



wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 7, 2023 – 07:53 PM EST

PDB ID : 1VQ5
Title : The structure of the transition state analogue "RAA" bound to the large ribosomal subunit of haloarcula marismortui
Authors : Schmeing, T.M.; Steitz, T.A.
Deposited on : 2004-12-16
Resolution : 2.60 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

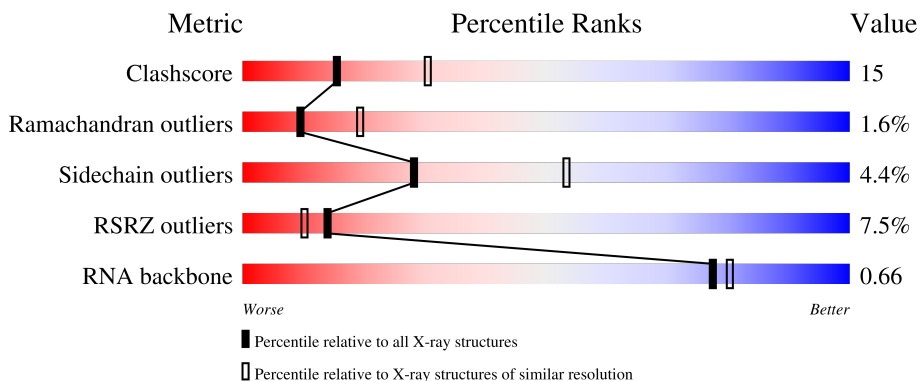
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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.



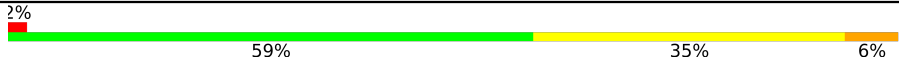
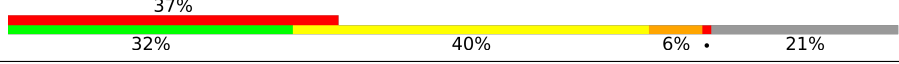

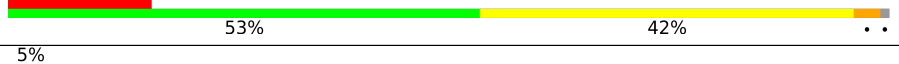
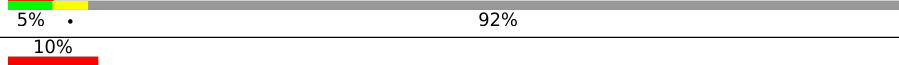
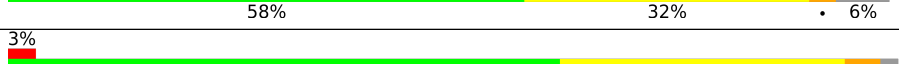
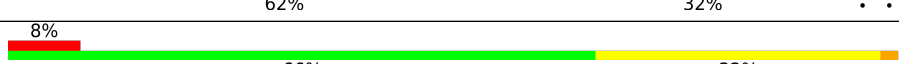
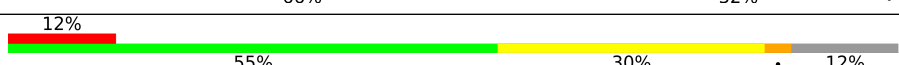
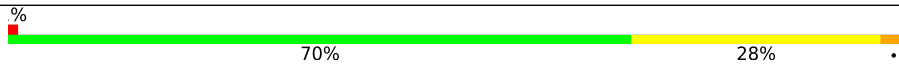


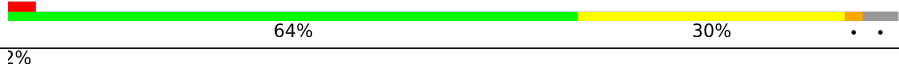
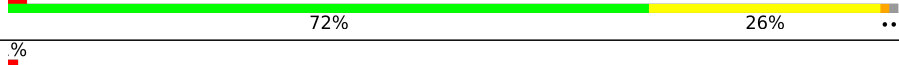

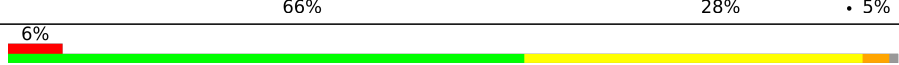
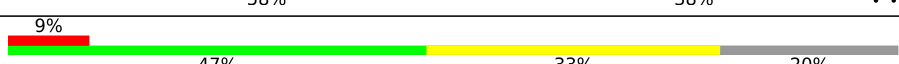
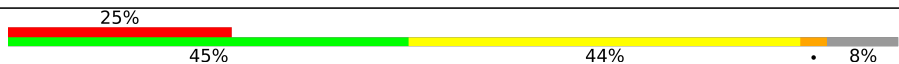


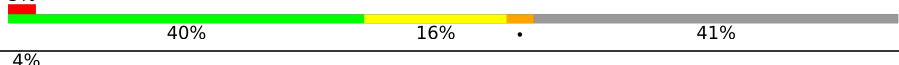





Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)
RNA backbone	3102	1040 (2.90-2.30)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	2922	 2% 61% 28% 5% 6%
2	9	122	 3% 58% 32% 10%
3	4	8	 38% 62%
4	A	240	 6% 60% 34% 5% 5%
5	B	338	 9% 50% 45% 5%

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Mol	Chain	Length	Quality of chain
6	C	246	
7	D	177	
8	E	178	
9	F	120	
10	G	348	
11	H	171	
12	J	145	
13	K	132	
14	L	165	
15	M	194	
16	N	187	
17	O	116	
18	P	149	
19	Q	96	
20	R	155	
21	S	85	
22	T	120	
23	U	66	
24	V	71	
25	W	154	
26	X	92	
27	Y	241	
28	Z	83	
29	1	57	
30	2	50	

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Mol	Chain	Length	Quality of chain
31	3	92	
32	I	162	

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	MG	0	8049	-	-	-	X
33	MG	0	8092	-	-	-	X
35	NA	0	9121	-	-	-	X
35	NA	0	9155	-	-	-	X
35	NA	0	9162	-	-	-	X
35	NA	0	9177	-	-	-	X
35	NA	0	9182	-	-	-	X
35	NA	0	9184	-	-	-	X
35	NA	B	9158	-	-	-	X
35	NA	R	9186	-	-	-	X

2 Entry composition [i](#)

There are 38 unique types of molecules in this entry. The entry contains 99060 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 RNA chain called 23S ribosomal rna.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	0	2754	59021	26350	10878	19048	2745	0	0	0

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
0	628	1MA	A	modified residue	GB 3377779
0	2587	OMU	U	modified residue	GB 3377779
0	2588	OMG	G	modified residue	GB 3377779
0	2619	UR3	U	modified residue	GB 3377779
0	2621	PSU	U	modified residue	GB 3377779

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	9	122	2600	1160	472	847	121	0	0	0

- Molecule 3 is a RNA chain called 5'-D*(DC)P*(DC)P*(5AA)P*(2OP)P*(PO2)P*AP*C*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	4	8	126	61	23	37	5	0	0	0

- Molecule 4 is a protein called 50S ribosomal protein L2P.

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

- Molecule 5 is a protein called 50S ribosomal protein L3P.

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

- Molecule 6 is a protein called 50S ribosomal protein L4E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	C	246	1859	1131	344	383	1	0	0	0

- Molecule 7 is a protein called 50S ribosomal protein L5P.

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

- Molecule 8 is a protein called 50S ribosomal protein L6P.

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

- Molecule 9 is a protein called 50S ribosomal protein L7AE.

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

- Molecule 10 is a protein called ACIDIC RIBOSOMAL PROTEIN P0 HOMOLOG.

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

- Molecule 11 is a protein called 50S RIBOSOMAL PROTEIN L10E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	H	160	1266	785	237	238	6	0	0	0

- Molecule 12 is a protein called 50S ribosomal protein L13P.

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

- Molecule 13 is a protein called 50S ribosomal protein L14P.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	K	132	992	609	187	192	4	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	44	LEU	HIS	conflict	UNP P22450

- Molecule 14 is a protein called 50S ribosomal protein L15P.

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

- Molecule 15 is a protein called 50S Ribosomal Protein L15E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	M	194	1560	943	332	284	1	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
M	13	GLU	LYS	conflict	GB 55231501
M	194	ALA	GLY	conflict	GB 55231501

- Molecule 16 is a protein called 50S ribosomal protein L18P.

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

- Molecule 17 is a protein called 50S ribosomal protein L18e.

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

- Molecule 18 is a protein called 50S ribosomal protein L19E.

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

- Molecule 19 is a protein called 50S ribosomal protein L21e.

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

- Molecule 20 is a protein called 50S ribosomal protein L22P.

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

- Molecule 21 is a protein called 50S ribosomal protein L23P.

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

- Molecule 22 is a protein called 50S ribosomal protein L24P.

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

- Molecule 23 is a protein called 50S ribosomal protein L24E.

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

- Molecule 24 is a protein called 50S ribosomal protein L29P.

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

- Molecule 25 is a protein called 50S ribosomal protein L30P.

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

- Molecule 26 is a protein called 50S ribosomal protein L31e.

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

- Molecule 27 is a protein called 50S ribosomal protein L32E.

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

- Molecule 28 is a protein called 50S ribosomal protein L37Ae.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
28	Z	73	578	346	116	111	5	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Z	10	ARG	SER	conflict	GB 55231162

- Molecule 29 is a protein called 50S ribosomal protein L37e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
29	1	56	431	258	86	83	4	0	0	0

- Molecule 30 is a protein called 50S ribosomal protein L39e.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
30	2	46	396	239	89	67	1	0	0	0

- Molecule 31 is a protein called 50S ribosomal protein L44E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
31	3	92	755	458	153	137	7	0	0	0

- Molecule 32 is a protein called 50S RIBOSOMAL PROTEIN L11P.

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

- Molecule 33 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
33	0	106	Total	Mg	0	0
			106	106		
33	9	2	Total	Mg	0	0
			2	2		
33	4	1	Total	Mg	0	0
			1	1		
33	A	2	Total	Mg	0	0
			2	2		
33	B	2	Total	Mg	0	0
			2	2		
33	K	1	Total	Mg	0	0
			1	1		
33	T	1	Total	Mg	0	0
			1	1		
33	Y	1	Total	Mg	0	0
			1	1		
33	2	1	Total	Mg	0	0
			1	1		
33	3	1	Total	Mg	0	0
			1	1		

- Molecule 34 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
34	0	3	Total K 3 3	0	0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
35	0	71	Total Na 71 71	0	0
35	9	2	Total Na 2 2	0	0
35	A	1	Total Na 1 1	0	0
35	B	1	Total Na 1 1	0	0
35	C	1	Total Na 1 1	0	0
35	H	2	Total Na 2 2	0	0
35	J	1	Total Na 1 1	0	0
35	L	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	3	Total Na 3 3	0	0
35	S	1	Total Na 1 1	0	0

- Molecule 36 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
36	0	10	Total Cl 10 10	0	0
36	A	1	Total Cl 1 1	0	0
36	B	1	Total Cl 1 1	0	0
36	J	3	Total Cl 3 3	0	0
36	L	1	Total Cl 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
36	M	1	Total Cl 1 1	0	0
36	N	1	Total Cl 1 1	0	0
36	O	1	Total Cl 1 1	0	0
36	R	1	Total Cl 1 1	0	0
36	Y	1	Total Cl 1 1	0	0
36	3	1	Total Cl 1 1	0	0

- Molecule 37 is CADMIUM ION (three-letter code: CD) (formula: Cd).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
37	O	1	Total Cd 1 1	0	0
37	U	1	Total Cd 1 1	0	0
37	Z	1	Total Cd 1 1	0	0
37	1	1	Total Cd 1 1	0	0
37	3	1	Total Cd 1 1	0	0

- Molecule 38 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	0	5820	Total O 5820 5820	0	0
38	9	133	Total O 133 133	0	0
38	4	8	Total O 8 8	0	0
38	A	117	Total O 117 117	0	0
38	B	150	Total O 150 150	0	0
38	C	165	Total O 165 165	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	D	49	Total O 49 49	0	0
38	E	47	Total O 47 47	0	0
38	F	21	Total O 21 21	0	0
38	G	16	Total O 16 16	0	0
38	H	66	Total O 66 66	0	0
38	J	52	Total O 52 52	0	0
38	K	54	Total O 54 54	0	0
38	L	83	Total O 83 83	0	0
38	M	118	Total O 118 118	0	0
38	N	66	Total O 66 66	0	0
38	O	39	Total O 39 39	0	0
38	P	65	Total O 65 65	0	0
38	Q	52	Total O 52 52	0	0
38	R	85	Total O 85 85	0	0
38	S	31	Total O 31 31	0	0
38	T	39	Total O 39 39	0	0
38	U	25	Total O 25 25	0	0
38	V	13	Total O 13 13	0	0
38	W	68	Total O 68 68	0	0
38	X	27	Total O 27 27	0	0
38	Y	92	Total O 92 92	0	0

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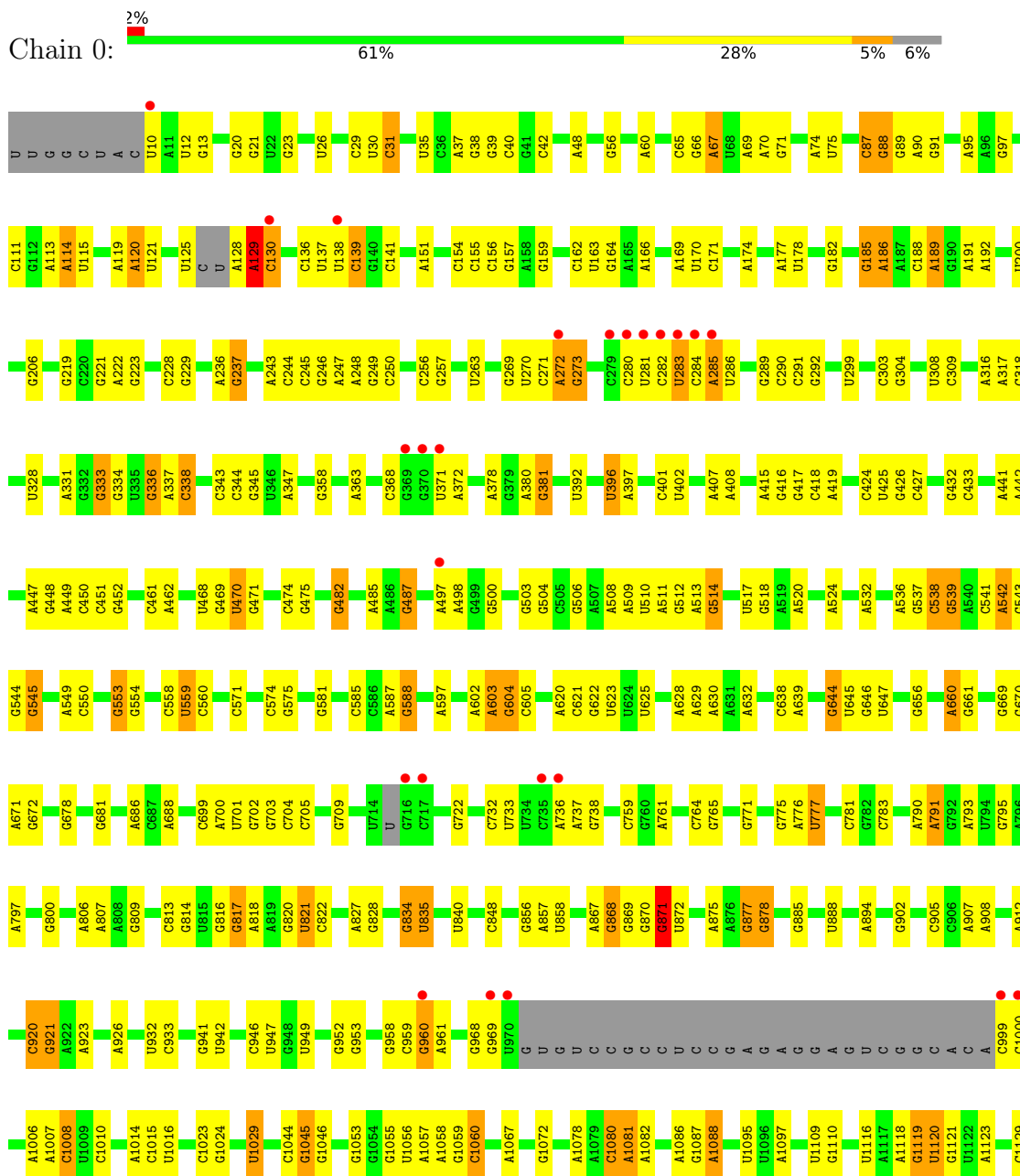
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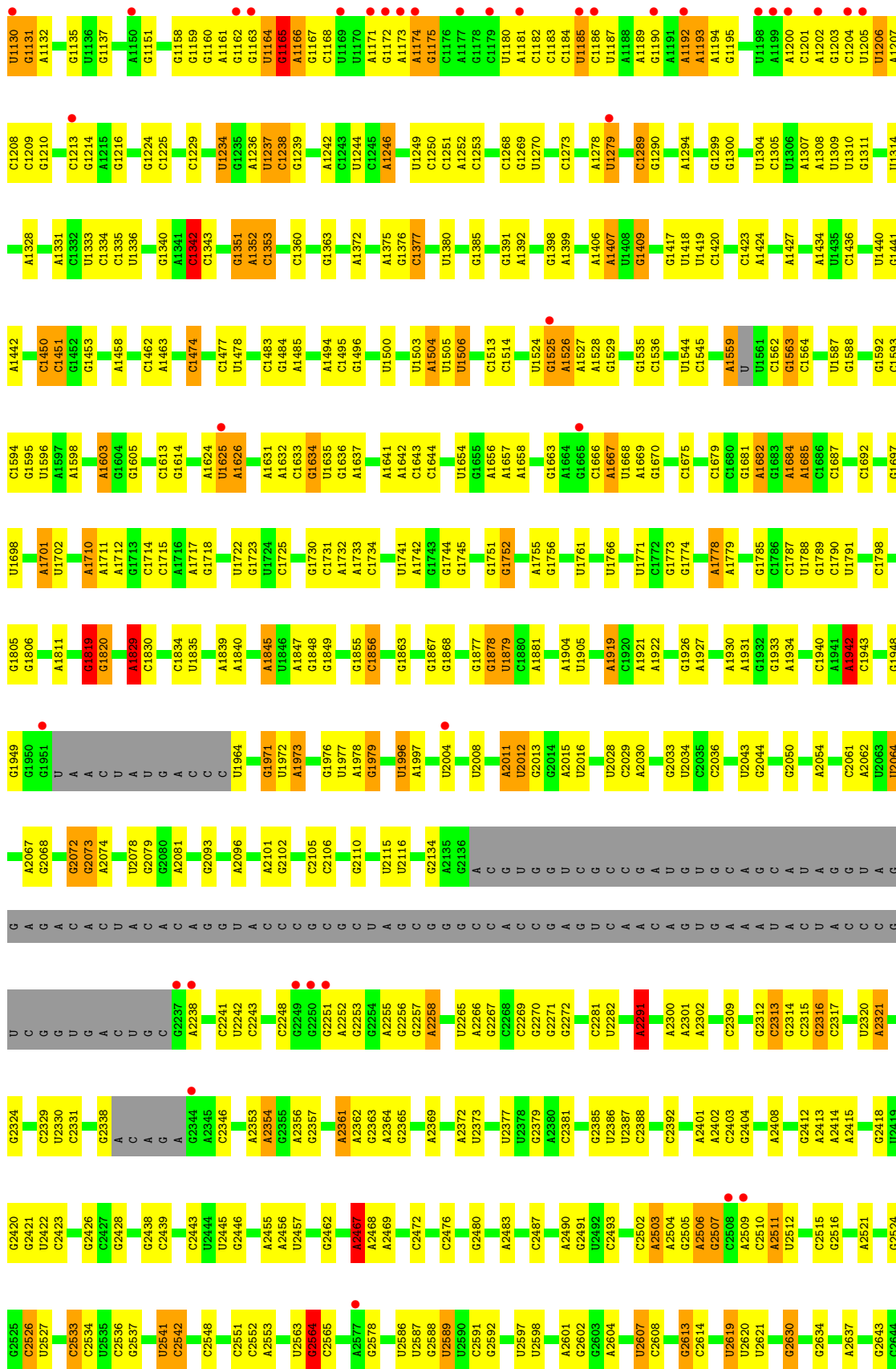
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
38	Z	30	Total O 30 30	0	0
38	1	59	Total O 59 59	0	0
38	2	42	Total O 42 42	0	0
38	3	74	Total O 74 74	0	0
38	I	10	Total O 10 10	0	0

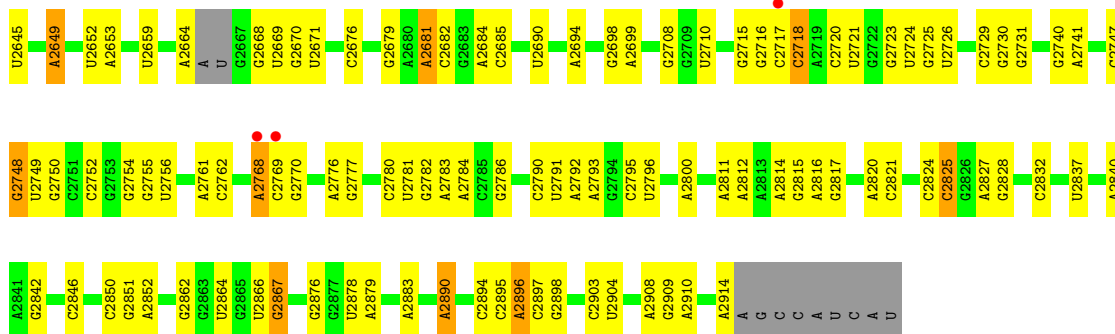
3 Residue-property plots [i](#)

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 and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

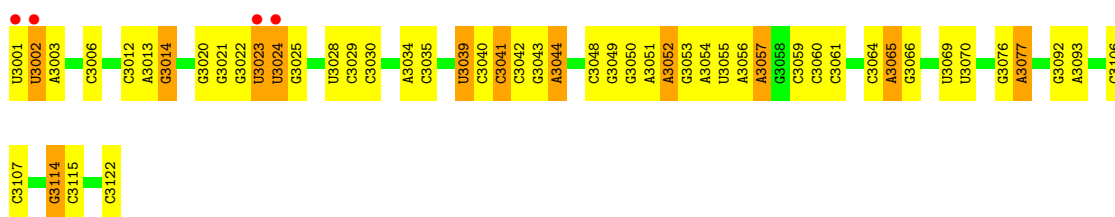
- Molecule 1: 23S ribosomal rna







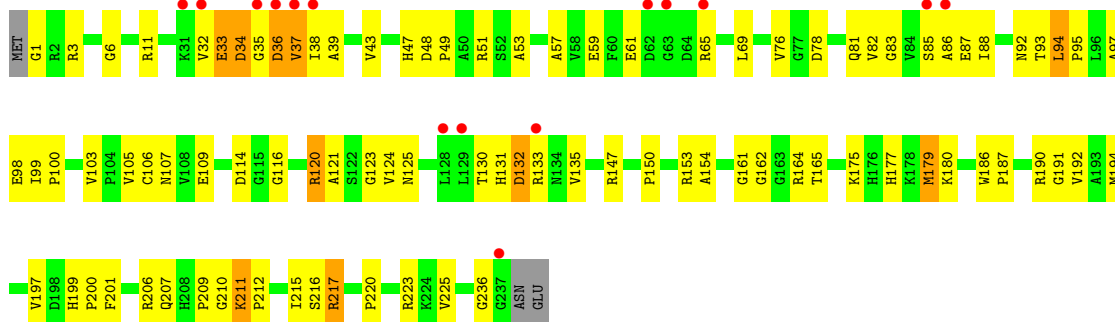
• Molecule 2: 5S ribosomal RNA



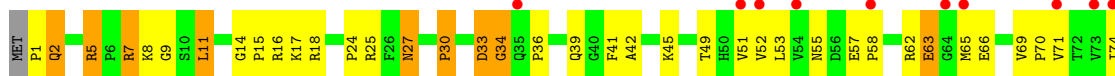
• Molecule 3: 5'-D*(DC)P*(DC)P*(5AA)P*(2OP)P*(PO2)P*AP*C*C-3'

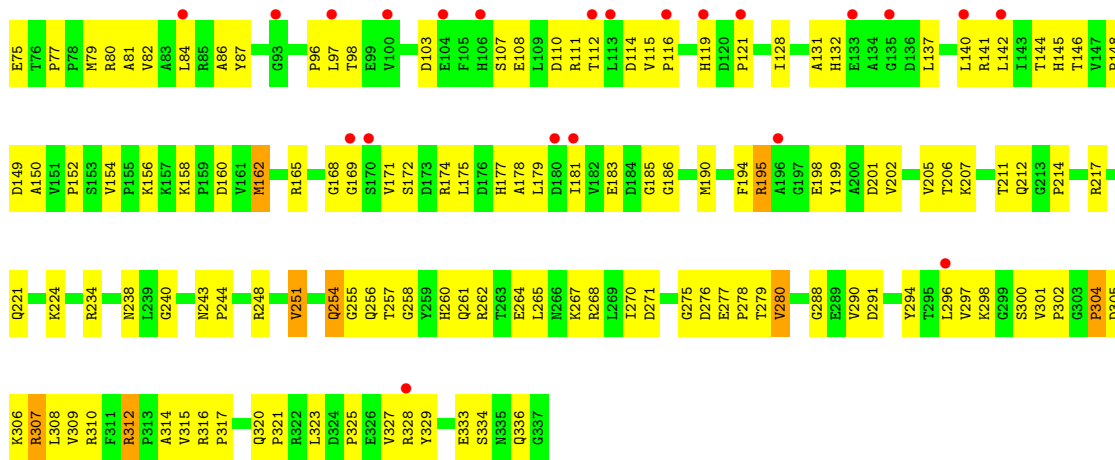


• Molecule 4: 50S ribosomal protein L2P

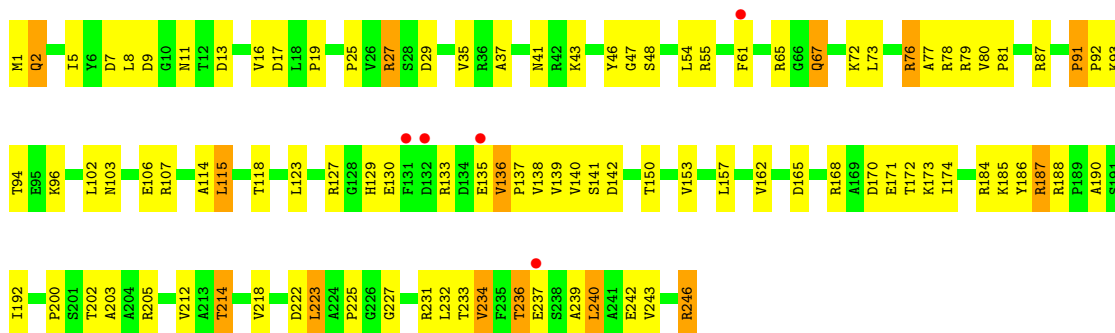


• Molecule 5: 50S ribosomal protein L3P

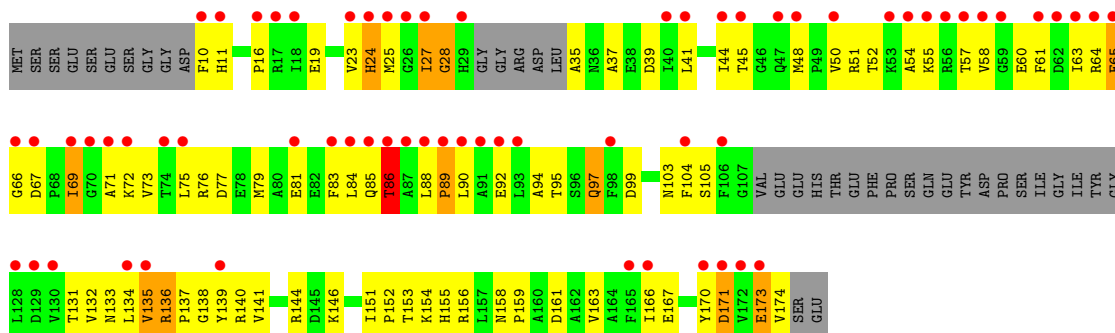




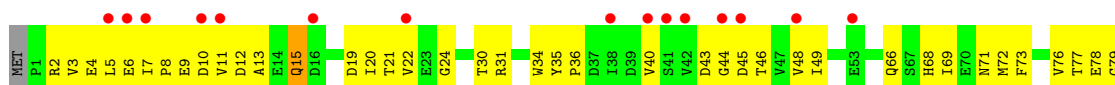
• Molecule 6: 50S ribosomal protein L4E

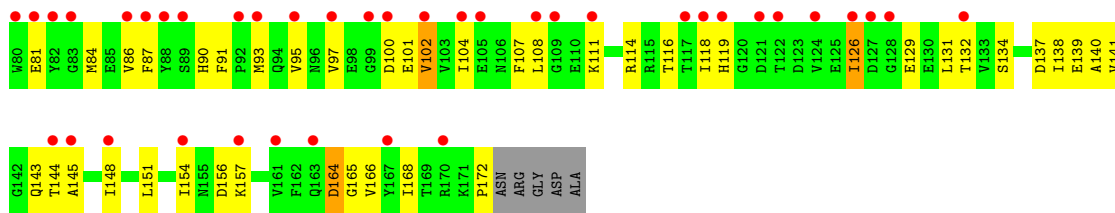


• Molecule 7: 50S ribosomal protein L5P

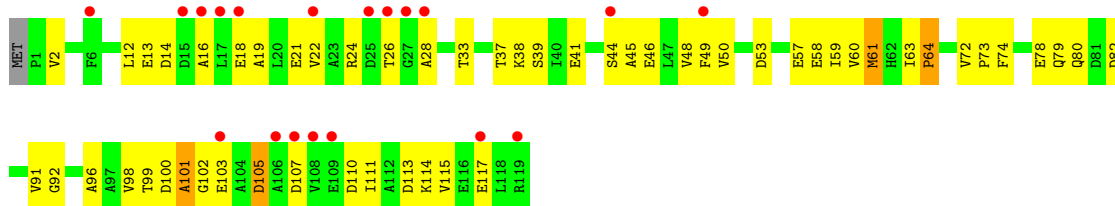


• Molecule 8: 50S ribosomal protein L6P

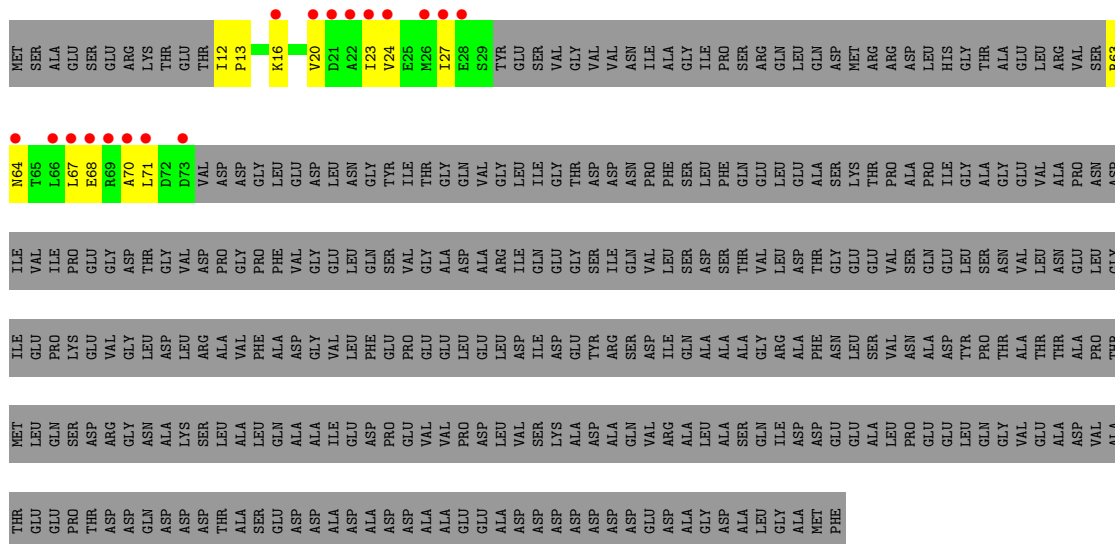




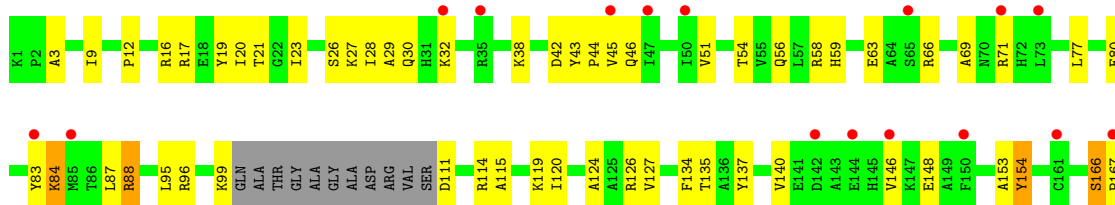
● Molecule 9: 50S ribosomal protein L7AE



● Molecule 10: ACIDIC RIBOSOMAL PROTEIN P0 HOMOLOG

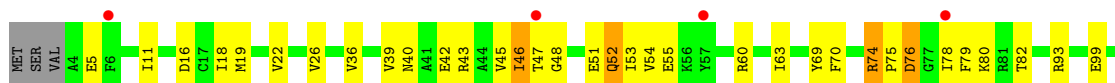


● Molecule 11: 50S RIBOSOMAL PROTEIN L10E





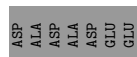
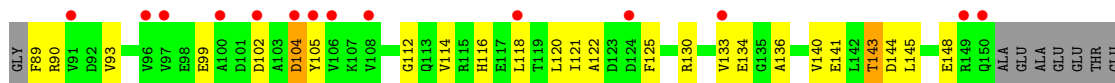
- Molecule 12: 50S ribosomal protein L13P



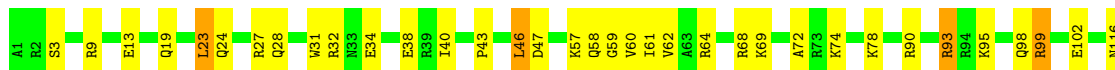
- Molecule 13: 50S ribosomal protein L14P



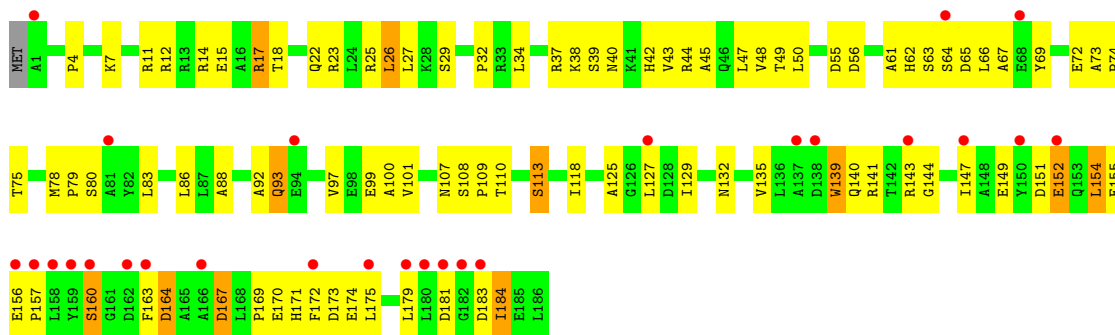
- Molecule 14: 50S ribosomal protein L15P



- Molecule 15: 50S Ribosomal Protein L15E



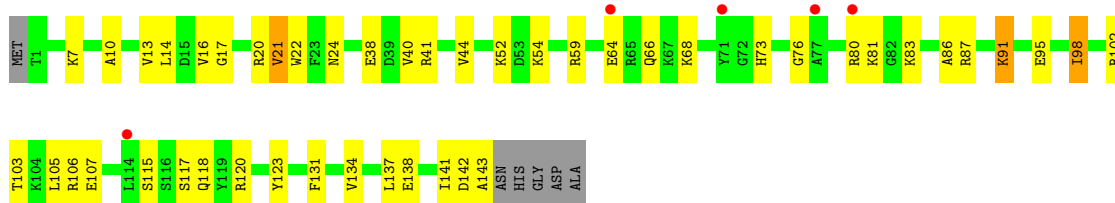
- Molecule 16: 50S ribosomal protein L18P



- Molecule 17: 50S ribosomal protein L18e



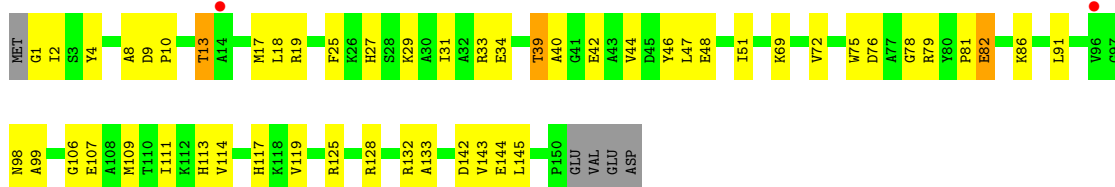
- Molecule 18: 50S ribosomal protein L19E



- Molecule 19: 50S ribosomal protein L21e



- Molecule 20: 50S ribosomal protein L22P



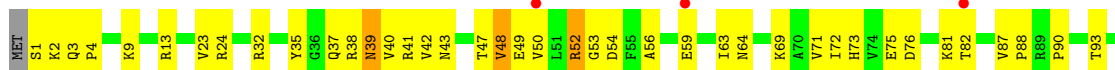
- Molecule 21: 50S ribosomal protein L23P

Chain S: 



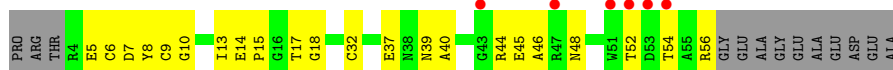
• Molecule 22: 50S ribosomal protein L24P

Chain T: 



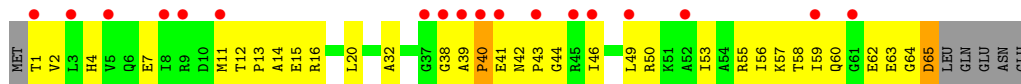
• Molecule 23: 50S ribosomal protein L24E

Chain U: 



• Molecule 24: 50S ribosomal protein L29P

Chain V: 



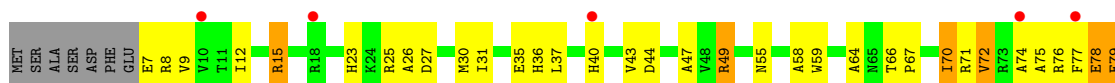
• Molecule 25: 50S ribosomal protein L30P

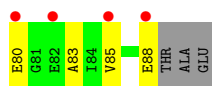
Chain W: 



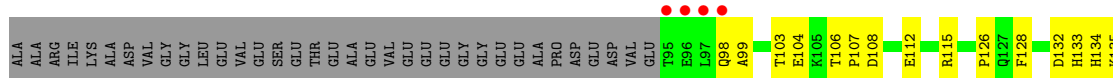
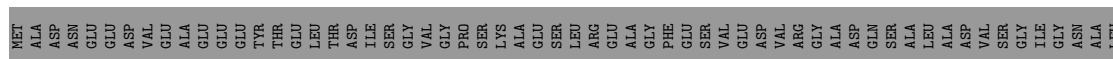
• Molecule 26: 50S ribosomal protein L31e

Chain X: 

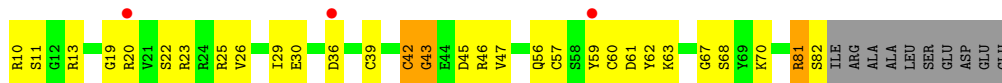




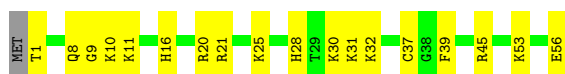
- Molecule 27: 50S ribosomal protein L32E



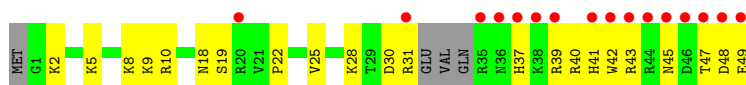
- Molecule 28: 50S ribosomal protein L37Ae



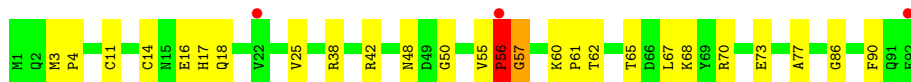
- Molecule 29: 50S ribosomal protein L37e



- Molecule 30: 50S ribosomal protein L39e



- Molecule 31: 50S ribosomal protein L44E



- Molecule 32: 50S RIBOSOMAL PROTEIN L11P



MET	SER		
ALA	PHE	A125	
GLY	GLU	K126	
THR	ILE	E127	
ILE	GLU	V128	
GLU	VAL	V129	
VAL	G71	G130	
LEU	V72	T131	
VAL	P73	C132	
PRO	P74	T133	
GLY	T75	S134	
GLY	A76	L135	
GLU	E77	G136	
ALA	L78	V137	
ASN	I79	T138	
PRO	K80	I139	
PRO	D81	E140	
PRO	E82	GLY	
PRO	A83	GLU	
LEU	G84	ASN	
GLY	F85	PRO	
PRO	E86	ARG	
GLU	T87	GLU	
LEU	G88	PHE	
GLY	S89	LYS	
PRO	G90	GLU	
THR	E91	ARG	
THR	P92	ILE	
VAL	Q93	ASP	
ASP	E94	ALA	
VAL	D95	GLY	
GLN	F96	GLU	
ALA	V97	TYR	
VAL	A98	ASP	
GLN	D99	ASP	
GLU	L100	VAL	
ILE	S101	PHE	
ASN	V102	ALA	
ASP	D103	ALA	
GLN	V105	GLU	
THR	K106	GLN	
ALA	Q107	ALA	
ALA	I108	PHE	
PHE	A109	ASP	
ASP	E110	GLY	
THR	K112	THR	
VAL	H113	GLU	
PRO	P114	VAL	
VAL	D115	PRO	
VAL	L116	VAL	
VAL	L117	THR	
VAL	S118	VAL	
LYS	Y119	LYS	
TYR	D120	TYR	
ASP	L121	ASP	
ASP	T122	ASP	
GLY	N123	GLY	
	A124		

4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	211.79Å 300.61Å 573.36Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.60 49.67 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.0 (50.00-2.60) 90.1 (49.67-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.83 (at 2.48Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.197 , 0.237 0.238 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	53.1	Xtrriage
Anisotropy	0.246	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 55.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	99060	wwPDB-VP
Average B, all atoms (Å ²)	60.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.51% 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, DCZ, UR3, NA, PSU, CL, PO2, CD, 5AA, K, OMU, 2OP, OMG, MG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	0	0.38	0/65959	0.69	20/102870 (0.0%)
2	9	0.33	0/2905	0.70	1/4528 (0.0%)
3	4	0.53	0/83	0.82	0/119
4	A	0.33	0/1786	0.64	0/2408
5	B	0.32	0/2690	0.63	0/3652
6	C	0.39	0/1884	0.66	0/2551
7	D	0.29	0/1111	0.53	0/1498
8	E	0.31	0/1382	0.57	0/1880
9	F	0.30	0/901	0.53	0/1224
10	G	0.29	0/241	0.45	0/324
11	H	0.34	0/1287	0.63	0/1725
12	J	0.35	0/1136	0.60	0/1530
13	K	0.35	0/1001	0.67	0/1347
14	L	0.33	0/1130	0.64	0/1509
15	M	0.35	0/1584	0.61	0/2119
16	N	0.28	0/1474	0.62	0/1999
17	O	0.34	0/874	0.59	0/1181
18	P	0.33	0/1147	0.54	0/1528
19	Q	0.37	0/749	0.68	0/1005
20	R	0.35	0/1172	0.64	0/1578
21	S	0.33	0/648	0.58	0/875
22	T	0.32	0/958	0.65	1/1289 (0.1%)
23	U	0.34	0/417	0.56	0/562
24	V	0.28	0/502	0.51	0/675
25	W	0.33	0/1219	0.62	0/1655
26	X	0.34	0/664	0.59	0/895
27	Y	0.36	0/1146	0.65	0/1536
28	Z	0.37	0/589	0.65	0/787
29	1	0.41	0/438	0.64	0/578
30	2	0.32	0/401	0.55	0/529
31	3	0.38	0/771	0.59	0/1024
32	I	0.29	0/526	0.53	0/716

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
All	All	0.37	0/98775	0.67	22/147696 (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
1	0	1	52
25	W	0	1
All	All	1	53

There are no bond length outliers.

The worst 5 of 22 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	0	1563	G	C2'-C3'-O3'	9.50	130.40	109.50
1	0	1942	A	C5'-C4'-C3'	7.87	128.58	116.00
2	9	3039	U	N1-C1'-C2'	6.80	122.84	114.00
1	0	871	G	C5'-C4'-O4'	-6.76	100.98	109.10
1	0	1819	G	C5'-C4'-C3'	6.21	125.94	116.00

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	0	1563	G	C3'

5 of 53 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0	174	A	Sidechain
1	0	189	A	Sidechain
1	0	26	U	Sidechain
1	0	333	G	Sidechain
1	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	0	59021	0	29813	777	1
2	9	2600	0	1326	52	1
3	4	126	0	75	5	0
4	A	1753	0	1766	106	0
5	B	2625	0	2533	158	1
6	C	1859	0	1816	111	0
7	D	1094	0	1085	93	0
8	E	1357	0	1266	78	0
9	F	890	0	843	51	0
10	G	240	0	231	11	0
11	H	1266	0	1268	60	0
12	J	1120	0	1098	62	0
13	K	992	0	1031	51	1
14	L	1118	0	1076	53	0
15	M	1560	0	1568	62	0
16	N	1445	0	1401	109	0
17	O	865	0	873	29	0
18	P	1136	0	1123	51	0
19	Q	735	0	729	23	0
20	R	1149	0	1122	55	0
21	S	641	0	605	19	0
22	T	950	0	923	50	0
23	U	410	0	364	21	0
24	V	499	0	511	34	0
25	W	1196	0	1137	95	0
26	X	654	0	653	44	0
27	Y	1130	0	1133	53	0
28	Z	578	0	539	24	0
29	1	431	0	426	27	0
30	2	396	0	413	29	0
31	3	755	0	728	19	0
32	I	519	0	500	58	0
33	0	106	0	0	0	0
33	2	1	0	0	0	0
33	3	1	0	0	0	0
33	4	1	0	0	0	0
33	9	2	0	0	0	0
33	A	2	0	0	0	0
33	B	2	0	0	0	0
33	K	1	0	0	0	0
33	T	1	0	0	0	0
33	Y	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
34	0	3	0	0	0	0
35	0	71	0	0	0	0
35	9	2	0	0	0	0
35	A	1	0	0	0	0
35	B	1	0	0	0	0
35	C	1	0	0	0	0
35	H	2	0	0	0	0
35	J	1	0	0	0	0
35	L	1	0	0	0	0
35	M	1	0	0	0	0
35	Q	1	0	0	0	0
35	R	3	0	0	0	0
35	S	1	0	0	0	0
36	0	10	0	0	1	0
36	3	1	0	0	0	0
36	A	1	0	0	0	0
36	B	1	0	0	0	0
36	J	3	0	0	0	0
36	L	1	0	0	0	0
36	M	1	0	0	0	0
36	N	1	0	0	0	0
36	O	1	0	0	0	0
36	R	1	0	0	0	0
36	Y	1	0	0	0	0
37	1	1	0	0	0	0
37	3	1	0	0	0	0
37	O	1	0	0	0	0
37	U	1	0	0	0	0
37	Z	1	0	0	0	0
38	0	5820	0	0	111	0
38	1	59	0	0	2	0
38	2	42	0	0	2	0
38	3	74	0	0	3	0
38	4	8	0	0	0	0
38	9	133	0	0	3	0
38	A	117	0	0	9	0
38	B	150	0	0	16	0
38	C	165	0	0	15	0
38	D	49	0	0	11	0
38	E	47	0	0	7	0
38	F	21	0	0	3	0
38	G	16	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	H	66	0	0	6	0
38	I	10	0	0	2	0
38	J	52	0	0	1	0
38	K	54	0	0	3	0
38	L	83	0	0	10	0
38	M	118	0	0	3	0
38	N	66	0	0	8	0
38	O	39	0	0	4	0
38	P	65	0	0	3	0
38	Q	52	0	0	5	0
38	R	85	0	0	4	0
38	S	31	0	0	3	0
38	T	39	0	0	1	0
38	U	25	0	0	0	0
38	V	13	0	0	2	0
38	W	68	0	0	6	0
38	X	27	0	0	2	0
38	Y	92	0	0	5	0
38	Z	30	0	0	2	0
All	All	99060	0	59975	2235	3

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 15.

The worst 5 of 2235 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)
1:0:1160:G:H5'	1:0:1161:A:H5'	1.26	1.12
15:M:164:THR:HG22	15:M:167:GLY:H	1.13	1.09
1:0:156:C:H5''	15:M:171:ARG:HD3	1.35	1.08
11:H:46:GLN:HB3	11:H:167:PRO:HD2	1.30	1.08
11:H:166:SER:HB2	11:H:167:PRO:HD3	1.35	1.07

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:9:3020:G:OP1	5:B:195:ARG:NH2[7_545]	1.98	0.22
1:0:1171:A:N3	1:0:1964:U:O5'[3_655]	2.13	0.07
13:K:63:GLU:CB	13:K:63:GLU:CB[3_655]	2.13	0.07

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	
4	A	235/240 (98%)	206 (88%)	24 (10%)	5 (2%)	7	13
5	B	335/338 (99%)	294 (88%)	35 (10%)	6 (2%)	8	16
6	C	244/246 (99%)	217 (89%)	26 (11%)	1 (0%)	34	57
7	D	134/177 (76%)	97 (72%)	25 (19%)	12 (9%)	1	0
8	E	170/178 (96%)	156 (92%)	13 (8%)	1 (1%)	25	47
9	F	117/120 (98%)	106 (91%)	7 (6%)	4 (3%)	3	5
10	G	25/348 (7%)	23 (92%)	2 (8%)	0	100	100
11	H	156/171 (91%)	142 (91%)	11 (7%)	3 (2%)	8	15
12	J	140/145 (97%)	130 (93%)	8 (6%)	2 (1%)	11	22
13	K	130/132 (98%)	119 (92%)	8 (6%)	3 (2%)	6	11
14	L	141/165 (86%)	120 (85%)	19 (14%)	2 (1%)	11	22
15	M	192/194 (99%)	178 (93%)	14 (7%)	0	100	100
16	N	184/187 (98%)	167 (91%)	11 (6%)	6 (3%)	4	6
17	O	113/116 (97%)	104 (92%)	8 (7%)	1 (1%)	17	35
18	P	141/149 (95%)	135 (96%)	6 (4%)	0	100	100
19	Q	93/96 (97%)	87 (94%)	6 (6%)	0	100	100
20	R	148/155 (96%)	138 (93%)	8 (5%)	2 (1%)	11	22
21	S	79/85 (93%)	75 (95%)	4 (5%)	0	100	100
22	T	117/120 (98%)	107 (92%)	10 (8%)	0	100	100
23	U	51/66 (77%)	47 (92%)	3 (6%)	1 (2%)	7	14
24	V	63/71 (89%)	55 (87%)	6 (10%)	2 (3%)	4	6
25	W	152/154 (99%)	146 (96%)	5 (3%)	1 (1%)	22	43
26	X	80/92 (87%)	70 (88%)	8 (10%)	2 (2%)	5	9
27	Y	140/241 (58%)	139 (99%)	1 (1%)	0	100	100
28	Z	71/83 (86%)	60 (84%)	7 (10%)	4 (6%)	2	2

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	1	54/57 (95%)	52 (96%)	2 (4%)	0	100	100
30	2	42/50 (84%)	41 (98%)	1 (2%)	0	100	100
31	3	90/92 (98%)	88 (98%)	0	2 (2%)	6	12
32	I	68/162 (42%)	51 (75%)	17 (25%)	0	100	100
All	All	3705/4430 (84%)	3350 (90%)	295 (8%)	60 (2%)	9	19

5 of 60 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	A	34	ASP
4	A	132	ASP
9	F	101	ALA
11	H	168	ALA
12	J	5	GLU

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	
4	A	179/182 (98%)	169 (94%)	10 (6%)	21	42
5	B	282/283 (100%)	265 (94%)	17 (6%)	19	39
6	C	193/193 (100%)	176 (91%)	17 (9%)	10	19
7	D	117/148 (79%)	112 (96%)	5 (4%)	29	54
8	E	152/156 (97%)	148 (97%)	4 (3%)	46	72
9	F	93/94 (99%)	92 (99%)	1 (1%)	73	88
10	G	27/283 (10%)	27 (100%)	0	100	100
11	H	132/138 (96%)	126 (96%)	6 (4%)	27	52
12	J	118/121 (98%)	109 (92%)	9 (8%)	13	26
13	K	106/106 (100%)	101 (95%)	5 (5%)	26	50
14	L	113/127 (89%)	107 (95%)	6 (5%)	22	45
15	M	158/158 (100%)	151 (96%)	7 (4%)	28	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	N	149/150 (99%)	144 (97%)	5 (3%)	37	63
17	O	93/94 (99%)	90 (97%)	3 (3%)	39	65
18	P	113/117 (97%)	109 (96%)	4 (4%)	36	62
19	Q	79/80 (99%)	76 (96%)	3 (4%)	33	59
20	R	117/122 (96%)	114 (97%)	3 (3%)	46	72
21	S	71/74 (96%)	69 (97%)	2 (3%)	43	69
22	T	105/106 (99%)	101 (96%)	4 (4%)	33	59
23	U	44/52 (85%)	44 (100%)	0	100	100
24	V	51/57 (90%)	50 (98%)	1 (2%)	55	78
25	W	130/130 (100%)	124 (95%)	6 (5%)	27	51
26	X	66/74 (89%)	61 (92%)	5 (8%)	13	26
27	Y	120/196 (61%)	111 (92%)	9 (8%)	13	27
28	Z	60/68 (88%)	60 (100%)	0	100	100
29	1	46/47 (98%)	46 (100%)	0	100	100
30	2	42/46 (91%)	41 (98%)	1 (2%)	49	74
31	3	79/79 (100%)	76 (96%)	3 (4%)	33	59
32	I	58/130 (45%)	57 (98%)	1 (2%)	60	81
All	All	3093/3611 (86%)	2956 (96%)	137 (4%)	28	53

5 of 137 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	W	122	ARG
26	X	27	ASP
27	Y	204	ARG
7	D	136	ARG
7	D	133	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 85 such sidechains are listed below:

Mol	Chain	Res	Type
22	T	43	ASN
27	Y	149	GLN
23	U	39	ASN
25	W	119	HIS

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Mol	Chain	Res	Type
29	1	28	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	0	2745/2922 (93%)	235 (8%)	32 (1%)
2	9	121/122 (99%)	15 (12%)	1 (0%)
3	4	0/8	-	-
All	All	2866/3052 (93%)	250 (8%)	33 (1%)

5 of 250 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	0	31	C
1	0	60	A
1	0	67	A
1	0	70	A
1	0	71	G

5 of 33 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	0	2649	A
1	0	2718	C
2	9	3065	A
1	0	1246	A
1	0	1237	U

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	5AA	4	76	1,3	18,26,27	0.74	0	15,38,41	0.75	0
1	1MA	0	628	1	16,25,26	1.41	3 (18%)	18,37,40	1.15	2 (11%)
1	OMU	0	2587	1,35	19,22,23	0.22	0	26,31,34	0.36	0
3	DCZ	4	74	3	17,17,17	0.30	0	24,24,24	0.28	0
1	OMG	0	2588	1,3	18,26,27	1.06	2 (11%)	19,38,41	0.71	1 (5%)
1	UR3	0	2619	1	19,22,23	0.33	0	26,32,35	0.60	1 (3%)
1	PSU	0	2621	1	18,21,22	1.52	2 (11%)	22,30,33	1.28	3 (13%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	5AA	4	76	1,3	-	0/7/29/30	0/3/3/3
1	1MA	0	628	1	-	0/3/25/26	0/3/3/3
1	OMU	0	2587	1,35	-	0/9/27/28	0/2/2/2
3	DCZ	4	74	3	-	0/6/18/18	0/2/2/2
1	OMG	0	2588	1,3	-	0/5/27/28	0/3/3/3
1	UR3	0	2619	1	-	0/7/25/26	0/2/2/2
1	PSU	0	2621	1	-	0/7/25/26	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)
1	0	2621	PSU	C2-N1	4.96	1.43	1.36
1	0	628	1MA	C2-N3	3.70	1.33	1.29
1	0	2621	PSU	C6-C5	3.08	1.38	1.35
1	0	628	1MA	C6-N6	2.77	1.34	1.27
1	0	2588	OMG	C5-C6	-2.57	1.42	1.47

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	0	2621	PSU	C6-C5-C4	3.33	120.53	118.20
1	0	2621	PSU	C6-N1-C2	-3.07	119.54	122.68
1	0	628	1MA	N1-C2-N3	2.91	129.42	126.02
1	0	2621	PSU	O2-C2-N1	2.54	125.59	122.79
1	0	628	1MA	C5-C6-N1	2.43	117.52	113.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	4	76	5AA	1	0
1	0	2587	OMU	2	0
3	4	74	DCZ	3	0
1	0	2619	UR3	2	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 234 ligands modelled in this entry, 234 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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q < 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	0	2749/2922 (94%)	0.03	65 (2%) 59 53	24, 51, 98, 161	0
2	9	122/122 (100%)	0.19	4 (3%) 46 39	46, 68, 96, 153	0
3	4	4/8 (50%)	-0.08	0 100 100	42, 42, 46, 46	0
4	A	237/240 (98%)	0.51	15 (6%) 20 15	31, 55, 94, 120	0
5	B	337/338 (99%)	0.97	32 (9%) 8 5	33, 65, 94, 103	0
6	C	246/246 (100%)	-0.01	5 (2%) 65 60	26, 51, 75, 86	0
7	D	140/177 (79%)	2.30	65 (46%) 0 0	64, 110, 134, 141	0
8	E	172/178 (96%)	1.66	54 (31%) 0 0	50, 81, 105, 115	0
9	F	119/120 (99%)	0.81	19 (15%) 1 1	57, 81, 107, 122	0
10	G	29/348 (8%)	2.93	17 (58%) 0 0	74, 95, 105, 107	0
11	H	160/171 (93%)	0.91	17 (10%) 6 4	42, 63, 94, 101	0
12	J	142/145 (97%)	0.68	4 (2%) 53 46	42, 59, 82, 97	0
13	K	132/132 (100%)	0.83	11 (8%) 11 8	37, 62, 86, 90	0
14	L	145/165 (87%)	0.74	19 (13%) 3 2	28, 74, 118, 131	0
15	M	194/194 (100%)	0.12	2 (1%) 82 80	33, 48, 64, 72	0
16	N	186/187 (99%)	0.83	27 (14%) 2 1	43, 69, 118, 124	0
17	O	115/116 (99%)	0.19	2 (1%) 70 66	43, 61, 79, 89	0
18	P	143/149 (95%)	0.52	5 (3%) 44 36	46, 62, 75, 81	0
19	Q	95/96 (98%)	0.35	2 (2%) 63 58	40, 50, 66, 77	0
20	R	150/155 (96%)	0.19	2 (1%) 77 73	36, 51, 72, 82	0
21	S	81/85 (95%)	0.34	4 (4%) 29 23	48, 65, 85, 94	0
22	T	119/120 (99%)	0.42	7 (5%) 22 17	44, 61, 90, 111	0
23	U	53/66 (80%)	0.97	6 (11%) 5 3	48, 63, 80, 88	0
24	V	65/71 (91%)	1.40	18 (27%) 0 0	59, 83, 117, 124	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
25	W	154/154 (100%)	0.39	1 (0%) 89 88	41, 57, 78, 88	0
26	X	82/92 (89%)	0.79	9 (10%) 5 3	49, 66, 89, 106	0
27	Y	142/241 (58%)	0.50	8 (5%) 24 19	32, 51, 74, 95	0
28	Z	73/83 (87%)	0.25	3 (4%) 37 30	45, 64, 78, 96	0
29	1	56/57 (98%)	-0.10	0 100 100	31, 38, 46, 61	0
30	2	46/50 (92%)	1.64	16 (34%) 0 0	40, 70, 123, 128	0
31	3	92/92 (100%)	0.37	3 (3%) 46 39	37, 60, 74, 89	0
32	I	70/162 (43%)	3.96	58 (82%) 0 0	108, 129, 152, 155	0
All	All	6650/7482 (88%)	0.44	500 (7%) 14 10	24, 58, 109, 161	0

The worst 5 of 500 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
32	I	93	GLN	11.8
32	I	133	THR	9.5
24	V	1	THR	8.2
7	D	88	LEU	8.1
32	I	137	VAL	8.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	DCZ	4	74	16/16	0.86	0.23	48,52,56,60	0
1	OMG	0	2588	24/25	0.90	0.20	30,33,38,40	0
1	UR3	0	2619	21/22	0.92	0.22	33,38,39,42	0
1	OMU	0	2587	21/22	0.93	0.17	31,35,40,41	0
3	5AA	4	76	24/25	0.93	0.23	40,44,46,47	0
1	1MA	0	628	23/24	0.93	0.21	28,34,37,38	0
1	PSU	0	2621	20/21	0.94	0.17	31,34,40,41	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands i

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
33	MG	0	8063	1/1	0.30	0.19	71,71,71,71	0
35	NA	0	9184	1/1	0.32	0.89	83,83,83,83	0
33	MG	0	8116	1/1	0.46	0.18	62,62,62,62	0
33	MG	0	8091	1/1	0.50	0.07	79,79,79,79	0
35	NA	0	9110	1/1	0.53	0.34	43,43,43,43	0
33	MG	0	8068	1/1	0.53	0.07	60,60,60,60	0
35	NA	R	9186	1/1	0.56	0.43	78,78,78,78	0
35	NA	0	9124	1/1	0.59	0.22	66,66,66,66	0
35	NA	0	9177	1/1	0.59	0.45	68,68,68,68	0
33	MG	0	8090	1/1	0.60	0.31	65,65,65,65	0
35	NA	0	9102	1/1	0.61	0.25	45,45,45,45	0
36	CL	J	9302	1/1	0.63	0.21	79,79,79,79	0
35	NA	0	9182	1/1	0.64	0.49	81,81,81,81	0
35	NA	0	9155	1/1	0.64	0.49	79,79,79,79	0
35	NA	0	9170	1/1	0.64	0.29	49,49,49,49	0
33	MG	0	8103	1/1	0.64	0.26	65,65,65,65	0
35	NA	0	9129	1/1	0.66	0.25	57,57,57,57	0
33	MG	0	8025	1/1	0.66	0.14	46,46,46,46	0
35	NA	0	9157	1/1	0.67	0.11	73,73,73,73	0
33	MG	0	8058	1/1	0.68	0.16	56,56,56,56	0
33	MG	9	8052	1/1	0.68	0.12	54,54,54,54	0
35	NA	0	9176	1/1	0.69	0.33	49,49,49,49	0
33	MG	0	8101	1/1	0.69	0.40	72,72,72,72	0
36	CL	J	9301	1/1	0.69	0.20	78,78,78,78	0
35	NA	0	9105	1/1	0.69	0.26	44,44,44,44	0
33	MG	0	8113	1/1	0.70	0.20	52,52,52,52	0
33	MG	0	8053	1/1	0.70	0.16	57,57,57,57	0
33	MG	0	8059	1/1	0.70	0.15	51,51,51,51	0
33	MG	0	8034	1/1	0.71	0.13	38,38,38,38	0
33	MG	0	8084	1/1	0.72	0.13	38,38,38,38	0
33	MG	0	8117	1/1	0.72	0.15	37,37,37,37	0
35	NA	S	9112	1/1	0.73	0.28	73,73,73,73	0
35	NA	0	9111	1/1	0.73	0.21	61,61,61,61	0
35	NA	0	9121	1/1	0.73	0.82	55,55,55,55	0
36	CL	N	9307	1/1	0.73	0.33	72,72,72,72	0
35	NA	0	9162	1/1	0.75	0.56	64,64,64,64	0
35	NA	0	9133	1/1	0.76	0.15	34,34,34,34	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
33	MG	B	8056	1/1	0.76	0.10	47,47,47,47	0
36	CL	J	9321	1/1	0.77	0.18	55,55,55,55	0
33	MG	0	8092	1/1	0.77	0.45	90,90,90,90	0
33	MG	B	8055	1/1	0.78	0.20	62,62,62,62	0
33	MG	0	8021	1/1	0.78	0.17	32,32,32,32	0
33	MG	0	8093	1/1	0.78	0.20	66,66,66,66	0
35	NA	0	9181	1/1	0.79	0.35	56,56,56,56	0
36	CL	0	9315	1/1	0.79	0.26	80,80,80,80	0
33	MG	0	8050	1/1	0.79	0.14	69,69,69,69	0
33	MG	0	8049	1/1	0.79	0.43	81,81,81,81	0
35	NA	B	9158	1/1	0.79	0.85	70,70,70,70	0
33	MG	0	8079	1/1	0.79	0.10	29,29,29,29	0
33	MG	0	8047	1/1	0.80	0.18	86,86,86,86	0
33	MG	0	8088	1/1	0.80	0.15	38,38,38,38	0
35	NA	0	9144	1/1	0.80	0.14	33,33,33,33	0
33	MG	0	8033	1/1	0.80	0.11	38,38,38,38	0
33	MG	0	8038	1/1	0.80	0.17	32,32,32,32	0
36	CL	3	9304	1/1	0.80	0.12	61,61,61,61	0
35	NA	0	9126	1/1	0.81	0.17	41,41,41,41	0
35	NA	0	9142	1/1	0.81	0.26	47,47,47,47	0
33	MG	9	8095	1/1	0.81	0.10	77,77,77,77	0
35	NA	0	9101	1/1	0.82	0.25	40,40,40,40	0
35	NA	0	9161	1/1	0.82	0.22	56,56,56,56	0
35	NA	0	9125	1/1	0.82	0.22	59,59,59,59	0
33	MG	0	8006	1/1	0.82	0.09	37,37,37,37	0
33	MG	0	8023	1/1	0.82	0.24	52,52,52,52	0
33	MG	0	8111	1/1	0.82	0.09	52,52,52,52	0
33	MG	0	8018	1/1	0.82	0.16	42,42,42,42	0
35	NA	0	9113	1/1	0.82	0.36	67,67,67,67	0
33	MG	0	8099	1/1	0.82	0.17	53,53,53,53	0
33	MG	0	8104	1/1	0.83	0.17	55,55,55,55	0
33	MG	0	8008	1/1	0.83	0.08	37,37,37,37	0
33	MG	0	8044	1/1	0.83	0.13	55,55,55,55	0
35	NA	C	9104	1/1	0.84	0.14	40,40,40,40	0
35	NA	0	9171	1/1	0.84	0.21	52,52,52,52	0
35	NA	0	9173	1/1	0.84	0.22	62,62,62,62	0
33	MG	0	8003	1/1	0.84	0.15	31,31,31,31	0
33	MG	K	8069	1/1	0.84	0.09	52,52,52,52	0
35	NA	0	9139	1/1	0.84	0.16	31,31,31,31	0
33	MG	Y	8109	1/1	0.84	0.34	44,44,44,44	0
35	NA	0	9169	1/1	0.84	0.33	60,60,60,60	0
35	NA	0	9117	1/1	0.84	0.26	61,61,61,61	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
35	NA	0	9164	1/1	0.85	0.28	53,53,53,53	0
33	MG	0	8007	1/1	0.85	0.11	27,27,27,27	0
33	MG	0	8032	1/1	0.85	0.20	41,41,41,41	0
33	MG	0	8071	1/1	0.85	0.18	66,66,66,66	0
33	MG	0	8045	1/1	0.85	0.19	73,73,73,73	0
33	MG	3	8078	1/1	0.86	0.10	43,43,43,43	0
35	NA	0	9131	1/1	0.86	0.20	41,41,41,41	0
35	NA	9	9151	1/1	0.86	0.14	64,64,64,64	0
33	MG	0	8072	1/1	0.86	0.26	60,60,60,60	0
35	NA	0	9156	1/1	0.86	0.32	49,49,49,49	0
36	CL	L	9310	1/1	0.86	0.16	63,63,63,63	0
35	NA	H	9122	1/1	0.86	0.17	72,72,72,72	0
33	MG	0	8082	1/1	0.86	0.16	76,76,76,76	0
35	NA	0	9135	1/1	0.87	0.40	52,52,52,52	0
33	MG	0	8026	1/1	0.87	0.10	24,24,24,24	0
33	MG	0	8064	1/1	0.87	0.15	30,30,30,30	0
33	MG	0	8057	1/1	0.87	0.15	42,42,42,42	0
37	CD	U	9201	1/1	0.87	0.11	74,74,74,74	0
36	CL	0	9316	1/1	0.88	0.31	66,66,66,66	0
33	MG	0	8009	1/1	0.88	0.13	30,30,30,30	0
35	NA	0	9166	1/1	0.88	0.12	69,69,69,69	0
35	NA	R	9138	1/1	0.88	0.14	63,63,63,63	0
35	NA	0	9174	1/1	0.88	0.35	62,62,62,62	0
35	NA	0	9119	1/1	0.88	0.10	44,44,44,44	0
36	CL	0	9311	1/1	0.88	0.16	53,53,53,53	0
34	K	0	9003	1/1	0.88	0.20	64,64,64,64	0
35	NA	R	9137	1/1	0.89	0.15	44,44,44,44	0
35	NA	0	9165	1/1	0.89	0.23	47,47,47,47	0
35	NA	0	9179	1/1	0.89	0.29	70,70,70,70	0
35	NA	0	9149	1/1	0.89	0.18	38,38,38,38	0
33	MG	0	8037	1/1	0.89	0.11	45,45,45,45	0
33	MG	0	8096	1/1	0.89	0.15	53,53,53,53	0
35	NA	0	9185	1/1	0.89	0.37	51,51,51,51	0
33	MG	0	8080	1/1	0.89	0.18	41,41,41,41	0
35	NA	9	9183	1/1	0.89	0.14	60,60,60,60	0
35	NA	0	9141	1/1	0.89	0.10	45,45,45,45	0
33	MG	0	8100	1/1	0.89	0.44	70,70,70,70	0
35	NA	H	9109	1/1	0.89	0.13	34,34,34,34	0
35	NA	0	9123	1/1	0.89	0.30	44,44,44,44	0
35	NA	Q	9148	1/1	0.89	0.21	38,38,38,38	0
33	MG	0	8015	1/1	0.90	0.12	33,33,33,33	0
33	MG	0	8070	1/1	0.90	0.10	57,57,57,57	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
35	NA	A	9145	1/1	0.90	0.20	48,48,48,48	0
33	MG	0	8081	1/1	0.90	0.16	52,52,52,52	0
33	MG	0	8036	1/1	0.90	0.13	35,35,35,35	0
35	NA	0	9178	1/1	0.90	0.48	57,57,57,57	0
33	MG	0	8106	1/1	0.90	0.07	54,54,54,54	0
35	NA	0	9106	1/1	0.90	0.37	38,38,38,38	0
33	MG	0	8108	1/1	0.90	0.11	58,58,58,58	0
33	MG	0	8027	1/1	0.90	0.09	37,37,37,37	0
33	MG	0	8077	1/1	0.90	0.09	28,28,28,28	0
33	MG	0	8016	1/1	0.91	0.29	50,50,50,50	0
33	MG	4	8118	1/1	0.91	0.13	41,41,41,41	0
35	NA	0	9127	1/1	0.91	0.12	42,42,42,42	0
33	MG	0	8107	1/1	0.91	0.10	53,53,53,53	0
36	CL	0	9317	1/1	0.91	0.09	61,61,61,61	0
33	MG	0	8085	1/1	0.91	0.19	72,72,72,72	0
33	MG	0	8086	1/1	0.91	0.12	50,50,50,50	0
33	MG	0	8013	1/1	0.91	0.19	33,33,33,33	0
33	MG	0	8115	1/1	0.91	0.09	57,57,57,57	0
33	MG	0	8014	1/1	0.91	0.07	43,43,43,43	0
36	CL	Y	9320	1/1	0.91	0.12	52,52,52,52	0
33	MG	0	8030	1/1	0.91	0.17	35,35,35,35	0
33	MG	0	8002	1/1	0.91	0.14	39,39,39,39	0
37	CD	1	9202	1/1	0.91	0.07	62,62,62,62	0
33	MG	0	8041	1/1	0.92	0.25	79,79,79,79	0
33	MG	0	8035	1/1	0.92	0.12	49,49,49,49	0
33	MG	0	8094	1/1	0.92	0.11	73,73,73,73	0
35	NA	0	9163	1/1	0.92	0.20	65,65,65,65	0
33	MG	0	8022	1/1	0.92	0.09	35,35,35,35	0
33	MG	0	8046	1/1	0.92	0.09	59,59,59,59	0
35	NA	0	9136	1/1	0.92	0.09	55,55,55,55	0
36	CL	B	9319	1/1	0.92	0.22	55,55,55,55	0
33	MG	T	8073	1/1	0.92	0.13	59,59,59,59	0
33	MG	0	8001	1/1	0.92	0.11	35,35,35,35	0
33	MG	0	8060	1/1	0.92	0.23	46,46,46,46	0
35	NA	0	9172	1/1	0.92	0.26	62,62,62,62	0
34	K	0	9002	1/1	0.92	0.12	48,48,48,48	0
33	MG	0	8061	1/1	0.92	0.08	37,37,37,37	0
35	NA	J	9146	1/1	0.92	0.08	42,42,42,42	0
33	MG	0	8119	1/1	0.92	0.20	62,62,62,62	0
33	MG	0	8010	1/1	0.92	0.11	28,28,28,28	0
35	NA	0	9140	1/1	0.93	0.26	47,47,47,47	0
36	CL	A	9309	1/1	0.93	0.25	61,61,61,61	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
33	MG	0	8011	1/1	0.93	0.19	20,20,20,20	0
35	NA	0	9128	1/1	0.93	0.09	43,43,43,43	0
35	NA	0	9108	1/1	0.93	0.10	49,49,49,49	0
35	NA	0	9130	1/1	0.93	0.12	45,45,45,45	0
33	MG	0	8114	1/1	0.93	0.07	56,56,56,56	0
33	MG	0	8012	1/1	0.93	0.13	32,32,32,32	0
35	NA	0	9134	1/1	0.93	0.15	41,41,41,41	0
33	MG	0	8075	1/1	0.93	0.16	57,57,57,57	0
37	CD	O	9205	1/1	0.93	0.05	143,143,143,143	0
35	NA	0	9114	1/1	0.93	0.21	64,64,64,64	0
35	NA	0	9115	1/1	0.93	0.14	37,37,37,37	0
36	CL	0	9314	1/1	0.94	0.11	49,49,49,49	0
35	NA	0	9116	1/1	0.94	0.17	42,42,42,42	0
35	NA	0	9175	1/1	0.94	0.34	52,52,52,52	0
33	MG	0	8031	1/1	0.94	0.13	30,30,30,30	0
33	MG	0	8051	1/1	0.94	0.08	72,72,72,72	0
33	MG	0	8083	1/1	0.94	0.09	42,42,42,42	0
33	MG	0	8102	1/1	0.94	0.10	58,58,58,58	0
35	NA	0	9168	1/1	0.94	0.08	49,49,49,49	0
35	NA	0	9152	1/1	0.94	0.50	61,61,61,61	0
33	MG	0	8089	1/1	0.94	0.10	56,56,56,56	0
33	MG	A	8066	1/1	0.94	0.06	66,66,66,66	0
33	MG	0	8005	1/1	0.94	0.19	36,36,36,36	0
36	CL	0	9303	1/1	0.94	0.12	53,53,53,53	0
33	MG	0	8098	1/1	0.94	0.10	47,47,47,47	0
36	CL	0	9312	1/1	0.94	0.28	59,59,59,59	0
36	CL	0	9313	1/1	0.94	0.13	60,60,60,60	0
35	NA	0	9103	1/1	0.95	0.26	43,43,43,43	0
33	MG	0	8087	1/1	0.95	0.27	59,59,59,59	0
33	MG	0	8028	1/1	0.95	0.18	41,41,41,41	0
35	NA	0	9160	1/1	0.95	0.35	46,46,46,46	0
35	NA	0	9107	1/1	0.95	0.17	46,46,46,46	0
33	MG	0	8020	1/1	0.95	0.13	31,31,31,31	0
35	NA	0	9120	1/1	0.95	0.26	52,52,52,52	0
33	MG	0	8048	1/1	0.95	0.07	56,56,56,56	0
33	MG	0	8097	1/1	0.95	0.09	40,40,40,40	0
35	NA	0	9150	1/1	0.95	0.23	42,42,42,42	0
35	NA	0	9167	1/1	0.95	0.07	52,52,52,52	0
33	MG	0	8040	1/1	0.95	0.14	56,56,56,56	0
33	MG	0	8043	1/1	0.96	0.11	47,47,47,47	0
33	MG	A	8065	1/1	0.96	0.17	45,45,45,45	0
33	MG	0	8039	1/1	0.96	0.05	52,52,52,52	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
35	NA	0	9159	1/1	0.96	0.24	50,50,50,50	0
35	NA	L	9180	1/1	0.96	0.46	51,51,51,51	0
35	NA	M	9147	1/1	0.96	0.14	25,25,25,25	0
36	CL	R	9306	1/1	0.96	0.13	57,57,57,57	0
33	MG	0	8110	1/1	0.96	0.15	32,32,32,32	0
33	MG	0	8067	1/1	0.96	0.16	49,49,49,49	0
33	MG	0	8042	1/1	0.96	0.06	44,44,44,44	0
36	CL	0	9322	1/1	0.96	0.18	77,77,77,77	0
33	MG	0	8062	1/1	0.96	0.07	51,51,51,51	0
33	MG	0	8004	1/1	0.97	0.09	34,34,34,34	0
35	NA	0	9118	1/1	0.97	0.22	62,62,62,62	0
33	MG	2	8076	1/1	0.97	0.14	55,55,55,55	0
33	MG	0	8024	1/1	0.97	0.17	39,39,39,39	0
33	MG	0	8017	1/1	0.97	0.14	29,29,29,29	0
35	NA	0	9153	1/1	0.97	0.19	21,21,21,21	0
35	NA	0	9154	1/1	0.97	0.14	33,33,33,33	0
33	MG	0	8029	1/1	0.97	0.07	36,36,36,36	0
37	CD	Z	9203	1/1	0.97	0.09	67,67,67,67	0
33	MG	0	8112	1/1	0.97	0.07	39,39,39,39	0
36	CL	O	9308	1/1	0.98	0.27	79,79,79,79	0
35	NA	0	9132	1/1	0.98	0.06	34,34,34,34	0
35	NA	0	9143	1/1	0.98	0.17	33,33,33,33	0
36	CL	0	9305	1/1	0.98	0.11	55,55,55,55	0
34	K	0	9001	1/1	0.98	0.14	71,71,71,71	0
33	MG	0	8019	1/1	0.98	0.14	35,35,35,35	0
36	CL	M	9318	1/1	0.98	0.17	47,47,47,47	0
33	MG	0	8054	1/1	0.98	0.10	29,29,29,29	0
37	CD	3	9204	1/1	0.98	0.06	64,64,64,64	0
33	MG	0	8074	1/1	0.99	0.08	37,37,37,37	0

6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.