



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 11, 2024 – 07:13 AM EST

PDB ID : 3CC7  
Title : Structure of Anisomycin resistant 50S Ribosomal Subunit: 23S rRNA mutation C2487U  
Authors : Blaha, G.; Gurel, G.  
Deposited on : 2008-02-25  
Resolution : 2.70 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

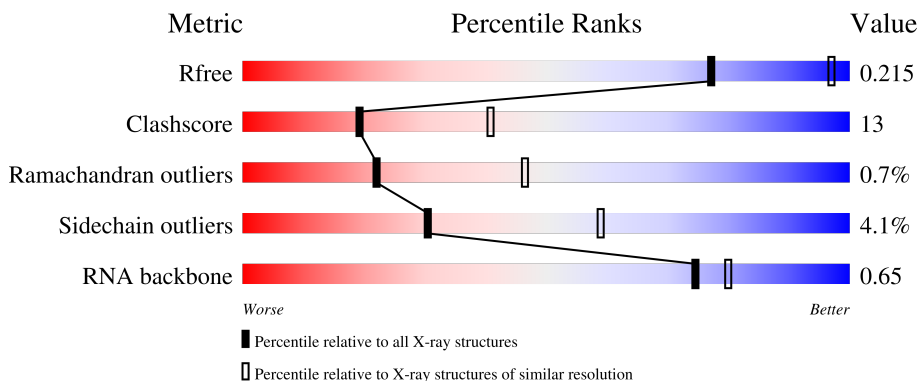
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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.











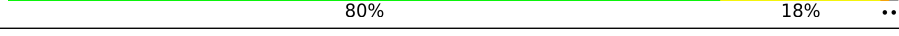

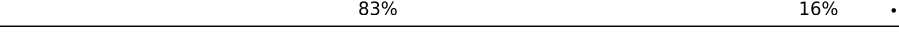
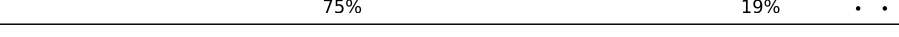

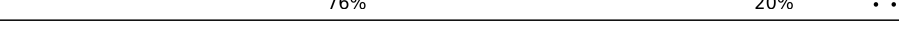


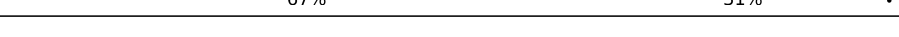

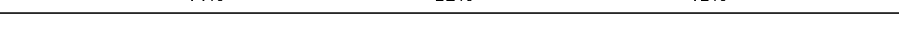




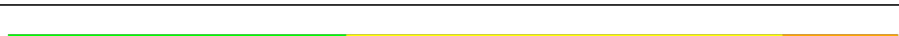

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RNA backbone	3102	1159 (3.00-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ .

Mol	Chain	Length	Quality of chain
1	A	240	70% (green), 26% (yellow), 4% (orange), 2% (red), 0% (grey)
2	B	338	65% (green), 32% (yellow), 3% (orange), 0% (red), 0% (grey)
3	C	246	74% (green), 22% (yellow), 4% (orange), 0% (red), 0% (grey)
4	D	177	49% (green), 28% (yellow), 2% (orange), 21% (grey)
5	E	178	79% (green), 17% (yellow), 4% (orange), 0% (red), 0% (grey)
6	F	120	75% (green), 23% (yellow), 2% (orange), 0% (red), 0% (grey)

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
7	G	348	 6% . 92%
8	H	177	 66% 23% . 10%
9	I	162	 31% 12% . 57%
10	J	145	 79% 16% . . .
11	K	132	 72% 27% . .
12	L	165	 74% 13% . 12%
13	M	196	 73% 23% . . .
14	N	187	 72% 27% . . .
15	O	116	 80% 18% . . .
16	P	149	 74% 19% . . .
17	Q	96	 83% 16% . .
18	R	155	 75% 19% . . .
19	S	85	 76% 18% . 5%
20	T	120	 76% 20% . . .
21	U	67	 49% 28% . 21%
22	V	71	 63% 27% . 8%
23	W	154	 67% 31% . .
24	X	92	 57% 30% . 11%
25	Y	241	 44% 12% . 41%
26	Z	116	 43% 18% . 37%
27	1	57	 63% 35% . .
28	2	50	 56% 36% 8%
29	3	92	 74% 24% . .
30	0	2923	 53% 35% 6% 6%
31	9	122	 38% 49% 13%

## 2 Entry composition [i](#)

There are 38 unique types of molecules in this entry. The entry contains 99122 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 50S ribosomal protein L2P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	237	1753	1072	352	324	5	0	0	0

- Molecule 2 is a protein called 50S ribosomal protein L3P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	337	2625	1616	493	511	5	0	0	0

- Molecule 3 is a protein called 50S ribosomal protein L4P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	246	1860	1130	345	384	1	0	0	0

- Molecule 4 is a protein called 50S ribosomal protein L5P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	140	1094	685	195	210	4	0	0	0

- Molecule 5 is a protein called 50S ribosomal protein L6P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	172	1357	840	224	289	4	0	0	0

- Molecule 6 is a protein called 50S ribosomal protein L7Ae.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	119	890	551	141	197	1	0	0	0

- Molecule 7 is a protein called 50S ribosomal protein L10E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	G	29	240	149	39	51	1	0	0	0

- Molecule 8 is a protein called 50S ribosomal protein L10e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	160	1282	798	240	238	6	0	0	0

- Molecule 9 is a protein called 50S ribosomal protein L11P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	I	70	519	323	81	114	1	0	0	0

- Molecule 10 is a protein called 50S ribosomal protein L13P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	142	1120	696	199	222	3	0	0	0

- Molecule 11 is a protein called 50S ribosomal protein L14P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	132	994	609	189	192	4	0	0	0

- Molecule 12 is a protein called 50S ribosomal protein L15P.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
12	L	145	1118	670	222	226	0	0	0

- Molecule 13 is a protein called 50S ribosomal protein L15e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	194	1558	943	333	281	1	0	0	0

- Molecule 14 is a protein called 50S ribosomal protein L18P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	186	1445	895	262	286	2	0	0	0

- Molecule 15 is a protein called 50S ribosomal protein L18e.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
15	O	115	865	529	161	175	0	0	0

- Molecule 16 is a protein called 50S ribosomal protein L19e.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
16	P	143	1136	683	229	224	0	0	0

- Molecule 17 is a protein called 50S ribosomal protein L21e.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
17	Q	95	735	450	141	144	0	0	0

- Molecule 18 is a protein called 50S ribosomal protein L22P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
18	R	150	1149	713	209	223	4	0	0	0

- Molecule 19 is a protein called 50S ribosomal protein L23P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
19	S	81	641	389	111	138	3	0	0	0

- Molecule 20 is a protein called 50S ribosomal protein L24P.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
20	T	119	950	568	180	202	0	0	0

- Molecule 21 is a protein called 50S ribosomal protein L24e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
21	U	53	Total	C	N	O	S	0	0	0
			410	244	75	86	5			

- Molecule 22 is a protein called 50S ribosomal protein L29P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	V	65	Total	C	N	O	S	0	0	0
			499	304	94	100	1			

- Molecule 23 is a protein called 50S ribosomal protein L30P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	W	154	Total	C	N	O	S	0	0	0
			1196	737	209	244	6			

- Molecule 24 is a protein called 50S ribosomal protein L31e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
24	X	82	Total	C	N	O	S	0	0	0
			654	402	129	122	1			

- Molecule 25 is a protein called 50S ribosomal protein L32e.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
25	Y	142	Total	C	N	O	0	0	0
			1130	686	228	216			

- Molecule 26 is a protein called 50S ribosomal protein L37Ae.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	Z	73	Total	C	N	O	S	0	0	0
			573	343	113	112	5			

- Molecule 27 is a protein called 50S ribosomal protein L37e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
27	1	56	Total	C	N	O	S	0	0	0
			431	258	86	83	4			

- Molecule 28 is a protein called 50S ribosomal protein L39e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	2	46	Total	C	N	O	S	0	0	0
			396	239	89	67	1			

- Molecule 29 is a protein called 50S ribosomal protein L44E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
29	3	92	Total	C	N	O	S	0	0	0
			755	458	153	137	7			

- Molecule 30 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
30	0	2754	Total	C	N	O	P	0	0	0
			59020	26349	10872	19054	2745			

- Molecule 31 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	9	122	Total	C	N	O	P	0	0	0
			2599	1160	471	847	121			

- Molecule 32 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
32	A	2	Total	Mg	0	0
			2	2		
32	B	2	Total	Mg	0	0
			2	2		
32	K	1	Total	Mg	0	0
			1	1		
32	T	1	Total	Mg	0	0
			1	1		
32	Y	1	Total	Mg	0	0
			1	1		
32	0	85	Total	Mg	0	0
			85	85		
32	9	1	Total	Mg	0	0
			1	1		

- Molecule 33 is CHLORIDE ION (three-letter code: CL) (formula: Cl).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
33	A	1	Total Cl 1 1	0	0
33	B	1	Total Cl 1 1	0	0
33	J	3	Total Cl 3 3	0	0
33	L	1	Total Cl 1 1	0	0
33	M	1	Total Cl 1 1	0	0
33	N	1	Total Cl 1 1	0	0
33	O	1	Total Cl 1 1	0	0
33	R	1	Total Cl 1 1	0	0
33	Y	1	Total Cl 1 1	0	0
33	3	1	Total Cl 1 1	0	0
33	0	10	Total Cl 10 10	0	0

- Molecule 34 is STRONTIUM ION (three-letter code: SR) (formula: Sr).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
34	A	3	Total Sr 3 3	0	0
34	B	2	Total Sr 2 2	0	0
34	F	1	Total Sr 1 1	0	0
34	J	1	Total Sr 1 1	0	0
34	R	1	Total Sr 1 1	0	0
34	S	1	Total Sr 1 1	0	0
34	1	2	Total Sr 2 2	0	0
34	3	2	Total Sr 2 2	0	0
34	0	93	Total Sr 93 93	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
34	9	2	Total	Sr	0	0
			2	2		

- Molecule 35 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
35	C	1	Total	Na	0	0
			1	1		
35	J	1	Total	Na	0	0
			1	1		
35	M	1	Total	Na	0	0
			1	1		
35	Q	1	Total	Na	0	0
			1	1		
35	R	2	Total	Na	0	0
			2	2		
35	S	1	Total	Na	0	0
			1	1		
35	0	66	Total	Na	0	0
			66	66		
35	9	2	Total	Na	0	0
			2	2		

- Molecule 36 is CADMIUM ION (three-letter code: CD) (formula: Cd).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
36	O	1	Total	Cd	0	0
			1	1		
36	U	1	Total	Cd	0	0
			1	1		
36	Z	1	Total	Cd	0	0
			1	1		
36	1	1	Total	Cd	0	0
			1	1		
36	3	1	Total	Cd	0	0
			1	1		

- Molecule 37 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
37	0	2	Total	K	0	0
			2	2		

- Molecule 38 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	A	111	Total O 111 111	0	0
38	B	153	Total O 153 153	0	0
38	C	165	Total O 165 165	0	0
38	D	46	Total O 46 46	0	0
38	E	44	Total O 44 44	0	0
38	F	23	Total O 23 23	0	0
38	G	19	Total O 19 19	0	0
38	H	71	Total O 71 71	0	0
38	I	10	Total O 10 10	0	0
38	J	54	Total O 54 54	0	0
38	K	56	Total O 56 56	0	0
38	L	80	Total O 80 80	0	0
38	M	130	Total O 130 130	0	0
38	N	59	Total O 59 59	0	0
38	O	41	Total O 41 41	0	0
38	P	61	Total O 61 61	0	0
38	Q	51	Total O 51 51	0	0
38	R	78	Total O 78 78	0	0
38	S	33	Total O 33 33	0	0
38	T	37	Total O 37 37	0	0
38	U	25	Total O 25 25	0	0

*Continued on next page...*

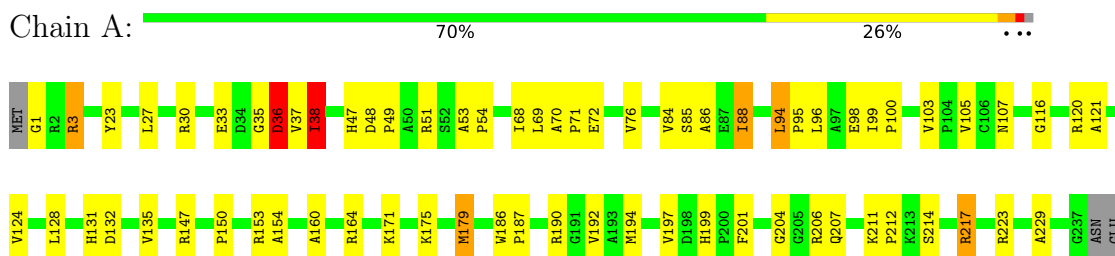
*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
38	V	11	Total O 11 11	0	0
38	W	63	Total O 63 63	0	0
38	X	28	Total O 28 28	0	0
38	Y	91	Total O 91 91	0	0
38	Z	28	Total O 28 28	0	0
38	1	52	Total O 52 52	0	0
38	2	37	Total O 37 37	0	0
38	3	68	Total O 68 68	0	0
38	0	5951	Total O 5951 5951	0	0
38	9	147	Total O 147 147	0	0

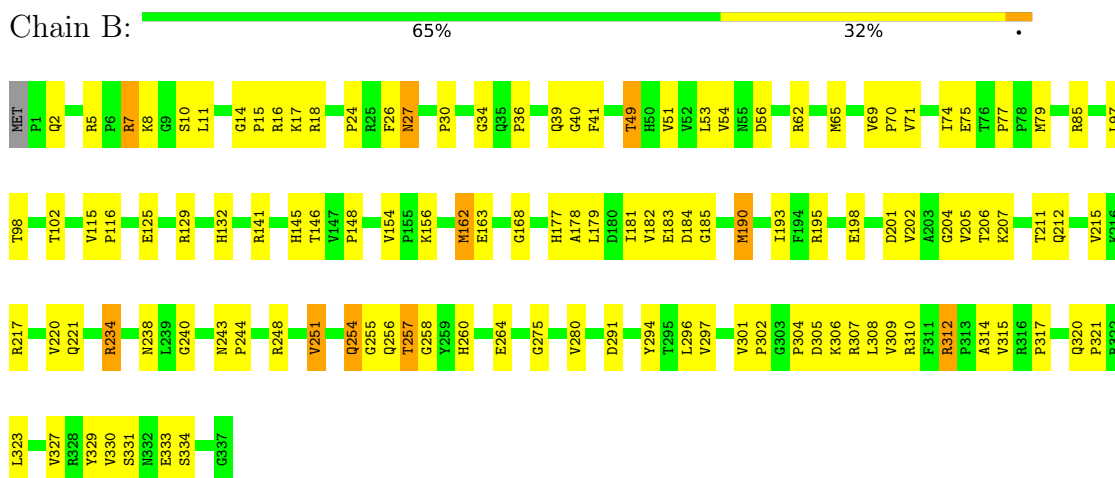
### 3 Residue-property plots [i](#)

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. 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. 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.

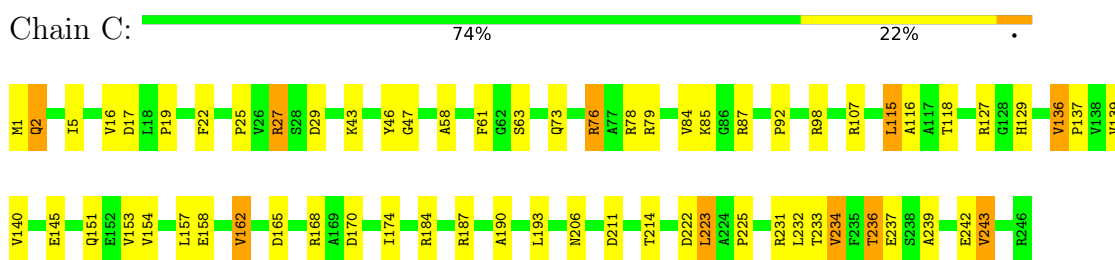
- Molecule 1: 50S ribosomal protein L2P



- Molecule 2: 50S ribosomal protein L3P



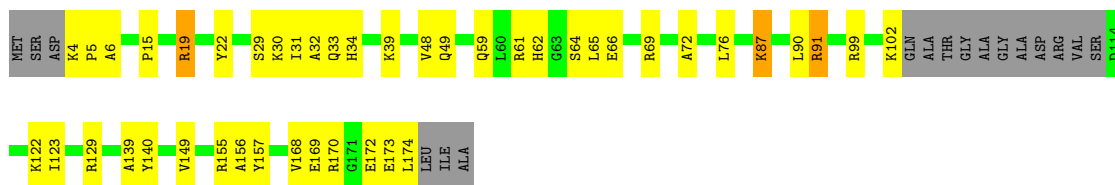
- Molecule 3: 50S ribosomal protein L4P



- Molecule 4: 50S ribosomal protein L5P

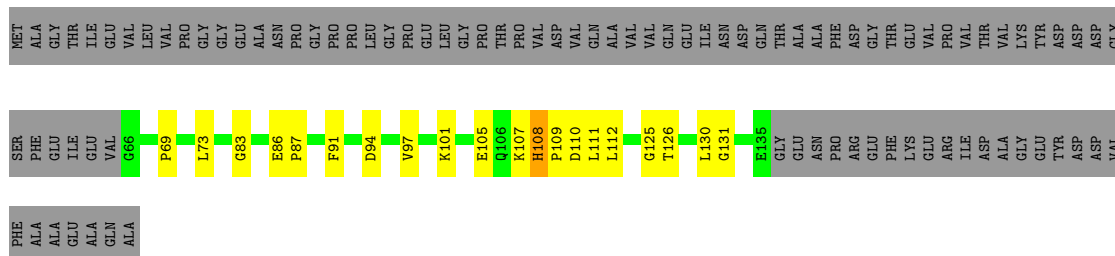


Chain H:  66% 23% 10%




- Molecule 9: 50S ribosomal protein L11P

Chain I:  31% 12% 57%



- Molecule 10: 50S ribosomal protein L13P

Chain J:  79% 16%



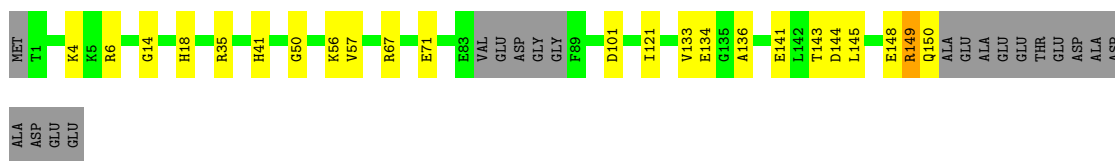
- Molecule 11: 50S ribosomal protein L14P

Chain K:  72% 27%



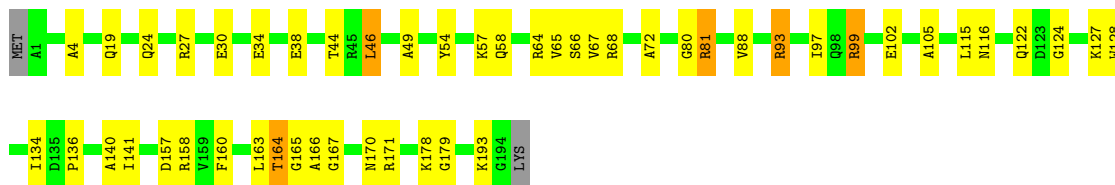
- Molecule 12: 50S ribosomal protein L15P

Chain L:  74% 13% 12%

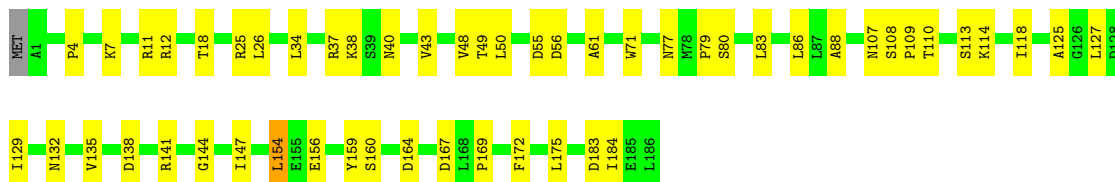


- Molecule 13: 50S ribosomal protein L15e

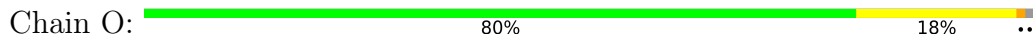
Chain M:  73% 23%



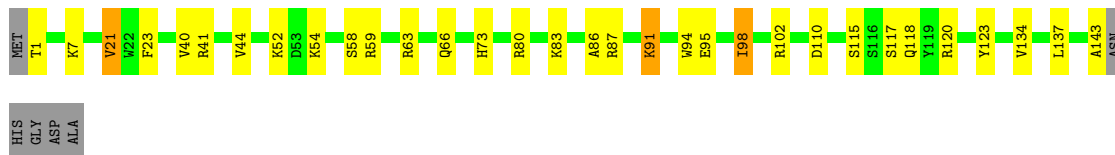
- Molecule 14: 50S ribosomal protein L18P



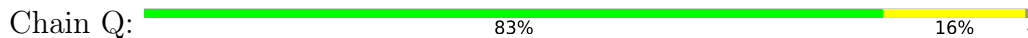
- Molecule 15: 50S ribosomal protein L18e



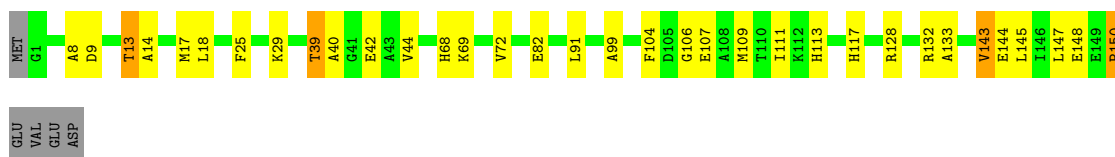
- Molecule 16: 50S ribosomal protein L19e



- Molecule 17: 50S ribosomal protein L21e



- Molecule 18: 50S ribosomal protein L22P





- Molecule 19: 50S ribosomal protein L23P

Chain S: 76% 18% 5%



- Molecule 20: 50S ribosomal protein L24P

Chain T: 76% 20% 2%



- Molecule 21: 50S ribosomal protein L24e

Chain U: 49% 28% 21%



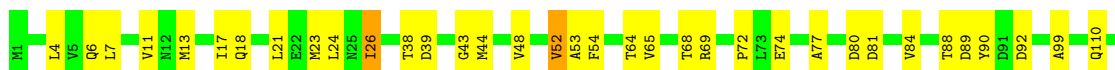
- Molecule 22: 50S ribosomal protein L29P

Chain V: 63% 27% 8%



- Molecule 23: 50S ribosomal protein L30P

Chain W: 67% 31% 2%



- Molecule 24: 50S ribosomal protein L31e

Chain X: 57% 30% 11%



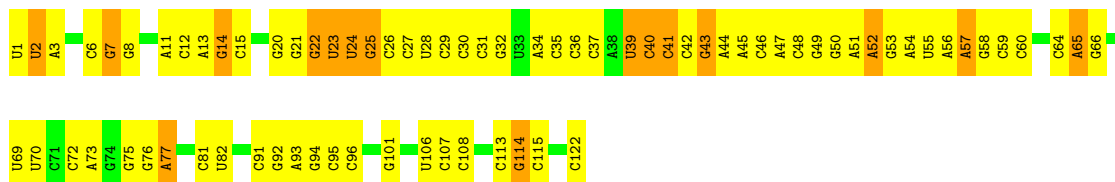
- Molecule 25: 50S ribosomal protein L32e



G1417	U1418	U1419	C1420	C1421	U1422	C1423	A1427	U1432	G1433	A1434	U1435	C1436	U1440	G1441	A1442	G1443	G1444	U1445	C1451	C1456	C1457	U1458	U1459	C1460	U1461	U1462	U1463	U1464	U1465	U1466	U1467	U1468	U1469	U1470	U1471	U1472	U1473	U1474	U1475	U1476	U1477	U1478	U1479	U1480	U1481	U1482	U1483	U1484	U1485	U1486	U1487	U1488	U1489	U1490	U1491	U1492	U1493	U1494	U1495	U1500	U1503	U1504	U1506	C1507	G1509	G1510	U1511	G1512	U1515	U1516																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
U1314	A1321	G1322	G1327	A1328	G1329	A1330	G1331	U1333	C1334	C1335	U1336	G1339	C1340	A1341	C1342	C1343	A1352	C1353	C1360	C1366	A1372	A1375	G1376	C1377	G1378	C1384	G1385	G1387	G1391	A1392	A1393	C1394	C1395	C1396	C1397	G1398	A1399	A1406	U1407	G1408	G1409	G1410	A1414	G1415	G1416																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
A1230	U1234	G1235	U1236	U1237	C1238	G1239	A1242	C1243	U1244	C1245	A1246	U1249	C1250	C1251	A1252	C1253	G1260	A1261	C1262	U1266	C1267	C1268	G1269	U1270	A1271	A1278	U1279	A1280	U1285	A1286	A1287	U1288	C1289	G1290	U1293	A1294	G1295	U1298	G1299	G1300	U1304	C1305	U1306	A1307	A1308	G1311	G1312	A1313																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
C1044	G1045	C1051	G1052	G1053	G1054	G1055	U1056	A1057	U1058	C1059	C1060	G1063	U1066	A1067	G1071	G1072	U1073	G1074	A1078	A1079	C1080	A1081	A1086	G1087	A1088	A1090	C999	A1097	A1098	G1099	U1109	G1110	U1116	A1117	A1118	G1119	U1120	U1130	G1131	A1132	C1156	C1157	G1158	U1159	G1160	A1161	G1162	G1163	U1164	G1165	U1166	C1167	C1168	U1169	U1170	A1171	G1172	A1173	A1174	G1175	C1176	U1180	A1181	C1182	C1183	C1184	U1185	C1186	U1187	A1188	A1189	A1192	A1193	A1194	G1195	U1196	A1199	A1200	C1201	A1202	G1203	U1204	U1205	U1206	A1207	C1208	C1209	G1210	C1211	C1212	G1213	A1307	A1308	G1311	G1312	A1313																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
C962	C963	G968	C969	U970	G	U	U	U	C	U	C	C	C	G	A	G	U	U	C	C	G	A	C	A	C	A	C999	C1000	U1001	A1005	A1006	A1007	C1008	U1009	C1010	A1013	A1014	U1015	U1016	C1023	G1024	C1025	U1029	A1032	G1039	C1156	C1157	G1158	U1159	G1160	A1161	G1162	G1163	U1164	G1165	U1166	C1167	C1168	U1169	U1170	A1171	G1172	A1173	A1174	G1175	C1176	U1180	A1181	C1182	C1183	C1184	U1185	C1186	U1187	A1188	A1189	A1192	A1193	A1194	G1195	U1196	A1199	A1200	C1201	A1202	G1203	U1204	U1205	U1206	A1207	C1208	C1209	G1210	C1211	C1212	G1213	A1307	A1308	G1311	G1312	A1313																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
G870	G871	U872	A875	A876	G877	G878	A886	G882	G888	G898	G902	U903	U904	C905	C906	A907	A908	A912	C920	G921	A922	A923	A926	U932	C933	C936	G941	U942	U943	G944	U945	C946	A843	A844	U845	U846	C847	C848	C853	U854	A955	G956	A951	U952	U953	U954	A955	G956	C959	U961	U962	U963	U964	U965	U966	U967	U968	U969	U970	U971	U972	U973	U974	A671	G672	C677	G678	G681	A682	G683	G684	A686	C687	A688	G689	G690	A698	C699	G700	U701	G702	G703	C704	C705	G711	U714	U	G716	C717	C718	G724	C725	C729	A628	A629	A511	A512	A513	G514	U517	G518	C637	A521	C638	A639	G644	U645	C764																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
G785	G775	A776	U777	A790	G791	G792	A797	G800	U801	A806	A807	A808	G809	A812	C813	G814	U815	A816	C817	A818	G921	A819	G820	U821	C822	U825	G834	U835	G836	U840	A841	C842	A843	A844	U845	U846	C847	C848	C853	U854	A955	G956	A951	U952	U953	U954	A955	G956	C959	U961	U962	U963	U964	U965	U966	U967	U968	U969	U970	U971	U972	U973	U974	A671	G672	C677	G678	G681	A682	G683	G684	A686	C687	A688	G689	G690	A698	C699	G700	U701	G702	G703	C704	C705	G711	U714	U	G716	C717	C718	G724	C725	C729	A628	A629	A511	A512	A513	G514	U517	G518	C637	A521	C638	A639	G644	U645	C764																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
A532	G537	C538	G539	A540	C541	A542	A543	A544	A545	A546	A547	A548	A549	A550	A551	A552	A553	A554	A555	A556	A557	U558	C559	U560	G564	U567	U582	C583	U584	G588	A383	G384	U385	U386	U387	U388	U389	U390	U391	U392	U393	U394	U395	U396	U397	U398	U399	U400	U401	U402	U403	U404	U405	U406	U407	U408	U409	U410	U411	U412	U413	U414	U415	U416	U417	U418	U419	U420	U421	U422	U423	U424	U425	U426	U427	U428	U429	U430	U431	U432	U433	U434	U435	U436	U437	U438	U439	U440	U441	U442	U443	U444	U445	U446	U447	U448	U449	U450	U451	U452	U453	U454	U455	U456	U457	U458	U459	U460	U461	U462	U463	U464	U465	U466	U467	U468	U469	U470	U471	U472	U473	U474	U475	U476	U477	U478	U479	U480	U481	U482	U483	U484	U485	U486	U487	U488	U489	U490	U491	U492	U493	U494	U495	U496	U497	U498	U499	U500	U501	U502	U503	U504	U505	U506	U507	U508	U509	U510	U511	U512	U513	U514	U515	U516	U517	U518	U519	U520	U521	U522	U523	U524	U525	U526	U527	U528	U529	U530	U531	U532	U533	U534	U535	U536	U537	U538	U539	U540	U541	U542	U543	U544	U545	U546	U547	U548	U549	U550	U551	U552	U553	U554	U555	U556	U557	U558	U559	U560	U561	U562	U563	U564	U565	U566	U567	U568	U569	U570	U571	U572	U573	U574	U575	U576	U577	U578	U579	U580	U581	U582	U583	U584	U585	U586	U587	U588	U589	U590	U591	U592	U593	U594	U595	U596	U597	U598	U599	U600	U601	U602	U603	U604	U605	U606	U607	U608	U609	U610	U611	U612	U613	U614	U615	U616	U617	U618	U619	U620	U621	U622	U623	U624	U625	U626	U627	U628	U629	U630	U631	U632	U633	U634	U635	U636	U637	U638	U639	U640	U641	U642	U643	U644	U645	U646	U647	U648	U649	U650	U651	U652	U653	U654	U655	U656	U657	U658	U659	U660	U661	U662	U663	U664	U665	U666	U667	U668	U669	U670	U671	U672	U673	U674	U675	U676	U677	U678	U679	U680	U681	U682	U683	U684	U685	U686	U687	U688	U689	U690	U691	U692	U693	U694	U695	U696	U697	U698	U699	U700	U701	U702	U703	U704	U705	U706	U707	U708	U709	U710	U711	U712	U713	U714	U715	U716	U717	U718	U719	U720	U721	U722	U723	U724	U725	U726	U727	U728	U729	U730	U731	U732	U733	U734	U735	U736	U737	U738	U739	U740	U741	U742	U743	U744	U745	U746	U747	U748	U749	U750	U751	U752	U753	U754	U755	U756	U757	U758	U759	U760	U761	U762	U763	U764	U765	U766	U767	U768	U769	U770	U771	U772	U773	U774	U775	U776	U777	U778	U779	U780	U781	U782	U783	U784	U785	U786	U787	U788	U789	U790	U791	U792	U793	U794	U795	U796	U797	U798	U799	U800	U801	U802	U803	U804	U805	U806	U807	U808	U809	U810	U811	U812	U813	U814	U815	U816	U817	U818	U819	U820	U821	U822	U823	U824	U825	U826	U827	U828	U829	U830	U831	U832	U833	U834	U835	U836	U837	U838	U839	U840	U841	U842	U843	U844	U845	U846	U847	U848	U849	U850	U851	U852	U853	U854	U855	U856	U857	U858	U859	U860	U861	U862	U863	U864	U865	U866	U867	U868	U869	U870	U871	U872	U873	U874	U875	U876	U877	U878	U879	U880	U881	U882	U883	U884	U885	U886	U887	U888	U889	U890	U891	U892	U893	U894	U895	U896	U897	U898	U899	U900	U901	U902	U903	U904	U905	U906	U907	U908	U909	U910	U911	U912	U913	U914	U915	U916	U917	U918	U919	U920	U921	U922	U923	U924	U925	U926	U927	U928	U929	U930	U931	U932	U933	U934	U935	U936	U937	U938	U939	U940	U941	U942	U943	U944	U945	U946	U947	U948	U949	U950	U951	U952	U953	U954	U955	U956	U957	U958	U959	U960	U961	U962	U963	U964	U965	U966	U967	U968	U969	U970	U971	U972	U973	U974	U975	U976	U977	U978	U979	U980	U981	U982	U983	U984	U985	U986	U987	U988	U989	U990	U991	U992	U993	U994	U995	U996	U997	U998	U999	U1000	U1001	U1002	U1003	U1004	U1005	U1006	U1007	U1008	U1009	U1010	U1011	U1012	U1013	U1014	U1015	U1016	U1017	U1018	U1019	U1020	U1021	U1022	U1023	U1024	U1025	U1026	U1027	U1028	U1029	U1030	U1031	U1032	U1033	U1034	U1035	U1036	U1037	U1038	U1039	U1040	U1041	U1042	U1043	U1044	U1045	U1046	U1047	U1048	U1049	U1050	U1051	U1052	U1053	U1054	U1055	U1056	U1057	U1058	U1059	U1060	U1061	U1062	U1063	U1064	U1065	U1066	U1067	U1068	U1069	U1070	U1071	U1072	U1073	U1074	U1075	U1076	U1077	U1078	U1079	U1080	U1081	U1082	U1083	U1084	U1085	U1086	U1087	U1088	U1089	U1090	U1091	U1092	U1093	U1094	U1095	U1096	U1097	U1098	U1099	U1100	U1101	U1102	U1103	U1104	U1105	U1106	U1107	U1108	U1109	U1110	U1111	U1112	U1113	U1114	U1115	U1116	U1117	U1118	U1119	U1120	U1121	U1122	U1123	U1124	U1125	U1126	U1127	U112

G2841	G2842	G2843	C2844	G2845	G2846	G2851	A2852	A2856	U2866	G2867	C2870	U2871	U2872	C2873	G2876	G2877	G2878	A2879	A2880	C2881	G2882	C2883	C2884	A2890	C2894	A2895	A2896	C2897	G2898	C2903	U2904	A2908	G2909	A2910	C2911	C2912	A2913	A2914	A	C	C	C	A	U									
G2755	U2756	A2757	G2758	G2759	C2760	A2761	G2762	G2763	C2764	C2765	A2768	C2769	G2770	G2777	A2778	U2779	C2780	G2781	A2782	A2783	A2784	C2787	C2790	U2791	A2792	A2793	C2794	C2795	U2796	A2800	C2801	C2802	C2803	A2811	G2812	A2813	A2814	C2819	A2820	C2821	C2825	G2826	A2827	C2828	U2829	U2830	C2831	G2834	C2835	G2836			
G2627	G2630	G2634	G2635	G2636	A2637	C2644	U2645	U2646	A2649	U2652	A2653	C2655	A2659	U2664	A	U	G2667	G2668	U2669	G2670	U2671	C2672	C2676	U2677	A2678	A2679	A2680	A2681	C2682	C2704	U2705	G2712	U2713	U2714	G2715	G2716	G2717	C2718	A2719	C2720	U2721	G2722	G2723	U2724	G2725	A2726	A2727	C2747	G2748	U2749	G2750	G2754	
U2531	A2532	C2533	C2534	U2535	C2536	U2541	C2548	C2551	G2552	A2553	C2559	U2563	A2564	U2565	A2566	A2567	A2568	A2569	G2570	A2577	G2578	U2586	U2587	G2588	U2589	U2590	G2591	G2592	U2597	U2598	A2599	A2600	A2601	G2602	G2603	A2604	U2607	C2608	G2609	U2610	G2613	C2614	G2617	G2618	U2619	U2620	U2621	C2626					
C2443	U2444	U2445	G2446	G2453	A2456	U2457	U2461	C2462	A2463	A2464	A2465	A2466	A2467	A2468	A2469	C2472	U2473	A2474	C2475	C2476	C2477	A2478	A2479	U2483	U2484	A2485	A2490	G2491	U2492	C2493	C2502	A2503	A2504	G2505	A2506	G2507	C2508	A2509	C2510	A2511	U2512	A2513	G2520	A2521	G2522	U2523	G2524	U2525	U2526	U2527	U2528	U2529	
G2338	A	C	A	G	G2344	A2345	C2346	C2347	C2348	A2353	A2354	G2355	A2356	A2361	A2362	C2363	A2364	A2368	A2369	A2370	G2371	A2372	U2373	G2379	G2385	U2386	U2387	C2388	C2392	G2404	A2408	A2412	G2413	A2414	A2415	G2416	U2419	G2420	G2421	U2422	C2423	U2424	A2425	G2426	U2435	C2439							
C2241	U2242	C2243	U2246	G2249	G2250	G2251	A2252	G2253	G2254	A2255	G2256	A2258	A2264	U2265	A2266	C2269	G2270	G2271	G2272	U2276	U2277	U2278	C2281	U2282	A2289	G2299	A2300	A2301	A2302	C2309	A2310	A2311	C2312	C2313	G2314	C2315	G2316	C2317	U2320	A2321	C2329	U2330	C2331	G2332	U2333	C2335	U2336	C2338	C2339	C2340	C2343	C2346	C2349
C2106	A1994	G1995	U1996	A1997	C2002	U2003	U2004	G2005	U2008	G2009	A2010	A2011	U2012	G2013	G2014	A2015	U2016	U2032	G2033	U2034	C2035	C2036	A2039	C2040	G2044	A2054	U2064	C2065	C2066	G2072	G2073	A2074	A2081	G2082	A2083	C2088	A2089	G2090	G2091	G2092	A2096	A2100	A2101	G2102	A2103	C2104	C2105						
C1993	A1994	G1995	U1996	A1997	C2002	U2003	U2004	G2005	U2008	G2009	A2010	A2011	U2012	G2013	G2014	A2015	U2016	U2032	G2033	U2034	C2035	C2036	A2039	C2040	G2044	A2054	U2064	C2065	C2066	G2072	G2073	A2074	A2081	G2082	A2083	C2088	A2089	G2090	G2091	G2092	A2096	A2100	A2101	G2102	A2103	C2104	C2105						
C1906	U1907	G1908	A1909	A1910	A1919	C1920	A1921	A1922	G1925	U1926	A1927	G1928	G1929	A1930	A1931	C1936	A1942	C1943	G1944	G1945	C1946	G1947	G1948	G1949	G1950	U1951	A	A	C	C	U1964	C1965	U1966	G1970	U1971	U1972	A1973	G1974	A1978	G1979	C1987	C1988	U1992										
G1819	G1820	U1825	C1826	A1829	C1834	U1835	A1836	G1837	A1838	A1839	A1840	C1841	A1842	A1845	U1846	A1847	G1848	U1849	U1850	G1851	A1852	C1853	A1856	C1857	G1858	U1859	G1863	G1867	G1868	G1877	A1878	C1879	G1882	A1881	C1882	U1883	G1884	A1885	A1886	U1890	G1896	U1897	G1902	U1903	A1904	U1905							
U1722	G1723	U1625	A1626	G1627	A1632	C1633	U1634	U1635	A1641	A1642	C1643	U1644	U1645	U1654	C1655	A1656	U1657	A1658	G1665	C1666	A1667	U1668	G1669	C1670	U1671	U1676	U1677	A1678	C1679	G1680	A1681	A1682	G1683	A1684	A1685	C1686	C1687	G1688	C1692	C1700	U1696	A1701	U1702	C1705	G1706	A1710	C1714	C1715	A1716	C1818			
C1517	G1520	C1521	A1522	G1523	U1524	G1525	A1526	A1527	A1528	G1529	G1535	C1536	U1544	C1545	G1546	U1547	U1548	G1552	C1553	C1554	G1555	G1556	G1557	C1558	A1559	U1561	C1562	C1565	C1566	C1574	G1588	G1589	G1592	C1593	C1594	U1595	U1596	A1597	A1598	A1603	G1605	A1606	A1607	C1613	G1614	A1615	A1616						

## ● Molecule 31: 5S ribosomal RNA

Chain 9:  38% 49% 13%

## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	212.83Å 299.90Å 576.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.83 – 2.70 85.81 – 2.41	Depositor EDS
% Data completeness (in resolution range)	92.7 (49.83-2.70) 90.8 (85.81-2.41)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	0.00 (at 2.40Å)	Xtrriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.184 , 0.226 0.174 , 0.215	Depositor DCC
$R_{free}$ test set	6547 reflections (0.98%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	47.5	Xtrriage
Anisotropy	0.113	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 67.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	99122	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	51.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.48% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: UR3, MG, OMG, K, CD, SR, NA, CL, OMU, PSU, 1MA

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	A	0.32	0/1786	0.64	0/2408
2	B	0.32	0/2690	0.65	0/3652
3	C	0.36	0/1885	0.62	0/2552
4	D	0.31	0/1111	0.55	0/1498
5	E	0.32	0/1382	0.56	0/1880
6	F	0.32	0/901	0.57	0/1224
7	G	0.31	0/241	0.48	0/324
8	H	0.32	0/1302	0.63	0/1743
9	I	0.29	0/526	0.51	0/716
10	J	0.35	0/1136	0.59	0/1530
11	K	0.33	0/1004	0.65	0/1351
12	L	0.33	0/1130	0.63	0/1509
13	M	0.34	0/1582	0.62	0/2116
14	N	0.29	0/1474	0.61	0/1999
15	O	0.34	0/874	0.59	1/1181 (0.1%)
16	P	0.32	0/1147	0.52	0/1528
17	Q	0.35	0/749	0.68	0/1005
18	R	1.26	7/1172 (0.6%)	1.11	6/1578 (0.4%)
19	S	0.31	0/648	0.57	0/875
20	T	0.33	0/958	0.62	1/1289 (0.1%)
21	U	0.34	0/417	0.55	0/562
22	V	0.31	0/502	0.52	0/675
23	W	0.34	0/1219	0.64	0/1655
24	X	0.34	0/664	0.58	0/895
25	Y	0.36	0/1146	0.60	0/1536
26	Z	0.35	0/584	0.60	0/781
27	1	0.37	0/438	0.61	0/578
28	2	0.34	0/401	0.55	0/529
29	3	0.36	0/771	0.57	0/1024
30	0	0.36	0/65957	0.68	17/102867 (0.0%)
31	9	0.32	0/2904	0.68	1/4526 (0.0%)
All	All	0.38	7/98701 (0.0%)	0.67	26/147586 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
18	R	1	0
30	0	0	42
31	9	0	1
All	All	1	43

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	R	150	PRO	CB-CG	27.34	2.86	1.50
18	R	150	PRO	CA-C	-18.21	1.16	1.52
18	R	150	PRO	CG-CD	13.97	1.96	1.50
18	R	150	PRO	C-O	11.88	1.47	1.23
18	R	150	PRO	N-CA	11.28	1.66	1.47

The worst 5 of 26 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
18	R	150	PRO	CB-CA-C	-22.47	55.83	112.00
18	R	150	PRO	N-CA-C	-19.39	61.69	112.10
18	R	150	PRO	CA-N-CD	12.31	128.94	111.70
18	R	150	PRO	N-CA-CB	10.98	116.48	103.30
18	R	150	PRO	CA-C-O	-8.51	99.77	120.20

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
18	R	150	PRO	CA

5 of 43 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
30	0	221	G	Sidechain
30	0	26	U	Sidechain
30	0	396	U	Sidechain
30	0	458	G	Sidechain
30	0	48	A	Sidechain



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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1753	0	1766	75	0
2	B	2625	0	2533	92	0
3	C	1860	0	1813	57	0
4	D	1094	0	1085	40	0
5	E	1357	0	1266	23	0
6	F	890	0	843	26	0
7	G	240	0	231	7	0
8	H	1282	0	1292	37	0
9	I	519	0	500	15	0
10	J	1120	0	1098	30	0
11	K	994	0	1027	36	0
12	L	1118	0	1076	22	0
13	M	1558	0	1573	42	0
14	N	1445	0	1401	45	0
15	O	865	0	873	15	0
16	P	1136	0	1123	28	0
17	Q	735	0	729	14	0
18	R	1149	0	1122	34	0
19	S	641	0	605	11	0
20	T	950	0	924	19	0
21	U	410	0	364	19	0
22	V	499	0	511	17	0
23	W	1196	0	1137	55	0
24	X	654	0	653	24	0
25	Y	1130	0	1133	36	0
26	Z	573	0	531	16	0
27	1	431	0	426	22	0
28	2	396	0	413	19	0
29	3	755	0	728	20	0
30	0	59020	0	29806	1142	0
31	9	2599	0	1325	101	0
32	0	85	0	0	0	0
32	9	1	0	0	0	0
32	A	2	0	0	0	0
32	B	2	0	0	0	0
32	K	1	0	0	0	0
32	T	1	0	0	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
32	Y	1	0	0	0	0
33	0	10	0	0	2	0
33	3	1	0	0	0	0
33	A	1	0	0	0	0
33	B	1	0	0	0	0
33	J	3	0	0	0	0
33	L	1	0	0	0	0
33	M	1	0	0	0	0
33	N	1	0	0	1	0
33	O	1	0	0	0	0
33	R	1	0	0	0	0
33	Y	1	0	0	0	0
34	0	93	0	0	0	0
34	1	2	0	0	0	0
34	3	2	0	0	0	0
34	9	2	0	0	0	0
34	A	3	0	0	0	0
34	B	2	0	0	0	0
34	F	1	0	0	0	0
34	J	1	0	0	0	0
34	R	1	0	0	0	0
34	S	1	0	0	0	0
35	0	66	0	0	0	0
35	9	2	0	0	0	0
35	C	1	0	0	0	0
35	J	1	0	0	0	0
35	M	1	0	0	0	0
35	Q	1	0	0	0	0
35	R	2	0	0	0	0
35	S	1	0	0	0	0
36	1	1	0	0	0	0
36	3	1	0	0	0	0
36	O	1	0	0	0	0
36	U	1	0	0	0	0
36	Z	1	0	0	0	0
37	0	2	0	0	0	0
38	0	5951	0	0	153	0
38	1	52	0	0	3	0
38	2	37	0	0	2	0
38	3	68	0	0	5	0
38	9	147	0	0	8	0
38	A	111	0	0	5	0

*Continued on next page...*

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	B	153	0	0	14	0
38	C	165	0	0	11	0
38	D	46	0	0	2	0
38	E	44	0	0	2	0
38	F	23	0	0	1	0
38	G	19	0	0	0	0
38	H	71	0	0	6	0
38	I	10	0	0	2	0
38	J	54	0	0	1	0
38	K	56	0	0	3	0
38	L	80	0	0	6	0
38	M	130	0	0	5	0
38	N	59	0	0	5	0
38	O	41	0	0	3	0
38	P	61	0	0	1	0
38	Q	51	0	0	2	0
38	R	78	0	0	3	0
38	S	33	0	0	2	0
38	T	37	0	0	2	0
38	U	25	0	0	3	0
38	V	11	0	0	0	0
38	W	63	0	0	4	0
38	X	28	0	0	1	0
38	Y	91	0	0	6	0
38	Z	28	0	0	3	0
All	All	99122	0	59907	1937	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 13.

The worst 5 of 1937 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)
18:R:150:PRO:CG	18:R:150:PRO:CD	1.96	1.44
30:0:1160:G:C5'	30:0:1161:A:H5'	1.81	1.10
31:9:56:A:H2'	31:9:57:A:H5''	1.33	1.08
18:R:150:PRO:CG	18:R:150:PRO:C	2.22	1.07
30:0:871:G:C8	30:0:871:G:H5'	1.87	1.07

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 X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	235/240 (98%)	212 (90%)	18 (8%)	5 (2%)	7	18
2	B	335/338 (99%)	306 (91%)	26 (8%)	3 (1%)	17	40
3	C	244/246 (99%)	228 (93%)	16 (7%)	0	100	100
4	D	134/177 (76%)	112 (84%)	19 (14%)	3 (2%)	6	17
5	E	170/178 (96%)	161 (95%)	9 (5%)	0	100	100
6	F	117/120 (98%)	107 (92%)	9 (8%)	1 (1%)	17	40
7	G	25/348 (7%)	24 (96%)	1 (4%)	0	100	100
8	H	156/177 (88%)	149 (96%)	6 (4%)	1 (1%)	25	50
9	I	68/162 (42%)	55 (81%)	10 (15%)	3 (4%)	2	5
10	J	140/145 (97%)	131 (94%)	9 (6%)	0	100	100
11	K	130/132 (98%)	125 (96%)	5 (4%)	0	100	100
12	L	141/165 (86%)	127 (90%)	13 (9%)	1 (1%)	22	46
13	M	192/196 (98%)	182 (95%)	9 (5%)	1 (0%)	29	54
14	N	184/187 (98%)	168 (91%)	13 (7%)	3 (2%)	9	24
15	O	113/116 (97%)	109 (96%)	4 (4%)	0	100	100
16	P	141/149 (95%)	141 (100%)	0	0	100	100
17	Q	93/96 (97%)	88 (95%)	5 (5%)	0	100	100
18	R	148/155 (96%)	140 (95%)	8 (5%)	0	100	100
19	S	79/85 (93%)	78 (99%)	1 (1%)	0	100	100
20	T	117/120 (98%)	110 (94%)	6 (5%)	1 (1%)	17	40
21	U	51/67 (76%)	47 (92%)	4 (8%)	0	100	100
22	V	63/71 (89%)	60 (95%)	2 (3%)	1 (2%)	9	24
23	W	152/154 (99%)	148 (97%)	4 (3%)	0	100	100
24	X	80/92 (87%)	73 (91%)	6 (8%)	1 (1%)	12	30
25	Y	140/241 (58%)	138 (99%)	2 (1%)	0	100	100

*Continued on next page...*

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	Z	71/116 (61%)	61 (86%)	8 (11%)	2 (3%)	5	11
27	1	54/57 (95%)	51 (94%)	3 (6%)	0	100	100
28	2	42/50 (84%)	41 (98%)	1 (2%)	0	100	100
29	3	90/92 (98%)	86 (96%)	3 (3%)	1 (1%)	14	34
All	All	3705/4472 (83%)	3458 (93%)	220 (6%)	27 (1%)	22	46

5 of 27 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	27	LEU
1	A	37	VAL
14	N	154	LEU
14	N	183	ASP
14	N	184	ILE

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	179/182 (98%)	171 (96%)	8 (4%)	27	55
2	B	282/283 (100%)	265 (94%)	17 (6%)	19	42
3	C	193/193 (100%)	178 (92%)	15 (8%)	12	29
4	D	117/148 (79%)	109 (93%)	8 (7%)	16	36
5	E	152/156 (97%)	147 (97%)	5 (3%)	38	67
6	F	93/94 (99%)	93 (100%)	0	100	100
7	G	27/282 (10%)	26 (96%)	1 (4%)	34	63
8	H	134/145 (92%)	127 (95%)	7 (5%)	23	49
9	I	58/130 (45%)	57 (98%)	1 (2%)	60	84
10	J	118/121 (98%)	112 (95%)	6 (5%)	24	50
11	K	106/106 (100%)	103 (97%)	3 (3%)	43	73
12	L	113/127 (89%)	111 (98%)	2 (2%)	59	83

Continued on next page...

*Continued from previous page...*

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
13	M	158/160 (99%)	150 (95%)	8 (5%)	24	50
14	N	149/150 (99%)	144 (97%)	5 (3%)	37	66
15	O	93/94 (99%)	91 (98%)	2 (2%)	52	79
16	P	113/117 (97%)	108 (96%)	5 (4%)	28	56
17	Q	79/80 (99%)	77 (98%)	2 (2%)	47	76
18	R	117/122 (96%)	113 (97%)	4 (3%)	37	66
19	S	71/74 (96%)	70 (99%)	1 (1%)	67	86
20	T	105/106 (99%)	99 (94%)	6 (6%)	20	44
21	U	44/53 (83%)	43 (98%)	1 (2%)	50	78
22	V	51/57 (90%)	50 (98%)	1 (2%)	55	81
23	W	130/130 (100%)	126 (97%)	4 (3%)	40	69
24	X	66/74 (89%)	60 (91%)	6 (9%)	9	21
25	Y	120/196 (61%)	114 (95%)	6 (5%)	24	51
26	Z	60/94 (64%)	59 (98%)	1 (2%)	60	84
27	1	46/47 (98%)	46 (100%)	0	100	100
28	2	42/46 (91%)	41 (98%)	1 (2%)	49	77
29	3	79/79 (100%)	77 (98%)	2 (2%)	47	76
All	All	3095/3646 (85%)	2967 (96%)	128 (4%)	30	59

5 of 128 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
24	X	72	VAL
25	Y	154	ARG
5	E	7	ILE
4	D	170	TYR
25	Y	169	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 75 such sidechains are listed below:

Mol	Chain	Res	Type
23	W	28	HIS
28	2	41	HIS
23	W	110	GLN
25	Y	133	HIS

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
10	J	52	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
30	0	2745/2923 (93%)	239 (8%)	32 (1%)
31	9	121/122 (99%)	16 (13%)	1 (0%)
All	All	2866/3045 (94%)	255 (8%)	33 (1%)

5 of 255 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
30	0	31	C
30	0	67	A
30	0	69	A
30	0	70	A
30	0	71	G

5 of 33 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
30	0	2649	A
30	0	2718	C
31	9	65	A
30	0	1080	C
30	0	877	G

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

5 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
30	UR3	0	2619	30	19,22,23	0.43	0	26,32,35	0.64	1 (3%)
30	PSU	0	2621	30	18,21,22	1.46	2 (11%)	22,30,33	1.27	3 (13%)
30	OMG	0	2588	30	18,26,27	1.05	2 (11%)	19,38,41	0.70	1 (5%)
30	1MA	0	628	35,30	16,25,26	1.32	3 (18%)	18,37,40	1.04	2 (11%)
30	OMU	0	2587	30	19,22,23	0.33	0	26,31,34	0.36	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
30	UR3	0	2619	30	-	0/7/25/26	0/2/2/2
30	PSU	0	2621	30	-	0/7/25/26	0/2/2/2
30	OMG	0	2588	30	-	0/5/27/28	0/3/3/3
30	1MA	0	628	35,30	-	0/3/25/26	0/3/3/3
30	OMU	0	2587	30	-	0/9/27/28	0/2/2/2

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
30	0	2621	PSU	C2-N1	4.85	1.43	1.36
30	0	628	1MA	C2-N3	3.37	1.33	1.29
30	0	2588	OMG	C5-C6	-2.69	1.42	1.47
30	0	2588	OMG	C8-N7	-2.48	1.30	1.35
30	0	2621	PSU	C6-C5	2.45	1.38	1.35

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
30	0	2621	PSU	C6-C5-C4	3.46	120.62	118.20
30	0	628	1MA	N1-C2-N3	2.79	129.27	126.02
30	0	2621	PSU	O2-C2-N1	2.73	125.80	122.79
30	0	2621	PSU	C6-N1-C2	-2.57	120.06	122.68
30	0	628	1MA	C5-C6-N1	2.56	117.71	113.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:



Mol	Chain	Res	Type	Clashes	Symm-Clashes
30	0	2587	OMU	1	0

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 305 ligands modelled in this entry, 305 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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 Fit of model and data

### 6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.