Full wwPDB EM Validation Report ⓘ

Jul 16, 2023 – 10:16 PM EDT

PDB ID	:	8FL9
EMDB ID	:	EMD-29271
Title	:	Human nuclear pre-60S ribosomal subunit (State J3)
Authors	:	Vanden Broeck, A.; Klinge, S.
Deposited on	:	2022-12-21
Resolution	:	2.75 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:

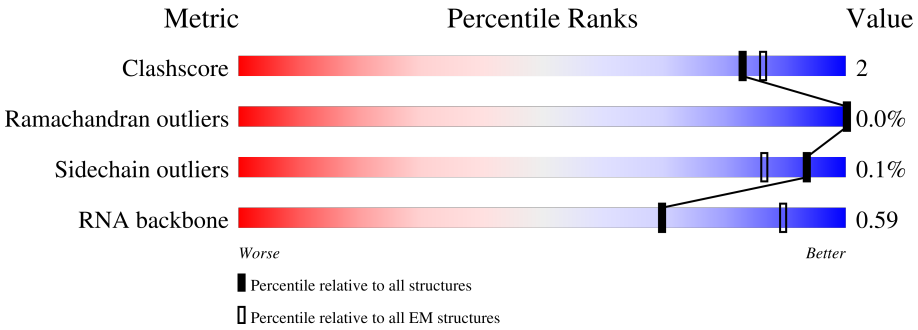
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.34

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 2.75 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	BA	165	55% 97%
2	L1	157	7% 79% 13% 6%
3	L3	5070	51% 13% 34%
4	L4	121	80% 17%
5	L5	178	91% 6%
6	L6	211	5% 92% 8%
7	L7	203	94% 5%

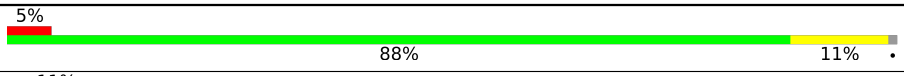
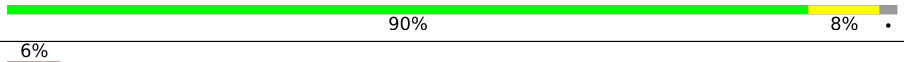
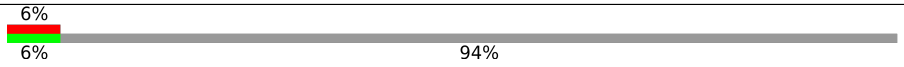
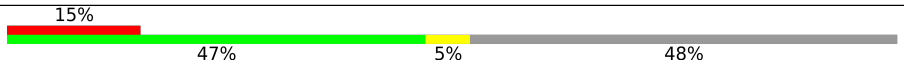
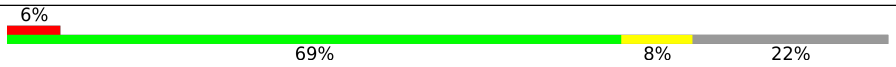
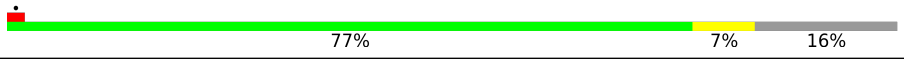
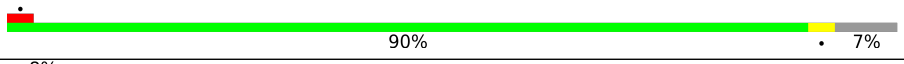
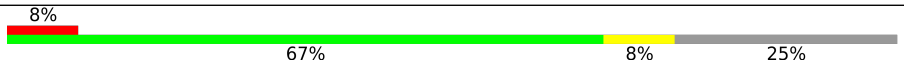
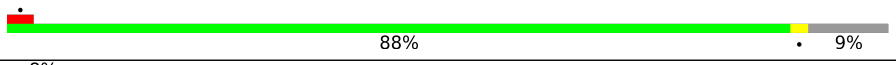
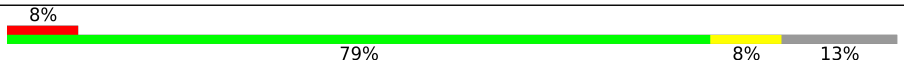
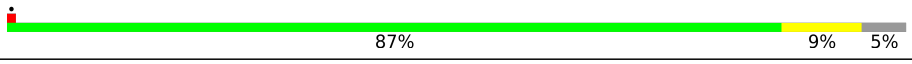
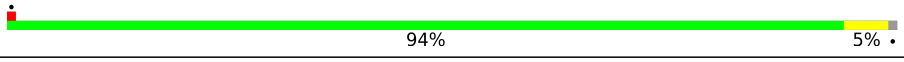
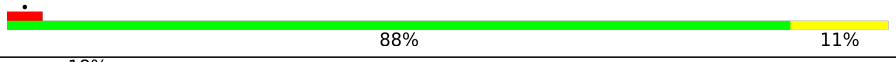
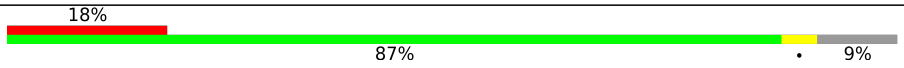
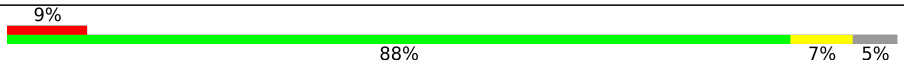
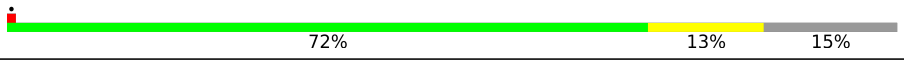
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	L8	215	59% 37%
9	L9	204	93% 7%
10	LA	184	77% 6% 17%
11	LB	188	91% 8%
12	LC	176	94% 6%
13	LD	196	70% 9% 21%
14	LE	160	94%
15	LF	128	74% 6% 20%
16	LG	140	89% 10%
17	LH	156	68% 7% 25%
18	LI	145	83% 9% 8%
19	LJ	136	88% 11%
20	LK	148	95%
21	LL	137	78% 13% 9%
22	LM	159	11% 49% 47%
23	LN	403	95% 5%
24	LO	115	5% 69% 14% 17%
25	LP	125	5% 78% 7% 15%
26	LQ	135	86% 9% 5%
27	LR	117	7% 87% 9%
28	LS	123	89% 11%
29	LT	110	94% 5%
30	LU	105	5% 90% 7%
31	LV	106	92% 6%
32	LW	97	81% 7% 11%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
33	LX	92	
34	LY	70	
35	LZ	51	
36	NC	731	
37	NF	260	
38	NK	129	
39	NP	134	
40	SA	427	
41	SB	297	
42	SC	288	
43	SD	248	
44	SE	266	
45	SF	257	
46	SG	192	
47	SK	245	
48	SQ	239	
49	SR	634	
50	SV	163	

2 Entry composition

There are 54 unique types of molecules in this entry. The entry contains 139879 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	BA	160	786	466	160	160	0	0

- Molecule 2 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	L1	154	3278	1463	581	1080	154	0	0

- Molecule 3 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	L3	3361	72147	32154	13213	23419	3361	0	0

- Molecule 4 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	L4	120	2561	1141	456	844	120	0	0

- Molecule 5 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	L5	168	1349	853	251	239	6	0	0

- Molecule 6 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	L6	210	1701	1064	352	281	4	0	0

- Molecule 7 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L7	201	Total	C	N	O	S	0	0
			1650	1063	321	261	5		

- Molecule 8 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L8	135	Total	C	N	O	S	0	0
			1111	713	213	178	7		

- Molecule 9 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	L9	203	Total	C	N	O	S	0	0
			1701	1072	359	266	4		

- Molecule 10 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	LA	153	Total	C	N	O	S	0	0
			1242	776	241	216	9		

- Molecule 11 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	LB	187	Total	C	N	O	S	0	0
			1512	944	314	249	5		

- Molecule 12 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LC	176	Total	C	N	O	S	0	0
			1461	930	284	236	11		

- Molecule 13 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LD	154	Total	C	N	O	S	0	0
			1289	805	277	198	9		

- Molecule 14 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LE	154	Total	C	N	O	S	0	0
			1264	803	246	210	5		

- Molecule 15 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LF	103	Total	C	N	O	S	0	0
			842	538	148	154	2		

- Molecule 16 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	LG	139	Total	C	N	O	S	0	0
			1034	648	199	182	5		

- Molecule 17 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LH	117	Total	C	N	O	S	0	0
			958	612	179	166	1		

- Molecule 18 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LI	134	Total	C	N	O	S	0	0
			1115	700	226	186	3		

- Molecule 19 is a protein called 60S ribosomal protein L27.

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

- Molecule 20 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LK	147	Total	C	N	O	S	0	0
			1162	736	237	186	3		

- Molecule 21 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LL	125	Total	C	N	O	S	0	0
			1002	622	207	168	5		

- Molecule 22 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LM	85	Total	C	N	O	S	0	0
			699	437	152	107	3		

- Molecule 23 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LN	402	Total	C	N	O	S	0	0
			3239	2061	608	556	14		

- Molecule 24 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	LO	95	Total	C	N	O	S	0	0
			738	468	131	133	6		

- Molecule 25 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LP	106	Total	C	N	O	S	0	0
			879	555	170	152	2		

- Molecule 26 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LQ	128	Total	C	N	O	S	0	0
			1053	667	216	165	5		

- Molecule 27 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LR	112	Total	C	N	O	S	0	0
			888	555	183	144	6		

- Molecule 28 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LS	122	Total	C	N	O	S	0	0
			1015	641	205	168	1		

- Molecule 29 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	LT	109	Total	C	N	O	S	0	0
			876	555	174	144	3		

- Molecule 30 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	LU	102	Total	C	N	O	S	0	0
			832	521	177	129	5		

- Molecule 31 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	LV	104	Total	C	N	O	S	0	0
			851	533	174	138	6		

- Molecule 32 is a protein called 60S ribosomal protein L37.

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

- Molecule 33 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	LX	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 34 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	LY	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

- Molecule 35 is a protein called 60S ribosomal protein L39.

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

- Molecule 36 is a protein called Nucleolar GTP-binding protein 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	NC	44	Total	C	N	O	0	0
			219	131	44	44		

- Molecule 37 is a protein called Ribosome biogenesis protein NSA2 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	NF	71	Total	C	N	O	S	0	0
			626	392	129	102	3		

- Molecule 38 is a protein called Protein LLP homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	NK	67	Total	C	N	O	S	0	0
			581	363	128	88	2		

- Molecule 39 is a protein called Zinc finger protein 593.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	NP	104	Total	C	N	O	S	0	0
			847	520	178	145	4		

- Molecule 40 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	SA	358	Total	C	N	O	S	0	0
			2853	1797	570	473	13		

- Molecule 41 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	SB	275	Total	C	N	O	S	0	0
			2243	1419	406	404	14		

- Molecule 42 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	SC	217	Total	C	N	O	S	0	0
			1747	1124	332	287	4		

- Molecule 43 is a protein called 60S ribosomal protein L7.

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

- Molecule 44 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	SE	231	Total	C	N	O	S	1	0
			1869	1191	361	313	4		

- Molecule 45 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	SF	245	Total	C	N	O	S	0	0
			1876	1177	383	310	6		

- Molecule 46 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	SG	190	Total	C	N	O	S	0	0
			1518	956	284	272	6		

- Molecule 47 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	SK	244	Total	C	N	O	S	0	0
			1852	1149	318	372	13		

- Molecule 48 is a protein called mRNA turnover protein 4 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	SQ	217	Total	C	N	O	S	0	0
			1771	1129	311	320	11		

- Molecule 49 is a protein called GTP-binding protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	SR	601	Total 4932	C 3105	N 899	O 902	S 26	0	0

- Molecule 50 is a protein called Probable ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	SV	139	Total 1184	C 754	N 229	O 191	S 10	0	0

- Molecule 51 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
51	L1	4	Total 4	Mg 4	0
51	L3	74	Total 74	Mg 74	0
51	L4	3	Total 3	Mg 3	0
51	LG	1	Total 1	Mg 1	0
51	LQ	1	Total 1	Mg 1	0
51	LT	1	Total 1	Mg 1	0
51	LW	1	Total 1	Mg 1	0
51	SA	1	Total 1	Mg 1	0
51	SF	1	Total 1	Mg 1	0
51	SR	1	Total 1	Mg 1	0

- Molecule 52 is ZINC ION (three-letter code: ZN) (formula: Zn).

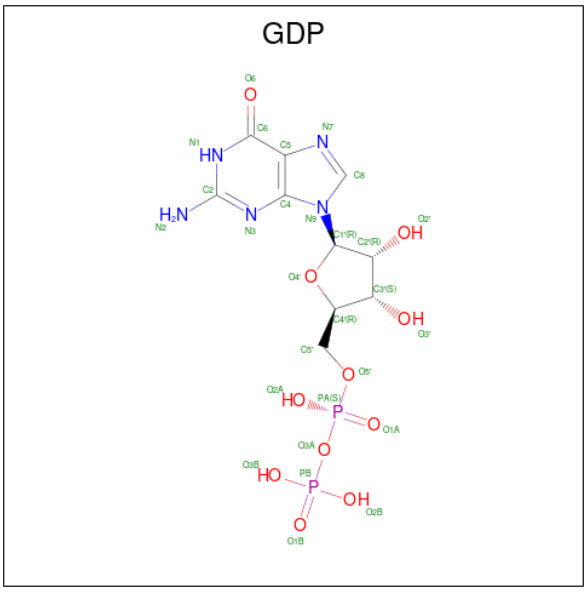
Mol	Chain	Residues	Atoms		AltConf
52	LR	1	Total 1	Zn 1	0
52	LV	1	Total 1	Zn 1	0
52	LW	1	Total 1	Zn 1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	AltConf
52	LX	1	Total Zn 1 1	0
52	NP	1	Total Zn 1 1	0
52	SV	1	Total Zn 1 1	0

- Molecule 53 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



Mol	Chain	Residues	Atoms	AltConf
53	SR	1	Total C N O P 28 10 5 11 2	0

- Molecule 54 is POTASSIUM ION (three-letter code: K) (formula: K).

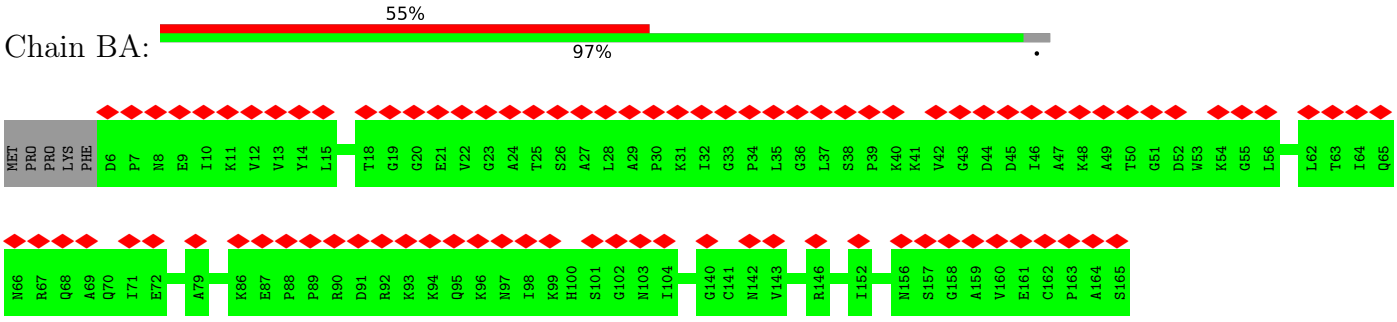
Mol	Chain	Residues	Atoms	AltConf
54	SR	1	Total K 1 1	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

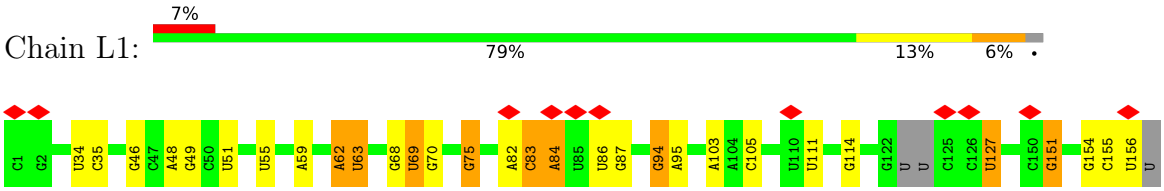
• Molecule 1: 60S ribosomal protein L12

Chain BA:



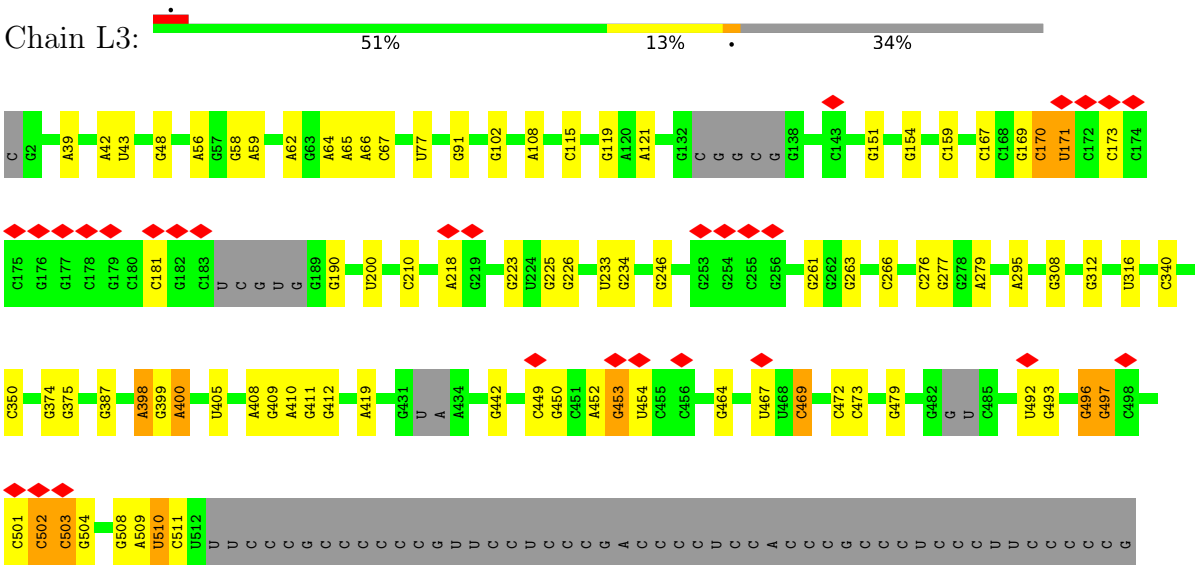
• Molecule 2: 5.8S rRNA

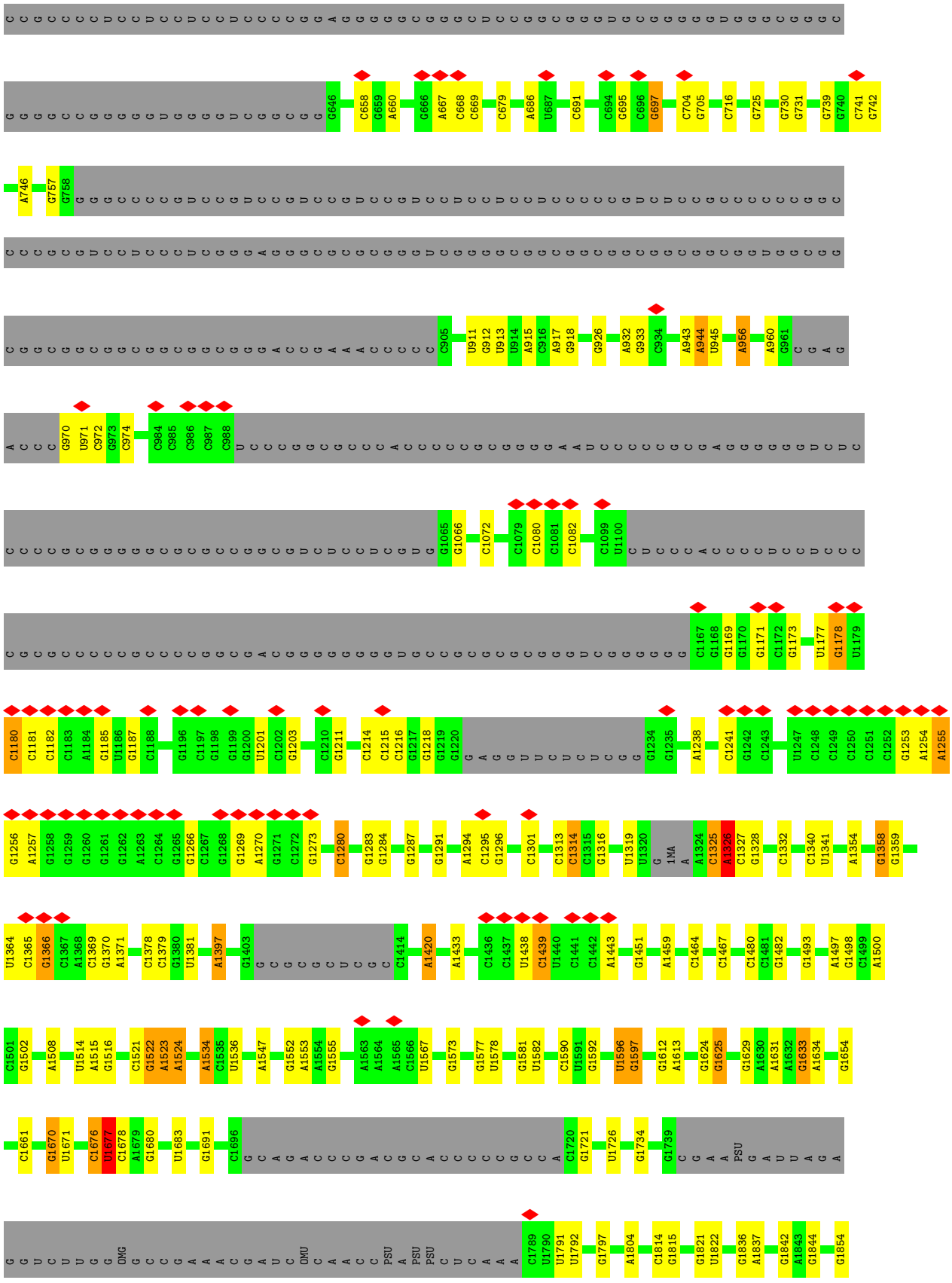
Chain L1:

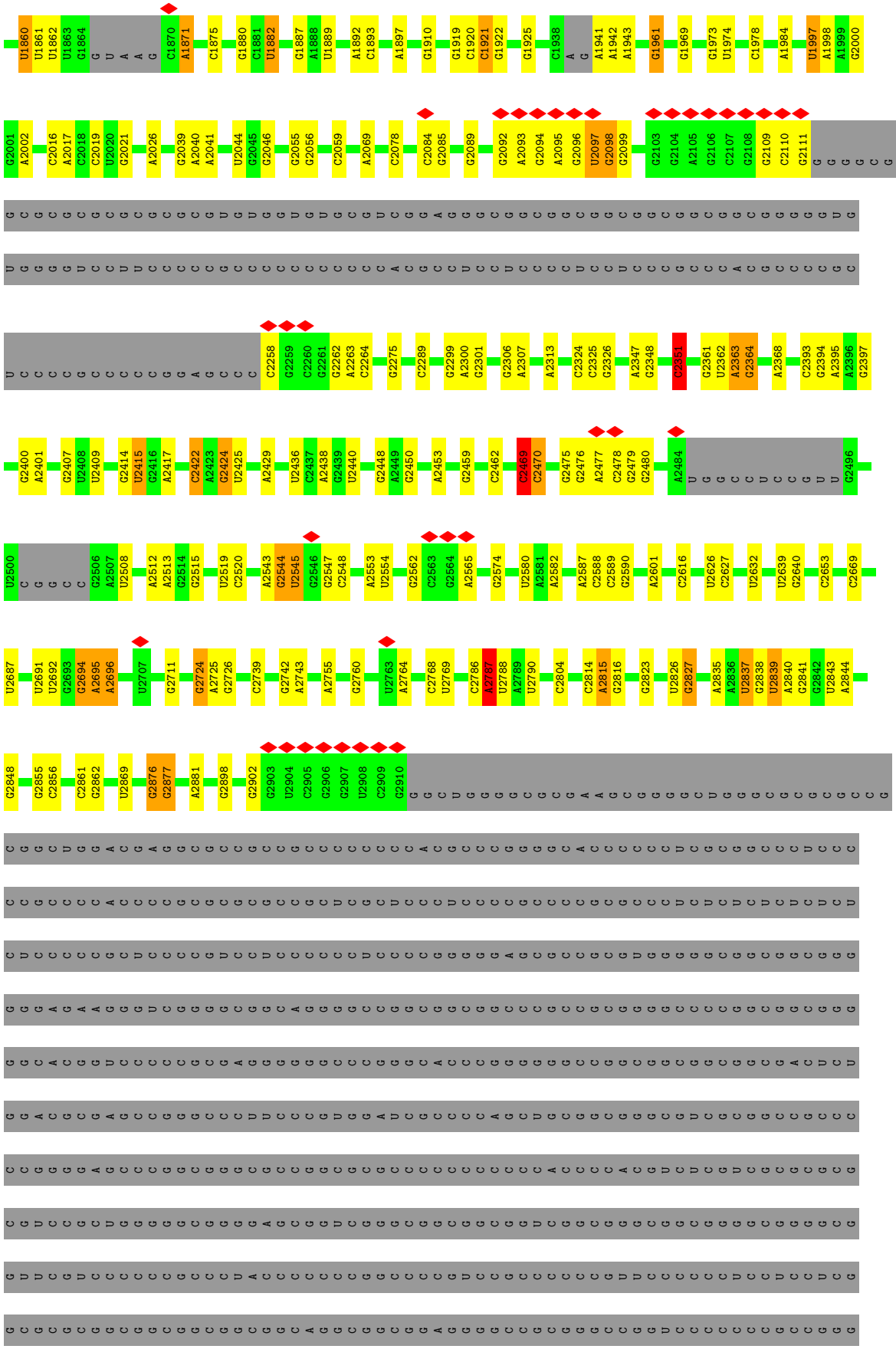


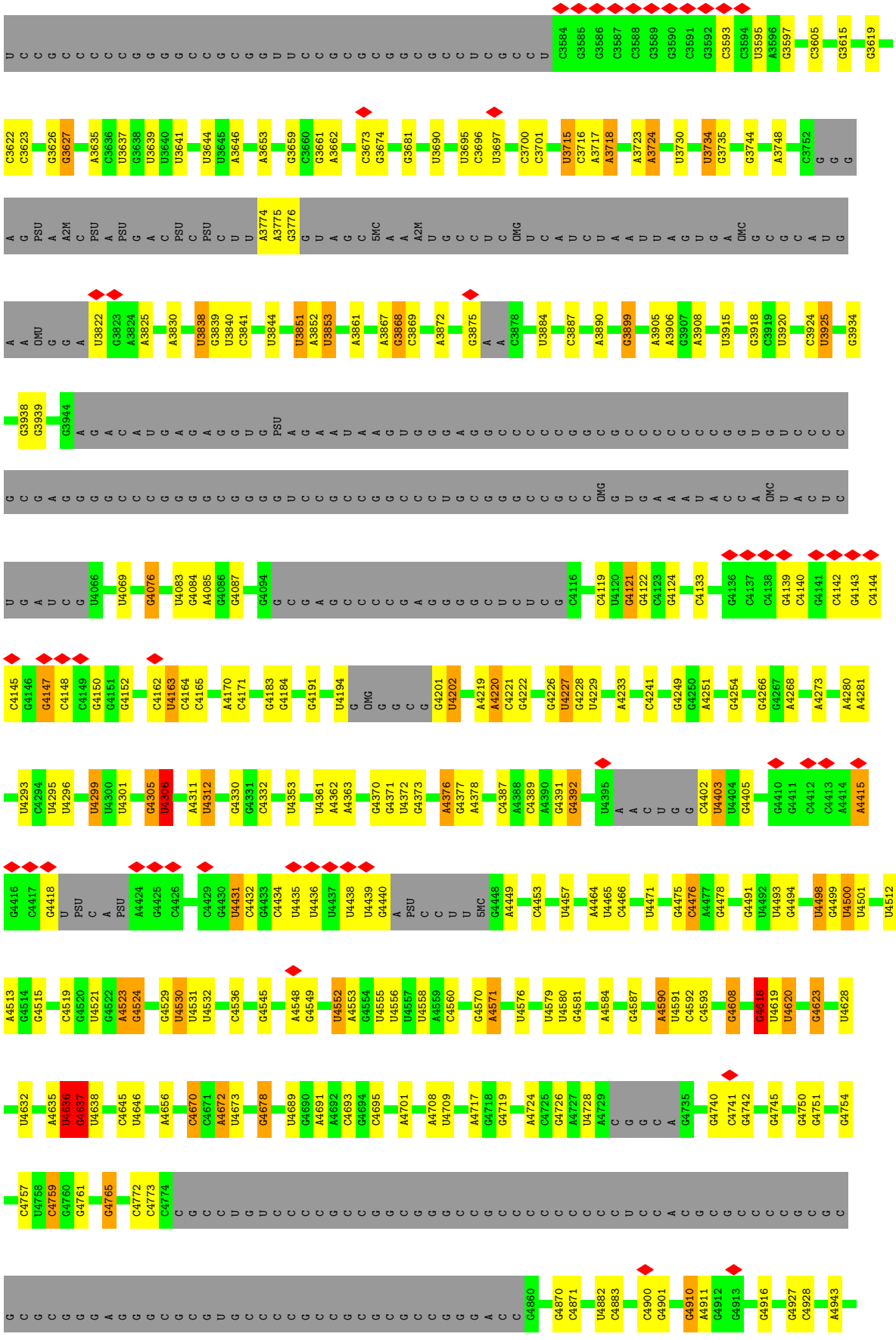
• Molecule 3: 28S rRNA

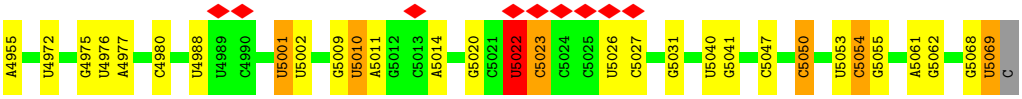
Chain L3:





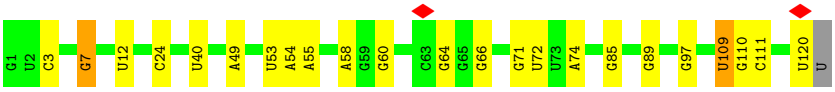






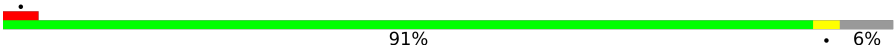
• Molecule 4: 5S rRNA

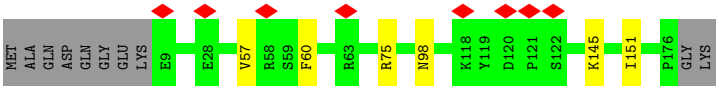
Chain L4:



• Molecule 5: 60S ribosomal protein L11

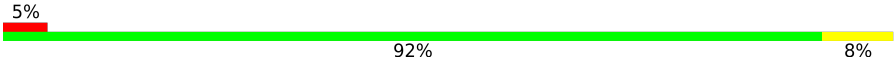
Chain L5:

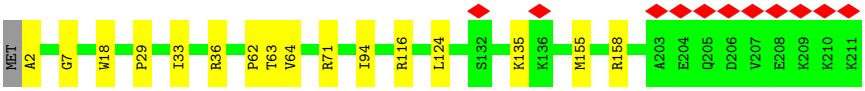




• Molecule 6: 60S ribosomal protein L13

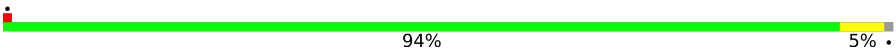
Chain L6:

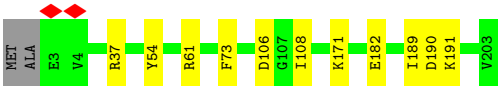




• Molecule 7: 60S ribosomal protein L13a

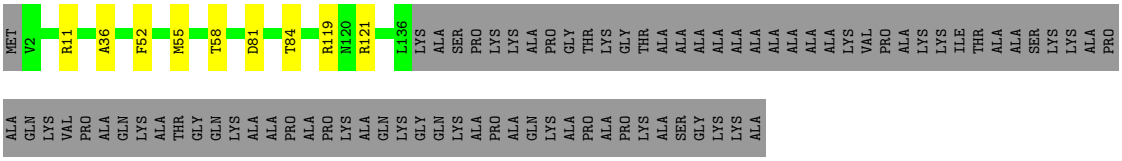
Chain L7:





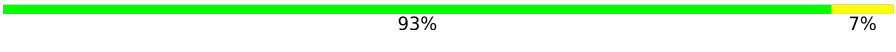
• Molecule 8: 60S ribosomal protein L14

Chain L8:



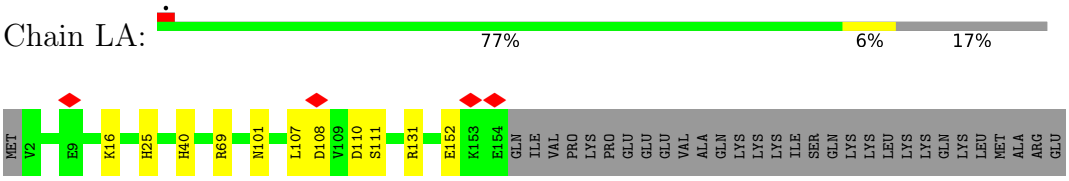
• Molecule 9: 60S ribosomal protein L15

Chain L9:



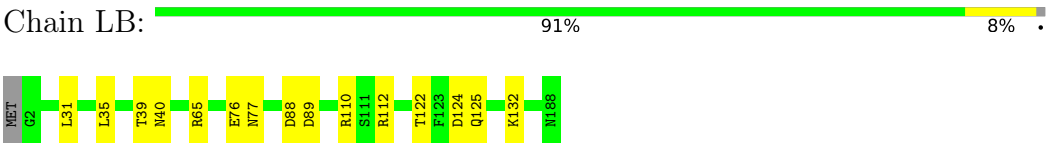
• Molecule 10: 60S ribosomal protein L17

Chain LA:



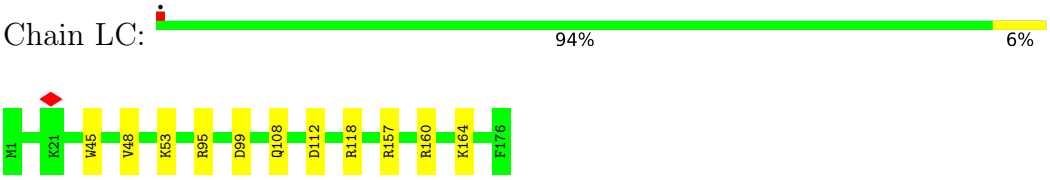
• Molecule 11: 60S ribosomal protein L18

Chain LB:



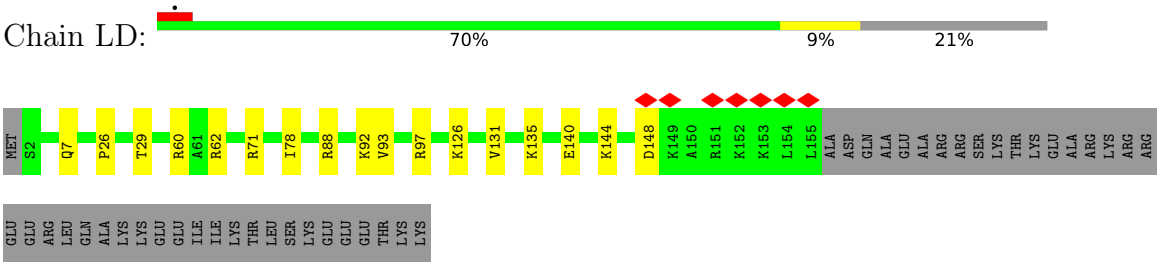
• Molecule 12: 60S ribosomal protein L18a

Chain LC:



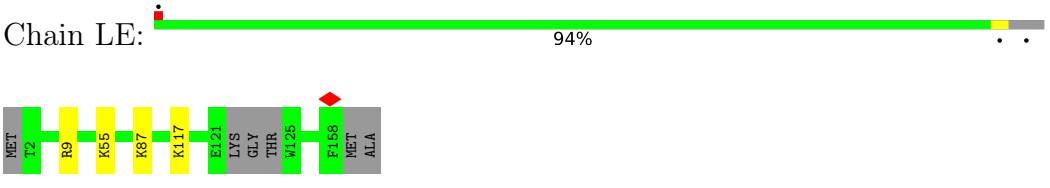
• Molecule 13: 60S ribosomal protein L19

Chain LD:



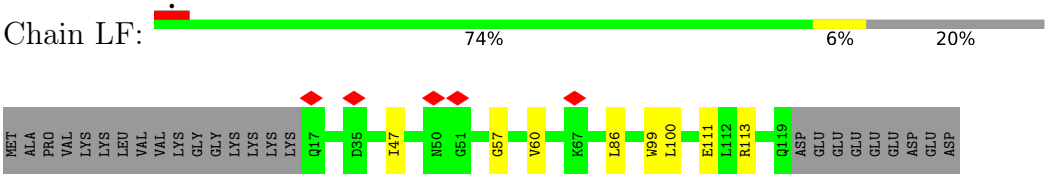
• Molecule 14: 60S ribosomal protein L21

Chain LE:



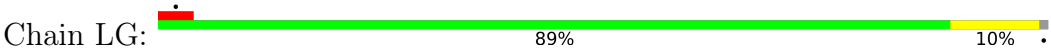
• Molecule 15: 60S ribosomal protein L22

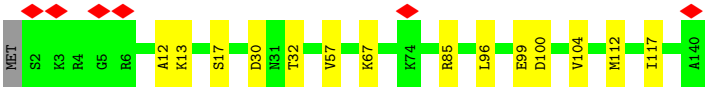
Chain LF:



• Molecule 16: 60S ribosomal protein L23

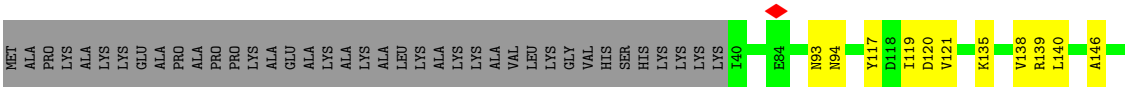
Chain LG:





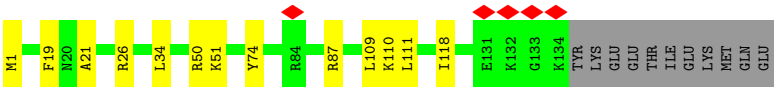
• Molecule 17: 60S ribosomal protein L23a

Chain LH:



• Molecule 18: 60S ribosomal protein L26

Chain LI:

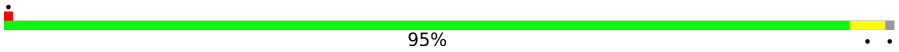


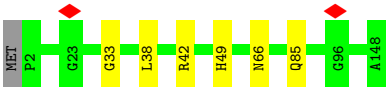
• Molecule 19: 60S ribosomal protein L27

Chain LJ:

• Molecule 20: 60S ribosomal protein L27a

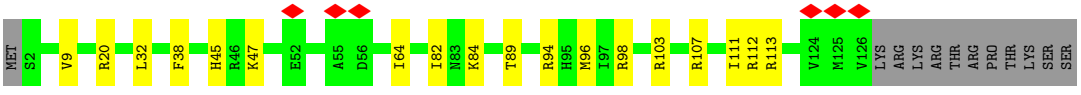
Chain LK:





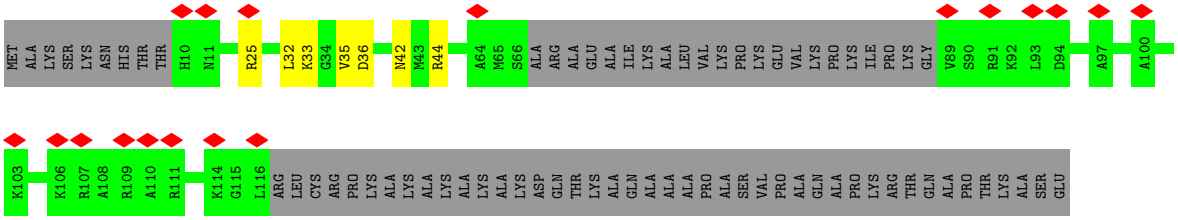
• Molecule 21: 60S ribosomal protein L28

Chain LL:

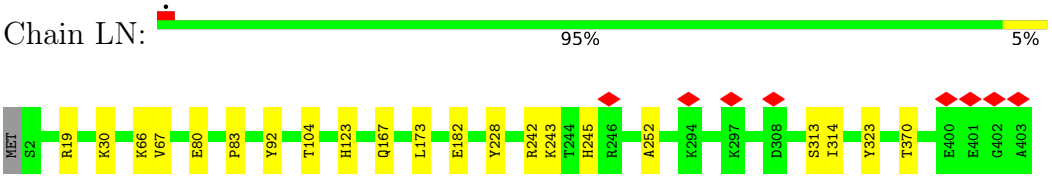


• Molecule 22: 60S ribosomal protein L29

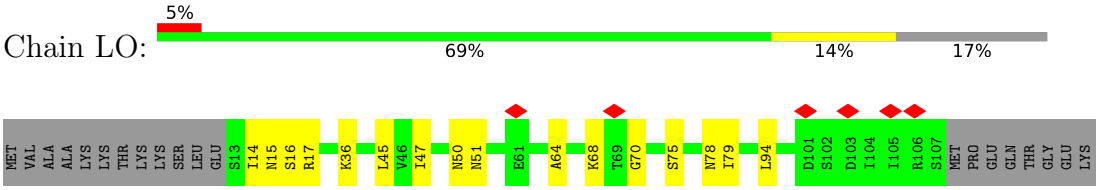
Chain LM:



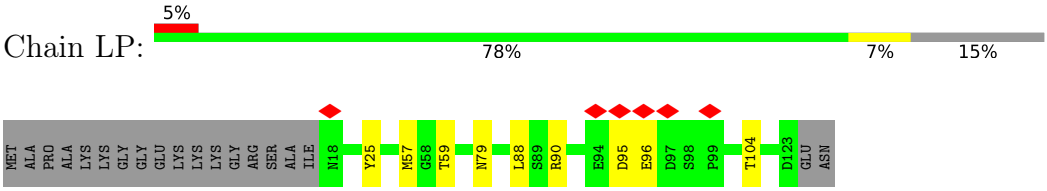
• Molecule 23: 60S ribosomal protein L3



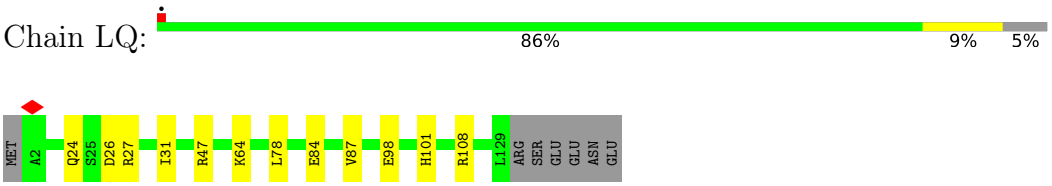
• Molecule 24: 60S ribosomal protein L30



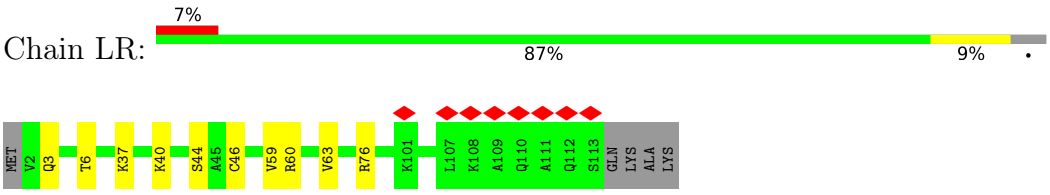
• Molecule 25: 60S ribosomal protein L31



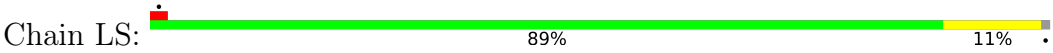
• Molecule 26: 60S ribosomal protein L32

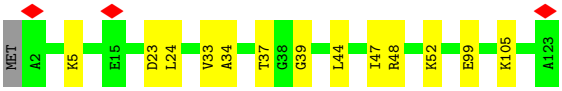


• Molecule 27: 60S ribosomal protein L34



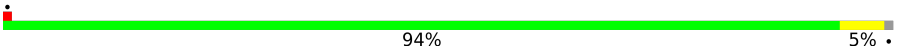
• Molecule 28: 60S ribosomal protein L35

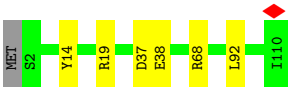




• Molecule 29: 60S ribosomal protein L35a

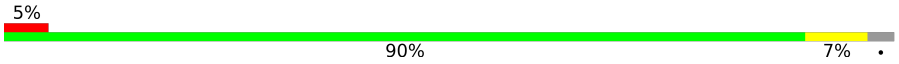
Chain LT:

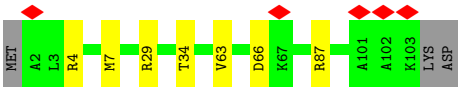




• Molecule 30: 60S ribosomal protein L36

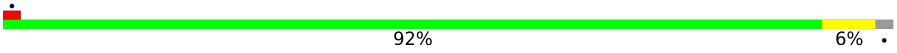
Chain LU:





• Molecule 31: 60S ribosomal protein L36a

Chain LV:

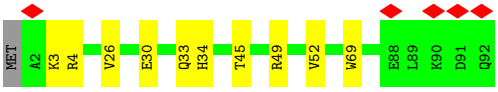


• Molecule 32: 60S ribosomal protein L37

Chain LW:

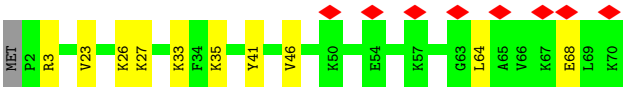
• Molecule 33: 60S ribosomal protein L37a

Chain LX:



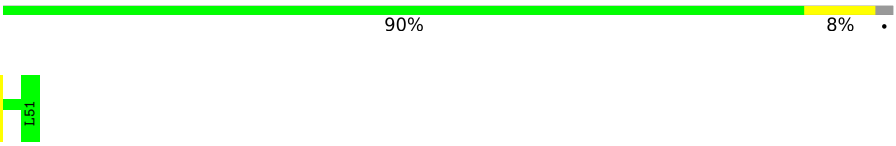
• Molecule 34: 60S ribosomal protein L38

Chain LY:



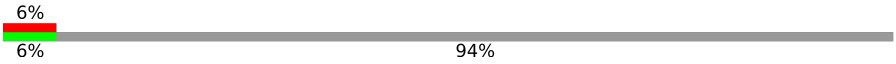
• Molecule 35: 60S ribosomal protein L39

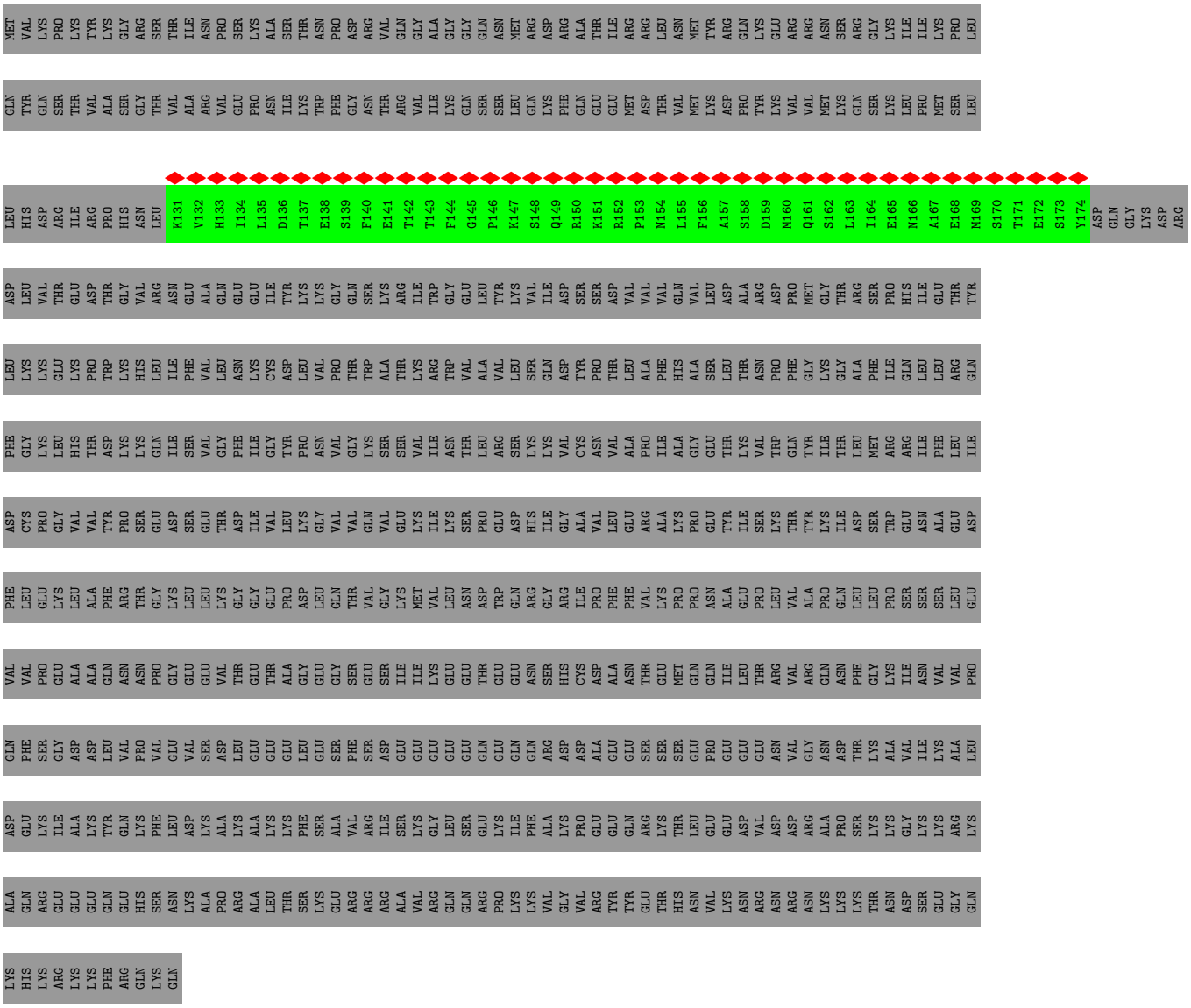
Chain LZ:



• Molecule 36: Nucleolar GTP-binding protein 2

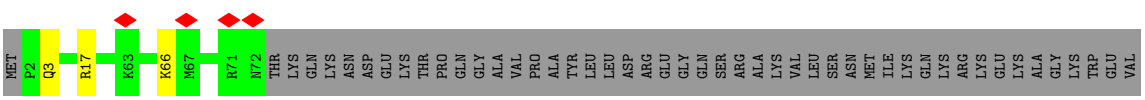
Chain NC:

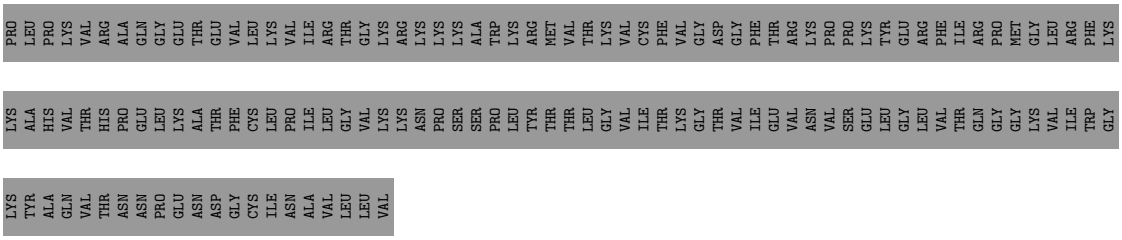




• Molecule 37: Ribosome biogenesis protein NSA2 homolog

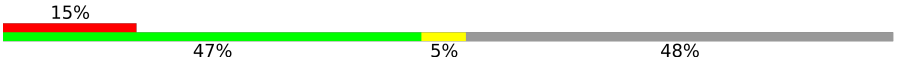
Chain NF:

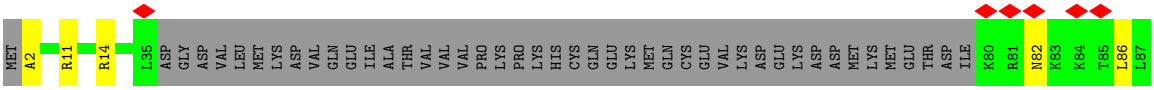




• Molecule 38: Protein LLP homolog

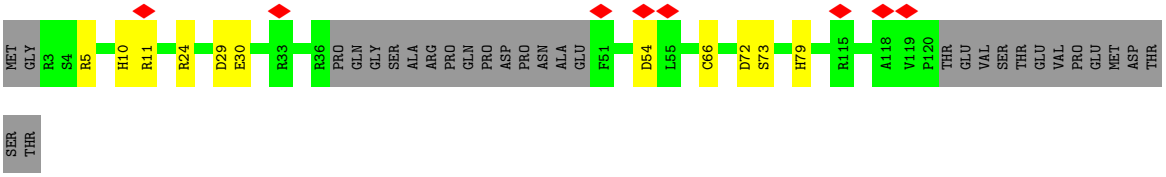
Chain NK:





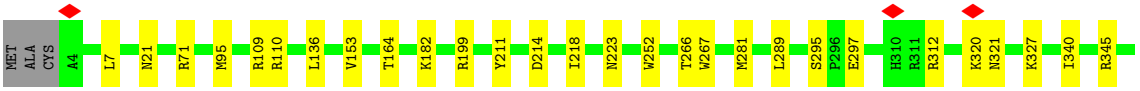
• Molecule 39: Zinc finger protein 593

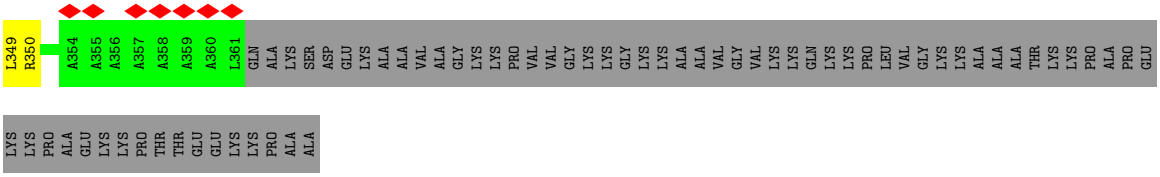
Chain NP:



• Molecule 40: 60S ribosomal protein L4

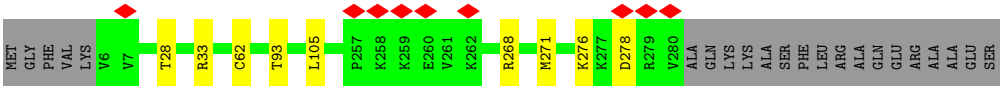
Chain SA:





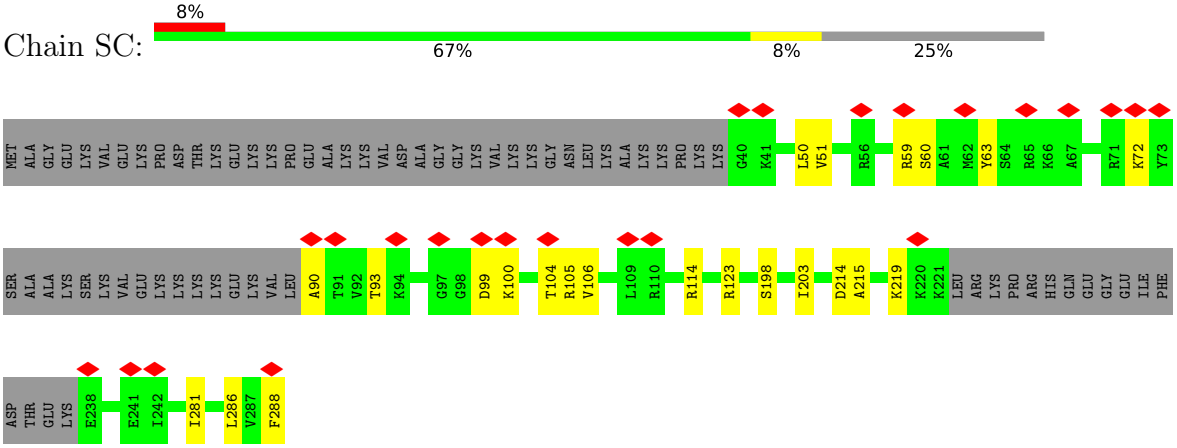
• Molecule 41: 60S ribosomal protein L5

Chain SB:



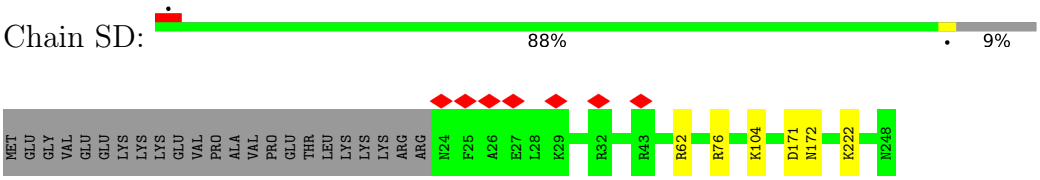
• Molecule 42: 60S ribosomal protein L6

Chain SC:



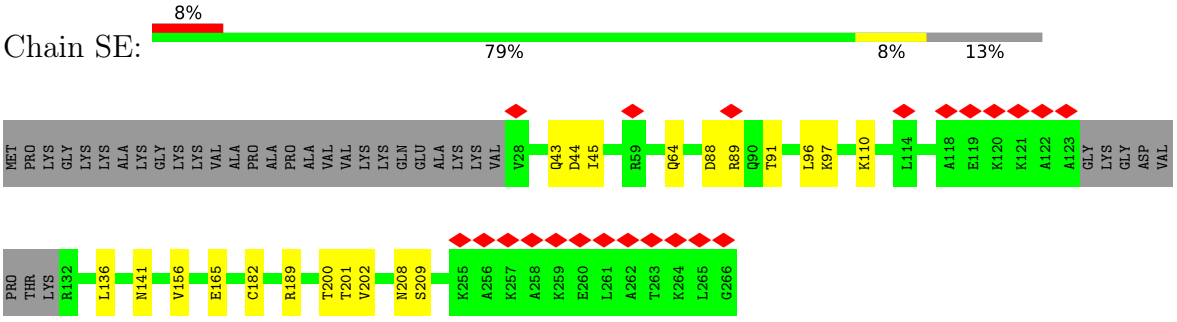
• Molecule 43: 60S ribosomal protein L7

Chain SD:



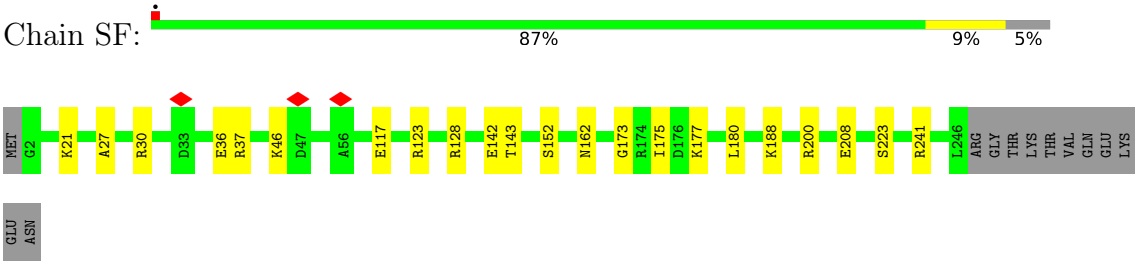
• Molecule 44: 60S ribosomal protein L7a

Chain SE:



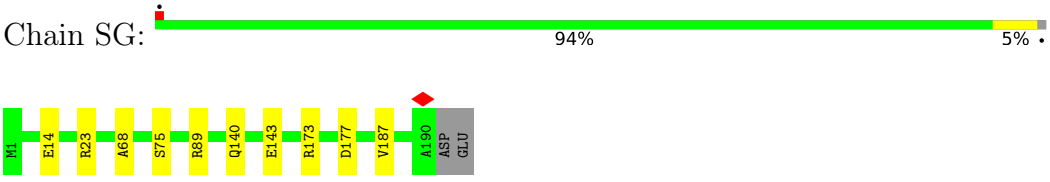
• Molecule 45: 60S ribosomal protein L8

Chain SF:



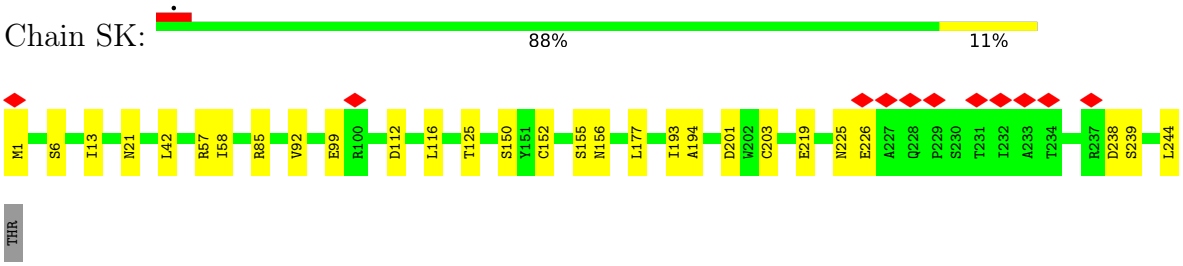
• Molecule 46: 60S ribosomal protein L9

Chain SG:



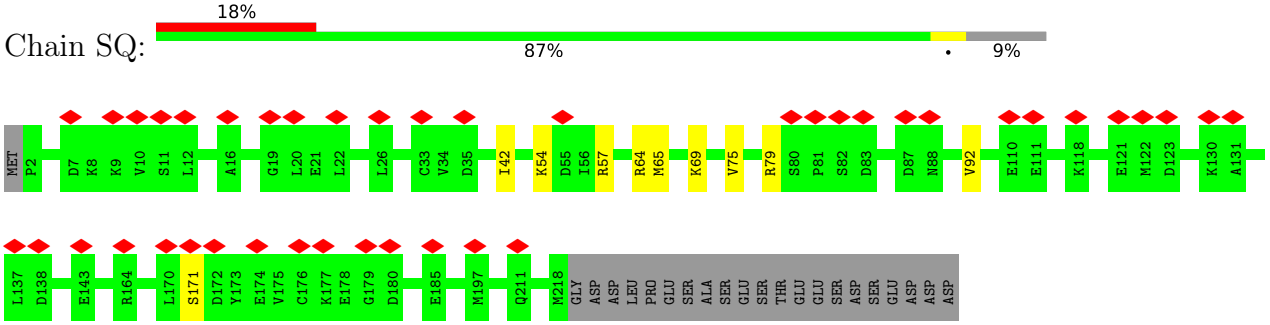
• Molecule 47: Eukaryotic translation initiation factor 6

Chain SK:



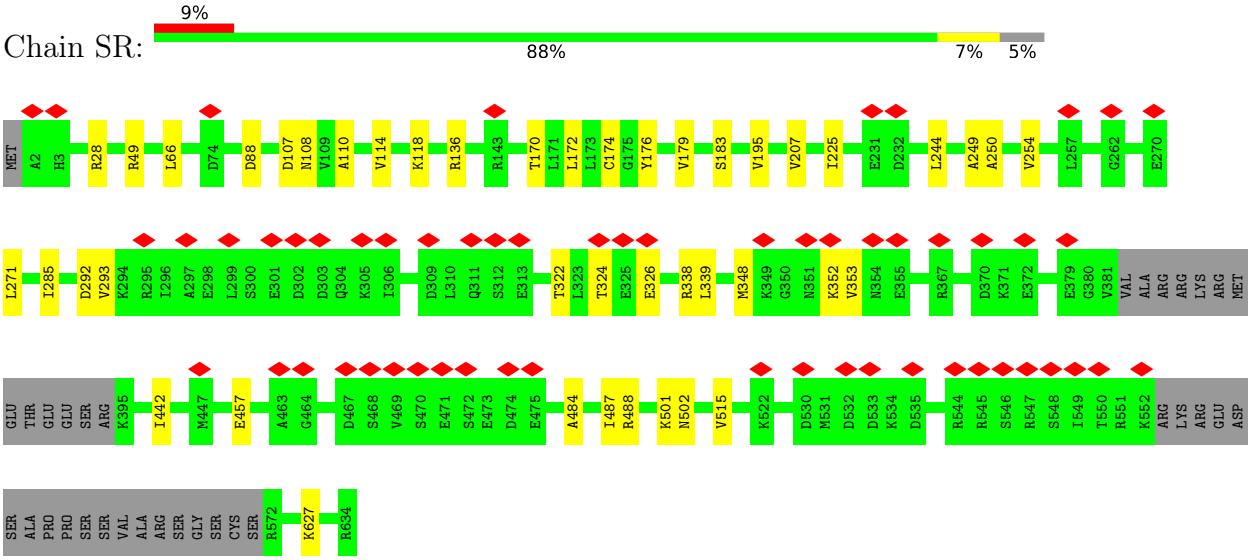
• Molecule 48: mRNA turnover protein 4 homolog

Chain SQ:



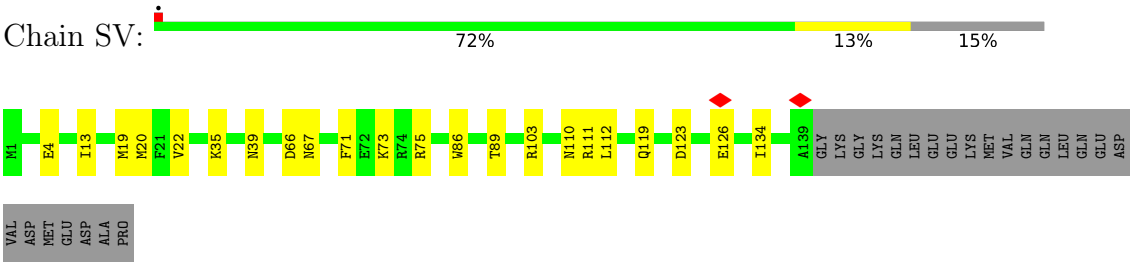
• Molecule 49: GTP-binding protein 4

Chain SR:



• Molecule 50: Probable ribosome biogenesis protein RLP24

Chain SV:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	28562	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	64000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	8.724	Depositor
Minimum map value	-1.400	Depositor
Average map value	0.051	Depositor
Map value standard deviation	0.175	Depositor
Recommended contour level	0.85	Depositor
Map size (Å)	514.56, 514.56, 514.56	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.072, 1.072, 1.072	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, OMU, 6MZ, ZN, MG, UR3, OMC, A2M, HIC, GDP, PSU, OMG

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	BA	0.24	0/785	0.42	0/1089
2	L1	0.44	0/3589	0.73	0/5589
3	L3	0.46	0/78237	0.78	10/122018 (0.0%)
4	L4	0.70	0/2861	0.83	0/4459
5	L5	0.29	0/1372	0.59	0/1836
6	L6	0.28	0/1732	0.59	0/2315
7	L7	0.31	0/1682	0.56	0/2250
8	L8	0.29	0/1133	0.53	0/1516
9	L9	0.31	0/1746	0.62	0/2338
10	LA	0.28	0/1268	0.53	0/1701
11	LB	0.31	0/1536	0.65	0/2052
12	LC	0.35	0/1501	0.59	0/2013
13	LD	0.25	0/1305	0.60	0/1727
14	LE	0.35	0/1291	0.57	0/1724
15	LF	0.29	0/856	0.52	0/1149
16	LG	0.30	0/1048	0.59	0/1402
17	LH	0.26	0/975	0.56	0/1312
18	LI	0.29	0/1132	0.57	0/1504
19	LJ	0.28	0/1130	0.53	0/1507
20	LK	0.30	0/1191	0.54	0/1591
21	LL	0.26	0/1017	0.59	0/1364
22	LM	0.28	0/710	0.56	0/935
23	LN	0.29	0/3294	0.55	0/4406
24	LO	0.28	0/748	0.48	0/1004
25	LP	0.28	0/894	0.58	0/1204
26	LQ	0.28	0/1071	0.58	0/1429
27	LR	0.28	0/898	0.62	0/1197
28	LS	0.26	0/1023	0.56	0/1351
29	LT	0.30	0/895	0.61	0/1198
30	LU	0.27	0/843	0.60	0/1115
31	LV	0.34	0/864	0.61	0/1140
32	LW	0.31	0/720	0.64	0/952

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	LX	0.28	0/718	0.55	0/953
34	LY	0.27	0/575	0.53	0/761
35	LZ	0.26	0/454	0.61	0/599
36	NC	0.23	0/218	0.39	0/303
37	NF	0.27	0/637	0.56	0/834
38	NK	0.26	0/587	0.60	0/767
39	NP	0.26	0/864	0.61	0/1154
40	SA	0.28	0/2907	0.57	0/3905
41	SB	0.36	0/2287	0.56	0/3065
42	SC	0.26	0/1781	0.56	0/2388
43	SD	0.30	0/1905	0.56	0/2539
44	SE	0.27	0/1903	0.56	0/2559
45	SF	0.29	0/1914	0.61	0/2567
46	SG	0.29	0/1537	0.56	0/2066
47	SK	0.28	0/1877	0.54	0/2554
48	SQ	0.25	0/1806	0.51	0/2420
49	SR	0.26	0/5014	0.52	0/6727
50	SV	0.30	0/1207	0.54	0/1600
All	All	0.40	0/147538	0.71	10/216148 (0.0%)

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	2469	C	C2-N1-C1'	7.78	127.35	118.80
3	L3	4476	C	C2-N1-C1'	6.51	125.97	118.80
3	L3	170	C	C6-N1-C2	-6.31	117.78	120.30
3	L3	4476	C	N1-C2-O2	5.67	122.30	118.90
3	L3	4434	C	N1-C2-O2	5.46	122.17	118.90
3	L3	1961	G	O4'-C1'-N9	5.46	112.56	108.20
3	L3	5022	U	O4'-C1'-N1	5.45	112.56	108.20
3	L3	2469	C	C6-N1-C1'	-5.38	114.35	120.80
3	L3	2469	C	C6-N1-C2	-5.08	118.27	120.30
3	L3	4476	C	N3-C2-O2	-5.08	118.34	121.90

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	BA	786	0	366	0	0
2	L1	3278	0	1665	18	0
3	L3	72147	0	36551	317	0
4	L4	2561	0	1295	9	0
5	L5	1349	0	1383	5	0
6	L6	1701	0	1818	13	0
7	L7	1650	0	1794	9	0
8	L8	1111	0	1174	7	0
9	L9	1701	0	1749	11	0
10	LA	1242	0	1269	7	0
11	LB	1512	0	1628	10	0
12	LC	1461	0	1502	8	0
13	LD	1289	0	1429	15	0
14	LE	1264	0	1328	2	0
15	LF	842	0	864	5	0
16	LG	1034	0	1097	13	0
17	LH	958	0	1027	8	0
18	LI	1115	0	1205	10	0
19	LJ	1107	0	1182	9	0
20	LK	1162	0	1213	6	0
21	LL	1002	0	1068	13	0
22	LM	699	0	758	6	0
23	LN	3239	0	3377	17	0
24	LO	738	0	774	9	0
25	LP	879	0	924	6	0
26	LQ	1053	0	1147	10	0
27	LR	888	0	977	8	0
28	LS	1015	0	1148	10	0
29	LT	876	0	912	4	0
30	LU	832	0	917	5	0
31	LV	851	0	920	5	0
32	LW	705	0	737	5	0
33	LX	708	0	756	8	0
34	LY	569	0	637	8	0
35	LZ	444	0	483	3	0
36	NC	219	0	92	0	0
37	NF	626	0	665	3	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	NK	581	0	656	6	0
39	NP	847	0	854	8	0
40	SA	2853	0	3028	26	0
41	SB	2243	0	2268	7	0
42	SC	1747	0	1897	18	0
43	SD	1870	0	1996	5	0
44	SE	1869	0	2014	14	0
45	SF	1876	0	1970	20	0
46	SG	1518	0	1601	9	0
47	SK	1852	0	1828	15	0
48	SQ	1771	0	1810	7	0
49	SR	4932	0	5070	33	0
50	SV	1184	0	1248	17	0
51	L1	4	0	0	0	0
51	L3	74	0	0	0	0
51	L4	3	0	0	0	0
51	LG	1	0	0	0	0
51	LQ	1	0	0	0	0
51	LT	1	0	0	0	0
51	LW	1	0	0	0	0
51	SA	1	0	0	0	0
51	SF	1	0	0	0	0
51	SR	1	0	0	0	0
52	LR	1	0	0	0	0
52	LV	1	0	0	0	0
52	LW	1	0	0	0	0
52	LX	1	0	0	0	0
52	NP	1	0	0	0	0
52	SV	1	0	0	0	0
53	SR	28	0	12	0	0
54	SR	1	0	0	0	0
All	All	139879	0	104083	582	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 2.

All (582) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L4:40:U:O2	5:L5:75:ARG:NH1	2.05	0.90
40:SA:109:ARG:O	40:SA:109:ARG:HG2	1.72	0.88

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2520:C:O2	3:L3:2640:G:N2	2.08	0.86
3:L3:974:C:O2	40:SA:327:LYS:NZ	2.10	0.83
18:LI:50:ARG:NH1	18:LI:51:LYS:O	2.10	0.83
3:L3:1280:C:O2'	40:SA:321:ASN:OD1	1.96	0.83
3:L3:1597:G:OP2	10:LA:131:ARG:NH1	2.12	0.82
45:SF:117:GLU:O	45:SF:162:ASN:ND2	2.13	0.82
3:L3:4693:C:O2	3:L3:4695:C:N4	2.12	0.82
3:L3:695:G:O2'	3:L3:697:G:OP2	1.97	0.82
3:L3:2263:A:OP1	21:LL:107:ARG:NH2	2.14	0.81
37:NF:3:GLN:NE2	49:SR:207:VAL:O	2.13	0.81
2:L1:51:U:OP2	35:LZ:21:ARG:NH2	2.14	0.81
44:SE:88:ASP:OD1	44:SE:91:THR:OG1	1.99	0.81
3:L3:1920:C:OP1	12:LC:164:LYS:NZ	2.14	0.80
2:L1:75:OMG:OP2	18:LI:74:TYR:OH	1.98	0.80
3:L3:2725:A:N6	13:LD:88:ARG:O	2.14	0.80
11:LB:40:ASN:OD1	11:LB:132:LYS:NZ	2.15	0.79
18:LI:21:ALA:O	18:LI:26:ARG:NH1	2.15	0.79
3:L3:1459:A:OP1	11:LB:65:ARG:NH2	2.16	0.79
16:LG:99:GLU:OE2	39:NP:24:ARG:NH1	2.16	0.78
3:L3:2545:U:O2'	3:L3:2547:G:N7	2.15	0.78
3:L3:1508:A:OP1	40:SA:110:ARG:NH2	2.15	0.78
3:L3:171:U:OP1	6:L6:135:LYS:NZ	2.18	0.77
3:L3:2448:G:O2'	45:SF:21:LYS:NZ	2.17	0.77
3:L3:295:A:OP2	31:LV:39:ARG:NH1	2.18	0.77
3:L3:1514:U:OP1	6:L6:2:ALA:N	2.17	0.77
19:LJ:3:LYS:NZ	19:LJ:5:MET:O	2.17	0.77
23:LN:83:PRO:O	23:LN:167:GLN:NE2	2.17	0.77
2:L1:62:A:OP1	28:LS:52:LYS:NZ	2.18	0.76
3:L3:2588:C:OP1	3:L3:2768:C:O2'	2.02	0.76
3:L3:2601:A:OP1	27:LR:40:LYS:NZ	2.18	0.76
3:L3:1480:C:O2'	3:L3:1482:G:OP2	2.02	0.76
3:L3:1358:G:N2	3:L3:1381:U:O4	2.18	0.75
3:L3:1178:G:O2'	3:L3:1180:C:OP2	2.05	0.75
3:L3:2275:G:OP2	40:SA:312:ARG:NH1	2.19	0.75
11:LB:122:THR:OG1	11:LB:124:ASP:OD1	2.04	0.75
3:L3:4726:G:OP2	38:NK:98:ASN:ND2	2.20	0.75
3:L3:1889:U:OP1	29:LT:19:ARG:NH1	2.19	0.74
3:L3:5068:G:N2	3:L3:5069:U:O4	2.20	0.74
12:LC:99:ASP:OD2	12:LC:108:GLN:NE2	2.20	0.74
3:L3:1364:U:OP2	6:L6:36:ARG:NH1	2.20	0.74
3:L3:1177:U:OP2	3:L3:1180:C:N4	2.21	0.74

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:4449:A:OP1	49:SR:118:LYS:NZ	2.21	0.73
11:LB:35:LEU:O	11:LB:39:THR:OG1	2.03	0.73
44:SE:44:ASP:OD1	44:SE:45:ILE:N	2.20	0.73
3:L3:4372:U:OP1	31:LV:59:LYS:NZ	2.22	0.73
7:L7:182:GLU:OE2	8:L8:119:ARG:NH2	2.22	0.73
40:SA:340:ILE:HG21	42:SC:50:LEU:HD13	1.68	0.73
3:L3:1255:A:OP1	3:L3:1257:A:N6	2.22	0.73
3:L3:4305:G:O2'	3:L3:4306:OMU:O5'	2.04	0.73
13:LD:140:GLU:O	13:LD:144:LYS:NZ	2.19	0.73
24:LO:50:ASN:ND2	24:LO:75:SER:O	2.21	0.73
3:L3:2696:A:H62	34:LY:35:LYS:HZ2	1.37	0.72
3:L3:226:G:OP2	18:LI:1:MET:N	2.17	0.72
3:L3:1882:U:O2'	26:LQ:47:ARG:NE	2.23	0.72
3:L3:4678:G:OP1	38:NK:14:ARG:NH1	2.22	0.72
3:L3:4083:U:OP1	45:SF:123:ARG:NH1	2.23	0.71
3:L3:2553:A:OP2	3:L3:2574:G:O2'	2.09	0.71
3:L3:502:C:O2'	3:L3:503:C:OP1	2.06	0.71
3:L3:4620:OMU:OP2	3:L3:4670:C:N4	2.23	0.71
3:L3:4717:A:OP2	23:LN:30:LYS:NZ	2.23	0.71
33:LX:33:GLN:OE1	33:LX:49:ARG:NH1	2.24	0.71
30:LU:4:ARG:NH2	30:LU:7:MET:SD	2.64	0.71
3:L3:4124:G:N2	44:SE:43:GLN:O	2.24	0.70
3:L3:62:A:N3	3:L3:77:U:O2'	2.24	0.70
3:L3:223:G:O2'	40:SA:223:ASN:ND2	2.23	0.70
3:L3:4301:U:OP2	14:LE:87:LYS:NZ	2.24	0.69
21:LL:47:LYS:O	21:LL:103:ARG:NH1	2.26	0.69
3:L3:2626:U:OP2	49:SR:501:LYS:NZ	2.24	0.69
3:L3:1943:A:OP2	3:L3:2039:G:N2	2.26	0.69
3:L3:2844:A:N6	3:L3:3839:G:O2'	2.25	0.69
3:L3:2848:G:O2'	3:L3:3838:U:O4	2.06	0.69
11:LB:76:GLU:OE1	11:LB:77:ASN:ND2	2.25	0.69
3:L3:3700:C:O2'	3:L3:3774:A:N3	2.27	0.68
3:L3:1943:A:N6	3:L3:2039:G:O2'	2.26	0.68
3:L3:4623:OMG:OP1	23:LN:19:ARG:NH2	2.27	0.68
3:L3:408:A:O2'	3:L3:411:G:OP2	2.11	0.67
2:L1:94:G:OP2	32:LW:72:ARG:NH1	2.27	0.67
3:L3:3622:C:OP1	39:NP:11:ARG:NH1	2.27	0.67
33:LX:30:GLU:O	33:LX:34:HIS:ND1	2.25	0.67
3:L3:1238:A:OP2	42:SC:60:SER:OG	2.04	0.67
3:L3:3776:G:N2	3:L3:3776:G:OP2	2.26	0.67
6:L6:62:PRO:O	6:L6:63:THR:OG1	2.11	0.67

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L7:189:ILE:HD11	8:L8:119:ARG:HG2	1.77	0.67
16:LG:13:LYS:NZ	16:LG:57:VAL:O	2.28	0.67
3:L3:2739:C:O2	45:SF:188:LYS:NZ	2.28	0.66
3:L3:2262:G:OP2	21:LL:98:ARG:NH2	2.28	0.66
3:L3:308:G:OP2	3:L3:308:G:N2	2.20	0.65
3:L3:1676:C:OP2	3:L3:1677:PSU:N1	2.30	0.65
47:SK:1:MET:N	47:SK:219:GLU:OE2	2.29	0.65
3:L3:2078:C:OP1	26:LQ:64:LYS:NZ	2.30	0.65
9:L9:73:ARG:HB3	9:L9:89:VAL:HG23	1.78	0.65
3:L3:2407:G:O6	35:LZ:2:SER:N	2.29	0.65
3:L3:276:C:OP2	30:LU:34:THR:HG21	1.97	0.65
3:L3:4646:U:O2'	49:SR:502:ASN:OD1	2.11	0.65
3:L3:725:G:OP2	40:SA:350:ARG:NH2	2.30	0.65
44:SE:156:VAL:HG12	44:SE:182:CYS:SG	2.36	0.65
3:L3:279:A:OP1	9:L9:50:ARG:NH2	2.29	0.64
3:L3:1629:G:N1	45:SF:208:GLU:OE1	2.28	0.64
13:LD:140:GLU:OE2	13:LD:144:LYS:NZ	2.30	0.64
3:L3:4431:PSU:H2'	3:L3:4432:C:C6	2.32	0.64
3:L3:1397:A:O2'	3:L3:1467:C:O2'	2.09	0.64
3:L3:375:G:OP2	32:LW:52:LYS:NZ	2.29	0.64
3:L3:1814:C:O2'	22:LM:42:ASN:OD1	2.13	0.64
4:L4:55:A:O2'	5:L5:151:ILE:O	2.11	0.64
44:SE:96:LEU:HD11	44:SE:189:ARG:HD3	1.79	0.64
4:L4:12:U:O3'	4:L4:109:U:O2'	2.12	0.64
46:SG:140:GLN:OE1	48:SQ:171:SER:OG	2.14	0.64
3:L3:2394:G:O4'	3:L3:2397:G:N2	2.30	0.64
30:LU:66:ASP:OD1	30:LU:87:ARG:NH1	2.31	0.63
3:L3:4299:PSU:OP1	22:LM:33:LYS:NZ	2.32	0.63
21:LL:38:PHE:O	21:LL:45:HIS:NE2	2.27	0.63
3:L3:1433:A:N6	3:L3:1451:G:O2'	2.30	0.63
3:L3:944:A:OP2	43:SD:62:ARG:NH1	2.32	0.63
49:SR:183:SER:HB3	49:SR:322:THR:HG21	1.79	0.63
3:L3:4476:C:O2'	46:SG:173:ARG:NH2	2.31	0.63
3:L3:4580:U:O2'	23:LN:182:GLU:OE2	2.17	0.62
3:L3:3734:PSU:H2'	3:L3:3735:G:O4'	1.99	0.62
3:L3:277:G:N7	30:LU:29:ARG:NH2	2.47	0.62
3:L3:453:G:O2'	3:L3:705:G:OP1	2.18	0.62
3:L3:151:G:OP2	9:L9:4:TYR:OH	2.09	0.62
3:L3:1941:A:N6	3:L3:2040:A:OP2	2.33	0.62
3:L3:2000:G:O2'	3:L3:2017:A:N1	2.31	0.62
34:LY:27:LYS:NZ	34:LY:68:GLU:OE2	2.23	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2436:U:OP2	17:LH:135:LYS:NZ	2.33	0.62
6:L6:29:PRO:O	6:L6:33:ILE:HD12	2.00	0.62
3:L3:4928:C:O4'	8:L8:121:ARG:NH1	2.33	0.61
3:L3:1633:G:O6	3:L3:3918:G:O2'	2.18	0.61
3:L3:5022:U:O2'	3:L3:5023:C:OP2	2.17	0.61
3:L3:1241:C:OP2	42:SC:72:LYS:NZ	2.32	0.61
3:L3:2351:OMC:HM23	40:SA:95:MET:HG3	1.82	0.61
3:L3:3748:A:O2'	45:SF:223:SER:OG	2.14	0.61
28:LS:33:VAL:O	28:LS:37:THR:OG1	2.13	0.61
44:SE:136:LEU:HD22	44:SE:202:VAL:CG1	2.30	0.61
23:LN:80:GLU:OE1	23:LN:323:TYR:OH	2.13	0.61
34:LY:23:VAL:HG23	34:LY:64:LEU:HD21	1.82	0.61
42:SC:50:LEU:HD12	42:SC:51:VAL:HG23	1.82	0.60
47:SK:99:GLU:OE1	47:SK:125:THR:OG1	2.12	0.60
3:L3:4305:G:HO2'	3:L3:4306:OMU:P	2.23	0.60
3:L3:1187:G:OP2	3:L3:1187:G:N2	2.23	0.60
3:L3:67:C:OP2	3:L3:312:G:N2	2.33	0.60
40:SA:153:VAL:HG12	40:SA:252:TRP:HB2	1.83	0.60
3:L3:3715:PSU:H2'	3:L3:3716:C:O4'	2.02	0.60
3:L3:2363:A2M:H2'	3:L3:2364:OMG:O4'	2.02	0.59
3:L3:4593:C:OP2	38:NK:2:ALA:N	2.35	0.59
50:SV:110:ASN:OD1	50:SV:111:ARG:N	2.36	0.59
2:L1:155:C:OP2	44:SE:89:ARG:NH2	2.35	0.59
3:L3:1378:C:O2'	6:L6:158:ARG:NH1	2.36	0.59
3:L3:2695:A:OP1	34:LY:35:LYS:NZ	2.23	0.59
43:SD:171:ASP:OD1	43:SD:172:ASN:N	2.34	0.59
3:L3:1464:C:H5"	22:LM:32:LEU:HD12	1.85	0.59
3:L3:3938:G:N2	3:L3:4171:C:OP2	2.36	0.59
3:L3:4440:G:N2	49:SR:66:LEU:O	2.34	0.59
3:L3:1590:C:O2'	39:NP:5:ARG:NH2	2.35	0.58
3:L3:5053:U:O2'	3:L3:5054:C:OP2	2.19	0.58
17:LH:93:ASN:O	17:LH:139:ARG:NH1	2.36	0.58
45:SF:30:ARG:NH1	45:SF:36:GLU:OE2	2.37	0.58
3:L3:225:G:OP2	40:SA:223:ASN:ND2	2.37	0.58
25:LP:57:MET:SD	25:LP:90:ARG:NH1	2.77	0.58
3:L3:1185:G:O2'	41:SB:278:ASP:OD1	2.20	0.58
3:L3:151:G:N7	44:SE:141:ASN:ND2	2.47	0.58
3:L3:223:G:O2'	3:L3:225:G:OP2	2.21	0.58
50:SV:66:ASP:OD1	50:SV:67:ASN:N	2.37	0.58
3:L3:1493:G:OP1	22:LM:44:ARG:NH2	2.35	0.58
16:LG:112:MET:CE	16:LG:117:ILE:HD11	2.34	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:NP:66:CYS:SG	39:NP:79:HIS:CE1	2.97	0.58
39:NP:72:ASP:OD1	39:NP:73:SER:N	2.37	0.58
40:SA:109:ARG:O	40:SA:109:ARG:CG	2.47	0.58
3:L3:970:G:OP2	42:SC:123:ARG:NH1	2.36	0.58
3:L3:2841:G:OP1	39:NP:10:HIS:NE2	2.36	0.58
3:L3:1573:G:OP1	13:LD:92:LYS:NZ	2.35	0.57
3:L3:1998:A:N3	3:L3:2019:C:O2'	2.37	0.57
3:L3:4670:C:O2'	3:L3:4672:A:OP2	2.20	0.57
40:SA:7:LEU:HD23	40:SA:21:ASN:ND2	2.18	0.57
47:SK:238:ASP:OD1	47:SK:239:SER:N	2.37	0.57
3:L3:2898:G:OP2	13:LD:135:LYS:NZ	2.34	0.57
3:L3:2876:OMG:HM22	3:L3:2877:G:H5'	1.87	0.57
3:L3:4910:G:N2	7:L7:106:ASP:O	2.37	0.57
16:LG:112:MET:HE1	16:LG:117:ILE:HD11	1.85	0.57
45:SF:142:GLU:O	45:SF:143:THR:OG1	2.20	0.57
9:L9:26:ARG:NH1	44:SE:165:GLU:OE2	2.36	0.57
3:L3:4765:G:OP1	46:SG:23:ARG:NE	2.38	0.57
27:LR:3:GLN:OE1	27:LR:3:GLN:N	2.37	0.57
7:L7:37:ARG:HD2	7:L7:108:ILE:HD11	1.87	0.57
42:SC:99:ASP:OD1	42:SC:100:LYS:N	2.36	0.57
2:L1:87:G:OP1	28:LS:5:LYS:NZ	2.20	0.56
3:L3:1844:G:O3'	22:LM:25:ARG:NH1	2.38	0.56
3:L3:2264:C:OP1	21:LL:112:ARG:NH1	2.38	0.56
21:LL:20:ARG:NH1	26:LQ:78:LEU:O	2.38	0.56
3:L3:2326:G:OP1	26:LQ:108:ARG:NH2	2.38	0.56
3:L3:2414:G:O2'	3:L3:2415:OMU:H5"	2.05	0.56
50:SV:71:PHE:O	50:SV:75:ARG:NH2	2.38	0.56
3:L3:508:G:O2'	3:L3:510:U:OP2	2.18	0.56
3:L3:1797:G:OP1	43:SD:104:LYS:NZ	2.38	0.56
41:SB:62:CYS:HB3	41:SB:105:LEU:HD22	1.87	0.56
42:SC:198:SER:N	42:SC:288:PHE:O	2.36	0.56
3:L3:4220:6MZ:H8	3:L3:4220:6MZ:O1P	2.06	0.56
3:L3:2639:U:O2'	3:L3:2694:G:O6	2.20	0.56
3:L3:4500:PSU:H2'	3:L3:4501:U:C6	2.40	0.56
3:L3:4552:PSU:H2'	3:L3:4553:A:C8	2.41	0.56
3:L3:2000:G:O6	48:SQ:54:LYS:NZ	2.35	0.56
3:L3:3908:A:O2'	3:L3:4531:U:OP1	2.19	0.56
16:LG:67:LYS:NZ	39:NP:54:ASP:OD2	2.33	0.56
47:SK:21:ASN:ND2	47:SK:201:ASP:OD2	2.39	0.56
3:L3:4249:G:O2'	5:L5:98:ASN:O	2.24	0.56
44:SE:136:LEU:HD22	44:SE:202:VAL:HG12	1.88	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:679:C:OP1	21:LL:84:LYS:NZ	2.36	0.55
3:L3:3681:G:OP2	45:SF:128:ARG:NH2	2.39	0.55
6:L6:7:GLY:O	20:LK:49:HIS:NE2	2.39	0.55
3:L3:2739:C:OP1	45:SF:177:LYS:NZ	2.40	0.55
49:SR:107:ASP:OD1	49:SR:108:ASN:N	2.39	0.55
28:LS:44:LEU:O	28:LS:47:ILE:HG22	2.06	0.55
3:L3:4371:G:O2'	3:L3:4372:U:OP2	2.20	0.55
3:L3:4515:G:OP1	49:SR:49:ARG:NH1	2.38	0.55
7:L7:54:TYR:OH	7:L7:73:PHE:O	2.23	0.55
26:LQ:26:ASP:OD1	26:LQ:27:ARG:N	2.39	0.55
3:L3:1420:A:O2'	3:L3:1500:A:O2'	2.11	0.55
11:LB:88:ASP:OD1	11:LB:89:ASP:N	2.40	0.55
24:LO:14:ILE:HD13	24:LO:17:ARG:HH21	1.72	0.55
14:LE:9:ARG:O	14:LE:55:LYS:NZ	2.37	0.55
17:LH:120:ASP:OD1	17:LH:121:VAL:N	2.40	0.55
3:L3:2696:A:O4'	34:LY:26:LYS:NZ	2.40	0.54
3:L3:2562:G:O2'	3:L3:2565:A:N6	2.41	0.54
3:L3:4311:A:O2'	3:L3:4312:PSU:H5"	2.07	0.54
24:LO:50:ASN:OD1	24:LO:51:ASN:N	2.40	0.54
3:L3:2543:A:O2'	3:L3:2545:U:OP1	2.12	0.54
3:L3:419:A:N3	3:L3:1332:C:O2'	2.39	0.54
4:L4:7:G:OP1	41:SB:33:ARG:NH1	2.40	0.54
40:SA:214:ASP:OD2	40:SA:218:ILE:HD12	2.07	0.54
3:L3:2258:C:N3	42:SC:90:ALA:N	2.56	0.54
3:L3:5009:G:O2'	3:L3:5010:PSU:H5"	2.08	0.54
7:L7:190:ASP:OD1	7:L7:191:LYS:N	2.41	0.54
10:LA:107:LEU:HD22	10:LA:152:GLU:OE2	2.07	0.54
2:L1:127:U:N3	3:L3:2544:G:OP1	2.39	0.54
47:SK:6:SER:HA	47:SK:13:ILE:HD11	1.90	0.54
2:L1:69:PSU:H2'	2:L1:70:G:O4'	2.07	0.53
3:L3:374:G:OP2	32:LW:56:ARG:NH2	2.37	0.53
3:L3:4975:G:O2'	3:L3:4977:A:N6	2.39	0.53
11:LB:110:ARG:NH1	40:SA:281:MET:SD	2.81	0.53
13:LD:7:GLN:N	13:LD:7:GLN:OE1	2.39	0.53
3:L3:2815:A2M:HM'2	3:L3:2816:G:H5'	1.91	0.53
3:L3:4691:A:OP1	46:SG:75:SER:OG	2.22	0.53
3:L3:399:G:O2'	3:L3:400:A2M:H5'	2.09	0.53
3:L3:2306:G:O2'	3:L3:2307:A:OP2	2.26	0.53
49:SR:176:TYR:CE1	49:SR:271:LEU:HD22	2.44	0.53
3:L3:5001:PSU:H2'	3:L3:5002:U:O4'	2.08	0.53
19:LJ:68:ILE:O	19:LJ:115:LYS:NZ	2.40	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:LR:44:SER:OG	27:LR:46:CYS:SG	2.54	0.53
2:L1:83:C:H41	18:LI:50:ARG:HE	1.56	0.53
3:L3:4530:UR3:H6	3:L3:4530:UR3:O5'	2.09	0.53
33:LX:26:VAL:HG21	45:SF:180:LEU:HD11	1.90	0.53
3:L3:1942:A:N6	3:L3:2040:A:OP2	2.42	0.53
48:SQ:75:VAL:HG22	48:SQ:79:ARG:HH12	1.74	0.53
13:LD:26:PRO:O	13:LD:29:THR:HG23	2.09	0.52
49:SR:487:ILE:CG1	50:SV:134:ILE:HD11	2.39	0.52
50:SV:35:LYS:O	50:SV:39:ASN:ND2	2.42	0.52
3:L3:1677:PSU:H4'	3:L3:1680:G:C2	2.45	0.52
3:L3:4529:G:O2'	3:L3:4530:UR3:H5'	2.09	0.52
3:L3:3717:A:OP2	3:L3:3735:G:N2	2.39	0.52
21:LL:82:ILE:HG21	21:LL:89:THR:HG23	1.91	0.52
3:L3:3718:A2M:H2	3:L3:3934:G:C1'	2.39	0.52
42:SC:281:ILE:HG23	42:SC:286:LEU:HD11	1.91	0.52
3:L3:3868:G:O2'	3:L3:3869:OMC:H5"	2.09	0.52
45:SF:117:GLU:OE2	45:SF:123:ARG:N	2.40	0.52
3:L3:2459:G:N2	3:L3:2462:C:OP2	2.42	0.52
3:L3:4087:G:OP2	45:SF:37:ARG:NH2	2.43	0.52
3:L3:121:A:OP1	44:SE:110:LYS:NZ	2.43	0.52
3:L3:1325:C:O2'	3:L3:1326:A2M:OP1	2.27	0.52
3:L3:1369:C:OP2	3:L3:1370:G:O2'	2.08	0.52
3:L3:3661:G:N7	45:SF:152:SER:OG	2.33	0.52
3:L3:4465:U:OP1	49:SR:28:ARG:NH1	2.39	0.51
17:LH:119:ILE:HD12	17:LH:140:LEU:CD2	2.40	0.51
3:L3:956:A:N6	3:L3:1283:G:O2'	2.44	0.51
3:L3:2838:G:O2'	3:L3:2839:PSU:H5"	2.11	0.51
3:L3:4587:G:OP1	7:L7:61:ARG:NH1	2.42	0.51
19:LJ:100:VAL:HG13	19:LJ:107:LYS:HA	1.92	0.51
49:SR:487:ILE:HG13	50:SV:134:ILE:HD11	1.92	0.51
11:LB:89:ASP:O	11:LB:112:ARG:NH1	2.43	0.51
24:LO:15:ASN:OD1	24:LO:16:SER:N	2.44	0.51
40:SA:211:TYR:OH	40:SA:218:ILE:HD11	2.11	0.51
3:L3:3723:A:H2'	3:L3:3724:A2M:H8	1.93	0.51
3:L3:1555:G:N7	33:LX:4:ARG:NH2	2.59	0.51
2:L1:151:G:O4'	44:SE:64:GLN:NE2	2.40	0.51
49:SR:225:ILE:HG13	49:SR:271:LEU:HD21	1.93	0.51
15:LF:99:TRP:CD1	49:SR:515:VAL:HG11	2.45	0.51
11:LB:31:LEU:HB2	40:SA:289:LEU:HD11	1.93	0.50
17:LH:117:TYR:O	17:LH:119:ILE:HG23	2.10	0.50
49:SR:110:ALA:O	49:SR:114:VAL:HG23	2.10	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:L9:148:THR:HG22	9:L9:148:THR:O	2.11	0.50
34:LY:33:LYS:HG2	34:LY:46:VAL:HG12	1.92	0.50
3:L3:1521:C:O2'	3:L3:1522:OMG:H5'	2.11	0.50
3:L3:4219:A:O2'	3:L3:4220:6MZ:O5'	2.24	0.50
3:L3:4552:PSU:H2'	3:L3:4553:A:H8	1.75	0.50
3:L3:4678:G:N7	38:NK:11:ARG:NH2	2.60	0.50
19:LJ:5:MET:O	19:LJ:28:ASN:ND2	2.44	0.50
33:LX:45:THR:HG23	33:LX:45:THR:O	2.11	0.50
27:LR:59:VAL:HG21	27:LR:63:VAL:HG11	1.92	0.50
3:L3:1515:A:OP1	20:LK:33:GLY:N	2.42	0.50
3:L3:1892:A:OP1	3:L3:1893:C:N4	2.33	0.50
3:L3:3924:C:O2'	3:L3:3925:OMU:H5"	2.10	0.50
21:LL:9:VAL:HG11	40:SA:136:LEU:HD22	1.94	0.50
3:L3:3641:U:OP2	3:L3:3646:A:N6	2.37	0.50
3:L3:4637:OMG:H2'	3:L3:4638:U:C6	2.47	0.50
3:L3:4724:A:O2'	23:LN:104:THR:HG22	2.11	0.49
4:L4:85:G:OP1	43:SD:222:LYS:NZ	2.35	0.49
16:LG:96:LEU:HD11	50:SV:22:VAL:HG23	1.94	0.49
3:L3:3659:G:OP1	45:SF:241:ARG:NH1	2.45	0.49
3:L3:3718:A2M:H2	3:L3:3934:G:O4'	2.12	0.49
3:L3:2299:G:OP1	40:SA:182:LYS:NZ	2.45	0.49
3:L3:4618:OMG:HM22	3:L3:4619:U:H5'	1.94	0.49
3:L3:1961:G:OP1	48:SQ:69:LYS:NZ	2.27	0.49
3:L3:1552:G:O2'	3:L3:1553:A:OP2	2.29	0.49
3:L3:1942:A:N6	3:L3:2039:G:O2'	2.45	0.49
15:LF:111:GLU:OE2	15:LF:113:ARG:NH2	2.46	0.49
3:L3:3718:A2M:H2	3:L3:3934:G:H1'	1.94	0.49
3:L3:1997:U:O3'	48:SQ:57:ARG:NH2	2.46	0.49
3:L3:5047:C:O2'	3:L3:5050:C:OP2	2.24	0.49
2:L1:84:A:N6	2:L1:87:G:O6	2.46	0.48
3:L3:4241:C:OP2	5:L5:145:LYS:NZ	2.36	0.48
10:LA:108:ASP:OD2	10:LA:111:SER:OG	2.26	0.48
3:L3:1670:G:OP2	3:L3:1670:G:N2	2.37	0.48
3:L3:5010:PSU:H2'	3:L3:5011:A:H8	1.77	0.48
18:LI:34:LEU:HD21	18:LI:109:LEU:HD11	1.95	0.48
20:LK:38:LEU:O	20:LK:42:ARG:NH1	2.47	0.48
21:LL:94:ARG:HG3	21:LL:111:ILE:HD11	1.94	0.48
2:L1:48:A:H2	2:L1:62:A:HO2'	1.61	0.48
4:L4:3:C:OP1	4:L4:58:A:O2'	2.22	0.48
10:LA:40:HIS:NE2	10:LA:110:ASP:O	2.43	0.48
44:SE:208:ASN:OD1	44:SE:209:SER:N	2.46	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2368:A:N6	3:L3:2827:G:O2'	2.47	0.48
3:L3:2616:C:OP1	13:LD:60:ARG:NH1	2.47	0.48
8:L8:55:MET:O	12:LC:157:ARG:NH2	2.47	0.48
6:L6:63:THR:HG21	20:LK:66:ASN:HB3	1.96	0.48
24:LO:78:ASN:OD1	24:LO:79:ILE:N	2.46	0.48
42:SC:93:THR:OG1	42:SC:104:THR:OG1	2.28	0.48
3:L3:3605:C:OP2	13:LD:71:ARG:NH1	2.46	0.48
23:LN:313:SER:OG	23:LN:314:ILE:N	2.47	0.48
4:L4:74:A:N3	12:LC:53:LYS:NZ	2.60	0.48
3:L3:2724:G:O2'	3:L3:2726:G:OP2	2.27	0.47
3:L3:4691:A:O2'	46:SG:68:ALA:O	2.30	0.47
24:LO:64:ALA:O	24:LO:68:LYS:N	2.47	0.47
3:L3:2324:C:O2'	26:LQ:98:GLU:OE1	2.30	0.47
3:L3:2725:A:H1'	13:LD:93:VAL:HG11	1.96	0.47
3:L3:4761:G:OP1	7:L7:37:ARG:NH2	2.47	0.47
16:LG:96:LEU:HD13	50:SV:20:MET:SD	2.54	0.47
46:SG:89:ARG:NH2	46:SG:187:VAL:HG23	2.30	0.47
3:L3:691:C:OP1	42:SC:114:ARG:NH1	2.47	0.47
3:L3:3939:G:O2'	3:L3:4076:G:N2	2.43	0.47
3:L3:4163:U:O2'	3:L3:4165:C:OP2	2.32	0.47
3:L3:4415:A:OP1	37:NF:66:LYS:NZ	2.31	0.47
3:L3:4435:U:O2'	49:SR:136:ARG:NH2	2.47	0.47
3:L3:4581:G:O2'	23:LN:92:TYR:OH	2.14	0.47
29:LT:37:ASP:OD1	29:LT:38:GLU:N	2.47	0.47
3:L3:1921:C:O2'	12:LC:160:ARG:NH2	2.44	0.47
8:L8:11:ARG:NH1	8:L8:58:THR:O	2.47	0.47
17:LH:94:ASN:OD1	17:LH:146:ALA:N	2.46	0.47
49:SR:488:ARG:NH1	50:SV:126:GLU:OE1	2.48	0.47
3:L3:2590:G:O2'	3:L3:2755:A:N6	2.46	0.47
13:LD:144:LYS:O	13:LD:148:ASP:N	2.44	0.47
47:SK:225:ASN:OD1	47:SK:226:GLU:N	2.48	0.47
25:LP:59:THR:OG1	25:LP:104:THR:OG1	2.19	0.46
3:L3:1327:C:N4	3:L3:1328:G:O6	2.48	0.46
3:L3:1366:G:N2	3:L3:1371:A:OP2	2.49	0.46
3:L3:2856:C:O2	23:LN:242:ARG:NH2	2.47	0.46
6:L6:94:ILE:HG23	6:L6:124:LEU:HD21	1.97	0.46
47:SK:42:LEU:HD21	47:SK:203:CYS:SG	2.55	0.46
47:SK:85:ARG:NH1	47:SK:92:VAL:O	2.45	0.46
3:L3:1314:C:O2'	26:LQ:24:GLN:OE1	2.30	0.46
3:L3:4226:G:O2'	3:L3:4227:OMU:H5"	2.15	0.46
9:L9:115:VAL:HA	9:L9:134:LEU:HD23	1.97	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:5040:U:H5”	50:SV:112:LEU:HD21	1.97	0.46
3:L3:1677:PSU:H4’	3:L3:1680:G:N1	2.30	0.46
3:L3:4728:U:O4	38:NK:99:GLN:NE2	2.45	0.46
23:LN:67:VAL:O	23:LN:67:VAL:HG22	2.16	0.46
42:SC:214:ASP:OD1	42:SC:215:ALA:N	2.47	0.46
2:L1:68:G:O2’	2:L1:69:PSU:H5”	2.14	0.46
3:L3:442:G:OP1	29:LT:68:ARG:NH1	2.43	0.46
3:L3:4121:G:H21	45:SF:46:LYS:NZ	2.13	0.46
3:L3:4636:PSU:N1	25:LP:79:ASN:OD1	2.49	0.46
16:LG:85:ARG:HE	16:LG:100:ASP:HA	1.81	0.46
3:L3:4389:C:OP2	49:SR:627:LYS:NZ	2.48	0.46
3:L3:4635:A:H3’	3:L3:4636:PSU:H4’	1.98	0.46
49:SR:174:CYS:SG	49:SR:244:LEU:HD21	2.56	0.46
3:L3:730:G:OP2	43:SD:76:ARG:NE	2.49	0.46
3:L3:2469:C:O2’	3:L3:2470:C:OP1	2.33	0.46
3:L3:3906:A:OP1	40:SA:71:ARG:NE	2.49	0.46
3:L3:4536:OMC:HM23	3:L3:4536:OMC:H1’	1.50	0.45
3:L3:398:A2M:O5’	3:L3:398:A2M:H8	2.17	0.45
3:L3:4376:A:O2’	20:LK:42:ARG:NH1	2.49	0.45
29:LT:14:TYR:OH	29:LT:92:LEU:O	2.30	0.45
42:SC:59:ARG:O	42:SC:63:TYR:N	2.47	0.45
49:SR:292:ASP:OD1	49:SR:293:VAL:N	2.49	0.45
3:L3:115:C:OP1	9:L9:2:GLY:N	2.49	0.45
3:L3:2861:OMC:HM23	3:L3:2861:OMC:H1’	1.45	0.45
3:L3:716:C:OP2	40:SA:320:LYS:NZ	2.44	0.45
3:L3:2415:OMU:HM22	3:L3:2415:OMU:C2	2.47	0.45
3:L3:4147:G:H2’	3:L3:4148:C:O4’	2.17	0.45
3:L3:4478:G:N2	3:L3:4608:G:O2’	2.50	0.45
3:L3:4637:OMG:H1’	3:L3:4637:OMG:HM23	1.47	0.45
16:LG:30:ASP:HB2	16:LG:32:THR:HG22	1.98	0.45
19:LJ:74:VAL:HG23	19:LJ:101:PHE:CZ	2.52	0.45
42:SC:281:ILE:CG2	42:SC:286:LEU:HD11	2.47	0.45
45:SF:27:ALA:O	45:SF:128:ARG:NH1	2.44	0.45
3:L3:2840:A:OP2	23:LN:243:LYS:NZ	2.43	0.45
3:L3:3851:PSU:H2’	3:L3:3852:A:O4’	2.17	0.45
9:L9:140:LYS:NZ	28:LS:99:GLU:OE2	2.21	0.45
48:SQ:64:ARG:NH1	48:SQ:65:MET:O	2.50	0.45
3:L3:2351:OMC:H2’	3:L3:2351:OMC:O2	2.16	0.45
3:L3:3690:U:OP2	45:SF:200:ARG:NH1	2.49	0.45
11:LB:124:ASP:OD1	11:LB:125:GLN:N	2.50	0.45
46:SG:140:GLN:NE2	46:SG:143:GLU:OE1	2.50	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:350:C:OP2	40:SA:199:ARG:NH2	2.48	0.45
3:L3:2837:OMU:HM23	3:L3:2837:OMU:H1'	1.55	0.45
3:L3:3619:G:N2	3:L3:3623:C:N3	2.65	0.45
48:SQ:42:ILE:HD11	48:SQ:92:VAL:HG13	1.99	0.45
9:L9:165:THR:HG23	9:L9:168:GLY:H	1.81	0.45
13:LD:126:LYS:O	13:LD:131:VAL:HG22	2.17	0.45
3:L3:4435:U:OP2	3:L3:4436:U:O2'	2.17	0.45
47:SK:58:ILE:O	47:SK:58:ILE:HG13	2.17	0.45
3:L3:102:G:OP1	6:L6:71:ARG:NH2	2.51	0.44
3:L3:2393:C:C2	3:L3:2823:G:N2	2.85	0.44
3:L3:4305:G:H4'	3:L3:4306:OMU:OP1	2.17	0.44
3:L3:4402:C:H2'	3:L3:4403:PSU:H5"	1.98	0.44
3:L3:4645:C:OP2	13:LD:62:ARG:NH1	2.50	0.44
3:L3:4672:A:OP1	16:LG:17:SER:OG	2.26	0.44
19:LJ:29:ILE:O	19:LJ:31:ASP:N	2.49	0.44
3:L3:2097:U:O3'	3:L3:2098:G:H4'	2.18	0.44
13:LD:78:ILE:HD12	13:LD:78:ILE:H	1.81	0.44
16:LG:12:ALA:O	23:LN:66:LYS:NZ	2.49	0.44
23:LN:173:LEU:HD21	23:LN:323:TYR:CE1	2.53	0.44
32:LW:31:LYS:O	32:LW:32:SER:OG	2.31	0.44
3:L3:3899:OMG:HM23	3:L3:3899:OMG:H1'	1.51	0.44
3:L3:4431:PSU:H2'	3:L3:4432:C:H6	1.80	0.44
45:SF:175:ILE:HG22	45:SF:175:ILE:O	2.17	0.44
3:L3:2415:OMU:HM23	3:L3:2415:OMU:H1'	1.81	0.44
4:L4:60:G:O2'	41:SB:268:ARG:NH1	2.50	0.44
3:L3:1567:U:OP1	33:LX:3:LYS:NZ	2.26	0.44
28:LS:34:ALA:O	28:LS:39:GLY:N	2.47	0.44
3:L3:2725:A:OP2	13:LD:97:ARG:NH2	2.50	0.44
19:LJ:76:ASN:OD1	19:LJ:77:TYR:N	2.50	0.44
39:NP:29:ASP:OD1	39:NP:30:GLU:N	2.51	0.44
47:SK:116:LEU:HD11	47:SK:177:LEU:HD11	1.98	0.44
3:L3:1438:U:O2'	3:L3:1439:C:OP1	2.30	0.44
3:L3:2364:OMG:H1'	3:L3:2364:OMG:HM23	1.41	0.44
3:L3:2786:C:H4'	3:L3:2787:A2M:H5"	1.99	0.44
30:LU:63:VAL:HG12	30:LU:63:VAL:O	2.17	0.44
47:SK:21:ASN:ND2	47:SK:112:ASP:OD2	2.51	0.44
8:L8:81:ASP:HB3	8:L8:84:THR:HG22	2.00	0.44
49:SR:457:GLU:OE1	50:SV:103:ARG:NH2	2.44	0.44
9:L9:64:ILE:HD11	9:L9:106:ALA:HB2	2.00	0.44
12:LC:45:TRP:HA	12:LC:48:VAL:HG12	1.99	0.44
47:SK:244:LEU:O	49:SR:352:LYS:NZ	2.40	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:SV:4:GLU:O	50:SV:13:ILE:N	2.47	0.44
3:L3:1438:U:HO2'	3:L3:1439:C:P	2.39	0.43
3:L3:3718:A2M:HM'3	3:L3:3718:A2M:H1'	1.80	0.43
17:LH:138:VAL:HG23	17:LH:138:VAL:O	2.17	0.43
46:SG:14:GLU:OE1	46:SG:14:GLU:N	2.44	0.43
3:L3:469:C:N3	42:SC:105:ARG:NH2	2.64	0.43
3:L3:1291:G:OP1	42:SC:219:LYS:NZ	2.46	0.43
3:L3:1577:G:O2'	3:L3:1612:G:H4'	2.18	0.43
3:L3:2422:OMC:H1'	3:L3:2422:OMC:HM23	1.76	0.43
5:L5:57:VAL:HG11	5:L5:60:PHE:CD2	2.53	0.43
31:LV:103:VAL:O	31:LV:103:VAL:HG13	2.17	0.43
42:SC:203:ILE:O	42:SC:203:ILE:HG22	2.18	0.43
3:L3:2347:A:C6	26:LQ:31:ILE:HD11	2.52	0.43
3:L3:3890:A:N6	3:L3:4570:G:O2'	2.50	0.43
37:NF:17:ARG:NH2	46:SG:177:ASP:O	2.51	0.43
3:L3:4201:G:O2'	3:L3:4202:U:OP2	2.29	0.43
6:L6:116:ARG:NH2	6:L6:155:MET:O	2.44	0.43
49:SR:348:MET:CE	49:SR:353:VAL:HG21	2.48	0.43
16:LG:96:LEU:HD11	50:SV:22:VAL:CG2	2.48	0.43
19:LJ:78:ASN:OD1	24:LO:36:LYS:NZ	2.51	0.43
47:SK:152:CYS:HA	47:SK:193:ILE:HD11	2.01	0.43
3:L3:2580:U:O2'	19:LJ:79:HIS:ND1	2.51	0.43
3:L3:3627:OMG:HM23	3:L3:3627:OMG:H1'	1.51	0.43
3:L3:5010:PSU:H2'	3:L3:5011:A:C8	2.53	0.43
3:L3:3717:A:H2'	3:L3:3718:A2M:H8	2.01	0.43
21:LL:64:ILE:HD11	21:LL:96:MET:HE3	2.01	0.43
40:SA:295:SER:OG	40:SA:297:GLU:OE1	2.31	0.43
49:SR:170:THR:HG23	49:SR:249:ALA:HB2	2.00	0.43
35:LZ:33:ASN:ND2	35:LZ:35:ILE:O	2.52	0.43
27:LR:59:VAL:HG22	27:LR:60:ARG:H	1.84	0.43
40:SA:345:ARG:O	40:SA:349:LEU:HD23	2.19	0.43
47:SK:155:SER:OG	47:SK:156:ASN:N	2.52	0.43
3:L3:2692:U:OP1	34:LY:33:LYS:NZ	2.29	0.43
10:LA:16:LYS:O	10:LA:101:ASN:ND2	2.52	0.43
44:SE:200:THR:HG22	44:SE:201:THR:HG23	2.01	0.43
50:SV:119:GLN:O	50:SV:123:ASP:N	2.51	0.43
3:L3:2400:G:H21	27:LR:6:THR:HG22	1.83	0.42
3:L3:4391:G:O2'	3:L3:4392:OMG:H5'	2.18	0.42
15:LF:57:GLY:O	15:LF:60:VAL:HG23	2.19	0.42
17:LH:119:ILE:HD12	17:LH:140:LEU:HD21	1.99	0.42
33:LX:69:TRP:NE1	45:SF:173:GLY:O	2.52	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
49:SR:195:VAL:HG23	49:SR:195:VAL:O	2.18	0.42
3:L3:2325:C:P	26:LQ:101:HIS:HD1	2.42	0.42
16:LG:30:ASP:OD1	16:LG:104:VAL:HG12	2.19	0.42
23:LN:370:THR:O	23:LN:370:THR:HG22	2.19	0.42
3:L3:496:G:O2'	3:L3:497:G:OP1	2.31	0.42
3:L3:1871:A2M:O5'	3:L3:1871:A2M:H8	2.18	0.42
3:L3:4570:G:H2'	3:L3:4571:A2M:H8	2.00	0.42
49:SR:179:VAL:HG22	49:SR:254:VAL:HG12	2.01	0.42
2:L1:49:G:H5'	28:LS:47:ILE:HG21	2.01	0.42
2:L1:75:OMG:HM23	2:L1:75:OMG:H1'	1.52	0.42
3:L3:2843:U:O2'	3:L3:4632:U:OP1	2.36	0.42
3:L3:2861:OMC:H2'	3:L3:2862:G:O4'	2.19	0.42
3:L3:3852:A:H2'	3:L3:3853:PSU:H5"	2.01	0.42
4:L4:71:G:H2'	4:L4:72:U:O4'	2.19	0.42
49:SR:442:ILE:HD13	50:SV:89:THR:HG21	2.01	0.42
49:SR:250:ALA:HB2	49:SR:339:LEU:HD12	2.02	0.42
3:L3:2438:A:HO2'	3:L3:2440:U:P	2.43	0.42
3:L3:2869:U:O2'	3:L3:2881:A:N7	2.37	0.42
3:L3:4745:G:H22	3:L3:4955:A:H2	1.66	0.42
25:LP:95:ASP:OD1	25:LP:96:GLU:N	2.52	0.42
3:L3:1340:OMC:HM23	3:L3:1340:OMC:H1'	1.55	0.42
3:L3:4524:G:C2	23:LN:252:ALA:HB1	2.54	0.42
15:LF:99:TRP:C	15:LF:100:LEU:HD12	2.39	0.42
3:L3:2804:OMC:HM23	3:L3:2804:OMC:H1'	1.66	0.42
3:L3:3841:OMC:HM23	3:L3:3841:OMC:H1'	1.56	0.42
6:L6:63:THR:HG22	6:L6:64:VAL:N	2.35	0.42
18:LI:110:LYS:NZ	18:LI:111:LEU:O	2.52	0.42
3:L3:508:G:H21	20:LK:85:GLN:HE22	1.66	0.42
3:L3:1082:C:N4	3:L3:1218:G:O6	2.53	0.42
3:L3:1523:A:O2'	3:L3:1524:A2M:H5'	2.20	0.42
12:LC:95:ARG:NH2	12:LC:112:ASP:OD2	2.48	0.42
24:LO:45:LEU:HD12	24:LO:70:GLY:O	2.20	0.42
24:LO:47:ILE:HD12	24:LO:94:LEU:HD11	2.01	0.42
31:LV:6:LYS:C	31:LV:23:VAL:HG12	2.40	0.42
38:NK:82:ASN:O	38:NK:86:LEU:N	2.46	0.42
40:SA:266:THR:HG22	40:SA:267:TRP:N	2.34	0.42
3:L3:3869:OMC:H1'	3:L3:3869:OMC:HM23	1.84	0.42
3:L3:4280:A:N6	41:SB:28:THR:O	2.48	0.42
3:L3:1920:C:H3'	3:L3:1921:C:H5"	2.02	0.41
3:L3:2582:A:OP1	27:LR:76:ARG:NH1	2.53	0.41
3:L3:2835:A:O2'	23:LN:228:TYR:O	2.35	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:LY:3:ARG:NH2	34:LY:41:TYR:OH	2.53	0.41
49:SR:484:ALA:HA	49:SR:487:ILE:HD12	2.01	0.41
3:L3:223:G:C4	40:SA:164:THR:HG21	2.55	0.41
3:L3:4571:A2M:H1'	3:L3:4571:A2M:HM'3	1.57	0.41
49:SR:324:THR:O	49:SR:326:GLU:N	2.52	0.41
18:LI:19:PHE:O	18:LI:26:ARG:NH2	2.53	0.41
41:SB:93:THR:HG22	41:SB:93:THR:O	2.20	0.41
3:L3:1340:OMC:H2'	3:L3:1341:U:C6	2.54	0.41
28:LS:23:ASP:OD1	28:LS:24:LEU:N	2.53	0.41
2:L1:63:U:OP1	28:LS:48:ARG:NH2	2.53	0.41
3:L3:1516:G:O2'	6:L6:18:TRP:NE1	2.48	0.41
3:L3:2361:G:O6	10:LA:25:HIS:ND1	2.54	0.41
47:SK:150:SER:HA	47:SK:194:ALA:HB3	2.02	0.41
8:L8:36:ALA:HB2	8:L8:52:PHE:CE1	2.56	0.41
9:L9:64:ILE:CD1	9:L9:106:ALA:HB2	2.50	0.41
15:LF:47:ILE:HD13	15:LF:86:LEU:CD1	2.50	0.41
22:LM:35:VAL:HG12	22:LM:36:ASP:N	2.36	0.41
49:SR:442:ILE:HD11	50:SV:86:TRP:CD1	2.56	0.41
41:SB:271:MET:O	41:SB:276:LYS:NZ	2.52	0.41
2:L1:70:G:OP1	18:LI:118:ILE:HD11	2.20	0.41
2:L1:95:A:OP1	32:LW:81:GLY:N	2.45	0.41
3:L3:154:G:O3'	28:LS:105:LYS:NZ	2.53	0.41
3:L3:911:U:H2'	3:L3:912:G:O4'	2.20	0.41
42:SC:106:VAL:HG23	42:SC:106:VAL:O	2.21	0.41
3:L3:1596:U:O2	3:L3:3861:A:O2'	2.21	0.41
3:L3:1860:PSU:H2'	3:L3:1861:U:C6	2.56	0.41
3:L3:2059:C:O2'	12:LC:118:ARG:NH1	2.54	0.41
3:L3:4362:A:H2'	3:L3:4363:A:O4'	2.20	0.41
3:L3:4927:G:OP2	3:L3:4927:G:N2	2.35	0.41
3:L3:4980:C:N3	10:LA:69:ARG:NH2	2.66	0.41
3:L3:2691:U:C2	3:L3:2692:U:C5	3.08	0.41
25:LP:88:LEU:HD22	25:LP:104:THR:HG21	2.03	0.41
49:SR:285:ILE:HD11	49:SR:338:ARG:HD2	2.03	0.41
50:SV:19:MET:SD	50:SV:19:MET:N	2.94	0.41
3:L3:43:U:H4'	31:LV:52:THR:HG22	2.03	0.40
3:L3:2362:U:H2'	3:L3:2363:A2M:H8	2.03	0.40
3:L3:2739:C:H4'	33:LX:52:VAL:HG21	2.03	0.40
3:L3:4591:U:H2'	3:L3:4592:C:C6	2.56	0.40
25:LP:25:TYR:CE1	25:LP:88:LEU:HD12	2.56	0.40
21:LL:32:LEU:O	21:LL:113:ARG:NH1	2.54	0.40
21:LL:94:ARG:CG	21:LL:111:ILE:HD11	2.51	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
49:SR:172:LEU:HD23	49:SR:244:LEU:HD23	2.02	0.40
3:L3:4759:C:OP2	7:L7:171:LYS:NZ	2.35	0.40
26:LQ:84:GLU:O	26:LQ:87:VAL:HG22	2.22	0.40
3:L3:405:U:OP1	18:LI:87:ARG:NH2	2.50	0.40
3:L3:2515:G:OP1	27:LR:37:LYS:NZ	2.47	0.40
3:L3:4988:U:OP2	23:LN:123:HIS:ND1	2.54	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	BA	158/165 (96%)	157 (99%)	1 (1%)	0	100	100
5	L5	166/178 (93%)	164 (99%)	2 (1%)	0	100	100
6	L6	208/211 (99%)	205 (99%)	3 (1%)	0	100	100
7	L7	199/203 (98%)	198 (100%)	1 (0%)	0	100	100
8	L8	133/215 (62%)	131 (98%)	2 (2%)	0	100	100
9	L9	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
10	LA	151/184 (82%)	148 (98%)	3 (2%)	0	100	100
11	LB	185/188 (98%)	178 (96%)	7 (4%)	0	100	100
12	LC	174/176 (99%)	170 (98%)	4 (2%)	0	100	100
13	LD	152/196 (78%)	151 (99%)	1 (1%)	0	100	100
14	LE	150/160 (94%)	145 (97%)	5 (3%)	0	100	100
15	LF	101/128 (79%)	98 (97%)	3 (3%)	0	100	100
16	LG	137/140 (98%)	134 (98%)	3 (2%)	0	100	100
17	LH	115/156 (74%)	112 (97%)	3 (3%)	0	100	100
18	LI	132/145 (91%)	131 (99%)	1 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	LJ	133/136 (98%)	129 (97%)	4 (3%)	0	100	100
20	LK	145/148 (98%)	141 (97%)	4 (3%)	0	100	100
21	LL	123/137 (90%)	120 (98%)	3 (2%)	0	100	100
22	LM	81/159 (51%)	80 (99%)	1 (1%)	0	100	100
23	LN	399/403 (99%)	388 (97%)	11 (3%)	0	100	100
24	LO	93/115 (81%)	93 (100%)	0	0	100	100
25	LP	104/125 (83%)	101 (97%)	3 (3%)	0	100	100
26	LQ	126/135 (93%)	125 (99%)	1 (1%)	0	100	100
27	LR	110/117 (94%)	109 (99%)	1 (1%)	0	100	100
28	LS	120/123 (98%)	119 (99%)	1 (1%)	0	100	100
29	LT	107/110 (97%)	107 (100%)	0	0	100	100
30	LU	100/105 (95%)	99 (99%)	1 (1%)	0	100	100
31	LV	102/106 (96%)	98 (96%)	4 (4%)	0	100	100
32	LW	84/97 (87%)	83 (99%)	1 (1%)	0	100	100
33	LX	89/92 (97%)	86 (97%)	3 (3%)	0	100	100
34	LY	67/70 (96%)	67 (100%)	0	0	100	100
35	LZ	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
36	NC	42/731 (6%)	41 (98%)	1 (2%)	0	100	100
37	NF	69/260 (26%)	68 (99%)	1 (1%)	0	100	100
38	NK	63/129 (49%)	63 (100%)	0	0	100	100
39	NP	100/134 (75%)	100 (100%)	0	0	100	100
40	SA	356/427 (83%)	347 (98%)	9 (2%)	0	100	100
41	SB	273/297 (92%)	270 (99%)	3 (1%)	0	100	100
42	SC	211/288 (73%)	204 (97%)	7 (3%)	0	100	100
43	SD	223/248 (90%)	216 (97%)	7 (3%)	0	100	100
44	SE	228/266 (86%)	225 (99%)	3 (1%)	0	100	100
45	SF	243/257 (95%)	234 (96%)	9 (4%)	0	100	100
46	SG	188/192 (98%)	186 (99%)	2 (1%)	0	100	100
47	SK	242/245 (99%)	236 (98%)	6 (2%)	0	100	100
48	SQ	215/239 (90%)	212 (99%)	3 (1%)	0	100	100
49	SR	595/634 (94%)	584 (98%)	10 (2%)	1 (0%)	47	69

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
50	SV	137/163 (84%)	136 (99%)	1 (1%)	0	100	100
All	All	7578/9388 (81%)	7434 (98%)	143 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
49	SR	88	ASP

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	L5	142/149 (95%)	142 (100%)	0	100	100
6	L6	176/177 (99%)	176 (100%)	0	100	100
7	L7	173/174 (99%)	173 (100%)	0	100	100
8	L8	115/161 (71%)	115 (100%)	0	100	100
9	L9	171/172 (99%)	171 (100%)	0	100	100
10	LA	134/163 (82%)	134 (100%)	0	100	100
11	LB	164/165 (99%)	164 (100%)	0	100	100
12	LC	157/157 (100%)	157 (100%)	0	100	100
13	LD	138/175 (79%)	138 (100%)	0	100	100
14	LE	136/140 (97%)	135 (99%)	1 (1%)	84	89
15	LF	93/115 (81%)	93 (100%)	0	100	100
16	LG	106/107 (99%)	106 (100%)	0	100	100
17	LH	105/133 (79%)	105 (100%)	0	100	100
18	LI	124/135 (92%)	124 (100%)	0	100	100
19	LJ	117/118 (99%)	117 (100%)	0	100	100
20	LK	120/121 (99%)	120 (100%)	0	100	100
21	LL	109/121 (90%)	109 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	LM	71/126 (56%)	71 (100%)	0	100	100
23	LN	347/348 (100%)	347 (100%)	0	100	100
24	LO	80/97 (82%)	80 (100%)	0	100	100
25	LP	97/110 (88%)	97 (100%)	0	100	100
26	LQ	114/121 (94%)	114 (100%)	0	100	100
27	LR	96/100 (96%)	96 (100%)	0	100	100
28	LS	109/110 (99%)	109 (100%)	0	100	100
29	LT	88/89 (99%)	88 (100%)	0	100	100
30	LU	86/89 (97%)	86 (100%)	0	100	100
31	LV	92/94 (98%)	92 (100%)	0	100	100
32	LW	73/80 (91%)	72 (99%)	1 (1%)	67	79
33	LX	74/75 (99%)	74 (100%)	0	100	100
34	LY	64/65 (98%)	64 (100%)	0	100	100
35	LZ	47/48 (98%)	47 (100%)	0	100	100
37	NF	65/228 (28%)	65 (100%)	0	100	100
38	NK	61/115 (53%)	61 (100%)	0	100	100
39	NP	88/114 (77%)	88 (100%)	0	100	100
40	SA	298/348 (86%)	298 (100%)	0	100	100
41	SB	234/250 (94%)	234 (100%)	0	100	100
42	SC	192/252 (76%)	192 (100%)	0	100	100
43	SD	194/215 (90%)	194 (100%)	0	100	100
44	SE	198/223 (89%)	197 (100%)	1 (0%)	88	92
45	SF	188/199 (94%)	188 (100%)	0	100	100
46	SG	169/171 (99%)	169 (100%)	0	100	100
47	SK	212/213 (100%)	211 (100%)	1 (0%)	88	92
48	SQ	194/214 (91%)	194 (100%)	0	100	100
49	SR	545/574 (95%)	545 (100%)	0	100	100
50	SV	128/149 (86%)	127 (99%)	1 (1%)	81	88
All	All	6484/7300 (89%)	6479 (100%)	5 (0%)	93	96

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
14	LE	117	LYS
32	LW	79	ARG
44	SE	97	LYS
47	SK	57	ARG
50	SV	73	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
10	LA	93	HIS
11	LB	77	ASN
12	LC	122	HIS
20	LK	17	HIS
23	LN	322	HIS
30	LU	15	HIS
33	LX	56	HIS
39	NP	13	HIS
40	SA	21	ASN
40	SA	223	ASN
42	SC	190	HIS
47	SK	83	HIS
49	SR	91	HIS
49	SR	157	HIS
49	SR	209	HIS
49	SR	274	ASN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	L1	152/157 (96%)	19 (12%)	0
3	L3	3328/5070 (65%)	404 (12%)	5 (0%)
4	L4	119/121 (98%)	12 (10%)	1 (0%)
All	All	3599/5348 (67%)	435 (12%)	6 (0%)

All (435) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	L1	34	U
2	L1	35	C
2	L1	46	G
2	L1	59	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	L1	62	A
2	L1	63	U
2	L1	82	A
2	L1	83	C
2	L1	84	A
2	L1	86	U
2	L1	94	G
2	L1	103	A
2	L1	105	C
2	L1	111	U
2	L1	114	G
2	L1	127	U
2	L1	151	G
2	L1	154	G
2	L1	156	U
3	L3	39	A
3	L3	42	A
3	L3	48	G
3	L3	56	A
3	L3	58	G
3	L3	59	A
3	L3	64	A
3	L3	65	A
3	L3	66	A
3	L3	91	G
3	L3	108	A
3	L3	119	G
3	L3	159	C
3	L3	167	C
3	L3	169	G
3	L3	170	C
3	L3	171	U
3	L3	173	C
3	L3	181	C
3	L3	190	G
3	L3	200	U
3	L3	210	C
3	L3	218	A
3	L3	233	U
3	L3	234	G
3	L3	246	G
3	L3	261	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	263	G
3	L3	266	C
3	L3	316	U
3	L3	340	C
3	L3	387	G
3	L3	409	G
3	L3	410	A
3	L3	412	G
3	L3	449	C
3	L3	450	G
3	L3	452	A
3	L3	453	G
3	L3	454	U
3	L3	464	G
3	L3	467	U
3	L3	469	C
3	L3	472	C
3	L3	473	C
3	L3	479	G
3	L3	492	U
3	L3	493	G
3	L3	496	G
3	L3	497	G
3	L3	501	C
3	L3	502	C
3	L3	503	C
3	L3	504	G
3	L3	509	A
3	L3	510	U
3	L3	511	C
3	L3	658	C
3	L3	660	A
3	L3	667	A
3	L3	668	C
3	L3	669	C
3	L3	686	A
3	L3	697	G
3	L3	704	C
3	L3	731	G
3	L3	739	G
3	L3	741	C
3	L3	742	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	746	A
3	L3	757	G
3	L3	913	U
3	L3	915	A
3	L3	917	A
3	L3	918	G
3	L3	926	G
3	L3	932	A
3	L3	933	G
3	L3	943	A
3	L3	944	A
3	L3	945	U
3	L3	956	A
3	L3	960	A
3	L3	971	U
3	L3	972	C
3	L3	1066	G
3	L3	1072	C
3	L3	1080	C
3	L3	1169	G
3	L3	1171	G
3	L3	1173	G
3	L3	1178	G
3	L3	1180	C
3	L3	1181	C
3	L3	1182	C
3	L3	1201	U
3	L3	1203	G
3	L3	1211	G
3	L3	1214	C
3	L3	1215	C
3	L3	1216	C
3	L3	1253	G
3	L3	1254	A
3	L3	1255	A
3	L3	1256	G
3	L3	1266	G
3	L3	1269	G
3	L3	1270	A
3	L3	1273	G
3	L3	1280	C
3	L3	1284	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	1287	G
3	L3	1294	A
3	L3	1295	C
3	L3	1296	G
3	L3	1301	C
3	L3	1313	C
3	L3	1314	C
3	L3	1319	U
3	L3	1325	C
3	L3	1326	A2M
3	L3	1354	A
3	L3	1358	G
3	L3	1359	G
3	L3	1365	C
3	L3	1366	G
3	L3	1379	C
3	L3	1397	A
3	L3	1420	A
3	L3	1439	C
3	L3	1443	A
3	L3	1497	A
3	L3	1498	G
3	L3	1502	G
3	L3	1523	A
3	L3	1534	A2M
3	L3	1547	A
3	L3	1578	U
3	L3	1581	G
3	L3	1592	G
3	L3	1596	U
3	L3	1597	G
3	L3	1613	A
3	L3	1624	G
3	L3	1625	OMG
3	L3	1631	A
3	L3	1633	G
3	L3	1634	A
3	L3	1654	G
3	L3	1661	C
3	L3	1670	G
3	L3	1671	U
3	L3	1676	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	1677	PSU
3	L3	1678	C
3	L3	1691	G
3	L3	1721	G
3	L3	1726	U
3	L3	1734	G
3	L3	1791	U
3	L3	1804	A
3	L3	1815	G
3	L3	1821	G
3	L3	1822	U
3	L3	1836	G
3	L3	1837	A
3	L3	1842	G
3	L3	1854	G
3	L3	1875	C
3	L3	1880	G
3	L3	1882	U
3	L3	1887	G
3	L3	1897	A
3	L3	1910	G
3	L3	1919	G
3	L3	1921	C
3	L3	1922	G
3	L3	1925	G
3	L3	1969	G
3	L3	1973	G
3	L3	1974	U
3	L3	1978	C
3	L3	1984	A
3	L3	1997	U
3	L3	2002	A
3	L3	2016	C
3	L3	2021	G
3	L3	2026	A
3	L3	2041	A
3	L3	2044	U
3	L3	2046	G
3	L3	2055	G
3	L3	2056	G
3	L3	2069	A
3	L3	2084	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	2085	G
3	L3	2089	G
3	L3	2092	G
3	L3	2093	A
3	L3	2094	G
3	L3	2095	A
3	L3	2096	G
3	L3	2097	U
3	L3	2098	G
3	L3	2099	G
3	L3	2109	G
3	L3	2110	C
3	L3	2111	G
3	L3	2289	C
3	L3	2300	A
3	L3	2301	G
3	L3	2313	A
3	L3	2348	G
3	L3	2351	OMC
3	L3	2395	A
3	L3	2409	U
3	L3	2417	A
3	L3	2422	OMC
3	L3	2424	OMG
3	L3	2425	U
3	L3	2429	A
3	L3	2450	G
3	L3	2453	A
3	L3	2470	C
3	L3	2475	G
3	L3	2476	G
3	L3	2477	A
3	L3	2478	C
3	L3	2479	G
3	L3	2480	G
3	L3	2512	A
3	L3	2513	A
3	L3	2519	U
3	L3	2544	G
3	L3	2545	U
3	L3	2548	C
3	L3	2554	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	2587	A
3	L3	2589	C
3	L3	2627	C
3	L3	2653	C
3	L3	2669	C
3	L3	2687	U
3	L3	2694	G
3	L3	2695	A
3	L3	2696	A
3	L3	2711	G
3	L3	2724	G
3	L3	2742	G
3	L3	2743	A
3	L3	2760	G
3	L3	2764	A
3	L3	2769	U
3	L3	2787	A2M
3	L3	2788	U
3	L3	2790	U
3	L3	2814	C
3	L3	2826	U
3	L3	2827	G
3	L3	2855	G
3	L3	2877	G
3	L3	2902	G
3	L3	3593	C
3	L3	3595	U
3	L3	3597	G
3	L3	3615	G
3	L3	3626	G
3	L3	3635	A
3	L3	3644	U
3	L3	3653	A
3	L3	3662	A
3	L3	3673	C
3	L3	3674	G
3	L3	3696	C
3	L3	3697	U
3	L3	3701	OMC
3	L3	3775	A
3	L3	3838	U
3	L3	3840	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	3868	G
3	L3	3872	A
3	L3	3875	G
3	L3	3887	OMC
3	L3	3905	A
3	L3	3915	U
3	L3	4069	U
3	L3	4076	G
3	L3	4084	G
3	L3	4085	A
3	L3	4119	C
3	L3	4121	G
3	L3	4122	G
3	L3	4133	C
3	L3	4139	G
3	L3	4140	C
3	L3	4142	C
3	L3	4143	G
3	L3	4144	C
3	L3	4145	C
3	L3	4147	G
3	L3	4150	G
3	L3	4152	G
3	L3	4162	C
3	L3	4163	U
3	L3	4164	C
3	L3	4170	A
3	L3	4183	G
3	L3	4184	G
3	L3	4191	G
3	L3	4194	U
3	L3	4202	U
3	L3	4221	C
3	L3	4222	G
3	L3	4229	U
3	L3	4233	A
3	L3	4251	A
3	L3	4254	G
3	L3	4266	G
3	L3	4268	A
3	L3	4273	A
3	L3	4281	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	4295	U
3	L3	4305	G
3	L3	4306	OMU
3	L3	4330	G
3	L3	4332	C
3	L3	4373	G
3	L3	4376	A
3	L3	4377	G
3	L3	4378	A
3	L3	4387	C
3	L3	4405	G
3	L3	4415	A
3	L3	4418	G
3	L3	4438	U
3	L3	4439	U
3	L3	4453	C
3	L3	4464	A
3	L3	4466	C
3	L3	4475	G
3	L3	4491	G
3	L3	4498	OMU
3	L3	4512	U
3	L3	4513	A
3	L3	4519	C
3	L3	4523	A2M
3	L3	4524	G
3	L3	4545	G
3	L3	4548	A
3	L3	4549	G
3	L3	4555	U
3	L3	4556	U
3	L3	4558	U
3	L3	4560	C
3	L3	4584	A
3	L3	4590	A2M
3	L3	4608	G
3	L3	4618	OMG
3	L3	4636	PSU
3	L3	4637	OMG
3	L3	4656	A
3	L3	4670	C
3	L3	4672	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L3	4678	G
3	L3	4701	A
3	L3	4708	A
3	L3	4709	U
3	L3	4719	G
3	L3	4740	G
3	L3	4741	C
3	L3	4742	G
3	L3	4750	G
3	L3	4751	G
3	L3	4754	G
3	L3	4757	C
3	L3	4759	C
3	L3	4765	G
3	L3	4772	C
3	L3	4773	C
3	L3	4870	G
3	L3	4871	C
3	L3	4882	U
3	L3	4883	C
3	L3	4900	C
3	L3	4901	G
3	L3	4910	G
3	L3	4911	A
3	L3	4916	G
3	L3	4943	A
3	L3	4976	U
3	L3	5014	A
3	L3	5020	G
3	L3	5022	U
3	L3	5023	C
3	L3	5026	U
3	L3	5027	C
3	L3	5031	G
3	L3	5041	G
3	L3	5050	C
3	L3	5054	C
3	L3	5055	G
3	L3	5061	A
3	L3	5062	G
3	L3	5069	U
4	L4	7	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	L4	24	C
4	L4	49	A
4	L4	53	U
4	L4	54	A
4	L4	64	G
4	L4	66	G
4	L4	89	G
4	L4	97	G
4	L4	110	G
4	L4	111	C
4	L4	120	U

All (6) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	L3	496	G
3	L3	502	C
3	L3	503	C
3	L3	2095	A
3	L3	2469	C
4	L4	109	U

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

107 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	PSU	L3	3822	3	18,21,22	1.10	1 (5%)	22,30,33	1.85	5 (22%)
3	OMC	L3	3701	3	19,22,23	0.52	0	26,31,34	0.58	0
3	PSU	L3	1683	3	18,21,22	1.08	2 (11%)	22,30,33	1.84	5 (22%)
3	PSU	L3	2632	3	18,21,22	1.05	1 (5%)	22,30,33	1.78	4 (18%)
3	PSU	L3	1862	3	18,21,22	1.10	1 (5%)	22,30,33	1.78	5 (22%)
3	PSU	L3	4312	3	18,21,22	1.01	1 (5%)	22,30,33	1.94	4 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	PSU	L3	3730	3	18,21,22	1.03	1 (5%)	22,30,33	1.84	5 (22%)
3	PSU	L3	4500	3	18,21,22	1.03	1 (5%)	22,30,33	1.75	4 (18%)
3	PSU	L3	4431	3	18,21,22	1.07	1 (5%)	22,30,33	1.86	5 (22%)
3	OMG	L3	2364	3	18,26,27	1.21	3 (16%)	19,38,41	0.87	1 (5%)
3	PSU	L3	4493	3	18,21,22	1.05	2 (11%)	22,30,33	1.87	5 (22%)
3	PSU	L3	2508	3	18,21,22	1.02	1 (5%)	22,30,33	1.82	3 (13%)
23	HIC	LN	245	23	8,11,12	1.64	2 (25%)	6,14,16	1.24	1 (16%)
3	PSU	L3	4576	3	18,21,22	1.04	1 (5%)	22,30,33	1.81	4 (18%)
3	OMC	L3	4536	3	19,22,23	0.58	0	26,31,34	0.65	0
3	A2M	L3	400	3	18,25,26	1.21	3 (16%)	18,36,39	1.25	2 (11%)
3	OMC	L3	3887	3	19,22,23	0.58	0	26,31,34	0.66	0
3	OMG	L3	1522	3	18,26,27	1.22	2 (11%)	19,38,41	0.83	1 (5%)
3	OMG	L3	4228	3	18,26,27	1.33	3 (16%)	19,38,41	0.96	1 (5%)
3	PSU	L3	3715	3	18,21,22	1.06	1 (5%)	22,30,33	1.86	6 (27%)
3	OMG	L3	3899	3	18,26,27	1.22	3 (16%)	19,38,41	0.90	1 (5%)
3	PSU	L3	1792	3	18,21,22	1.05	1 (5%)	22,30,33	1.82	6 (27%)
3	OMC	L3	2861	3	19,22,23	0.56	0	26,31,34	0.60	0
3	UR3	L3	4530	3	19,22,23	1.10	3 (15%)	26,32,35	1.24	1 (3%)
3	PSU	L3	1536	3	18,21,22	1.03	2 (11%)	22,30,33	1.86	5 (22%)
3	OMG	L3	1316	3	18,26,27	1.18	2 (11%)	19,38,41	0.88	1 (5%)
3	A2M	L3	4590	3	18,25,26	1.25	3 (16%)	18,36,39	1.55	3 (16%)
3	A2M	L3	2787	3	18,25,26	1.16	2 (11%)	18,36,39	1.36	2 (11%)
3	OMC	L3	2351	3	19,22,23	0.67	0	26,31,34	0.89	2 (7%)
3	OMG	L3	3627	3	18,26,27	1.21	2 (11%)	19,38,41	0.89	1 (5%)
3	OMC	L3	2365	3	19,22,23	0.59	0	26,31,34	0.69	0
3	OMG	L3	4370	3	18,26,27	1.27	3 (16%)	19,38,41	0.95	1 (5%)
3	OMG	L3	4623	3	18,26,27	1.23	2 (11%)	19,38,41	0.93	1 (5%)
2	PSU	L1	55	2	18,21,22	1.06	1 (5%)	22,30,33	1.92	5 (22%)
3	PSU	L3	3734	3	18,21,22	1.10	1 (5%)	22,30,33	1.85	6 (27%)
3	OMG	L3	4618	3	18,26,27	1.22	3 (16%)	19,38,41	0.93	1 (5%)
3	PSU	L3	4673	3	18,21,22	1.03	2 (11%)	22,30,33	1.87	5 (22%)
3	PSU	L3	1677	3	18,21,22	1.03	1 (5%)	22,30,33	1.76	4 (18%)
2	PSU	L1	69	2	18,21,22	1.11	2 (11%)	22,30,33	1.78	5 (22%)
3	PSU	L3	1860	3	18,21,22	1.04	1 (5%)	22,30,33	1.84	6 (27%)
3	OMC	L3	2804	3	19,22,23	0.58	0	26,31,34	0.66	0
3	OMC	L3	3841	3	19,22,23	0.56	0	26,31,34	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	PSU	L3	4689	3	18,21,22	1.08	1 (5%)	22,30,33	1.88	4 (18%)
3	A2M	L3	398	3	18,25,26	1.21	3 (16%)	18,36,39	1.32	2 (11%)
3	PSU	L3	4457	3	18,21,22	1.08	1 (5%)	22,30,33	1.78	4 (18%)
3	PSU	L3	4552	3	18,21,22	1.04	1 (5%)	22,30,33	1.77	4 (18%)
3	A2M	L3	3830	3	18,25,26	1.19	2 (11%)	18,36,39	1.31	2 (11%)
3	6MZ	L3	4220	3	18,25,26	1.07	2 (11%)	16,36,39	2.11	4 (25%)
3	PSU	L3	1582	3	18,21,22	1.06	1 (5%)	22,30,33	1.90	4 (18%)
3	PSU	L3	5010	3	18,21,22	1.02	1 (5%)	22,30,33	1.82	4 (18%)
3	A2M	L3	3724	3	18,25,26	1.22	2 (11%)	18,36,39	1.25	2 (11%)
3	OMG	L3	2876	3	18,26,27	1.15	2 (11%)	19,38,41	0.85	1 (5%)
3	PSU	L3	4361	3	18,21,22	0.98	1 (5%)	22,30,33	1.75	4 (18%)
3	OMU	L3	4498	3	19,22,23	2.08	7 (36%)	26,31,34	1.72	5 (19%)
3	A2M	L3	4523	3	18,25,26	1.16	2 (11%)	18,36,39	1.26	1 (5%)
3	PSU	L3	3637	3	18,21,22	1.04	1 (5%)	22,30,33	1.90	5 (22%)
3	A2M	L3	4571	3	18,25,26	1.18	2 (11%)	18,36,39	1.22	2 (11%)
3	OMU	L3	4227	3	19,22,23	1.94	5 (26%)	26,31,34	1.77	4 (15%)
3	OMG	L3	4392	3	18,26,27	1.20	3 (16%)	19,38,41	0.85	1 (5%)
3	PSU	L3	4471	3	18,21,22	1.07	1 (5%)	22,30,33	1.89	5 (22%)
3	PSU	L3	4293	3	18,21,22	1.00	1 (5%)	22,30,33	1.66	4 (18%)
3	PSU	L3	3853	3	18,21,22	1.05	1 (5%)	22,30,33	1.70	4 (18%)
3	PSU	L3	4296	3	18,21,22	0.99	2 (11%)	22,30,33	1.96	4 (18%)
3	OMG	L3	4494	3	18,26,27	1.29	3 (16%)	19,38,41	0.89	1 (5%)
3	A2M	L3	2401	3	18,25,26	1.23	3 (16%)	18,36,39	1.27	2 (11%)
3	A2M	L3	3867	3	18,25,26	1.16	2 (11%)	18,36,39	1.27	2 (11%)
3	OMU	L3	3925	3	19,22,23	1.94	6 (31%)	26,31,34	1.74	5 (19%)
3	PSU	L3	4521	3	18,21,22	1.02	1 (5%)	22,30,33	1.81	4 (18%)
3	PSU	L3	5001	3	18,21,22	1.09	1 (5%)	22,30,33	1.80	5 (22%)
3	PSU	L3	3851	3	18,21,22	1.08	2 (11%)	22,30,33	1.82	6 (27%)
3	PSU	L3	2839	3	18,21,22	1.06	1 (5%)	22,30,33	1.79	4 (18%)
3	A2M	L3	1524	3	18,25,26	1.22	3 (16%)	18,36,39	1.32	2 (11%)
3	A2M	L3	2815	3	18,25,26	1.20	2 (11%)	18,36,39	1.25	2 (11%)
3	PSU	L3	3884	3	18,21,22	1.02	1 (5%)	22,30,33	1.76	4 (18%)
3	PSU	L3	4972	3	18,21,22	1.01	1 (5%)	22,30,33	1.79	4 (18%)
3	PSU	L3	4579	3	18,21,22	1.00	2 (11%)	22,30,33	1.81	4 (18%)
3	PSU	L3	3695	3	18,21,22	1.07	1 (5%)	22,30,33	1.84	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	OMG	L3	2424	3	18,26,27	1.22	2 (11%)	19,38,41	0.81	1 (5%)
3	PSU	L3	3920	3,51	18,21,22	1.06	2 (11%)	22,30,33	1.85	5 (22%)
3	OMG	L3	1625	3	18,26,27	1.20	2 (11%)	19,38,41	0.83	1 (5%)
3	PSU	L3	4353	3	18,21,22	1.00	1 (5%)	22,30,33	1.91	6 (27%)
3	A2M	L3	1326	3	18,25,26	1.19	3 (16%)	18,36,39	1.34	2 (11%)
3	PSU	L3	3639	3	18,21,22	1.05	2 (11%)	22,30,33	1.84	5 (22%)
3	PSU	L3	3844	3	18,21,22	1.05	1 (5%)	22,30,33	1.86	5 (22%)
3	OMU	L3	4620	3	19,22,23	1.92	5 (26%)	26,31,34	1.62	4 (15%)
3	OMU	L3	4306	3	19,22,23	1.93	5 (26%)	26,31,34	1.82	5 (19%)
3	PSU	L3	4636	3	18,21,22	1.04	1 (5%)	22,30,33	1.85	5 (22%)
3	A2M	L3	2363	3,51	18,25,26	1.22	3 (16%)	18,36,39	1.19	2 (11%)
3	OMU	L3	2415	3	19,22,23	2.01	6 (31%)	26,31,34	1.83	5 (19%)
3	OMC	L3	2824	3	19,22,23	0.58	0	26,31,34	0.59	0
3	OMC	L3	3869	3	19,22,23	0.60	0	26,31,34	0.68	0
3	A2M	L3	1871	3	18,25,26	1.19	2 (11%)	18,36,39	1.38	3 (16%)
3	PSU	L3	4299	3	18,21,22	0.99	2 (11%)	22,30,33	1.97	4 (18%)
3	OMC	L3	1340	3	19,22,23	0.65	0	26,31,34	0.71	0
3	OMC	L3	2422	3,51	19,22,23	0.57	0	26,31,34	0.72	0
3	OMG	L3	4637	3	18,26,27	1.18	2 (11%)	19,38,41	0.91	1 (5%)
3	A2M	L3	1534	3,51	18,25,26	1.19	3 (16%)	18,36,39	1.42	3 (16%)
3	PSU	L3	4532	3	18,21,22	1.07	1 (5%)	22,30,33	1.93	5 (22%)
3	OMG	L3	3744	3	18,26,27	1.15	2 (11%)	19,38,41	0.88	1 (5%)
3	PSU	L3	4628	3	18,21,22	1.01	2 (11%)	22,30,33	1.88	5 (22%)
3	PSU	L3	4403	3	18,21,22	1.02	1 (5%)	22,30,33	1.80	4 (18%)
3	OMC	L3	4456	3	19,22,23	0.54	0	26,31,34	0.59	0
3	OMG	L3	4499	3	18,26,27	1.16	2 (11%)	19,38,41	0.82	1 (5%)
3	A2M	L3	3718	3	18,25,26	1.24	3 (16%)	18,36,39	1.18	1 (5%)
3	OMU	L3	2837	3	19,22,23	2.00	7 (36%)	26,31,34	1.75	5 (19%)
3	A2M	L3	3825	3	18,25,26	1.19	2 (11%)	18,36,39	1.23	1 (5%)
2	OMG	L1	75	2	18,26,27	1.17	2 (11%)	19,38,41	0.86	1 (5%)

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	PSU	L3	3822	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3701	3	-	7/9/27/28	0/2/2/2
3	PSU	L3	1683	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	2632	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1862	3	-	2/7/25/26	0/2/2/2
3	PSU	L3	4312	3	-	1/7/25/26	0/2/2/2
3	PSU	L3	3730	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4500	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4431	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2364	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4493	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	2508	3	-	0/7/25/26	0/2/2/2
23	HIC	LN	245	23	-	2/5/6/8	0/1/1/1
3	PSU	L3	4576	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	4536	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	400	3	-	0/5/27/28	0/3/3/3
3	OMC	L3	3887	3	-	2/9/27/28	0/2/2/2
3	OMG	L3	1522	3	-	0/5/27/28	0/3/3/3
3	OMG	L3	4228	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	3715	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	3899	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	1792	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2861	3	-	1/9/27/28	0/2/2/2
3	UR3	L3	4530	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1536	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	1316	3	-	1/5/27/28	0/3/3/3
3	A2M	L3	4590	3	-	3/5/27/28	0/3/3/3
3	A2M	L3	2787	3	-	3/5/27/28	0/3/3/3
3	OMC	L3	2351	3	-	4/9/27/28	0/2/2/2
3	OMG	L3	3627	3	-	1/5/27/28	0/3/3/3
3	OMC	L3	2365	3	-	0/9/27/28	0/2/2/2
3	OMG	L3	4370	3	-	0/5/27/28	0/3/3/3
3	OMG	L3	4623	3	-	0/5/27/28	0/3/3/3
2	PSU	L1	55	2	-	0/7/25/26	0/2/2/2
3	PSU	L3	3734	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4618	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4673	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1677	3	-	3/7/25/26	0/2/2/2
2	PSU	L1	69	2	-	0/7/25/26	0/2/2/2
3	PSU	L3	1860	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2804	3	-	1/9/27/28	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMC	L3	3841	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	4689	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	398	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4457	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4552	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3830	3	-	1/5/27/28	0/3/3/3
3	6MZ	L3	4220	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	1582	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	5010	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3724	3	-	2/5/27/28	0/3/3/3
3	OMG	L3	2876	3	-	4/5/27/28	0/3/3/3
3	PSU	L3	4361	3	-	0/7/25/26	0/2/2/2
3	OMU	L3	4498	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	4523	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	3637	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	4571	3	-	1/5/27/28	0/3/3/3
3	OMU	L3	4227	3	-	0/9/27/28	0/2/2/2
3	OMG	L3	4392	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4471	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4293	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3853	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4296	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4494	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	2401	3	-	2/5/27/28	0/3/3/3
3	A2M	L3	3867	3	-	1/5/27/28	0/3/3/3
3	OMU	L3	3925	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	4521	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	5001	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3851	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	2839	3	-	1/7/25/26	0/2/2/2
3	A2M	L3	1524	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	2815	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	3884	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4972	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4579	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3695	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2424	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	3920	3,51	-	0/7/25/26	0/2/2/2
3	OMG	L3	1625	3	-	4/5/27/28	0/3/3/3
3	PSU	L3	4353	3	-	1/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A2M	L3	1326	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	3639	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3844	3	-	1/7/25/26	0/2/2/2
3	OMU	L3	4620	3	-	0/9/27/28	0/2/2/2
3	OMU	L3	4306	3	-	4/9/27/28	0/2/2/2
3	PSU	L3	4636	3	-	5/7/25/26	0/2/2/2
3	A2M	L3	2363	3,51	-	1/5/27/28	0/3/3/3
3	OMU	L3	2415	3	-	2/9/27/28	0/2/2/2
3	OMC	L3	2824	3	-	0/9/27/28	0/2/2/2
3	OMC	L3	3869	3	-	0/9/27/28	0/2/2/2
3	A2M	L3	1871	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	4299	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	1340	3	-	1/9/27/28	0/2/2/2
3	OMC	L3	2422	3,51	-	2/9/27/28	0/2/2/2
3	OMG	L3	4637	3	-	3/5/27/28	0/3/3/3
3	A2M	L3	1534	3,51	-	2/5/27/28	0/3/3/3
3	PSU	L3	4532	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	3744	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4628	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4403	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	4456	3	-	1/9/27/28	0/2/2/2
3	OMG	L3	4499	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	3718	3	-	1/5/27/28	0/3/3/3
3	OMU	L3	2837	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	3825	3	-	1/5/27/28	0/3/3/3
2	OMG	L1	75	2	-	1/5/27/28	0/3/3/3

All (196) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4498	OMU	C6-N1	4.75	1.49	1.38
3	L3	2415	OMU	C6-N1	4.66	1.49	1.38
3	L3	4620	OMU	C6-N1	4.60	1.49	1.38
3	L3	2837	OMU	C6-N1	4.58	1.49	1.38
3	L3	4227	OMU	C6-N1	4.55	1.49	1.38
3	L3	4306	OMU	C6-N1	4.53	1.48	1.38
3	L3	3925	OMU	C6-N1	4.51	1.48	1.38
3	L3	4498	OMU	C2-N1	4.30	1.45	1.38
3	L3	4498	OMU	C5-C4	4.09	1.52	1.43
3	L3	2415	OMU	C5-C4	4.05	1.52	1.43
3	L3	2837	OMU	C2-N1	3.94	1.44	1.38

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2415	OMU	C2-N1	3.89	1.44	1.38
3	L3	2837	OMU	C5-C4	3.88	1.52	1.43
3	L3	3925	OMU	C5-C4	3.87	1.52	1.43
3	L3	4227	OMU	C2-N1	3.82	1.44	1.38
3	L3	4306	OMU	C2-N1	3.77	1.44	1.38
3	L3	4227	OMU	C5-C4	3.77	1.52	1.43
3	L3	4620	OMU	C2-N1	3.71	1.44	1.38
3	L3	4620	OMU	C5-C4	3.67	1.51	1.43
3	L3	4306	OMU	C5-C4	3.63	1.51	1.43
23	LN	245	HIC	CD2-CG	3.60	1.41	1.36
3	L3	3925	OMU	C2-N1	3.59	1.44	1.38
3	L3	3822	PSU	C6-C5	3.48	1.39	1.35
3	L3	3734	PSU	C6-C5	3.41	1.39	1.35
3	L3	1862	PSU	C6-C5	3.40	1.39	1.35
3	L3	4457	PSU	C6-C5	3.36	1.39	1.35
2	L1	69	PSU	C6-C5	3.33	1.39	1.35
3	L3	4431	PSU	C6-C5	3.33	1.39	1.35
3	L3	4228	OMG	C8-N7	-3.31	1.29	1.35
3	L3	1871	A2M	O4'-C1'	3.29	1.45	1.41
3	L3	3715	PSU	C6-C5	3.26	1.39	1.35
3	L3	3695	PSU	C6-C5	3.25	1.39	1.35
3	L3	4500	PSU	C6-C5	3.23	1.39	1.35
3	L3	3853	PSU	C6-C5	3.21	1.39	1.35
3	L3	4494	OMG	C8-N7	-3.20	1.29	1.35
3	L3	1582	PSU	C6-C5	3.19	1.39	1.35
3	L3	5001	PSU	C6-C5	3.19	1.39	1.35
3	L3	1860	PSU	C6-C5	3.19	1.39	1.35
3	L3	4618	OMG	C8-N7	-3.18	1.29	1.35
3	L3	4532	PSU	C6-C5	3.18	1.39	1.35
3	L3	2839	PSU	C6-C5	3.18	1.39	1.35
3	L3	4576	PSU	C6-C5	3.17	1.39	1.35
3	L3	3851	PSU	C6-C5	3.15	1.39	1.35
3	L3	4471	PSU	C6-C5	3.15	1.39	1.35
3	L3	4689	PSU	C6-C5	3.15	1.39	1.35
3	L3	4636	PSU	C6-C5	3.14	1.39	1.35
3	L3	3637	PSU	C6-C5	3.14	1.39	1.35
3	L3	3724	A2M	O4'-C1'	3.14	1.45	1.41
2	L1	55	PSU	C6-C5	3.13	1.39	1.35
3	L3	3730	PSU	C6-C5	3.11	1.38	1.35
3	L3	3884	PSU	C6-C5	3.10	1.38	1.35
3	L3	5010	PSU	C6-C5	3.10	1.38	1.35
3	L3	1792	PSU	C6-C5	3.10	1.38	1.35

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2632	PSU	C6-C5	3.10	1.38	1.35
3	L3	4306	OMU	O4-C4	-3.09	1.18	1.24
3	L3	3844	PSU	C6-C5	3.08	1.38	1.35
3	L3	4403	PSU	C6-C5	3.08	1.38	1.35
3	L3	4228	OMG	C5-C6	-3.05	1.41	1.47
3	L3	4552	PSU	C6-C5	3.05	1.38	1.35
3	L3	2815	A2M	O4'-C1'	3.02	1.45	1.41
3	L3	4620	OMU	O4-C4	-3.02	1.18	1.24
3	L3	4623	OMG	C8-N7	-3.02	1.29	1.35
3	L3	398	A2M	O4'-C1'	3.02	1.45	1.41
3	L3	1683	PSU	C6-C5	3.01	1.38	1.35
3	L3	3920	PSU	C6-C5	3.01	1.38	1.35
3	L3	2364	OMG	C8-N7	-3.01	1.29	1.35
3	L3	400	A2M	O4'-C1'	3.01	1.45	1.41
3	L3	4521	PSU	C6-C5	2.99	1.38	1.35
3	L3	4972	PSU	C6-C5	2.99	1.38	1.35
3	L3	2401	A2M	O4'-C1'	2.99	1.45	1.41
3	L3	2424	OMG	C8-N7	-2.98	1.30	1.35
3	L3	4227	OMU	O4-C4	-2.97	1.18	1.24
3	L3	4673	PSU	C6-C5	2.96	1.38	1.35
3	L3	3718	A2M	O4'-C1'	2.94	1.45	1.41
3	L3	4493	PSU	C6-C5	2.94	1.38	1.35
3	L3	3830	A2M	O4'-C1'	2.93	1.45	1.41
3	L3	2508	PSU	C6-C5	2.92	1.38	1.35
3	L3	3639	PSU	C6-C5	2.91	1.38	1.35
3	L3	4370	OMG	C8-N7	-2.91	1.30	1.35
3	L3	1625	OMG	C8-N7	-2.91	1.30	1.35
3	L3	4637	OMG	C8-N7	-2.91	1.30	1.35
3	L3	4361	PSU	C6-C5	2.91	1.38	1.35
3	L3	1522	OMG	C8-N7	-2.90	1.30	1.35
3	L3	3825	A2M	O4'-C1'	2.89	1.45	1.41
3	L3	1536	PSU	C6-C5	2.89	1.38	1.35
3	L3	4530	UR3	C2-N1	-2.88	1.34	1.38
3	L3	4353	PSU	C6-C5	2.88	1.38	1.35
3	L3	1326	A2M	O4'-C1'	2.88	1.45	1.41
3	L3	4571	A2M	O4'-C1'	2.88	1.45	1.41
3	L3	2876	OMG	C8-N7	-2.87	1.30	1.35
3	L3	3899	OMG	C8-N7	-2.87	1.30	1.35
3	L3	4392	OMG	C8-N7	-2.84	1.30	1.35
3	L3	4499	OMG	C8-N7	-2.81	1.30	1.35
2	L1	75	OMG	C8-N7	-2.81	1.30	1.35
3	L3	2415	OMU	O4-C4	-2.80	1.19	1.24

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2837	OMU	O4-C4	-2.80	1.19	1.24
3	L3	3925	OMU	O4-C4	-2.80	1.19	1.24
3	L3	2363	A2M	O4'-C1'	2.78	1.45	1.41
3	L3	1316	OMG	C8-N7	-2.78	1.30	1.35
3	L3	3867	A2M	O4'-C1'	2.78	1.45	1.41
3	L3	3627	OMG	C8-N7	-2.77	1.30	1.35
3	L3	4293	PSU	C6-C5	2.77	1.38	1.35
3	L3	4312	PSU	C6-C5	2.76	1.38	1.35
3	L3	4494	OMG	C5-C6	-2.75	1.41	1.47
3	L3	4579	PSU	C6-C5	2.75	1.38	1.35
3	L3	4523	A2M	O4'-C1'	2.74	1.44	1.41
3	L3	4628	PSU	C6-C5	2.74	1.38	1.35
3	L3	2363	A2M	C8-N7	-2.74	1.29	1.34
3	L3	1677	PSU	C6-C5	2.73	1.38	1.35
3	L3	4498	OMU	O4-C4	-2.72	1.19	1.24
3	L3	1524	A2M	O4'-C1'	2.71	1.44	1.41
3	L3	3744	OMG	C8-N7	-2.71	1.30	1.35
3	L3	4590	A2M	O4'-C1'	2.70	1.44	1.41
3	L3	1522	OMG	C5-C6	-2.68	1.42	1.47
3	L3	2424	OMG	C5-C6	-2.67	1.42	1.47
3	L3	3899	OMG	C5-C6	-2.66	1.42	1.47
3	L3	3718	A2M	C8-N7	-2.66	1.30	1.34
3	L3	1625	OMG	C5-C6	-2.65	1.42	1.47
3	L3	4370	OMG	C5-C6	-2.65	1.42	1.47
3	L3	4498	OMU	C2-N3	2.62	1.42	1.38
3	L3	4590	A2M	C8-N7	-2.62	1.30	1.34
3	L3	4306	OMU	O2-C2	-2.62	1.18	1.23
3	L3	2787	A2M	O4'-C1'	2.61	1.44	1.41
3	L3	1534	A2M	O4'-C1'	2.61	1.44	1.41
3	L3	3627	OMG	C5-C6	-2.60	1.42	1.47
3	L3	4220	6MZ	C8-N7	-2.59	1.30	1.34
3	L3	1534	A2M	C8-N7	-2.59	1.30	1.34
3	L3	4392	OMG	C5-C6	-2.57	1.42	1.47
3	L3	4623	OMG	C5-C6	-2.56	1.42	1.47
3	L3	4571	A2M	C8-N7	-2.56	1.30	1.34
3	L3	4296	PSU	C6-C5	2.54	1.38	1.35
3	L3	4530	UR3	C4-N3	-2.53	1.34	1.40
3	L3	2364	OMG	C5-C6	-2.53	1.42	1.47
3	L3	2401	A2M	C8-N7	-2.53	1.30	1.34
3	L3	400	A2M	C8-N7	-2.52	1.30	1.34
3	L3	4637	OMG	C5-C6	-2.51	1.42	1.47
3	L3	2787	A2M	C8-N7	-2.51	1.30	1.34

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	3825	A2M	C8-N7	-2.51	1.30	1.34
2	L1	75	OMG	C5-C6	-2.51	1.42	1.47
3	L3	1524	A2M	C8-N7	-2.50	1.30	1.34
3	L3	398	A2M	C8-N7	-2.50	1.30	1.34
3	L3	4523	A2M	C8-N7	-2.50	1.30	1.34
3	L3	3830	A2M	C8-N7	-2.49	1.30	1.34
3	L3	1316	OMG	C5-C6	-2.48	1.42	1.47
3	L3	3724	A2M	C8-N7	-2.47	1.30	1.34
3	L3	2815	A2M	C8-N7	-2.47	1.30	1.34
3	L3	2837	OMU	C2-N3	2.45	1.42	1.38
3	L3	1871	A2M	C8-N7	-2.43	1.30	1.34
3	L3	3867	A2M	C8-N7	-2.43	1.30	1.34
3	L3	4618	OMG	C5-C6	-2.43	1.42	1.47
3	L3	3744	OMG	C5-C6	-2.42	1.42	1.47
3	L3	4499	OMG	C5-C6	-2.42	1.42	1.47
3	L3	2876	OMG	C5-C6	-2.42	1.42	1.47
3	L3	4299	PSU	C6-C5	2.40	1.38	1.35
3	L3	1326	A2M	C8-N7	-2.37	1.30	1.34
3	L3	4227	OMU	O2-C2	-2.37	1.18	1.23
3	L3	4620	OMU	O2-C2	-2.36	1.18	1.23
3	L3	4530	UR3	C2-N3	-2.33	1.34	1.39
3	L3	2415	OMU	O2-C2	-2.33	1.18	1.23
3	L3	2415	OMU	C2-N3	2.32	1.42	1.38
3	L3	4590	A2M	C4-N3	-2.32	1.32	1.35
3	L3	3925	OMU	O2-C2	-2.29	1.18	1.23
3	L3	3925	OMU	C2-N3	2.28	1.42	1.38
3	L3	1524	A2M	C4-N3	-2.26	1.32	1.35
3	L3	4370	OMG	C5-C4	-2.26	1.37	1.43
3	L3	1534	A2M	C4-N3	-2.24	1.32	1.35
3	L3	3718	A2M	C4-N3	-2.20	1.32	1.35
3	L3	4220	6MZ	C4-N3	-2.19	1.32	1.35
3	L3	2837	OMU	O2-C2	-2.18	1.19	1.23
3	L3	4494	OMG	C5-C4	-2.16	1.37	1.43
3	L3	4228	OMG	C5-C4	-2.15	1.37	1.43
3	L3	1326	A2M	C4-N3	-2.13	1.32	1.35
3	L3	4618	OMG	C5-C4	-2.11	1.37	1.43
3	L3	2401	A2M	C4-N3	-2.09	1.32	1.35
3	L3	4392	OMG	C5-C4	-2.08	1.37	1.43
3	L3	4579	PSU	C4-C5	-2.07	1.38	1.44
3	L3	3639	PSU	C4-C5	-2.07	1.38	1.44
3	L3	400	A2M	C4-N3	-2.07	1.32	1.35
3	L3	4296	PSU	C4-C5	-2.06	1.38	1.44

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4628	PSU	C4-C5	-2.06	1.38	1.44
2	L1	69	PSU	O4'-C1'	-2.06	1.41	1.43
3	L3	1683	PSU	C4-C5	-2.05	1.38	1.44
3	L3	4498	OMU	C4-N3	2.05	1.42	1.38
3	L3	4498	OMU	O2-C2	-2.04	1.19	1.23
3	L3	3920	PSU	C4-C5	-2.04	1.38	1.44
3	L3	3851	PSU	O4'-C1'	-2.04	1.41	1.43
3	L3	2364	OMG	C5-C4	-2.04	1.37	1.43
3	L3	3899	OMG	C5-C4	-2.04	1.37	1.43
23	LN	245	HIC	CZ-NE2	-2.03	1.42	1.48
3	L3	398	A2M	C4-N3	-2.03	1.32	1.35
3	L3	4493	PSU	C4-C5	-2.03	1.38	1.44
3	L3	4299	PSU	C4-C5	-2.02	1.38	1.44
3	L3	1536	PSU	C4-C5	-2.02	1.38	1.44
3	L3	2363	A2M	C4-N3	-2.01	1.32	1.35
3	L3	2837	OMU	C4-N3	2.01	1.42	1.38
3	L3	4673	PSU	C4-C5	-2.01	1.38	1.44

All (318) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	4227	OMU	C4-N3-C2	-5.41	119.45	126.58
3	L3	2415	OMU	C4-N3-C2	-5.40	119.46	126.58
3	L3	4306	OMU	C4-N3-C2	-5.26	119.64	126.58
3	L3	4498	OMU	C4-N3-C2	-5.23	119.69	126.58
3	L3	4296	PSU	C4-N3-C2	-5.22	118.81	126.34
3	L3	2837	OMU	C4-N3-C2	-5.21	119.71	126.58
3	L3	4220	6MZ	C2-N1-C6	5.20	121.05	116.59
3	L3	3925	OMU	C4-N3-C2	-5.12	119.83	126.58
3	L3	4299	PSU	C4-N3-C2	-5.10	119.00	126.34
3	L3	4689	PSU	C4-N3-C2	-5.10	119.00	126.34
3	L3	4312	PSU	C4-N3-C2	-5.07	119.03	126.34
3	L3	4299	PSU	N1-C2-N3	4.96	120.75	115.13
3	L3	4312	PSU	N1-C2-N3	4.95	120.74	115.13
3	L3	4689	PSU	N1-C2-N3	4.95	120.74	115.13
3	L3	1582	PSU	C4-N3-C2	-4.91	119.26	126.34
3	L3	4353	PSU	N1-C2-N3	4.91	120.69	115.13
3	L3	4493	PSU	C4-N3-C2	-4.89	119.29	126.34
3	L3	4532	PSU	C4-N3-C2	-4.84	119.36	126.34
3	L3	3637	PSU	C4-N3-C2	-4.84	119.37	126.34
3	L3	4353	PSU	C4-N3-C2	-4.83	119.38	126.34
3	L3	3637	PSU	N1-C2-N3	4.82	120.59	115.13

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	4471	PSU	N1-C2-N3	4.82	120.59	115.13
3	L3	4532	PSU	N1-C2-N3	4.81	120.58	115.13
3	L3	2508	PSU	C4-N3-C2	-4.81	119.41	126.34
3	L3	4636	PSU	C4-N3-C2	-4.79	119.44	126.34
3	L3	4471	PSU	C4-N3-C2	-4.78	119.45	126.34
2	L1	55	PSU	C4-N3-C2	-4.77	119.47	126.34
3	L3	5010	PSU	C4-N3-C2	-4.76	119.47	126.34
2	L1	55	PSU	N1-C2-N3	4.74	120.50	115.13
3	L3	4590	A2M	N3-C2-N1	-4.74	121.27	128.68
3	L3	3695	PSU	C4-N3-C2	-4.73	119.52	126.34
3	L3	4403	PSU	C4-N3-C2	-4.72	119.53	126.34
3	L3	1582	PSU	N1-C2-N3	4.72	120.47	115.13
3	L3	1683	PSU	N1-C2-N3	4.71	120.47	115.13
3	L3	4493	PSU	N1-C2-N3	4.70	120.46	115.13
3	L3	4296	PSU	N1-C2-N3	4.70	120.45	115.13
3	L3	4673	PSU	C4-N3-C2	-4.70	119.57	126.34
3	L3	1536	PSU	C4-N3-C2	-4.69	119.58	126.34
3	L3	4628	PSU	N1-C2-N3	4.69	120.44	115.13
3	L3	3851	PSU	C4-N3-C2	-4.69	119.59	126.34
3	L3	4530	UR3	C4-N3-C2	-4.69	120.15	124.56
3	L3	3844	PSU	N1-C2-N3	4.68	120.43	115.13
3	L3	3715	PSU	N1-C2-N3	4.68	120.43	115.13
3	L3	2632	PSU	C4-N3-C2	-4.67	119.60	126.34
3	L3	4628	PSU	C4-N3-C2	-4.67	119.61	126.34
3	L3	4431	PSU	C4-N3-C2	-4.67	119.61	126.34
3	L3	3920	PSU	C4-N3-C2	-4.65	119.64	126.34
3	L3	1677	PSU	C4-N3-C2	-4.65	119.64	126.34
3	L3	3844	PSU	C4-N3-C2	-4.64	119.65	126.34
3	L3	4673	PSU	N1-C2-N3	4.64	120.39	115.13
3	L3	4576	PSU	C4-N3-C2	-4.64	119.65	126.34
3	L3	4972	PSU	C4-N3-C2	-4.64	119.65	126.34
3	L3	3730	PSU	N1-C2-N3	4.64	120.38	115.13
3	L3	3639	PSU	C4-N3-C2	-4.64	119.66	126.34
3	L3	4521	PSU	C4-N3-C2	-4.63	119.66	126.34
3	L3	3715	PSU	C4-N3-C2	-4.63	119.67	126.34
3	L3	4500	PSU	C4-N3-C2	-4.63	119.67	126.34
3	L3	3730	PSU	C4-N3-C2	-4.61	119.69	126.34
3	L3	2839	PSU	C4-N3-C2	-4.61	119.69	126.34
3	L3	3734	PSU	C4-N3-C2	-4.61	119.70	126.34
3	L3	5001	PSU	C4-N3-C2	-4.61	119.70	126.34
3	L3	4636	PSU	N1-C2-N3	4.61	120.35	115.13
3	L3	3734	PSU	N1-C2-N3	4.60	120.34	115.13

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	1792	PSU	N1-C2-N3	4.60	120.34	115.13
3	L3	1536	PSU	N1-C2-N3	4.60	120.34	115.13
3	L3	1683	PSU	C4-N3-C2	-4.60	119.72	126.34
3	L3	3822	PSU	N1-C2-N3	4.59	120.33	115.13
3	L3	3822	PSU	C4-N3-C2	-4.59	119.72	126.34
3	L3	4457	PSU	N1-C2-N3	4.58	120.32	115.13
3	L3	4220	6MZ	C9-N6-C6	-4.58	118.92	122.87
3	L3	2839	PSU	N1-C2-N3	4.58	120.32	115.13
3	L3	1792	PSU	C4-N3-C2	-4.58	119.74	126.34
3	L3	4576	PSU	N1-C2-N3	4.58	120.32	115.13
3	L3	1860	PSU	N1-C2-N3	4.57	120.31	115.13
3	L3	1860	PSU	C4-N3-C2	-4.57	119.76	126.34
3	L3	4361	PSU	C4-N3-C2	-4.56	119.77	126.34
3	L3	4579	PSU	C4-N3-C2	-4.55	119.79	126.34
3	L3	4521	PSU	N1-C2-N3	4.54	120.28	115.13
3	L3	1677	PSU	N1-C2-N3	4.54	120.27	115.13
3	L3	5010	PSU	N1-C2-N3	4.53	120.26	115.13
3	L3	1862	PSU	C4-N3-C2	-4.53	119.81	126.34
3	L3	4552	PSU	C4-N3-C2	-4.53	119.81	126.34
3	L3	4361	PSU	N1-C2-N3	4.53	120.26	115.13
3	L3	5001	PSU	N1-C2-N3	4.53	120.26	115.13
3	L3	4431	PSU	N1-C2-N3	4.52	120.25	115.13
3	L3	3884	PSU	C4-N3-C2	-4.51	119.84	126.34
3	L3	3695	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	3639	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	3851	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	3884	PSU	N1-C2-N3	4.50	120.22	115.13
3	L3	3920	PSU	N1-C2-N3	4.48	120.21	115.13
3	L3	4403	PSU	N1-C2-N3	4.48	120.20	115.13
2	L1	69	PSU	C4-N3-C2	-4.48	119.89	126.34
3	L3	4620	OMU	C4-N3-C2	-4.47	120.68	126.58
3	L3	4972	PSU	N1-C2-N3	4.47	120.20	115.13
3	L3	1862	PSU	N1-C2-N3	4.47	120.19	115.13
3	L3	2632	PSU	N1-C2-N3	4.46	120.19	115.13
3	L3	4306	OMU	N3-C2-N1	4.46	120.81	114.89
3	L3	4457	PSU	C4-N3-C2	-4.46	119.92	126.34
3	L3	2508	PSU	N1-C2-N3	4.46	120.18	115.13
3	L3	4579	PSU	N1-C2-N3	4.45	120.17	115.13
3	L3	3853	PSU	C4-N3-C2	-4.44	119.94	126.34
3	L3	2415	OMU	N3-C2-N1	4.42	120.75	114.89
2	L1	69	PSU	N1-C2-N3	4.39	120.11	115.13
3	L3	4500	PSU	N1-C2-N3	4.38	120.10	115.13

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	4552	PSU	N1-C2-N3	4.38	120.09	115.13
3	L3	3853	PSU	N1-C2-N3	4.32	120.03	115.13
3	L3	4293	PSU	N1-C2-N3	4.30	120.01	115.13
3	L3	4293	PSU	C4-N3-C2	-4.26	120.20	126.34
3	L3	3830	A2M	N3-C2-N1	-4.15	122.20	128.68
3	L3	1524	A2M	N3-C2-N1	-4.12	122.23	128.68
3	L3	3925	OMU	N3-C2-N1	4.09	120.33	114.89
3	L3	398	A2M	N3-C2-N1	-4.09	122.28	128.68
3	L3	4227	OMU	N3-C2-N1	4.09	120.32	114.89
3	L3	4523	A2M	N3-C2-N1	-4.08	122.30	128.68
3	L3	2787	A2M	N3-C2-N1	-4.06	122.33	128.68
3	L3	1534	A2M	N3-C2-N1	-4.03	122.38	128.68
3	L3	3825	A2M	N3-C2-N1	-4.01	122.41	128.68
3	L3	4498	OMU	N3-C2-N1	4.00	120.21	114.89
3	L3	3724	A2M	N3-C2-N1	-4.00	122.42	128.68
3	L3	1326	A2M	N3-C2-N1	-3.99	122.44	128.68
3	L3	2815	A2M	N3-C2-N1	-3.97	122.47	128.68
3	L3	2837	OMU	N3-C2-N1	3.97	120.17	114.89
3	L3	1871	A2M	N3-C2-N1	-3.96	122.48	128.68
3	L3	3867	A2M	N3-C2-N1	-3.96	122.48	128.68
3	L3	4220	6MZ	N3-C2-N1	-3.95	122.50	128.68
3	L3	2401	A2M	N3-C2-N1	-3.94	122.52	128.68
3	L3	400	A2M	N3-C2-N1	-3.93	122.54	128.68
3	L3	4571	A2M	N3-C2-N1	-3.88	122.62	128.68
3	L3	4227	OMU	C5-C4-N3	3.81	120.53	114.84
3	L3	2363	A2M	N3-C2-N1	-3.77	122.78	128.68
3	L3	3718	A2M	N3-C2-N1	-3.75	122.81	128.68
3	L3	4620	OMU	C5-C4-N3	3.64	120.28	114.84
3	L3	4620	OMU	N3-C2-N1	3.58	119.65	114.89
3	L3	4498	OMU	C5-C4-N3	3.53	120.12	114.84
3	L3	2837	OMU	C5-C4-N3	3.50	120.08	114.84
3	L3	4306	OMU	C5-C4-N3	3.50	120.07	114.84
3	L3	2415	OMU	C5-C4-N3	3.49	120.06	114.84
3	L3	3925	OMU	C5-C4-N3	3.39	119.91	114.84
3	L3	4296	PSU	O2-C2-N1	-3.31	119.15	122.79
3	L3	2837	OMU	O4-C4-C5	-3.02	119.85	125.16
3	L3	1536	PSU	O2-C2-N1	-2.96	119.53	122.79
3	L3	3925	OMU	O4-C4-C5	-2.95	119.98	125.16
3	L3	4579	PSU	O2-C2-N1	-2.90	119.60	122.79
3	L3	4227	OMU	O4-C4-C5	-2.87	120.11	125.16
3	L3	4498	OMU	O4-C4-C5	-2.87	120.11	125.16
3	L3	4628	PSU	O2-C2-N1	-2.86	119.64	122.79

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	3851	PSU	O2-C2-N1	-2.84	119.67	122.79
2	L1	55	PSU	O2-C2-N1	-2.83	119.67	122.79
3	L3	4532	PSU	C6-C5-C4	2.83	120.18	118.20
3	L3	3920	PSU	O2-C2-N1	-2.83	119.67	122.79
3	L3	4299	PSU	C6-C5-C4	2.82	120.17	118.20
3	L3	4620	OMU	O4-C4-C5	-2.81	120.21	125.16
3	L3	3730	PSU	O2-C2-N1	-2.80	119.70	122.79
2	L1	55	PSU	C6-C5-C4	2.79	120.15	118.20
3	L3	2415	OMU	O4-C4-C5	-2.78	120.28	125.16
3	L3	5010	PSU	O2-C2-N1	-2.75	119.76	122.79
3	L3	3822	PSU	C6-C5-C4	2.72	120.10	118.20
3	L3	3844	PSU	O2-C2-N1	-2.72	119.79	122.79
3	L3	4306	OMU	O4-C4-C5	-2.72	120.37	125.16
3	L3	4312	PSU	O2-C2-N1	-2.72	119.80	122.79
3	L3	3715	PSU	O2-C2-N1	-2.72	119.80	122.79
3	L3	4521	PSU	O2-C2-N1	-2.70	119.81	122.79
3	L3	4431	PSU	C6-C5-C4	2.70	120.09	118.20
3	L3	4370	OMG	O6-C6-C5	2.69	129.62	124.37
3	L3	3822	PSU	O2-C2-N1	-2.68	119.84	122.79
3	L3	3734	PSU	O2-C2-N1	-2.68	119.84	122.79
3	L3	4353	PSU	O2-C2-N1	-2.67	119.85	122.79
3	L3	4431	PSU	O2-C2-N1	-2.67	119.85	122.79
3	L3	4576	PSU	O2-C2-N1	-2.67	119.85	122.79
3	L3	4636	PSU	O2-C2-N1	-2.67	119.85	122.79
3	L3	1862	PSU	O2-C2-N1	-2.66	119.86	122.79
3	L3	3639	PSU	O2-C2-N1	-2.66	119.86	122.79
3	L3	4471	PSU	O2-C2-N1	-2.66	119.87	122.79
3	L3	1860	PSU	O2-C2-N1	-2.65	119.88	122.79
3	L3	4532	PSU	O2-C2-N1	-2.65	119.88	122.79
3	L3	4500	PSU	O2-C2-N1	-2.64	119.89	122.79
3	L3	4673	PSU	O2-C2-N1	-2.64	119.89	122.79
2	L1	69	PSU	O2-C2-N1	-2.63	119.89	122.79
3	L3	3884	PSU	O2-C2-N1	-2.63	119.89	122.79
3	L3	1677	PSU	O2-C2-N1	-2.62	119.90	122.79
3	L3	3637	PSU	C6-C5-C4	2.62	120.03	118.20
3	L3	4972	PSU	O2-C2-N1	-2.60	119.92	122.79
3	L3	4579	PSU	C6-N1-C2	-2.60	120.03	122.68
3	L3	2415	OMU	O2-C2-N1	-2.58	119.35	122.79
3	L3	3853	PSU	O2-C2-N1	-2.58	119.95	122.79
3	L3	4673	PSU	C6-C5-C4	2.58	120.00	118.20
3	L3	2839	PSU	O2-C2-N1	-2.58	119.95	122.79
3	L3	4403	PSU	O2-C2-N1	-2.57	119.96	122.79

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	3734	PSU	C6-C5-C4	2.56	119.99	118.20
3	L3	2508	PSU	O2-C2-N1	-2.54	120.00	122.79
3	L3	3925	OMU	O2-C2-N1	-2.53	119.42	122.79
3	L3	4552	PSU	O2-C2-N1	-2.52	120.01	122.79
3	L3	2351	OMC	C1'-N1-C2	2.52	124.05	118.42
3	L3	4299	PSU	O2-C2-N1	-2.52	120.02	122.79
3	L3	5001	PSU	O2-C2-N1	-2.51	120.02	122.79
3	L3	2632	PSU	O2-C2-N1	-2.51	120.03	122.79
3	L3	4457	PSU	C6-N1-C2	-2.50	120.13	122.68
3	L3	4494	OMG	O6-C6-C5	2.49	129.23	124.37
3	L3	1582	PSU	O2-C2-N1	-2.49	120.05	122.79
3	L3	3884	PSU	C6-N1-C2	-2.48	120.15	122.68
3	L3	4623	OMG	O6-C6-C5	2.48	129.22	124.37
3	L3	3844	PSU	C6-C5-C4	2.47	119.92	118.20
3	L3	4618	OMG	O6-C6-C5	2.47	129.20	124.37
3	L3	4628	PSU	C6-C5-C4	2.47	119.92	118.20
3	L3	1316	OMG	O6-C6-C5	2.47	129.19	124.37
3	L3	1792	PSU	O2-C2-N1	-2.46	120.08	122.79
3	L3	2876	OMG	O6-C6-C5	2.46	129.18	124.37
3	L3	1582	PSU	C6-C5-C4	2.46	119.92	118.20
3	L3	4628	PSU	C6-N1-C2	-2.45	120.18	122.68
3	L3	3639	PSU	C6-C5-C4	2.45	119.91	118.20
3	L3	3637	PSU	O2-C2-N1	-2.44	120.11	122.79
3	L3	3695	PSU	C6-C5-C4	2.42	119.89	118.20
3	L3	3744	OMG	O6-C6-C5	2.42	129.09	124.37
3	L3	3695	PSU	O2-C2-N1	-2.41	120.13	122.79
3	L3	4457	PSU	O2-C2-N1	-2.41	120.14	122.79
23	LN	245	HIC	CB-CA-C	-2.41	106.95	111.47
3	L3	3730	PSU	C6-N1-C2	-2.40	120.23	122.68
3	L3	4353	PSU	C6-C5-C4	2.38	119.86	118.20
3	L3	2815	A2M	C4-C5-N7	-2.37	106.93	109.40
3	L3	2364	OMG	O6-C6-C5	2.37	129.00	124.37
3	L3	3844	PSU	C6-N1-C2	-2.37	120.26	122.68
3	L3	1683	PSU	C6-N1-C2	-2.37	120.26	122.68
3	L3	3920	PSU	C6-C5-C4	2.36	119.85	118.20
3	L3	3715	PSU	C6-N1-C2	-2.36	120.27	122.68
3	L3	1683	PSU	O2-C2-N1	-2.36	120.20	122.79
3	L3	4637	OMG	O6-C6-C5	2.35	128.97	124.37
3	L3	1536	PSU	C6-C5-C4	2.35	119.84	118.20
3	L3	1792	PSU	C6-N1-C2	-2.34	120.29	122.68
3	L3	4293	PSU	C6-N1-C2	-2.34	120.29	122.68
2	L1	75	OMG	O6-C6-C5	2.34	128.94	124.37

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	4590	A2M	C2-N1-C6	2.34	122.76	118.75
3	L3	4552	PSU	C6-N1-C2	-2.34	120.29	122.68
3	L3	5001	PSU	C6-N1-C2	-2.34	120.29	122.68
2	L1	69	PSU	O4'-C1'-C2'	2.33	108.44	105.14
3	L3	3627	OMG	O6-C6-C5	2.33	128.92	124.37
3	L3	4673	PSU	C6-N1-C2	-2.33	120.30	122.68
3	L3	2424	OMG	O6-C6-C5	2.33	128.92	124.37
3	L3	3730	PSU	C6-C5-C4	2.32	119.82	118.20
3	L3	3899	OMG	O6-C6-C5	2.32	128.90	124.37
3	L3	1860	PSU	C6-N1-C2	-2.32	120.31	122.68
3	L3	4471	PSU	C6-C5-C4	2.31	119.82	118.20
2	L1	69	PSU	C6-N1-C2	-2.31	120.32	122.68
3	L3	4590	A2M	C4-C5-N7	-2.29	107.01	109.40
3	L3	4689	PSU	O2-C2-N1	-2.29	120.27	122.79
3	L3	3639	PSU	C6-N1-C2	-2.29	120.34	122.68
3	L3	4576	PSU	C6-N1-C2	-2.29	120.34	122.68
3	L3	4392	OMG	O6-C6-C5	2.28	128.82	124.37
3	L3	4532	PSU	C6-N1-C2	-2.26	120.37	122.68
3	L3	4471	PSU	C6-N1-C2	-2.26	120.37	122.68
3	L3	3734	PSU	C6-N1-C2	-2.26	120.38	122.68
3	L3	4636	PSU	C6-C5-C4	2.25	119.77	118.20
2	L1	55	PSU	C6-N1-C2	-2.24	120.39	122.68
3	L3	3715	PSU	O4'-C1'-C2'	2.24	108.31	105.14
3	L3	1536	PSU	C6-N1-C2	-2.24	120.39	122.68
3	L3	3920	PSU	C6-N1-C2	-2.24	120.39	122.68
3	L3	1534	A2M	O4'-C1'-C2'	-2.24	102.71	106.59
3	L3	2839	PSU	C6-N1-C2	-2.24	120.40	122.68
3	L3	4521	PSU	C6-N1-C2	-2.23	120.41	122.68
3	L3	1522	OMG	O6-C6-C5	2.23	128.72	124.37
3	L3	4361	PSU	O2-C2-N1	-2.23	120.34	122.79
3	L3	2632	PSU	C6-N1-C2	-2.22	120.41	122.68
3	L3	1677	PSU	C6-N1-C2	-2.22	120.41	122.68
3	L3	1625	OMG	O6-C6-C5	2.22	128.70	124.37
3	L3	2837	OMU	O2-C2-N1	-2.22	119.84	122.79
3	L3	1326	A2M	C4-C5-N7	-2.22	107.09	109.40
3	L3	1862	PSU	C6-N1-C2	-2.21	120.42	122.68
3	L3	1860	PSU	O4'-C1'-C2'	2.21	108.26	105.14
3	L3	3822	PSU	C6-N1-C2	-2.21	120.42	122.68
3	L3	4493	PSU	C6-C5-C4	2.20	119.74	118.20
3	L3	4972	PSU	C6-N1-C2	-2.20	120.43	122.68
3	L3	1860	PSU	C6-C5-C4	2.20	119.74	118.20
3	L3	3715	PSU	C6-C5-C4	2.20	119.74	118.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	4312	PSU	C6-N1-C2	-2.19	120.44	122.68
3	L3	4293	PSU	O2-C2-N1	-2.19	120.38	122.79
3	L3	4353	PSU	C6-N1-C2	-2.18	120.46	122.68
3	L3	4493	PSU	O2-C2-N1	-2.17	120.41	122.79
3	L3	2363	A2M	C4-C5-N7	-2.15	107.16	109.40
3	L3	4689	PSU	C6-N1-C2	-2.15	120.48	122.68
3	L3	4493	PSU	C6-N1-C2	-2.15	120.49	122.68
3	L3	4498	OMU	O2-C2-N1	-2.13	119.95	122.79
3	L3	4431	PSU	C6-N1-C2	-2.13	120.51	122.68
3	L3	3637	PSU	C6-N1-C2	-2.13	120.51	122.68
3	L3	4499	OMG	O6-C6-C5	2.12	128.52	124.37
3	L3	4500	PSU	C6-N1-C2	-2.12	120.52	122.68
3	L3	1871	A2M	C4-C5-N7	-2.11	107.20	109.40
3	L3	3853	PSU	C6-N1-C2	-2.10	120.53	122.68
3	L3	3851	PSU	C6-N1-C2	-2.10	120.53	122.68
3	L3	4571	A2M	C4-C5-N7	-2.10	107.21	109.40
3	L3	5010	PSU	C6-C5-C4	2.10	119.67	118.20
3	L3	4361	PSU	C6-N1-C2	-2.09	120.54	122.68
3	L3	1871	A2M	C3'-C2'-C1'	-2.09	98.96	102.89
3	L3	2787	A2M	C4-C5-N7	-2.09	107.22	109.40
3	L3	2401	A2M	C4-C5-N7	-2.08	107.23	109.40
3	L3	3695	PSU	C6-N1-C2	-2.08	120.55	122.68
3	L3	3851	PSU	O4'-C1'-C2'	2.08	108.08	105.14
3	L3	4228	OMG	O6-C6-C5	2.08	128.43	124.37
3	L3	1534	A2M	C4-C5-N7	-2.08	107.23	109.40
3	L3	398	A2M	C4-C5-N7	-2.07	107.24	109.40
3	L3	3734	PSU	O4'-C1'-C2'	2.07	108.06	105.14
3	L3	3724	A2M	C4-C5-N7	-2.06	107.25	109.40
3	L3	4353	PSU	O4'-C1'-C2'	2.06	108.05	105.14
3	L3	5001	PSU	O4'-C1'-C2'	2.05	108.04	105.14
3	L3	4220	6MZ	C4-C5-N7	-2.05	107.27	109.40
3	L3	3867	A2M	C4-C5-N7	-2.05	107.27	109.40
3	L3	400	A2M	C4-C5-N7	-2.04	107.27	109.40
3	L3	4636	PSU	C6-N1-C2	-2.04	120.59	122.68
3	L3	1792	PSU	C6-C5-C4	2.04	119.62	118.20
3	L3	4296	PSU	C6-C5-C4	2.04	119.62	118.20
3	L3	1792	PSU	O4'-C1'-C2'	2.03	108.01	105.14
3	L3	2351	OMC	C1'-N1-C6	-2.03	116.41	120.84
3	L3	3830	A2M	C4-C5-N7	-2.03	107.28	109.40
3	L3	4403	PSU	C6-C5-C4	2.02	119.61	118.20
3	L3	4306	OMU	O2-C2-N1	-2.02	120.10	122.79
3	L3	1524	A2M	C4-C5-N7	-2.02	107.30	109.40

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	L3	1683	PSU	C6-C5-C4	2.01	119.61	118.20
3	L3	3851	PSU	C6-C5-C4	2.01	119.60	118.20
3	L3	1862	PSU	C6-C5-C4	2.00	119.60	118.20

There are no chirality outliers.

All (96) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	L1	75	OMG	C1'-C2'-O2'-CM2
3	L3	398	A2M	C1'-C2'-O2'-CM'
3	L3	1316	OMG	C1'-C2'-O2'-CM2
3	L3	1326	A2M	O4'-C4'-C5'-O5'
3	L3	1326	A2M	C3'-C4'-C5'-O5'
3	L3	1326	A2M	C1'-C2'-O2'-CM'
3	L3	1340	OMC	C1'-C2'-O2'-CM2
3	L3	1534	A2M	C3'-C2'-O2'-CM'
3	L3	2363	A2M	C1'-C2'-O2'-CM'
3	L3	2364	OMG	C1'-C2'-O2'-CM2
3	L3	2415	OMU	C1'-C2'-O2'-CM2
3	L3	2787	A2M	O4'-C4'-C5'-O5'
3	L3	2787	A2M	C3'-C4'-C5'-O5'
3	L3	2787	A2M	C1'-C2'-O2'-CM'
3	L3	2804	OMC	C1'-C2'-O2'-CM2
3	L3	2837	OMU	C1'-C2'-O2'-CM2
3	L3	2861	OMC	C1'-C2'-O2'-CM2
3	L3	2876	OMG	C3'-C4'-C5'-O5'
3	L3	3627	OMG	C1'-C2'-O2'-CM2
3	L3	3701	OMC	C2'-C1'-N1-C2
3	L3	3701	OMC	C2'-C1'-N1-C6
3	L3	3718	A2M	C1'-C2'-O2'-CM'
3	L3	3724	A2M	C1'-C2'-O2'-CM'
3	L3	3744	OMG	C1'-C2'-O2'-CM2
3	L3	3825	A2M	C1'-C2'-O2'-CM'
3	L3	3830	A2M	C1'-C2'-O2'-CM'
3	L3	3841	OMC	C1'-C2'-O2'-CM2
3	L3	3867	A2M	C1'-C2'-O2'-CM'
3	L3	3887	OMC	C3'-C4'-C5'-O5'
3	L3	3887	OMC	O4'-C4'-C5'-O5'
3	L3	3899	OMG	C1'-C2'-O2'-CM2
3	L3	3925	OMU	C1'-C2'-O2'-CM2
3	L3	4306	OMU	C3'-C4'-C5'-O5'
3	L3	4392	OMG	C1'-C2'-O2'-CM2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	L3	4523	A2M	O4'-C4'-C5'-O5'
3	L3	4536	OMC	C1'-C2'-O2'-CM2
3	L3	4571	A2M	C1'-C2'-O2'-CM'
3	L3	4590	A2M	C3'-C4'-C5'-O5'
3	L3	4618	OMG	O4'-C4'-C5'-O5'
3	L3	4636	PSU	C2'-C1'-C5-C4
3	L3	4637	OMG	C1'-C2'-O2'-CM2
23	LN	245	HIC	CA-CB-CG-ND1
3	L3	2401	A2M	C3'-C4'-C5'-O5'
3	L3	2876	OMG	O4'-C4'-C5'-O5'
3	L3	4220	6MZ	O4'-C4'-C5'-O5'
3	L3	4220	6MZ	C3'-C4'-C5'-O5'
3	L3	4306	OMU	O4'-C4'-C5'-O5'
3	L3	4523	A2M	C3'-C4'-C5'-O5'
3	L3	4637	OMG	O4'-C4'-C5'-O5'
3	L3	2401	A2M	O4'-C4'-C5'-O5'
3	L3	4590	A2M	O4'-C4'-C5'-O5'
3	L3	4618	OMG	C3'-C4'-C5'-O5'
3	L3	4637	OMG	C3'-C4'-C5'-O5'
3	L3	1625	OMG	C3'-C2'-O2'-CM2
3	L3	1625	OMG	C3'-C4'-C5'-O5'
3	L3	3701	OMC	C3'-C4'-C5'-O5'
3	L3	1862	PSU	C3'-C4'-C5'-O5'
3	L3	3701	OMC	O4'-C4'-C5'-O5'
3	L3	1677	PSU	O4'-C4'-C5'-O5'
3	L3	4590	A2M	C4'-C5'-O5'-P
3	L3	1677	PSU	C3'-C4'-C5'-O5'
3	L3	1625	OMG	O4'-C4'-C5'-O5'
3	L3	2424	OMG	O4'-C4'-C5'-O5'
3	L3	3844	PSU	C4'-C5'-O5'-P
3	L3	2351	OMC	C2'-C1'-N1-C2
3	L3	2351	OMC	C3'-C2'-O2'-CM2
3	L3	3701	OMC	O4'-C1'-N1-C6
3	L3	2351	OMC	C2'-C1'-N1-C6
3	L3	1625	OMG	C4'-C5'-O5'-P
3	L3	4306	OMU	C4'-C5'-O5'-P
3	L3	1862	PSU	O4'-C4'-C5'-O5'
3	L3	4636	PSU	C4'-C5'-O5'-P
3	L3	3724	A2M	C3'-C2'-O2'-CM'
3	L3	3701	OMC	O4'-C1'-N1-C2
3	L3	4220	6MZ	C4'-C5'-O5'-P
23	LN	245	HIC	CA-CB-CG-CD2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	L3	2839	PSU	O4'-C1'-C5-C4
3	L3	4312	PSU	O4'-C1'-C5-C4
3	L3	4353	PSU	O4'-C1'-C5-C4
3	L3	4636	PSU	O4'-C1'-C5-C4
3	L3	2876	OMG	C3'-C2'-O2'-CM2
3	L3	2422	OMC	C1'-C2'-O2'-CM2
3	L3	2876	OMG	C1'-C2'-O2'-CM2
3	L3	4456	OMC	C1'-C2'-O2'-CM2
3	L3	4498	OMU	C4'-C5'-O5'-P
3	L3	2415	OMU	O4'-C4'-C5'-O5'
3	L3	2424	OMG	C3'-C4'-C5'-O5'
3	L3	1677	PSU	O4'-C1'-C5-C6
3	L3	4636	PSU	O4'-C1'-C5-C6
3	L3	4306	OMU	C2'-C1'-N1-C2
3	L3	2351	OMC	O4'-C4'-C5'-O5'
3	L3	2422	OMC	O4'-C4'-C5'-O5'
3	L3	4636	PSU	O4'-C4'-C5'-O5'
3	L3	1534	A2M	O4'-C4'-C5'-O5'
3	L3	2364	OMG	O4'-C4'-C5'-O5'
3	L3	3701	OMC	C4'-C5'-O5'-P

There are no ring outliers.

54 monomers are involved in 80 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	4312	PSU	1	0
3	L3	4500	PSU	1	0
3	L3	4431	PSU	2	0
3	L3	2364	OMG	2	0
3	L3	4536	OMC	1	0
3	L3	400	A2M	1	0
3	L3	1522	OMG	1	0
3	L3	3715	PSU	1	0
3	L3	3899	OMG	1	0
3	L3	2861	OMC	2	0
3	L3	4530	UR3	2	0
3	L3	2787	A2M	1	0
3	L3	2351	OMC	2	0
3	L3	3627	OMG	1	0
3	L3	4623	OMG	1	0
3	L3	3734	PSU	1	0
3	L3	4618	OMG	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	1677	PSU	3	0
2	L1	69	PSU	2	0
3	L3	1860	PSU	1	0
3	L3	2804	OMC	1	0
3	L3	3841	OMC	1	0
3	L3	398	A2M	1	0
3	L3	4552	PSU	2	0
3	L3	4220	6MZ	2	0
3	L3	5010	PSU	3	0
3	L3	3724	A2M	1	0
3	L3	2876	OMG	1	0
3	L3	4571	A2M	2	0
3	L3	4227	OMU	1	0
3	L3	4392	OMG	1	0
3	L3	3853	PSU	1	0
3	L3	3925	OMU	1	0
3	L3	5001	PSU	1	0
3	L3	3851	PSU	1	0
3	L3	2839	PSU	1	0
3	L3	1524	A2M	1	0
3	L3	2815	A2M	1	0
3	L3	1326	A2M	1	0
3	L3	4620	OMU	1	0
3	L3	4306	OMU	3	0
3	L3	4636	PSU	2	0
3	L3	2363	A2M	2	0
3	L3	2415	OMU	3	0
3	L3	3869	OMC	2	0
3	L3	1871	A2M	1	0
3	L3	4299	PSU	1	0
3	L3	1340	OMC	2	0
3	L3	2422	OMC	1	0
3	L3	4637	OMG	2	0
3	L3	4403	PSU	1	0
3	L3	3718	A2M	5	0
3	L3	2837	OMU	1	0
2	L1	75	OMG	2	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 96 ligands modelled in this entry, 95 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	$\#\|Z\| > 2$
53	GDP	SR	1001	51,54	24,30,30	2.56	8 (33%)	30,47,47	1.71	9 (30%)

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
53	GDP	SR	1001	51,54	-	3/12/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	SR	1001	GDP	O6-C6	8.37	1.40	1.23
53	SR	1001	GDP	C2-N2	4.78	1.45	1.34
53	SR	1001	GDP	O4'-C1'	4.37	1.47	1.41
53	SR	1001	GDP	C5-C4	2.32	1.49	1.43
53	SR	1001	GDP	PB-O3B	-2.27	1.46	1.54
53	SR	1001	GDP	PB-O2B	-2.25	1.46	1.54
53	SR	1001	GDP	C2'-C1'	-2.17	1.50	1.53
53	SR	1001	GDP	C2'-C3'	-2.05	1.47	1.53

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
53	SR	1001	GDP	C3'-C2'-C1'	3.90	106.84	100.98
53	SR	1001	GDP	C5-C6-N1	3.38	119.92	113.95
53	SR	1001	GDP	C2-N1-C6	-2.95	119.67	125.10
53	SR	1001	GDP	O2B-PB-O3A	2.88	114.29	104.64
53	SR	1001	GDP	O3B-PB-O3A	2.68	113.63	104.64

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
53	SR	1001	GDP	C2'-C3'-C4'	2.55	107.60	102.64
53	SR	1001	GDP	O6-C6-C5	-2.33	119.83	124.37
53	SR	1001	GDP	PA-O3A-PB	-2.30	124.93	132.83
53	SR	1001	GDP	O2A-PA-O1A	-2.14	101.67	112.24

There are no chirality outliers.

All (3) torsion outliers are listed below:

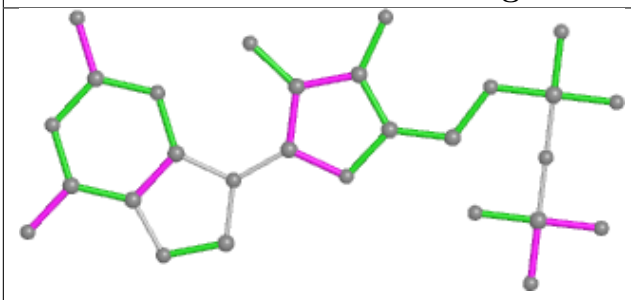
Mol	Chain	Res	Type	Atoms
53	SR	1001	GDP	PA-O3A-PB-O1B
53	SR	1001	GDP	PA-O3A-PB-O2B
53	SR	1001	GDP	PA-O3A-PB-O3B

There are no ring outliers.

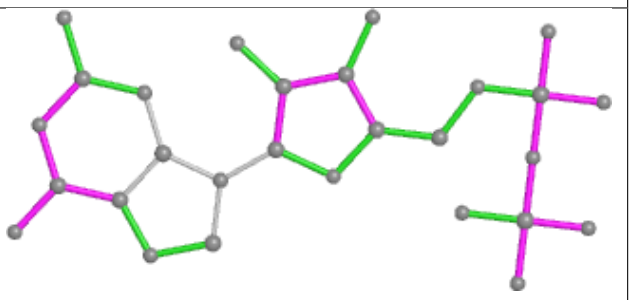
No monomer is involved in short contacts.

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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

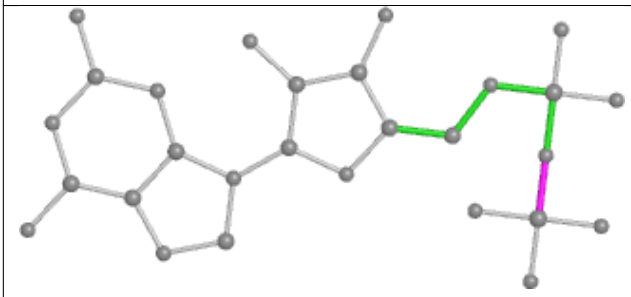
Ligand GDP SR 1001



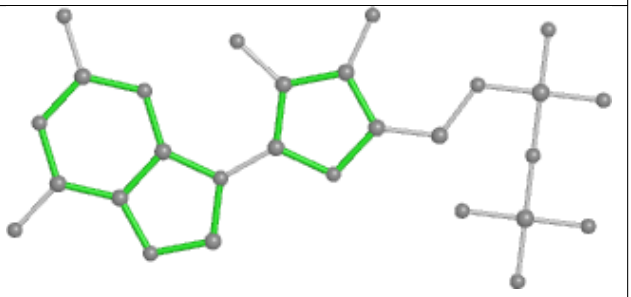
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

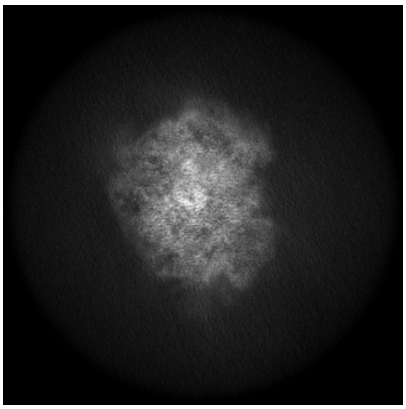
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-29271. These allow visual inspection of the internal detail of the map and identification of artifacts.

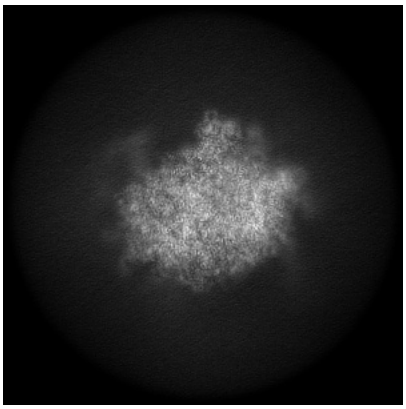
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

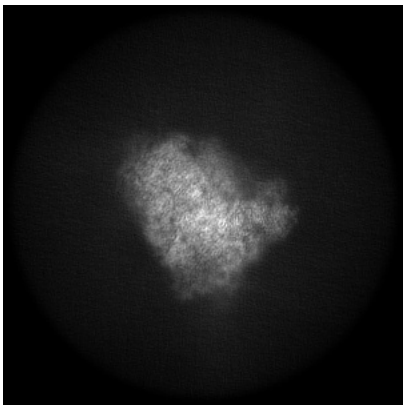
6.1.1 Primary map



X

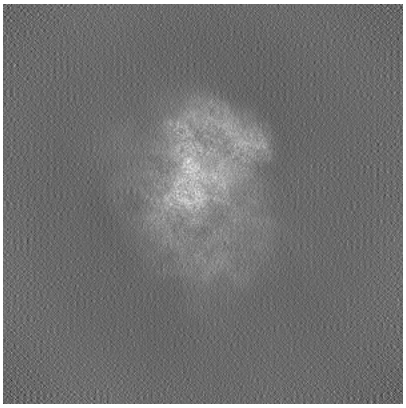


Y

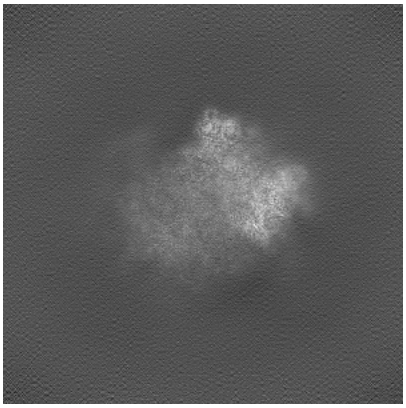


Z

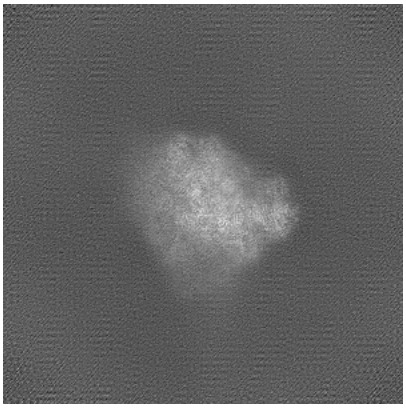
6.1.2 Raw map



X



Y

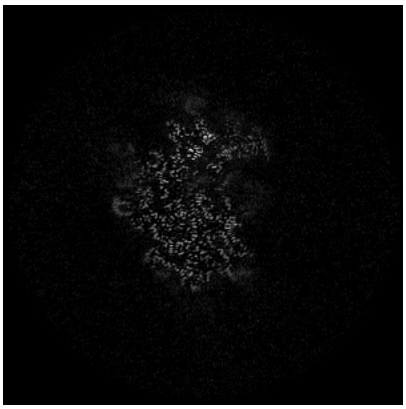


Z

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

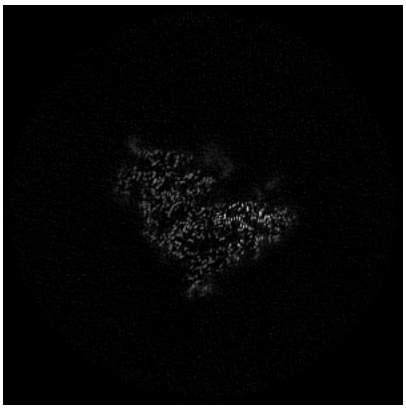
6.2 Central slices (i)

6.2.1 Primary map



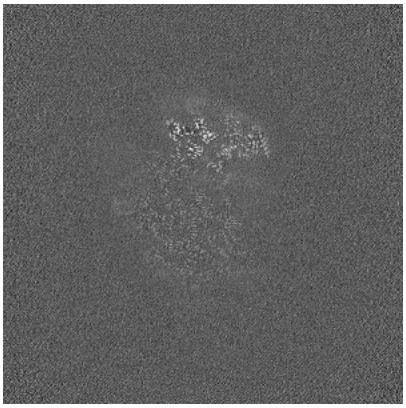
X Index: 240

Y Index: 240

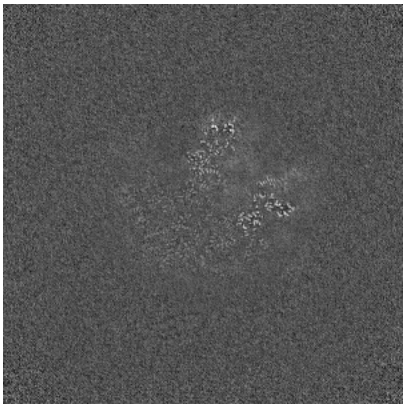


Z Index: 240

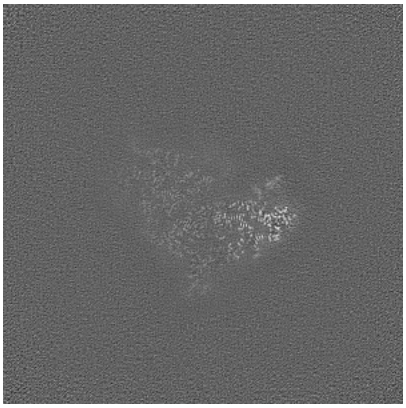
6.2.2 Raw map



X Index: 240



Y Index: 240

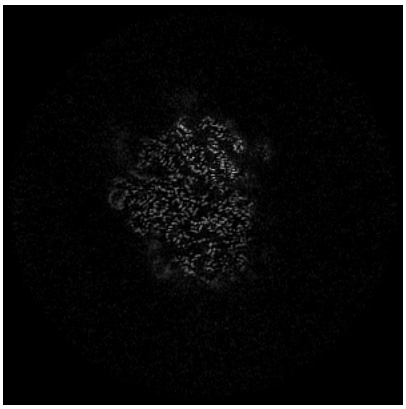


Z Index: 240

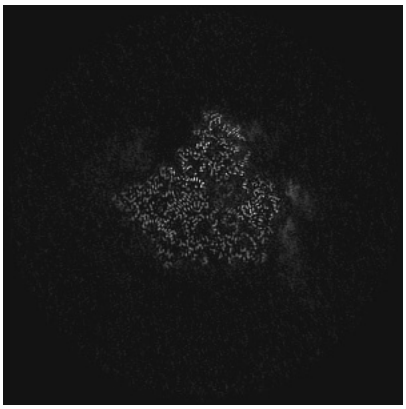
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

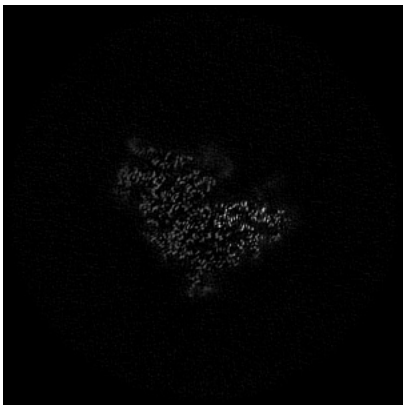
6.3.1 Primary map



X Index: 226

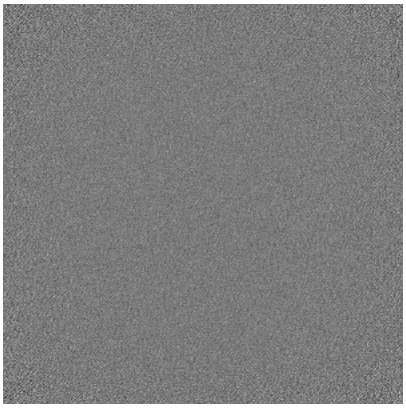


Y Index: 227

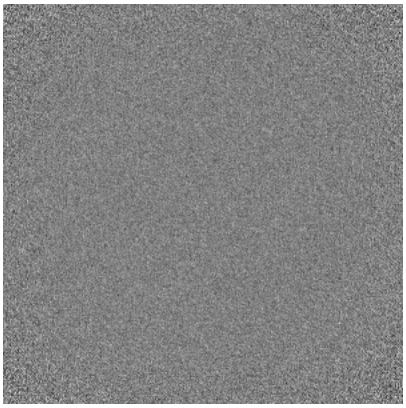


Z Index: 239

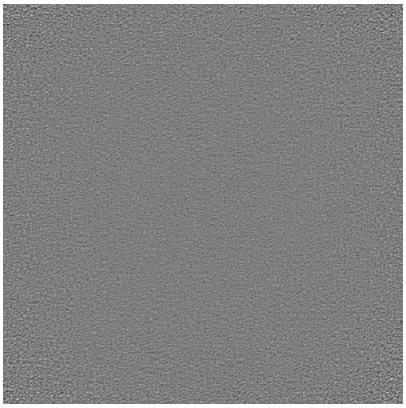
6.3.2 Raw map



X Index: 0



Y Index: 0

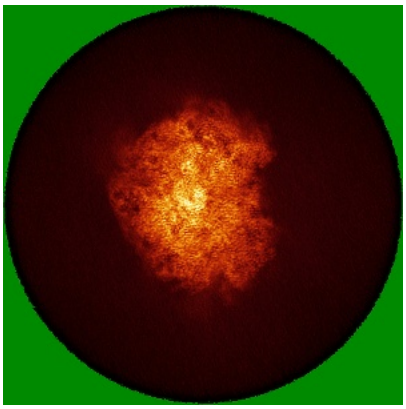


Z Index: 0

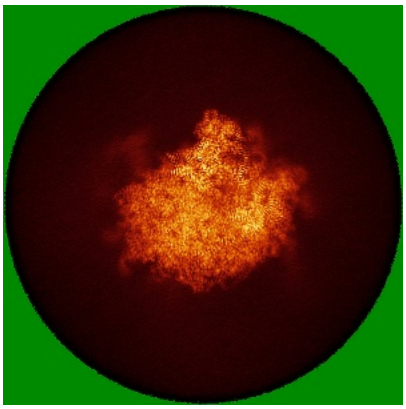
The images above show the largest variance slices of the map in three orthogonal directions.

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

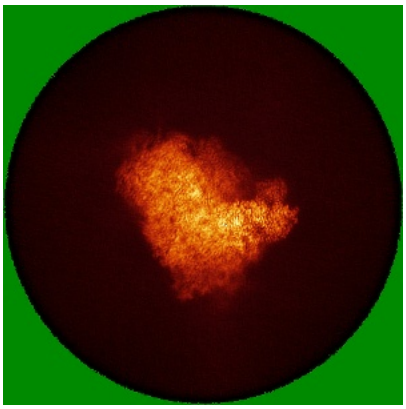
6.4.1 Primary map



X

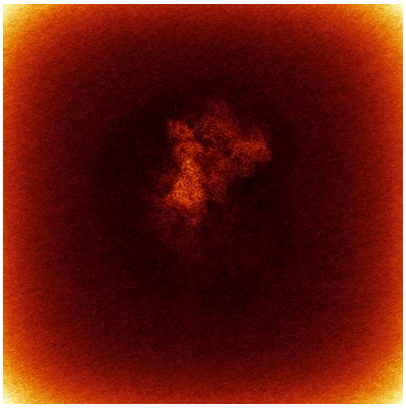


Y

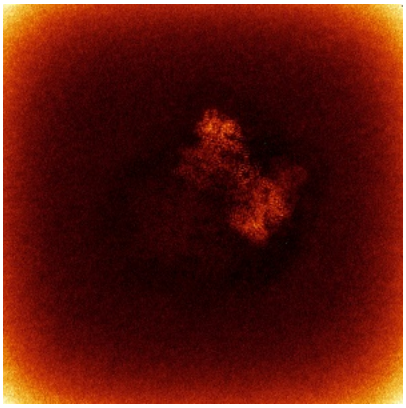


Z

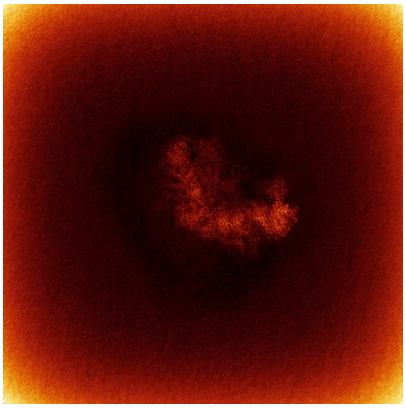
6.4.2 Raw map



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

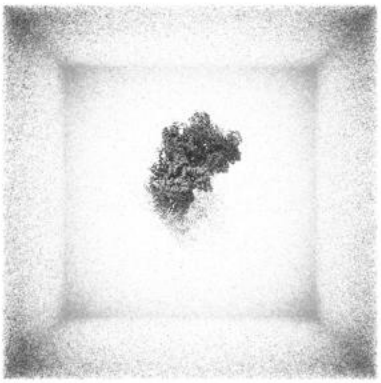
X

Y

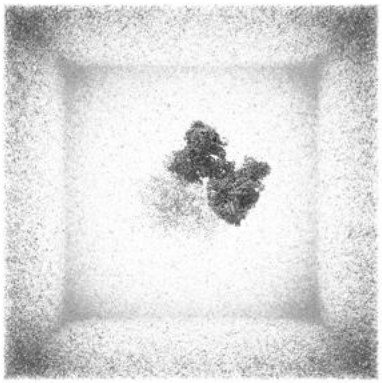
Z

The images above show the 3D surface view of the map at the recommended contour level 0.85. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

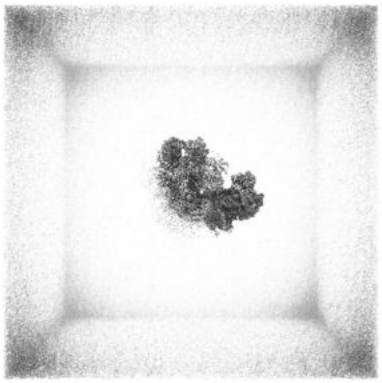
6.5.2 Raw map



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.

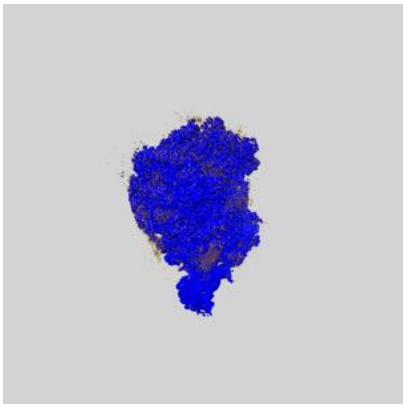
6.6 Mask visualisation

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

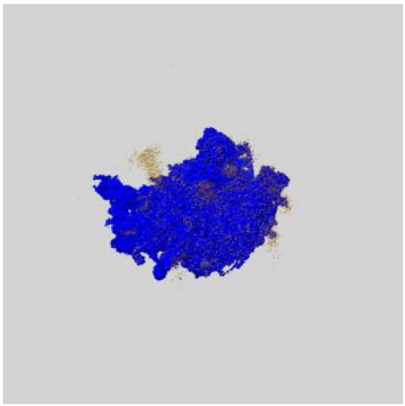
A mask typically either:

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

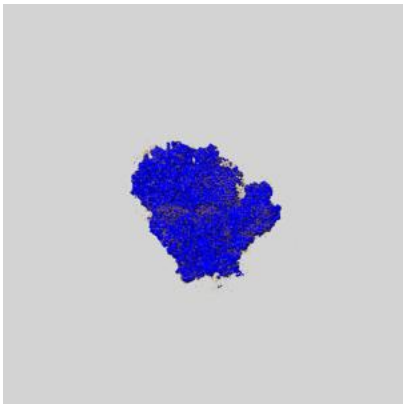
6.6.1 emd_29271_msk_1.map



X



Y

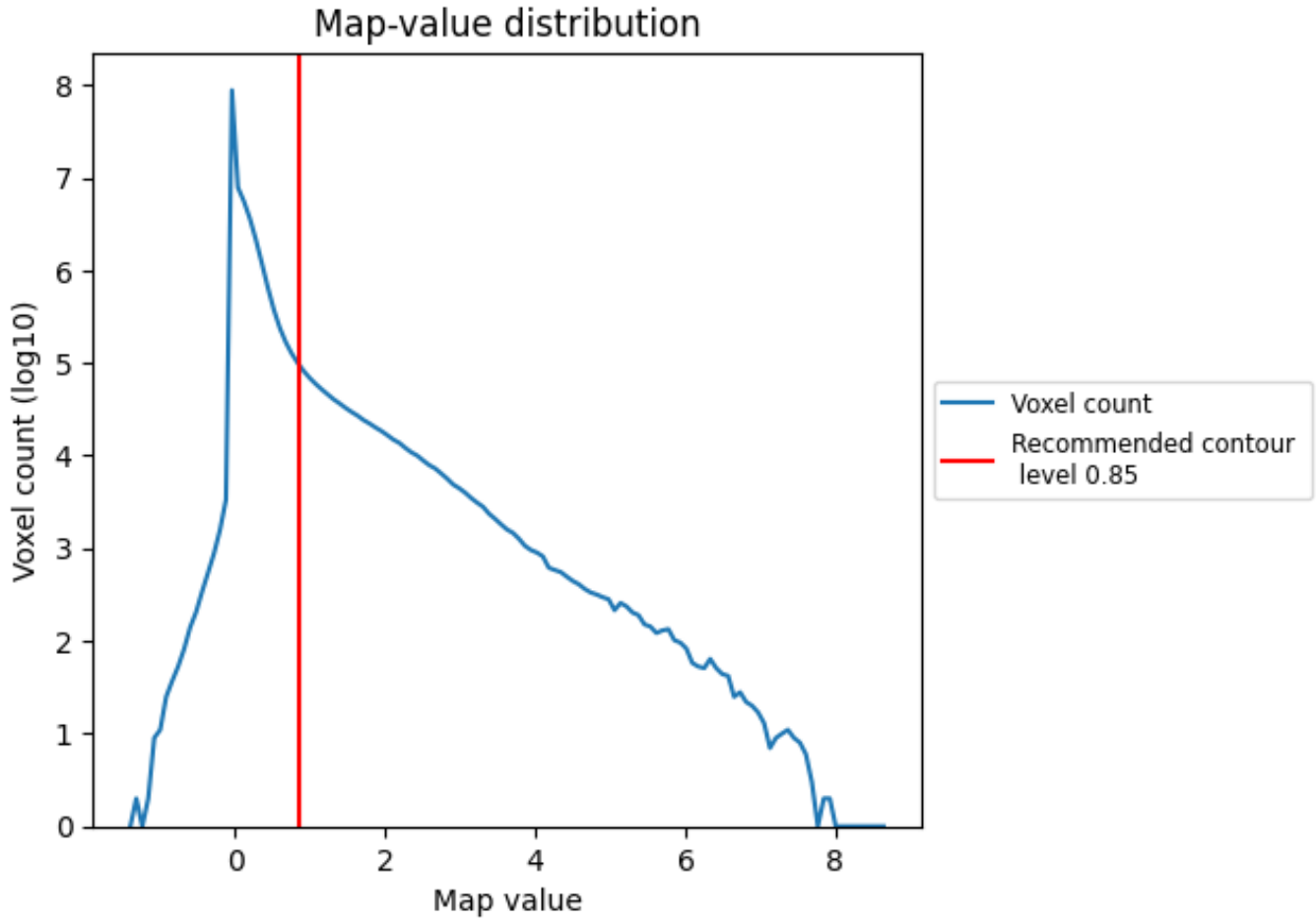


Z

7 Map analysis

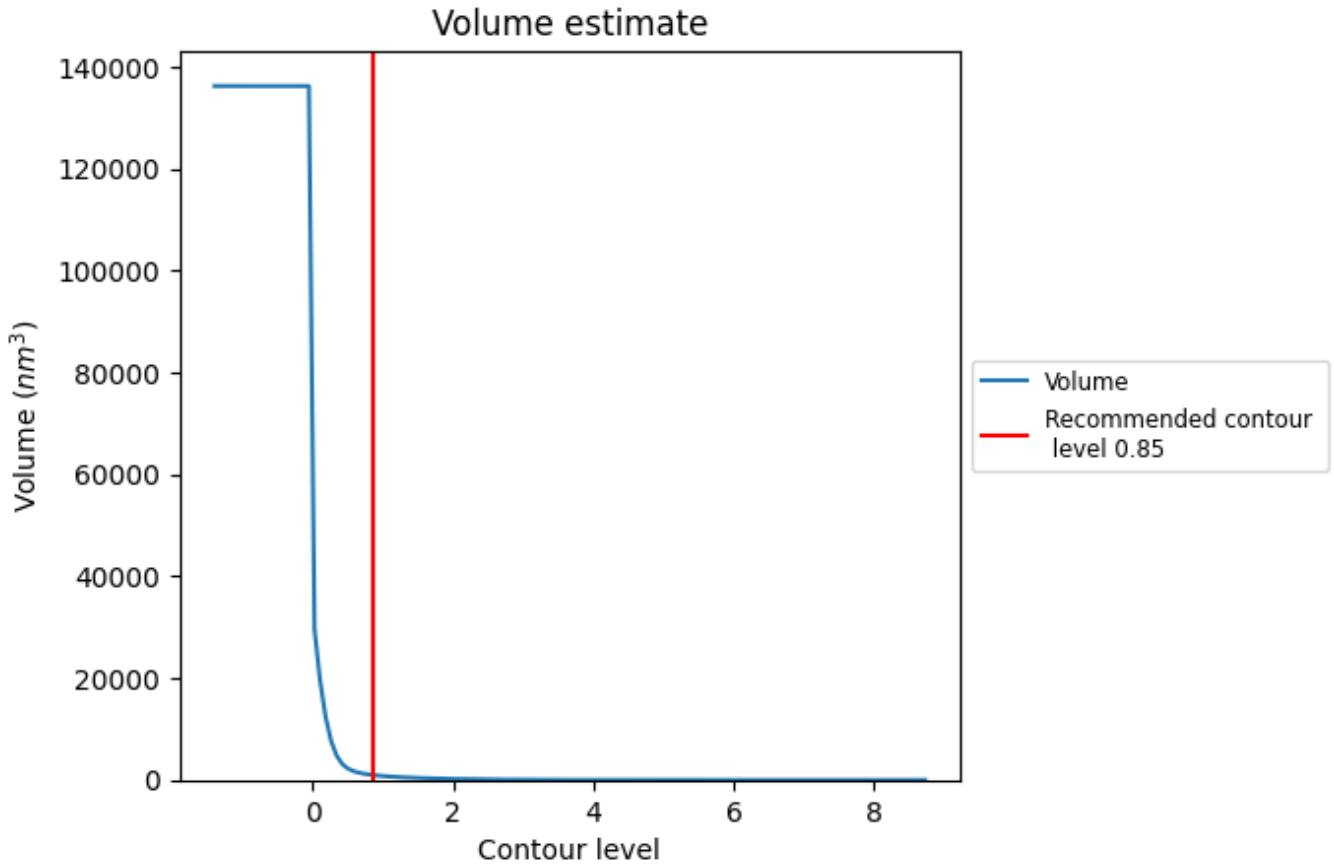
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

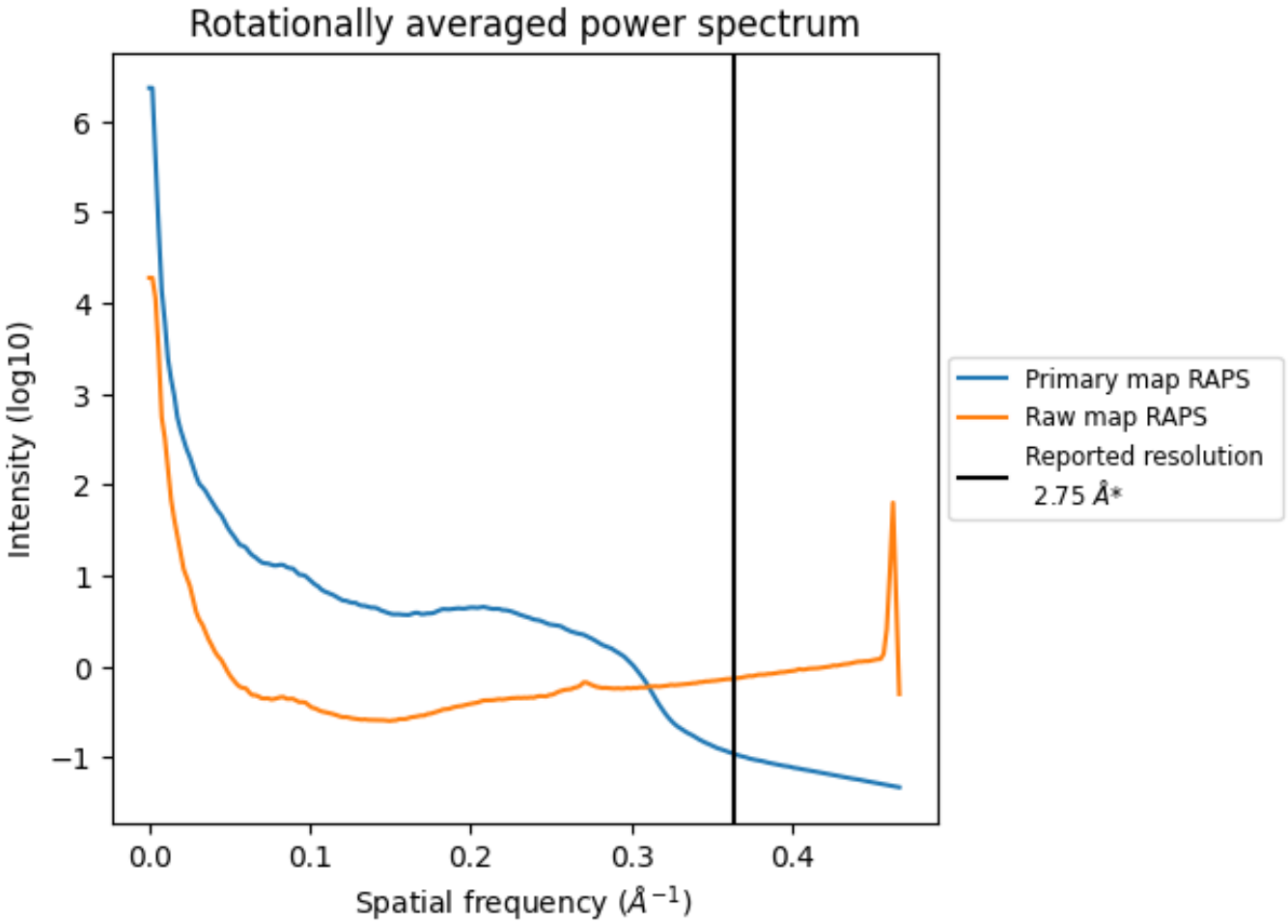
7.2 Volume estimate



The volume at the recommended contour level is 982 nm^3; this corresponds to an approximate mass of 887 kDa.

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

7.3 Rotationally averaged power spectrum (i)

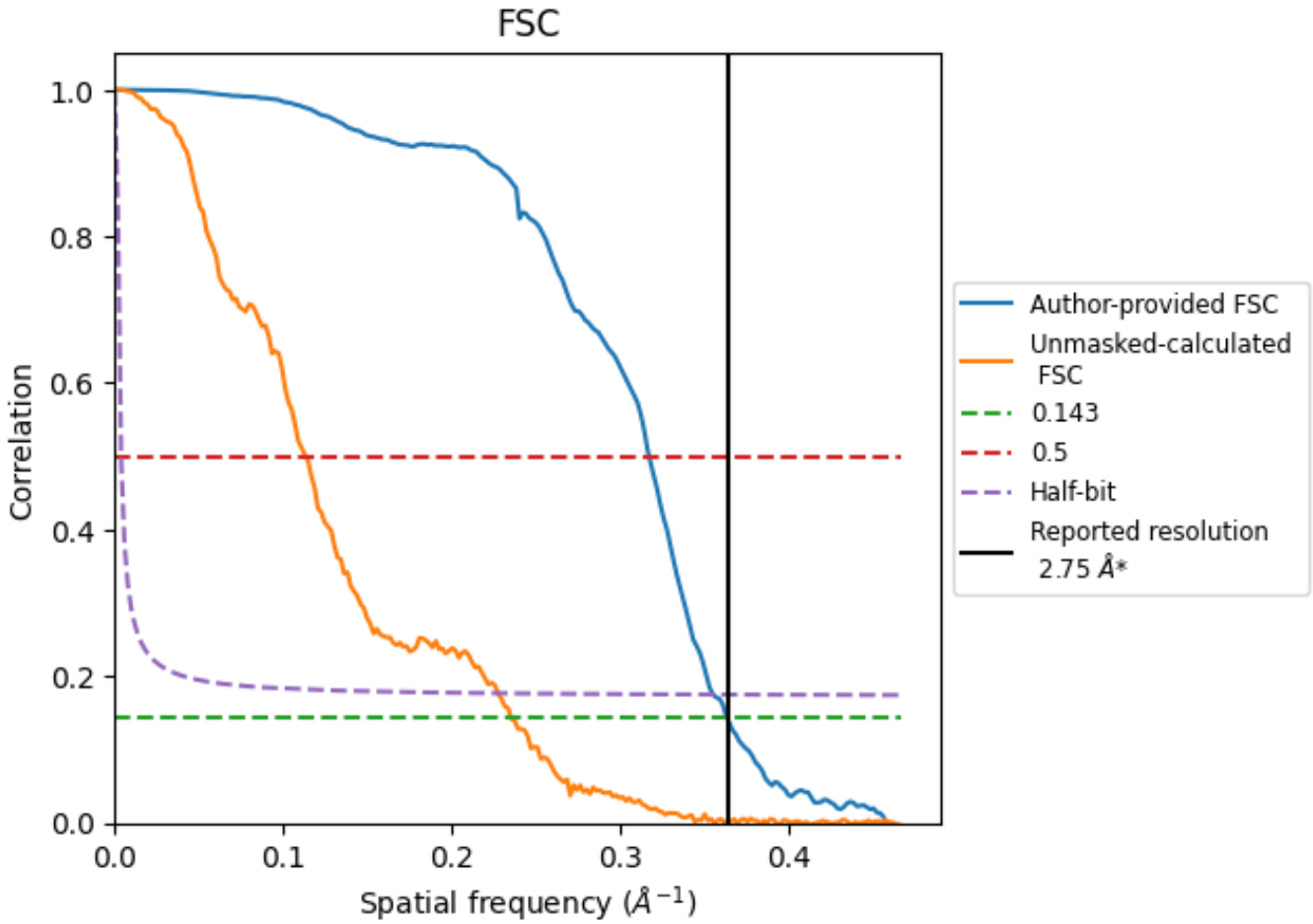


*Reported resolution corresponds to spatial frequency of 0.364 $Å^{-1}$

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.364 Å^{-1}

8.2 Resolution estimates (i)

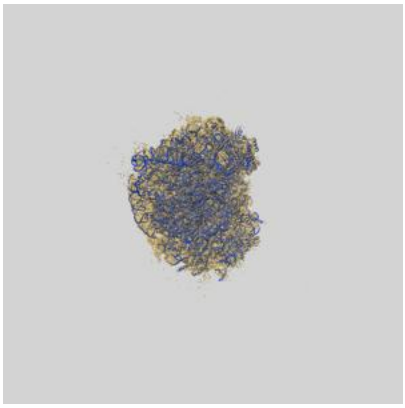
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.75	-	-
Author-provided FSC curve	2.75	3.16	2.82
Unmasked-calculated*	4.26	8.83	4.40

*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 4.26 differs from the reported value 2.75 by more than 10 %

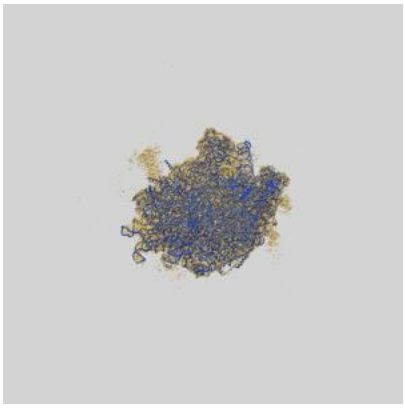
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-29271 and PDB model 8FL9. Per-residue inclusion information can be found in section 3 on page 14.

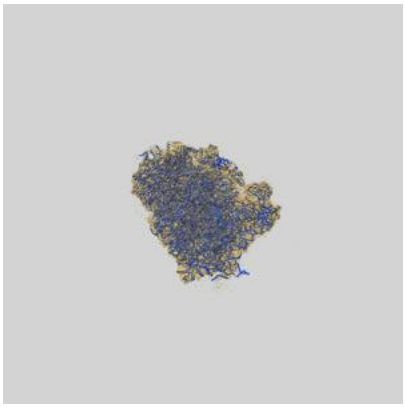
9.1 Map-model overlay



X



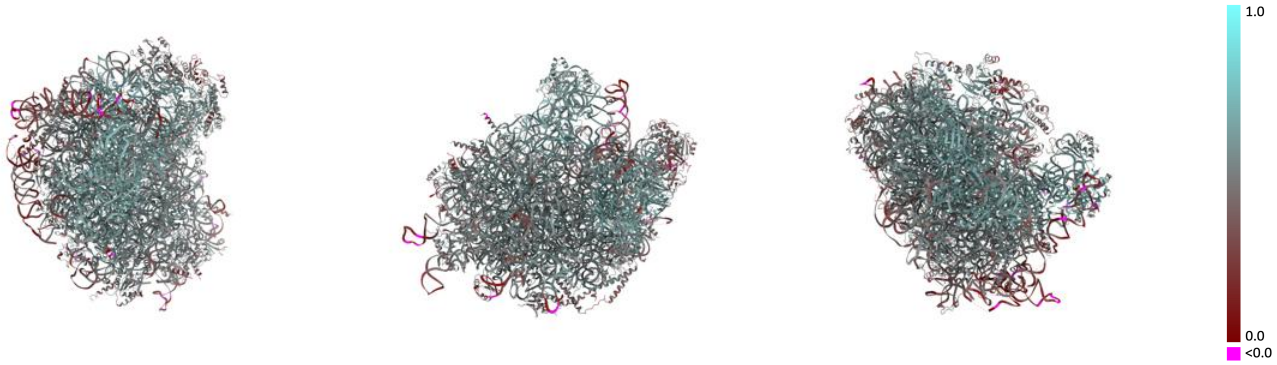
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.85 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.

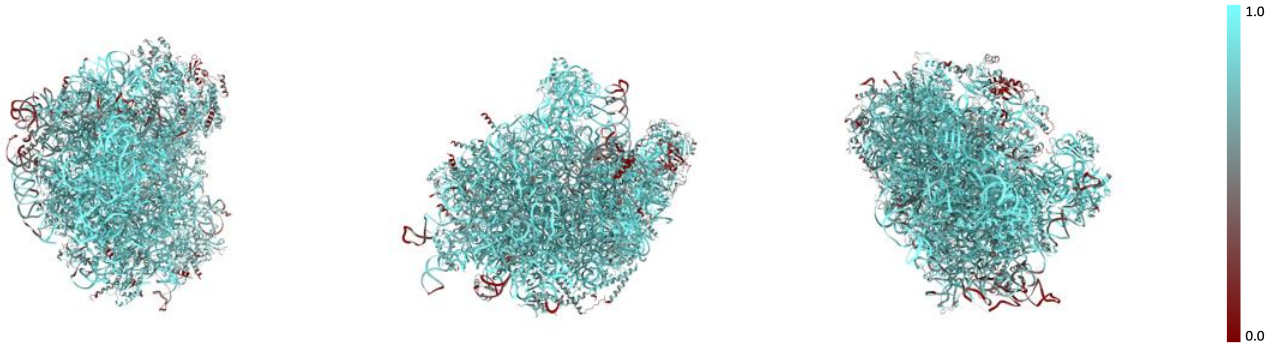
9.2 Q-score mapped to coordinate model



X Y Z

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

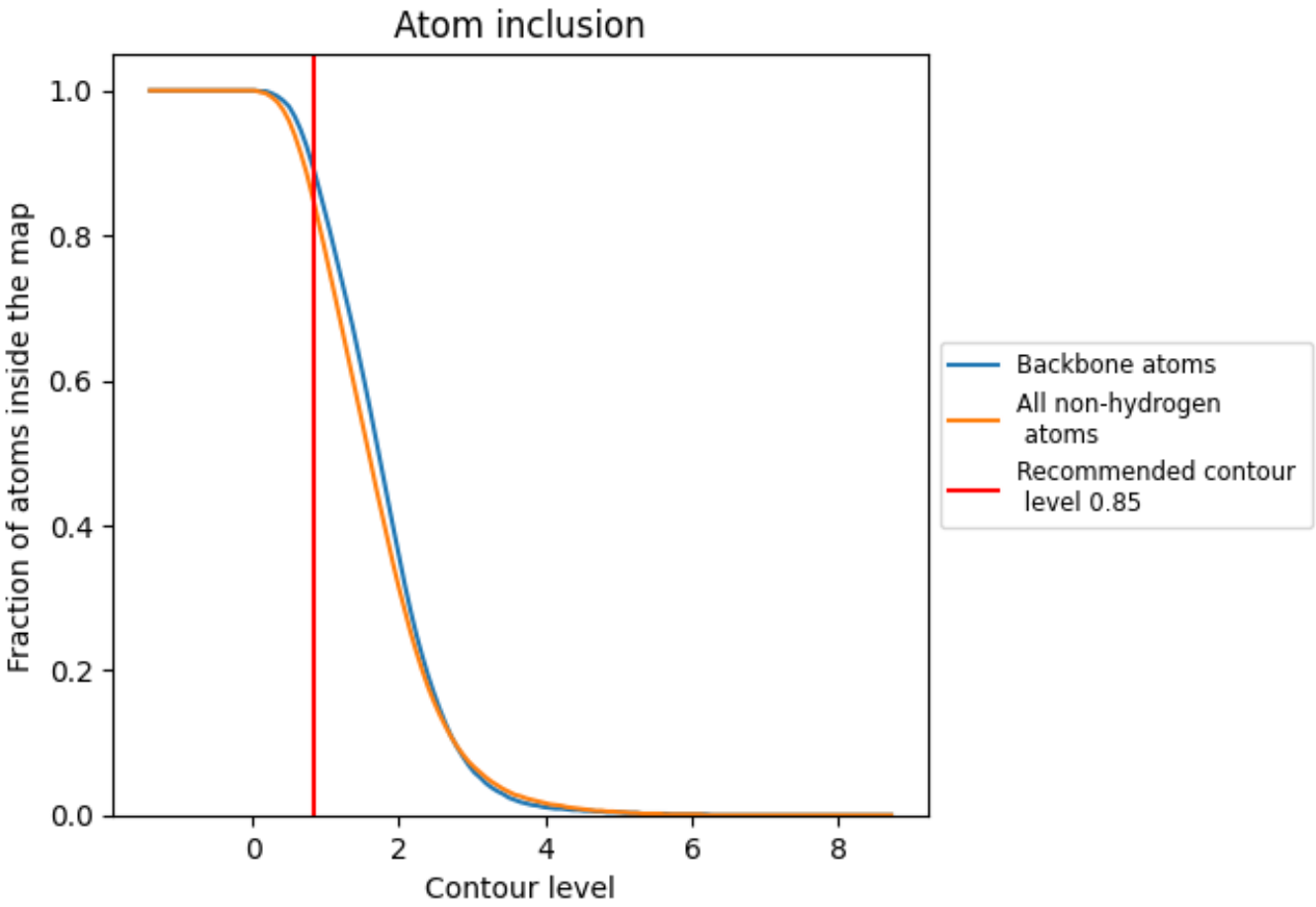
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.85).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 84% 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 (0.85) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8410	0.5180
BA	0.4250	0.3480
L1	0.8980	0.5160
L3	0.8730	0.5030
L4	0.9800	0.6130
L5	0.7990	0.5260
L6	0.7860	0.5080
L7	0.8970	0.5940
L8	0.9060	0.5830
L9	0.8820	0.5680
LA	0.8060	0.5310
LB	0.8600	0.5570
LC	0.9550	0.6420
LD	0.7720	0.5050
LE	0.8750	0.5650
LF	0.7330	0.4760
LG	0.8710	0.5970
LH	0.7960	0.5210
LI	0.7720	0.5080
LJ	0.7520	0.4880
LK	0.8820	0.5700
LL	0.7920	0.5140
LM	0.6910	0.4930
LN	0.8480	0.5570
LO	0.7120	0.4570
LP	0.7820	0.5170
LQ	0.8150	0.5490
LR	0.7730	0.5230
LS	0.7700	0.5060
LT	0.8520	0.5590
LU	0.7540	0.5110
LV	0.8610	0.5830
LW	0.8770	0.5630
LX	0.7600	0.5110
LY	0.6520	0.4570

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
LZ	0.8720	0.5710
NC	0.0360	0.3270
NF	0.7270	0.5600
NK	0.6220	0.4800
NP	0.7420	0.4880
SA	0.8200	0.5390
SB	0.8810	0.5810
SC	0.6800	0.4570
SD	0.8310	0.5420
SE	0.7140	0.4660
SF	0.8290	0.5440
SG	0.9160	0.6150
SK	0.8220	0.5460
SQ	0.6140	0.4680
SR	0.7390	0.5180
SV	0.7730	0.5030