



wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 25, 2020 – 03:47 PM BST

PDB ID : 4DV0
Title : Crystal structure of the *Thermus thermophilus* 30S ribosomal subunit with a 16S rRNA mutation, U20G
Authors : Demirci, H.; Murphy IV, F.; Murphy, E.; Gregory, S.T.; Dahlberg, A.E.; Jogl, G.
Deposited on : 2012-02-22
Resolution : 3.85 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 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 : 2.13
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) : 2.13

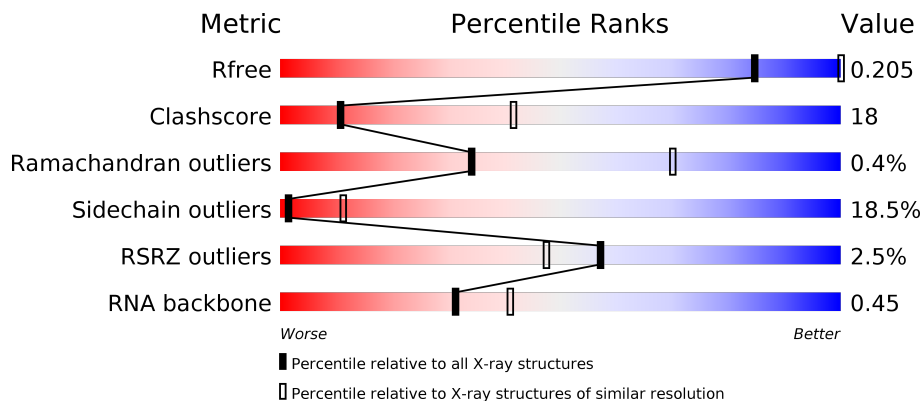
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.85 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.








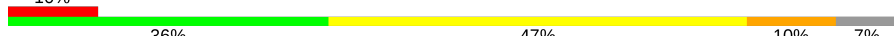

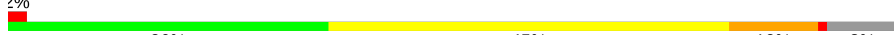



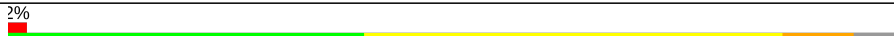



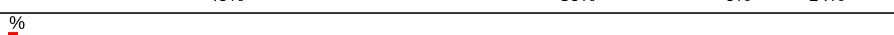

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1048 (4.10-3.62)
Clashscore	141614	1015 (4.08-3.64)
Ramachandran outliers	138981	1069 (4.10-3.62)
Sidechain outliers	138945	1062 (4.10-3.62)
RSRZ outliers	127900	1206 (4.12-3.60)
RNA backbone	3102	1039 (4.70-3.00)

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 on 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	A	1522	 2% 28% 43% 23% 6%
2	B	256	 2% 47% 36% 8% 9%
3	C	239	 5% 41% 38% 8% 14%
4	D	209	 0% 49% 38% 12%

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Mol	Chain	Length	Quality of chain
5	E	162	
6	F	101	
7	G	156	
8	H	138	
9	I	128	
10	J	105	
11	K	129	
12	L	135	
13	M	126	
14	N	61	
15	O	89	
16	P	88	
17	Q	105	
18	R	88	
19	S	93	
20	T	106	
21	U	27	

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
22	MG	A	1696	-	-	-	X
22	MG	A	1721	-	-	-	X
22	MG	A	1722	-	-	-	X
22	MG	A	1737	-	-	-	X
22	MG	A	1743	-	-	-	X
22	MG	A	1778	-	-	-	X
22	MG	A	1792	-	-	-	X
22	MG	A	1815	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
22	MG	A	1827	-	-	-	X
22	MG	A	1831	-	-	-	X
22	MG	A	1836	-	-	-	X
22	MG	A	1862	-	-	-	X
22	MG	M	201	-	-	-	X

2 Entry composition [i](#)

There are 24 unique types of molecules in this entry. The entry contains 52453 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 16S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	A	1512	32647	14541	6042	10546	1518	0	6	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	20	G	U	ENGINEERED MUTATION	GB M26923.1
A	1534	C	A	CONFLICT	GB M26923.1
A	1535	A	C	CONFLICT	GB M26923.1

- Molecule 2 is a protein called ribosomal protein S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	234	1900	1213	341	341	5	0	0	0

- Molecule 3 is a protein called ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	206	1612	1016	314	281	1	0	0	0

- Molecule 4 is a protein called ribosomal protein S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	208	1703	1066	339	291	7	0	0	0

- Molecule 5 is a protein called ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	150	1146	724	217	201	4	0	0	0

- Molecule 6 is a protein called ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	101	843	531	155	154	3	0	0	0

- Molecule 7 is a protein called ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	G	155	1257	781	252	218	6	0	0	0

- Molecule 8 is a protein called ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	138	1116	705	215	193	3	0	0	0

- Molecule 9 is a protein called ribosomal protein S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace	
			Total	C	N	O				
9	I	127	1010	639	197	174		0	0	0

- Molecule 10 is a protein called ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	98	792	498	156	137	1	0	0	0

- Molecule 11 is a protein called ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	116	864	537	164	160	3	0	0	0

- Molecule 12 is a protein called ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	124	972	612	195	163	2	0	0	0

- Molecule 13 is a protein called ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	118	937	579	193	163	2	0	0	0

- Molecule 14 is a protein called ribosomal protein S14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	60	492	312	104	72	4	0	0	0

- Molecule 15 is a protein called ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	O	87	729	457	146	124	2	0	0	0

- Molecule 16 is a protein called ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
16	P	83	700	443	139	117	1	0	0	0

- Molecule 17 is a protein called ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
17	Q	99	823	528	152	141	2	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Q	96	GLN	GLU	CONFLICT	UNP Q5SHP7

- Molecule 18 is a protein called ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
18	R	70	574	367	112	95	0	0	0

- Molecule 19 is a protein called ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
19	S	80	647	414	119	112	2	0	0	0

- Molecule 20 is a protein called ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
20	T	99	763	470	162	129	2	0	0	0

- Molecule 21 is a protein called ribosomal protein THX.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
21	U	24	208	128	50	30	0	0	0

- Molecule 22 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
22	P	2	Total 2	Mg 2	0	0
22	J	2	Total 2	Mg 2	0	0
22	Q	1	Total 1	Mg 1	0	0
22	D	2	Total 2	Mg 2	0	0
22	E	1	Total 1	Mg 1	0	0
22	B	3	Total 3	Mg 3	0	0
22	C	1	Total 1	Mg 1	0	0
22	A	262	Total 262	Mg 262	0	0
22	S	1	Total 1	Mg 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
22	F	1	Total Mg 1 1	0	0
22	M	1	Total Mg 1 1	0	0

- Molecule 23 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
23	D	1	Total Zn 1 1	0	0
23	N	1	Total Zn 1 1	0	0

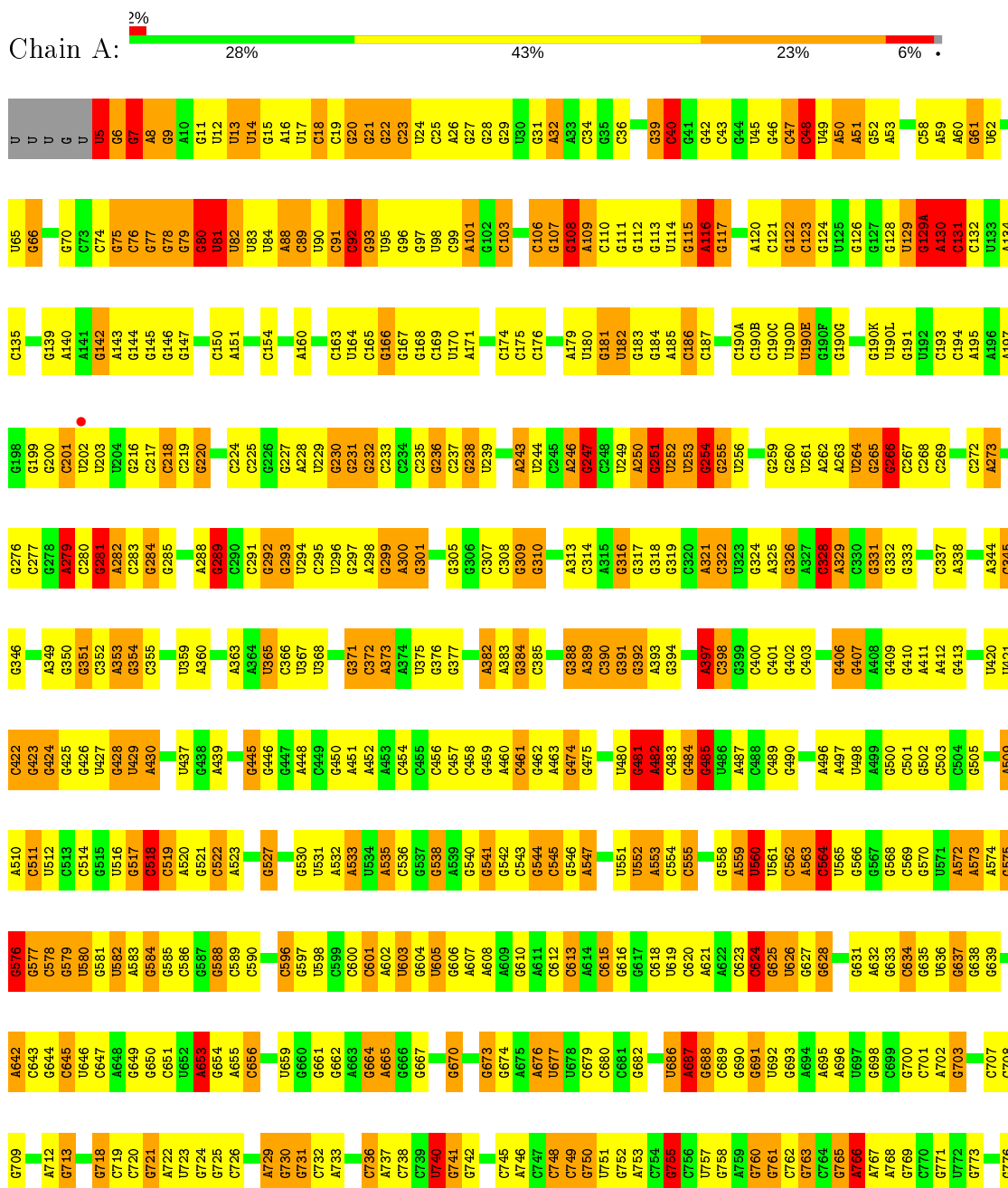
- Molecule 24 is water.

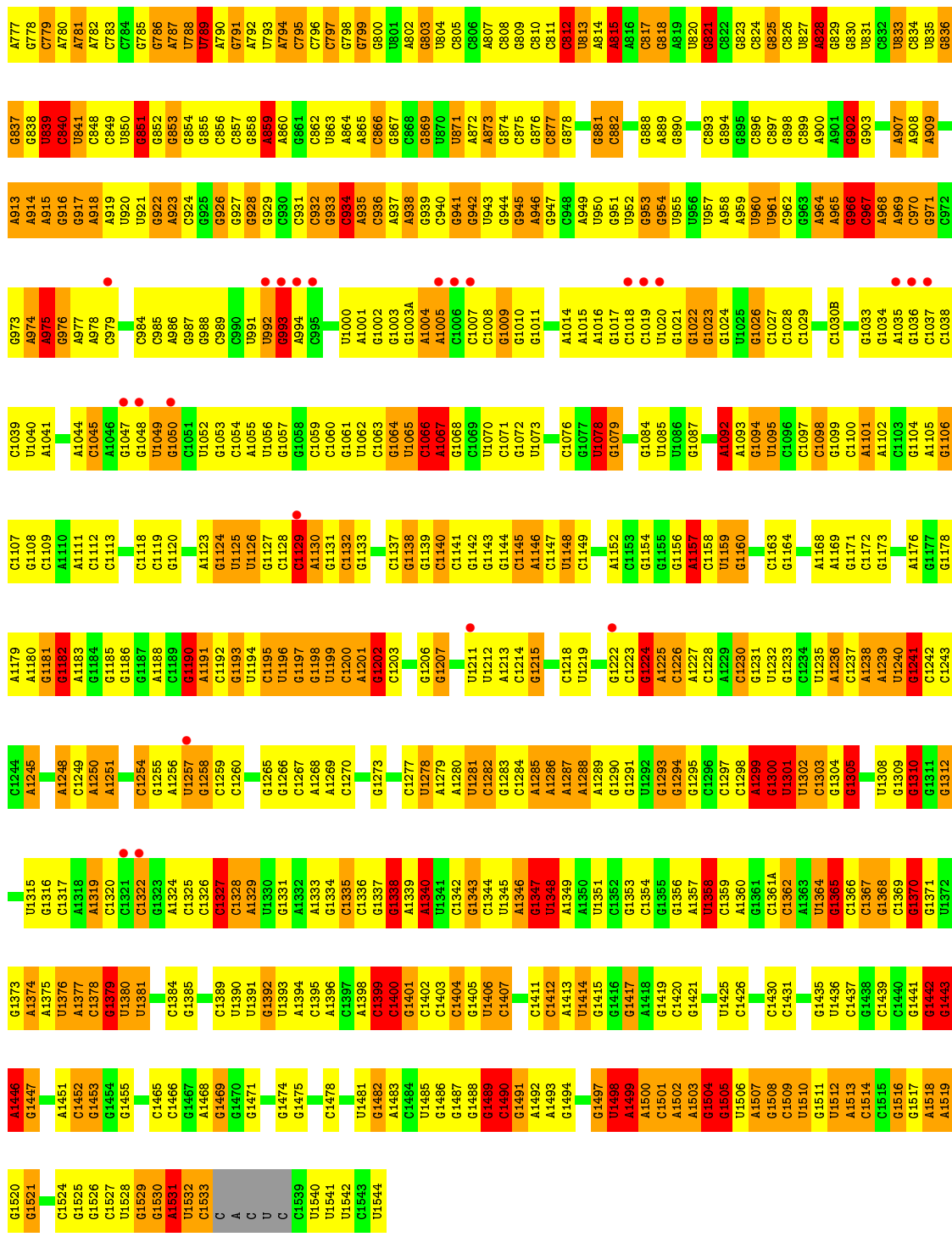
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
24	A	397	Total O 397 397	0	0
24	D	1	Total O 1 1	0	0
24	E	4	Total O 4 4	0	0
24	G	4	Total O 4 4	0	0
24	I	1	Total O 1 1	0	0
24	J	3	Total O 3 3	0	0
24	L	1	Total O 1 1	0	0
24	M	8	Total O 8 8	0	0
24	N	1	Total O 1 1	0	0
24	P	10	Total O 10 10	0	0
24	Q	2	Total O 2 2	0	0
24	S	2	Total O 2 2	0	0
24	T	5	Total O 5 5	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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: 16S rRNA





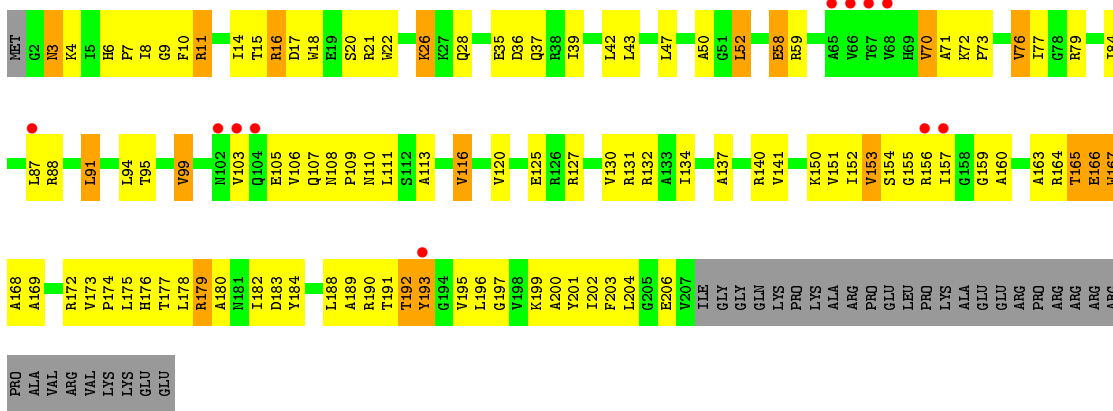
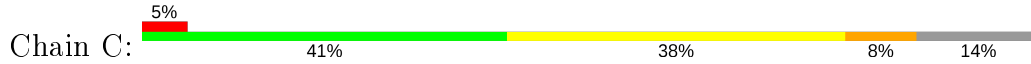
• Molecule 2: ribosomal protein S2



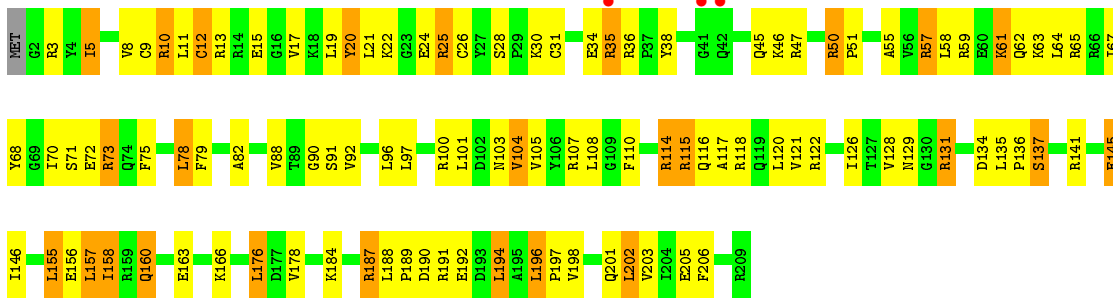
MET	I38	L51	T64	F55	I58	E59	D60	L61	A62	M63	R64	L65	T67	I66	L69	T73
PRO	H40	I41	I42	L44	E45	K46	M48	L51	T64	F55	I58	E59	D60	L61	A62	M63
VAL	I43	I44	L44	E45	K46	M48	L51	T64	F55	I58	E59	D60	L61	A62	M63	R64
GLU	I45	I46	L47	E48	K49	M50	L51	T64	F55	I58	E59	D60	L61	A62	M63	R64
ILE	I47	I48	L49	E50	K51	M52	L53	T65	F57	I60	E61	D62	L63	A64	M65	R66
THR	I49	I50	L51	E52	K53	M54	L55	T67	F59	I62	E63	D64	L65	A66	M67	R68
V7	I51	I52	L53	E54	K55	M56	L57	T69	F61	I64	E65	D66	L67	A68	M69	R70
K8	I53	I54	L55	E56	K57	M58	L59	T71	F63	I66	E67	D68	L69	A70	M71	R72
E9	I55	I56	L57	E58	K59	M60	L61	T73	F65	I68	E69	D70	L71	A72	M73	R74
L10	I57	I58	L59	E60	K61	M62	L63	T75	F67	I70	E71	D72	L73	A74	M75	R76
L11	I59	I60	L61	E62	K63	M64	L65	T77	F69	I72	E73	D74	L75	A76	M77	R78
E12	I61	I62	L63	E64	K65	M66	L67	T79	F71	I74	E75	D76	L77	A78	M79	R80
C	I63	I64	L65	E66	K67	M68	L69	T81	F73	I76	E77	D78	L79	A80	M81	R82
A	I65	I66	L67	E68	K69	M70	L71	T83	F75	I78	E79	D80	L81	A82	M83	R84
C	I67	I68	L69	E70	K71	M72	L73	T85	F77	I80	E81	D82	L83	A84	M85	R86
U	I69	I70	L71	E72	K73	M74	L75	T87	F79	I82	E83	D84	L85	A86	M87	R88
C	I71	I72	L73	E74	K75	M76	L77	T89	F81	I84	E85	D86	L87	A88	M89	R90
C	I73	I74	L75	E76	K77	M78	L79	T91	F83	I86	E87	D88	L89	A90	M91	R92
C	I75	I76	L77	E78	K79	M80	L81	T93	F85	I88	E89	D90	L91	A92	M93	R94
C	I77	I78	L79	E80	K81	M82	L83	T95	F87	I90	E91	D92	L93	A94	M95	R96
C	I79	I80	L81	E82	K83	M84	L85	T97	F89	I92	E93	D94	L95	A96	M97	R98
C	I81	I82	L83	E84	K85	M86	L87	T99	F91	I94	E95	D96	L97	A98	M99	R100
C	I83	I84	L85	E86	K87	M88	L89	T101	F93	I96	E97	D98	L99	A100	M101	R102
C	I85	I86	L87	E88	K89	M90	L91	T103	F95	I98	E99	D100	L101	A102	M103	R104
C	I87	I88	L89	E90	K91	M92	L93	T105	F97	I100	E101	D102	L103	A104	M105	R106
C	I89	I90	L91	E92	K93	M94	L95	T107	F99	I102	E103	D104	L105	A106	M107	R108
C	I91	I92	L93	E94	K95	M96	L97	T109	F101	I104	E105	D106	L107	A108	M109	R110
C	I93	I94	L95	E96	K97	M98	L99	T111	F103	I106	E107	D108	L109	A110	M111	R112
C	I95	I96	L97	E98	K99	M100	L101	T113	F105	I108	E109	D110	L111	A112	M113	R114
C	I97	I98	L99	E100	K101	M102	L103	T115	F107	I110	E111	D112	L113	A114	M115	R116
C	I99	I100	L101	E102	K103	M104	L105	T117	F109	I112	E113	D114	L115	A116	M117	R118
C	I101	I102	L103	E104	K105	M106	L107	T119	F111	I114	E115	D116	L117	A118	M119	R120
C	I103	I104	L105	E106	K107	M108	L109	T121	F113	I116	E117	D118	L119	A120	M121	R122
C	I105	I106	L107	E108	K109	M110	L111	T123	F115	I118	E119	D120	L121	A122	M123	R124
C	I107	I108	L109	E110	K111	M112	L113	T125	F117	I120	E121	D122	L123	A124	M125	R126
C	I109	I110	L111	E112	K113	M114	L115	T127	F119	I122	E123	D124	L125	A126	M127	R128
C	I111	I112	L113	E114	K115	M116	L117	T129	F121	I124	E125	D126	L127	A128	M129	R130
C	I113	I114	L115	E116	K117	M118	L119	T131	F123	I126	E127	D128	L129	A130	M131	R132
C	I115	I116	L117	E118	K119	M120	L121	T133	F125	I128	E129	D130	L131	A132	M133	R134
C	I117	I118	L119	E120	K121	M122	L123	T135	F127	I130	E131	D132	L133	A134	M135	R136
C	I119	I120	L121	E122	K123	M124	L125	T137	F129	I132	E133	D134	L135	A136	M137	R138
C	I121	I122	L123	E124	K125	M126	L127	T139	F131	I134	E135	D136	L137	A138	M139	R140
C	I123	I124	L125	E126	K127	M128	L129	T141	F133	I136	E137	D138	L139	A140	M141	R142
C	I125	I126	L127	E128	K129	M130	L131	T143	F135	I138	E139	D140	L141	A142	M143	R144
C	I127	I128	L129	E130	K131	M132	L133	T145	F137	I140	E141	D142	L143	A144	M145	R146
C	I129	I130	L131	E132	K133	M134	L135	T147	F139	I142	E143	D144	L145	A146	M147	R148
C	I131	I132	L133	E134	K135	M136	L137	T149	F141	I144	E145	D146	L147	A148	M149	R150
C	I133	I134	L135	E136	K137	M138	L139	T151	F143	I146	E147	D148	L149	A150	M151	R152
C	I135	I136	L137	E138	K139	M140	L141	T153	F145	I148	E149	D150	L151	A152	M153	R154
C	I137	I138	L139	E140	K141	M142	L143	T155	F147	I150	E151	D152	L153	A154	M155	R156
C	I139	I140	L141	E142	K143	M144	L145	T157	F149	I152	E153	D154	L155	A156	M157	R158
C	I141	I142	L143	E144	K145	M146	L147	T159	F151	I154	E155	D156	L157	A158	M159	R160
C	I143	I144	L145	E146	K147	M148	L149	T161	F153	I156	E157	D158	L159	A160	M161	R162
C	I145	I146	L147	E148	K149	M150	L151	T163	F155	I158	E159	D160	L161	A162	M163	R164
C	I147	I148	L149	E150	K151	M152	L153	T165	F157	I160	E161	D162	L163	A164	M165	R166
C	I149	I150	L151	E152	K153	M154	L155	T167	F159	I162	E163	D164	L165	A166	M167	R168
C	I151	I152	L153	E154	K155	M156	L157	T169	F161	I164	E165	D166	L167	A168	M169	R170
C	I153	I154	L155	E156	K157	M158	L159	T171	F163	I166	E167	D168	L169	A170	M171	R172
C	I155	I156	L157	E158	K159	M160	L161	T173	F165	I168	E169	D170	L171	A172	M173	R174
C	I157	I158	L159	E160	K161	M162	L163	T175	F167	I170	E171	D172	L173	A174	M175	R176
C	I159	I160	L161	E162	K163	M164	L165	T177	F169	I172	E173	D174	L175	A176	M177	R178
C	I161	I162	L163	E164	K165	M166	L167	T179	F171	I174	E175	D176	L177	A178	M179	R180
C	I163	I164	L165	E166	K167	M168	L169	T181	F173	I176	E177	D178	L179	A180	M181	R182
C	I165	I166	L167	E168	K169	M170	L171	T183	F175	I178	E179	D180	L181	A182	M183	R184
C	I167	I168	L169	E170	K171	M172	L173	T185	F177	I180	E181	D182	L183	A184	M185	R186
C	I169	I170	L171	E172	K173	M174	L175	T187	F179	I182	E183	D184	L185	A186	M187	R188
C	I171	I172	L173	E174	K175	M176	L177	T189	F181	I184	E185	D186	L187	A188	M189	R190
C	I173	I174	L175	E176	K177	M178	L179	T191	F183	I186	E187	D188	L189	A190	M191	R192
C	I175	I176	L177	E178	K179	M180	L181	T193	F185	I188	E189	D190	L191	A192	M193	R194
C	I177	I178	L179	E180	K181	M182	L183	T195	F187	I190	E191	D192	L193	A194	M195	R196
C	I179	I180	L181	E182	K183	M184	L185	T197	F189	I192	E193	D194	L195	A196	M197	R198
C	I181	I182	L183	E184	K185	M186	L187	T199	F191	I194	E195	D196	L197	A198	M199	R200
C	I183	I184	L185	E186	K187	M188	L189	T201	F193	I196	E197	D198	L199	A200	M201	R202
C	I185	I186	L187	E188	K189	M190	L191	T203	F195	I198	E199	D200	L201	A202	M203	R204
C	I187	I188	L189	E190	K191	M192	L193	T205	F197	I200	E201	D202	L203	A204	M205	R206
C	I189	I190	L191	E192	K193	M194	L195	T207	F199	I202	E203	D204	L205	A206	M207	R208
C	I191	I192	L193	E194	K195	M196	L197	T209	F201	I204	E205	D206	L207	A208	M209	R210
C	I193	I194	L195	E196	K197	M198	L199	T211	F203	I206	E207	D208				



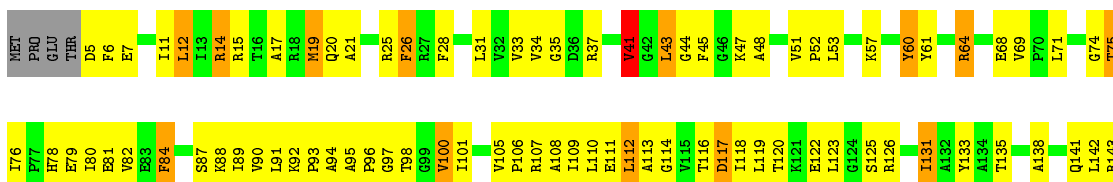
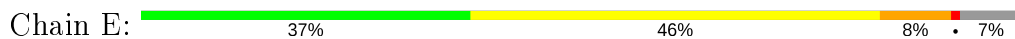
- Molecule 3: ribosomal protein S3



- Molecule 4: ribosomal protein S4

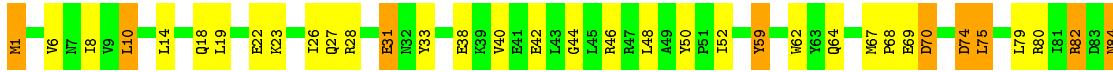


- Molecule 5: ribosomal protein S5





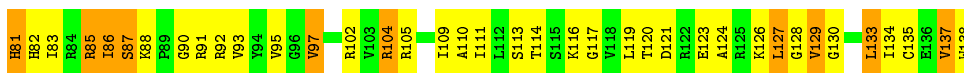
- Molecule 6: ribosomal protein S6



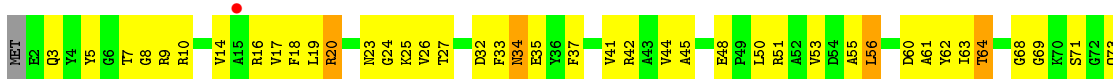
- Molecule 7: ribosomal protein S7



- Molecule 8: ribosomal protein S8

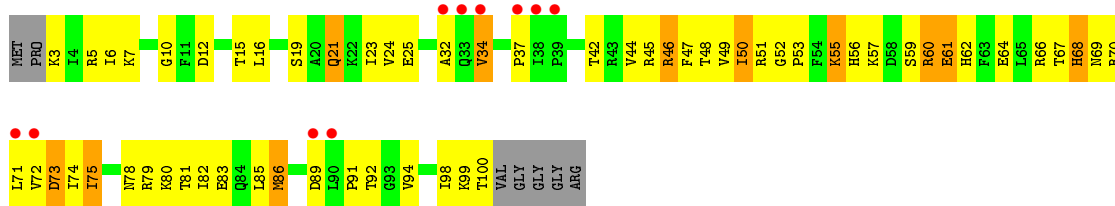


- Molecule 9: ribosomal protein S9

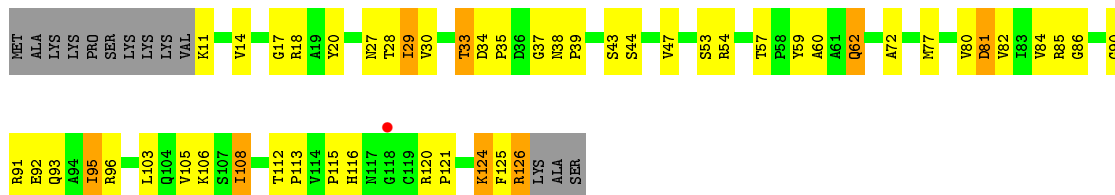


- Molecule 10: ribosomal protein S10

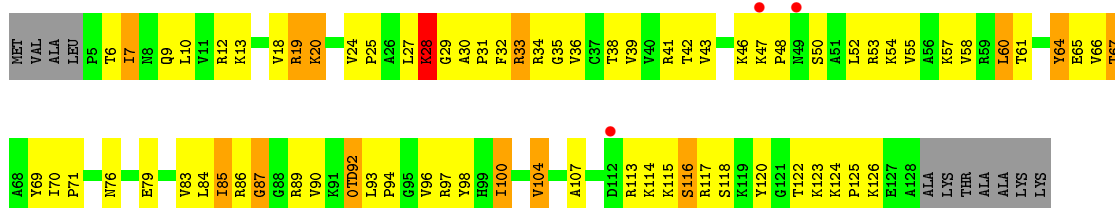




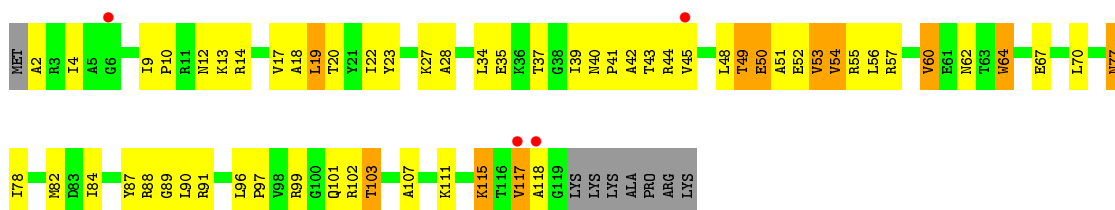
• Molecule 11: ribosomal protein S11



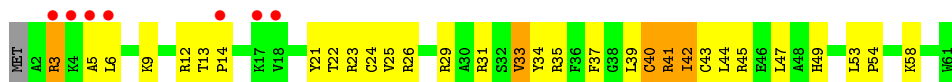
• Molecule 12: ribosomal protein S12



• Molecule 13: ribosomal protein S13

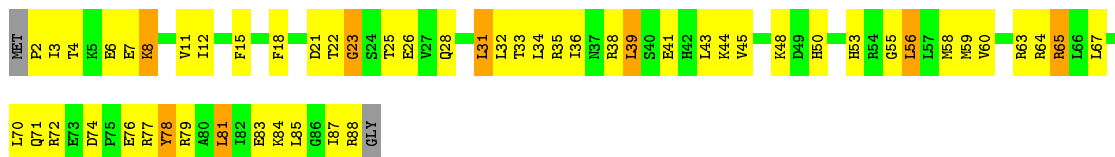


• Molecule 14: ribosomal protein S14

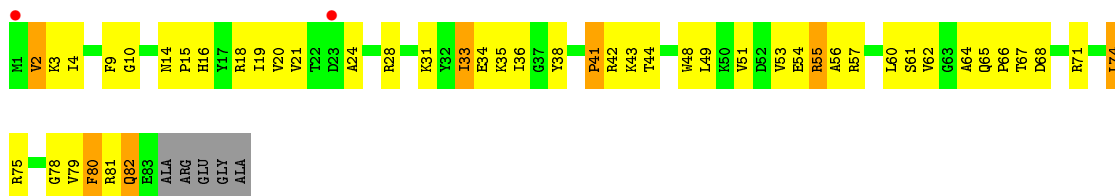


• Molecule 15: ribosomal protein S15

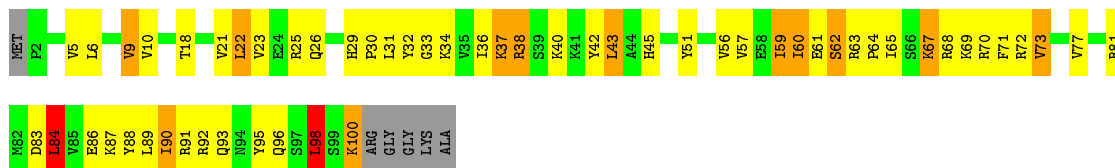




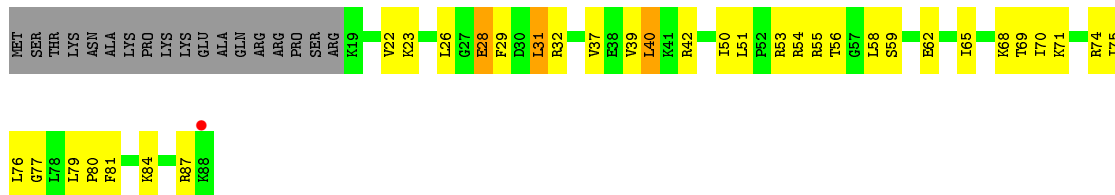
• Molecule 16: ribosomal protein S16



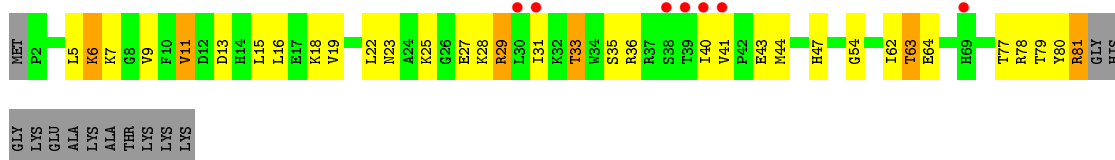
• Molecule 17: ribosomal protein S17



• Molecule 18: ribosomal protein S18

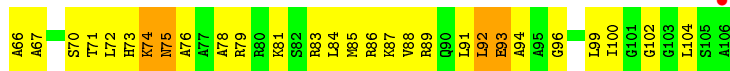


• Molecule 19: ribosomal protein S19

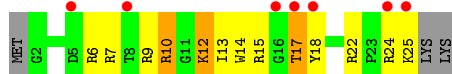


• Molecule 20: ribosomal protein S20





• Molecule 21: ribosomal protein THX



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	402.11Å 402.11Å 174.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.82 – 3.85 34.82 – 3.85	Depositor EDS
% Data completeness (in resolution range)	97.7 (34.82-3.85) 97.4 (34.82-3.85)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.95 (at 3.87Å)	Xtrriage
Refinement program	PHENIX dev_978	Depositor
R, R_{free}	0.147 , 0.206 0.148 , 0.205	Depositor DCC
R_{free} test set	6511 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	164.0	Xtrriage
Anisotropy	0.173	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.23 , 130.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	52453	wwPDB-VP
Average B, all atoms (Å ²)	196.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.59% 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 i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MA6, 0TD, MG, 2MG, 5MC, UR3, 4OC, M2G, 7MG, PSU

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	1.01	71/36143 (0.2%)	1.67	1154/56403 (2.0%)
2	B	0.59	1/1935 (0.1%)	0.75	1/2609 (0.0%)
3	C	0.52	0/1636	0.72	0/2205
4	D	0.64	0/1733	0.85	1/2318 (0.0%)
5	E	0.86	0/1162	1.01	4/1564 (0.3%)
6	F	0.59	0/856	0.80	0/1154
7	G	0.58	0/1276	0.76	0/1709
8	H	0.88	1/1136 (0.1%)	1.06	2/1527 (0.1%)
9	I	0.51	0/1029	0.74	0/1379
10	J	0.57	0/805	0.77	0/1082
11	K	0.65	0/879	0.86	0/1187
12	L	0.72	0/977	0.94	1/1306 (0.1%)
13	M	0.54	0/947	0.72	0/1270
14	N	0.56	0/501	0.75	0/664
15	O	0.68	0/740	0.92	1/987 (0.1%)
16	P	0.76	0/716	0.96	0/963
17	Q	0.87	0/836	1.08	3/1117 (0.3%)
18	R	0.68	0/579	0.88	0/768
19	S	0.49	0/661	0.71	1/890 (0.1%)
20	T	0.71	0/765	0.97	1/1007 (0.1%)
21	U	0.59	0/212	0.77	0/277
All	All	0.90	73/55524 (0.1%)	1.47	1169/82386 (1.4%)

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
3	C	0	2
8	H	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
10	J	0	1
12	L	0	1
20	T	0	1
All	All	0	6

The worst 5 of 73 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	279	A	N9-C4	-11.81	1.30	1.37
1	A	1248	A	N9-C4	8.30	1.42	1.37
1	A	1509	C	N3-C4	-8.09	1.28	1.33
1	A	1504	G	N7-C5	-7.64	1.34	1.39
1	A	574	A	N9-C4	-7.46	1.33	1.37

The worst 5 of 1169 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1505	G	C8-N9-C4	-14.29	100.69	106.40
1	A	635	G	N1-C6-O6	13.97	128.28	119.90
1	A	117	G	N1-C6-O6	12.96	127.68	119.90
1	A	279	A	C5-N7-C8	-12.79	97.51	103.90
1	A	13	U	C2-N1-C1'	12.74	132.99	117.70

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	166	GLU	Peptide
3	C	179	ARG	Peptide
8	H	90	GLY	Peptide
10	J	86	MET	Peptide
12	L	87	GLY	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	32647	0	16508	762	0
2	B	1900	0	1951	80	0
3	C	1612	0	1677	81	0
4	D	1703	0	1763	91	0
5	E	1146	0	1207	63	0
6	F	843	0	857	44	0
7	G	1257	0	1296	53	0
8	H	1116	0	1177	73	0
9	I	1010	0	1037	68	0
10	J	792	0	835	52	0
11	K	864	0	881	36	0
12	L	972	0	1058	65	0
13	M	937	0	995	50	0
14	N	492	0	529	30	0
15	O	729	0	768	41	0
16	P	700	0	720	36	0
17	Q	823	0	893	43	0
18	R	574	0	644	27	0
19	S	647	0	673	20	0
20	T	763	0	861	52	0
21	U	208	0	221	11	0
22	A	262	0	0	0	0
22	B	3	0	0	0	0
22	C	1	0	0	0	0
22	D	2	0	0	0	0
22	E	1	0	0	0	0
22	F	1	0	0	0	0
22	J	2	0	0	0	0
22	M	1	0	0	0	0
22	P	2	0	0	0	0
22	Q	1	0	0	0	0
22	S	1	0	0	0	0
23	D	1	0	0	0	0
23	N	1	0	0	0	0
24	A	397	0	0	11	0
24	D	1	0	0	0	0
24	E	4	0	0	0	0
24	G	4	0	0	0	0
24	I	1	0	0	0	0
24	J	3	0	0	1	0
24	L	1	0	0	0	0
24	M	8	0	0	3	0
24	N	1	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	P	10	0	0	4	0
24	Q	2	0	0	0	0
24	S	2	0	0	0	0
24	T	5	0	0	1	0
All	All	52453	0	36551	1587	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 18.

The worst 5 of 1587 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:A:1377:A:HO2'	7:G:2:ALA:N	1.58	1.00
1:A:481:G:HO2'	1:A:482:A:H8	1.06	0.96
13:M:10:PRO:HB2	13:M:18:ALA:HB1	1.48	0.96
1:A:103:C:OP1	20:T:17:ARG:NH1	2.01	0.93
8:H:83:ILE:HG12	8:H:137:VAL:HG22	1.52	0.90

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	
2	B	232/256 (91%)	209 (90%)	22 (10%)	1 (0%)	34	70
3	C	204/239 (85%)	180 (88%)	23 (11%)	1 (0%)	29	66
4	D	206/209 (99%)	195 (95%)	11 (5%)	0	100	100
5	E	148/162 (91%)	135 (91%)	13 (9%)	0	100	100
6	F	99/101 (98%)	94 (95%)	5 (5%)	0	100	100
7	G	153/156 (98%)	136 (89%)	17 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	H	136/138 (99%)	130 (96%)	6 (4%)	0	100	100
9	I	125/128 (98%)	113 (90%)	11 (9%)	1 (1%)	19	56
10	J	96/105 (91%)	80 (83%)	14 (15%)	2 (2%)	7	38
11	K	114/129 (88%)	101 (89%)	13 (11%)	0	100	100
12	L	121/135 (90%)	108 (89%)	12 (10%)	1 (1%)	19	56
13	M	116/126 (92%)	100 (86%)	15 (13%)	1 (1%)	17	53
14	N	58/61 (95%)	48 (83%)	9 (16%)	1 (2%)	9	42
15	O	85/89 (96%)	77 (91%)	8 (9%)	0	100	100
16	P	81/88 (92%)	79 (98%)	2 (2%)	0	100	100
17	Q	97/105 (92%)	86 (89%)	11 (11%)	0	100	100
18	R	68/88 (77%)	59 (87%)	9 (13%)	0	100	100
19	S	78/93 (84%)	70 (90%)	7 (9%)	1 (1%)	12	46
20	T	97/106 (92%)	79 (81%)	18 (19%)	0	100	100
21	U	22/27 (82%)	18 (82%)	4 (18%)	0	100	100
All	All	2336/2541 (92%)	2097 (90%)	230 (10%)	9 (0%)	34	70

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	L	28	LYS
19	S	31	ILE
2	B	21	ARG
9	I	119	ALA
10	J	86	MET

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	
2	B	202/220 (92%)	167 (83%)	35 (17%)	2	13
3	C	160/188 (85%)	130 (81%)	30 (19%)	1	11

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	D	180/181 (99%)	146 (81%)	34 (19%)	1	10
5	E	115/123 (94%)	87 (76%)	28 (24%)	0	5
6	F	90/90 (100%)	78 (87%)	12 (13%)	4	22
7	G	126/127 (99%)	110 (87%)	16 (13%)	4	23
8	H	119/119 (100%)	90 (76%)	29 (24%)	0	5
9	I	98/99 (99%)	84 (86%)	14 (14%)	3	20
10	J	87/92 (95%)	70 (80%)	17 (20%)	1	9
11	K	88/99 (89%)	75 (85%)	13 (15%)	3	18
12	L	103/110 (94%)	81 (79%)	22 (21%)	1	7
13	M	94/101 (93%)	79 (84%)	15 (16%)	2	16
14	N	49/50 (98%)	40 (82%)	9 (18%)	1	11
15	O	79/80 (99%)	64 (81%)	15 (19%)	1	10
16	P	72/74 (97%)	59 (82%)	13 (18%)	1	12
17	Q	94/97 (97%)	71 (76%)	23 (24%)	0	5
18	R	61/77 (79%)	54 (88%)	7 (12%)	5	26
19	S	71/80 (89%)	61 (86%)	10 (14%)	3	21
20	T	76/82 (93%)	58 (76%)	18 (24%)	1	5
21	U	19/22 (86%)	13 (68%)	6 (32%)	0	2
All	All	1983/2111 (94%)	1617 (82%)	366 (18%)	1	11

5 of 366 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	H	63	LEU
10	J	55	LYS
19	S	36	ARG
8	H	85	ARG
9	I	34	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
8	H	78	GLN
9	I	73	GLN
15	O	42	HIS

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Mol	Chain	Res	Type
3	C	6	HIS
15	O	28	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1504/1522 (98%)	334 (22%)	50 (3%)

5 of 334 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	6	G
1	A	7	G
1	A	8	A
1	A	9	G
1	A	13	U

5 of 50 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	748	C
1	A	913	A
1	A	1347	G
1	A	776	G
1	A	812	C

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

17 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
1	5MC	A	967	1	15,22,23	1.03	2 (13%)	19,32,35	1.02	2 (10%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	M2G	A	966	1	20,27,28	1.47	4 (20%)	22,40,43	2.42	5 (22%)
1	UR3	A	1498	1	14,22,23	0.87	0	15,32,35	1.23	2 (13%)
1	5MC	A	1400	1	15,22,23	1.19	2 (13%)	19,32,35	1.14	3 (15%)
1	MA6	A	1518[A]	1	19,26,27	0.98	0	18,38,41	0.99	1 (5%)
1	4OC	A	1402	1	16,23,24	1.38	2 (12%)	17,32,35	0.64	0
1	5MC	A	1404	1	15,22,23	1.28	1 (6%)	19,32,35	1.09	2 (10%)
1	5MC	A	1407	1	15,22,23	1.40	3 (20%)	19,32,35	0.99	2 (10%)
1	MA6	A	1519[A]	1	19,26,27	0.73	0	18,38,41	0.83	0
1	PSU	A	516	1	17,21,22	1.14	2 (11%)	20,30,33	3.37	8 (40%)
1	MA6	A	1519[B]	1	19,26,27	1.40	3 (15%)	18,38,41	0.70	0
1	MA6	A	1518[B]	1	19,26,27	1.38	2 (10%)	18,38,41	0.61	0
1	7MG	A	527	1,22	22,26,27	1.97	5 (22%)	28,39,42	1.60	4 (14%)
1	2MG	A	1207	1	19,26,27	3.12	4 (21%)	21,38,41	2.17	4 (19%)
1	PSU	A	1541	1	17,21,22	1.15	1 (5%)	20,30,33	3.40	6 (30%)
1	PSU	A	1540	1	17,21,22	1.02	1 (5%)	20,30,33	3.50	7 (35%)
12	0TD	L	92	12	4,9,10	0.93	0	3,11,13	3.62	2 (66%)

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
1	5MC	A	967	1	-	3/5/25/26	0/2/2/2
1	M2G	A	966	1	-	3/7/29/30	0/3/3/3
1	UR3	A	1498	1	-	2/5/25/26	0/2/2/2
1	5MC	A	1400	1	-	2/5/25/26	0/2/2/2
1	MA6	A	1518[A]	1	-	0/7/29/30	0/3/3/3
1	4OC	A	1402	1	-	6/9/29/30	0/2/2/2
1	5MC	A	1404	1	-	0/5/25/26	0/2/2/2
1	5MC	A	1407	1	-	0/5/25/26	0/2/2/2
1	MA6	A	1519[A]	1	-	4/7/29/30	0/3/3/3
1	PSU	A	516	1	-	0/7/25/26	0/2/2/2
1	MA6	A	1519[B]	1	-	6/7/29/30	0/3/3/3
1	MA6	A	1518[B]	1	-	0/7/29/30	0/3/3/3
1	7MG	A	527	1,22	-	0/7/37/38	0/3/3/3
1	2MG	A	1207	1	-	3/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	A	1541	1	-	1/7/25/26	0/2/2/2
1	PSU	A	1540	1	-	0/7/25/26	0/2/2/2
12	0TD	L	92	12	-	1/3/12/14	-

The worst 5 of 32 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1207	2MG	C2-N2	10.03	1.42	1.34
1	A	1207	2MG	C6-N1	7.53	1.46	1.33
1	A	527	7MG	C2-N2	4.69	1.43	1.33
1	A	1518[B]	MA6	C6-N1	4.03	1.39	1.33
1	A	966	M2G	C6-N1	3.98	1.40	1.33

The worst 5 of 48 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1540	PSU	N1-C2-N3	-12.28	118.67	128.43
1	A	1541	PSU	N1-C2-N3	-11.98	118.90	128.43
1	A	516	PSU	N1-C2-N3	-11.22	119.51	128.43
1	A	966	M2G	C5-C6-N1	-7.99	112.51	123.43
1	A	1207	2MG	C5-C6-N1	-7.77	112.81	123.43

There are no chirality outliers.

5 of 31 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	967	5MC	O4'-C4'-C5'-O5'
1	A	967	5MC	C3'-C4'-C5'-O5'
1	A	967	5MC	C2'-C1'-N1-C6
1	A	1207	2MG	N1-C2-N2-CM2
1	A	1207	2MG	N3-C2-N2-CM2

There are no ring outliers.

13 monomers are involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	967	5MC	1	0
1	A	966	M2G	1	0
1	A	1498	UR3	5	0
1	A	1400	5MC	1	0
1	A	1518[A]	MA6	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	1404	5MC	1	0
1	A	1407	5MC	1	0
1	A	1519[A]	MA6	3	0
1	A	1519[B]	MA6	3	0
1	A	1518[B]	MA6	3	0
1	A	527	7MG	2	0
1	A	1207	2MG	1	0
12	L	92	0TD	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 279 ligands modelled in this entry, 279 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	A	1498/1522 (98%)	-0.38	24 (1%) 72 63	104, 178, 309, 393	0
2	B	234/256 (91%)	-0.45	4 (1%) 70 61	145, 220, 326, 363	0
3	C	206/239 (86%)	-0.10	11 (5%) 26 22	190, 245, 287, 310	0
4	D	208/209 (99%)	-0.35	3 (1%) 75 67	120, 190, 253, 287	0
5	E	150/162 (92%)	-0.52	0 100 100	101, 152, 195, 248	0
6	F	101/101 (100%)	-0.69	0 100 100	139, 213, 251, 291	0
7	G	155/156 (99%)	-0.31	7 (4%) 33 27	162, 218, 283, 328	0
8	H	138/138 (100%)	-0.62	0 100 100	94, 136, 183, 228	0
9	I	127/128 (99%)	-0.17	3 (2%) 59 49	205, 246, 296, 310	0
10	J	98/105 (93%)	0.34	10 (10%) 6 6	194, 256, 344, 406	0
11	K	116/129 (89%)	-0.45	1 (0%) 84 78	134, 176, 225, 241	0
12	L	123/135 (91%)	-0.31	3 (2%) 59 49	99, 180, 223, 243	0
13	M	118/126 (93%)	-0.22	4 (3%) 45 36	158, 213, 251, 306	0
14	N	60/61 (98%)	0.28	7 (11%) 4 4	187, 237, 295, 326	0
15	O	87/89 (97%)	-0.41	0 100 100	110, 167, 217, 231	0
16	P	83/88 (94%)	-0.39	2 (2%) 59 49	130, 172, 227, 272	0
17	Q	99/105 (94%)	-0.55	0 100 100	115, 152, 216, 241	0
18	R	70/88 (79%)	-0.52	1 (1%) 75 67	128, 177, 240, 273	0
19	S	80/93 (86%)	0.31	7 (8%) 10 8	223, 271, 315, 328	0
20	T	99/106 (93%)	-0.68	1 (1%) 82 75	129, 173, 233, 280	0
21	U	24/27 (88%)	1.60	7 (29%) 0 0	198, 224, 253, 260	0
All	All	3874/4063 (95%)	-0.33	95 (2%) 57 47	94, 194, 292, 406	0

The worst 5 of 95 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
10	J	34	VAL	8.5
1	A	993	G	7.5
1	A	994	A	6.5
10	J	39	PRO	6.5
21	U	17	THR	6.4

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
1	PSU	A	1540	20/21	0.85	0.46	262,265,277,283	0
1	PSU	A	1541	20/21	0.92	0.30	239,247,262,263	0
1	PSU	A	516	20/21	0.94	0.09	161,204,223,224	0
1	5MC	A	967	21/22	0.94	0.16	183,190,208,211	0
1	UR3	A	1498	21/22	0.94	0.22	155,172,189,197	0
1	4OC	A	1402	22/23	0.95	0.20	148,156,171,187	0
1	5MC	A	1404	21/22	0.95	0.19	141,170,203,221	0
1	M2G	A	966	25/26	0.95	0.16	192,203,210,221	0
1	2MG	A	1207	24/25	0.95	0.12	211,231,295,300	0
1	5MC	A	1400	21/22	0.95	0.17	141,159,171,180	0
1	7MG	A	527	24/25	0.96	0.14	141,171,178,185	0
1	MA6	A	1519[A]	24/25	0.96	0.31	136,142,149,152	24
1	5MC	A	1407	21/22	0.96	0.18	157,205,219,224	0
1	MA6	A	1519[B]	24/25	0.96	0.31	136,148,164,167	24
1	MA6	A	1518[A]	24/25	0.97	0.25	145,163,168,171	24
1	MA6	A	1518[B]	24/25	0.97	0.25	143,163,180,183	24
12	0TD	L	92	10/11	0.97	0.54	158,180,208,372	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(\AA^2)	Q<0.9
22	MG	A	1713	1/1	0.26	0.30	155,155,155,155	0
22	MG	A	1722	1/1	0.26	0.82	130,130,130,130	0
22	MG	A	1845	1/1	0.31	0.27	137,137,137,137	0
22	MG	A	1686	1/1	0.43	0.24	135,135,135,135	0
22	MG	A	1862	1/1	0.57	0.57	129,129,129,129	0
22	MG	A	1654	1/1	0.57	0.40	111,111,111,111	0
22	MG	P	101	1/1	0.58	0.36	102,102,102,102	0
22	MG	M	201	1/1	0.60	0.61	160,160,160,160	0
22	MG	Q	201	1/1	0.63	0.13	158,158,158,158	0
22	MG	A	1836	1/1	0.64	0.90	207,207,207,207	0
22	MG	A	1737	1/1	0.65	0.46	139,139,139,139	0
22	MG	A	1849	1/1	0.66	0.26	141,141,141,141	0
22	MG	A	1837	1/1	0.66	0.28	179,179,179,179	0
22	MG	A	1827	1/1	0.66	0.42	507,507,507,507	0
22	MG	A	1778	1/1	0.67	1.46	164,164,164,164	0
22	MG	A	1696	1/1	0.69	0.55	151,151,151,151	0
22	MG	A	1850	1/1	0.70	0.18	140,140,140,140	0
22	MG	A	1712	1/1	0.72	0.39	171,171,171,171	0
22	MG	A	1815	1/1	0.72	0.57	218,218,218,218	0
22	MG	A	1650	1/1	0.72	0.38	161,161,161,161	0
22	MG	S	101	1/1	0.74	0.14	234,234,234,234	0
22	MG	P	102	1/1	0.75	0.33	360,360,360,360	0
22	MG	A	1721	1/1	0.75	0.54	166,166,166,166	0
22	MG	A	1736	1/1	0.76	0.35	110,110,110,110	0
22	MG	A	1844	1/1	0.77	0.32	138,138,138,138	0
22	MG	A	1743	1/1	0.77	1.02	159,159,159,159	0
22	MG	A	1846	1/1	0.77	0.35	163,163,163,163	0
22	MG	A	1856	1/1	0.77	0.40	132,132,132,132	0
22	MG	A	1792	1/1	0.77	0.53	229,229,229,229	0
22	MG	A	1791	1/1	0.78	0.34	444,444,444,444	0
22	MG	A	1831	1/1	0.79	0.42	322,322,322,322	0
22	MG	A	1748	1/1	0.79	0.32	149,149,149,149	0
22	MG	A	1617	1/1	0.79	0.21	140,140,140,140	0
22	MG	A	1859	1/1	0.80	0.68	161,161,161,161	0
22	MG	A	1789	1/1	0.80	0.34	259,259,259,259	0
22	MG	A	1621	1/1	0.81	0.31	132,132,132,132	0
22	MG	A	1728	1/1	0.81	0.20	129,129,129,129	0
22	MG	A	1734	1/1	0.82	0.24	129,129,129,129	0
22	MG	A	1638	1/1	0.83	0.29	155,155,155,155	0
22	MG	A	1667	1/1	0.84	0.47	128,128,128,128	0
22	MG	A	1622	1/1	0.84	0.48	71,71,71,71	0
22	MG	A	1746	1/1	0.84	0.39	157,157,157,157	0
22	MG	A	1679	1/1	0.84	0.28	146,146,146,146	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1838	1/1	0.84	0.15	198,198,198,198	0
22	MG	A	1765	1/1	0.85	0.33	149,149,149,149	0
22	MG	A	1853	1/1	0.85	0.31	171,171,171,171	0
22	MG	A	1788	1/1	0.85	0.33	288,288,288,288	0
22	MG	A	1793	1/1	0.85	0.32	189,189,189,189	0
22	MG	A	1659	1/1	0.86	0.29	154,154,154,154	0
22	MG	A	1672	1/1	0.86	0.15	163,163,163,163	0
22	MG	A	1802	1/1	0.86	0.19	225,225,225,225	0
22	MG	A	1807	1/1	0.86	0.24	500,500,500,500	0
22	MG	A	1653	1/1	0.87	0.37	129,129,129,129	0
22	MG	A	1834	1/1	0.87	0.58	113,113,113,113	0
22	MG	A	1840	1/1	0.87	0.29	153,153,153,153	0
22	MG	A	1602	1/1	0.87	0.31	237,237,237,237	0
22	MG	A	1766	1/1	0.87	0.21	171,171,171,171	0
22	MG	A	1695	1/1	0.87	0.21	386,386,386,386	0
22	MG	A	1655	1/1	0.88	0.26	136,136,136,136	0
22	MG	A	1626	1/1	0.88	0.35	127,127,127,127	0
22	MG	A	1745	1/1	0.88	0.20	126,126,126,126	0
22	MG	A	1824	1/1	0.88	0.21	424,424,424,424	0
22	MG	A	1741	1/1	0.88	0.47	145,145,145,145	0
22	MG	A	1857	1/1	0.88	0.45	189,189,189,189	0
22	MG	A	1848	1/1	0.88	0.25	173,173,173,173	0
22	MG	A	1738	1/1	0.88	0.33	167,167,167,167	0
22	MG	A	1706	1/1	0.88	0.67	131,131,131,131	0
22	MG	A	1784	1/1	0.88	0.38	250,250,250,250	0
22	MG	A	1699	1/1	0.88	0.41	126,126,126,126	0
22	MG	A	1773	1/1	0.89	0.23	121,121,121,121	0
22	MG	A	1776	1/1	0.89	0.22	159,159,159,159	0
22	MG	A	1710	1/1	0.89	0.31	157,157,157,157	0
22	MG	A	1811	1/1	0.89	0.29	317,317,317,317	0
22	MG	A	1673	1/1	0.90	0.48	175,175,175,175	0
22	MG	A	1671	1/1	0.90	0.26	171,171,171,171	0
22	MG	A	1641	1/1	0.90	0.26	139,139,139,139	0
22	MG	A	1702	1/1	0.90	0.09	165,165,165,165	0
22	MG	A	1781	1/1	0.90	0.21	247,247,247,247	0
22	MG	A	1798	1/1	0.90	0.26	514,514,514,514	0
22	MG	A	1794	1/1	0.90	0.19	173,173,173,173	0
22	MG	A	1733	1/1	0.90	0.18	102,102,102,102	0
22	MG	A	1775	1/1	0.91	0.08	120,120,120,120	0
22	MG	A	1725	1/1	0.91	0.39	131,131,131,131	0
22	MG	A	1735	1/1	0.91	0.55	157,157,157,157	0
22	MG	A	1852	1/1	0.91	0.14	152,152,152,152	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1828	1/1	0.91	0.17	281,281,281,281	0
22	MG	A	1829	1/1	0.91	0.25	317,317,317,317	0
22	MG	A	1801	1/1	0.91	0.33	465,465,465,465	0
22	MG	A	1632	1/1	0.91	0.32	109,109,109,109	0
22	MG	A	1666	1/1	0.91	0.25	155,155,155,155	0
22	MG	A	1805	1/1	0.91	0.31	450,450,450,450	0
22	MG	A	1767	1/1	0.91	0.14	136,136,136,136	0
22	MG	A	1861	1/1	0.91	0.25	155,155,155,155	0
22	MG	A	1732	1/1	0.92	0.17	127,127,127,127	0
22	MG	A	1822	1/1	0.92	0.23	202,202,202,202	0
22	MG	A	1755	1/1	0.92	0.19	192,192,192,192	0
22	MG	A	1756	1/1	0.92	0.38	126,126,126,126	0
22	MG	A	1642	1/1	0.92	0.22	129,129,129,129	0
22	MG	A	1684	1/1	0.92	0.18	222,222,222,222	0
22	MG	A	1803	1/1	0.92	0.45	413,413,413,413	0
22	MG	A	1690	1/1	0.92	0.25	154,154,154,154	0
22	MG	A	1670	1/1	0.92	0.11	209,209,209,209	0
22	MG	A	1704	1/1	0.92	0.23	105,105,105,105	0
22	MG	A	1753	1/1	0.92	0.26	128,128,128,128	0
22	MG	A	1780	1/1	0.93	0.41	380,380,380,380	0
22	MG	A	1683	1/1	0.93	0.09	310,310,310,310	0
22	MG	A	1744	1/1	0.93	0.10	158,158,158,158	0
22	MG	A	1608	1/1	0.93	0.17	150,150,150,150	0
22	MG	A	1742	1/1	0.93	0.14	148,148,148,148	0
22	MG	A	1619	1/1	0.93	0.48	179,179,179,179	0
22	MG	C	301	1/1	0.93	0.12	166,166,166,166	0
22	MG	A	1707	1/1	0.93	0.25	131,131,131,131	0
22	MG	A	1832	1/1	0.93	0.74	435,435,435,435	0
22	MG	B	302	1/1	0.93	0.14	219,219,219,219	0
22	MG	A	1709	1/1	0.94	0.23	157,157,157,157	0
22	MG	A	1631	1/1	0.94	0.52	175,175,175,175	0
22	MG	D	303	1/1	0.94	0.15	138,138,138,138	0
22	MG	A	1806	1/1	0.94	0.65	279,279,279,279	0
22	MG	A	1754	1/1	0.94	0.52	115,115,115,115	0
22	MG	A	1624	1/1	0.94	0.19	146,146,146,146	0
22	MG	B	303	1/1	0.94	1.19	260,260,260,260	0
22	MG	A	1777	1/1	0.94	0.20	119,119,119,119	0
22	MG	A	1660	1/1	0.94	0.35	135,135,135,135	0
22	MG	A	1604	1/1	0.94	0.98	120,120,120,120	0
22	MG	A	1697	1/1	0.94	0.28	119,119,119,119	0
22	MG	A	1763	1/1	0.94	0.20	358,358,358,358	0
22	MG	A	1830	1/1	0.94	0.52	321,321,321,321	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1779	1/1	0.94	0.62	137,137,137,137	0
22	MG	A	1723	1/1	0.94	0.20	163,163,163,163	0
22	MG	A	1685	1/1	0.94	0.30	247,247,247,247	0
22	MG	A	1813	1/1	0.94	0.16	460,460,460,460	0
22	MG	A	1664	1/1	0.94	0.31	120,120,120,120	0
22	MG	A	1812	1/1	0.94	0.24	450,450,450,450	0
22	MG	A	1770	1/1	0.94	0.20	185,185,185,185	0
22	MG	A	1797	1/1	0.94	0.35	387,387,387,387	0
22	MG	A	1783	1/1	0.94	0.19	404,404,404,404	0
22	MG	A	1669	1/1	0.94	0.07	306,306,306,306	0
22	MG	A	1796	1/1	0.94	0.23	271,271,271,271	0
22	MG	A	1649	1/1	0.95	0.19	235,235,235,235	0
22	MG	A	1782	1/1	0.95	0.04	517,517,517,517	0
22	MG	A	1606	1/1	0.95	0.18	174,174,174,174	0
22	MG	A	1689	1/1	0.95	0.11	223,223,223,223	0
22	MG	A	1787	1/1	0.95	0.23	254,254,254,254	0
22	MG	A	1750	1/1	0.95	0.19	152,152,152,152	0
22	MG	A	1818	1/1	0.95	0.62	432,432,432,432	0
22	MG	A	1658	1/1	0.95	0.44	210,210,210,210	0
22	MG	A	1708	1/1	0.95	0.38	135,135,135,135	0
22	MG	A	1752	1/1	0.95	0.15	149,149,149,149	0
22	MG	A	1682	1/1	0.95	0.56	123,123,123,123	0
22	MG	A	1614	1/1	0.95	0.81	194,194,194,194	0
22	MG	A	1663	1/1	0.95	0.09	315,315,315,315	0
22	MG	A	1760	1/1	0.95	0.18	189,189,189,189	0
22	MG	A	1616	1/1	0.95	0.37	190,190,190,190	0
22	MG	A	1644	1/1	0.95	0.13	143,143,143,143	0
22	MG	A	1860	1/1	0.95	0.27	151,151,151,151	0
22	MG	A	1751	1/1	0.95	0.34	160,160,160,160	0
22	MG	A	1718	1/1	0.95	0.47	145,145,145,145	0
22	MG	A	1640	1/1	0.95	0.92	165,165,165,165	0
22	MG	A	1636	1/1	0.96	0.36	114,114,114,114	0
22	MG	A	1676	1/1	0.96	0.21	173,173,173,173	0
22	MG	A	1826	1/1	0.96	0.11	178,178,178,178	0
22	MG	A	1607	1/1	0.96	0.33	130,130,130,130	0
22	MG	A	1817	1/1	0.96	0.26	489,489,489,489	0
22	MG	A	1687	1/1	0.96	0.33	325,325,325,325	0
22	MG	A	1668	1/1	0.96	0.59	153,153,153,153	0
22	MG	A	1747	1/1	0.96	0.16	134,134,134,134	0
22	MG	A	1730	1/1	0.96	0.28	149,149,149,149	0
22	MG	A	1785	1/1	0.96	0.16	243,243,243,243	0
22	MG	A	1774	1/1	0.96	0.09	154,154,154,154	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1623	1/1	0.96	0.27	185,185,185,185	0
22	MG	A	1629	1/1	0.96	0.11	154,154,154,154	0
22	MG	A	1680	1/1	0.96	0.12	165,165,165,165	0
22	MG	A	1821	1/1	0.96	0.09	449,449,449,449	0
22	MG	A	1651	1/1	0.96	0.25	141,141,141,141	0
22	MG	A	1674	1/1	0.96	0.13	153,153,153,153	0
22	MG	A	1657	1/1	0.96	0.07	190,190,190,190	0
22	MG	A	1786	1/1	0.96	0.15	449,449,449,449	0
22	MG	A	1647	1/1	0.96	0.18	132,132,132,132	0
22	MG	A	1698	1/1	0.96	0.14	180,180,180,180	0
22	MG	A	1611	1/1	0.96	0.06	234,234,234,234	0
22	MG	A	1661	1/1	0.96	0.10	136,136,136,136	0
22	MG	A	1703	1/1	0.96	0.06	237,237,237,237	0
22	MG	A	1625	1/1	0.96	0.12	114,114,114,114	0
22	MG	J	202	1/1	0.96	0.39	501,501,501,501	0
22	MG	A	1790	1/1	0.96	0.13	307,307,307,307	0
22	MG	E	201	1/1	0.96	0.18	171,171,171,171	0
22	MG	A	1847	1/1	0.96	0.14	147,147,147,147	0
22	MG	D	302	1/1	0.97	0.41	140,140,140,140	0
22	MG	A	1610	1/1	0.97	0.14	206,206,206,206	0
22	MG	A	1858	1/1	0.97	0.20	127,127,127,127	0
22	MG	F	201	1/1	0.97	0.16	170,170,170,170	0
22	MG	A	1720	1/1	0.97	0.36	171,171,171,171	0
22	MG	A	1855	1/1	0.97	0.11	133,133,133,133	0
22	MG	A	1729	1/1	0.97	0.21	169,169,169,169	0
22	MG	A	1800	1/1	0.97	0.13	237,237,237,237	0
22	MG	A	1675	1/1	0.97	0.19	269,269,269,269	0
22	MG	A	1833	1/1	0.97	0.17	338,338,338,338	0
22	MG	A	1726	1/1	0.97	0.15	132,132,132,132	0
22	MG	A	1808	1/1	0.97	0.36	359,359,359,359	0
22	MG	A	1841	1/1	0.97	0.12	196,196,196,196	0
22	MG	A	1694	1/1	0.97	0.19	346,346,346,346	0
22	MG	A	1758	1/1	0.97	0.12	172,172,172,172	0
22	MG	A	1795	1/1	0.97	0.20	416,416,416,416	0
22	MG	A	1814	1/1	0.97	0.18	336,336,336,336	0
22	MG	A	1705	1/1	0.97	0.16	129,129,129,129	0
22	MG	A	1662	1/1	0.97	0.08	182,182,182,182	0
22	MG	A	1634	1/1	0.97	0.14	118,118,118,118	0
22	MG	A	1842	1/1	0.97	0.19	173,173,173,173	0
22	MG	A	1693	1/1	0.97	0.35	394,394,394,394	0
22	MG	A	1843	1/1	0.97	0.19	156,156,156,156	0
22	MG	A	1639	1/1	0.97	0.28	227,227,227,227	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1757	1/1	0.97	0.06	162,162,162,162	0
22	MG	B	301	1/1	0.97	0.37	173,173,173,173	0
22	MG	A	1711	1/1	0.97	0.37	101,101,101,101	0
22	MG	A	1851	1/1	0.97	0.15	182,182,182,182	0
22	MG	A	1601	1/1	0.97	0.35	210,210,210,210	0
22	MG	A	1810	1/1	0.97	0.46	344,344,344,344	0
22	MG	A	1771	1/1	0.97	0.20	139,139,139,139	0
22	MG	A	1761	1/1	0.97	0.12	205,205,205,205	0
22	MG	A	1731	1/1	0.97	0.36	106,106,106,106	0
22	MG	A	1656	1/1	0.98	0.15	146,146,146,146	0
22	MG	A	1678	1/1	0.98	0.10	180,180,180,180	0
22	MG	A	1688	1/1	0.98	0.16	145,145,145,145	0
23	ZN	D	301	1/1	0.98	0.28	147,147,147,147	0
22	MG	J	201	1/1	0.98	0.30	138,138,138,138	0
22	MG	A	1854	1/1	0.98	0.16	172,172,172,172	0
22	MG	A	1635	1/1	0.98	0.38	177,177,177,177	0
22	MG	A	1618	1/1	0.98	0.21	137,137,137,137	0
22	MG	A	1769	1/1	0.98	0.27	161,161,161,161	0
22	MG	A	1823	1/1	0.98	0.26	256,256,256,256	0
22	MG	A	1772	1/1	0.98	0.16	150,150,150,150	0
22	MG	A	1691	1/1	0.98	0.41	197,197,197,197	0
22	MG	A	1819	1/1	0.98	0.09	407,407,407,407	0
22	MG	A	1820	1/1	0.98	0.59	437,437,437,437	0
22	MG	A	1839	1/1	0.98	0.26	170,170,170,170	0
22	MG	A	1620	1/1	0.98	0.12	107,107,107,107	0
22	MG	A	1633	1/1	0.98	0.09	368,368,368,368	0
22	MG	A	1714	1/1	0.98	0.33	118,118,118,118	0
22	MG	A	1715	1/1	0.98	0.11	155,155,155,155	0
22	MG	A	1717	1/1	0.98	0.10	137,137,137,137	0
22	MG	A	1652	1/1	0.98	0.16	188,188,188,188	0
22	MG	A	1762	1/1	0.98	0.29	365,365,365,365	0
22	MG	A	1816	1/1	0.98	0.09	357,357,357,357	0
22	MG	A	1692	1/1	0.98	0.07	148,148,148,148	0
22	MG	A	1681	1/1	0.98	0.08	154,154,154,154	0
22	MG	A	1740	1/1	0.98	0.69	138,138,138,138	0
22	MG	A	1835	1/1	0.98	0.17	161,161,161,161	0
22	MG	A	1612	1/1	0.98	0.17	172,172,172,172	0
22	MG	A	1646	1/1	0.98	0.35	205,205,205,205	0
22	MG	A	1768	1/1	0.98	0.45	164,164,164,164	0
22	MG	A	1739	1/1	0.98	0.13	158,158,158,158	0
23	ZN	N	101	1/1	0.98	0.18	258,258,258,258	0
22	MG	A	1719	1/1	0.98	0.33	136,136,136,136	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
22	MG	A	1799	1/1	0.98	0.25	224,224,224,224	0
22	MG	A	1809	1/1	0.98	0.33	249,249,249,249	0
22	MG	A	1764	1/1	0.99	0.20	298,298,298,298	0
22	MG	A	1605	1/1	0.99	0.08	153,153,153,153	0
22	MG	A	1727	1/1	0.99	0.07	113,113,113,113	0
22	MG	A	1648	1/1	0.99	0.17	139,139,139,139	0
22	MG	A	1716	1/1	0.99	0.11	131,131,131,131	0
22	MG	A	1665	1/1	0.99	0.15	180,180,180,180	0
22	MG	A	1628	1/1	0.99	0.42	189,189,189,189	0
22	MG	A	1825	1/1	0.99	0.17	264,264,264,264	0
22	MG	A	1630	1/1	0.99	0.12	104,104,104,104	0
22	MG	A	1700	1/1	0.99	0.16	143,143,143,143	0
22	MG	A	1613	1/1	0.99	0.09	144,144,144,144	0
22	MG	A	1615	1/1	0.99	0.17	104,104,104,104	0
22	MG	A	1603	1/1	0.99	0.27	170,170,170,170	0
22	MG	A	1804	1/1	0.99	0.12	228,228,228,228	0
22	MG	A	1609	1/1	0.99	0.20	151,151,151,151	0
22	MG	A	1701	1/1	0.99	0.14	101,101,101,101	0
22	MG	A	1645	1/1	0.99	0.21	87,87,87,87	0
22	MG	A	1677	1/1	0.99	0.09	189,189,189,189	0
22	MG	A	1749	1/1	0.99	0.06	113,113,113,113	0
22	MG	A	1724	1/1	0.99	0.39	127,127,127,127	0
22	MG	A	1759	1/1	0.99	0.30	167,167,167,167	0
22	MG	A	1643	1/1	0.99	0.10	113,113,113,113	0
22	MG	A	1637	1/1	0.99	0.19	283,283,283,283	0
22	MG	A	1627	1/1	0.99	0.14	113,113,113,113	0

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

There are no such residues in this entry.