

# wwPDB EM Validation Summary Report (i)

#### Jul 2, 2024 – 09:47 PM JST

PDB ID : 8XT2EMDB ID : EMD-38634 Title Cryo-EM structure of the human 55S mitoribosome with 10uM Tigecycline : Authors : Li, X.; Wang, M.; Cheng, J. Deposited on 2024-01-10 : 3.30 Å(reported) Resolution : Based on initial model 7A5I :

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 (i) 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 (1)) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7(2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

# 1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.30 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	$egin{array}{c} { m Whole \ archive} \ (\#{ m Entries}) \end{array}$	${f EM\ structures}\ (\#{f Entries})$		
Ramachandran outliers	154571	4023		
Sidechain outliers	154315	3826		
RNA backbone	4643	859		

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

Mol	Chain	Length	Quality of chain	
1	L1	1559	72%	22% • •
2	L2	69	64% 17%	19%
3	LB	305	77%	• 22%
4	LC	348	87%	13%
5	LD	311	80%	20%
6	LI	267	35% 64%	
7	LJ	261	60% ·	39%
8	LK	192	91%	• 9%



Mol	Chain	Length	Quality of chain	
9	LM	178	99%	
10	LN	145	79%	21%
11	LO	296	96%	• •
12	LP	251	88%	12%
13	LQ	175	86%	• 13%
14	LR	179	80%	18%
15	LS	292	74% .	25%
16	LT	149	94%	6%
17	LU	205	77% •	22%
18	LV	212	78%	22%
19	LW	153	93%	7%
20	LX	216	93%	6%
21	La	148	74% .	25%
22	Lb	256	95%	5%
23	Lu	250	70%	30%
24	Ld	161	75%	25%
25	Lf	188	57% 43%	
26	Lg	65	80%	20%
27	Lh	92	50% 50%	
28	Li	188	51% 49%	
29	Lj	103	37% 63%	
30	Lk	423	93%	7%
31	Ll	380	93%	7%
32	Lm	338	86%	13%
33	Ln	206	• • 52%	



Mol	Chain	Length	Quality of chain					
34	Lo	137	91%	9%				
35	Lp	142	• 67% •	32%				
36	Lq	215	69%	31%				
37	Lr	332	83%	17%				
38	Ls	306	<sup>6%</sup> 70%	30%				
39	$\operatorname{Lt}$	279	76%	• 22%				
40	Lv	212	<b>6</b> 2%	38%				
41	Lw	166	80%	20%				
42	Lx	158	70%	30%				
43	Ly	128	76%	24%				
44	Lz	123	73%	• 25%				
45	L3	112	84%	• 14%				
46	L4	138	<b>5</b> 7% •	40%				
47	L5	128	<b>34%</b> • 65%					
48	L6	102	92%	8%				
49	m L7	206	60% ·	38%				
50	L8	222	58%	42%				
51	$\operatorname{SR}$	196	74%	26%				
52	Sf	439	84%	16%				
53	SB	296	73%	27%				
54	SZ	167	79%	21%				
55	SE	430	74%	26%				
56	$\operatorname{SF}$	125	98%	•				
57	SG	242	82%	• 17%				
58	SI	396	76%	• 23%				



Mol	Chain	Length	Quality of chain	
59	SJ	201		39%
60	SK	194	70% •	30%
61	$\operatorname{SL}$	138	78%	• 22%
62	SN	128	• 77%	• 21%
63	SO	257	<b>•</b> 64%	36%
64	$\operatorname{SP}$	137	85%	15%
65	SQ	130	82%	18%
66	SS	258	71%	28%
67	ST	142	68%	32%
68	SW	87	98%	
69	SX	360	82%	18%
70	SY	190	<b>6</b> 6% •	34%
71	Sa	173	92%	• 6%
72	$\operatorname{Sb}$	205	84%	16%
73	$\operatorname{Sc}$	414	8%	7%
74	Sd	187	50% ·	48%
75	Se	398	87%	• 12%
76	$\operatorname{Sg}$	395	27% 73%	
77	Si	106	79%	• 19%
78	Sj	218	91%	• 8%
79	Sk	323	79%	21%
80	Sm	118	96%	••
81	Sn	199	35% 65%	
82	So	689	61%	• 11%
83	S1	954	75%	21% •••



# 2 Entry composition (i)

There are 87 unique types of molecules in this entry. The entry contains 165243 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 16s rRNA.

Mol	Chain	Residues		I	AltConf	Trace			
1	L1	1500	Total 31847	C 14290	N 5750	O 10307	Р 1500	0	0

• Molecule 2 is a RNA chain called Val tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L2	56	Total 1191	C 534	N 214	0 387	Р 56	0	0

• Molecule 3 is a protein called Large ribosomal subunit protein uL2m.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	LB	237	Total 1851	C 1151	N 375	0 316	S 9	0	0

• Molecule 4 is a protein called Large ribosomal subunit protein uL3m.

Mol	Chain	Residues		At	AltConf	Trace			
4	LC	304	Total 2393	C 1538	N 415	0 429	S 11	0	0

• Molecule 5 is a protein called Large ribosomal subunit protein uL4m.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	LD	250	Total 2013	C 1294	N 365	0 348	S 6	0	0

• Molecule 6 is a protein called Large ribosomal subunit protein bL9m.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	TT	05	Total	С	Ν	Ο	0	0
0	1/1	90	784	498	152	134	0	0



• Molecule 7 is a protein called Large ribosomal subunit protein uL10m.

Mol	Chain	Residues		A	toms		AltConf	Trace	
7	LJ	158	Total 1283	C 828	N 235	0 210	S 10	0	0

• Molecule 8 is a protein called Large ribosomal subunit protein uL11m.

Mol	Chain	Residues		At	oms			AltConf	Trace
8	LK	175	Total 1323	C 841	N 237	0 243	${ m S}_2$	0	0
8	LK	175	1323	841	237	243	2	0	

• Molecule 9 is a protein called Large ribosomal subunit protein uL13m.

Mol	Chain	Residues		At	oms			AltConf	Trace
9	LM	177	Total 1451	С 934	N 259	O 251	${ m S} 7$	0	0

• Molecule 10 is a protein called Large ribosomal subunit protein uL14m.

Mol	Chain	Residues		At	$\mathbf{oms}$			AltConf	Trace
10	LN	115	Total 889	C 559	N 171	0 154	${ m S}{ m 5}$	0	0

• Molecule 11 is a protein called Large ribosomal subunit protein uL15m.

Mol	Chain	Residues		Ate	oms			AltConf	Trace
11	LO	287	Total 2305	C 1472	N 425	O 402	S 6	0	0

• Molecule 12 is a protein called Large ribosomal subunit protein uL16m.

Mol	Chain	Residues		At	AltConf	Trace			
12	LP	221	Total 1779	C 1138	N 325	O 306	S 10	0	0

• Molecule 13 is a protein called Large ribosomal subunit protein bL17m.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LQ	152	Total 1245	C 784	N 239	0 215	S 7	0	0

• Molecule 14 is a protein called Mitochondrial ribosomal protein L18, isoform CRA\_b.



Mol	Chain	Residues		At	oms	AltConf	Trace		
14	LR	146	Total 1189	C 743	N 226	O 215	${ m S}{ m 5}$	0	0

• Molecule 15 is a protein called Large ribosomal subunit protein bL19m.

Mol	Chain	Residues		Ate	AltConf	Trace			
15	LS	219	Total 1822	C 1168	N 322	O 323	${ m S} 9$	0	0

• Molecule 16 is a protein called Large ribosomal subunit protein bL20m.

Mol	Chain	Residues		At	oms	AltConf	Trace		
16	LT	140	Total 1153	C 732	N 231	0 186	$\frac{S}{4}$	0	0

• Molecule 17 is a protein called Large ribosomal subunit protein bL21m.

Mol	Chain	Residues		At	oms			AltConf	Trace
17	LU	160	Total 1284	C 829	N 226	O 225	${S \atop 4}$	0	0

• Molecule 18 is a protein called 39S ribosomal protein L22, mitochondrial.

Mol	Chain	Residues		At	oms			AltConf	Trace
18	LV	166	Total 1368	C 875	N 254	0 232	S 7	0	0

• Molecule 19 is a protein called Large ribosomal subunit protein uL23m.

Mol	Chain	Residues		At	oms			AltConf	Trace
19	LW	143	Total 1188	C 752	N 224	O 208	$\frac{S}{4}$	0	0

• Molecule 20 is a protein called Large ribosomal subunit protein uL24m.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LX	202	Total 1652	C 1053	N 294	0 297	S 8	0	0

• Molecule 21 is a protein called Large ribosomal subunit protein bL27m.



Mol	Chain	Residues		At	oms			AltConf	Trace
21	La	111	Total 871	C 558	N 164	O 146	${ m S} { m 3}$	0	0

• Molecule 22 is a protein called Large ribosomal subunit protein bL28m.

Mol	Chain	Residues		Ate	AltConf	Trace			
22	Lb	243	Total 2035	C 1317	N 351	O 362	${ m S}{ m 5}$	0	0

• Molecule 23 is a protein called Large ribosomal subunit protein uL29m.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Lu	176	Total 1517	C 970	N 291	O 252	S 4	0	0

• Molecule 24 is a protein called Large ribosomal subunit protein uL30m.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Ld	120	Total 978	C 626	N 183	0 166	${ m S} { m 3}$	0	0

• Molecule 25 is a protein called Large ribosomal subunit protein bL32m.

Mol	Chain	Residues		At	oms	AltConf	Trace		
25	Lf	108	Total 880	C 545	N 172	0 157	S 6	0	0

• Molecule 26 is a protein called Large ribosomal subunit protein bL33m.

Mol	Chain	Residues		Ato	$\mathbf{ms}$	AltConf	Trace		
26	Ισ	52	Total	С	Ν	0	S	0	0
20	Lg	52	433	278	83	70	2	0	0

• Molecule 27 is a protein called Large ribosomal subunit protein bL34m.

Mol	Chain	Residues		Atc	$\mathbf{ms}$	AltConf	Trace		
27	Lh	46	Total 376	C 233	N 83	O 50	S 1	0	0
			510	200	00	55	T		

• Molecule 28 is a protein called Large ribosomal subunit protein bL35m.



Mol	Chain	Residues		At	oms	AltConf	Trace		
28	Li	95	Total 831	$\begin{array}{c} \mathrm{C} \\ 539 \end{array}$	N 162	O 127	${ m S} { m 3}$	0	0

• Molecule 29 is a protein called Large ribosomal subunit protein bL36m.

Mol	Chain	Residues		Atc	$\mathbf{ms}$	AltConf	Trace		
29	Lj	38	Total 341	C 217	N 72	0 48	$\frac{S}{4}$	0	0

• Molecule 30 is a protein called Large ribosomal subunit protein mL37.

Mol	Chain	Residues		At	AltConf	Trace			
30	Lk	394	Total 3210	C 2073	N 560	O 566	S 11	0	0

• Molecule 31 is a protein called Large ribosomal subunit protein mL38.

Mol	Chain	Residues		At	AltConf	Trace			
31	Ll	354	Total 2947	C 1881	N 525	O 532	S 9	0	0

• Molecule 32 is a protein called Large ribosomal subunit protein mL39.

Mol	Chain	Residues		At	oms			AltConf	Trace
32	Lm	293	Total 2382	C 1525	N 404	0 435	S 18	0	0

• Molecule 33 is a protein called Large ribosomal subunit protein mL40.

Mol	Chain	Residues		At	oms		Atoms					
33	Ln	99	Total 836	C 535	N 144	0 155	${ m S} { m 2}$	0	0			

• Molecule 34 is a protein called Large ribosomal subunit protein mL41.

Mol	Chain	Residues		At	oms	AltConf	Trace		
34	Lo	124	Total 997	С 644	N 170	0 181	${S \over 2}$	0	0

• Molecule 35 is a protein called Large ribosomal subunit protein mL42.



Mol	Chain	Residues		At	oms	AltConf	Trace		
35	Lp	97	Total 815	C 514	N 147	0 149	${f S}{5}$	0	0

• Molecule 36 is a protein called Large ribosomal subunit protein mL43.

Mol	Chain	Residues		At	oms	AltConf	Trace		
36	Lq	148	Total 1178	C 733	N 229	0 213	${ m S} { m 3}$	0	0

• Molecule 37 is a protein called Large ribosomal subunit protein mL44.

Mol	Chain	Residues		Ate	AltConf	Trace			
37	Lr	275	Total 2217	C 1415	N 383	O 410	${ m S} 9$	0	0

• Molecule 38 is a protein called Large ribosomal subunit protein mL45.

Mol	Chain	Residues		At	AltConf	Trace			
38	Ls	214	Total 1754	C 1117	N 304	0 320	S 13	0	0

• Molecule 39 is a protein called Large ribosomal subunit protein mL46.

Mol	Chain	Residues		Ate	oms			AltConf	Trace
39	Lt	217	Total 1762	C 1124	N 310	O 323	${ m S}{ m 5}$	0	0

• Molecule 40 is a protein called Large ribosomal subunit protein mL48.

Mol	Chain	Residues		At	oms	AltConf	Trace		
40	Lv	131	Total 1035	C 661	N 169	O 201	${f S}$ $4$	0	0

• Molecule 41 is a protein called Large ribosomal subunit protein mL49.

Mol	Chain	Residues		At	oms	AltConf	Trace		
41	Lw	132	Total 1097	C 710	N 191	0 194	$\begin{array}{c} \mathrm{S} \\ \mathrm{2} \end{array}$	0	0

• Molecule 42 is a protein called Large ribosomal subunit protein mL50.



Mol	Chain	Residues		At	oms	AltConf	Trace		
42	Lx	110	Total 895	C 568	N 156	0 168	${ m S} { m 3}$	0	0

• Molecule 43 is a protein called Large ribosomal subunit protein mL51.

Mol	Chain	Residues		At	oms	AltConf	Trace		
43	Ly	97	Total 827	C 532	N 165	O 126	${f S}$ $4$	0	0

• Molecule 44 is a protein called 39S ribosomal protein L52, mitochondrial.

Mol	Chain	Residues		At	oms	AltConf	Trace		
44	Lz	92	Total 732	C 454	N 142	0 134	$\begin{array}{c} \mathrm{S} \\ \mathrm{2} \end{array}$	0	0

• Molecule 45 is a protein called Large ribosomal subunit protein mL53.

Mol	Chain	Residues		At	oms			AltConf	Trace
45	L3	96	Total 743	C 462	N 143	0 133	${ m S}{ m 5}$	0	0

• Molecule 46 is a protein called Large ribosomal subunit protein mL54.

Mol	Chain	Residues		At	oms		AltConf	Trace	
46	L4	83	Total 703	C 446	N 124	O 130	${ m S} { m 3}$	0	0

• Molecule 47 is a protein called Large ribosomal subunit protein mL55.

Mol	Chain	Residues		Ato	$\mathbf{ms}$			AltConf	Trace
47	L5	45	Total	C 222	N 76	0 62	S 2	0	0
			312	Z3Z	10	02	$\Delta$		

• Molecule 48 is a protein called Large ribosomal subunit protein mL63.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	L6	94	Total 797	C 501	N 165	0 128	${ m S} { m 3}$	0	0

• Molecule 49 is a protein called Large ribosomal subunit protein mL62.



Mol	Chain	Residues		At	oms			AltConf	Trace
49	L7	127	Total 1058	C 661	N 201	O 192	$\frac{S}{4}$	0	0

• Molecule 50 is a protein called Large ribosomal subunit protein mL64.

Mol	Chain	Residues		At	oms	AltConf	Trace		
50	L8	128	Total 1076	C 671	N 208	0 192	${ m S}{ m 5}$	0	0

• Molecule 51 is a protein called Large ribosomal subunit protein mL66.

Mol	Chain	Residues		At	oms	AltConf	Trace		
51	SR	146	Total 1203	С 764	N 232	0 199	S 8	0	0

• Molecule 52 is a protein called Large ribosomal subunit protein mL65.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	Sf	370	Total 3036	C 1946	N 542	0 534	S 14	0	0

• Molecule 53 is a protein called Small ribosomal subunit protein uS2m.

Mol	Chain	Residues		At	oms			AltConf	Trace
53	SB	217	Total 1768	C 1131	N 321	O 306	S 10	0	0

• Molecule 54 is a protein called Small ribosomal subunit protein uS3m.

Mol	Chain	Residues		At	oms		AltConf	Trace	
54	SZ	132	Total 1082	C 699	N 195	0 184	${S \atop 4}$	0	0

• Molecule 55 is a protein called Small ribosomal subunit protein uS5m.

Mol	Chain	Residues		At	oms			AltConf	Trace
55	SE	320	Total 2540	C 1600	N 473	0 455	S 12	0	0

• Molecule 56 is a protein called Small ribosomal subunit protein bS6m.



Mol	Chain	Residues		At	oms			AltConf	Trace
56	SF	122	Total 972	C 614	N 177	0 177	$\frac{S}{4}$	0	0

• Molecule 57 is a protein called Small ribosomal subunit protein uS7m.

Mol	Chain	Residues		At	AltConf	Trace			
57	SG	201	Total 1668	C 1069	N 305	0 283	S 11	0	0

• Molecule 58 is a protein called Small ribosomal subunit protein uS9m.

Mol	Chain	Residues		At	AltConf	Trace			
58	SI	304	Total 2501	C 1591	N 444	O 452	S 14	0	0

• Molecule 59 is a protein called Small ribosomal subunit protein uS10m.

Mol	Chain	Residues		Atoms					Trace
59	SJ	122	Total 999	C 643	N 168	0 185	${ m S} { m 3}$	0	0

• Molecule 60 is a protein called Small ribosomal subunit protein uS11m.

Mol	Chain	Residues		At	oms			AltConf	Trace
60	SK	136	Total 1011	C 637	N 192	0 178	S 4	0	0

• Molecule 61 is a protein called Small ribosomal subunit protein uS12m.

Mol	Chain	Residues		At	oms			AltConf	Trace
61	SL	108	Total 838	C 521	N 169	0 142	S 6	0	0

• Molecule 62 is a protein called Small ribosomal subunit protein uS14m.

Mol	Chain	Residues		Atoms					Trace
62	SN	101	Total 861	C 537	N 179	0 140	${S \atop 5}$	0	0

• Molecule 63 is a protein called Small ribosomal subunit protein uS15m.



Mol	Chain	Residues		At	oms			AltConf	Trace
63	SO	164	Total 1382	C 883	N 257	O 235	${ m S} 7$	0	0

• Molecule 64 is a protein called Small ribosomal subunit protein bS16m.

Mol	Chain	Residues		At	oms			AltConf	Trace
64	SP	116	Total 920	C 582	N 182	O 150	S 6	0	0

• Molecule 65 is a protein called Small ribosomal subunit protein uS17m.

Mol	Chain	Residues		At	oms			AltConf	Trace
65	SQ	107	Total 846	C 549	N 153	0 141	${ m S} { m 3}$	0	0

• Molecule 66 is a protein called Small ribosomal subunit protein mS40.

Mol	Chain	Residues		At	oms			AltConf	Trace
66	$\mathbf{SS}$	185	Total 1528	C 970	N 285	O 267	S 6	0	0

• Molecule 67 is a protein called Small ribosomal subunit protein bS18m.

Mol	Chain	Residues		At	oms	AltConf	Trace		
67	ST	96	Total 774	C 498	N 133	0 135	S 8	0	0

• Molecule 68 is a protein called Small ribosomal subunit protein bS21m.

Mol	Chain	Residues		At	oms	AltConf	Trace		
68	SW	86	Total 740	C 458	N 150	0 124	S 8	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SW	50	ARG	CYS	variant	UNP P82921

• Molecule 69 is a protein called Small ribosomal subunit protein mS22.



Mol	Chain	Residues		At	AltConf	Trace			
69	SX	295	Total 2405	C 1530	N 413	O 454	S 8	0	0

• Molecule 70 is a protein called Small ribosomal subunit protein mS23.

Mol	Chain	Residues		At	oms	AltConf	Trace		
70	SY	126	Total 1042	C 673	N 183	0 185	S 1	0	0

• Molecule 71 is a protein called Small ribosomal subunit protein mS25.

Mol	Chain	Residues		A	AltConf	Trace			
71	Sa	162	Total 1330	C 850	N 231	0 238	S 11	0	0

• Molecule 72 is a protein called Small ribosomal subunit protein mS26.

Mol	Chain	Residues		At	oms	AltConf	Trace		
72	$\operatorname{Sb}$	173	Total 1454	C 894	N 294	O 262	${S \atop 4}$	0	0

• Molecule 73 is a protein called Small ribosomal subunit protein mS27.

Mol	Chain	Residues		At	AltConf	Trace			
73	$\operatorname{Sc}$	385	Total 3116	C 1980	N 522	O 603	S 11	0	0

• Molecule 74 is a protein called Small ribosomal subunit protein bS1m.

Mol	Chain	Residues		At	$\mathbf{oms}$	AltConf	Trace		
74	Sd	97	Total 766	C 486	N 137	O 139	${f S}$ $4$	0	0

• Molecule 75 is a protein called Small ribosomal subunit protein mS29.

Mol	Chain	Residues		At	AltConf	Trace			
75	Se	350	Total 2836	C 1813	N 497	0 515	S 11	0	0

• Molecule 76 is a protein called Small ribosomal subunit protein mS31.



Mol	Chain	Residues		At	oms			AltConf	Trace
76	$\operatorname{Sg}$	108	Total 903	C 587	N 145	O 169	${ m S} { m 2}$	0	0

• Molecule 77 is a protein called Small ribosomal subunit protein mS33.

Mol	Chain	Residues		At	oms		Atoms						
77	Si	86	Total 731	C 467	N 131	O 129	$\frac{S}{4}$	0	0				

• Molecule 78 is a protein called Small ribosomal subunit protein mS34.

Mol	Chain	Residues		Ate	oms			AltConf	Trace
78	Sj	201	Total 1680	C 1062	N 321	O 292	${ m S}{ m 5}$	0	0

• Molecule 79 is a protein called Small ribosomal subunit protein mS35.

Mol	Chain	Residues		At	oms			AltConf	Trace
79	Sk	256	Total 2068	C 1317	N 349	0 392	S 10	0	0

• Molecule 80 is a protein called Small ribosomal subunit protein mS37.

Mol	Chain	Residues		At	oms			AltConf	Trace
80	Sm	116	Total 925	C 574	N 181	O 162	S 8	0	0

• Molecule 81 is a protein called Small ribosomal subunit protein mS38.

Mol	Chain	Residues		Ate	oms			AltConf	Trace
<b>Q1</b>	Sn	60	Total	С	Ν	Ο	S	0	0
01	511	09	610	393	130	86	1	0	0

• Molecule 82 is a protein called Small ribosomal subunit protein mS39.

Mol	Chain	Residues		At	oms			AltConf	Trace
82	So	616	Total 4981	C 3177	N 849	0 928	S 27	0	0

• Molecule 83 is a RNA chain called 12s rRNA.



Mol	Chain	Residues		A	toms			AltConf	Trace
02	<b>C</b> 1	0.28	Total	С	Ν	Ο	Р	0	0
00	51	920	19716	8840	3560	6388	928	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S1	873	А	U	conflict	GB 587653826

• Molecule 84 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
84	L1	104	Total         Mg           104         104	0
84	LB	3	Total Mg 3 3	0
84	LC	1	Total Mg 1 1	0
84	LP	1	Total Mg 1 1	0
84	La	1	Total Mg 1 1	0
84	Lw	1	Total Mg 1 1	0
84	L6	1	Total Mg 1 1	0
84	S1	33	TotalMg3333	0

• Molecule 85 is TIGECYCLINE (three-letter code: T1C) (formula:  $C_{29}H_{41}N_5O_8$ ) (labeled as "Ligand of Interest" by depositor).





Mol	Chain	Residues	Atoms	AltConf
85	L1	1	Total         C         N         O           42         29         5         8	0
85	L1	1	Total         C         N         O           42         29         5         8	0
85	S1	1	Total         C         N         O           42         29         5         8	0

• Molecule 86 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
86	Lf	1	Total Zn 1 1	0
86	Lj	1	Total Zn 1 1	0
86	SR	1	Total Zn 1 1	0
86	SB	1	Total Zn 1 1	0
86	$\mathbf{SS}$	1	Total Zn 1 1	0
86	ST	1	Total Zn 1 1	0
86	Sa	1	Total Zn 1 1	0

• Molecule 87 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ).





Mol	Chain	Residues		Ate	oms			AltConf
97	So	1	Total	С	Ν	Ο	Р	0
01	be	L	28	10	5	11	2	0



# 3 Residue-property plots (i)

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

 $\bullet$  Molecule 1: 16s rRNA





U1356 U1371 U1372 U1372 01384 01386 01386 01386 01386	01400 01401 01402 01416 01416 01416 01430 01430 01432 01433 01434 01434 01434 01434 01434 01444 01444 01444 01444 01444	G1461 A1471 A1471 U1480 C1487 A1486 A1486 A1488 A1480 C1487 A1490 C1492
U1564 A1506 A1510 A1510 U1513 A1520 A1521 C1522 C1522 C1522	u A 1 U U C 1534 C 1538 C 1538 C 1538 C 1538 C 1541 C 1542 C 1542 C 1542 A 1548 V U 1558 V U U U U U U U U U U U U U U U U U U	
• Molecule 2: Val	tRNA	
Chain L2:	64%	17% 19%
C 6 8 6 4 6 4 6 4 1 4 1 3 8 15 8 15 8 15 8 15 8 15 8 15 8 15 8 15	C C C C C C C C C C C C C C C C C C C	A 60 C C C C C C C C C C C C C C C C C C C
• Molecule 3: Lar	ge ribosomal subunit protein uL2	'n
Chain LB:	77%	• 22%
MET ALA LEU CYS CYS ALA ALA ALA ALA LEU SER SER LEU	ASN ASN ALEU PRO PRO PRO ALA ALA PRO PRO PRO PRO PRO PRO PRO PRO PRO PRO	LEU LEU GLN PRO GLN FRO FRO FRO FRO FRO FRO FRO FRO FRO FRO
A61 H168 1207 LE0 FRU SER ALA ALA ALA	GLN SER	
• Molecule 4: Lar	eribosomal subunit protein uL3	
	.Se incosoniai sustante protoni allo	111
Chain LC:	87%	13%
Chain LC:	ALL	
Chain LC:	87% 물록증복용증확증용증칙칙용증권증적확복분위험활동분 ge ribosomal subunit protein uL4	111 13% 13% 13% 13% 13% 13% 13%
Chain LC: 토문동문학동문동동동동 • Molecule 5: Lar Chain LD:	87% 考察發展發發發展發展發展發展發展發展開開展展開 rge ribosomal subunit protein uL4 80%	13% 13% 13% 13% 13% 13% 13% 13% 13% 13%
Chain LC:	87% # A 3 & A 3 A 4 3 A 4 4 A A 4 A A 4 A A 4 A A A 4 A	
Chain LC:	87% # G & B & B & B & B & B & B & B & B & B &	
Chain LC:	87% * E 5 2 E 5 2 5 E 5 E 5 E 5 E 5 E 5 E 5 E	
Chain LC:	87% # # 3 # # 3 # 3 # 3 # 3 # 3 # 4 # 1 # # # # # # # # # # # # # # # #	111 13% 13% 13% 13% 13% 13% 13%
Chain LC: Chain LD: Chain LD: Chain LD: Chain LD: Chain LI: Chain LI: Chain LI:	87%         87%         900         900         900         80%         9000         900	



CLU CLU THR THR CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU
$\bullet$ Molecule 7: Large ribosomal subunit protein uL10m
Chain LJ: 60% · 39%
MET ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
LEU VAL VAL VAL CLEU VAL CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLE
ASP SER
$\bullet$ Molecule 8: Large ribosomal subunit protein uL11m
Chain LK: 91% · 9%
MET SER LLYS LLEV GLY ALA ALA ALA ALA ALA ALA ALA ALA ALA A
$\bullet$ Molecule 9: Large ribosomal subunit protein uL13m
Chain LM: 99% ··
MET 22 22 22 22 22 22 22 22 22 22 22 22 22
$\bullet$ Molecule 10: Large ribosomal subunit protein uL14m
Chain LN: 79% 21%
MET PHE CLUY CLUY CLUY CLUY THR PHE PHE CVX CVX SER HIS CVX SER HIS CVX SER HIS CVX SER HIS SER CVX SER SER SER CVX SER SER SER SER SER SER SER SER SER SER
$\bullet$ Molecule 11: Large ribosomal subunit protein uL15m
Chain LO: 96% ··
MET ALA CLIY CLIN CLIN CLIN CLIN CLIN CLIN CLIN CLIN
$\bullet$ Molecule 12: Large ribosomal subunit protein uL16m
Chain LP: 88% 12%
MET TRP LEU ARG ARG ARA SER ARG VAL ARG CLEU CLEU CLEU ARG ARG CLEU ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG
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• Molecule 13	: Large ribosomal subunit protein bL17m	
Chain LQ:	86%	13%
MET ARG LEU SER VAL ALA ALA ALA ALA I9	TI10 P111 CUU ALA ALA ALA ALA ALA CUU ALA CUU CUU CUU CUU CUU CUU CUU CUU CUU CU	
• Molecule 14	: Mitochondrial ribosomal protein L18, isoform $CRA_{-}$	b
Chain LR:	80% .	18%
MET ALA LEU LEU ARG SER SER SER PHE TRP CLN	SER VAL ARG CYS ARG CYS ARG CYS CYS CIV CIV CIV CIV CIV CIV CIV CIV CIV CIV	
• Molecule 15	: Large ribosomal subunit protein bL19m	
Chain LS:	74% • 25	%
MET ALA ALA CYS CYS CYS TLE ALA ALA GLY HIS TRP	ALA ALA MET CLEV CLEV CLEV CLEV CLEV CLEV ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	PRO GLY ALA PHE GLN PRO PRO PRO PRO PRO PRO
VAL ILE VAL VAL ASP LYS HIS ARG PRO PRO VAL CUL	PR0 GLU ARC R96 P211 C277 S392 S392	
• Molecule 16	: Large ribosomal subunit protein bL20m	
Chain LT:	94%	6%
MET VAL PHE LEU THR ALA GLN CEU TRP LEU LAO		
• Molecule 17	: Large ribosomal subunit protein bL21m	
Chain LU:	77% •	22%
MET ALA ALA SER SER SER LEU THR THR LEU	GLY ALA ALA ALA ALA SER ALA ALA CVS SER ALA ALA ALA ALA ALA ALA ALA ALA SER ALA SER ALA SER ALA SER ALA SER ALA SER SER SER SER SER SER SER SER SER SER	LEU
• Molecule 18	: 39S ribosomal protein L22, mitochondrial	
Chain LV:	78%	22%
MET ALA ALA ALA ALA VAL LEU GLY GLN GLY GLY	ALA ALA TRP TRP ASN ASN ASN ASN ASN ASN ALA ALA CLY CLY CLY CLY SER TTR ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	L212
• Molecule 19	: Large ribosomal subunit protein uL23m	
Chain LW:	93%	7%





• Molecule 20: Large ribosomal subunit protein uL24m

Chain LX:	93%	6%
MET MET LEU LEU SER SER LEU LLEU LLEU LLE LLE LLE THR R3 SER R3 SER R3 SER R3 SER R3 SER R3 SER R3 SER R3 SER R3 SER R4 R5 R5 R5 R5 R5 R5 R5 R5 R5 R5 R5 LEU LEU LEU LEU LEU LEU LEU SER SER SER SER SER SER SER SER SER SER	T101         M102         D103         D127         M126         M127         B127         A140         G141         T153         Y216	
• Molecule 21: Large rib	osomal subunit protein b	L27m
Chain La:	74%	• 25%
MET SER SER VAL VAL LEU ALA ARG ARG ARG ARG ARG ARG CIEU CIEU	SER THR PRO PRO PRO PRO PRO PRO ALA ALA ALA ALA ALA ALA ALA CLYS SER CYS SER CYS SER CJY	<b>338</b> 11 14
• Molecule 22: Large rib	osomal subunit protein b	L28m
Chain Lb:	95%	5%
MET P2 2332 243 244 243 244 241 243 244 241 724 741 701 701 701 701 701 701 701 701 701 70	LYS ARG SER GLY GLN	
• Molecule 23: Large rib	osomal subunit protein u	L29m
Chain Lu:	70%	30%
MET ALA ALA ALA ALA ALA ALA ALA CYS CYS VAL SER SER ALA LEU LEU SER LEU	SER ARG ARG ARG CLU CLU VAL ALLA ALLA ALLA CYS CYS CYS CYS CYS CYS CYS CYS CYS CYS	LEU LEU LEU LEU LEU LEU PRO PRO PRO PRO PRO PRO CLN THR THR TTR TTR TTR TTR TTR TTR TTR TTR
ARC LYS D63 F236 F236 F236 F14 ALA ALA ALA ALA ALA ALA ALA CLU CLN LYS SER SER SER VAL		
• Molecule 24: Large rib	osomal subunit protein u	L30m
Chain Ld:	75%	25%
MET ALA GLY ILLE LEU VAL LEU VAL CLU GLN PRO PRO GLN ARG GLN THR	VAL THR LYR GLY GLY GLY GLY CVAL GLZ THR TRR TRR TRR ASP HIG K35 K35	GLN GLN LYS ALA HIS GLU SER SER
• Molecule 25: Large rib	osomal subunit protein b	L32m
Chain Lf:	57%	43%
MET ALA ALA ALA ALA ALA VAL VAL VAL VAL VAL	VAL LEU ASN TYR TYR TRP TRP GLU LEU LEU LEU CLEU CLEU CLEU CLEU CLEU	PHR PRO PRO PRO PRO PRO PRO GLY ALA ALA ALA ALA ALA ALA ALA ALA ALA A



ASP THR SER GLY SER LYS GLU ASN	SER LEU LEU LEU TILE RER MET AT9 GLN ASN	
• Molecule	e 26: Large ribosomal subunit protein bL33m	
Chain Lg:	80%	20%
MET PHE LEU SER ALA PHE PHE	ALA SER LYS SER KI4 LB5	
• Molecule	27: Large ribosomal subunit protein bL34m	
Chain Lh:	50%	50%
MET ALA VAL LEU LEU GLY SER LEU	LEU CLEU THR PRO SER ARG SER ALA ALA ALA CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	ALA ALA ARC GLY GLY H92 H92
• Molecule	28: Large ribosomal subunit protein bL35m	
Chain Li: '	51%	49%
MET ALA ALA SER SER ALA ALA ALA GLY	ALA ALA ARA ARA SER SER SER CULTE LEU ARU LEU ARU ARU ARU ARU ARU ARU ARU ARU ARU AR	THR GLY ARG PHE SER HIS THR THR PRO PRO PRO PRO PRO PRO PRO PRO PRO LEU
THR THR SER GLU ARG ASN LEU THR	CYS THR HIS SER VAL ILEU ARG ARG PRO PRO PRO PRO PRO PRO PRO PRO PRO PRO	
• Molecule	29: Large ribosomal subunit protein bL36m	
Chain Lj: '	37% 63%	
MET ALA ASN LEU PHE TLE ARG LYS	MET ASIN ASIN ASIN ASIN ASIN TTRE TTRE PRO ALA ALA ALA ALA ALA ALA ALA ALA ALA	PLU CLU CLU CLU CLU VAL ALA ALA ALA ALA ALA ALA ALA CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU
LEU PRO ALA LEU GLY F66 M103		
• Molecule	a 30: Large ribosomal subunit protein mL37	
Chain Lk:	93%	7%
MET ALA LEU SER GLY PRO ALA	ARG ARG ARG ALA ALA ALA ALA CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	
• Molecule	e 31: Large ribosomal subunit protein mL38	
Chain Ll:	93%	7%
MET ALA ALA PRO TRP ARG ALA	ALA LEU CYS CYS CYS CYS CYS ARG ARG ARG ARG ARG ALA ALA ALA VAL CUV CLV CLV CLV CLV CLV CLV CLV CLV CLV CL	
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• Molecule 32	2: Large ribosomal subunit protein mL39	
Chain Lm:	86%	13%
	◆ <mark>₽</mark>	
MET GLLU GLLU LEU MET MET GLY SER ALA	LEU LEU VULLEU VULLEU VULLEU VULLEU VULLEU VULLEU CLEAU CLEAU VILLEU VILLEU SERF SERF SERF SERF SERF SERF SERF SERF	NULL NULL NULL NULL NULL NULL NULL NULL
• Molecule 33	3: Large ribosomal subunit protein mL40	
Chain Ln:	47% • 52'	%
MET THR ALA SER VAL LEU ARG SER ILE SER SER	LEU LEU ARG ARG ARG ARG ARG CLY THR THR THR THR THR THR THR THR THR THR	MET ARG SER GLU PRO LEU PRO LYS LYS LYS LYS VAL ASP PRO LYS UYS
_		
ASP GLN GLU GLU CLYS CLU CLU LYS ARG	LIVE ARGE LEVE CLUYS CLUYS CLUYS CLUYS CLUYS CLUS CLUS CLUS CLUS CLUS CLUS CLUS CLU	ASN THR THR LYS VAL TYR THR THR CLN VAL GLN VAL CLN CLN CLN CLN CLN CLN CLN CLN CLN CL
• Molecule 34	4: Large ribosomal subunit protein mL41	
Chain Lo:	91%	9%
MET GLY GLY LEU LEU ALA ALA ALA ARG ARG CYS	LEU VAL AVAL AVAL AVAL AVAL AVAL B114 B115 H137	
• Molecule 35	5: Large ribosomal subunit protein mL42	
Chain Lp:	67% .	32%
MET ALA ALA ALA ALA ALA VAL TRP VAL MET	SER ARG ARG LLEU LLEU LLEU LLEU LLEU PRO ALA ALA ALA ALA ALA CYS CYS CYS CYS CYS CYS CYS CYS CYS ASN ASP ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN	CLU THR HIS HIS E97 E98 K99 K99 K99 K122 R142
• Molecule 36	5: Large ribosomal subunit protein mL43	
Chain Lq:	69%	31%
MET T2 ASP PRO ALA ALA ALA GLN GLN	ASP GLFU GLFU LEU ALA ALA ALA ALA ALA ALA ALA CLEU CLEU CLEU PRO PRO PRO PRO PRO PRO PRO PRO PRO PRO	THR SER ALA PRO PRO PRO PRO SER ALA SER SER SER CYS SER SER SER SER SER SER SER SER SER SE
VAL PRO ALA LEU THR THR VAL CYS SET ALA		
• Molecule 37	7: Large ribosomal subunit protein mL44	
Chain Lr:	83%	17%



#### THR ALA SER

• Molecule 38: Large ribosomal subunit protein mL45

Chain Ls:	70%	30%
MET ALA ALA PRO PRO GLN GLN CYS SER CYS	LLEU PHE ARC ARC GLY TRP GLY VAL LLEU VAL LLEU LLEU LLEU LLEU VAL ALA ALA ALA ALA ALA ALA ALA ALA ALA	THR LLYS LLYS ARG PHE PHE PHE CLU PHE CLU CLYS CLU SLU CLU SLU CLU CLU CLU CLU CLU CLU CLU CLU CLU C
ARG LYS LYS GLA GLA CHL TLE TLE PRO GLU GLU GLU	R96 197 898 SER LEU LEU LEU CLU CLU CLU CLU CLU CLU CLU CLU CLU CL	A117 S118 S121 1122 R123 A125 M202 M202 M202 M203 A12 A12 A12 A12 A12 A12 A12 A12 A12 A12
• Molecule 39:	Large ribosomal subunit protein	mL46
Chain Lt:	76%	• 22%
MET ALA ALA ALA ALA ALA VAL VAL THR THR LEU LEU LEU LEU	ALLA ALLA ALLA GLY TRP GLY ARG ARG GLU GLU CLEU ALA ALA ALA ALA ALA ALA	PALA PALA SER SER SER ASN ASN CLY CLY A103 A103 A103 A103 A103 A103 A103 A103
K132 A140 L205 F217 F217 GLN ALA MET	ARG THR CLU SER SER SER N249 P266 L227	
• Molecule 40:	Large ribosomal subunit protein	mL48
Chain Lv:	62%	38%
MET SER CLY THR THR LEU CLU CLU CVS CVS	ANNA ASN TLE TLE PHE CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN	VAL VAL GLY GLY GLY LEU LEU SER ARG FRO FRO PRO PRO PRO PRO PRO CLY CVX LYS CLY CVX CVX CVX CVX CVX CVX CVX CVX CVX CVX
V77 Le2 G33 C33 C33 C33 C33 C33 C33 ASP C138 ASP C138 C138	GLY SER LYSS LYSS LYSS PHE LYS PHE LYS ARG ARG CLY ALA ARG CLU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	2
• Molecule 41:	Large ribosomal subunit protein	mL49
Chain Lw:	80%	20%
MET ALA ALA THR MET PHE ARG ALA LEU CEU	THR THR THR THR THR CLY VAL ARG GLN ARG CLY CYS GLN THR GLN GLN FNO GLN FNO GLN FNO	F 166
• Molecule 42:	Large ribosomal subunit protein i	nL50
Chain Lx:	70%	30%
MET ALA ALA ALA ARG SER VAL SER SER CLY THR THR	VAL VAL THR THR THR THR THR VAL VAL VAL CAL PRO CAL PRO CAL THR PRO CAL THR PRO CAL THR PRO CAL CAL CAL CAL CAL PRO CAL CAL CAL CAL CAL CAL CAL CAL CAL CAL	VAL VAL VAL THR VAL THR VAL GLU GLU GLU GLU GLU GLU GLU GLU GLU GL
• Molecule 43:	Large ribosomal subunit protein	mL51



Chain Ly:	76%	24%	
MET ALA GLY GLY ASN LEU LEU SER SER GLY	ALA ARG ARG ARG ARG ARG VAL TRP PRO CYS SER PRO CYS CYS ARG CYS CYS ARG CYS ARG CYS ARG ARG ARG ARG ARG ARG ARG ARG ARD ASP ARD ARD ARD ARD ARD ARD ARD ARD ARD ARD		
• Molecule	44: 39S ribosomal protein L52, mitochondrial		
Chain Lz:	73% •	25%	
MET ALA ALA LEU VAL VAL VAL LEU	PHE THR GLY VAL ARG ARG ARG ARG ARG ARG ARG ARG ARG ARA ALA ALA ALA ALA ALA ALA ALA ALA ALA		
• Molecule	45: Large ribosomal subunit protein mL53		
Chain L3:	84%	• 14%	
MET A2 L10 Q15 R97	ASP ALA ALA CLY SER GLY PRO ASP ASP ASP ASP ASP ASP ASP		
• Molecule	46: Large ribosomal subunit protein mL54		
Chain L4:	• 57% •	40%	
MET ALA LYS LYS ARG LEU PHE GLY	ALA THR ARG ARG ARG ARA ALA ALA ALA ALA ALA ALA ALA ALA ALA	LYS SER GLY LYS LYAL VAL TAR TAR CLY GLU GLO CLO	T63
Y78 4 490 4 E91 4 E98	M99 110 110 110 110 100 110 100 100 100 1		
• Molecule	47: Large ribosomal subunit protein mL55		
Chain L5:	<b>34%</b> • 65%		
MET ALA ALA VAL CLY SER LEU LEU	GLY ARG LEU ARG GLM SER SER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	SER PRO GLU GLU GLU GLU ARG ARG ARG ARG ARG CLU ARG CLU GLU GLN	LEU
GLN SER ARG LYS GLU GLU GLU GLU	LEU SER ASP ASP ASP HIS CLU CLU CLU CLU CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN		
• Molecule	48: Large ribosomal subunit protein mL63		
Chain L6:	92%	8%	
MET PHE LEU ALA LEU LEU TRP	80 00 00		
• Molecule	49: Large ribosomal subunit protein mL62		
Chain L7:	60% • ∞orldwide	38%	

ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA
ASR ASR ASR ASR ASR ASR ASR ASR ASR ASR
Molecule 50: Large ribosomal subunit protein mL64
Chain L8: 58% 42%
ALA ALA ALA ALA ALA ALA ALA ALA ALA ALA
LITE LITE ARG CIU CIU CIU CIU CIU CIU CIU CIU CIU CIU
Molecule 51: Large ribosomal subunit protein mL66
Chain SR: 74% 26%
ALA ALA ALA ALA ALA ALA ALA ALA ALA CTR CTR CTR ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
Molecule 52: Large ribosomal subunit protein mL65
Shain SI: 84% 16%
Cualu SI: 84% 16%
Cualu SI:     84%     16%       Indu     16%     16%       Indu     16% <tr< td=""></tr<>
Amin Sr:     84%     16%       Image: Space of the s
Chain Sr:     84%     16%       IIII Sr:     84%     16%       IIII SI:     84%     16%       IIII SI:     84%     16%
Image: String
Chain Sr: 84%     141
Stand St:       84%       16%         IIII St:       84%       IIIII Still State
211111 SI:       84%       16%         211112 SE # # # # # # # # # # # # # # # # # #

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• Molecule 55	: Small ribosomal subunit protein u	ıS5m
Chain SE:	74%	26%
MET ALA THR ALA ALA VAL VAL VAL CVS	PLEU PLEU VAL CLVS SER CLV ALA ALA ALA ALA ALA ALA ALA SER SER SER SER SER SER SER SER SER SER	ILLE LLEU ALLA ALLA ALLA VALL VALL LLEU ALY ALY ALY ALY ALY ALA ALY ALY ALA ALY ALY
ALA SER LEU SER SER ALA ALA CLU CLU CLU	CYS CYS SER SER SER SER HIS HIS CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN	ARG CLY CLYS CLYS CLYS CLYS CLYS CLYS ARG ARG CLYS CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL35 CL26 CL26 CL26 CL26 CL26 CL26 CL26 CL26
ASN GLY ALA V154 E163 E166 E166 K167	A1 70	
• Molecule 56	: Small ribosomal subunit protein b	oS6m
Chain SF:	98%	
MET P2 R123 LYS LYS		
• Molecule 57	: Small ribosomal subunit protein u	ıS7m
Chain SG:	82%	• 17%
MET ALA ALA PRO PRO ALA VAL LYS VAL ALA ARG	CLY CLY SER SER CLY CLY CLU LLU ALA ALA ALA ALA CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	K53 PR0 VAL CLU CLU CLU CLU CLU CLU CLU CLU CLU CL
• Molecule 58	: Small ribosomal subunit protein u	ıS9m
Chain SI:	76%	• 23%
MET ALA ALA ALA PRO PRO CYS VAL SER TYR GLY GLY	ALA VAL SER TYR SER LEU LEU LEU LEU ARG GLY SER CLY SER CLY SER CLY SER LEU CLY CLY CLY TRP LIYU ALA	GLU GLU GLU GLN THR ASN VAL ARG CLN CLLU CLLU ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG
VAL PRO SER SER LYS ARG GLU THR THR	E71 G176 SER HIS HIS HIS CLN CLN CLN CLN CLN FILE CLN THR THR THR ARG ASP ASP ASP ASP ASP ASP CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN	K275 K395 ARG
• Molecule 59	: Small ribosomal subunit protein u	ıS10m
Chain SJ:	59%	• 39%
MET ALA ALA ALA ALA THR PHE 73LY ALA ALA	CYS CARG ARG CLLV TRP CLLU CLLU CLLU CLLU CLLU CLLU CLLU CLL	LEU LEU MAEN MAEN MAEN MAEN MAEN MAEN MAEN MAEN
P61 S66 R75 1126 A169	E182 HLS HLS HLS HLS HLS FLD TLF HLS CUU CLU CLU CLU CLU CLU CLU CLU CLU CLU	

• Molecule 60: Small ribosomal subunit protein uS11m



Chain SK:	70%	• 30%
MET GLN GLN ALA VAL ARG ASN GLY SER SER ARG	LEU LEU ARG SER THR THR PTRP PTRP PTRP ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	ALA ALA ALA ALA CLYS CLV CLYS CLV CLV GLN GLU ALA ALA ALA ALA ALA ALA ALA ALA ALA A
<mark>q141</mark> L194		
• Molecule 61:	Small ribosomal subunit protein uS12m	
Chain SL:	78%	• 22%
MET SER TRP TRP SER SER GLY LEU LEU LEU ASN	TTRE TTRE CYS CYS CYS CYS CYS PRO PRO PRO PRO PRO ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	
• Molecule 62:	Small ribosomal subunit protein uS14m	
Chain SN:	77%	• 21%
MET ALA ALA PHE MET LEU SER SER LEU ARO	THR PHE MET MET MET MET MET ALL CLV CLV ALL ALL ALL ALL ALL ALL ALL ALL ALL A	
• Molecule 63:	Small ribosomal subunit protein uS15m	
Chain SO:	64%	36%
Chain SO:	64% ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG	ARG SER LEU LEU LEU LEU LEU ARA ARA CLN ARA CLN ARA CLN ARA CLN ARA CLN ARA CLN ARA
Chain SO: Valor	CALA ALLA ALLA ALLA ALLA ALLA ALLA ALLA	ARG LEU LEU LEU LEU LEU ALA ALA ALA ALA ARG CLY VAL TYR ARG CLY ARG CLY SC ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
Chain SO:	64%	ARG LEU LEU LEU LEU LEU ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
Chain SO:	64% SH SWEEN STREET ST	36% ARG D D N V V V V V V V V V V V V V V V V V
Chain SO: Chain SO: Chain SP: Chain SP: Chain SP:	64% <b>Solution</b> <b>Solution</b> <b>Solution</b> <b>Small ribosomal subunit protein bS16m</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Street</b> <b>Str</b>	36% MRG LEGUN ALA ARG LINS ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG
Chain SO: Chain SO: Chain SP: Molecule 64: Chain SP: Molecule 65:	64% Solution of the state of t	36% WW C THE
Chain SO: Chain SO: Chain SP: Chain SP: Molecule 64: Chain SP: Chain SQ:	64%	36% 38 8 8 9 9 9 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Chain SO: Chain SO: Chain SO: Chain SP: Chain SP: Chain SQ: Chain SQ: Chain SQ:	64%         8         <	36% 98 8 8 9 9 9 1 1 1 1 1 8 8 9 8 1 1 1 1 1

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Chain SS:	71%	28%
MET ALA ALA SER VAL LEU ASN THR	VAL VAL ARG ARG ARG PEU PEU DEU ARG ARG ARG ARG ARG ARG ARG CTS THR THR ARA CTS CTS CTS CTS CTS CTS CTS CTS CTS CTS	LEU SER SER VAL PAL TLE FRA RAS RAS RAS RAS RAS RAS RAS RAS RAS R
PRO PRO ARG PRO PRO GLU ALA	SER SER THR CLN THR CLN CLN CLN SER ALA LEU	
• Molecule	67: Small ribosomal subunit protein bS18m	
Chain ST:	68%	32%
MET ALA ALA VAL VAL ALA VAL VAL VAL	GLY GLY CLEU GLY GLY CLEU ARG CLY ARG CLY ALA ALA ALA ALA ALA ALA ALA ALA ALA A	GLN CALN VAL SER SER N47 E142 E142
• Molecule	68: Small ribosomal subunit protein bS21m	
Chain SW:	98%	
MET A2 M13 C87		
• Molecule	69: Small ribosomal subunit protein $mS22$	
Chain SX:	7%	18%
MET ALA PRO LEU GLY THR VAL	LEU THR SER SER LEU LEU LEU ARG SER SER ARG CVAL CVAL CVAL CVAL CVAL CVAL CVAL CVAL	CYS PHE CLU CLU CLU CLU CLU CLU ALZ ALZ ALZ ALZ ALZ ALZ ALZ ALZ SER CLU SER SER SER SER SER SER SER SER SER SER
GLY SER PRO CLU THR K66 K67	P68 M71 N277 N277 N277 N277 P309 P310 P310 A314 A317 K318 A321 A321 A321 A321 A322 C316 A322 A322 A323 C336 A322 A322 A322 A321 A322 A322 A322 A322	H355 3357 A358 A358 A359 A359 A359
• Molecule	70: Small ribosomal subunit protein mS23	
Chain SY:	• 66% •	34%
MET A2 L109 G110 E111 T112	L125 L125 L125 CLU CLU CLU CLU CLU CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU ARG CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	ARG PRO GLN THR ALA ALA ALA ALA CLU CLU CLU CLU CLU CLU CLU CLU CLU CASP CLN CASP CLN CASP CLN
LEU GLU ALA PRO ALA ASP GLN SER	LYS LEU PRO PRO	
• Molecule	71: Small ribosomal subunit protein $mS25$	
Chain Sa:	92%	• 6%
MET P2 N33 Q122 I140	TTS TTS ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	
• Molecule	72: Small ribosomal subunit protein mS26	



Chain Sb:	84%		16%	1
MET NET ARG ALA ALA SER SER SER CLV GLV THR THR THR THR THR ARC PRO	ARG ARG PRU PRU LEU LEU PRO ARG ARG ARG ARG ARG ARG ARG	R199 GLN ARG ARG SER SER		
• Molecule 73: Small	ribosomal subunit p	protein mS27		
Chain Sc:	93	%	7%	
MET ALA ALA ALA SER ILE VAL ARG ARG CLV CLU CLU CLU CLU VAL VAL	VAL LEU PRO GLN CLN CLN CLN SER PRO CLY TYR TYR TYR TEU LI30	S31 S32 A33 H38 A42 €174 A191	L225 P270 E271 S292 A293 A293 D294 C295	A296 S297 E298 E299 Q300 Q301 Q302 N303
D304 E305 D306 D306 Q306 Q308 Q308 C309 C309 C309 C309 C309 C309 C309 C309	K361			
• Molecule 74: Small	ribosomal subunit p	protein bS1m		
Chain Sd:	50%	• 4	.8%	I
MET ALA ALA LEU CYS CYS CYS ARG ARG ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	LEU ARG VAL PHE PHE PHE PHE PRO PRO PRO PRO PRO CLY GLY	THR CLU SER GLV SER CLU SER SER ASN ALA LYS CLU	PRO LYS THR ARG ALA GLY CLY PHE SER ALA SER ALA	GLU ARG HIS SER
CLU LEU LEU LEU CLN VAL CLN PRU CLV CLV CLV SER SER ASN	V77 E109 N110 L144 C173 C173 C173 C173 C173 C173 C173 C173	LVS CLU CLU CLU CLU CLU CLU CLV		
• Molecule 75: Small	ribosomal subunit p	protein mS29		
Chain Se:	87%		• 12%	
MET MET LEU LEU LYS CLY CLY CLEU LEU LEU LEU LEU LEU LEU LEU LEU LEU	ASP PRO GLY GLY HES PHE HES CLN ALA ALA ALA ALA	SER LLE ALA ALA ALA ALA HIS LEU ASP CLA VAL VAL CLA CLA SER	PRO ARG ALA ILA S49 L31 L31 L398 L398	
• Molecule 76: Small	ribosomal subunit p	protein mS31		
Chain Sg: 27%		73%		I
MET PHE PRO ARG ARG SER FHE LEU LEU LEU LEU LEU CEU SER ARG	HIS PRO LEU SER SER SER PRO GLU GLU GLU ALA ALA ALA	ILLE MET LEU LEU LEU THR VAL ARG GLY THR VAL ARG ARG	SER SER ALA ALA LEU LEU LEU ARG THR LYS ASN ASN ASN	GLN ARG PHE
GLY THR ASN SER ASN VAL TLE CYS SER LYS SER LYS GLN SER VAL	THR GLU GLU GLU GLU SER CLU SER GLU SER GLU SER SER	GLU LYS ASN ASN THR LYS LYS LYS LYS LZU LEU LEU LEU LEU LEU LYS	GLY MET LYS LYS VAL GLU GLU LEU SER THR SER ASN VAL ARG	THR THR LYS PRO
PRO LYS LYS ARG ARG PRO LEU LEU LLU GLU GLY CLU LEU	ARG ARG ARG ALA THR GLU FYS CYS CYS CYS CYS CYS CYS CYS CYS	LEU SER PRO GLU GLU CLEU ALA ALA ALA ALA ALA ALA ALA ALA ALA ASP	SER LEU PRO PHE ASP LYS CLN THR THR LYS SER GLU	LEU LEU GLN
LEU CLIN CLIN CLIN CLIN CLIU CLUU CLUU CLIU CLIN ARC ARC ARC ARC	PRO LYS LYS SER SER SER SER ASS MET NEE NEE VAL	ALA ARG SER ALA ALA ALA ALA ALA ARG SER SER SER SER CUU	ARG ILE CLM PHE ASP GLU GLU GLU GLU ASP ASP ASN TYR ASP PRO	GLY GLU GLN
THR ASP ASP ASP LEU LYS LYS ASN ASN THE THE THR CLEU LEU	ASN TLLE PHE ASP ASP ASP ALA LYS CUU PRO CUU	ASP ASP THR THR PRO PRO P2776 V2280 V2280 V2280 V2280 V2280	A283 K284 A287 T288 L294	L V385 L V385 A SP A SP L LEU L LEU L LEU L LEU L LEU SER SER

WORLDWIDE PROTEIN DATA BANK

#### ASN ILE GLN PHE ASN

 $\bullet$  Molecule 77: Small ribosomal subunit protein mS33

Chain Si:	<b>79%</b> • 19%	_
MET SER SER LEU K46 K46 L68	G30 LYS CIYS CIYS CIYS LYS GLY GLY ALA ALA ALA ALA LYS LYS LYS	
• Molecule 78	8: Small ribosomal subunit protein mS34	
Chain Sj:	91%	8%
MET ALA ARG LYS LYS LYS LAS L68	M135 PR0 ALA PR0 ALA PR0 ALA ALA ALA AL2 AL2 CLV THR PR0 VAL	
• Molecule 79	$\theta$ : Small ribosomal subunit protein mS35	
Chain Sk:	79% 21%	
MET ALA ALA ALA ALA LEU PRO PRO TRP LEU	SER LEU GLU ARG ARG ARG ARG ARG ARA PRO PRO PRO PRO PRO PRO PRO PRO PRO PRO	W66 B138 B140
E245		
• Molecule 80	): Small ribosomal subunit protein $mS37$	
Chain Sm:	96%	•••
MET A2 A37 A54 A54 C55 C55	End of the second secon	
• Molecule 81	1: Small ribosomal subunit protein mS38	
Chain Sn:	35% 65%	
MET LEU LEU GLY ARG LEU SER SER CLN	LEU ARG ARG ARG ARG CLY ALA ALA ALA ALA PRO PRO CYS GLY VAL LEU VAL LEU VAL LEU VAL LEU VAL LEU VAL CYS ARG CYS ARG CYS ARG CYS ARG ALA ARA CILY VAL CILY VAL CILY VAL CILY VAL CILY PRO CILY VAL CILY PRO CILY VAL CILY PRO CILY VAL CILY PRO CILNO CI	ANG LYS GLY ALA GLN LEU GLU LEU
GLU GLU MET LEU VAL PRO PRO ARG LYS MET SER	VAL VAL PRO CLU PRO CLU PRO CLU CLU CLU PRO ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	GLN GLY GLY GLU GLY VAL ALA
ASP ALA PRO GLN ILE GLN CYS K128 K128	ARG GLY LYS	

 $\bullet$  Molecule 82: Small ribosomal subunit protein mS39





• Molecule 83: 12s rRNA



#### C6885 C730 C880 C729 C730 C880 C890 C800 C890 C800 C6801 C8801 C731 C731 C800 C801 C600 C801 C8801 C731 C731 C600 C600 C600 C600 C891 A736 C600 C601 C600 C891 A736 C601 C600 C891 A745 C601 C600 A910 A743 C614 C601 A911 A745 C615 C601 A917 A745 C615 C614 A917 A745 C615 C616 A917 A745 C615 C616 A917 A745 C615 C616 A917 A745 C615 C616 A925 A760 U773 C614 A955 A760 U773 C643 A955 A783 A637 C643 A955 A783 C643 C643 A955 A783 C643 C643 A955 A



# 4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	83274	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE	Depositor
	CORRECTION; Relion	
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{\AA}^2)$	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 $(6k \ge 4k)$	Depositor
Maximum map value	0.065	Depositor
Minimum map value	-0.012	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	446.88, 446.88, 446.88	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.064, 1.064, 1.064	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: T1C, ZN, GDP, MG

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).

Mal	Chain	Bo	ond lengths	I	Bond angles
WIOI	Ullalli	RMSZ	# Z  > 5	RMSZ	# Z  > 5
1	L1	0.58	0/35628	0.98	88/55448~(0.2%)
2	L2	0.30	0/1328	0.98	0/2056
3	LB	0.34	0/1888	0.62	0/2538
4	LC	0.34	0/2462	0.57	1/3340~(0.0%)
5	LD	0.36	0/2071	0.65	1/2817~(0.0%)
6	LI	0.37	0/798	0.71	1/1073~(0.1%)
7	LJ	0.34	0/1308	0.82	1/1761~(0.1%)
8	LK	0.32	0/1340	0.57	0/1802
9	LM	0.35	0/1495	0.60	1/2029~(0.0%)
10	LN	0.31	0/904	0.55	0/1218
11	LO	0.37	0/2359	0.62	0/3185
12	LP	0.35	0/1826	0.62	0/2458
13	LQ	0.34	0/1269	0.63	0/1708
14	LR	0.35	1/1215~(0.1%)	0.62	1/1645~(0.1%)
15	LS	0.32	0/1863	0.61	1/2509~(0.0%)
16	LT	0.39	0/1174	0.62	0/1572
17	LU	0.36	0/1311	0.68	2/1778~(0.1%)
18	LV	0.36	0/1402	0.57	0/1886
19	LW	0.37	0/1217	0.62	0/1644
20	LX	0.33	0/1697	0.65	0/2302
21	La	0.39	0/893	0.61	1/1204~(0.1%)
22	Lb	0.31	0/2090	0.54	0/2825
23	Lu	0.35	0/1552	0.61	0/2079
24	Ld	0.35	0/1003	0.56	0/1354
25	Lf	0.32	0/895	0.57	0/1201
26	Lg	0.32	0/438	0.66	0/583
27	Lh	0.36	0/382	0.61	0/507
28	Li	0.35	0/852	0.60	0/1136
29	Lj	0.34	0/349	0.63	0/461
30	Lk	0.31	0/3305	0.56	0/4502
31	Ll	0.34	0/3042	0.61	0/4140
32	Lm	0.31	0/2439	0.57	$\overline{1/3299}~(0.0\%)$



Mal	Chain	Bo	ond lengths	E	Bond angles
IVI01	Chain	RMSZ	# Z  > 5	RMSZ	# Z  > 5
33	Ln	0.34	0/855	0.66	1/1152~(0.1%)
34	Lo	0.34	0/1025	0.56	0/1379
35	Lp	0.35	0/839	0.58	0/1136
36	Lq	0.36	0/1202	0.65	0/1626
37	Lr	0.33	0/2264	0.57	0/3059
38	Ls	0.31	0/1800	0.63	1/2436~(0.0%)
39	Lt	0.29	0/1797	0.63	1/2422~(0.0%)
40	Lv	0.32	0/1051	0.62	0/1422
41	Lw	0.37	0/1134	0.63	0/1547
42	Lx	0.35	0/918	0.63	0/1249
43	Ly	0.37	0/849	0.61	0/1135
44	Lz	0.34	0/747	0.64	0/1005
45	L3	0.31	0/754	0.71	1/1017~(0.1%)
46	L4	0.32	0/722	0.75	3/978~(0.3%)
47	L5	0.29	0/379	0.82	1/510~(0.2%)
48	L6	0.35	0/818	0.61	0/1097
49	L7	0.37	0/1071	0.75	3/1433~(0.2%)
50	L8	0.31	0/1107	0.62	0/1498
51	SR	0.34	0/1238	0.63	0/1676
52	Sf	0.33	0/3114	0.58	0/4225
53	SB	0.39	0/1811	0.68	0/2451
54	SZ	0.35	0/1112	0.68	0/1505
55	SE	0.32	0/2590	0.63	1/3477~(0.0%)
56	SF	0.32	0/989	0.67	0/1335
57	SG	0.29	0/1708	0.61	2/2291~(0.1%)
58	SI	0.30	0/2555	0.58	0/3424
59	SJ	0.35	0/1019	0.78	1/1379~(0.1%)
60	SK	0.32	0/1031	0.60	0/1390
61	$\operatorname{SL}$	0.33	0/854	0.67	0/1148
62	SN	0.31	0/879	0.72	1/1182~(0.1%)
63	SO	0.33	0/1406	0.60	0/1878
64	SP	0.34	0/941	0.70	0/1265
65	SQ	0.29	0/864	0.55	0/1169
66	$\mathbf{SS}$	0.29	0/1580	0.61	0/2150
67	ST	0.36	0/791	0.65	0/1062
68	SW	0.39	$\overline{0/752}$	0.66	$1/10\overline{01} \ (0.1\%)$
69	SX	0.31	0/2452	0.62	0/3310
70	SY	0.34	0/1069	0.67	1/1441 (0.1%)
71	Sa	0.30	0/1361	0.59	$1/1829 \ \overline{(0.1\%)}$
72	Sb	0.27	0/1474	0.60	0/1976
73	Sc	$0.2\overline{7}$	$0/317\overline{7}$	0.53	$1/4292 \ (0.0\%)$
74	Sd	0.34	0/778	0.77	1/1048~(0.1%)
75	Se	0.28	0/2908	0.56	$1/3936 \ (0.0\%)$



Mal	Chain	Bo	ond lengths	I	Bond angles
INIOI	Unam	RMSZ	# Z  > 5	RMSZ	# Z  > 5
76	$\operatorname{Sg}$	0.29	0/931	0.60	1/1259~(0.1%)
77	Si	0.31	0/748	0.66	1/1000~(0.1%)
78	Sj	0.29	0/1723	0.69	2/2334~(0.1%)
79	Sk	0.38	1/2113~(0.0%)	0.68	0/2863
80	$\operatorname{Sm}$	0.44	1/939~(0.1%)	0.77	2/1256~(0.2%)
81	Sn	0.34	0/621	0.65	0/820
82	So	0.29	0/5093	0.57	2/6891~(0.0%)
83	S1	0.39	0/22053	0.98	66/34324~(0.2%)
All	All	0.40	3/173801~(0.0%)	0.77	195/246748~(0.1%)

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
7	LJ	0	1
8	LK	0	1
11	LO	0	1
13	LQ	0	1
18	LV	0	1
31	Ll	0	1
39	$\operatorname{Lt}$	0	1
46	L4	0	1
47	L5	0	1
49	L7	0	1
55	SE	0	1
59	SJ	0	1
79	Sk	0	1
All	All	0	13

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms		Observed(Å)	Ideal(Å)
80	Sm	55	CYS	CB-SG	-8.35	1.68	1.82
79	Sk	66	TRP	CB-CG	-6.15	1.39	1.50
14	LR	147	PRO	C-N	-5.52	1.21	1.34

The worst 5 of 195 bond angle outliers are listed below:

Mol	Chain	$\mathbf{Res}$	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
83	S1	118	С	C2-N1-C1'	9.86	129.64	118.80



Mol	Chain	Res	Type	Atoms	$\mathbf{Z}$	$Observed(^{o})$	$Ideal(^{o})$
17	LU	121	ASP	CB-CG-OD1	8.53	125.98	118.30
1	L1	1542	С	C2-N1-C1'	8.47	128.11	118.80
80	Sm	55	CYS	CA-CB-SG	8.25	128.85	114.00
49	L7	75	ARG	CG-CD-NE	-8.12	94.75	111.80

There are no chirality outliers.

5 of 13 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
7	LJ	163	GLU	Peptide
8	LK	60	ILE	Peptide
11	LO	39	ARG	Sidechain
13	LQ	110	ILE	Peptide
18	LV	129	VAL	Peptide

### 5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

### 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	Perce	ntiles
3	LB	235/305~(77%)	228~(97%)	6 (3%)	1 (0%)	34	66
4	LC	302/348~(87%)	283 (94%)	19 (6%)	0	100	100
5	LD	248/311~(80%)	235~(95%)	13 (5%)	0	100	100
6	LI	93/267~(35%)	87 (94%)	6 (6%)	0	100	100
7	LJ	154/261~(59%)	142 (92%)	12 (8%)	0	100	100
8	LK	173/192~(90%)	166 (96%)	7 (4%)	0	100	100
9	LM	175/178~(98%)	163 (93%)	12 (7%)	0	100	100



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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
10	LN	113/145~(78%)	109~(96%)	4 (4%)	0	100	100
11	LO	285/296~(96%)	274~(96%)	11 (4%)	0	100	100
12	LP	219/251~(87%)	213~(97%)	6 (3%)	0	100	100
13	LQ	150/175~(86%)	139~(93%)	10 (7%)	1 (1%)	22	54
14	LR	144/179~(80%)	142 (99%)	2 (1%)	0	100	100
15	LS	217/292~(74%)	207~(95%)	10 (5%)	0	100	100
16	LT	138/149~(93%)	135~(98%)	3 (2%)	0	100	100
17	LU	158/205~(77%)	154 (98%)	4 (2%)	0	100	100
18	LV	164/212~(77%)	157~(96%)	7 (4%)	0	100	100
19	LW	139/153~(91%)	136~(98%)	3 (2%)	0	100	100
20	LX	200/216~(93%)	191 (96%)	9 (4%)	0	100	100
21	La	109/148~(74%)	105~(96%)	4 (4%)	0	100	100
22	Lb	241/256~(94%)	233~(97%)	8 (3%)	0	100	100
23	Lu	174/250~(70%)	171 (98%)	3 (2%)	0	100	100
24	Ld	118/161~(73%)	112 (95%)	6 (5%)	0	100	100
25	Lf	106/188~(56%)	102 (96%)	4 (4%)	0	100	100
26	Lg	50/65~(77%)	49 (98%)	1 (2%)	0	100	100
27	Lh	44/92~(48%)	43 (98%)	1 (2%)	0	100	100
28	Li	93/188~(50%)	89~(96%)	4 (4%)	0	100	100
29	Lj	36/103~(35%)	35~(97%)	1 (3%)	0	100	100
30	Lk	392/423~(93%)	378~(96%)	14 (4%)	0	100	100
31	Ll	352/380~(93%)	328~(93%)	24 (7%)	0	100	100
32	Lm	291/338~(86%)	277~(95%)	14 (5%)	0	100	100
33	Ln	97/206~(47%)	85~(88%)	12 (12%)	0	100	100
34	Lo	122/137~(89%)	118 (97%)	4 (3%)	0	100	100
35	Lp	93/142~(66%)	88~(95%)	5 (5%)	0	100	100
36	Lq	146/215~(68%)	135 (92%)	11 (8%)	0	100	100
37	Lr	$271/332$ ( $\overline{82\%}$ )	266 (98%)	5 (2%)	0	100	100
38	Ls	210/306~(69%)	203~(97%)	7 (3%)	0	100	100
39	Lt	211/279 (76%)	189 (90%)	21 (10%)	1 (0%)	29	61
40	Lv	125/212~(59%)	121 (97%)	4 (3%)	0	100	100



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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
41	Lw	130/166~(78%)	124 (95%)	6 (5%)	0	100	100
42	Lx	108/158~(68%)	105 (97%)	3(3%)	0	100	100
43	Ly	95/128~(74%)	90 (95%)	5 (5%)	0	100	100
44	Lz	90/123~(73%)	85 (94%)	5~(6%)	0	100	100
45	L3	94/112~(84%)	81 (86%)	13 (14%)	0	100	100
46	L4	81/138~(59%)	75 (93%)	6 (7%)	0	100	100
47	L5	43/128~(34%)	38 (88%)	5 (12%)	0	100	100
48	L6	92/102~(90%)	91 (99%)	1 (1%)	0	100	100
49	L7	119/206~(58%)	114 (96%)	4 (3%)	1 (1%)	19	51
50	L8	126/222~(57%)	125 (99%)	1 (1%)	0	100	100
51	SR	140/196~(71%)	135 (96%)	5 (4%)	0	100	100
52	Sf	366/439~(83%)	348 (95%)	16 (4%)	2 (0%)	29	61
53	SB	215/296~(73%)	207 (96%)	8 (4%)	0	100	100
54	SZ	130/167~(78%)	115 (88%)	15 (12%)	0	100	100
55	SE	314/430~(73%)	293 (93%)	21 (7%)	0	100	100
56	SF	120/125~(96%)	116 (97%)	4 (3%)	0	100	100
57	SG	197/242~(81%)	193 (98%)	4 (2%)	0	100	100
58	SI	300/396~(76%)	274 (91%)	26 (9%)	0	100	100
59	SJ	120/201~(60%)	105 (88%)	15 (12%)	0	100	100
60	SK	134/194~(69%)	128 (96%)	6 (4%)	0	100	100
61	SL	106/138~(77%)	92 (87%)	13 (12%)	1 (1%)	17	48
62	SN	99/128~(77%)	92 (93%)	7 (7%)	0	100	100
63	SO	162/257~(63%)	155 (96%)	7 (4%)	0	100	100
64	SP	114/137~(83%)	109 (96%)	5 (4%)	0	100	100
65	SQ	105/130~(81%)	96 (91%)	9 (9%)	0	100	100
66	SS	183/258~(71%)	165 (90%)	18 (10%)	0	100	100
67	ST	94/142~(66%)	89 (95%)	5 (5%)	0	100	100
68	SW	84/87~(97%)	82 (98%)	2 (2%)	0	100	100
69	SX	293/360~(81%)	281 (96%)	12 (4%)	0	100	100
70	SY	$\overline{124/190}~(65\%)$	119 (96%)	5 (4%)	0	100	100
71	Sa	160/173~(92%)	149 (93%)	11 (7%)	0	100	100



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
72	Sb	171/205~(83%)	167~(98%)	4 (2%)	0	100	100
73	Sc	383/414~(92%)	374 (98%)	9 (2%)	0	100	100
74	Sd	95/187~(51%)	87 (92%)	7 (7%)	1 (1%)	14	45
75	Se	348/398~(87%)	332~(95%)	16 (5%)	0	100	100
76	Sg	106/395~(27%)	98~(92%)	8 (8%)	0	100	100
77	Si	84/106~(79%)	82~(98%)	2 (2%)	0	100	100
78	Sj	197/218~(90%)	176 (89%)	21 (11%)	0	100	100
79	Sk	252/323~(78%)	223 (88%)	29 (12%)	0	100	100
80	Sm	114/118~(97%)	107 (94%)	7 (6%)	0	100	100
81	Sn	67/199~(34%)	63 (94%)	4 (6%)	0	100	100
82	So	614/689~(89%)	594 (97%)	20 (3%)	0	100	100
All	All	13557/17977~(75%)	12862 (95%)	687 (5%)	8 (0%)	54	81

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	$\mathbf{Res}$	Type
39	$\operatorname{Lt}$	266	PRO
49	L7	190	GLN
52	Sf	250	PHE
61	SL	72	LYS
74	Sd	109	GLU

#### 5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent side chain 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	Perce	ntiles
3	LB	191/245~(78%)	190 (100%)	1 (0%)	88	93
4	LC	258/290~(89%)	258 (100%)	0	100	100
5	LD	217/262~(83%)	217~(100%)	0	100	100
6	LI	86/228~(38%)	86 (100%)	0	100	100
7	LJ	145/232~(62%)	145 (100%)	0	100	100



Mol	Chain	Analysed	Rotameric	Outliers	Perce	ntiles
8	LK	137/150~(91%)	137~(100%)	0	100	100
9	LM	155/156~(99%)	155~(100%)	0	100	100
10	LN	98/124~(79%)	98~(100%)	0	100	100
11	LO	245/249~(98%)	244 (100%)	1 (0%)	91	95
12	LP	188/211 (89%)	188 (100%)	0	100	100
13	LQ	133/150~(89%)	133 (100%)	0	100	100
14	LR	128/154~(83%)	128 (100%)	0	100	100
15	LS	201/256~(78%)	199 (99%)	2 (1%)	76	86
16	LT	118/126~(94%)	118 (100%)	0	100	100
17	LU	145/180~(81%)	144 (99%)	1 (1%)	84	90
18	LV	146/182~(80%)	146 (100%)	0	100	100
19	LW	128/135~(95%)	128 (100%)	0	100	100
20	LX	180/191~(94%)	179~(99%)	1 (1%)	86	91
21	La	91/119~(76%)	91 (100%)	0	100	100
22	Lb	219/229~(96%)	219 (100%)	0	100	100
23	Lu	159/223~(71%)	159 (100%)	0	100	100
24	Ld	111/147~(76%)	111 (100%)	0	100	100
25	Lf	97/164~(59%)	97 (100%)	0	100	100
26	Lg	49/60~(82%)	49 (100%)	0	100	100
27	Lh	40/72~(56%)	40 (100%)	0	100	100
28	Li	88/166~(53%)	88 (100%)	0	100	100
29	Lj	37/89~(42%)	37 (100%)	0	100	100
30	Lk	353/368~(96%)	353 (100%)	0	100	100
31	Ll	313/332~(94%)	313 (100%)	0	100	100
32	Lm	269/303~(89%)	269 (100%)	0	100	100
33	Ln	91/190~(48%)	89 (98%)	2 (2%)	52	74
34	Lo	104/112~(93%)	104 (100%)	0	100	100
35	Lp	93/133~(70%)	91 (98%)	2 (2%)	52	74
36	Lq	130/186~(70%)	130 (100%)	0	100	100
37	Lr	241/288 (84%)	241 (100%)	0	100	100
38	Ls	196/274~(72%)	196 (100%)	0	100	100



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Mol	Chain	Analysed	Rotameric	Outliers	Percentile	
39	$\operatorname{Lt}$	188/236~(80%)	187 (100%)	1 (0%)	88	93
40	Lv	116/188~(62%)	116 (100%)	0	100	100
41	Lw	122/148~(82%)	122~(100%)	0	100	100
42	Lx	104/148~(70%)	104 (100%)	0	100	100
43	Ly	86/110 (78%)	86 (100%)	0	100	100
44	Lz	73/97~(75%)	71 (97%)	2 (3%)	44	71
45	L3	81/90 (90%)	80 (99%)	1 (1%)	71	83
46	L4	78/116~(67%)	78 (100%)	0	100	100
47	L5	40/113~(35%)	40 (100%)	0	100	100
48	L6	80/87~(92%)	80 (100%)	0	100	100
49	L7	117/181~(65%)	117 (100%)	0	100	100
50	L8	110/178~(62%)	110 (100%)	0	100	100
51	$\operatorname{SR}$	133/169~(79%)	133 (100%)	0	100	100
52	Sf	326/381~(86%)	326 (100%)	0	100	100
53	SB	191/249~(77%)	190 (100%)	1 (0%)	88	93
54	SZ	115/143~(80%)	115 (100%)	0	100	100
55	SE	267/357~(75%)	267 (100%)	0	100	100
56	$\mathbf{SF}$	104/107~(97%)	104 (100%)	0	100	100
57	$\operatorname{SG}$	178/209~(85%)	178 (100%)	0	100	100
58	SI	263/342~(77%)	261 (99%)	2 (1%)	81	89
59	SJ	112/180~(62%)	111 (99%)	1 (1%)	78	87
60	SK	104/147~(71%)	103 (99%)	1 (1%)	76	86
61	$\operatorname{SL}$	93/118~(79%)	93 (100%)	0	100	100
62	SN	91/113 (80%)	89 (98%)	2 (2%)	52	74
63	SO	152/226~(67%)	152 (100%)	0	100	100
64	SP	95/113 (84%)	95 (100%)	0	100	100
65	SQ	93/115 (81%)	93 (100%)	0	100	100
66	SS	166/230~(72%)	165~(99%)	1 (1%)	86	91
67	ST	87/123 (71%)	87 (100%)	0	100	100
68	SW	78/79~(99%)	78 (100%)	0	100	100
69	SX	263/318~(83%)	262 (100%)	1 (0%)	91	95



Mol	Chain	Analysed	Rotameric	Outliers	Perce	entiles
70	SY	109/164~(66%)	109 (100%)	0	100	100
71	Sa	150/157~(96%)	148 (99%)	2 (1%)	69	82
72	Sb	148/174~(85%)	147 (99%)	1 (1%)	84	90
73	Sc	338/364~(93%)	338 (100%)	0	100	100
74	Sd	84/158~(53%)	83 (99%)	1 (1%)	71	83
75	Se	310/351~(88%)	309 (100%)	1 (0%)	92	96
76	Sg	97/357~(27%)	97 (100%)	0	100	100
77	Si	79/95~(83%)	78~(99%)	1 (1%)	69	82
78	Sj	175/190~(92%)	174 (99%)	1 (1%)	86	91
79	Sk	235/291~(81%)	234 (100%)	1 (0%)	91	95
80	Sm	99/101 (98%)	98 (99%)	1 (1%)	76	86
81	Sn	63/166~(38%)	63 (100%)	0	100	100
82	So	548/609~(90%)	546 (100%)	2 (0%)	91	95
All	All	12121/15564 (78%)	12087 (100%)	34 (0%)	92	96

5 of 34 residues with a non-rotameric side chain are listed below:

Mol	Chain	$\mathbf{Res}$	Type
77	Si	46	LYS
78	Sj	135	MET
82	So	594	LYS
44	Lz	110	LYS
44	Lz	104	LYS

Sometimes side chains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 25 such side chains are listed below:

Mol	Chain	Res	Type
60	SK	129	GLN
73	Sc	388	GLN
82	So	333	GLN
72	Sb	139	GLN
73	Sc	391	GLN

### 5.3.3 RNA (i)



Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	L1	1491/1559~(95%)	354~(23%)	10 (0%)
2	L2	51/69~(73%)	12 (23%)	0
83	S1	921/954~(96%)	186 (20%)	10 (1%)
All	All	2463/2582~(95%)	552 (22%)	20 (0%)

5 of 552 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	L1	5	А
1	L1	6	А
1	L1	7	С
1	L1	8	С
1	L1	9	U

5 of 20 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
83	S1	599	U
83	S1	768	G
83	S1	890	С
83	S1	887	С
1	L1	929	U

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

There are no non-standard protein/DNA/RNA residues in this entry.

# 5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry (i)

Of 156 ligands modelled in this entry, 152 are monoatomic - leaving 4 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).



Mal	Turne	Chain	Deg Link		Bond lengths			Bond angles			
IVIOI	туре	Unam	Res	nes	LIIIK	Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
85	T1C	L1	1705	-	44,45,45	1.19	4 (9%)	53,72,72	0.92	2 (3%)	
85	T1C	S1	1034	84	44,45,45	1.22	3 (6%)	53,72,72	1.05	2 (3%)	
87	GDP	Se	500	-	24,30,30	0.94	1 (4%)	30,47,47	1.32	4 (13%)	
85	T1C	L1	1706	84	44,45,45	1.17	4 (9%)	53,72,72	0.98	3 (5%)	

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
85	T1C	L1	1705	-	-	6/22/80/80	0/4/4/4
85	T1C	S1	1034	84	-	10/22/80/80	0/4/4/4
87	GDP	Se	500	-	-	1/12/32/32	0/3/3/3
85	T1C	L1	1706	84	-	10/22/80/80	0/4/4/4

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms		Observed(Å)	Ideal(Å)
85	S1	1034	T1C	C21-N21	5.49	1.48	1.33
85	L1	1706	T1C	C21-N21	5.42	1.47	1.33
85	L1	1705	T1C	C21-N21	5.37	1.47	1.33
85	L1	1705	T1C	C4-N4	2.49	1.53	1.47
87	Se	500	GDP	C6-N1	-2.40	1.34	1.37

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

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
85	S1	1034	T1C	C1-C1C-C12	3.95	114.52	109.88
85	S1	1034	T1C	C11-C1B-C12	3.70	121.73	118.80
87	Se	500	GDP	C3'-C2'-C1'	3.53	106.30	100.98
87	Se	500	GDP	PA-O3A-PB	-3.48	120.87	132.83
85	L1	1706	T1C	O1C-C1C-C12	-3.09	105.19	110.14

There are no chirality outliers.

 $5~{\rm of}~27$  torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
85	L1	1705	T1C	C41-C4-N4-C43
85	L1	1705	T1C	C3-C2-C21-O21



Mol	Chain	Res	Type	Atoms
85	L1	1705	T1C	C3-C2-C21-N21
85	L1	1705	T1C	C1-C2-C21-O21
85	L1	1706	T1C	C92-C91-N9-C9

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There are no ring outliers.

No monomer is involved in short contacts.

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











# 5.7 Other polymers (i)

There are no such residues in this entry.

# 5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.



# 6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-38634. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

# 6.1 Orthogonal projections (i)

#### 6.1.1 Primary map



6.1.2 Raw map



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



## 6.2 Central slices (i)

### 6.2.1 Primary map



X Index: 210



Y Index: 210



Z Index: 210

#### 6.2.2 Raw map



X Index: 210

Y Index: 210

Z Index: 210

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: 199



Y Index: 206



Z Index: 219

#### 6.3.2 Raw map



X Index: 199

Y Index: 206



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



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

### 6.4.1 Primary map



6.4.2 Raw map



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



## 6.5 Orthogonal surface views (i)

#### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

#### 6.5.2 Raw map



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

### 6.6 Mask visualisation (i)

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



# 7 Map analysis (i)

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

# 7.1 Map-value distribution (i)



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



# 7.2 Volume estimate (i)



The volume at the recommended contour level is  $2621 \text{ nm}^3$ ; this corresponds to an approximate mass of 2368 kDa.

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



# 7.3 Rotationally averaged power spectrum (i)



\*Reported resolution corresponds to spatial frequency of 0.303  ${\rm \AA^{-1}}$ 



# 8 Fourier-Shell correlation (i)

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

### 8.1 FSC (i)



\*Reported resolution corresponds to spatial frequency of 0.303  $\mathrm{\AA^{-1}}$ 



# 8.2 Resolution estimates (i)

$\begin{bmatrix} Bosolution ostimato (Å) \end{bmatrix}$	Estimation criterion (FSC cut-off)			
resolution estimate (A)	0.143	0.5	Half-bit	
Reported by author	3.30	-	-	
Author-provided FSC curve	3.31	3.95	3.37	
Unmasked-calculated*	3.95	5.98	4.06	

\*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 3.95 differs from the reported value 3.3 by more than 10 %



# 9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-38634 and PDB model 8XT2. Per-residue inclusion information can be found in section 3 on page 21.

# 9.1 Map-model overlay (i)



The images above show the 3D surface view of the map at the recommended contour level 0.01 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 (0.01).



## 9.4 Atom inclusion (i)



At the recommended contour level, 97% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.



# 9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9210	0.4150
L1	0.9980	0.4930
L2	0.9770	0.3350
L3	0.8870	0.3250
L4	0.8020	0.2870
L5	0.9660	0.3440
L6	0.9780	0.5020
L7	0.8990	0.4170
L8	0.8880	0.4010
LB	0.9850	0.5190
LC	0.9610	0.4820
LD	0.9570	0.4940
LI	0.9230	0.4220
LJ	0.8690	0.3190
LK	0.7710	0.2390
LM	0.9770	0.4960
LN	0.9800	0.4880
LO	0.9490	0.4870
LP	0.9680	0.4780
LQ	0.9610	0.4820
LR	0.9390	0.4500
LS	0.9480	0.4640
LT	0.9680	0.4920
LU	0.9510	0.4900
LV	0.9560	0.5020
LW	0.9200	0.4680
LX	0.8320	0.4240
La	0.9820	0.5130
Lb	0.9100	0.4570
Ld	0.9660	0.5070
Lf	0.9480	0.4800
Lg	0.9790	0.4660
Lh	1.0000	0.5210
Li	0.9860	0.5240
Lj	0.9880	0.5100

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Chain	Atom inclusion	Q-score
Lk	0.9470	0.4650
Ll	0.9230	0.4220
Lm	0.8830	0.4050
Ln	0.8850	0.2890
Lo	0.8900	0.4600
Lp	0.9190	0.4570
Lq	0.9660	0.4950
Lr	0.9220	0.4460
Ls	0.7640	0.3850
Lt	0.8560	0.2430
Lu	0.9520	0.4660
Lv	0.8910	0.3450
Lw	0.9520	0.4850
Lx	0.7970	0.4050
Ly	0.9820	0.5120
Lz	0.9250	0.4500
S1	0.9960	0.4300
SB	0.9330	0.4150
SE	0.8990	0.3840
SF	0.9270	0.4530
SG	0.9370	0.3640
SI	0.9000	0.3170
SJ	0.9000	0.2820
SK	0.9610	0.4450
SL	0.9820	0.4400
SN	0.9310	0.3030
SO	0.9240	0.4100
SP	0.9220	0.3330
SQ	0.9690	0.4580
SR	0.9770	0.4750
SS	0.9040	0.3310
ST	0.9250	0.4480
SW	0.9630	0.4600
SX	0.7510	0.2830
SY	0.8640	0.3650
SZ	0.8960	0.3160
Sa	0.9280	0.4060
Sb	0.8760	0.3220
Sc	0.7770	0.2020
Sd	0.9010	0.4120
Se	0.9030	0.3060
Sf	0.9630	0.4790



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Chain	Atom inclusion	Q-score
Sg	0.7460	0.2220
Si	0.9070	0.2600
Sj	0.9010	0.2740
Sk	0.8370	0.2340
Sm	0.9350	0.3930
Sn	0.9850	0.4690
So	0.2830	0.1160

