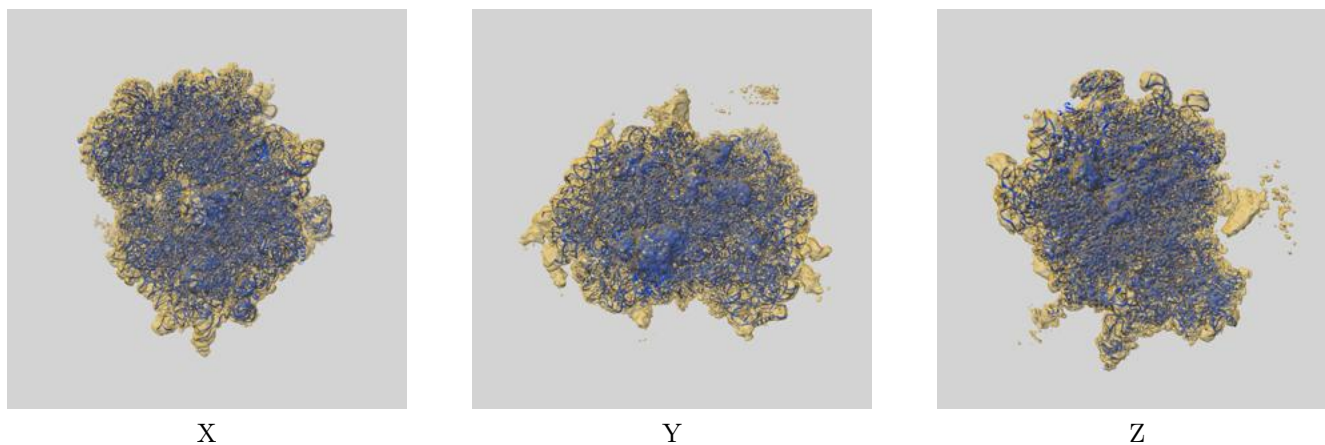
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.47	-	-
Author-provided FSC curve	2.47	2.89	2.53
Unmasked-calculated*	3.08	4.12	3.14

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.08 differs from the reported value 2.47 by more than 10 %

9 Map-model fit [i](#)

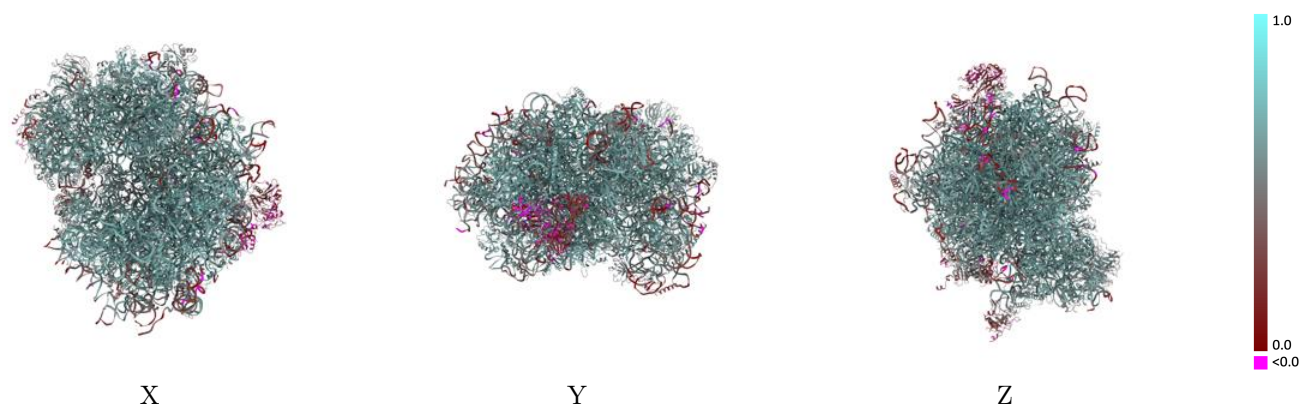
This section contains information regarding the fit between EMDB map EMD-53230 and PDB model 9QLO. Per-residue inclusion information can be found in section 3 on page 23.

9.1 Map-model overlay [i](#)



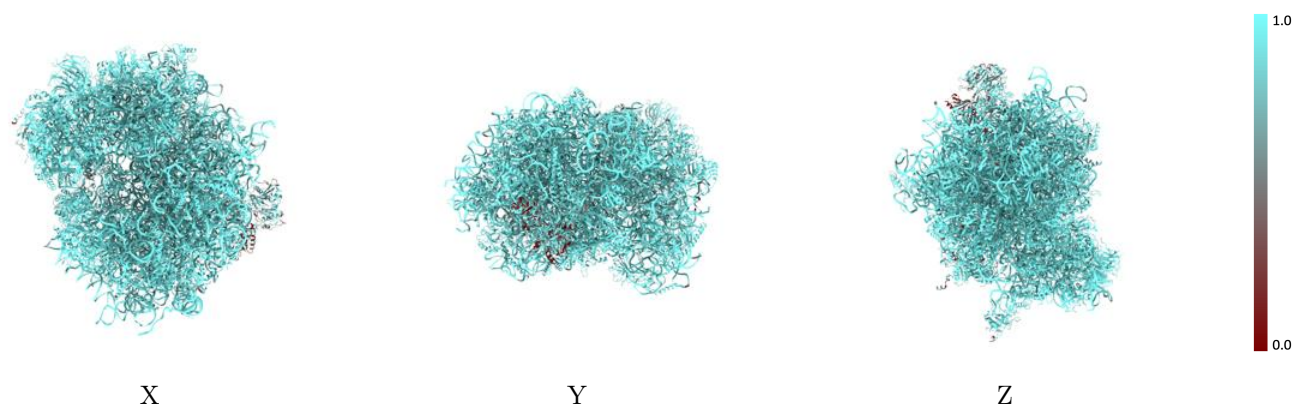
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



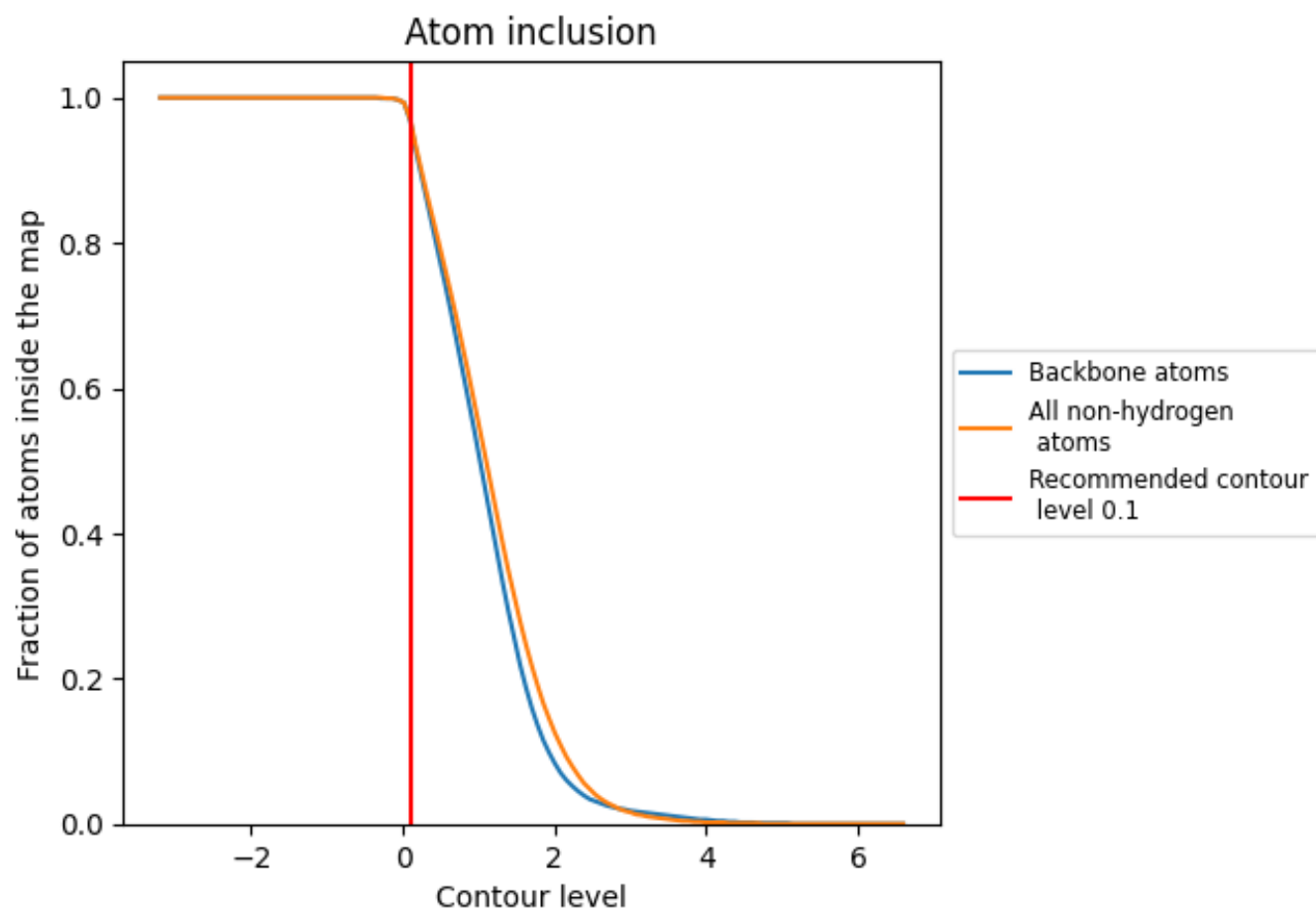
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 97% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ





















































































The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9700	 0.5940
CM	 0.9720	 0.5780
CP	 0.9660	 0.5530
CR	 0.9030	 0.4990
CZ	 0.5220	 0.1290
L5	 0.9850	 0.6080
L7	 0.9960	 0.6570
L8	 0.9840	 0.6260
LA	 0.9900	 0.6850
LB	 0.9890	 0.6660
LC	 0.9880	 0.6640
LD	 0.9850	 0.6170
LE	 0.9800	 0.6070
LF	 0.9850	 0.6700
LG	 0.9720	 0.6070
LH	 0.9860	 0.6330
LI	 0.9810	 0.6400
LJ	 0.9810	 0.6030
LL	 0.9820	 0.6380
LM	 0.9910	 0.6420
LN	 0.9980	 0.6940
LO	 0.9910	 0.6750
LP	 0.9920	 0.6740
LQ	 0.9910	 0.6820
LR	 0.9880	 0.6510
LS	 0.9910	 0.6690
LT	 0.9780	 0.6350
LU	 0.9770	 0.5510
LV	 0.9920	 0.6690
LW	 0.9450	 0.5130
LX	 0.9820	 0.6480
LY	 0.9870	 0.6460
LZ	 0.9900	 0.6420
La	 0.9950	 0.6820
Lb	 0.9530	 0.5950



























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Chain	Atom inclusion	Q-score
Lc	 0.9790	 0.6510
Ld	 0.9950	 0.6580
Le	 0.9970	 0.6870
Lf	 0.9870	 0.6760
Lg	 0.9860	 0.6540
Lh	 0.9940	 0.6450
Li	 0.9850	 0.6310
Lj	 0.9930	 0.6810
Lk	 0.9530	 0.5790
Ll	 0.9860	 0.6630
Lm	 0.9780	 0.6560
Ln	 1.0000	 0.6850
Lo	 0.9870	 0.6570
Lp	 0.9930	 0.6860
Lr	 0.9900	 0.6550
Ls	 0.8090	 0.2980
Lt	 0.9210	 0.3330
NA	 0.3870	 0.1240
NB	 0.4150	 0.2020
NM	 0.7560	 0.1650
S2	 0.9810	 0.5890
SA	 0.9870	 0.6360
SB	 0.9820	 0.6330
SC	 0.9890	 0.6460
SD	 0.9890	 0.5940
SE	 0.9840	 0.6070
SF	 0.9740	 0.6010
SG	 0.9800	 0.5360
SH	 0.9820	 0.5630
SI	 0.9890	 0.6250
SJ	 0.9890	 0.6140
SK	 0.9860	 0.5680
SL	 0.9870	 0.6540
SM	 0.8390	 0.2780
SN	 0.9900	 0.6570
SO	 0.9900	 0.6500
SP	 0.9870	 0.5790
SQ	 0.9720	 0.6100
SR	 0.9610	 0.5630
SS	 0.9760	 0.5840
ST	 0.9760	 0.6040
SU	 0.9660	 0.5490

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Chain	Atom inclusion	Q-score
SV	 0.9880	 0.6370
SW	 0.9910	 0.6660
SX	 0.9880	 0.6410
SY	 0.9900	 0.5790
SZ	 0.9760	 0.5700
Sa	 0.9790	 0.6330
Sb	 0.9700	 0.5920
Sc	 0.9300	 0.5470
Sd	 0.9860	 0.6300
Se	 0.9800	 0.5910
Sf	 0.8310	 0.2870
Sg	 0.9620	 0.5250