



## Full wwPDB EM Validation Report ⓘ

Jul 16, 2023 – 10:15 PM EDT

PDB ID : 8FLC  
EMDB ID : EMD-29274  
Title : Human nuclear pre-60S ribosomal subunit (State K3)  
Authors : Vanden Broeck, A.; Klinge, S.  
Deposited on : 2022-12-21  
Resolution : 2.76 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](mailto: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>.

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

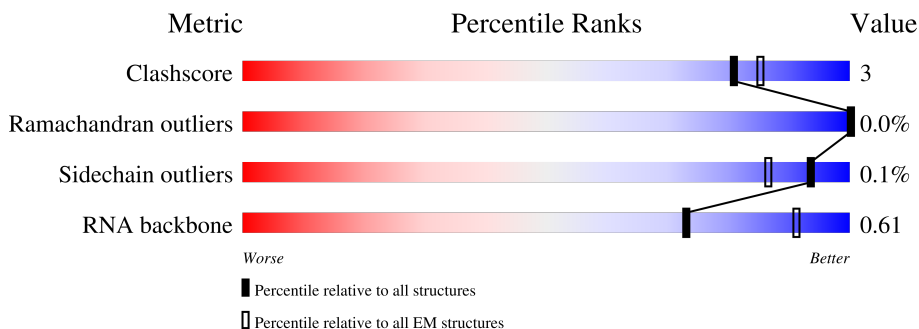
EMDB validation analysis : 0.0.1.dev50  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal 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 2.76 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.






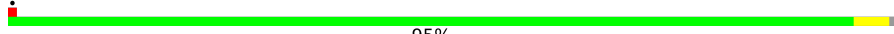


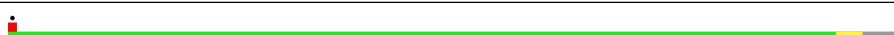
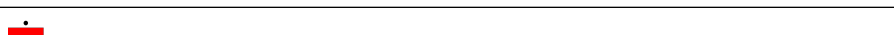
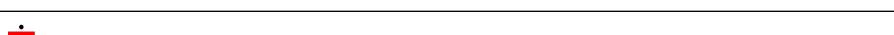
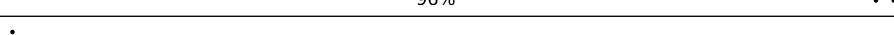
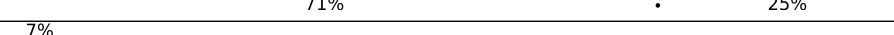
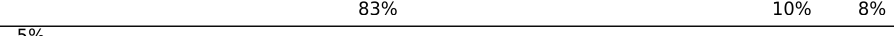

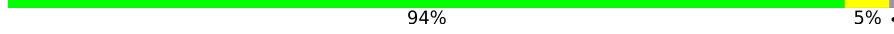

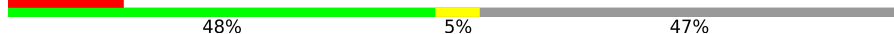







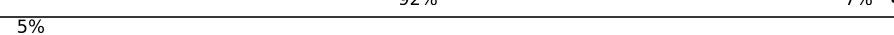

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	BA	165	
2	L1	157	
3	L3	5070	
4	L4	121	
5	L5	178	
6	L6	211	
7	L7	203	

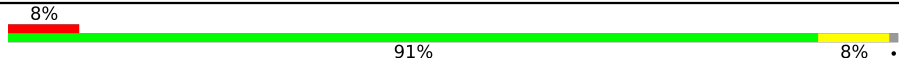
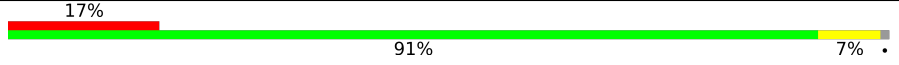
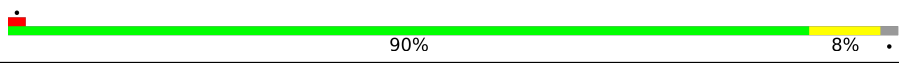
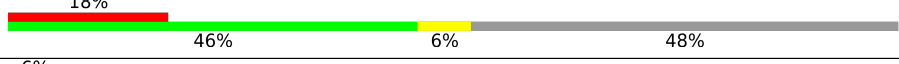

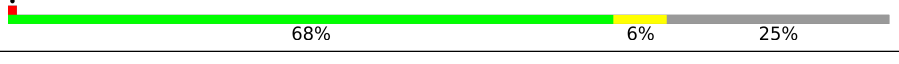
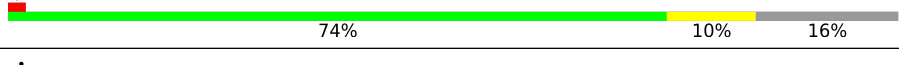
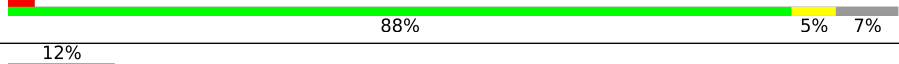
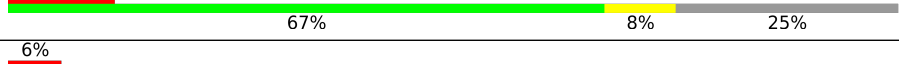


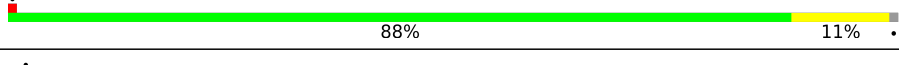


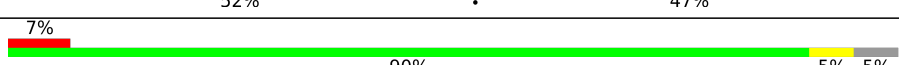
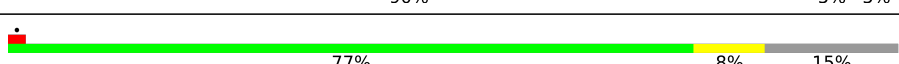
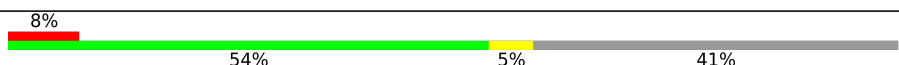

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Mol	Chain	Length	Quality of chain
8	L8	215	 60% 37%
9	L9	204	 87% 13%
10	LA	184	 79% 17%
11	LB	188	 95%
12	LC	176	 95% 5%
13	LD	196	 70% 8% 21%
14	LE	160	 93%
15	LF	128	 73% 7% 20%
16	LG	140	 96%
17	LH	156	 71% 25%
18	LI	145	 7% 83% 10% 8%
19	LJ	136	 5% 79% 21%
20	LK	148	 94% 5%
21	LL	137	 6% 88% 9%
22	LM	159	 13% 48% 5% 47%
23	LN	403	 91% 9%
24	LO	115	 6% 78% 17%
25	LP	125	 7% 78% 7% 15%
26	LQ	135	 83% 12% 5%
27	LR	117	 7% 91% 5%
28	LS	123	 92% 7%
29	LT	110	 92% 7%
30	LU	105	 5% 89% 9%
31	LV	106	 91% 8%
32	LW	97	 80% 8% 11%

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Mol	Chain	Length	Quality of chain
33	LX	92	
34	LY	70	
35	LZ	51	
36	NK	129	
37	NP	134	
38	NR	203	
39	SA	427	
40	SB	297	
41	SC	288	
42	SD	248	
43	SE	266	
44	SF	257	
45	SG	192	
46	SK	245	
47	SQ	239	
48	SR	634	
49	SV	163	
50	VB	99	

## 2 Entry composition

There are 54 unique types of molecules in this entry. The entry contains 139595 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	91	449	267	91	91	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	3373	72412	32273	13268	23498	3373	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
			Total	C	N	O	S		
7	L7	201	1650	1063	321	261	5	0	0

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

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

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

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

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

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

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

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

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

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

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

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

- 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
			Total	C	N	O	S		
21	LL	125	1002	622	207	168	5	0	0

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

- 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 Protein LLP homolog.

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

- Molecule 37 is a protein called Zinc finger protein 593.

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

- Molecule 38 is a protein called Translation machinery-associated protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace	
38	NR	152	Total	C	N	O	P	S	1	0
			1299	809	249	235	1	5		

- Molecule 39 is a protein called 60S ribosomal protein L4.

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

- Molecule 40 is a protein called 60S ribosomal protein L5.

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

- Molecule 41 is a protein called 60S ribosomal protein L6.

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

- Molecule 42 is a protein called 60S ribosomal protein L7.

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

- Molecule 43 is a protein called 60S ribosomal protein L7a.

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

- Molecule 44 is a protein called 60S ribosomal protein L8.

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

- Molecule 45 is a protein called 60S ribosomal protein L9.

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

- Molecule 46 is a protein called Eukaryotic translation initiation factor 6.

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

- Molecule 47 is a protein called mRNA turnover protein 4 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
47	SQ	127	650	388	132	130	0	0

- Molecule 48 is a protein called GTP-binding protein 4.

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

- Molecule 49 is a protein called Probable ribosome biogenesis protein RLP24.

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

- Molecule 50 is a protein called Leydig cell tumor 10 kDa protein homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	VB	58	455	285	95	74	1	0	0

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

Mol	Chain	Residues	Atoms		AltConf
51	L1	3	Total 3	Mg 3	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	LN	1	Total 1	Mg 1	0
51	LQ	1	Total 1	Mg 1	0
51	LR	1	Total 1	Mg 1	0
51	LT	1	Total 1	Mg 1	0
51	LW	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).

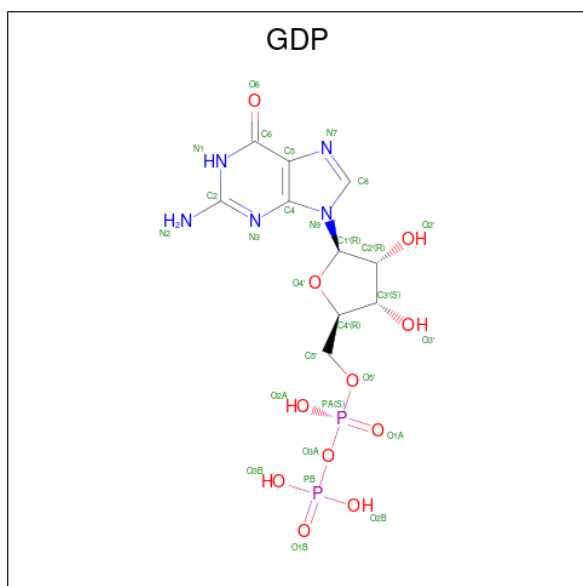
Mol	Chain	Residues	Atoms		AltConf
52	LR	1	Total 1	Zn 1	0
52	LV	1	Total 1	Zn 1	0

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

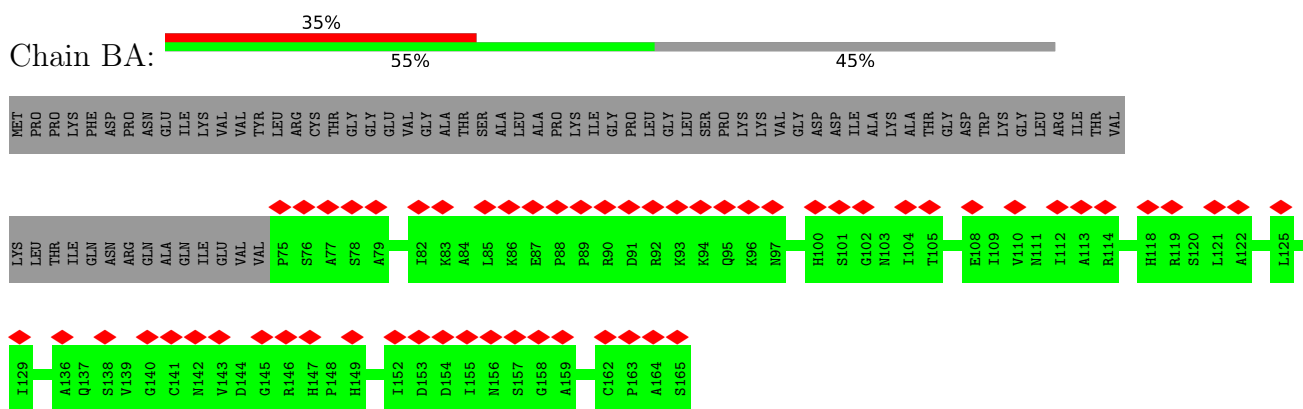
- Molecule 53 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ).



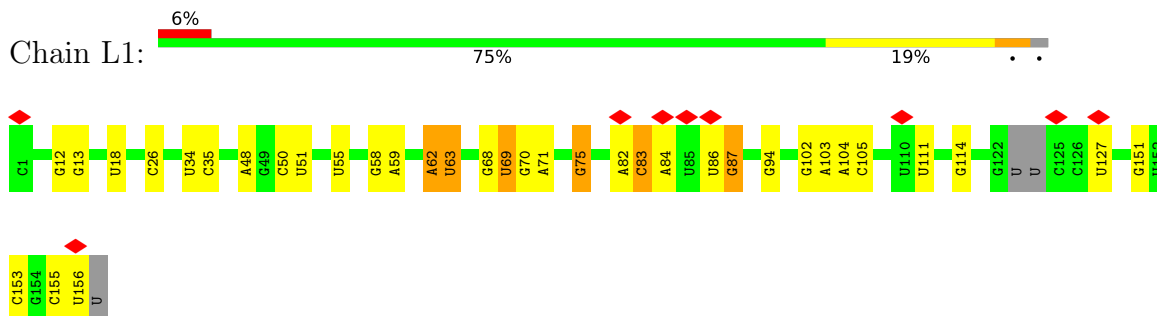
### 3 Residue-property plots [i](#)

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.

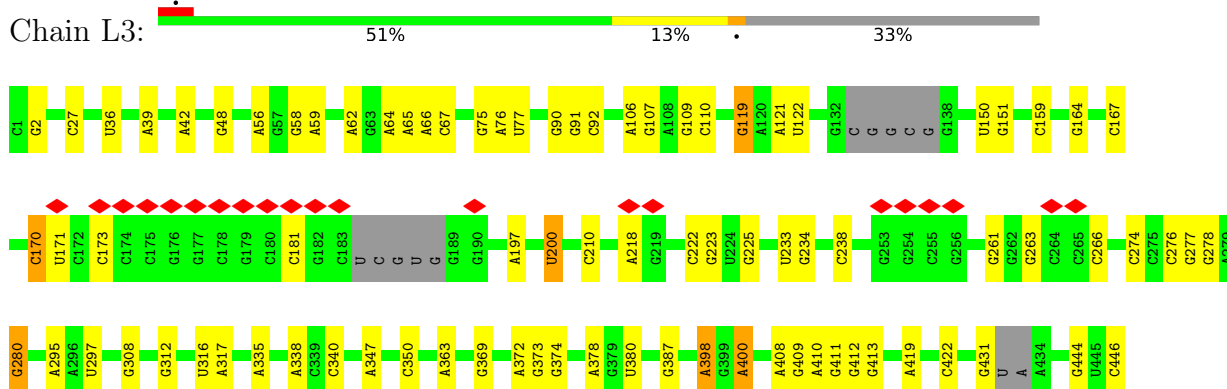
- Molecule 1: 60S ribosomal protein L12

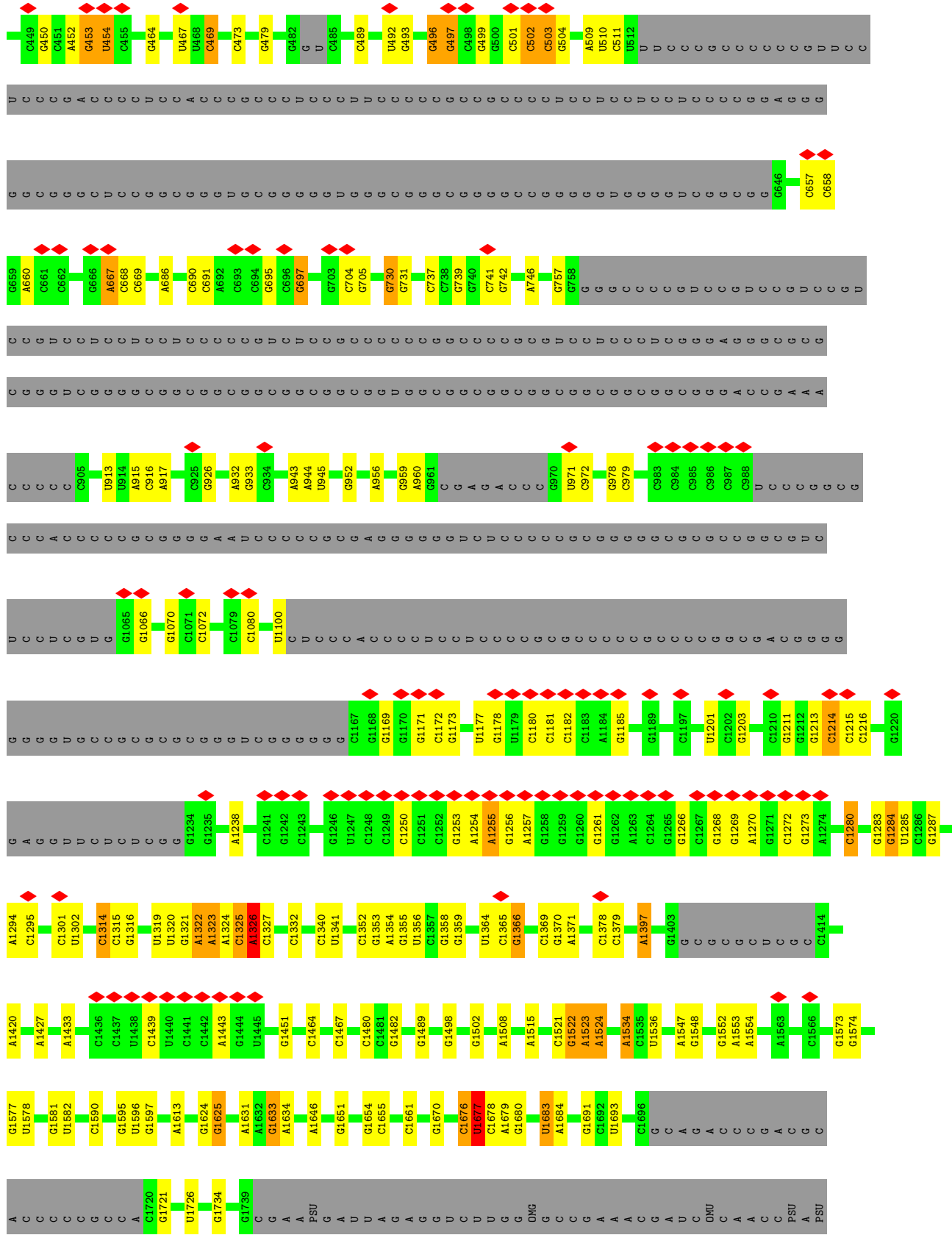


- Molecule 2: 5.8S rRNA



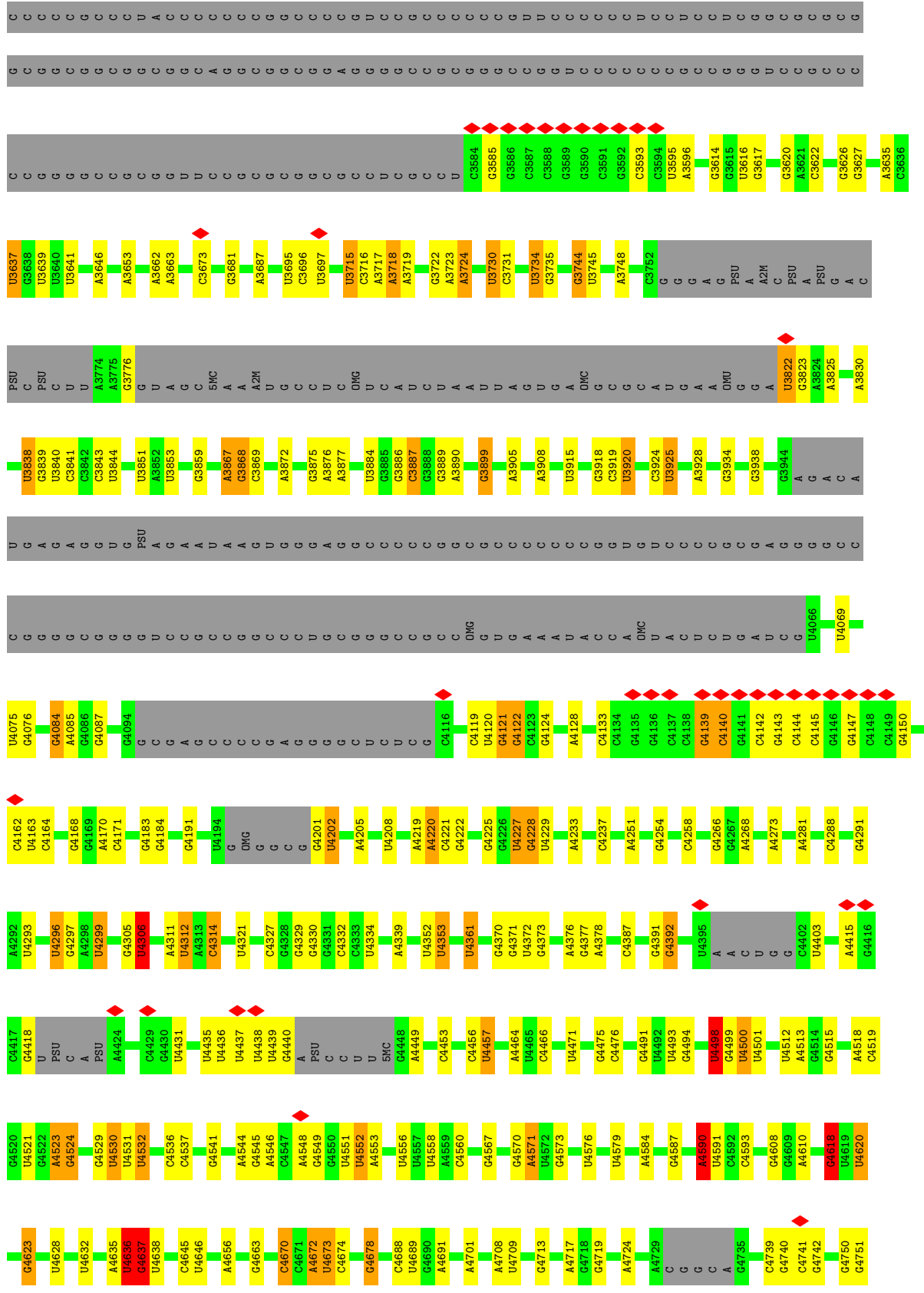
- Molecule 3: 28S rRNA

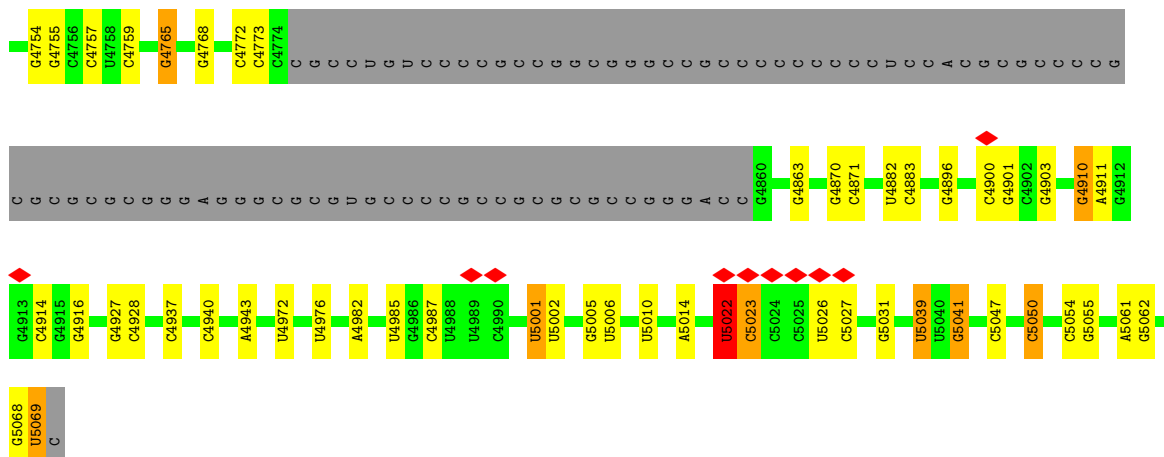




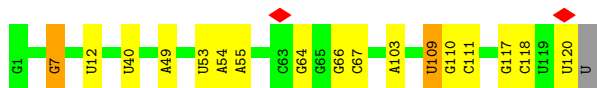
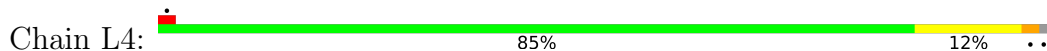




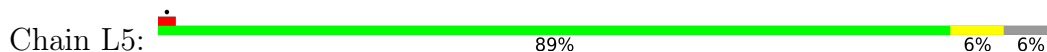




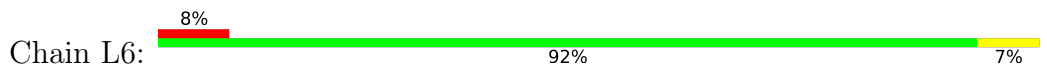
• Molecule 4: 5S rRNA



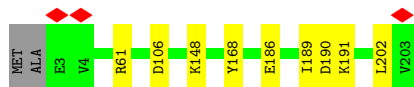
• Molecule 5: 60S ribosomal protein L11



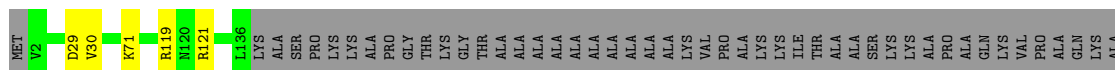
• Molecule 6: 60S ribosomal protein L13



• Molecule 7: 60S ribosomal protein L13a



• Molecule 8: 60S ribosomal protein L14

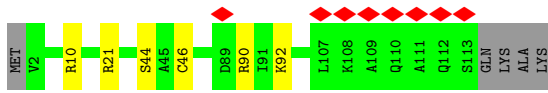




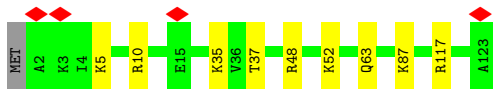




- Molecule 27: 60S ribosomal protein L34



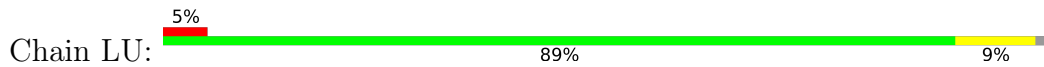
- Molecule 28: 60S ribosomal protein L35



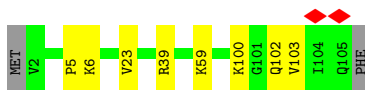
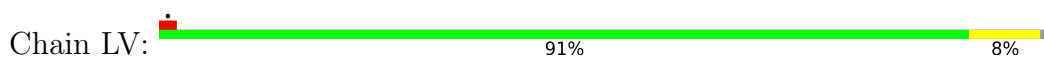
- Molecule 29: 60S ribosomal protein L35a



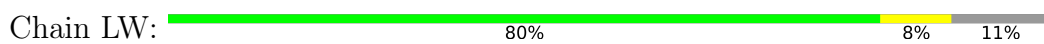
- Molecule 30: 60S ribosomal protein L36



- Molecule 31: 60S ribosomal protein L36a

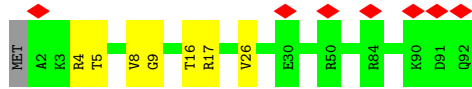


- Molecule 32: 60S ribosomal protein L37

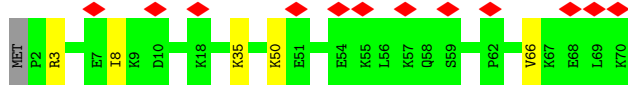


- Molecule 33: 60S ribosomal protein L37a

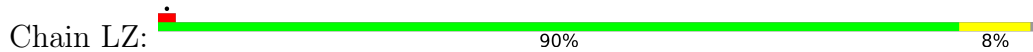




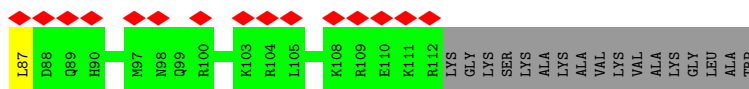
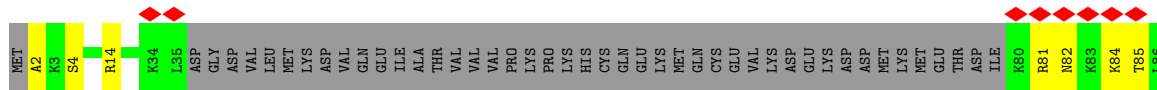
• Molecule 34: 60S ribosomal protein L38



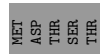
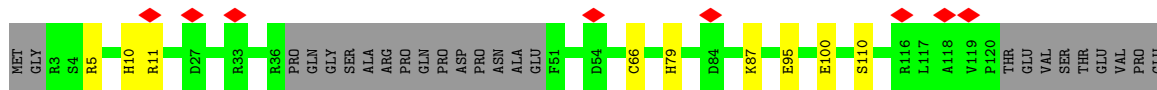
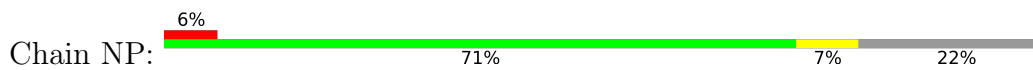
• Molecule 35: 60S ribosomal protein L39



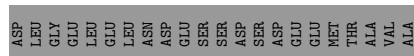
• Molecule 36: Protein LLP homolog



• Molecule 37: Zinc finger protein 593

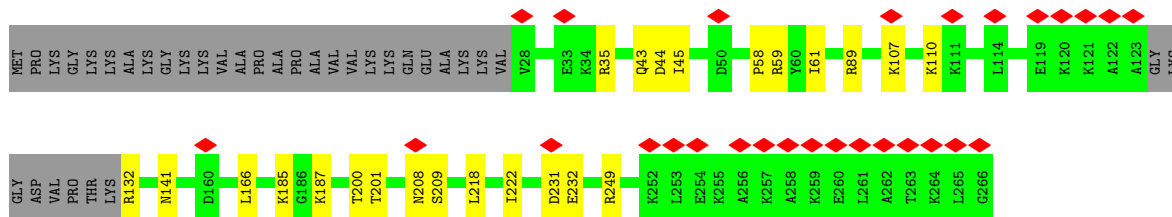


• Molecule 38: Translation machinery-associated protein 16

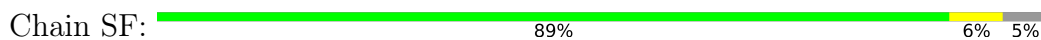




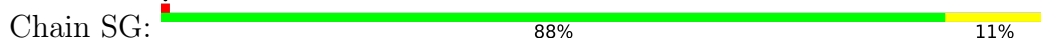




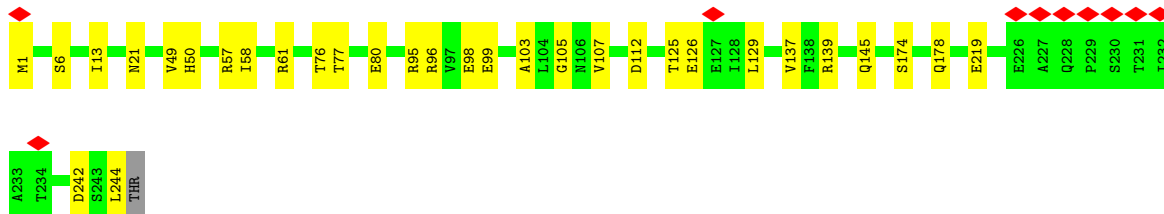
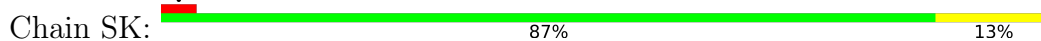
• Molecule 44: 60S ribosomal protein L8



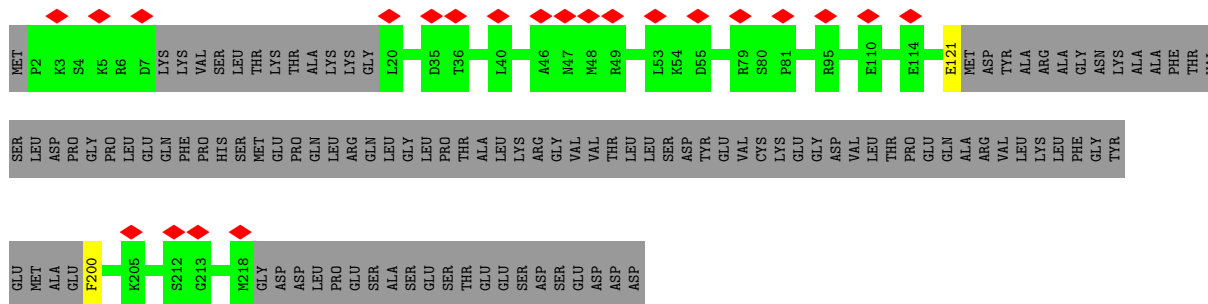
• Molecule 45: 60S ribosomal protein L9



• Molecule 46: Eukaryotic translation initiation factor 6

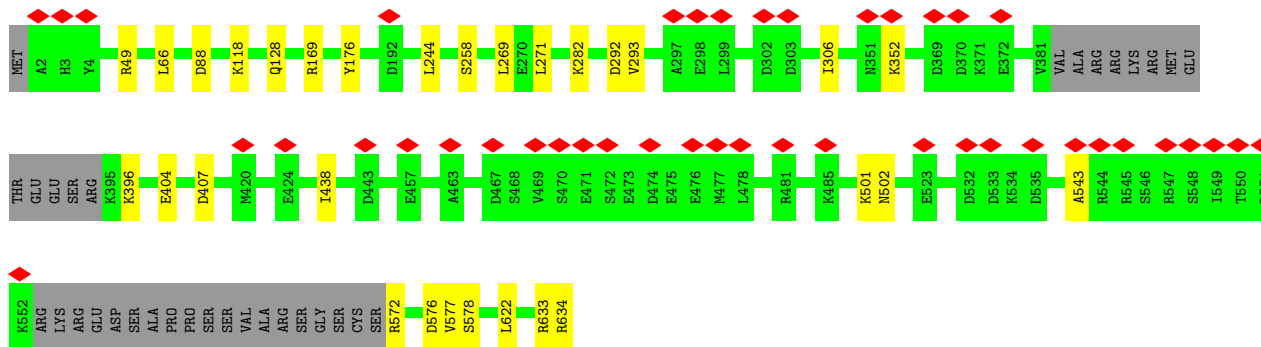


• Molecule 47: mRNA turnover protein 4 homolog

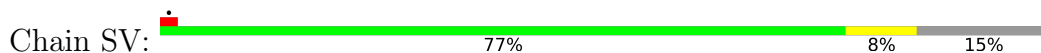


• Molecule 48: GTP-binding protein 4

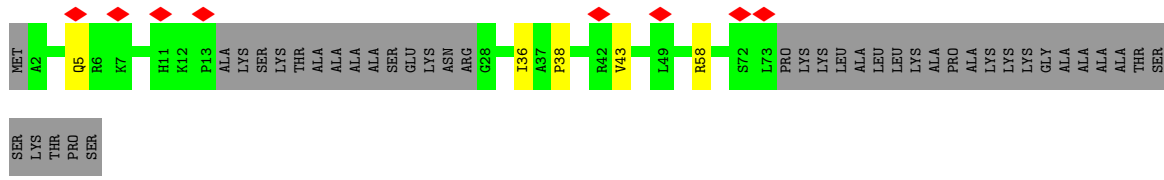




- Molecule 49: Probable ribosome biogenesis protein RLP24



- Molecule 50: Leydig cell tumor 10 kDa protein homolog



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	20809	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 ( $e^-/\text{\AA}^2$ )	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	10.151	Depositor
Minimum map value	-1.391	Depositor
Average map value	0.052	Depositor
Map value standard deviation	0.177	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 [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: A2M, UR3, OMC, ZN, 6MZ, PTR, OMG, GDP, MG, HIC, 1MA, PSU, OMU, K

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	0.23	0/448	0.40	0/622
2	L1	0.21	0/3589	0.72	0/5589
3	L3	0.24	0/78513	0.76	5/122457 (0.0%)
4	L4	0.32	0/2861	0.78	0/4459
5	L5	0.25	0/1372	0.58	0/1836
6	L6	0.25	0/1732	0.59	0/2315
7	L7	0.26	0/1682	0.56	0/2250
8	L8	0.26	0/1133	0.54	0/1516
9	L9	0.25	0/1746	0.59	0/2338
10	LA	0.24	0/1268	0.54	0/1701
11	LB	0.25	0/1536	0.63	0/2052
12	LC	0.27	0/1501	0.59	0/2013
13	LD	0.23	0/1305	0.60	0/1727
14	LE	0.27	0/1291	0.57	0/1724
15	LF	0.28	0/856	0.51	0/1149
16	LG	0.26	0/1048	0.57	0/1402
17	LH	0.24	0/975	0.53	0/1312
18	LI	0.24	0/1132	0.56	0/1504
19	LJ	0.26	0/1130	0.54	0/1507
20	LK	0.24	0/1191	0.55	0/1591
21	LL	0.23	0/1017	0.58	0/1364
22	LM	0.25	0/710	0.56	0/935
23	LN	0.25	0/3294	0.54	0/4406
24	LO	0.26	0/748	0.50	0/1004
25	LP	0.25	0/894	0.58	0/1204
26	LQ	0.24	0/1071	0.57	0/1429
27	LR	0.24	0/898	0.60	0/1197
28	LS	0.24	0/1023	0.55	0/1351
29	LT	0.25	0/895	0.61	0/1198
30	LU	0.24	0/843	0.58	0/1115
31	LV	0.26	0/864	0.59	0/1140
32	LW	0.24	0/720	0.64	0/952

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	LX	0.25	0/718	0.55	0/953
34	LY	0.25	0/575	0.52	0/761
35	LZ	0.23	0/454	0.61	0/599
36	NK	0.27	0/587	0.62	0/767
37	NP	0.24	0/864	0.61	0/1154
38	NR	0.24	0/1306	0.54	0/1740
39	SA	0.24	0/2907	0.57	0/3905
40	SB	0.27	0/2287	0.55	0/3065
41	SC	0.25	0/1781	0.55	0/2388
42	SD	0.25	0/1905	0.55	0/2539
43	SE	0.25	0/1903	0.55	0/2559
44	SF	0.25	0/1914	0.60	0/2567
45	SG	0.25	0/1537	0.54	0/2066
46	SK	0.24	0/1877	0.52	0/2554
47	SQ	0.22	0/648	0.45	0/894
48	SR	0.24	0/5014	0.51	0/6727
49	SV	0.25	0/1207	0.53	0/1600
50	VB	0.23	0/459	0.51	0/605
All	All	0.24	0/147229	0.69	5/215802 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	2469	C	C2-N1-C1'	7.76	127.34	118.80
3	L3	5022	U	O4'-C1'-N1	6.29	113.23	108.20
3	L3	170	C	C6-N1-C2	-6.25	117.80	120.30
3	L3	2469	C	C6-N1-C1'	-5.39	114.34	120.80
3	L3	2469	C	C6-N1-C2	-5.03	118.29	120.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	BA	449	0	207	0	0
2	L1	3278	0	1665	20	0
3	L3	72412	0	36680	343	0
4	L4	2561	0	1295	7	0
5	L5	1349	0	1383	7	0
6	L6	1701	0	1818	14	0
7	L7	1650	0	1794	8	0
8	L8	1111	0	1174	4	0
9	L9	1701	0	1749	21	0
10	LA	1242	0	1269	7	0
11	LB	1512	0	1628	8	0
12	LC	1461	0	1502	6	0
13	LD	1289	0	1429	13	0
14	LE	1264	0	1328	4	0
15	LF	842	0	864	6	0
16	LG	1034	0	1097	3	0
17	LH	958	0	1027	4	0
18	LI	1115	0	1205	10	0
19	LJ	1107	0	1182	21	0
20	LK	1162	0	1213	7	0
21	LL	1002	0	1068	5	0
22	LM	699	0	758	7	0
23	LN	3239	0	3377	28	0
24	LO	738	0	774	3	0
25	LP	879	0	924	6	0
26	LQ	1053	0	1147	12	0
27	LR	888	0	977	5	0
28	LS	1015	0	1148	8	0
29	LT	876	0	912	6	0
30	LU	832	0	917	7	0
31	LV	851	0	920	6	0
32	LW	705	0	737	7	0
33	LX	708	0	756	6	0
34	LY	569	0	637	5	0
35	LZ	444	0	483	4	0
36	NK	581	0	656	9	0
37	NP	847	0	854	8	0
38	NR	1299	0	1318	8	0
39	SA	2853	0	3028	32	0
40	SB	2243	0	2268	11	0
41	SC	1747	0	1897	19	0
42	SD	1870	0	1996	9	0
43	SE	1869	0	2014	18	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	SF	1876	0	1970	14	0
45	SG	1518	0	1601	14	0
46	SK	1852	0	1828	18	0
47	SQ	650	0	308	1	0
48	SR	4932	0	5072	24	0
49	SV	1184	0	1248	11	0
50	VB	455	0	504	4	0
51	L1	3	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	LN	1	0	0	0	0
51	LQ	1	0	0	0	0
51	LR	1	0	0	0	0
51	LT	1	0	0	0	0
51	LW	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	139595	0	103618	608	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (608) 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)
36:NK:81:ARG:NH2	36:NK:85:THR:OG1	2.02	0.93
9:L9:64:ILE:HD11	9:L9:106:ALA:HB2	1.49	0.93
3:L3:4903:G:OP1	36:NK:82:ASN:ND2	2.04	0.90
6:L6:60:ARG:NH2	6:L6:67:HIS:O	2.10	0.85
3:L3:2520:C:O2	3:L3:2640:G:N2	2.11	0.83
37:NP:66:CYS:SG	37:NP:79:HIS:CE1	2.69	0.82
4:L4:40:U:O2	5:L5:75:ARG:NH1	2.13	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:1280:C:O2'	39:SA:321:ASN:OD1	1.99	0.80
3:L3:308:G:OP2	3:L3:308:G:N2	2.11	0.80
19:LJ:92:ASP:OD2	19:LJ:94:THR:OG1	1.98	0.80
2:L1:62:A:OP1	28:LS:52:LYS:NZ	2.15	0.80
3:L3:3641:U:OP2	3:L3:3646:A:N6	2.14	0.79
3:L3:3928:A:OP1	9:L9:90:ASN:ND2	2.16	0.79
3:L3:1480:C:O2'	3:L3:1482:G:OP2	1.98	0.79
3:L3:1853:G:O2'	3:L3:1854:G:OP2	2.00	0.78
3:L3:1883:G:OP1	26:LQ:47:ARG:NH2	2.16	0.78
3:L3:3748:A:HO2'	44:SF:223:SER:HG	1.28	0.78
15:LF:105:ASN:OD1	15:LF:109:SER:OG	2.02	0.78
3:L3:2553:A:OP2	3:L3:2574:G:O2'	2.01	0.77
2:L1:12:G:OP1	10:LA:3:ARG:NH1	2.18	0.77
2:L1:63:U:OP1	28:LS:48:ARG:NH2	2.18	0.77
3:L3:4688:C:O2'	45:SG:155:SER:OG	1.99	0.77
29:LT:14:TYR:OH	29:LT:92:LEU:O	2.03	0.77
3:L3:277:G:OP2	30:LU:29:ARG:NH2	2.18	0.77
3:L3:1397:A:HO2'	3:L3:1467:C:HO2'	1.32	0.76
3:L3:2407:G:N2	3:L3:2407:G:OP2	2.17	0.76
3:L3:4128:A:O2'	43:SE:35:ARG:NH1	2.19	0.76
39:SA:109:ARG:CG	39:SA:109:ARG:O	2.33	0.76
3:L3:422:C:O2'	10:LA:121:LYS:NZ	2.18	0.76
3:L3:4314:C:O2'	22:LM:36:ASP:OD1	2.04	0.76
2:L1:51:U:OP2	35:LZ:21:ARG:NH2	2.19	0.76
41:SC:161:ARG:O	41:SC:182:ASN:ND2	2.17	0.76
3:L3:4768:G:OP1	7:L7:168:TYR:OH	2.04	0.76
3:L3:695:G:O2'	3:L3:697:G:OP2	2.04	0.75
9:L9:32:GLN:O	43:SE:59:ARG:NH2	2.20	0.75
48:SR:244:LEU:O	48:SR:282:LYS:NZ	2.19	0.75
13:LD:12:SER:OG	13:LD:17:CYS:O	2.03	0.74
3:L3:4120:U:O2'	3:L3:4121:G:OP1	2.04	0.74
3:L3:1185:G:O2'	40:SB:278:ASP:OD1	2.04	0.74
28:LS:10:ARG:NH2	28:LS:63:GLN:OE1	2.20	0.74
2:L1:75:OMG:OP2	18:LI:74:TYR:OH	2.05	0.74
3:L3:2448:G:O2'	44:SF:21:LYS:NZ	2.17	0.74
3:L3:4541:G:N2	3:L3:4544:A:OP2	2.19	0.74
3:L3:1397:A:O2'	3:L3:1467:C:O2'	2.03	0.74
3:L3:67:C:OP2	3:L3:312:G:N2	2.20	0.74
3:L3:110:C:OP1	6:L6:89:LYS:NZ	2.20	0.74
3:L3:1508:A:OP1	39:SA:110:ARG:NH2	2.21	0.74
3:L3:1931:C:N4	3:L3:2039:G:OP2	2.20	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:295:A:OP2	31:LV:39:ARG:NH1	2.21	0.73
3:L3:122:U:O4	43:SE:107:LYS:NZ	2.19	0.73
3:L3:4717:A:OP2	23:LN:30:LYS:NZ	2.21	0.72
3:L3:62:A:N3	3:L3:77:U:O2'	2.20	0.72
2:L1:153:C:OP1	43:SE:185:LYS:NZ	2.23	0.72
3:L3:1573:G:OP1	13:LD:92:LYS:NZ	2.23	0.72
5:L5:158:SER:OG	5:L5:161:GLU:OE1	2.02	0.71
3:L3:2545:U:O2'	3:L3:2547:G:N7	2.21	0.71
3:L3:2848:G:O2'	3:L3:3838:U:O4	2.04	0.71
3:L3:502:C:O2'	3:L3:503:C:OP1	2.04	0.71
4:L4:7:G:OP1	40:SB:33:ARG:NH1	2.23	0.71
5:L5:84:GLU:OE2	5:L5:92:TYR:OH	2.09	0.71
46:SK:98:GLU:OE2	49:SV:74:ARG:NH2	2.24	0.71
3:L3:2841:G:OP1	37:NP:10:HIS:NE2	2.24	0.71
3:L3:1177:U:O2'	40:SB:280:VAL:O	2.08	0.71
3:L3:1314:C:O2'	26:LQ:24:GLN:NE2	2.25	0.70
3:L3:2580:U:HO2'	19:LJ:79:HIS:HD1	1.38	0.70
3:L3:75:G:OP2	6:L6:102:ARG:NH1	2.25	0.70
3:L3:369:G:N2	3:L3:372:A:OP2	2.23	0.70
3:L3:2856:C:O2	23:LN:242:ARG:NH2	2.25	0.70
3:L3:1323:A:O2'	3:L3:1325:C:OP2	2.10	0.69
3:L3:2588:C:OP1	3:L3:2768:C:O2'	2.09	0.69
7:L7:202:LEU:O	7:L7:202:LEU:HD23	1.92	0.69
3:L3:1322:1MA:O2'	3:L3:1323:A:O4'	2.11	0.69
3:L3:1646:A:O2'	32:LW:49:TRP:O	2.10	0.69
3:L3:5002:U:OP2	23:LN:385:LYS:NZ	2.24	0.69
39:SA:337:ARG:NH1	41:SC:55:GLY:O	2.26	0.69
3:L3:979:C:OP2	41:SC:66:LYS:NZ	2.18	0.69
3:L3:4476:C:O2'	45:SG:173:ARG:NH2	2.26	0.69
3:L3:1814:C:O2'	22:LM:42:ASN:OD1	2.10	0.69
32:LW:48:ASN:OD1	32:LW:54:LYS:NZ	2.20	0.69
3:L3:1433:A:N6	3:L3:1451:G:O2'	2.26	0.68
39:SA:179:ASP:OD1	39:SA:204:ARG:NH2	2.27	0.68
3:L3:1802:A:N3	14:LE:130:ARG:NH2	2.41	0.68
3:L3:408:A:O2'	3:L3:411:G:OP2	2.11	0.68
3:L3:3908:A:O2'	3:L3:4531:U:OP1	2.10	0.68
3:L3:3734:PSU:H2'	3:L3:3735:G:O4'	1.94	0.67
47:SQ:121:GLU:O	47:SQ:200:PHE:N	2.26	0.67
3:L3:5039:U:O2'	49:SV:115:ASN:OD1	2.11	0.67
3:L3:4765:G:OP1	45:SG:23:ARG:NE	2.28	0.66
3:L3:2696:A:H62	34:LY:35:LYS:HZ2	1.42	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:LG:13:LYS:NZ	16:LG:59:ASP:OD1	2.29	0.65
36:NK:81:ARG:NH1	36:NK:82:ASN:O	2.30	0.65
36:NK:81:ARG:NE	36:NK:87:LEU:O	2.29	0.65
3:L3:1366:G:N2	3:L3:1371:A:OP2	2.29	0.65
28:LS:35:LYS:O	48:SR:572:ARG:NH1	2.30	0.65
4:L4:117:G:OP1	40:SB:253:TYR:OH	2.11	0.65
2:L1:50:C:O2'	48:SR:578:SER:OG	2.14	0.65
3:L3:151:G:OP2	9:L9:4:TYR:OH	2.14	0.64
3:L3:2556:G:O2'	19:LJ:109:LYS:NZ	2.30	0.64
3:L3:1366:G:N7	6:L6:37:LYS:NZ	2.40	0.64
3:L3:419:A:N3	3:L3:1332:C:O2'	2.27	0.64
3:L3:3620:G:OP1	3:L3:3622:C:N4	2.30	0.64
3:L3:1255:A:OP1	3:L3:1257:A:N6	2.31	0.64
3:L3:1895:G:OP1	42:SD:96:ARG:NH2	2.30	0.64
3:L3:2427:G:OP1	13:LD:5:ARG:NH2	2.31	0.63
3:L3:2543:A:O2'	3:L3:2545:U:OP1	2.09	0.63
29:LT:33:VAL:HG23	29:LT:38:GLU:HB2	1.80	0.63
3:L3:3681:G:N1	44:SF:118:GLU:OE2	2.30	0.63
3:L3:3938:G:N2	3:L3:4171:C:OP2	2.32	0.63
3:L3:1355:G:OP1	11:LB:108:ARG:NH1	2.31	0.63
43:SE:58:PRO:HD2	43:SE:61:ILE:HD12	1.80	0.63
3:L3:1548:G:O2'	3:L3:2812:A:N3	2.30	0.63
9:L9:2:GLY:N	43:SE:141:ASN:OD1	2.32	0.63
38:NR:131:ILE:HG21	38:NR:161:ILE:HD12	1.79	0.63
12:LC:173:ASN:ND2	12:LC:175:PHE:O	2.32	0.63
2:L1:87:G:OP2	28:LS:5:LYS:NZ	2.31	0.63
3:L3:280:G:OP2	9:L9:44:ARG:NH2	2.32	0.63
24:LO:47:ILE:HD12	24:LO:94:LEU:HD11	1.79	0.63
3:L3:4449:A:OP1	48:SR:118:LYS:NZ	2.31	0.62
3:L3:1214:C:N4	22:LM:90:SER:O	2.31	0.62
16:LG:115:SER:OG	46:SK:145:GLN:OE1	2.13	0.62
3:L3:4124:G:N2	43:SE:43:GLN:O	2.32	0.62
3:L3:4500:PSU:H2'	3:L3:4501:U:C6	2.34	0.62
3:L3:3776:G:OP2	3:L3:3776:G:N2	2.30	0.62
3:L3:1369:C:OP2	3:L3:1370:G:O2'	2.08	0.62
46:SK:242:ASP:OD1	48:SR:169:ARG:NH2	2.32	0.62
3:L3:4220:6MZ:H8	3:L3:4220:6MZ:O1P	1.99	0.62
23:LN:357:ARG:NE	48:SR:407:ASP:OD1	2.31	0.62
3:L3:1881:C:O2'	3:L3:1882:U:OP2	2.18	0.62
3:L3:200:U:O4	18:LI:103:LYS:NZ	2.22	0.61
3:L3:737:C:OP2	8:L8:71:LYS:NZ	2.31	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:276:C:OP2	30:LU:34:THR:HG21	2.01	0.61
7:L7:189:ILE:HD11	8:L8:119:ARG:HG2	1.82	0.61
3:L3:453:G:O2'	3:L3:705:G:OP1	2.17	0.61
3:L3:1943:A:C2	50:VB:36:ILE:HD12	2.35	0.61
4:L4:55:A:O2'	5:L5:151:ILE:O	2.13	0.61
3:L3:4529:G:O2'	3:L3:4530:UR3:H5'	2.01	0.61
49:SV:53:LYS:NZ	49:SV:62:GLU:OE2	2.34	0.61
3:L3:489:C:O2'	3:L3:667:A:N6	2.34	0.60
3:L3:2407:G:O6	35:LZ:2:SER:N	2.34	0.60
46:SK:99:GLU:OE1	46:SK:125:THR:OG1	2.17	0.60
3:L3:4987:C:N4	23:LN:121:ASN:OD1	2.34	0.60
3:L3:121:A:OP1	43:SE:110:LYS:NZ	2.33	0.60
39:SA:109:ARG:O	39:SA:109:ARG:HG2	2.00	0.60
3:L3:2262:G:OP1	21:LL:94:ARG:NH1	2.35	0.60
39:SA:340:ILE:HG21	41:SC:50:LEU:HD13	1.84	0.60
3:L3:4928:C:O4'	8:L8:121:ARG:NH1	2.34	0.60
3:L3:4435:U:OP2	3:L3:4436:U:O2'	2.15	0.60
3:L3:690:C:OP1	21:LL:87:ARG:NH1	2.35	0.60
3:L3:4670:C:O2'	3:L3:4672:A:OP2	2.20	0.60
3:L3:2811:G:N2	3:L3:2814:C:OP2	2.30	0.60
3:L3:454:U:O2	26:LQ:5:ARG:NH2	2.36	0.59
3:L3:1957:U:OP2	38:NR:105:ARG:NH2	2.35	0.59
3:L3:3924:C:O2'	3:L3:3925:OMU:H5''	2.02	0.59
39:SA:288:ASP:OD2	39:SA:291:ARG:NH1	2.35	0.59
48:SR:176:TYR:CE1	48:SR:271:LEU:HD22	2.36	0.59
3:L3:3748:A:O2'	44:SF:223:SER:OG	2.07	0.59
48:SR:269:LEU:HD22	48:SR:306:ILE:HG23	1.84	0.59
3:L3:3717:A:OP2	3:L3:3735:G:N2	2.34	0.59
3:L3:2258:C:N3	41:SC:90:ALA:N	2.52	0.58
3:L3:2318:G:N2	3:L3:2321:G:OP2	2.23	0.58
3:L3:4645:C:OP2	13:LD:62:ARG:NH1	2.36	0.58
3:L3:2562:G:O2'	3:L3:2565:A:N6	2.36	0.58
3:L3:76:A:OP2	6:L6:74:ARG:NH1	2.36	0.58
3:L3:2876:OMG:HM22	3:L3:2877:G:H5'	1.86	0.58
50:VB:5:GLN:OE1	50:VB:5:GLN:N	2.36	0.58
3:L3:1521:C:O2'	3:L3:1522:OMG:H5'	2.03	0.58
3:L3:2299:G:OP1	39:SA:182:LYS:NZ	2.35	0.58
3:L3:1577:G:C2	3:L3:3637:PSU:H1'	2.39	0.58
3:L3:347:A:OP2	18:LI:8:THR:OG1	2.21	0.58
3:L3:4371:G:OP1	31:LV:59:LYS:NZ	2.37	0.58
48:SR:396:LYS:NZ	48:SR:404:GLU:OE1	2.26	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2350:U:O5'	3:L3:2351:OMC:H5'	2.04	0.57
3:L3:2902:G:O6	3:L3:3596:A:O2'	2.10	0.57
23:LN:213:GLN:NE2	23:LN:285:TYR:O	2.35	0.57
3:L3:1677:PSU:H4'	3:L3:1680:G:C2	2.39	0.57
3:L3:36:U:OP1	3:L3:1651:G:N2	2.37	0.57
3:L3:4299:PSU:OP1	22:LM:33:LYS:NZ	2.36	0.57
43:SE:44:ASP:OD1	43:SE:45:ILE:N	2.38	0.57
20:LK:38:LEU:O	20:LK:42:ARG:NH1	2.37	0.57
3:L3:1364:U:OP2	6:L6:36:ARG:NH2	2.37	0.57
38:NR:90:GLU:OE2	38:NR:91:GLN:NE2	2.37	0.57
3:L3:1880:G:OP1	3:L3:1882:U:O2'	2.15	0.57
3:L3:4371:G:O2'	3:L3:4372:U:OP2	2.20	0.56
3:L3:4546:A:N7	44:SF:215:ASN:ND2	2.53	0.56
3:L3:4122:G:O2'	19:LJ:136:PHE:OXT	2.18	0.56
3:L3:222:C:OP2	39:SA:165:LYS:NZ	2.27	0.56
3:L3:978:G:OP1	41:SC:47:ASN:ND2	2.38	0.56
23:LN:219:VAL:HG11	23:LN:337:VAL:CG2	2.35	0.56
37:NP:100:GLU:N	37:NP:100:GLU:OE1	2.38	0.56
42:SD:171:ASP:OD1	42:SD:172:ASN:N	2.39	0.56
3:L3:2578:G:N7	19:LJ:17:ARG:NH2	2.51	0.56
2:L1:127:U:N3	3:L3:2544:G:OP1	2.37	0.56
27:LR:44:SER:OG	27:LR:46:CYS:SG	2.56	0.56
43:SE:218:LEU:O	43:SE:222:ILE:HD12	2.05	0.56
3:L3:2725:A:OP2	13:LD:97:ARG:NH2	2.39	0.56
39:SA:153:VAL:HG12	39:SA:252:TRP:HB2	1.88	0.56
3:L3:27:C:OP2	9:L9:193:ARG:NH1	2.38	0.56
3:L3:1670:G:OP2	3:L3:1670:G:N2	2.35	0.56
13:LD:7:GLN:N	13:LD:7:GLN:OE1	2.39	0.56
41:SC:281:ILE:CG2	41:SC:286:LEU:HD11	2.35	0.55
3:L3:4311:A:O2'	3:L3:4312:PSU:H5''	2.05	0.55
19:LJ:22:LYS:NZ	19:LJ:132:GLN:O	2.33	0.55
3:L3:4087:G:OP2	44:SF:37:ARG:NH2	2.40	0.55
3:L3:1238:A:O2'	42:SD:52:GLU:OE2	2.25	0.55
3:L3:4391:G:O2'	3:L3:4392:OMG:H5'	2.07	0.55
25:LP:103:TYR:HE2	25:LP:105:LEU:HD21	1.72	0.55
3:L3:90:G:OP2	3:L3:92:C:N4	2.39	0.55
3:L3:1378:C:O2	6:L6:158:ARG:NE	2.39	0.55
3:L3:2772:C:OP1	34:LY:3:ARG:NH2	2.40	0.55
3:L3:5068:G:N2	3:L3:5069:U:O4	2.27	0.55
3:L3:2306:G:O2'	3:L3:2307:A:OP2	2.24	0.55
3:L3:2414:G:O2'	3:L3:2415:OMU:H5''	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:350:C:OP2	39:SA:199:ARG:NH2	2.40	0.54
23:LN:222:VAL:O	23:LN:343:ARG:NH1	2.40	0.54
3:L3:2363:A2M:H2'	3:L3:2364:OMG:O4'	2.07	0.54
3:L3:2633:U:OP1	13:LD:64:ARG:NH2	2.41	0.54
3:L3:4084:G:O6	44:SF:72:ARG:NH2	2.40	0.54
3:L3:2626:U:OP2	48:SR:501:LYS:NZ	2.37	0.54
3:L3:3722:G:OP2	30:LU:68:ARG:NH2	2.41	0.54
3:L3:1693:U:O4	11:LB:14:ARG:NH2	2.39	0.54
44:SF:142:GLU:OE1	44:SF:143:THR:HG23	2.07	0.54
3:L3:730:G:OP2	42:SD:76:ARG:NE	2.41	0.54
3:L3:4635:A:H3'	3:L3:4636:PSU:H4'	1.90	0.54
13:LD:41:ILE:O	13:LD:45:ILE:HD12	2.08	0.54
3:L3:4987:C:OP2	23:LN:116:ARG:NH2	2.41	0.54
9:L9:45:PRO:HG2	43:SE:166:LEU:HD21	1.90	0.54
3:L3:4724:A:O2'	23:LN:104:THR:HG22	2.08	0.53
3:L3:2459:G:N2	3:L3:2462:C:OP2	2.38	0.53
3:L3:4587:G:OP1	7:L7:61:ARG:NH1	2.41	0.53
46:SK:6:SER:HA	46:SK:13:ILE:HD11	1.91	0.53
3:L3:374:G:OP2	32:LW:56:ARG:NH2	2.41	0.53
9:L9:115:VAL:HG22	9:L9:134:LEU:CD2	2.39	0.53
39:SA:8:ILE:HD11	39:SA:257:PHE:CE2	2.43	0.53
3:L3:119:G:O4'	43:SE:132:ARG:NH1	2.42	0.53
3:L3:2469:C:O2'	3:L3:2470:C:OP1	2.26	0.53
3:L3:2844:A:N6	3:L3:3839:G:O2'	2.41	0.53
3:L3:5001:PSU:H2'	3:L3:5002:U:O4'	2.08	0.53
31:LV:100:LYS:O	31:LV:102:GLN:NE2	2.42	0.53
3:L3:1464:C:H5''	22:LM:32:LEU:HD12	1.90	0.53
19:LJ:120:GLU:O	19:LJ:124:THR:HG23	2.09	0.53
3:L3:1340:OMC:H2'	3:L3:1341:U:C6	2.44	0.52
3:L3:4673:PSU:H2'	3:L3:4674:C:C6	2.44	0.52
2:L1:68:G:O2'	2:L1:69:PSU:H5''	2.09	0.52
3:L3:1676:C:OP2	3:L3:1677:PSU:N1	2.40	0.52
3:L3:2898:G:OP2	13:LD:135:LYS:NZ	2.24	0.52
3:L3:2695:A:OP1	34:LY:35:LYS:NZ	2.34	0.52
3:L3:4593:C:OP2	36:NK:2:ALA:N	2.43	0.52
3:L3:2300:A:OP1	26:LQ:83:LYS:NZ	2.41	0.52
2:L1:69:PSU:H2'	2:L1:70:G:O4'	2.09	0.52
3:L3:691:C:OP1	41:SC:114:ARG:NH1	2.41	0.52
3:L3:2402:G:O2'	27:LR:10:ARG:O	2.28	0.52
9:L9:124:ASP:OD1	9:L9:125:SER:N	2.40	0.52
17:LH:82:THR:O	17:LH:82:THR:HG22	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:SE:208:ASN:OD1	43:SE:209:SER:N	2.42	0.52
3:L3:952:G:OP1	29:LT:73:LYS:NZ	2.42	0.52
3:L3:1326:A2M:H2'	3:L3:1327:C:C6	2.45	0.52
6:L6:7:GLY:O	20:LK:49:HIS:NE2	2.36	0.52
9:L9:148:THR:HG22	9:L9:148:THR:O	2.10	0.52
40:SB:62:CYS:HB3	40:SB:105:LEU:HD22	1.91	0.52
45:SG:103:VAL:HG11	45:SG:144:LEU:HD21	1.92	0.52
3:L3:1523:A:O2'	3:L3:1524:A2M:H5'	2.10	0.52
3:L3:4637:OMG:H2'	3:L3:4638:U:C6	2.45	0.52
3:L3:4457:PSU:O4	23:LN:252:ALA:HB3	2.10	0.51
42:SD:203:GLU:N	42:SD:203:GLU:OE1	2.43	0.51
3:L3:4296:PSU:H2'	3:L3:4297:G:O4'	2.10	0.51
6:L6:178:ALA:N	20:LK:134:GLU:OE2	2.43	0.51
14:LE:121:GLU:OE1	14:LE:121:GLU:N	2.43	0.51
18:LI:91:ASN:OD1	18:LI:93:THR:HG22	2.11	0.51
43:SE:231:ASP:OD1	43:SE:232:GLU:N	2.43	0.51
3:L3:1590:C:O2'	37:NP:5:ARG:NH2	2.43	0.51
3:L3:4515:G:OP1	48:SR:49:ARG:NH1	2.43	0.51
3:L3:4524:G:C2	23:LN:252:ALA:HB1	2.45	0.51
16:LG:97:TYR:OH	49:SV:37:HIS:NE2	2.40	0.51
39:SA:109:ARG:O	39:SA:109:ARG:HG3	2.08	0.51
3:L3:1321:G:O2'	3:L3:1322:1MA:H5'	2.09	0.51
15:LF:67:LYS:O	15:LF:68:SER:OG	2.27	0.51
23:LN:298:LEU:HD11	23:LN:300:LYS:HE3	1.93	0.51
3:L3:469:C:N3	41:SC:105:ARG:NH2	2.55	0.51
11:LB:17:GLU:N	11:LB:17:GLU:OE1	2.44	0.51
36:NK:84:LYS:HD3	36:NK:85:THR:HG23	1.93	0.51
19:LJ:68:ILE:O	19:LJ:115:LYS:NZ	2.37	0.51
40:SB:268:ARG:NH2	40:SB:271:MET:SD	2.82	0.51
45:SG:52:LYS:O	45:SG:54:ARG:NH1	2.44	0.51
3:L3:3715:PSU:H2'	3:L3:3716:C:O4'	2.11	0.51
3:L3:3723:A:H2'	3:L3:3724:A2M:H8	1.93	0.51
41:SC:281:ILE:HG23	41:SC:286:LEU:HD11	1.93	0.51
3:L3:431:G:N2	3:L3:3889:G:OP2	2.44	0.50
3:L3:1889:U:OP1	29:LT:19:ARG:NH1	2.44	0.50
3:L3:2296:G:O2'	39:SA:242:PRO:O	2.29	0.50
3:L3:4678:G:OP2	36:NK:14:ARG:NH1	2.44	0.50
14:LE:41:ASP:OD1	14:LE:61:THR:OG1	2.20	0.50
3:L3:107:G:OP2	6:L6:42:LYS:NZ	2.35	0.50
19:LJ:76:ASN:OD1	19:LJ:77:TYR:N	2.44	0.50
3:L3:2519:U:O2'	3:L3:2530:U:O2	2.27	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:3718:A2M:H2	3:L3:3934:G:O4'	2.12	0.50
19:LJ:10:VAL:HG23	19:LJ:83:THR:OG1	2.11	0.50
23:LN:67:VAL:O	23:LN:67:VAL:HG22	2.11	0.50
4:L4:12:U:O3'	4:L4:109:U:O2'	2.17	0.50
3:L3:4219:A:O2'	3:L3:4220:6MZ:O5'	2.21	0.50
23:LN:205:VAL:HG13	23:LN:205:VAL:O	2.12	0.50
13:LD:34:ASN:O	13:LD:36:ASN:ND2	2.43	0.50
44:SF:27:ALA:O	44:SF:128:ARG:NH1	2.44	0.50
6:L6:63:THR:HG21	20:LK:66:ASN:HB3	1.93	0.50
23:LN:80:GLU:OE1	23:LN:323:TYR:OH	2.25	0.50
25:LP:57:MET:SD	25:LP:90:ARG:NH1	2.85	0.50
21:LL:20:ARG:NH1	26:LQ:78:LEU:O	2.45	0.49
23:LN:108:GLU:OE2	23:LN:138:GLN:NE2	2.42	0.49
2:L1:71:A:N6	2:L1:83:C:O4'	2.45	0.49
3:L3:5047:C:O2'	3:L3:5050:C:OP2	2.23	0.49
3:L3:223:G:N3	39:SA:223:ASN:ND2	2.56	0.49
3:L3:2411:C:HO2'	3:L3:2526:C:HO2'	1.56	0.49
9:L9:44:ARG:NH1	9:L9:120:TRP:O	2.45	0.49
34:LY:66:VAL:HG13	34:LY:66:VAL:O	2.12	0.49
3:L3:2325:C:P	26:LQ:101:HIS:HD1	2.35	0.49
7:L7:190:ASP:OD1	7:L7:191:LYS:N	2.46	0.49
33:LX:5:THR:HG21	33:LX:8:VAL:HG22	1.94	0.49
3:L3:2368:A:N6	3:L3:2827:G:O2'	2.46	0.49
3:L3:4122:G:O3'	27:LR:90:ARG:NH1	2.45	0.49
40:SB:104:LEU:HD21	40:SB:108:ARG:NH2	2.27	0.49
15:LF:26:THR:O	15:LF:30:GLU:OE1	2.31	0.49
38:NR:150:LEU:HD13	38:NR:153:LEU:HD11	1.94	0.49
3:L3:1931:C:N4	3:L3:2041:A:OP1	2.46	0.49
3:L3:2667:C:OP2	13:LD:103:ARG:NH1	2.43	0.49
45:SG:118:LEU:HD11	45:SG:167:VAL:HG22	1.95	0.49
3:L3:3614:G:O6	37:NP:87:LYS:NZ	2.42	0.49
4:L4:12:U:OP2	4:L4:67:C:O2'	2.28	0.49
30:LU:28:ARG:O	30:LU:32:ARG:NH1	2.45	0.49
3:L3:1340:OMC:H2'	3:L3:1341:U:H6	1.78	0.48
40:SB:104:LEU:HD21	40:SB:108:ARG:CZ	2.43	0.48
26:LQ:26:ASP:OD1	26:LQ:27:ARG:N	2.46	0.48
3:L3:3622:C:OP1	37:NP:11:ARG:NH1	2.46	0.48
3:L3:3867:A2M:HM'3	3:L3:3867:A2M:H1'	1.65	0.48
3:L3:4863:G:OP1	45:SG:21:LYS:NZ	2.43	0.48
9:L9:115:VAL:HA	9:L9:134:LEU:HD23	1.94	0.48
23:LN:219:VAL:HG11	23:LN:337:VAL:HG21	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:SC:244:GLU:OE1	41:SC:244:GLU:N	2.44	0.48
3:L3:2666:U:OP2	13:LD:124:TYR:OH	2.22	0.48
3:L3:4620:OMU:OP2	3:L3:4670:C:N4	2.39	0.48
37:NP:110:SER:OG	49:SV:70:GLU:OE2	2.28	0.48
46:SK:21:ASN:ND2	46:SK:112:ASP:OD2	2.45	0.48
46:SK:76:THR:O	46:SK:96:ARG:NH1	2.45	0.48
46:SK:174:SER:O	46:SK:178:GLN:N	2.43	0.48
3:L3:4691:A:OP1	45:SG:75:SER:OG	2.19	0.48
9:L9:160:GLU:OE1	9:L9:160:GLU:N	2.44	0.48
18:LI:19:PHE:O	18:LI:26:ARG:NH2	2.46	0.48
3:L3:4075:U:OP1	43:SE:249:ARG:NH2	2.47	0.47
3:L3:4536:OMC:H2'	3:L3:4537:C:H6	1.79	0.47
18:LI:109:LEU:HD11	18:LI:115:ARG:HH11	1.79	0.47
24:LO:59:GLU:OE1	27:LR:92:LYS:NZ	2.47	0.47
41:SC:214:ASP:OD1	41:SC:215:ALA:N	2.47	0.47
49:SV:19:MET:SD	49:SV:19:MET:N	2.87	0.47
3:L3:150:U:O4	43:SE:187:LYS:NZ	2.38	0.47
3:L3:4982:A:OP1	10:LA:74:LYS:NZ	2.42	0.47
40:SB:59:ASP:OD1	40:SB:60:ILE:N	2.46	0.47
3:L3:3730:PSU:H2'	3:L3:3731:C:C6	2.48	0.47
39:SA:146:GLU:N	39:SA:146:GLU:OE1	2.48	0.47
3:L3:2340:C:H4'	39:SA:42:THR:HG23	1.97	0.47
48:SR:176:TYR:CD1	48:SR:271:LEU:HD22	2.50	0.47
23:LN:370:THR:O	23:LN:370:THR:HG22	2.15	0.47
30:LU:88:GLU:OE2	30:LU:92:ASN:ND2	2.46	0.47
3:L3:1238:A:OP2	41:SC:60:SER:OG	2.21	0.47
3:L3:2835:A:O2'	23:LN:228:TYR:O	2.33	0.47
3:L3:3724:A2M:HM'3	3:L3:3724:A2M:H1'	1.58	0.47
3:L3:2843:U:O2'	3:L3:4632:U:OP1	2.32	0.47
15:LF:108:GLU:N	15:LF:108:GLU:OE1	2.48	0.47
22:LM:35:VAL:HB	22:LM:40:LEU:HD11	1.96	0.47
43:SE:200:THR:HG22	43:SE:201:THR:HG23	1.97	0.47
3:L3:1302:U:OP1	26:LQ:18:LYS:NZ	2.48	0.47
3:L3:1952:G:OP1	12:LC:139:ARG:NE	2.48	0.47
3:L3:3822:PSU:H3'	3:L3:3823:G:H21	1.80	0.47
3:L3:1983:A:O2'	3:L3:2011:C:OP1	2.32	0.46
3:L3:2424:OMG:HM23	3:L3:2424:OMG:H1'	1.63	0.46
3:L3:2630:U:H2'	3:L3:2632:PSU:H1'	1.95	0.46
3:L3:4457:PSU:H1'	23:LN:252:ALA:HB3	1.95	0.46
19:LJ:84:ARG:NH2	19:LJ:85:TYR:OH	2.48	0.46
38:NR:69:TYR:O	38:NR:135:LEU:HD13	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:4623:OMG:HM23	3:L3:4623:OMG:H1'	1.76	0.46
3:L3:4985:U:O2	23:LN:174:ARG:NH1	2.49	0.46
6:L6:127:PHE:O	28:LS:117:ARG:NH2	2.45	0.46
3:L3:338:A:OP1	6:L6:31:ARG:NH2	2.48	0.46
3:L3:1554:A:OP2	33:LX:4:ARG:NH2	2.49	0.46
3:L3:4673:PSU:H2'	3:L3:4674:C:H6	1.79	0.46
3:L3:4227:OMU:HM23	3:L3:4227:OMU:H1'	1.70	0.46
39:SA:124:ILE:HG21	39:SA:264:TYR:OH	2.15	0.46
49:SV:85:LEU:O	49:SV:89:THR:HG23	2.15	0.46
2:L1:13:G:O2'	10:LA:121:LYS:O	2.34	0.46
3:L3:106:A:O2'	3:L3:335:A:N3	2.48	0.46
21:LL:86:ALA:HB3	41:SC:114:ARG:HH21	1.81	0.46
3:L3:2562:G:N2	3:L3:2565:A:OP2	2.42	0.46
3:L3:4220:6MZ:H2'	3:L3:4222:G:H5''	1.97	0.46
19:LJ:33:THR:HG23	19:LJ:36:ARG:H	1.81	0.46
39:SA:187:GLN:NE2	39:SA:203:GLN:OE1	2.47	0.46
46:SK:58:ILE:O	46:SK:58:ILE:HG13	2.15	0.46
3:L3:2436:U:C2'	17:LH:127:LEU:HD11	2.46	0.46
3:L3:4571:A2M:HM'3	3:L3:4571:A2M:H1'	1.60	0.46
38:NR:150:LEU:CD1	38:NR:153:LEU:HD11	2.46	0.46
3:L3:4352:U:O2'	3:L3:4353:PSU:H5''	2.16	0.46
3:L3:4376:A:O2'	20:LK:42:ARG:NH1	2.48	0.46
23:LN:220:ILE:HG12	23:LN:278:THR:HG23	1.98	0.46
3:L3:3841:OMC:HM23	3:L3:3841:OMC:H1'	1.50	0.46
5:L5:128:LEU:HD23	5:L5:129:ASP:N	2.30	0.46
19:LJ:100:VAL:HG13	19:LJ:107:LYS:HA	1.99	0.46
48:SR:576:ASP:OD1	48:SR:577:VAL:N	2.49	0.46
46:SK:49:VAL:HG12	46:SK:50:HIS:O	2.16	0.45
3:L3:1284:G:O2'	3:L3:1285:U:OP2	2.32	0.45
3:L3:2837:OMU:HM23	3:L3:2837:OMU:H1'	1.67	0.45
3:L3:4591:U:OP1	36:NK:4:SER:OG	2.16	0.45
46:SK:126:GLU:OE1	46:SK:139:ARG:NH2	2.49	0.45
8:L8:29:ASP:OD1	8:L8:30:VAL:N	2.47	0.45
23:LN:248:LEU:HD23	23:LN:248:LEU:H	1.81	0.45
39:SA:210:ILE:HG21	39:SA:252:TRP:CZ3	2.51	0.45
3:L3:2580:U:HO2'	19:LJ:79:HIS:CE1	2.34	0.45
3:L3:2823:G:O2'	3:L3:2824:OMC:H5''	2.17	0.45
3:L3:4208:U:OP2	14:LE:4:THR:HG23	2.16	0.45
3:L3:2555:G:O2'	19:LJ:108:ARG:NH1	2.49	0.45
3:L3:2590:G:O2'	3:L3:2755:A:N6	2.46	0.45
3:L3:2641:A:OP1	27:LR:21:ARG:NH2	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:4120:U:HO2'	3:L3:4121:G:P	2.37	0.45
3:L3:4551:U:O2'	3:L3:4552:PSU:H5''	2.16	0.45
9:L9:64:ILE:HD12	9:L9:132:VAL:HG21	1.99	0.45
19:LJ:10:VAL:O	19:LJ:83:THR:OG1	2.25	0.45
32:LW:25:LYS:NZ	35:LZ:50:GLY:O	2.23	0.45
3:L3:2580:U:OP1	19:LJ:36:ARG:NH1	2.45	0.45
5:L5:128:LEU:HD22	5:L5:130:PHE:HE1	1.81	0.45
3:L3:278:G:OP2	30:LU:30:ARG:NH2	2.49	0.45
3:L3:1524:A2M:H2	3:L3:1651:G:O6	2.17	0.45
3:L3:2422:OMC:H1'	3:L3:2422:OMC:HM23	1.45	0.45
3:L3:3687:A:O2'	44:SF:236:GLY:N	2.50	0.45
12:LC:9:GLU:OE2	12:LC:31:ARG:NH1	2.49	0.45
21:LL:112:ARG:NH1	41:SC:117:PRO:O	2.47	0.45
2:L1:155:C:OP2	43:SE:89:ARG:NH1	2.49	0.45
3:L3:2394:G:O4'	3:L3:2397:G:N2	2.48	0.45
9:L9:103:GLU:OE1	9:L9:165:THR:HG21	2.17	0.45
39:SA:275:SER:OG	39:SA:276:ASN:N	2.50	0.45
48:SR:292:ASP:OD1	48:SR:292:ASP:N	2.50	0.45
2:L1:26:C:O2'	39:SA:53:ALA:O	2.34	0.45
26:LQ:89:LEU:HD13	26:LQ:118:LEU:HD22	1.99	0.45
49:SV:117:GLU:OE1	49:SV:117:GLU:N	2.49	0.45
3:L3:1353:G:N7	11:LB:104:ARG:NH2	2.65	0.45
3:L3:3744:OMG:HM22	3:L3:3744:OMG:H1'	1.62	0.45
3:L3:4646:U:O2'	48:SR:502:ASN:OD1	2.28	0.45
3:L3:4940:C:OP1	41:SC:156:ARG:NH1	2.42	0.45
30:LU:63:VAL:O	30:LU:63:VAL:HG22	2.17	0.45
39:SA:22:VAL:HG22	39:SA:258:ARG:NH2	2.31	0.45
2:L1:48:A:H2	2:L1:62:A:HO2'	1.64	0.44
3:L3:2869:U:O2'	3:L3:2881:A:N7	2.36	0.44
20:LK:76:ASP:OD1	20:LK:77:LYS:N	2.50	0.44
3:L3:1352:C:O2'	3:L3:1356:U:OP1	2.34	0.44
3:L3:2351:OMC:H1'	3:L3:2351:OMC:HM23	1.50	0.44
3:L3:3868:G:O2'	3:L3:3869:OMC:H5''	2.16	0.44
44:SF:136:VAL:HG12	44:SF:148:VAL:HG12	1.98	0.44
3:L3:3859:G:OP2	10:LA:25:HIS:NE2	2.47	0.44
3:L3:4237:C:OP1	3:L3:4327:C:O2'	2.30	0.44
3:L3:4610:A:H8	45:SG:170:LYS:HZ1	1.65	0.44
7:L7:186:GLU:HA	7:L7:189:ILE:HG22	1.99	0.44
23:LN:369:ASP:OD2	23:LN:373:LYS:NZ	2.50	0.44
46:SK:244:LEU:O	48:SR:352:LYS:NZ	2.30	0.44
3:L3:225:G:OP1	39:SA:222:ARG:NE	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:1646:A:OP2	39:SA:80:ARG:NH1	2.51	0.44
3:L3:4910:G:N2	7:L7:106:ASP:O	2.47	0.44
9:L9:64:ILE:HD12	9:L9:132:VAL:CG2	2.48	0.44
11:LB:88:ASP:OD1	11:LB:89:ASP:N	2.50	0.44
3:L3:1326:A2M:HM'3	3:L3:1326:A2M:H1'	1.58	0.44
3:L3:2861:OMC:HM23	3:L3:2861:OMC:H1'	1.48	0.44
4:L4:118:C:H41	40:SB:258:LYS:NZ	2.16	0.44
19:LJ:29:ILE:O	19:LJ:31:ASP:N	2.48	0.44
19:LJ:74:VAL:HG23	19:LJ:101:PHE:CZ	2.53	0.44
42:SD:238:ASP:OD1	42:SD:238:ASP:N	2.46	0.44
3:L3:1655:C:OP1	3:L3:1679:A:O2'	2.31	0.44
26:LQ:84:GLU:O	26:LQ:87:VAL:HG22	2.18	0.44
39:SA:72:ALA:HB1	48:SR:622:LEU:HD22	2.00	0.44
40:SB:80:ALA:HA	40:SB:83:LEU:HD13	1.99	0.44
3:L3:373:G:OP2	32:LW:36:LYS:NZ	2.46	0.44
3:L3:2087:C:OP2	11:LB:37:ARG:NE	2.43	0.44
3:L3:4306:OMU:HM23	3:L3:4306:OMU:H1'	1.54	0.44
3:L3:4713:G:OP1	7:L7:148:LYS:NZ	2.40	0.44
18:LI:50:ARG:NH1	18:LI:51:LYS:O	2.51	0.44
3:L3:1515:A:OP1	20:LK:33:GLY:N	2.50	0.43
3:L3:1595:G:N2	48:SR:634:ARG:OXT	2.50	0.43
3:L3:3919:C:O2'	3:L3:3920:PSU:H5''	2.18	0.43
25:LP:27:ILE:HD12	25:LP:86:VAL:HG21	2.00	0.43
3:L3:4552:PSU:H2'	3:L3:4553:A:C8	2.53	0.43
31:LV:103:VAL:O	31:LV:103:VAL:HG13	2.18	0.43
39:SA:152:LEU:HD22	39:SA:251:ILE:HG23	2.00	0.43
39:SA:233:SER:HA	39:SA:263:LEU:HD21	2.00	0.43
3:L3:2824:OMC:HM23	3:L3:2824:OMC:H1'	1.54	0.43
3:L3:4139:G:H21	3:L3:4140:C:N4	2.15	0.43
3:L3:4288:C:O2'	3:L3:4321:U:OP1	2.33	0.43
9:L9:64:ILE:HD13	9:L9:102:ALA:O	2.18	0.43
13:LD:45:ILE:HD12	13:LD:45:ILE:H	1.83	0.43
45:SG:12:ILE:HG12	45:SG:18:ILE:HD12	1.99	0.43
46:SK:77:THR:HG23	46:SK:80:GLU:H	1.84	0.43
3:L3:2422:OMC:H2'	3:L3:2423:A:C8	2.54	0.43
3:L3:3890:A:N6	3:L3:4570:G:O2'	2.48	0.43
28:LS:87:LYS:N	32:LW:80:GLU:OE2	2.47	0.43
3:L3:3744:OMG:H2'	3:L3:3745:U:O4'	2.19	0.43
25:LP:103:TYR:CE2	25:LP:105:LEU:HD21	2.54	0.43
37:NP:95:GLU:O	49:SV:47:ARG:NH1	2.46	0.43
3:L3:1683:PSU:H2'	3:L3:1684:A:C8	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:3924:C:C2'	3:L3:3925:OMU:H5''	2.49	0.43
17:LH:94:ASN:OD1	17:LH:146:ALA:N	2.49	0.43
31:LV:6:LYS:C	31:LV:23:VAL:HG12	2.39	0.43
3:L3:3718:A2M:H2'	3:L3:3719:A:O4'	2.18	0.43
15:LF:117:ILE:HG23	48:SR:543:ALA:HB2	2.01	0.43
48:SR:258:SER:OG	48:SR:293:VAL:HG11	2.18	0.43
3:L3:2437:C:OP2	3:L3:2528:G:O2'	2.37	0.42
3:L3:2781:G:O2'	35:LZ:3:SER:O	2.36	0.42
3:L3:3886:G:H2'	3:L3:3887:OMC:H5'	2.00	0.42
3:L3:4755:G:N7	41:SC:279:ASN:ND2	2.67	0.42
23:LN:313:SER:OG	23:LN:314:ILE:N	2.52	0.42
33:LX:26:VAL:HG21	44:SF:180:LEU:HD11	2.00	0.42
44:SF:104:VAL:HG13	44:SF:136:VAL:HG11	2.01	0.42
3:L3:4201:G:O2'	3:L3:4202:U:OP2	2.33	0.42
3:L3:5005:G:H22	3:L3:5041:G:H1'	1.84	0.42
18:LI:51:LYS:NZ	18:LI:71:VAL:O	2.47	0.42
41:SC:59:ARG:O	41:SC:63:TYR:N	2.46	0.42
42:SD:219:GLY:O	42:SD:246:ARG:NH2	2.52	0.42
3:L3:1552:G:O2'	3:L3:1574:G:N2	2.44	0.42
3:L3:2097:U:O3'	3:L3:2098:G:H4'	2.19	0.42
3:L3:2876:OMG:C8	33:LX:16:THR:HG22	2.55	0.42
3:L3:3663:A:N6	3:L3:4168:G:O2'	2.53	0.42
3:L3:4440:G:N2	48:SR:66:LEU:O	2.50	0.42
3:L3:4896:G:N2	3:L3:4927:G:O6	2.52	0.42
5:L5:24:ILE:HD11	5:L5:128:LEU:HD12	2.02	0.42
28:LS:37:THR:O	28:LS:37:THR:HG22	2.19	0.42
3:L3:1283:G:O6	39:SA:312:ARG:NH2	2.53	0.42
3:L3:2347:A:C4	26:LQ:31:ILE:HD11	2.55	0.42
3:L3:3899:OMG:HM23	3:L3:3899:OMG:H1'	1.56	0.42
3:L3:4590:A2M:HM'3	3:L3:4590:A2M:H1'	1.88	0.42
3:L3:4663:G:OP1	49:SV:34:SER:OG	2.26	0.42
18:LI:53:ASP:O	18:LI:70:VAL:HG23	2.19	0.42
41:SC:133:PHE:O	41:SC:138:ARG:NH2	2.51	0.42
3:L3:363:A:N7	3:L3:378:A:N6	2.67	0.42
3:L3:1427:A:C2	11:LB:138:LEU:HD23	2.55	0.42
3:L3:2378:G:N2	3:L3:2381:A:OP2	2.50	0.42
3:L3:2794:C:N4	10:LA:134:GLY:O	2.53	0.42
10:LA:42:ARG:NH2	10:LA:110:ASP:OD1	2.46	0.42
23:LN:240:LEU:HB3	23:LN:241:PRO:HD2	2.01	0.42
45:SG:113:GLU:OE1	45:SG:125:ARG:NE	2.53	0.42
3:L3:4498:OMU:HM23	3:L3:4498:OMU:H1'	1.65	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:L9:73:ARG:HG2	9:L9:75:VAL:HG13	2.02	0.42
46:SK:61:ARG:O	46:SK:105:GLY:N	2.50	0.42
2:L1:58:G:O6	32:LW:63:ARG:NH1	2.52	0.42
9:L9:68:ARG:NH2	9:L9:123:GLU:OE2	2.52	0.42
39:SA:110:ARG:O	39:SA:113:ARG:NH1	2.45	0.42
45:SG:105:ILE:HD12	45:SG:136:VAL:HG13	2.01	0.42
45:SG:128:MET:SD	45:SG:146:LEU:HD21	2.60	0.42
48:SR:128:GLN:OE1	50:VB:58:ARG:NE	2.52	0.42
2:L1:18:U:O2	3:L3:2309:G:O2'	2.38	0.42
3:L3:380:U:H5''	3:L3:413:G:H21	1.84	0.42
3:L3:2364:OMG:H1'	3:L3:2364:OMG:HM23	1.46	0.42
3:L3:4739:C:H4'	36:NK:87:LEU:HD13	2.00	0.42
45:SG:41:ILE:HG22	45:SG:43:VAL:HG13	2.02	0.42
2:L1:102:G:OP2	2:L1:104:A:O2'	2.28	0.41
3:L3:4636:PSU:N1	25:LP:79:ASN:OD1	2.53	0.41
12:LC:27:LEU:HD12	38:NR:127:PTR:O1P	2.20	0.41
38:NR:78:ILE:HG21	38:NR:124:PHE:CE1	2.55	0.41
2:L1:75:OMG:HM23	2:L1:75:OMG:H1'	1.48	0.41
3:L3:1683:PSU:H2'	3:L3:1684:A:H8	1.85	0.41
3:L3:3730:PSU:H2'	3:L3:3731:C:H6	1.84	0.41
19:LJ:36:ARG:NH1	19:LJ:38:TYR:OH	2.47	0.41
24:LO:35:LEU:HA	24:LO:38:ILE:HG22	2.02	0.41
25:LP:68:LEU:CD2	25:LP:106:VAL:HG12	2.50	0.41
3:L3:400:A2M:HM'3	3:L3:400:A2M:H1'	1.81	0.41
3:L3:5022:U:O2'	3:L3:5023:C:OP2	2.29	0.41
3:L3:2072:C:O2'	42:SD:213:LEU:O	2.38	0.41
18:LI:109:LEU:HD11	18:LI:115:ARG:NH1	2.35	0.41
26:LQ:9:LYS:NZ	26:LQ:71:PRO:O	2.54	0.41
12:LC:15:ARG:HB3	12:LC:27:LEU:HD23	2.01	0.41
3:L3:197:A:N1	3:L3:225:G:O2'	2.46	0.41
3:L3:1553:A:O2'	33:LX:9:GLY:O	2.37	0.41
3:L3:398:A2M:HM'3	3:L3:398:A2M:H1'	1.71	0.41
3:L3:1998:A:N3	3:L3:2019:C:O2'	2.50	0.41
3:L3:4570:G:H2'	3:L3:4571:A2M:H8	2.02	0.41
29:LT:78:HIS:N	29:LT:83:MET:O	2.51	0.41
3:L3:1213:G:OP1	42:SD:59:LYS:NZ	2.40	0.41
3:L3:1577:G:OP1	33:LX:17:ARG:NH2	2.47	0.41
3:L3:2084:C:H42	11:LB:14:ARG:HB2	1.85	0.41
3:L3:3744:OMG:H2'	3:L3:3745:U:C6	2.56	0.41
3:L3:4208:U:OP1	3:L3:4334:U:O2'	2.30	0.41
3:L3:4530:UR3:H6	3:L3:4530:UR3:O5'	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:LN:309:LEU:HD12	48:SR:438:ILE:HD11	2.01	0.41
29:LT:33:VAL:O	29:LT:33:VAL:HG13	2.20	0.41
3:L3:317:A:C2	3:L3:4361:PSU:H1'	2.56	0.41
3:L3:496:G:O2'	3:L3:497:G:OP1	2.29	0.41
15:LF:75:GLU:OE1	15:LF:75:GLU:N	2.54	0.41
48:SR:577:VAL:HG12	48:SR:577:VAL:O	2.20	0.41
3:L3:1250:C:N4	3:L3:1261:G:O6	2.54	0.40
44:SF:178:PRO:HB2	44:SF:180:LEU:HD12	2.03	0.40
3:L3:4618:OMG:HM23	3:L3:4618:OMG:H1'	1.87	0.40
19:LJ:74:VAL:HG23	19:LJ:101:PHE:CE2	2.56	0.40
39:SA:154:VAL:HG11	39:SA:158:VAL:HG21	2.03	0.40
46:SK:129:LEU:HD22	46:SK:137:VAL:HG22	2.04	0.40
3:L3:2845:A:H61	3:L3:3843:C:H42	1.68	0.40
17:LH:119:ILE:HD12	17:LH:140:LEU:HD22	2.04	0.40
34:LY:8:ILE:H	34:LY:8:ILE:HD12	1.87	0.40
46:SK:103:ALA:O	46:SK:107:VAL:HG23	2.21	0.40
50:VB:38:PRO:HB2	50:VB:43:VAL:HG23	2.04	0.40
3:L3:1268:G:N7	22:LM:111:ARG:NH2	2.70	0.40
3:L3:1482:G:N7	6:L6:188:ASN:ND2	2.69	0.40
31:LV:5:PRO:O	31:LV:23:VAL:HG11	2.20	0.40
46:SK:1:MET:N	46:SK:219:GLU:OE2	2.44	0.40
46:SK:95:ARG:NH2	49:SV:77:GLU:OE2	2.54	0.40
3:L3:1633:G:O6	3:L3:3918:G:O2'	2.39	0.40
3:L3:1952:G:H4'	12:LC:93:MET:HB2	2.03	0.40
3:L3:4456:OMC:HM23	3:L3:4456:OMC:H1'	1.63	0.40
3:L3:4637:OMG:HM23	3:L3:4637:OMG:H1'	1.50	0.40
9:L9:38:ARG:NE	9:L9:60:VAL:HG23	2.36	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	89/165 (54%)	89 (100%)	0	0	100	100
5	L5	166/178 (93%)	164 (99%)	2 (1%)	0	100	100
6	L6	208/211 (99%)	204 (98%)	4 (2%)	0	100	100
7	L7	199/203 (98%)	195 (98%)	4 (2%)	0	100	100
8	L8	133/215 (62%)	132 (99%)	1 (1%)	0	100	100
9	L9	201/204 (98%)	199 (99%)	2 (1%)	0	100	100
10	LA	151/184 (82%)	148 (98%)	3 (2%)	0	100	100
11	LB	185/188 (98%)	183 (99%)	2 (1%)	0	100	100
12	LC	174/176 (99%)	171 (98%)	3 (2%)	0	100	100
13	LD	152/196 (78%)	152 (100%)	0	0	100	100
14	LE	150/160 (94%)	146 (97%)	4 (3%)	0	100	100
15	LF	101/128 (79%)	99 (98%)	2 (2%)	0	100	100
16	LG	137/140 (98%)	134 (98%)	3 (2%)	0	100	100
17	LH	115/156 (74%)	114 (99%)	1 (1%)	0	100	100
18	LI	132/145 (91%)	131 (99%)	1 (1%)	0	100	100
19	LJ	133/136 (98%)	131 (98%)	2 (2%)	0	100	100
20	LK	145/148 (98%)	143 (99%)	2 (1%)	0	100	100
21	LL	123/137 (90%)	122 (99%)	1 (1%)	0	100	100
22	LM	81/159 (51%)	80 (99%)	1 (1%)	0	100	100
23	LN	399/403 (99%)	390 (98%)	9 (2%)	0	100	100
24	LO	93/115 (81%)	92 (99%)	1 (1%)	0	100	100
25	LP	104/125 (83%)	104 (100%)	0	0	100	100
26	LQ	126/135 (93%)	124 (98%)	2 (2%)	0	100	100
27	LR	110/117 (94%)	108 (98%)	2 (2%)	0	100	100
28	LS	120/123 (98%)	120 (100%)	0	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%)	101 (99%)	1 (1%)	0	100	100
32	LW	84/97 (87%)	83 (99%)	1 (1%)	0	100	100
33	LX	89/92 (97%)	87 (98%)	2 (2%)	0	100	100
34	LY	67/70 (96%)	67 (100%)	0	0	100	100
35	LZ	48/51 (94%)	48 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
36	NK	63/129 (49%)	61 (97%)	2 (3%)	0	100	100
37	NP	100/134 (75%)	100 (100%)	0	0	100	100
38	NR	150/203 (74%)	147 (98%)	2 (1%)	1 (1%)	22	39
39	SA	356/427 (83%)	349 (98%)	7 (2%)	0	100	100
40	SB	273/297 (92%)	265 (97%)	8 (3%)	0	100	100
41	SC	211/288 (73%)	204 (97%)	7 (3%)	0	100	100
42	SD	223/248 (90%)	219 (98%)	4 (2%)	0	100	100
43	SE	228/266 (86%)	227 (100%)	1 (0%)	0	100	100
44	SF	243/257 (95%)	236 (97%)	7 (3%)	0	100	100
45	SG	188/192 (98%)	186 (99%)	2 (1%)	0	100	100
46	SK	242/245 (99%)	235 (97%)	7 (3%)	0	100	100
47	SQ	121/239 (51%)	121 (100%)	0	0	100	100
48	SR	595/634 (94%)	589 (99%)	5 (1%)	1 (0%)	47	69
49	SV	137/163 (84%)	137 (100%)	0	0	100	100
50	VB	54/99 (54%)	54 (100%)	0	0	100	100
All	All	7508/8699 (86%)	7397 (98%)	109 (2%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
38	NR	126	GLY
48	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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
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%)	137 (99%)	1 (1%)	84	89
14	LE	136/140 (97%)	136 (100%)	0	100	100
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
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%)	73 (100%)	0	100	100
33	LX	74/75 (99%)	74 (100%)	0	100	100
34	LY	64/65 (98%)	63 (98%)	1 (2%)	62	77
35	LZ	47/48 (98%)	47 (100%)	0	100	100
36	NK	61/115 (53%)	61 (100%)	0	100	100
37	NP	88/114 (77%)	88 (100%)	0	100	100
38	NR	140/183 (76%)	140 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	SA	298/348 (86%)	297 (100%)	1 (0%)	92	95
40	SB	234/250 (94%)	234 (100%)	0	100	100
41	SC	192/252 (76%)	191 (100%)	1 (0%)	88	92
42	SD	194/215 (90%)	193 (100%)	1 (0%)	88	92
43	SE	198/223 (89%)	198 (100%)	0	100	100
44	SF	188/199 (94%)	188 (100%)	0	100	100
45	SG	169/171 (99%)	169 (100%)	0	100	100
46	SK	212/213 (100%)	211 (100%)	1 (0%)	88	92
47	SQ	6/214 (3%)	6 (100%)	0	100	100
48	SR	545/574 (95%)	544 (100%)	1 (0%)	93	96
49	SV	128/149 (86%)	128 (100%)	0	100	100
50	VB	48/76 (63%)	48 (100%)	0	100	100
All	All	6419/7331 (88%)	6412 (100%)	7 (0%)	93	96

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	LD	16	ARG
34	LY	50	LYS
39	SA	95	MET
41	SC	56	ARG
42	SD	34	ARG
46	SK	57	ARG
48	SR	633	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
5	L5	71	HIS
9	L9	86	HIS
9	L9	178	HIS
26	LQ	24	GLN
41	SC	190	HIS
41	SC	211	HIS
43	SE	141	ASN
45	SG	40	HIS
48	SR	157	HIS

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Mol	Chain	Res	Type
48	SR	209	HIS
49	SV	17	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	L1	152/157 (96%)	17 (11%)	0
3	L3	3343/5070 (65%)	432 (12%)	10 (0%)
4	L4	119/121 (98%)	10 (8%)	1 (0%)
All	All	3614/5348 (67%)	459 (12%)	11 (0%)

All (459) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	L1	34	U
2	L1	35	C
2	L1	59	A
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	87	G
2	L1	94	G
2	L1	103	A
2	L1	105	C
2	L1	111	U
2	L1	114	G
2	L1	151	G
2	L1	156	U
3	L3	2	G
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	91	G
3	L3	109	G
3	L3	119	G
3	L3	159	C
3	L3	164	G
3	L3	167	C
3	L3	170	C
3	L3	171	U
3	L3	173	C
3	L3	181	C
3	L3	200	U
3	L3	210	C
3	L3	218	A
3	L3	233	U
3	L3	234	G
3	L3	238	C
3	L3	261	G
3	L3	263	G
3	L3	266	C
3	L3	274	C
3	L3	280	G
3	L3	297	U
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	444	G
3	L3	446	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	473	C
3	L3	479	G
3	L3	492	U
3	L3	493	G
3	L3	496	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	497	G
3	L3	499	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	657	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	730	G
3	L3	731	G
3	L3	739	G
3	L3	741	C
3	L3	742	G
3	L3	746	A
3	L3	757	G
3	L3	913	U
3	L3	915	A
3	L3	916	C
3	L3	917	A
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	959	G
3	L3	960	A
3	L3	971	U
3	L3	972	C
3	L3	1066	G
3	L3	1070	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	1072	C
3	L3	1080	C
3	L3	1100	U
3	L3	1169	G
3	L3	1171	G
3	L3	1172	C
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	1272	C
3	L3	1273	G
3	L3	1280	C
3	L3	1284	G
3	L3	1287	G
3	L3	1294	A
3	L3	1295	C
3	L3	1301	C
3	L3	1314	C
3	L3	1315	C
3	L3	1319	U
3	L3	1320	U
3	L3	1323	A
3	L3	1325	C
3	L3	1326	A2M
3	L3	1354	A
3	L3	1358	G
3	L3	1359	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	1489	G
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	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	1676	C
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	1811	G
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	1850	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	1854	G
3	L3	1855	G
3	L3	1866	U
3	L3	1869	G
3	L3	1880	G
3	L3	1881	C
3	L3	1882	U
3	L3	1883	G
3	L3	1887	G
3	L3	1891	A
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	1936	C
3	L3	1960	A
3	L3	1974	U
3	L3	1984	A
3	L3	1997	U
3	L3	2002	A
3	L3	2011	C
3	L3	2016	C
3	L3	2021	G
3	L3	2026	A
3	L3	2046	G
3	L3	2055	G
3	L3	2056	G
3	L3	2069	A
3	L3	2084	C
3	L3	2085	G
3	L3	2092	G
3	L3	2093	A
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	2289	C
3	L3	2300	A
3	L3	2301	G
3	L3	2306	G
3	L3	2313	A
3	L3	2348	G
3	L3	2351	OMC
3	L3	2395	A
3	L3	2401	A2M
3	L3	2417	A
3	L3	2422	OMC
3	L3	2425	U
3	L3	2429	A
3	L3	2437	C
3	L3	2450	G
3	L3	2453	A
3	L3	2470	C
3	L3	2474	G
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	2484	A
3	L3	2498	C
3	L3	2506	G
3	L3	2507	A
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
3	L3	2556	G
3	L3	2567	G
3	L3	2587	A
3	L3	2589	C
3	L3	2627	C
3	L3	2653	C
3	L3	2669	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	2687	U
3	L3	2694	G
3	L3	2695	A
3	L3	2696	A
3	L3	2711	G
3	L3	2743	A
3	L3	2759	G
3	L3	2760	G
3	L3	2764	A
3	L3	2769	U
3	L3	2771	G
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	2829	U
3	L3	2855	G
3	L3	2877	G
3	L3	2902	G
3	L3	3585	G
3	L3	3593	C
3	L3	3595	U
3	L3	3617	G
3	L3	3626	G
3	L3	3635	A
3	L3	3653	A
3	L3	3662	A
3	L3	3673	C
3	L3	3696	C
3	L3	3697	U
3	L3	3838	U
3	L3	3840	U
3	L3	3868	G
3	L3	3872	A
3	L3	3875	G
3	L3	3876	A
3	L3	3877	A
3	L3	3887	OMC
3	L3	3905	A
3	L3	3915	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	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	4202	U
3	L3	4205	A
3	L3	4221	C
3	L3	4225	G
3	L3	4228	OMG
3	L3	4229	U
3	L3	4233	A
3	L3	4251	A
3	L3	4254	G
3	L3	4258	C
3	L3	4266	G
3	L3	4268	A
3	L3	4273	A
3	L3	4281	A
3	L3	4291	G
3	L3	4305	G
3	L3	4306	OMU
3	L3	4314	C
3	L3	4329	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	4330	G
3	L3	4332	C
3	L3	4339	A
3	L3	4373	G
3	L3	4377	G
3	L3	4378	A
3	L3	4387	C
3	L3	4415	A
3	L3	4418	G
3	L3	4437	U
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	4518	A
3	L3	4519	C
3	L3	4523	A2M
3	L3	4524	G
3	L3	4532	PSU
3	L3	4545	G
3	L3	4548	A
3	L3	4549	G
3	L3	4556	U
3	L3	4558	U
3	L3	4560	C
3	L3	4567	G
3	L3	4573	G
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	4914	C
3	L3	4916	G
3	L3	4937	C
3	L3	4943	A
3	L3	4976	U
3	L3	5006	U
3	L3	5014	A
3	L3	5022	U
3	L3	5023	C
3	L3	5026	U
3	L3	5027	C
3	L3	5031	G
3	L3	5039	U
3	L3	5041	G
3	L3	5050	C
3	L3	5054	C
3	L3	5055	G
3	L3	5061	A

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Mol	Chain	Res	Type
3	L3	5062	G
3	L3	5069	U
4	L4	7	G
4	L4	49	A
4	L4	53	U
4	L4	54	A
4	L4	64	G
4	L4	66	G
4	L4	103	A
4	L4	110	G
4	L4	111	C
4	L4	120	U

All (11) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	L3	496	G
3	L3	502	C
3	L3	503	C
3	L3	1324	A
3	L3	1633	G
3	L3	1853	G
3	L3	2095	A
3	L3	2469	C
3	L3	2477	A
3	L3	3616	U
4	L4	109	U

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

109 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	3639	3	18,21,22	1.07	1 (5%)	22,30,33	1.81	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PSU	L3	2839	3	18,21,22	1.07	1 (5%)	22,30,33	1.82	4 (18%)
3	A2M	L3	3724	3	18,25,26	1.19	2 (11%)	18,36,39	1.25	2 (11%)
3	UR3	L3	4530	3	19,22,23	1.04	3 (15%)	26,32,35	1.24	1 (3%)
3	OMC	L3	3887	3	19,22,23	0.53	0	26,31,34	0.69	0
3	1MA	L3	1322	3	16,25,26	0.91	2 (12%)	18,37,40	1.18	2 (11%)
3	A2M	L3	1326	3	18,25,26	1.18	2 (11%)	18,36,39	1.23	2 (11%)
3	PSU	L3	4457	3	18,21,22	1.05	1 (5%)	22,30,33	1.77	4 (18%)
3	OMC	L3	4456	3	19,22,23	0.54	0	26,31,34	0.65	0
3	PSU	L3	3844	3	18,21,22	1.08	1 (5%)	22,30,33	1.81	5 (22%)
3	OMU	L3	4620	3	19,22,23	2.01	6 (31%)	26,31,34	1.59	4 (15%)
3	PSU	L3	4293	3	18,21,22	1.01	1 (5%)	22,30,33	1.73	4 (18%)
3	OMC	L3	2365	3	19,22,23	0.53	0	26,31,34	0.70	0
3	A2M	L3	4590	3	18,25,26	1.19	2 (11%)	18,36,39	1.39	2 (11%)
3	PSU	L3	3853	3	18,21,22	1.06	1 (5%)	22,30,33	1.72	4 (18%)
3	PSU	L3	4579	3	18,21,22	1.06	1 (5%)	22,30,33	1.79	4 (18%)
3	PSU	L3	5010	3	18,21,22	1.09	1 (5%)	22,30,33	1.79	5 (22%)
3	PSU	L3	4628	3	18,21,22	0.99	1 (5%)	22,30,33	1.78	5 (22%)
3	PSU	L3	4403	3	18,21,22	1.06	1 (5%)	22,30,33	1.82	6 (27%)
3	OMG	L3	4499	3	18,26,27	1.11	2 (11%)	19,38,41	0.85	1 (5%)
3	PSU	L3	1536	3	18,21,22	1.06	1 (5%)	22,30,33	1.81	5 (22%)
3	OMU	L3	2837	3	19,22,23	2.05	7 (36%)	26,31,34	1.70	5 (19%)
3	OMG	L3	3744	3	18,26,27	1.10	2 (11%)	19,38,41	0.85	1 (5%)
3	OMG	L3	2364	3	18,26,27	1.12	2 (11%)	19,38,41	0.85	1 (5%)
3	OMC	L3	2422	51,3	19,22,23	0.53	0	26,31,34	0.77	1 (3%)
3	OMG	L3	4637	3	18,26,27	1.12	2 (11%)	19,38,41	0.84	1 (5%)
3	PSU	L3	3884	3	18,21,22	1.05	1 (5%)	22,30,33	1.77	4 (18%)
3	OMG	L3	4623	3	18,26,27	1.13	2 (11%)	19,38,41	0.91	1 (5%)
3	PSU	L3	1677	3	18,21,22	1.03	1 (5%)	22,30,33	1.76	5 (22%)
3	PSU	L3	3715	3	18,21,22	1.09	1 (5%)	22,30,33	1.80	6 (27%)
3	OMC	L3	2804	3	19,22,23	0.53	0	26,31,34	0.69	0
2	OMG	L1	75	2	18,26,27	1.11	2 (11%)	19,38,41	0.85	1 (5%)
2	PSU	L1	55	2	18,21,22	1.06	1 (5%)	22,30,33	1.81	5 (22%)
3	OMC	L3	2824	3	19,22,23	0.52	0	26,31,34	0.62	0
3	A2M	L3	2363	51,3	18,25,26	1.20	2 (11%)	18,36,39	1.22	2 (11%)
3	A2M	L3	1524	3	18,25,26	1.18	2 (11%)	18,36,39	1.28	2 (11%)
3	PSU	L3	3822	3	18,21,22	1.09	1 (5%)	22,30,33	1.80	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	A2M	L3	1871	3	18,25,26	1.18	2 (11%)	18,36,39	1.38	2 (11%)
3	A2M	L3	400	3	18,25,26	1.18	2 (11%)	18,36,39	1.26	2 (11%)
3	6MZ	L3	4220	3	18,25,26	1.04	2 (11%)	16,36,39	1.92	4 (25%)
3	A2M	L3	1534	51,3	18,25,26	1.14	2 (11%)	18,36,39	1.49	4 (22%)
3	A2M	L3	2787	3	18,25,26	1.17	2 (11%)	18,36,39	1.33	2 (11%)
38	PTR	NR	127	38	15,16,17	1.29	1 (6%)	19,22,24	0.68	0
3	OMG	L3	1316	3	18,26,27	1.13	2 (11%)	19,38,41	0.87	1 (5%)
3	PSU	L3	1792	3	18,21,22	1.07	1 (5%)	22,30,33	1.77	4 (18%)
3	PSU	L3	1582	3	18,21,22	1.02	1 (5%)	22,30,33	1.79	3 (13%)
3	PSU	L3	2508	3	18,21,22	1.08	1 (5%)	22,30,33	1.77	4 (18%)
3	OMC	L3	4536	3	19,22,23	0.53	0	26,31,34	0.66	0
3	PSU	L3	4312	3	18,21,22	1.03	1 (5%)	22,30,33	1.84	5 (22%)
3	OMG	L3	1625	3	18,26,27	1.13	2 (11%)	19,38,41	0.84	1 (5%)
3	PSU	L3	4500	3	18,21,22	1.04	1 (5%)	22,30,33	1.77	4 (18%)
3	OMC	L3	3841	3	19,22,23	0.51	0	26,31,34	0.64	0
3	PSU	L3	1683	3	18,21,22	1.08	1 (5%)	22,30,33	1.78	5 (22%)
3	OMC	L3	3869	3	19,22,23	0.53	0	26,31,34	0.66	0
3	PSU	L3	4299	3	18,21,22	1.03	1 (5%)	22,30,33	1.86	5 (22%)
3	PSU	L3	3920	51,3	18,21,22	1.02	1 (5%)	22,30,33	1.80	5 (22%)
3	OMG	L3	2424	3	18,26,27	1.14	2 (11%)	19,38,41	0.82	1 (5%)
3	OMG	L3	1522	3	18,26,27	1.13	2 (11%)	19,38,41	0.83	1 (5%)
3	A2M	L3	4523	3	18,25,26	1.16	2 (11%)	18,36,39	1.28	2 (11%)
3	A2M	L3	2401	3	18,25,26	1.20	2 (11%)	18,36,39	1.29	2 (11%)
3	OMU	L3	4498	3	19,22,23	2.08	7 (36%)	26,31,34	1.68	4 (15%)
3	A2M	L3	3867	3	18,25,26	1.13	2 (11%)	18,36,39	1.32	2 (11%)
3	PSU	L3	2632	3	18,21,22	1.08	1 (5%)	22,30,33	1.72	4 (18%)
3	OMG	L3	3627	3	18,26,27	1.13	2 (11%)	19,38,41	0.88	1 (5%)
3	A2M	L3	3825	3	18,25,26	1.18	2 (11%)	18,36,39	1.26	2 (11%)
2	PSU	L1	69	2	18,21,22	1.09	1 (5%)	22,30,33	1.81	5 (22%)
3	PSU	L3	5001	3	18,21,22	1.10	1 (5%)	22,30,33	1.80	6 (27%)
3	PSU	L3	4471	3	18,21,22	1.09	1 (5%)	22,30,33	1.81	5 (22%)
3	OMG	L3	4494	3	18,26,27	1.15	2 (11%)	19,38,41	0.86	1 (5%)
3	OMU	L3	2415	3	19,22,23	2.04	7 (36%)	26,31,34	1.69	5 (19%)
3	PSU	L3	4296	3	18,21,22	1.04	1 (5%)	22,30,33	1.84	5 (22%)
3	A2M	L3	398	3	18,25,26	1.18	2 (11%)	18,36,39	1.32	2 (11%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PSU	L3	4431	3	18,21,22	1.10	1 (5%)	22,30,33	1.81	5 (22%)
3	PSU	L3	1860	3	18,21,22	1.07	1 (5%)	22,30,33	1.80	5 (22%)
3	PSU	L3	4552	3	18,21,22	1.06	1 (5%)	22,30,33	1.78	5 (22%)
3	PSU	L3	4576	3	18,21,22	1.08	1 (5%)	22,30,33	1.79	4 (18%)
3	A2M	L3	3718	3	18,25,26	1.17	2 (11%)	18,36,39	1.24	2 (11%)
3	PSU	L3	4493	3	18,21,22	1.05	1 (5%)	22,30,33	1.81	5 (22%)
23	HIC	LN	245	23	8,11,12	1.67	2 (25%)	6,14,16	1.27	1 (16%)
3	OMG	L3	4392	3	18,26,27	1.12	2 (11%)	19,38,41	0.86	1 (5%)
3	PSU	L3	4521	3	18,21,22	1.06	1 (5%)	22,30,33	1.77	5 (22%)
3	OMG	L3	4228	3	18,26,27	1.15	2 (11%)	19,38,41	0.91	1 (5%)
3	OMU	L3	4306	3	19,22,23	2.02	6 (31%)	26,31,34	1.69	5 (19%)
3	OMC	L3	2861	3	19,22,23	0.50	0	26,31,34	0.68	0
3	PSU	L3	1862	3	18,21,22	1.08	1 (5%)	22,30,33	1.85	5 (22%)
3	OMU	L3	4227	3	19,22,23	2.03	6 (31%)	26,31,34	1.74	4 (15%)
3	A2M	L3	4571	3	18,25,26	1.18	2 (11%)	18,36,39	1.24	2 (11%)
3	PSU	L3	4972	3	18,21,22	1.05	1 (5%)	22,30,33	1.79	5 (22%)
3	A2M	L3	3830	3	18,25,26	1.16	2 (11%)	18,36,39	1.28	2 (11%)
3	A2M	L3	2815	3	18,25,26	1.18	2 (11%)	18,36,39	1.27	2 (11%)
3	PSU	L3	3734	3	18,21,22	1.09	1 (5%)	22,30,33	1.76	5 (22%)
3	OMC	L3	3701	3	19,22,23	0.49	0	26,31,34	0.66	0
3	OMC	L3	1340	3	19,22,23	0.54	0	26,31,34	0.64	0
3	OMG	L3	4618	3	18,26,27	1.15	2 (11%)	19,38,41	0.83	1 (5%)
3	PSU	L3	4636	3	18,21,22	1.07	1 (5%)	22,30,33	1.85	5 (22%)
3	PSU	L3	4689	3	18,21,22	1.05	1 (5%)	22,30,33	1.81	5 (22%)
3	OMG	L3	2876	3	18,26,27	1.11	2 (11%)	19,38,41	0.83	1 (5%)
3	OMG	L3	4370	3	18,26,27	1.17	2 (11%)	19,38,41	0.88	1 (5%)
3	OMU	L3	3925	3	19,22,23	2.04	7 (36%)	26,31,34	1.68	5 (19%)
3	PSU	L3	3637	3	18,21,22	1.07	1 (5%)	22,30,33	1.96	5 (22%)
3	PSU	L3	4532	3	18,21,22	1.07	1 (5%)	22,30,33	1.83	4 (18%)
3	PSU	L3	3851	3	18,21,22	1.10	1 (5%)	22,30,33	1.80	5 (22%)
3	OMC	L3	2351	51,3	19,22,23	0.54	0	26,31,34	0.70	0
3	OMG	L3	3899	3	18,26,27	1.13	2 (11%)	19,38,41	0.88	1 (5%)
3	PSU	L3	4361	3	18,21,22	1.03	1 (5%)	22,30,33	1.82	5 (22%)
3	PSU	L3	3695	3	18,21,22	1.09	1 (5%)	22,30,33	1.81	5 (22%)
3	PSU	L3	4353	3	18,21,22	1.06	1 (5%)	22,30,33	1.85	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PSU	L3	4673	3	18,21,22	1.07	1 (5%)	22,30,33	1.79	5 (22%)
3	PSU	L3	3730	3	18,21,22	1.04	1 (5%)	22,30,33	1.81	5 (22%)

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	3639	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	3724	3	-	1/5/27/28	0/3/3/3
3	UR3	L3	4530	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3887	3	-	2/9/27/28	0/2/2/2
3	1MA	L3	1322	3	-	0/3/25/26	0/3/3/3
3	A2M	L3	1326	3	-	4/5/27/28	0/3/3/3
3	PSU	L3	4457	3	-	1/7/25/26	0/2/2/2
3	OMC	L3	4456	3	-	1/9/27/28	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	PSU	L3	4293	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2365	3	-	0/9/27/28	0/2/2/2
3	A2M	L3	4590	3	-	4/5/27/28	0/3/3/3
3	PSU	L3	3853	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	5010	3	-	0/7/25/26	0/2/2/2
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	OMG	L3	4499	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	1536	3	-	0/7/25/26	0/2/2/2
3	OMU	L3	2837	3	-	1/9/27/28	0/2/2/2
3	OMG	L3	3744	3	-	1/5/27/28	0/3/3/3
3	OMG	L3	2364	3	-	1/5/27/28	0/3/3/3
3	OMC	L3	2422	51,3	-	2/9/27/28	0/2/2/2
3	OMG	L3	4637	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	3884	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4623	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	1677	3	-	4/7/25/26	0/2/2/2
3	PSU	L3	3715	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2804	3	-	1/9/27/28	0/2/2/2
2	OMG	L1	75	2	-	1/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	L1	55	2	-	0/7/25/26	0/2/2/2
3	OMC	L3	2824	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	2363	51,3	-	0/5/27/28	0/3/3/3
3	A2M	L3	1524	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	3822	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	1871	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	400	3	-	1/5/27/28	0/3/3/3
3	6MZ	L3	4220	3	-	3/5/27/28	0/3/3/3
3	A2M	L3	1534	51,3	-	2/5/27/28	0/3/3/3
3	A2M	L3	2787	3	-	2/5/27/28	0/3/3/3
38	PTR	NR	127	38	-	0/10/11/13	0/1/1/1
3	OMG	L3	1316	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	1792	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1582	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	2508	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	4536	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	4312	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	1625	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4500	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3841	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	1683	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3869	3	-	0/9/27/28	0/2/2/2
3	PSU	L3	4299	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3920	51,3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2424	3	-	1/5/27/28	0/3/3/3
3	OMG	L3	1522	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	4523	3	-	2/5/27/28	0/3/3/3
3	A2M	L3	2401	3	-	2/5/27/28	0/3/3/3
3	OMU	L3	4498	3	-	4/9/27/28	0/2/2/2
3	A2M	L3	3867	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	2632	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	3627	3	-	1/5/27/28	0/3/3/3
3	A2M	L3	3825	3	-	1/5/27/28	0/3/3/3
2	PSU	L1	69	2	-	0/7/25/26	0/2/2/2
3	PSU	L3	5001	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4471	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4494	3	-	0/5/27/28	0/3/3/3
3	OMU	L3	2415	3	-	2/9/27/28	0/2/2/2
3	PSU	L3	4296	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	398	3	-	1/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PSU	L3	4431	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1860	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4552	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4576	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3718	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4493	3	-	0/7/25/26	0/2/2/2
23	HIC	LN	245	23	-	2/5/6/8	0/1/1/1
3	OMG	L3	4392	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4521	3	-	2/7/25/26	0/2/2/2
3	OMG	L3	4228	3	-	3/5/27/28	0/3/3/3
3	OMU	L3	4306	3	-	1/9/27/28	0/2/2/2
3	OMC	L3	2861	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	1862	3	-	0/7/25/26	0/2/2/2
3	OMU	L3	4227	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	4571	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4972	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3830	3	-	1/5/27/28	0/3/3/3
3	A2M	L3	2815	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	3734	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3701	3	-	7/9/27/28	0/2/2/2
3	OMC	L3	1340	3	-	1/9/27/28	0/2/2/2
3	OMG	L3	4618	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4636	3	-	3/7/25/26	0/2/2/2
3	PSU	L3	4689	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2876	3	-	3/5/27/28	0/3/3/3
3	OMG	L3	4370	3	-	0/5/27/28	0/3/3/3
3	OMU	L3	3925	3	-	2/9/27/28	0/2/2/2
3	PSU	L3	3637	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4532	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3851	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2351	51,3	-	4/9/27/28	0/2/2/2
3	OMG	L3	3899	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4361	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3695	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4353	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4673	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3730	3	-	0/7/25/26	0/2/2/2

All (176) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4498	OMU	C6-N1	4.85	1.49	1.38
3	L3	2837	OMU	C6-N1	4.75	1.49	1.38
3	L3	2415	OMU	C6-N1	4.74	1.49	1.38
3	L3	4620	OMU	C6-N1	4.73	1.49	1.38
3	L3	3925	OMU	C6-N1	4.71	1.49	1.38
3	L3	4227	OMU	C6-N1	4.69	1.49	1.38
3	L3	4306	OMU	C6-N1	4.67	1.49	1.38
38	NR	127	PTR	OH-CZ	-4.61	1.30	1.40
3	L3	4498	OMU	C2-N1	4.31	1.45	1.38
3	L3	2837	OMU	C2-N1	4.16	1.45	1.38
3	L3	4227	OMU	C2-N1	4.14	1.45	1.38
3	L3	3925	OMU	C2-N1	4.14	1.45	1.38
3	L3	4620	OMU	C2-N1	4.12	1.45	1.38
3	L3	4498	OMU	C5-C4	4.09	1.52	1.43
3	L3	2415	OMU	C2-N1	4.09	1.45	1.38
3	L3	2415	OMU	C5-C4	4.05	1.52	1.43
3	L3	2837	OMU	C5-C4	4.02	1.52	1.43
3	L3	4306	OMU	C2-N1	4.02	1.44	1.38
3	L3	4227	OMU	C5-C4	4.02	1.52	1.43
3	L3	3925	OMU	C5-C4	3.99	1.52	1.43
3	L3	4306	OMU	C5-C4	3.92	1.52	1.43
3	L3	4620	OMU	C5-C4	3.87	1.52	1.43
23	LN	245	HIC	CD2-CG	3.71	1.41	1.36
3	L3	4431	PSU	C6-C5	3.54	1.39	1.35
3	L3	2632	PSU	C6-C5	3.53	1.39	1.35
3	L3	3822	PSU	C6-C5	3.51	1.39	1.35
3	L3	5001	PSU	C6-C5	3.50	1.39	1.35
3	L3	3715	PSU	C6-C5	3.49	1.39	1.35
3	L3	5010	PSU	C6-C5	3.46	1.39	1.35
3	L3	3695	PSU	C6-C5	3.45	1.39	1.35
3	L3	2839	PSU	C6-C5	3.44	1.39	1.35
3	L3	3851	PSU	C6-C5	3.44	1.39	1.35
3	L3	4576	PSU	C6-C5	3.44	1.39	1.35
3	L3	3853	PSU	C6-C5	3.44	1.39	1.35
3	L3	3734	PSU	C6-C5	3.44	1.39	1.35
3	L3	2508	PSU	C6-C5	3.43	1.39	1.35
3	L3	4636	PSU	C6-C5	3.42	1.39	1.35
3	L3	4471	PSU	C6-C5	3.42	1.39	1.35
3	L3	1862	PSU	C6-C5	3.42	1.39	1.35
3	L3	3844	PSU	C6-C5	3.41	1.39	1.35
3	L3	1860	PSU	C6-C5	3.41	1.39	1.35
2	L1	69	PSU	C6-C5	3.41	1.39	1.35
3	L3	4521	PSU	C6-C5	3.39	1.39	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4353	PSU	C6-C5	3.38	1.39	1.35
3	L3	4673	PSU	C6-C5	3.37	1.39	1.35
3	L3	1683	PSU	C6-C5	3.37	1.39	1.35
3	L3	4972	PSU	C6-C5	3.37	1.39	1.35
2	L1	55	PSU	C6-C5	3.36	1.39	1.35
3	L3	4403	PSU	C6-C5	3.36	1.39	1.35
3	L3	1792	PSU	C6-C5	3.36	1.39	1.35
3	L3	3639	PSU	C6-C5	3.36	1.39	1.35
3	L3	4532	PSU	C6-C5	3.36	1.39	1.35
3	L3	4493	PSU	C6-C5	3.33	1.39	1.35
3	L3	3884	PSU	C6-C5	3.33	1.39	1.35
3	L3	3637	PSU	C6-C5	3.33	1.39	1.35
3	L3	4500	PSU	C6-C5	3.32	1.39	1.35
3	L3	4579	PSU	C6-C5	3.32	1.39	1.35
3	L3	4552	PSU	C6-C5	3.32	1.39	1.35
3	L3	4457	PSU	C6-C5	3.31	1.39	1.35
3	L3	3730	PSU	C6-C5	3.29	1.39	1.35
3	L3	1536	PSU	C6-C5	3.28	1.39	1.35
3	L3	4689	PSU	C6-C5	3.26	1.39	1.35
3	L3	1582	PSU	C6-C5	3.26	1.39	1.35
3	L3	398	A2M	O4'-C1'	3.26	1.45	1.41
3	L3	2401	A2M	O4'-C1'	3.25	1.45	1.41
3	L3	4312	PSU	C6-C5	3.25	1.39	1.35
3	L3	3724	A2M	O4'-C1'	3.23	1.45	1.41
3	L3	4296	PSU	C6-C5	3.22	1.39	1.35
3	L3	400	A2M	O4'-C1'	3.22	1.45	1.41
3	L3	1871	A2M	O4'-C1'	3.21	1.45	1.41
3	L3	2815	A2M	O4'-C1'	3.18	1.45	1.41
3	L3	4361	PSU	C6-C5	3.17	1.39	1.35
3	L3	4299	PSU	C6-C5	3.16	1.39	1.35
3	L3	3825	A2M	O4'-C1'	3.16	1.45	1.41
3	L3	2363	A2M	O4'-C1'	3.15	1.45	1.41
3	L3	4293	PSU	C6-C5	3.15	1.39	1.35
3	L3	4571	A2M	O4'-C1'	3.12	1.45	1.41
3	L3	3920	PSU	C6-C5	3.10	1.38	1.35
3	L3	3830	A2M	O4'-C1'	3.10	1.45	1.41
3	L3	1326	A2M	O4'-C1'	3.09	1.45	1.41
3	L3	1677	PSU	C6-C5	3.09	1.38	1.35
3	L3	4590	A2M	O4'-C1'	3.08	1.45	1.41
3	L3	3718	A2M	O4'-C1'	3.05	1.45	1.41
3	L3	4523	A2M	O4'-C1'	3.03	1.45	1.41
3	L3	4628	PSU	C6-C5	3.02	1.38	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	1524	A2M	O4'-C1'	2.99	1.45	1.41
3	L3	2787	A2M	O4'-C1'	2.93	1.45	1.41
3	L3	4494	OMG	C8-N7	-2.87	1.30	1.35
3	L3	4618	OMG	C8-N7	-2.85	1.30	1.35
3	L3	4306	OMU	O4-C4	-2.82	1.19	1.24
3	L3	4227	OMU	O4-C4	-2.80	1.19	1.24
3	L3	4370	OMG	C8-N7	-2.80	1.30	1.35
3	L3	4620	OMU	O4-C4	-2.78	1.19	1.24
3	L3	3867	A2M	O4'-C1'	2.78	1.45	1.41
3	L3	2424	OMG	C8-N7	-2.78	1.30	1.35
3	L3	4623	OMG	C8-N7	-2.77	1.30	1.35
3	L3	4228	OMG	C8-N7	-2.75	1.30	1.35
3	L3	4499	OMG	C8-N7	-2.75	1.30	1.35
3	L3	4637	OMG	C8-N7	-2.73	1.30	1.35
3	L3	2364	OMG	C8-N7	-2.73	1.30	1.35
3	L3	1534	A2M	O4'-C1'	2.73	1.44	1.41
3	L3	2876	OMG	C8-N7	-2.72	1.30	1.35
3	L3	2837	OMU	O4-C4	-2.72	1.19	1.24
3	L3	1625	OMG	C8-N7	-2.71	1.30	1.35
2	L1	75	OMG	C8-N7	-2.71	1.30	1.35
3	L3	1316	OMG	C8-N7	-2.71	1.30	1.35
3	L3	3899	OMG	C8-N7	-2.71	1.30	1.35
3	L3	1522	OMG	C8-N7	-2.70	1.30	1.35
3	L3	2415	OMU	O4-C4	-2.69	1.19	1.24
3	L3	3925	OMU	O4-C4	-2.67	1.19	1.24
3	L3	4392	OMG	C8-N7	-2.67	1.30	1.35
3	L3	4530	UR3	C2-N1	-2.66	1.34	1.38
3	L3	4498	OMU	O4-C4	-2.66	1.19	1.24
3	L3	3744	OMG	C8-N7	-2.66	1.30	1.35
3	L3	3627	OMG	C8-N7	-2.63	1.30	1.35
3	L3	2415	OMU	C2-N3	2.60	1.42	1.38
3	L3	4220	6MZ	C8-N7	-2.54	1.30	1.34
3	L3	4498	OMU	C2-N3	2.53	1.42	1.38
3	L3	3925	OMU	C2-N3	2.52	1.42	1.38
3	L3	2837	OMU	C2-N3	2.52	1.42	1.38
3	L3	2363	A2M	C8-N7	-2.49	1.30	1.34
3	L3	4228	OMG	C5-C6	-2.49	1.42	1.47
3	L3	4530	UR3	C4-N3	-2.48	1.35	1.40
3	L3	1534	A2M	C8-N7	-2.46	1.30	1.34
3	L3	2787	A2M	C8-N7	-2.45	1.30	1.34
3	L3	4370	OMG	C5-C6	-2.44	1.42	1.47
3	L3	4618	OMG	C5-C6	-2.43	1.42	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	1316	OMG	C5-C6	-2.43	1.42	1.47
3	L3	3825	A2M	C8-N7	-2.42	1.30	1.34
3	L3	4571	A2M	C8-N7	-2.42	1.30	1.34
3	L3	3724	A2M	C8-N7	-2.41	1.30	1.34
3	L3	2401	A2M	C8-N7	-2.41	1.30	1.34
3	L3	4590	A2M	C8-N7	-2.41	1.30	1.34
3	L3	4306	OMU	C2-N3	2.40	1.42	1.38
3	L3	2424	OMG	C5-C6	-2.40	1.42	1.47
3	L3	3718	A2M	C8-N7	-2.40	1.30	1.34
3	L3	1871	A2M	C8-N7	-2.39	1.30	1.34
3	L3	4494	OMG	C5-C6	-2.38	1.42	1.47
3	L3	2364	OMG	C5-C6	-2.38	1.42	1.47
3	L3	3867	A2M	C8-N7	-2.37	1.30	1.34
3	L3	1522	OMG	C5-C6	-2.37	1.42	1.47
3	L3	1322	1MA	C8-N7	-2.37	1.31	1.35
3	L3	1625	OMG	C5-C6	-2.35	1.42	1.47
3	L3	398	A2M	C8-N7	-2.35	1.30	1.34
3	L3	3899	OMG	C5-C6	-2.35	1.42	1.47
3	L3	1524	A2M	C8-N7	-2.35	1.30	1.34
2	L1	75	OMG	C5-C6	-2.35	1.42	1.47
3	L3	2815	A2M	C8-N7	-2.35	1.30	1.34
3	L3	1326	A2M	C8-N7	-2.35	1.30	1.34
3	L3	4392	OMG	C5-C6	-2.35	1.42	1.47
3	L3	400	A2M	C8-N7	-2.34	1.30	1.34
3	L3	3627	OMG	C5-C6	-2.34	1.42	1.47
3	L3	4499	OMG	C5-C6	-2.34	1.42	1.47
3	L3	4523	A2M	C8-N7	-2.34	1.30	1.34
3	L3	4637	OMG	C5-C6	-2.33	1.42	1.47
3	L3	2876	OMG	C5-C6	-2.31	1.42	1.47
3	L3	4620	OMU	C2-N3	2.29	1.42	1.38
3	L3	4623	OMG	C5-C6	-2.29	1.42	1.47
3	L3	3830	A2M	C8-N7	-2.28	1.30	1.34
3	L3	4220	6MZ	C6-N6	2.28	1.38	1.35
3	L3	4227	OMU	C2-N3	2.28	1.42	1.38
3	L3	4306	OMU	O2-C2	-2.27	1.18	1.23
3	L3	3744	OMG	C5-C6	-2.25	1.42	1.47
3	L3	4530	UR3	C2-N3	-2.18	1.34	1.39
3	L3	4227	OMU	O2-C2	-2.15	1.19	1.23
3	L3	4620	OMU	O2-C2	-2.12	1.19	1.23
3	L3	3925	OMU	O2-C2	-2.10	1.19	1.23
3	L3	2837	OMU	O2-C2	-2.10	1.19	1.23
3	L3	2837	OMU	C4-N3	2.09	1.42	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2415	OMU	O2-C2	-2.09	1.19	1.23
3	L3	1322	1MA	C5-C4	-2.04	1.37	1.43
3	L3	3925	OMU	C4-N3	2.04	1.42	1.38
3	L3	2415	OMU	C4-N3	2.04	1.42	1.38
3	L3	4498	OMU	C4-N3	2.04	1.42	1.38
23	LN	245	HIC	CZ-NE2	-2.03	1.42	1.48
3	L3	4498	OMU	O2-C2	-2.03	1.19	1.23

All (326) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4227	OMU	C4-N3-C2	-5.25	119.66	126.58
3	L3	4220	6MZ	C2-N1-C6	5.10	120.97	116.59
3	L3	2837	OMU	C4-N3-C2	-5.07	119.89	126.58
3	L3	4498	OMU	C4-N3-C2	-5.02	119.96	126.58
3	L3	2415	OMU	C4-N3-C2	-5.00	119.98	126.58
3	L3	3637	PSU	N1-C2-N3	5.00	120.80	115.13
3	L3	4306	OMU	C4-N3-C2	-4.98	120.01	126.58
3	L3	3925	OMU	C4-N3-C2	-4.97	120.02	126.58
3	L3	3637	PSU	C4-N3-C2	-4.88	119.31	126.34
3	L3	4312	PSU	N1-C2-N3	4.77	120.53	115.13
3	L3	4299	PSU	C4-N3-C2	-4.75	119.50	126.34
3	L3	4296	PSU	C4-N3-C2	-4.72	119.53	126.34
3	L3	4636	PSU	C4-N3-C2	-4.72	119.54	126.34
3	L3	1582	PSU	C4-N3-C2	-4.71	119.55	126.34
3	L3	4353	PSU	C4-N3-C2	-4.71	119.56	126.34
3	L3	4299	PSU	N1-C2-N3	4.69	120.44	115.13
3	L3	4353	PSU	N1-C2-N3	4.69	120.44	115.13
3	L3	4532	PSU	C4-N3-C2	-4.68	119.60	126.34
3	L3	1862	PSU	C4-N3-C2	-4.66	119.62	126.34
3	L3	1677	PSU	C4-N3-C2	-4.65	119.63	126.34
3	L3	4493	PSU	C4-N3-C2	-4.65	119.63	126.34
3	L3	4689	PSU	N1-C2-N3	4.64	120.38	115.13
3	L3	4403	PSU	C4-N3-C2	-4.63	119.66	126.34
3	L3	2839	PSU	C4-N3-C2	-4.63	119.67	126.34
3	L3	3851	PSU	C4-N3-C2	-4.62	119.68	126.34
3	L3	1862	PSU	N1-C2-N3	4.62	120.36	115.13
3	L3	1860	PSU	C4-N3-C2	-4.62	119.69	126.34
3	L3	4296	PSU	N1-C2-N3	4.62	120.36	115.13
3	L3	4530	UR3	C4-N3-C2	-4.61	120.22	124.56
3	L3	4636	PSU	N1-C2-N3	4.61	120.35	115.13
2	L1	55	PSU	C4-N3-C2	-4.61	119.70	126.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4431	PSU	C4-N3-C2	-4.60	119.70	126.34
3	L3	1536	PSU	C4-N3-C2	-4.60	119.71	126.34
3	L3	5010	PSU	C4-N3-C2	-4.60	119.71	126.34
3	L3	4552	PSU	C4-N3-C2	-4.60	119.72	126.34
3	L3	4361	PSU	N1-C2-N3	4.60	120.34	115.13
3	L3	4312	PSU	C4-N3-C2	-4.60	119.72	126.34
3	L3	4361	PSU	C4-N3-C2	-4.59	119.72	126.34
3	L3	4471	PSU	N1-C2-N3	4.59	120.33	115.13
3	L3	5001	PSU	C4-N3-C2	-4.59	119.73	126.34
3	L3	3730	PSU	C4-N3-C2	-4.59	119.73	126.34
3	L3	2839	PSU	N1-C2-N3	4.59	120.33	115.13
3	L3	4689	PSU	C4-N3-C2	-4.59	119.73	126.34
3	L3	3695	PSU	C4-N3-C2	-4.58	119.73	126.34
3	L3	3844	PSU	C4-N3-C2	-4.58	119.74	126.34
3	L3	4493	PSU	N1-C2-N3	4.58	120.32	115.13
3	L3	3715	PSU	C4-N3-C2	-4.57	119.75	126.34
3	L3	3822	PSU	C4-N3-C2	-4.56	119.77	126.34
3	L3	4972	PSU	C4-N3-C2	-4.56	119.77	126.34
3	L3	1792	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	4673	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	4471	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	2508	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	3639	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	4579	PSU	C4-N3-C2	-4.55	119.78	126.34
3	L3	1683	PSU	C4-N3-C2	-4.54	119.80	126.34
3	L3	3920	PSU	C4-N3-C2	-4.54	119.80	126.34
3	L3	4500	PSU	C4-N3-C2	-4.53	119.81	126.34
3	L3	2632	PSU	C4-N3-C2	-4.53	119.81	126.34
3	L3	4403	PSU	N1-C2-N3	4.53	120.26	115.13
3	L3	1536	PSU	N1-C2-N3	4.53	120.26	115.13
3	L3	1683	PSU	N1-C2-N3	4.52	120.25	115.13
3	L3	4457	PSU	C4-N3-C2	-4.52	119.83	126.34
3	L3	4521	PSU	N1-C2-N3	4.52	120.25	115.13
3	L3	3844	PSU	N1-C2-N3	4.51	120.25	115.13
3	L3	4521	PSU	C4-N3-C2	-4.51	119.84	126.34
3	L3	3730	PSU	N1-C2-N3	4.51	120.24	115.13
3	L3	3822	PSU	N1-C2-N3	4.51	120.24	115.13
3	L3	4576	PSU	C4-N3-C2	-4.51	119.84	126.34
2	L1	69	PSU	C4-N3-C2	-4.51	119.85	126.34
3	L3	3639	PSU	N1-C2-N3	4.51	120.23	115.13
3	L3	1792	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	3884	PSU	N1-C2-N3	4.50	120.23	115.13

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	3695	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	1582	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	4431	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	5001	PSU	N1-C2-N3	4.50	120.23	115.13
3	L3	4293	PSU	N1-C2-N3	4.49	120.22	115.13
3	L3	4673	PSU	N1-C2-N3	4.49	120.22	115.13
3	L3	4576	PSU	N1-C2-N3	4.49	120.22	115.13
3	L3	3851	PSU	N1-C2-N3	4.49	120.22	115.13
3	L3	5010	PSU	N1-C2-N3	4.49	120.21	115.13
3	L3	4500	PSU	N1-C2-N3	4.48	120.21	115.13
3	L3	3715	PSU	N1-C2-N3	4.48	120.21	115.13
2	L1	55	PSU	N1-C2-N3	4.48	120.21	115.13
3	L3	4972	PSU	N1-C2-N3	4.48	120.21	115.13
3	L3	4628	PSU	C4-N3-C2	-4.48	119.88	126.34
3	L3	3734	PSU	C4-N3-C2	-4.48	119.88	126.34
3	L3	1677	PSU	N1-C2-N3	4.48	120.20	115.13
3	L3	3884	PSU	C4-N3-C2	-4.47	119.89	126.34
3	L3	4532	PSU	N1-C2-N3	4.47	120.20	115.13
3	L3	3920	PSU	N1-C2-N3	4.47	120.19	115.13
3	L3	4620	OMU	C4-N3-C2	-4.47	120.69	126.58
3	L3	1860	PSU	N1-C2-N3	4.47	120.19	115.13
3	L3	4457	PSU	N1-C2-N3	4.46	120.18	115.13
3	L3	4579	PSU	N1-C2-N3	4.45	120.17	115.13
2	L1	69	PSU	N1-C2-N3	4.44	120.17	115.13
3	L3	4628	PSU	N1-C2-N3	4.43	120.14	115.13
3	L3	3853	PSU	N1-C2-N3	4.41	120.13	115.13
3	L3	4552	PSU	N1-C2-N3	4.41	120.13	115.13
3	L3	3734	PSU	N1-C2-N3	4.41	120.13	115.13
3	L3	2508	PSU	N1-C2-N3	4.38	120.10	115.13
3	L3	2632	PSU	N1-C2-N3	4.38	120.09	115.13
3	L3	3853	PSU	C4-N3-C2	-4.37	120.05	126.34
3	L3	4293	PSU	C4-N3-C2	-4.31	120.12	126.34
3	L3	4590	A2M	N3-C2-N1	-4.30	121.95	128.68
3	L3	1871	A2M	N3-C2-N1	-4.10	122.27	128.68
3	L3	3830	A2M	N3-C2-N1	-4.07	122.31	128.68
3	L3	4523	A2M	N3-C2-N1	-4.07	122.32	128.68
3	L3	3825	A2M	N3-C2-N1	-4.06	122.34	128.68
3	L3	2401	A2M	N3-C2-N1	-4.05	122.35	128.68
3	L3	400	A2M	N3-C2-N1	-4.04	122.36	128.68
3	L3	398	A2M	N3-C2-N1	-4.04	122.36	128.68
3	L3	1524	A2M	N3-C2-N1	-4.04	122.37	128.68
3	L3	3724	A2M	N3-C2-N1	-4.04	122.37	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	2815	A2M	N3-C2-N1	-4.01	122.41	128.68
3	L3	4571	A2M	N3-C2-N1	-3.99	122.44	128.68
3	L3	4227	OMU	N3-C2-N1	3.99	120.18	114.89
3	L3	2787	A2M	N3-C2-N1	-3.98	122.46	128.68
3	L3	2415	OMU	N3-C2-N1	3.98	120.17	114.89
3	L3	1326	A2M	N3-C2-N1	-3.97	122.47	128.68
3	L3	3867	A2M	N3-C2-N1	-3.96	122.49	128.68
3	L3	4498	OMU	N3-C2-N1	3.93	120.10	114.89
3	L3	2837	OMU	N3-C2-N1	3.93	120.10	114.89
3	L3	2363	A2M	N3-C2-N1	-3.92	122.56	128.68
3	L3	4306	OMU	N3-C2-N1	3.89	120.05	114.89
3	L3	3925	OMU	N3-C2-N1	3.89	120.05	114.89
3	L3	1534	A2M	N3-C2-N1	-3.88	122.61	128.68
3	L3	3718	A2M	N3-C2-N1	-3.85	122.66	128.68
3	L3	4220	6MZ	N3-C2-N1	-3.83	122.69	128.68
3	L3	4227	OMU	C5-C4-N3	3.68	120.35	114.84
3	L3	4620	OMU	N3-C2-N1	3.60	119.67	114.89
3	L3	4498	OMU	C5-C4-N3	3.49	120.06	114.84
3	L3	2837	OMU	C5-C4-N3	3.46	120.02	114.84
3	L3	4306	OMU	C5-C4-N3	3.45	120.00	114.84
3	L3	3925	OMU	C5-C4-N3	3.45	120.00	114.84
3	L3	2415	OMU	C5-C4-N3	3.37	119.88	114.84
3	L3	4620	OMU	C5-C4-N3	3.34	119.84	114.84
3	L3	4220	6MZ	C9-N6-C6	-3.14	120.17	122.87
3	L3	3637	PSU	C6-C5-C4	2.94	120.26	118.20
3	L3	3925	OMU	O4-C4-C5	-2.91	120.05	125.16
3	L3	4227	OMU	O4-C4-C5	-2.88	120.09	125.16
3	L3	4306	OMU	O4-C4-C5	-2.85	120.14	125.16
3	L3	2837	OMU	O4-C4-C5	-2.84	120.17	125.16
3	L3	2415	OMU	O4-C4-C5	-2.83	120.18	125.16
3	L3	4628	PSU	O2-C2-N1	-2.81	119.69	122.79
3	L3	1534	A2M	O4'-C1'-C2'	-2.81	101.72	106.59
3	L3	4498	OMU	O4-C4-C5	-2.80	120.23	125.16
3	L3	4620	OMU	O4-C4-C5	-2.80	120.24	125.16
3	L3	4500	PSU	O2-C2-N1	-2.78	119.73	122.79
3	L3	2839	PSU	O2-C2-N1	-2.77	119.74	122.79
2	L1	55	PSU	O2-C2-N1	-2.74	119.77	122.79
3	L3	3822	PSU	O2-C2-N1	-2.73	119.78	122.79
3	L3	4576	PSU	O2-C2-N1	-2.72	119.80	122.79
3	L3	3844	PSU	O2-C2-N1	-2.71	119.80	122.79
3	L3	1536	PSU	O2-C2-N1	-2.71	119.81	122.79
3	L3	3715	PSU	O2-C2-N1	-2.70	119.82	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4361	PSU	O2-C2-N1	-2.68	119.84	122.79
3	L3	4457	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	3639	PSU	O2-C2-N1	-2.66	119.86	122.79
3	L3	4353	PSU	O2-C2-N1	-2.65	119.87	122.79
3	L3	4296	PSU	O2-C2-N1	-2.65	119.88	122.79
3	L3	3734	PSU	O2-C2-N1	-2.64	119.88	122.79
2	L1	69	PSU	O2-C2-N1	-2.64	119.89	122.79
3	L3	3695	PSU	O2-C2-N1	-2.63	119.89	122.79
3	L3	3884	PSU	O2-C2-N1	-2.62	119.91	122.79
3	L3	4579	PSU	O2-C2-N1	-2.61	119.92	122.79
3	L3	1677	PSU	O2-C2-N1	-2.60	119.92	122.79
3	L3	3853	PSU	O2-C2-N1	-2.59	119.94	122.79
3	L3	4972	PSU	O2-C2-N1	-2.59	119.94	122.79
3	L3	4673	PSU	O2-C2-N1	-2.58	119.95	122.79
3	L3	3920	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	4532	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	4431	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	1582	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	1862	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	4403	PSU	O2-C2-N1	-2.57	119.96	122.79
3	L3	5010	PSU	O2-C2-N1	-2.56	119.97	122.79
3	L3	3851	PSU	O2-C2-N1	-2.56	119.97	122.79
3	L3	3730	PSU	O2-C2-N1	-2.56	119.97	122.79
3	L3	2508	PSU	O2-C2-N1	-2.54	119.99	122.79
3	L3	4299	PSU	O2-C2-N1	-2.54	120.00	122.79
3	L3	5001	PSU	O2-C2-N1	-2.54	120.00	122.79
23	LN	245	HIC	CB-CA-C	-2.54	106.71	111.47
3	L3	4532	PSU	C6-C5-C4	2.53	119.97	118.20
3	L3	4623	OMG	O6-C6-C5	2.52	129.28	124.37
3	L3	4689	PSU	O2-C2-N1	-2.51	120.03	122.79
3	L3	4552	PSU	O2-C2-N1	-2.50	120.04	122.79
3	L3	4493	PSU	O2-C2-N1	-2.48	120.06	122.79
3	L3	4636	PSU	C6-C5-C4	2.48	119.93	118.20
3	L3	4312	PSU	O2-C2-N1	-2.47	120.07	122.79
3	L3	1860	PSU	O2-C2-N1	-2.47	120.07	122.79
3	L3	4471	PSU	O2-C2-N1	-2.47	120.08	122.79
3	L3	4293	PSU	C6-N1-C2	-2.45	120.17	122.68
3	L3	4312	PSU	C6-N1-C2	-2.44	120.19	122.68
3	L3	3884	PSU	C6-N1-C2	-2.44	120.19	122.68
3	L3	4628	PSU	C6-N1-C2	-2.44	120.19	122.68
3	L3	4521	PSU	O2-C2-N1	-2.42	120.13	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	1792	PSU	O2-C2-N1	-2.41	120.14	122.79
3	L3	4392	OMG	O6-C6-C5	2.41	129.08	124.37
3	L3	1862	PSU	C6-C5-C4	2.40	119.87	118.20
3	L3	4579	PSU	C6-N1-C2	-2.40	120.23	122.68
3	L3	4370	OMG	O6-C6-C5	2.40	129.05	124.37
3	L3	4499	OMG	O6-C6-C5	2.39	129.05	124.37
3	L3	3637	PSU	O2-C2-N1	-2.39	120.16	122.79
3	L3	1316	OMG	O6-C6-C5	2.38	129.03	124.37
3	L3	3899	OMG	O6-C6-C5	2.38	129.03	124.37
3	L3	4689	PSU	C6-N1-C2	-2.38	120.25	122.68
2	L1	69	PSU	O4'-C1'-C2'	2.38	108.50	105.14
3	L3	4494	OMG	O6-C6-C5	2.38	129.02	124.37
3	L3	3695	PSU	C6-C5-C4	2.37	119.85	118.20
3	L3	3627	OMG	O6-C6-C5	2.36	128.97	124.37
3	L3	2364	OMG	O6-C6-C5	2.35	128.97	124.37
3	L3	4299	PSU	C6-C5-C4	2.35	119.84	118.20
3	L3	4471	PSU	C6-C5-C4	2.35	119.84	118.20
3	L3	3730	PSU	C6-N1-C2	-2.34	120.29	122.68
3	L3	3744	OMG	O6-C6-C5	2.33	128.93	124.37
2	L1	75	OMG	O6-C6-C5	2.33	128.93	124.37
3	L3	4403	PSU	C6-C5-C4	2.33	119.83	118.20
3	L3	3920	PSU	C6-N1-C2	-2.33	120.30	122.68
3	L3	1683	PSU	O2-C2-N1	-2.32	120.24	122.79
3	L3	4431	PSU	C6-C5-C4	2.32	119.82	118.20
3	L3	1625	OMG	O6-C6-C5	2.31	128.89	124.37
2	L1	69	PSU	C6-N1-C2	-2.31	120.33	122.68
3	L3	3639	PSU	C6-C5-C4	2.30	119.81	118.20
3	L3	2839	PSU	C6-N1-C2	-2.30	120.33	122.68
3	L3	4637	OMG	O6-C6-C5	2.30	128.86	124.37
3	L3	4590	A2M	C4-C5-N7	-2.30	107.00	109.40
3	L3	4293	PSU	O2-C2-N1	-2.30	120.26	122.79
3	L3	3853	PSU	C6-N1-C2	-2.29	120.34	122.68
3	L3	1522	OMG	O6-C6-C5	2.29	128.85	124.37
3	L3	4228	OMG	O6-C6-C5	2.29	128.85	124.37
3	L3	4576	PSU	C6-N1-C2	-2.29	120.34	122.68
3	L3	2424	OMG	O6-C6-C5	2.29	128.84	124.37
3	L3	4361	PSU	C6-N1-C2	-2.28	120.35	122.68
3	L3	4312	PSU	C6-C5-C4	2.28	119.79	118.20
3	L3	1683	PSU	C6-N1-C2	-2.27	120.36	122.68
3	L3	3637	PSU	C6-N1-C2	-2.27	120.36	122.68
3	L3	1536	PSU	C6-N1-C2	-2.27	120.36	122.68
3	L3	4521	PSU	C6-N1-C2	-2.27	120.36	122.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4500	PSU	C6-N1-C2	-2.26	120.37	122.68
3	L3	2415	OMU	O2-C2-N1	-2.26	119.78	122.79
3	L3	2876	OMG	O6-C6-C5	2.25	128.77	124.37
3	L3	4457	PSU	C6-N1-C2	-2.25	120.38	122.68
3	L3	1536	PSU	C6-C5-C4	2.25	119.77	118.20
3	L3	3639	PSU	C6-N1-C2	-2.24	120.39	122.68
3	L3	2815	A2M	C4-C5-N7	-2.24	107.06	109.40
3	L3	5010	PSU	C6-N1-C2	-2.24	120.39	122.68
3	L3	4618	OMG	O6-C6-C5	2.24	128.75	124.37
3	L3	1677	PSU	C6-C5-C4	2.24	119.76	118.20
3	L3	3734	PSU	C6-N1-C2	-2.23	120.40	122.68
3	L3	3822	PSU	C6-N1-C2	-2.23	120.40	122.68
3	L3	3822	PSU	C6-C5-C4	2.23	119.75	118.20
3	L3	5001	PSU	C6-N1-C2	-2.23	120.41	122.68
3	L3	2632	PSU	O2-C2-N1	-2.22	120.34	122.79
3	L3	1322	1MA	N1-C6-N6	2.22	125.42	119.77
3	L3	3844	PSU	C6-C5-C4	2.22	119.75	118.20
3	L3	1862	PSU	C6-N1-C2	-2.22	120.42	122.68
3	L3	3844	PSU	C6-N1-C2	-2.22	120.42	122.68
3	L3	4471	PSU	C6-N1-C2	-2.22	120.42	122.68
3	L3	1792	PSU	C6-N1-C2	-2.21	120.42	122.68
3	L3	3715	PSU	C6-N1-C2	-2.21	120.42	122.68
3	L3	4353	PSU	C6-N1-C2	-2.21	120.42	122.68
3	L3	4296	PSU	C6-C5-C4	2.21	119.74	118.20
3	L3	3851	PSU	C6-N1-C2	-2.21	120.43	122.68
3	L3	1322	1MA	C5-C6-N1	-2.21	110.61	113.90
3	L3	4673	PSU	C6-N1-C2	-2.20	120.43	122.68
3	L3	2401	A2M	C4-C5-N7	-2.20	107.11	109.40
3	L3	4296	PSU	C6-N1-C2	-2.20	120.44	122.68
3	L3	4299	PSU	C6-N1-C2	-2.20	120.44	122.68
2	L1	55	PSU	C6-N1-C2	-2.19	120.44	122.68
3	L3	1326	A2M	C4-C5-N7	-2.19	107.12	109.40
3	L3	3695	PSU	C6-N1-C2	-2.19	120.45	122.68
3	L3	3830	A2M	C4-C5-N7	-2.19	107.12	109.40
3	L3	2837	OMU	O2-C2-N1	-2.18	119.89	122.79
3	L3	2363	A2M	C4-C5-N7	-2.18	107.13	109.40
2	L1	55	PSU	C6-C5-C4	2.18	119.72	118.20
3	L3	4493	PSU	C6-C5-C4	2.18	119.72	118.20
3	L3	4431	PSU	C6-N1-C2	-2.17	120.46	122.68
3	L3	4972	PSU	C6-N1-C2	-2.17	120.46	122.68
3	L3	4972	PSU	C6-C5-C4	2.17	119.71	118.20
3	L3	3724	A2M	C4-C5-N7	-2.17	107.14	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4552	PSU	C6-N1-C2	-2.16	120.47	122.68
3	L3	4361	PSU	C6-C5-C4	2.16	119.71	118.20
3	L3	2632	PSU	C6-N1-C2	-2.16	120.47	122.68
3	L3	2508	PSU	C6-N1-C2	-2.16	120.48	122.68
3	L3	398	A2M	C4-C5-N7	-2.16	107.15	109.40
3	L3	4571	A2M	C4-C5-N7	-2.16	107.15	109.40
3	L3	4673	PSU	C6-C5-C4	2.15	119.70	118.20
3	L3	2787	A2M	C4-C5-N7	-2.15	107.16	109.40
3	L3	1534	A2M	C4-C5-N7	-2.15	107.16	109.40
3	L3	3825	A2M	C4-C5-N7	-2.14	107.16	109.40
3	L3	3867	A2M	C4-C5-N7	-2.14	107.17	109.40
3	L3	2422	OMC	C1'-N1-C2	2.14	123.20	118.42
3	L3	4403	PSU	C6-N1-C2	-2.14	120.50	122.68
3	L3	1860	PSU	C6-N1-C2	-2.13	120.50	122.68
3	L3	3920	PSU	C6-C5-C4	2.12	119.68	118.20
3	L3	4636	PSU	C6-N1-C2	-2.12	120.52	122.68
3	L3	3925	OMU	O2-C2-N1	-2.12	119.97	122.79
3	L3	1524	A2M	C4-C5-N7	-2.12	107.19	109.40
3	L3	1677	PSU	C6-N1-C2	-2.11	120.52	122.68
3	L3	3851	PSU	O4'-C1'-C2'	2.11	108.12	105.14
3	L3	1871	A2M	C4-C5-N7	-2.11	107.20	109.40
3	L3	3718	A2M	C4-C5-N7	-2.11	107.20	109.40
3	L3	4353	PSU	C6-C5-C4	2.11	119.67	118.20
3	L3	4493	PSU	C6-N1-C2	-2.10	120.54	122.68
3	L3	4689	PSU	C6-C5-C4	2.09	119.66	118.20
3	L3	3715	PSU	O4'-C1'-C2'	2.09	108.09	105.14
3	L3	400	A2M	C4-C5-N7	-2.08	107.23	109.40
3	L3	4220	6MZ	C4-C5-N7	-2.08	107.23	109.40
3	L3	4523	A2M	C4-C5-N7	-2.07	107.24	109.40
3	L3	5001	PSU	O4'-C1'-C2'	2.07	108.06	105.14
3	L3	3730	PSU	C6-C5-C4	2.07	119.64	118.20
3	L3	4552	PSU	C6-C5-C4	2.07	119.64	118.20
3	L3	1860	PSU	C6-C5-C4	2.07	119.64	118.20
3	L3	4306	OMU	O2-C2-N1	-2.06	120.05	122.79
3	L3	3715	PSU	C6-C5-C4	2.05	119.63	118.20
3	L3	5010	PSU	C6-C5-C4	2.05	119.63	118.20
3	L3	4521	PSU	C6-C5-C4	2.04	119.62	118.20
3	L3	1534	A2M	C3'-C2'-C1'	-2.03	99.08	102.89
3	L3	3734	PSU	C6-C5-C4	2.02	119.61	118.20
3	L3	5001	PSU	C6-C5-C4	2.01	119.61	118.20
3	L3	4403	PSU	O4'-C1'-C2'	2.01	107.98	105.14
3	L3	1683	PSU	C6-C5-C4	2.01	119.60	118.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4628	PSU	C6-C5-C4	2.01	119.60	118.20

There are no chirality outliers.

All (98) 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	400	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	2351	OMC	C1'-C2'-O2'-CM2
3	L3	2364	OMG	C1'-C2'-O2'-CM2
3	L3	2401	A2M	C3'-C4'-C5'-O5'
3	L3	2422	OMC	C1'-C2'-O2'-CM2
3	L3	2424	OMG	C1'-C2'-O2'-CM2
3	L3	2787	A2M	C3'-C4'-C5'-O5'
3	L3	2804	OMC	C1'-C2'-O2'-CM2
3	L3	2815	A2M	C1'-C2'-O2'-CM'
3	L3	2824	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	3899	OMG	C1'-C2'-O2'-CM2
3	L3	3925	OMU	C1'-C2'-O2'-CM2
3	L3	4227	OMU	C1'-C2'-O2'-CM2
3	L3	4306	OMU	C1'-C2'-O2'-CM2
3	L3	4392	OMG	C1'-C2'-O2'-CM2

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Mol	Chain	Res	Type	Atoms
3	L3	4456	OMC	C1'-C2'-O2'-CM2
3	L3	4498	OMU	C1'-C2'-O2'-CM2
3	L3	4498	OMU	C3'-C4'-C5'-O5'
3	L3	4498	OMU	O4'-C4'-C5'-O5'
3	L3	4498	OMU	C4'-C5'-O5'-P
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	4590	A2M	C1'-C2'-O2'-CM'
3	L3	4618	OMG	O4'-C4'-C5'-O5'
3	L3	4623	OMG	C1'-C2'-O2'-CM2
3	L3	4637	OMG	C1'-C2'-O2'-CM2
23	LN	245	HIC	CA-CB-CG-ND1
3	L3	1534	A2M	O4'-C4'-C5'-O5'
3	L3	1534	A2M	C3'-C4'-C5'-O5'
3	L3	2401	A2M	O4'-C4'-C5'-O5'
3	L3	2876	OMG	O4'-C4'-C5'-O5'
3	L3	3887	OMC	O4'-C4'-C5'-O5'
3	L3	4220	6MZ	O4'-C4'-C5'-O5'
3	L3	4220	6MZ	C3'-C4'-C5'-O5'
3	L3	1625	OMG	C3'-C4'-C5'-O5'
3	L3	1677	PSU	C3'-C4'-C5'-O5'
3	L3	1677	PSU	O4'-C4'-C5'-O5'
3	L3	4228	OMG	C3'-C4'-C5'-O5'
3	L3	4523	A2M	C3'-C4'-C5'-O5'
3	L3	4590	A2M	O4'-C4'-C5'-O5'
3	L3	4618	OMG	C3'-C4'-C5'-O5'
3	L3	4637	OMG	O4'-C4'-C5'-O5'
3	L3	4590	A2M	C4'-C5'-O5'-P
3	L3	4228	OMG	O4'-C4'-C5'-O5'
3	L3	2787	A2M	O4'-C4'-C5'-O5'
3	L3	3701	OMC	O4'-C4'-C5'-O5'
3	L3	4637	OMG	C3'-C4'-C5'-O5'
3	L3	1625	OMG	O4'-C4'-C5'-O5'
23	LN	245	HIC	CA-CB-CG-CD2
3	L3	2415	OMU	O4'-C4'-C5'-O5'
3	L3	2422	OMC	O4'-C4'-C5'-O5'
3	L3	3844	PSU	C4'-C5'-O5'-P
3	L3	3701	OMC	C3'-C4'-C5'-O5'
3	L3	4220	6MZ	C4'-C5'-O5'-P
3	L3	4636	PSU	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
3	L3	3867	A2M	C3'-C2'-O2'-CM'
3	L3	3701	OMC	O4'-C1'-N1-C6
3	L3	2351	OMC	C2'-C1'-N1-C6
3	L3	1677	PSU	O4'-C1'-C5-C4
3	L3	2839	PSU	O4'-C1'-C5-C4
3	L3	4457	PSU	O4'-C1'-C5-C4
3	L3	4521	PSU	O4'-C1'-C5-C4
3	L3	4636	PSU	O4'-C1'-C5-C4
3	L3	2876	OMG	C3'-C2'-O2'-CM2
3	L3	2415	OMU	C3'-C4'-C5'-O5'
3	L3	3925	OMU	C3'-C2'-O2'-CM2
3	L3	4228	OMG	C3'-C2'-O2'-CM2
3	L3	2351	OMC	C2'-C1'-N1-C2
3	L3	3701	OMC	C4'-C5'-O5'-P
3	L3	1677	PSU	O4'-C1'-C5-C6
3	L3	4521	PSU	O4'-C1'-C5-C6
3	L3	3701	OMC	O4'-C1'-N1-C2
3	L3	4636	PSU	O4'-C4'-C5'-O5'
3	L3	2351	OMC	O4'-C4'-C5'-O5'
3	L3	1326	A2M	C4'-C5'-O5'-P

There are no ring outliers.

63 monomers are involved in 90 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	3724	A2M	2	0
3	L3	4530	UR3	2	0
3	L3	3887	OMC	1	0
3	L3	1322	1MA	2	0
3	L3	1326	A2M	2	0
3	L3	4457	PSU	2	0
3	L3	4456	OMC	1	0
3	L3	4620	OMU	1	0
3	L3	4590	A2M	1	0
3	L3	2837	OMU	1	0
3	L3	3744	OMG	3	0
3	L3	2364	OMG	2	0
3	L3	2422	OMC	2	0
3	L3	4637	OMG	2	0
3	L3	4623	OMG	1	0
3	L3	1677	PSU	2	0
3	L3	3715	PSU	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	L1	75	OMG	2	0
3	L3	2824	OMC	2	0
3	L3	2363	A2M	1	0
3	L3	1524	A2M	2	0
3	L3	3822	PSU	1	0
3	L3	400	A2M	1	0
3	L3	4220	6MZ	3	0
38	NR	127	PTR	1	0
3	L3	4536	OMC	1	0
3	L3	4312	PSU	1	0
3	L3	4500	PSU	1	0
3	L3	3841	OMC	1	0
3	L3	1683	PSU	2	0
3	L3	3869	OMC	1	0
3	L3	4299	PSU	1	0
3	L3	3920	PSU	1	0
3	L3	2424	OMG	1	0
3	L3	1522	OMG	1	0
3	L3	4498	OMU	1	0
3	L3	3867	A2M	1	0
3	L3	2632	PSU	1	0
2	L1	69	PSU	2	0
3	L3	5001	PSU	1	0
3	L3	2415	OMU	1	0
3	L3	4296	PSU	1	0
3	L3	398	A2M	1	0
3	L3	4552	PSU	2	0
3	L3	3718	A2M	2	0
3	L3	4392	OMG	1	0
3	L3	4306	OMU	1	0
3	L3	2861	OMC	1	0
3	L3	4227	OMU	1	0
3	L3	4571	A2M	2	0
3	L3	3734	PSU	1	0
3	L3	1340	OMC	2	0
3	L3	4618	OMG	1	0
3	L3	4636	PSU	2	0
3	L3	2876	OMG	2	0
3	L3	3925	OMU	2	0
3	L3	3637	PSU	1	0
3	L3	2351	OMC	2	0
3	L3	3899	OMG	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	4361	PSU	1	0
3	L3	4353	PSU	1	0
3	L3	4673	PSU	2	0
3	L3	3730	PSU	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	54,51	24,30,30	2.54	7 (29%)	30,47,47	1.77	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	54,51	-	0/12/32/32	0/3/3/3

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	SR	1001	GDP	O6-C6	8.35	1.40	1.23
53	SR	1001	GDP	C2-N2	4.72	1.45	1.34
53	SR	1001	GDP	O4'-C1'	4.43	1.47	1.41
53	SR	1001	GDP	C5-C4	2.37	1.49	1.43
53	SR	1001	GDP	PB-O2B	-2.21	1.46	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	SR	1001	GDP	PB-O3B	-2.18	1.46	1.54
53	SR	1001	GDP	C2'-C3'	-2.04	1.47	1.53

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
53	SR	1001	GDP	C3'-C2'-C1'	4.21	107.31	100.98
53	SR	1001	GDP	C5-C6-N1	3.37	119.90	113.95
53	SR	1001	GDP	C2-N1-C6	-2.93	119.71	125.10
53	SR	1001	GDP	O2B-PB-O3A	2.85	114.19	104.64
53	SR	1001	GDP	O3B-PB-O3A	2.82	114.11	104.64
53	SR	1001	GDP	C2'-C3'-C4'	2.72	107.93	102.64
53	SR	1001	GDP	PA-O3A-PB	-2.63	123.80	132.83
53	SR	1001	GDP	O2A-PA-O1A	-2.21	101.29	112.24
53	SR	1001	GDP	O6-C6-C5	-2.19	120.08	124.37

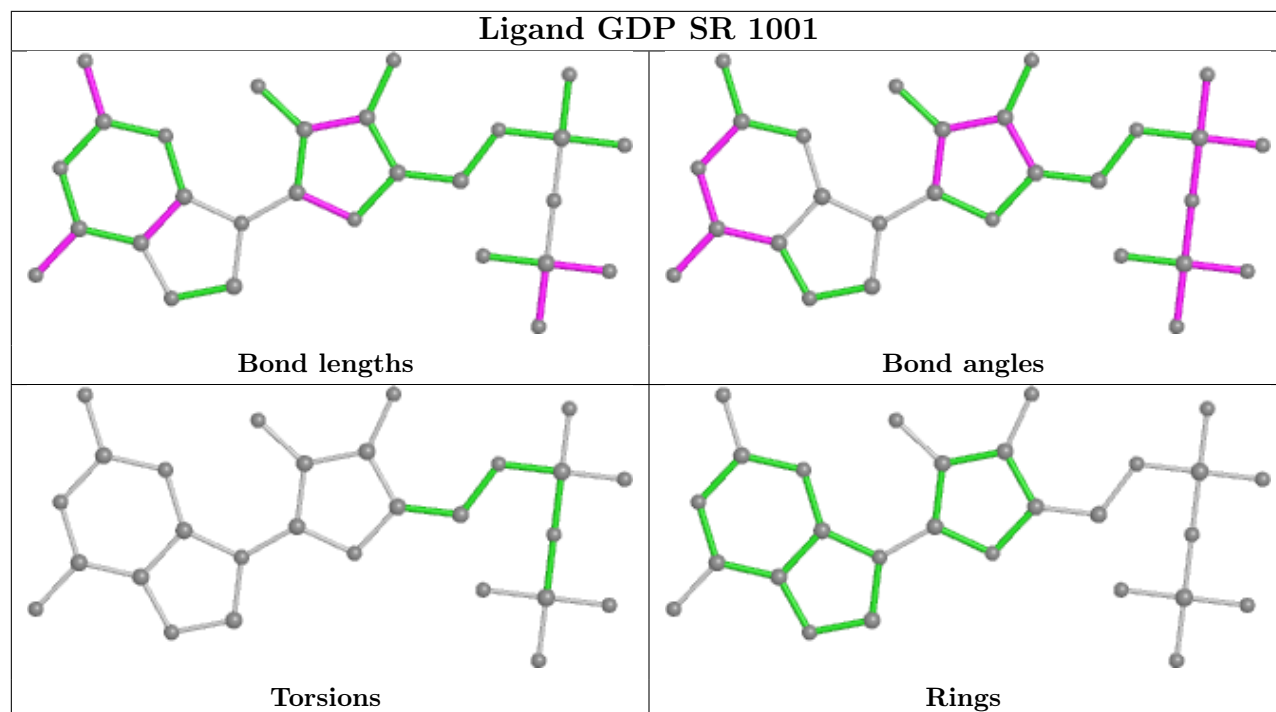
There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

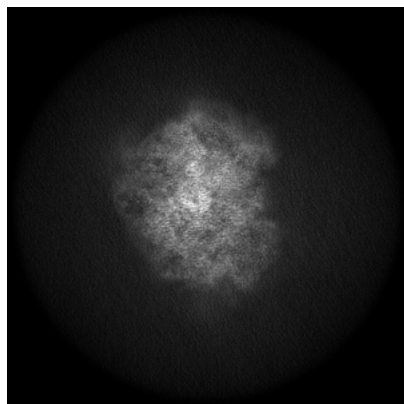
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29274. These allow visual inspection of the internal detail of the map and identification of artifacts.

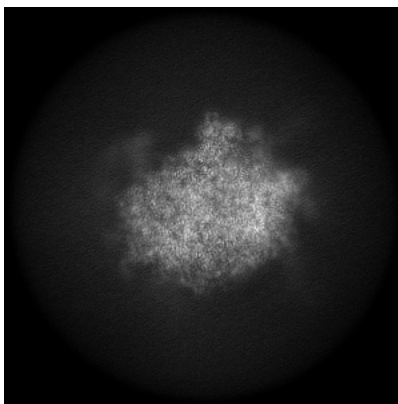
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

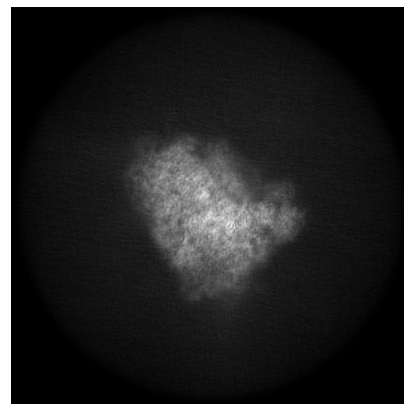
#### 6.1.1 Primary map



X

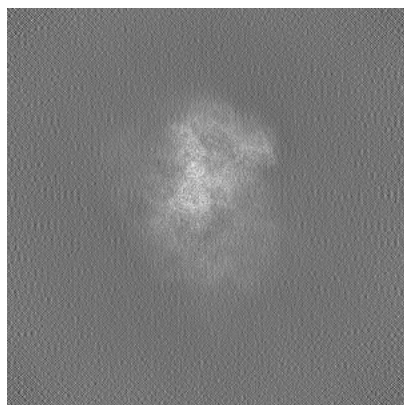


Y

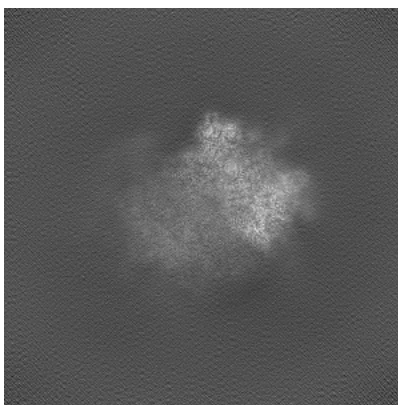


Z

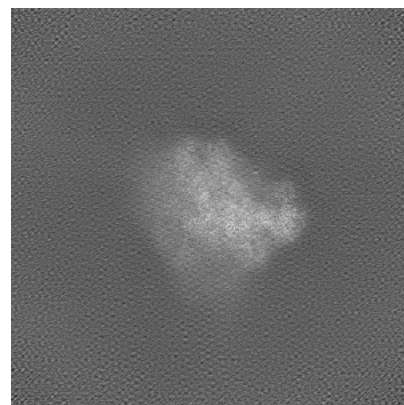
#### 6.1.2 Raw map



X



Y



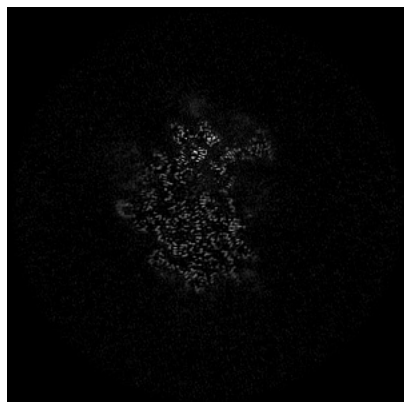
Z

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

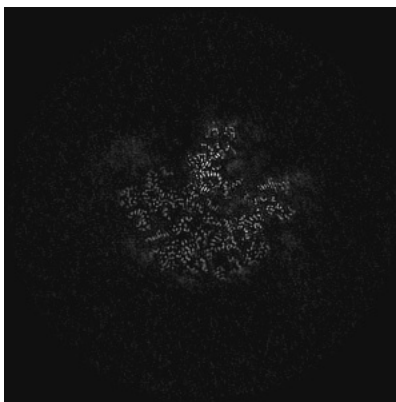


## 6.2 Central slices [i](#)

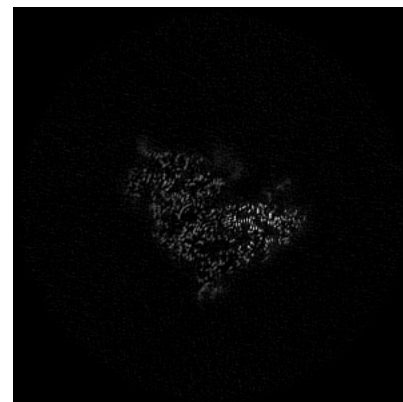
### 6.2.1 Primary map



X Index: 240

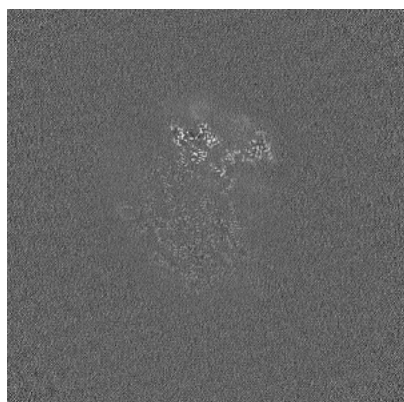


Y Index: 240

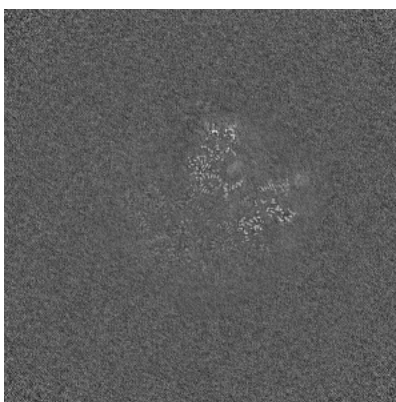


Z Index: 240

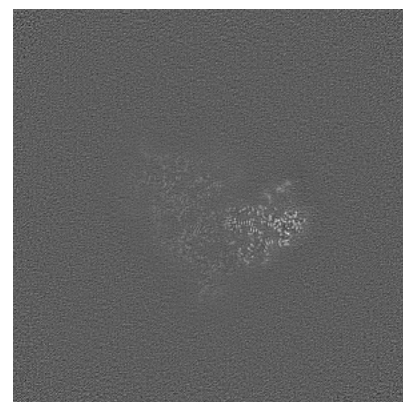
### 6.2.2 Raw map



X Index: 240



Y Index: 240

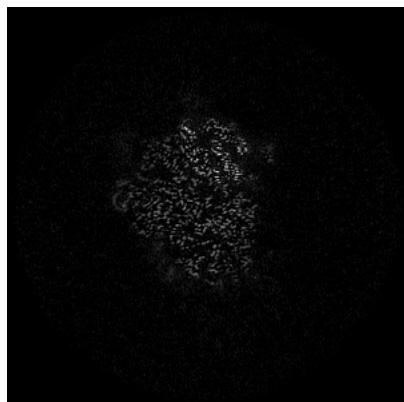


Z Index: 240

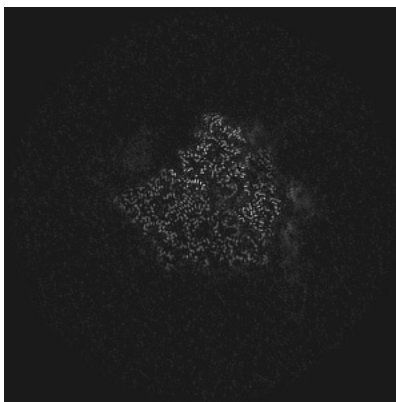
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

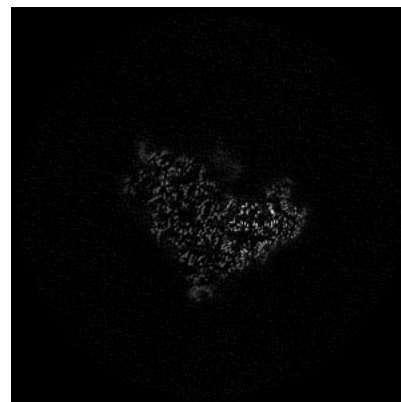
### 6.3.1 Primary map



X Index: 226

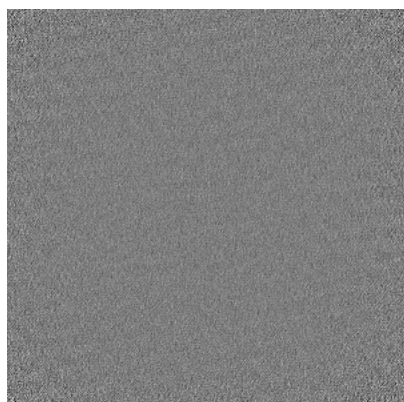


Y Index: 227

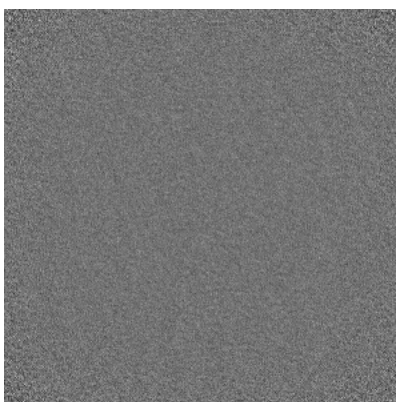


Z Index: 245

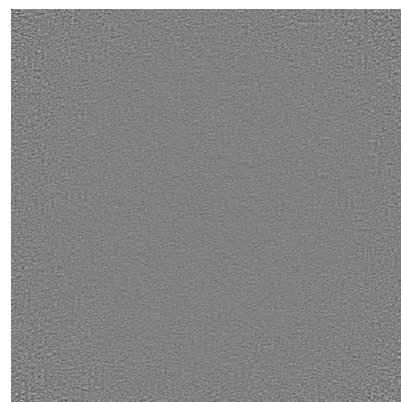
### 6.3.2 Raw map



X Index: 0



Y Index: 0

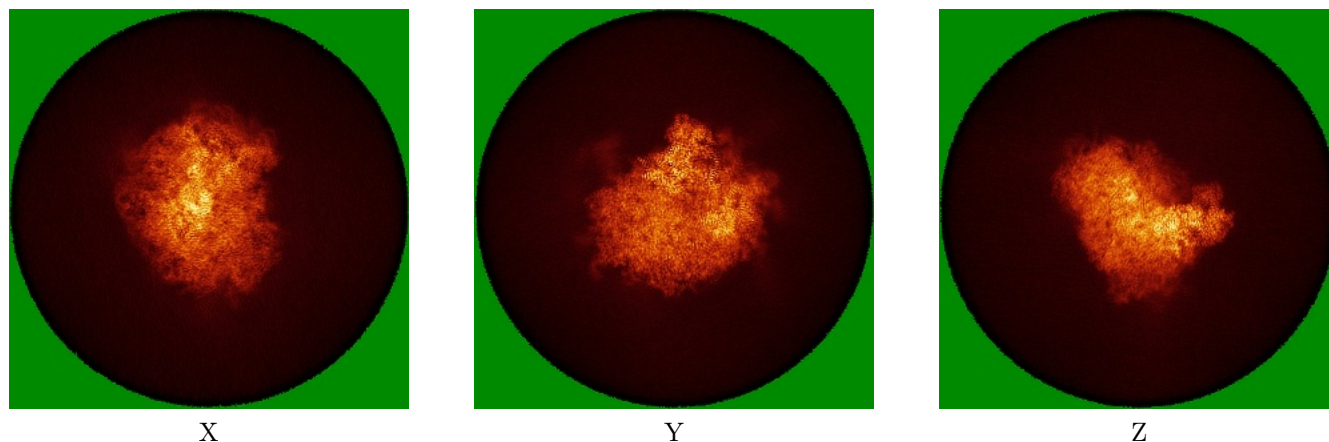


Z Index: 0

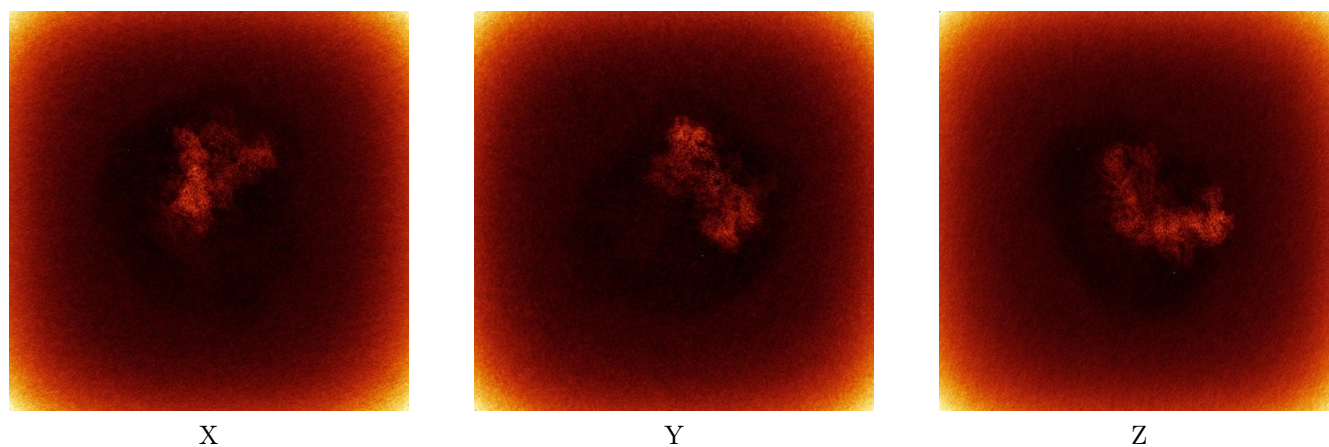
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



### 6.4.2 Raw map



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



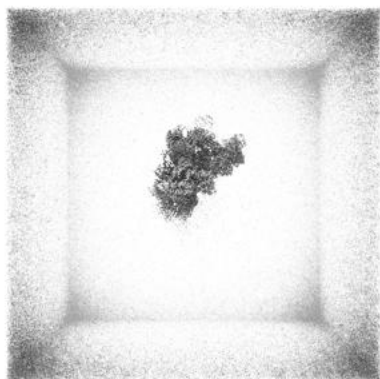
Y



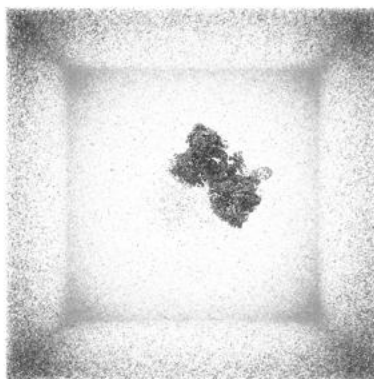
Z

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.

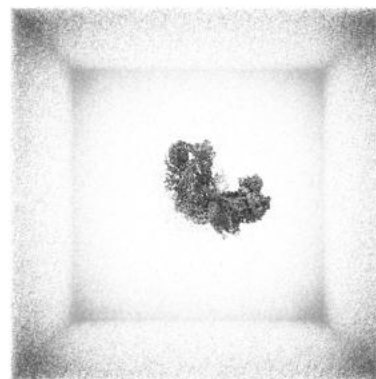
### 6.5.2 Raw map



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.



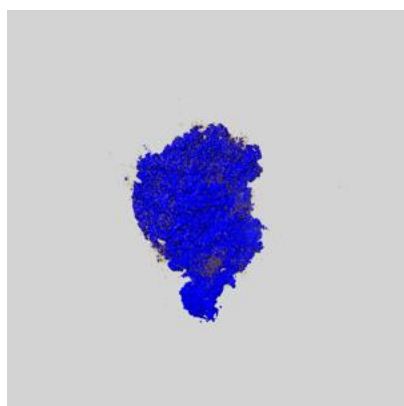
## 6.6 Mask visualisation [i](#)

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

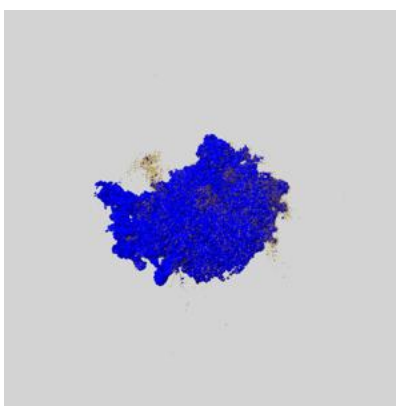
A mask typically either:

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

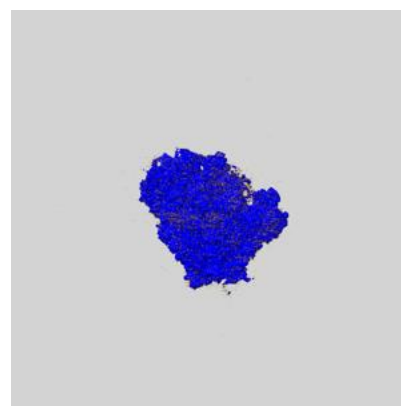
### 6.6.1 emd\_29274\_msk\_1.map [i](#)



X



Y

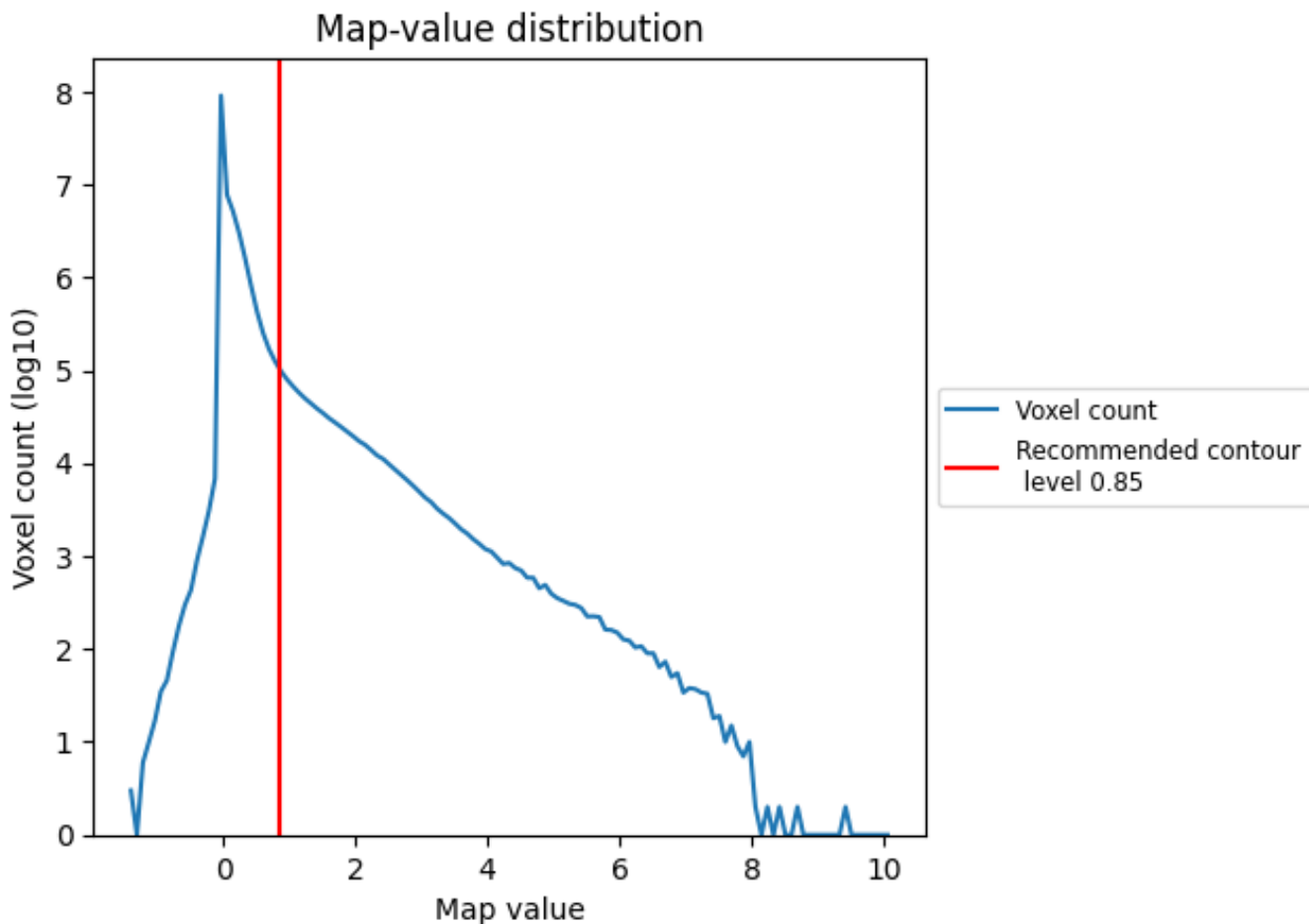


Z

## 7 Map analysis [i](#)

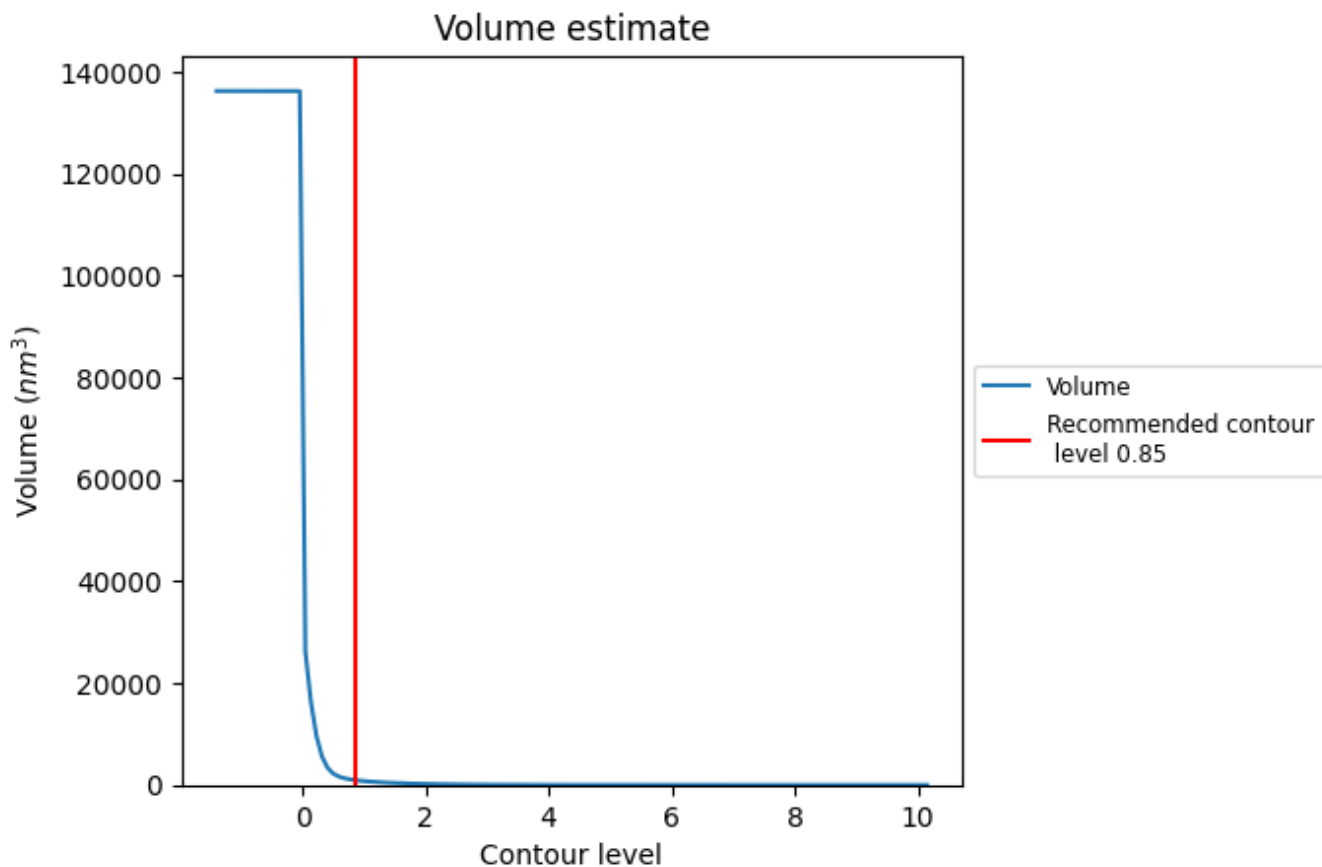
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

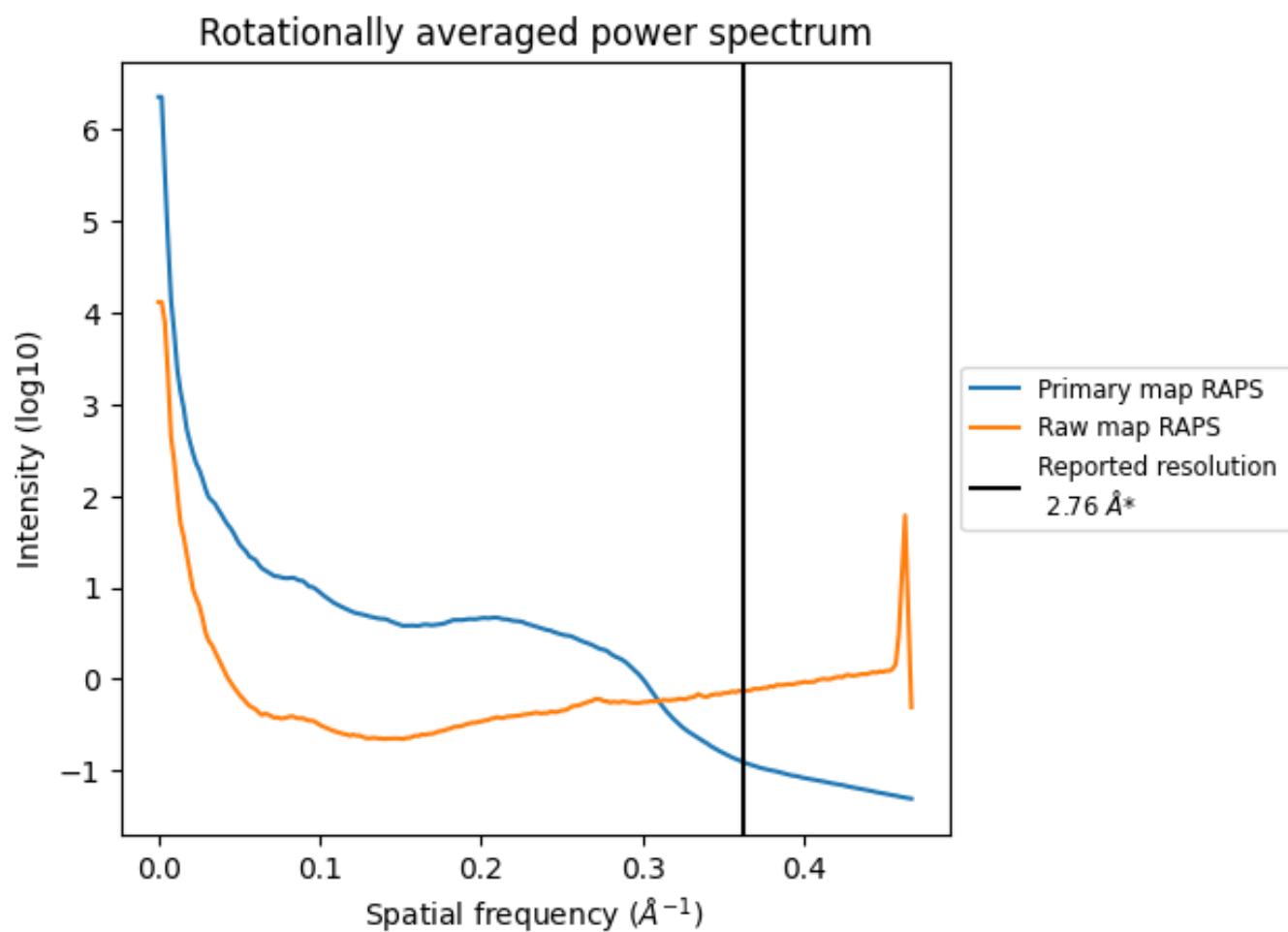
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 966  $\text{nm}^3$ ; this corresponds to an approximate mass of 873 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



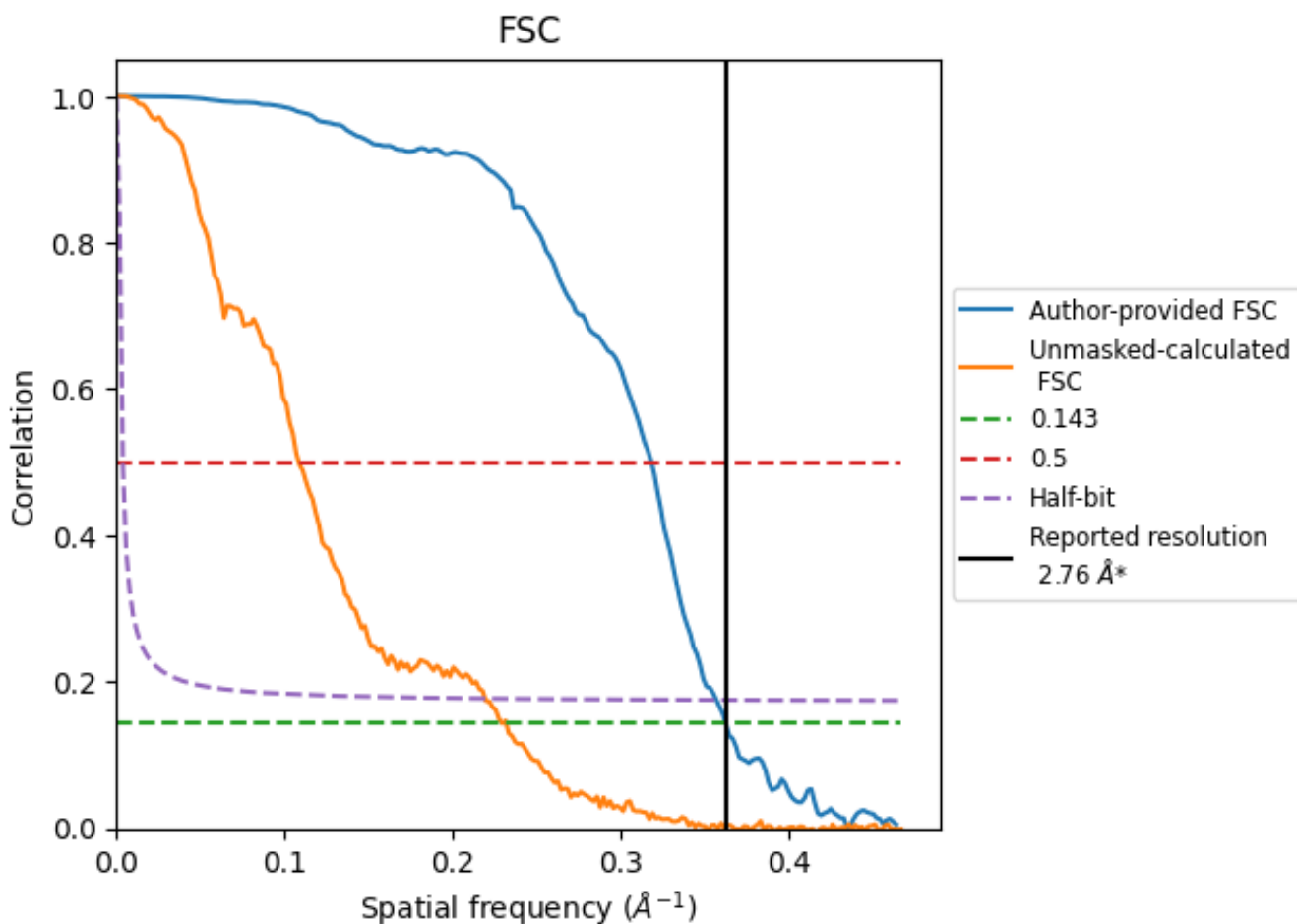
\*Reported resolution corresponds to spatial frequency of 0.362 Å<sup>-1</sup>



## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.362  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

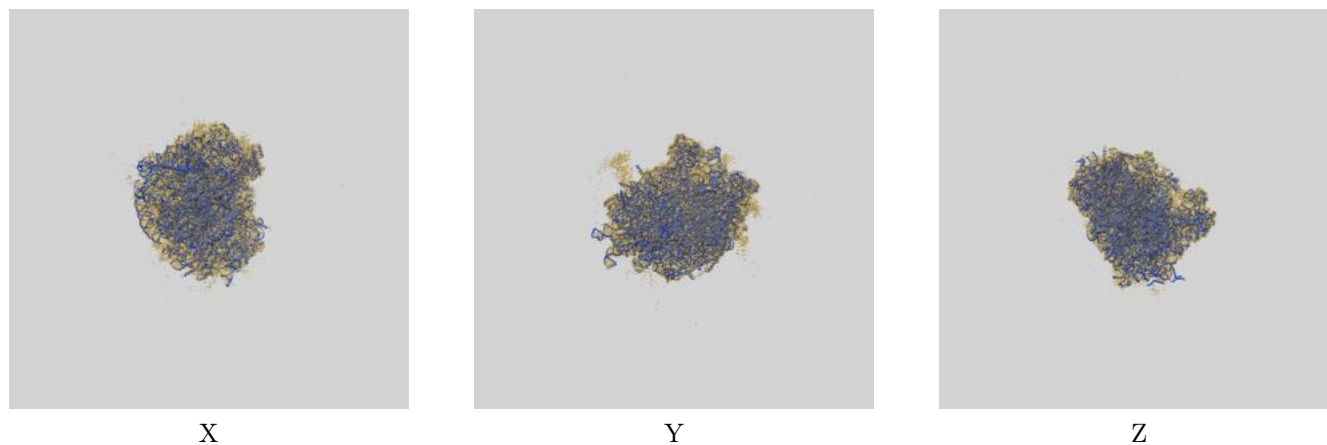
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.76	-	-
Author-provided FSC curve	2.76	3.14	2.80
Unmasked-calculated*	4.36	9.23	4.56

\*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 4.36 differs from the reported value 2.76 by more than 10 %

## 9 Map-model fit [i](#)

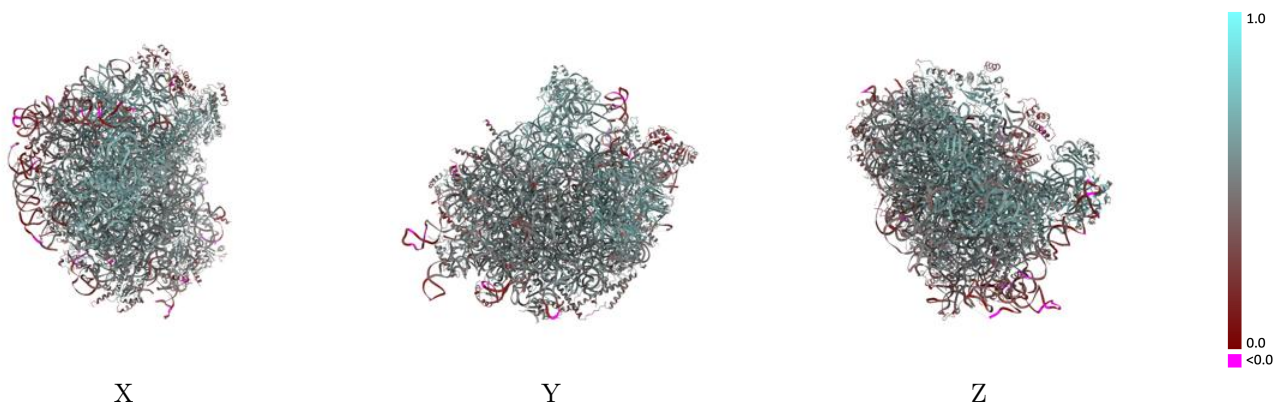
This section contains information regarding the fit between EMDB map EMD-29274 and PDB model 8FLC. Per-residue inclusion information can be found in section 3 on page 14.

### 9.1 Map-model overlay [i](#)



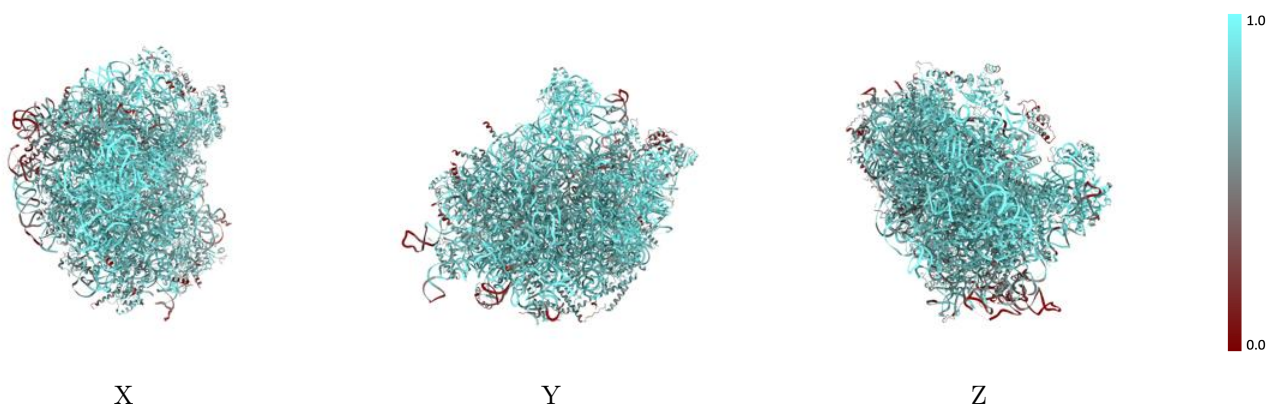
The images above show the 3D surface view of the map at the recommended contour level 0.85 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



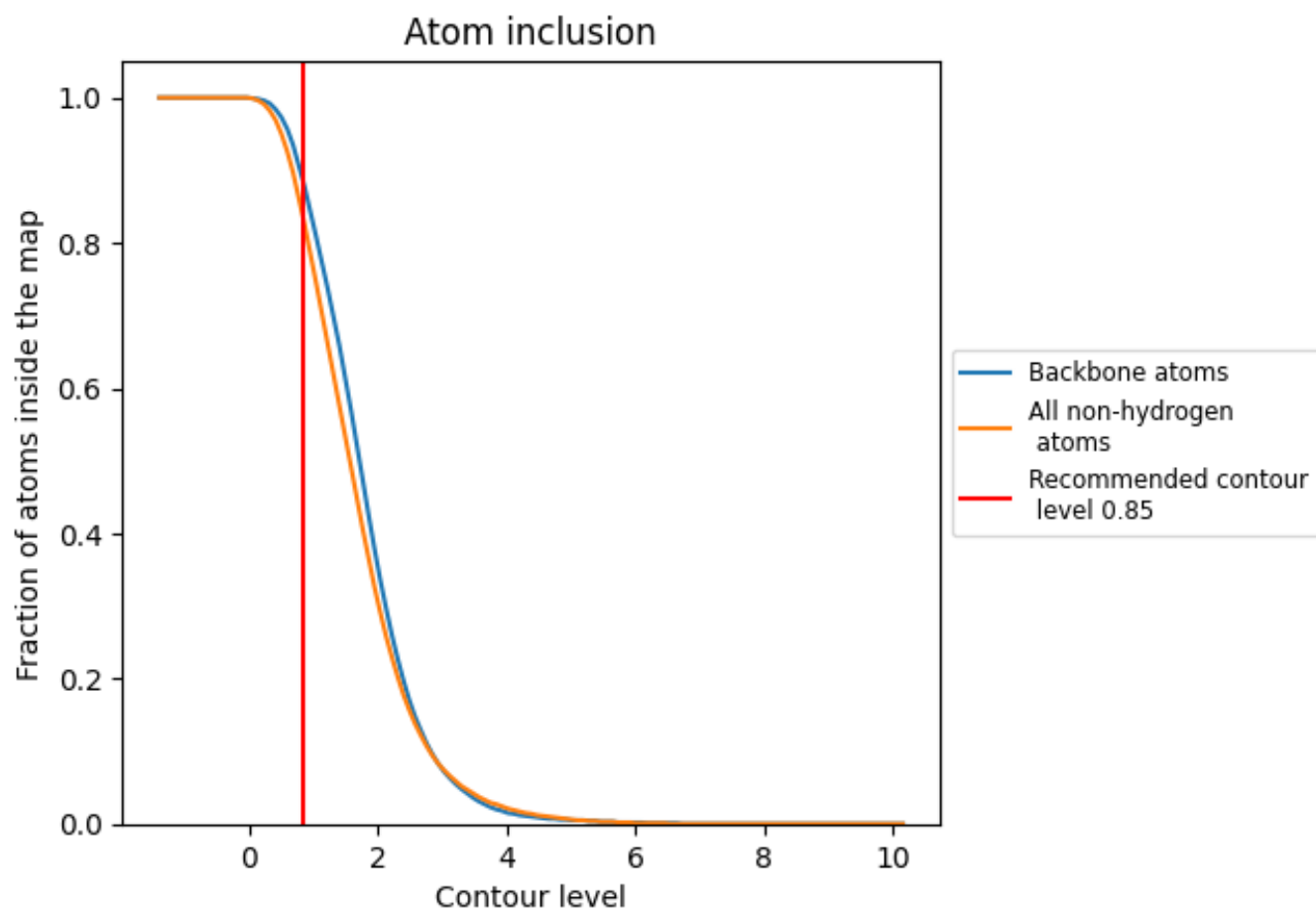
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [i](#)



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







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 83% 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	 0.8300	 0.5090
BA	 0.3790	 0.2720
L1	 0.8720	 0.5000
L3	 0.8560	 0.4900
L4	 0.9820	 0.6130
L5	 0.8410	 0.5550
L6	 0.7570	 0.5030
L7	 0.8900	 0.6050
L8	 0.8970	 0.5880
L9	 0.8550	 0.5550
LA	 0.7840	 0.5220
LB	 0.8400	 0.5570
LC	 0.9650	 0.6500
LD	 0.7530	 0.4990
LE	 0.9070	 0.5930
LF	 0.7200	 0.4790
LG	 0.8700	 0.5890
LH	 0.7600	 0.5050
LI	 0.7560	 0.5010
LJ	 0.7070	 0.4770
LK	 0.8560	 0.5630
LL	 0.7580	 0.5010
LM	 0.6970	 0.5030
LN	 0.8310	 0.5500
LO	 0.6860	 0.4460
LP	 0.7380	 0.5090
LQ	 0.7740	 0.5360
LR	 0.7430	 0.5010
LS	 0.7440	 0.4920
LT	 0.8280	 0.5480
LU	 0.7290	 0.4960
LV	 0.8910	 0.6010
LW	 0.8460	 0.5490
LX	 0.7320	 0.4910
LY	 0.6410	 0.4340



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Chain	Atom inclusion	Q-score
LZ	 0.8370	 0.5480
NK	 0.5990	 0.4310
NP	 0.7180	 0.4880
NR	 0.7440	 0.5330
SA	 0.7880	 0.5240
SB	 0.8970	 0.5930
SC	 0.6260	 0.4410
SD	 0.8140	 0.5350
SE	 0.6760	 0.4500
SF	 0.8090	 0.5320
SG	 0.9180	 0.6090
SK	 0.8260	 0.5500
SQ	 0.7150	 0.3740
SR	 0.7680	 0.5160
SV	 0.7590	 0.5010
VB	 0.6670	 0.5280