



# Full wwPDB EM Validation Report ⓘ

Dec 30, 2024 – 11:01 PM EST

PDB ID : 8FL7  
EMDB ID : EMD-29269  
Title : Human nuclear pre-60S ribosomal subunit (State J2)  
Authors : Vanden Broeck, A.; Klinge, S.  
Deposited on : 2022-12-21  
Resolution : 2.55 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:

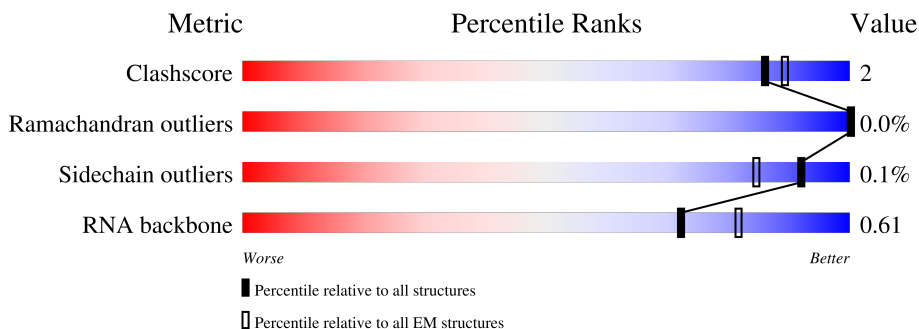
EMDB validation analysis : 0.0.1.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 2.55 Å.

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




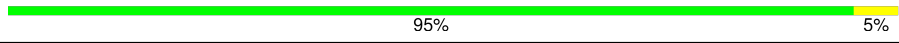

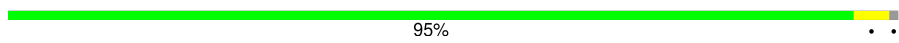
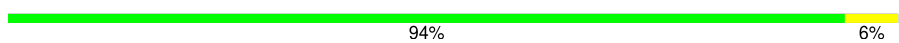



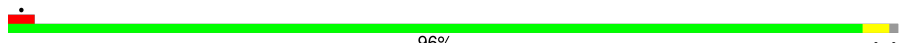


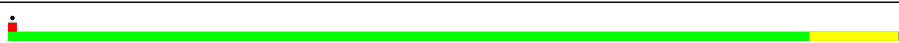




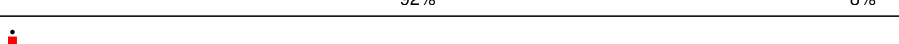
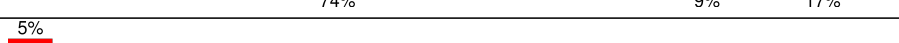


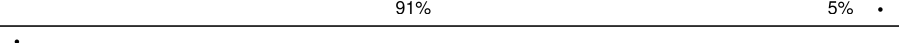
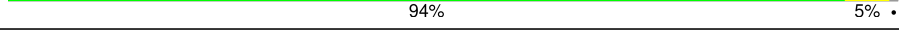
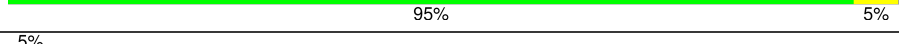

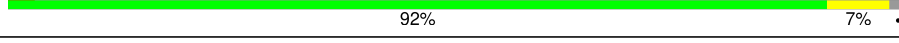
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	<div style="display: flex; align-items: center;"> <div style="width: 59%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 93%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
2	L1	157	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 80%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
3	L3	5070	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 53%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 33%; height: 10px; background-color: grey;"></div> </div>
4	L4	121	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
5	L5	178	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 89%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 6%; height: 10px; background-color: grey;"></div> </div>
6	L6	211	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 90%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 9%; height: 10px; background-color: yellow;"></div> </div>
7	L7	203	<div style="display: flex; align-items: center;"> <div style="width: 94%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: yellow;"></div> </div>

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Mol	Chain	Length	Quality of chain
8	L8	215	
9	L9	204	
10	LA	184	
11	LB	188	
12	LC	176	
13	LD	196	
14	LE	160	
15	LF	128	
16	LG	140	
17	LH	156	
18	LI	145	
19	LJ	136	
20	LK	148	
21	LL	137	
22	LM	159	
23	LN	403	
24	LO	115	
25	LP	125	
26	LQ	135	
27	LR	117	
28	LS	123	
29	LT	110	
30	LU	105	
31	LV	106	
32	LW	97	

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Mol	Chain	Length	Quality of chain
33	LX	92	
34	LY	70	
35	LZ	51	
36	NC	731	
37	NF	260	
38	NK	129	
39	NL	478	
40	NP	134	
41	SA	427	
42	SB	297	
43	SC	288	
44	SD	248	
45	SE	266	
46	SF	257	
47	SG	192	
48	SH	293	
49	SI	255	
50	SK	245	
51	SM	588	
52	SQ	239	
53	SR	634	
54	SV	163	

## 2 Entry composition

There are 58 unique types of molecules in this entry. The entry contains 149506 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	S		
1	BA	160	954	570	188	193	3	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	3409	73178	32611	13401	23757	3409	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	143	Total	C	N	O	S	0	0
			1156	740	220	195	1		

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LM	91	Total	C	N	O	S	0	0
			751	469	165	113	4		

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

- Molecule 38 is a protein called Protein LLP homolog.

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

- Molecule 39 is a protein called Ribosome biogenesis protein NOP53.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	NL	263	2175	1347	433	393	2	0	0

- Molecule 40 is a protein called Zinc finger protein 593.

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

- Molecule 41 is a protein called 60S ribosomal protein L4.

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

- Molecule 42 is a protein called 60S ribosomal protein L5.

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

- Molecule 43 is a protein called 60S ribosomal protein L6.

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

- Molecule 44 is a protein called 60S ribosomal protein L7.

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

- Molecule 45 is a protein called 60S ribosomal protein L7a.

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

- Molecule 46 is a protein called 60S ribosomal protein L8.

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

- Molecule 47 is a protein called 60S ribosomal protein L9.

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

- Molecule 48 is a protein called MKI67 FHA domain-interacting nucleolar phosphoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	SH	93	Total	C	N	O	S	0	0
			773	501	130	139	3		

- Molecule 49 is a protein called 60S ribosomal protein L7-like 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	SI	234	Total	C	N	O	S	3	0
			1952	1267	365	316	4		

- Molecule 50 is a protein called Eukaryotic translation initiation factor 6.

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

- Molecule 51 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	SM	399	Total	C	N	O	S	0	0
			3278	2120	576	571	11		

- Molecule 52 is a protein called mRNA turnover protein 4 homolog.

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

- Molecule 53 is a protein called GTP-binding protein 4.

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

- Molecule 54 is a protein called Probable ribosome biogenesis protein RLP24.

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

- Molecule 55 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
55	L1	4	Total	Mg	0
			4	4	
55	L3	73	Total	Mg	0
			73	73	
55	L4	3	Total	Mg	0
			3	3	

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Mol	Chain	Residues	Atoms		AltConf
55	LG	1	Total 1	Mg 1	0
55	LQ	1	Total 1	Mg 1	0
55	LR	1	Total 1	Mg 1	0
55	LT	1	Total 1	Mg 1	0
55	LW	1	Total 1	Mg 1	0
55	SA	1	Total 1	Mg 1	0
55	SF	1	Total 1	Mg 1	0
55	SR	1	Total 1	Mg 1	0

- Molecule 56 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
56	LR	1	Total 1	Zn 1	0
56	LV	1	Total 1	Zn 1	0
56	LW	1	Total 1	Zn 1	0
56	LX	1	Total 1	Zn 1	0
56	NP	1	Total 1	Zn 1	0
56	SV	1	Total 1	Zn 1	0

- Molecule 57 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>11</sub>P<sub>2</sub>).

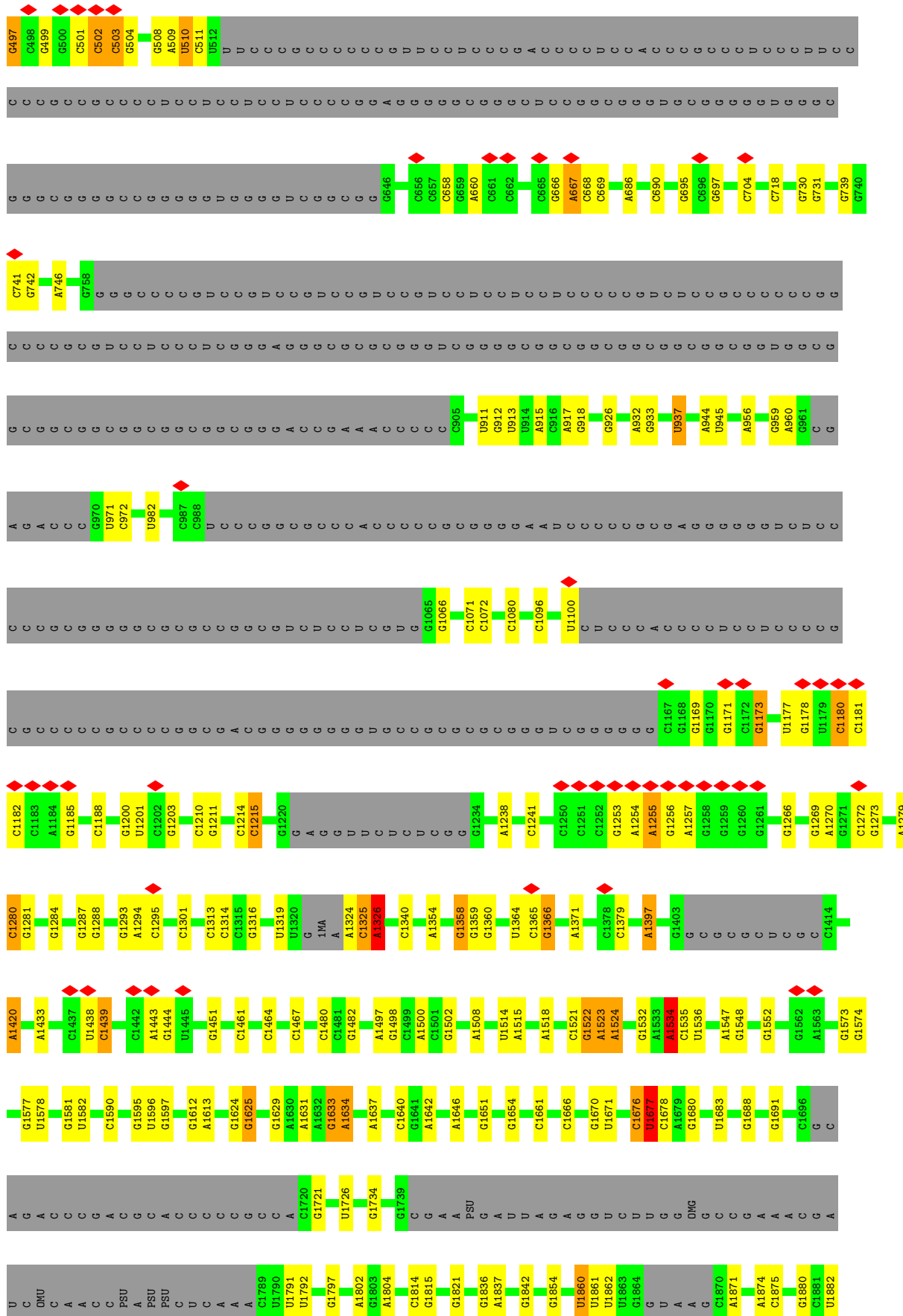


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
57	SR	1	28	10	5	11	2	0

- Molecule 58 is POTASSIUM ION (three-letter code: K) (formula: K).

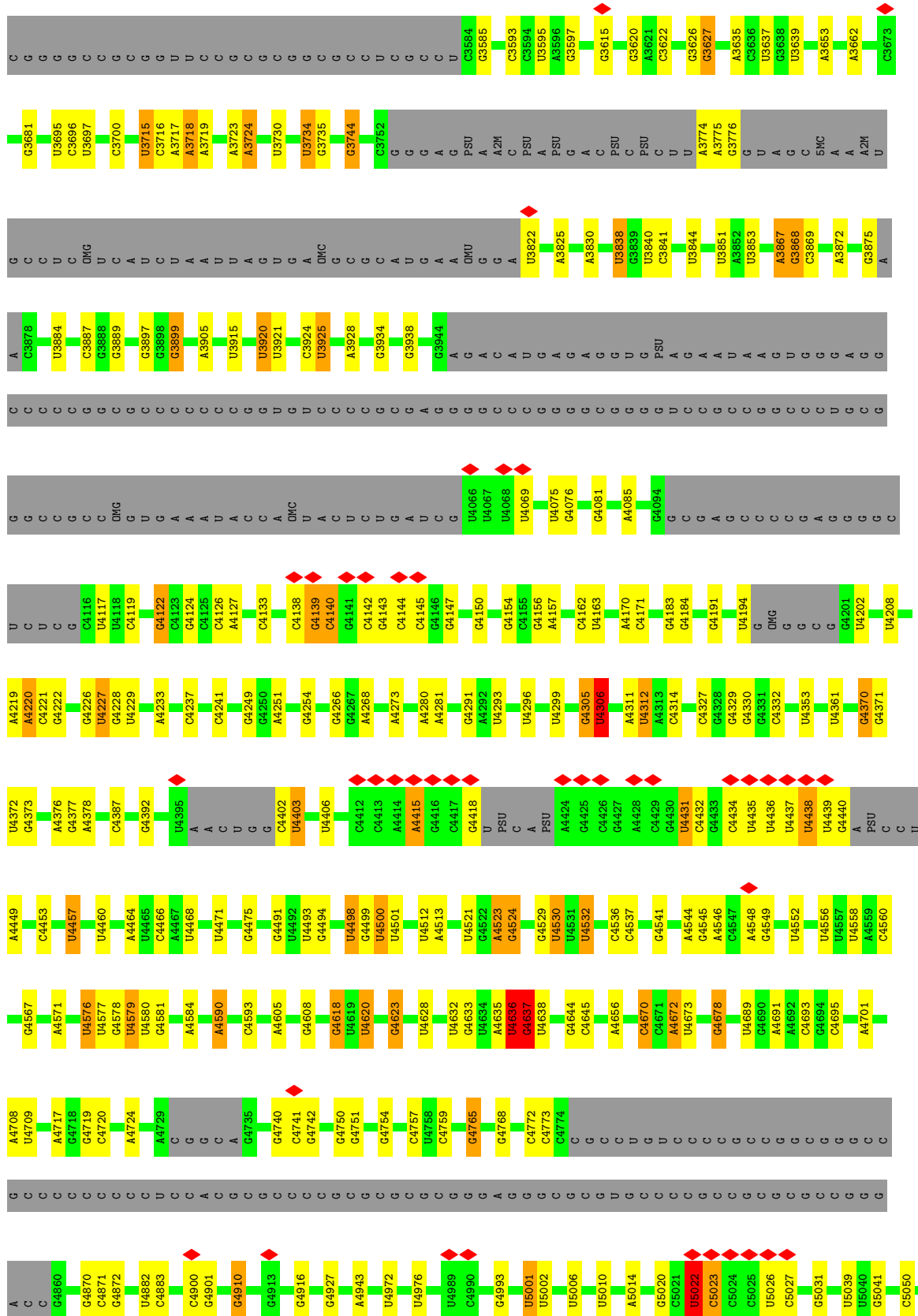
Mol	Chain	Residues	Atoms		AltConf
			Total	K	
58	SR	1	1	1	0





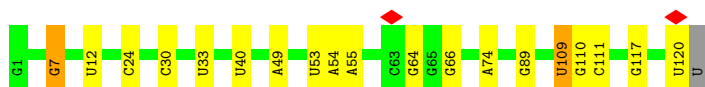
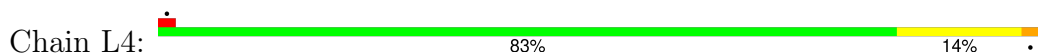




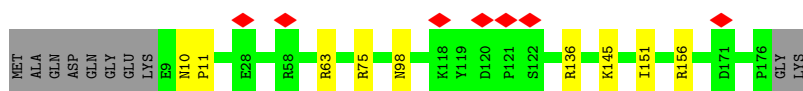




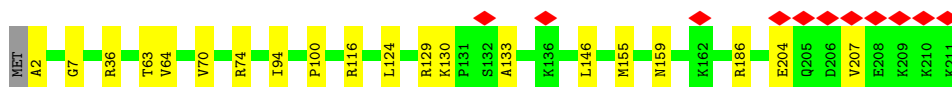
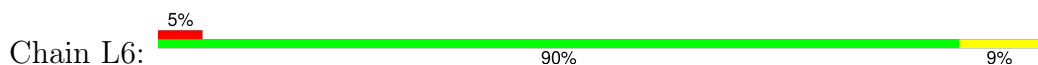
• Molecule 4: 5S rRNA



• Molecule 5: 60S ribosomal protein L11



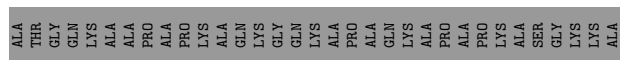
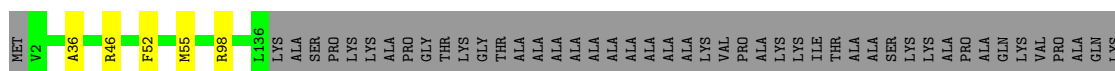
• Molecule 6: 60S ribosomal protein L13



• Molecule 7: 60S ribosomal protein L13a



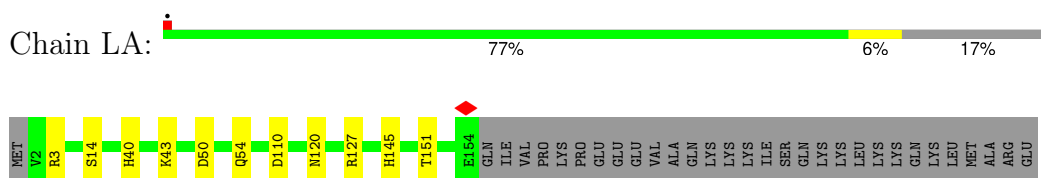
• Molecule 8: 60S ribosomal protein L14



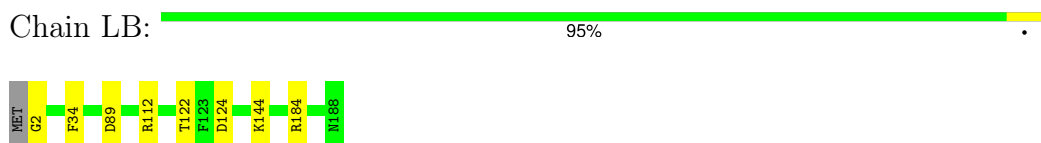
• Molecule 9: 60S ribosomal protein L15



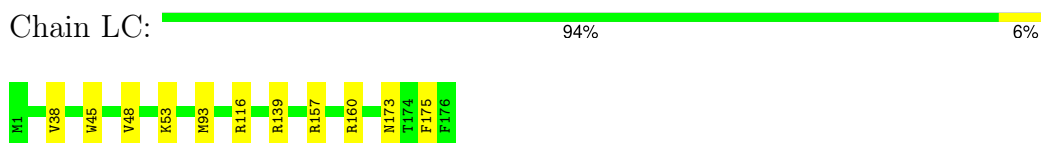
- Molecule 10: 60S ribosomal protein L17



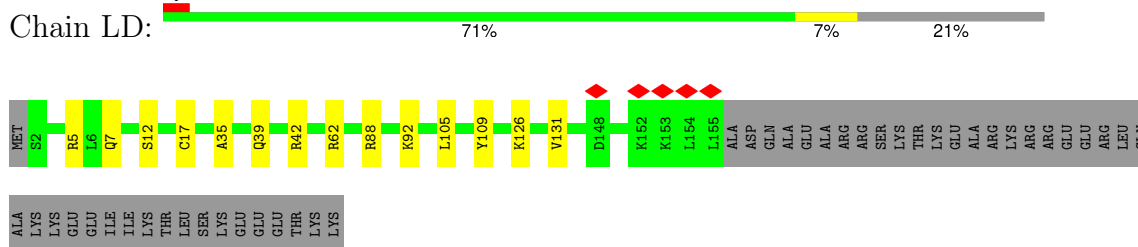
- Molecule 11: 60S ribosomal protein L18



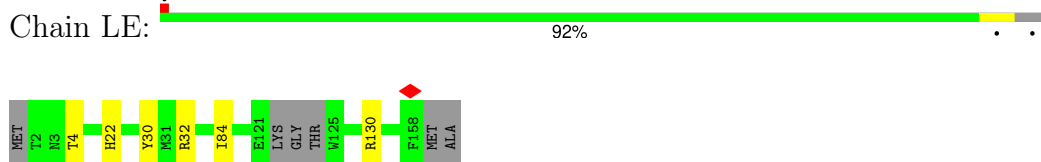
- Molecule 12: 60S ribosomal protein L18a



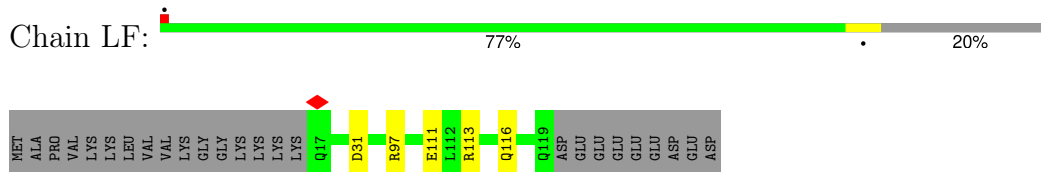
- Molecule 13: 60S ribosomal protein L19



- Molecule 14: 60S ribosomal protein L21

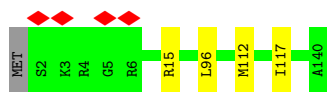


- Molecule 15: 60S ribosomal protein L22

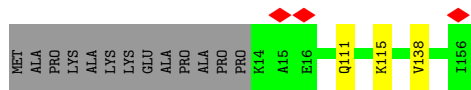


- Molecule 16: 60S ribosomal protein L23

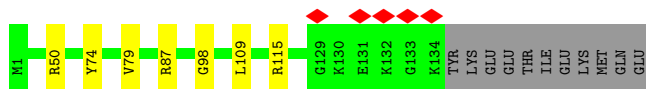
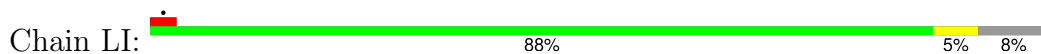




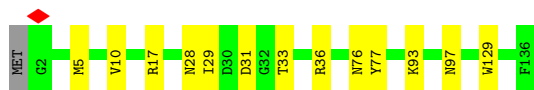
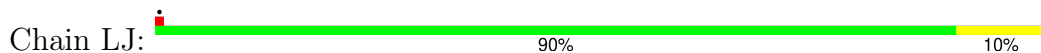
• Molecule 17: 60S ribosomal protein L23a



• Molecule 18: 60S ribosomal protein L26



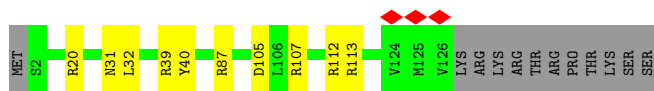
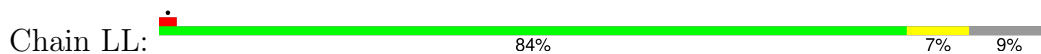
• Molecule 19: 60S ribosomal protein L27



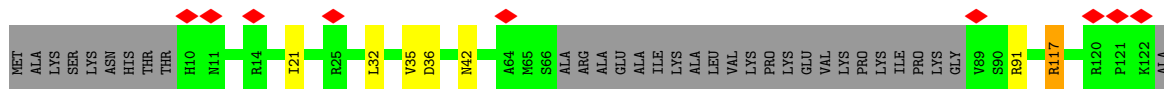
• Molecule 20: 60S ribosomal protein L27a



• Molecule 21: 60S ribosomal protein L28



• Molecule 22: 60S ribosomal protein L29




LYS  
ALA  
LYS  
LYS  
LYS  
LYS  
ASP  
GLN  
THR  
LYS  
LYS  
ALA  
GLN  
ALA  
ALA  
ALA  
ALA  
PRO  
PRO  
SER  
VAL  
PRO  
PRO  
ALA  
GLN  
ALA  
ALA  
PRO  
PRO  
LYS  
LYS  
ARG  
THR  
GLN  
ALA  
ALA  
THR  
LYS  
ALA  
SER  
SER  
GLU

- Molecule 23: 60S ribosomal protein L3

Chain LN:  92% 8%




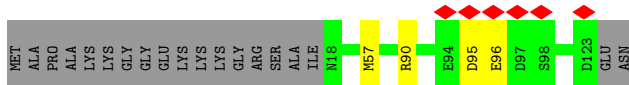
- Molecule 24: 60S ribosomal protein L30

Chain LO:  74% 9% 17%




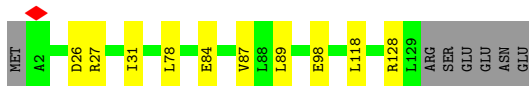
- Molecule 25: 60S ribosomal protein L31

Chain LP:  5% 82% 15%



- Molecule 26: 60S ribosomal protein L32

Chain LQ:  87% 7% 5%



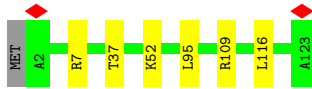
- Molecule 27: 60S ribosomal protein L34

Chain LR:  91% 5%

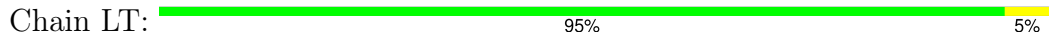


- Molecule 28: 60S ribosomal protein L35

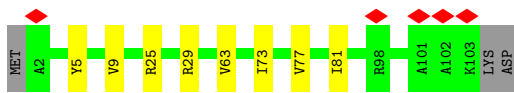
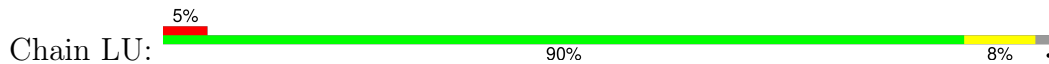
Chain LS:  94% 5%



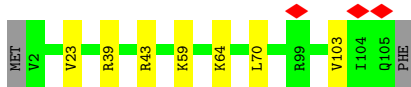
- Molecule 29: 60S ribosomal protein L35a



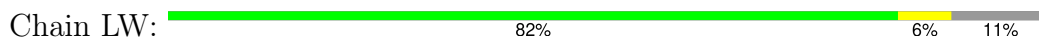
- Molecule 30: 60S ribosomal protein L36



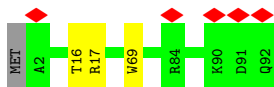
- Molecule 31: 60S ribosomal protein L36a



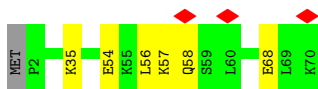
- Molecule 32: 60S ribosomal protein L37



- Molecule 33: 60S ribosomal protein L37a



- Molecule 34: 60S ribosomal protein L38



- Molecule 35: 60S ribosomal protein L39













## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	74556	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	8.592	Depositor
Minimum map value	-0.003	Depositor
Average map value	0.047	Depositor
Map value standard deviation	0.184	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: OMU, K, 6MZ, PSU, UR3, A2M, OMC, MG, OMG, HIC, ZN, GDP

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z  > 5$	RMSZ	$\# Z  > 5$
1	BA	0.24	0/959	0.47	0/1312
2	L1	0.35	0/3589	0.74	0/5589
3	L3	0.33	0/79388	0.77	9/123813 (0.0%)
4	L4	0.43	0/2861	0.79	0/4459
5	L5	0.26	0/1372	0.57	0/1836
6	L6	0.25	0/1732	0.59	0/2315
7	L7	0.26	0/1682	0.55	0/2250
8	L8	0.25	0/1133	0.51	0/1516
9	L9	0.27	0/1746	0.63	0/2338
10	LA	0.25	0/1268	0.53	0/1701
11	LB	0.26	0/1536	0.64	0/2052
12	LC	0.30	0/1501	0.58	0/2013
13	LD	0.23	0/1305	0.60	0/1727
14	LE	0.28	0/1291	0.56	0/1724
15	LF	0.26	0/856	0.51	0/1149
16	LG	0.26	0/1048	0.57	0/1402
17	LH	0.25	0/1175	0.52	0/1572
18	LI	0.27	0/1132	0.59	0/1504
19	LJ	0.29	0/1130	0.55	0/1507
20	LK	0.26	0/1191	0.54	0/1591
21	LL	0.24	0/1017	0.59	0/1364
22	LM	0.26	0/763	0.58	0/1005
23	LN	0.26	0/3294	0.54	0/4406
24	LO	0.26	0/748	0.48	0/1004
25	LP	0.25	0/894	0.58	0/1204
26	LQ	0.25	0/1071	0.56	0/1429
27	LR	0.26	0/898	0.61	0/1197
28	LS	0.24	0/1023	0.56	0/1351
29	LT	0.26	0/895	0.61	0/1198
30	LU	0.24	0/843	0.58	0/1115
31	LV	0.28	0/864	0.60	0/1140
32	LW	0.27	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	0.50	0/761
35	LZ	0.24	0/454	0.60	0/599
36	NC	0.21	0/218	0.36	0/303
37	NF	0.26	0/637	0.55	0/834
38	NK	0.23	0/587	0.59	0/767
39	NL	0.24	0/2207	0.58	0/2955
40	NP	0.24	0/864	0.61	0/1154
41	SA	0.25	0/2907	0.56	0/3905
42	SB	0.29	0/2287	0.54	0/3065
43	SC	0.25	0/1781	0.55	0/2388
44	SD	0.26	0/1905	0.56	0/2539
45	SE	0.26	0/1903	0.55	0/2559
46	SF	0.26	0/1914	0.60	0/2567
47	SG	0.25	0/1537	0.54	0/2066
48	SH	0.26	0/794	0.50	0/1071
49	SI	0.24	0/2003	0.52	0/2688
50	SK	0.25	0/1877	0.52	0/2554
51	SM	0.26	0/3357	0.51	0/4529
52	SQ	0.25	0/1806	0.51	0/2420
53	SR	0.24	0/5014	0.51	0/6727
54	SV	0.26	0/1207	0.52	0/1600
All	All	0.30	0/157477	0.69	9/229739 (0.0%)

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	2469	C	C2-N1-C1'	6.66	126.12	118.80
3	L3	170	C	C6-N1-C2	-6.42	117.73	120.30
3	L3	2486	G	N1-C6-O6	-5.91	116.36	119.90
3	L3	5022	U	O4'-C1'-N1	5.79	112.83	108.20
3	L3	1961	G	O4'-C1'-N9	5.57	112.65	108.20
3	L3	2486	G	C5-C6-O6	5.46	131.88	128.60
3	L3	4434	C	N1-C2-O2	5.21	122.03	118.90
3	L3	4438	U	C2-N1-C1'	5.19	123.93	117.70
3	L3	2519	U	O4'-C1'-N1	5.13	112.31	108.20

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	BA	954	0	690	6	0
2	L1	3278	0	1665	11	0
3	L3	73178	0	37073	293	0
4	L4	2561	0	1295	7	0
5	L5	1349	0	1383	7	0
6	L6	1701	0	1818	15	0
7	L7	1650	0	1794	7	0
8	L8	1111	0	1174	4	0
9	L9	1701	0	1749	7	0
10	LA	1242	0	1269	7	0
11	LB	1512	0	1628	6	0
12	LC	1461	0	1502	9	0
13	LD	1289	0	1429	10	0
14	LE	1264	0	1328	7	0
15	LF	842	0	864	3	0
16	LG	1034	0	1097	3	0
17	LH	1156	0	1268	2	0
18	LI	1115	0	1205	7	0
19	LJ	1107	0	1182	7	0
20	LK	1162	0	1213	8	0
21	LL	1002	0	1068	7	0
22	LM	751	0	820	6	0
23	LN	3239	0	3377	26	0
24	LO	738	0	774	6	0
25	LP	879	0	924	2	0
26	LQ	1053	0	1147	7	0
27	LR	888	0	977	4	0
28	LS	1015	0	1148	6	0
29	LT	876	0	912	4	0
30	LU	832	0	917	7	0
31	LV	851	0	920	6	0
32	LW	705	0	737	5	0
33	LX	708	0	756	3	0
34	LY	569	0	637	5	0
35	LZ	444	0	483	4	0
36	NC	219	0	92	1	0
37	NF	626	0	665	7	0

*Continued on next page...*



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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	NK	581	0	656	7	0
39	NL	2175	0	2235	15	0
40	NP	847	0	854	4	0
41	SA	2853	0	3028	17	0
42	SB	2243	0	2268	11	0
43	SC	1747	0	1897	16	0
44	SD	1870	0	1996	9	0
45	SE	1869	0	2014	13	0
46	SF	1876	0	1970	9	0
47	SG	1518	0	1601	7	0
48	SH	773	0	755	4	0
49	SI	1952	0	2086	7	0
50	SK	1852	0	1828	13	0
51	SM	3278	0	3332	16	0
52	SQ	1771	0	1810	8	0
53	SR	4932	0	5070	29	0
54	SV	1184	0	1248	6	0
55	L1	4	0	0	0	0
55	L3	73	0	0	0	0
55	L4	3	0	0	0	0
55	LG	1	0	0	0	0
55	LQ	1	0	0	0	0
55	LR	1	0	0	0	0
55	LT	1	0	0	0	0
55	LW	1	0	0	0	0
55	SA	1	0	0	0	0
55	SF	1	0	0	0	0
55	SR	1	0	0	0	0
56	LR	1	0	0	0	0
56	LV	1	0	0	0	0
56	LW	1	0	0	0	0
56	LX	1	0	0	0	0
56	NP	1	0	0	0	0
56	SV	1	0	0	0	0
57	SR	28	0	12	0	0
58	SR	1	0	0	0	0
All	All	149506	0	113640	523	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (523) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L4:40:U:O2	5:L5:75:ARG:NH1	2.06	0.89
3:L3:4075:U:OP1	45:SE:249:ARG:NH1	2.11	0.84
2:L1:51:U:OP2	35:LZ:21:ARG:NH2	2.11	0.83
3:L3:2520:C:O2	3:L3:2640:G:N2	2.11	0.82
3:L3:4156:G:OP2	3:L3:4157:A:O2'	1.98	0.81
37:Nf:17:ARG:NH1	47:SG:180:TYR:OH	2.13	0.81
3:L3:4371:G:OP1	31:LV:59:LYS:NZ	2.12	0.80
3:L3:695:G:O2'	3:L3:697:G:OP2	2.00	0.80
2:L1:75:OMG:OP2	18:LI:74:TYR:OH	1.99	0.80
3:L3:3928:A:OP1	9:L9:90:ASN:ND2	2.14	0.79
3:L3:4435:U:OP2	3:L3:4436:U:O2'	2.00	0.79
22:LM:117:ARG:NH1	43:SC:73:TYR:O	2.16	0.79
3:L3:2848:G:O2'	3:L3:3838:U:O4	2.01	0.78
3:L3:1480:C:O2'	3:L3:1482:G:OP2	2.02	0.78
3:L3:1892:A:OP1	3:L3:1893:C:N4	2.13	0.78
4:L4:30:C:O2'	42:SB:221:LYS:NZ	2.13	0.78
3:L3:2300:A:N6	41:SA:178:ASN:OD1	2.18	0.77
2:L1:71:A:O2'	2:L1:83:C:N4	2.18	0.77
3:L3:1280:C:O2'	41:SA:321:ASN:OD1	2.02	0.77
3:L3:4305:G:O2'	3:L3:4306:OMU:O5'	2.03	0.76
3:L3:4415:A:OP1	37:Nf:66:LYS:NZ	2.18	0.76
3:L3:2545:U:O2'	3:L3:2547:G:N7	2.19	0.76
47:SG:140:GLN:NE2	52:SQ:171:SER:OG	2.18	0.76
41:SA:179:ASP:OD1	41:SA:204:ARG:NH2	2.20	0.75
3:L3:1886:G:OP2	29:LT:19:ARG:NH2	2.19	0.75
3:L3:502:C:O2'	3:L3:503:C:OP1	2.04	0.75
46:SF:142:GLU:O	46:SF:143:THR:OG1	2.03	0.75
3:L3:937:U:OP1	8:L8:46:ARG:NH2	2.20	0.74
11:LB:122:THR:OG1	11:LB:124:ASP:OD1	2.05	0.74
3:L3:4081:G:O2'	46:SF:119:LYS:NZ	2.20	0.74
13:LD:39:GLN:OE1	13:LD:42:ARG:NH1	2.21	0.74
3:L3:4693:C:O2	3:L3:4695:C:N4	2.20	0.74
51:SM:357:ASP:OD2	51:SM:359:SER:OG	2.03	0.74
3:L3:4927:G:OP2	3:L3:4927:G:N2	2.16	0.73
2:L1:62:A:OP1	28:LS:52:LYS:NZ	2.21	0.73
2:L1:12:G:OP1	10:LA:3:ARG:NH1	2.22	0.72
3:L3:1397:A:HO2'	3:L3:1467:C:HO2'	1.37	0.72
3:L3:151:G:OP2	9:L9:4:TYR:OH	2.07	0.72
3:L3:1943:A:OP2	3:L3:2039:G:N2	2.23	0.72
3:L3:295:A:OP2	31:LV:39:ARG:NH1	2.23	0.72
13:LD:12:SER:OG	13:LD:17:CYS:O	2.07	0.71
3:L3:1508:A:OP1	41:SA:110:ARG:NH2	2.24	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:1071:C:O2	43:SC:70:LYS:NZ	2.21	0.71
49:SI:249:GLN:OE1	51:SM:267:LEU:HD21	1.91	0.70
4:L4:55:A:O2'	5:L5:151:ILE:O	2.07	0.70
3:L3:67:C:OP2	3:L3:312:G:N2	2.22	0.70
3:L3:4449:A:OP1	53:SR:118:LYS:NZ	2.22	0.70
3:L3:277:G:OP2	30:LU:29:ARG:NH2	2.25	0.69
3:L3:4460:U:OP1	23:LN:10:ARG:NH1	2.25	0.69
3:L3:2487:G:OP1	39:NL:456:ARG:NH2	2.26	0.69
3:L3:4872:G:O6	8:L8:98:ARG:NH1	2.26	0.69
3:L3:1518:A:OP1	20:LK:27:LYS:NZ	2.23	0.69
3:L3:1943:A:N6	3:L3:2039:G:O2'	2.25	0.69
3:L3:3776:G:N2	3:L3:3776:G:OP2	2.23	0.69
3:L3:4620:OMU:OP2	3:L3:4670:C:N4	2.21	0.69
40:NP:72:ASP:OD1	40:NP:73:SER:N	2.27	0.68
3:L3:2601:A:OP1	27:LR:40:LYS:NZ	2.26	0.68
51:SM:337:GLU:OE1	51:SM:380:ARG:NH2	2.26	0.68
3:L3:4678:G:OP1	38:NK:14:ARG:NH1	2.26	0.68
3:L3:2725:A:N6	13:LD:88:ARG:O	2.27	0.68
37:NF:3:GLN:NE2	53:SR:207:VAL:O	2.27	0.67
51:SM:370:ASP:OD2	51:SM:372:ARG:NH2	2.27	0.67
3:L3:1255:A:OP1	3:L3:1257:A:N6	2.27	0.67
3:L3:2324:C:O2'	26:LQ:98:GLU:OE1	2.12	0.67
9:L9:73:ARG:HB3	9:L9:89:VAL:HG23	1.76	0.67
3:L3:3734:PSU:H2'	3:L3:3735:G:O4'	1.95	0.67
3:L3:3717:A:OP2	3:L3:3735:G:N2	2.27	0.67
3:L3:4435:U:O2'	53:SR:136:ARG:NH2	2.28	0.66
17:LH:111:GLN:OE1	17:LH:115:LYS:NZ	2.28	0.66
3:L3:404:U:O3'	18:LI:87:ARG:NH2	2.28	0.66
3:L3:2318:G:N2	3:L3:2321:G:OP2	2.19	0.66
3:L3:119:G:O4'	45:SE:132:ARG:NH1	2.29	0.66
3:L3:1433:A:N6	3:L3:1451:G:O2'	2.28	0.66
23:LN:141:ASP:OD2	38:NK:81:ARG:NH1	2.29	0.65
3:L3:5066:U:OP1	10:LA:43:LYS:NZ	2.30	0.65
53:SR:174:CYS:SG	53:SR:244:LEU:HD21	2.36	0.65
3:L3:3838:U:OP2	40:NP:23:ARG:NH2	2.29	0.65
43:SC:99:ASP:OD1	43:SC:100:LYS:N	2.30	0.65
3:L3:2470:C:O2'	45:SE:56:LYS:NZ	2.18	0.65
3:L3:121:A:OP1	45:SE:110:LYS:NZ	2.26	0.65
39:NL:427:SER:OG	51:SM:379:ASP:OD1	2.15	0.65
3:L3:4910:G:N2	7:L7:106:ASP:O	2.30	0.65
3:L3:386:A:O2'	18:LI:87:ARG:NH1	2.29	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2414:G:O2'	3:L3:2415:OMU:H5''	1.97	0.64
3:L3:1397:A:O2'	3:L3:1467:C:O2'	2.09	0.64
3:L3:62:A:N3	3:L3:77:U:O2'	2.29	0.64
29:LT:49:TYR:OH	29:LT:95:LYS:NZ	2.30	0.64
3:L3:4541:G:N2	3:L3:4544:A:OP2	2.28	0.64
9:L9:124:ASP:OD1	9:L9:125:SER:N	2.30	0.64
3:L3:4220:6MZ:H8	3:L3:4220:6MZ:O1P	1.97	0.64
3:L3:4524:G:O3'	23:LN:246:ARG:NH2	2.30	0.63
3:L3:1215:C:OP2	44:SD:59:LYS:NZ	2.29	0.63
3:L3:1595:G:N2	53:SR:634:ARG:OXT	2.27	0.63
3:L3:2072:C:OP1	11:LB:2:GLY:N	2.32	0.63
3:L3:2601:A:N6	3:L3:2744:A:OP2	2.31	0.63
3:L3:3681:G:N2	46:SF:118:GLU:OE2	2.29	0.63
11:LB:184:ARG:NH1	20:LK:55:LYS:O	2.31	0.63
14:LE:22:HIS:HB2	42:SB:17:GLN:HE22	1.64	0.63
50:SK:21:ASN:ND2	50:SK:112:ASP:OD2	2.31	0.63
3:L3:2588:C:OP1	3:L3:2768:C:O2'	2.14	0.63
3:L3:408:A:O2'	3:L3:411:G:OP2	2.17	0.63
3:L3:4580:U:O2'	23:LN:182:GLU:OE2	2.16	0.62
3:L3:4765:G:OP1	47:SG:23:ARG:NE	2.32	0.62
49:SI:70:ARG:NE	49:SI:106:ASP:O	2.33	0.62
3:L3:1941:A:N6	3:L3:2040:A:OP2	2.32	0.62
3:L3:1366:G:N2	3:L3:1371:A:OP2	2.33	0.62
3:L3:1629:G:N1	46:SF:208:GLU:OE1	2.33	0.62
3:L3:2843:U:O2'	3:L3:4632:U:OP1	2.18	0.62
3:L3:122:U:O4	45:SE:107:LYS:NZ	2.27	0.62
3:L3:375:G:OP2	32:LW:52:LYS:NZ	2.30	0.62
3:L3:4124:G:N2	45:SE:43:GLN:O	2.33	0.61
1:BA:138:SER:OG	3:L3:2002:A:N6	2.34	0.61
3:L3:4126:C:OP1	45:SE:37:LYS:NZ	2.29	0.61
3:L3:1325:C:O2'	3:L3:1326:A2M:OP1	2.15	0.61
3:L3:2368:A:N6	3:L3:2827:G:O2'	2.32	0.61
39:NL:258:LEU:HD23	39:NL:418:VAL:HG11	1.83	0.61
3:L3:2876:OMG:HM22	3:L3:2877:G:H5'	1.82	0.61
53:SR:474:ASP:O	53:SR:478:LEU:HD12	2.00	0.60
3:L3:3718:A2M:H2	3:L3:3934:G:O4'	2.01	0.60
6:L6:204:GLU:O	6:L6:207:VAL:HG22	2.01	0.60
3:L3:508:G:O2'	3:L3:510:U:OP2	2.07	0.60
4:L4:12:U:O3'	4:L4:109:U:O2'	2.16	0.59
3:L3:1177:U:OP2	3:L3:1180:C:N4	2.35	0.59
43:SC:281:ILE:HG23	43:SC:286:LEU:HD11	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:SK:99:GLU:OE1	50:SK:125:THR:OG1	2.17	0.59
3:L3:2000:G:O2'	3:L3:2017:A:N1	2.29	0.59
3:L3:4117:U:O4'	45:SE:43:GLN:NE2	2.35	0.59
16:LG:96:LEU:HD11	54:SV:22:VAL:HG23	1.84	0.59
3:L3:2579:G:N2	3:L3:2582:A:OP2	2.28	0.59
3:L3:2695:A:OP1	34:LY:35:LYS:NZ	2.32	0.59
4:L4:7:G:OP1	42:SB:33:ARG:NH1	2.35	0.59
3:L3:2350:U:O5'	3:L3:2351:OMC:H5'	2.03	0.59
3:L3:2578:G:N7	19:LJ:17:ARG:NH1	2.50	0.59
3:L3:4440:G:N2	53:SR:66:LEU:O	2.36	0.59
3:L3:90:G:OP2	3:L3:92:C:N4	2.34	0.59
3:L3:3938:G:N2	3:L3:4171:C:OP2	2.35	0.58
3:L3:1514:U:OP1	6:L6:2:ALA:N	2.37	0.58
25:LP:57:MET:SD	25:LP:90:ARG:NH1	2.75	0.58
3:L3:1573:G:OP1	13:LD:92:LYS:NZ	2.33	0.58
3:L3:4637:OMG:H2'	3:L3:4638:U:C6	2.38	0.58
3:L3:1173:G:N2	3:L3:1188:C:N3	2.52	0.58
3:L3:1802:A:N3	14:LE:130:ARG:NH2	2.51	0.58
3:L3:2415:OMU:HM22	3:L3:2415:OMU:O2	2.04	0.58
7:L7:54:TYR:OH	7:L7:73:PHE:O	2.19	0.58
1:BA:119:ARG:NH1	3:L3:1974:U:OP2	2.37	0.57
3:L3:4241:C:OP2	5:L5:145:LYS:NZ	2.36	0.57
23:LN:222:VAL:O	23:LN:343:ARG:NH1	2.36	0.57
3:L3:4305:G:HO2'	3:L3:4306:OMU:P	2.25	0.57
14:LE:84:ILE:HD12	22:LM:21:ILE:HG22	1.86	0.57
3:L3:109:G:OP2	6:L6:74:ARG:NH2	2.36	0.57
3:L3:2763:U:O2'	39:NL:391:ARG:NH2	2.37	0.57
24:LO:13:SER:O	24:LO:16:SER:OG	2.22	0.57
42:SB:62:CYS:HB3	42:SB:105:LEU:HD22	1.87	0.57
3:L3:2696:A:H62	34:LY:35:LYS:HZ2	1.51	0.57
3:L3:4691:A:OP1	47:SG:75:SER:OG	2.21	0.57
3:L3:4724:A:O2'	23:LN:104:THR:HG22	2.05	0.57
15:LF:31:ASP:OD1	53:SR:538:HIS:N	2.38	0.57
3:L3:1325:C:HO2'	3:L3:1326:A2M:P	2.28	0.56
3:L3:4546:A:N7	46:SF:215:ASN:ND2	2.52	0.56
3:L3:4431:PSU:H2'	3:L3:4432:C:C6	2.41	0.56
1:BA:128:THR:O	1:BA:132:ILE:HD12	2.04	0.56
3:L3:4237:C:OP1	3:L3:4327:C:O2'	2.22	0.56
29:LT:110:ILE:O	43:SC:141:ARG:NH2	2.39	0.56
3:L3:294:G:OP2	31:LV:43:ARG:NH1	2.37	0.56
3:L3:3681:G:OP2	46:SF:128:ARG:NH2	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2781:G:O2'	35:LZ:3:SER:O	2.24	0.56
3:L3:4406:U:OP2	53:SR:131:ARG:NH1	2.39	0.56
3:L3:1288:G:OP1	43:SC:134:SER:OG	2.22	0.56
50:SK:238:ASP:OD1	50:SK:239:SER:N	2.38	0.56
54:SV:4:GLU:O	54:SV:13:ILE:N	2.38	0.56
3:L3:4371:G:O2'	3:L3:4372:U:OP2	2.20	0.56
3:L3:4500:PSU:H2'	3:L3:4501:U:C6	2.41	0.56
3:L3:4593:C:OP2	38:NK:2:ALA:N	2.39	0.56
4:L4:117:G:OP1	42:SB:253:TYR:OH	2.20	0.56
6:L6:7:GLY:O	20:LK:49:HIS:NE2	2.35	0.56
3:L3:2415:OMU:HM23	3:L3:2416:G:H8	1.70	0.55
26:LQ:26:ASP:OD1	26:LQ:27:ARG:N	2.40	0.55
39:NL:239:GLU:OE2	39:NL:447:ARG:NH1	2.39	0.55
2:L1:69:PSU:H2'	2:L1:70:G:O4'	2.05	0.55
3:L3:2480:G:OP1	51:SM:22:LYS:NZ	2.39	0.55
3:L3:1814:C:O2'	22:LM:42:ASN:OD1	2.13	0.55
3:L3:1998:A:N3	3:L3:2019:C:O2'	2.35	0.55
30:LU:73:ILE:O	30:LU:77:VAL:HG22	2.05	0.55
3:L3:4581:G:O2'	23:LN:92:TYR:OH	2.25	0.55
43:SC:161:ARG:O	43:SC:182:ASN:ND2	2.39	0.55
43:SC:281:ILE:CG2	43:SC:286:LEU:HD11	2.37	0.55
3:L3:4529:G:O2'	3:L3:4530:UR3:H5'	2.07	0.55
6:L6:146:LEU:HD12	6:L6:146:LEU:O	2.06	0.54
3:L3:431:G:N2	3:L3:3889:G:OP2	2.40	0.54
3:L3:2562:G:O2'	3:L3:2565:A:N6	2.41	0.54
39:NL:452:GLU:OE2	39:NL:454:ARG:NH1	2.40	0.54
3:L3:369:G:N2	3:L3:372:A:OP2	2.29	0.54
3:L3:5022:U:O2'	3:L3:5023:C:OP2	2.24	0.54
39:NL:209:GLN:HB2	39:NL:214:LEU:HD11	1.89	0.54
3:L3:4122:G:N2	27:LR:98:GLU:OE2	2.40	0.54
34:LY:57:LYS:NZ	34:LY:68:GLU:OE2	2.41	0.54
46:SF:27:ALA:O	46:SF:128:ARG:NH1	2.39	0.54
3:L3:4581:G:HO2'	23:LN:92:TYR:HH	1.55	0.54
24:LO:102:SER:O	24:LO:106:ARG:NH2	2.40	0.54
3:L3:2300:A:N7	41:SA:143:ARG:NH1	2.56	0.53
3:L3:2407:G:O6	35:LZ:2:SER:N	2.40	0.53
3:L3:4691:A:O2'	47:SG:68:ALA:O	2.25	0.53
14:LE:32:ARG:O	42:SB:41:LYS:NZ	2.29	0.53
3:L3:2841:G:OP1	40:NP:10:HIS:NE2	2.39	0.53
3:L3:4633:G:O2'	3:L3:4635:A:OP2	2.13	0.53
45:SE:90:GLN:NE2	49:SI:62:GLU:OE2	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2493:G:O4'	51:SM:36:ARG:NH2	2.41	0.53
50:SK:126:GLU:OE1	50:SK:139:ARG:NH2	2.41	0.53
3:L3:2835:A:O2'	23:LN:228:TYR:O	2.27	0.53
19:LJ:33:THR:HG23	19:LJ:36:ARG:H	1.74	0.53
19:LJ:93:LYS:O	19:LJ:97:ASN:ND2	2.41	0.53
3:L3:1942:A:N6	3:L3:2040:A:OP2	2.42	0.53
3:L3:1552:G:O2'	3:L3:1574:G:N2	2.33	0.53
3:L3:1997:U:O3'	52:SQ:57:ARG:NH2	2.42	0.53
3:L3:3868:G:O2'	3:L3:3869:OMC:H5''	2.09	0.53
54:SV:53:LYS:NZ	54:SV:62:GLU:OE2	2.42	0.53
3:L3:489:C:O2'	3:L3:667:A:N6	2.42	0.52
3:L3:2632:PSU:H2'	3:L3:2633:U:C6	2.43	0.52
3:L3:3924:C:O2'	3:L3:3925:OMU:H5''	2.07	0.52
3:L3:4311:A:O2'	3:L3:4312:PSU:H5''	2.08	0.52
3:L3:2922:G:O2'	3:L3:3275:A:N6	2.42	0.52
7:L7:190:ASP:OD1	7:L7:191:LYS:N	2.43	0.52
3:L3:155:C:OP1	28:LS:109:ARG:NH2	2.42	0.52
3:L3:2487:G:O6	49:SI:51:LYS:NZ	2.37	0.52
3:L3:4226:G:O2'	3:L3:4227:OMU:H5''	2.09	0.52
3:L3:5001:PSU:H2'	3:L3:5002:U:O4'	2.10	0.52
6:L6:70:VAL:HG12	6:L6:159:ASN:OD1	2.10	0.52
7:L7:202:LEU:O	7:L7:202:LEU:HD23	2.10	0.52
14:LE:84:ILE:CD1	22:LM:21:ILE:HG22	2.40	0.52
3:L3:730:G:OP2	44:SD:76:ARG:NE	2.43	0.52
3:L3:4536:OMC:HM22	3:L3:4537:C:O4'	2.09	0.52
2:L1:71:A:OP2	18:LI:50:ARG:NH1	2.42	0.52
23:LN:306:ASP:OD2	53:SR:428:LYS:NZ	2.27	0.52
3:L3:1464:C:H5''	22:LM:32:LEU:HD12	1.92	0.51
8:L8:55:MET:O	12:LC:157:ARG:NH2	2.43	0.51
10:LA:14:SER:OG	10:LA:151:THR:HG22	2.09	0.51
12:LC:173:ASN:ND2	12:LC:175:PHE:O	2.42	0.51
42:SB:64:ILE:HD13	42:SB:109:LEU:HD22	1.92	0.51
3:L3:718:C:OP1	44:SD:217:ARG:NH1	2.43	0.51
28:LS:37:THR:O	28:LS:37:THR:HG22	2.11	0.51
3:L3:3723:A:H2'	3:L3:3724:A2M:H8	1.93	0.51
3:L3:4524:G:C2	23:LN:252:ALA:HB1	2.45	0.51
3:L3:1534:A2M:HM'3	3:L3:1637:A:C4	2.45	0.51
7:L7:185:VAL:O	7:L7:189:ILE:HG22	2.11	0.51
3:L3:1185:G:O2'	42:SB:278:ASP:OD1	2.24	0.51
3:L3:4645:C:OP2	13:LD:62:ARG:NH1	2.44	0.51
3:L3:4670:C:O2'	3:L3:4672:A:OP2	2.27	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:2351:OMC:HM23	41:SA:95:MET:HG3	1.92	0.51
41:SA:337:ARG:NH1	43:SC:55:GLY:O	2.43	0.51
3:L3:1364:U:OP2	6:L6:36:ARG:NH2	2.43	0.50
3:L3:2415:OMU:HM22	3:L3:2415:OMU:C2	2.41	0.50
3:L3:4402:C:H2'	3:L3:4403:PSU:H5''	1.92	0.50
23:LN:223:THR:HG22	23:LN:338:VAL:HG13	1.92	0.50
3:L3:1438:U:O2'	3:L3:1439:C:OP1	2.29	0.50
3:L3:2038:U:O2'	37:NF:42:MET:O	2.22	0.50
3:L3:4635:A:H3'	3:L3:4636:PSU:H4'	1.93	0.50
41:SA:154:VAL:HG11	41:SA:174:LEU:HD11	1.92	0.50
52:SQ:60:TRP:HE3	52:SQ:63:SER:HG	1.57	0.50
3:L3:2590:G:O2'	3:L3:2755:A:N6	2.40	0.50
53:SR:55:GLN:NE2	53:SR:107:ASP:OD1	2.45	0.50
3:L3:1646:A:O2'	32:LW:49:TRP:O	2.21	0.50
51:SM:265:TYR:HB3	51:SM:362:ILE:HD11	1.94	0.50
20:LK:38:LEU:O	20:LK:42:ARG:NH1	2.45	0.50
41:SA:159:GLU:OE2	41:SA:253:THR:HG21	2.12	0.49
3:L3:4605:A:N7	37:NF:3:GLN:HG3	2.26	0.49
19:LJ:29:ILE:O	19:LJ:31:ASP:N	2.44	0.49
3:L3:2562:G:N2	3:L3:2565:A:OP2	2.42	0.49
3:L3:2838:G:O2'	3:L3:2839:PSU:H5''	2.12	0.49
3:L3:1577:G:OP1	33:LX:17:ARG:NH2	2.43	0.49
5:L5:136:ARG:NH1	5:L5:156:ARG:O	2.45	0.49
21:LL:31:ASN:ND2	21:LL:40:TYR:O	2.46	0.49
50:SK:242:ASP:OD2	53:SR:169:ARG:NH2	2.43	0.49
3:L3:1521:C:O2'	3:L3:1522:OMG:H5'	2.13	0.49
3:L3:4208:U:OP2	14:LE:4:THR:HG23	2.12	0.49
50:SK:244:LEU:O	53:SR:352:LYS:NZ	2.41	0.49
52:SQ:42:ILE:HD11	52:SQ:92:VAL:HG13	1.95	0.49
3:L3:1358:G:O2'	3:L3:1360:G:O6	2.22	0.49
13:LD:7:GLN:NE2	13:LD:35:ALA:O	2.45	0.49
51:SM:33:ASP:OD1	51:SM:36:ARG:NH1	2.45	0.49
3:L3:1238:A:OP2	43:SC:60:SER:OG	2.12	0.49
27:LR:93:ARG:HG2	27:LR:97:ILE:HD12	1.94	0.49
50:SK:167:ILE:HD11	53:SR:358:ASN:HA	1.95	0.49
50:SK:78:ASP:OD2	54:SV:2:ARG:NH1	2.42	0.48
2:L1:87:G:OP2	28:LS:7:ARG:NH2	2.46	0.48
3:L3:2815:A2M:H2'	3:L3:2816:G:C8	2.47	0.48
3:L3:2347:A:C4	26:LQ:31:ILE:HD11	2.49	0.48
2:L1:26:C:O2'	41:SA:53:ALA:O	2.28	0.48
3:L3:36:U:OP1	3:L3:1651:G:N2	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:LN:217:ILE:HD11	23:LN:333:LEU:HD21	1.94	0.48
52:SQ:40:LEU:HD21	52:SQ:102:LEU:HD22	1.95	0.48
11:LB:89:ASP:O	11:LB:112:ARG:NH1	2.46	0.48
20:LK:77:LYS:O	20:LK:80:THR:OG1	2.28	0.48
39:NL:190:ARG:NH2	51:SM:117:ASP:OD1	2.44	0.48
53:SR:367:ARG:NH2	53:SR:371:LYS:O	2.44	0.48
2:L1:68:G:O2'	2:L1:69:PSU:H5''	2.13	0.48
3:L3:1946:G:O2'	37:NF:36:SER:OG	2.25	0.48
39:NL:384:GLU:OE2	39:NL:388:ARG:NE	2.47	0.48
3:L3:1420:A:O2'	3:L3:1500:A:O2'	2.18	0.47
3:L3:3841:OMC:H1'	3:L3:3841:OMC:HM23	1.50	0.47
13:LD:105:LEU:HD11	13:LD:109:TYR:CZ	2.49	0.47
23:LN:95:THR:OG1	23:LN:98:GLY:O	2.22	0.47
50:SK:6:SER:HA	50:SK:13:ILE:HD11	1.96	0.47
53:SR:285:ILE:HD11	53:SR:338:ARG:HD2	1.96	0.47
38:NK:86:LEU:HB2	38:NK:105:LEU:HD21	1.95	0.47
51:SM:170:HIS:HB3	51:SM:283:LEU:HD11	1.97	0.47
3:L3:4139:G:H21	3:L3:4140:C:N4	2.12	0.47
23:LN:370:THR:O	23:LN:370:THR:HG22	2.15	0.47
27:LR:44:SER:OG	27:LR:46:CYS:SG	2.68	0.47
3:L3:2258:C:N3	43:SC:90:ALA:N	2.62	0.47
3:L3:2296:G:O2'	41:SA:242:PRO:O	2.32	0.47
3:L3:1326:A2M:HM'3	3:L3:1326:A2M:H1'	1.59	0.47
3:L3:2000:G:O6	52:SQ:54:LYS:NZ	2.34	0.47
3:L3:5022:U:HO2'	3:L3:5023:C:P	2.38	0.47
53:SR:477:MET:SD	53:SR:480:ILE:HD11	2.55	0.47
3:L3:1279:A:O2'	3:L3:1281:G:N7	2.41	0.47
19:LJ:76:ASN:OD1	19:LJ:77:TYR:N	2.48	0.47
43:SC:50:LEU:HD23	43:SC:50:LEU:H	1.79	0.47
3:L3:1895:G:OP1	44:SD:96:ARG:NH2	2.48	0.46
13:LD:126:LYS:O	13:LD:131:VAL:HG22	2.15	0.46
19:LJ:5:MET:O	19:LJ:28:ASN:ND2	2.48	0.46
3:L3:2861:OMC:H1'	3:L3:2861:OMC:HM23	1.48	0.46
3:L3:3920:PSU:H2'	3:L3:3921:U:C6	2.50	0.46
3:L3:4768:G:OP1	7:L7:168:TYR:OH	2.32	0.46
7:L7:203:VAL:HG22	7:L7:203:VAL:O	2.15	0.46
3:L3:1523:A:O2'	3:L3:1524:A2M:H5'	2.16	0.46
3:L3:2363:A2M:H2'	3:L3:2364:OMG:O4'	2.16	0.46
3:L3:2724:G:O2'	3:L3:2726:G:OP2	2.24	0.46
3:L3:1210:C:H41	44:SD:66:ARG:CZ	2.28	0.46
14:LE:30:TYR:O	42:SB:41:LYS:NZ	2.36	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:LL:112:ARG:NH1	43:SC:117:PRO:O	2.44	0.46
45:SE:58:PRO:HD2	45:SE:61:ILE:HD12	1.97	0.46
3:L3:1666:C:O2'	3:L3:1688:G:OP1	2.27	0.46
3:L3:1874:A:O2'	3:L3:4219:A:N3	2.41	0.46
3:L3:1921:C:O2'	12:LC:160:ARG:NH2	2.43	0.46
50:SK:42:LEU:HD21	50:SK:203:CYS:SG	2.56	0.46
3:L3:690:C:OP1	21:LL:87:ARG:NH1	2.48	0.46
3:L3:2422:OMC:HM23	3:L3:2422:OMC:H1'	1.51	0.46
6:L6:63:THR:HG21	20:LK:66:ASN:HB3	1.98	0.46
10:LA:40:HIS:NE2	10:LA:110:ASP:O	2.44	0.46
31:LV:23:VAL:HG12	31:LV:70:LEU:HD23	1.98	0.46
34:LY:56:LEU:HD21	39:NL:371:LEU:HD21	1.97	0.46
39:NL:478:LEU:HD11	48:SH:101:ILE:HD13	1.97	0.46
41:SA:340:ILE:HD13	43:SC:51:VAL:HG21	1.98	0.46
43:SC:100:LYS:HD2	43:SC:100:LYS:O	2.16	0.46
3:L3:982:U:O5'	43:SC:73:TYR:OH	2.34	0.46
3:L3:1633:G:O2'	3:L3:1634:A:OP2	2.32	0.46
3:L3:1676:C:OP2	3:L3:1677:PSU:N1	2.48	0.46
3:L3:2306:G:OP1	26:LQ:128:ARG:NH1	2.49	0.46
23:LN:67:VAL:O	23:LN:67:VAL:HG22	2.16	0.46
39:NL:225:PRO:HD2	39:NL:228:LEU:HD12	1.96	0.46
44:SD:53:LYS:NZ	44:SD:189:ASP:OD2	2.31	0.46
47:SG:41:ILE:HG21	47:SG:73:ILE:HD11	1.97	0.45
51:SM:175:ALA:HB2	51:SM:242:LEU:HD11	1.97	0.45
1:BA:135:THR:HG22	3:L3:1974:U:O4	2.17	0.45
15:LF:111:GLU:OE2	15:LF:113:ARG:NH2	2.44	0.45
18:LI:109:LEU:HD22	18:LI:115:ARG:HH21	1.81	0.45
3:L3:2280:G:HO2'	3:L3:2281:U:H6	1.65	0.45
3:L3:2809:G:O2'	3:L3:4644:G:OP1	2.31	0.45
16:LG:112:MET:HE1	16:LG:117:ILE:HD11	1.97	0.45
50:SK:175:SER:O	50:SK:178:GLN:NE2	2.50	0.45
53:SR:170:THR:HG23	53:SR:249:ALA:HB2	1.97	0.45
3:L3:4717:A:OP2	23:LN:30:LYS:NZ	2.43	0.45
45:SE:103:ARG:NH2	45:SE:192:ARG:O	2.50	0.45
3:L3:5039:U:OP1	54:SV:111:ARG:NH1	2.50	0.45
6:L6:116:ARG:NH2	6:L6:155:MET:O	2.44	0.45
30:LU:81:ILE:H	30:LU:81:ILE:HD12	1.80	0.45
3:L3:131:C:N4	3:L3:138:G:O6	2.50	0.45
6:L6:129:ARG:NH1	28:LS:116:LEU:O	2.50	0.45
6:L6:130:LYS:HE2	6:L6:133:ALA:HB3	1.98	0.45
13:LD:7:GLN:OE1	13:LD:7:GLN:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:LP:95:ASP:OD1	25:LP:96:GLU:N	2.49	0.45
45:SE:45:ILE:HD12	45:SE:45:ILE:H	1.82	0.45
3:L3:4623:OMG:N2	23:LN:279:GLU:OE2	2.37	0.45
3:L3:373:G:OP2	32:LW:36:LYS:NZ	2.47	0.44
3:L3:1950:U:O2'	12:LC:116:ARG:NH1	2.50	0.44
32:LW:21:ARG:NH2	32:LW:41:ALA:O	2.39	0.44
3:L3:3718:A2M:H2'	3:L3:3719:A:C8	2.51	0.44
3:L3:66:A:O2'	3:L3:326:C:O2	2.35	0.44
3:L3:3718:A2M:H2	3:L3:3934:G:C1'	2.47	0.44
3:L3:1340:OMC:H1'	3:L3:1340:OMC:HM23	1.50	0.44
3:L3:2815:A2M:H2'	3:L3:2816:G:H8	1.83	0.44
3:L3:3700:C:O2'	3:L3:3774:A:N3	2.43	0.44
19:LJ:10:VAL:HG11	19:LJ:129:TRP:HZ3	1.82	0.44
3:L3:4678:G:N7	38:NK:11:ARG:NH2	2.65	0.44
23:LN:10:ARG:NH1	23:LN:14:LEU:HD11	2.33	0.44
46:SF:36:GLU:OE2	46:SF:163:ARG:NH1	2.41	0.44
53:SR:480:ILE:HD12	54:SV:124:ILE:HD13	1.99	0.44
3:L3:1548:G:O2'	3:L3:2812:A:N3	2.42	0.44
3:L3:1860:PSU:H2'	3:L3:1861:U:C6	2.52	0.44
5:L5:10:ASN:OD1	5:L5:11:PRO:HD2	2.17	0.44
3:L3:1461:C:OP1	11:LB:144:LYS:NZ	2.46	0.44
3:L3:2097:U:O3'	3:L3:2098:G:H4'	2.18	0.44
3:L3:4578:G:O2'	3:L3:4579:PSU:H5''	2.17	0.44
48:SH:79:SER:O	48:SH:83:GLY:N	2.46	0.44
3:L3:404:U:O2'	18:LI:87:ARG:NH2	2.51	0.44
3:L3:3744:OMG:H1'	3:L3:3744:OMG:HM23	1.56	0.44
24:LO:31:TYR:OH	24:LO:59:GLU:OE1	2.31	0.44
26:LQ:84:GLU:O	26:LQ:87:VAL:HG22	2.17	0.44
48:SH:110:LEU:HD12	48:SH:115:LEU:HD21	1.98	0.44
3:L3:2470:C:C2'	45:SE:56:LYS:HZ3	2.25	0.43
6:L6:63:THR:HG22	6:L6:64:VAL:N	2.33	0.43
21:LL:32:LEU:O	21:LL:113:ARG:NH1	2.51	0.43
30:LU:63:VAL:HG12	30:LU:63:VAL:O	2.18	0.43
44:SD:171:ASP:OD1	44:SD:172:ASN:N	2.51	0.43
3:L3:1532:G:OP2	32:LW:31:LYS:NZ	2.50	0.43
36:NC:168:GLU:O	36:NC:171:THR:N	2.50	0.43
3:L3:2351:OMC:HM22	3:L3:2352:U:H5'	2.00	0.43
3:L3:3717:A:H2'	3:L3:3718:A2M:H8	2.01	0.43
3:L3:3867:A2M:HM'2	3:L3:3867:A2M:H1'	1.54	0.43
3:L3:4249:G:O2'	5:L5:98:ASN:O	2.30	0.43
3:L3:4457:PSU:H1'	23:LN:252:ALA:HB3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:L9:143:ARG:HH11	28:LS:95:LEU:HD23	1.83	0.43
39:NL:254:HIS:CE1	39:NL:258:LEU:HD11	2.54	0.43
2:L1:75:OMG:H1'	2:L1:75:OMG:HM23	1.47	0.43
3:L3:2759:G:O2'	3:L3:2760:G:O4'	2.30	0.43
34:LY:54:GLU:O	34:LY:58:GLN:NE2	2.51	0.43
1:BA:125:LEU:O	1:BA:128:THR:OG1	2.26	0.43
3:L3:1515:A:OP1	20:LK:33:GLY:N	2.46	0.43
3:L3:2263:A:OP1	21:LL:107:ARG:NH2	2.51	0.43
53:SR:172:LEU:HD23	53:SR:244:LEU:HD23	2.00	0.43
3:L3:351:C:OP2	41:SA:197:ARG:NH1	2.50	0.43
3:L3:2340:C:H4'	41:SA:42:THR:HG23	2.00	0.43
3:L3:4305:G:H4'	3:L3:4306:OMU:OP1	2.18	0.43
3:L3:4468:U:HO2'	38:NK:2:ALA:N	2.17	0.43
3:L3:4576:PSU:H2'	3:L3:4577:U:C6	2.54	0.43
49:SI:193:CYS:SG	49:SI:194:LEU:N	2.91	0.43
23:LN:107:ALA:HB2	23:LN:201:LEU:HG	2.00	0.43
3:L3:442:G:OP1	29:LT:68:ARG:NH1	2.47	0.43
3:L3:1590:C:O2'	40:NP:5:ARG:NH2	2.52	0.43
23:LN:29:VAL:HG13	23:LN:348:ARG:HD3	2.00	0.43
53:SR:44:ARG:NH2	53:SR:120:GLY:O	2.46	0.43
3:L3:2487:G:OP2	51:SM:152:LYS:NZ	2.41	0.42
3:L3:4620:OMU:H1'	3:L3:4620:OMU:HM23	1.72	0.42
20:LK:145:VAL:HG13	30:LU:5:TYR:CE1	2.54	0.42
3:L3:1797:G:OP1	44:SD:104:LYS:NZ	2.52	0.42
48:SH:123:PRO:O	48:SH:126:VAL:HG12	2.19	0.42
3:L3:2837:OMU:HM23	3:L3:2837:OMU:H1'	1.58	0.42
3:L3:5068:G:N2	3:L3:5069:U:O4	2.45	0.42
3:L3:3899:OMG:HM23	3:L3:3899:OMG:H1'	1.62	0.42
3:L3:3925:OMU:HM23	3:L3:3925:OMU:H1'	1.57	0.42
3:L3:4219:A:O2'	3:L3:4220:6MZ:O5'	2.23	0.42
4:L4:74:A:N3	12:LC:53:LYS:NZ	2.67	0.42
3:L3:2624:G:OP2	15:LF:97:ARG:NH2	2.52	0.42
3:L3:496:G:O2'	3:L3:497:G:OP1	2.29	0.42
3:L3:4457:PSU:O4	23:LN:252:ALA:HB3	2.20	0.42
3:L3:2691:U:C2	3:L3:2692:U:C5	3.08	0.42
3:L3:3620:G:OP1	3:L3:3622:C:N4	2.53	0.42
5:L5:63:ARG:CD	31:LV:103:VAL:HG11	2.50	0.42
23:LN:224:LYS:HG2	23:LN:340:THR:HG22	2.02	0.42
24:LO:14:ILE:HD13	24:LO:17:ARG:NH2	2.35	0.42
41:SA:209:ILE:HD11	41:SA:227:ILE:HD12	2.02	0.42
42:SB:64:ILE:CD1	42:SB:109:LEU:HD22	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:453:G:H1	3:L3:1293:G:H22	1.68	0.42
3:L3:3718:A2M:H1'	3:L3:3718:A2M:HM'3	1.64	0.42
18:LI:79:VAL:HG21	18:LI:98:GLY:HA3	2.01	0.42
3:L3:4530:UR3:H6	3:L3:4530:UR3:O5'	2.20	0.42
6:L6:94:ILE:HG23	6:L6:124:LEU:HD21	2.02	0.42
12:LC:45:TRP:HA	12:LC:48:VAL:HG12	2.02	0.42
3:L3:2364:OMG:HM23	3:L3:2364:OMG:H1'	1.48	0.41
6:L6:100:PRO:O	30:LU:25:ARG:NH1	2.45	0.41
12:LC:38:VAL:HG13	44:SD:237:GLU:OE1	2.20	0.41
3:L3:1677:PSU:H4'	3:L3:1680:G:C2	2.56	0.41
8:L8:36:ALA:HB2	8:L8:52:PHE:CE1	2.56	0.41
23:LN:220:ILE:HG12	23:LN:278:THR:HG23	2.03	0.41
26:LQ:89:LEU:HD13	26:LQ:118:LEU:HD22	2.02	0.41
35:LZ:12:PHE:CD2	35:LZ:51:LEU:HD22	2.55	0.41
51:SM:120:ILE:HD11	51:SM:229:THR:HB	2.02	0.41
3:L3:2427:G:OP1	13:LD:5:ARG:NH2	2.53	0.41
21:LL:39:ARG:NH1	21:LL:105:ASP:OD2	2.52	0.41
50:SK:163:PRO:O	53:SR:358:ASN:ND2	2.52	0.41
52:SQ:209:ASP:OD2	52:SQ:211:GLN:NE2	2.47	0.41
3:L3:1096:C:O2	3:L3:1200:G:N2	2.53	0.41
3:L3:1577:G:O2'	3:L3:1612:G:H4'	2.20	0.41
3:L3:2415:OMU:O5'	3:L3:2415:OMU:H6	2.20	0.41
38:NK:82:ASN:O	38:NK:86:LEU:N	2.44	0.41
3:L3:49:U:OP2	9:L9:189:ARG:NH1	2.52	0.41
3:L3:2876:OMG:C8	33:LX:16:THR:HG22	2.56	0.41
53:SR:272:PHE:CZ	53:SR:284:LEU:HD21	2.56	0.41
3:L3:1534:A2M:HM'2	3:L3:1535:C:C6	2.56	0.41
3:L3:3715:PSU:H2'	3:L3:3716:C:O4'	2.20	0.41
22:LM:35:VAL:HG12	22:LM:36:ASP:N	2.36	0.41
39:NL:257:LEU:HG	39:NL:418:VAL:HG22	2.03	0.41
53:SR:292:ASP:OD1	53:SR:293:VAL:N	2.53	0.41
1:BA:138:SER:HG	3:L3:2002:A:N6	2.18	0.41
3:L3:3627:OMG:HM23	3:L3:3627:OMG:H1'	1.70	0.41
3:L3:4618:OMG:H5''	16:LG:15:ARG:HB2	2.03	0.41
9:L9:165:THR:HG22	9:L9:166:SER:N	2.35	0.41
17:LH:138:VAL:O	17:LH:138:VAL:HG23	2.20	0.41
53:SR:341:ALA:O	53:SR:344:VAL:HG22	2.21	0.41
3:L3:1952:G:H4'	12:LC:93:MET:HB2	2.03	0.41
3:L3:4993:G:H22	3:L3:5058:A:H2	1.69	0.41
39:NL:416:ILE:HG22	39:NL:418:VAL:HG23	2.03	0.41
3:L3:2407:G:OP2	3:L3:2407:G:N2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L3:4227:OMU:H1'	3:L3:4227:OMU:HM23	1.58	0.41
3:L3:4431:PSU:H2'	3:L3:4432:C:H6	1.82	0.41
3:L3:4637:OMG:HM23	3:L3:4637:OMG:H1'	1.70	0.41
3:L3:5002:U:OP2	23:LN:385:LYS:NZ	2.38	0.41
24:LO:14:ILE:HD13	24:LO:17:ARG:HH21	1.86	0.41
41:SA:39:PHE:O	41:SA:43:ASN:ND2	2.53	0.41
49:SI:101:ARG:NH1	49:SI:122:LYS:O	2.54	0.41
50:SK:116:LEU:HD11	50:SK:177:LEU:HD11	2.03	0.41
51:SM:265:TYR:OH	51:SM:358:LYS:O	2.34	0.41
51:SM:412:GLU:OE1	51:SM:412:GLU:N	2.51	0.41
3:L3:308:G:OP2	3:L3:308:G:N2	2.36	0.41
3:L3:911:U:H2'	3:L3:912:G:O4'	2.21	0.41
3:L3:1952:G:OP1	12:LC:139:ARG:NE	2.54	0.41
6:L6:186:ARG:HG2	30:LU:9:VAL:HG21	2.02	0.41
37:NF:12:LYS:NZ	53:SR:194:ASP:OD2	2.49	0.41
21:LL:20:ARG:NH1	26:LQ:78:LEU:O	2.49	0.40
24:LO:78:ASN:OD1	24:LO:79:ILE:N	2.54	0.40
53:SR:258:SER:OG	53:SR:293:VAL:HG11	2.21	0.40
3:L3:2422:OMC:OP1	10:LA:127:ARG:NH2	2.47	0.40
11:LB:34:PHE:CD2	41:SA:293:LEU:HD22	2.56	0.40
47:SG:120:GLU:OE1	47:SG:124:ARG:NH1	2.54	0.40
53:SR:225:ILE:HG13	53:SR:271:LEU:HD21	2.03	0.40
3:L3:4370:OMG:H4'	31:LV:64:LYS:HE3	2.02	0.40
33:LX:69:TRP:NE1	46:SF:173:GLY:O	2.55	0.40
49:SI:98:PHE:HB2	49:SI:152:PRO:HG3	2.03	0.40
3:L3:1961:G:OP1	52:SQ:69:LYS:NZ	2.36	0.40
3:L3:2626:U:OP2	53:SR:501:LYS:NZ	2.51	0.40
3:L3:4280:A:N6	42:SB:28:THR:O	2.51	0.40
10:LA:50:ASP:O	10:LA:54:GLN:N	2.55	0.40
10:LA:120:ASN:O	10:LA:145:HIS:N	2.49	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	BA	158/165 (96%)	157 (99%)	1 (1%)	0	100	100
5	L5	166/178 (93%)	164 (99%)	2 (1%)	0	100	100
6	L6	208/211 (99%)	204 (98%)	4 (2%)	0	100	100
7	L7	199/203 (98%)	198 (100%)	1 (0%)	0	100	100
8	L8	133/215 (62%)	131 (98%)	2 (2%)	0	100	100
9	L9	201/204 (98%)	197 (98%)	4 (2%)	0	100	100
10	LA	151/184 (82%)	146 (97%)	5 (3%)	0	100	100
11	LB	185/188 (98%)	181 (98%)	4 (2%)	0	100	100
12	LC	174/176 (99%)	171 (98%)	3 (2%)	0	100	100
13	LD	152/196 (78%)	151 (99%)	1 (1%)	0	100	100
14	LE	150/160 (94%)	146 (97%)	4 (3%)	0	100	100
15	LF	101/128 (79%)	100 (99%)	1 (1%)	0	100	100
16	LG	137/140 (98%)	135 (98%)	2 (2%)	0	100	100
17	LH	141/156 (90%)	141 (100%)	0	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%)	144 (99%)	1 (1%)	0	100	100
21	LL	123/137 (90%)	120 (98%)	3 (2%)	0	100	100
22	LM	87/159 (55%)	86 (99%)	1 (1%)	0	100	100
23	LN	399/403 (99%)	392 (98%)	7 (2%)	0	100	100
24	LO	93/115 (81%)	93 (100%)	0	0	100	100
25	LP	104/125 (83%)	104 (100%)	0	0	100	100
26	LQ	126/135 (93%)	126 (100%)	0	0	100	100
27	LR	110/117 (94%)	109 (99%)	1 (1%)	0	100	100
28	LS	120/123 (98%)	119 (99%)	1 (1%)	0	100	100
29	LT	107/110 (97%)	107 (100%)	0	0	100	100
30	LU	100/105 (95%)	100 (100%)	0	0	100	100
31	LV	102/106 (96%)	100 (98%)	2 (2%)	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

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
34	LY	67/70 (96%)	67 (100%)	0	0	100	100
35	LZ	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
36	NC	42/731 (6%)	42 (100%)	0	0	100	100
37	NF	69/260 (26%)	68 (99%)	1 (1%)	0	100	100
38	NK	63/129 (49%)	63 (100%)	0	0	100	100
39	NL	259/478 (54%)	258 (100%)	1 (0%)	0	100	100
40	NP	100/134 (75%)	100 (100%)	0	0	100	100
41	SA	356/427 (83%)	351 (99%)	5 (1%)	0	100	100
42	SB	273/297 (92%)	270 (99%)	3 (1%)	0	100	100
43	SC	211/288 (73%)	206 (98%)	5 (2%)	0	100	100
44	SD	223/248 (90%)	217 (97%)	6 (3%)	0	100	100
45	SE	228/266 (86%)	226 (99%)	2 (1%)	0	100	100
46	SF	243/257 (95%)	236 (97%)	7 (3%)	0	100	100
47	SG	188/192 (98%)	186 (99%)	2 (1%)	0	100	100
48	SH	91/293 (31%)	90 (99%)	1 (1%)	0	100	100
49	SI	233/255 (91%)	230 (99%)	3 (1%)	0	100	100
50	SK	242/245 (99%)	234 (97%)	8 (3%)	0	100	100
51	SM	393/588 (67%)	389 (99%)	4 (1%)	0	100	100
52	SQ	215/239 (90%)	214 (100%)	1 (0%)	0	100	100
53	SR	595/634 (94%)	589 (99%)	5 (1%)	1 (0%)	44	56
54	SV	137/163 (84%)	135 (98%)	2 (2%)	0	100	100
All	All	8586/11002 (78%)	8472 (99%)	113 (1%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
53	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	
1	BA	53/137 (39%)	53 (100%)	0	100	100
5	L5	142/149 (95%)	142 (100%)	0	100	100
6	L6	176/177 (99%)	176 (100%)	0	100	100
7	L7	173/174 (99%)	173 (100%)	0	100	100
8	L8	115/161 (71%)	115 (100%)	0	100	100
9	L9	171/172 (99%)	171 (100%)	0	100	100
10	LA	134/163 (82%)	134 (100%)	0	100	100
11	LB	164/165 (99%)	164 (100%)	0	100	100
12	LC	157/157 (100%)	157 (100%)	0	100	100
13	LD	138/175 (79%)	138 (100%)	0	100	100
14	LE	136/140 (97%)	136 (100%)	0	100	100
15	LF	93/115 (81%)	92 (99%)	1 (1%)	70	82
16	LG	106/107 (99%)	106 (100%)	0	100	100
17	LH	124/133 (93%)	124 (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	77/126 (61%)	75 (97%)	2 (3%)	41	59
23	LN	347/348 (100%)	346 (100%)	1 (0%)	91	96
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%)	64 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	LZ	47/48 (98%)	47 (100%)	0	100	100
37	NF	65/228 (28%)	65 (100%)	0	100	100
38	NK	61/115 (53%)	61 (100%)	0	100	100
39	NL	227/402 (56%)	227 (100%)	0	100	100
40	NP	88/114 (77%)	88 (100%)	0	100	100
41	SA	298/348 (86%)	297 (100%)	1 (0%)	91	96
42	SB	234/250 (94%)	234 (100%)	0	100	100
43	SC	192/252 (76%)	191 (100%)	1 (0%)	86	93
44	SD	194/215 (90%)	194 (100%)	0	100	100
45	SE	198/223 (89%)	197 (100%)	1 (0%)	86	93
46	SF	188/199 (94%)	188 (100%)	0	100	100
47	SG	169/171 (99%)	169 (100%)	0	100	100
48	SH	85/274 (31%)	85 (100%)	0	100	100
49	SI	212/228 (93%)	212 (100%)	0	100	100
50	SK	212/213 (100%)	211 (100%)	1 (0%)	86	93
51	SM	354/509 (70%)	354 (100%)	0	100	100
52	SQ	194/214 (91%)	194 (100%)	0	100	100
53	SR	545/574 (95%)	544 (100%)	1 (0%)	92	97
54	SV	128/149 (86%)	128 (100%)	0	100	100
All	All	7440/8850 (84%)	7431 (100%)	9 (0%)	92	98

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
15	LF	116	GLN
22	LM	91	ARG
22	LM	117	ARG
23	LN	246	ARG
41	SA	122	TYR
43	SC	100	LYS
45	SE	175	ARG
50	SK	57	ARG
53	SR	8	LYS

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

Mol	Chain	Res	Type
20	LK	17	HIS
20	LK	19	HIS
23	LN	123	HIS
23	LN	322	HIS
42	SB	17	GLN
43	SC	190	HIS
47	SG	140	GLN
49	SI	94	HIS
51	SM	211	HIS
53	SR	157	HIS
53	SR	209	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	L1	152/157 (96%)	18 (11%)	0
3	L3	3376/5070 (66%)	413 (12%)	6 (0%)
4	L4	119/121 (98%)	12 (10%)	1 (0%)
All	All	3647/5348 (68%)	443 (12%)	7 (0%)

All (443) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	L1	23	C
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	94	G
2	L1	103	A
2	L1	105	C
2	L1	110	U
2	L1	111	U
2	L1	114	G
2	L1	151	G
2	L1	156	U
3	L3	6	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	13	U
3	L3	25	A
3	L3	39	A
3	L3	42	A
3	L3	48	G
3	L3	56	A
3	L3	58	G
3	L3	59	A
3	L3	64	A
3	L3	65	A
3	L3	66	A
3	L3	69	A
3	L3	91	G
3	L3	108	A
3	L3	119	G
3	L3	159	C
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	234	G
3	L3	261	G
3	L3	263	G
3	L3	266	C
3	L3	274	C
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	450	G
3	L3	452	A
3	L3	453	G
3	L3	454	U
3	L3	464	G
3	L3	467	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	469	C
3	L3	473	C
3	L3	492	U
3	L3	493	G
3	L3	496	G
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	658	C
3	L3	660	A
3	L3	666	G
3	L3	667	A
3	L3	668	C
3	L3	669	C
3	L3	686	A
3	L3	704	C
3	L3	731	G
3	L3	739	G
3	L3	741	C
3	L3	742	G
3	L3	746	A
3	L3	913	U
3	L3	915	A
3	L3	917	A
3	L3	918	G
3	L3	926	G
3	L3	932	A
3	L3	933	G
3	L3	937	U
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	1066	G
3	L3	1072	C
3	L3	1080	C
3	L3	1100	U
3	L3	1169	G
3	L3	1171	G
3	L3	1173	G
3	L3	1178	G
3	L3	1180	C
3	L3	1181	C
3	L3	1182	C
3	L3	1201	U
3	L3	1203	G
3	L3	1211	G
3	L3	1214	C
3	L3	1215	C
3	L3	1241	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	1313	C
3	L3	1314	C
3	L3	1319	U
3	L3	1325	C
3	L3	1326	A2M
3	L3	1354	A
3	L3	1358	G
3	L3	1359	G
3	L3	1365	C
3	L3	1366	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	1379	C
3	L3	1397	A
3	L3	1420	A
3	L3	1439	C
3	L3	1443	A
3	L3	1444	G
3	L3	1497	A
3	L3	1498	G
3	L3	1502	G
3	L3	1523	A
3	L3	1534	A2M
3	L3	1547	A
3	L3	1578	U
3	L3	1581	G
3	L3	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	1640	C
3	L3	1642	A
3	L3	1654	G
3	L3	1661	C
3	L3	1670	G
3	L3	1671	U
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	1815	G
3	L3	1821	G
3	L3	1836	G
3	L3	1837	A
3	L3	1842	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	1854	G
3	L3	1875	C
3	L3	1880	G
3	L3	1882	U
3	L3	1883	G
3	L3	1887	G
3	L3	1888	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	1973	G
3	L3	1974	U
3	L3	1978	C
3	L3	1984	A
3	L3	1997	U
3	L3	2002	A
3	L3	2016	C
3	L3	2021	G
3	L3	2026	A
3	L3	2041	A
3	L3	2044	U
3	L3	2046	G
3	L3	2055	G
3	L3	2056	G
3	L3	2069	A
3	L3	2084	C
3	L3	2092	G
3	L3	2093	A
3	L3	2094	G
3	L3	2095	A
3	L3	2096	G
3	L3	2097	U
3	L3	2098	G
3	L3	2099	G
3	L3	2109	G
3	L3	2110	C
3	L3	2111	G
3	L3	2262	G
3	L3	2289	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	2300	A
3	L3	2301	G
3	L3	2313	A
3	L3	2348	G
3	L3	2351	OMC
3	L3	2395	A
3	L3	2417	A
3	L3	2422	OMC
3	L3	2425	U
3	L3	2429	A
3	L3	2450	G
3	L3	2453	A
3	L3	2470	C
3	L3	2471	G
3	L3	2475	G
3	L3	2476	G
3	L3	2477	A
3	L3	2478	C
3	L3	2480	G
3	L3	2486	G
3	L3	2487	G
3	L3	2488	C
3	L3	2489	C
3	L3	2492	C
3	L3	2493	G
3	L3	2512	A
3	L3	2513	A
3	L3	2519	U
3	L3	2544	G
3	L3	2545	U
3	L3	2548	C
3	L3	2554	U
3	L3	2587	A
3	L3	2627	C
3	L3	2653	C
3	L3	2669	C
3	L3	2687	U
3	L3	2694	G
3	L3	2695	A
3	L3	2696	A
3	L3	2711	G
3	L3	2743	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	2760	G
3	L3	2764	A
3	L3	2769	U
3	L3	2772	C
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	2894	A
3	L3	2902	G
3	L3	2917	G
3	L3	2918	G
3	L3	2922	G
3	L3	3271	G
3	L3	3585	G
3	L3	3593	C
3	L3	3595	U
3	L3	3597	G
3	L3	3615	G
3	L3	3626	G
3	L3	3635	A
3	L3	3653	A
3	L3	3662	A
3	L3	3696	C
3	L3	3697	U
3	L3	3775	A
3	L3	3838	U
3	L3	3840	U
3	L3	3868	G
3	L3	3872	A
3	L3	3875	G
3	L3	3887	OMC
3	L3	3897	G
3	L3	3905	A
3	L3	3915	U
3	L3	4069	U
3	L3	4076	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L3	4085	A
3	L3	4119	C
3	L3	4122	G
3	L3	4127	A
3	L3	4133	C
3	L3	4138	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	4154	G
3	L3	4162	C
3	L3	4163	U
3	L3	4170	A
3	L3	4183	G
3	L3	4184	G
3	L3	4191	G
3	L3	4194	U
3	L3	4202	U
3	L3	4221	C
3	L3	4222	G
3	L3	4229	U
3	L3	4233	A
3	L3	4251	A
3	L3	4254	G
3	L3	4266	G
3	L3	4268	A
3	L3	4273	A
3	L3	4281	A
3	L3	4291	G
3	L3	4305	G
3	L3	4306	OMU
3	L3	4314	C
3	L3	4329	G
3	L3	4330	G
3	L3	4332	C
3	L3	4373	G
3	L3	4376	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	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	4584	A
3	L3	4590	A2M
3	L3	4608	G
3	L3	4636	PSU
3	L3	4637	OMG
3	L3	4656	A
3	L3	4670	C
3	L3	4672	A
3	L3	4678	G
3	L3	4701	A
3	L3	4708	A
3	L3	4709	U
3	L3	4719	G
3	L3	4720	C
3	L3	4740	G
3	L3	4741	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	4916	G
3	L3	4943	A
3	L3	4976	U
3	L3	5006	U
3	L3	5014	A
3	L3	5020	G
3	L3	5022	U
3	L3	5023	C
3	L3	5026	U
3	L3	5027	C
3	L3	5031	G
3	L3	5041	G
3	L3	5050	C
3	L3	5054	C
3	L3	5055	G
3	L3	5061	A
3	L3	5062	G
3	L3	5069	U
4	L4	7	G
4	L4	24	C
4	L4	33	U
4	L4	49	A
4	L4	53	U
4	L4	54	A
4	L4	64	G
4	L4	66	G

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Mol	Chain	Res	Type
4	L4	89	G
4	L4	110	G
4	L4	111	C
4	L4	120	U

All (7) 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	2095	A
4	L4	109	U

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PSU	L3	3730	3	18,21,22	1.12	1 (5%)	21,30,33	1.96	5 (23%)
3	OMU	L3	4227	3	19,22,23	2.02	6 (31%)	25,31,34	1.80	4 (16%)
3	A2M	L3	1524	3	18,25,26	1.26	2 (11%)	20,36,39	1.51	3 (15%)
3	OMU	L3	4498	3	19,22,23	2.09	7 (36%)	25,31,34	1.81	5 (20%)
3	OMC	L3	3887	3	19,22,23	0.55	0	25,31,34	0.68	0
3	OMG	L3	4499	3	19,26,27	1.11	2 (10%)	21,38,41	0.81	1 (4%)
3	PSU	L3	3822	3	18,21,22	1.14	1 (5%)	21,30,33	1.93	5 (23%)
3	PSU	L3	4689	3	18,21,22	1.06	1 (5%)	21,30,33	1.96	4 (19%)
3	PSU	L3	4403	3	18,21,22	1.08	1 (5%)	21,30,33	1.96	5 (23%)
3	PSU	L3	4361	3	18,21,22	1.07	1 (5%)	21,30,33	1.88	4 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	UR3	L3	4530	3	19,22,23	1.12	3 (15%)	26,32,35	1.52	2 (7%)
3	PSU	L3	5010	3	18,21,22	1.06	1 (5%)	21,30,33	1.95	5 (23%)
3	PSU	L3	4521	3	18,21,22	1.09	1 (5%)	21,30,33	1.92	5 (23%)
3	A2M	L3	398	3	18,25,26	1.27	2 (11%)	20,36,39	1.35	2 (10%)
3	OMC	L3	2351	3,55	19,22,23	0.58	0	25,31,34	0.83	1 (4%)
3	PSU	L3	4552	3	18,21,22	1.07	1 (5%)	21,30,33	1.92	5 (23%)
3	OMG	L3	3899	3	19,26,27	1.18	2 (10%)	21,38,41	0.82	1 (4%)
3	A2M	L3	3825	3	18,25,26	1.26	2 (11%)	20,36,39	1.29	2 (10%)
3	PSU	L3	1536	3	18,21,22	1.07	1 (5%)	21,30,33	1.90	4 (19%)
3	OMC	L3	4536	3	19,22,23	0.54	0	25,31,34	0.65	0
3	OMG	L3	1625	3	19,26,27	1.20	2 (10%)	21,38,41	0.85	1 (4%)
3	OMG	L3	2876	3	19,26,27	1.15	2 (10%)	21,38,41	0.79	1 (4%)
3	PSU	L3	3844	3	18,21,22	1.12	1 (5%)	21,30,33	1.97	5 (23%)
3	PSU	L3	4636	3	18,21,22	1.10	1 (5%)	21,30,33	2.02	6 (28%)
3	PSU	L3	3639	3	18,21,22	1.08	1 (5%)	21,30,33	1.94	5 (23%)
3	OMG	L3	4494	3	19,26,27	1.19	2 (10%)	21,38,41	0.85	1 (4%)
3	PSU	L3	4431	3	18,21,22	1.13	1 (5%)	21,30,33	1.97	5 (23%)
3	OMG	L3	3627	3	19,26,27	1.17	2 (10%)	21,38,41	0.85	1 (4%)
3	OMU	L3	2837	3	19,22,23	2.05	7 (36%)	25,31,34	1.85	5 (20%)
3	A2M	L3	4571	3	18,25,26	1.27	2 (11%)	20,36,39	1.24	1 (5%)
3	PSU	L3	4579	3	18,21,22	1.05	1 (5%)	21,30,33	1.90	4 (19%)
2	OMG	L1	75	2	19,26,27	1.17	2 (10%)	21,38,41	0.81	1 (4%)
3	PSU	L3	2839	3	18,21,22	1.06	1 (5%)	21,30,33	1.92	4 (19%)
3	PSU	L3	1860	3	18,21,22	1.08	1 (5%)	21,30,33	1.94	5 (23%)
3	OMG	L3	4370	3	19,26,27	1.22	3 (15%)	21,38,41	0.88	1 (4%)
3	PSU	L3	5001	3	18,21,22	1.12	1 (5%)	21,30,33	1.93	4 (19%)
3	A2M	L3	3724	3	18,25,26	1.29	2 (11%)	20,36,39	1.29	1 (5%)
3	OMG	L3	4228	3	19,26,27	1.25	3 (15%)	21,38,41	0.90	1 (4%)
3	OMG	L3	4623	3	19,26,27	1.18	2 (10%)	21,38,41	0.88	1 (4%)
3	PSU	L3	4293	3	18,21,22	1.03	1 (5%)	21,30,33	1.77	4 (19%)
3	A2M	L3	2815	3	18,25,26	1.27	2 (11%)	20,36,39	1.29	2 (10%)
3	OMC	L3	2422	3,55	19,22,23	0.53	0	25,31,34	0.72	1 (4%)
3	OMU	L3	4620	3	19,22,23	1.98	6 (31%)	25,31,34	1.70	4 (16%)
3	PSU	L3	3695	3	18,21,22	1.14	1 (5%)	21,30,33	1.95	5 (23%)
3	OMU	L3	4306	3	19,22,23	2.01	6 (31%)	25,31,34	1.82	4 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	PSU	L1	55	2	18,21,22	1.06	1 (5%)	21,30,33	1.93	5 (23%)
3	A2M	L3	1326	3	18,25,26	1.28	3 (16%)	20,36,39	1.30	2 (10%)
3	OMC	L3	3841	3	19,22,23	0.54	0	25,31,34	0.71	0
3	PSU	L3	4299	3	18,21,22	1.03	2 (11%)	21,30,33	2.02	5 (23%)
3	OMC	L3	3869	3	19,22,23	0.55	0	25,31,34	0.68	0
3	A2M	L3	4590	3	18,25,26	1.25	3 (16%)	20,36,39	1.46	3 (15%)
3	OMC	L3	4456	3	19,22,23	0.55	0	25,31,34	0.66	0
3	PSU	L3	3734	3	18,21,22	1.12	1 (5%)	21,30,33	1.96	6 (28%)
3	OMG	L3	4392	3	19,26,27	1.19	2 (10%)	21,38,41	0.83	1 (4%)
3	PSU	L3	2508	3	18,21,22	1.07	1 (5%)	21,30,33	1.96	4 (19%)
2	PSU	L1	69	2	18,21,22	1.11	1 (5%)	21,30,33	1.95	5 (23%)
3	PSU	L3	3884	3	18,21,22	1.06	1 (5%)	21,30,33	1.86	4 (19%)
3	PSU	L3	1677	3	18,21,22	1.06	1 (5%)	21,30,33	1.84	4 (19%)
3	PSU	L3	4576	3	18,21,22	1.11	1 (5%)	21,30,33	1.97	6 (28%)
3	PSU	L3	2632	3	18,21,22	1.08	1 (5%)	21,30,33	1.88	5 (23%)
3	OMC	L3	2824	3	19,22,23	0.53	0	25,31,34	0.67	0
3	A2M	L3	2363	3,55	18,25,26	1.29	2 (11%)	20,36,39	1.29	1 (5%)
3	OMG	L3	4618	3	19,26,27	1.18	2 (10%)	21,38,41	0.90	1 (4%)
3	A2M	L3	2401	3	18,25,26	1.29	3 (16%)	20,36,39	1.41	2 (10%)
3	PSU	L3	4471	3	18,21,22	1.14	1 (5%)	21,30,33	1.92	5 (23%)
3	PSU	L3	3853	3	18,21,22	1.06	1 (5%)	21,30,33	1.81	4 (19%)
3	OMG	L3	2364	3	19,26,27	1.17	2 (10%)	21,38,41	0.85	1 (4%)
3	PSU	L3	1683	3	18,21,22	1.08	1 (5%)	21,30,33	1.91	4 (19%)
3	OMG	L3	1316	3	19,26,27	1.18	2 (10%)	21,38,41	0.84	1 (4%)
3	PSU	L3	4457	3	18,21,22	1.12	1 (5%)	21,30,33	1.95	5 (23%)
3	OMG	L3	2424	3	19,26,27	1.21	2 (10%)	21,38,41	0.77	1 (4%)
3	OMG	L3	1522	3	19,26,27	1.20	3 (15%)	21,38,41	0.83	1 (4%)
3	OMU	L3	2415	3	19,22,23	2.03	6 (31%)	25,31,34	1.82	5 (20%)
3	PSU	L3	4532	3	18,21,22	1.09	1 (5%)	21,30,33	2.00	5 (23%)
3	A2M	L3	3867	3	18,25,26	1.23	2 (11%)	20,36,39	1.36	1 (5%)
3	OMC	L3	1340	3	19,22,23	0.59	0	25,31,34	0.79	0
3	PSU	L3	3715	3	18,21,22	1.13	1 (5%)	21,30,33	1.94	6 (28%)
3	PSU	L3	4673	3	18,21,22	1.09	1 (5%)	21,30,33	1.92	4 (19%)
3	PSU	L3	4493	3	18,21,22	1.07	1 (5%)	21,30,33	1.94	5 (23%)
3	OMU	L3	3925	3	19,22,23	2.03	6 (31%)	25,31,34	1.82	5 (20%)
3	PSU	L3	1792	3	18,21,22	1.09	1 (5%)	21,30,33	1.93	6 (28%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	OMC	L3	2365	3	19,22,23	0.54	0	25,31,34	0.69	0
23	HIC	LN	245	23	8,11,12	1.64	2 (25%)	5,14,16	0.99	0
3	OMC	L3	2861	3	19,22,23	0.52	0	25,31,34	0.68	0
3	OMG	L3	4637	3	19,26,27	1.15	2 (10%)	21,38,41	0.85	1 (4%)
3	PSU	L3	4628	3	18,21,22	1.06	2 (11%)	21,30,33	1.97	6 (28%)
3	PSU	L3	4353	3	18,21,22	1.06	1 (5%)	21,30,33	1.99	6 (28%)
3	PSU	L3	1862	3	18,21,22	1.12	1 (5%)	21,30,33	1.92	5 (23%)
3	PSU	L3	4972	3	18,21,22	1.09	1 (5%)	21,30,33	1.94	5 (23%)
3	PSU	L3	3920	3,55	18,21,22	1.11	2 (11%)	21,30,33	1.89	4 (19%)
3	PSU	L3	1582	3	18,21,22	1.04	1 (5%)	21,30,33	1.93	5 (23%)
3	OMC	L3	2804	3	19,22,23	0.54	0	25,31,34	0.69	0
3	A2M	L3	4523	3	18,25,26	1.25	2 (11%)	20,36,39	1.31	2 (10%)
3	OMG	L3	3744	3	19,26,27	1.14	2 (10%)	21,38,41	0.84	1 (4%)
3	A2M	L3	1534	3,55	18,25,26	1.27	3 (16%)	20,36,39	1.39	2 (10%)
3	A2M	L3	3718	3	18,25,26	1.28	3 (16%)	20,36,39	1.24	1 (5%)
3	6MZ	L3	4220	3	17,25,26	1.19	3 (17%)	15,36,39	2.17	4 (26%)
3	PSU	L3	4296	3	18,21,22	1.05	2 (11%)	21,30,33	2.02	5 (23%)
3	PSU	L3	3637	3	18,21,22	1.06	1 (5%)	21,30,33	2.01	5 (23%)
3	A2M	L3	3830	3	18,25,26	1.25	2 (11%)	20,36,39	1.32	2 (10%)
3	A2M	L3	400	3	18,25,26	1.26	2 (11%)	20,36,39	1.36	2 (10%)
3	A2M	L3	2787	3	18,25,26	1.25	2 (11%)	20,36,39	1.40	2 (10%)
3	PSU	L3	4312	3	18,21,22	1.04	1 (5%)	21,30,33	1.97	4 (19%)
3	A2M	L3	1871	3	18,25,26	1.27	2 (11%)	20,36,39	1.47	1 (5%)
3	PSU	L3	4500	3	18,21,22	1.09	1 (5%)	21,30,33	1.93	6 (28%)
3	OMC	L3	3701	3	19,22,23	0.49	0	25,31,34	0.63	0
3	PSU	L3	3851	3	18,21,22	1.08	1 (5%)	21,30,33	1.93	5 (23%)

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	3730	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	1524	3	-	1/5/27/28	0/3/3/3
3	OMU	L3	4498	3	-	0/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMC	L3	3887	3	-	2/9/27/28	0/2/2/2
3	OMG	L3	4499	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	3822	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4689	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4403	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	4361	3	-	0/7/25/26	0/2/2/2
3	UR3	L3	4530	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	4521	3	-	2/7/25/26	0/2/2/2
3	A2M	L3	398	3	-	1/5/27/28	0/3/3/3
3	OMC	L3	2351	3,55	-	2/9/27/28	0/2/2/2
3	PSU	L3	4552	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	3899	3	-	1/5/27/28	0/3/3/3
3	A2M	L3	3825	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	1536	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	4536	3	-	0/9/27/28	0/2/2/2
3	OMG	L3	1625	3	-	2/5/27/28	0/3/3/3
3	OMG	L3	2876	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	3844	3	-	1/7/25/26	0/2/2/2
3	PSU	L3	4636	3	-	3/7/25/26	0/2/2/2
3	PSU	L3	3639	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4494	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	4431	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	3627	3	-	1/5/27/28	0/3/3/3
3	OMU	L3	2837	3	-	1/9/27/28	0/2/2/2
3	A2M	L3	4571	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	4579	3	-	0/7/25/26	0/2/2/2
2	OMG	L1	75	2	-	1/5/27/28	0/3/3/3
3	PSU	L3	2839	3	-	2/7/25/26	0/2/2/2
3	PSU	L3	1860	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4370	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	5001	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3724	3	-	2/5/27/28	0/3/3/3
3	OMG	L3	4228	3	-	0/5/27/28	0/3/3/3
3	OMG	L3	4623	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	4293	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	2815	3	-	1/5/27/28	0/3/3/3
3	OMC	L3	2422	3,55	-	2/9/27/28	0/2/2/2
3	OMU	L3	4620	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	3695	3	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMU	L3	4306	3	-	4/9/27/28	0/2/2/2
2	PSU	L1	55	2	-	0/7/25/26	0/2/2/2
3	A2M	L3	1326	3	-	3/5/27/28	0/3/3/3
3	OMC	L3	3841	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	4299	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3869	3	-	0/9/27/28	0/2/2/2
3	A2M	L3	4590	3	-	4/5/27/28	0/3/3/3
3	OMC	L3	4456	3	-	0/9/27/28	0/2/2/2
3	PSU	L3	3734	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	4392	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	2508	3	-	0/7/25/26	0/2/2/2
2	PSU	L1	69	2	-	0/7/25/26	0/2/2/2
3	PSU	L3	3884	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	1677	3	-	4/7/25/26	0/2/2/2
3	PSU	L3	4576	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	2632	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2824	3	-	0/9/27/28	0/2/2/2
3	A2M	L3	2363	3,55	-	0/5/27/28	0/3/3/3
3	OMG	L3	4618	3	-	2/5/27/28	0/3/3/3
3	A2M	L3	2401	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4471	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3853	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2364	3	-	1/5/27/28	0/3/3/3
3	PSU	L3	1683	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	1316	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4457	3	-	0/7/25/26	0/2/2/2
3	OMG	L3	2424	3	-	0/5/27/28	0/3/3/3
3	OMG	L3	1522	3	-	0/5/27/28	0/3/3/3
3	OMU	L3	2415	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	4532	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3867	3	-	1/5/27/28	0/3/3/3
3	OMC	L3	1340	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	3715	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	4493	3	-	0/7/25/26	0/2/2/2
3	OMU	L3	3925	3	-	1/9/27/28	0/2/2/2
3	PSU	L3	1792	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2365	3	-	0/9/27/28	0/2/2/2
23	HIC	LN	245	23	-	2/5/6/8	0/1/1/1
3	OMC	L3	2861	3	-	1/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMG	L3	4637	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	4628	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	1862	3	-	2/7/25/26	0/2/2/2
3	PSU	L3	4972	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3920	3,55	-	0/7/25/26	0/2/2/2
3	PSU	L3	1582	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	2804	3	-	0/9/27/28	0/2/2/2
3	A2M	L3	4523	3	-	2/5/27/28	0/3/3/3
3	OMG	L3	3744	3	-	1/5/27/28	0/3/3/3
3	A2M	L3	1534	3,55	-	1/5/27/28	0/3/3/3
3	A2M	L3	3718	3	-	1/5/27/28	0/3/3/3
3	6MZ	L3	4220	3	-	3/5/27/28	0/3/3/3
3	PSU	L3	4296	3	-	0/7/25/26	0/2/2/2
3	PSU	L3	3637	3	-	0/7/25/26	0/2/2/2
3	A2M	L3	3830	3	-	2/5/27/28	0/3/3/3
3	A2M	L3	400	3	-	0/5/27/28	0/3/3/3
3	A2M	L3	2787	3	-	2/5/27/28	0/3/3/3
3	PSU	L3	4312	3	-	1/7/25/26	0/2/2/2
3	A2M	L3	1871	3	-	0/5/27/28	0/3/3/3
3	PSU	L3	4500	3	-	0/7/25/26	0/2/2/2
3	OMC	L3	3701	3	-	6/9/27/28	0/2/2/2
3	PSU	L3	3851	3	-	0/7/25/26	0/2/2/2

All (184) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4498	OMU	C6-N1	4.81	1.49	1.38
3	L3	2837	OMU	C6-N1	4.72	1.49	1.38
3	L3	4620	OMU	C6-N1	4.67	1.49	1.38
3	L3	2415	OMU	C6-N1	4.67	1.49	1.38
3	L3	4306	OMU	C6-N1	4.66	1.49	1.38
3	L3	3925	OMU	C6-N1	4.64	1.49	1.38
3	L3	4227	OMU	C6-N1	4.64	1.49	1.38
3	L3	4498	OMU	C2-N1	4.39	1.45	1.38
3	L3	2837	OMU	C2-N1	4.15	1.45	1.38
3	L3	2415	OMU	C2-N1	4.13	1.44	1.38
3	L3	4498	OMU	C5-C4	4.13	1.52	1.43
3	L3	4227	OMU	C2-N1	4.10	1.44	1.38
3	L3	4306	OMU	C2-N1	4.09	1.44	1.38
3	L3	3925	OMU	C2-N1	4.08	1.44	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2837	OMU	C5-C4	4.02	1.52	1.43
3	L3	4620	OMU	C2-N1	3.98	1.44	1.38
3	L3	2415	OMU	C5-C4	3.94	1.52	1.43
3	L3	3925	OMU	C5-C4	3.93	1.52	1.43
3	L3	4227	OMU	C5-C4	3.91	1.52	1.43
3	L3	4620	OMU	C5-C4	3.86	1.52	1.43
3	L3	4306	OMU	C5-C4	3.85	1.52	1.43
3	L3	3822	PSU	C6-C5	3.80	1.39	1.35
3	L3	3695	PSU	C6-C5	3.71	1.39	1.35
3	L3	1871	A2M	O4'-C1'	3.69	1.45	1.40
3	L3	3715	PSU	C6-C5	3.69	1.39	1.35
3	L3	4471	PSU	C6-C5	3.65	1.39	1.35
3	L3	3730	PSU	C6-C5	3.62	1.39	1.35
3	L3	4431	PSU	C6-C5	3.62	1.39	1.35
3	L3	4457	PSU	C6-C5	3.61	1.39	1.35
3	L3	1862	PSU	C6-C5	3.60	1.39	1.35
3	L3	3734	PSU	C6-C5	3.59	1.39	1.35
23	LN	245	HIC	CD2-CG	3.54	1.41	1.36
3	L3	5001	PSU	C6-C5	3.54	1.39	1.35
3	L3	4576	PSU	C6-C5	3.52	1.39	1.35
2	L1	69	PSU	C6-C5	3.52	1.39	1.35
3	L3	4500	PSU	C6-C5	3.51	1.39	1.35
3	L3	4636	PSU	C6-C5	3.51	1.39	1.35
3	L3	4532	PSU	C6-C5	3.50	1.39	1.35
3	L3	3724	A2M	O4'-C1'	3.50	1.45	1.40
3	L3	3844	PSU	C6-C5	3.49	1.39	1.35
3	L3	1860	PSU	C6-C5	3.47	1.39	1.35
3	L3	1792	PSU	C6-C5	3.46	1.39	1.35
3	L3	2401	A2M	O4'-C1'	3.46	1.45	1.40
3	L3	4673	PSU	C6-C5	3.46	1.39	1.35
3	L3	4521	PSU	C6-C5	3.45	1.39	1.35
3	L3	4403	PSU	C6-C5	3.44	1.39	1.35
3	L3	3853	PSU	C6-C5	3.44	1.39	1.35
3	L3	1326	A2M	O4'-C1'	3.44	1.45	1.40
3	L3	3825	A2M	O4'-C1'	3.43	1.45	1.40
3	L3	3920	PSU	C6-C5	3.43	1.39	1.35
3	L3	4571	A2M	O4'-C1'	3.43	1.45	1.40
3	L3	2815	A2M	O4'-C1'	3.42	1.45	1.40
3	L3	4361	PSU	C6-C5	3.42	1.39	1.35
3	L3	398	A2M	O4'-C1'	3.41	1.45	1.40
3	L3	2632	PSU	C6-C5	3.41	1.39	1.35
3	L3	3851	PSU	C6-C5	3.41	1.39	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4972	PSU	C6-C5	3.41	1.39	1.35
3	L3	3830	A2M	O4'-C1'	3.41	1.45	1.40
3	L3	2508	PSU	C6-C5	3.39	1.39	1.35
3	L3	2839	PSU	C6-C5	3.38	1.39	1.35
3	L3	400	A2M	O4'-C1'	3.38	1.45	1.40
3	L3	4353	PSU	C6-C5	3.37	1.39	1.35
3	L3	4493	PSU	C6-C5	3.37	1.39	1.35
3	L3	4552	PSU	C6-C5	3.36	1.39	1.35
3	L3	3639	PSU	C6-C5	3.34	1.39	1.35
3	L3	3637	PSU	C6-C5	3.33	1.39	1.35
3	L3	2363	A2M	O4'-C1'	3.33	1.45	1.40
3	L3	3884	PSU	C6-C5	3.33	1.39	1.35
3	L3	1683	PSU	C6-C5	3.33	1.39	1.35
3	L3	5010	PSU	C6-C5	3.33	1.39	1.35
3	L3	4689	PSU	C6-C5	3.32	1.39	1.35
3	L3	4523	A2M	O4'-C1'	3.30	1.45	1.40
3	L3	1536	PSU	C6-C5	3.30	1.38	1.35
3	L3	4579	PSU	C6-C5	3.29	1.38	1.35
2	L1	55	PSU	C6-C5	3.29	1.38	1.35
3	L3	1582	PSU	C6-C5	3.27	1.38	1.35
3	L3	4312	PSU	C6-C5	3.26	1.38	1.35
3	L3	3718	A2M	O4'-C1'	3.25	1.45	1.40
3	L3	1534	A2M	O4'-C1'	3.25	1.45	1.40
3	L3	4628	PSU	C6-C5	3.24	1.38	1.35
3	L3	1677	PSU	C6-C5	3.19	1.38	1.35
3	L3	4293	PSU	C6-C5	3.17	1.38	1.35
3	L3	4590	A2M	O4'-C1'	3.16	1.45	1.40
3	L3	4296	PSU	C6-C5	3.16	1.38	1.35
3	L3	2787	A2M	O4'-C1'	3.11	1.45	1.40
3	L3	1524	A2M	O4'-C1'	3.10	1.45	1.40
3	L3	3867	A2M	O4'-C1'	3.10	1.45	1.40
3	L3	2424	OMG	C8-N7	-3.09	1.30	1.34
3	L3	4618	OMG	C8-N7	-3.07	1.30	1.34
3	L3	4228	OMG	C8-N7	-3.05	1.30	1.34
3	L3	2876	OMG	C8-N7	-3.05	1.30	1.34
3	L3	4392	OMG	C8-N7	-3.05	1.30	1.34
3	L3	4299	PSU	C6-C5	3.03	1.38	1.35
2	L1	75	OMG	C8-N7	-3.02	1.30	1.34
3	L3	3899	OMG	C8-N7	-3.02	1.30	1.34
3	L3	4494	OMG	C8-N7	-3.00	1.30	1.34
3	L3	1316	OMG	C8-N7	-3.00	1.30	1.34
3	L3	1522	OMG	C8-N7	-2.99	1.30	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2364	OMG	C8-N7	-2.97	1.30	1.34
3	L3	1625	OMG	C8-N7	-2.96	1.30	1.34
3	L3	4306	OMU	O4-C4	-2.95	1.18	1.24
3	L3	4530	UR3	C2-N1	-2.95	1.34	1.38
3	L3	4370	OMG	C8-N7	-2.94	1.30	1.34
3	L3	4220	6MZ	C6-C5	-2.90	1.40	1.44
3	L3	4637	OMG	C8-N7	-2.89	1.30	1.34
3	L3	3925	OMU	O4-C4	-2.85	1.18	1.24
3	L3	3627	OMG	C8-N7	-2.85	1.30	1.34
3	L3	4623	OMG	C8-N7	-2.85	1.30	1.34
3	L3	4530	UR3	C4-N3	-2.84	1.34	1.40
3	L3	4620	OMU	O4-C4	-2.83	1.19	1.24
3	L3	3744	OMG	C8-N7	-2.82	1.30	1.34
3	L3	4499	OMG	C8-N7	-2.82	1.30	1.34
3	L3	4228	OMG	C5-C6	-2.79	1.41	1.47
3	L3	4227	OMU	O4-C4	-2.78	1.19	1.24
3	L3	2415	OMU	O4-C4	-2.77	1.19	1.24
3	L3	2837	OMU	O4-C4	-2.76	1.19	1.24
3	L3	2424	OMG	C5-C6	-2.70	1.42	1.47
3	L3	4498	OMU	O4-C4	-2.67	1.19	1.24
3	L3	4498	OMU	C2-N3	2.66	1.42	1.38
3	L3	4392	OMG	C5-C6	-2.62	1.42	1.47
3	L3	4370	OMG	C5-C6	-2.61	1.42	1.47
3	L3	1522	OMG	C5-C6	-2.61	1.42	1.47
3	L3	4494	OMG	C5-C6	-2.60	1.42	1.47
3	L3	3627	OMG	C5-C6	-2.58	1.42	1.47
3	L3	2363	A2M	C8-N7	-2.57	1.30	1.34
3	L3	1316	OMG	C5-C6	-2.56	1.42	1.47
3	L3	2837	OMU	C2-N3	2.54	1.42	1.38
3	L3	3899	OMG	C5-C6	-2.53	1.42	1.47
3	L3	2364	OMG	C5-C6	-2.52	1.42	1.47
3	L3	2787	A2M	C8-N7	-2.51	1.30	1.34
3	L3	4220	6MZ	C8-N7	-2.50	1.30	1.34
3	L3	4623	OMG	C5-C6	-2.49	1.42	1.47
3	L3	4637	OMG	C5-C6	-2.49	1.42	1.47
2	L1	75	OMG	C5-C6	-2.49	1.42	1.47
3	L3	4618	OMG	C5-C6	-2.48	1.42	1.47
3	L3	3744	OMG	C5-C6	-2.48	1.42	1.47
3	L3	1625	OMG	C5-C6	-2.45	1.42	1.47
3	L3	4306	OMU	O2-C2	-2.45	1.18	1.23
3	L3	3925	OMU	C2-N3	2.45	1.42	1.38
3	L3	1534	A2M	C8-N7	-2.44	1.30	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	2815	A2M	C8-N7	-2.44	1.30	1.34
3	L3	3718	A2M	C8-N7	-2.42	1.30	1.34
3	L3	2876	OMG	C5-C6	-2.41	1.42	1.47
3	L3	4499	OMG	C5-C6	-2.40	1.42	1.47
3	L3	2415	OMU	C2-N3	2.40	1.42	1.38
3	L3	4590	A2M	C8-N7	-2.40	1.30	1.34
3	L3	4227	OMU	C2-N3	2.39	1.42	1.38
3	L3	4571	A2M	C8-N7	-2.39	1.30	1.34
3	L3	400	A2M	C8-N7	-2.38	1.30	1.34
3	L3	4523	A2M	C8-N7	-2.38	1.30	1.34
3	L3	398	A2M	C8-N7	-2.38	1.30	1.34
3	L3	2401	A2M	C8-N7	-2.38	1.30	1.34
3	L3	4227	OMU	O2-C2	-2.37	1.18	1.23
3	L3	1524	A2M	C8-N7	-2.37	1.30	1.34
3	L3	3724	A2M	C8-N7	-2.37	1.30	1.34
3	L3	3825	A2M	C8-N7	-2.37	1.30	1.34
3	L3	3867	A2M	C8-N7	-2.36	1.30	1.34
3	L3	2415	OMU	O2-C2	-2.36	1.18	1.23
3	L3	3830	A2M	C8-N7	-2.33	1.30	1.34
3	L3	1326	A2M	C8-N7	-2.31	1.30	1.34
3	L3	1871	A2M	C8-N7	-2.29	1.30	1.34
3	L3	4306	OMU	C2-N3	2.28	1.41	1.38
3	L3	3925	OMU	O2-C2	-2.27	1.19	1.23
3	L3	4620	OMU	O2-C2	-2.25	1.19	1.23
3	L3	2837	OMU	O2-C2	-2.22	1.19	1.23
3	L3	4530	UR3	C2-N3	-2.17	1.34	1.39
3	L3	4370	OMG	C5-C4	-2.14	1.37	1.43
3	L3	4498	OMU	C4-N3	2.13	1.42	1.38
3	L3	3718	A2M	C4-N3	-2.10	1.32	1.35
3	L3	4498	OMU	O2-C2	-2.08	1.19	1.23
3	L3	2837	OMU	C4-N3	2.07	1.42	1.38
3	L3	4620	OMU	C2-N3	2.07	1.41	1.38
3	L3	3920	PSU	C4-C5	-2.05	1.38	1.44
3	L3	4228	OMG	C5-C4	-2.05	1.38	1.43
3	L3	4628	PSU	C4-C5	-2.05	1.38	1.44
3	L3	4220	6MZ	C4-N3	-2.04	1.32	1.35
3	L3	4590	A2M	C4-N3	-2.02	1.32	1.35
3	L3	1534	A2M	C4-N3	-2.02	1.32	1.35
3	L3	1326	A2M	C4-N3	-2.02	1.32	1.35
3	L3	2401	A2M	C4-N3	-2.02	1.32	1.35
23	LN	245	HIC	CZ-NE2	-2.01	1.42	1.48
3	L3	1522	OMG	C5-C4	-2.01	1.38	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L3	4296	PSU	C4-C5	-2.01	1.38	1.44
3	L3	4299	PSU	C4-C5	-2.00	1.38	1.44

All (323) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4220	6MZ	C2-N1-C6	5.73	121.05	116.60
3	L3	2837	OMU	C4-N3-C2	-5.50	119.78	126.61
3	L3	4498	OMU	C4-N3-C2	-5.45	119.84	126.61
3	L3	3925	OMU	C4-N3-C2	-5.40	119.91	126.61
3	L3	4227	OMU	C4-N3-C2	-5.37	119.95	126.61
3	L3	4530	UR3	C4-N3-C2	-5.34	120.28	124.58
3	L3	4306	OMU	C4-N3-C2	-5.33	120.00	126.61
3	L3	2415	OMU	C4-N3-C2	-5.33	120.00	126.61
3	L3	4296	PSU	C4-N3-C2	-5.11	119.34	126.37
3	L3	3637	PSU	N1-C2-N3	5.08	120.53	115.17
3	L3	4590	A2M	N3-C2-N1	-5.07	121.78	128.67
3	L3	4299	PSU	C4-N3-C2	-5.07	119.39	126.37
3	L3	4299	PSU	N1-C2-N3	5.06	120.50	115.17
3	L3	4689	PSU	N1-C2-N3	5.05	120.49	115.17
3	L3	4636	PSU	C4-N3-C2	-5.04	119.43	126.37
3	L3	1582	PSU	C4-N3-C2	-5.02	119.46	126.37
3	L3	3637	PSU	C4-N3-C2	-5.01	119.47	126.37
3	L3	4353	PSU	N1-C2-N3	4.98	120.42	115.17
3	L3	4532	PSU	C4-N3-C2	-4.98	119.51	126.37
3	L3	4312	PSU	N1-C2-N3	4.98	120.42	115.17
3	L3	2508	PSU	C4-N3-C2	-4.97	119.52	126.37
3	L3	4532	PSU	N1-C2-N3	4.97	120.41	115.17
3	L3	4312	PSU	C4-N3-C2	-4.97	119.53	126.37
3	L3	4636	PSU	N1-C2-N3	4.97	120.41	115.17
3	L3	4296	PSU	N1-C2-N3	4.96	120.40	115.17
3	L3	4431	PSU	C4-N3-C2	-4.94	119.57	126.37
3	L3	4403	PSU	C4-N3-C2	-4.94	119.57	126.37
3	L3	4576	PSU	N1-C2-N3	4.93	120.37	115.17
3	L3	4457	PSU	N1-C2-N3	4.93	120.36	115.17
3	L3	4353	PSU	C4-N3-C2	-4.92	119.60	126.37
3	L3	4689	PSU	C4-N3-C2	-4.91	119.60	126.37
3	L3	5010	PSU	C4-N3-C2	-4.89	119.63	126.37
3	L3	2508	PSU	N1-C2-N3	4.88	120.32	115.17
3	L3	4628	PSU	N1-C2-N3	4.88	120.31	115.17
3	L3	5001	PSU	N1-C2-N3	4.88	120.31	115.17
3	L3	2632	PSU	C4-N3-C2	-4.88	119.66	126.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4493	PSU	N1-C2-N3	4.87	120.30	115.17
3	L3	5010	PSU	N1-C2-N3	4.86	120.29	115.17
3	L3	3844	PSU	N1-C2-N3	4.86	120.29	115.17
3	L3	4403	PSU	N1-C2-N3	4.85	120.29	115.17
3	L3	3844	PSU	C4-N3-C2	-4.85	119.69	126.37
3	L3	3639	PSU	N1-C2-N3	4.85	120.28	115.17
2	L1	55	PSU	C4-N3-C2	-4.85	119.70	126.37
3	L3	4552	PSU	C4-N3-C2	-4.84	119.70	126.37
3	L3	1683	PSU	C4-N3-C2	-4.84	119.71	126.37
3	L3	4673	PSU	C4-N3-C2	-4.84	119.71	126.37
3	L3	4493	PSU	C4-N3-C2	-4.83	119.72	126.37
3	L3	4471	PSU	N1-C2-N3	4.83	120.26	115.17
3	L3	4972	PSU	N1-C2-N3	4.82	120.26	115.17
3	L3	1677	PSU	C4-N3-C2	-4.82	119.73	126.37
3	L3	3730	PSU	N1-C2-N3	4.82	120.25	115.17
3	L3	4457	PSU	C4-N3-C2	-4.82	119.74	126.37
3	L3	3734	PSU	N1-C2-N3	4.82	120.25	115.17
3	L3	3730	PSU	C4-N3-C2	-4.81	119.74	126.37
3	L3	2839	PSU	N1-C2-N3	4.81	120.24	115.17
3	L3	3715	PSU	C4-N3-C2	-4.81	119.74	126.37
3	L3	3695	PSU	N1-C2-N3	4.81	120.24	115.17
3	L3	3695	PSU	C4-N3-C2	-4.80	119.75	126.37
3	L3	3822	PSU	N1-C2-N3	4.80	120.23	115.17
3	L3	3715	PSU	N1-C2-N3	4.80	120.23	115.17
3	L3	4620	OMU	C4-N3-C2	-4.80	120.65	126.61
3	L3	3851	PSU	N1-C2-N3	4.79	120.22	115.17
3	L3	3851	PSU	C4-N3-C2	-4.79	119.77	126.37
3	L3	1792	PSU	N1-C2-N3	4.79	120.22	115.17
3	L3	4521	PSU	C4-N3-C2	-4.79	119.78	126.37
3	L3	4576	PSU	C4-N3-C2	-4.79	119.78	126.37
3	L3	4972	PSU	C4-N3-C2	-4.78	119.78	126.37
3	L3	4521	PSU	N1-C2-N3	4.78	120.21	115.17
3	L3	4471	PSU	C4-N3-C2	-4.78	119.79	126.37
3	L3	400	A2M	N3-C2-N1	-4.78	122.19	128.67
3	L3	1792	PSU	C4-N3-C2	-4.78	119.79	126.37
3	L3	3639	PSU	C4-N3-C2	-4.77	119.79	126.37
3	L3	1860	PSU	C4-N3-C2	-4.77	119.80	126.37
3	L3	1860	PSU	N1-C2-N3	4.77	120.20	115.17
3	L3	4431	PSU	N1-C2-N3	4.77	120.20	115.17
2	L1	69	PSU	C4-N3-C2	-4.77	119.80	126.37
3	L3	1536	PSU	C4-N3-C2	-4.77	119.80	126.37
3	L3	4500	PSU	C4-N3-C2	-4.77	119.80	126.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4361	PSU	N1-C2-N3	4.77	120.20	115.17
2	L1	69	PSU	N1-C2-N3	4.76	120.19	115.17
3	L3	3724	A2M	N3-C2-N1	-4.75	122.22	128.67
3	L3	4673	PSU	N1-C2-N3	4.75	120.18	115.17
3	L3	1862	PSU	N1-C2-N3	4.75	120.18	115.17
3	L3	3822	PSU	C4-N3-C2	-4.75	119.83	126.37
3	L3	4500	PSU	N1-C2-N3	4.75	120.17	115.17
3	L3	3920	PSU	C4-N3-C2	-4.74	119.84	126.37
3	L3	4552	PSU	N1-C2-N3	4.74	120.17	115.17
3	L3	3734	PSU	C4-N3-C2	-4.74	119.84	126.37
3	L3	5001	PSU	C4-N3-C2	-4.74	119.84	126.37
3	L3	1862	PSU	C4-N3-C2	-4.74	119.85	126.37
3	L3	4628	PSU	C4-N3-C2	-4.73	119.86	126.37
3	L3	1683	PSU	N1-C2-N3	4.72	120.15	115.17
3	L3	1582	PSU	N1-C2-N3	4.72	120.14	115.17
3	L3	398	A2M	N3-C2-N1	-4.71	122.27	128.67
3	L3	4361	PSU	C4-N3-C2	-4.71	119.88	126.37
3	L3	4579	PSU	N1-C2-N3	4.70	120.12	115.17
3	L3	2363	A2M	N3-C2-N1	-4.69	122.30	128.67
2	L1	55	PSU	N1-C2-N3	4.68	120.11	115.17
3	L3	1524	A2M	N3-C2-N1	-4.68	122.32	128.67
3	L3	3825	A2M	N3-C2-N1	-4.68	122.32	128.67
3	L3	1536	PSU	N1-C2-N3	4.68	120.10	115.17
3	L3	2401	A2M	N3-C2-N1	-4.67	122.33	128.67
3	L3	3830	A2M	N3-C2-N1	-4.67	122.33	128.67
3	L3	4523	A2M	N3-C2-N1	-4.67	122.34	128.67
3	L3	4579	PSU	C4-N3-C2	-4.67	119.94	126.37
3	L3	3884	PSU	N1-C2-N3	4.66	120.08	115.17
3	L3	2839	PSU	C4-N3-C2	-4.66	119.96	126.37
3	L3	1871	A2M	N3-C2-N1	-4.65	122.36	128.67
3	L3	1326	A2M	N3-C2-N1	-4.65	122.36	128.67
3	L3	3867	A2M	N3-C2-N1	-4.63	122.38	128.67
3	L3	1677	PSU	N1-C2-N3	4.63	120.05	115.17
3	L3	3920	PSU	N1-C2-N3	4.63	120.05	115.17
3	L3	2632	PSU	N1-C2-N3	4.62	120.04	115.17
3	L3	2815	A2M	N3-C2-N1	-4.60	122.42	128.67
3	L3	3884	PSU	C4-N3-C2	-4.57	120.07	126.37
3	L3	4571	A2M	N3-C2-N1	-4.57	122.46	128.67
3	L3	1534	A2M	N3-C2-N1	-4.57	122.47	128.67
3	L3	2787	A2M	N3-C2-N1	-4.56	122.49	128.67
3	L3	4220	6MZ	N3-C2-N1	-4.55	122.49	128.67
3	L3	3853	PSU	C4-N3-C2	-4.54	120.12	126.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4293	PSU	N1-C2-N3	4.52	119.93	115.17
3	L3	3853	PSU	N1-C2-N3	4.51	119.93	115.17
3	L3	4293	PSU	C4-N3-C2	-4.37	120.35	126.37
3	L3	3718	A2M	N3-C2-N1	-4.30	122.83	128.67
3	L3	4306	OMU	N3-C2-N1	4.27	120.45	114.89
3	L3	2837	OMU	N3-C2-N1	4.07	120.19	114.89
3	L3	2415	OMU	N3-C2-N1	4.05	120.16	114.89
3	L3	3925	OMU	N3-C2-N1	4.03	120.14	114.89
3	L3	4498	OMU	N3-C2-N1	3.98	120.08	114.89
3	L3	4227	OMU	N3-C2-N1	3.91	119.98	114.89
3	L3	4227	OMU	C5-C4-N3	3.85	120.20	114.80
3	L3	3925	OMU	C5-C4-N3	3.79	120.10	114.80
3	L3	4498	OMU	C5-C4-N3	3.76	120.06	114.80
3	L3	2837	OMU	C5-C4-N3	3.73	120.03	114.80
3	L3	2415	OMU	C5-C4-N3	3.70	119.98	114.80
3	L3	4620	OMU	N3-C2-N1	3.66	119.66	114.89
3	L3	4620	OMU	C5-C4-N3	3.65	119.92	114.80
3	L3	4306	OMU	C5-C4-N3	3.60	119.84	114.80
3	L3	4530	UR3	C5-C4-N3	3.33	119.43	115.04
3	L3	4220	6MZ	C9-N6-C6	-3.12	119.96	122.85
3	L3	3734	PSU	O2-C2-N1	-3.11	119.58	122.79
3	L3	4296	PSU	O2-C2-N1	-3.05	119.65	122.79
3	L3	2837	OMU	O4-C4-C5	-3.03	119.94	125.16
3	L3	3925	OMU	O4-C4-C5	-3.03	119.94	125.16
3	L3	4227	OMU	O4-C4-C5	-3.00	119.99	125.16
3	L3	3844	PSU	O2-C2-N1	-2.98	119.71	122.79
3	L3	4628	PSU	O2-C2-N1	-2.98	119.71	122.79
2	L1	69	PSU	O2-C2-N1	-2.97	119.72	122.79
3	L3	3730	PSU	O2-C2-N1	-2.95	119.75	122.79
3	L3	4500	PSU	O2-C2-N1	-2.95	119.75	122.79
3	L3	2415	OMU	O4-C4-C5	-2.94	120.09	125.16
3	L3	1524	A2M	C4'-O4'-C1'	-2.92	107.25	109.92
3	L3	4498	OMU	O4-C4-C5	-2.92	120.13	125.16
3	L3	4532	PSU	O2-C2-N1	-2.91	119.79	122.79
3	L3	1677	PSU	O2-C2-N1	-2.89	119.80	122.79
3	L3	2839	PSU	O2-C2-N1	-2.89	119.80	122.79
3	L3	1536	PSU	O2-C2-N1	-2.88	119.82	122.79
3	L3	3639	PSU	O2-C2-N1	-2.88	119.82	122.79
3	L3	3695	PSU	O2-C2-N1	-2.87	119.83	122.79
3	L3	5001	PSU	O2-C2-N1	-2.87	119.83	122.79
3	L3	3853	PSU	O2-C2-N1	-2.86	119.84	122.79
3	L3	4579	PSU	O2-C2-N1	-2.85	119.84	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	3822	PSU	O2-C2-N1	-2.85	119.85	122.79
3	L3	4312	PSU	O2-C2-N1	-2.85	119.85	122.79
3	L3	2508	PSU	O2-C2-N1	-2.84	119.86	122.79
3	L3	5010	PSU	O2-C2-N1	-2.84	119.86	122.79
3	L3	4299	PSU	O2-C2-N1	-2.84	119.86	122.79
3	L3	4576	PSU	O2-C2-N1	-2.84	119.86	122.79
3	L3	3884	PSU	C6-N1-C2	-2.82	120.07	122.69
3	L3	4972	PSU	O2-C2-N1	-2.82	119.88	122.79
3	L3	4628	PSU	C6-N1-C2	-2.82	120.08	122.69
3	L3	4620	OMU	O4-C4-C5	-2.82	120.30	125.16
3	L3	4689	PSU	C6-N1-C2	-2.82	120.08	122.69
3	L3	1862	PSU	O2-C2-N1	-2.82	119.88	122.79
3	L3	3884	PSU	O2-C2-N1	-2.82	119.88	122.79
3	L3	1860	PSU	O2-C2-N1	-2.81	119.89	122.79
3	L3	4689	PSU	O2-C2-N1	-2.81	119.89	122.79
2	L1	55	PSU	O2-C2-N1	-2.80	119.90	122.79
3	L3	4431	PSU	O2-C2-N1	-2.79	119.91	122.79
3	L3	3715	PSU	O2-C2-N1	-2.79	119.91	122.79
3	L3	4457	PSU	O2-C2-N1	-2.79	119.91	122.79
3	L3	4579	PSU	C6-N1-C2	-2.79	120.10	122.69
3	L3	4636	PSU	O2-C2-N1	-2.78	119.92	122.79
3	L3	3851	PSU	O2-C2-N1	-2.78	119.93	122.79
3	L3	1792	PSU	O2-C2-N1	-2.77	119.93	122.79
3	L3	1683	PSU	O2-C2-N1	-2.77	119.93	122.79
3	L3	4306	OMU	O4-C4-C5	-2.77	120.39	125.16
3	L3	4293	PSU	C6-N1-C2	-2.76	120.13	122.69
3	L3	4353	PSU	O2-C2-N1	-2.74	119.96	122.79
3	L3	5001	PSU	C6-N1-C2	-2.74	120.15	122.69
3	L3	3637	PSU	C6-C5-C4	2.72	120.01	118.17
3	L3	4521	PSU	O2-C2-N1	-2.72	119.98	122.79
3	L3	3734	PSU	C6-N1-C2	-2.69	120.20	122.69
3	L3	4403	PSU	O2-C2-N1	-2.67	120.03	122.79
3	L3	2839	PSU	C6-N1-C2	-2.66	120.22	122.69
3	L3	4457	PSU	C6-N1-C2	-2.65	120.23	122.69
3	L3	1582	PSU	O2-C2-N1	-2.65	120.06	122.79
3	L3	4471	PSU	O2-C2-N1	-2.64	120.06	122.79
3	L3	4576	PSU	C6-N1-C2	-2.64	120.24	122.69
3	L3	3639	PSU	C6-N1-C2	-2.58	120.29	122.69
3	L3	3730	PSU	C6-N1-C2	-2.58	120.30	122.69
3	L3	1860	PSU	C6-N1-C2	-2.58	120.30	122.69
3	L3	4618	OMG	O6-C6-C5	2.58	129.43	124.32
3	L3	3920	PSU	O2-C2-N1	-2.58	120.13	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	4972	PSU	C6-N1-C2	-2.57	120.31	122.69
3	L3	4493	PSU	O2-C2-N1	-2.56	120.15	122.79
3	L3	4312	PSU	C6-N1-C2	-2.56	120.32	122.69
3	L3	2632	PSU	O2-C2-N1	-2.55	120.16	122.79
3	L3	4673	PSU	O2-C2-N1	-2.55	120.16	122.79
3	L3	4493	PSU	C6-N1-C2	-2.53	120.34	122.69
3	L3	3844	PSU	C6-N1-C2	-2.53	120.35	122.69
2	L1	69	PSU	C6-N1-C2	-2.52	120.35	122.69
3	L3	4361	PSU	C6-N1-C2	-2.52	120.35	122.69
3	L3	4552	PSU	O2-C2-N1	-2.51	120.20	122.79
3	L3	4500	PSU	C6-N1-C2	-2.50	120.37	122.69
3	L3	4370	OMG	O6-C6-C5	2.50	129.27	124.32
3	L3	4494	OMG	O6-C6-C5	2.50	129.27	124.32
3	L3	5010	PSU	C6-N1-C2	-2.49	120.38	122.69
3	L3	4471	PSU	C6-N1-C2	-2.49	120.38	122.69
3	L3	4636	PSU	C6-C5-C4	2.49	119.85	118.17
3	L3	4431	PSU	C6-C5-C4	2.48	119.85	118.17
3	L3	1862	PSU	C6-N1-C2	-2.48	120.39	122.69
3	L3	1792	PSU	C6-N1-C2	-2.48	120.39	122.69
3	L3	4673	PSU	C6-N1-C2	-2.47	120.40	122.69
3	L3	3851	PSU	C6-N1-C2	-2.47	120.40	122.69
3	L3	4299	PSU	C6-N1-C2	-2.47	120.40	122.69
3	L3	3744	OMG	O6-C6-C5	2.46	129.19	124.32
3	L3	4361	PSU	O2-C2-N1	-2.46	120.25	122.79
3	L3	4521	PSU	C6-N1-C2	-2.45	120.42	122.69
3	L3	4532	PSU	C6-N1-C2	-2.45	120.42	122.69
3	L3	3695	PSU	C6-N1-C2	-2.44	120.43	122.69
3	L3	1536	PSU	C6-N1-C2	-2.43	120.43	122.69
3	L3	1316	OMG	O6-C6-C5	2.43	129.13	124.32
3	L3	4623	OMG	O6-C6-C5	2.42	129.12	124.32
3	L3	3822	PSU	C6-N1-C2	-2.41	120.45	122.69
3	L3	4353	PSU	C6-N1-C2	-2.41	120.45	122.69
3	L3	4296	PSU	C6-N1-C2	-2.41	120.46	122.69
3	L3	4532	PSU	C6-C5-C4	2.40	119.80	118.17
3	L3	3853	PSU	C6-N1-C2	-2.39	120.47	122.69
3	L3	4552	PSU	C6-N1-C2	-2.39	120.47	122.69
3	L3	3715	PSU	C6-N1-C2	-2.39	120.47	122.69
3	L3	3637	PSU	C6-N1-C2	-2.39	120.47	122.69
3	L3	3920	PSU	C6-N1-C2	-2.39	120.47	122.69
3	L3	2508	PSU	C6-N1-C2	-2.38	120.48	122.69
3	L3	3695	PSU	C6-C5-C4	2.38	119.78	118.17
3	L3	4392	OMG	O6-C6-C5	2.37	129.02	124.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	1677	PSU	C6-N1-C2	-2.37	120.49	122.69
3	L3	3822	PSU	C6-C5-C4	2.36	119.77	118.17
3	L3	2351	OMC	C1'-N1-C2	2.36	123.66	118.44
3	L3	2364	OMG	O6-C6-C5	2.36	129.00	124.32
3	L3	1522	OMG	O6-C6-C5	2.36	129.00	124.32
3	L3	4293	PSU	O2-C2-N1	-2.34	120.37	122.79
3	L3	4499	OMG	O6-C6-C5	2.34	128.96	124.32
3	L3	4637	OMG	O6-C6-C5	2.33	128.95	124.32
3	L3	4403	PSU	C6-N1-C2	-2.33	120.53	122.69
2	L1	75	OMG	O6-C6-C5	2.32	128.91	124.32
3	L3	4636	PSU	C6-N1-C2	-2.31	120.54	122.69
3	L3	1683	PSU	C6-N1-C2	-2.31	120.55	122.69
2	L1	55	PSU	C6-C5-C4	2.31	119.73	118.17
3	L3	4403	PSU	C6-C5-C4	2.31	119.73	118.17
3	L3	4431	PSU	C6-N1-C2	-2.29	120.56	122.69
3	L3	4296	PSU	C6-C5-C4	2.29	119.72	118.17
3	L3	2632	PSU	C6-N1-C2	-2.29	120.57	122.69
3	L3	3899	OMG	O6-C6-C5	2.29	128.85	124.32
3	L3	2876	OMG	O6-C6-C5	2.28	128.85	124.32
2	L1	55	PSU	C6-N1-C2	-2.28	120.58	122.69
3	L3	4576	PSU	C6-C5-C4	2.28	119.71	118.17
3	L3	4353	PSU	C6-C5-C4	2.27	119.71	118.17
2	L1	69	PSU	O4'-C1'-C2'	2.27	108.30	105.15
3	L3	1625	OMG	O6-C6-C5	2.27	128.82	124.32
3	L3	4299	PSU	C6-C5-C4	2.26	119.70	118.17
3	L3	3637	PSU	O2-C2-N1	-2.26	120.46	122.79
3	L3	3627	OMG	O6-C6-C5	2.25	128.78	124.32
3	L3	4972	PSU	C6-C5-C4	2.24	119.69	118.17
3	L3	2424	OMG	O6-C6-C5	2.23	128.74	124.32
3	L3	3844	PSU	C6-C5-C4	2.21	119.67	118.17
3	L3	4228	OMG	O6-C6-C5	2.21	128.70	124.32
3	L3	1862	PSU	C6-C5-C4	2.19	119.65	118.17
3	L3	2837	OMU	O2-C2-N1	-2.19	119.94	122.80
3	L3	3639	PSU	C6-C5-C4	2.17	119.64	118.17
3	L3	3730	PSU	C6-C5-C4	2.17	119.64	118.17
3	L3	4628	PSU	C6-C5-C4	2.17	119.64	118.17
3	L3	3925	OMU	O2-C2-N1	-2.16	119.98	122.80
3	L3	5010	PSU	C6-C5-C4	2.16	119.63	118.17
3	L3	4552	PSU	C6-C5-C4	2.15	119.62	118.17
3	L3	2401	A2M	C4-C5-N7	-2.14	107.08	109.34
3	L3	1860	PSU	O4'-C1'-C2'	2.13	108.10	105.15
3	L3	4498	OMU	O2-C2-N1	-2.13	120.02	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L3	3715	PSU	O4'-C1'-C2'	2.13	108.10	105.15
3	L3	4628	PSU	O4'-C1'-C2'	2.13	108.10	105.15
3	L3	1534	A2M	C4-C5-N7	-2.12	107.10	109.34
3	L3	2815	A2M	C4-C5-N7	-2.12	107.10	109.34
3	L3	4590	A2M	O4'-C1'-N9	2.11	111.54	108.75
3	L3	4493	PSU	C6-C5-C4	2.10	119.59	118.17
3	L3	1524	A2M	C4-C5-N7	-2.10	107.12	109.34
3	L3	3851	PSU	O4'-C1'-C2'	2.09	108.05	105.15
3	L3	3734	PSU	C6-C5-C4	2.09	119.59	118.17
3	L3	1792	PSU	C6-C5-C4	2.09	119.58	118.17
3	L3	3830	A2M	C4-C5-N7	-2.09	107.13	109.34
3	L3	3715	PSU	C6-C5-C4	2.08	119.58	118.17
3	L3	4500	PSU	C6-C5-C4	2.07	119.57	118.17
3	L3	2787	A2M	C4-C5-N7	-2.07	107.15	109.34
3	L3	1326	A2M	C4-C5-N7	-2.07	107.15	109.34
3	L3	3734	PSU	O4'-C1'-C2'	2.06	108.00	105.15
3	L3	4576	PSU	O4'-C1'-C2'	2.06	108.00	105.15
3	L3	398	A2M	C4-C5-N7	-2.05	107.17	109.34
3	L3	1582	PSU	C6-C5-C4	2.05	119.55	118.17
3	L3	4521	PSU	C6-C5-C4	2.04	119.55	118.17
3	L3	4636	PSU	O4'-C1'-C2'	2.03	107.97	105.15
3	L3	4523	A2M	C4-C5-N7	-2.03	107.19	109.34
3	L3	4500	PSU	O4'-C1'-C2'	2.03	107.96	105.15
3	L3	400	A2M	C4-C5-N7	-2.02	107.20	109.34
3	L3	4590	A2M	C4-C5-N7	-2.02	107.20	109.34
3	L3	2422	OMC	C1'-N1-C2	2.02	122.90	118.44
3	L3	4353	PSU	O4'-C1'-C2'	2.02	107.94	105.15
3	L3	1792	PSU	O4'-C1'-C2'	2.02	107.94	105.15
3	L3	4457	PSU	O4'-C1'-C2'	2.02	107.94	105.15
3	L3	1582	PSU	C6-N1-C2	-2.01	120.82	122.69
3	L3	3825	A2M	C4-C5-N7	-2.01	107.21	109.34
3	L3	2632	PSU	O4'-C1'-C2'	2.01	107.93	105.15
3	L3	4220	6MZ	C4-C5-N7	-2.01	107.22	109.34
3	L3	4471	PSU	C6-C5-C4	2.01	119.53	118.17
3	L3	2415	OMU	O2-C2-N1	-2.00	120.19	122.80

There are no chirality outliers.

All (86) 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'

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Mol	Chain	Res	Type	Atoms
3	L3	1316	OMG	C1'-C2'-O2'-CM2
3	L3	1326	A2M	O4'-C4'-C5'-O5'
3	L3	1326	A2M	C1'-C2'-O2'-CM'
3	L3	1340	OMC	C1'-C2'-O2'-CM2
3	L3	2364	OMG	C1'-C2'-O2'-CM2
3	L3	2415	OMU	C1'-C2'-O2'-CM2
3	L3	2422	OMC	C1'-C2'-O2'-CM2
3	L3	2815	A2M	C1'-C2'-O2'-CM'
3	L3	2837	OMU	C1'-C2'-O2'-CM2
3	L3	2861	OMC	C1'-C2'-O2'-CM2
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	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	O4'-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	4392	OMG	C1'-C2'-O2'-CM2
3	L3	4523	A2M	O4'-C4'-C5'-O5'
3	L3	4571	A2M	C1'-C2'-O2'-CM'
3	L3	4590	A2M	O4'-C4'-C5'-O5'
3	L3	4590	A2M	C3'-C4'-C5'-O5'
3	L3	4590	A2M	C1'-C2'-O2'-CM'
3	L3	4620	OMU	C1'-C2'-O2'-CM2
3	L3	4637	OMG	O4'-C4'-C5'-O5'
3	L3	4637	OMG	C1'-C2'-O2'-CM2
23	LN	245	HIC	CA-CB-CG-ND1
23	LN	245	HIC	CA-CB-CG-CD2
3	L3	1326	A2M	C3'-C4'-C5'-O5'
3	L3	2401	A2M	C3'-C4'-C5'-O5'
3	L3	2787	A2M	C3'-C4'-C5'-O5'
3	L3	3887	OMC	C3'-C4'-C5'-O5'
3	L3	4220	6MZ	O4'-C4'-C5'-O5'
3	L3	4618	OMG	O4'-C4'-C5'-O5'
3	L3	2787	A2M	O4'-C4'-C5'-O5'
3	L3	4306	OMU	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
3	L3	4306	OMU	O4'-C4'-C5'-O5'
3	L3	4523	A2M	C3'-C4'-C5'-O5'
3	L3	4637	OMG	C3'-C4'-C5'-O5'
3	L3	4220	6MZ	C3'-C4'-C5'-O5'
3	L3	1677	PSU	C3'-C4'-C5'-O5'
3	L3	1677	PSU	O4'-C4'-C5'-O5'
3	L3	2401	A2M	O4'-C4'-C5'-O5'
3	L3	3701	OMC	O4'-C4'-C5'-O5'
3	L3	4590	A2M	C4'-C5'-O5'-P
3	L3	3701	OMC	C3'-C4'-C5'-O5'
3	L3	1625	OMG	C3'-C4'-C5'-O5'
3	L3	4618	OMG	C3'-C4'-C5'-O5'
3	L3	1862	PSU	C3'-C4'-C5'-O5'
3	L3	2876	OMG	C3'-C4'-C5'-O5'
3	L3	2876	OMG	C3'-C2'-O2'-CM2
3	L3	4220	6MZ	C4'-C5'-O5'-P
3	L3	4306	OMU	C4'-C5'-O5'-P
3	L3	1524	A2M	C3'-C2'-O2'-CM'
3	L3	2839	PSU	O4'-C1'-C5-C4
3	L3	4312	PSU	O4'-C1'-C5-C4
3	L3	4521	PSU	O4'-C1'-C5-C4
3	L3	4636	PSU	O4'-C1'-C5-C4
3	L3	3701	OMC	O4'-C1'-N1-C6
3	L3	3844	PSU	C4'-C5'-O5'-P
3	L3	3830	A2M	C3'-C2'-O2'-CM'
3	L3	4636	PSU	C4'-C5'-O5'-P
3	L3	1862	PSU	O4'-C4'-C5'-O5'
3	L3	2876	OMG	O4'-C4'-C5'-O5'
3	L3	2351	OMC	C2'-C1'-N1-C6
3	L3	1677	PSU	O4'-C1'-C5-C6
3	L3	2839	PSU	O4'-C1'-C5-C6
3	L3	4521	PSU	O4'-C1'-C5-C6
3	L3	1316	OMG	C3'-C2'-O2'-CM2
3	L3	2351	OMC	C3'-C2'-O2'-CM2
3	L3	3724	A2M	C3'-C2'-O2'-CM'
3	L3	1677	PSU	C2'-C1'-C5-C6
3	L3	1625	OMG	O4'-C4'-C5'-O5'
3	L3	3701	OMC	O4'-C1'-N1-C2
3	L3	2422	OMC	O4'-C4'-C5'-O5'
3	L3	1534	A2M	C4'-C5'-O5'-P
3	L3	4306	OMU	C2'-C1'-N1-C2
3	L3	4636	PSU	O4'-C4'-C5'-O5'

There are no ring outliers.

51 monomers are involved in 80 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	4227	OMU	2	0
3	L3	1524	A2M	1	0
3	L3	4403	PSU	1	0
3	L3	4530	UR3	2	0
3	L3	2351	OMC	3	0
3	L3	3899	OMG	1	0
3	L3	4536	OMC	1	0
3	L3	2876	OMG	2	0
3	L3	4636	PSU	1	0
3	L3	4431	PSU	2	0
3	L3	3627	OMG	1	0
3	L3	2837	OMU	1	0
3	L3	4579	PSU	1	0
2	L1	75	OMG	2	0
3	L3	2839	PSU	1	0
3	L3	1860	PSU	1	0
3	L3	4370	OMG	1	0
3	L3	5001	PSU	1	0
3	L3	3724	A2M	1	0
3	L3	4623	OMG	1	0
3	L3	2815	A2M	2	0
3	L3	2422	OMC	2	0
3	L3	4620	OMU	2	0
3	L3	4306	OMU	3	0
3	L3	1326	A2M	3	0
3	L3	3841	OMC	1	0
3	L3	3869	OMC	1	0
3	L3	3734	PSU	1	0
2	L1	69	PSU	2	0
3	L3	1677	PSU	2	0
3	L3	4576	PSU	1	0
3	L3	2632	PSU	1	0
3	L3	2363	A2M	1	0
3	L3	4618	OMG	1	0
3	L3	2364	OMG	2	0
3	L3	4457	PSU	2	0
3	L3	1522	OMG	1	0
3	L3	2415	OMU	5	0
3	L3	3867	A2M	1	0
3	L3	1340	OMC	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L3	3715	PSU	1	0
3	L3	3925	OMU	2	0
3	L3	2861	OMC	1	0
3	L3	4637	OMG	2	0
3	L3	3920	PSU	1	0
3	L3	3744	OMG	1	0
3	L3	1534	A2M	2	0
3	L3	3718	A2M	5	0
3	L3	4220	6MZ	2	0
3	L3	4312	PSU	1	0
3	L3	4500	PSU	1	0

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides 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$
57	GDP	SR	1001	58,55	25,30,30	2.66	9 (36%)	30,47,47	1.55	7 (23%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
57	GDP	SR	1001	58,55	-	0/12/32/32	0/3/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	SR	1001	GDP	O6-C6	7.28	1.40	1.23
57	SR	1001	GDP	PA-O3A	5.24	1.65	1.59
57	SR	1001	GDP	O4'-C1'	4.97	1.47	1.40
57	SR	1001	GDP	C2-N2	4.85	1.45	1.34
57	SR	1001	GDP	C1'-N9	-2.48	1.43	1.50
57	SR	1001	GDP	C5-C4	2.41	1.49	1.43
57	SR	1001	GDP	PB-O2B	-2.31	1.46	1.54
57	SR	1001	GDP	PB-O3B	-2.26	1.46	1.54
57	SR	1001	GDP	C2'-C3'	-2.04	1.47	1.53

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
57	SR	1001	GDP	C5-C6-N1	2.96	119.71	114.07
57	SR	1001	GDP	O2B-PB-O3A	2.93	114.47	104.64
57	SR	1001	GDP	C2-N1-C6	-2.90	119.80	125.11
57	SR	1001	GDP	C2'-C3'-C4'	2.73	107.89	102.61
57	SR	1001	GDP	O3B-PB-O3A	2.71	113.72	104.64
57	SR	1001	GDP	O2A-PA-O1A	-2.35	101.50	112.44
57	SR	1001	GDP	O6-C6-C5	-2.11	120.14	124.32

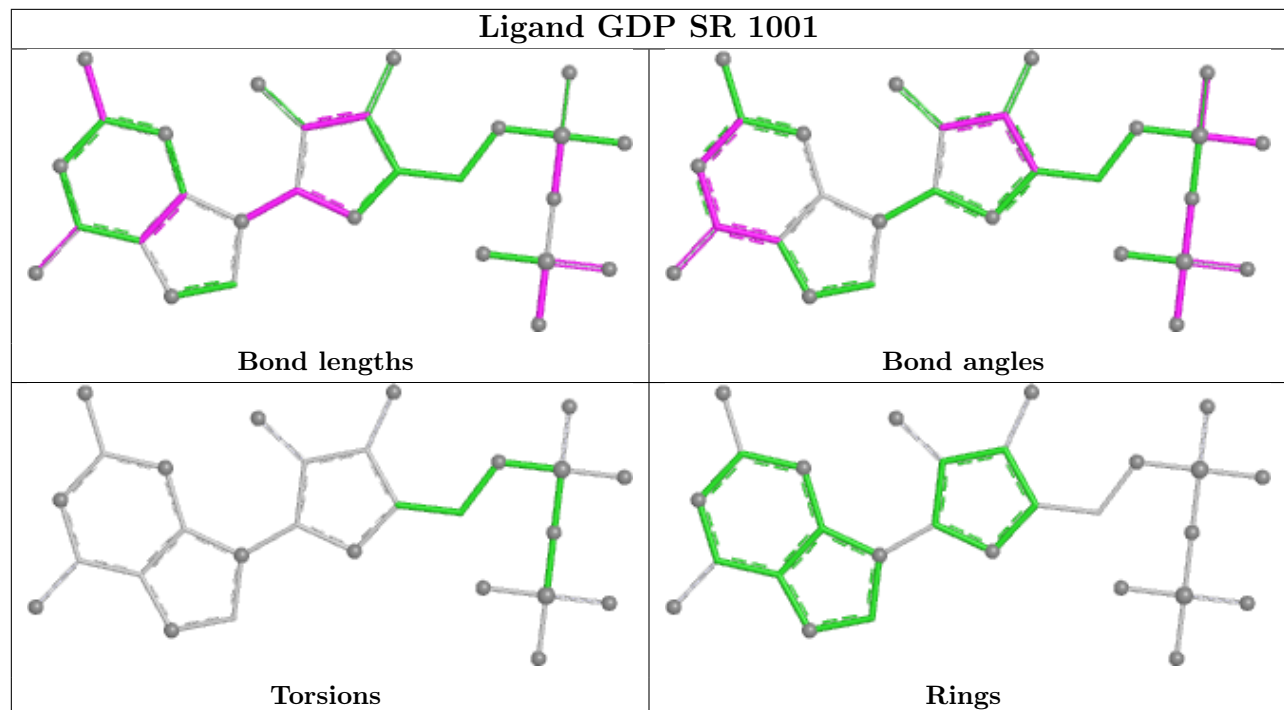
There are no chirality outliers.

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.

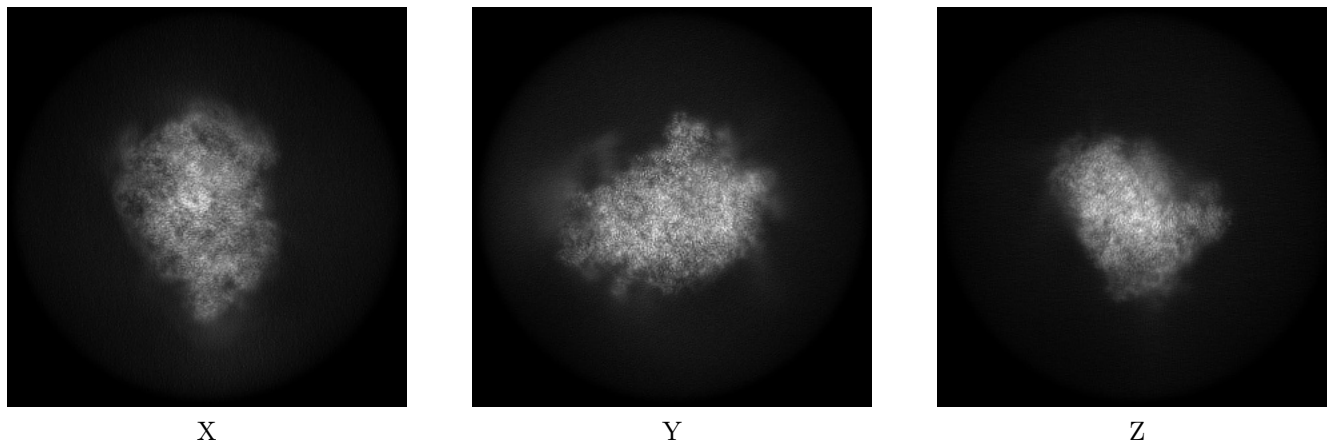
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29269. These allow visual inspection of the internal detail of the map and identification of artifacts.

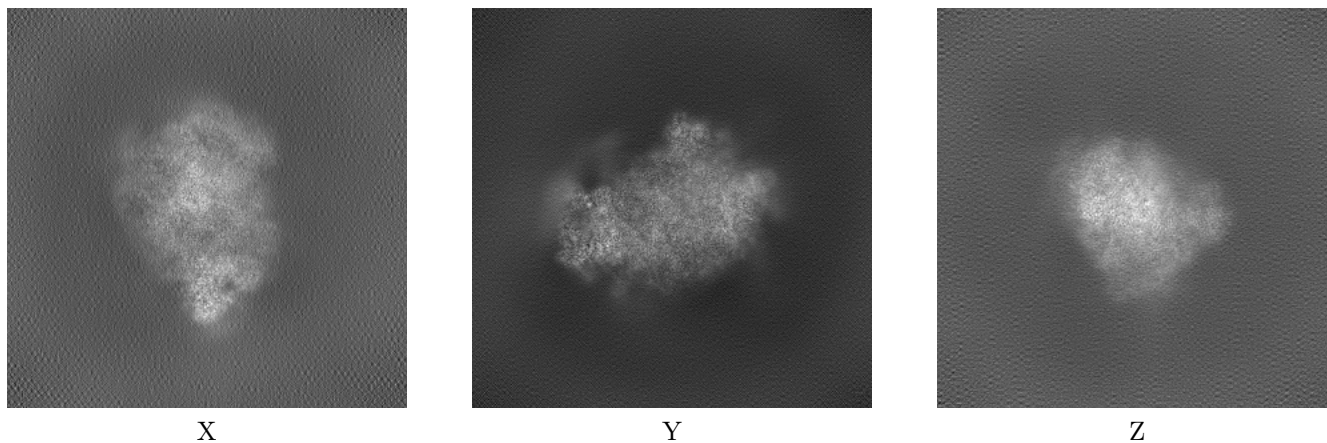
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

#### 6.1.1 Primary map



#### 6.1.2 Raw map

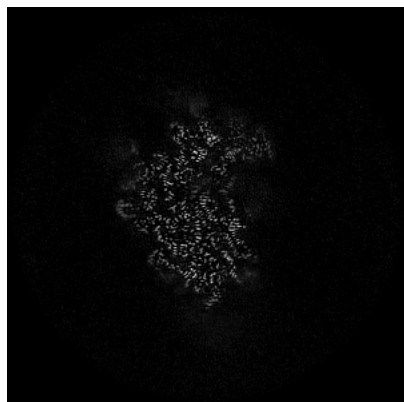


The images above show the map projected in three orthogonal directions.

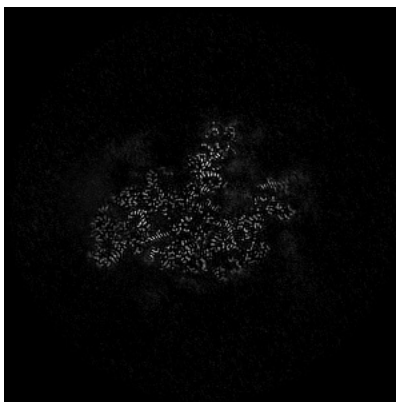


## 6.2 Central slices [i](#)

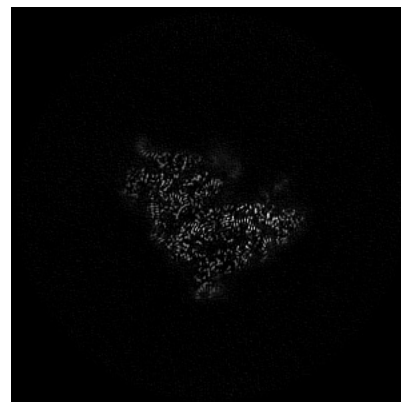
### 6.2.1 Primary map



X Index: 240

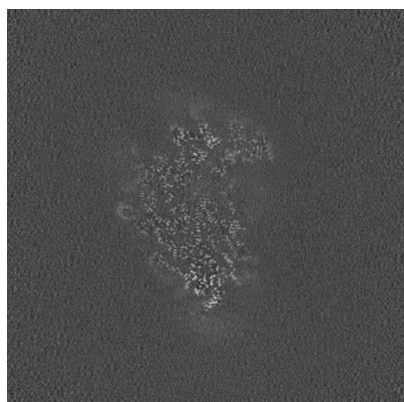


Y Index: 240

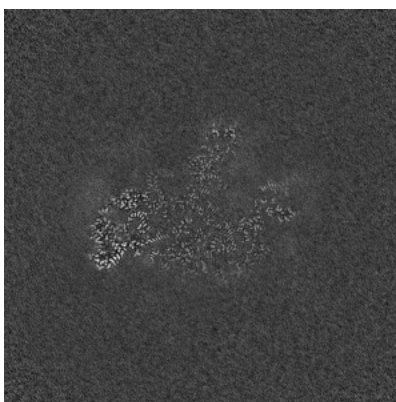


Z Index: 240

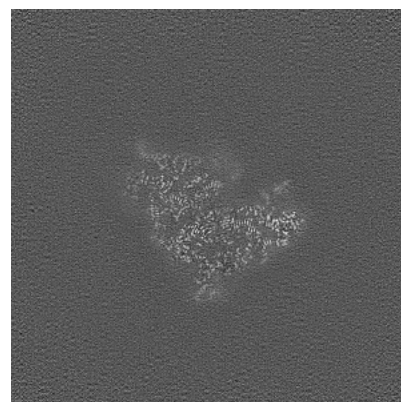
### 6.2.2 Raw map



X Index: 240



Y Index: 240



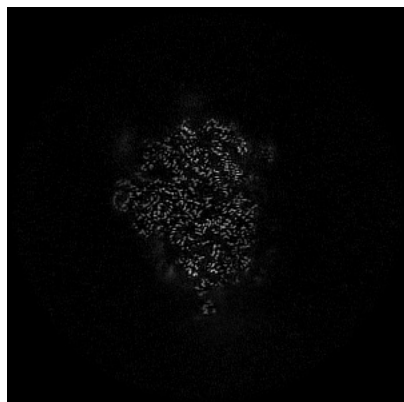
Z Index: 240

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

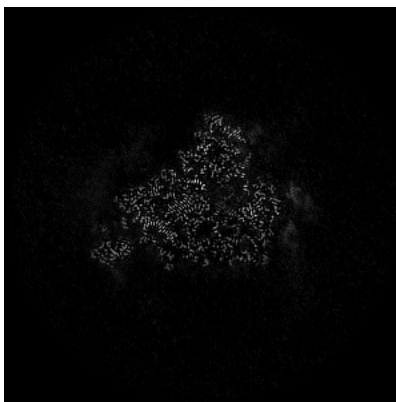


## 6.3 Largest variance slices [i](#)

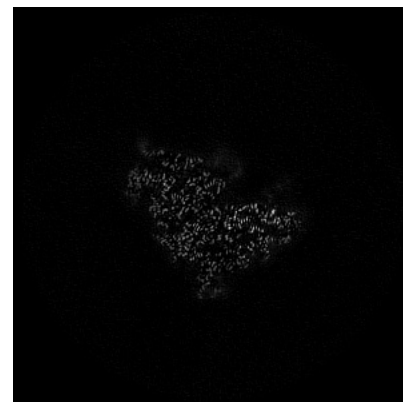
### 6.3.1 Primary map



X Index: 226

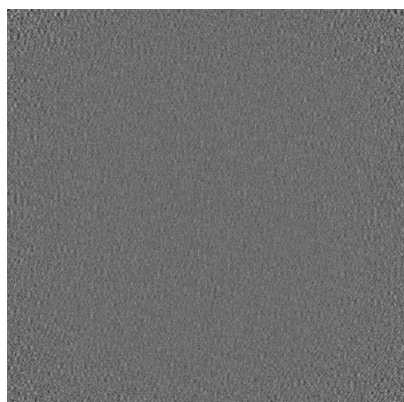


Y Index: 227

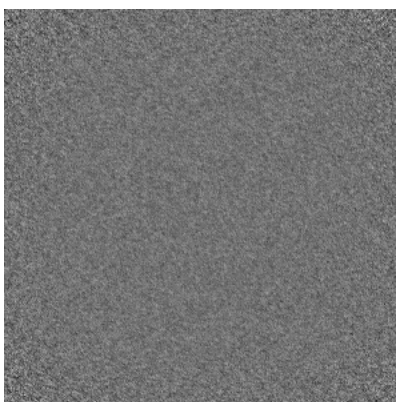


Z Index: 239

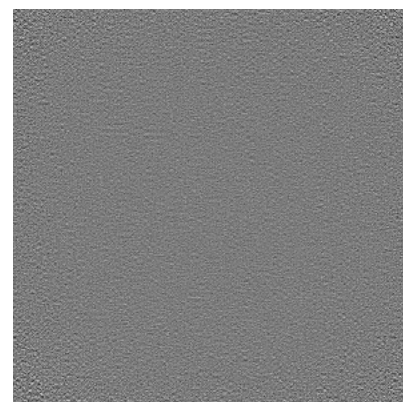
### 6.3.2 Raw map



X Index: 0



Y Index: 0

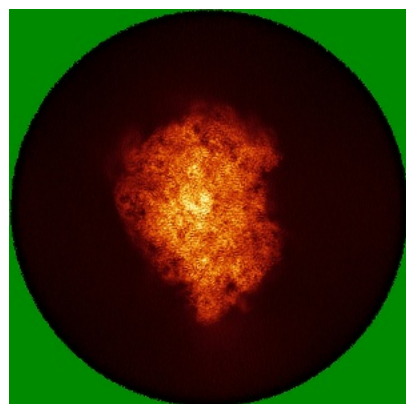


Z Index: 0

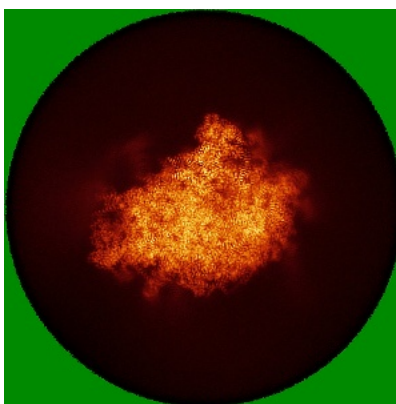
The images above show the largest variance slices of the map in three orthogonal directions.

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

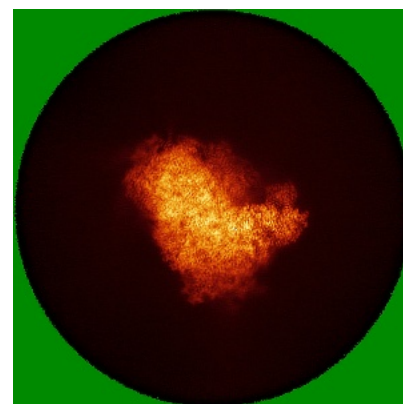
### 6.4.1 Primary map



X

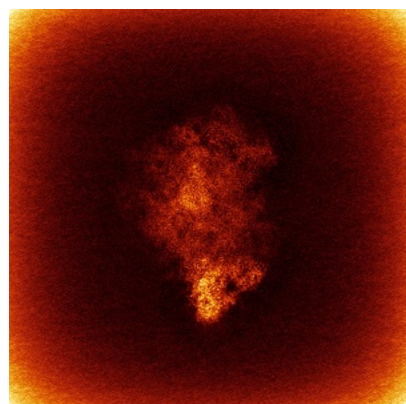


Y

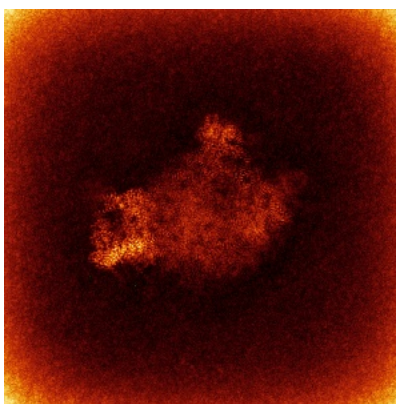


Z

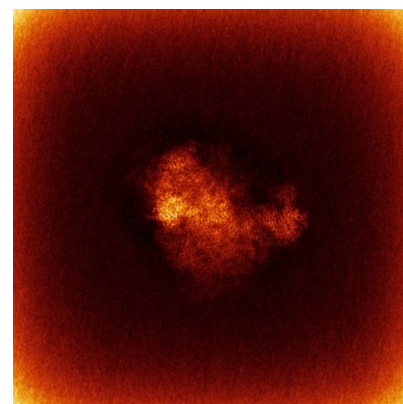
### 6.4.2 Raw map



X



Y



Z

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

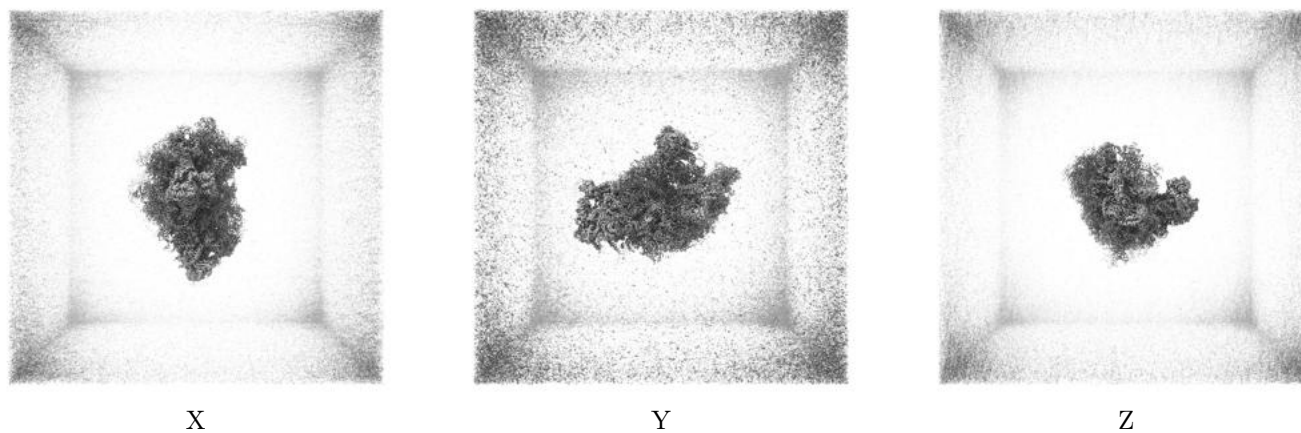
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



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



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.

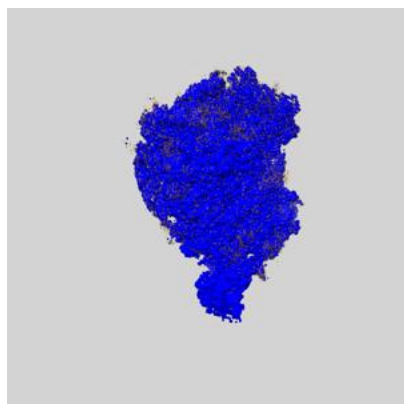
## 6.6 Mask visualisation [i](#)

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

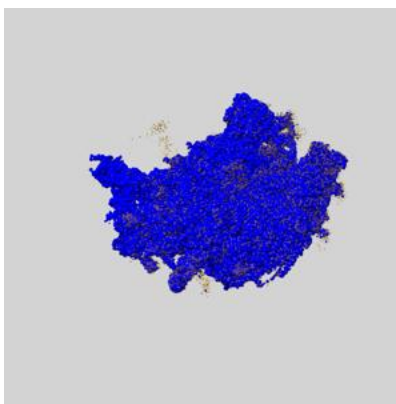
A mask typically either:

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

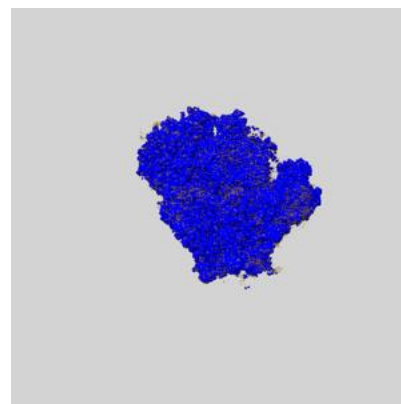
### 6.6.1 emd\_29269\_msk\_1.map [i](#)



X



Y

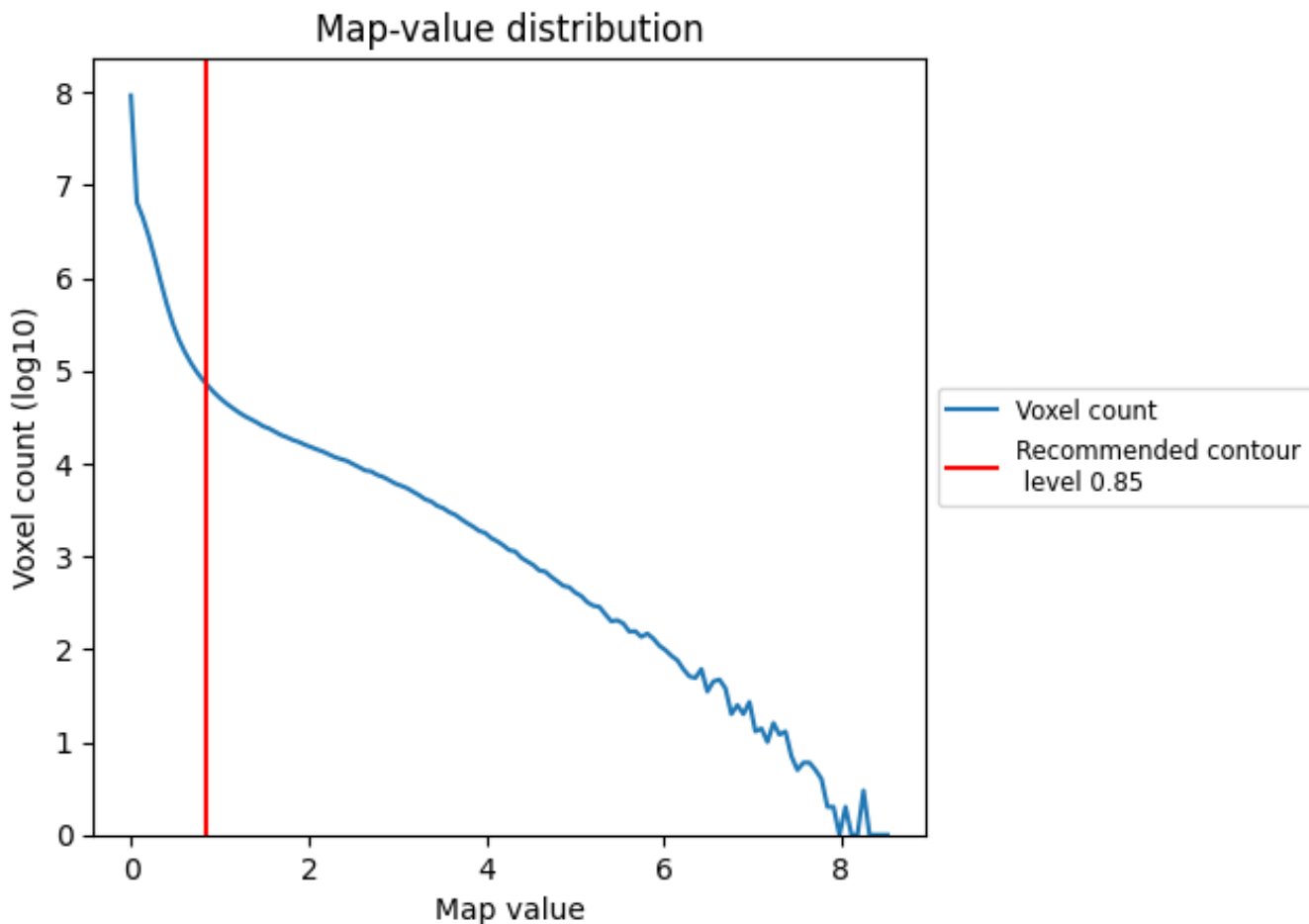


Z

## 7 Map analysis [i](#)

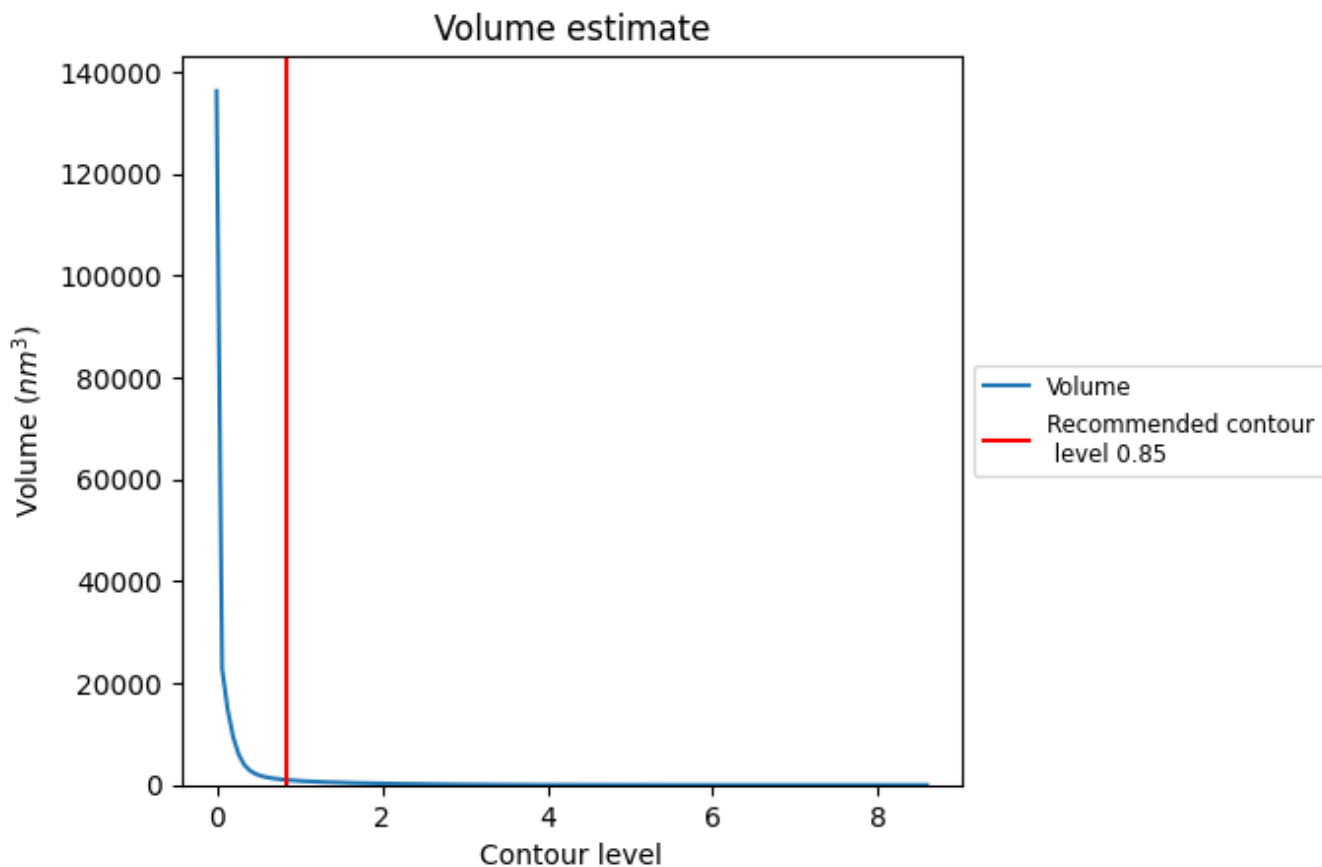
This section contains the results of statistical analysis of the map.

### 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.

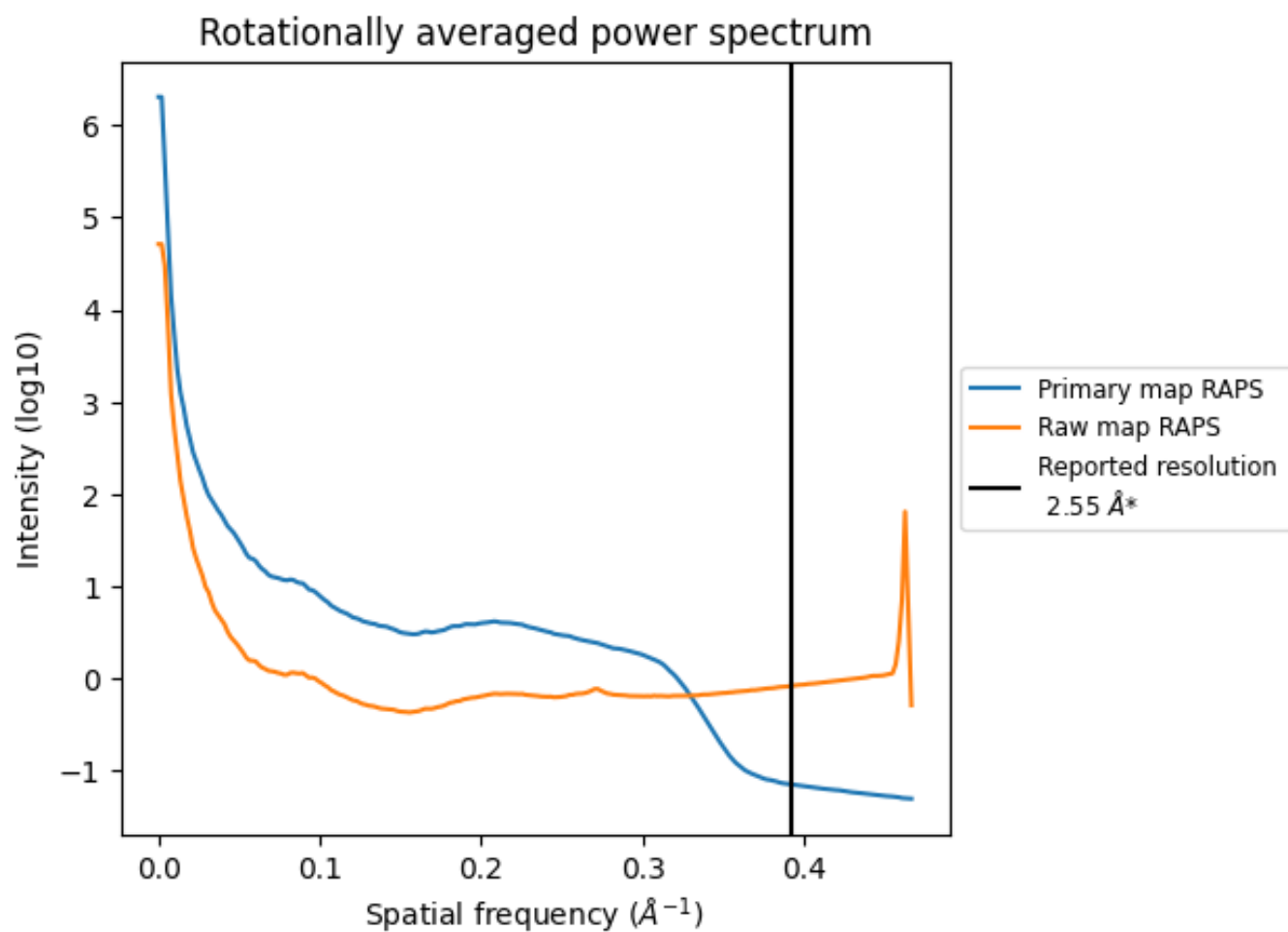
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 979  $\text{nm}^3$ ; this corresponds to an approximate mass of 884 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](#)



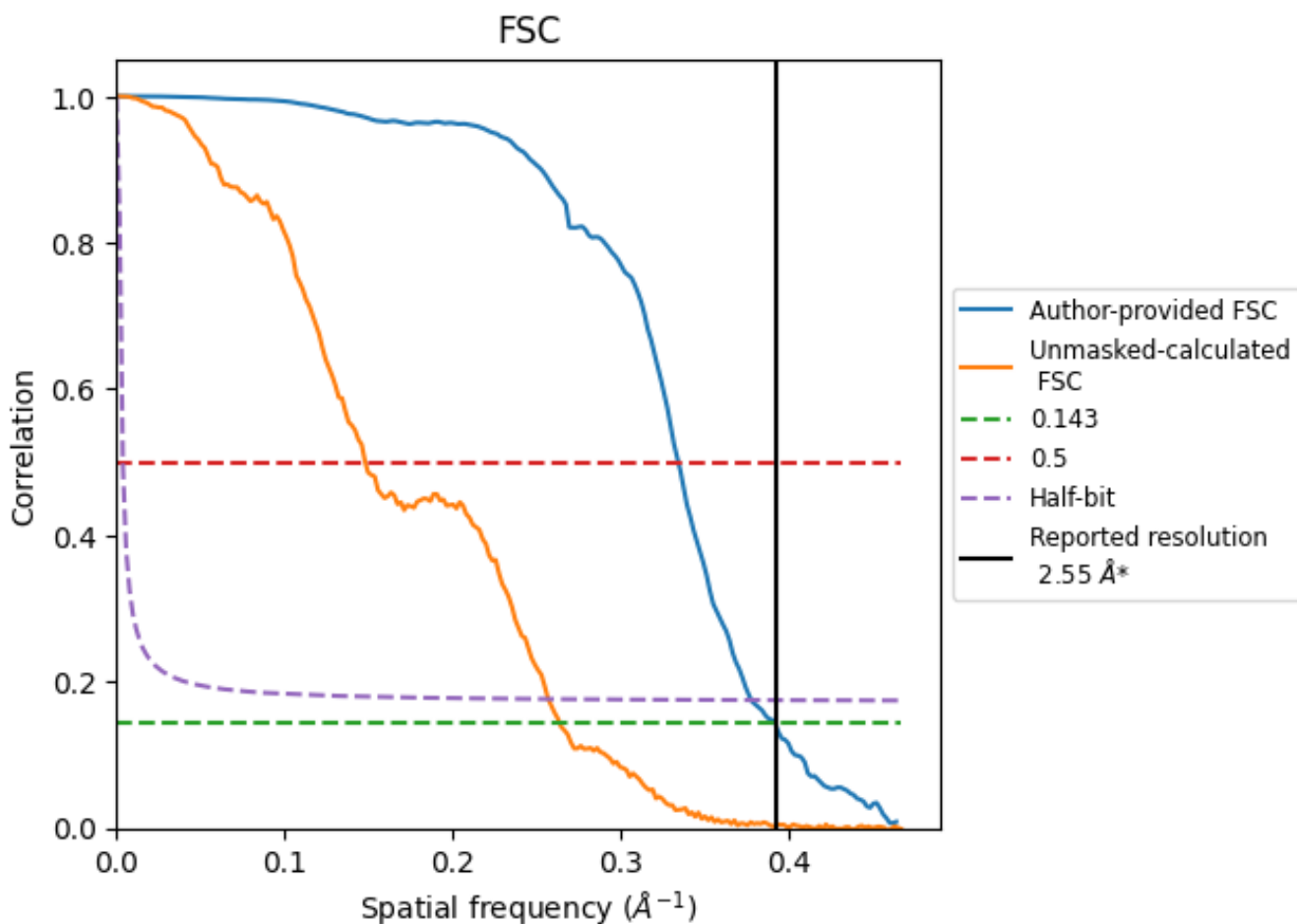
\*Reported resolution corresponds to spatial frequency of  $0.392 \text{ \AA}^{-1}$



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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.392 Å<sup>-1</sup>



## 8.2 Resolution estimates [i](#)

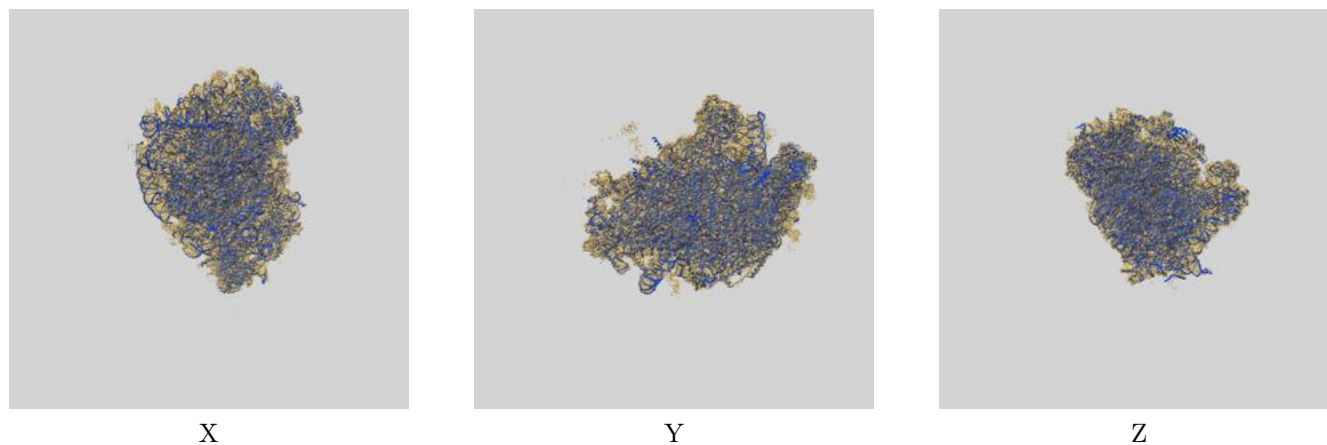
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.55	-	-
Author-provided FSC curve	2.55	2.99	2.65
Unmasked-calculated*	3.80	6.76	3.90

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.80 differs from the reported value 2.55 by more than 10 %

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

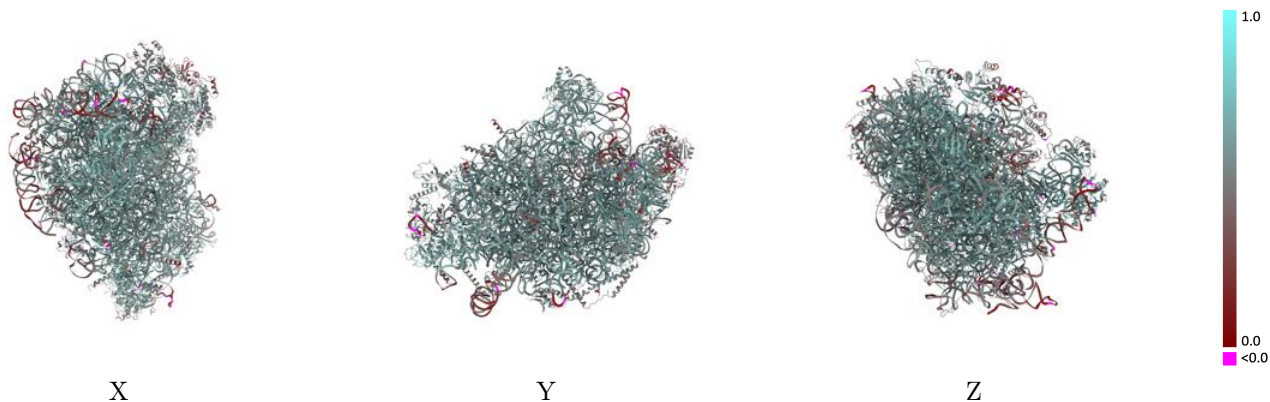
This section contains information regarding the fit between EMDB map EMD-29269 and PDB model 8FL7. Per-residue inclusion information can be found in section 3 on page 15.

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



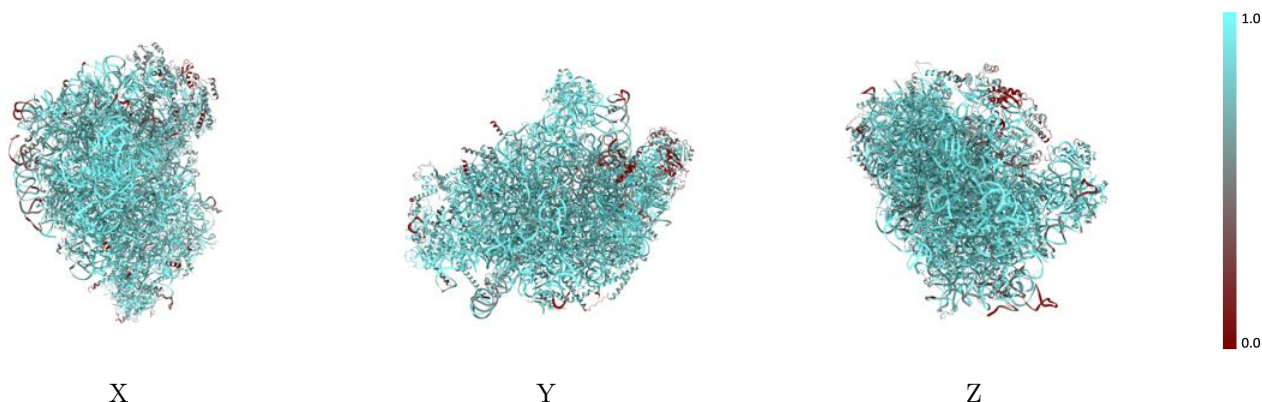
The images above show the 3D surface view of the map at the recommended contour level 0.85 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



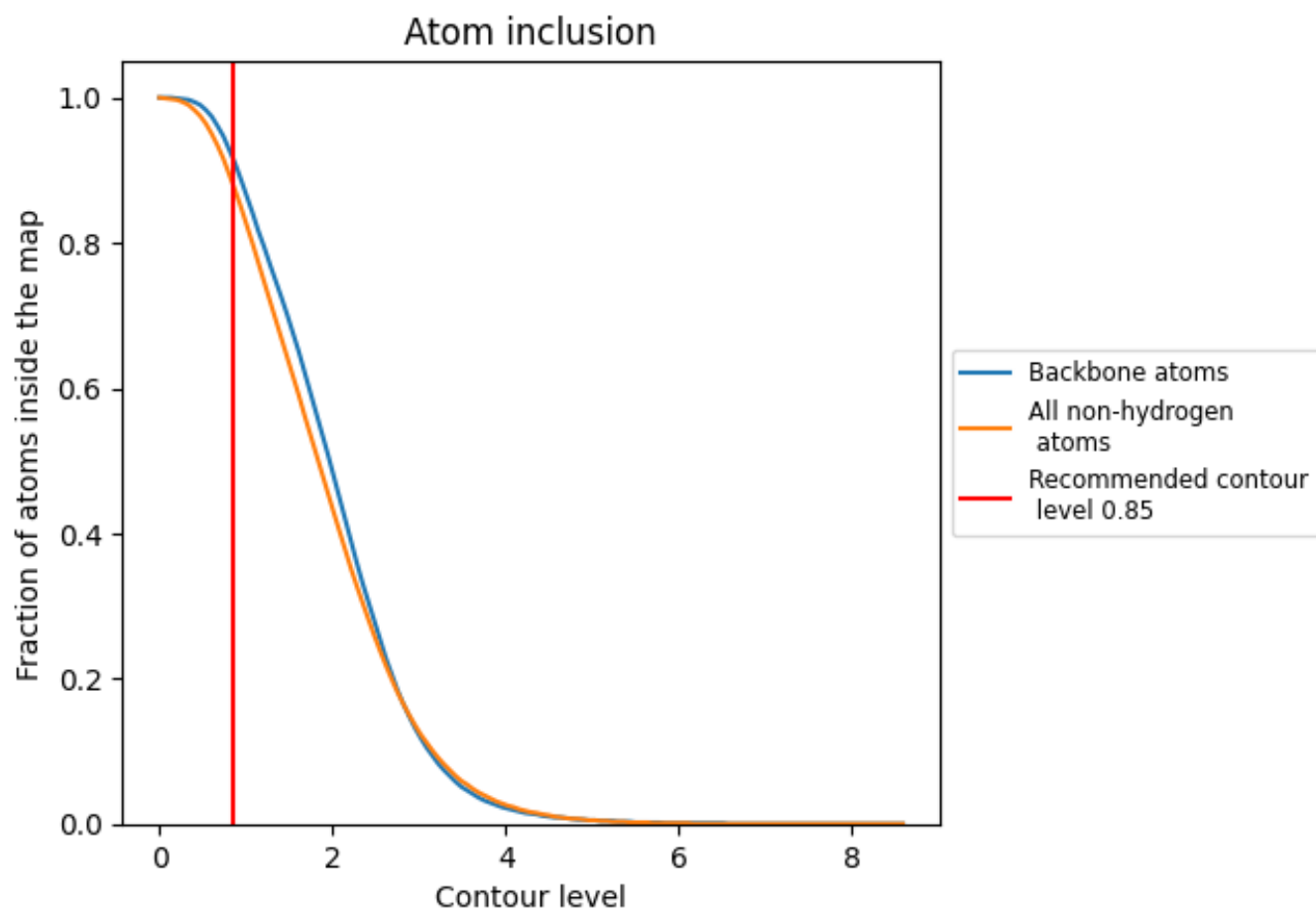
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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, 92% of all backbone atoms, 88% 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	 0.8800	 0.5700
BA	 0.3720	 0.3380
L1	 0.9540	 0.6100
L3	 0.9090	 0.5590
L4	 0.9810	 0.6210
L5	 0.8050	 0.5410
L6	 0.8220	 0.5660
L7	 0.9070	 0.6160
L8	 0.9180	 0.6070
L9	 0.9620	 0.6400
LA	 0.8860	 0.5960
LB	 0.9100	 0.6100
LC	 0.9560	 0.6440
LD	 0.8570	 0.5760
LE	 0.8910	 0.5810
LF	 0.8060	 0.5490
LG	 0.8890	 0.6090
LH	 0.8720	 0.6060
LI	 0.8430	 0.5710
LJ	 0.9300	 0.6210
LK	 0.9200	 0.6150
LL	 0.8750	 0.5820
LM	 0.7380	 0.5260
LN	 0.8990	 0.6020
LO	 0.8100	 0.5600
LP	 0.8460	 0.5760
LQ	 0.8880	 0.5960
LR	 0.9140	 0.6080
LS	 0.8650	 0.5890
LT	 0.9320	 0.6140
LU	 0.7990	 0.5570
LV	 0.8570	 0.5990
LW	 0.9360	 0.6150
LX	 0.8040	 0.5670
LY	 0.7590	 0.5590



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Chain	Atom inclusion	Q-score
LZ	 0.9240	 0.6130
NC	 0.0590	 0.3230
NF	 0.7120	 0.5510
NK	 0.6960	 0.5190
NL	 0.8240	 0.5680
NP	 0.8110	 0.5620
SA	 0.8930	 0.5970
SB	 0.8830	 0.5900
SC	 0.7820	 0.5360
SD	 0.8950	 0.5950
SE	 0.8650	 0.5910
SF	 0.9160	 0.6160
SG	 0.9130	 0.6140
SH	 0.6810	 0.5000
SI	 0.7460	 0.5260
SK	 0.8430	 0.5750
SM	 0.9050	 0.6150
SQ	 0.6070	 0.4720
SR	 0.7590	 0.5430
SV	 0.8390	 0.5720