



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 11, 2024 – 09:17 AM EST

PDB ID : 3CCE
Title : Structure of Anisomycin resistant 50S Ribosomal Subunit: 23S rRNA mutation U2535A
Authors : Blaha, G.; Gurel, G.
Deposited on : 2008-02-25
Resolution : 2.75 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

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

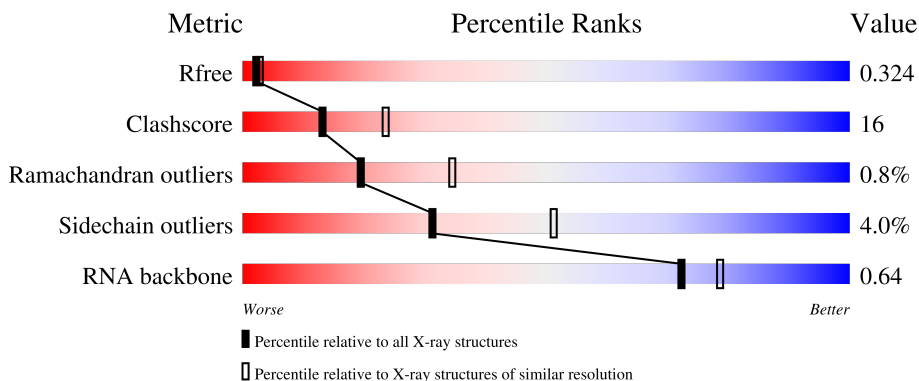
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.75 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	1235 (2.78-2.74)
Clashscore	141614	1277 (2.78-2.74)
Ramachandran outliers	138981	1257 (2.78-2.74)
Sidechain outliers	138945	1257 (2.78-2.74)
RNA backbone	3102	1060 (3.02-2.50)

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 ≥ 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	65% (green), 30% (yellow), 5% (orange), 0% (red), 0% (grey)
2	B	338	62% (green), 34% (yellow), 2% (orange), 0% (red), 0% (grey)
3	C	246	67% (green), 30% (yellow), 3% (orange), 0% (red), 0% (grey)
4	D	177	41% (green), 37% (yellow), 1% (orange), 1% (red), 21% (grey)
5	E	178	67% (green), 29% (yellow), 4% (orange), 0% (red), 0% (grey)
6	F	120	74% (green), 25% (yellow), 1% (orange), 0% (red), 0% (grey)

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Mol	Chain	Length	Quality of chain
7	G	348	5% . 92%
8	H	177	68% 21% . 10%
9	I	162	31% 12% . 57%
10	J	145	71% 24% . .
11	K	132	70% 30% .
12	L	165	66% 21% . 12%
13	M	196	70% 26% . .
14	N	187	64% 34% . .
15	O	116	85% 14% .
16	P	149	69% 25% . .
17	Q	96	73% 25% . .
18	R	155	70% 24% . .
19	S	85	74% 21% 5%
20	T	120	77% 20% . .
21	U	67	51% 28% 21%
22	V	71	62% 27% . 8%
23	W	154	66% 32% .
24	X	92	60% 27% . 11%
25	Y	241	43% 16% 41%
26	Z	116	41% 21% . 37%
27	1	57	67% 32% .
28	2	50	54% 38% 8%
29	3	92	78% 21% .
30	0	2923	45% 43% 6% 6%
31	9	122	32% 55% 13%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
33	CL	J	8801	-	-	X	-
33	CL	J	8802	-	-	X	-

2 Entry composition [i](#)

There are 38 unique types of molecules in this entry. The entry contains 99124 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
			59022	26350	10876	19051	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	1	Total	Mg	0	0
			1	1		
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	86	Total	Mg	0	0
			86	86		
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	Q	1	Total Cl 1 1	0	0
33	R	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	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	92	Total Sr 92 92	0	0
34	9	4	Total Sr 4 4	0	0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
35	C	1	Total Na 1 1	0	0
35	J	1	Total Na 1 1	0	0
35	M	1	Total Na 1 1	0	0
35	Q	1	Total Na 1 1	0	0
35	R	1	Total Na 1 1	0	0
35	S	1	Total Na 1 1	0	0
35	0	67	Total Na 67 67	0	0
35	9	2	Total Na 2 2	0	0

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

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

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

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

- Molecule 38 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	A	118	Total O 118 118	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
38	B	144	Total 144	O 144	0	0
38	C	179	Total 179	O 179	0	0
38	D	46	Total 46	O 46	0	0
38	E	40	Total 40	O 40	0	0
38	F	27	Total 27	O 27	0	0
38	G	19	Total 19	O 19	0	0
38	H	68	Total 68	O 68	0	0
38	I	5	Total 5	O 5	0	0
38	J	55	Total 55	O 55	0	0
38	K	52	Total 52	O 52	0	0
38	L	84	Total 84	O 84	0	0
38	M	127	Total 127	O 127	0	0
38	N	63	Total 63	O 63	0	0
38	O	40	Total 40	O 40	0	0
38	P	61	Total 61	O 61	0	0
38	Q	43	Total 43	O 43	0	0
38	R	84	Total 84	O 84	0	0
38	S	33	Total 33	O 33	0	0
38	T	33	Total 33	O 33	0	0
38	U	28	Total 28	O 28	0	0
38	V	14	Total 14	O 14	0	0

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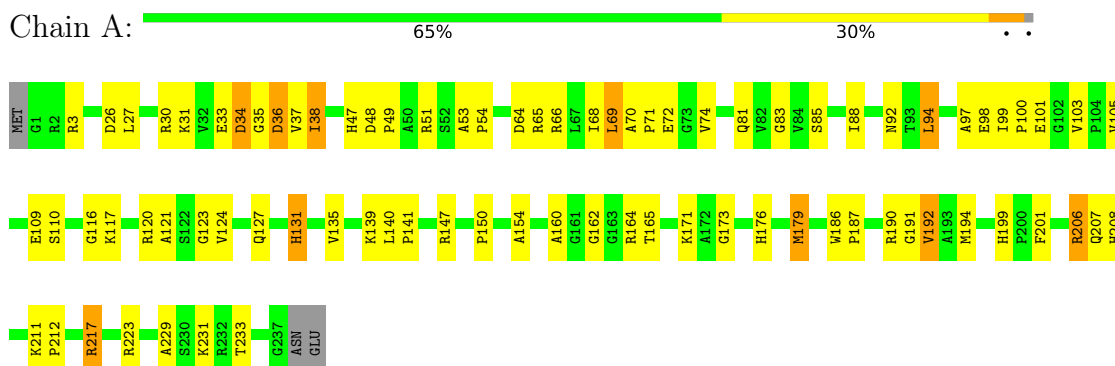
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	W	67	Total O 67 67	0	0
38	X	30	Total O 30 30	0	0
38	Y	100	Total O 100 100	0	0
38	Z	32	Total O 32 32	0	0
38	1	55	Total O 55 55	0	0
38	2	42	Total O 42 42	0	0
38	3	63	Total O 63 63	0	0
38	0	5927	Total O 5927 5927	0	0
38	9	144	Total O 144 144	0	0

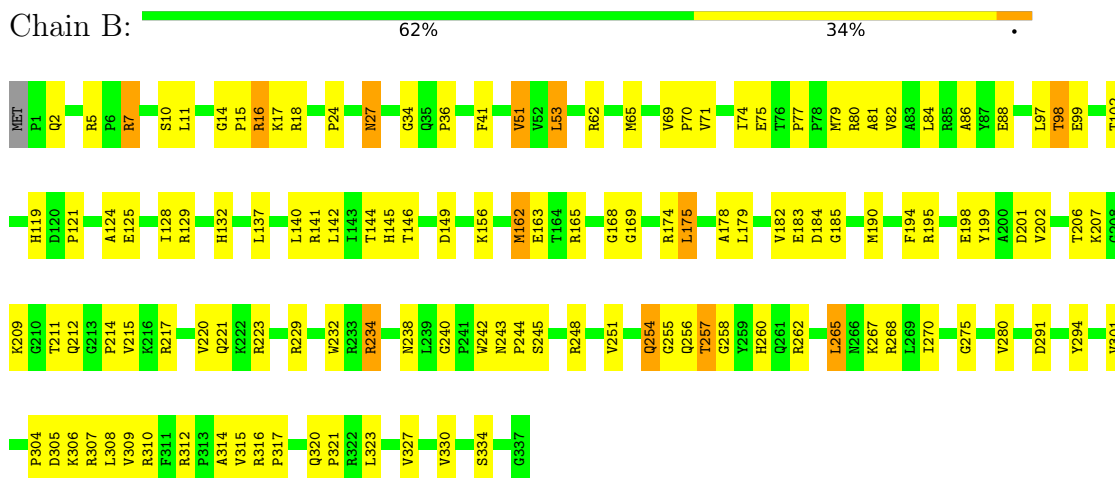
3 Residue-property plots [i](#)

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.

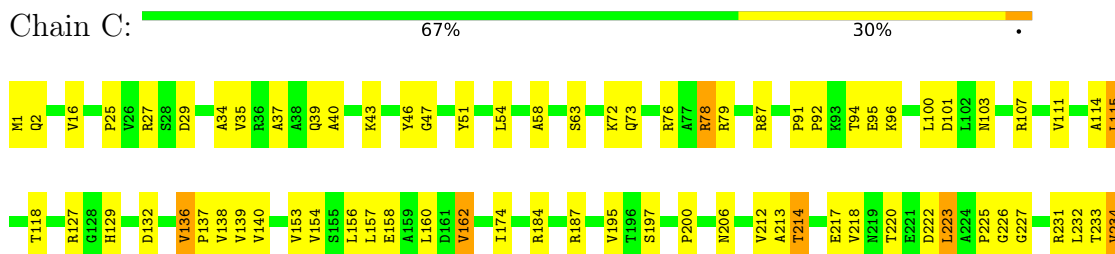
- Molecule 1: 50S ribosomal protein L2P



- Molecule 2: 50S ribosomal protein L3P



- Molecule 3: 50S ribosomal protein L4P



ASP
ASP
ASP
THR
ALA
SER
SER
GLU
ASP
ASP
ALA
ASP
ALA
ASP
ASP
ALA
ALA
ALA
GLU
GLU
ALA
ALA
ASP
ASP
ASP
ASP
ASP
ASP
ASP
ASP
GLU
GLU
ALA
ALA
GLY
GLY
ALA
ALA
MET
PHE

- Molecule 8: 50S ribosomal protein L10e

Chain H: 68% 21% 10%

MET SER ASP K4 P5 A6 S7 M8 I12 P15 R19 R20 E21 Y22 T26 P27 G28 S29 K30 I31 K35 Y46 P47 L52 Q59 L60 R61 H62 G63 S64 L70 S71 A72 N73 R74 I77 E82 K87 R91 L98 K102 GLN ALA THR GLY

ALA GLY ASP ARG VAL SER D114 I123 A127 A128 R129 K150 F153 R154 A155 A156 Y157 R165 V168 E169 R170 L174 LEU ILE ALA

- Molecule 9: 50S ribosomal protein L11P

Chain I: 31% 12% 57%

MET ALA THR ILE VAL LEU VAL PRO GLY GLU ALA ASN PRO PRO LEU PRO PRO GLY ASP VAL GLN ALA VAL GLN VAL GLU ILE ASN ASP THR ALA PHE ASP THR THR VAL PRO VAL THR LYS TVR ASP ASP GLY

SER PHE GLU ILE VAL G66 P69 L73 T82 G83 E86 P87 L95 S96 V97 D98 Q99 V100 K101 K107 H108 P109 D110 L111 L112 M118 A119 A120 K121 V124 L130 E135 GLY ASN PRO ARG GLU PHE LYS GLU ARG THR ILE ASP ALA ALA GLY TYR ASP

ASP VAL PHE ALA ALA GLU ALA GLN ALA

- Molecule 10: 50S ribosomal protein L13P

Chain J: 71% 24% 5%

MET SER VAL A4 E5 T18 M19 V26 V36 V39 M40 A41 V45 I46 Q52 I53 V54 V55 I63 Y69 F70 R74 P75 D76 G77 I78 F79 K80 R81 T82 P88 H89 K90 R93 V101 L105 G106 M107 P108 Y109 I127 K128 F129 V130 T131 L132 G133

E134 I135 S136 E137 T138 W145

- Molecule 11: 50S ribosomal protein L14P

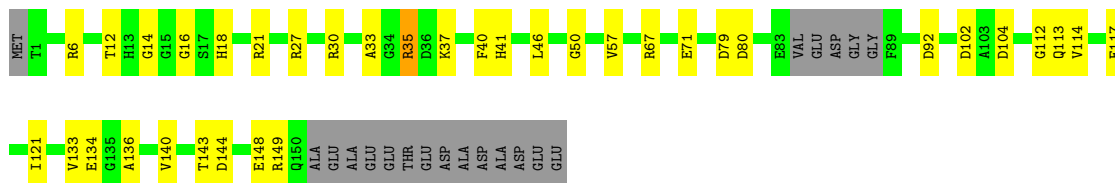
Chain K: 70% 30%

K1 L4 V8 T9 Q10 G11 L12 K14 I18 I19 C20 A21 D22 L29 I32 S33 V34 G39 T40 K41 N42 P45 K46 A47 V55 S56 S65 E63 M64 Q67 V74 K78 P79 I80 R81 R82 R87 N93 V98 E102 I113 A114 R115

E116 V117 A118 A125 A128 M129 M130 I131 V132

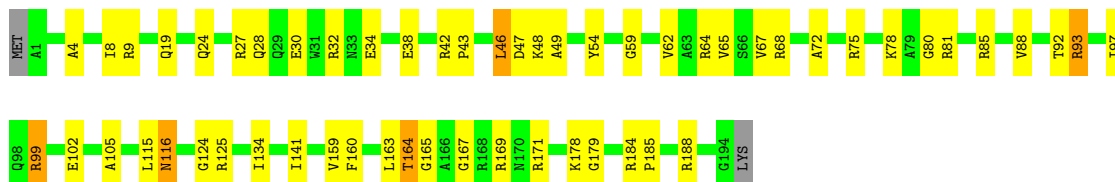
- Molecule 12: 50S ribosomal protein L15P

Chain L: 66% 21% 12%



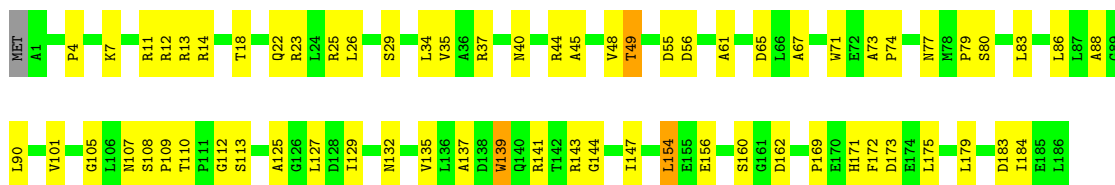
- Molecule 13: 50S ribosomal protein L15e

Chain M: 70% 26% ..



- Molecule 14: 50S ribosomal protein L18P

Chain N: 64% 34% ..



- Molecule 15: 50S ribosomal protein L18e

Chain O: 85% 14% ..



- Molecule 16: 50S ribosomal protein L19e

Chain P: 69% 25% ..

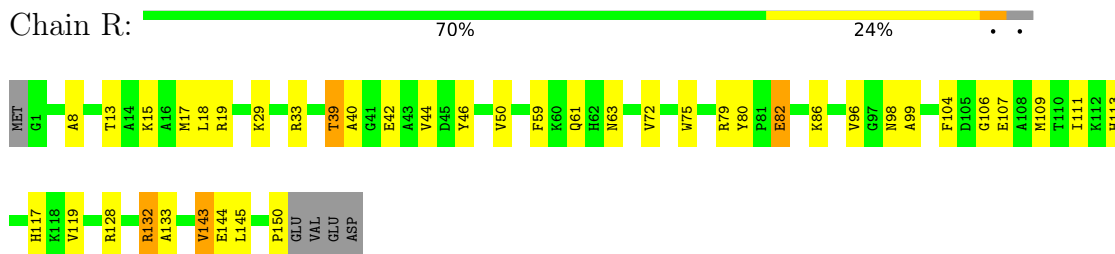


- Molecule 17: 50S ribosomal protein L21e

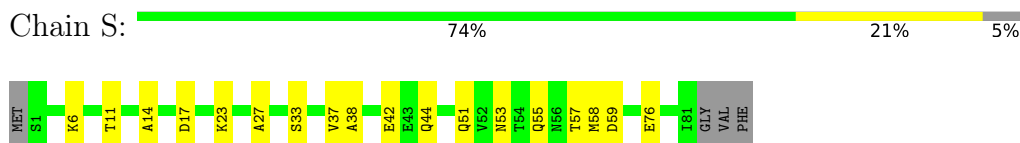
Chain Q: 73% 25% ..



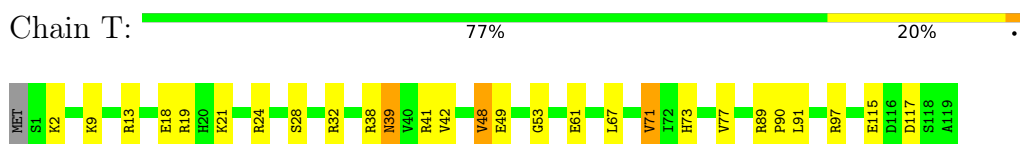
- Molecule 18: 50S ribosomal protein L22P



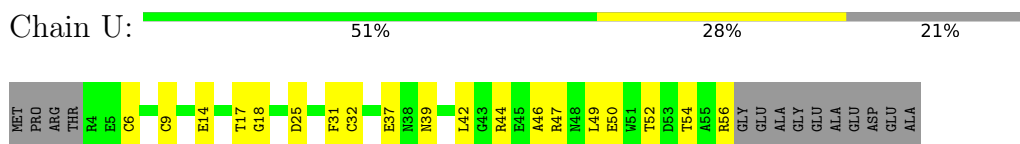
- Molecule 19: 50S ribosomal protein L23P



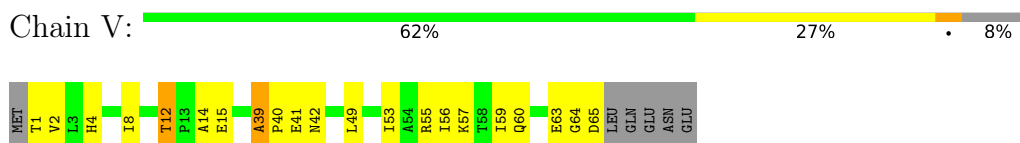
- Molecule 20: 50S ribosomal protein L24P



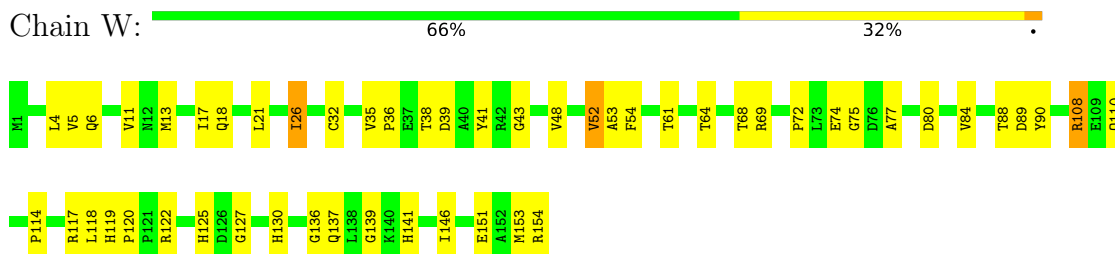
- Molecule 21: 50S ribosomal protein L24e



- Molecule 22: 50S ribosomal protein L29P



- Molecule 23: 50S ribosomal protein L30P



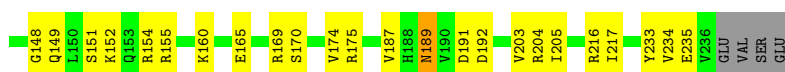
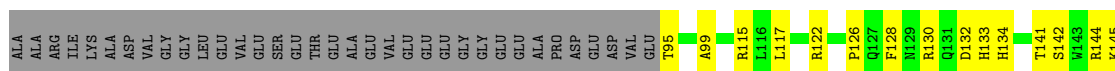
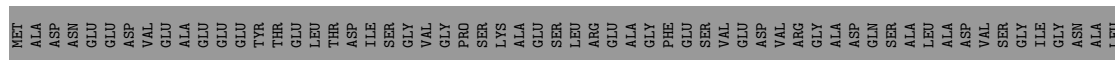
- Molecule 24: 50S ribosomal protein L31e

Chain X:  60% 27% 11%



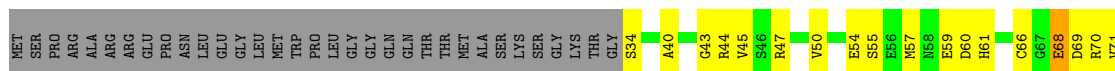
- Molecule 25: 50S ribosomal protein L32e

Chain Y:  43% 16% 41%



- Molecule 26: 50S ribosomal protein L37Ae

Chain Z:  41% 21% 37%



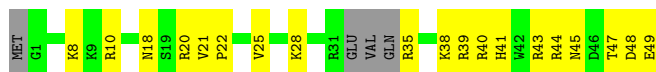
- Molecule 27: 50S ribosomal protein L37e

Chain 1:  67% 32%




- Molecule 28: 50S ribosomal protein L39e

Chain 2:  54% 38% 8%



- Molecule 29: 50S ribosomal protein L44E

Chain 3:  78% 21%

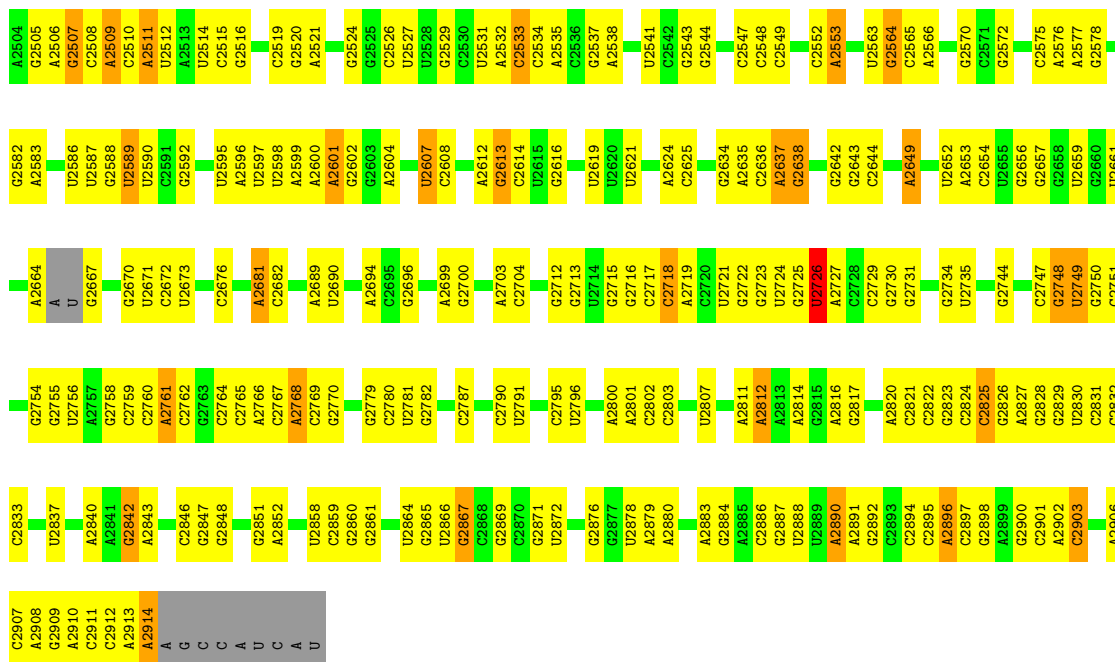


- Molecule 30: 23S RIBOSOMAL RNA

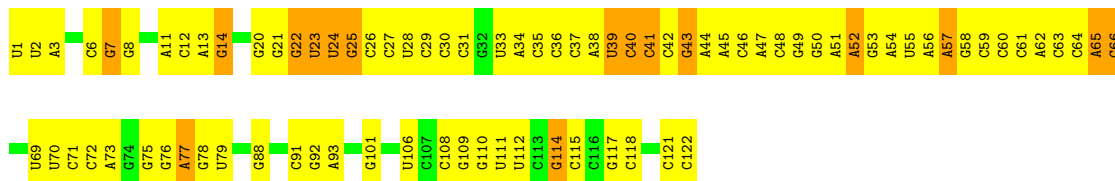
Chain 0: 45% 43% 6% 6%

G	U	U	G	G	C	U	A	C	U10	A11	U12	G13	C18	U19	G20	G21	U22	G23	G24	A25	U26	U27	U30	C31	C36	G39	A45	U46	G47	G56	G61	G62	U63	G64	C65	G66	A67	U68	A69	A70	G71	G72	U73	G74	U75	G78	G79	A80	C85	C86	A86								
C87	C88	G89	A90	G91	C92	C93	G94	A95	G96	G97	A98	A99	C100	A101	C102	A106	U107	C111	G112	A113	A114	U115	A119	C120	C121	U122	C123	U124	U125	C	U128	A129	C130	U134	G135	C136	U137	U138	C139	G140	A145	U146	G147	A151	A152	C153	C154	C155	C156	C162									
U163	G164	A165	A166	C167	C168	G169	A177	G182	G185	A186	C188	G189	A191	A192	C195	G196	C197	A198	A199	C200	A204	U205	C207	C289	C291	G292	C294	C295	G296	U299	U300	C301	G302	C303	G304	A305	G306	G307	U308	C309	U312	C238	C239	A241	A316	A317	A318	A319	G320	G249	C251								
C254	A255	C256	C257	G258	G259	A262	U263	G264	U265	C271	A272	G273	G274	G275	C276	U277	A278	A354	C279	C280	U281	C282	U283	C284	A285	U286	C287	C290	G291	G292	C294	C295	G296	U299	U300	C301	G302	C303	G304	A305	G306	G307	U308	C309	U312	C238	C239	A241	A316	A317	A318	A319	G320	A327					
U328	A329	G333	G334	U335	G336	A337	C338	A339	A340	C341	C342	C343	C344	A347	C348	U349	G350	A354	C355	U358	A360	C361	G362	C363	U364	C365	U366	C367	C368	G369	G370	U371	A372	C376	C377	A378	G379	A380	C381	G393	A395	U396	U398	C399	A316	A317	A318	A319	G320	A407	A408								
G413	C414	G417	C418	G423	C424	U425	A426	C427	G432	C433	C440	A441	A442	G443	C444	U445	G446	A447	G448	A449	C450	G458	C462	A459	A460	C461	A466	C467	U470	G471	G475	C476	G479	G482	C483	A484	A485	U486	C571	G574	A497	A498	G499	G500	G581	U582	C583	U584	C585	A507									
A508	A509	U510	A511	G512	G513	C514	C515	A516	U517	U518	A519	U522	C523	A524	A532	U533	C534	C535	A536	U537	U538	U539	A540	C541	A542	G543	U544	C545	C553	C558	U559	U560	A561	A562	C563	G564	A565	A566	U567	G571	G574	A497	A498	G499	G500	G581	U582	C583	U584	C585	A507								
G588	U589	A590	A591	C594	U595	C596	A602	G603	G604	C605	C613	U614	G615	U616	A620	C621	G622	U623	U624	U625	U626	G627	G709	G710	G711	A630	A631	A632	A635	C636	C637	U649	C650	U653	G652	U653	G656	G657	C658	A659	A660	G661	A666	U667	G668	U669	G670	A671											
G672	U675	G681	A682	G683	G684	C685	A686	C687	A688	A694	C695	C696	G697	A698	U700	U701	G702	G703	C704	C705	G709	G710	G711	A630	A631	A632	A635	C636	C637	U649	C650	U653	G652	U653	G656	G657	C658	A659	A660	G661	A666	U667	G668	U669	G670	A671													
G765	G772	A773	G774	G775	A776	U777	U779	C789	A790	A791	G792	A793	U794	G795	A796	A797	G798	U801	G800	U801	A875	G877	G878	G805	A806	A807	A808	G809	A812	C813	G814	U815	G816	G817	A818	A819	G820	U821	C905	A912	U917	C920	G921	A922	U923	G924	C925	A926	A929	A941	U932								
A843	A844	U845	C846	C847	C848	C849	U850	C851	U852	G853	U854	U855	G856	A857	G858	G859	G860	G861	G862	G863	G864	G865	G866	G867	G868	G869	G870	G871	G872	G873	G874	G875	G876	G877	G878	G879	G880	G881	G882	G883	G884	G885	C889	G902	U903	U904	C905	A912	U917	C920	G921	A922	U923	G924	C925	A926	A929	A941	U932
C933	G938	A939	C940	G941	U942	U945	C946	U947	G948	U949	G950	A951	C952	G953	A954	A955	G956	A957	C1023	C958	U1024	G1027	U1028	U1029	G1030	C1031	U1041	U1042	U1043	U1053	U1056	A1057	C1058	G1059	C1060	U1066	A1067	G1068	C1069	A1070	G1071	U1072	A1073	G1074	A1078	A1079	C1080	A1081											
A1086	U1087	A1088	U1089	C1102	U1109	U1110	U1111	U1116	A1117	A1118	U1119	A1193	A1194	G1195	C1196	A1124	U1125	C1126	U1128	C1129	U1130	G1131	A1132	U1137	G1138	U1139	C1140	U1149	A1150	G1151	A1154	U1155	C1156	U1158	G1159	A1160	A1161	U1162	C1125	U1164	G1165	A1166	U1167	U1168	U1170														
G1172	A1173	G1174	U1175	C1176	U1180	A1181	C1182	C1183	C1184	U1185	C1186	A1187	A1188	A1189	G1190	A1191	A1192	A1193	A1194	G1195	C1196	G1197	U1198	A1199	A1200	C1201	A1202	G1203	C1204	U1205	U1206	A1207	C1208	C1209	G1210	G1211	C1212	C1213	G1214	A1215	G1216	G1217	U1218	U1219	U1220	G1221	C1222	G1223	C1224	C1225	G1226	C1229	A1230	U1234	G1235				

U1236	A1236	G1322	A1406	U1511	U1599	C1692	A1783	U1871	G1950	A2039	C2132	G2253	G2336	U2424	G2456	G2483	G2484	G2485	G2486	G2487	G2488	G2489	G2490	G2491	G2492	G2493	G2497	G2498	G2500	G2501	G2502	A2503			
U1237	U1237	G1323	A1407	G1512	A1603	G1696	U1784	C1872	G1951	A2039	C2132	G2254	G2337	A2434	U2435	U2436	U2437	U2438	U2439	U2440	U2441	U2442	U2443	U2444	U2445	U2446	U2447	U2448	U2449	U2450	U2451	U2452	A2503		
G1238	G1238	G1324	U1408	G1513	G1604	U1696	G1786	U1874	U	C2040	U2133	A2254	G2338	A	G	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
G1239	G1239	G1325	U1409	G1514	G1605	U1697	C1787	C1875	C	G2044	C2133	G2255	G2339	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
A1242	C1243	U1244	G1410	U1515	A1606	A1701	U1788	C1876	C	G2050	G2136	A2257	G2340	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
U1245	U1246	U1246	A1413	U1516	A1413	U1702	G1789	U1877	A	A2054	A	U2285	G2341	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
U1249	C1250	C1251	A1414	U1517	A1414	U1703	U1791	U1878	G	U2054	G	U2286	G2342	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
A1255	G1260	U1266	A1415	U1518	A1415	C1705	G1795	C1880	G	U2059	U	U2287	G2343	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
U1267	C1267	C1268	A1416	U1519	A1416	G1706	G1796	C1881	A	U2060	U	U2288	G2344	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
G1269	G1354	G1355	A1417	U1520	A1417	G1707	A1796	C1882	C	A2062	C	U2289	G2345	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
C1273	A1355	A1355	U1418	U1521	A1418	A1710	A1797	C1883	C	U2063	G	U2290	G2346	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
A1278	A1360	U1350	A1419	U1522	U1419	A1711	A1800	C1884	G	U2064	G	U2291	G2347	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
U1279	G1364	G1364	C1420	U1523	A1420	A1712	G1800	C1885	A	U2065	C	U2292	G2348	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
G1284	G1365	G1365	C1421	U1524	A1421	A1713	G1803	C1886	A	U2066	C	U2293	G2349	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1285	C1366	C1366	U1442	U1525	A1422	A1714	A1804	C1887	A	U2067	C	U2294	G2350	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1286	A1367	A1367	U1444	U1526	A1423	A1715	G1805	C1888	A	U2068	C	U2295	G2351	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1287	U1368	U1368	U1446	U1527	A1424	A1716	A1805	C1889	A	U2069	C	U2296	G2352	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1288	U1368	U1368	U1446	U1528	A1424	A1717	G1805	C1890	A	U2070	C	U2297	G2353	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
C1289	A1372	A1372	C1426	U1529	A1426	A1718	G1805	C1891	A	U2071	C	U2298	G2354	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1290	A1375	A1375	C1426	U1530	A1426	A1719	G1805	C1892	A	U2072	C	U2299	G2355	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1294	G1376	G1376	C1426	U1531	A1426	A1720	G1805	C1893	A	U2073	C	U2300	G2356	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1296	C1377	C1377	C1426	U1532	A1426	A1721	G1805	C1894	A	U2074	C	U2301	G2357	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1297	A1381	A1381	C1426	U1533	A1426	A1722	G1805	C1895	A	U2075	C	U2302	G2358	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1299	G1382	G1382	C1426	U1534	A1426	A1723	G1805	C1896	A	U2076	C	U2303	G2359	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1300	U1383	U1383	C1426	U1535	A1426	A1724	G1805	C1897	A	U2077	C	U2304	G2360	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
C1305	C1384	C1384	C1426	U1536	A1426	A1725	G1805	C1898	A	U2078	C	U2305	G2361	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1306	G1385	G1385	C1426	U1537	A1426	A1726	G1805	C1899	A	U2079	C	U2306	G2362	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1307	G1386	G1386	C1426	U1538	A1426	A1727	G1805	C1900	A	U2080	C	U2307	G2363	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1308	G1387	G1387	C1426	U1539	A1426	A1728	G1805	C1901	A	U2081	C	U2308	G2364	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1309	G1391	G1391	C1426	U1540	A1426	A1729	G1805	C1902	A	U2082	C	U2309	G2365	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1310	A1392	A1392	C1426	U1541	A1426	A1730	G1805	C1903	A	U2083	C	U2310	G2366	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1311	C1393	C1393	C1426	U1542	A1426	A1731	G1805	C1904	A	U2084	C	U2311	G2367	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1312	C1394	C1394	C1426	U1543	A1426	A1732	G1805	C1905	A	U2085	C	U2312	G2368	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1313	C1395	C1395	C1426	U1544	A1426	A1733	G1805	C1906	A	U2086	C	U2313	G2369	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
U1314	C1396	C1396	C1426	U1545	A1426	A1734	G1805	C1907	A	U2087	C	U2314	G2370	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1315	C1397	C1397	C1426	U1546	A1426	A1735	G1805	C1908	A	U2088	C	U2315	G2371	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
G1316	G1398	G1398	C1426	U1547	A1426	A1736	G1805	C1909	A	U2089	C	U2316	G2372	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
C1320	A1399	A1399	C1426	U1548	A1426	A1737	G1805	C1910	A	U2090	C	U2317	G2373	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
A1321	A1400	A1400	C1426	U1549	A1426	A1738	G1805	C1911	A	U2091	C	U2318	G2374	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C



● Molecule 31: 5S RIBOSOMAL RNA



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	212.83Å 299.90Å 576.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.33 – 2.75 85.81 – 2.41	Depositor EDS
% Data completeness (in resolution range)	81.3 (49.33-2.75) 81.1 (85.81-2.41)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.00 (at 2.40Å)	Xtrriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.183 , 0.232 0.311 , 0.324	Depositor DCC
R_{free} test set	6547 reflections (0.98%)	wwPDB-VP
Wilson B-factor (Å ²)	45.6	Xtrriage
Anisotropy	0.228	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 78.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.83	EDS
Total number of atoms	99124	wwPDB-VP
Average B, all atoms (Å ²)	52.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.24% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: 1MA, CD, SR, OMU, PSU, OMG, NA, UR3, MG, CL, K

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	0.34	0/1786	0.65	0/2408
2	B	0.33	0/2690	0.64	0/3652
3	C	0.36	0/1885	0.65	0/2552
4	D	0.33	0/1111	0.55	0/1498
5	E	0.33	0/1382	0.56	0/1880
6	F	0.34	0/901	0.57	0/1224
7	G	0.30	0/241	0.50	0/324
8	H	0.35	0/1302	0.61	0/1743
9	I	0.30	0/526	0.50	0/716
10	J	0.34	0/1136	0.59	0/1530
11	K	0.35	0/1004	0.66	0/1351
12	L	0.31	0/1130	0.64	0/1509
13	M	0.34	0/1582	0.63	0/2116
14	N	0.30	0/1474	0.62	0/1999
15	O	0.34	0/874	0.60	0/1181
16	P	0.32	0/1147	0.53	0/1528
17	Q	0.34	0/749	0.65	0/1005
18	R	0.35	0/1172	0.64	0/1578
19	S	0.35	0/648	0.59	0/875
20	T	0.33	0/958	0.62	0/1289
21	U	0.34	0/417	0.57	0/562
22	V	0.31	0/502	0.49	0/675
23	W	0.34	0/1219	0.61	0/1655
24	X	0.34	0/664	0.60	0/895
25	Y	0.36	0/1146	0.62	0/1536
26	Z	0.36	0/584	0.58	0/781
27	1	0.40	0/438	0.63	0/578
28	2	0.34	0/401	0.60	0/529
29	3	0.36	0/771	0.59	0/1024
30	0	0.37	0/65960	0.68	6/102872 (0.0%)
31	9	0.32	0/2904	0.67	1/4526 (0.0%)
All	All	0.36	0/98704	0.66	7/147591 (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
23	W	0	1
30	0	0	26
All	All	0	27

There are no bond length outliers.

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

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
30	0	1819	G	C5'-C4'-C3'	6.12	125.79	116.00
30	0	871	G	C5'-C4'-O4'	-6.04	101.86	109.10
30	0	1504	A	C1'-O4'-C4'	-5.84	105.22	109.90
30	0	1504	A	N9-C1'-C2'	5.53	121.18	114.00
30	0	841	A	C1'-O4'-C4'	-5.34	105.63	109.90

There are no chirality outliers.

5 of 27 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
30	0	22	U	Sidechain
30	0	26	U	Sidechain
30	0	396	U	Sidechain
30	0	458	G	Sidechain
23	W	90	TYR	Sidechain

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1753	0	1766	80	0
2	B	2625	0	2533	110	0
3	C	1860	0	1813	73	0
4	D	1094	0	1085	56	0
5	E	1357	0	1266	42	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	F	890	0	843	23	0
7	G	240	0	231	7	0
8	H	1282	0	1292	33	0
9	I	519	0	500	24	0
10	J	1120	0	1098	36	0
11	K	994	0	1027	37	0
12	L	1118	0	1076	30	0
13	M	1558	0	1573	48	0
14	N	1445	0	1401	61	0
15	O	865	0	873	22	0
16	P	1136	0	1123	36	0
17	Q	735	0	729	20	0
18	R	1149	0	1122	33	0
19	S	641	0	605	13	0
20	T	950	0	924	21	0
21	U	410	0	364	16	0
22	V	499	0	511	16	0
23	W	1196	0	1137	58	0
24	X	654	0	653	21	0
25	Y	1130	0	1133	41	0
26	Z	573	0	531	18	0
27	1	431	0	426	25	0
28	2	396	0	413	21	0
29	3	755	0	729	15	0
30	0	59022	0	29809	1550	0
31	9	2599	0	1325	114	0
32	0	86	0	0	0	0
32	9	1	0	0	0	0
32	A	2	0	0	0	0
32	B	1	0	0	0	0
32	K	1	0	0	0	0
32	T	1	0	0	0	0
32	Y	1	0	0	0	0
33	0	10	0	0	1	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	5	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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
33	Q	1	0	0	0	0
33	R	1	0	0	0	0
34	0	92	0	0	0	0
34	1	2	0	0	0	0
34	3	2	0	0	0	0
34	9	4	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	R	1	0	0	0	0
34	S	1	0	0	0	0
35	0	67	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	1	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	5927	0	0	235	0
38	1	55	0	0	3	0
38	2	42	0	0	3	0
38	3	63	0	0	3	0
38	9	144	0	0	10	0
38	A	118	0	0	7	0
38	B	144	0	0	11	0
38	C	179	0	0	19	0
38	D	46	0	0	4	0
38	E	40	0	0	2	0
38	F	27	0	0	1	0
38	G	19	0	0	0	0
38	H	68	0	0	5	0
38	I	5	0	0	1	0
38	J	55	0	0	2	0
38	K	52	0	0	2	0
38	L	84	0	0	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	M	127	0	0	5	0
38	N	63	0	0	4	0
38	O	40	0	0	2	0
38	P	61	0	0	1	0
38	Q	43	0	0	1	0
38	R	84	0	0	5	0
38	S	33	0	0	2	0
38	T	33	0	0	2	0
38	U	28	0	0	2	0
38	V	14	0	0	1	0
38	W	67	0	0	5	0
38	X	30	0	0	0	0
38	Y	100	0	0	10	0
38	Z	32	0	0	0	0
All	All	99124	0	59911	2446	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 16.

The worst 5 of 2446 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)
14:N:37:ARG:NH1	31:9:6:C:H5''	1.60	1.15
13:M:171:ARG:HD3	30:0:156:C:H5''	1.32	1.11
30:0:1160:G:C5'	30:0:1161:A:H5'	1.78	1.11
30:0:871:G:H5'	30:0:871:G:H8	1.12	1.11
30:0:871:G:H5'	30:0:871:G:C8	1.84	1.11

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%)	211 (90%)	22 (9%)	2 (1%)	17	31
2	B	335/338 (99%)	309 (92%)	21 (6%)	5 (2%)	10	18
3	C	244/246 (99%)	228 (93%)	16 (7%)	0	100	100
4	D	134/177 (76%)	110 (82%)	22 (16%)	2 (2%)	10	18
5	E	170/178 (96%)	160 (94%)	9 (5%)	1 (1%)	25	42
6	F	117/120 (98%)	107 (92%)	8 (7%)	2 (2%)	9	16
7	G	25/348 (7%)	23 (92%)	2 (8%)	0	100	100
8	H	156/177 (88%)	141 (90%)	14 (9%)	1 (1%)	25	42
9	I	68/162 (42%)	53 (78%)	13 (19%)	2 (3%)	4	6
10	J	140/145 (97%)	131 (94%)	8 (6%)	1 (1%)	22	39
11	K	130/132 (98%)	122 (94%)	8 (6%)	0	100	100
12	L	141/165 (86%)	125 (89%)	13 (9%)	3 (2%)	7	12
13	M	192/196 (98%)	181 (94%)	10 (5%)	1 (0%)	29	47
14	N	184/187 (98%)	164 (89%)	16 (9%)	4 (2%)	6	11
15	O	113/116 (97%)	110 (97%)	3 (3%)	0	100	100
16	P	141/149 (95%)	137 (97%)	4 (3%)	0	100	100
17	Q	93/96 (97%)	89 (96%)	3 (3%)	1 (1%)	14	25
18	R	148/155 (96%)	141 (95%)	7 (5%)	0	100	100
19	S	79/85 (93%)	74 (94%)	5 (6%)	0	100	100
20	T	117/120 (98%)	108 (92%)	8 (7%)	1 (1%)	17	31
21	U	51/67 (76%)	48 (94%)	3 (6%)	0	100	100
22	V	63/71 (89%)	59 (94%)	3 (5%)	1 (2%)	9	16
23	W	152/154 (99%)	146 (96%)	6 (4%)	0	100	100
24	X	80/92 (87%)	73 (91%)	5 (6%)	2 (2%)	5	9
25	Y	140/241 (58%)	139 (99%)	1 (1%)	0	100	100
26	Z	71/116 (61%)	62 (87%)	9 (13%)	0	100	100
27	1	54/57 (95%)	52 (96%)	2 (4%)	0	100	100
28	2	42/50 (84%)	41 (98%)	1 (2%)	0	100	100
29	3	90/92 (98%)	88 (98%)	2 (2%)	0	100	100
All	All	3705/4472 (83%)	3432 (93%)	244 (7%)	29 (1%)	19	34

5 of 29 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	37	VAL
8	H	19	ARG
10	J	5	GLU
14	N	154	LEU
14	N	183	ASP

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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%)	166 (93%)	13 (7%)	14	25
2	B	282/283 (100%)	264 (94%)	18 (6%)	17	31
3	C	193/193 (100%)	179 (93%)	14 (7%)	14	25
4	D	117/148 (79%)	113 (97%)	4 (3%)	37	58
5	E	152/156 (97%)	150 (99%)	2 (1%)	69	81
6	F	93/94 (99%)	92 (99%)	1 (1%)	73	84
7	G	27/282 (10%)	25 (93%)	2 (7%)	13	24
8	H	134/145 (92%)	129 (96%)	5 (4%)	34	54
9	I	58/130 (45%)	58 (100%)	0	100	100
10	J	118/121 (98%)	112 (95%)	6 (5%)	24	41
11	K	106/106 (100%)	105 (99%)	1 (1%)	78	87
12	L	113/127 (89%)	107 (95%)	6 (5%)	22	38
13	M	158/160 (99%)	152 (96%)	6 (4%)	33	53
14	N	149/150 (99%)	142 (95%)	7 (5%)	26	45
15	O	93/94 (99%)	93 (100%)	0	100	100
16	P	113/117 (97%)	110 (97%)	3 (3%)	44	65
17	Q	79/80 (99%)	75 (95%)	4 (5%)	24	41
18	R	117/122 (96%)	111 (95%)	6 (5%)	24	41
19	S	71/74 (96%)	70 (99%)	1 (1%)	67	79
20	T	105/106 (99%)	98 (93%)	7 (7%)	16	28

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	U	44/53 (83%)	44 (100%)	0	100	100
22	V	51/57 (90%)	50 (98%)	1 (2%)	55	72
23	W	130/130 (100%)	126 (97%)	4 (3%)	40	60
24	X	66/74 (89%)	62 (94%)	4 (6%)	18	33
25	Y	120/196 (61%)	116 (97%)	4 (3%)	38	58
26	Z	60/94 (64%)	59 (98%)	1 (2%)	60	76
27	1	46/47 (98%)	45 (98%)	1 (2%)	52	70
28	2	42/46 (91%)	41 (98%)	1 (2%)	49	68
29	3	79/79 (100%)	76 (96%)	3 (4%)	33	53
All	All	3095/3646 (85%)	2970 (96%)	125 (4%)	31	51

5 of 125 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	H	91	ARG
23	W	146	ILE
12	L	140	VAL
23	W	108	ARG
25	Y	203	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 77 such sidechains are listed below:

Mol	Chain	Res	Type
20	T	39	ASN
28	2	18	ASN
22	V	60	GLN
24	X	23	HIS
29	3	20	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
30	0	2745/2923 (93%)	232 (8%)	18 (0%)
31	9	121/122 (99%)	16 (13%)	1 (0%)
All	All	2866/3045 (94%)	248 (8%)	19 (0%)

5 of 248 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 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
30	0	2649	A
30	0	2761	A
31	9	65	A
30	0	2726	U
30	0	1352	A

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	OMG	0	2588	30	18,26,27	0.99	2 (11%)	19,38,41	0.70	1 (5%)
30	UR3	0	2619	30	19,22,23	0.42	0	26,32,35	0.63	1 (3%)
30	OMU	0	2587	30	19,22,23	0.29	0	26,31,34	0.39	0
30	PSU	0	2621	30	18,21,22	1.49	2 (11%)	22,30,33	1.26	3 (13%)
30	1MA	0	628	30,35	16,25,26	1.36	3 (18%)	18,37,40	1.02	2 (11%)

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	OMG	0	2588	30	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
30	UR3	0	2619	30	-	0/7/25/26	0/2/2/2
30	OMU	0	2587	30	-	0/9/27/28	0/2/2/2
30	PSU	0	2621	30	-	0/7/25/26	0/2/2/2
30	1MA	0	628	30,35	-	0/3/25/26	0/3/3/3

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	4.94	1.43	1.36
30	0	628	1MA	C2-N3	3.53	1.33	1.29
30	0	2621	PSU	C6-C5	2.69	1.38	1.35
30	0	628	1MA	C6-N6	2.56	1.34	1.27
30	0	2588	OMG	C8-N7	-2.45	1.30	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	3.37	120.56	118.20
30	0	2621	PSU	O2-C2-N1	2.76	125.83	122.79
30	0	628	1MA	N1-C2-N3	2.76	129.24	126.02
30	0	2621	PSU	C6-N1-C2	-2.72	119.90	122.68
30	0	628	1MA	C5-C6-N1	2.49	117.62	113.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
30	0	2587	OMU	2	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

There are no such residues in this entry.

5.8 Polymer linkage issues

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.