



wwPDB X-ray Structure Validation Summary Report

Mar 1, 2014 – 04:40 AM GMT

PDB ID : 3ORA
Title : Crystal structure of the E. coli ribosome bound to CEM-101. This file contains the 30S subunit of the second 70S ribosome.
Authors : Dunkle, J.A.; Zhang, W.; Cate, J.H.D.; Mankin, A.S.
Deposited on : 2010-09-06
Resolution : 3.30 Å(reported)

This is a wwPDB validation summary report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

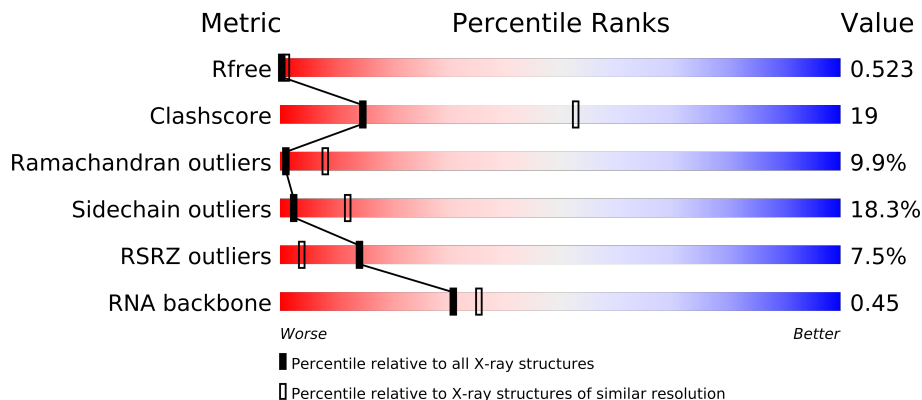
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Mogul	:	1.15 2013
Xtriage (Phenix)	:	dev-1323
EDS	:	stable22639
Percentile statistics	:	21963
Refmac	:	5.8.0049
CCP4	:	6.3.0 (Settle)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP)	:	stable22683

1 Overall quality at a glance

The reported resolution of this entry is 3.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.







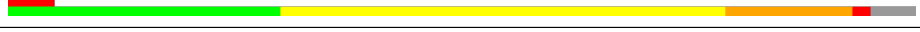




Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	66092	1341 (3.40-3.20)
Clashscore	79885	1696 (3.40-3.20)
Ramachandran outliers	78287	1664 (3.40-3.20)
Sidechain outliers	78261	1662 (3.40-3.20)
RSRZ outliers	66119	1342 (3.40-3.20)
RNA backbone	1838	1042 (3.90-2.70)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	1533	
2	B	241	
3	C	233	
4	D	206	
5	E	167	
6	F	135	
7	G	179	
8	H	130	
9	I	130	
10	J	103	
11	K	129	
12	L	124	

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Mol	Chain	Length	Quality of chain
13	M	118	
14	N	101	
15	O	89	
16	P	82	
17	Q	84	
18	R	75	
19	S	92	
20	T	87	
21	U	71	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
22	MG	A	1535	-	X
22	MG	A	1543	-	X
22	MG	A	1544	-	X
22	MG	A	1545	-	X
22	MG	A	1547	-	X
22	MG	A	1548	-	X
22	MG	A	1552	-	X
22	MG	A	1556	-	X
22	MG	A	1561	-	X
22	MG	A	1572	-	X
22	MG	A	1573	-	X

2 Entry composition

There are 23 unique types of molecules in this entry. The entry contains 51559 atoms, of which 0 are hydrogen and 0 are deuterium.

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
1	A	1530	Total	C	N	O	P	0	0	0
			32831	14642	6024	10635	1530			

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	218	Total	C	N	O	S	0	0	0
			1704	1081	305	311	7			

- Molecule 3 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	206	Total	C	N	O	S	0	0	0
			1624	1028	305	288	3			

- Molecule 4 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	205	Total	C	N	O	S	0	0	0
			1643	1026	315	298	4			

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	150	Total	C	N	O	S	0	0	0
			1105	687	211	201	6			

- Molecule 6 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	100	Total	C	N	O	S	0	0	0
			817	515	148	148	6			

- Molecule 7 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	150	Total	C	N	O	S	0	0	0
			1174	730	226	214	4			

- Molecule 8 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	129	Total	C	N	O	S	0	0	0
			979	616	173	184	6			

- Molecule 9 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	I	127	Total	C	N	O	S	0	0	0
			1022	634	206	179	3			

- Molecule 10 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	98	Total	C	N	O	S	0	0	0
			786	493	150	142	1			

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	K	117	Total	C	N	O	S	0	0	0
			877	540	174	160	3			

- Molecule 12 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
12	L	123	Total	C	N	O	S	0	0	0
			955	590	196	165	4			

- Molecule 13 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
13	M	113	Total	C	N	O	S	0	0	0
			876	541	177	155	3			

- Molecule 14 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	N	91	Total	C	N	O	S	0	0	0
			735	461	151	120	3			

- Molecule 15 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
15	O	88	Total	C	N	O	S	0	0	0
			714	439	144	130	1			

- Molecule 16 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
16	P	80	Total	C	N	O	S	0	0	0
			638	400	126	111	1			

- Molecule 17 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
17	Q	80	Total	C	N	O	S	0	0	0
			648	411	121	113	3			

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
18	R	55	Total	C	N	O	0	0	0
			455	288	86	81			

- Molecule 19 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
19	S	79	Total	C	N	O	S	0	0	0
			637	408	120	107	2			

- Molecule 20 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	T	85	Total	C	N	O	S	0	0	0
			665	411	137	114	3			

- Molecule 21 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
21	U	51	Total	C	N	O	S	0	0	0
			425	265	86	73	1			

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
22	A	42	Total	Mg	0	0
			42	42		

- Molecule 23 is water.

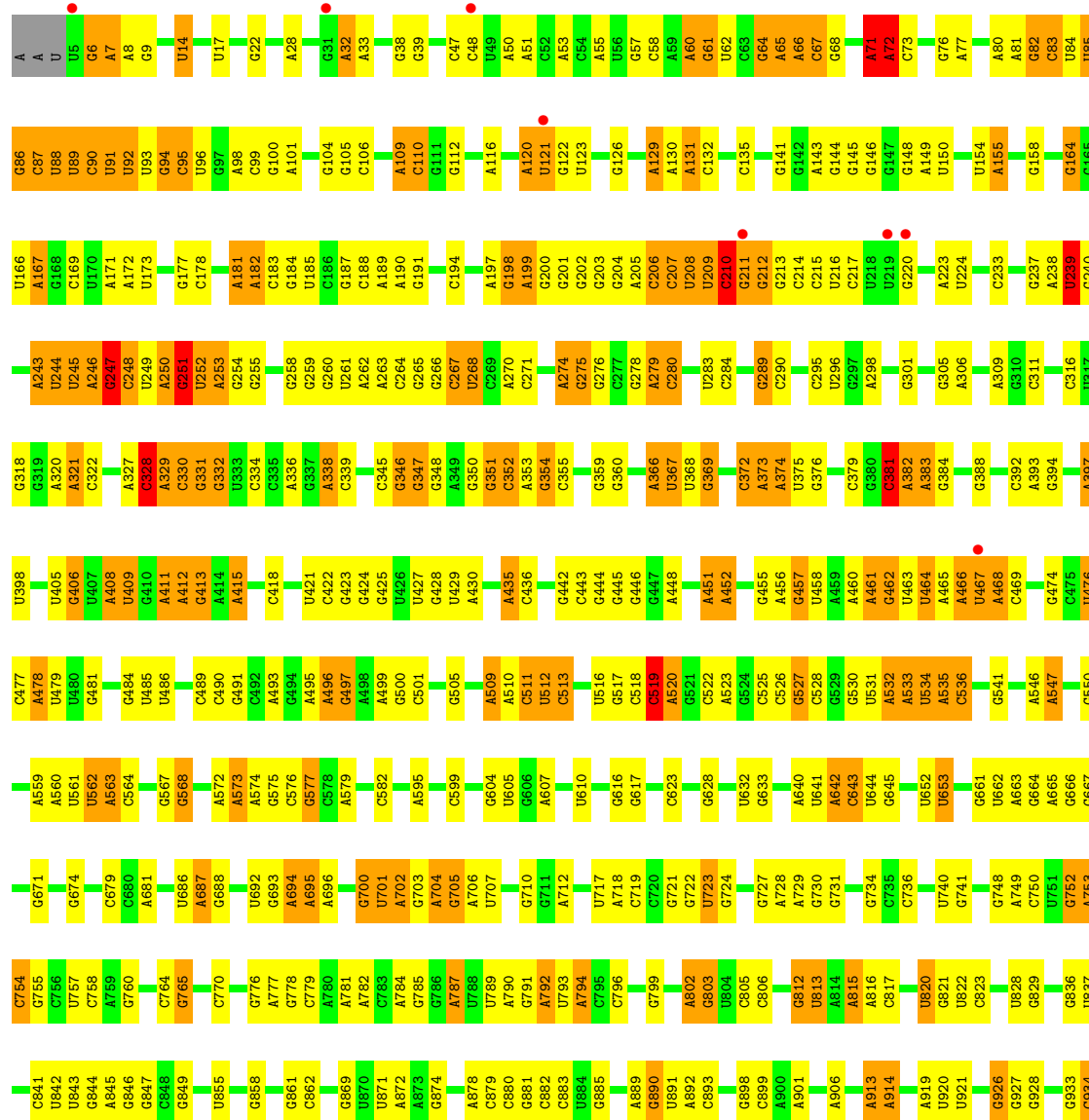
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
23	A	203	Total	O	0	0
			203	203		
23	E	1	Total	O	0	0
			1	1		
23	N	2	Total	O	0	0
			2	2		
23	U	1	Total	O	0	0
			1	1		

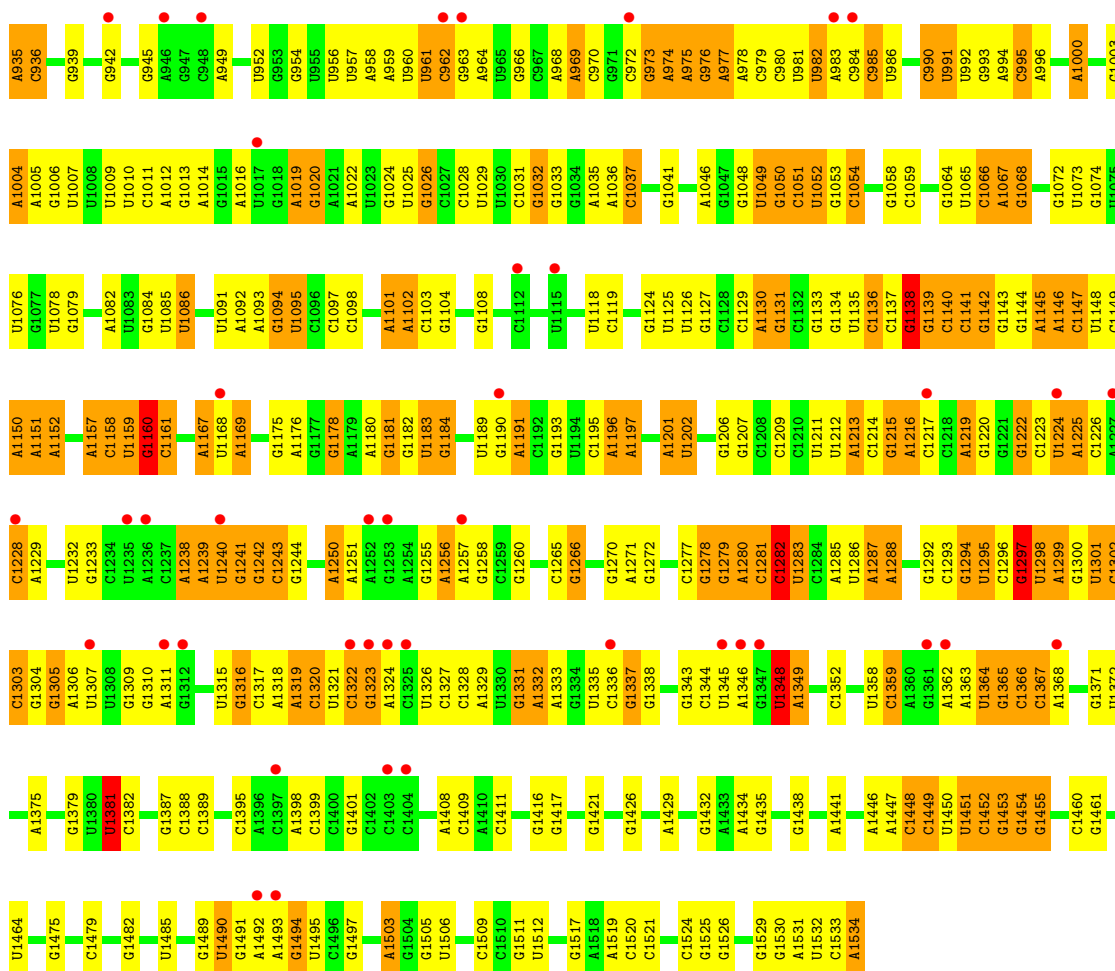
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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 ($\text{RSRZ} > 2$). 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

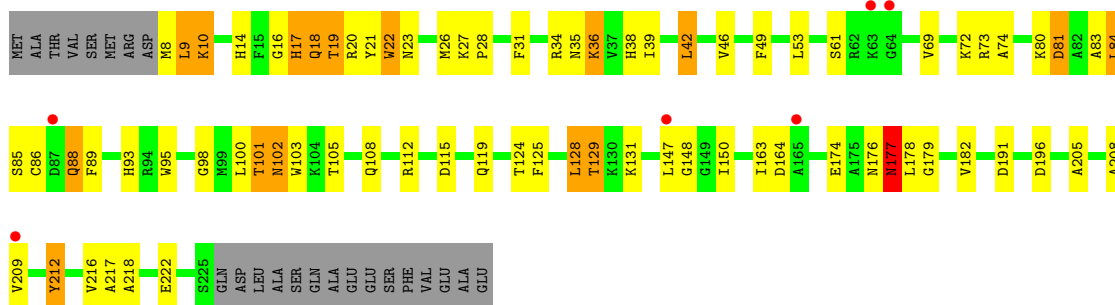
Chain A: 





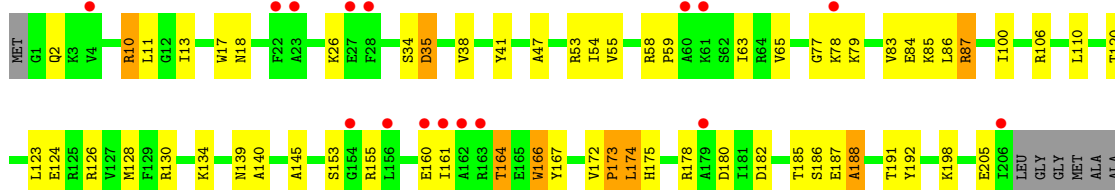
• Molecule 2: 30S ribosomal protein S2

Chain B:



• Molecule 3: 30S ribosomal protein S3

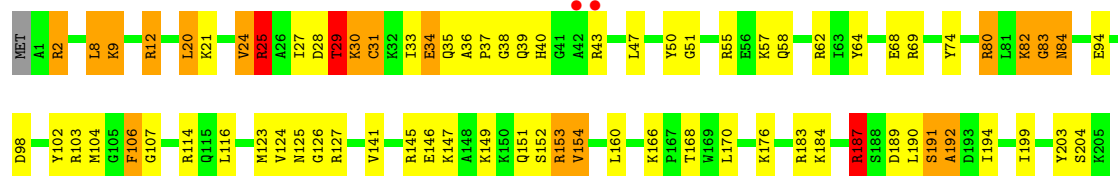
Chain C:



VAL
GLU
GLN
PRO
GLU
LYS
PRO
ALA
ALA
GLN
PRO
LYS
LYS
GLN
GLN
ARG
LYS
GLY
ARG
LYS

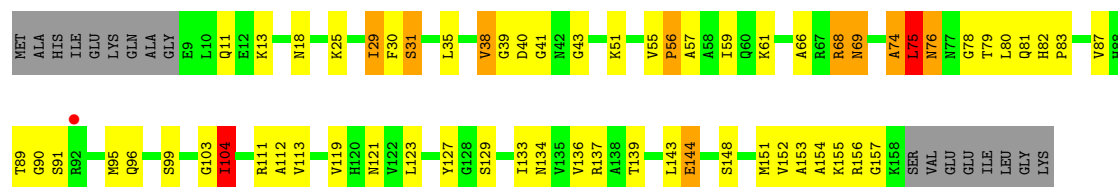
• Molecule 4: 30S ribosomal protein S4

Chain D:



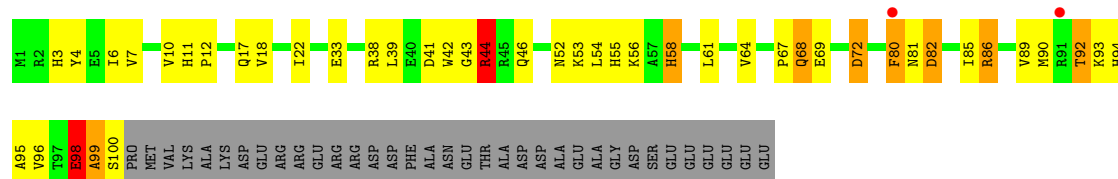
• Molecule 5: 30S ribosomal protein S5

Chain E:



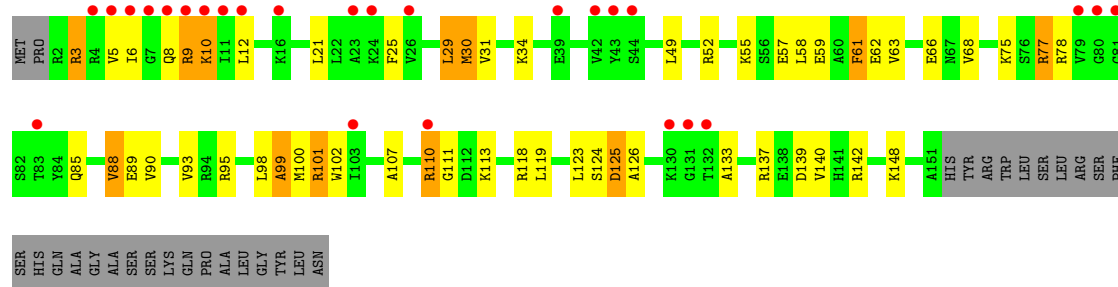
• Molecule 6: 30S ribosomal protein S6

Chain F:



• Molecule 7: 30S ribosomal protein S7

Chain G:



• Molecule 8: 30S ribosomal protein S8

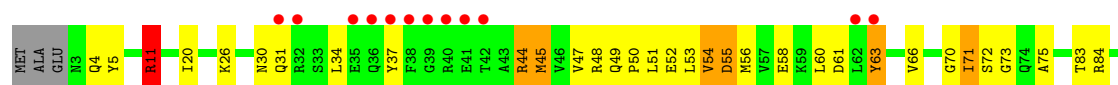
Chain H:





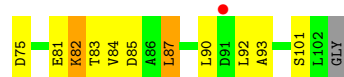
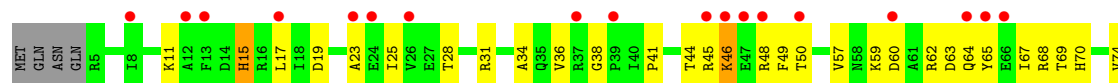
• Molecule 9: 30S ribosomal protein S9

Chain I:



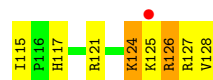
• Molecule 10: 30S ribosomal protein S10

Chain J:



• Molecule 11: 30S ribosomal protein S11

Chain K:



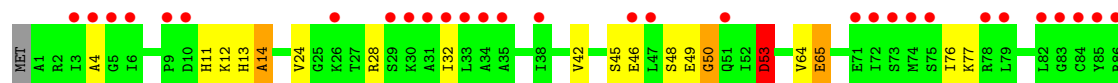
• Molecule 12: 30S ribosomal protein S12

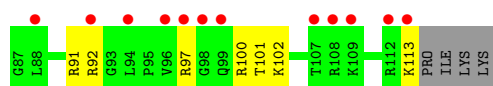
Chain L:



• Molecule 13: 30S ribosomal protein S13

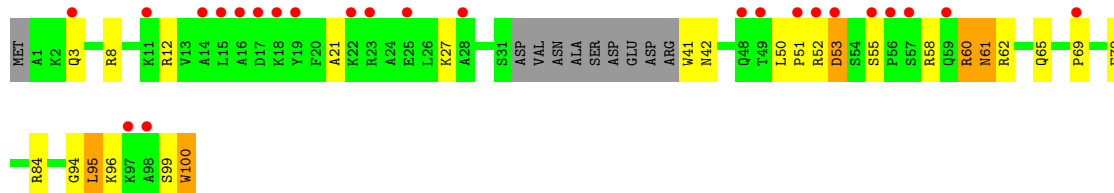
Chain M:





- Molecule 14: 30S ribosomal protein S14

Chain N:



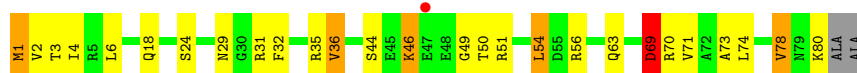
- Molecule 15: 30S ribosomal protein S15

Chain O:



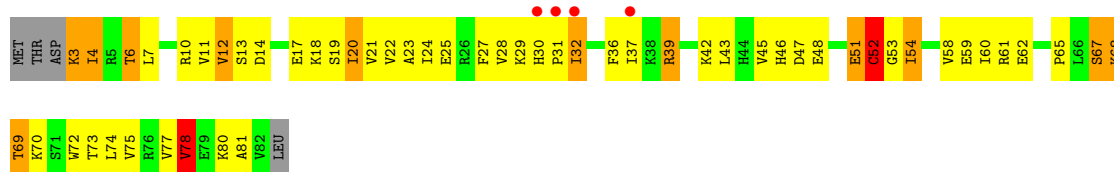
- Molecule 16: 30S ribosomal protein S16

Chain P:



- Molecule 17: 30S ribosomal protein S17

Chain Q:



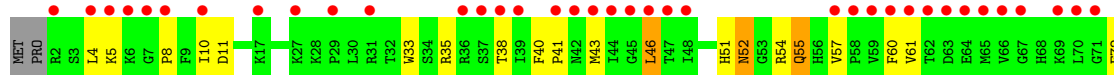
- Molecule 18: 30S ribosomal protein S18

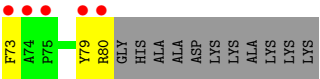
Chain R:



- Molecule 19: 30S ribosomal protein S19

Chain S:

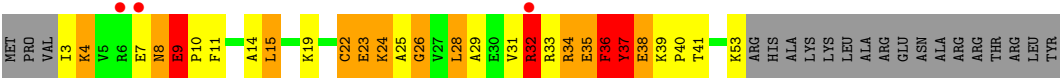
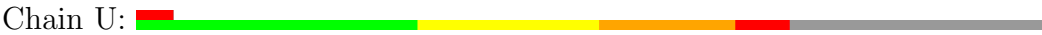




● Molecule 20: 30S ribosomal protein S20



● Molecule 21: 30S ribosomal protein S21



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	210.76Å 433.27Å 618.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	69.78 – 3.30 69.78 – 3.10	Depositor EDS
% Data completeness (in resolution range)	97.8 (69.78-3.30) 95.9 (69.78-3.10)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.51 (at 3.13Å)	Xtriage
Refinement program	PHENIX (phenix.refine: dev_501)	Depositor
R, R_{free}	0.187 , 0.244 0.522 , 0.523	Depositor DCC
R_{free} test set	19610 reflections (2.02%)	DCC
Wilson B-factor (Å ²)	68.1	Xtriage
Anisotropy	0.435	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.25 , 64.2	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.30$	Xtriage
Outliers	0 of 971020 reflections	Xtriage
F_o, F_c correlation	0.50	EDS
Total number of atoms	51559	wwPDB-VP
Average B, all atoms (Å ²)	139.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.42% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 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	A	0.39	0/36762	0.80	29/57350 (0.1%)
2	B	0.26	0/1735	0.49	0/2338
3	C	0.26	0/1651	0.48	0/2225
4	D	0.40	0/1665	0.63	0/2227
5	E	0.35	0/1118	0.60	0/1504
6	F	0.30	0/835	0.54	0/1128
7	G	0.25	0/1187	0.48	0/1591
8	H	0.30	0/989	0.51	0/1326
9	I	0.26	0/1034	0.48	0/1375
10	J	0.26	0/796	0.50	0/1077
11	K	0.29	0/893	0.55	0/1205
12	L	0.34	0/969	0.58	0/1300
13	M	0.22	0/884	0.44	0/1181
14	N	0.23	0/746	0.42	0/990
15	O	0.27	0/722	0.46	0/964
16	P	0.31	0/648	0.53	0/870
17	Q	0.32	0/657	0.53	0/881
18	R	0.35	0/462	0.50	0/621
19	S	0.22	0/652	0.45	0/877
20	T	0.27	0/671	0.52	0/888
21	U	0.38	0/430	0.64	0/570
All	All	0.36	0/55506	0.73	29/82488 (0.0%)

There are no bond length outliers.

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	765	G	C4-N9-C1'	8.08	137.01	126.50
1	A	210	C	C2-N1-C1'	7.69	127.25	118.80
1	A	251	G	C4-N9-C1'	7.65	136.45	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	381	C	C2-N1-C1'	7.24	126.76	118.80
1	A	251	G	C8-N9-C1'	-6.92	118.01	127.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	32831	0	44	633	0
2	B	1704	0	0	29	0
3	C	1624	0	0	19	0
4	D	1643	0	0	33	0
5	E	1105	0	75	28	0
6	F	817	0	0	20	0
7	G	1174	0	0	14	0
8	H	979	0	0	17	0
9	I	1022	0	0	29	0
10	J	786	0	0	11	0
11	K	877	0	0	21	0
12	L	955	0	0	11	0
13	M	876	0	0	5	0
14	N	735	0	0	8	0
15	O	714	0	0	8	0
16	P	638	0	0	11	0
17	Q	648	0	691	52	0
18	R	455	0	0	10	0
19	S	637	0	0	7	0
20	T	665	0	0	13	0
21	U	425	0	0	23	0
22	A	42	0	0	0	0
23	A	203	0	0	6	0
23	E	1	0	0	0	0
23	N	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
23	U	1	0	0	0	0
All	All	51559	0	810	948	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 19.

The worst 5 of 948 close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:701:U:O2'	1:A:702:A:OP2	1.73	1.04
17:Q:30:HIS:HE1	17:Q:32:ILE:HG13	1.29	0.95
1:A:330:C:O2'	1:A:331:G:C8	2.25	0.89
17:Q:46:HIS:HB2	17:Q:70:LYS:HE3	1.54	0.89
1:A:247:G:O6	1:A:278:G:C6	2.30	0.85

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

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	216/241 (90%)	146 (68%)	49 (23%)	21 (10%)	1	8
3	C	204/233 (88%)	137 (67%)	44 (22%)	23 (11%)	1	5
4	D	203/206 (98%)	141 (70%)	44 (22%)	18 (9%)	1	10
5	E	148/167 (89%)	110 (74%)	24 (16%)	14 (10%)	1	9
6	F	98/135 (73%)	59 (60%)	28 (29%)	11 (11%)	1	5
7	G	148/179 (83%)	86 (58%)	46 (31%)	16 (11%)	1	6
8	H	127/130 (98%)	92 (72%)	25 (20%)	10 (8%)	1	13
9	I	125/130 (96%)	91 (73%)	25 (20%)	9 (7%)	2	16
10	J	96/103 (93%)	61 (64%)	22 (23%)	13 (14%)	0	3
11	K	115/129 (89%)	87 (76%)	18 (16%)	10 (9%)	1	11
12	L	121/124 (98%)	90 (74%)	22 (18%)	9 (7%)	2	15

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	M	111/118 (94%)	64 (58%)	33 (30%)	14 (13%)	0	3
14	N	87/101 (86%)	58 (67%)	18 (21%)	11 (13%)	0	3
15	O	86/89 (97%)	64 (74%)	18 (21%)	4 (5%)	4	30
16	P	78/82 (95%)	52 (67%)	18 (23%)	8 (10%)	1	7
17	Q	78/84 (93%)	63 (81%)	6 (8%)	9 (12%)	1	5
18	R	53/75 (71%)	37 (70%)	15 (28%)	1 (2%)	12	60
19	S	77/92 (84%)	47 (61%)	25 (32%)	5 (6%)	2	19
20	T	83/87 (95%)	59 (71%)	18 (22%)	6 (7%)	2	16
21	U	49/71 (69%)	21 (43%)	12 (24%)	16 (33%)	0	0
All	All	2303/2576 (89%)	1565 (68%)	510 (22%)	228 (10%)	1	8

5 of 228 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	84	LEU
2	B	102	ASN
2	B	129	THR
3	C	59	PRO
3	C	140	ALA

5.3.2 Protein sidechains ⓘ

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	180/199 (90%)	148 (82%)	32 (18%)	2	13
3	C	170/190 (90%)	148 (87%)	22 (13%)	6	29
4	D	172/173 (99%)	133 (77%)	39 (23%)	1	5
5	E	113/126 (90%)	89 (79%)	24 (21%)	1	7
6	F	87/116 (75%)	69 (79%)	18 (21%)	2	8
7	G	123/147 (84%)	94 (76%)	29 (24%)	1	4
8	H	104/105 (99%)	84 (81%)	20 (19%)	2	10
9	I	105/107 (98%)	82 (78%)	23 (22%)	1	7

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	J	86/90 (96%)	70 (81%)	16 (19%)	2	11
11	K	90/99 (91%)	76 (84%)	14 (16%)	4	19
12	L	103/104 (99%)	84 (82%)	19 (18%)	2	12
13	M	91/96 (95%)	81 (89%)	10 (11%)	9	38
14	N	75/84 (89%)	64 (85%)	11 (15%)	4	22
15	O	76/77 (99%)	69 (91%)	7 (9%)	13	48
16	P	65/65 (100%)	51 (78%)	14 (22%)	1	7
17	Q	74/78 (95%)	57 (77%)	17 (23%)	1	5
18	R	48/65 (74%)	42 (88%)	6 (12%)	7	31
19	S	70/79 (89%)	60 (86%)	10 (14%)	5	23
20	T	65/66 (98%)	48 (74%)	17 (26%)	1	2
21	U	44/61 (72%)	36 (82%)	8 (18%)	2	12
All	All	1941/2127 (91%)	1585 (82%)	356 (18%)	2	12

5 of 356 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	G	137	ARG
9	I	89	TYR
19	S	73	PHE
8	H	40	LYS
8	H	102	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
17	Q	49	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1529/1533 (99%)	442 (28%)	70 (4%)

5 of 442 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	6	G
1	A	7	A
1	A	8	A
1	A	9	G
1	A	14	U

5 of 70 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	429	U
1	A	559	A
1	A	1331	G
1	A	451	A
1	A	500	G

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 42 ligands modelled in this entry, 42 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.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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	1530/1533 (99%)	0.15	50 (3%) 44 10	55, 113, 259, 356	0
2	B	218/241 (90%)	0.13	6 (2%) 50 12	93, 145, 201, 251	0
3	C	206/233 (88%)	0.32	16 (7%) 13 4	86, 136, 185, 215	0
4	D	205/206 (99%)	0.05	2 (0%) 79 33	41, 78, 132, 212	0
5	E	150/167 (89%)	0.02	1 (0%) 84 42	55, 92, 141, 191	0
6	F	100/135 (74%)	0.01	2 (2%) 62 19	82, 119, 176, 211	0
7	G	150/179 (83%)	0.75	26 (17%) 2 1	121, 195, 245, 277	0
8	H	129/130 (99%)	0.19	3 (2%) 57 15	77, 115, 152, 209	0
9	I	127/130 (97%)	0.86	21 (16%) 2 1	114, 158, 225, 259	0
10	J	98/103 (95%)	1.06	19 (19%) 2 1	117, 166, 211, 238	0
11	K	117/129 (90%)	0.17	2 (1%) 67 21	67, 115, 162, 186	0
12	L	123/124 (99%)	0.15	5 (4%) 35 8	61, 89, 142, 202	0
13	M	113/118 (95%)	1.83	42 (37%) 1 0	218, 370, 442, 470	0
14	N	91/101 (90%)	1.64	24 (26%) 1 1	107, 180, 260, 287	0
15	O	88/89 (98%)	0.11	4 (4%) 32 7	76, 116, 160, 209	0
16	P	80/82 (97%)	0.33	1 (1%) 74 27	72, 107, 158, 222	0
17	Q	80/84 (95%)	0.32	4 (5%) 28 6	78, 115, 144, 155	0
18	R	55/75 (73%)	0.24	1 (1%) 65 20	74, 103, 171, 243	0
19	S	79/92 (85%)	2.99	42 (53%) 0 0	205, 346, 411, 424	0
20	T	85/87 (97%)	0.99	16 (18%) 2 1	91, 134, 190, 216	0
21	U	51/71 (71%)	0.36	3 (5%) 22 5	83, 120, 184, 224	0
All	All	3875/4109 (94%)	0.39	290 (7%) 14 4	41, 126, 289, 470	0

The worst 5 of 290 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
19	S	46	LEU	13.1
19	S	65	MET	10.2
19	S	64	GLU	9.4
19	S	41	PRO	9.4
14	N	52	ARG	8.2

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	RSR	LLDF	B-factors(Å ²)	Q<0.9
22	MG	A	1552	1/1	1.07	31.03	212,212,212,212	0
22	MG	A	1547	1/1	1.67	17.44	236,236,236,236	0
22	MG	A	1535	1/1	0.42	12.69	139,139,139,139	0
22	MG	A	1545	1/1	0.56	12.52	125,125,125,125	0
22	MG	A	1573	1/1	0.42	11.05	137,137,137,137	0
22	MG	A	1561	1/1	1.38	8.83	224,224,224,224	0
22	MG	A	1548	1/1	0.37	7.79	187,187,187,187	0
22	MG	A	1556	1/1	0.25	5.06	108,108,108,108	0
22	MG	A	1544	1/1	0.36	2.99	110,110,110,110	0
22	MG	A	1572	1/1	0.19	2.39	159,159,159,159	0
22	MG	A	1543	1/1	0.24	2.12	168,168,168,168	0
22	MG	A	1540	1/1	0.27	1.50	167,167,167,167	0
22	MG	A	1569	1/1	0.43	1.11	224,224,224,224	0
22	MG	A	1554	1/1	0.19	0.43	57,57,57,57	0
22	MG	A	1546	1/1	0.18	0.02	147,147,147,147	0
22	MG	A	1539	1/1	0.19	-0.02	93,93,93,93	0
22	MG	A	1571	1/1	0.23	-0.02	204,204,204,204	0

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
22	MG	A	1574	1/1	0.21	-0.13	116,116,116,116	0
22	MG	A	1562	1/1	0.24	-0.24	190,190,190,190	0
22	MG	A	1565	1/1	0.35	-0.29	122,122,122,122	0
22	MG	A	1557	1/1	0.23	-0.30	146,146,146,146	0
22	MG	A	1551	1/1	0.20	-0.51	136,136,136,136	0
22	MG	A	1538	1/1	0.17	-0.54	54,54,54,54	0
22	MG	A	1549	1/1	0.31	-0.60	195,195,195,195	0
22	MG	A	1567	1/1	0.18	-0.75	165,165,165,165	0
22	MG	A	1550	1/1	0.22	-0.79	202,202,202,202	0
22	MG	A	1542	1/1	0.18	-0.94	98,98,98,98	0
22	MG	A	1558	1/1	0.18	-1.03	111,111,111,111	0
22	MG	A	1570	1/1	0.13	-1.18	94,94,94,94	0
22	MG	A	1	1/1	0.12	-1.20	106,106,106,106	0
22	MG	A	1568	1/1	0.20	-1.57	76,76,76,76	0
22	MG	A	1559	1/1	0.18	-2.07	20,20,20,20	0
22	MG	A	1564	1/1	0.14	-2.10	82,82,82,82	0
22	MG	A	1553	1/1	0.11	-2.32	182,182,182,182	0
22	MG	A	1563	1/1	0.08	-2.45	160,160,160,160	0
22	MG	A	1537	1/1	0.09	-3.73	96,96,96,96	0
22	MG	A	1536	1/1	0.14	-3.93	136,136,136,136	0
22	MG	A	1541	1/1	0.10	-4.58	47,47,47,47	0
22	MG	A	1560	1/1	0.16	-4.76	197,197,197,197	0
22	MG	A	1575	1/1	0.10	-5.44	139,139,139,139	0
22	MG	A	1566	1/1	0.07	-7.24	79,79,79,79	0
22	MG	A	1555	1/1	0.13	-10.21	187,187,187,187	0

6.5 Other polymers ⓘ

There are no such residues in this entry.