



wwPDB EM Validation Summary Report ⓘ

Jul 14, 2025 – 05:34 pm BST

PDB ID : 9FXO / pdb_00009fxo
EMDB ID : EMD-50852
Title : CRYO-EM STRUCTURE OF LEISHMANIA MAJOR 80S RIBOSOME
WITH A/P/E-SITE TRNA AND MRNA : LM32CS1C1 M2 OE MUTANT
Authors : Rajan, K.S.; Yonath, A.
Deposited on : 2024-07-02
Resolution : 2.25 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev118
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

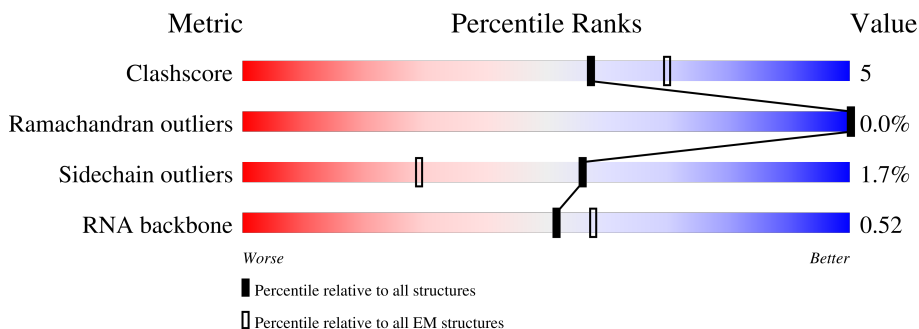
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.25 Å.

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











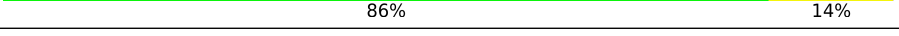

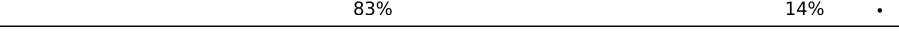
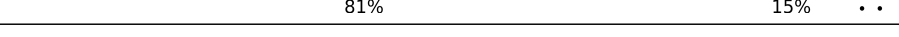

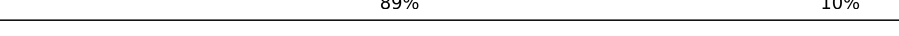


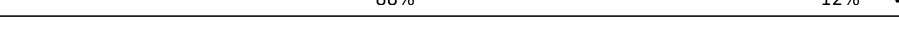

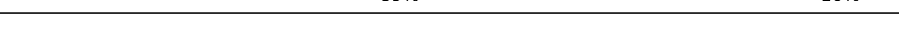






Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	L1	1782	
2	L2	1526	
3	L3	216	
4	L4	184	
5	L5	135	
6	L6	73	
7	L7	171	












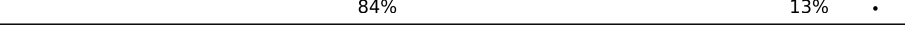







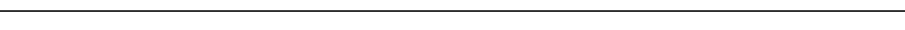

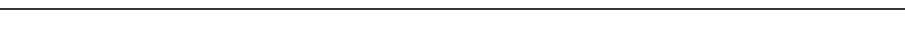
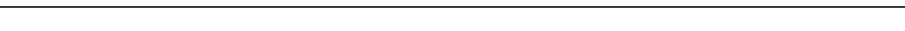


Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	L8	124	
9	LA	260	
10	LB	419	
11	LC	373	
12	LD	188	
13	LE	190	
14	LF	195	
15	LG	264	
16	LH	222	
17	LI	220	
18	LJ	139	
19	LK	175	
20	LL	145	
21	LM	204	
22	LN	213	
23	LO	305	
24	LP	198	
25	LQ	254	
26	LR	179	
27	LS	159	
28	LT	166	
29	LU	129	
30	LV	145	
31	LW	143	
32	LX	124	









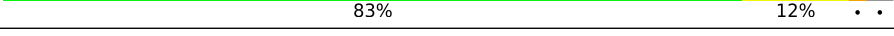

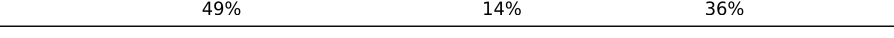
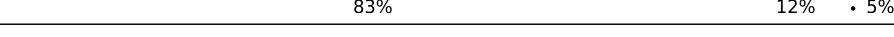

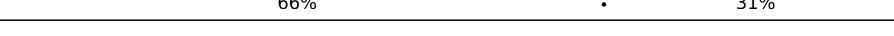


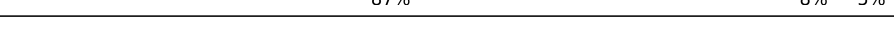

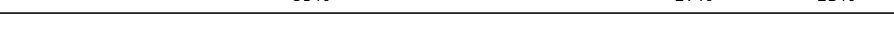






Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
33	LY	134	 90% 10% .
34	LZ	147	 81% 17% ..
35	La	127	 85% 13% ..
36	Lb	70	 84% 13% .
37	Lc	252	 81% 10% 9%
38	Ld	104	 75% 15% . 8%
39	Le	188	 87% 12% .
40	Lf	133	 89% 7% .
41	Lg	144	 85% 14% ..
42	Lh	168	 64% 11% . 24%
43	Li	105	 90% 7% .
44	Lj	83	 84% 13% .
45	Lk	83	 84% 10% 6%
46	Ll	51	 86% 12% .
47	Lm	128	 34% 7% 59%
48	Ln	34	 85% 12% .
49	Lo	92	 86% 11% .
50	Lp	106	 75% 15% . 8%
51	S1	2204	 55% 23% 6% 16%
52	S2	76	 11% 8% . 80%
52	S4	76	 39% 38% 12% 11%
53	S3	77	 68% 27% . .
54	SA	264	 79% 11% 10%
55	SB	246	 72% 14% 14%
56	SC	219	 79% 17% .

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
57	SD	190	
58	SE	273	
59	SF	265	
60	SG	249	
61	SH	190	
62	SI	200	
63	SJ	130	
64	SK	220	
65	SL	149	
66	SM	116	
67	SN	168	
68	SO	144	
69	SP	143	
70	SQ	141	
71	SR	153	
72	SS	57	
73	ST	151	
74	SU	173	
75	SV	143	
76	SW	152	
77	SX	161	
78	SY	164	
79	SZ	137	
80	Sa	120	
81	Sb	112	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
82	Sc	86	 81% 16% ..
83	Sd	87	 68% 8% 24%
84	Se	66	 74% 15% 11%
85	Sf	152	 38% 12% 51%
86	Sg	312	 74% 22% ..
87	Sh	235	 55% 17% 27%
88	S5	13	 69% 15% 8% 8%

2 Entry composition

There are 96 unique types of molecules in this entry. The entry contains 218491 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called LSUa_rRNA_chain_1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	L1	1684	Total	C	N	O	P	0	0
			36117	16147	6602	11684	1684		

- Molecule 2 is a RNA chain called LSUb_rRNA_chain_2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L2	1160	Total	C	N	O	P	0	0
			24815	11110	4470	8075	1160		

- Molecule 3 is a RNA chain called SR1_chain_3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	L3	183	Total	C	N	O	P	0	0
			3880	1736	672	1289	183		

- Molecule 4 is a RNA chain called SR2_chain_4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	L4	184	Total	C	N	O	P	0	0
			3937	1756	712	1285	184		

- Molecule 5 is a RNA chain called SR4_chain_5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	L5	121	Total	C	N	O	P	0	0
			2578	1150	460	847	121		

- Molecule 6 is a RNA chain called SR6_chain_6.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	L6	71	Total	C	N	O	P	1	0
			1526	684	274	496	72		

- Molecule 7 is a RNA chain called 5.8S_rRNA_chain_7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L7	166	Total	C	N	O	P	0	0
			3534	1584	626	1159	165		

- Molecule 8 is a RNA chain called 5S_rRNA_chain_8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L8	120	Total	C	N	O	P	0	0
			2551	1141	454	836	120		

- Molecule 9 is a protein called Putative 60S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	LA	258	Total	C	N	O	S	1	0
			1972	1229	403	330	10		

- Molecule 10 is a protein called Putative ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	LB	404	Total	C	N	O	S	0	0
			3216	2024	638	541	13		

- Molecule 11 is a protein called Putative ribosomal protein L1a.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	LC	366	Total	C	N	O	S	0	0
			2826	1765	562	484	15		

- Molecule 12 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LD	175	Total	C	N	O	S	0	0
			1391	878	262	243	8		

- Molecule 13 is a protein called Putative 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LE	186	Total	C	N	O	S	0	0
			1477	936	273	262	6		

- Molecule 14 is a protein called Putative 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LF	151	Total	C	N	O	S	0	0
			1169	743	220	204	2		

- Molecule 15 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LG	241	Total	C	N	O	S	1	0
			1895	1190	376	322	7		

- Molecule 16 is a protein called Putative 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	LH	221	Total	C	N	O	S	0	0
			1767	1123	353	284	7		

- Molecule 17 is a protein called Putative 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LI	214	Total	C	N	O	S	0	0
			1695	1056	342	289	8		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LI	203	ARG	ASN	conflict	UNP E9AEA8

- Molecule 18 is a protein called Putative 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LJ	135	Total	C	N	O	S	0	0
			1012	638	191	177	6		

- Molecule 19 is a protein called Putative 40S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LK	169	Total	C	N	O	S	0	0
			1329	827	263	231	8		

- Molecule 20 is a protein called Putative 60S ribosomal protein L27A/L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LL	144	Total	C	N	O	S	0	0
			1124	707	226	185	6		

- Molecule 21 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LM	203	Total	C	N	O	S	0	0
			1711	1079	362	262	8		

- Molecule 22 is a protein called Putative 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LN	200	Total	C	N	O	S	0	0
			1626	1025	323	264	14		

- Molecule 23 is a protein called Putative 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LO	298	Total	C	N	O	S	1	0
			2339	1486	440	407	6		

- Molecule 24 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	LP	197	Total	C	N	O	S	0	0
			1539	968	307	258	6		

- Molecule 25 is a protein called Putative 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LQ	201	Total	C	N	O	S	1	0
			1692	1041	370	275	6		

- Molecule 26 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LR	178	Total	C	N	O	S	0	0
			1455	925	279	246	5		

- Molecule 27 is a protein called Putative 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LS	158	Total	C	N	O	S	0	0
			1261	803	245	209	4		

- Molecule 28 is a protein called Putative 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LT	152	Total	C	N	O	S	0	0
			1221	762	241	207	11		

- Molecule 29 is a protein called Putative 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	LU	122	Total	C	N	O	S	0	0
			960	624	176	157	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
30	LV	119	Total	C	N	O	S	0	0
			953	604	181	166	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
31	LW	121	Total	C	N	O	S	0	0
			967	603	200	160	4		

- Molecule 32 is a protein called Putative ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	LX	85	Total	C	N	O	S	0	0
			714	461	140	109	4		

- Molecule 33 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	LY	133	Total	C	N	O	S	0	0
			1065	683	215	164	3		

- Molecule 34 is a protein called Putative 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	LZ	145	Total	C	N	O	S	0	0
			1117	685	238	189	5		

- Molecule 35 is a protein called Putative 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	La	125	Total	C	N	O	S	0	0
			1043	650	217	172	4		

- Molecule 36 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Lb	68	Total	C	N	O	S	0	0
			546	335	125	86			

- Molecule 37 is a protein called Putative 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Lc	229	Total	C	N	O	S	0	0
			1862	1185	358	308	11		

- Molecule 38 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Ld	96	Total	C	N	O	S	0	0
			730	455	133	137	5		

- Molecule 39 is a protein called Putative 60S ribosomal subunit protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Le	186	Total	C	N	O	S	0	0
			1469	922	296	247	4		

- Molecule 40 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Lf	128	Total	C	N	O	S	0	0
			1046	658	210	174	4		

- Molecule 41 is a protein called Putative ribosomal protein l35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Lg	143	Total	C	N	O	S	1	0
			1159	720	243	191	5		

- Molecule 42 is a protein called Putative 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Lh	127	Total	C	N	O	S	0	0
			1029	633	224	166	6		

- Molecule 43 is a protein called Putative 60S Ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Li	101	Total	C	N	O	S	0	0
			798	503	162	131	2		

- Molecule 44 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Lj	81	Total	C	N	O	S	0	0
			668	406	153	103	6		

- Molecule 45 is a protein called Putative ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Lk	78	Total	C	N	O	S	0	0
			608	383	119	103	3		

- Molecule 46 is a protein called Putative 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Ll	50	Total	C	N	O	S	0	0
			450	291	95	63	1		

- Molecule 47 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lm	52	Total	C	N	O	S	0	0
			416	263	85	64	4		

- Molecule 48 is a protein called Ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Ln	33	Total	C	N	O	S	0	0
			292	178	75	37	2		

- Molecule 49 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Lo	89	Total	C	N	O	S	0	0
			693	431	143	113	6		

- Molecule 50 is a protein called Putative 60S ribosomal protein L44.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Lp	97	Total	C	N	O	S	0	0
			784	496	158	125	5		

- Molecule 51 is a RNA chain called SSU_rRNA_chain_S1.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	S1	1852	Total	C	N	O	P	1	0
			39635	17733	7147	12902	1853		

- Molecule 52 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	S2	15	Total	C	N	O	P	0	0
			325	149	58	102	15		
52	S4	68	Total	C	N	O	P	0	0
			1446	646	258	475	67		

- Molecule 53 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	S3	75	Total	C	N	O	P	0	0
			1599	713	290	521	75		

- Molecule 54 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	SA	238	Total	C	N	O	S	0	0
			1909	1194	366	338	11		

- Molecule 55 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	SB	211	Total	C	N	O	S	0	0
			1662	1055	303	292	12		

- Molecule 56 is a protein called Putative 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SC	212	Total	C	N	O	S	1	0
			1646	1040	302	291	13		

- Molecule 57 is a protein called Putative 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SD	183	Total	C	N	O	S	0	0
			1508	949	305	246	8		

- Molecule 58 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	SE	260	Total	C	N	O	S	0	0
			2054	1301	393	351	9		

- Molecule 59 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SF	222	Total	C	N	O	S	0	0
			1708	1088	301	309	10		

- Molecule 60 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SG	234	Total	C	N	O	S	0	0
			1866	1163	383	317	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
61	SH	183	Total	C	N	O	S	0	0
			1441	896	276	262	7		

- Molecule 62 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	SI	200	Total	C	N	O	S	0	0
			1649	1050	320	271	8		

- Molecule 63 is a protein called Putative 40S ribosomal protein S15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	SJ	129	Total	C	N	O	S	0	0
			1021	646	188	179	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
64	SK	197	Total	C	N	O	S	0	0
			1582	986	326	268	2		

- Molecule 65 is a protein called Putative 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	SL	144	Total	C	N	O	S	0	0
			1140	731	210	196	3		

- Molecule 66 is a protein called Putative ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SM	103	Total	C	N	O	S	0	0
			805	503	146	154	2		

- Molecule 67 is a protein called Putative 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	SN	107	Total	C	N	O	S	0	0
			874	560	152	155	7		

- Molecule 68 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	SO	137	Total	C	N	O	S	0	0
			1024	633	200	183	8		

- Molecule 69 is a protein called Putative 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	SP	141	Total	C	N	O	S	0	0
			1100	694	217	186	3		

- Molecule 70 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms				AltConf	Trace
70	SQ	97	Total	C	N	O	0	0
			480	286	97	97		

- Molecule 71 is a protein called Putative 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	SR	142	Total	C	N	O	S	0	0
			1138	715	226	192	5		

- Molecule 72 is a protein called Putative ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	SS	56	Total	C	N	O	S	0	0
			452	279	94	73	6		

- Molecule 73 is a protein called Putative 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	ST	143	Total	C	N	O	S	0	0
			1167	736	231	191	9		

- Molecule 74 is a protein called Putative 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	SU	153	Total	C	N	O	S	0	0
			1260	796	251	208	5		

- Molecule 75 is a protein called Putative 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	SV	122	Total	C	N	O	S	0	0
			992	619	193	175	5		

- Molecule 76 is a protein called Putative 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	SW	115	Total	C	N	O	S	0	0
			928	591	176	157	4		

- Molecule 77 is a protein called 40S ribosomal protein S19-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	SX	152	Total	C	N	O	S	0	0
			1206	766	237	199	4		

- Molecule 78 is a protein called Putative 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	SY	88	Total	C	N	O	S	1	0
			673	415	124	130	4		

- Molecule 79 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	SZ	130	Total	C	N	O	S	0	0
			1051	675	204	169	3		

- Molecule 80 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	Sa	83	Total	C	N	O	S	0	0
			650	412	118	117	3		

- Molecule 81 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	Sb	104	Total	C	N	O	S	0	0
			825	511	177	130	7		

- Molecule 82 is a protein called Putative 40S ribosomal protein S27-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	Sc	85	Total	C	N	O	S	0	0
			661	410	127	119	5		

- Molecule 83 is a protein called Putative 40S ribosomal protein S33.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	Sd	66	Total	C	N	O	S	0	0
			496	301	100	91	4		

- Molecule 84 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	Se	59	Total	C	N	O	S	0	0
			449	281	95	72	1		

- Molecule 85 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
85	Sf	75	Total	C	N	O	S	0	0
			465	293	88	81	3		

- Molecule 86 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
86	Sg	303	Total	C	N	O	S	0	0
			2343	1469	418	443	13		

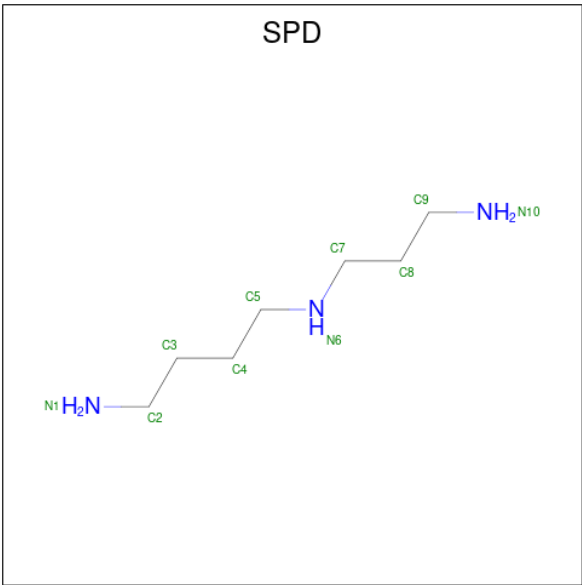
- Molecule 87 is a protein called Putative RNA binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
87	Sh	171	Total	C	N	O	S	0	0
			1212	769	224	216	3		

- Molecule 88 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
88	S5	12	Total	C	N	O	P	0	0
			251	113	43	83	12		

- Molecule 89 is SPERMIDINE (CCD ID: SPD) (formula: C₇H₁₉N₃).



Mol	Chain	Residues	Atoms			AltConf
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	
89	L1	1	Total	C	N	0
			10	7	3	

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			AltConf
89	L1	1	Total	C	N	0
			10	7	3	
89	L2	1	Total	C	N	0
			10	7	3	
89	L2	1	Total	C	N	0
			10	7	3	
89	LM	1	Total	C	N	0
			10	7	3	
89	S1	1	Total	C	N	0
			10	7	3	
89	S1	1	Total	C	N	0
			10	7	3	
89	S1	1	Total	C	N	0
			10	7	3	

- Molecule 90 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
90	L1	120	Total	Mg	0
			120	120	
90	L2	94	Total	Mg	0
			94	94	
90	L3	5	Total	Mg	0
			5	5	
90	L4	10	Total	Mg	0
			10	10	
90	L5	6	Total	Mg	0
			6	6	
90	L6	2	Total	Mg	0
			2	2	
90	L7	4	Total	Mg	0
			4	4	
90	L8	6	Total	Mg	0
			6	6	
90	LA	2	Total	Mg	0
			2	2	
90	LG	1	Total	Mg	0
			1	1	
90	LJ	1	Total	Mg	0
			1	1	
90	LN	1	Total	Mg	0
			1	1	

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
90	LS	1	Total 1	Mg 1	0
90	LT	1	Total 1	Mg 1	0
90	Lf	1	Total 1	Mg 1	0
90	Lh	2	Total 2	Mg 2	0
90	S1	109	Total 109	Mg 109	0
90	S3	1	Total 1	Mg 1	0
90	SG	1	Total 1	Mg 1	0
90	SO	1	Total 1	Mg 1	0
90	ST	1	Total 1	Mg 1	0
90	SX	1	Total 1	Mg 1	0
90	Sb	1	Total 1	Mg 1	0

- Molecule 91 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		AltConf
91	L1	15	Total 15	Na 15	0
91	L2	12	Total 12	Na 12	0
91	L3	1	Total 1	Na 1	0
91	L4	3	Total 3	Na 3	0
91	L7	2	Total 2	Na 2	0
91	LN	1	Total 1	Na 1	0
91	Lf	1	Total 1	Na 1	0
91	S1	12	Total 12	Na 12	0

Continued on next page...

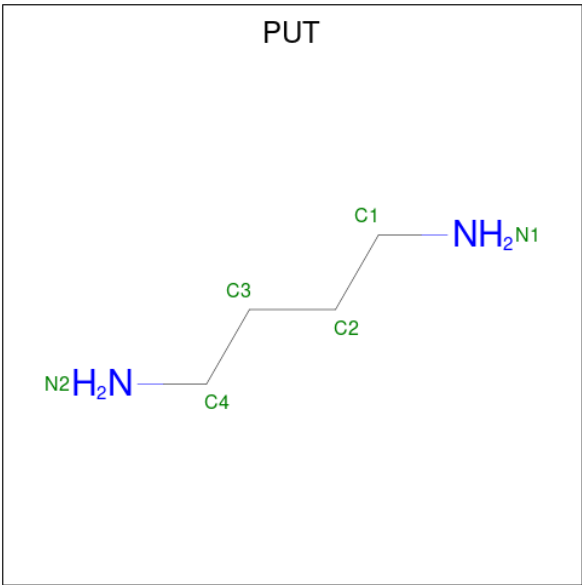
Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
91	SS	1	Total 1	Na 1	0

- Molecule 92 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
92	L1	20	Total 20	K 20	0
92	L2	14	Total 14	K 14	0
92	L4	4	Total 4	K 4	0
92	L7	1	Total 1	K 1	0
92	LB	1	Total 1	K 1	0
92	LC	2	Total 2	K 2	0
92	LM	1	Total 1	K 1	0
92	LV	1	Total 1	K 1	0
92	Le	1	Total 1	K 1	0
92	Ll	1	Total 1	K 1	0
92	S1	19	Total 19	K 19	0

- Molecule 93 is 1,4-DIAMINOBUTANE (CCD ID: PUT) (formula: C₄H₁₂N₂).



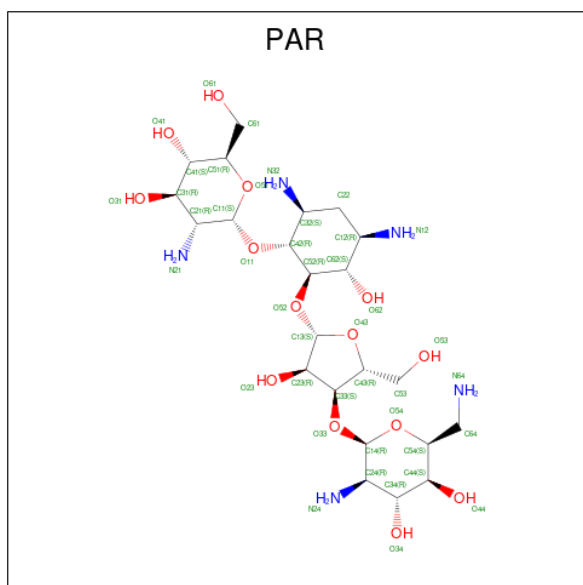
Mol	Chain	Residues	Atoms			AltConf
93	L1	1	Total	C	N	0
			6	4	2	
			Total	C	N	
			6	4	2	
			Total	C	N	
			6	4	2	
	L2	1	Total	C	N	0
			6	4	2	
			Total	C	N	
			6	4	2	
			Total	C	N	
			6	4	2	
93	L4	1	Total	C	N	0
			6	4	2	
			Total	C	N	
93	L5	1	Total	C	N	0
			6	4	2	

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			AltConf
93	S1	1	Total	C	N	0
			6	4	2	
93	S1	1	Total	C	N	0
			6	4	2	

- Molecule 94 is PAROMOMYCIN (CCD ID: PAR) (formula: $C_{23}H_{45}N_5O_{14}$).



Mol	Chain	Residues	Atoms				AltConf
94	L1	1	Total	C	N	O	0
			42	23	5	14	
94	L2	1	Total	C	N	O	0
			42	23	5	14	
94	L2	1	Total	C	N	O	0
			42	23	5	14	
94	L7	1	Total	C	N	O	0
			42	23	5	14	
94	S1	1	Total	C	N	O	0
			42	23	5	14	
94	S1	1	Total	C	N	O	0
			42	23	5	14	

- Molecule 95 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
95	LK	1	Total	Zn	0
			1	1	

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
95	Lj	1	Total 1	Zn 1	0
95	Lm	1	Total 1	Zn 1	0
95	Lo	1	Total 1	Zn 1	0
95	Lp	1	Total 1	Zn 1	0
95	SS	1	Total 1	Zn 1	0
95	Sb	1	Total 1	Zn 1	0

- Molecule 96 is water.

Mol	Chain	Residues	Atoms		AltConf
96	L1	762	Total 762	O 762	0
96	L2	787	Total 787	O 787	0
96	L3	49	Total 49	O 49	0
96	L4	55	Total 55	O 55	0
96	L5	22	Total 22	O 22	0
96	L7	24	Total 24	O 24	0
96	LA	46	Total 46	O 46	0
96	LB	42	Total 42	O 42	0
96	LC	27	Total 27	O 27	0
96	LD	1	Total 1	O 1	0
96	LG	1	Total 1	O 1	0
96	LH	6	Total 6	O 6	0
96	LI	11	Total 11	O 11	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
96	LJ	5	Total 5	O 5	0
96	LL	15	Total 15	O 15	0
96	LM	26	Total 26	O 26	0
96	LN	2	Total 2	O 2	0
96	LO	1	Total 1	O 1	0
96	LP	9	Total 9	O 9	0
96	LQ	11	Total 11	O 11	0
96	LS	4	Total 4	O 4	0
96	LT	15	Total 15	O 15	0
96	LU	1	Total 1	O 1	0
96	LV	2	Total 2	O 2	0
96	LW	5	Total 5	O 5	0
96	LX	2	Total 2	O 2	0
96	LY	2	Total 2	O 2	0
96	La	1	Total 1	O 1	0
96	Lb	5	Total 5	O 5	0
96	Lc	2	Total 2	O 2	0
96	Ld	4	Total 4	O 4	0
96	Le	6	Total 6	O 6	0
96	Lf	3	Total 3	O 3	0
96	Lg	3	Total 3	O 3	0

Continued on next page...

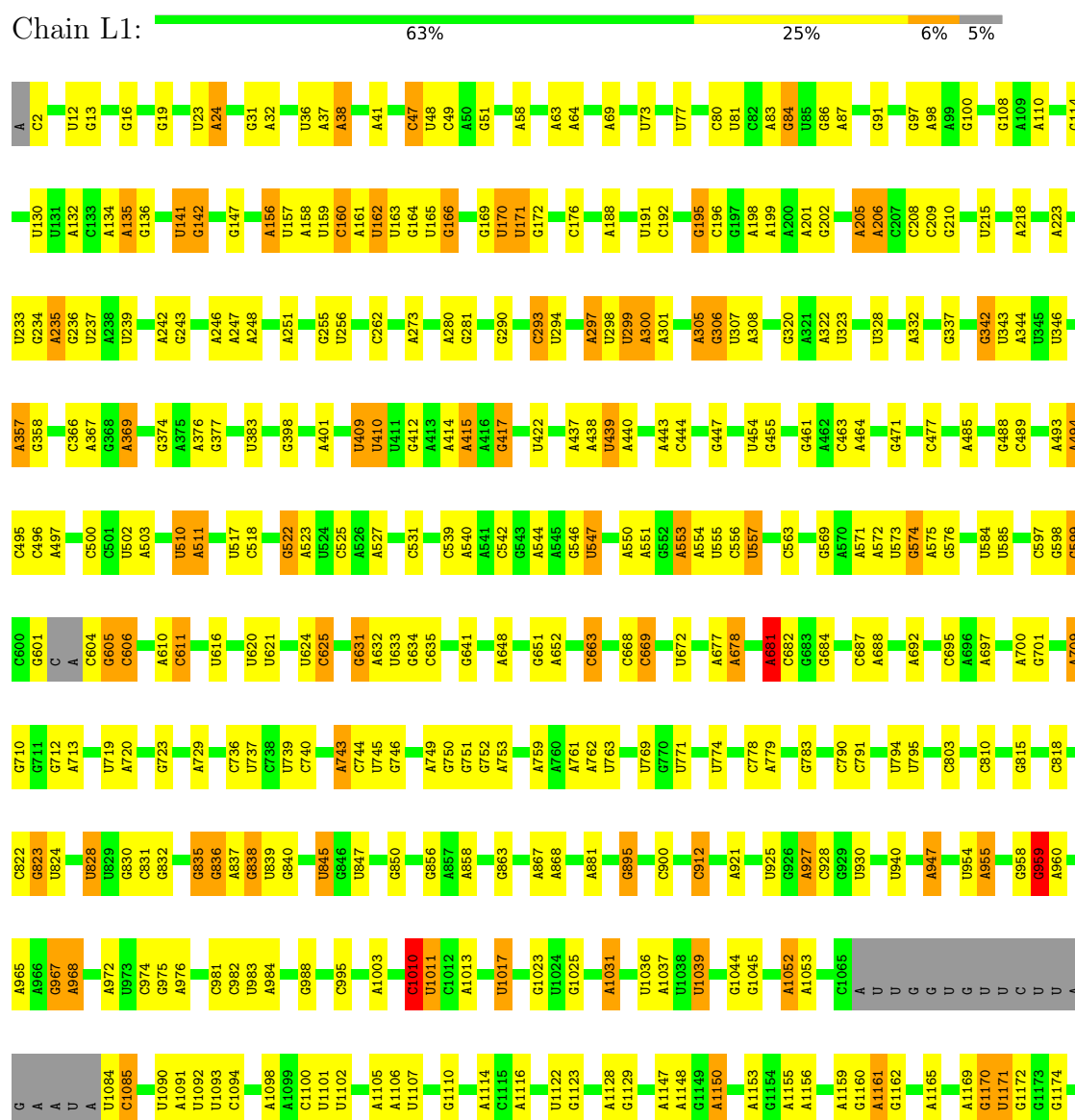
Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
96	Lh	12	Total 12	O 12	0
96	Lj	18	Total 18	O 18	0
96	Ln	9	Total 9	O 9	0
96	Lo	23	Total 23	O 23	0
96	Lp	14	Total 14	O 14	0
96	S1	595	Total 595	O 595	0
96	S2	1	Total 1	O 1	0
96	S3	6	Total 6	O 6	0
96	S4	15	Total 15	O 15	0
96	SA	6	Total 6	O 6	0
96	SF	1	Total 1	O 1	0
96	SJ	1	Total 1	O 1	0
96	SK	19	Total 19	O 19	0
96	SO	9	Total 9	O 9	0
96	SP	4	Total 4	O 4	0
96	ST	14	Total 14	O 14	0
96	SU	9	Total 9	O 9	0
96	Sb	9	Total 9	O 9	0
96	Sc	1	Total 1	O 1	0
96	Sg	1	Total 1	O 1	0

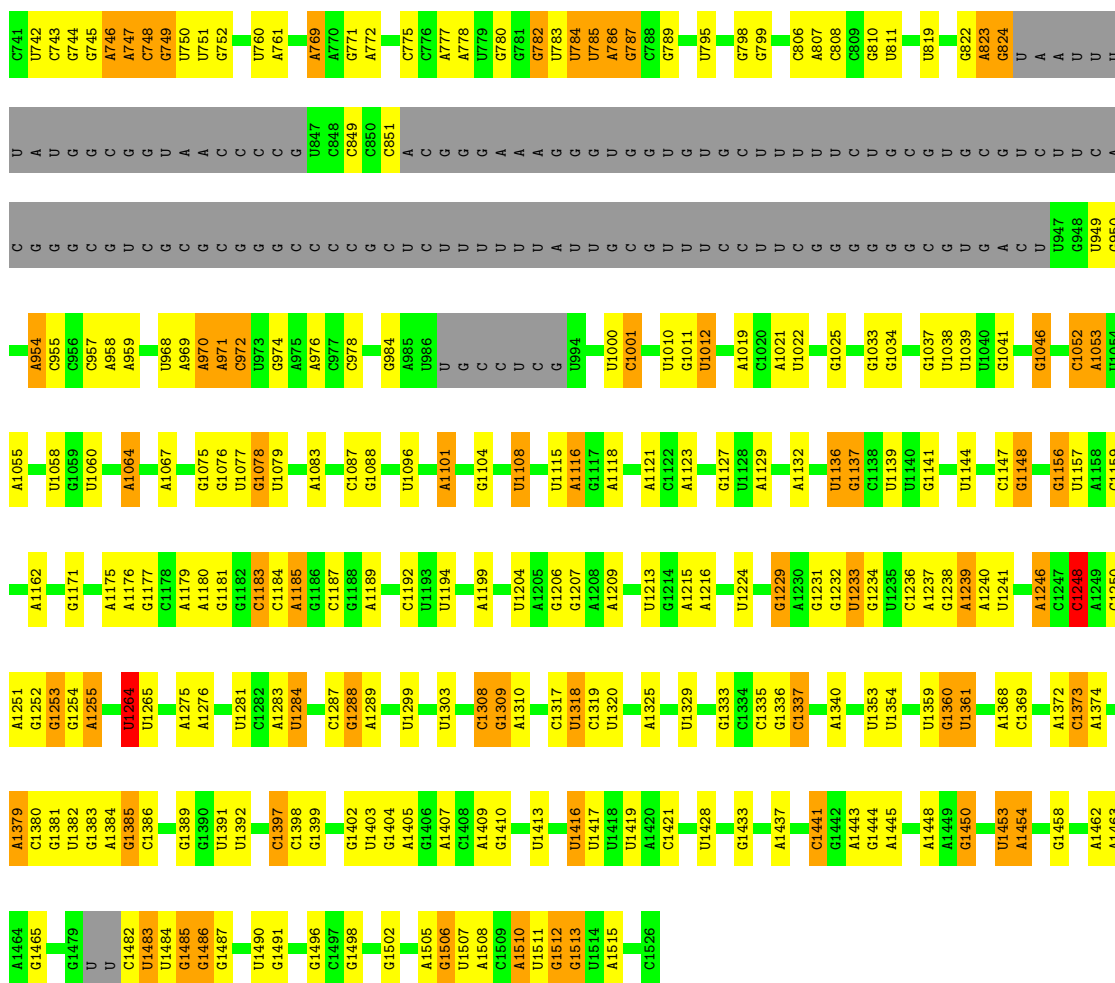
3 Residue-property plots [i](#)

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

• Molecule 1: LSUa_rRNA_chain_1

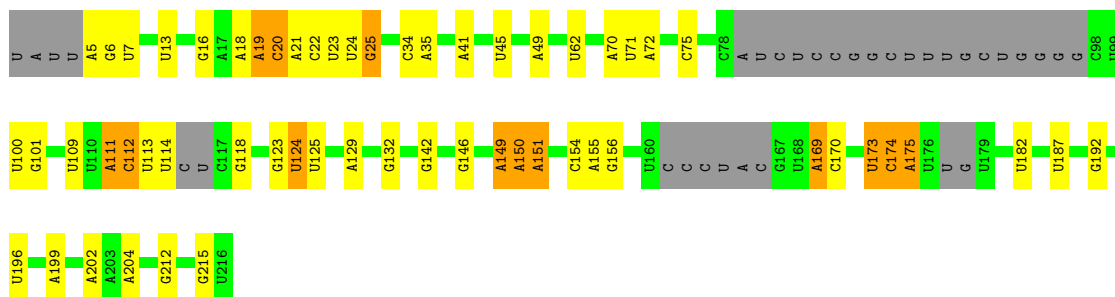






• Molecule 3: SR1_chain_3

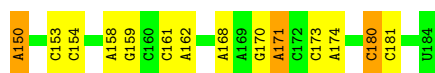
Chain L3: 58% 21% 6% 15%



• Molecule 4: SR2_chain_4

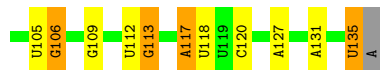
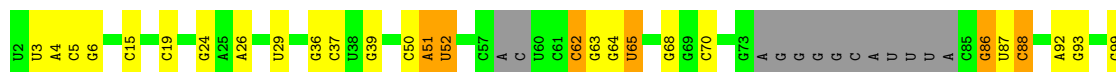
Chain L4: 73% 23% 4%





• Molecule 5: SR4_chain_5

Chain L5: 61% 21% 7% 10%



• Molecule 6: SR6_chain_6

Chain L6: 49% 37% 11%



• Molecule 7: 5.8S_rRNA_chain_7

Chain L7: 69% 21% 7%



• Molecule 8: 5S_rRNA_chain_8

Chain L8: 76% 20%



• Molecule 9: Putative 60S ribosomal protein L2

Chain LA: 89% 10%



• Molecule 10: Putative ribosomal protein L3

Chain LB: 84% 12%

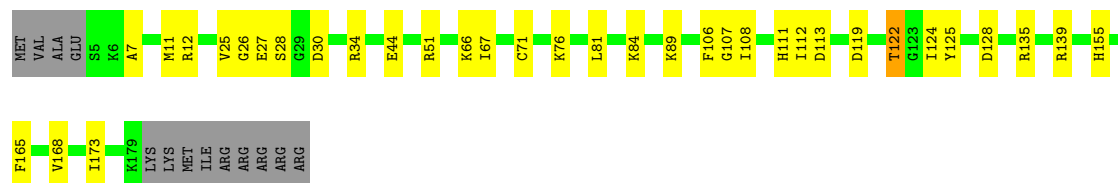
- Molecule 11: Putative ribosomal protein L1a

Chain LC:  87% 11%




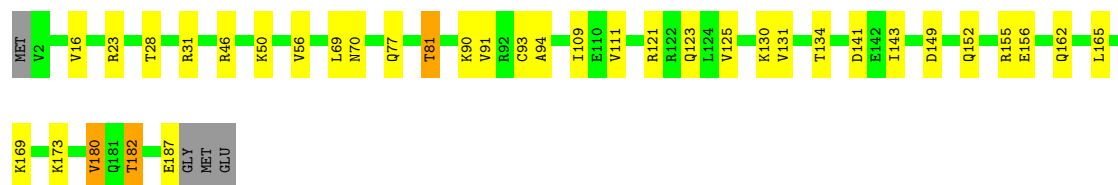
- Molecule 12: 60S ribosomal protein L11

Chain LD: 



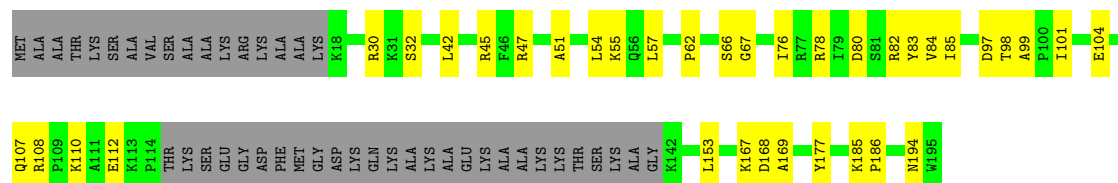
- Molecule 13: Putative 60S ribosomal protein L9

Chain LE:  79% 17% 4%

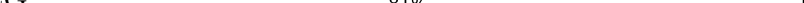


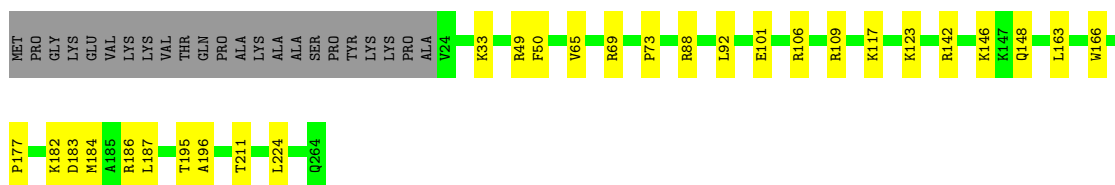
- Molecule 14: Putative 60S ribosomal protein L6

Chain LF: 



- Molecule 15: 60S ribosomal protein L7a

Chain LG: 



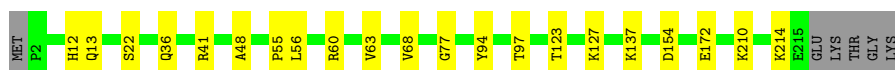
- Molecule 16: Putative 60S ribosomal protein L13a

Chain LH: 86% 14%



- Molecule 17: Putative 60S ribosomal protein L13

Chain LI: 88% 10% .



- Molecule 18: Putative 60S ribosomal protein L23

Chain LJ: 83% 14% .



- Molecule 19: Putative 40S ribosomal protein L14

Chain LK: 81% 15% . .



- Molecule 20: Putative 60S ribosomal protein L27A/L29

Chain LL: 81% 18% .




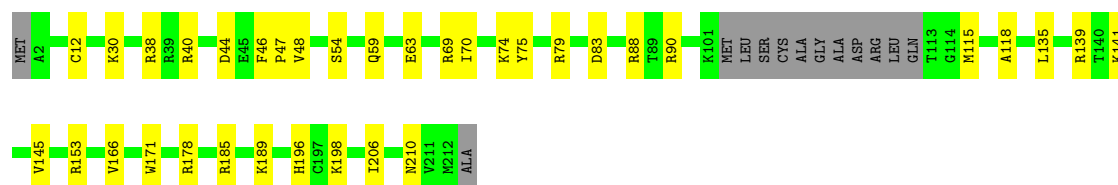
- Molecule 21: Ribosomal protein L15

Chain LM: 89% 10%




- Molecule 22: Putative 60S ribosomal protein L10

Chain LN:  77% 16% 6%



- Molecule 23: Putative 60S ribosomal protein L5

Chain LO:  85% 12% .



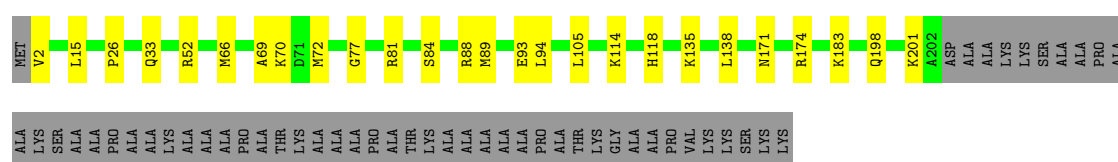
- Molecule 24: 60S ribosomal protein L18

Chain LP:  88% 12% .




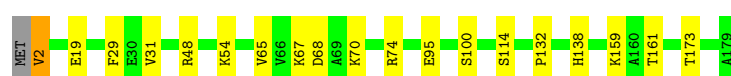
- Molecule 25: Putative 60S ribosomal protein L19

Chain LQ:  69% 10% 21%




- Molecule 26: 60S ribosomal protein L18a

Chain LR:  89% 10% ..




- Molecule 27: Putative 60S ribosomal protein L21

Chain LS:  89% 10% .




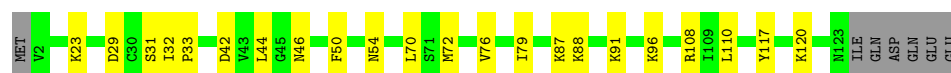
- Molecule 28: Putative 60S ribosomal protein L17

Chain LT:  83% 9% 8%




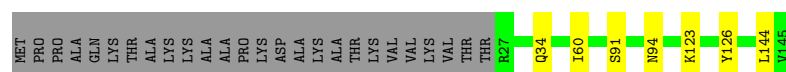
- Molecule 29: Putative 60S ribosomal protein L22

Chain LU:  78% 17% 5%



- Molecule 30: Putative 60S ribosomal protein L23a

Chain LV:  77% 5% 18%



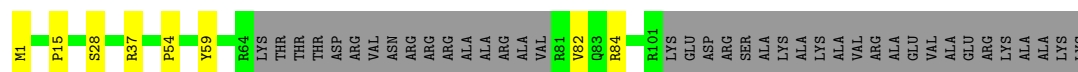
- Molecule 31: Putative 60S ribosomal protein L26

Chain LW:  71% 14% 15%



- Molecule 32: Putative ribosomal protein L24

Chain LX:  62% 6% 31%




- Molecule 33: 60S ribosomal protein L27

Chain LY:  90% 10% 0%




- Molecule 34: Putative 60S ribosomal protein L28

Chain LZ:  81% 17% 2%




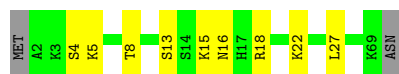
- Molecule 35: Putative 60S ribosomal protein L35

Chain La:  85% 13% ..




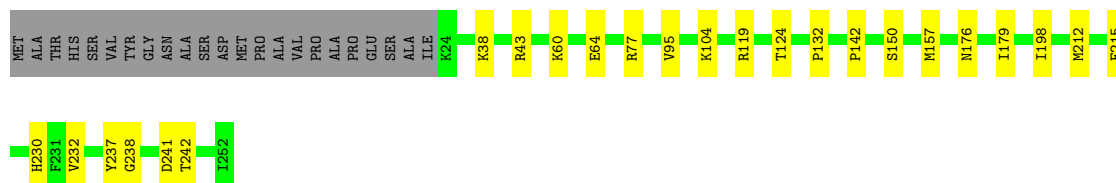
- Molecule 36: 60S ribosomal protein L29

Chain Lb:  84% 13% .



- Molecule 37: Putative 60S ribosomal protein L7

Chain Lc:  81% 10% 9%




- Molecule 38: 60S ribosomal protein L30

Chain Ld:  75% 15% 8%




- Molecule 39: Putative 60S ribosomal subunit protein L31

Chain Le:  87% 12% .




- Molecule 40: 60S ribosomal protein L32

Chain Lf:  89% 7% .

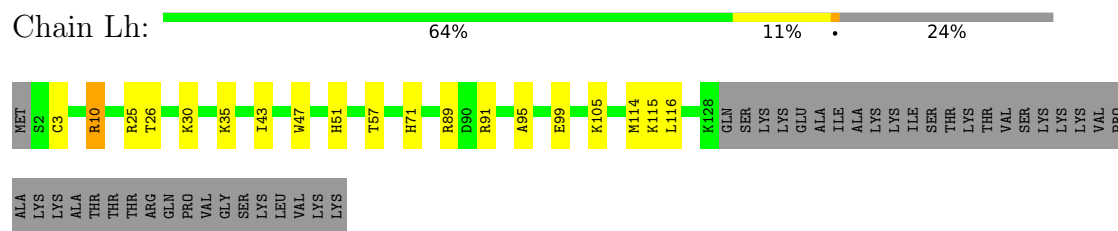


- Molecule 41: Putative ribosomal protein l35a

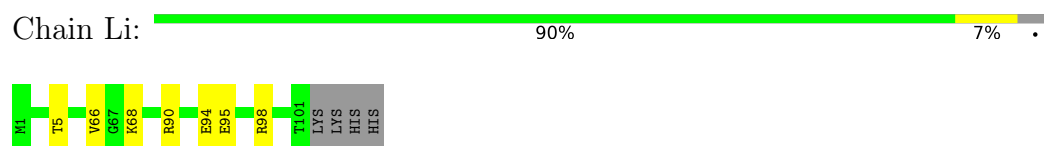
Chain Lg:  85% 14% ..



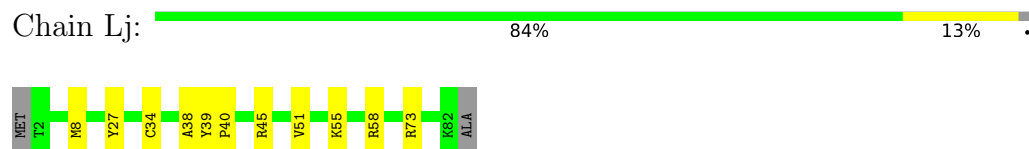
- Molecule 42: Putative 60S ribosomal protein L34



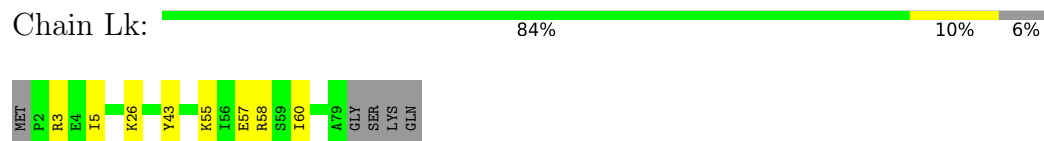
- Molecule 43: Putative 60S Ribosomal protein L36



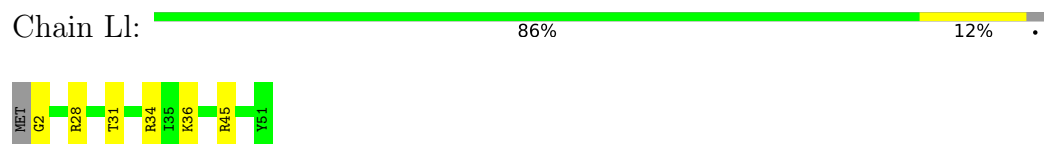
- Molecule 44: Ribosomal protein L37



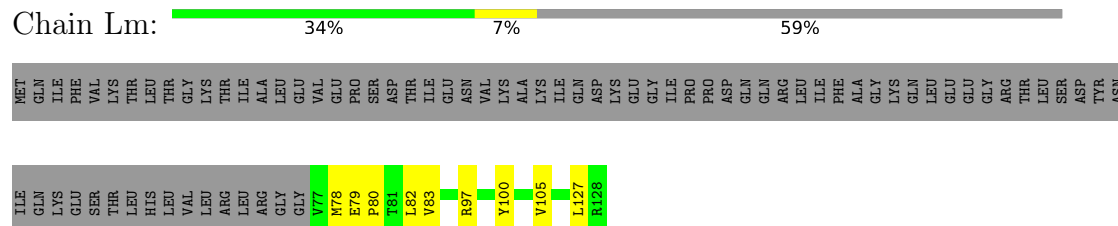
- Molecule 45: Putative ribosomal protein L38



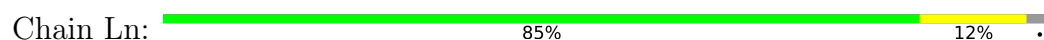
- Molecule 46: Putative 60S ribosomal protein L39

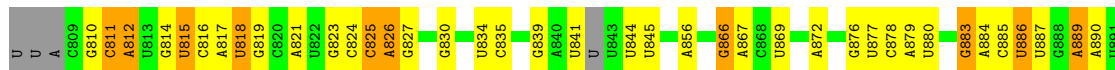


- Molecule 47: Ubiquitin-60S ribosomal protein L40



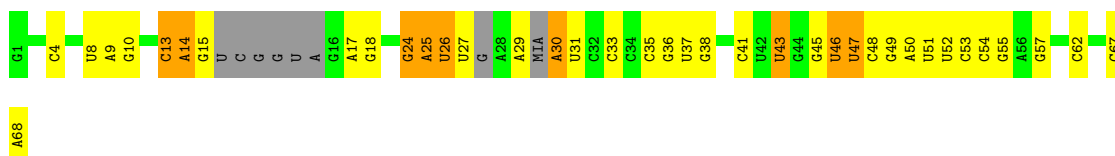
- Molecule 48: Ribosomal protein L41







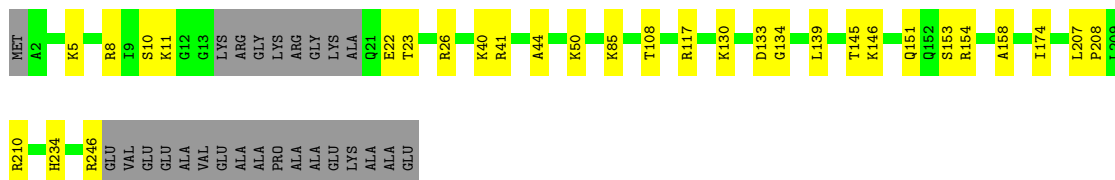
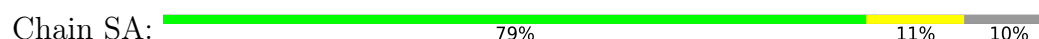
- Molecule 52: tRNA



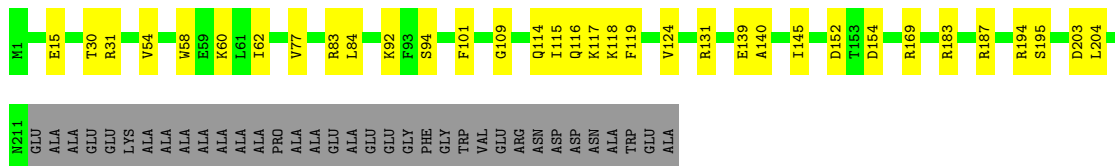
- Molecule 53: tRNA



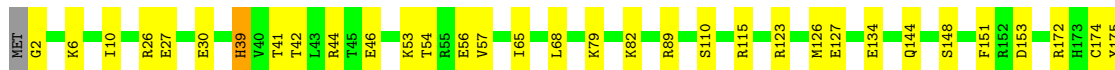
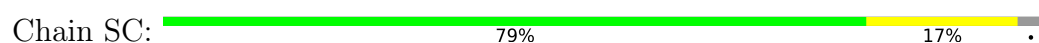
- Molecule 54: 40S ribosomal protein S3a



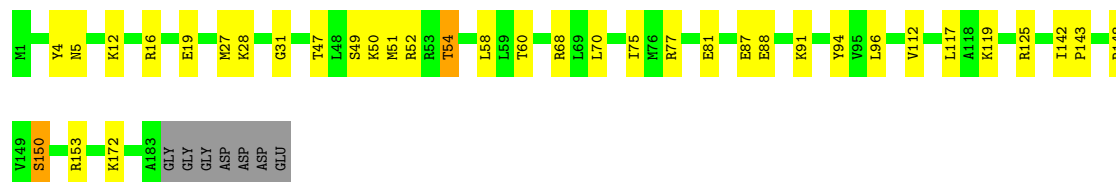
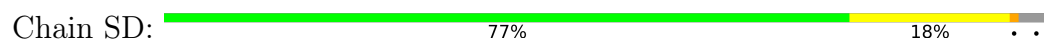
- Molecule 55: 40S ribosomal protein SA



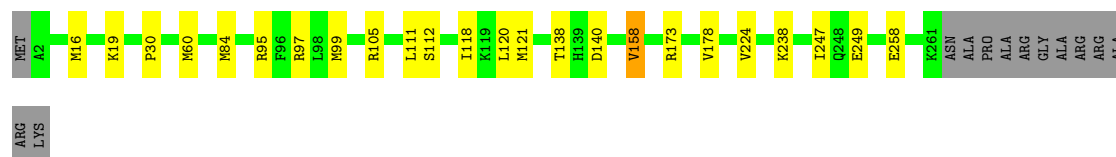
- Molecule 56: Putative 40S ribosomal protein S3



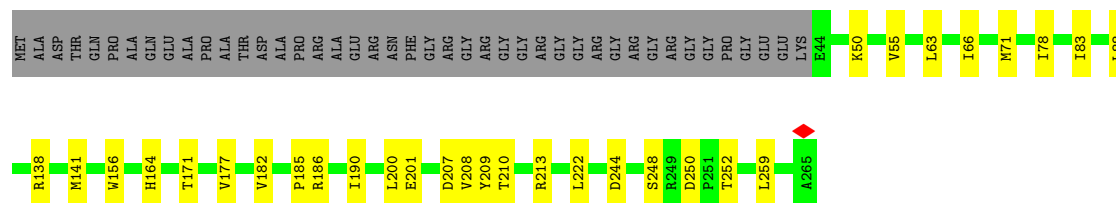
- Molecule 57: Putative 40S ribosomal protein S9



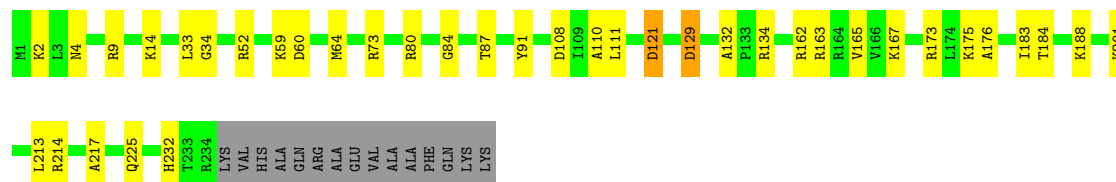
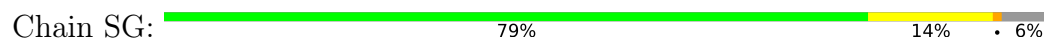
- Molecule 58: 40S ribosomal protein S4



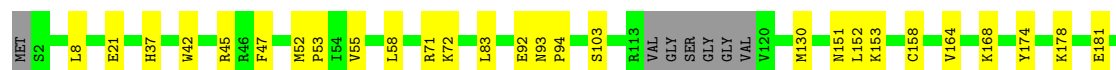
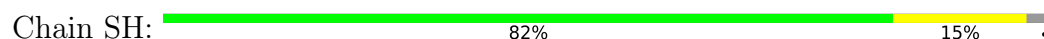
- Molecule 59: 40S ribosomal protein S2




- Molecule 60: 40S ribosomal protein S6



- Molecule 61: 40S ribosomal protein S5




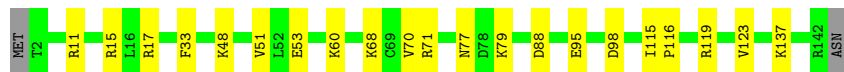
- Molecule 68: 40S ribosomal protein S14

Chain SO:  83% 12% 5%



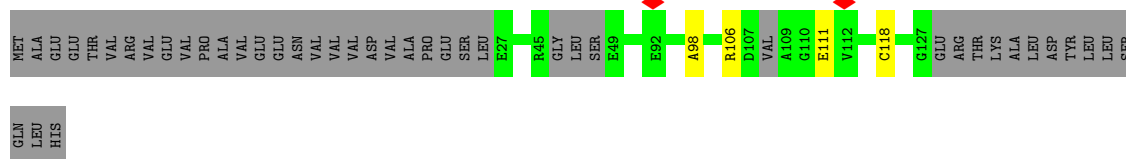
- Molecule 69: Putative 40S ribosomal protein S23

Chain SP:  84% 15% 1%




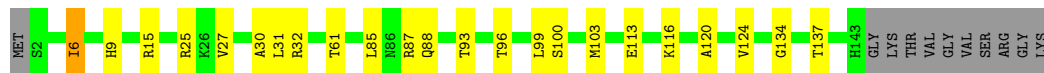
- Molecule 70: 40S ribosomal protein S12

Chain SQ:  66% 31% 3%




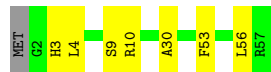
- Molecule 71: Putative 40S ribosomal protein S18

Chain SR:  78% 14% 7%




- Molecule 72: Putative ribosomal protein S29

Chain SS:  86% 12% 2%




- Molecule 73: Putative 40S ribosomal protein S13

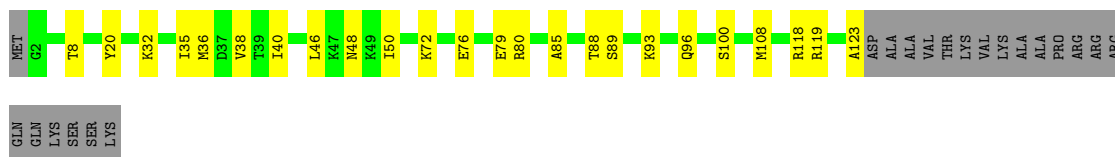
Chain ST:  87% 8% 5%



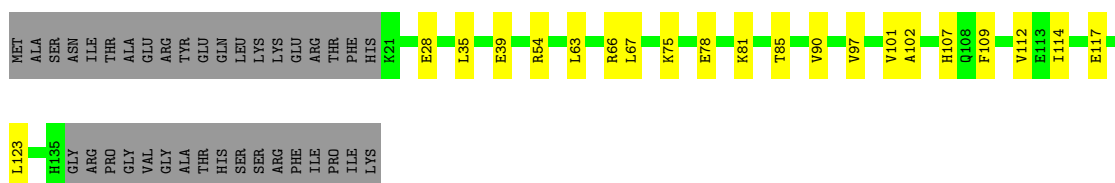
- Molecule 74: Putative 40S ribosomal protein S11

Chain SU:  81% 7% 12%

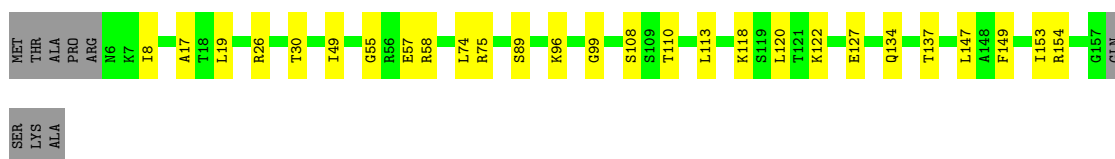
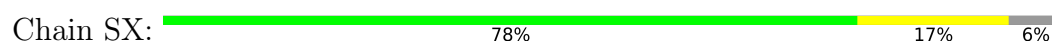
- Molecule 75: Putative 40S ribosomal protein S17



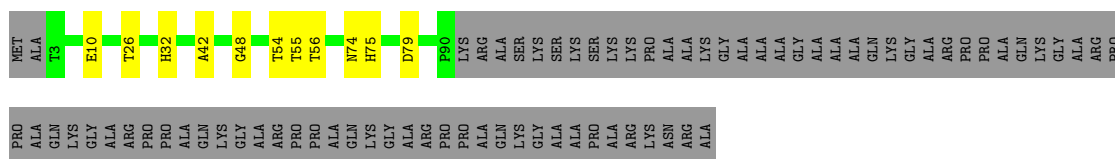
- Molecule 76: Putative 40S ribosomal protein S15



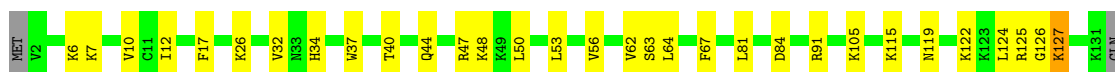
- Molecule 77: 40S ribosomal protein S19-like protein



- Molecule 78: Putative 40S ribosomal protein S21



- Molecule 79: 40S ribosomal protein S24



-
- Diagram illustrating a 4x4 grid structure with columns labeled C1, C4, U8, U9, A12, and A. The grid contains various colored cells (green, orange, yellow, grey) and some cells are empty.

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	150124	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 ($e^-/\text{\AA}^2$)	0.92	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.201	Depositor
Minimum map value	-0.079	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.005	Depositor
Map size (Å)	395.76, 395.76, 395.76	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8245, 0.8245, 0.8245	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MIA, 5MC, 7MG, OMC, ZN, MG, A2M, PAR, SPD, PSU, OMU, PUT, 1MA, NA, MA6, K, B8N, OMG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	L1	0.15	2/39379 (0.0%)	0.24	0/61402
2	L2	0.17	5/26133 (0.0%)	0.25	0/40729
3	L3	0.13	0/4306	0.24	0/6694
4	L4	0.09	0/4376	0.22	0/6822
5	L5	0.10	0/2878	0.25	0/4479
6	L6	0.10	0/1705	0.24	0/2652
7	L7	0.17	0/3804	0.26	0/5923
8	L8	0.08	0/2851	0.18	0/4439
9	LA	0.11	0/2018	0.30	0/2712
10	LB	0.11	0/3283	0.27	0/4412
11	LC	0.09	0/2876	0.26	0/3868
12	LD	0.09	0/1414	0.25	0/1888
13	LE	0.09	0/1497	0.24	0/2017
14	LF	0.11	0/1191	0.31	0/1608
15	LG	0.08	0/1921	0.24	0/2588
16	LH	0.08	0/1803	0.25	0/2422
17	LI	0.09	0/1728	0.26	0/2313
18	LJ	0.10	0/1029	0.30	0/1388
19	LK	0.08	0/1348	0.22	0/1808
20	LL	0.10	0/1151	0.28	0/1538
21	LM	0.09	0/1751	0.24	0/2338
22	LN	0.08	0/1658	0.26	0/2217
23	LO	0.09	0/2381	0.26	0/3187
24	LP	0.08	0/1564	0.24	0/2092
25	LQ	0.08	0/1712	0.22	0/2265
26	LR	0.09	0/1489	0.24	0/2008
27	LS	0.10	0/1290	0.26	0/1736
28	LT	0.10	0/1245	0.29	0/1670
29	LU	0.08	0/976	0.24	0/1303
30	LV	0.09	0/968	0.26	0/1302
31	LW	0.08	0/981	0.26	0/1310

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	LX	0.09	0/735	0.25	0/989
33	LY	0.07	0/1086	0.21	0/1452
34	LZ	0.09	0/1133	0.22	0/1516
35	La	0.09	0/1054	0.24	0/1399
36	Lb	0.08	0/557	0.23	0/743
37	Lc	0.09	0/1896	0.25	0/2540
38	Ld	0.10	0/740	0.26	0/1003
39	Le	0.08	0/1488	0.22	0/1979
40	Lf	0.08	0/1066	0.26	0/1424
41	Lg	0.09	0/1183	0.25	0/1588
42	Lh	0.10	0/1045	0.28	0/1390
43	Li	0.11	0/813	0.29	0/1088
44	Lj	0.10	0/682	0.30	0/911
45	Lk	0.09	0/617	0.26	0/828
46	Ll	0.08	0/463	0.23	0/617
47	Lm	0.09	0/422	0.28	0/562
48	Ln	0.11	0/296	0.29	0/386
49	Lo	0.11	0/705	0.33	0/940
50	Lp	0.10	0/797	0.25	0/1053
51	S1	0.13	2/43029 (0.0%)	0.23	0/67033
52	S2	0.09	0/328	0.25	0/503
52	S4	0.11	0/1613	0.27	0/2508
53	S3	0.08	0/1785	0.18	0/2778
54	SA	0.10	0/1933	0.28	0/2596
55	SB	0.10	0/1696	0.28	0/2293
56	SC	0.08	0/1674	0.22	0/2240
57	SD	0.09	0/1536	0.24	0/2059
58	SE	0.09	0/2092	0.27	0/2819
59	SF	0.09	0/1744	0.25	0/2362
60	SG	0.09	0/1889	0.24	0/2523
61	SH	0.08	0/1463	0.23	0/1963
62	SI	0.10	0/1679	0.28	0/2255
63	SJ	0.09	0/1038	0.25	0/1391
64	SK	0.09	0/1605	0.25	0/2150
65	SL	0.08	0/1161	0.24	0/1559
66	SM	0.09	0/815	0.24	0/1105
67	SN	0.46	2/899 (0.2%)	0.89	5/1217 (0.4%)
68	SO	0.10	0/1039	0.30	0/1395
69	SP	0.09	0/1120	0.25	0/1500
70	SQ	0.08	0/477	0.24	0/660
71	SR	0.08	0/1158	0.23	0/1553
72	SS	0.08	0/458	0.25	0/607
73	ST	0.09	0/1190	0.27	0/1594

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
74	SU	0.09	0/1289	0.27	0/1731
75	SV	0.08	0/1002	0.22	0/1334
76	SW	0.09	0/948	0.22	0/1275
77	SX	0.08	0/1237	0.24	0/1661
78	SY	0.09	0/684	0.25	0/928
79	SZ	0.09	0/1071	0.27	0/1425
80	Sa	0.08	0/657	0.24	0/882
81	Sb	0.09	0/842	0.25	0/1127
82	Sc	0.08	0/675	0.23	0/907
83	Sd	0.08	0/498	0.31	0/668
84	Se	0.09	0/457	0.26	0/609
85	Sf	0.07	0/472	0.25	0/640
86	Sg	0.08	0/2400	0.26	0/3260
87	Sh	0.09	0/1231	0.27	0/1671
88	S5	0.08	0/279	0.21	0/431
All	All	0.13	11/226647 (0.0%)	0.25	5/332750 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
28	LT	0	1

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
67	SN	100	PRO	CG-CD	-11.35	1.12	1.50
67	SN	100	PRO	CB-CG	-5.79	1.20	1.49
2	L2	527	A2M	O3'-P	5.36	1.61	1.56
2	L2	1384	A2M	O3'-P	5.20	1.61	1.56
51	S1	668	A2M	O3'-P	5.17	1.61	1.56

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
67	SN	100	PRO	N-CD-CG	-19.68	73.69	103.20
67	SN	100	PRO	CA-CB-CG	-17.99	70.31	104.50
67	SN	100	PRO	CB-CG-CD	8.34	132.79	106.10
67	SN	100	PRO	N-CA-CB	-6.44	97.40	103.19
67	SN	100	PRO	CA-N-CD	-6.41	103.03	112.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
28	LT	135	ARG	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L1	36117	0	18210	264	0
2	L2	24815	0	12579	193	0
3	L3	3880	0	1967	29	0
4	L4	3937	0	1989	19	0
5	L5	2578	0	1309	23	0
6	L6	1526	0	779	23	0
7	L7	3534	0	1793	30	0
8	L8	2551	0	1293	14	0
9	LA	1972	0	2018	21	0
10	LB	3216	0	3334	47	0
11	LC	2826	0	2942	24	0
12	LD	1391	0	1436	21	0
13	LE	1477	0	1558	22	0
14	LF	1169	0	1242	26	0
15	LG	1895	0	1993	18	0
16	LH	1767	0	1872	20	0
17	LI	1695	0	1764	15	0
18	LJ	1012	0	1057	12	0
19	LK	1329	0	1381	17	0
20	LL	1124	0	1151	22	0
21	LM	1711	0	1790	20	0
22	LN	1626	0	1696	21	0
23	LO	2339	0	2424	25	0
24	LP	1539	0	1648	21	0
25	LQ	1692	0	1807	16	0
26	LR	1455	0	1492	13	0
27	LS	1261	0	1311	13	0
28	LT	1221	0	1256	11	0
29	LU	960	0	987	15	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	LV	953	0	1016	5	0
31	LW	967	0	1040	15	0
32	LX	714	0	727	6	0
33	LY	1065	0	1135	8	0
34	LZ	1117	0	1165	18	0
35	La	1043	0	1142	11	0
36	Lb	546	0	575	5	0
37	Lc	1862	0	1959	16	0
38	Ld	730	0	743	10	0
39	Le	1469	0	1599	17	0
40	Lf	1046	0	1106	6	0
41	Lg	1159	0	1209	16	0
42	Lh	1029	0	1084	17	0
43	Li	798	0	853	3	0
44	Lj	668	0	672	8	0
45	Lk	608	0	641	5	0
46	Ll	450	0	483	6	0
47	Lm	416	0	446	7	0
48	Ln	292	0	331	4	0
49	Lo	693	0	712	7	0
50	Lp	784	0	841	13	0
51	S1	39635	0	20030	303	0
52	S2	325	0	175	3	0
52	S4	1446	0	738	16	0
53	S3	1599	0	816	9	0
54	SA	1909	0	1999	18	0
55	SB	1662	0	1692	22	0
56	SC	1646	0	1716	26	0
57	SD	1508	0	1582	29	0
58	SE	2054	0	2148	19	0
59	SF	1708	0	1754	17	0
60	SG	1866	0	1990	32	0
61	SH	1441	0	1469	19	0
62	SI	1649	0	1752	26	0
63	SJ	1021	0	1050	9	0
64	SK	1582	0	1652	21	0
65	SL	1140	0	1197	16	0
66	SM	805	0	844	16	0
67	SN	874	0	860	13	0
68	SO	1024	0	1052	13	0
69	SP	1100	0	1146	15	0
70	SQ	480	0	229	2	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
71	SR	1138	0	1186	12	0
72	SS	452	0	459	5	0
73	ST	1167	0	1243	9	0
74	SU	1260	0	1301	7	0
75	SV	992	0	1065	20	0
76	SW	928	0	955	13	0
77	SX	1206	0	1231	16	0
78	SY	673	0	664	8	0
79	SZ	1051	0	1130	17	0
80	Sa	650	0	688	12	0
81	Sb	825	0	859	7	0
82	Sc	661	0	647	10	0
83	Sd	496	0	511	4	0
84	Se	449	0	475	8	0
85	Sf	465	0	353	14	0
86	Sg	2343	0	2256	41	0
87	Sh	1212	0	1139	29	0
88	S5	251	0	130	1	0
89	L1	150	0	285	14	0
89	L2	20	0	36	1	0
89	LM	10	0	19	3	0
89	S1	30	0	57	5	0
90	L1	120	0	0	0	0
90	L2	94	0	0	0	0
90	L3	5	0	0	0	0
90	L4	10	0	0	0	0
90	L5	6	0	0	0	0
90	L6	2	0	0	0	0
90	L7	4	0	0	0	0
90	L8	6	0	0	0	0
90	LA	2	0	0	0	0
90	LG	1	0	0	0	0
90	LJ	1	0	0	0	0
90	LN	1	0	0	0	0
90	LS	1	0	0	0	0
90	LT	1	0	0	0	0
90	Lf	1	0	0	0	0
90	Lh	2	0	0	0	0
90	S1	109	0	0	0	0
90	S3	1	0	0	0	0
90	SG	1	0	0	0	0
90	SO	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
90	ST	1	0	0	0	0
90	SX	1	0	0	0	0
90	Sb	1	0	0	0	0
91	L1	15	0	0	0	0
91	L2	12	0	0	0	0
91	L3	1	0	0	0	0
91	L4	3	0	0	0	0
91	L7	2	0	0	0	0
91	LN	1	0	0	0	0
91	Lf	1	0	0	0	0
91	S1	12	0	0	0	0
91	SS	1	0	0	0	0
92	L1	20	0	0	0	0
92	L2	14	0	0	0	0
92	L4	4	0	0	0	0
92	L7	1	0	0	0	0
92	LB	1	0	0	0	0
92	LC	2	0	0	0	0
92	LM	1	0	0	0	0
92	LV	1	0	0	0	0
92	Le	1	0	0	0	0
92	Ll	1	0	0	0	0
92	S1	19	0	0	0	0
93	L1	42	0	82	1	0
93	L2	30	0	60	1	0
93	L4	6	0	12	0	0
93	L5	6	0	12	0	0
93	S1	12	0	24	0	0
94	L1	42	0	45	3	0
94	L2	84	0	90	6	0
94	L7	42	0	45	4	0
94	S1	84	0	89	5	0
95	LK	1	0	0	0	0
95	Lj	1	0	0	0	0
95	Lm	1	0	0	0	0
95	Lo	1	0	0	0	0
95	Lp	1	0	0	0	0
95	SS	1	0	0	0	0
95	Sb	1	0	0	0	0
96	L1	762	0	0	4	0
96	L2	787	0	0	4	0
96	L3	49	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
96	L4	55	0	0	1	0
96	L5	22	0	0	0	0
96	L7	24	0	0	0	0
96	LA	46	0	0	1	0
96	LB	42	0	0	0	0
96	LC	27	0	0	0	0
96	LD	1	0	0	0	0
96	LG	1	0	0	0	0
96	LH	6	0	0	0	0
96	LI	11	0	0	0	0
96	LJ	5	0	0	0	0
96	LL	15	0	0	0	0
96	LM	26	0	0	0	0
96	LN	2	0	0	0	0
96	LO	1	0	0	0	0
96	LP	9	0	0	0	0
96	LQ	11	0	0	0	0
96	LS	4	0	0	0	0
96	LT	15	0	0	0	0
96	LU	1	0	0	0	0
96	LV	2	0	0	0	0
96	LW	5	0	0	1	0
96	LX	2	0	0	0	0
96	LY	2	0	0	0	0
96	La	1	0	0	0	0
96	Lb	5	0	0	0	0
96	Lc	2	0	0	0	0
96	Ld	4	0	0	0	0
96	Le	6	0	0	0	0
96	Lf	3	0	0	0	0
96	Lg	3	0	0	0	0
96	Lh	12	0	0	0	0
96	Lj	18	0	0	0	0
96	Ln	9	0	0	0	0
96	Lo	23	0	0	0	0
96	Lp	14	0	0	0	0
96	S1	595	0	0	3	0
96	S2	1	0	0	0	0
96	S3	6	0	0	0	0
96	S4	15	0	0	0	0
96	SA	6	0	0	0	0
96	SF	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
96	SJ	1	0	0	0	0
96	SK	19	0	0	0	0
96	SO	9	0	0	0	0
96	SP	4	0	0	0	0
96	ST	14	0	0	0	0
96	SU	9	0	0	0	0
96	Sb	9	0	0	0	0
96	Sc	1	0	0	0	0
96	Sg	1	0	0	0	0
All	All	218491	0	158596	1688	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 5.

The worst 5 of 1688 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)
94:L2:1729:PAR:O43	94:L2:1729:PAR:C13	1.65	1.24
94:S1:2445:PAR:C13	94:S1:2445:PAR:O43	1.65	1.24
94:L2:1728:PAR:O43	94:L2:1728:PAR:C13	1.65	1.19
94:L7:208:PAR:O43	94:L7:208:PAR:C13	1.65	1.17
94:L1:1978:PAR:O43	94:L1:1978:PAR:C13	1.65	1.12

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	LA	257/260 (99%)	248 (96%)	9 (4%)	0	100	100
10	LB	402/419 (96%)	398 (99%)	4 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
11	LC	364/373 (98%)	355 (98%)	9 (2%)	0	100	100
12	LD	173/188 (92%)	171 (99%)	2 (1%)	0	100	100
13	LE	184/190 (97%)	178 (97%)	6 (3%)	0	100	100
14	LF	147/195 (75%)	141 (96%)	6 (4%)	0	100	100
15	LG	240/264 (91%)	237 (99%)	3 (1%)	0	100	100
16	LH	219/222 (99%)	217 (99%)	2 (1%)	0	100	100
17	LI	212/220 (96%)	207 (98%)	5 (2%)	0	100	100
18	LJ	133/139 (96%)	131 (98%)	2 (2%)	0	100	100
19	LK	167/175 (95%)	161 (96%)	6 (4%)	0	100	100
20	LL	142/145 (98%)	137 (96%)	5 (4%)	0	100	100
21	LM	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
22	LN	196/213 (92%)	189 (96%)	7 (4%)	0	100	100
23	LO	295/305 (97%)	292 (99%)	3 (1%)	0	100	100
24	LP	195/198 (98%)	190 (97%)	5 (3%)	0	100	100
25	LQ	200/254 (79%)	200 (100%)	0	0	100	100
26	LR	176/179 (98%)	174 (99%)	2 (1%)	0	100	100
27	LS	156/159 (98%)	152 (97%)	4 (3%)	0	100	100
28	LT	150/166 (90%)	149 (99%)	1 (1%)	0	100	100
29	LU	120/129 (93%)	119 (99%)	1 (1%)	0	100	100
30	LV	117/145 (81%)	116 (99%)	1 (1%)	0	100	100
31	LW	119/143 (83%)	116 (98%)	3 (2%)	0	100	100
32	LX	81/124 (65%)	78 (96%)	3 (4%)	0	100	100
33	LY	131/134 (98%)	130 (99%)	1 (1%)	0	100	100
34	LZ	143/147 (97%)	142 (99%)	1 (1%)	0	100	100
35	La	123/127 (97%)	120 (98%)	3 (2%)	0	100	100
36	Lb	66/70 (94%)	66 (100%)	0	0	100	100
37	Lc	227/252 (90%)	222 (98%)	5 (2%)	0	100	100
38	Ld	94/104 (90%)	94 (100%)	0	0	100	100
39	Le	184/188 (98%)	183 (100%)	1 (0%)	0	100	100
40	Lf	126/133 (95%)	123 (98%)	3 (2%)	0	100	100
41	Lg	142/144 (99%)	140 (99%)	2 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
42	Lh	125/168 (74%)	124 (99%)	1 (1%)	0	100	100
43	Li	99/105 (94%)	98 (99%)	1 (1%)	0	100	100
44	Lj	79/83 (95%)	78 (99%)	1 (1%)	0	100	100
45	Lk	76/83 (92%)	76 (100%)	0	0	100	100
46	Ll	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
47	Lm	50/128 (39%)	50 (100%)	0	0	100	100
48	Ln	31/34 (91%)	31 (100%)	0	0	100	100
49	Lo	87/92 (95%)	82 (94%)	5 (6%)	0	100	100
50	Lp	95/106 (90%)	94 (99%)	1 (1%)	0	100	100
54	SA	234/264 (89%)	229 (98%)	5 (2%)	0	100	100
55	SB	209/246 (85%)	205 (98%)	4 (2%)	0	100	100
56	SC	211/219 (96%)	208 (99%)	3 (1%)	0	100	100
57	SD	181/190 (95%)	180 (99%)	1 (1%)	0	100	100
58	SE	258/273 (94%)	255 (99%)	3 (1%)	0	100	100
59	SF	220/265 (83%)	218 (99%)	2 (1%)	0	100	100
60	SG	232/249 (93%)	229 (99%)	3 (1%)	0	100	100
61	SH	179/190 (94%)	176 (98%)	3 (2%)	0	100	100
62	SI	198/200 (99%)	192 (97%)	6 (3%)	0	100	100
63	SJ	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
64	SK	193/220 (88%)	191 (99%)	2 (1%)	0	100	100
65	SL	142/149 (95%)	139 (98%)	3 (2%)	0	100	100
66	SM	101/116 (87%)	99 (98%)	2 (2%)	0	100	100
67	SN	105/168 (62%)	103 (98%)	2 (2%)	0	100	100
68	SO	135/144 (94%)	131 (97%)	3 (2%)	1 (1%)	19	18
69	SP	139/143 (97%)	138 (99%)	1 (1%)	0	100	100
70	SQ	91/141 (64%)	89 (98%)	2 (2%)	0	100	100
71	SR	140/153 (92%)	137 (98%)	3 (2%)	0	100	100
72	SS	54/57 (95%)	54 (100%)	0	0	100	100
73	ST	141/151 (93%)	137 (97%)	4 (3%)	0	100	100
74	SU	151/173 (87%)	146 (97%)	5 (3%)	0	100	100
75	SV	120/143 (84%)	119 (99%)	1 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
76	SW	113/152 (74%)	111 (98%)	2 (2%)	0	100	100
77	SX	150/161 (93%)	146 (97%)	4 (3%)	0	100	100
78	SY	87/164 (53%)	83 (95%)	4 (5%)	0	100	100
79	SZ	128/137 (93%)	125 (98%)	3 (2%)	0	100	100
80	Sa	81/120 (68%)	81 (100%)	0	0	100	100
81	Sb	102/112 (91%)	99 (97%)	3 (3%)	0	100	100
82	Sc	83/86 (96%)	83 (100%)	0	0	100	100
83	Sd	64/87 (74%)	62 (97%)	2 (3%)	0	100	100
84	Se	57/66 (86%)	56 (98%)	1 (2%)	0	100	100
85	Sf	71/152 (47%)	68 (96%)	3 (4%)	0	100	100
86	Sg	297/312 (95%)	284 (96%)	13 (4%)	0	100	100
87	Sh	167/235 (71%)	158 (95%)	9 (5%)	0	100	100
All	All	11533/12926 (89%)	11308 (98%)	224 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
68	SO	131	ASP

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
9	LA	201/204 (98%)	200 (100%)	1 (0%)	86	91
10	LB	337/351 (96%)	335 (99%)	2 (1%)	84	89
11	LC	293/301 (97%)	287 (98%)	6 (2%)	50	59
12	LD	148/162 (91%)	142 (96%)	6 (4%)	26	30
13	LE	166/172 (96%)	159 (96%)	7 (4%)	25	29
14	LF	124/153 (81%)	122 (98%)	2 (2%)	58	69

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	LG	193/221 (87%)	191 (99%)	2 (1%)	73	80
16	LH	182/188 (97%)	181 (100%)	1 (0%)	86	91
17	LI	178/183 (97%)	177 (99%)	1 (1%)	84	89
18	LJ	106/111 (96%)	104 (98%)	2 (2%)	52	62
19	LK	136/145 (94%)	131 (96%)	5 (4%)	29	35
20	LL	113/114 (99%)	112 (99%)	1 (1%)	75	83
21	LM	178/180 (99%)	177 (99%)	1 (1%)	84	89
22	LN	170/179 (95%)	168 (99%)	2 (1%)	67	76
23	LO	233/242 (96%)	227 (97%)	6 (3%)	41	50
24	LP	163/164 (99%)	162 (99%)	1 (1%)	84	89
25	LQ	171/198 (86%)	170 (99%)	1 (1%)	84	89
26	LR	157/159 (99%)	154 (98%)	3 (2%)	52	62
27	LS	132/134 (98%)	132 (100%)	0	100	100
28	LT	129/143 (90%)	128 (99%)	1 (1%)	79	86
29	LU	93/114 (82%)	92 (99%)	1 (1%)	70	79
30	LV	102/124 (82%)	101 (99%)	1 (1%)	73	80
31	LW	104/122 (85%)	103 (99%)	1 (1%)	73	80
32	LX	74/104 (71%)	73 (99%)	1 (1%)	62	72
33	LY	110/116 (95%)	108 (98%)	2 (2%)	54	64
34	LZ	114/118 (97%)	112 (98%)	2 (2%)	54	64
35	La	114/118 (97%)	111 (97%)	3 (3%)	41	50
36	Lb	56/58 (97%)	53 (95%)	3 (5%)	18	18
37	Lc	191/209 (91%)	191 (100%)	0	100	100
38	Ld	82/89 (92%)	78 (95%)	4 (5%)	21	23
39	Le	154/158 (98%)	151 (98%)	3 (2%)	52	62
40	Lf	111/115 (96%)	111 (100%)	0	100	100
41	Lg	121/121 (100%)	118 (98%)	3 (2%)	42	52
42	Lh	107/146 (73%)	104 (97%)	3 (3%)	38	47
43	Li	82/88 (93%)	81 (99%)	1 (1%)	67	76
44	Lj	67/70 (96%)	67 (100%)	0	100	100
45	Lk	65/74 (88%)	65 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
46	Ll	46/47 (98%)	45 (98%)	1 (2%)	47	56
47	Lm	42/113 (37%)	41 (98%)	1 (2%)	44	53
48	Ln	30/32 (94%)	29 (97%)	1 (3%)	33	41
49	Lo	69/74 (93%)	68 (99%)	1 (1%)	62	72
50	Lp	83/92 (90%)	81 (98%)	2 (2%)	44	53
54	SA	205/222 (92%)	202 (98%)	3 (2%)	60	70
55	SB	179/202 (89%)	177 (99%)	2 (1%)	70	79
56	SC	176/184 (96%)	170 (97%)	6 (3%)	32	40
57	SD	159/164 (97%)	156 (98%)	3 (2%)	52	62
58	SE	216/225 (96%)	214 (99%)	2 (1%)	75	83
59	SF	182/208 (88%)	179 (98%)	3 (2%)	58	69
60	SG	194/208 (93%)	191 (98%)	3 (2%)	60	70
61	SH	152/159 (96%)	152 (100%)	0	100	100
62	SI	181/186 (97%)	180 (99%)	1 (1%)	84	89
63	SJ	110/111 (99%)	109 (99%)	1 (1%)	75	83
64	SK	159/176 (90%)	159 (100%)	0	100	100
65	SL	116/120 (97%)	112 (97%)	4 (3%)	32	40
66	SM	93/104 (89%)	92 (99%)	1 (1%)	70	79
67	SN	95/128 (74%)	92 (97%)	3 (3%)	34	42
68	SO	104/113 (92%)	103 (99%)	1 (1%)	73	80
69	SP	114/117 (97%)	111 (97%)	3 (3%)	41	50
71	SR	120/130 (92%)	114 (95%)	6 (5%)	20	22
72	SS	47/49 (96%)	45 (96%)	2 (4%)	25	28
73	ST	126/132 (96%)	125 (99%)	1 (1%)	79	86
74	SU	136/152 (90%)	134 (98%)	2 (2%)	60	70
75	SV	109/126 (86%)	107 (98%)	2 (2%)	54	64
76	SW	98/130 (75%)	97 (99%)	1 (1%)	73	80
77	SX	122/131 (93%)	120 (98%)	2 (2%)	58	69
78	SY	73/116 (63%)	69 (94%)	4 (6%)	18	18
79	SZ	111/118 (94%)	107 (96%)	4 (4%)	30	37
80	Sa	71/95 (75%)	70 (99%)	1 (1%)	62	72

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
81	Sb	85/93 (91%)	82 (96%)	3 (4%)	31	38
82	Sc	70/76 (92%)	69 (99%)	1 (1%)	62	72
83	Sd	52/75 (69%)	52 (100%)	0	100	100
84	Se	44/54 (82%)	43 (98%)	1 (2%)	45	54
85	Sf	26/126 (21%)	25 (96%)	1 (4%)	28	34
86	Sg	255/265 (96%)	248 (97%)	7 (3%)	40	48
87	Sh	104/177 (59%)	100 (96%)	4 (4%)	28	34
All	All	9611/10678 (90%)	9448 (98%)	163 (2%)	56	66

5 of 163 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
67	SN	36	THR
79	SZ	124	LEU
69	SP	119	ARG
74	SU	67	LYS
84	Se	39	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 90 such sidechains are listed below:

Mol	Chain	Res	Type
57	SD	45	ASN
67	SN	70	HIS
59	SF	147	ASN
63	SJ	9	ASN
74	SU	24	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	L1	1678/1782 (94%)	320 (19%)	14 (0%)
2	L2	1153/1526 (75%)	207 (17%)	6 (0%)
3	L3	178/216 (82%)	34 (19%)	2 (1%)
4	L4	183/184 (99%)	31 (16%)	1 (0%)
5	L5	118/135 (87%)	24 (20%)	0
51	S1	1831/2204 (83%)	354 (19%)	18 (0%)
52	S2	13/76 (17%)	3 (23%)	1 (7%)

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
52	S4	65/76 (85%)	24 (36%)	3 (4%)
53	S3	73/77 (94%)	10 (13%)	0
6	L6	69/73 (94%)	22 (31%)	0
7	L7	164/171 (95%)	22 (13%)	3 (1%)
8	L8	119/124 (95%)	11 (9%)	0
88	S5	11/13 (84%)	3 (27%)	0
All	All	5655/6657 (84%)	1065 (18%)	48 (0%)

5 of 1065 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	L1	16	G
1	L1	24	A
1	L1	32	A
1	L1	38	A
1	L1	41	A

5 of 48 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
51	S1	294	G
51	S1	958	G
51	S1	328	C
51	S1	777	A
51	S1	1360	U

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

175 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
51	B8N	S1	1543	51	24,29,30	3.15	8 (33%)	29,42,45	1.71	5 (17%)
2	PSU	L2	662	90,2	18,21,22	4.61	8 (44%)	22,30,33	1.88	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	PSU	L1	940	1	18,21,22	4.55	7 (38%)	22,30,33	1.77	5 (22%)
51	OMG	S1	600	51	18,26,27	2.59	8 (44%)	19,38,41	1.51	4 (21%)
2	PSU	L2	1194	2	18,21,22	4.55	7 (38%)	22,30,33	1.77	5 (22%)
2	PSU	L2	1264	2	18,21,22	4.65	9 (50%)	22,30,33	1.79	4 (18%)
51	PSU	S1	2048	51	18,21,22	4.54	7 (38%)	22,30,33	1.79	5 (22%)
2	PSU	L2	1144	2	18,21,22	4.54	7 (38%)	22,30,33	1.80	5 (22%)
1	PSU	L1	774	1	18,21,22	4.56	7 (38%)	22,30,33	1.82	5 (22%)
1	1MA	L1	677	1,90	16,25,26	3.92	4 (25%)	18,37,40	1.40	3 (16%)
51	PSU	S1	1246	51	18,21,22	4.55	7 (38%)	22,30,33	1.81	5 (22%)
7	OMU	L7	101	7	19,22,23	4.57	14 (73%)	26,31,34	1.96	6 (23%)
51	OMG	S1	1829	51,90	18,26,27	2.41	8 (44%)	19,38,41	1.19	3 (15%)
51	OMU	S1	29	51	19,22,23	3.04	8 (42%)	26,31,34	1.70	5 (19%)
7	A2M	L7	43	7	18,25,26	4.28	7 (38%)	18,36,39	2.65	3 (16%)
2	PSU	L2	506	2	18,21,22	4.56	7 (38%)	22,30,33	1.78	5 (22%)
51	A2M	S1	2021	51	18,25,26	4.24	7 (38%)	18,36,39	2.71	4 (22%)
2	A2M	L2	572	2	18,25,26	4.24	7 (38%)	18,36,39	2.67	3 (16%)
1	OMU	L1	1253	1	19,22,23	3.05	8 (42%)	26,31,34	1.68	5 (19%)
1	A2M	L1	681	1	18,25,26	4.26	7 (38%)	18,36,39	2.59	3 (16%)
2	OMU	L2	667	2	19,22,23	3.05	8 (42%)	26,31,34	1.71	4 (15%)
51	PSU	S1	1292	51,90	18,21,22	4.55	7 (38%)	22,30,33	1.75	5 (22%)
2	PSU	L2	1060	2	18,21,22	4.53	7 (38%)	22,30,33	1.83	5 (22%)
1	A2M	L1	1539	1,2,90	18,25,26	4.33	7 (38%)	18,36,39	2.59	3 (16%)
2	OMG	L2	641	2	18,26,27	2.42	8 (44%)	19,38,41	1.27	3 (15%)
52	MIA	S2	37	52	24,31,32	2.44	3 (12%)	26,44,47	4.98	9 (34%)
2	A2M	L2	1384	90,2	18,25,26	4.33	7 (38%)	18,36,39	2.44	3 (16%)
2	A2M	L2	502	90,2	18,25,26	4.26	7 (38%)	18,36,39	2.65	3 (16%)
2	PSU	L2	500	2	18,21,22	4.56	7 (38%)	22,30,33	1.83	5 (22%)
51	OMU	S1	1621	51,90	19,22,23	3.04	8 (42%)	26,31,34	1.69	5 (19%)
2	OMU	L2	73	2	19,22,23	3.02	8 (42%)	26,31,34	1.64	4 (15%)
1	PSU	L1	422	1	18,21,22	4.56	7 (38%)	22,30,33	1.79	5 (22%)
2	PSU	L2	1413	2	18,21,22	4.66	7 (38%)	22,30,33	1.89	5 (22%)
2	A2M	L2	604	1,2	18,25,26	4.26	7 (38%)	18,36,39	2.64	3 (16%)
2	OMG	L2	1360	2,52	18,26,27	2.58	8 (44%)	19,38,41	1.48	4 (21%)
2	OMC	L2	1159	2	19,22,23	3.05	8 (42%)	26,31,34	0.75	0
51	OMU	S1	1662	51	19,22,23	3.06	8 (42%)	26,31,34	1.68	4 (15%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	OMG	L2	1046	2,53	18,26,27	2.59	8 (44%)	19,38,41	1.49	4 (21%)
2	OMG	L2	1231	2	18,26,27	2.56	8 (44%)	19,38,41	1.51	5 (26%)
51	OMC	S1	2059	51,90	19,22,23	3.05	8 (42%)	26,31,34	0.76	0
1	PSU	L1	1011	1,2	18,21,22	4.61	7 (38%)	22,30,33	1.63	4 (18%)
1	PSU	L1	1533	1,2	18,21,22	4.54	7 (38%)	22,30,33	1.77	5 (22%)
1	OMU	L1	1107	1	19,22,23	3.01	8 (42%)	26,31,34	1.76	5 (19%)
2	PSU	L2	593	2	18,21,22	4.56	7 (38%)	22,30,33	1.77	5 (22%)
3	OMU	L3	13	3	19,22,23	3.03	8 (42%)	26,31,34	1.70	5 (19%)
2	OMU	L2	56	1,2	19,22,23	3.05	8 (42%)	26,31,34	1.71	5 (19%)
7	OMG	L7	75	7	18,26,27	2.60	8 (44%)	19,38,41	1.52	4 (21%)
2	A2M	L2	1372	2	18,25,26	4.23	7 (38%)	18,36,39	2.70	3 (16%)
1	OMC	L1	695	1	19,22,23	3.05	8 (42%)	26,31,34	0.70	0
2	OMC	L2	1397	2	19,22,23	3.06	8 (42%)	26,31,34	0.74	0
51	OMG	S1	1550	51	18,26,27	2.42	8 (44%)	19,38,41	1.18	3 (15%)
2	PSU	L2	597	2	18,21,22	4.55	7 (38%)	22,30,33	1.83	5 (22%)
2	OMU	L2	1419	2	19,22,23	3.04	8 (42%)	26,31,34	1.65	4 (15%)
51	OMU	S1	1777	51	19,22,23	3.06	8 (42%)	26,31,34	1.68	4 (15%)
51	OMU	S1	661	51	19,22,23	3.11	8 (42%)	26,31,34	1.70	4 (15%)
2	PSU	L2	512	2	18,21,22	4.54	7 (38%)	22,30,33	1.78	5 (22%)
51	OMC	S1	38	51	19,22,23	3.05	8 (42%)	26,31,34	0.72	0
51	A2M	S1	668	51,90	18,25,26	4.14	6 (33%)	18,36,39	2.69	4 (22%)
51	PSU	S1	1539	51	18,21,22	4.66	7 (38%)	22,30,33	1.85	5 (22%)
1	A2M	L1	858	1	18,25,26	4.33	7 (38%)	18,36,39	2.67	3 (16%)
2	PSU	L2	1058	2	18,21,22	4.63	7 (38%)	22,30,33	1.93	5 (22%)
2	PSU	L2	1265	90,2	18,21,22	4.50	8 (44%)	22,30,33	1.69	5 (22%)
1	OMU	L1	1371	1	19,22,23	3.04	8 (42%)	26,31,34	1.67	4 (15%)
2	PSU	L2	1403	2	18,21,22	4.65	7 (38%)	22,30,33	1.79	6 (27%)
1	A2M	L1	305	1	18,25,26	4.17	7 (38%)	18,36,39	2.67	3 (16%)
1	OMU	L1	845	1	19,22,23	3.04	8 (42%)	26,31,34	1.67	4 (15%)
1	OMC	L1	1552	1	19,22,23	3.04	8 (42%)	26,31,34	0.75	0
51	PSU	S1	455	51	18,21,22	4.56	7 (38%)	22,30,33	1.73	5 (22%)
51	5MC	S1	1544	51	18,22,23	3.60	7 (38%)	26,32,35	1.01	1 (3%)
1	OMG	L1	1540	1,2	18,26,27	2.44	8 (44%)	19,38,41	1.18	3 (15%)
51	5MC	S1	2061	51	18,22,23	3.59	7 (38%)	26,32,35	0.94	1 (3%)
1	OMU	L1	1659	1,90	19,22,23	3.05	8 (42%)	26,31,34	1.67	5 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	OMC	L2	14	1,2	19,22,23	3.05	8 (42%)	26,31,34	0.72	0
1	PSU	L1	1171	1,91,92	18,21,22	4.62	8 (44%)	22,30,33	1.90	5 (22%)
51	PSU	S1	12	51	18,21,22	4.55	7 (38%)	22,30,33	1.80	5 (22%)
1	OMG	L1	1524	1	18,26,27	2.40	8 (44%)	19,38,41	1.17	3 (15%)
2	OMU	L2	1077	2	19,22,23	3.08	8 (42%)	26,31,34	1.68	4 (15%)
51	OMC	S1	2019	51	19,22,23	3.05	8 (42%)	26,31,34	0.71	0
1	PSU	L1	1093	1	18,21,22	4.56	7 (38%)	22,30,33	1.77	5 (22%)
2	PSU	L2	1213	2	18,21,22	4.56	7 (38%)	22,30,33	1.81	5 (22%)
2	PSU	L2	1303	2	18,21,22	4.57	7 (38%)	22,30,33	1.84	6 (27%)
2	OMC	L2	1317	2	19,22,23	3.03	8 (42%)	26,31,34	0.66	0
51	OMC	S1	2140	51	19,22,23	3.06	8 (42%)	26,31,34	0.73	0
2	5MC	L2	1308	90,2	18,21,23	4.62	12 (66%)	25,30,35	1.39	3 (12%)
51	PSU	S1	33	51	18,21,22	4.57	7 (38%)	22,30,33	1.79	5 (22%)
51	PSU	S1	2046	51	18,21,22	4.56	7 (38%)	22,30,33	1.82	5 (22%)
51	OMG	S1	1865	91,51	18,26,27	2.61	8 (44%)	19,38,41	1.53	4 (21%)
2	5MC	L2	524	90,2	18,22,23	3.57	7 (38%)	26,32,35	1.04	2 (7%)
1	A2M	L1	955	1	18,25,26	4.25	7 (38%)	18,36,39	2.74	3 (16%)
2	OMG	L2	1078	2	18,26,27	2.56	8 (44%)	19,38,41	1.68	5 (26%)
51	A2M	S1	28	51,90	18,25,26	4.28	7 (38%)	18,36,39	2.63	3 (16%)
51	A2M	S1	512	51,90	18,25,26	4.24	8 (44%)	18,36,39	2.69	3 (16%)
51	A2M	S1	969	51	18,25,26	4.20	6 (33%)	18,36,39	2.86	4 (22%)
51	OMC	S1	1866	51	19,22,23	3.05	8 (42%)	26,31,34	0.75	0
2	PSU	L2	1361	2,52	18,21,22	4.54	7 (38%)	22,30,33	1.88	5 (22%)
51	OMC	S1	18	51	19,22,23	3.02	8 (42%)	26,31,34	0.68	0
1	A2M	L1	69	1	18,25,26	4.13	6 (33%)	18,36,39	2.69	3 (16%)
2	PSU	L2	626	2	18,21,22	4.55	7 (38%)	22,30,33	1.83	5 (22%)
1	A2M	L1	697	1	18,25,26	4.26	7 (38%)	18,36,39	2.66	3 (16%)
1	A2M	L1	678	1,2	18,25,26	4.22	7 (38%)	18,36,39	2.64	3 (16%)
51	PSU	S1	1192	51	18,21,22	4.56	7 (38%)	22,30,33	1.65	4 (18%)
51	OMG	S1	1647	51	18,26,27	2.62	8 (44%)	19,38,41	1.58	4 (21%)
2	A2M	L2	665	2	18,25,26	4.27	7 (38%)	18,36,39	2.68	3 (16%)
1	A2M	L1	927	1,90	18,25,26	4.34	8 (44%)	18,36,39	2.47	3 (16%)
51	PSU	S1	1566	51	18,21,22	4.57	7 (38%)	22,30,33	1.74	5 (22%)
2	OMC	L2	1248	2	19,22,23	3.06	8 (42%)	26,31,34	0.71	0
51	PSU	S1	609	51	18,21,22	4.56	7 (38%)	22,30,33	1.79	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
51	OMG	S1	2151	51	18,26,27	2.59	8 (44%)	19,38,41	1.56	3 (15%)
7	A2M	L7	162	7,1	18,25,26	4.24	7 (38%)	18,36,39	2.69	3 (16%)
51	A2M	S1	479	51	18,25,26	4.25	7 (38%)	18,36,39	2.67	3 (16%)
2	OMG	L2	1229	2	18,26,27	2.59	8 (44%)	19,38,41	1.49	4 (21%)
2	PSU	L2	510	2	18,21,22	4.57	7 (38%)	22,30,33	1.76	5 (22%)
51	OMG	S1	1623	51	18,26,27	2.60	8 (44%)	19,38,41	1.50	4 (21%)
2	OMG	L2	534	2	18,26,27	2.57	8 (44%)	19,38,41	1.50	4 (21%)
51	OMG	S1	2008	51	18,26,27	2.60	8 (44%)	19,38,41	1.61	4 (21%)
51	PSU	S1	1533	51	18,21,22	4.56	7 (38%)	22,30,33	1.78	5 (22%)
2	A2M	L2	1067	2	18,25,26	4.26	7 (38%)	18,36,39	2.62	3 (16%)
2	PSU	L2	504	2	18,21,22	4.56	7 (38%)	22,30,33	1.81	6 (27%)
2	A2M	L2	382	2	18,25,26	4.36	8 (44%)	18,36,39	2.47	3 (16%)
51	OMG	S1	1478	51	18,26,27	2.57	8 (44%)	19,38,41	1.54	5 (26%)
2	PSU	L2	1382	90,2,92	18,21,22	4.64	7 (38%)	22,30,33	1.90	6 (27%)
51	PSU	S1	1841	51	18,21,22	4.56	7 (38%)	22,30,33	1.83	5 (22%)
1	OMU	L1	1039	1	19,22,23	3.07	8 (42%)	26,31,34	1.70	4 (15%)
2	PSU	L2	78	2	18,21,22	4.56	7 (38%)	22,30,33	1.75	5 (22%)
1	OMC	L1	1527	1	19,22,23	3.08	8 (42%)	26,31,34	0.78	1 (3%)
1	PSU	L1	239	1	18,21,22	4.55	7 (38%)	22,30,33	1.77	5 (22%)
51	MA6	S1	2185	51	18,26,27	1.04	2 (11%)	19,38,41	4.02	2 (10%)
51	7MG	S1	1995	51,53	22,26,27	4.33	10 (45%)	29,39,42	2.05	9 (31%)
2	A2M	L2	1185	2	18,25,26	4.38	8 (44%)	18,36,39	2.68	3 (16%)
1	OMG	L1	1190	1	18,26,27	2.60	8 (44%)	19,38,41	1.64	6 (31%)
2	OMC	L2	359	2	19,22,23	3.07	8 (42%)	26,31,34	0.68	0
51	PSU	S1	1156	51	18,21,22	4.56	7 (38%)	22,30,33	1.78	5 (22%)
2	OMC	L2	583	2	19,22,23	3.05	8 (42%)	26,31,34	0.74	0
2	OMU	L2	1359	90,2	19,22,23	3.05	8 (42%)	26,31,34	1.69	5 (19%)
2	PSU	L2	1284	2	18,21,22	4.56	7 (38%)	22,30,33	1.77	5 (22%)
2	OMC	L2	443	91,2	19,22,23	3.01	8 (42%)	26,31,34	0.63	0
1	OMG	L1	1626	1,92	18,26,27	2.41	8 (44%)	19,38,41	1.16	3 (15%)
51	A2M	S1	98	51,90	18,25,26	4.26	7 (38%)	18,36,39	2.58	3 (16%)
51	OMU	S1	1833	51	19,22,23	3.06	8 (42%)	26,31,34	1.74	4 (15%)
51	PSU	S1	104	51	18,21,22	4.55	7 (38%)	22,30,33	1.80	5 (22%)
2	OMG	L2	686	2	18,26,27	2.61	8 (44%)	19,38,41	1.54	4 (21%)
1	OMC	L1	669	1	19,22,23	2.97	8 (42%)	26,31,34	0.59	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	PSU	L1	1664	1	18,21,22	4.55	8 (44%)	22,30,33	1.72	5 (22%)
1	A2M	L1	1373	1	18,25,26	4.26	7 (38%)	18,36,39	2.65	3 (16%)
51	OMU	S1	1979	51	19,22,23	3.05	8 (42%)	26,31,34	1.68	4 (15%)
1	A2M	L1	235	1	18,25,26	4.26	7 (38%)	18,36,39	2.65	3 (16%)
1	PSU	L1	672	1,90	18,21,22	4.63	7 (38%)	22,30,33	1.87	4 (18%)
51	MA6	S1	2184	51	18,26,27	1.04	2 (11%)	19,38,41	3.90	2 (10%)
2	OMG	L2	655	2,92	18,26,27	2.59	8 (44%)	19,38,41	1.56	3 (15%)
2	A2M	L2	591	2	18,25,26	4.24	7 (38%)	18,36,39	2.62	3 (16%)
2	OMG	L2	1253	2	18,26,27	2.43	8 (44%)	19,38,41	1.19	3 (15%)
4	OMG	L4	74	4	18,26,27	2.58	8 (44%)	19,38,41	1.53	5 (26%)
2	PSU	L2	437	2,92	18,21,22	4.56	7 (38%)	22,30,33	1.77	5 (22%)
2	A2M	L2	628	2	18,25,26	4.26	7 (38%)	18,36,39	2.68	3 (16%)
51	OMU	S1	8	51	19,22,23	3.04	8 (42%)	26,31,34	1.74	5 (19%)
2	A2M	L2	95	2	18,25,26	4.26	7 (38%)	18,36,39	2.67	3 (16%)
1	OMU	L1	48	1	19,22,23	3.03	8 (42%)	26,31,34	1.67	5 (19%)
1	OMU	L1	847	1	19,22,23	3.05	8 (42%)	26,31,34	1.68	4 (15%)
7	PSU	L7	74	7	18,21,22	4.56	7 (38%)	22,30,33	1.83	5 (22%)
1	OMG	L1	856	1	18,26,27	2.39	8 (44%)	19,38,41	1.19	3 (15%)
51	PSU	S1	2202	51	18,21,22	4.55	8 (44%)	22,30,33	1.71	5 (22%)
1	OMC	L1	1010	1,90	19,22,23	3.07	8 (42%)	26,31,34	0.75	0
2	OMG	L2	71	2	18,26,27	2.43	8 (44%)	19,38,41	1.24	3 (15%)
7	PSU	L7	69	7,90	18,21,22	4.61	7 (38%)	22,30,33	1.85	6 (27%)
1	PSU	L1	1528	1,92	18,21,22	4.66	7 (38%)	22,30,33	1.82	5 (22%)
2	A2M	L2	570	1,2	18,25,26	4.28	7 (38%)	18,36,39	2.71	3 (16%)
2	PSU	L2	1318	2	18,21,22	4.56	7 (38%)	22,30,33	1.78	5 (22%)
1	PSU	L1	1181	1	18,21,22	4.56	7 (38%)	22,30,33	1.82	5 (22%)
51	PSU	S1	1657	51	18,21,22	4.55	7 (38%)	22,30,33	1.77	5 (22%)
1	OMG	L1	959	1	18,26,27	2.59	8 (44%)	19,38,41	1.48	4 (21%)
2	A2M	L2	527	90,2	18,25,26	3.98	7 (38%)	18,36,39	2.64	3 (16%)
1	PSU	L1	1017	1,91	18,21,22	4.65	7 (38%)	22,30,33	1.85	5 (22%)
2	PSU	L2	472	2	18,21,22	4.55	7 (38%)	22,30,33	1.78	5 (22%)
51	A2M	S1	897	51	18,25,26	4.28	7 (38%)	18,36,39	2.65	3 (16%)
2	OMU	L2	560	90,2	19,22,23	3.09	8 (42%)	26,31,34	1.81	4 (15%)

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
51	B8N	S1	1543	51	-	4/16/34/35	0/2/2/2
2	PSU	L2	662	90,2	-	0/7/25/26	0/2/2/2
1	PSU	L1	940	1	-	0/7/25/26	0/2/2/2
51	OMG	S1	600	51	-	2/5/27/28	0/3/3/3
2	PSU	L2	1194	2	-	0/7/25/26	0/2/2/2
2	PSU	L2	1264	2	-	2/7/25/26	0/2/2/2
51	PSU	S1	2048	51	-	0/7/25/26	0/2/2/2
2	PSU	L2	1144	2	-	0/7/25/26	0/2/2/2
1	PSU	L1	774	1	-	0/7/25/26	0/2/2/2
1	1MA	L1	677	1,90	-	0/3/25/26	0/3/3/3
51	PSU	S1	1246	51	-	0/7/25/26	0/2/2/2
7	OMU	L7	101	7	-	0/9/27/28	0/2/2/2
51	OMG	S1	1829	51,90	-	2/5/27/28	0/3/3/3
51	OMU	S1	29	51	-	1/9/27/28	0/2/2/2
7	A2M	L7	43	7	-	0/5/27/28	0/3/3/3
2	PSU	L2	506	2	-	0/7/25/26	0/2/2/2
51	A2M	S1	2021	51	-	1/5/27/28	0/3/3/3
2	A2M	L2	572	2	-	0/5/27/28	0/3/3/3
1	OMU	L1	1253	1	-	0/9/27/28	0/2/2/2
1	A2M	L1	681	1	-	3/5/27/28	0/3/3/3
2	OMU	L2	667	2	-	0/9/27/28	0/2/2/2
51	PSU	S1	1292	51,90	-	0/7/25/26	0/2/2/2
2	PSU	L2	1060	2	-	0/7/25/26	0/2/2/2
1	A2M	L1	1539	1,2,90	-	0/5/27/28	0/3/3/3
2	OMG	L2	641	2	-	0/5/27/28	0/3/3/3
52	MIA	S2	37	52	-	4/11/33/34	0/3/3/3
2	A2M	L2	1384	90,2	-	1/5/27/28	0/3/3/3
2	A2M	L2	502	90,2	-	1/5/27/28	0/3/3/3
2	PSU	L2	500	2	-	0/7/25/26	0/2/2/2
51	OMU	S1	1621	51,90	-	0/9/27/28	0/2/2/2
2	OMU	L2	73	2	-	0/9/27/28	0/2/2/2
1	PSU	L1	422	1	-	0/7/25/26	0/2/2/2
2	PSU	L2	1413	2	-	0/7/25/26	0/2/2/2
2	A2M	L2	604	1,2	-	1/5/27/28	0/3/3/3
2	OMG	L2	1360	2,52	-	0/5/27/28	0/3/3/3
2	OMC	L2	1159	2	-	0/9/27/28	0/2/2/2
51	OMU	S1	1662	51	-	1/9/27/28	0/2/2/2
2	OMG	L2	1046	2,53	-	3/5/27/28	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	OMG	L2	1231	2	-	0/5/27/28	0/3/3/3
51	OMC	S1	2059	51,90	-	1/9/27/28	0/2/2/2
1	PSU	L1	1011	1,2	-	4/7/25/26	0/2/2/2
1	PSU	L1	1533	1,2	-	0/7/25/26	0/2/2/2
1	OMU	L1	1107	1	-	0/9/27/28	0/2/2/2
2	PSU	L2	593	2	-	0/7/25/26	0/2/2/2
3	OMU	L3	13	3	-	0/9/27/28	0/2/2/2
2	OMU	L2	56	1,2	-	0/9/27/28	0/2/2/2
7	OMG	L7	75	7	-	0/5/27/28	0/3/3/3
2	A2M	L2	1372	2	-	0/5/27/28	0/3/3/3
1	OMC	L1	695	1	-	0/9/27/28	0/2/2/2
2	OMC	L2	1397	2	-	0/9/27/28	0/2/2/2
51	OMG	S1	1550	51	-	0/5/27/28	0/3/3/3
2	PSU	L2	597	2	-	0/7/25/26	0/2/2/2
2	OMU	L2	1419	2	-	0/9/27/28	0/2/2/2
51	OMU	S1	1777	51	-	0/9/27/28	0/2/2/2
51	OMU	S1	661	51	-	0/9/27/28	0/2/2/2
2	PSU	L2	512	2	-	0/7/25/26	0/2/2/2
51	OMC	S1	38	51	-	0/9/27/28	0/2/2/2
51	A2M	S1	668	51,90	-	3/5/27/28	0/3/3/3
51	PSU	S1	1539	51	-	0/7/25/26	0/2/2/2
1	A2M	L1	858	1	-	0/5/27/28	0/3/3/3
2	PSU	L2	1058	2	-	0/7/25/26	0/2/2/2
2	PSU	L2	1265	90,2	-	0/7/25/26	0/2/2/2
1	OMU	L1	1371	1	-	3/9/27/28	0/2/2/2
2	PSU	L2	1403	2	-	0/7/25/26	0/2/2/2
1	A2M	L1	305	1	-	0/5/27/28	0/3/3/3
1	OMU	L1	845	1	-	0/9/27/28	0/2/2/2
1	OMC	L1	1552	1	-	1/9/27/28	0/2/2/2
51	PSU	S1	455	51	-	2/7/25/26	0/2/2/2
51	5MC	S1	1544	51	-	1/7/25/26	0/2/2/2
1	OMG	L1	1540	1,2	-	2/5/27/28	0/3/3/3
51	5MC	S1	2061	51	-	0/7/25/26	0/2/2/2
1	OMU	L1	1659	1,90	-	0/9/27/28	0/2/2/2
2	OMC	L2	14	1,2	-	0/9/27/28	0/2/2/2
1	PSU	L1	1171	1,91,92	-	2/7/25/26	0/2/2/2
51	PSU	S1	12	51	-	0/7/25/26	0/2/2/2
1	OMG	L1	1524	1	-	3/5/27/28	0/3/3/3
2	OMU	L2	1077	2	-	0/9/27/28	0/2/2/2
51	OMC	S1	2019	51	-	0/9/27/28	0/2/2/2
1	PSU	L1	1093	1	-	0/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	L2	1213	2	-	0/7/25/26	0/2/2/2
2	PSU	L2	1303	2	-	0/7/25/26	0/2/2/2
2	OMC	L2	1317	2	-	0/9/27/28	0/2/2/2
51	OMC	S1	2140	51	-	0/9/27/28	0/2/2/2
2	5MC	L2	1308	90,2	-	4/6/24/26	0/2/2/2
51	PSU	S1	33	51	-	0/7/25/26	0/2/2/2
51	PSU	S1	2046	51	-	0/7/25/26	0/2/2/2
51	OMG	S1	1865	91,51	-	0/5/27/28	0/3/3/3
2	5MC	L2	524	90,2	-	0/7/25/26	0/2/2/2
1	A2M	L1	955	1	-	1/5/27/28	0/3/3/3
2	OMG	L2	1078	2	-	0/5/27/28	0/3/3/3
51	A2M	S1	28	51,90	-	0/5/27/28	0/3/3/3
51	A2M	S1	512	51,90	-	2/5/27/28	0/3/3/3
51	A2M	S1	969	51	-	1/5/27/28	0/3/3/3
51	OMC	S1	1866	51	-	0/9/27/28	0/2/2/2
2	PSU	L2	1361	2,52	-	3/7/25/26	0/2/2/2
51	OMC	S1	18	51	-	0/9/27/28	0/2/2/2
1	A2M	L1	69	1	-	0/5/27/28	0/3/3/3
2	PSU	L2	626	2	-	0/7/25/26	0/2/2/2
1	A2M	L1	697	1	-	0/5/27/28	0/3/3/3
1	A2M	L1	678	1,2	-	0/5/27/28	0/3/3/3
51	PSU	S1	1192	51	-	0/7/25/26	0/2/2/2
51	OMG	S1	1647	51	-	0/5/27/28	0/3/3/3
2	A2M	L2	665	2	-	3/5/27/28	0/3/3/3
1	A2M	L1	927	1,90	-	0/5/27/28	0/3/3/3
51	PSU	S1	1566	51	-	0/7/25/26	0/2/2/2
2	OMC	L2	1248	2	-	2/9/27/28	0/2/2/2
51	PSU	S1	609	51	-	0/7/25/26	0/2/2/2
51	OMG	S1	2151	51	-	0/5/27/28	0/3/3/3
7	A2M	L7	162	7,1	-	1/5/27/28	0/3/3/3
51	A2M	S1	479	51	-	0/5/27/28	0/3/3/3
2	OMG	L2	1229	2	-	2/5/27/28	0/3/3/3
2	PSU	L2	510	2	-	0/7/25/26	0/2/2/2
51	OMG	S1	1623	51	-	1/5/27/28	0/3/3/3
2	OMG	L2	534	2	-	2/5/27/28	0/3/3/3
51	OMG	S1	2008	51	-	0/5/27/28	0/3/3/3
51	PSU	S1	1533	51	-	0/7/25/26	0/2/2/2
2	A2M	L2	1067	2	-	0/5/27/28	0/3/3/3
2	PSU	L2	504	2	-	0/7/25/26	0/2/2/2
2	A2M	L2	382	2	-	0/5/27/28	0/3/3/3
51	OMG	S1	1478	51	-	1/5/27/28	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	L2	1382	90,2,92	-	1/7/25/26	0/2/2/2
51	PSU	S1	1841	51	-	0/7/25/26	0/2/2/2
1	OMU	L1	1039	1	-	1/9/27/28	0/2/2/2
2	PSU	L2	78	2	-	0/7/25/26	0/2/2/2
1	OMC	L1	1527	1	-	2/9/27/28	0/2/2/2
1	PSU	L1	239	1	-	0/7/25/26	0/2/2/2
51	MA6	S1	2185	51	-	1/7/29/30	0/3/3/3
51	7MG	S1	1995	51,53	-	2/7/37/38	0/3/3/3
2	A2M	L2	1185	2	-	3/5/27/28	0/3/3/3
1	OMG	L1	1190	1	-	0/5/27/28	0/3/3/3
2	OMC	L2	359	2	-	0/9/27/28	0/2/2/2
51	PSU	S1	1156	51	-	0/7/25/26	0/2/2/2
2	OMC	L2	583	2	-	0/9/27/28	0/2/2/2
2	OMU	L2	1359	90,2	-	0/9/27/28	0/2/2/2
2	PSU	L2	1284	2	-	0/7/25/26	0/2/2/2
2	OMC	L2	443	91,2	-	4/9/27/28	0/2/2/2
1	OMG	L1	1626	1,92	-	0/5/27/28	0/3/3/3
51	A2M	S1	98	51,90	-	2/5/27/28	0/3/3/3
51	OMU	S1	1833	51	-	1/9/27/28	0/2/2/2
51	PSU	S1	104	51	-	0/7/25/26	0/2/2/2
2	OMG	L2	686	2	-	0/5/27/28	0/3/3/3
1	OMC	L1	669	1	-	1/9/27/28	0/2/2/2
1	PSU	L1	1664	1	-	0/7/25/26	0/2/2/2
1	A2M	L1	1373	1	-	0/5/27/28	0/3/3/3
51	OMU	S1	1979	51	-	0/9/27/28	0/2/2/2
1	A2M	L1	235	1	-	0/5/27/28	0/3/3/3
1	PSU	L1	672	1,90	-	0/7/25/26	0/2/2/2
51	MA6	S1	2184	51	-	0/7/29/30	0/3/3/3
2	OMG	L2	655	2,92	-	0/5/27/28	0/3/3/3
2	A2M	L2	591	2	-	1/5/27/28	0/3/3/3
2	OMG	L2	1253	2	-	0/5/27/28	0/3/3/3
4	OMG	L4	74	4	-	1/5/27/28	0/3/3/3
2	PSU	L2	437	2,92	-	0/7/25/26	0/2/2/2
2	A2M	L2	628	2	-	0/5/27/28	0/3/3/3
51	OMU	S1	8	51	-	5/9/27/28	0/2/2/2
2	A2M	L2	95	2	-	0/5/27/28	0/3/3/3
1	OMU	L1	48	1	-	0/9/27/28	0/2/2/2
1	OMU	L1	847	1	-	0/9/27/28	0/2/2/2
7	PSU	L7	74	7	-	0/7/25/26	0/2/2/2
1	OMG	L1	856	1	-	0/5/27/28	0/3/3/3
51	PSU	S1	2202	51	-	1/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	OMC	L1	1010	1,90	-	3/9/27/28	0/2/2/2
2	OMG	L2	71	2	-	0/5/27/28	0/3/3/3
7	PSU	L7	69	7,90	-	0/7/25/26	0/2/2/2
1	PSU	L1	1528	1,92	-	0/7/25/26	0/2/2/2
2	A2M	L2	570	1,2	-	2/5/27/28	0/3/3/3
2	PSU	L2	1318	2	-	0/7/25/26	0/2/2/2
1	PSU	L1	1181	1	-	0/7/25/26	0/2/2/2
51	PSU	S1	1657	51	-	1/7/25/26	0/2/2/2
1	OMG	L1	959	1	-	0/5/27/28	0/3/3/3
2	A2M	L2	527	90,2	-	1/5/27/28	0/3/3/3
1	PSU	L1	1017	1,91	-	0/7/25/26	0/2/2/2
2	PSU	L2	472	2	-	0/7/25/26	0/2/2/2
51	A2M	S1	897	51	-	0/5/27/28	0/3/3/3
2	OMU	L2	560	90,2	-	1/9/27/28	0/2/2/2

The worst 5 of 1303 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	L2	382	A2M	O4'-C1'	15.97	1.63	1.41
2	L2	1185	A2M	O4'-C1'	15.90	1.63	1.41
2	L2	1384	A2M	O4'-C1'	15.80	1.63	1.41
1	L1	927	A2M	O4'-C1'	15.78	1.63	1.41
1	L1	1539	A2M	O4'-C1'	15.74	1.63	1.41

The worst 5 of 656 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
52	S2	37	MIA	C1'-N9-C4	18.64	159.40	126.64
51	S1	2185	MA6	N1-C6-N6	-16.43	99.76	117.06
51	S1	2184	MA6	N1-C6-N6	-15.94	100.28	117.06
52	S2	37	MIA	C11-S10-C2	9.89	109.65	102.27
52	S2	37	MIA	S10-C2-N3	9.45	148.89	116.10

There are no chirality outliers.

5 of 105 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	L1	681	A2M	O4'-C4'-C5'-O5'
1	L1	681	A2M	C3'-C4'-C5'-O5'
1	L1	955	A2M	C1'-C2'-O2'-CM'
1	L1	1010	OMC	C1'-C2'-O2'-CM2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
1	L1	1011	PSU	C2'-C1'-C5-C4

There are no ring outliers.

63 monomers are involved in 85 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
51	S1	1543	B8N	1	0
2	L2	1264	PSU	1	0
51	S1	1829	OMG	1	0
51	S1	29	OMU	4	0
7	L7	43	A2M	1	0
1	L1	1253	OMU	1	0
1	L1	681	A2M	1	0
52	S2	37	MIA	1	0
2	L2	1360	OMG	2	0
51	S1	1662	OMU	1	0
51	S1	2059	OMC	1	0
2	L2	56	OMU	1	0
2	L2	1397	OMC	1	0
51	S1	1550	OMG	2	0
2	L2	512	PSU	1	0
51	S1	38	OMC	1	0
51	S1	668	A2M	1	0
51	S1	1539	PSU	2	0
1	L1	1371	OMU	1	0
1	L1	305	A2M	1	0
1	L1	845	OMU	1	0
1	L1	1552	OMC	1	0
1	L1	1659	OMU	1	0
2	L2	14	OMC	2	0
1	L1	1524	OMG	2	0
51	S1	2019	OMC	1	0
51	S1	2140	OMC	1	0
2	L2	1308	5MC	2	0
1	L1	955	A2M	1	0
2	L2	1078	OMG	1	0
51	S1	28	A2M	1	0
51	S1	969	A2M	4	0
51	S1	18	OMC	1	0
1	L1	678	A2M	3	0
1	L1	927	A2M	1	0
51	S1	1566	PSU	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	L2	1248	OMC	2	0
7	L7	162	A2M	2	0
51	S1	479	A2M	1	0
51	S1	2008	OMG	3	0
2	L2	382	A2M	3	0
1	L1	1039	OMU	1	0
1	L1	1527	OMC	2	0
2	L2	1185	A2M	1	0
1	L1	1190	OMG	2	0
2	L2	1284	PSU	1	0
2	L2	443	OMC	1	0
1	L1	1626	OMG	2	0
51	S1	98	A2M	2	0
1	L1	669	OMC	1	0
1	L1	1373	A2M	1	0
1	L1	235	A2M	1	0
2	L2	591	A2M	3	0
2	L2	1253	OMG	1	0
2	L2	95	A2M	1	0
1	L1	1010	OMC	1	0
7	L7	69	PSU	1	0
1	L1	1528	PSU	1	0
2	L2	570	A2M	1	0
2	L2	1318	PSU	1	0
1	L1	959	OMG	1	0
1	L1	1017	PSU	1	0
2	L2	560	OMU	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 535 ligands modelled in this entry, 492 are monoatomic - leaving 43 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	$\# Z > 2$
94	PAR	L1	1978	-	45,45,45	3.57	11 (24%)	64,67,67	1.13	4 (6%)
94	PAR	L7	208	-	45,45,45	3.47	11 (24%)	64,67,67	1.36	12 (18%)
89	SPD	L1	1806	-	9,9,9	0.44	0	8,8,8	0.39	0
93	PUT	L5	207	-	5,5,5	0.24	0	4,4,4	0.18	0
89	SPD	L1	1808	-	9,9,9	0.43	0	8,8,8	0.37	0
93	PUT	L1	1975	-	5,5,5	0.24	0	4,4,4	0.17	0
93	PUT	L2	1726	-	5,5,5	0.24	0	4,4,4	0.15	0
89	SPD	L2	1601	-	9,9,9	0.44	0	8,8,8	0.18	0
93	PUT	L2	1724	-	5,5,5	0.24	0	4,4,4	0.18	0
93	PUT	L1	1973	-	5,5,5	0.24	0	4,4,4	0.16	0
89	SPD	L1	1804	-	9,9,9	0.43	0	8,8,8	0.34	0
94	PAR	L2	1729	-	45,45,45	3.52	10 (22%)	64,67,67	1.36	10 (15%)
93	PUT	S1	2444	-	5,5,5	0.24	0	4,4,4	0.16	0
89	SPD	S1	2301	-	9,9,9	0.44	0	8,8,8	0.27	0
94	PAR	S1	2445	92	45,45,45	3.59	11 (24%)	64,67,67	1.05	6 (9%)
89	SPD	L1	1814	-	9,9,9	0.44	0	8,8,8	0.24	0
89	SPD	L1	1805	-	9,9,9	0.46	0	8,8,8	0.24	0
89	SPD	L1	1815	-	9,9,9	0.44	0	8,8,8	0.25	0
89	SPD	L2	1602	2	9,9,9	0.45	0	8,8,8	0.21	0
89	SPD	L1	1802	-	9,9,9	0.43	0	8,8,8	0.21	0
89	SPD	L1	1811	-	9,9,9	0.42	0	8,8,8	0.41	0
93	PUT	L1	1976	-	5,5,5	0.24	0	4,4,4	0.18	0
89	SPD	L1	1812	-	9,9,9	0.45	0	8,8,8	0.22	0
89	SPD	L1	1801	-	9,9,9	0.42	0	8,8,8	0.44	0
93	PUT	S1	2443	-	5,5,5	0.24	0	4,4,4	0.16	0
89	SPD	L1	1809	-	9,9,9	0.44	0	8,8,8	0.28	0
93	PUT	L1	1977	-	5,5,5	0.24	0	4,4,4	0.16	0
89	SPD	L1	1813	-	9,9,9	0.44	0	8,8,8	0.19	0
89	SPD	L1	1803	-	9,9,9	0.43	0	8,8,8	0.26	0
94	PAR	S1	2446	-	45,45,45	3.56	11 (24%)	64,67,67	1.15	6 (9%)
93	PUT	L4	218	-	5,5,5	0.24	0	4,4,4	0.16	0
93	PUT	L2	1725	-	5,5,5	0.24	0	4,4,4	0.17	0
89	SPD	S1	2302	-	9,9,9	0.44	0	8,8,8	0.34	0
93	PUT	L1	1974	-	5,5,5	0.24	0	4,4,4	0.17	0
89	SPD	LM	301	-	9,9,9	0.44	0	8,8,8	0.16	0
89	SPD	L1	1807	-	9,9,9	0.42	0	8,8,8	0.36	0
93	PUT	L1	1971	-	5,5,5	0.24	0	4,4,4	0.17	0
93	PUT	L2	1727	-	5,5,5	0.23	0	4,4,4	0.22	0
93	PUT	L1	1972	1	5,5,5	0.25	0	4,4,4	0.09	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
89	SPD	L1	1810	-	9,9,9	0.42	0	8,8,8	0.31	0
94	PAR	L2	1728	-	45,45,45	3.54	10 (22%)	64,67,67	1.22	6 (9%)
89	SPD	S1	2447	-	9,9,9	0.44	0	8,8,8	0.31	0
93	PUT	L2	1723	-	5,5,5	0.23	0	4,4,4	0.18	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
94	PAR	L1	1978	-	-	8/18/94/94	0/4/4/4
94	PAR	L7	208	-	-	9/18/94/94	0/4/4/4
89	SPD	L1	1806	-	-	1/7/7/7	-
93	PUT	L5	207	-	-	0/3/3/3	-
89	SPD	L1	1808	-	-	0/7/7/7	-
93	PUT	L1	1975	-	-	1/3/3/3	-
93	PUT	L2	1726	-	-	0/3/3/3	-
89	SPD	L2	1601	-	-	1/7/7/7	-
93	PUT	L2	1724	-	-	1/3/3/3	-
93	PUT	L1	1973	-	-	0/3/3/3	-
89	SPD	L1	1804	-	-	2/7/7/7	-
94	PAR	L2	1729	-	-	11/18/94/94	0/4/4/4
93	PUT	S1	2444	-	-	1/3/3/3	-
89	SPD	S1	2301	-	-	2/7/7/7	-
94	PAR	S1	2445	92	-	6/18/94/94	0/4/4/4
89	SPD	L1	1814	-	-	0/7/7/7	-
89	SPD	L1	1805	-	-	2/7/7/7	-
89	SPD	L1	1815	-	-	0/7/7/7	-
89	SPD	L2	1602	2	-	1/7/7/7	-
89	SPD	L1	1802	-	-	1/7/7/7	-
89	SPD	L1	1811	-	-	2/7/7/7	-
93	PUT	L1	1976	-	-	0/3/3/3	-
89	SPD	L1	1812	-	-	2/7/7/7	-
89	SPD	L1	1801	-	-	3/7/7/7	-
93	PUT	S1	2443	-	-	1/3/3/3	-
89	SPD	L1	1809	-	-	2/7/7/7	-
93	PUT	L1	1977	-	-	0/3/3/3	-
89	SPD	L1	1813	-	-	1/7/7/7	-
89	SPD	L1	1803	-	-	0/7/7/7	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
94	PAR	S1	2446	-	-	10/18/94/94	0/4/4/4
93	PUT	L4	218	-	-	0/3/3/3	-
93	PUT	L2	1725	-	-	0/3/3/3	-
89	SPD	S1	2302	-	-	0/7/7/7	-
93	PUT	L1	1974	-	-	0/3/3/3	-
89	SPD	LM	301	-	-	0/7/7/7	-
89	SPD	L1	1807	-	-	2/7/7/7	-
93	PUT	L1	1971	-	-	0/3/3/3	-
93	PUT	L2	1727	-	-	0/3/3/3	-
93	PUT	L1	1972	1	-	0/3/3/3	-
89	SPD	L1	1810	-	-	0/7/7/7	-
94	PAR	L2	1728	-	-	6/18/94/94	0/4/4/4
89	SPD	S1	2447	-	-	2/7/7/7	-
93	PUT	L2	1723	-	-	1/3/3/3	-

The worst 5 of 64 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
94	S1	2445	PAR	C13-C23	-15.69	1.32	1.52
94	L1	1978	PAR	C13-C23	-15.62	1.32	1.52
94	S1	2446	PAR	C13-C23	-15.46	1.33	1.52
94	L2	1728	PAR	C13-C23	-15.18	1.33	1.52
94	L7	208	PAR	C13-C23	-14.99	1.33	1.52

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
94	L1	1978	PAR	C14-O33-C33	-4.03	107.99	117.96
94	L7	208	PAR	C44-C34-C24	3.77	117.55	111.07
94	L2	1728	PAR	C14-O33-C33	-3.58	109.12	117.96
94	L2	1729	PAR	C34-C44-C54	3.12	115.81	110.24
94	L7	208	PAR	C11-O11-C42	-3.10	110.30	117.96

There are no chirality outliers.

5 of 79 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
94	L1	1978	PAR	C23-C13-O52-C52
94	L1	1978	PAR	O43-C43-C53-O53
94	L1	1978	PAR	C44-C54-C64-N64
94	L1	1978	PAR	O54-C54-C64-N64

Continued on next page...

Continued from previous page...

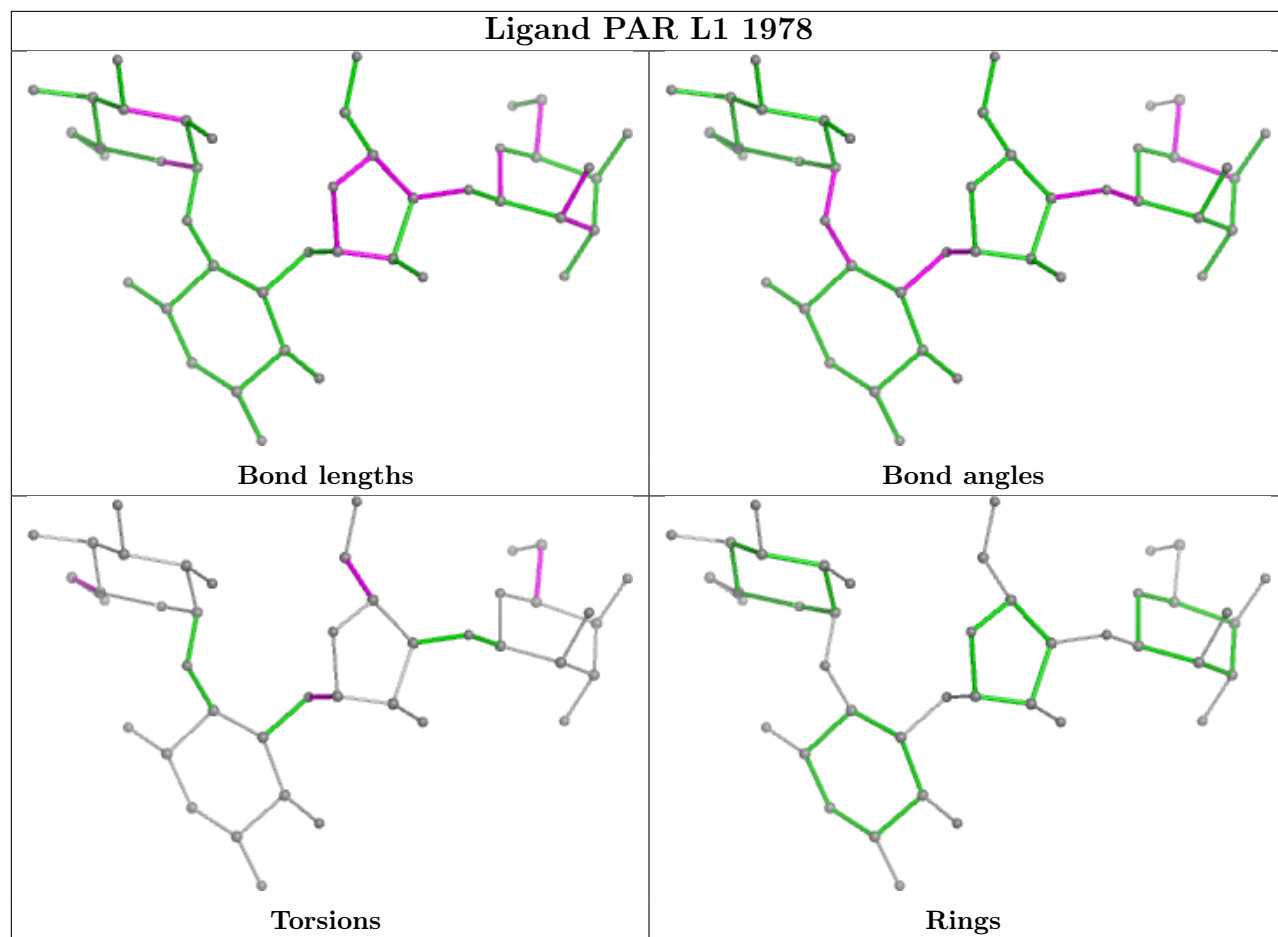
Mol	Chain	Res	Type	Atoms
94	L2	1729	PAR	C23-C13-O52-C52

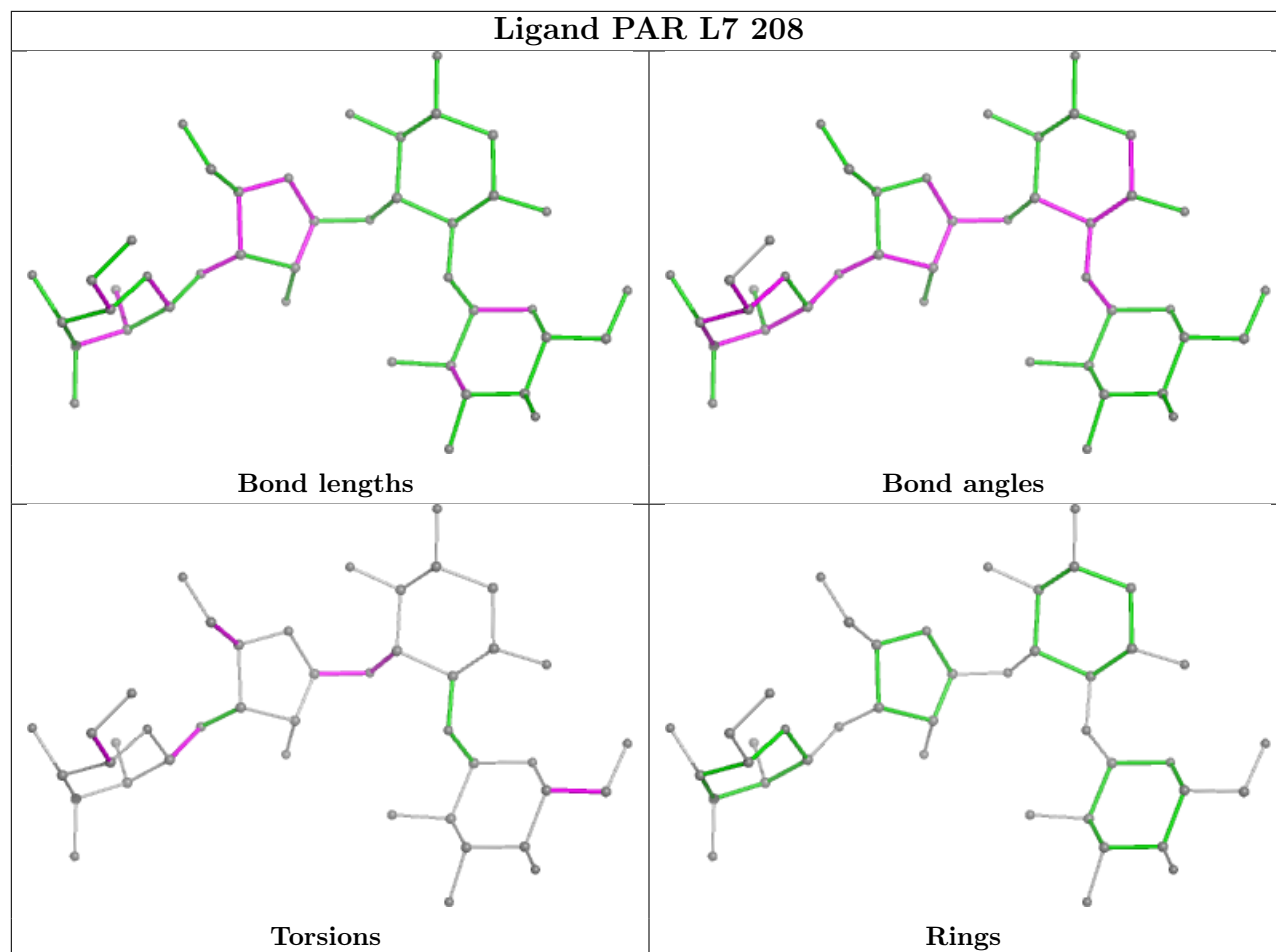
There are no ring outliers.

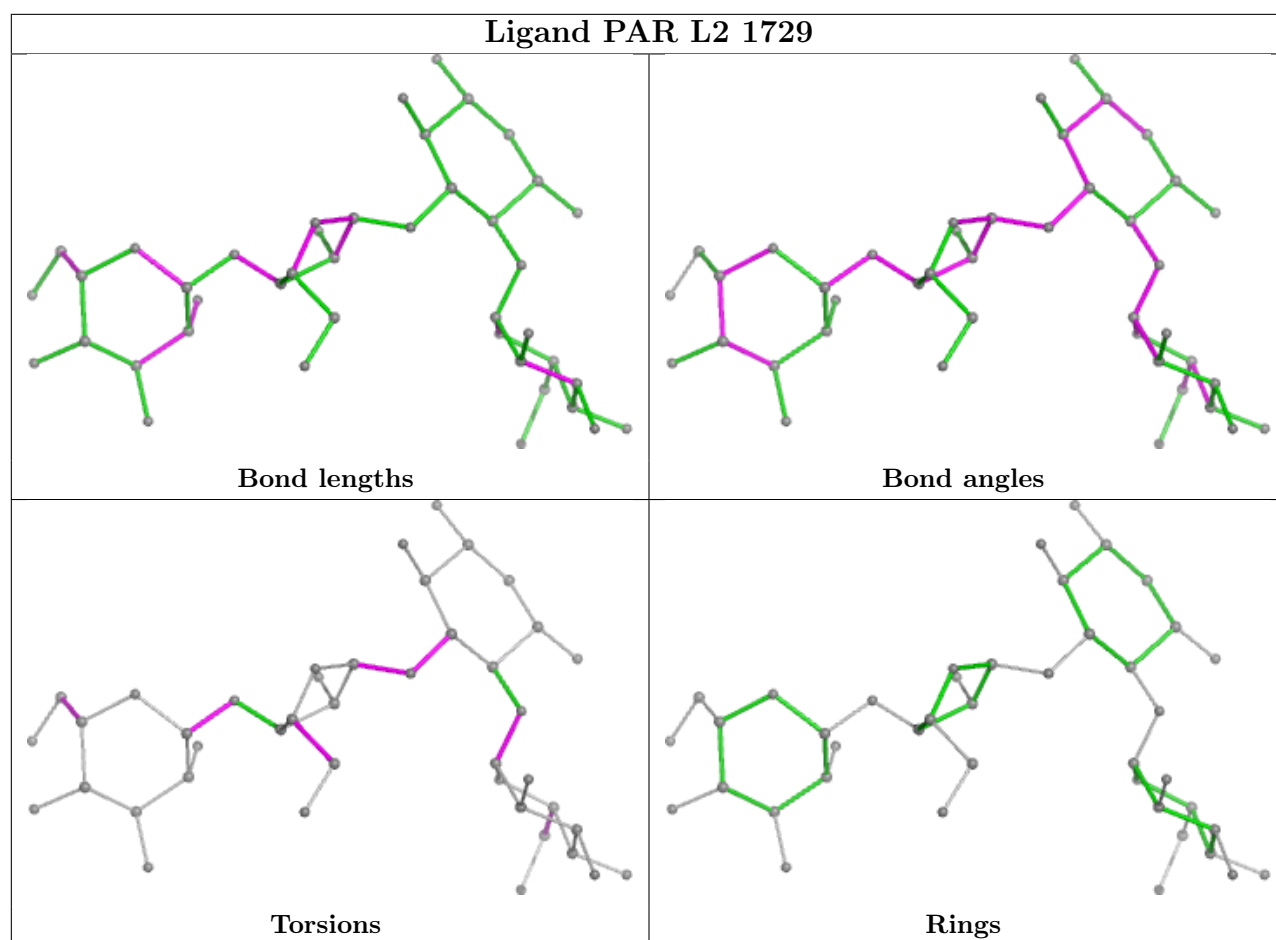
20 monomers are involved in 43 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
94	L1	1978	PAR	3	0
94	L7	208	PAR	4	0
89	L1	1806	SPD	2	0
89	L1	1808	SPD	1	0
94	L2	1729	PAR	5	0
89	S1	2301	SPD	1	0
94	S1	2445	PAR	2	0
89	L1	1814	SPD	1	0
89	L1	1815	SPD	1	0
89	L2	1602	SPD	1	0
89	L1	1802	SPD	2	0
89	L1	1811	SPD	3	0
93	L1	1977	PUT	1	0
89	L1	1813	SPD	4	0
94	S1	2446	PAR	3	0
89	S1	2302	SPD	2	0
89	LM	301	SPD	3	0
93	L2	1727	PUT	1	0
94	L2	1728	PAR	1	0
89	S1	2447	SPD	2	0

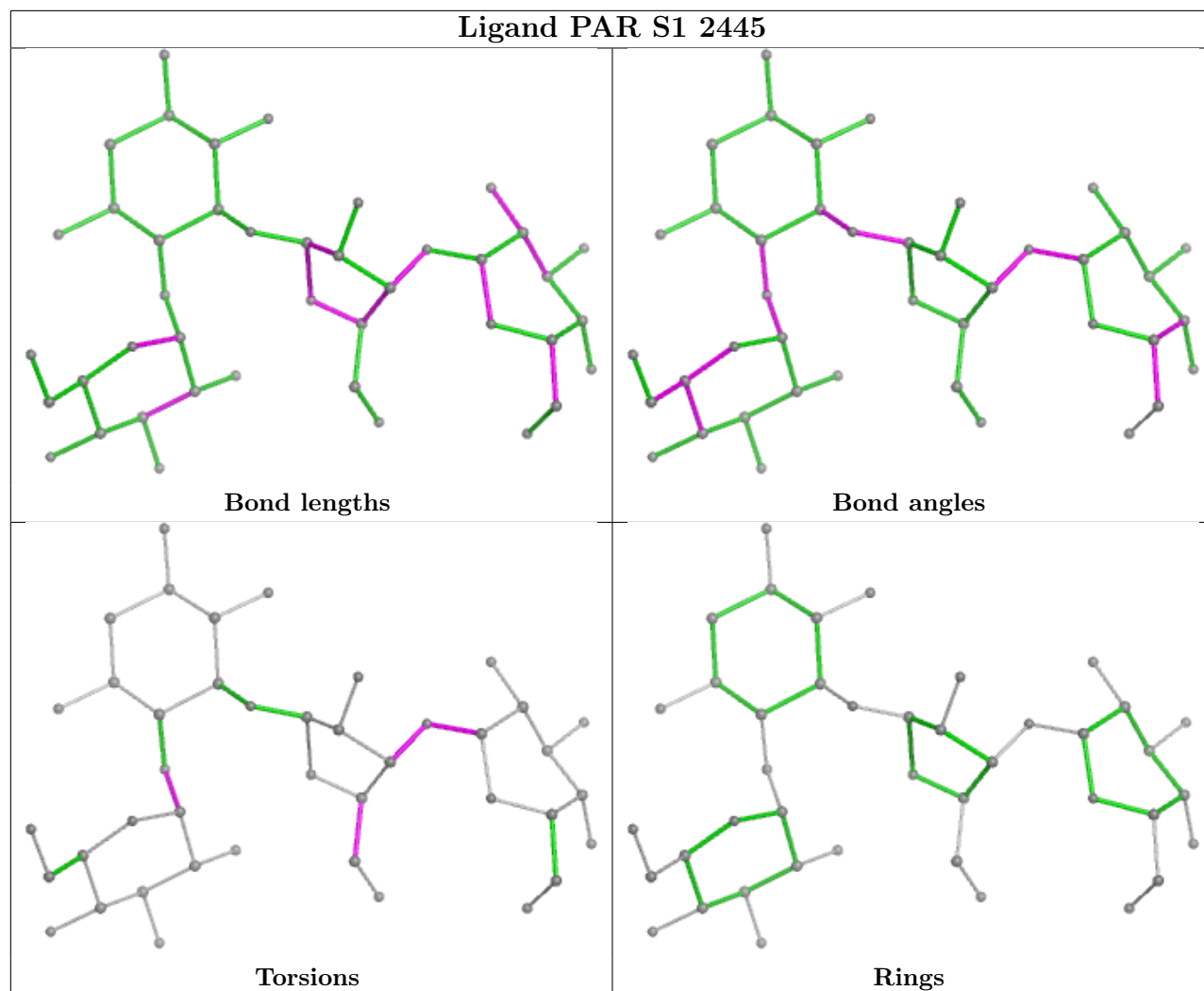
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

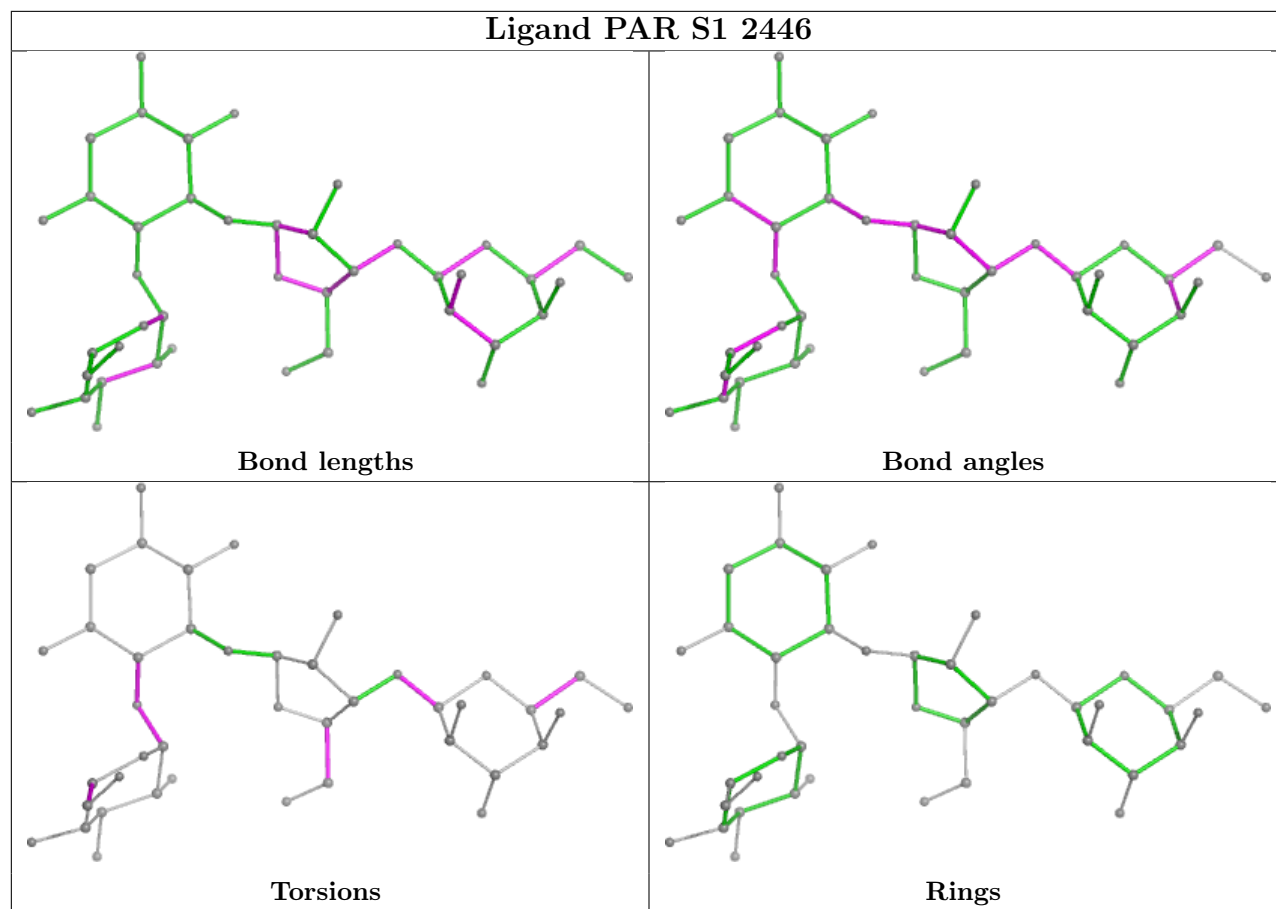


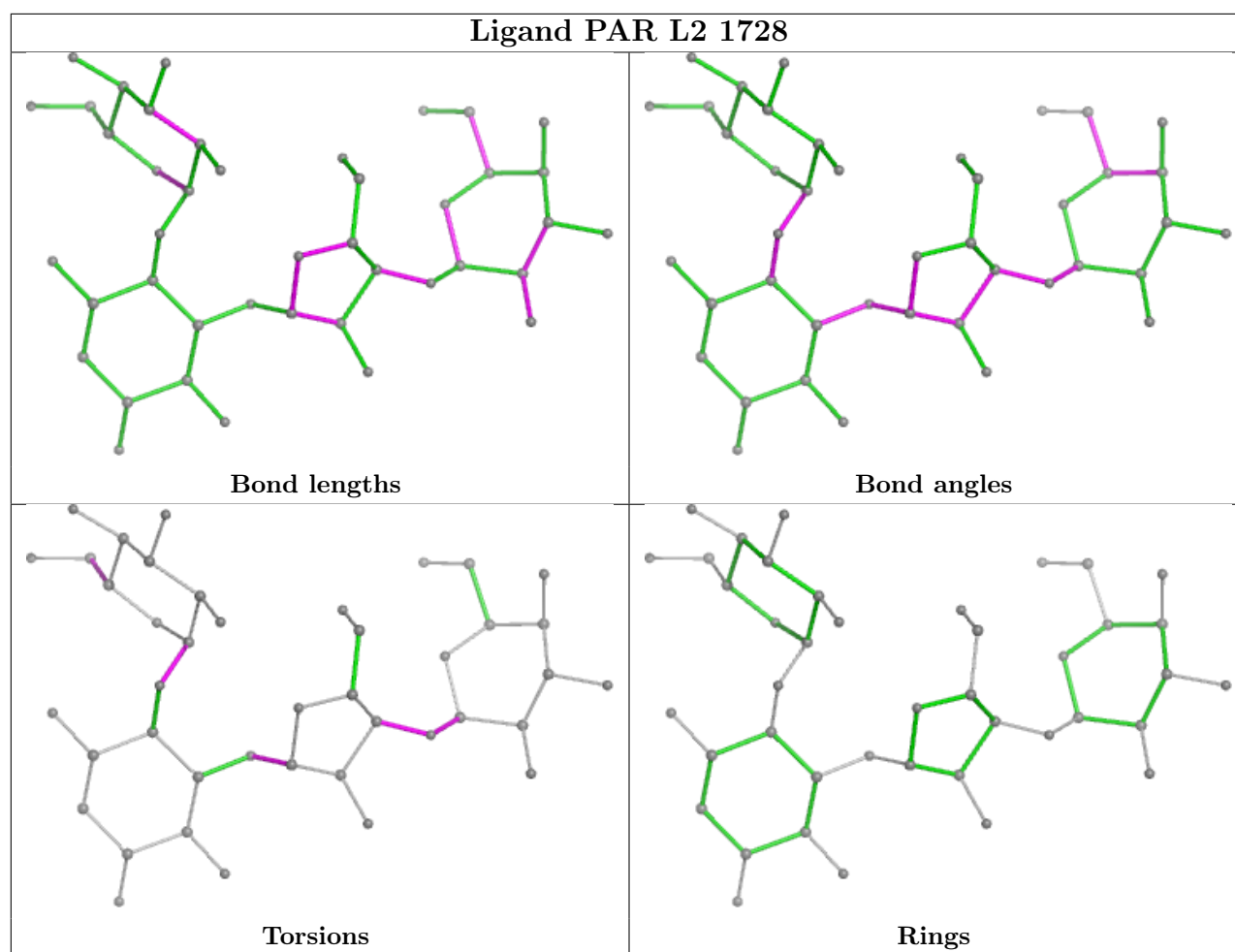




Ligand PAR S1 2445







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
51	S1	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	S1	1543:B8N	O3'	1544:5MC	P	4.02

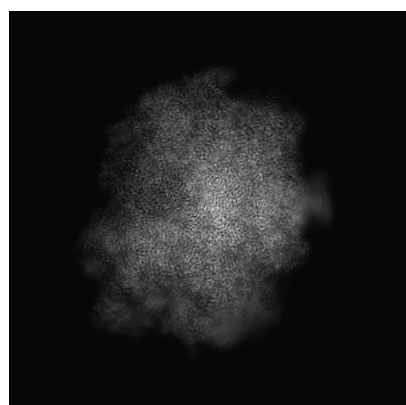
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-50852. These allow visual inspection of the internal detail of the map and identification of artifacts.

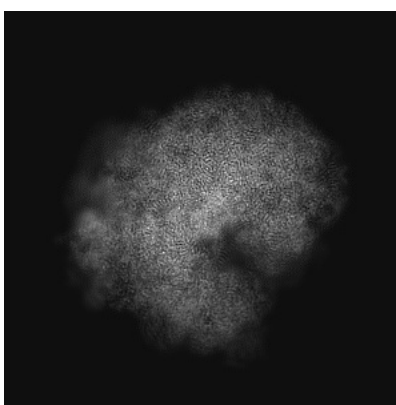
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

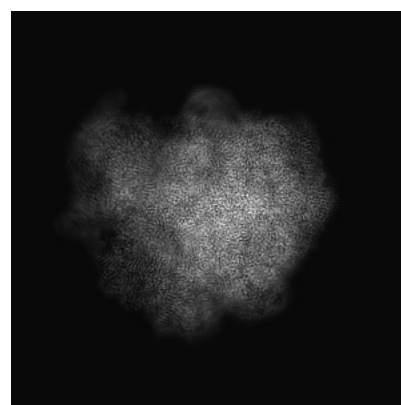
6.1.1 Primary map



X



Y

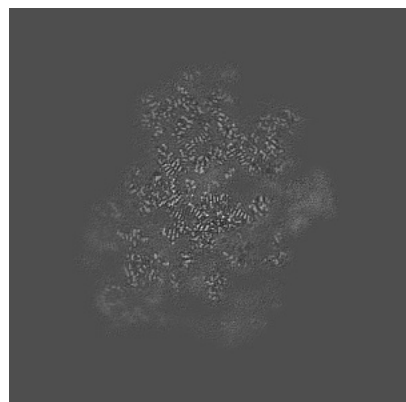


Z

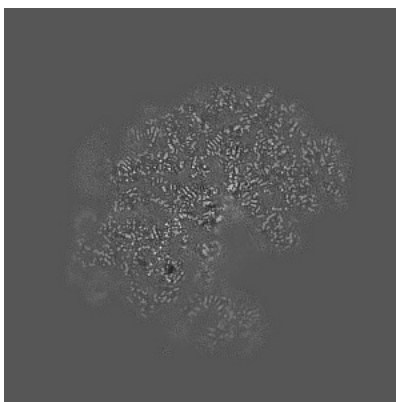
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

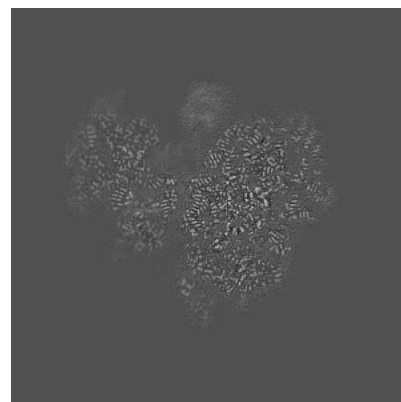
6.2.1 Primary map



X Index: 240



Y Index: 240

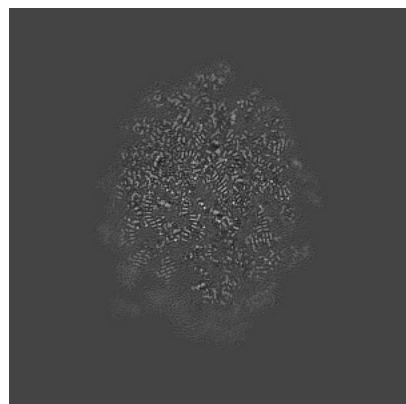


Z Index: 240

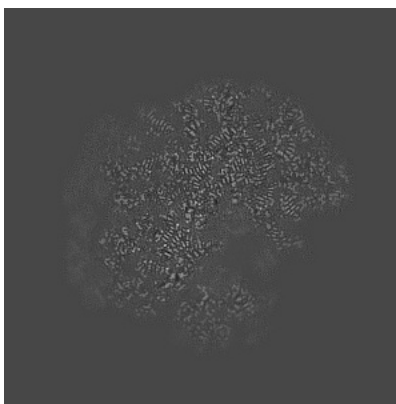
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

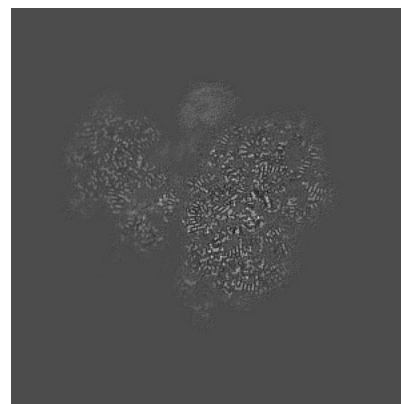
6.3.1 Primary map



X Index: 271



Y Index: 253

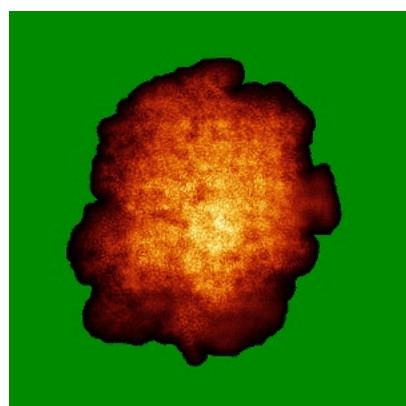


Z Index: 243

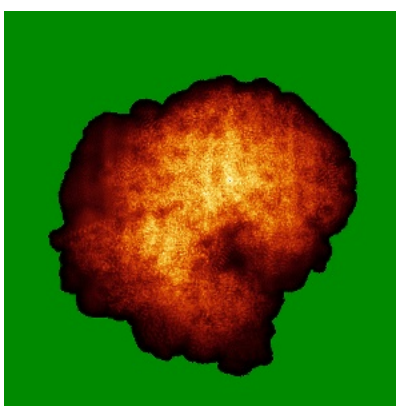
The images above show the largest variance slices of the map in three orthogonal directions.

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

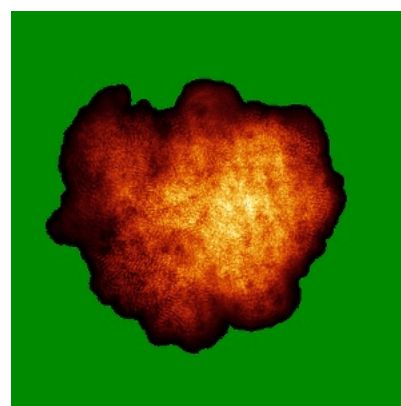
6.4.1 Primary map



X



Y

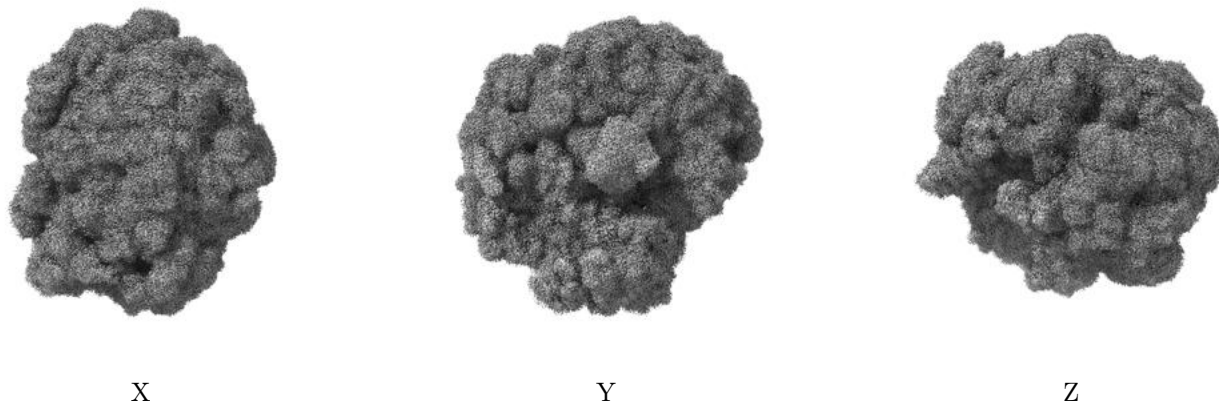


Z

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 0.005. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

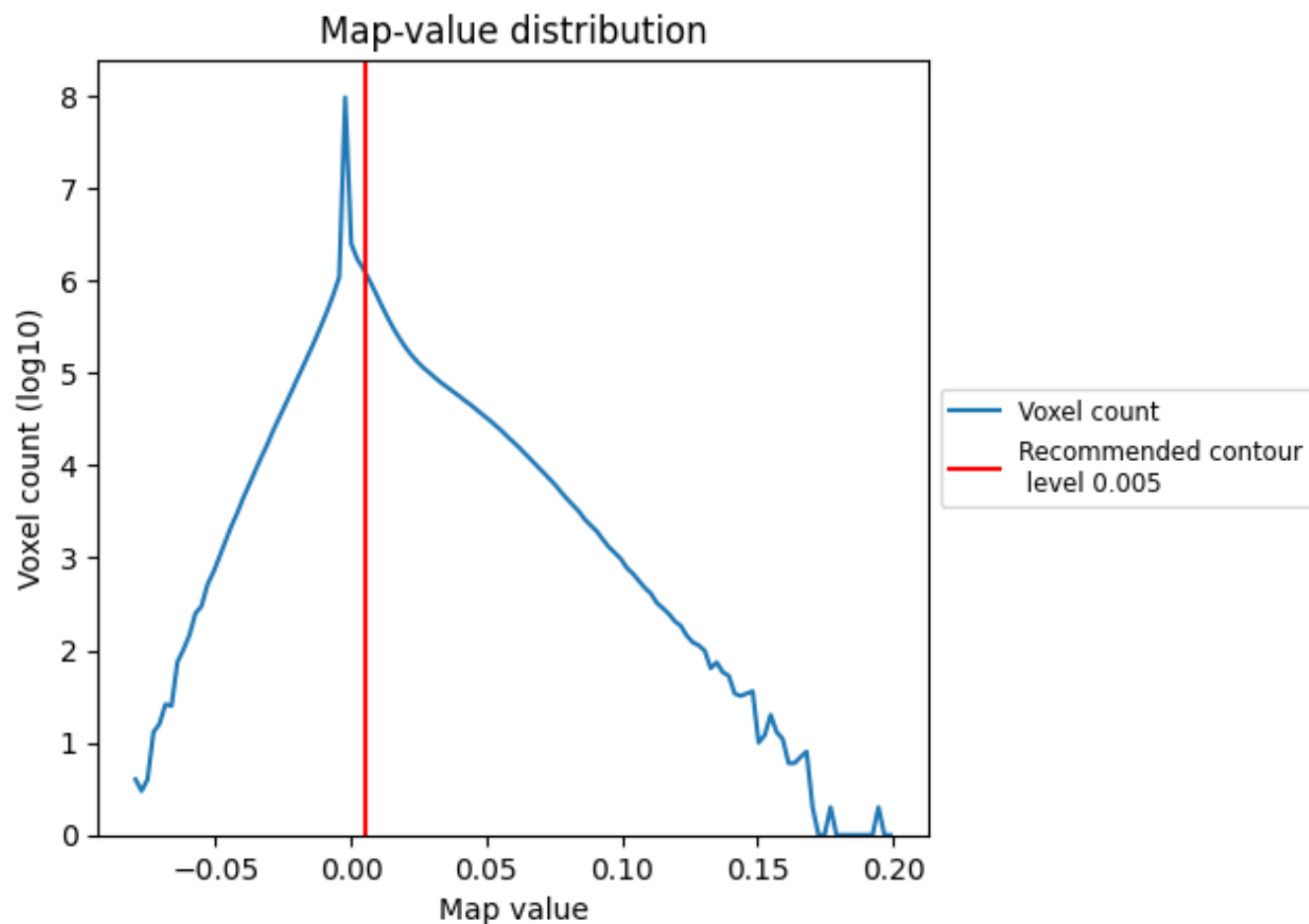
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

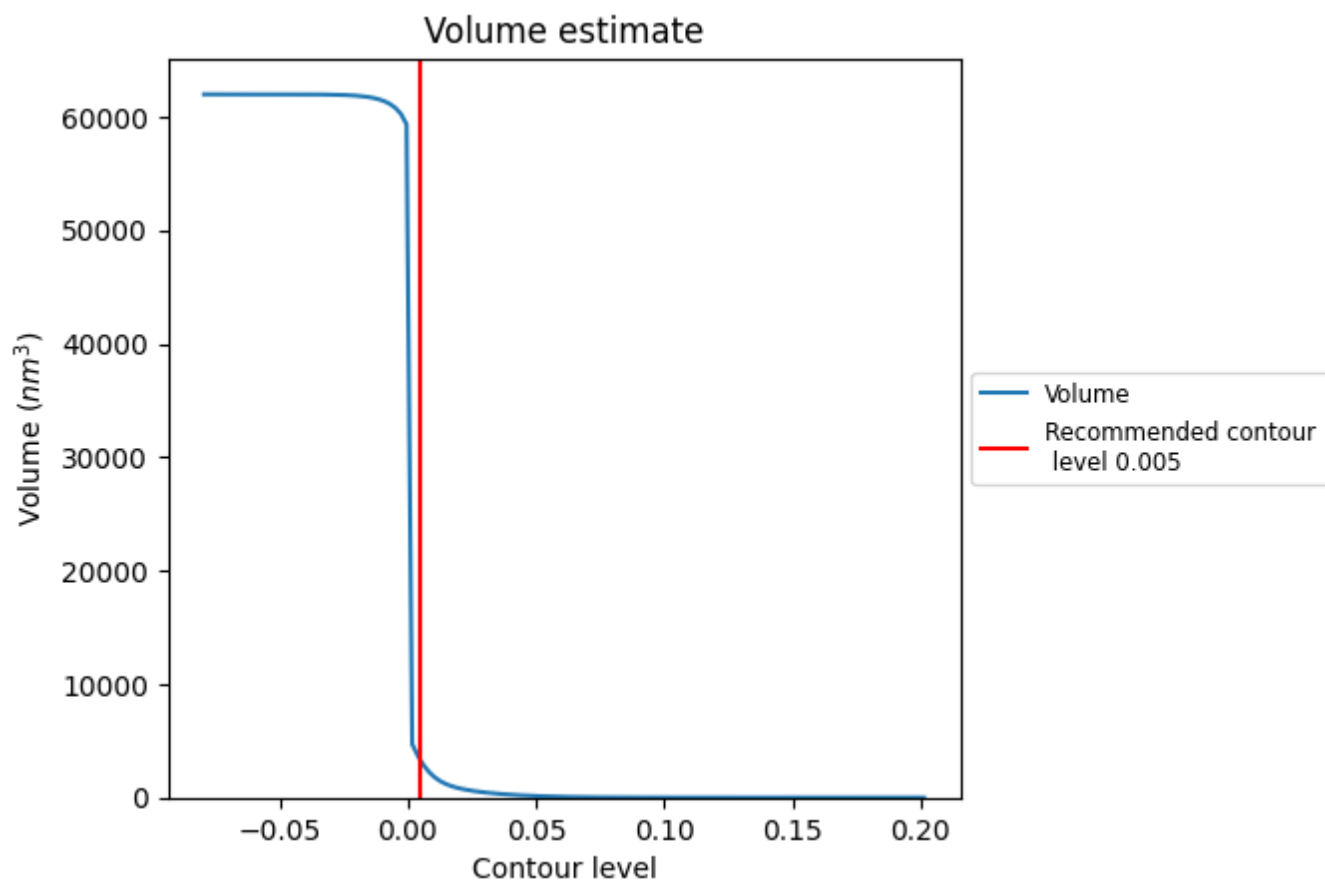
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

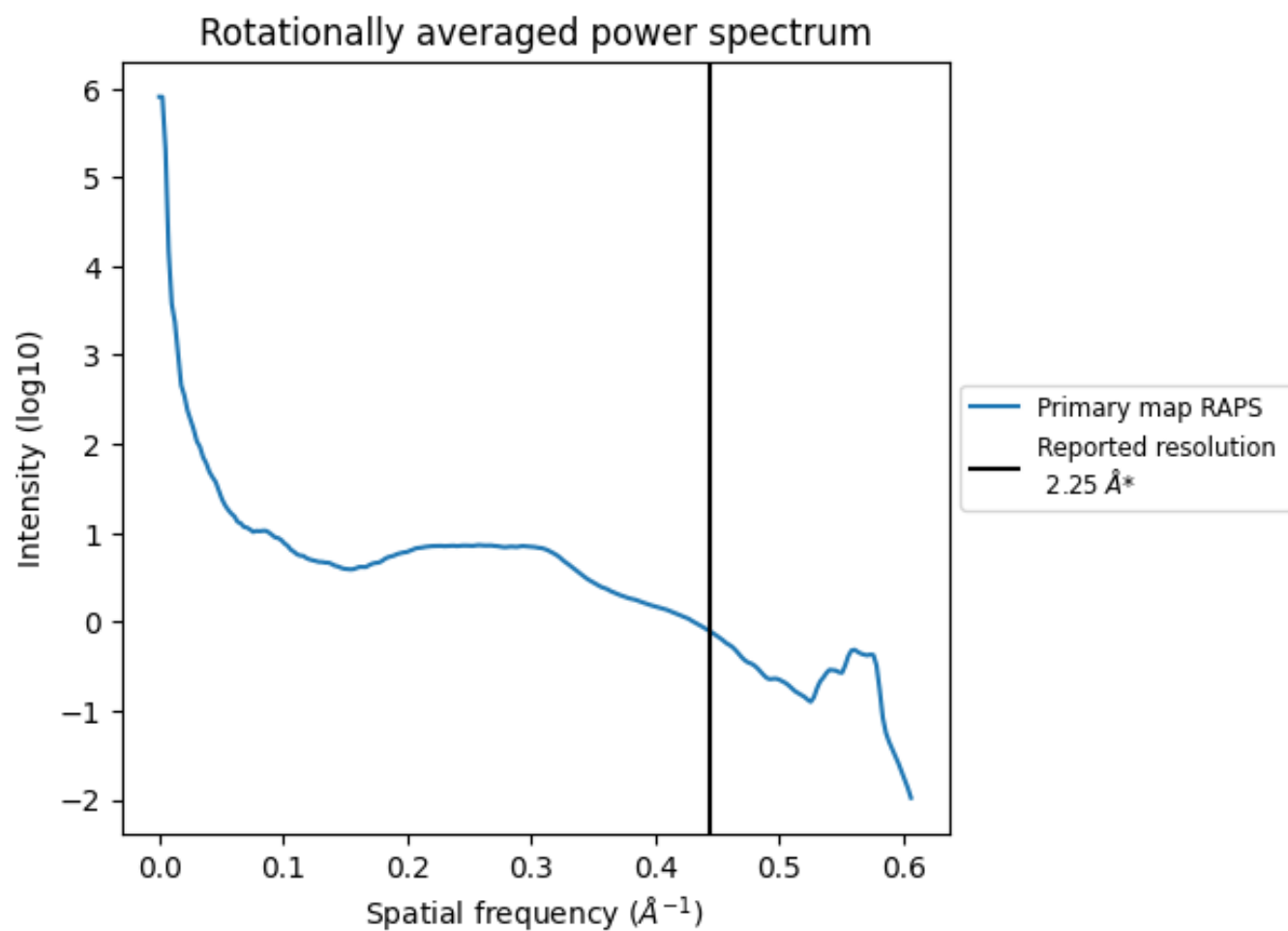
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 3258 nm³; this corresponds to an approximate mass of 2943 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

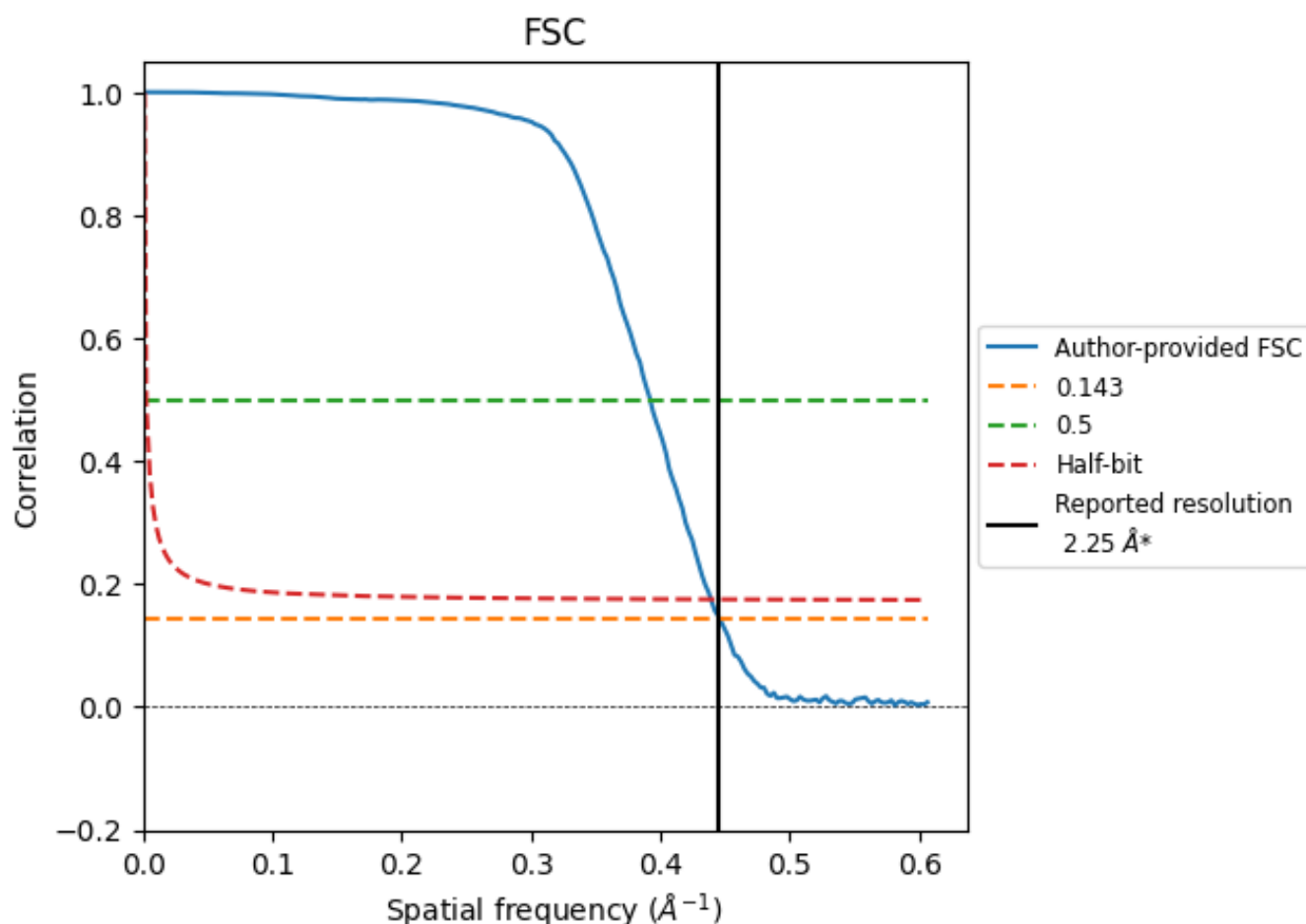


*Reported resolution corresponds to spatial frequency of 0.444 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.444 Å⁻¹

8.2 Resolution estimates [i](#)

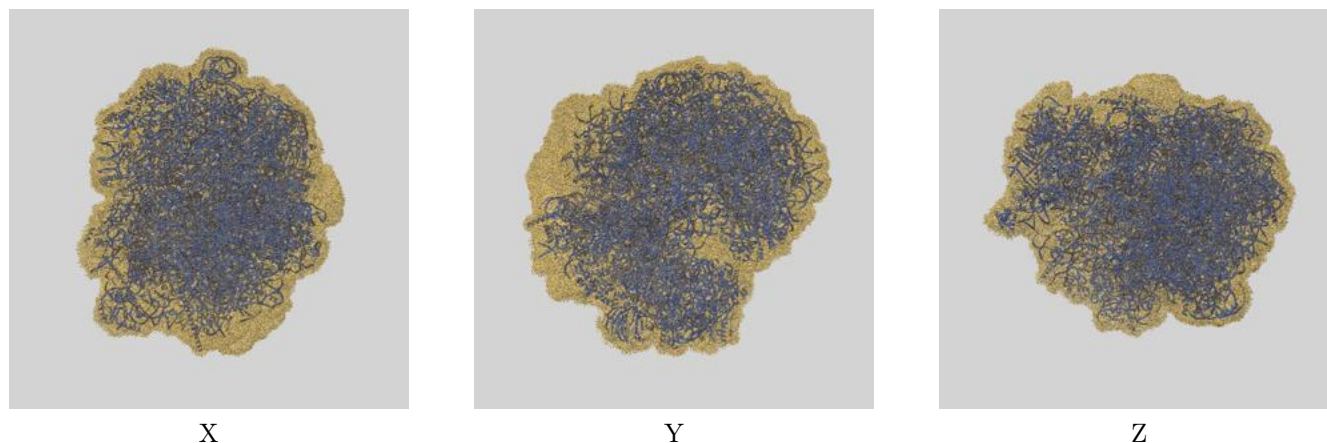
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.25	-	-
Author-provided FSC curve	2.24	2.55	2.28
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

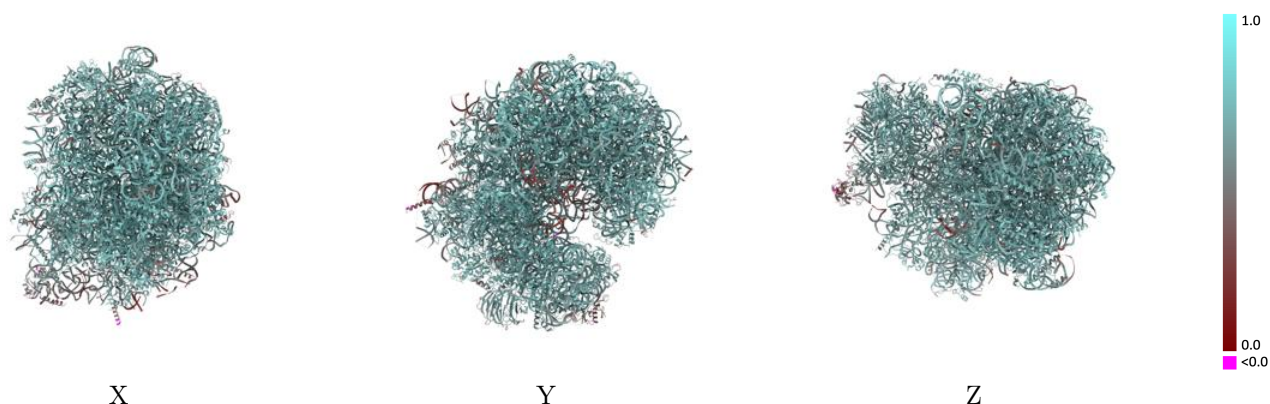
This section contains information regarding the fit between EMDB map EMD-50852 and PDB model 9FXO. Per-residue inclusion information can be found in section [3](#) on page [29](#).

9.1 Map-model overlay [i](#)



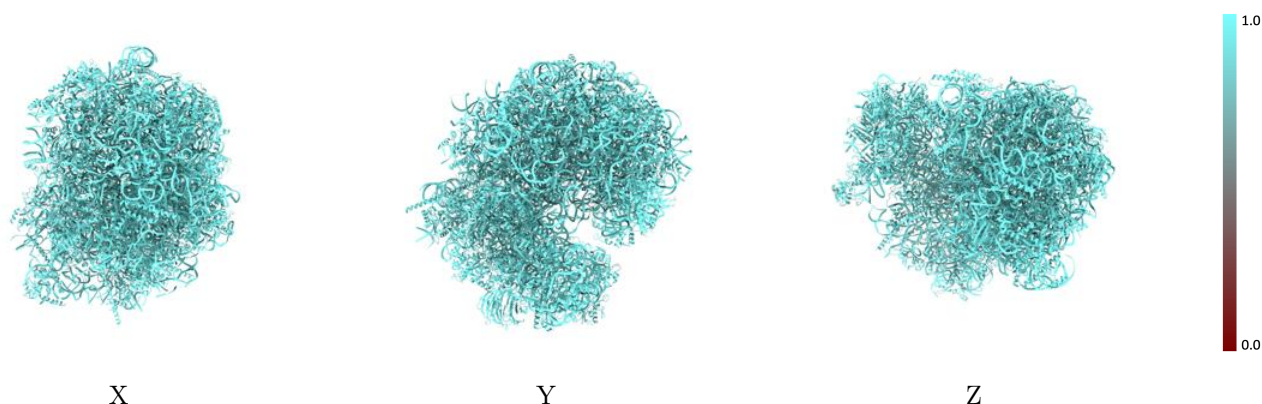
The images above show the 3D surface view of the map at the recommended contour level 0.005 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



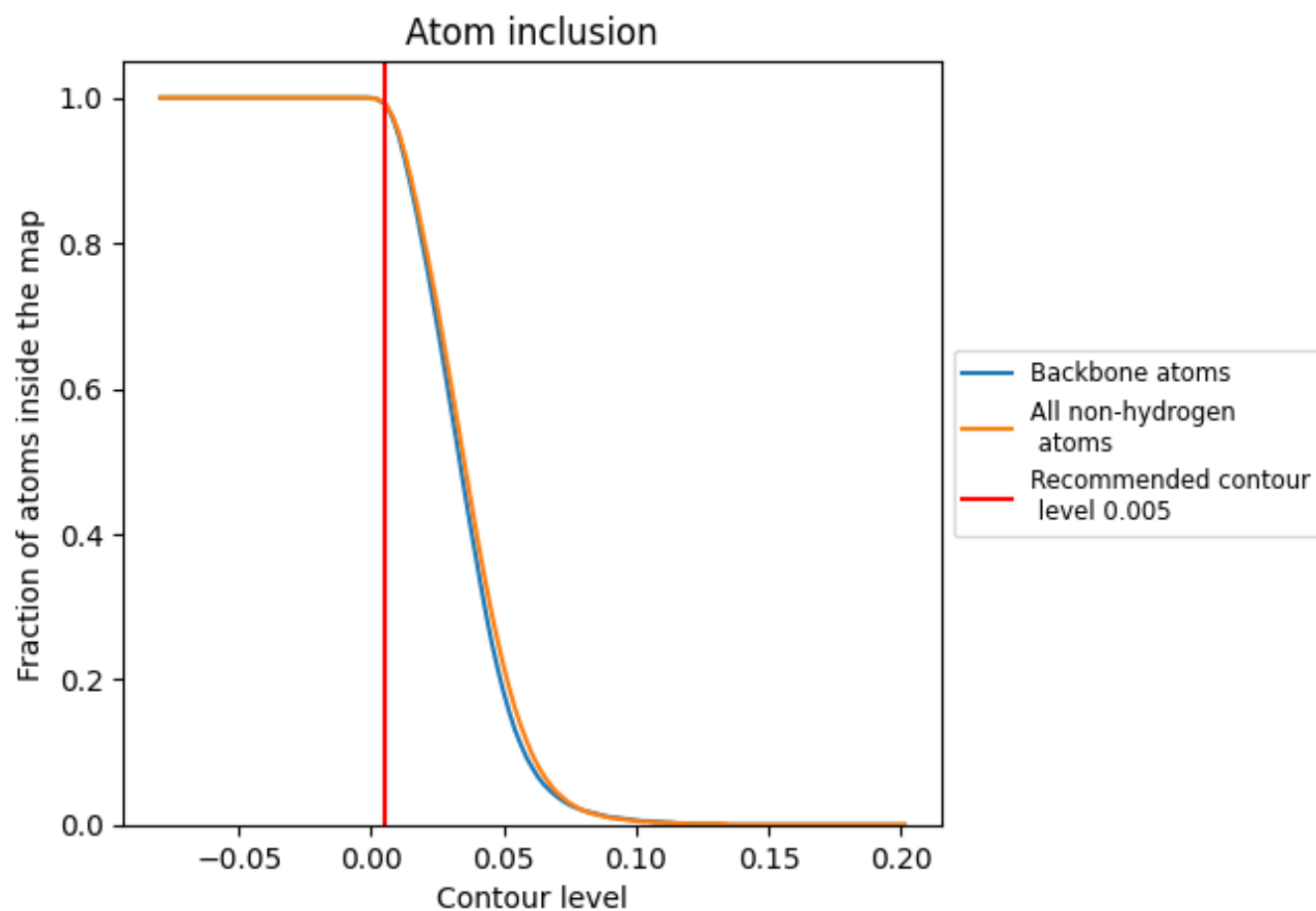
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.005).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 99% 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 (0.005) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9930	 0.6730
L1	 0.9940	 0.6770
L2	 0.9960	 0.6770
L3	 0.9940	 0.6840
L4	 0.9980	 0.6920
L5	 0.9920	 0.6680
L6	 0.9900	 0.6410
L7	 0.9930	 0.6880
L8	 1.0000	 0.6770
LA	 0.9990	 0.7500
LB	 0.9970	 0.7260
LC	 0.9970	 0.7140
LD	 0.9960	 0.6380
LE	 0.9950	 0.6900
LF	 0.9890	 0.6570
LG	 0.9900	 0.6990
LH	 0.9990	 0.7100
LI	 0.9950	 0.7080
LJ	 0.9980	 0.7270
LK	 0.9950	 0.6650
LL	 0.9960	 0.7220
LM	 1.0000	 0.7500
LN	 0.9960	 0.6920
LO	 0.9870	 0.6550
LP	 0.9980	 0.7160
LQ	 0.9940	 0.6830
LR	 0.9980	 0.6970
LS	 0.9970	 0.6890
LT	 0.9980	 0.7340
LU	 0.9950	 0.6410
LV	 0.9980	 0.7280
LW	 0.9980	 0.7220
LX	 0.9930	 0.6910
LY	 0.9990	 0.7010
LZ	 1.0000	 0.7060





























Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
La	 0.9980	 0.7020
Lb	 0.9960	 0.7090
Lc	 0.9990	 0.7030
Ld	 0.9940	 0.7210
Le	 0.9900	 0.6880
Lf	 0.9980	 0.7080
Lg	 0.9980	 0.6990
Lh	 0.9920	 0.6980
Li	 0.9960	 0.6970
Lj	 0.9980	 0.7490
Lk	 0.9950	 0.6970
Ll	 1.0000	 0.7440
Lm	 0.9980	 0.6910
Ln	 1.0000	 0.7130
Lo	 0.9940	 0.7420
Lp	 0.9970	 0.6930
S1	 0.9910	 0.6530
S2	 0.9540	 0.4430
S3	 0.9860	 0.5550
S4	 0.9540	 0.3780
S5	 0.9560	 0.5120
SA	 0.9910	 0.7080
SB	 0.9930	 0.6860
SC	 0.9910	 0.6410
SD	 0.9950	 0.6930
SE	 0.9950	 0.7030
SF	 0.9890	 0.7090
SG	 0.9960	 0.6600
SH	 0.9930	 0.6860
SI	 0.9940	 0.6910
SJ	 0.9970	 0.7330
SK	 0.9960	 0.6880
SL	 0.9980	 0.6960
SM	 0.9870	 0.6450
SN	 0.9870	 0.5820
SO	 0.9960	 0.7270
SP	 0.9960	 0.7100
SQ	 0.8850	 0.3870
SR	 0.9940	 0.6490
SS	 0.9930	 0.6900
ST	 0.9960	 0.7330
SU	 0.9920	 0.6870

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
SV	 0.9810	 0.6380
SW	 0.9830	 0.6280
SX	 0.9950	 0.6700
SY	 0.9940	 0.6940
SZ	 0.9900	 0.6680
Sa	 0.9790	 0.6320
Sb	 0.9990	 0.7320
Sc	 0.9840	 0.6730
Sd	 0.9810	 0.6530
Se	 0.9790	 0.6280
Sf	 0.9180	 0.4020
Sg	 0.9740	 0.5940
Sh	 0.9220	 0.4270