



wwPDB EM Validation Summary Report ⓘ

Dec 16, 2025 – 02:56 AM EST

PDB ID : 9P72 / pdb_00009p72
EMDB ID : EMD-71331
Title : In situ human P-E state 80S ribosome
Authors : Wei, Z.; Yong, X.
Deposited on : 2025-06-20
Resolution : 2.80 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.dev129
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.47

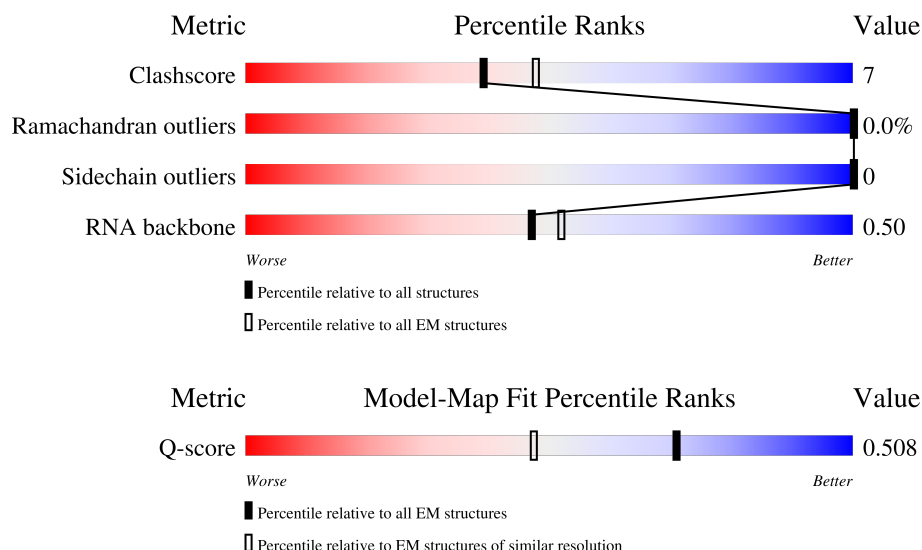
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.80 Å.

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



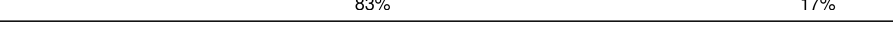
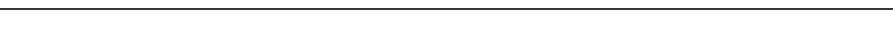
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	11806 (2.30 - 3.30)

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	Pt	74	
2	Et	75	
3	L5	3655	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	L7	120	
5	L8	156	
6	LA	248	
7	LB	402	
8	LC	368	
9	LD	293	
10	LE	240	
11	LF	225	
12	LG	241	
13	LH	190	
14	LI	213	
15	LJ	176	
16	LL	210	
17	LM	139	
18	LN	203	
19	LO	201	
20	LP	153	
21	LQ	187	
22	LR	187	
23	LS	175	
24	LT	159	
25	LU	101	
26	LV	131	
27	LW	118	
28	LX	120	

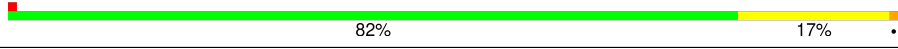
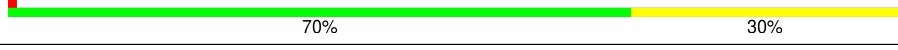
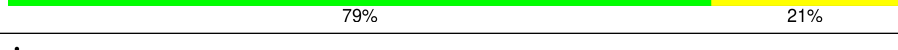
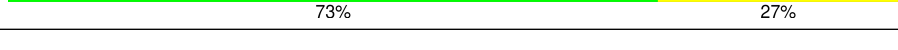
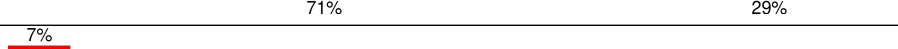
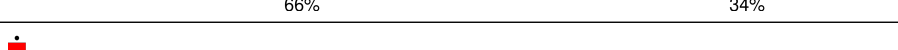
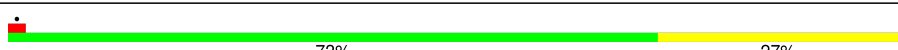
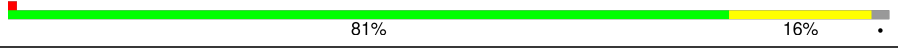
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
29	LY	134	
30	LZ	135	
31	La	147	
32	Lb	109	
33	Lc	98	
34	Ld	107	
35	Le	128	
36	Lf	109	
37	Lg	114	
38	Lh	122	
39	Li	102	
40	Lj	86	
41	Lk	69	
42	Ll	50	
43	Lm	52	
44	Ln	24	
45	Lo	105	
46	Lp	91	
47	Lr	125	
48	Ls	196	
49	Lt	141	
50	SD	227	
51	SF	189	
52	SK	98	
53	SM	122	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
54	SP	121	
55	SQ	144	
56	SR	135	
57	SS	145	
58	ST	143	
59	SU	104	
60	SZ	75	
61	Sc	64	
62	Sd	55	
63	Sf	67	
64	Sg	313	
65	SA	221	
66	SB	214	
67	SC	222	
68	SE	262	
69	SG	237	
70	SH	186	
71	SI	206	
72	SJ	185	
73	SL	153	
74	SN	150	
75	SO	140	
76	SV	83	
77	SW	129	
78	SX	141	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
79	SY	131	
80	Sa	102	
81	Sb	83	
82	Se	58	
83	S2	1740	
84	CI	31	

2 Entry composition [i](#)

There are 88 unique types of molecules in this entry. The entry contains 219971 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 P site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	Pt	74	Total	C	N	O	P	0	0
			1576	705	286	512	73		

- Molecule 2 is a RNA chain called E site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	Et	75	Total	C	N	O	P	0	0
			1593	712	281	526	74		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	L5	3655	Total	C	N	O	P	1	0
			78444	34968	14346	25475	3655		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
4	L7	120	Total	C	N	O	P	0	0
			2561	1141	456	844	120		

- Molecule 5 is a RNA chain called 5.8S rRNA [Homo sapiens].

Mol	Chain	Residues	Atoms					AltConf	Trace
5	L8	156	Total	C	N	O	P	0	0
			3315	1481	585	1094	155		

- Molecule 6 is a protein called 60S ribosomal protein L8.

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

- Molecule 7 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	LB	402	Total	C	N	O	S	0	0
			3238	2060	608	556	14		

- Molecule 8 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	LC	368	Total	C	N	O	S	0	0
			2927	1840	583	489	15		

- Molecule 9 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	LD	293	Total	C	N	O	S	0	0
			2382	1507	434	427	14		

- Molecule 10 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	LE	240	Total	C	N	O	S	0	0
			1935	1242	368	321	4		

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LE	?	-	SER	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878
LE	?	-	VAL	deletion	UNP Q02878
LE	?	-	GLU	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878
LE	?	-	GLU	deletion	UNP Q02878
LE	?	-	LYS	deletion	UNP Q02878

- Molecule 11 is a protein called 60S ribosomal protein L7.

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

- Molecule 12 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LG	241	Total	C	N	O	S	0	0
			1927	1228	371	324	4		

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

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

- Molecule 14 is a protein called Ribosomal protein uL16-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LI	213	Total	C	N	O	S	0	0
			1711	1082	329	285	15		

- Molecule 15 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LJ	170	Total	C	N	O	S	0	0
			1362	861	254	241	6		

- Molecule 16 is a protein called Large ribosomal subunit protein eL13.

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

- Molecule 17 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LM	139	Total	C	N	O	S	0	0
			1138	730	218	183	7		

- Molecule 18 is a protein called 60S ribosomal protein L15.

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

- Molecule 19 is a protein called 60S ribosomal protein L13a.

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

- Molecule 20 is a protein called 60S ribosomal protein L17.

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

- Molecule 21 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LQ	187	Total	C	N	O	S	0	0
			1513	944	314	250	5		

- Molecule 22 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LR	187	Total	C	N	O	S	0	0
			1566	971	336	250	9		

- Molecule 23 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LS	175	Total	C	N	O	S	0	0
			1453	925	283	235	10		

- Molecule 24 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	LT	159	Total	C	N	O	S	0	0
			1298	823	252	217	6		

- Molecule 25 is a protein called Heparin-binding protein HBp15.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LU	101	Total	C	N	O	S	0	0
			825	529	144	150	2		

- Molecule 26 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LV	131	Total	C	N	O	S	0	0
			979	618	184	172	5		

- Molecule 27 is a protein called Ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LW	116	Total	C	N	O	S	0	0
			945	592	193	156	4		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LW	?	-	SER	deletion	UNP A0A994J4A5
LW	?	-	GLU	deletion	UNP A0A994J4A5
LW	?	-	GLU	deletion	UNP A0A994J4A5
LW	?	-	ILE	deletion	UNP A0A994J4A5
LW	?	-	GLN	deletion	UNP A0A994J4A5
LW	?	-	LYS	deletion	UNP A0A994J4A5

- Molecule 28 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LX	120	Total	C	N	O	S	0	0
			985	630	185	169	1		

- Molecule 29 is a protein called 60S ribosomal protein L26.

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

- Molecule 30 is a protein called 60S ribosomal protein L27.

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

- Molecule 31 is a protein called 60S ribosomal protein L27a.

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

- Molecule 32 is a protein called Large ribosomal subunit protein eL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Lb	109	Total	C	N	O	S	0	0
			876	546	189	137	4		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Lb	?	-	LYS	deletion	UNP P47914
Lb	?	-	PRO	deletion	UNP P47914
Lb	?	-	LYS	deletion	UNP P47914
Lb	?	-	GLU	deletion	UNP P47914
Lb	?	-	VAL	deletion	UNP P47914
Lb	?	-	LYS	deletion	UNP P47914
Lb	?	-	PRO	deletion	UNP P47914
Lb	?	-	LYS	deletion	UNP P47914
Lb	?	-	ILE	deletion	UNP P47914
Lb	?	-	PRO	deletion	UNP P47914
Lb	?	-	LYS	deletion	UNP P47914
Lb	?	-	GLY	deletion	UNP P47914

- Molecule 33 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Lc	98	Total	C	N	O	S	0	0
			764	485	135	138	6		

- Molecule 34 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Ld	107	Total	C	N	O	S	0	0
			888	560	171	155	2		

- Molecule 35 is a protein called 60S ribosomal protein L32.

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

- Molecule 36 is a protein called 60S ribosomal protein L35a.

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

- Molecule 37 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Lg	114	Total	C	N	O	S	0	0
			906	566	187	147	6		

- Molecule 38 is a protein called 60S ribosomal protein L35.

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

- Molecule 39 is a protein called 60S ribosomal protein L36.

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

- Molecule 40 is a protein called 60S ribosomal protein L37.

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

- Molecule 41 is a protein called 60S ribosomal protein L38.

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

- Molecule 42 is a protein called 60S ribosomal protein L39.

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

- Molecule 43 is a protein called Large ribosomal subunit protein eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lm	52	Total	C	N	O	S	0	0
			429	266	90	67	6		

- Molecule 44 is a protein called 60S ribosomal protein L41.

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

- Molecule 45 is a protein called 60S ribosomal protein L36a.

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

- Molecule 46 is a protein called 60S ribosomal protein L37a.

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

- Molecule 47 is a protein called 60S ribosomal protein L28.

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

- Molecule 48 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Ls	196	Total	C	N	O	S	0	0
			1496	952	259	276	9		

- Molecule 49 is a protein called Large ribosomal subunit protein uL11.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Lt	134	Total	C	N	O	S	0	0
			998	626	180	189	3		

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Lt	?	-	PRO	deletion	UNP P30050
Lt	?	-	PRO	deletion	UNP P30050
Lt	?	-	ARG	deletion	UNP P30050
Lt	?	-	ASP	deletion	UNP P30050
Lt	?	-	ARG	deletion	UNP P30050
Lt	?	-	LYS	deletion	UNP P30050
Lt	?	-	LYS	deletion	UNP P30050
Lt	?	-	GLN	deletion	UNP P30050
Lt	?	-	LYS	deletion	UNP P30050
Lt	?	-	ASN	deletion	UNP P30050
Lt	?	-	ILE	deletion	UNP P30050
Lt	?	-	LYS	deletion	UNP P30050
Lt	?	-	HIS	deletion	UNP P30050
Lt	?	-	SER	deletion	UNP P30050
Lt	?	-	GLY	deletion	UNP P30050
Lt	?	-	ASN	deletion	UNP P30050

- Molecule 50 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	SD	227	Total	C	N	O	S	0	0
			1765	1125	317	315	8		

- Molecule 51 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	SF	189	Total	C	N	O	S	0	0
			1495	934	284	270	7		

- Molecule 52 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	SK	98	Total	C	N	O	S	0	0
			827	539	148	134	6		

- Molecule 53 is a protein called Small ribosomal subunit protein eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	SM	122	Total	C	N	O	S	0	0
			940	590	164	177	9		

- Molecule 54 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	SP	121	Total	C	N	O	S	0	0
			985	623	185	170	7		

- Molecule 55 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	SQ	144	Total	C	N	O	S	0	0
			1142	726	216	197	3		

- Molecule 56 is a protein called Small ribosomal subunit protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SR	135	Total	C	N	O	S	0	0
			1090	685	202	198	5		

- Molecule 57 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SS	145	Total	C	N	O	S	0	0
			1198	751	242	203	2		

- Molecule 58 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	ST	143	Total	C	N	O	S	0	0
			1112	697	214	198	3		

- Molecule 59 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SU	104	Total	C	N	O	S	0	0
			821	514	155	148	4		

- Molecule 60 is a protein called Small ribosomal subunit protein eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SZ	75	Total	C	N	O	S	0	0
			598	382	111	104	1		

- Molecule 61 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	Sc	64	Total	C	N	O	S	0	0
			506	308	102	94	2		

- Molecule 62 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	Sd	55	Total	C	N	O	S	0	0
			459	286	94	74	5		

- Molecule 63 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	Sf	67	Total	C	N	O	S	0	0
			548	346	102	93	7		

- Molecule 64 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	Sg	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
65	SA	221	Total	C	N	O	S	0	0
			1741	1106	305	322	8		

- Molecule 66 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SB	214	Total	C	N	O	S	0	0
			1738	1103	310	311	14		

- Molecule 67 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	SC	220	Total	C	N	O	S	0	0
			1707	1104	293	300	10		

- Molecule 68 is a protein called Small ribosomal subunit protein eS4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	SE	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

- Molecule 69 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	SG	237	Total	C	N	O	S	0	0
			1923	1200	387	329	7		

- Molecule 70 is a protein called Small ribosomal subunit protein eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	SH	186	Total	C	N	O	S	0	0
			1497	956	274	266	1		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SH	?	-	SER	deletion	UNP P62081
SH	?	-	ARG	deletion	UNP P62081
SH	?	-	THR	deletion	UNP P62081

- Molecule 71 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	SI	206	Total	C	N	O	S	0	0
			1686	1058	332	291	5		

- Molecule 72 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	SJ	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 73 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	SL	153	Total	C	N	O	S	0	0
			1247	793	234	214	6		

- Molecule 74 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	SN	150	Total	C	N	O	S	0	0
			1208	773	229	205	1		

- Molecule 75 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	SO	137	Total	C	N	O	S	0	0
			1024	627	200	191	6		

- Molecule 76 is a protein called Small ribosomal subunit protein eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	SV	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

- Molecule 77 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	SW	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 78 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	SX	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
79	SY	131	Total	C	N	O	S	0	0
			1065	673	209	178	5		

- Molecule 80 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	Sa	102	Total	C	N	O	S	0	0
			821	512	171	133	5		

- Molecule 81 is a protein called Small ribosomal subunit protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	Sb	83	Total	C	N	O	S	0	0
			651	408	121	115	7		

- Molecule 82 is a protein called Small ribosomal subunit protein eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	Se	58	Total	C	N	O	S	0	0
			459	284	100	74	1		

- Molecule 83 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	S2	1740	Total	C	N	O	P	0	0
			36953	16508	6600	12106	1739		

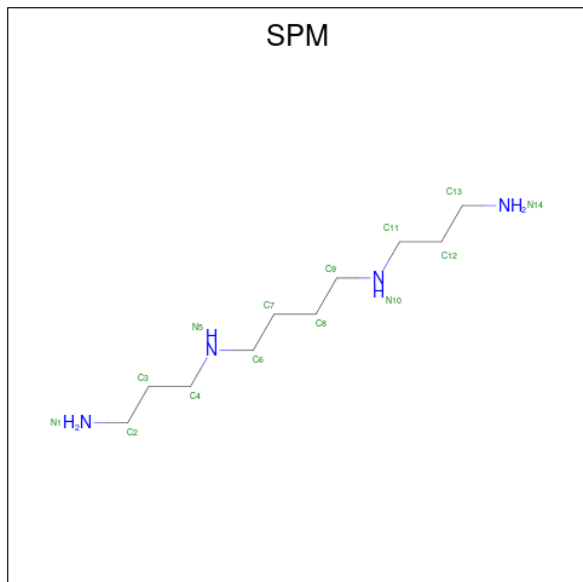
- Molecule 84 is a protein called Transcription factor BTF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	CI	31	Total	C	N	O	S	0	0
			247	153	55	38	1		

- Molecule 85 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

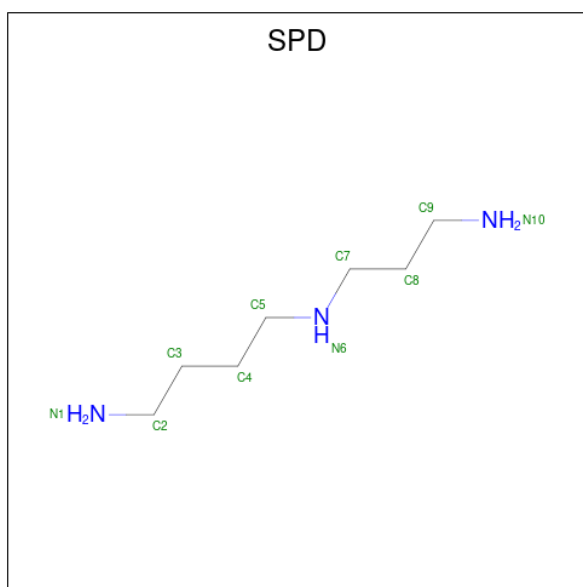
Mol	Chain	Residues	Atoms		AltConf
85	L5	179	Total	Mg	0
			179	179	
85	L7	3	Total	Mg	0
			3	3	
85	L8	5	Total	Mg	0
			5	5	
85	LA	1	Total	Mg	0
			1	1	
85	LP	1	Total	Mg	0
			1	1	
85	LV	1	Total	Mg	0
			1	1	
85	Le	1	Total	Mg	0
			1	1	
85	SS	1	Total	Mg	0
			1	1	
85	S2	27	Total	Mg	0
			27	27	

- Molecule 86 is SPERMINE (CCD ID: SPM) (formula: $C_{10}H_{26}N_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
86	L5	1	Total	C	N	0
			14	10	4	
86	L5	1	Total	C	N	0
			14	10	4	
86	L5	1	Total	C	N	0
			14	10	4	
86	L5	1	Total	C	N	0
			14	10	4	
86	L5	1	Total	C	N	0
			14	10	4	
86	L5	1	Total	C	N	0
			14	10	4	

- Molecule 87 is SPERMIDINE (CCD ID: SPD) (formula: $C_7H_{19}N_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	L5	1	Total	C	N	0
			10	7	3	
87	LN	1	Total	C	N	0
			10	7	3	

- Molecule 88 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
88	Lg	1	Total	Zn	0
			1	1	

Continued on next page...

Continued from previous page...

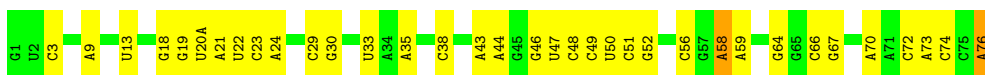
Mol	Chain	Residues	Atoms		AltConf
88	Lj	1	Total 1	Zn 1	0
88	Lm	1	Total 1	Zn 1	0
88	Lo	1	Total 1	Zn 1	0
88	Lp	1	Total 1	Zn 1	0
88	Sa	1	Total 1	Zn 1	0

3 Residue-property plots

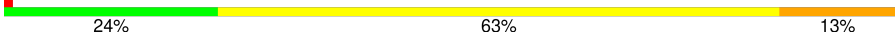
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

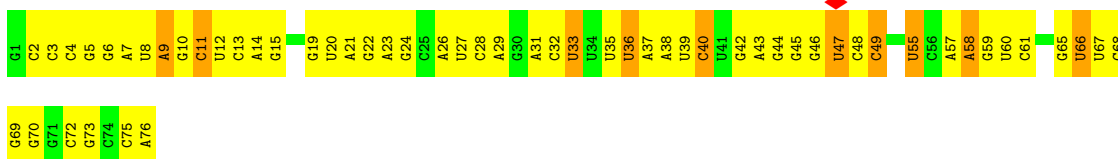
• Molecule 1: P site tRNA

Chain Pt: 



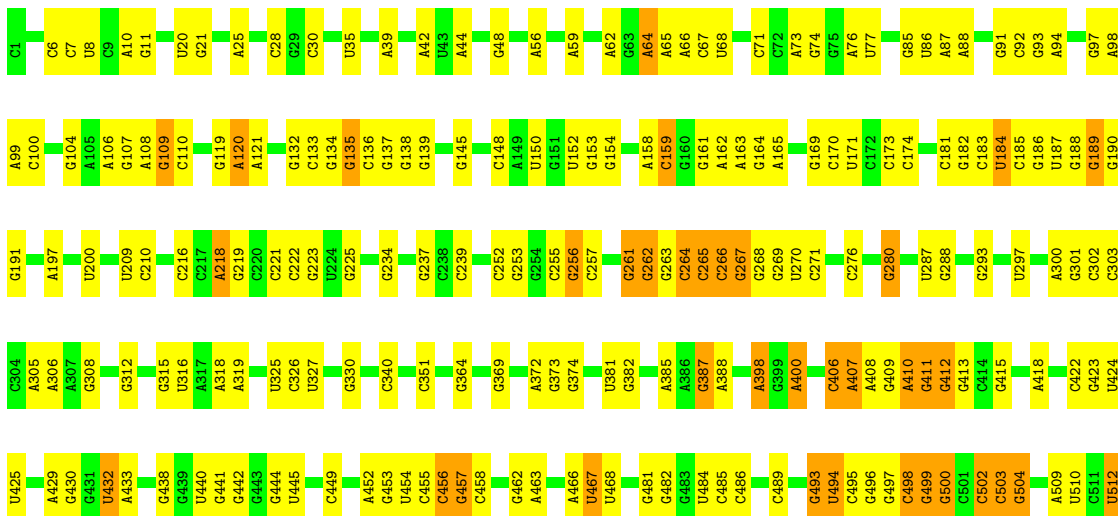
• Molecule 2: E site tRNA

Chain Et: 



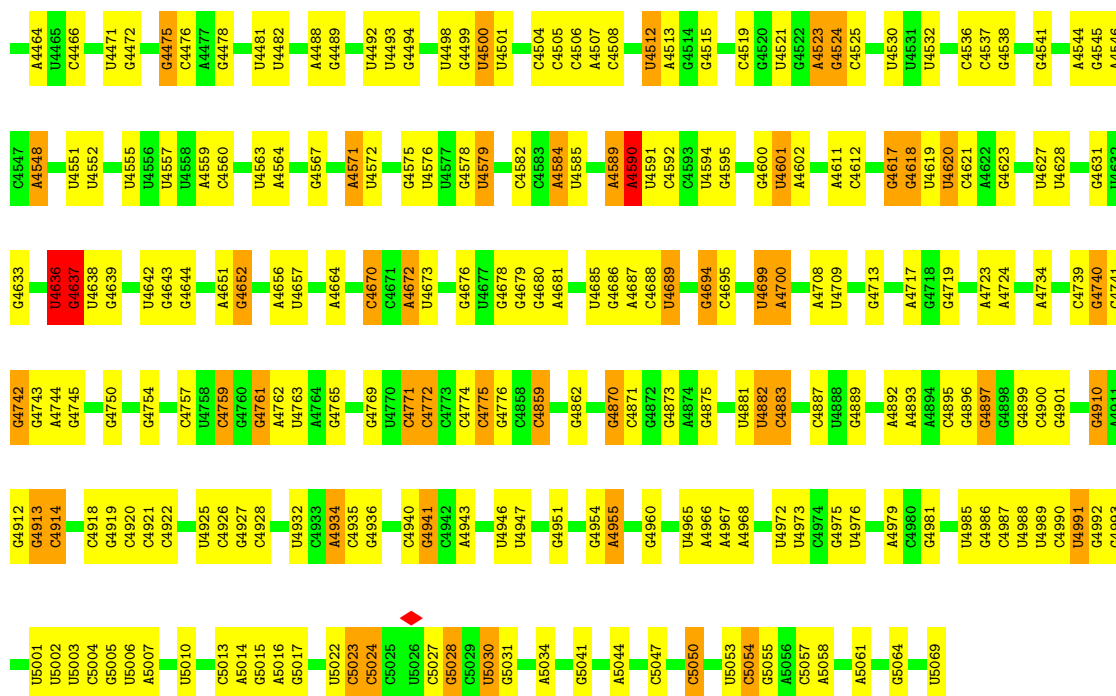
• Molecule 3: 28S rRNA

Chain L5: 



G2252	C2019	A1942	G1855	A1554	C1447	G1351	G1281	C1181	G957	U513
A2253	U2020	A1943	C1856	A1558	G1457	A1354	G1282	C1182	G958	U514
C2256	G2021	G1948	C1857	G1559	C1458	A1359	G1283	C1183	C959	C515
C2257	G2024	C1763	C1762	A1563	C1459	G1359	G1284	A1184	G960	C516
C2258	A2025	G1764	C1763	A1564	C1460	G1364	G1287	G1185	G961	C517
A2026	A2026	A1765	A1678	A1565	A1461	C1365	G1287	U1186	C962	G518
G2262	A2029	G1766	G1680	A1566	A1462	C1366	G1290	G1187	C519	C519
A2263	A2030	A1767	G1681	A1567	A1463	C1367	G1291	G966	G642	G643
G2265	A2041	C1768	G1682	A1568	C1468	G1382	G1292	C967	G646	G647
G2275	G2045	A1770	G1683	G1574	C1468	G1385	G1293	G968	G647	
A2276	G2046	G1771	G1684	G1577	C1478	C1386	G1294	G970		
A2279	A2047	U1772	G1685	G1578	C1479	A1387	G1295	G971		
G2280	U2048	U1773	G1686	U1578	C1480	C1388	G1296	G972		
U2281	G2049	U1774	G1687	U1582	C1481	A1389	G1297	G973		
	G2055	U1775	G1688	U1589	C1483	G1390	G1298	G974		
G2284	G2056	U1776	G1689	C1589	U1494	A1391	G1299	G975		
G2289	G2057	U1777	G1690	C1590	U1495	A1392	G1300	G976		
C2295	A2069	U1778	G1691	U1591	G1496	A1393	C1301	G977		
G2296	G2072	U1779	G1692	U1596	G1497	G1394	C1302	G978		
G2297	G2076	U1780	G1693	U1597	G1498	G1395	C1303	G979		
U2298	G2077	U1781	G1694	U1598	G1499	G1396	C1304	G980		
A2300	U2080	U1782	G1695	U1600	G1500	G1397	C1305	G981		
G2301	G1981	U1783	G1696	A1601	C1501	A1398	C1306	G982		
G2302	G1982	U1784	G1697	U1602	G1502	G1403	C1307	G983		
C2303	A1983	U1785	G1698	U1603	G1503	A1404	C1308	G984		
G2306	G1984	C1785	G1699	U1604	G1504	G1405	C1309	G985		
G2307	G1985	U1786	G1700	U1605	G1505	G1406	C1310	G986		
G2308	G1986	A1787	G1701	U1606	G1506	G1407	C1311	G987		
G2309	G1987	U1788	G1702	U1607	G1507	G1408	C1312	G988		
G2310	G1988	U1789	G1703	U1608	G1508	G1409	C1313	G989		
G2311	G1989	U1790	G1704	U1609	G1509	G1410	C1314	G990		
G2312	G1990	U1791	G1705	U1610	G1510	G1411	C1315	G991		
G2313	G1991	U1792	G1706	U1611	U1511	G1412	C1316	G992		
G2314	G1992	U1793	G1707	U1612	U1512	G1413	C1317	G993		
G2315	G1993	U1794	G1708	U1613	U1513	G1414	C1318	G994		
G2316	G1994	U1795	G1709	U1614	U1514	G1415	C1319	G995		
G2317	G1995	U1796	G1710	U1615	U1515	G1416	C1320	G996		
G2318	G1996	U1797	G1711	U1616	U1516	G1417	C1321	G997		
G2319	G1997	U1798	G1712	U1617	U1517	G1418	C1322	G998		
G2320	G1998	U1799	G1713	U1618	U1518	G1419	C1323	G999		
G2321	G1999	U1800	G1714	U1619	U1519	G1420	C1324	G1000		
G2322	G2000	U1801	G1715	U1620	U1520	G1421	C1325	G1001		
G2323	G2001	U1802	G1716	U1621	U1521	G1422	C1326	G1002		
G2324	G2002	U1803	G1717	U1622	U1522	G1423	C1327	G1003		
G2325	G2003	U1804	G1718	U1623	U1523	G1424	C1328	G1004		
G2326	G2004	U1805	G1719	U1624	U1524	G1425	C1329	G1005		
G2327	G2005	U1806	G1720	U1625	U1525	G1426	C1330	G1006		
G2328	G2006	U1807	G1721	U1626	U1526	G1427	C1331	G1007		
G2329	G2007	U1808	G1722	U1627	U1527	G1428	C1332	G1008		
G2330	G2008	U1809	G1723	U1628	U1528	G1429	C1333	G1009		
G2331	G2009	U1810	G1724	U1629	U1529	G1430	C1334	G1010		
G2332	G2010	U1811	G1725	U1630	U1530	G1431	C1335	G1011		
G2333	G2011	U1812	G1726	U1631	U1531	G1432	C1336	G1012		
G2334	G2012	U1813	G1727	U1632	U1532	G1433	C1337	G1013		
G2335	G2013	U1814	G1728	U1633	U1533	G1434	C1338	G1014		
G2336	G2014	U1815	G1729	U1634	U1534	G1435	C1339	G1015		
G2337	G2015	U1816	G1730	U1635	U1535	G1436	C1340	G1016		
G2338	G2016	U1817	G1731	U1636	U1536	G1437	C1341	G1017		
G2339	G2017	U1818	G1732	U1637	U1537	G1438	C1342	G1018		
G2340	G2018	U1819	G1733	U1638	U1538	G1439	C1343	G1019		
G2341	G2019	U1820	G1734	U1639	U1539	G1440	C1344	G1020		
G2342	G2020	U1821	G1735	U1640	U1540	G1441	C1345	G1021		
G2343	G2021	U1822	G1736	U1641	U1541	G1442	C1346	G1022		
G2344	G2022	U1823	G1737	U1642	U1542	G1443	C1347	G1023		
G2345	G2023	U1824	G1738	U1643	U1543	G1444	C1348	G1024		
G2346	G2024	U1825	G1739	U1644	U1544	G1445	C1349	G1025		
G2347	G2025	U1826	G1740	U1645	U1545	G1446	C1350	G1026		
G2348	G2026	U1827	G1741	U1646	U1546	G1447	C1351	G1027		
G2349	G2027	U1828	G1742	U1647	U1547	G1448	C1352	G1028		
G2350	G2028	U1829	G1743	U1648	U1548	G1449	C1353	G1029		
G2351	G2029	U1830	G1744	U1649	U1549	G1450	C1354	G1030		
G2352	G2030	U1831	G1745	U1650	U1550	G1451	C1355	G1031		
G2353	G2031	U1832	G1746	U1651	U1551	G1452	C1356	G1032		
G2354	G2032	U1833	G1747	U1652	U1552	G1453	C1357	G1033		
G2355	G2033	U1834	G1748	U1653	U1553	G1454	C1358	G1034		
G2356	G2034	U1835	G1749	U1654	U1554	G1455	C1359	G1035		
G2357	G2035	U1836	G1750	U1655	U1555	G1456	C1360	G1036		
G2358	G2036	U1837	G1751	U1656	U1556	G1457	C1361	G1037		
G2359	G2037	U1838	G1752	U1657	U1557	G1458	C1362	G1038		
G2360	G2038	U1839	G1753	U1658	U1558	G1459	C1363	G1039		
G2361	G2039	U1840	G1754	U1659	U1559	G1460	C1364	G1040		
G2362	G2040	U1841	G1755	U1660	U1560	G1461	C1365	G1041		
G2363	G2041	U1842	G1756	U1661	U1561	G1462	C1366	G1042		
G2364	G2042	U1843	G1757	U1662	U1562	G1463	C1367	G1043		
G2365	G2043	U1844	G1758	U1663	U1563	G1464	C1368	G1044		
G2366	G2044	U1845	G1759	U1664	U1564	G1465	C1369	G1045		
G2367	G2045	U1846	G1760	U1665	U1565	G1466	C1370	G1046		
G2368	G2046	U1847	G1761	U1666	U1566	G1467	C1371	G1047		
G2369	G2047	U1848	G1762	U1667	U1567	G1468	C1372	G1048		
G2370	G2048	U1849	G1763	U1668	U1568	G1469	C1373	G1049		
G2371	G2049	U1850	G1764	U1669	U1569	G1470	C1374	G1050		
G2372	G2050	U1851	G1765	U1670	U1570	G1471	C1375	G1051		
G2373	G2051	U1852	G1766	U1671	U1571	G1472	C1376	G1052		
G2374	G2052	U1853	G1767	U1672	U1572	G1473	C1377	G1053		
G2375	G2053	U1854	G1768	U1673	U1573	G1474	C1378	G1054		
G2376	G2054	U1855	G1769	U1674	U1574	G1475	C1379	G1055		
G2377	G2055	U1856	G1770	U1675	U1575	G1476	C1380	G1056		
G2378	G2056	U1857	G1771	U1676	U1576	G1477	C1381	G1057		
G2379	G2057	U1858	G1772	U1677	U1577	G1478	C1382	G1058		
G2380	G2058	U1859	G1773	U1678	U1578	G1479	C1383	G1059		
G2381	G2059	U1860	G1774	U1679	U1579	G1480	C1384	G1060		
G2382	G2060	U1861	G1775	U1680	U1580	G1481	C1385	G1061		
G2383	G2061	U1862	G1776	U1681	U1581	G1482	C1386	G1062		
G2384	G2062	U1863	G1777	U1682	U1582	G1483	C1387	G1063		
G2385	G2063	U1864	G1778	U1683	U1583	G1484	C1388	G1064		
G2386	G2064	U1865	G1779	U1684	U1584	G1485	C1389	G1065		
G2387	G2065	U1866	G1780	U1685	U1585	G1486	C1390	G1066		
G2388	G2066	U1867	G1781	U1686	U1586	G1487	C1391	G1067		
G2389	G2067	U1868	G1782	U1687	U1587	G1488	C1392	G1068		
G2390	G2068	U1869	G1783	U1688	U1588	G1489	C1393	G1069		
G2391	G2069	U1870	G1784	U1689	U1589	G1490	C1394	G1070		
G2392	G2070	U1871	G1785	U1690	U1590	G1491	C1395	G1071		
G2393	G2071	U1872	G1786	U1691	U1591	G1492	C1396	G1072		
G2394	G2072	U1873	G1787	U1692	U1592	G1493	C1397	G1073		
G2395	G2073	U1874	G1788	U1693	U1593	G1494	C1398	G1074		
G2396	G2074	U1875	G1789	U1694	U1594	G1495	C1399	G1075		
G2397	G2075	U1876	G1790	U1695	U1595	G1496	C1400	G1076		
G2398	G2076	U1877	G1791	U1696	U1596	G1497	C1401	G1077		
G2399	G2077	U1878	G1792	U1697	U1597	G1498	C1402	G1078		
G2400	G2078	U1879	G1793	U1698	U1598	G1499	C1403	G1079		
G2401	G2079	U1880	G1794	U1699	U1599	G1500	C1404	G1080		
G2402	G2080	U1881	G1795	U1700	U1600	G1501	C1405	G1081		
G2403	G2081	U1882	G1796	U1701	U1601	G1502	C1406	G1082		
G2404	G2082	U1883	G1797	U1702	U1602	G1503	C1407	G1083		
G2405	G2083	U1884	G1798	U1703	U1603	G1504	C1408	G1084		
G2406	G2084	U1885	G1799	U1704	U1604	G1505	C1409	G1085		
G2407	G2085	U1886	G1800	U1705	U1605	G1506	C1410	G1086		
G2408	G2086	U1887	G1801	U1706	U1606	G1507				

U4361	A4273	G4185	G4092	A3830	A3726	C3636	A2871	A2765	A2676	U2570	G2479	A2363
A4362	A4274	A4186	G4093	U3838	A3727	U3637	C2875	A2766	C2684	C2571	G2480	G2364
A4363	G4275	U4187	G4094	U3839	A3728	C3638	G2876	C2767	C2684	C2572	G2481	
G4364		G4095	G4095	U3840		U3639	G2877	C2768		A2376	G2482	
G4365	A4279	U4188	G4096	U3841	A3732	U3640		C2769		C2377	G2483	
	A4280	U4189	G4097	C3841	A3733	U3641	C2890	C2770	U2687	C2577	A2484	
A4281		U4190	C3842	C3842	U3734	U3642			G2688	G2578	G2378	
A4282	A4099	G4191	C3918	C3843	G3735	U3644	C2891	G2773		G2579	U2485	
	G4099	G4196	U3920	U3844	A3736	U3645				G2580	G2486	
G4373	C4100				A3737	A3646	A2894	G2777	U2691	A2581	C2487	
	C4101					A3647	A2895	G2778	U2692	C2582	C2488	
A4203	C4104	A3923	A3924	U3848	G3744	A3648	A2896		U2693	C2583	U2386	
U4208		C3924		C3850					U2694			
G4209	G4107	U3925		U3851	A3748		C2899	A2787		A2587		
U4210	G4108	U3930		U3852		G3654	U2900	U2788	C2702	C2588	U2493	
A4212		C3931		U3853		C3655	G2901	A2789		C2589	U2494	
A4213		G3932		C3854	G3753	C3659	G2902	U2790	G2706	A2601		
A4214	U4111	U3933		C3855	U3758	C3660	U2903	C2804	U2707	U2707	C2504	
	U4112	G3934		A3856	A3759	C3662	C2905	C2805	U2708	G2608	C2505	
A4219	U4113				A3760	A3663	G2906	C2806	U2709	G2609	G2506	
A4220	C4114	C3937		A3861	G3765	C3664	U2907	A2807	C2710	C2610		
C4221	C4115	G3938		A3862		C3665	U2908	G2808	C2711	A2611		
G4222	C4116	G3939				C3670	C2909	G2809	G2712	G2612	A2513	
	U4117			C3865	U3770		G2910	U2810		C2613	G2516	
		A3942		C3866	C3771	C3673	C2911	G2811	U2718	C2614	G2517	
	G4122	A3943		A3867	U3772	G3674	G3585	G2812	U2719		G2518	
G4226	C4126	G3944		C3868	U3773			C2813	C2720	G2622	U2519	
U4227	A4127	A3945		C3869	A3774	C3674	G3590	G2814	G2721	C2623	C2520	
G4228		G3946		C3870	A3775		G3591	C2815		G2624	G2521	
U4229	C4139	A3947		A3871	G3776	U3687	C3594	A2815	G2724	U2625		
	U4140	C3848		C3872	G3777	C3689	C3595	C2824	U2725	U2626	A2529	
U4232	C4141	A3949		G3873		U3690	U3595	C2825	A2726	C2627	A2537	
A4233	C4142	U3950		G3874		C3691	A3596	A2826	U2727	U2632	U2538	
C4237	C4143			A3877	U3786	A3692	G3597	G2827	U2730	C2633	A2423	
G4238	C4144	G3953		C3878	G3792	U3693	A3599	G2831	C2731	C2634	G2424	
A4239	C4145	A3954		C3879		U3694	G3600	A2832	G2732	U2635	U2425	
G4240	G4146	A4056		G3880	A3799	C3696	C3601		G2733			
C4241		C4057		G3881		U3697		U2837	C2738	G2638	A2449	
U4242	C4149	U4058				C3698	A3604	G2838	C2739	U2639	G2544	
U4243	G4150	C4059		U3884	G3805		C3605	G2839	U2740	U2640	U2545	
G4246	C4151	U4060		C3885	A3806		U3606	U2844	G2741	A2641	A2453	
G4247	C4153	G4061		G3886	C3808		U3607	A2845	G2742			
	U4154	U4062					A3608	G2846	A2743	C2643	C2458	
A4251		U4063		U3892	G3811	C3708	G3615	G2847	A2744	C2653	G2459	
C4252	C4162	U4067		C3893	C3812	G3709	G3619	G2848	A2745	U2656	C2462	
A4253	U4163	A3894		A3718	A3813	G3710	A3624	G2849	A2746	G2657	G2554	
G4254	C4164	G3895		A3719	U3814	A3711	G3625	G2855		G2658	G2555	
		C3896		G3720	G3815	A3712	G3626	G2856	C2749	G2659	C2464	
A4257	C4168	G3897		G3721	A3816	U3713	G3627	C2857	G2750	C2670	G2557	
C4258	G4169	G3898		G3722	A3817					C2671	C2558	
C4259	A4170	G3899		G3723	U13818		G3619	C2861	G2756	C2672	U2468	
U4260	C4171	G3900		A3724	G3819	A3718	A3624	C2862	A2757	G2667	C2469	
C4261		A4077		G3907		A3719	G3625	U2864	G2758	G2668	C2560	
	C4177	A3901		G3908	U3822	G3720	G3626	U2865	G2759	C2669	G2561	
U4265	C4178	A3906		G3907	G3823	U3721	G3627	G2866		C2670	G2562	
	C4179	G3907		A3824	A3824	G3722		C2867	U2761	C2671	G2474	
A4268	G4180	C4088		A3825	A3825	A3723	C3633	C2867	U2762	C2672	G2475	
		G4089		C3909	C3826	G3725	A3635		U2763		C2568	
G4272	C4183			C3910					A2764	G2675	G2569	
	C4184											
U4431	U4419	U4433	U4431	U4431	U4431	U4431	U4431	U4431	U4431	U4431	U4431	U4431
U4432	U4420	U4434	U4432	U4432	U4432	U4432	U4432	U4432	U4432	U4432	U4432	U4432
U4433	U4421	U4435	U4433	U4433	U4433	U4433	U4433	U4433	U4433	U4433	U4433	U4433
U4434	U4422	U4436	U4434	U4434	U4434	U4434	U4434	U4434	U4434	U4434	U4434	U4434
U4435	U4423	U4437	U4435	U4435	U4435	U4435	U4435	U4435	U4435	U4435	U4435	U4435
U4436	U4424	U4438	U4436	U4436	U4436	U4436	U4436	U4436	U4436	U4436	U4436	U4436
U4437	U4425	U4439	U4437	U4437	U4437	U4437	U4437	U4437	U4437	U4437	U4437	U4437
U4438	U4426	U4440	U4438	U4438	U4438	U4438	U4438	U4438	U4438	U4438	U4438	U4438
U4439	U4427	U4441	U4439	U4439	U4439	U4439	U4439	U4439	U4439	U4439	U4439	U4439
U4440	U4428	U4442	U4440	U4440	U4440	U4440	U4440	U4440	U4440	U4440	U4440	U4440
U4441	U4429	U4443	U4441	U4441	U4441	U4441	U4441	U4441	U4441	U4441	U4441	U4441
U4442	U4430	U4444	U4442	U4442	U4442	U4442	U4442	U4442	U4442	U4442	U4442	U4442
U4443	U4431	U4445	U4443	U4443	U4443	U4443	U4443	U4443	U4443	U4443	U4443	U4443
U4444	U4432	U4446	U4444	U4444	U4444	U4444	U4444	U4444	U4444	U4444	U4444	U4444
U4445	U4433	U4447	U4445	U4445	U4445	U4445	U4445	U4445	U4445	U4445	U4445	U4445
U4446	U4434	U4448	U4446	U4446	U4446	U4446	U4446	U4446	U4446	U4446	U4446	U4446
U4447	U4435	U4449	U4447	U4447	U4447	U4447	U4447	U4447	U4447	U4447	U4447	U4447
U4448	U4436	U4450	U4448	U4448	U4448	U4448	U4448	U4448	U4448	U4448	U4448	U4448
U4449	U4437	U4451	U4449	U4449	U4449	U4449	U4449	U4449	U4449	U4449	U4449	U4449
U4450	U4438	U4452	U4450	U4450	U4450	U4450	U4450	U4450	U4450	U4450	U4450	U4450
U4451	U4439	U4453	U4451	U4451	U4451	U4451	U4451	U4451	U4451	U4451	U4451	U4451
U4452	U4440	U4454	U4452	U4452	U4452	U4452	U4452	U4452	U4452	U4452	U4452	U4452
U4453	U4441	U4455	U4453	U4453	U4453	U4453	U4453	U4453	U4453	U4453	U4453	U4453
U4454	U4442	U4456	U4454	U4454	U4454	U4454	U4454	U4454	U4454	U4454	U4454	U4454
U4455	U4443	U4457	U4455	U4455	U4455	U4455	U4455	U4455	U4455	U4455	U4455	U4455
U4456	U4444	U4458	U4456	U4456	U4456	U4456	U4456	U4456	U4456	U4456	U4456	U4456
U4457	U4445	U4459	U4457	U4457	U4457	U4457	U4457	U4457	U4457	U4457	U4457	U4457
U4458	U4446	U4460	U4458	U4458	U4458	U4458	U4458	U4458	U4458	U4458	U4458	U4458
U4459	U4447	U4461	U4459	U4459	U4459	U4459	U4459	U4459	U4459	U4459	U4459	U4459
U4460	U4448	U4462	U4460	U4460	U4460	U4460	U4460	U4460	U4460	U4460	U4460	U4460
U4461	U4449	U4463	U4461	U4461	U4461	U4461	U4461	U4461	U4461	U4461	U4461	U4461



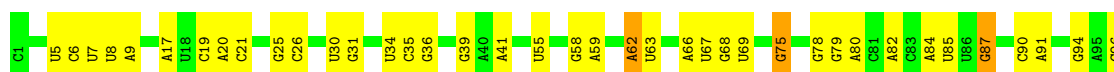
- Molecule 4: 5S rRNA

Chain L7: 70% 27%



- Molecule 5: 5.8S rRNA [Homo sapiens]

Chain L8: 63% 34%

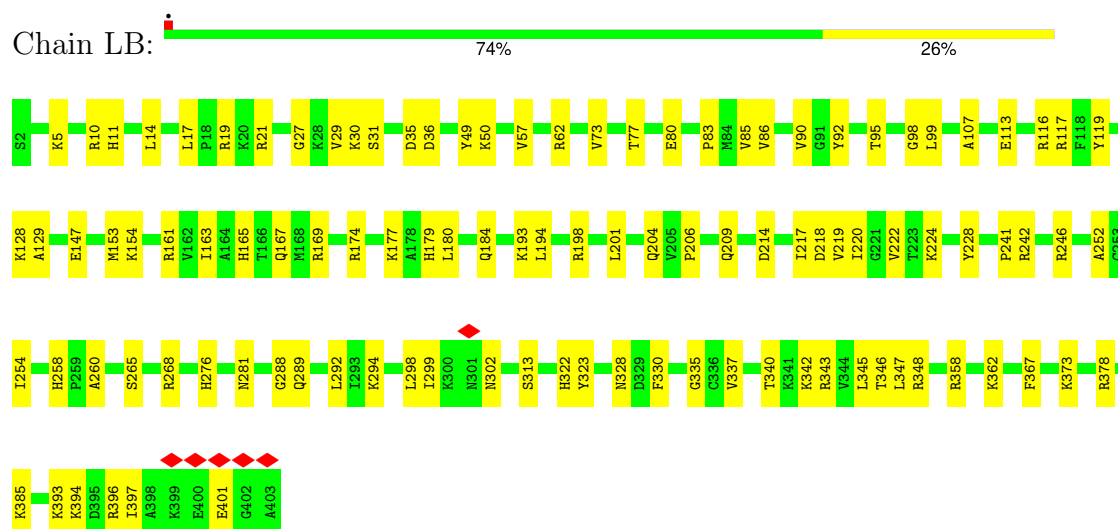


- Molecule 6: 60S ribosomal protein L8

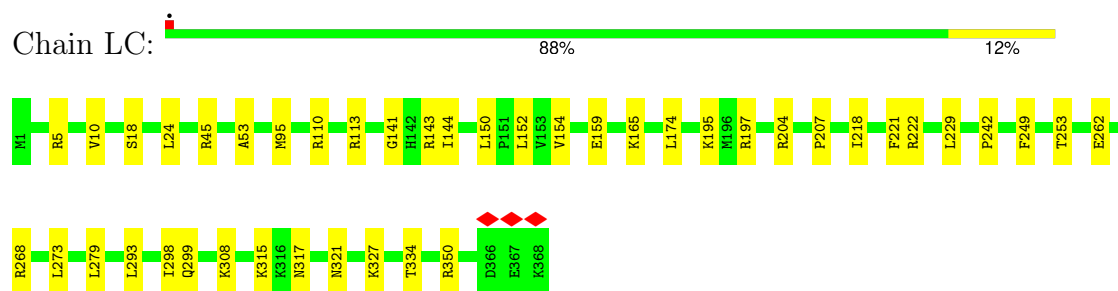
Chain LA: 76% 24%



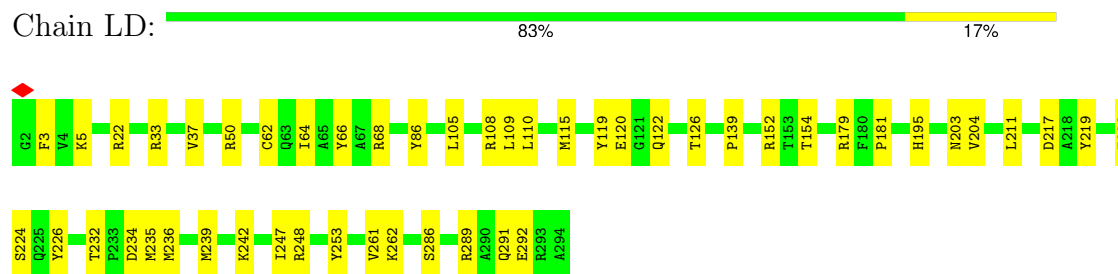
- Molecule 7: Large ribosomal subunit protein uL3



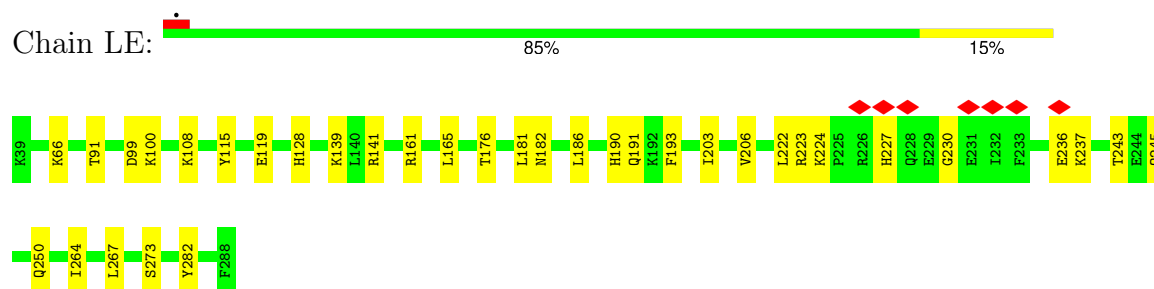
- Molecule 8: 60S ribosomal protein L4



- Molecule 9: Large ribosomal subunit protein uL18



- Molecule 10: Large ribosomal subunit protein eL6



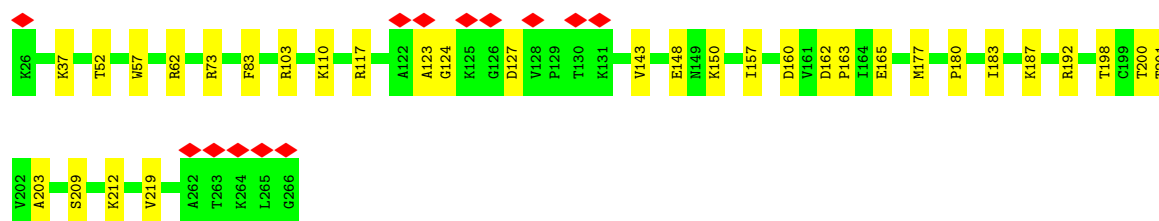
- Molecule 11: 60S ribosomal protein L7

Chain LF:  83% 17%



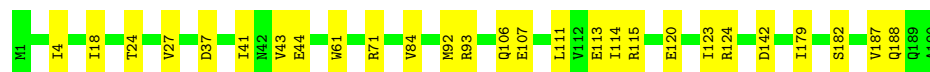
- Molecule 12: 60S ribosomal protein L7a

Chain LG:  5% 87% 13%



- Molecule 13: 60S ribosomal protein L9

Chain LH:  86% 14%



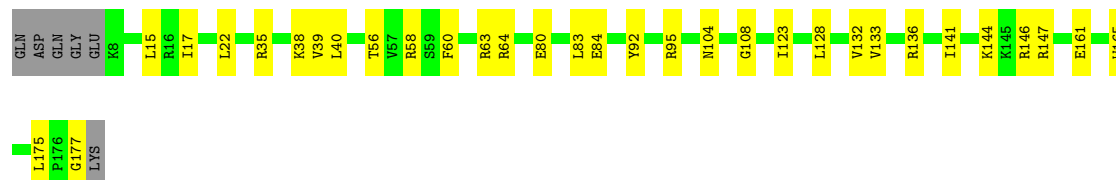
- Molecule 14: Ribosomal protein uL16-like

Chain LI:  87% 13%



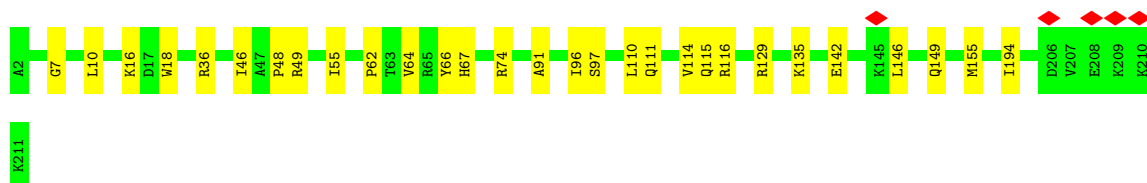
- Molecule 15: 60S ribosomal protein L11

Chain LJ:  78% 18% .



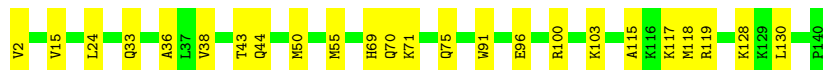
- Molecule 16: Large ribosomal subunit protein eL13

Chain LL:  86% 14%



- Molecule 17: 60S ribosomal protein L14

Chain LM: 83% 17%



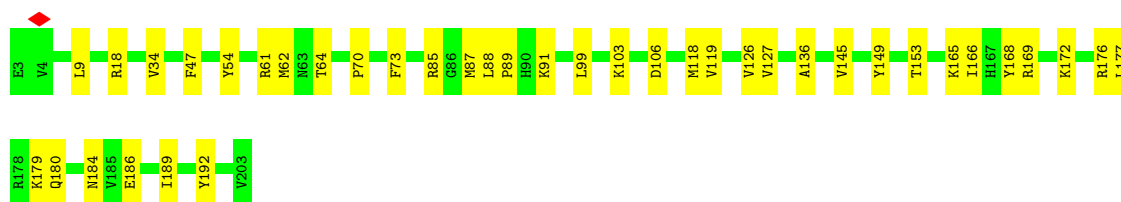
- Molecule 18: 60S ribosomal protein L15

Chain LN: 87% 13%



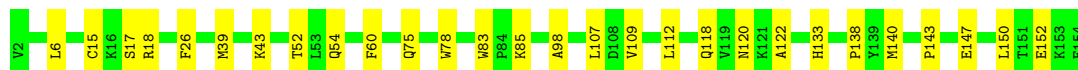
- Molecule 19: 60S ribosomal protein L13a

Chain LO: 81% 19%



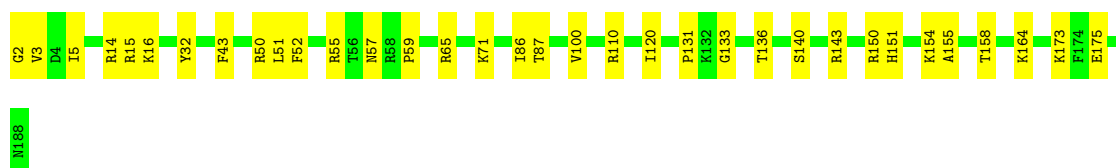
- Molecule 20: 60S ribosomal protein L17

Chain LP: 82% 18%



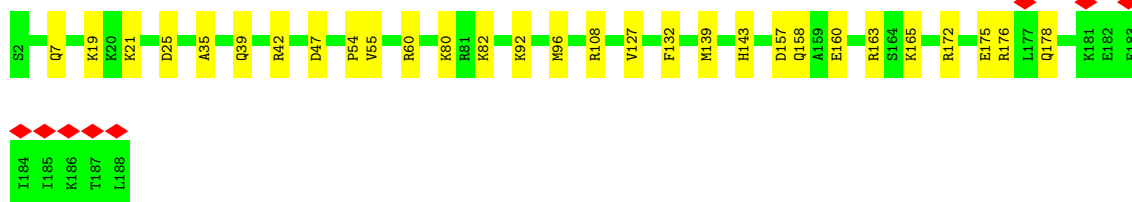
- Molecule 21: 60S ribosomal protein L18

Chain LQ: 82% 18%



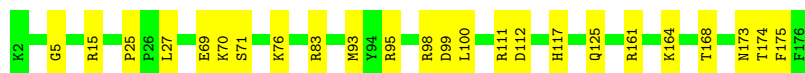
- Molecule 22: 60S ribosomal protein L19

Chain LR:  84% 16%



- Molecule 23: 60S ribosomal protein L18a

Chain LS:  86% 14%



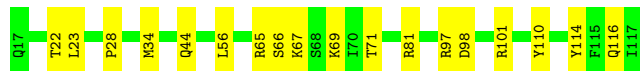
- Molecule 24: 60S ribosomal protein L21

Chain LT:  85% 15%



- Molecule 25: Heparin-binding protein HBp15

Chain LU:  82% 18%



- Molecule 26: 60S ribosomal protein L23

Chain LV:  89% 11%

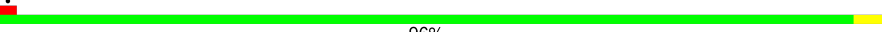


- Molecule 27: Ribosomal protein L24

Chain LW:  5% 78% 20%



- Molecule 28: 60S ribosomal protein L23a

Chain LX:  96%



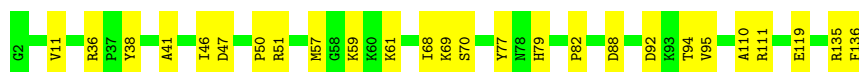
- Molecule 29: 60S ribosomal protein L26

Chain LY: 85% 15%



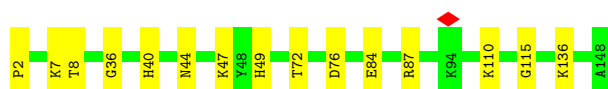
- Molecule 30: 60S ribosomal protein L27

Chain LZ: 81% 19%



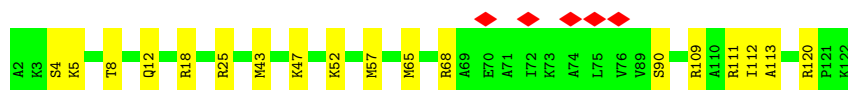
- Molecule 31: 60S ribosomal protein L27a

Chain La: 90% 10%



- Molecule 32: Large ribosomal subunit protein eL29

Chain Lb: 5% 83% 17%



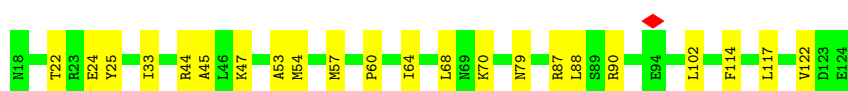
- Molecule 33: 60S ribosomal protein L30

Chain Lc: 77% 23%



- Molecule 34: 60S ribosomal protein L31

Chain Ld: 79% 21%



- Molecule 35: 60S ribosomal protein L32

Chain Le:  91% 9%



- Molecule 36: 60S ribosomal protein L35a

Chain Lf:  89% 11%



- Molecule 37: 60S ribosomal protein L34

Chain Lg:  92% 8%



- Molecule 38: 60S ribosomal protein L35

Chain Lh:  84% 16%



- Molecule 39: 60S ribosomal protein L36

Chain Li:  91% 9%



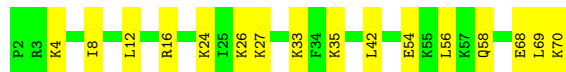
- Molecule 40: 60S ribosomal protein L37

Chain Lj:  80% 20%



- Molecule 41: 60S ribosomal protein L38

Chain Lk:  77% 23%



- Molecule 42: 60S ribosomal protein L39

Chain Ll:  88% 12%



- Molecule 43: Large ribosomal subunit protein eL40

Chain Lm:  90% 10%



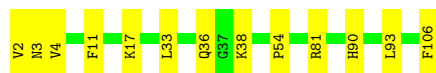
- Molecule 44: 60S ribosomal protein L41

Chain Ln:  92% 8%



- Molecule 45: 60S ribosomal protein L36a

Chain Lo:  88% 12%



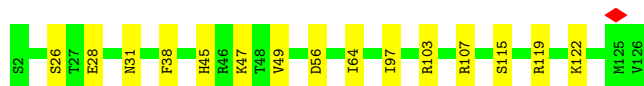
- Molecule 46: 60S ribosomal protein L37a

Chain Lp:  91% 9%



- Molecule 47: 60S ribosomal protein L28

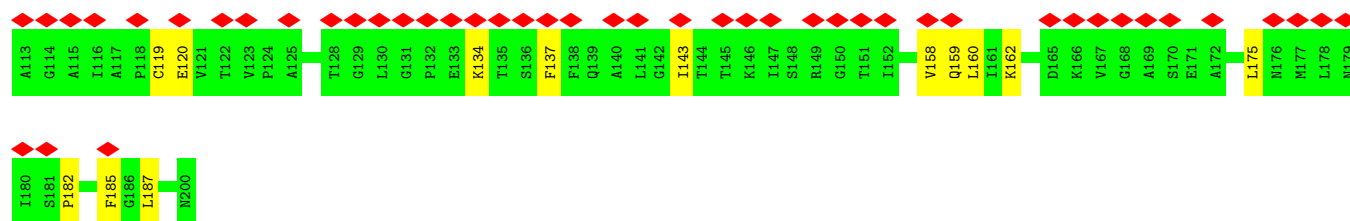
Chain Lr:  88% 12%



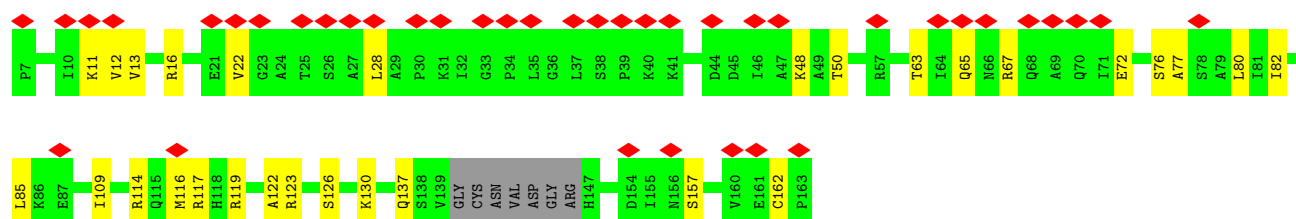
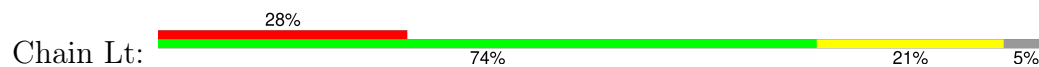
- Molecule 48: 60S acidic ribosomal protein P0

Chain Ls:  29% 81% 19%

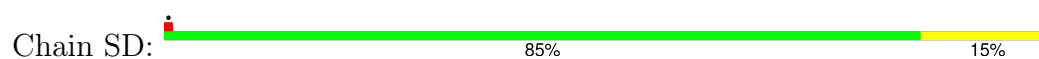




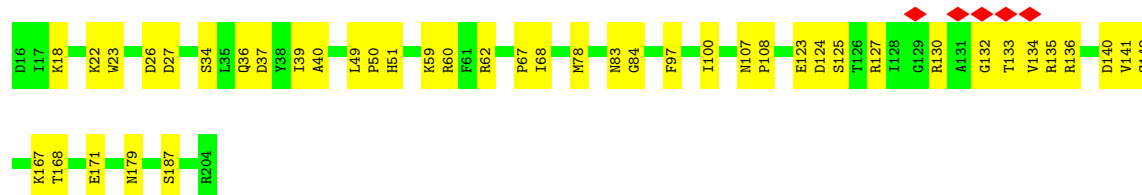
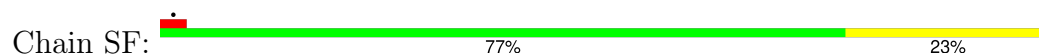
- Molecule 49: Large ribosomal subunit protein uL11



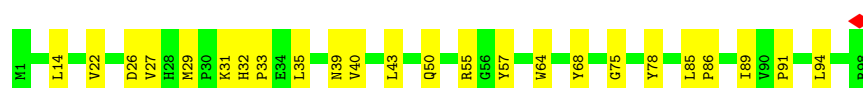
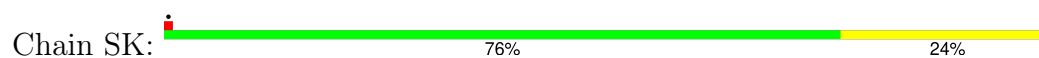
- Molecule 50: Small ribosomal subunit protein uS3



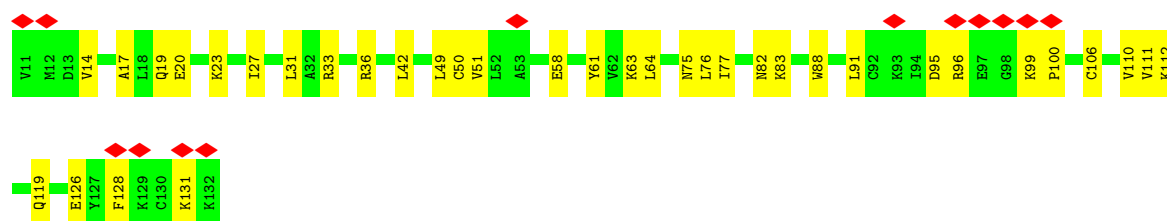
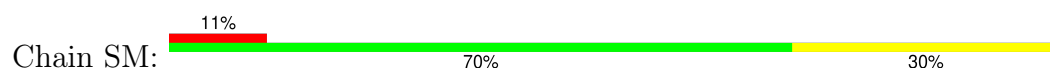
- Molecule 51: 40S ribosomal protein S5



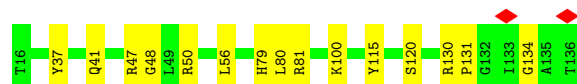
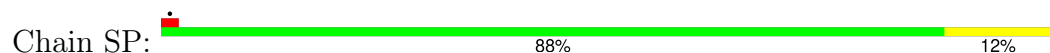
- Molecule 52: 40S ribosomal protein S10



- Molecule 53: Small ribosomal subunit protein eS12



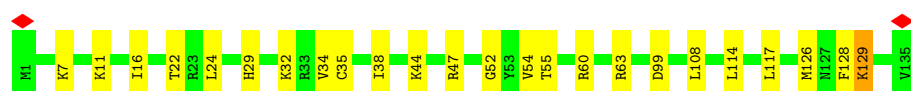
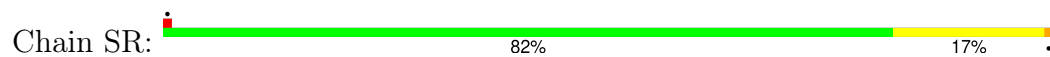
- Molecule 54: Small ribosomal subunit protein uS19



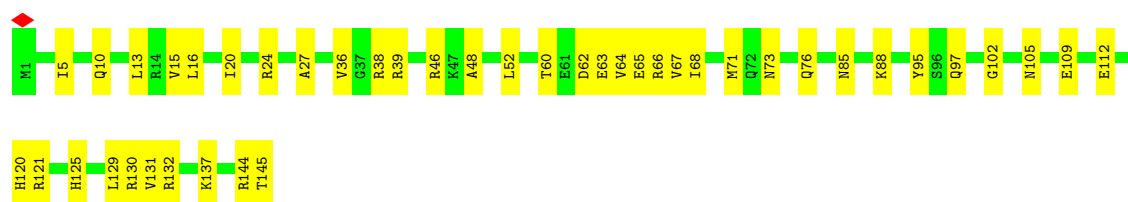
- Molecule 55: Small ribosomal subunit protein uS9



- Molecule 56: Small ribosomal subunit protein eS17

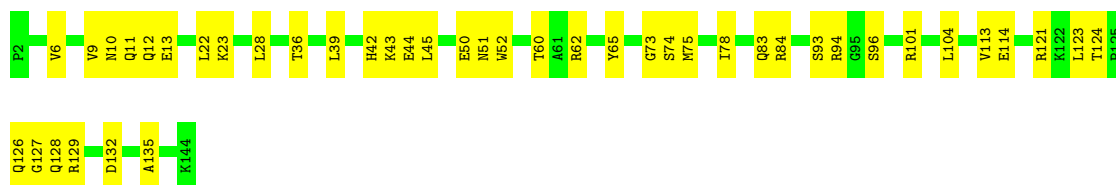


- Molecule 57: 40S ribosomal protein S18

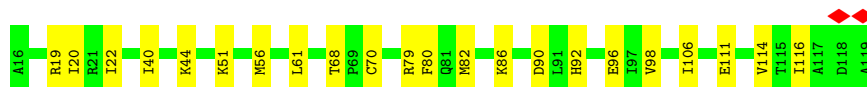
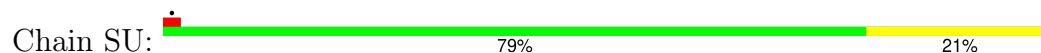


- Molecule 58: 40S ribosomal protein S19

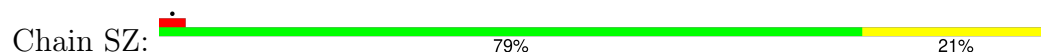




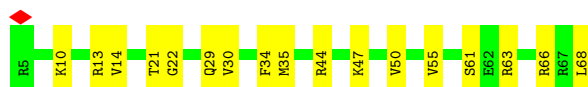
- Molecule 59: 40S ribosomal protein S20



- Molecule 60: Small ribosomal subunit protein eS25



- Molecule 61: 40S ribosomal protein S28



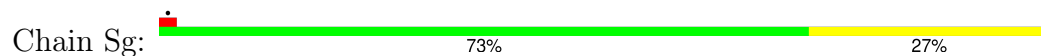
- Molecule 62: 40S ribosomal protein S29

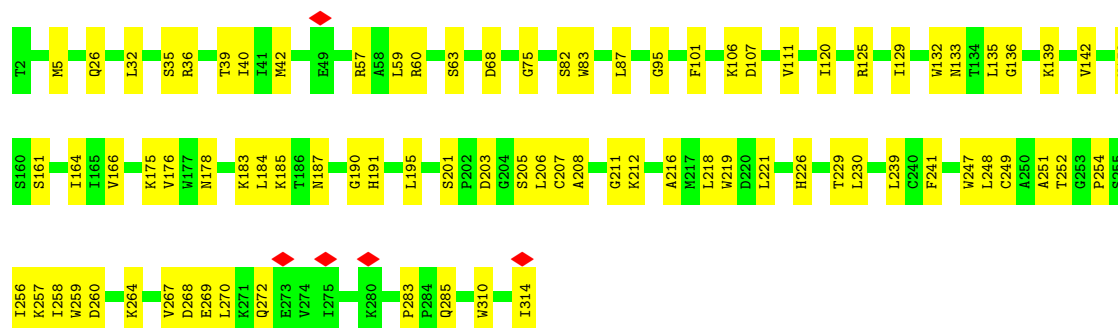


- Molecule 63: Ubiquitin-40S ribosomal protein S27a



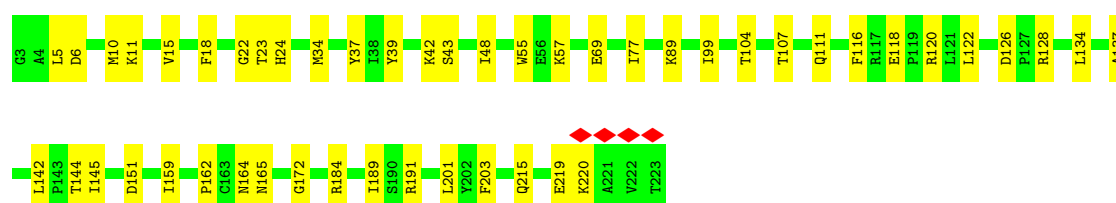
- Molecule 64: Receptor of activated protein C kinase 1





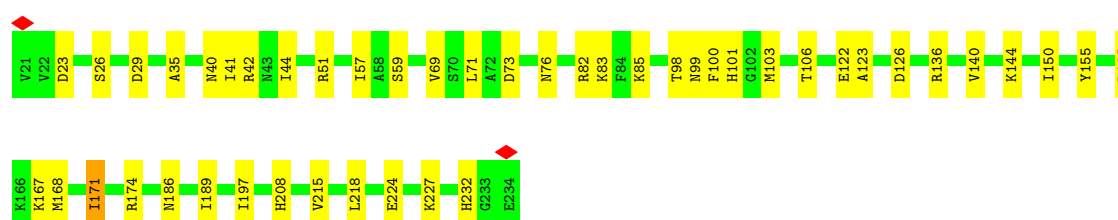
- Molecule 65: 40S ribosomal protein SA

Chain SA: 78% 22%



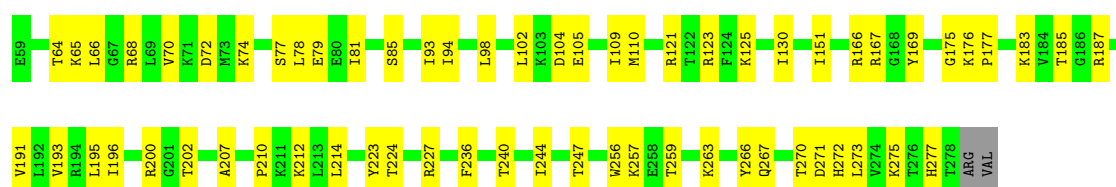
- Molecule 66: 40S ribosomal protein S3a

Chain SB: 79% 21%



- Molecule 67: 40S ribosomal protein S2

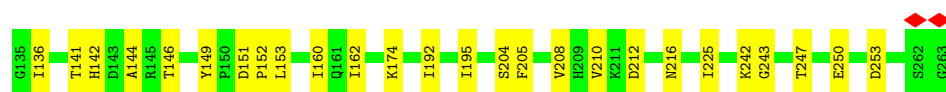
Chain SC: 71% 28%



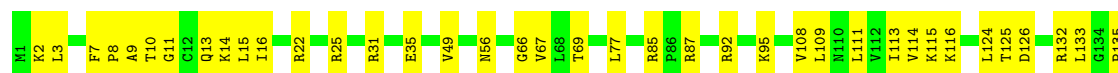
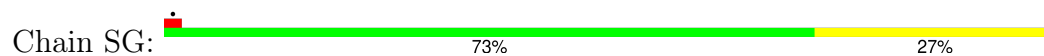
- Molecule 68: Small ribosomal subunit protein eS4, X isoform

Chain SE: 77% 23%

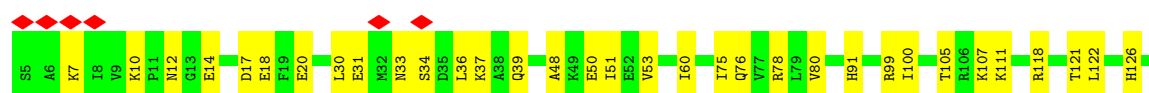
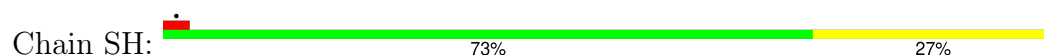




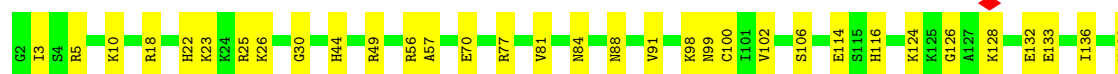
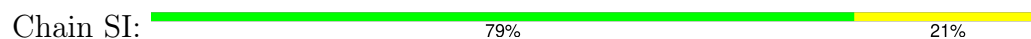
- Molecule 69: 40S ribosomal protein S6



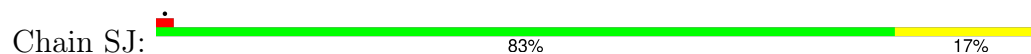
- Molecule 70: Small ribosomal subunit protein eS7



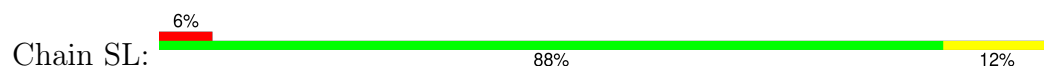
- Molecule 71: 40S ribosomal protein S8

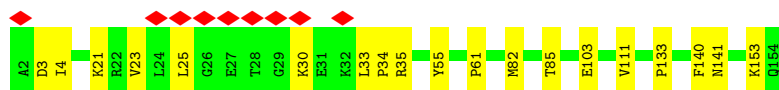


- Molecule 72: 40S ribosomal protein S9



- Molecule 73: 40S ribosomal protein S11





- Molecule 74: 40S ribosomal protein S13

Chain SN: 89% 11%



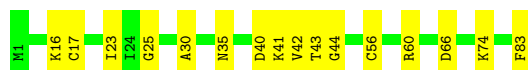
- Molecule 75: Small ribosomal subunit protein uS11

Chain SO: 81% 16%



- Molecule 76: Small ribosomal subunit protein eS21

Chain SV: 81% 19%



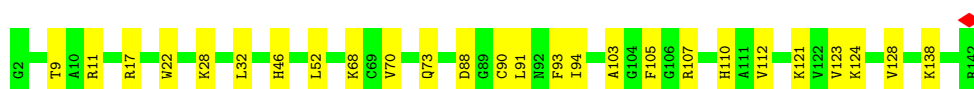
- Molecule 77: 40S ribosomal protein S15a

Chain SW: 79% 21%



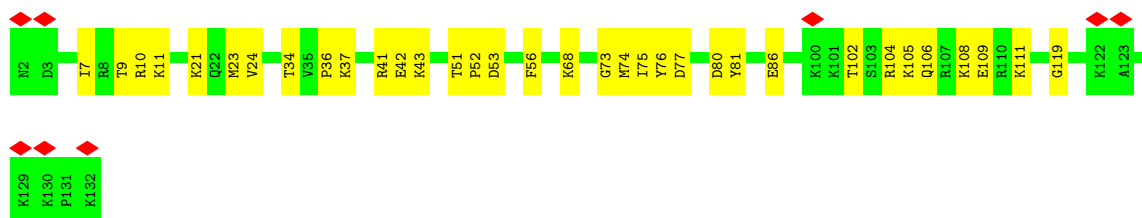
- Molecule 78: 40S ribosomal protein S23

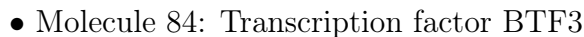
Chain SX: 82% 18%



- Molecule 79: 40S ribosomal protein S24

Chain SY: 6% 74% 26%







4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	67622	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.164	Depositor
Minimum map value	-0.057	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.0128	Depositor
Map size ($\text{\AA}$)	546.816, 546.816, 546.816	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.068, 1.068, 1.068	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: B8N, MA6, 4AC, SPD, G7M, MG, 1MA, OMC, PSU, OMG, OMU, UR3, 6MZ, ZN, 5MC, A2M, SPM, UY1

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	Pt	0.12	0/1761	0.26	0/2741
2	Et	0.14	0/1778	0.31	0/2767
3	L5	0.19	0/85098	0.30	0/132762
4	L7	0.16	0/2861	0.25	0/4459
5	L8	0.17	0/3631	0.28	0/5657
6	LA	0.20	0/1936	0.38	0/2596
7	LB	0.18	0/3306	0.36	0/4424
8	LC	0.18	0/2981	0.35	0/4002
9	LD	0.16	0/2428	0.33	0/3252
10	LE	0.17	0/1973	0.41	0/2645
11	LF	0.18	0/1905	0.32	0/2539
12	LG	0.17	0/1960	0.39	0/2637
13	LH	0.16	0/1537	0.34	0/2066
14	LI	0.17	0/1751	0.33	0/2340
15	LJ	0.16	0/1385	0.36	0/1852
16	LL	0.17	0/1732	0.32	0/2315
17	LM	0.18	0/1161	0.36	0/1554
18	LN	0.19	0/1746	0.33	0/2338
19	LO	0.20	0/1682	0.35	0/2250
20	LP	0.19	0/1268	0.39	0/1701
21	LQ	0.19	0/1537	0.35	0/2052
22	LR	0.17	0/1582	0.35	0/2091
23	LS	0.19	0/1493	0.33	0/2003
24	LT	0.18	0/1326	0.32	0/1770
25	LU	0.18	0/839	0.43	0/1126
26	LV	0.17	0/993	0.36	0/1332
27	LW	0.17	0/959	0.37	0/1270
28	LX	0.16	0/1002	0.33	0/1345
29	LY	0.17	0/1132	0.36	0/1504
30	LZ	0.16	0/1130	0.35	0/1507
31	La	0.17	0/1191	0.31	0/1591

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	Lb	0.16	0/889	0.40	0/1175
33	Lc	0.17	0/774	0.36	0/1038
34	Ld	0.17	0/903	0.34	0/1216
35	Le	0.18	0/1071	0.31	0/1429
36	Lf	0.19	0/895	0.35	0/1198
37	Lg	0.17	0/916	0.35	0/1220
38	Lh	0.15	0/1023	0.32	0/1351
39	Li	0.15	0/843	0.32	0/1115
40	Lj	0.19	0/720	0.36	0/952
41	Lk	0.16	0/575	0.42	0/761
42	Ll	0.17	0/454	0.29	0/599
43	Lm	0.16	0/435	0.33	0/575
44	Ln	0.18	0/231	0.31	0/294
45	Lo	0.18	0/876	0.33	0/1156
46	Lp	0.17	0/718	0.33	0/953
47	Lr	0.17	0/1017	0.32	0/1364
48	Ls	0.12	0/1519	0.33	0/2052
49	Lt	0.17	0/1009	0.50	0/1363
50	SD	0.13	0/1793	0.30	0/2414
51	SF	0.15	0/1516	0.36	0/2037
52	SK	0.14	0/851	0.43	0/1147
53	SM	0.13	0/950	0.37	0/1275
54	SP	0.15	0/1003	0.42	0/1342
55	SQ	0.15	0/1160	0.39	0/1553
56	SR	0.16	0/1105	0.42	0/1484
57	SS	0.15	0/1216	0.36	0/1628
58	ST	0.14	0/1131	0.39	0/1515
59	SU	0.17	0/831	0.44	0/1115
60	SZ	0.16	0/604	0.48	0/810
61	Sc	0.15	0/508	0.36	0/680
62	Sd	0.14	0/470	0.34	0/623
63	Sf	0.15	0/560	0.45	0/745
64	Sg	0.13	0/2493	0.36	0/3394
65	SA	0.14	0/1778	0.34	0/2416
66	SB	0.14	0/1765	0.35	0/2362
67	SC	0.15	0/1744	0.35	0/2357
68	SE	0.14	0/2118	0.35	0/2849
69	SG	0.15	0/1946	0.37	0/2590
70	SH	0.16	0/1519	0.41	0/2033
71	SI	0.16	0/1715	0.36	0/2287
72	SJ	0.13	0/1550	0.32	0/2069
73	SL	0.15	0/1268	0.31	0/1696
74	SN	0.13	0/1232	0.27	0/1656

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
75	SO	0.17	0/1037	0.38	0/1391
76	SV	0.16	0/643	0.38	0/860
77	SW	0.17	0/1051	0.35	0/1406
78	SX	0.15	0/1116	0.36	0/1490
79	SY	0.15	0/1083	0.40	0/1438
80	Sa	0.17	0/836	0.33	0/1121
81	Sb	0.14	0/665	0.35	0/891
82	Se	0.14	0/465	0.41	0/612
83	S2	0.18	0/39756	0.28	0/61939
84	CI	0.16	0/247	0.30	0/323
All	All	0.17	0/231657	0.32	0/339847

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
55	SQ	0	1
66	SB	0	1
75	SO	0	1
All	All	0	3

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
66	SB	171	ILE	Peptide
75	SO	137	SER	Peptide
55	SQ	107	GLU	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	Pt	1576	0	803	20	0
2	Et	1593	0	810	37	0
3	L5	78444	0	39719	907	0
4	L7	2561	0	1295	21	0
5	L8	3315	0	1685	35	0
6	LA	1898	0	1993	45	0
7	LB	3238	0	3376	78	0
8	LC	2927	0	3104	32	0
9	LD	2382	0	2410	32	0
10	LE	1935	0	2096	25	0
11	LF	1870	0	1996	29	0
12	LG	1927	0	2074	21	0
13	LH	1518	0	1601	18	0
14	LI	1711	0	1749	21	0
15	LJ	1362	0	1399	22	0
16	LL	1701	0	1818	24	0
17	LM	1138	0	1204	20	0
18	LN	1701	0	1749	23	0
19	LO	1650	0	1794	29	0
20	LP	1242	0	1269	20	0
21	LQ	1513	0	1628	25	0
22	LR	1566	0	1729	21	0
23	LS	1453	0	1490	15	0
24	LT	1298	0	1366	17	0
25	LU	825	0	850	14	0
26	LV	979	0	1039	11	0
27	LW	945	0	1003	20	0
28	LX	985	0	1066	4	0
29	LY	1115	0	1205	13	0
30	LZ	1107	0	1182	18	0
31	La	1162	0	1213	12	0
32	Lb	876	0	948	17	0
33	Lc	764	0	804	13	0
34	Ld	888	0	930	17	0
35	Le	1053	0	1147	10	0
36	Lf	876	0	912	8	0
37	Lg	906	0	998	8	0
38	Lh	1015	0	1148	17	0
39	Li	832	0	917	7	0
40	Lj	705	0	737	16	0
41	Lk	569	0	637	14	0
42	Ll	444	0	483	5	0
43	Lm	429	0	465	3	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	Ln	230	0	276	2	0
45	Lo	862	0	929	11	0
46	Lp	708	0	756	7	0
47	Lr	1002	0	1068	9	0
48	Ls	1496	0	1540	25	0
49	Lt	998	0	1032	20	0
50	SD	1765	0	1865	23	0
51	SF	1495	0	1549	38	0
52	SK	827	0	854	17	0
53	SM	940	0	965	23	0
54	SP	985	0	1031	13	0
55	SQ	1142	0	1213	29	0
56	SR	1090	0	1149	16	0
57	SS	1198	0	1261	32	0
58	ST	1112	0	1146	31	0
59	SU	821	0	883	16	0
60	SZ	598	0	656	15	0
61	Sc	506	0	536	11	0
62	Sd	459	0	452	16	0
63	Sf	548	0	551	19	0
64	Sg	2436	0	2393	58	0
65	SA	1741	0	1746	32	0
66	SB	1738	0	1809	29	0
67	SC	1707	0	1791	45	0
68	SE	2076	0	2177	41	0
69	SG	1923	0	2089	56	0
70	SH	1497	0	1590	32	0
71	SI	1686	0	1772	34	0
72	SJ	1525	0	1640	25	0
73	SL	1247	0	1323	14	0
74	SN	1208	0	1294	11	0
75	SO	1024	0	1050	15	0
76	SV	636	0	637	13	0
77	SW	1034	0	1080	25	0
78	SX	1098	0	1167	23	0
79	SY	1065	0	1142	26	0
80	Sa	821	0	870	10	0
81	Sb	651	0	672	16	0
82	Se	459	0	503	11	0
83	S2	36953	0	18679	529	0
84	CI	247	0	283	18	0
85	L5	179	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
85	L7	3	0	0	0	0
85	L8	5	0	0	0	0
85	LA	1	0	0	0	0
85	LP	1	0	0	0	0
85	LV	1	0	0	0	0
85	Le	1	0	0	0	0
85	S2	27	0	0	0	0
85	SS	1	0	0	0	0
86	L5	98	0	182	7	0
87	L5	90	0	171	5	0
87	LN	10	0	19	0	0
88	Lg	1	0	0	0	0
88	Lj	1	0	0	0	0
88	Lm	1	0	0	0	0
88	Lo	1	0	0	0	0
88	Lp	1	0	0	0	0
88	Sa	1	0	0	0	0
All	All	219971	0	163632	2637	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 7.

The worst 5 of 2637 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)
3:L5:2708:U:O2'	84:CI:79:ARG:NH1	1.63	1.30
34:Ld:70:LYS:NZ	84:CI:66:GLY:HA3	1.81	0.96
83:S2:1033:G:H1	83:S2:1080:A:HO2'	1.07	0.95
83:S2:928:G:H1	83:S2:1013:U:H3	1.15	0.93
3:L5:1759:G:H1	3:L5:1773:U:H3	1.05	0.93

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	LA	246/248 (99%)	230 (94%)	16 (6%)	0	100	100
7	LB	400/402 (100%)	386 (96%)	14 (4%)	0	100	100
8	LC	366/368 (100%)	354 (97%)	12 (3%)	0	100	100
9	LD	291/293 (99%)	282 (97%)	9 (3%)	0	100	100
10	LE	236/240 (98%)	221 (94%)	15 (6%)	0	100	100
11	LF	223/225 (99%)	215 (96%)	8 (4%)	0	100	100
12	LG	239/241 (99%)	224 (94%)	15 (6%)	0	100	100
13	LH	188/190 (99%)	183 (97%)	5 (3%)	0	100	100
14	LI	211/213 (99%)	205 (97%)	6 (3%)	0	100	100
15	LJ	168/176 (96%)	161 (96%)	7 (4%)	0	100	100
16	LL	208/210 (99%)	198 (95%)	10 (5%)	0	100	100
17	LM	137/139 (99%)	132 (96%)	5 (4%)	0	100	100
18	LN	201/203 (99%)	199 (99%)	2 (1%)	0	100	100
19	LO	199/201 (99%)	195 (98%)	4 (2%)	0	100	100
20	LP	151/153 (99%)	146 (97%)	5 (3%)	0	100	100
21	LQ	185/187 (99%)	181 (98%)	4 (2%)	0	100	100
22	LR	185/187 (99%)	180 (97%)	5 (3%)	0	100	100
23	LS	173/175 (99%)	164 (95%)	9 (5%)	0	100	100
24	LT	157/159 (99%)	152 (97%)	5 (3%)	0	100	100
25	LU	99/101 (98%)	93 (94%)	6 (6%)	0	100	100
26	LV	129/131 (98%)	121 (94%)	8 (6%)	0	100	100
27	LW	112/118 (95%)	108 (96%)	4 (4%)	0	100	100
28	LX	118/120 (98%)	117 (99%)	1 (1%)	0	100	100
29	LY	132/134 (98%)	127 (96%)	5 (4%)	0	100	100
30	LZ	133/135 (98%)	125 (94%)	8 (6%)	0	100	100
31	La	145/147 (99%)	142 (98%)	3 (2%)	0	100	100
32	Lb	105/109 (96%)	100 (95%)	5 (5%)	0	100	100
33	Lc	96/98 (98%)	93 (97%)	3 (3%)	0	100	100
34	Ld	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
35	Le	126/128 (98%)	125 (99%)	1 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
36	Lf	107/109 (98%)	107 (100%)	0	0	100	100
37	Lg	112/114 (98%)	111 (99%)	1 (1%)	0	100	100
38	Lh	120/122 (98%)	117 (98%)	3 (2%)	0	100	100
39	Li	100/102 (98%)	100 (100%)	0	0	100	100
40	Lj	84/86 (98%)	82 (98%)	2 (2%)	0	100	100
41	Lk	67/69 (97%)	66 (98%)	1 (2%)	0	100	100
42	Ll	48/50 (96%)	46 (96%)	2 (4%)	0	100	100
43	Lm	50/52 (96%)	50 (100%)	0	0	100	100
44	Ln	22/24 (92%)	22 (100%)	0	0	100	100
45	Lo	103/105 (98%)	99 (96%)	4 (4%)	0	100	100
46	Lp	89/91 (98%)	86 (97%)	3 (3%)	0	100	100
47	Lr	123/125 (98%)	119 (97%)	4 (3%)	0	100	100
48	Ls	194/196 (99%)	183 (94%)	11 (6%)	0	100	100
49	Lt	128/141 (91%)	112 (88%)	16 (12%)	0	100	100
50	SD	225/227 (99%)	219 (97%)	6 (3%)	0	100	100
51	SF	187/189 (99%)	174 (93%)	13 (7%)	0	100	100
52	SK	96/98 (98%)	87 (91%)	9 (9%)	0	100	100
53	SM	120/122 (98%)	111 (92%)	9 (8%)	0	100	100
54	SP	119/121 (98%)	115 (97%)	4 (3%)	0	100	100
55	SQ	142/144 (99%)	131 (92%)	11 (8%)	0	100	100
56	SR	133/135 (98%)	125 (94%)	7 (5%)	1 (1%)	16	44
57	SS	143/145 (99%)	134 (94%)	9 (6%)	0	100	100
58	ST	141/143 (99%)	137 (97%)	4 (3%)	0	100	100
59	SU	102/104 (98%)	100 (98%)	2 (2%)	0	100	100
60	SZ	73/75 (97%)	70 (96%)	3 (4%)	0	100	100
61	Sc	62/64 (97%)	60 (97%)	2 (3%)	0	100	100
62	Sd	53/55 (96%)	52 (98%)	1 (2%)	0	100	100
63	Sf	65/67 (97%)	57 (88%)	8 (12%)	0	100	100
64	Sg	311/313 (99%)	295 (95%)	16 (5%)	0	100	100
65	SA	219/221 (99%)	206 (94%)	13 (6%)	0	100	100
66	SB	212/214 (99%)	205 (97%)	7 (3%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
67	SC	218/222 (98%)	207 (95%)	11 (5%)	0	100	100
68	SE	260/262 (99%)	251 (96%)	9 (4%)	0	100	100
69	SG	235/237 (99%)	225 (96%)	10 (4%)	0	100	100
70	SH	182/186 (98%)	169 (93%)	13 (7%)	0	100	100
71	SI	204/206 (99%)	197 (97%)	7 (3%)	0	100	100
72	SJ	183/185 (99%)	175 (96%)	7 (4%)	1 (0%)	25	56
73	SL	151/153 (99%)	147 (97%)	4 (3%)	0	100	100
74	SN	148/150 (99%)	147 (99%)	1 (1%)	0	100	100
75	SO	135/140 (96%)	126 (93%)	9 (7%)	0	100	100
76	SV	81/83 (98%)	74 (91%)	7 (9%)	0	100	100
77	SW	127/129 (98%)	123 (97%)	4 (3%)	0	100	100
78	SX	139/141 (99%)	135 (97%)	4 (3%)	0	100	100
79	SY	129/131 (98%)	126 (98%)	3 (2%)	0	100	100
80	Sa	100/102 (98%)	98 (98%)	2 (2%)	0	100	100
81	Sb	81/83 (98%)	76 (94%)	5 (6%)	0	100	100
82	Se	56/58 (97%)	50 (89%)	6 (11%)	0	100	100
84	CI	29/31 (94%)	29 (100%)	0	0	100	100
All	All	11672/11860 (98%)	11194 (96%)	476 (4%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
56	SR	129	LYS
72	SJ	138	ARG

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	
6	LA	190/190 (100%)	190 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
7	LB	348/348 (100%)	348 (100%)	0	100	100
8	LC	306/306 (100%)	306 (100%)	0	100	100
9	LD	246/247 (100%)	246 (100%)	0	100	100
10	LE	212/212 (100%)	212 (100%)	0	100	100
11	LF	194/194 (100%)	194 (100%)	0	100	100
12	LG	203/205 (99%)	203 (100%)	0	100	100
13	LH	169/169 (100%)	169 (100%)	0	100	100
14	LI	180/180 (100%)	180 (100%)	0	100	100
15	LJ	143/148 (97%)	143 (100%)	0	100	100
16	LL	176/176 (100%)	176 (100%)	0	100	100
17	LM	118/118 (100%)	118 (100%)	0	100	100
18	LN	171/171 (100%)	171 (100%)	0	100	100
19	LO	173/173 (100%)	173 (100%)	0	100	100
20	LP	134/134 (100%)	134 (100%)	0	100	100
21	LQ	164/164 (100%)	164 (100%)	0	100	100
22	LR	166/166 (100%)	166 (100%)	0	100	100
23	LS	156/156 (100%)	156 (100%)	0	100	100
24	LT	139/139 (100%)	139 (100%)	0	100	100
25	LU	91/91 (100%)	91 (100%)	0	100	100
26	LV	101/101 (100%)	101 (100%)	0	100	100
27	LW	95/97 (98%)	95 (100%)	0	100	100
28	LX	108/108 (100%)	108 (100%)	0	100	100
29	LY	124/124 (100%)	124 (100%)	0	100	100
30	LZ	117/117 (100%)	117 (100%)	0	100	100
31	La	120/120 (100%)	120 (100%)	0	100	100
32	Lb	88/90 (98%)	88 (100%)	0	100	100
33	Lc	83/83 (100%)	83 (100%)	0	100	100
34	Ld	98/98 (100%)	98 (100%)	0	100	100
35	Le	114/114 (100%)	114 (100%)	0	100	100
36	Lf	88/88 (100%)	88 (100%)	0	100	100
37	Lg	98/98 (100%)	98 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
38	Lh	109/109 (100%)	109 (100%)	0	100	100
39	Li	86/86 (100%)	86 (100%)	0	100	100
40	Lj	73/73 (100%)	73 (100%)	0	100	100
41	Lk	64/64 (100%)	64 (100%)	0	100	100
42	Ll	47/47 (100%)	47 (100%)	0	100	100
43	Lm	48/48 (100%)	48 (100%)	0	100	100
44	Ln	23/23 (100%)	23 (100%)	0	100	100
45	Lo	93/93 (100%)	93 (100%)	0	100	100
46	Lp	74/74 (100%)	74 (100%)	0	100	100
47	Lr	109/109 (100%)	109 (100%)	0	100	100
48	Ls	162/164 (99%)	162 (100%)	0	100	100
49	Lt	107/115 (93%)	107 (100%)	0	100	100
50	SD	190/190 (100%)	190 (100%)	0	100	100
51	SF	159/159 (100%)	159 (100%)	0	100	100
52	SK	89/89 (100%)	89 (100%)	0	100	100
53	SM	102/104 (98%)	102 (100%)	0	100	100
54	SP	107/107 (100%)	107 (100%)	0	100	100
55	SQ	119/119 (100%)	119 (100%)	0	100	100
56	SR	122/122 (100%)	122 (100%)	0	100	100
57	SS	126/126 (100%)	126 (100%)	0	100	100
58	ST	113/113 (100%)	113 (100%)	0	100	100
59	SU	94/94 (100%)	94 (100%)	0	100	100
60	SZ	66/66 (100%)	66 (100%)	0	100	100
61	Sc	57/57 (100%)	57 (100%)	0	100	100
62	Sd	48/48 (100%)	48 (100%)	0	100	100
63	Sf	60/60 (100%)	60 (100%)	0	100	100
64	Sg	272/272 (100%)	272 (100%)	0	100	100
65	SA	183/183 (100%)	183 (100%)	0	100	100
66	SB	195/195 (100%)	195 (100%)	0	100	100
67	SC	186/188 (99%)	186 (100%)	0	100	100
68	SE	224/224 (100%)	224 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
69	SG	207/207 (100%)	207 (100%)	0	100	100
70	SH	166/166 (100%)	166 (100%)	0	100	100
71	SI	178/178 (100%)	178 (100%)	0	100	100
72	SJ	161/161 (100%)	161 (100%)	0	100	100
73	SL	137/137 (100%)	137 (100%)	0	100	100
74	SN	130/130 (100%)	130 (100%)	0	100	100
75	SO	107/110 (97%)	107 (100%)	0	100	100
76	SV	67/67 (100%)	67 (100%)	0	100	100
77	SW	112/112 (100%)	112 (100%)	0	100	100
78	SX	113/113 (100%)	113 (100%)	0	100	100
79	SY	113/113 (100%)	113 (100%)	0	100	100
80	Sa	89/89 (100%)	89 (100%)	0	100	100
81	Sb	75/75 (100%)	75 (100%)	0	100	100
82	Se	47/47 (100%)	47 (100%)	0	100	100
84	CI	25/25 (100%)	25 (100%)	0	100	100
All	All	10147/10176 (100%)	10147 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 89 such sidechains are listed below:

Mol	Chain	Res	Type
53	SM	19	GLN
66	SB	76	ASN
57	SS	87	GLN
64	Sg	272	GLN
67	SC	277	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	Pt	72/74 (97%)	15 (20%)	0
2	Et	73/75 (97%)	25 (34%)	0
3	L5	3643/3655 (99%)	726 (19%)	16 (0%)
4	L7	119/120 (99%)	9 (7%)	0

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
5	L8	155/156 (99%)	21 (13%)	0
83	S2	1714/1740 (98%)	369 (21%)	3 (0%)
All	All	5776/5820 (99%)	1165 (20%)	19 (0%)

5 of 1165 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	Pt	9	A
1	Pt	13	U
1	Pt	19	G
1	Pt	21	A
1	Pt	46	G

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	L5	4699	U
83	S2	563	G
83	S2	688	U
83	S2	291	G
3	L5	2416	G

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	A2M	L5	3830	3	18,25,26	1.34	2 (11%)	20,36,39	2.15	5 (25%)
3	PSU	L5	5010	3	18,21,22	1.12	1 (5%)	21,30,33	1.88	4 (19%)
3	PSU	L5	4361	3	18,21,22	1.08	1 (5%)	21,30,33	1.79	4 (19%)
3	PSU	L5	3853	85,3	18,21,22	1.05	1 (5%)	21,30,33	1.79	4 (19%)
83	PSU	S2	649	83	18,21,22	1.12	1 (5%)	21,30,33	1.91	4 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
83	OMG	S2	683	83	19,26,27	1.15	2 (10%)	21,38,41	0.83	1 (4%)
3	A2M	L5	2363	85,3	18,25,26	1.35	3 (16%)	20,36,39	1.88	7 (35%)
83	6MZ	S2	1832	85,83	21,26,26	1.27	2 (9%)	22,39,39	1.86	3 (13%)
3	PSU	L5	4500	3	18,21,22	1.13	1 (5%)	21,30,33	2.01	5 (23%)
83	OMG	S2	436	83	19,26,27	1.17	2 (10%)	21,38,41	0.85	1 (4%)
3	PSU	L5	4972	3	18,21,22	1.08	1 (5%)	21,30,33	1.87	4 (19%)
3	PSU	L5	1862	3	18,21,22	1.09	1 (5%)	21,30,33	1.90	4 (19%)
3	PSU	L5	4579	3	18,21,22	1.07	1 (5%)	21,30,33	1.86	4 (19%)
3	PSU	L5	3920	85,3	18,21,22	1.09	1 (5%)	21,30,33	1.89	4 (19%)
3	A2M	L5	4590	3	18,25,26	1.31	2 (11%)	20,36,39	2.03	5 (25%)
3	OMC	L5	3869	3	19,22,23	0.55	0	25,31,34	0.72	0
3	PSU	L5	3851	3	18,21,22	1.11	1 (5%)	21,30,33	1.86	4 (19%)
3	OMC	L5	2351	85,3	19,22,23	0.60	0	25,31,34	1.19	2 (8%)
83	OMG	S2	1490	83	19,26,27	1.24	2 (10%)	21,38,41	0.71	0
83	PSU	S2	1046	83	18,21,22	1.11	1 (5%)	21,30,33	1.83	4 (19%)
3	PSU	L5	4353	3	18,21,22	1.10	1 (5%)	21,30,33	1.89	4 (19%)
3	A2M	L5	2815	3	18,25,26	1.28	1 (5%)	20,36,39	1.82	7 (35%)
83	OMU	S2	116	83	19,22,23	3.35	7 (36%)	25,31,34	1.73	4 (16%)
83	OMC	S2	1272	83	19,22,23	0.56	0	25,31,34	1.05	2 (8%)
3	OMG	L5	2364	85,3	19,26,27	1.20	2 (10%)	21,38,41	0.85	1 (4%)
83	OMU	S2	172	83	19,22,23	3.36	7 (36%)	25,31,34	1.85	5 (20%)
3	PSU	L5	1744	85,3	18,21,22	1.09	1 (5%)	21,30,33	1.86	4 (19%)
83	OMC	S2	517	83	19,22,23	0.50	0	25,31,34	0.65	0
83	OMC	S2	1703	83	19,22,23	0.52	0	25,31,34	0.60	0
3	OMU	L5	2837	3	19,22,23	3.37	7 (36%)	25,31,34	1.85	4 (16%)
3	OMU	L5	4498	3	19,22,23	3.33	7 (36%)	25,31,34	1.83	5 (20%)
3	PSU	L5	3637	3	18,21,22	1.11	1 (5%)	21,30,33	1.97	4 (19%)
83	OMG	S2	644	83	19,26,27	1.13	2 (10%)	21,38,41	0.88	1 (4%)
3	OMU	L5	4306	3	19,22,23	3.33	7 (36%)	25,31,34	1.82	4 (16%)
83	PSU	S2	1177	83	18,21,22	1.08	1 (5%)	21,30,33	1.84	4 (19%)
3	A2M	L5	4571	3	18,25,26	1.38	3 (16%)	20,36,39	1.97	6 (30%)
83	PSU	S2	801	83	18,21,22	1.12	1 (5%)	21,30,33	1.87	4 (19%)
3	PSU	L5	4312	3	18,21,22	1.10	1 (5%)	21,30,33	1.91	4 (19%)
3	5MC	L5	3782	85,3	19,22,23	0.59	0	26,32,35	0.71	0
3	A2M	L5	1534	85,3	18,25,26	1.30	2 (11%)	20,36,39	1.80	7 (35%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	PSU	L5	4532	3	18,21,22	1.10	1 (5%)	21,30,33	1.81	4 (19%)
3	PSU	L5	4299	3	18,21,22	1.05	1 (5%)	21,30,33	1.91	5 (23%)
83	OMC	S2	462	83	19,22,23	0.53	0	25,31,34	0.73	0
3	UY1	L5	3818	3	19,22,23	4.93	10 (52%)	21,31,34	2.02	6 (28%)
3	OMC	L5	3887	3	19,22,23	0.54	0	25,31,34	0.77	0
83	A2M	S2	27	83	18,25,26	1.32	2 (11%)	20,36,39	2.00	6 (30%)
3	A2M	L5	3867	3	18,25,26	1.34	2 (11%)	20,36,39	1.78	6 (30%)
3	PSU	L5	4576	3	18,21,22	1.10	1 (5%)	21,30,33	1.81	4 (19%)
3	A2M	L5	4523	85,3	18,25,26	1.42	3 (16%)	20,36,39	2.13	5 (25%)
83	A2M	S2	668	85,83	18,25,26	1.36	3 (16%)	20,36,39	1.98	6 (30%)
3	PSU	L5	4493	3	18,21,22	1.09	1 (5%)	21,30,33	1.88	4 (19%)
3	A2M	L5	398	3	18,25,26	1.30	2 (11%)	20,36,39	2.11	5 (25%)
3	PSU	L5	5001	3	18,21,22	1.12	1 (5%)	21,30,33	1.88	4 (19%)
3	OMC	L5	2422	85,3	19,22,23	0.53	0	25,31,34	0.71	0
83	A2M	S2	159	83	18,25,26	1.23	1 (5%)	20,36,39	1.87	6 (30%)
3	PSU	L5	3884	3	18,21,22	1.10	1 (5%)	21,30,33	1.89	4 (19%)
83	OMU	S2	1326	83	19,22,23	3.35	7 (36%)	25,31,34	1.85	5 (20%)
3	A2M	L5	1524	3	18,25,26	1.43	3 (16%)	20,36,39	2.28	5 (25%)
83	OMU	S2	627	83	19,22,23	3.40	7 (36%)	25,31,34	1.79	5 (20%)
83	OMU	S2	799	83	19,22,23	3.40	7 (36%)	25,31,34	1.80	4 (16%)
83	PSU	S2	966	85,83	18,21,22	1.09	1 (5%)	21,30,33	1.83	4 (19%)
3	OMC	L5	1340	3	19,22,23	0.55	0	25,31,34	0.76	0
83	PSU	S2	1081	83	18,21,22	1.08	1 (5%)	21,30,33	1.88	5 (23%)
3	OMU	L5	4227	3	19,22,23	3.36	7 (36%)	25,31,34	1.83	4 (16%)
83	A2M	S2	576	83	18,25,26	1.27	2 (11%)	20,36,39	1.97	5 (25%)
3	OMG	L5	4637	3	19,26,27	1.16	2 (10%)	21,38,41	0.87	1 (4%)
83	4AC	S2	1337	83	21,24,25	0.39	0	28,34,37	0.74	1 (3%)
83	B8N	S2	1248	83	25,29,30	3.27	6 (24%)	28,42,45	1.99	7 (25%)
3	PSU	L5	1782	3	18,21,22	1.08	1 (5%)	21,30,33	1.88	4 (19%)
3	OMG	L5	3899	3	19,26,27	1.20	2 (10%)	21,38,41	0.88	1 (4%)
3	A2M	L5	3718	3	18,25,26	1.23	2 (11%)	20,36,39	1.89	5 (25%)
3	PSU	L5	3844	3	18,21,22	1.14	1 (5%)	21,30,33	1.81	4 (19%)
83	PSU	S2	814	83	18,21,22	1.12	1 (5%)	21,30,33	1.82	4 (19%)
83	OMC	S2	174	83	19,22,23	0.49	0	25,31,34	0.64	0
83	OMC	S2	1391	83	19,22,23	0.50	0	25,31,34	0.69	0
83	PSU	S2	93	83	18,21,22	1.11	1 (5%)	21,30,33	1.74	4 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
83	PSU	S2	681	83	18,21,22	1.08	1 (5%)	21,30,33	1.81	4 (19%)
3	PSU	L5	4431	3	18,21,22	1.09	1 (5%)	21,30,33	1.86	4 (19%)
83	A2M	S2	484	83	18,25,26	1.22	1 (5%)	20,36,39	1.80	6 (30%)
3	OMC	L5	3808	3	19,22,23	0.58	0	25,31,34	0.85	1 (4%)
3	PSU	L5	1781	3	18,21,22	1.05	1 (5%)	21,30,33	1.75	4 (19%)
83	OMU	S2	1442	83	19,22,23	3.39	7 (36%)	25,31,34	1.76	4 (16%)
3	OMC	L5	4536	3	19,22,23	0.55	0	25,31,34	0.71	0
3	1MA	L5	1322	85,3	17,25,26	1.00	2 (11%)	17,37,40	1.14	2 (11%)
3	OMG	L5	3627	3	19,26,27	1.16	2 (10%)	21,38,41	0.91	1 (4%)
83	PSU	S2	105	83	18,21,22	1.12	1 (5%)	21,30,33	1.83	4 (19%)
3	OMG	L5	4228	3	19,26,27	1.18	2 (10%)	21,38,41	0.95	1 (4%)
3	OMC	L5	2824	3	19,22,23	0.55	0	25,31,34	0.72	0
83	PSU	S2	1232	83	18,21,22	1.15	1 (5%)	21,30,33	1.92	4 (19%)
3	OMC	L5	3841	3	19,22,23	0.54	0	25,31,34	0.65	0
5	PSU	L8	55	5	18,21,22	1.07	1 (5%)	21,30,33	1.94	5 (23%)
3	OMU	L5	4620	3	19,22,23	3.28	7 (36%)	25,31,34	1.72	4 (16%)
3	A2M	L5	400	3	18,25,26	1.38	2 (11%)	20,36,39	1.96	7 (35%)
3	PSU	L5	1683	3	18,21,22	1.09	1 (5%)	21,30,33	1.89	4 (19%)
3	PSU	L5	4973	3	18,21,22	1.11	1 (5%)	21,30,33	1.90	4 (19%)
83	PSU	S2	1045	83	18,21,22	1.08	1 (5%)	21,30,33	1.82	4 (19%)
3	OMG	L5	4494	3	19,26,27	1.18	2 (10%)	21,38,41	0.88	1 (4%)
83	A2M	S2	1383	83	18,25,26	1.30	2 (11%)	20,36,39	2.15	5 (25%)
3	PSU	L5	3822	3	18,21,22	1.12	1 (5%)	21,30,33	1.91	5 (23%)
83	PSU	S2	651	83	18,21,22	1.12	1 (5%)	21,30,33	1.91	4 (19%)
83	PSU	S2	109	83	18,21,22	1.12	1 (5%)	21,30,33	1.89	4 (19%)
83	PSU	S2	1004	83	18,21,22	1.14	1 (5%)	21,30,33	1.89	4 (19%)
83	PSU	S2	686	83	18,21,22	1.13	1 (5%)	21,30,33	1.92	4 (19%)
83	OMU	S2	121	83	19,22,23	3.36	7 (36%)	25,31,34	1.81	5 (20%)
83	OMG	S2	1328	83	19,26,27	1.10	2 (10%)	21,38,41	0.84	1 (4%)
3	6MZ	L5	4220	3	17,25,26	3.53	6 (35%)	15,36,39	2.65	4 (26%)
3	OMG	L5	2876	3	19,26,27	1.15	2 (10%)	21,38,41	0.84	1 (4%)
83	PSU	S2	866	83	18,21,22	1.11	1 (5%)	21,30,33	1.86	5 (23%)
3	OMC	L5	2804	3	19,22,23	0.59	0	25,31,34	0.97	1 (4%)
3	PSU	L5	4636	3	18,21,22	1.13	1 (5%)	21,30,33	2.04	6 (28%)
83	A2M	S2	166	83	18,25,26	1.33	2 (11%)	20,36,39	2.06	6 (30%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	PSU	L5	4442	3	18,21,22	1.14	1 (5%)	21,30,33	1.89	5 (23%)
83	PSU	S2	1244	83	18,21,22	1.12	1 (5%)	21,30,33	1.88	4 (19%)
83	4AC	S2	1842	83	21,24,25	0.37	0	28,34,37	0.46	0
83	A2M	S2	468	83	18,25,26	1.31	2 (11%)	20,36,39	2.01	6 (30%)
3	A2M	L5	1871	85,3	18,25,26	1.43	2 (11%)	20,36,39	2.21	5 (25%)
3	UR3	L5	4530	3	19,22,23	2.73	7 (36%)	26,32,35	1.57	3 (11%)
83	MA6	S2	1851	83	19,26,27	1.49	3 (15%)	18,38,41	3.47	3 (16%)
83	OMG	S2	867	83	19,26,27	1.12	2 (10%)	21,38,41	0.88	1 (4%)
83	PSU	S2	1056	83	18,21,22	1.11	1 (5%)	21,30,33	1.89	4 (19%)
3	PSU	L5	1677	3	18,21,22	1.08	1 (5%)	21,30,33	2.01	5 (23%)
3	PSU	L5	3695	3	18,21,22	1.09	1 (5%)	21,30,33	1.90	5 (23%)
3	OMC	L5	4456	3	19,22,23	0.59	0	25,31,34	0.91	1 (4%)
3	PSU	L5	4673	85,3	18,21,22	1.08	1 (5%)	21,30,33	1.89	4 (19%)
83	G7M	S2	1639	1,83	20,26,27	2.45	6 (30%)	16,39,42	1.06	1 (6%)
3	OMG	L5	3744	3	19,26,27	1.16	2 (10%)	21,38,41	0.88	1 (4%)
3	A2M	L5	2401	3	18,25,26	1.33	2 (11%)	20,36,39	2.01	6 (30%)
3	OMU	L5	3925	3	19,22,23	3.31	7 (36%)	25,31,34	1.85	5 (20%)
3	5MC	L5	4447	3	19,22,23	0.72	0	26,32,35	0.62	0
3	PSU	L5	4403	3	18,21,22	1.09	1 (5%)	21,30,33	1.97	6 (28%)
83	A2M	S2	1031	83	18,25,26	1.28	2 (11%)	20,36,39	2.08	5 (25%)
83	OMU	S2	354	83	19,22,23	3.34	7 (36%)	25,31,34	1.84	5 (20%)
83	PSU	S2	1174	83	18,21,22	1.12	1 (5%)	21,30,33	1.86	4 (19%)
3	A2M	L5	3785	85,3	18,25,26	1.30	2 (11%)	20,36,39	2.38	7 (35%)
3	PSU	L5	2632	3	18,21,22	1.07	1 (5%)	21,30,33	1.84	4 (19%)
3	PSU	L5	1536	3	18,21,22	1.09	1 (5%)	21,30,33	1.90	4 (19%)
3	PSU	L5	4552	3	18,21,22	1.10	1 (5%)	21,30,33	1.91	4 (19%)
3	OMG	L5	1316	3	19,26,27	1.20	2 (10%)	21,38,41	0.92	1 (4%)
3	OMG	L5	4392	3	19,26,27	1.15	2 (10%)	21,38,41	0.89	1 (4%)
83	PSU	S2	406	83	18,21,22	1.10	1 (5%)	21,30,33	1.98	5 (23%)
3	OMG	L5	4618	3	19,26,27	1.17	2 (10%)	21,38,41	0.83	1 (4%)
83	OMG	S2	601	83	19,26,27	1.13	2 (10%)	21,38,41	0.86	1 (4%)
3	PSU	L5	4457	3	18,21,22	1.08	1 (5%)	21,30,33	1.88	5 (23%)
83	OMU	S2	1288	83	19,22,23	3.37	7 (36%)	25,31,34	1.78	5 (20%)
3	PSU	L5	3639	3	18,21,22	1.12	1 (5%)	21,30,33	1.90	5 (23%)
3	OMG	L5	4623	3	19,26,27	1.17	2 (10%)	21,38,41	0.93	1 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
83	PSU	S2	863	83	18,21,22	1.12	1 (5%)	21,30,33	1.87	4 (19%)
3	A2M	L5	1323	3	18,25,26	1.44	4 (22%)	20,36,39	2.00	7 (35%)
3	OMG	L5	3792	3	19,26,27	1.16	2 (10%)	21,38,41	0.83	1 (4%)
3	A2M	L5	3825	3	18,25,26	1.37	2 (11%)	20,36,39	2.04	5 (25%)
3	PSU	L5	4471	3	18,21,22	1.10	1 (5%)	21,30,33	1.86	4 (19%)
83	MA6	S2	1850	83	19,26,27	1.48	3 (15%)	18,38,41	3.40	3 (16%)
3	OMC	L5	2365	85,3	19,22,23	0.53	0	25,31,34	0.62	0
5	OMG	L8	75	5	19,26,27	1.15	2 (10%)	21,38,41	0.89	1 (4%)
3	PSU	L5	1792	3	18,21,22	1.07	1 (5%)	21,30,33	1.80	4 (19%)
3	PSU	L5	4293	3	18,21,22	1.11	1 (5%)	21,30,33	1.98	4 (19%)
3	PSU	L5	1860	3	18,21,22	1.09	1 (5%)	21,30,33	1.91	4 (19%)
83	PSU	S2	1367	83	18,21,22	1.13	1 (5%)	21,30,33	1.87	4 (19%)
3	PSU	L5	4689	3	18,21,22	1.08	1 (5%)	21,30,33	1.93	4 (19%)
3	PSU	L5	4628	3	18,21,22	1.09	1 (5%)	21,30,33	1.84	5 (23%)
3	PSU	L5	4521	85,3	18,21,22	1.10	1 (5%)	21,30,33	2.01	5 (23%)
83	A2M	S2	99	85,83	18,25,26	1.34	2 (11%)	20,36,39	1.99	5 (25%)
3	OMC	L5	2861	3	19,22,23	0.54	0	25,31,34	0.86	1 (4%)
3	A2M	L5	1326	3	18,25,26	1.34	2 (11%)	20,36,39	1.78	6 (30%)
3	OMG	L5	4370	3	19,26,27	1.18	2 (10%)	21,38,41	0.86	1 (4%)
3	A2M	L5	2787	3	18,25,26	1.32	2 (11%)	20,36,39	1.80	6 (30%)
5	PSU	L8	69	5	18,21,22	1.10	1 (5%)	21,30,33	1.87	5 (23%)
3	PSU	L5	4296	3	18,21,22	1.11	1 (5%)	21,30,33	1.90	4 (19%)
3	OMG	L5	2424	3	19,26,27	1.18	2 (10%)	21,38,41	0.82	1 (4%)
3	OMC	L5	3701	3	19,22,23	0.65	0	25,31,34	1.70	4 (16%)
3	OMG	L5	4196	1,3	19,26,27	1.14	2 (10%)	21,38,41	0.85	1 (4%)
3	OMG	L5	4499	3	19,26,27	1.14	2 (10%)	21,38,41	0.85	1 (4%)
83	OMG	S2	509	83	19,26,27	1.14	2 (10%)	21,38,41	0.85	1 (4%)
3	OMG	L5	1625	3	19,26,27	1.21	2 (10%)	21,38,41	0.85	1 (4%)
3	PSU	L5	1582	3	18,21,22	1.12	1 (5%)	21,30,33	1.85	4 (19%)
83	OMU	S2	428	83	19,22,23	3.37	7 (36%)	25,31,34	1.83	5 (20%)
3	OMG	L5	1522	3	19,26,27	1.19	2 (10%)	21,38,41	0.93	1 (4%)
3	PSU	L5	2839	3	18,21,22	1.09	1 (5%)	21,30,33	1.84	4 (19%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A2M	L5	3830	3	-	0/5/27/28	0/3/3/3
3	PSU	L5	5010	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4361	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	3853	85,3	-	0/7/25/26	0/2/2/2
83	PSU	S2	649	83	-	0/7/25/26	0/2/2/2
83	OMG	S2	683	83	-	2/5/27/28	0/3/3/3
3	A2M	L5	2363	85,3	-	0/5/27/28	0/3/3/3
83	6MZ	S2	1832	85,83	-	3/8/28/28	0/3/3/3
3	PSU	L5	4500	3	-	3/7/25/26	0/2/2/2
83	OMG	S2	436	83	-	2/5/27/28	0/3/3/3
3	PSU	L5	4972	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	1862	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4579	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	3920	85,3	-	0/7/25/26	0/2/2/2
3	A2M	L5	4590	3	-	3/5/27/28	0/3/3/3
3	OMC	L5	3869	3	-	1/9/27/28	0/2/2/2
3	PSU	L5	3851	3	-	1/7/25/26	0/2/2/2
3	OMC	L5	2351	85,3	-	3/9/27/28	0/2/2/2
83	OMG	S2	1490	83	-	1/5/27/28	0/3/3/3
83	PSU	S2	1046	83	-	0/7/25/26	0/2/2/2
3	PSU	L5	4353	3	-	0/7/25/26	0/2/2/2
3	A2M	L5	2815	3	-	2/5/27/28	0/3/3/3
83	OMU	S2	116	83	-	1/9/27/28	0/2/2/2
83	OMC	S2	1272	83	-	5/9/27/28	0/2/2/2
3	OMG	L5	2364	85,3	-	2/5/27/28	0/3/3/3
83	OMU	S2	172	83	-	0/9/27/28	0/2/2/2
3	PSU	L5	1744	85,3	-	0/7/25/26	0/2/2/2
83	OMC	S2	517	83	-	2/9/27/28	0/2/2/2
83	OMC	S2	1703	83	-	1/9/27/28	0/2/2/2
3	OMU	L5	2837	3	-	0/9/27/28	0/2/2/2
3	OMU	L5	4498	3	-	0/9/27/28	0/2/2/2
3	PSU	L5	3637	3	-	0/7/25/26	0/2/2/2
83	OMG	S2	644	83	-	3/5/27/28	0/3/3/3
3	OMU	L5	4306	3	-	1/9/27/28	0/2/2/2
83	PSU	S2	1177	83	-	0/7/25/26	0/2/2/2
3	A2M	L5	4571	3	-	0/5/27/28	0/3/3/3
83	PSU	S2	801	83	-	2/7/25/26	0/2/2/2
3	PSU	L5	4312	3	-	0/7/25/26	0/2/2/2
3	5MC	L5	3782	85,3	-	1/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A2M	L5	1534	85,3	-	1/5/27/28	0/3/3/3
3	PSU	L5	4532	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4299	3	-	0/7/25/26	0/2/2/2
83	OMC	S2	462	83	-	1/9/27/28	0/2/2/2
3	UY1	L5	3818	3	-	2/9/27/28	0/2/2/2
3	OMC	L5	3887	3	-	1/9/27/28	0/2/2/2
83	A2M	S2	27	83	-	1/5/27/28	0/3/3/3
3	A2M	L5	3867	3	-	3/5/27/28	0/3/3/3
3	PSU	L5	4576	3	-	0/7/25/26	0/2/2/2
3	A2M	L5	4523	85,3	-	0/5/27/28	0/3/3/3
83	A2M	S2	668	85,83	-	2/5/27/28	0/3/3/3
3	PSU	L5	4493	3	-	0/7/25/26	0/2/2/2
3	A2M	L5	398	3	-	1/5/27/28	0/3/3/3
3	PSU	L5	5001	3	-	0/7/25/26	0/2/2/2
3	OMC	L5	2422	85,3	-	2/9/27/28	0/2/2/2
83	A2M	S2	159	83	-	1/5/27/28	0/3/3/3
3	PSU	L5	3884	3	-	0/7/25/26	0/2/2/2
83	OMU	S2	1326	83	-	0/9/27/28	0/2/2/2
3	A2M	L5	1524	3	-	3/5/27/28	0/3/3/3
83	OMU	S2	627	83	-	4/9/27/28	0/2/2/2
83	OMU	S2	799	83	-	2/9/27/28	0/2/2/2
83	PSU	S2	966	85,83	-	0/7/25/26	0/2/2/2
3	OMC	L5	1340	3	-	1/9/27/28	0/2/2/2
83	PSU	S2	1081	83	-	0/7/25/26	0/2/2/2
3	OMU	L5	4227	3	-	0/9/27/28	0/2/2/2
83	A2M	S2	576	83	-	3/5/27/28	0/3/3/3
3	OMG	L5	4637	3	-	3/5/27/28	0/3/3/3
83	4AC	S2	1337	83	-	1/11/29/30	0/2/2/2
83	B8N	S2	1248	83	-	4/16/34/35	0/2/2/2
3	PSU	L5	1782	3	-	0/7/25/26	0/2/2/2
3	OMG	L5	3899	3	-	3/5/27/28	0/3/3/3
3	A2M	L5	3718	3	-	0/5/27/28	0/3/3/3
3	PSU	L5	3844	3	-	1/7/25/26	0/2/2/2
83	PSU	S2	814	83	-	0/7/25/26	0/2/2/2
83	OMC	S2	174	83	-	0/9/27/28	0/2/2/2
83	OMC	S2	1391	83	-	0/9/27/28	0/2/2/2
83	PSU	S2	93	83	-	0/7/25/26	0/2/2/2
83	PSU	S2	681	83	-	0/7/25/26	0/2/2/2
3	PSU	L5	4431	3	-	0/7/25/26	0/2/2/2
83	A2M	S2	484	83	-	0/5/27/28	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMC	L5	3808	3	-	0/9/27/28	0/2/2/2
3	PSU	L5	1781	3	-	2/7/25/26	0/2/2/2
83	OMU	S2	1442	83	-	2/9/27/28	0/2/2/2
3	OMC	L5	4536	3	-	0/9/27/28	0/2/2/2
3	1MA	L5	1322	85,3	-	0/3/25/26	0/3/3/3
3	OMG	L5	3627	3	-	0/5/27/28	0/3/3/3
83	PSU	S2	105	83	-	0/7/25/26	0/2/2/2
3	OMG	L5	4228	3	-	0/5/27/28	0/3/3/3
3	OMC	L5	2824	3	-	1/9/27/28	0/2/2/2
83	PSU	S2	1232	83	-	0/7/25/26	0/2/2/2
3	OMC	L5	3841	3	-	1/9/27/28	0/2/2/2
5	PSU	L8	55	5	-	0/7/25/26	0/2/2/2
3	OMU	L5	4620	3	-	1/9/27/28	0/2/2/2
3	A2M	L5	400	3	-	1/5/27/28	0/3/3/3
3	PSU	L5	1683	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4973	3	-	0/7/25/26	0/2/2/2
83	PSU	S2	1045	83	-	2/7/25/26	0/2/2/2
3	OMG	L5	4494	3	-	0/5/27/28	0/3/3/3
83	A2M	S2	1383	83	-	1/5/27/28	0/3/3/3
3	PSU	L5	3822	3	-	0/7/25/26	0/2/2/2
83	PSU	S2	651	83	-	0/7/25/26	0/2/2/2
83	PSU	S2	109	83	-	0/7/25/26	0/2/2/2
83	PSU	S2	1004	83	-	0/7/25/26	0/2/2/2
83	PSU	S2	686	83	-	0/7/25/26	0/2/2/2
83	OMU	S2	121	83	-	0/9/27/28	0/2/2/2
83	OMG	S2	1328	83	-	1/5/27/28	0/3/3/3
3	6MZ	L5	4220	3	-	0/5/27/28	0/3/3/3
3	OMG	L5	2876	3	-	0/5/27/28	0/3/3/3
83	PSU	S2	866	83	-	0/7/25/26	0/2/2/2
3	OMC	L5	2804	3	-	1/9/27/28	0/2/2/2
3	PSU	L5	4636	3	-	1/7/25/26	0/2/2/2
83	A2M	S2	166	83	-	0/5/27/28	0/3/3/3
3	PSU	L5	4442	3	-	0/7/25/26	0/2/2/2
83	PSU	S2	1244	83	-	0/7/25/26	0/2/2/2
83	4AC	S2	1842	83	-	0/11/29/30	0/2/2/2
83	A2M	S2	468	83	-	1/5/27/28	0/3/3/3
3	A2M	L5	1871	85,3	-	0/5/27/28	0/3/3/3
3	UR3	L5	4530	3	-	0/7/25/26	0/2/2/2
83	MA6	S2	1851	83	-	1/7/29/30	0/3/3/3
83	OMG	S2	867	83	-	2/5/27/28	0/3/3/3
83	PSU	S2	1056	83	-	0/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PSU	L5	1677	3	-	4/7/25/26	0/2/2/2
3	PSU	L5	3695	3	-	0/7/25/26	0/2/2/2
3	OMC	L5	4456	3	-	0/9/27/28	0/2/2/2
3	PSU	L5	4673	85,3	-	0/7/25/26	0/2/2/2
83	G7M	S2	1639	1,83	-	0/3/25/26	0/3/3/3
3	OMG	L5	3744	3	-	0/5/27/28	0/3/3/3
3	A2M	L5	2401	3	-	0/5/27/28	0/3/3/3
3	OMU	L5	3925	3	-	0/9/27/28	0/2/2/2
3	5MC	L5	4447	3	-	4/7/25/26	0/2/2/2
3	PSU	L5	4403	3	-	0/7/25/26	0/2/2/2
83	A2M	S2	1031	83	-	0/5/27/28	0/3/3/3
83	OMU	S2	354	83	-	0/9/27/28	0/2/2/2
83	PSU	S2	1174	83	-	0/7/25/26	0/2/2/2
3	A2M	L5	3785	85,3	-	0/5/27/28	0/3/3/3
3	PSU	L5	2632	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	1536	3	-	2/7/25/26	0/2/2/2
3	PSU	L5	4552	3	-	0/7/25/26	0/2/2/2
3	OMG	L5	1316	3	-	0/5/27/28	0/3/3/3
3	OMG	L5	4392	3	-	0/5/27/28	0/3/3/3
83	PSU	S2	406	83	-	0/7/25/26	0/2/2/2
3	OMG	L5	4618	3	-	1/5/27/28	0/3/3/3
83	OMG	S2	601	83	-	1/5/27/28	0/3/3/3
3	PSU	L5	4457	3	-	0/7/25/26	0/2/2/2
83	OMU	S2	1288	83	-	2/9/27/28	0/2/2/2
3	PSU	L5	3639	3	-	0/7/25/26	0/2/2/2
3	OMG	L5	4623	3	-	0/5/27/28	0/3/3/3
83	PSU	S2	863	83	-	0/7/25/26	0/2/2/2
3	A2M	L5	1323	3	-	2/5/27/28	0/3/3/3
3	OMG	L5	3792	3	-	2/5/27/28	0/3/3/3
3	A2M	L5	3825	3	-	0/5/27/28	0/3/3/3
3	PSU	L5	4471	3	-	0/7/25/26	0/2/2/2
83	MA6	S2	1850	83	-	0/7/29/30	0/3/3/3
3	OMC	L5	2365	85,3	-	0/9/27/28	0/2/2/2
5	OMG	L8	75	5	-	0/5/27/28	0/3/3/3
3	PSU	L5	1792	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4293	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	1860	3	-	0/7/25/26	0/2/2/2
83	PSU	S2	1367	83	-	0/7/25/26	0/2/2/2
3	PSU	L5	4689	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4628	3	-	0/7/25/26	0/2/2/2
3	PSU	L5	4521	85,3	-	0/7/25/26	0/2/2/2

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
83	A2M	S2	99	85,83	-	3/5/27/28	0/3/3/3
3	OMC	L5	2861	3	-	0/9/27/28	0/2/2/2
3	A2M	L5	1326	3	-	4/5/27/28	0/3/3/3
3	OMG	L5	4370	3	-	0/5/27/28	0/3/3/3
3	A2M	L5	2787	3	-	2/5/27/28	0/3/3/3
5	PSU	L8	69	5	-	0/7/25/26	0/2/2/2
3	PSU	L5	4296	3	-	2/7/25/26	0/2/2/2
3	OMG	L5	2424	3	-	0/5/27/28	0/3/3/3
3	OMC	L5	3701	3	-	6/9/27/28	0/2/2/2
3	OMG	L5	4196	1,3	-	1/5/27/28	0/3/3/3
3	OMG	L5	4499	3	-	1/5/27/28	0/3/3/3
83	OMG	S2	509	83	-	0/5/27/28	0/3/3/3
3	OMG	L5	1625	3	-	2/5/27/28	0/3/3/3
3	PSU	L5	1582	3	-	0/7/25/26	0/2/2/2
83	OMU	S2	428	83	-	4/9/27/28	0/2/2/2
3	OMG	L5	1522	3	-	0/5/27/28	0/3/3/3
3	PSU	L5	2839	3	-	0/7/25/26	0/2/2/2

The worst 5 of 347 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L5	3818	UY1	C6-C5	12.91	1.49	1.35
3	L5	3818	UY1	C2-N1	11.87	1.52	1.36
83	S2	799	OMU	C2-N1	8.50	1.51	1.38
3	L5	2837	OMU	C2-N1	8.38	1.51	1.38
83	S2	1442	OMU	C2-N1	8.38	1.51	1.38

The worst 5 of 620 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
83	S2	1851	MA6	N1-C6-N6	-12.50	102.39	116.83
83	S2	1850	MA6	N1-C6-N6	-12.18	102.75	116.83
3	L5	1524	A2M	C4'-O4'-C1'	-7.12	103.40	109.92
3	L5	3785	A2M	C4'-O4'-C1'	-7.08	103.44	109.92
3	L5	4220	6MZ	N3-C2-N1	-6.64	119.66	128.67

There are no chirality outliers.

5 of 140 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	L5	400	A2M	C1'-C2'-O2'-CM'
3	L5	1326	A2M	O4'-C4'-C5'-O5'
3	L5	1340	OMC	C1'-C2'-O2'-CM2
3	L5	1625	OMG	O4'-C4'-C5'-O5'
3	L5	2351	OMC	C1'-C2'-O2'-CM2

There are no ring outliers.

80 monomers are involved in 110 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
83	S2	649	PSU	2	0
83	S2	683	OMG	1	0
3	L5	2363	A2M	1	0
83	S2	436	OMG	1	0
3	L5	4579	PSU	2	0
3	L5	4590	A2M	1	0
3	L5	2351	OMC	1	0
83	S2	1046	PSU	1	0
83	S2	116	OMU	2	0
83	S2	1272	OMC	1	0
3	L5	2364	OMG	1	0
83	S2	517	OMC	1	0
83	S2	1703	OMC	1	0
3	L5	4306	OMU	1	0
3	L5	4571	A2M	1	0
3	L5	1534	A2M	1	0
83	S2	462	OMC	1	0
3	L5	3818	UY1	1	0
83	S2	27	A2M	3	0
3	L5	3867	A2M	5	0
3	L5	4523	A2M	2	0
3	L5	398	A2M	1	0
3	L5	2422	OMC	1	0
83	S2	159	A2M	2	0
3	L5	3884	PSU	1	0
3	L5	1340	OMC	2	0
83	S2	576	A2M	2	0
3	L5	4637	OMG	1	0
83	S2	1337	4AC	2	0
3	L5	3718	A2M	3	0
83	S2	1391	OMC	1	0
83	S2	681	PSU	1	0
3	L5	4431	PSU	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
83	S2	484	A2M	1	0
83	S2	1442	OMU	1	0
3	L5	4536	OMC	1	0
3	L5	4228	OMG	1	0
3	L5	2824	OMC	1	0
83	S2	1232	PSU	1	0
3	L5	3841	OMC	1	0
3	L5	4620	OMU	2	0
3	L5	400	A2M	1	0
3	L5	1683	PSU	2	0
83	S2	1383	A2M	1	0
3	L5	3822	PSU	1	0
83	S2	1004	PSU	2	0
83	S2	121	OMU	1	0
3	L5	4220	6MZ	1	0
3	L5	2876	OMG	1	0
83	S2	866	PSU	2	0
3	L5	2804	OMC	1	0
3	L5	4636	PSU	1	0
83	S2	166	A2M	2	0
83	S2	1842	4AC	1	0
83	S2	468	A2M	1	0
3	L5	1871	A2M	1	0
83	S2	867	OMG	3	0
3	L5	1677	PSU	1	0
3	L5	4456	OMC	1	0
83	S2	1639	G7M	1	0
3	L5	3925	OMU	1	0
83	S2	1031	A2M	1	0
83	S2	1174	PSU	2	0
3	L5	3785	A2M	1	0
3	L5	4392	OMG	1	0
3	L5	4618	OMG	1	0
83	S2	601	OMG	2	0
3	L5	4457	PSU	1	0
83	S2	1288	OMU	1	0
3	L5	3825	A2M	1	0
83	S2	1850	MA6	1	0
5	L8	75	OMG	2	0
3	L5	4293	PSU	1	0
3	L5	4689	PSU	1	0
83	S2	99	A2M	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	L5	1326	A2M	5	0
3	L5	2424	OMG	1	0
3	L5	3701	OMC	1	0
3	L5	4196	OMG	1	0
83	S2	509	OMG	3	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 242 ligands modelled in this entry, 225 are monoatomic - leaving 17 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	$\# Z > 2$
86	SPM	L5	5263	-	13,13,13	0.34	0	12,12,12	0.98	0
86	SPM	L5	5292	-	13,13,13	0.35	0	12,12,12	0.90	0
87	SPD	L5	5284	-	9,9,9	0.31	0	8,8,8	0.79	0
86	SPM	L5	5289	-	13,13,13	0.37	0	12,12,12	1.01	0
87	SPD	L5	5283	-	9,9,9	0.34	0	8,8,8	0.86	0
87	SPD	L5	5285	-	9,9,9	0.32	0	8,8,8	0.88	0
87	SPD	LN	301	-	9,9,9	0.31	0	8,8,8	0.91	0
87	SPD	L5	5261	-	9,9,9	0.32	0	8,8,8	0.94	0
87	SPD	L5	5291	-	9,9,9	0.31	0	8,8,8	0.81	0
87	SPD	L5	5287	-	9,9,9	0.32	0	8,8,8	0.85	0
87	SPD	L5	5288	-	9,9,9	0.31	0	8,8,8	0.83	0
86	SPM	L5	5293	-	13,13,13	0.36	0	12,12,12	0.87	0
86	SPM	L5	5259	-	13,13,13	0.35	0	12,12,12	0.99	0
87	SPD	L5	5286	-	9,9,9	0.32	0	8,8,8	0.84	0
87	SPD	L5	5290	-	9,9,9	0.33	0	8,8,8	0.85	0
86	SPM	L5	5264	-	13,13,13	0.34	0	12,12,12	1.01	0
86	SPM	L5	5267	-	13,13,13	0.36	0	12,12,12	1.09	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
86	SPM	L5	5263	-	-	2/11/11/11	-
86	SPM	L5	5292	-	-	4/11/11/11	-
87	SPD	L5	5284	-	-	1/7/7/7	-
86	SPM	L5	5289	-	-	5/11/11/11	-
87	SPD	L5	5283	-	-	1/7/7/7	-
87	SPD	L5	5285	-	-	4/7/7/7	-
87	SPD	LN	301	-	-	1/7/7/7	-
87	SPD	L5	5261	-	-	1/7/7/7	-
87	SPD	L5	5291	-	-	4/7/7/7	-
87	SPD	L5	5287	-	-	3/7/7/7	-
87	SPD	L5	5288	-	-	3/7/7/7	-
86	SPM	L5	5293	-	-	5/11/11/11	-
86	SPM	L5	5259	-	-	2/11/11/11	-
87	SPD	L5	5286	-	-	0/7/7/7	-
87	SPD	L5	5290	-	-	2/7/7/7	-
86	SPM	L5	5264	-	-	4/11/11/11	-
86	SPM	L5	5267	-	-	4/11/11/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 46 torsion outliers are listed below:

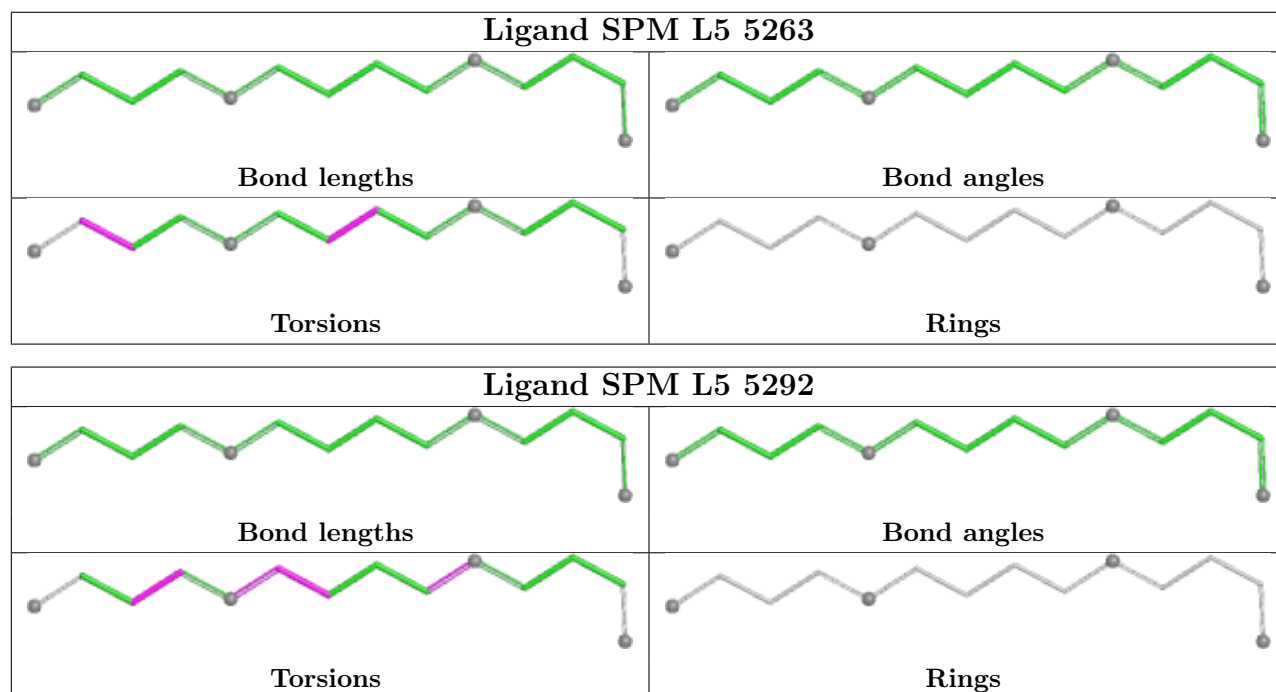
Mol	Chain	Res	Type	Atoms
86	L5	5264	SPM	N5-C6-C7-C8
87	L5	5285	SPD	C3-C4-C5-N6
86	L5	5292	SPM	C7-C8-C9-N10
87	L5	5285	SPD	N6-C7-C8-C9
86	L5	5264	SPM	C7-C6-N5-C4

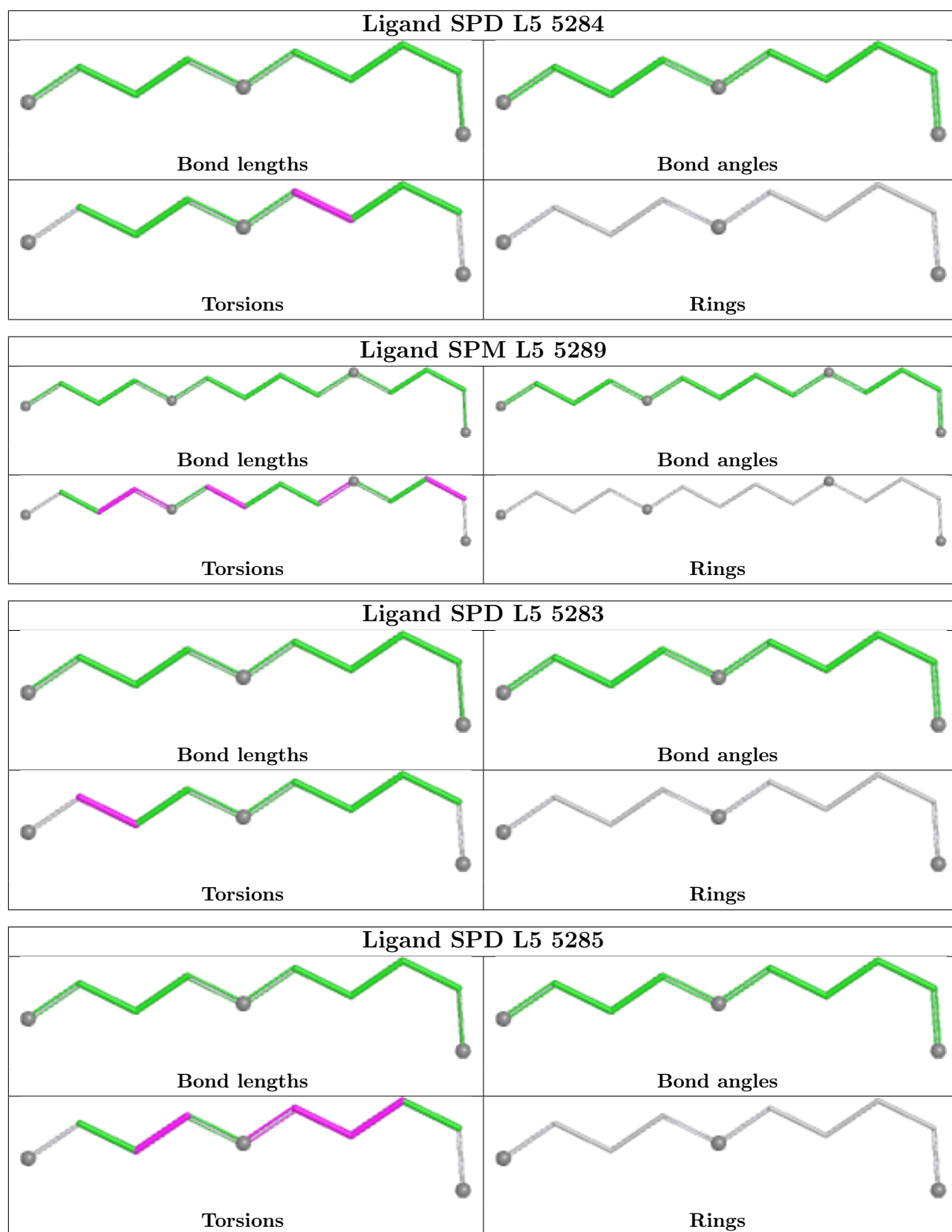
There are no ring outliers.

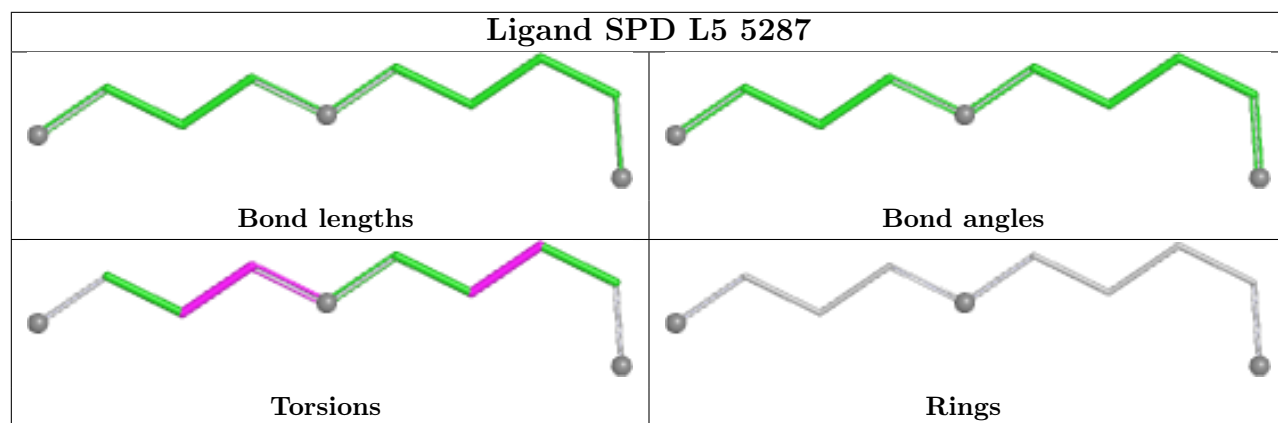
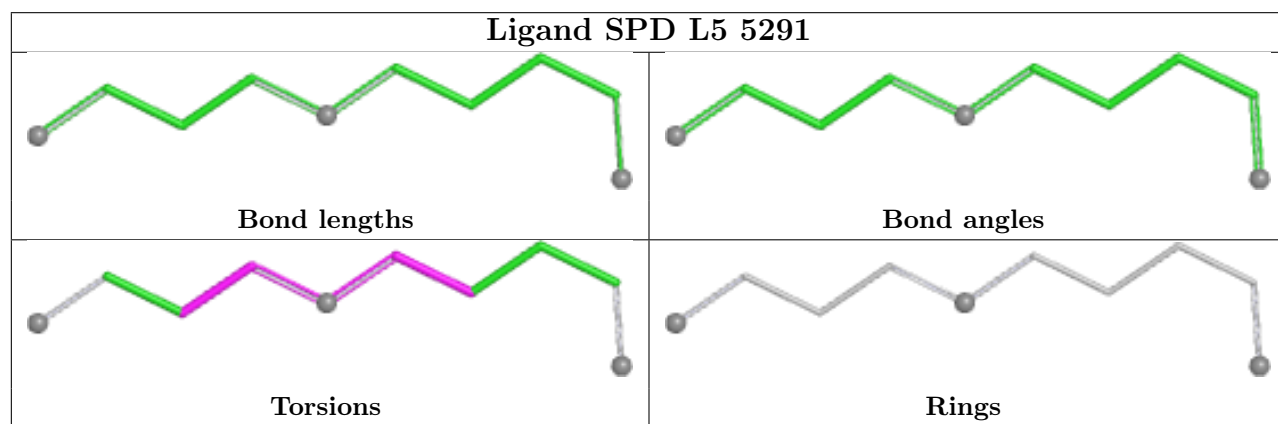
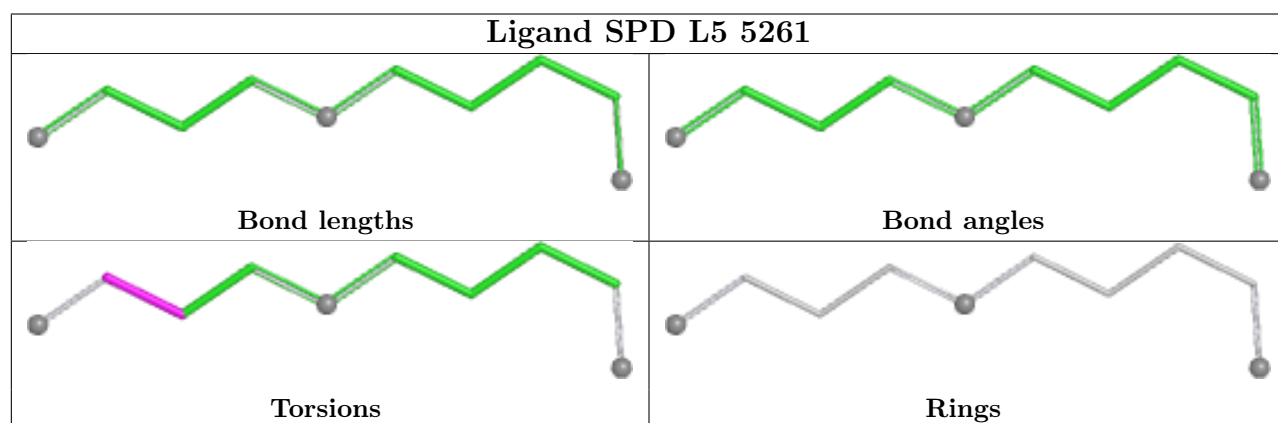
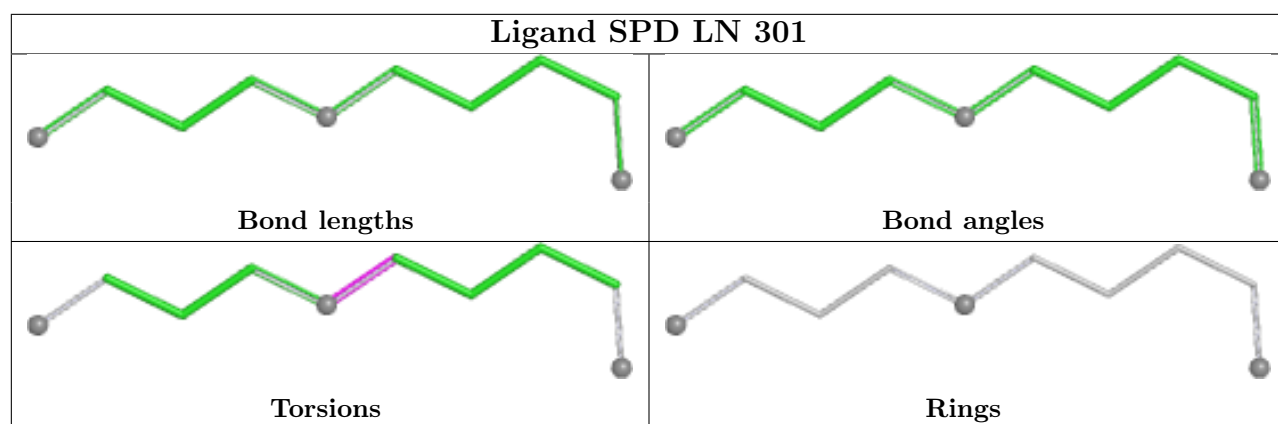
8 monomers are involved in 12 short contacts:

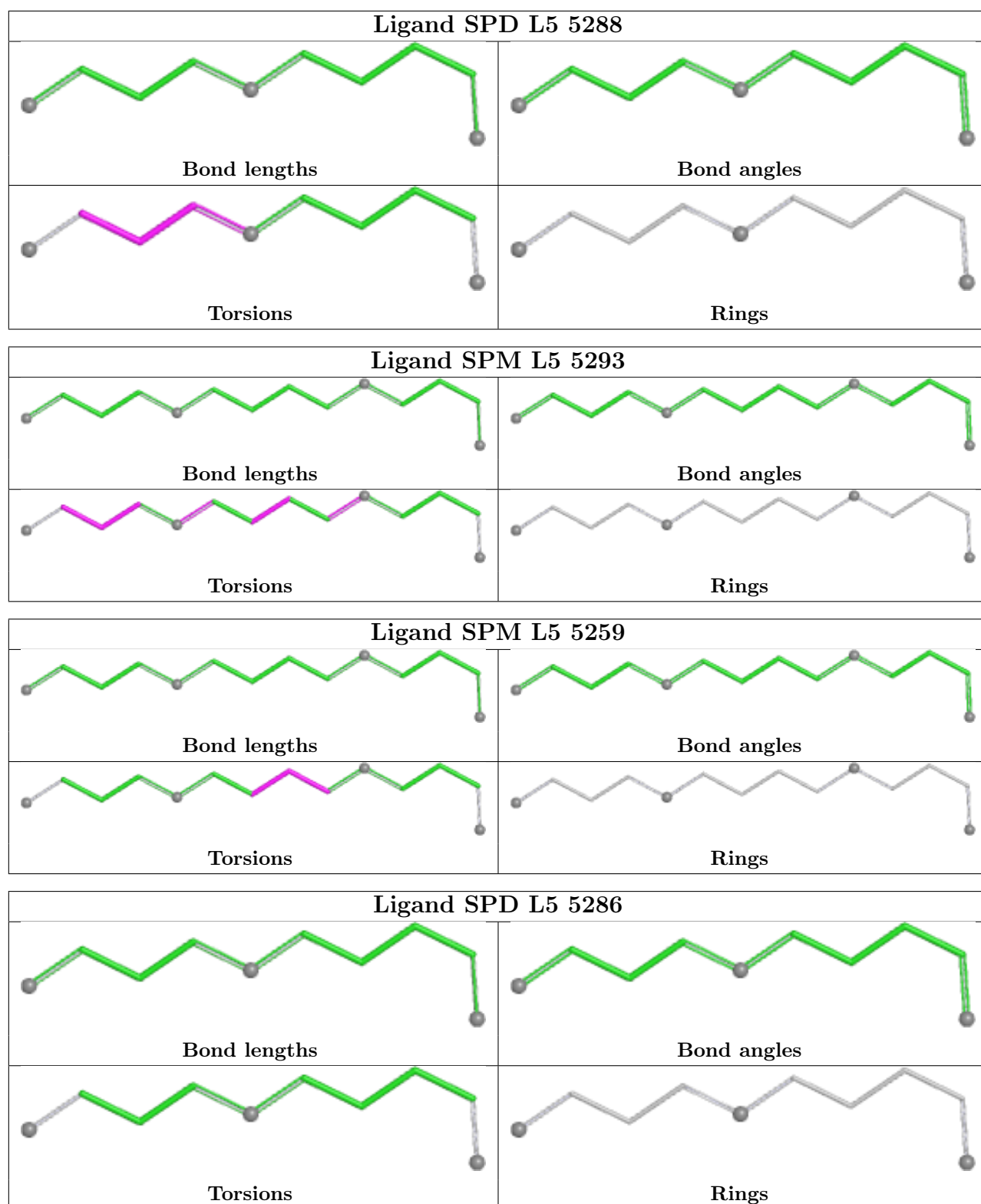
Mol	Chain	Res	Type	Clashes	Symm-Clashes
86	L5	5263	SPM	1	0
86	L5	5292	SPM	1	0
87	L5	5284	SPD	2	0
87	L5	5261	SPD	2	0
86	L5	5293	SPM	2	0
86	L5	5259	SPM	1	0
87	L5	5290	SPD	1	0
86	L5	5264	SPM	2	0

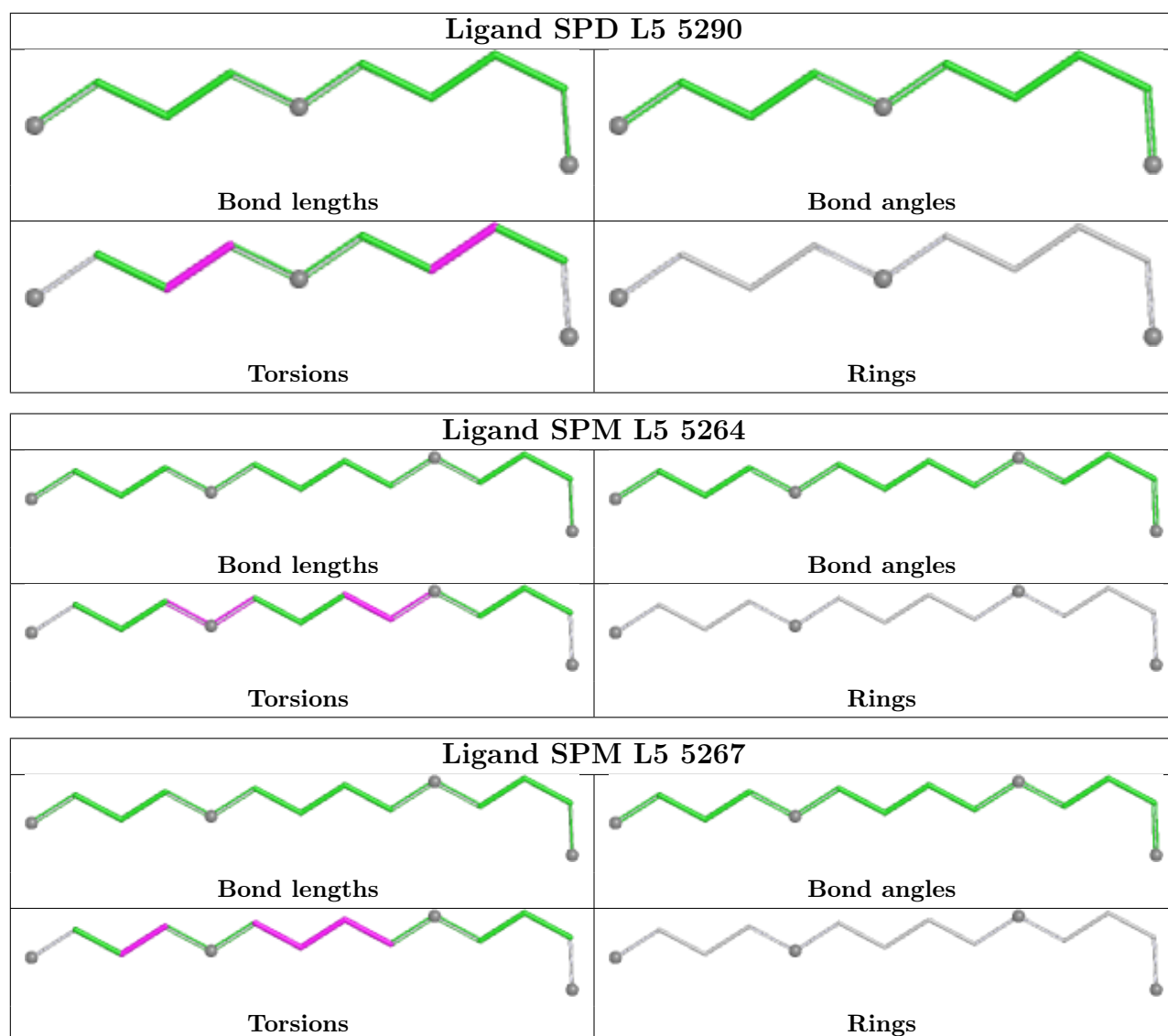
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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











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
3	L5	10
83	S2	5
32	Lb	1
10	LE	1
49	Lt	1

Continued on next page...

Continued from previous page...

Mol	Chain	Number of breaks
70	SH	1
1	Pt	1
2	Et	1

The worst 5 of 21 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	Lb	76:VAL	C	89:VAL	N	35.06
1	S2	753:C	O3'	785:C	P	29.06
1	LE	76:ALA	C	87:LYS	N	21.90
1	L5	2910:G	O3'	3584:C	P	21.12
1	L5	1706:A	O3'	1716:G	P	20.98

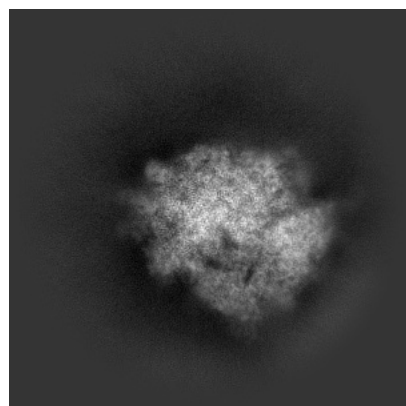
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-71331. These allow visual inspection of the internal detail of the map and identification of artifacts.

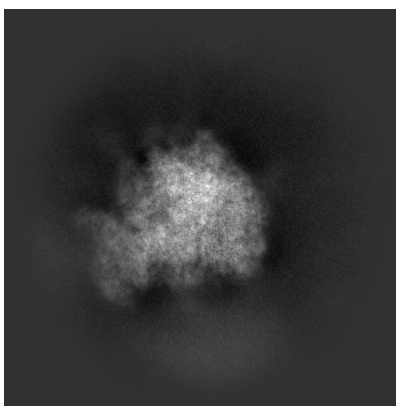
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

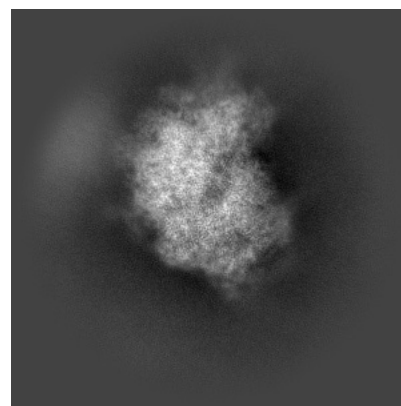
6.1.1 Primary map



X

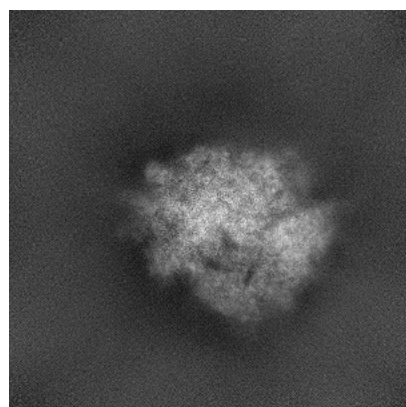


Y

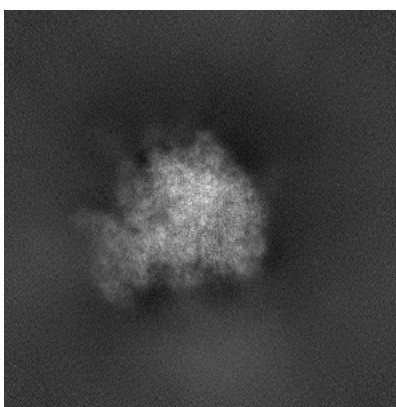


Z

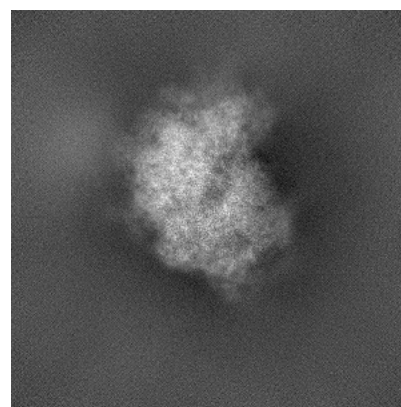
6.1.2 Raw map



X



Y

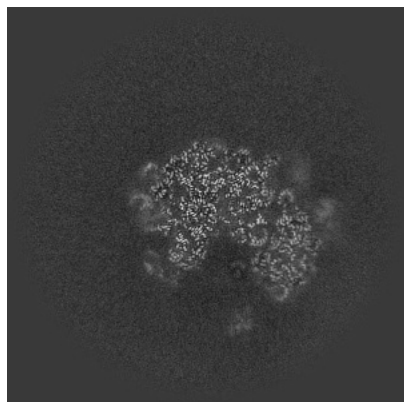


Z

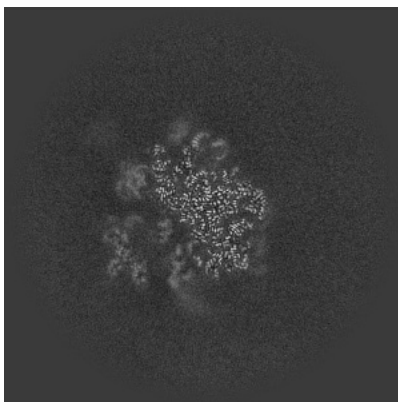
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

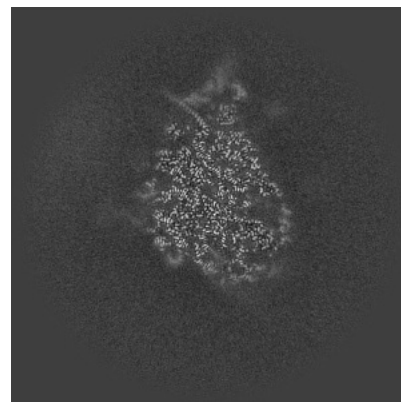
6.2.1 Primary map



X Index: 256

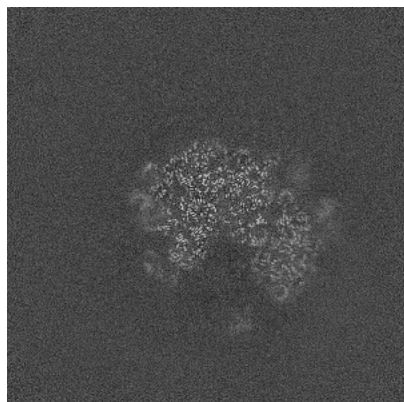


Y Index: 256

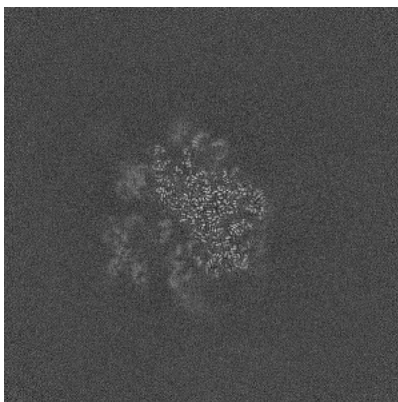


Z Index: 256

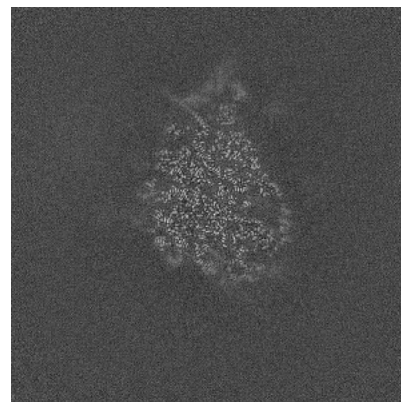
6.2.2 Raw map



X Index: 256



Y Index: 256

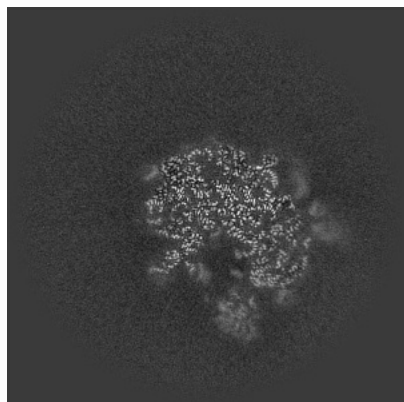


Z Index: 256

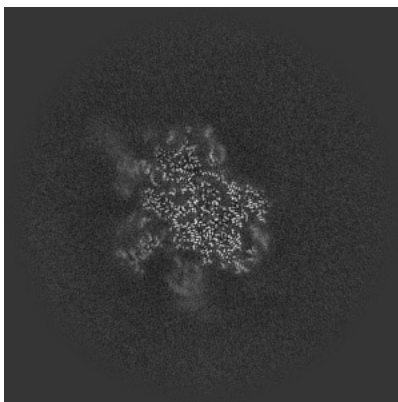
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

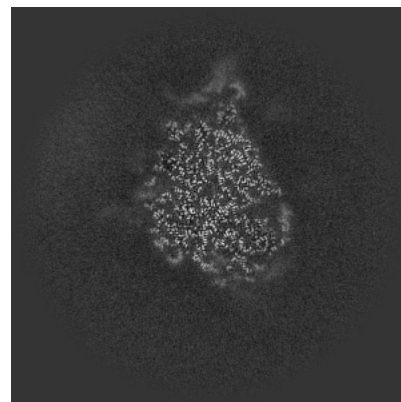
6.3.1 Primary map



X Index: 243

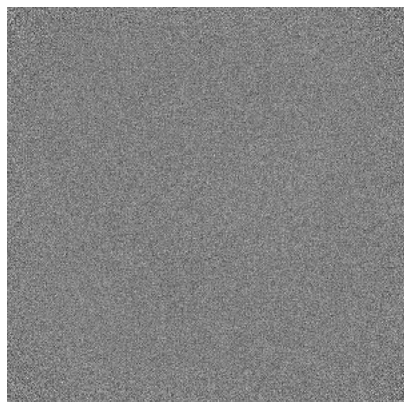


Y Index: 243

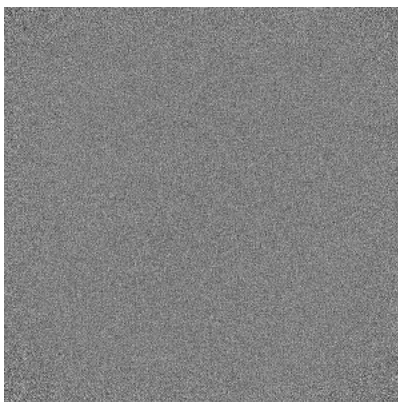


Z Index: 258

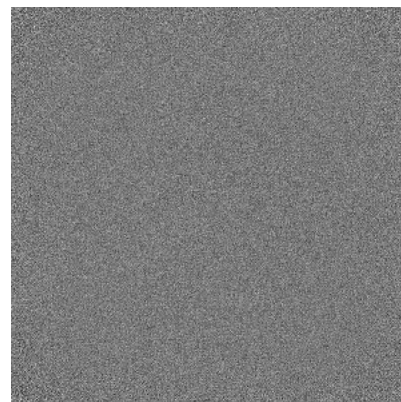
6.3.2 Raw map



X Index: 0



Y Index: 0

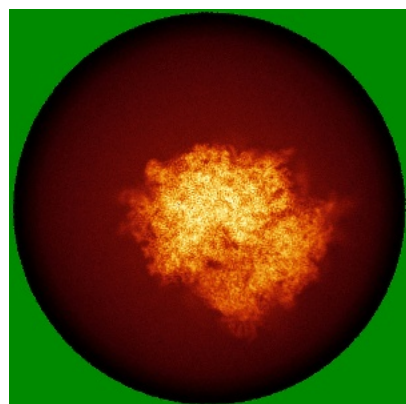


Z Index: 0

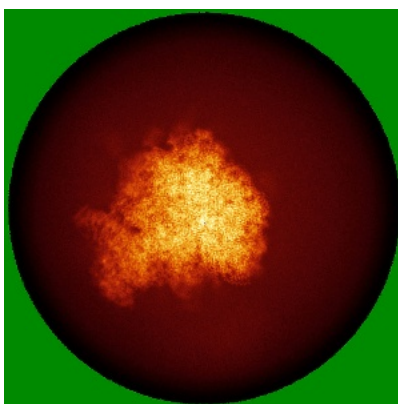
The images above show the largest variance slices of the map in three orthogonal directions.

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

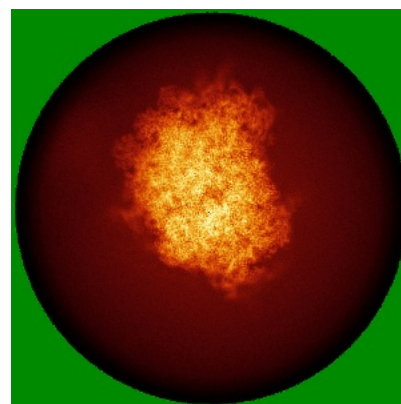
6.4.1 Primary map



X

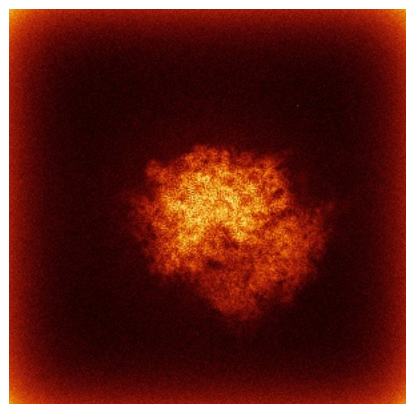


Y

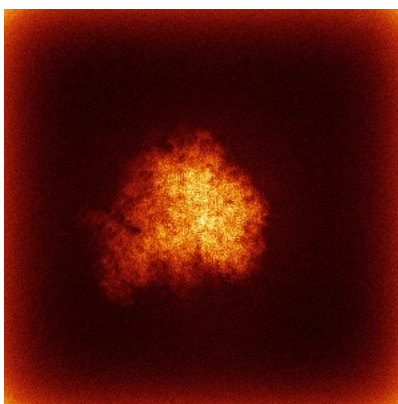


Z

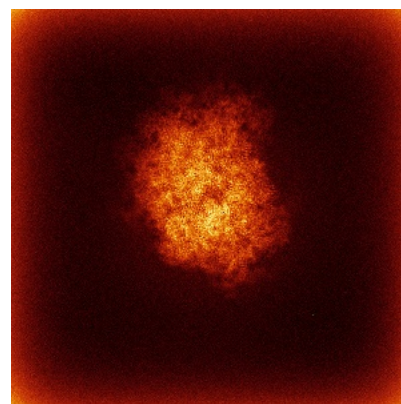
6.4.2 Raw map



X



Y

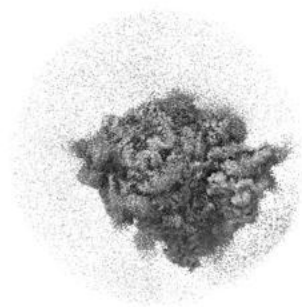


Z

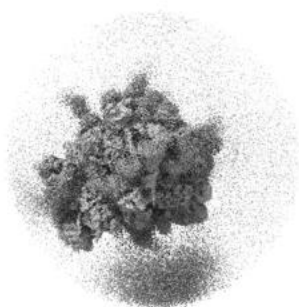
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

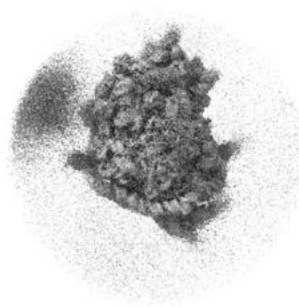
6.5.1 Primary map



X



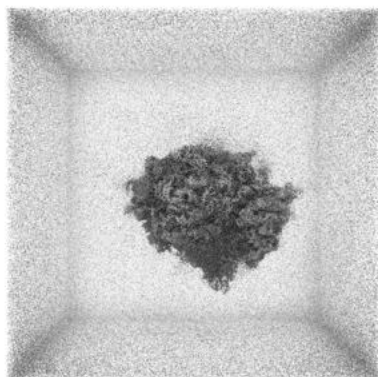
Y



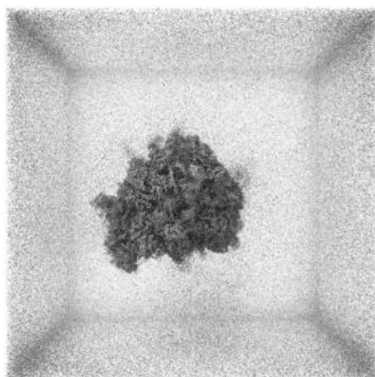
Z

The images above show the 3D surface view of the map at the recommended contour level 0.0128. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

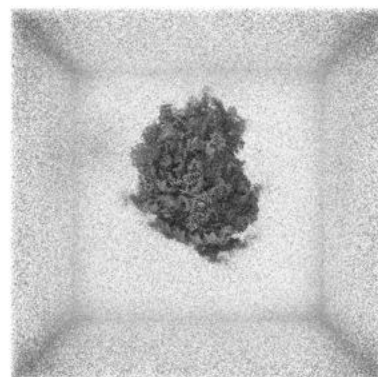
6.5.2 Raw map



X



Y



Z

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

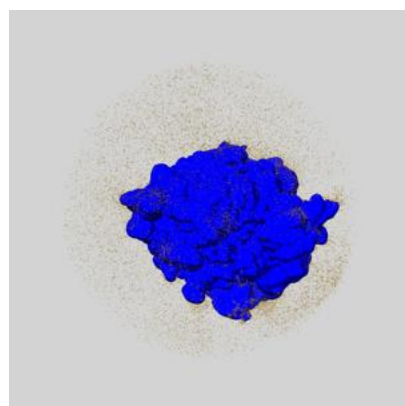
6.6 Mask visualisation [i](#)

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

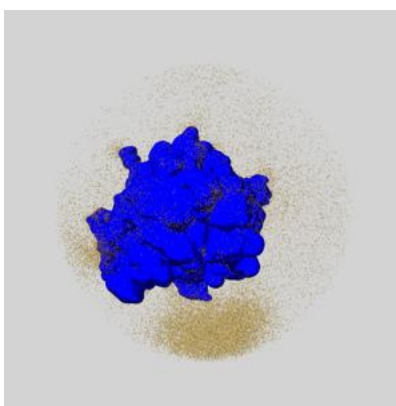
A mask typically either:

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

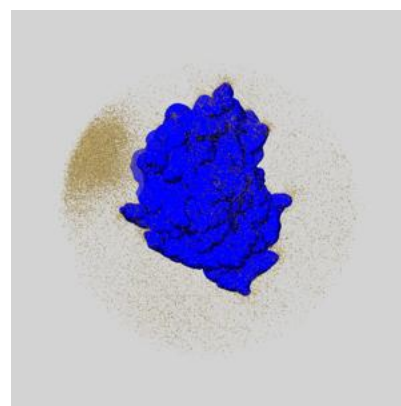
6.6.1 emd_71331_msk_1.map [i](#)



X



Y

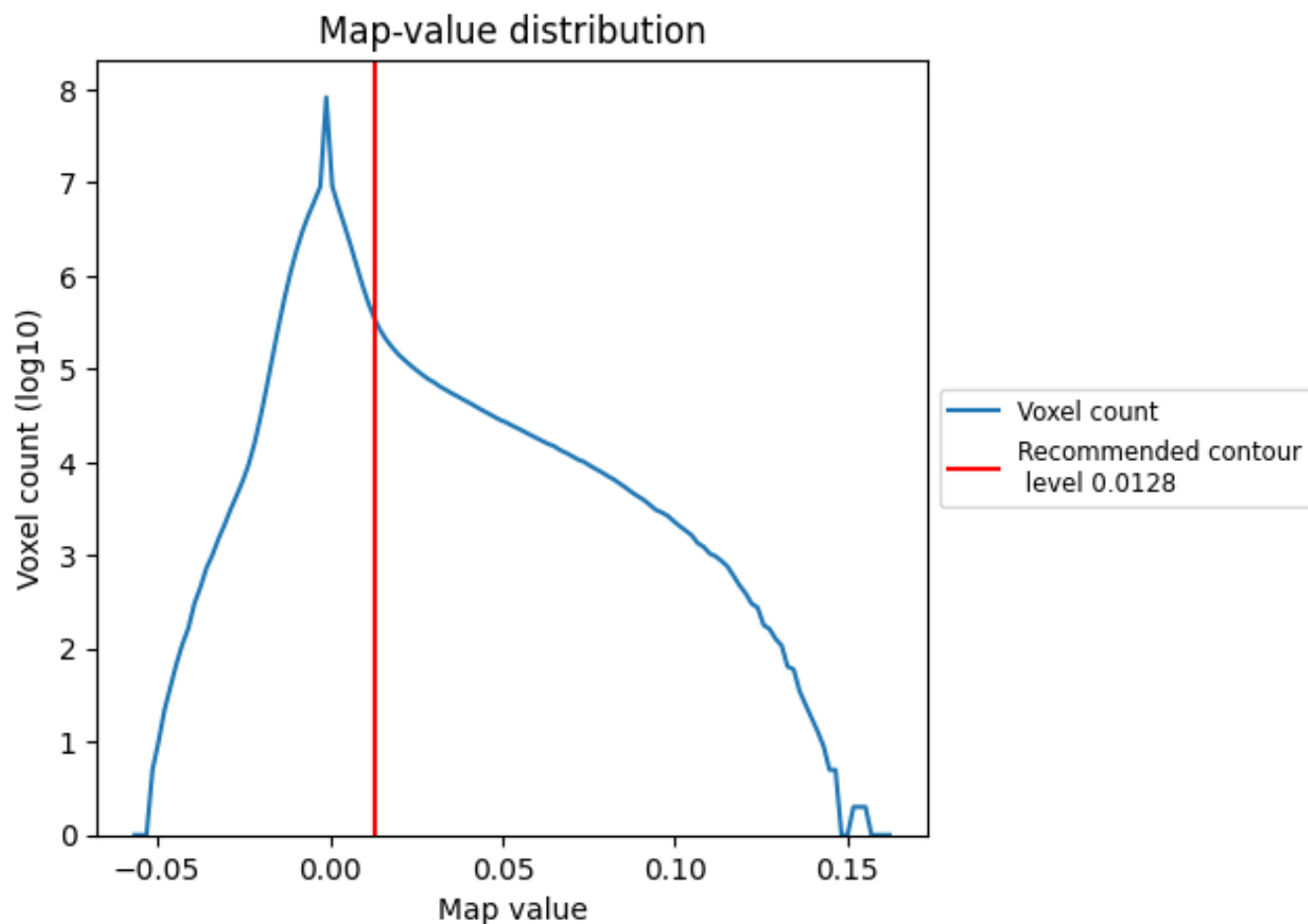


Z

7 Map analysis [i](#)

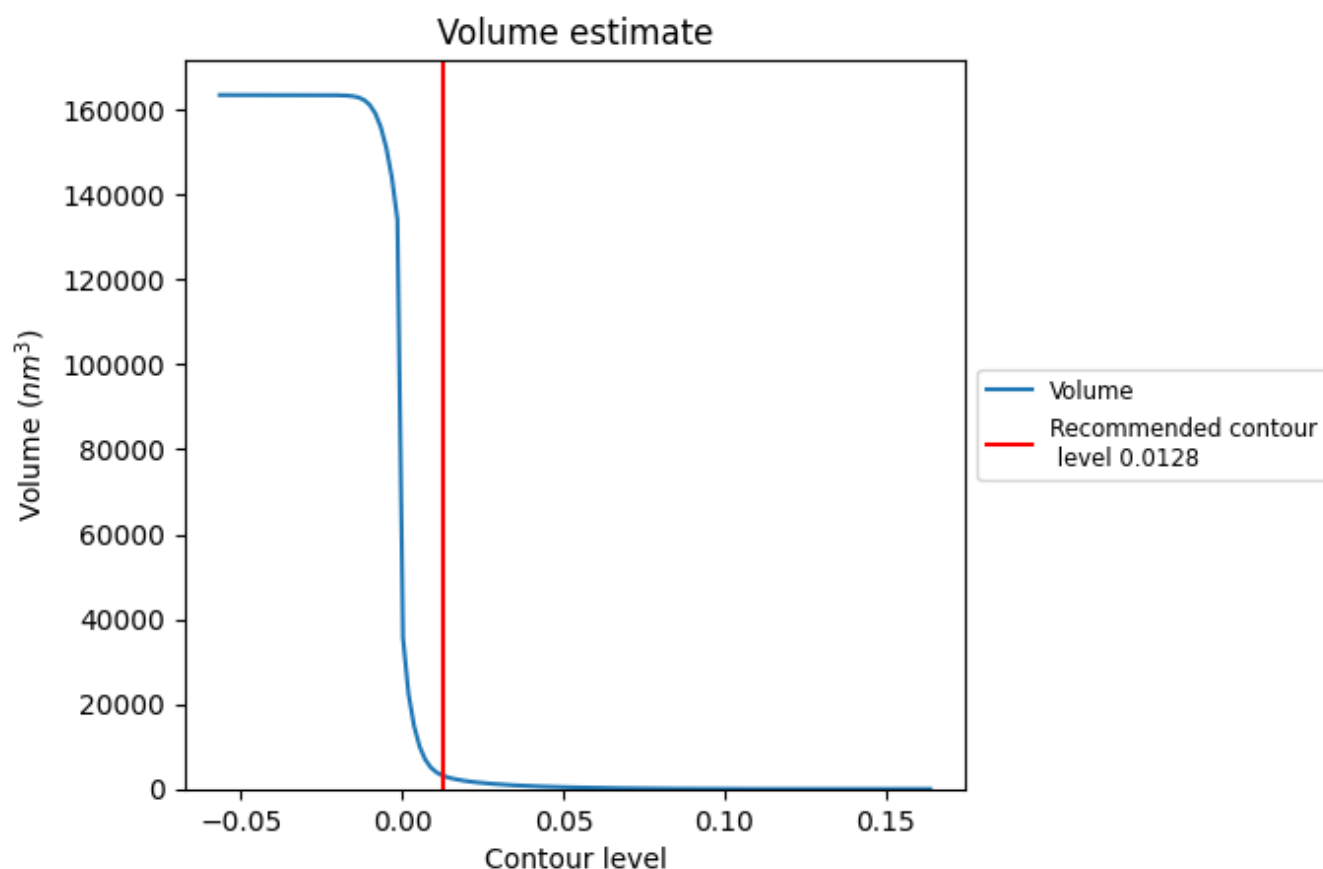
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

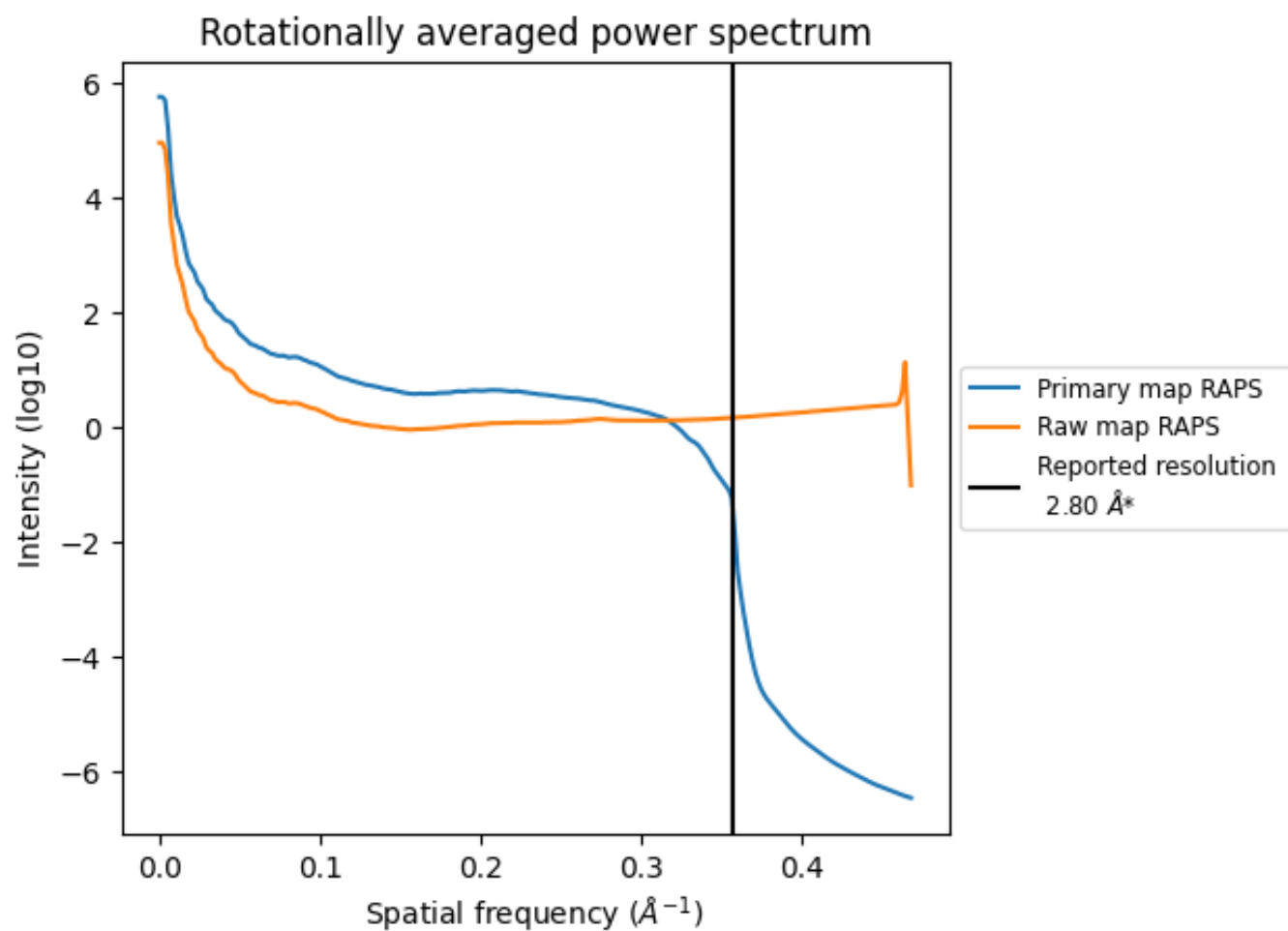
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 3105 nm^3 ; this corresponds to an approximate mass of 2804 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 ⓘ

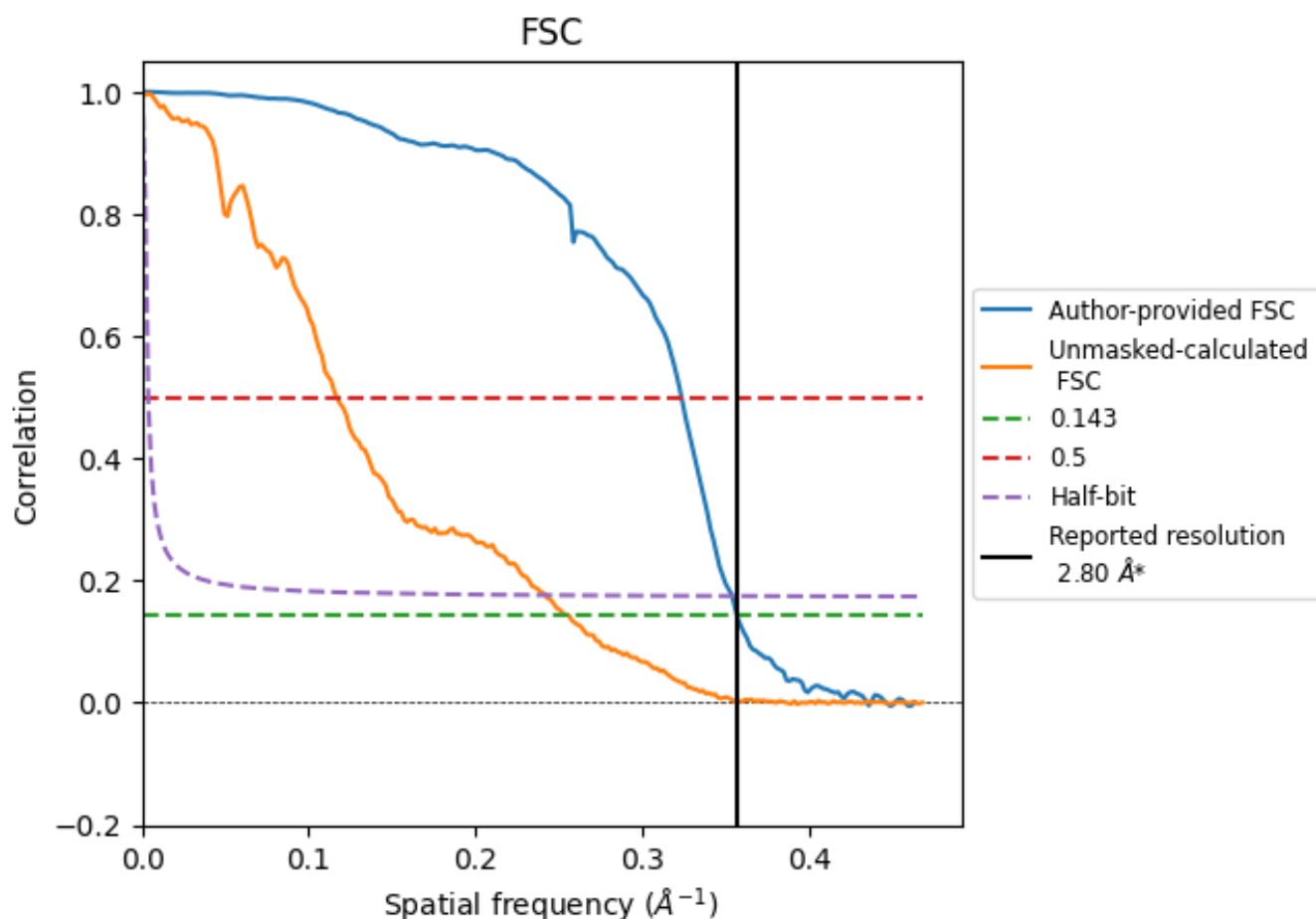


*Reported resolution corresponds to spatial frequency of 0.357 Å⁻¹

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 0.357 Å⁻¹

8.2 Resolution estimates [i](#)

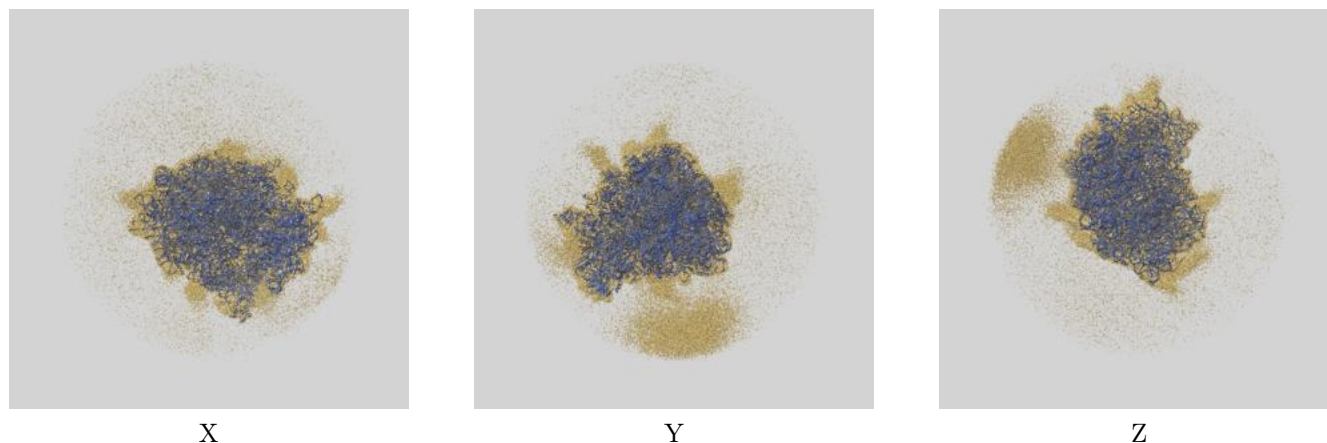
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.80	-	-
Author-provided FSC curve	2.80	3.09	2.82
Unmasked-calculated*	3.91	8.56	4.13

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.91 differs from the reported value 2.8 by more than 10 %

9 Map-model fit [i](#)

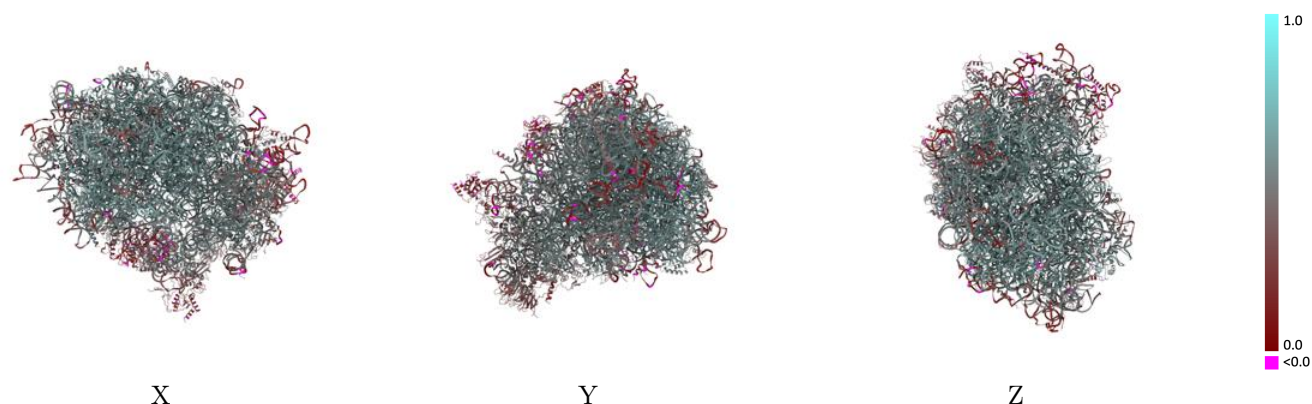
This section contains information regarding the fit between EMDB map EMD-71331 and PDB model 9P72. Per-residue inclusion information can be found in [section 3](#) on [page 24](#).

9.1 Map-model overlay [i](#)



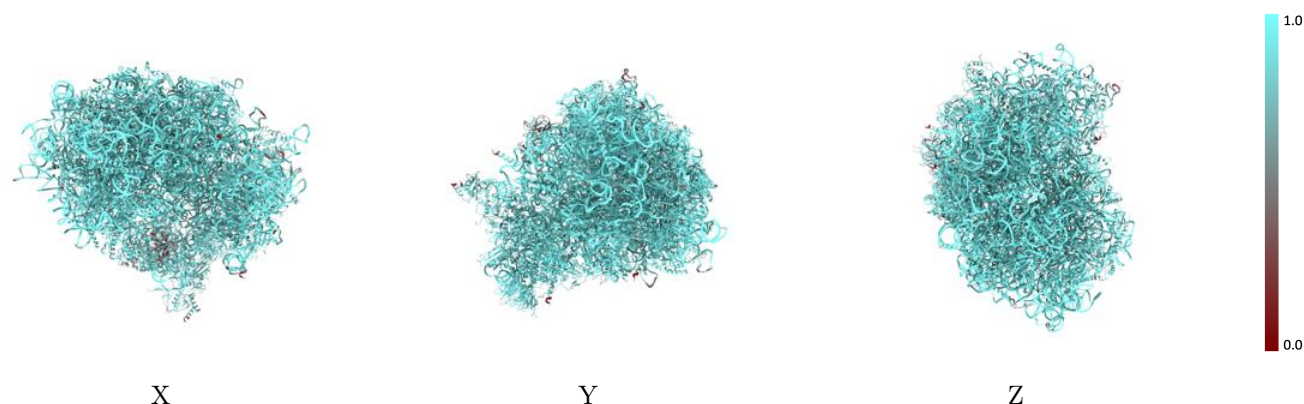
The images above show the 3D surface view of the map at the recommended contour level 0.0128 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



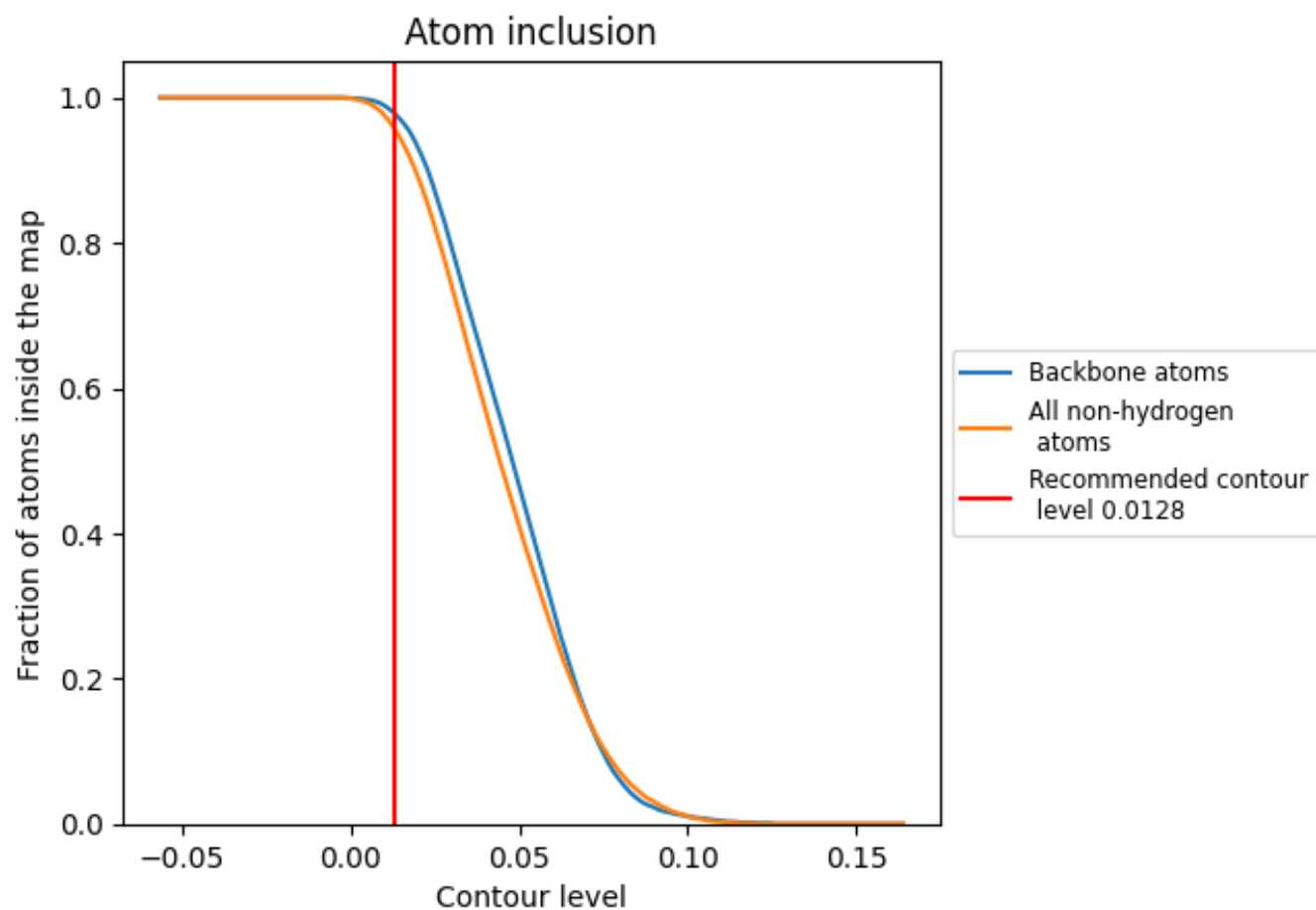
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0128).

9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 96% 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 (0.0128) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9580	 0.5080
CI	 0.8160	 0.4450
Et	 0.9350	 0.2290
L5	 0.9820	 0.5310
L7	 0.9980	 0.5770
L8	 0.9880	 0.5580
LA	 0.9790	 0.5940
LB	 0.9580	 0.5730
LC	 0.9580	 0.5710
LD	 0.9480	 0.5330
LE	 0.9200	 0.5110
LF	 0.9770	 0.5740
LG	 0.9110	 0.5130
LH	 0.9570	 0.5630
LI	 0.9550	 0.5640
LJ	 0.9390	 0.5100
LL	 0.9360	 0.5470
LM	 0.9670	 0.5530
LN	 0.9910	 0.6080
LO	 0.9700	 0.5700
LP	 0.9710	 0.5830
LQ	 0.9790	 0.5950
LR	 0.9130	 0.5200
LS	 0.9840	 0.5940
LT	 0.9530	 0.5570
LU	 0.9460	 0.4940
LV	 0.9650	 0.5810
LW	 0.8710	 0.4130
LX	 0.9500	 0.5530
LY	 0.9530	 0.5540
LZ	 0.9640	 0.5460
La	 0.9760	 0.6000
Lb	 0.9130	 0.4960
Lc	 0.9650	 0.5450
Ld	 0.9480	 0.5610



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
Le	 0.9780	 0.5940
Lf	 0.9850	 0.5990
Lg	 0.9630	 0.5700
Lh	 0.9450	 0.5470
Li	 0.9590	 0.5480
Lj	 0.9900	 0.5940
Lk	 0.9080	 0.5030
Ll	 0.9810	 0.5800
Lm	 0.9590	 0.5700
Ln	 0.9860	 0.5700
Lo	 0.9570	 0.5690
Lp	 0.9670	 0.5720
Lr	 0.9710	 0.5780
Ls	 0.6350	 0.2060
Lt	 0.5870	 0.1380
Pt	 0.9680	 0.4760
S2	 0.9840	 0.4850
SA	 0.9120	 0.4780
SB	 0.9200	 0.5060
SC	 0.9530	 0.5110
SD	 0.8970	 0.4140
SE	 0.9520	 0.4840
SF	 0.9110	 0.4370
SG	 0.8790	 0.3930
SH	 0.8590	 0.4030
SI	 0.9170	 0.4900
SJ	 0.9230	 0.4660
SK	 0.8920	 0.3600
SL	 0.9070	 0.5120
SM	 0.7000	 0.1900
SN	 0.9520	 0.5360
SO	 0.9370	 0.5230
SP	 0.8710	 0.3920
SQ	 0.9070	 0.4350
SR	 0.8660	 0.4110
SS	 0.9050	 0.4280
ST	 0.9310	 0.4340
SU	 0.8950	 0.3700
SV	 0.9490	 0.4870
SW	 0.9720	 0.5350
SX	 0.9470	 0.5250
SY	 0.8710	 0.3920

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
SZ	 0.8490	 0.4040
Sa	 0.9400	 0.5230
Sb	 0.9190	 0.4810
Sc	 0.8870	 0.4320
Sd	 0.9500	 0.4760
Se	 0.8110	 0.4000
Sf	 0.7790	 0.2470
Sg	 0.8920	 0.3480