wwPDB X-ray Structure Validation Summary Report (i)

Feb 5, 2024 – 09:36 AM EST

PDB ID	:	1S72
Title	:	REFINED CRYSTAL STRUCTURE OF THE HALOARCULA MARISMORTUI LARGE RIBOSOMAL SUBUNIT AT 2.4 ANGSTROM RESOLUTION
Authors	:	Klein, D.J.; Schmeing, T.M.; Moore, P.B.; Steitz, T.A.
Deposited on	:	2004-01-28
Resolution	:	2.40 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 (i) 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 (i)) were used in the production of this report:

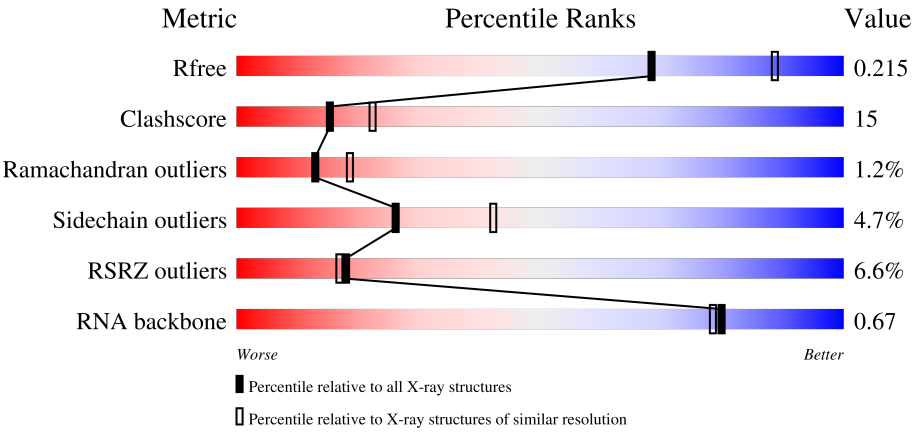
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA,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

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)
RNA backbone	3102	1174 (2.80-2.00)

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 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 <=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% 65% 24% 5% 6%
2	9	122	4% 56% 35% 7%
3	A	240	8% 63% 30% 6%
4	B	338	4% 57% 37% 6%

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Mol	Chain	Length	Quality of chain
5	C	246	4% 63% 33%
6	D	177	46% 25% 47% 6% 21%
7	E	178	7% 57% 37%
8	F	120	20% 61% 37%
9	G	348	6% 5% 92%
10	H	171	12% 60% 29% 6%
11	I	162	41% 11% 28% 57%
12	J	145	3% 59% 34% 5%
13	K	132	5% 64% 34%
14	L	165	10% 52% 35% 12%
15	M	194	69% 28%
16	N	187	9% 51% 44%
17	O	116	73% 24%
18	P	149	73% 21%
19	Q	96	76% 20%
20	R	155	70% 26%
21	S	85	12% 69% 26% 5%
22	T	120	4% 56% 40%
23	U	66	3% 47% 33% 20%
24	V	71	17% 51% 38% 8%
25	W	154	4% 52% 44%
26	X	92	4% 45% 41% 11%
27	Y	241	41% 15% 41%
28	Z	73	5% 63% 37%
29	1	57	74% 25%

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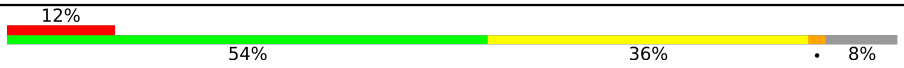
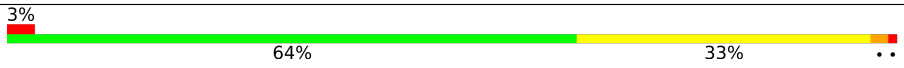
Mol	Chain	Length	Quality of chain
30	2	50	
31	3	92	

2 Entry composition (i)

There are 37 unique types of molecules in this entry. The entry contains 99039 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 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
0	560	C	U	conflict	GB 3377779
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 protein called 50S ribosomal protein L2P.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	85	SER	ASP	conflict	UNP P20276
A	160	ALA	GLY	conflict	UNP P20276

- Molecule 4 is a protein called 50S ribosomal protein L3P.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	310	ARG	PRO	conflict	UNP P20279

- Molecule 5 is a protein called 50S ribosomal protein L4E.

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

- Molecule 6 is a protein called 50S ribosomal protein L5P.

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

- Molecule 7 is a protein called 50S ribosomal protein L6P.

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

- Molecule 8 is a protein called 50S ribosomal protein L7Ae.

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

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	103	GLU	ALA	conflict	UNP P12743
F	105	ASP	ALA	conflict	UNP P12743
F	106	ALA	THR	conflict	UNP P12743
F	107	ASP	VAL	conflict	UNP P12743
F	108	VAL	LEU	conflict	UNP P12743
F	110	ASP	GLU	conflict	UNP P12743

- Molecule 9 is a protein called Acidic ribosomal protein P0 homolog.

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

- Molecule 10 is a protein called 50S ribosomal protein L10e.

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

- Molecule 11 is a protein called 50S ribosomal protein L11P.

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

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

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

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

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

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
14	L	145	Total	C	N	O	0	0	0
			1118	670	222	226			

- Molecule 15 is a protein called 50S ribosomal protein L15e.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	Z	73	Total	C	N	O	S	0	0	0
			579	346	116	112	5			

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
32	0	109	Total	Mg	0	0
			109	109		
32	9	1	Total	Mg	0	0
			1	1		
32	A	1	Total	Mg	0	0
			1	1		
32	B	1	Total	Mg	0	0
			1	1		
32	K	1	Total	Mg	0	0
			1	1		
32	T	1	Total	Mg	0	0
			1	1		
32	Y	1	Total	Mg	0	0
			1	1		
32	3	1	Total	Mg	0	0
			1	1		

- Molecule 33 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
33	0	2	Total	K	0	0
			2	2		

- Molecule 34 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
34	0	72	Total Na 72 72	0	0
34	9	2	Total Na 2 2	0	0
34	A	1	Total Na 1 1	0	0
34	C	1	Total Na 1 1	0	0
34	H	2	Total Na 2 2	0	0
34	J	1	Total Na 1 1	0	0
34	L	1	Total Na 1 1	0	0
34	M	1	Total Na 1 1	0	0
34	Q	1	Total Na 1 1	0	0
34	R	2	Total Na 2 2	0	0
34	S	1	Total Na 1 1	0	0
34	T	1	Total Na 1 1	0	0

- Molecule 35 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
35	0	10	Total Cl 10 10	0	0
35	A	1	Total Cl 1 1	0	0
35	B	1	Total Cl 1 1	0	0
35	J	3	Total Cl 3 3	0	0
35	L	1	Total Cl 1 1	0	0
35	M	1	Total Cl 1 1	0	0
35	N	1	Total Cl 1 1	0	0
35	O	1	Total Cl 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
35	R	1	Total Cl 1 1	0	0
35	Y	1	Total Cl 1 1	0	0
35	3	1	Total Cl 1 1	0	0

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

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

- Molecule 37 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
37	0	5893	Total O 5893 5893	0	0
37	9	136	Total O 136 136	0	0
37	A	127	Total O 127 127	0	0
37	B	153	Total O 153 153	0	0
37	C	172	Total O 172 172	0	0
37	D	49	Total O 49 49	0	0
37	E	44	Total O 44 44	0	0
37	F	25	Total O 25 25	0	0
37	G	20	Total O 20 20	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
37	H	71	Total O 71 71	0	0
37	I	9	Total O 9 9	0	0
37	J	55	Total O 55 55	0	0
37	K	61	Total O 61 61	0	0
37	L	85	Total O 85 85	0	0
37	M	121	Total O 121 121	0	0
37	N	64	Total O 64 64	0	0
37	O	44	Total O 44 44	0	0
37	P	65	Total O 65 65	0	0
37	Q	52	Total O 52 52	0	0
37	R	83	Total O 83 83	0	0
37	S	33	Total O 33 33	0	0
37	T	40	Total O 40 40	0	0
37	U	25	Total O 25 25	0	0
37	V	14	Total O 14 14	0	0
37	W	67	Total O 67 67	0	0
37	X	28	Total O 28 28	0	0
37	Y	96	Total O 96 96	0	0
37	Z	29	Total O 29 29	0	0
37	1	51	Total O 51 51	0	0
37	2	40	Total O 40 40	0	0

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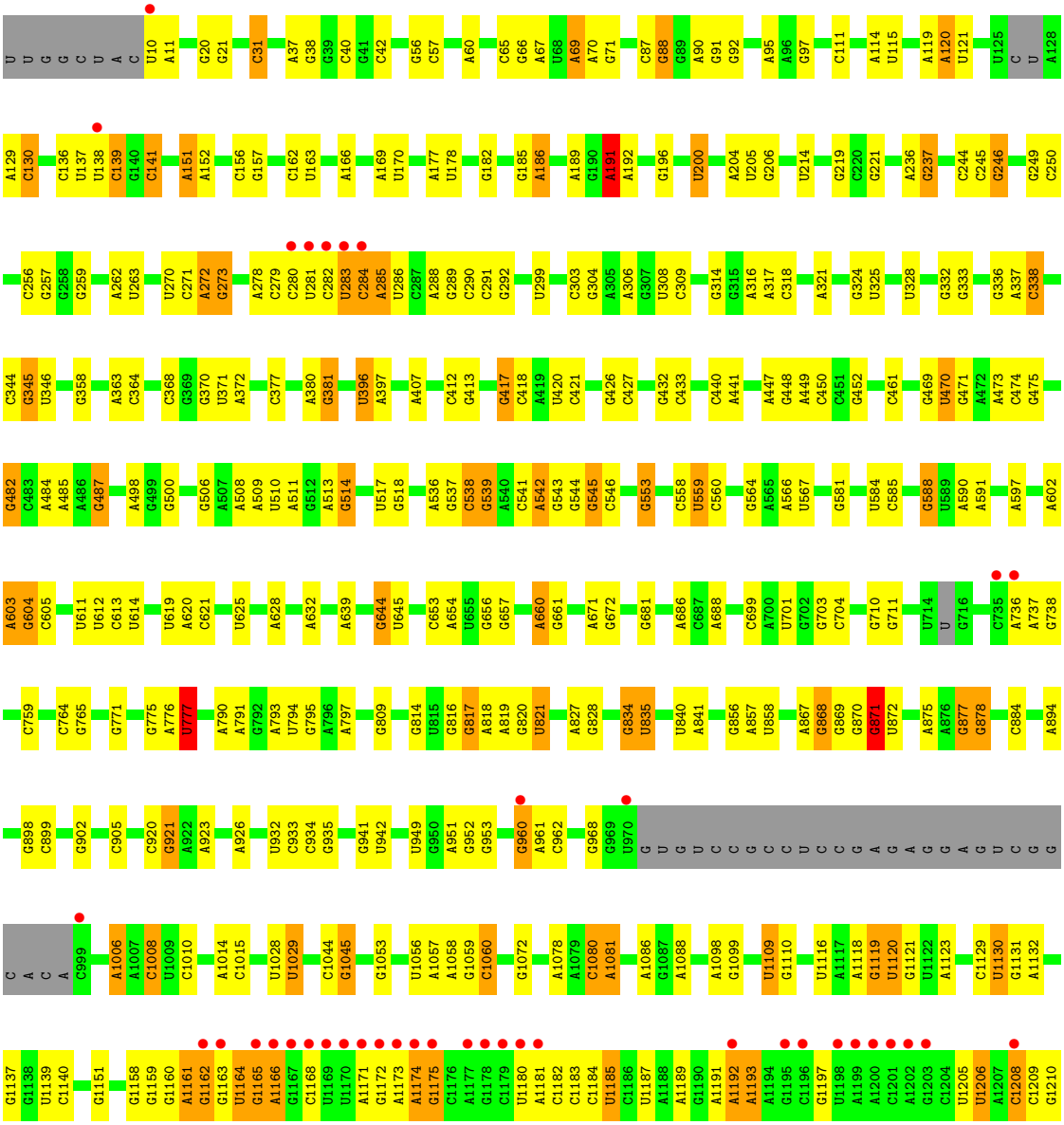
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
37	3	71	Total	O	0	0
			71	71		

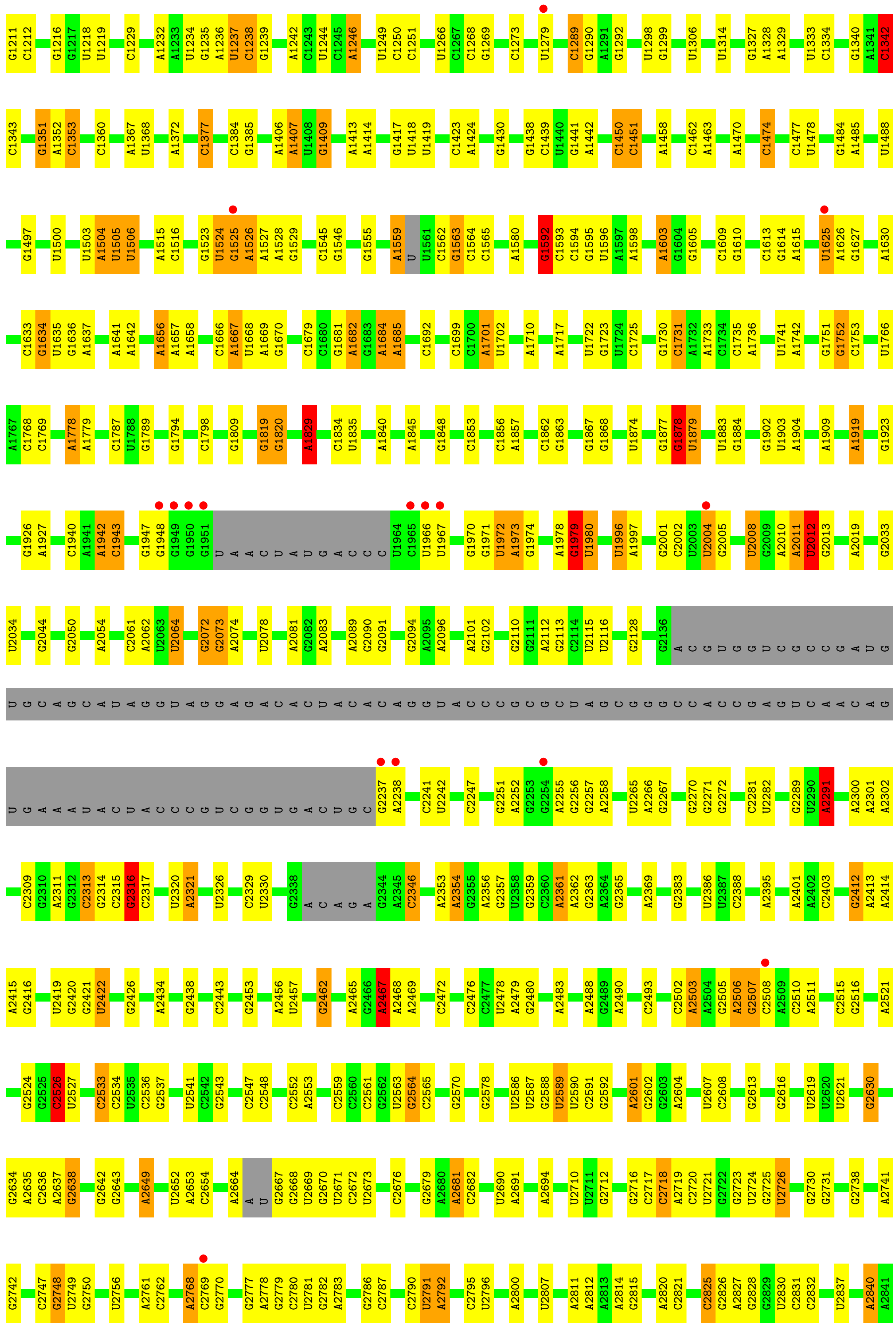
3 Residue-property plots (i)

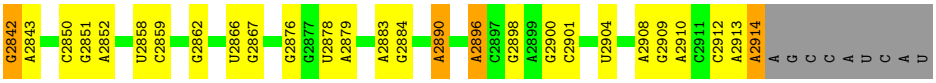
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

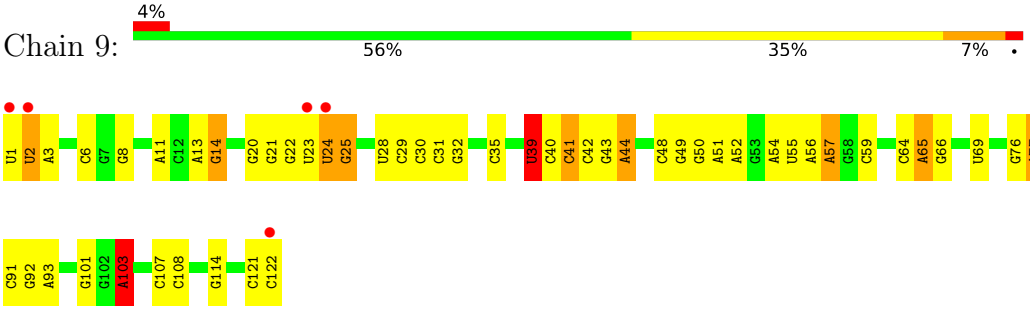
Chain 0:



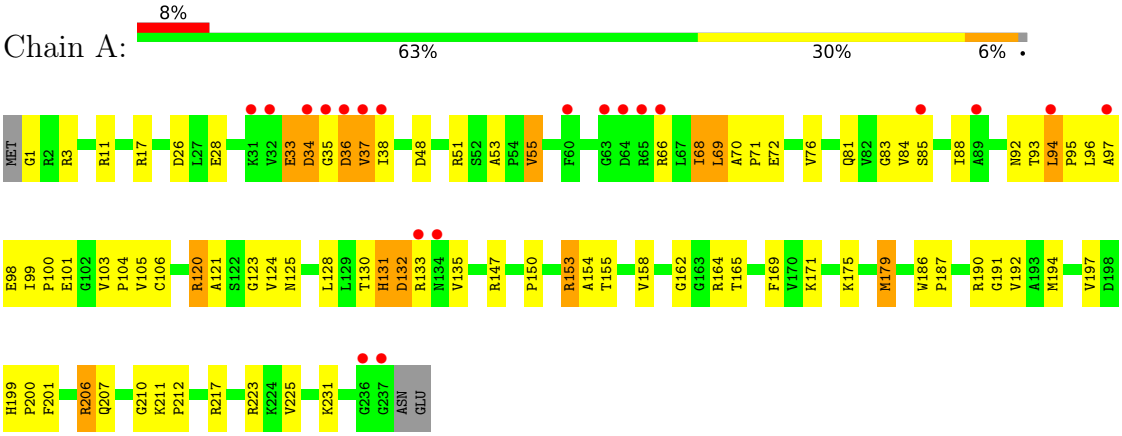

G1211 C1212 G1216 G1217 U1218 U1219 C1229 A1232 A1233 U1234 G1235 A1236 U1237 C1238 G1239 A1242 C1243 U1244 C1245 A1246 U1249 C1250 C1251 U1266 C1267 C1268 G1269 C1273 U1279 C1289 G1290 A1291 G1292 U1298 G1299 U1306 U1314 G1327 A1328 A1329 U1333 C1334 G1340 A1341 C1342
C1343 G1351 A1352 C1353 C1360 A1367 U1368 A1372 C1377 C1384 G1385 A1406 A1407 U1408 G1409 A1413 A1414 G1417 U1418 U1419 C1423 A1424 G1430 G1438 C1439 U1440 G1441 A1442 C1450 C1451 A1458 C1462 A1463 A1470 C1474 C1477 U1478 G1484 A1485 U1488
G1497 U1500 U1503 A1504 U1505 U1506 A1515 C1516 G1523 U1524 G1525 A1526 A1527 A1528 G1529 C1545 G1546 G1555 A1559 U U1561 C1562 G1563 C1564 C1565 A1580 G1592 C1593 C1594 G1595 U1596 A1597 A1598 A1603 G1604 G1605 C1609 G1610 C1613 G1614 A1615 U1625 A1626 G1627 A1630
C1633 G1634 U1635 G1636 A1637 A1641 A1642 A1656 A1657 A1658 C1666 A1667 U1668 A1669 G1670 C1679 G1680 G1681 A1682 G1683 A1684 A1685 C1692 C1699 C1700 A1701 U1702 A1710 A1717 U1722 G1723 U1724 C1725 G1730 C1731 A1732 A1733 C1734 C1735 A1736 U1741 A1742 G1751 G1752 C1753 U1766
A1767 C1768 C1769 A1778 A1779 C1787 U1788 G1789 G1794 C1798 G1809 G1819 G1820 A1829 C1834 U1835 A1840 A1845 G1848 C1853 C1856 A1857 C1862 G1863 G1867 G1868 U1874 G1877 G1878 U1879 U1883 G1884 G1902 U1903 A1904 A1909 A1919 G1923
G1926 A1927 C1940 A1941 A1942 C1943 G1947 G1948 G1949 G1950 G1951 U A A C U A U G A C C C U1964 C1965 U1966 U1967 G1970 G1971 U1972 A1973 G1974 A1978 G1979 U1980 U1996 A1997 G2001 C2002 U2003 U2004 G2005 U2008 G2009 A2010 A2011 U2012 G2013 A2019 G2033
U2034 G2044 G2050 A2054 C2061 A2062 U2063 U2064 G2072 G2073 A2074 U2078 A2081 G2082 A2083 A2089 G2090 G2091 G2094 A2095 A2096 A2101 G2102 G2110 G2111 A2112 G2113 C2114 U2115 U2116 G2128 G2136 A C G U G G U C G C C G A U G
U G C A G C A U A G G U A G G A G A C A C U A C A C A G G U A C C C G C G C U A G C G G G C C A C C G A G U C A A C A G
U G A A A U A C U A C C C G U C G G U G A C U G C G2237 A2238 C2241 U2242 C2247 G2251 A2252 G2253 G2254 A2255 G2256 G2257 A2258 U2265 A2266 G2267 G2270 G2271 U2272 C2281 U2282 G2289 U2290 A2291 A2300 A2301 A2302
C2309 G2310 A2311 G2312 C2313 G2314 C2315 G2316 C2317 U2320 A2321 U2326 C2329 U2330 G2338 A C A G A G2344 A2345 C2346 A2353 A2354 G2355 A2356 G2357 U2358 G2359 C2360 A2361 A2362 G2363 A2364 G2365 A2369 G2383 U2386 U2387 C2388 A2395 A2401 A2402 C2403 G2412 A2413 A2414
A2415 G2416 U2419 G2420 G2421 U2422 G2426 A2434 G2438 C2443 G2453 A2456 U2457 G2462 A2465 G2466 A2467 A2468 A2469 C2472 C2476 C2477 U2478 A2479 G2480 A2483 A2488 G2489 A2490 C2493 C2502 A2503 A2504 G2505 A2506 G2507 C2508 A2509 C2510 A2511 C2515 G2516 A2521
G2524 G2525 C2526 U2527 C2533 C2534 U2535 C2536 G2537 U2541 C2542 G2543 C2547 C2548 C2552 A2553 C2559 C2560 C2561 G2562 U2563 G2564 C2565 G2570 G2578 U2586 U2587 G2588 U2589 U2590 C2591 G2592 A2601 G2602 G2603 A2604 U2607 C2608 G2613 G2616 U2619 U2620 U2621 G2630
G2634 A2635 C2636 A2637 G2638 G2642 G2643 A2649 U2652 A2653 C2654 A2664 A U G2667 G2668 U2669 G2670 U2671 C2672 U2673 C2676 G2679 A2680 A2681 C2682 U2690 A2691 A2694 U2710 U2711 G2712 G2716 C2717 C2718 A2719 C2720 U2721 G2722 G2723 U2724 G2725 U2726 G2730 G2731 G2738 A2741
G2742 C2747 G2748 U2749 G2750 U2756 A2761 C2762 A2768 C2769 G2770 G2777 A2778 G2779 C2780 U2781 G2782 A2783 G2786 C2787 C2790 U2791 A2792 C2795 U2796 A2800 U2807 A2811 A2812 A2813 A2814 G2815 A2820 C2821 C2825 G2826 A2827 G2828 G2829 U2830 C2831 C2832 U2837 A2840 A2841



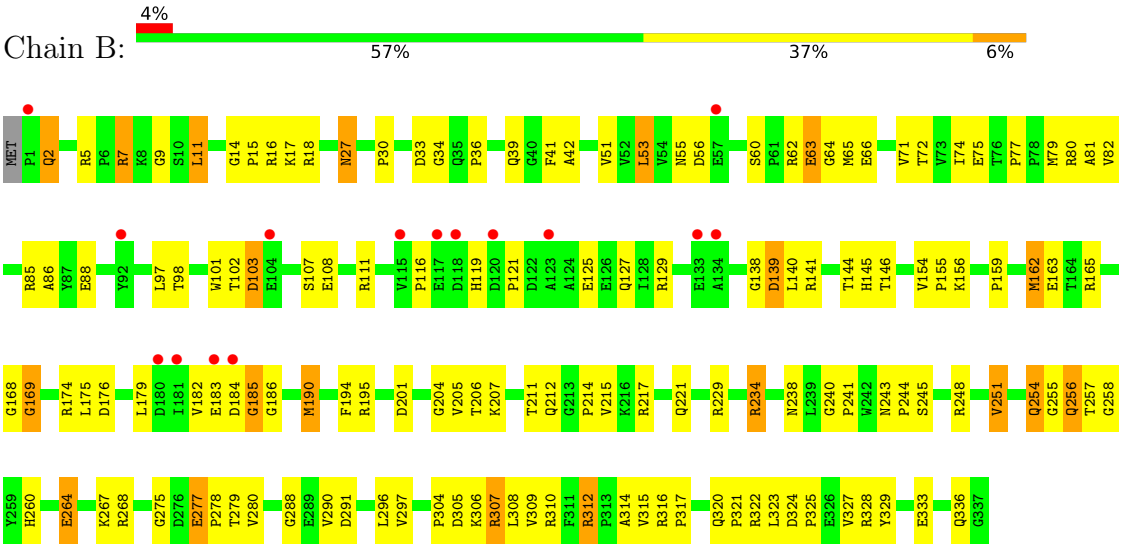
• Molecule 2: 5S ribosomal RNA



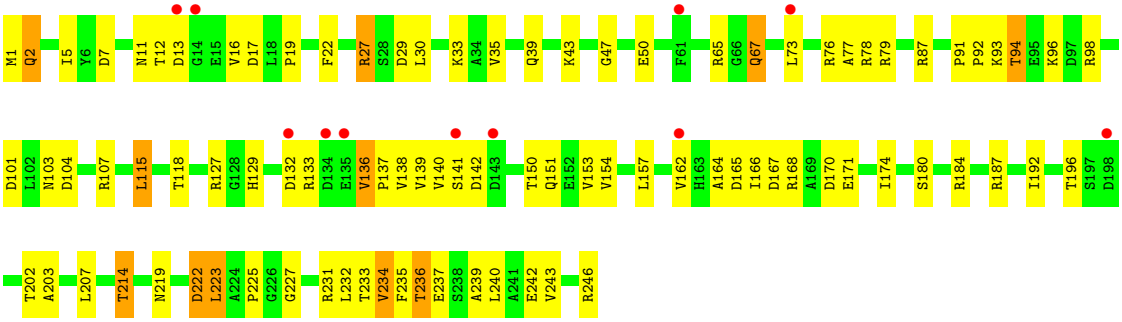
• Molecule 3: 50S ribosomal protein L2P



• Molecule 4: 50S ribosomal protein L3P

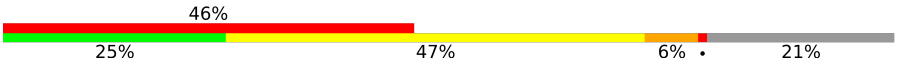


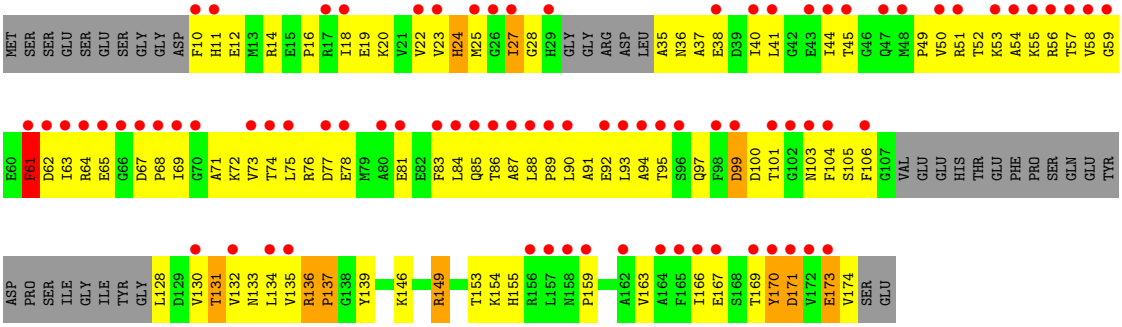
• Molecule 5: 50S ribosomal protein L4E



• Molecule 6: 50S ribosomal protein L5P

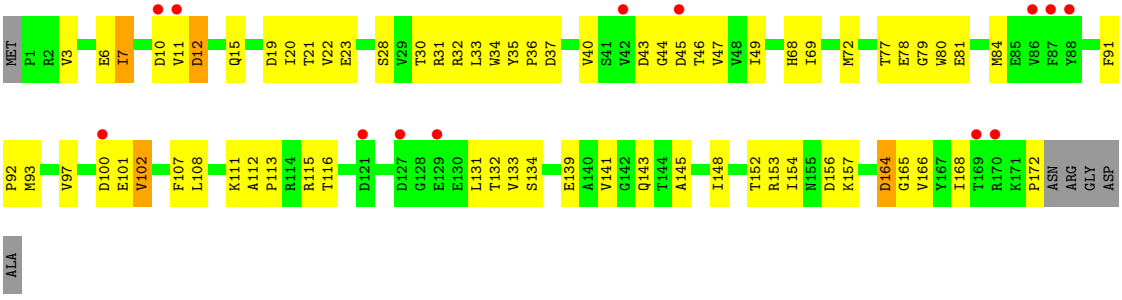
Chain D:





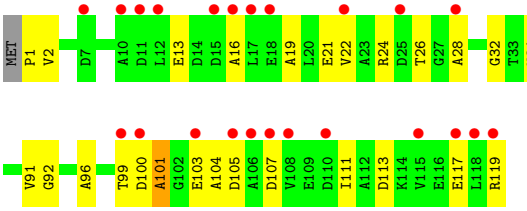
• Molecule 7: 50S ribosomal protein L6P

Chain E:



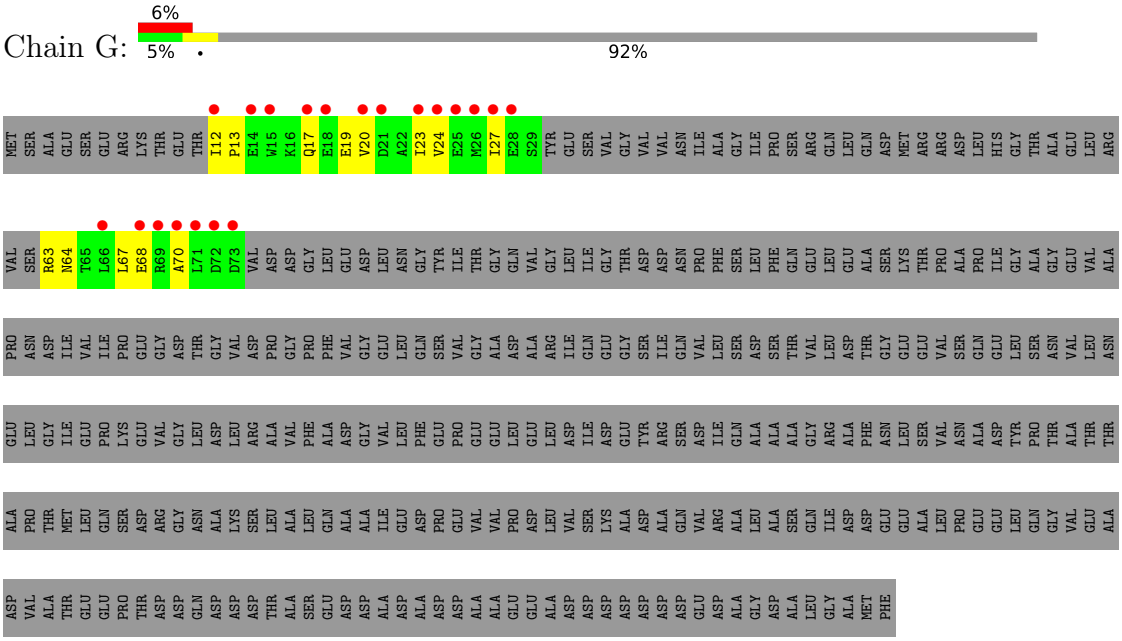
• Molecule 8: 50S ribosomal protein L7Ae

Chain F:



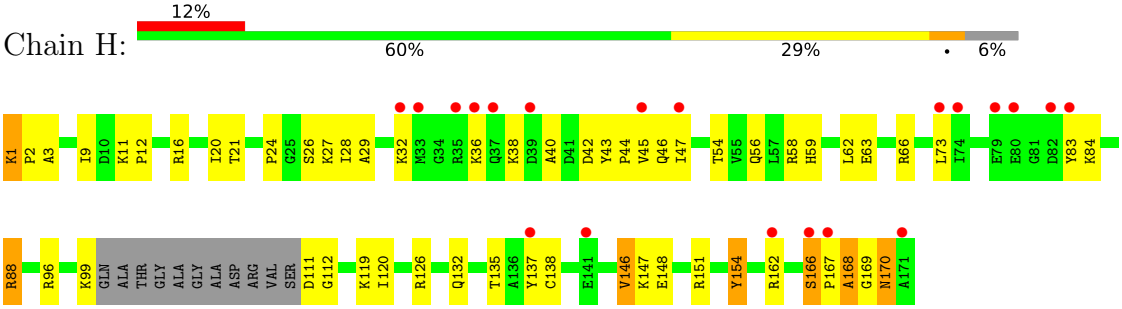
• Molecule 9: Acidic ribosomal protein P0 homolog

Chain G:



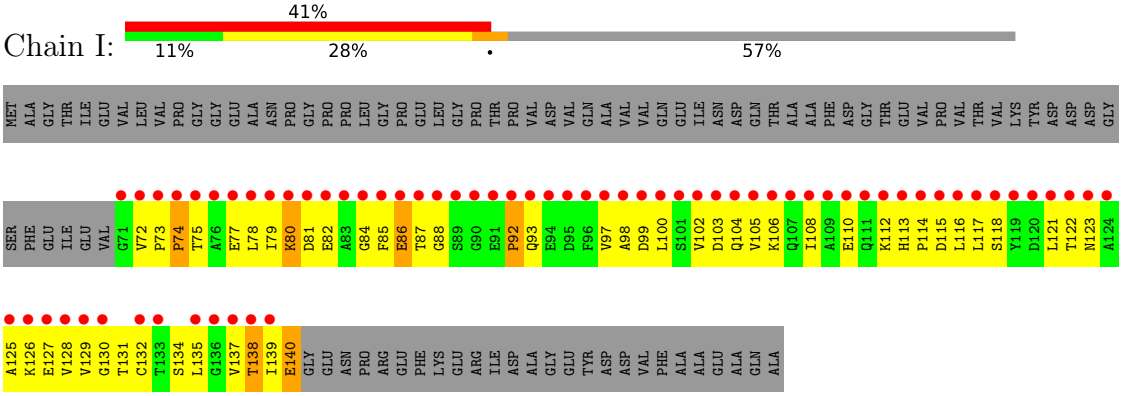
• Molecule 10: 50S ribosomal protein L10e

Chain H:



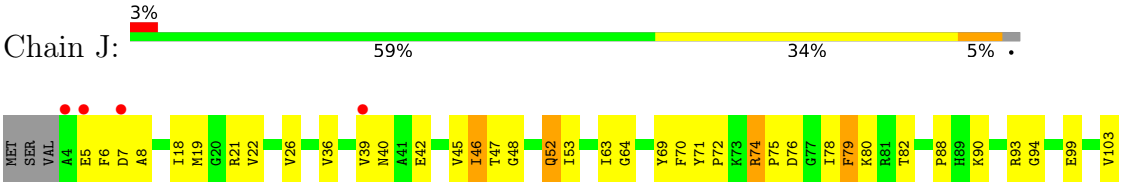
• Molecule 11: 50S ribosomal protein L11P

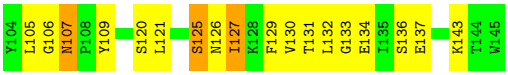
Chain I:



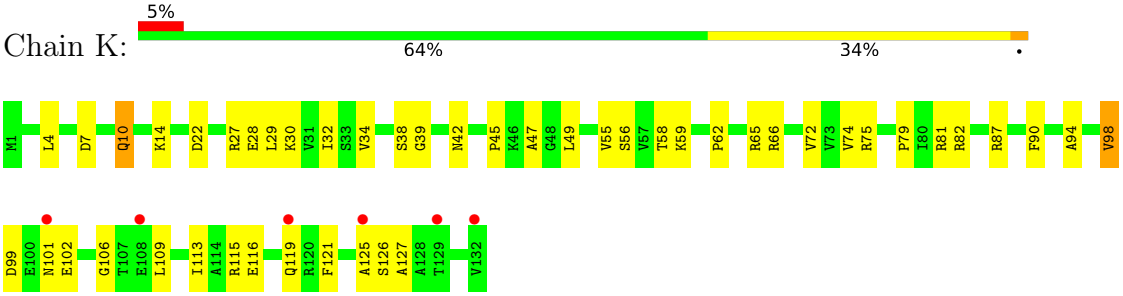
• Molecule 12: 50S ribosomal protein L13P

Chain J:

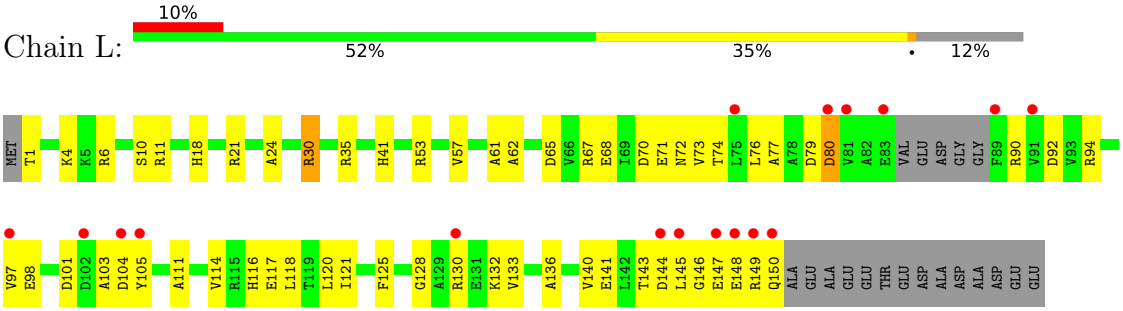




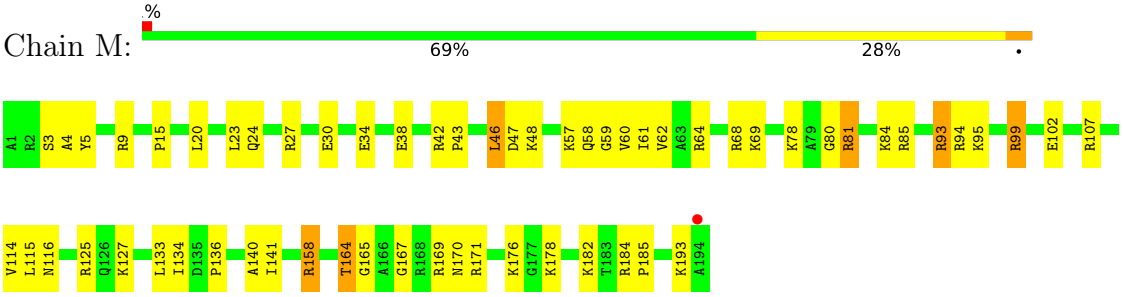
• Molecule 13: 50S ribosomal protein L14P



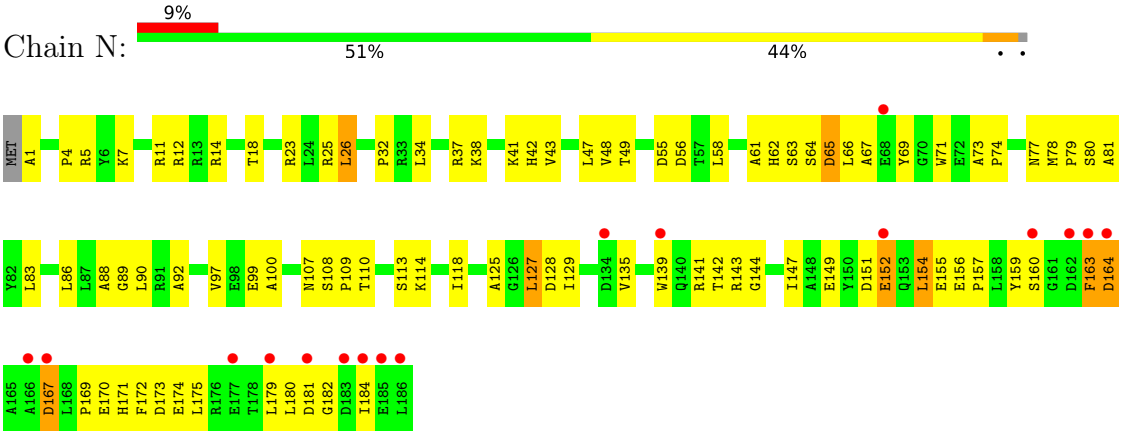
• Molecule 14: 50S ribosomal protein L15P



• Molecule 15: 50S ribosomal protein L15e

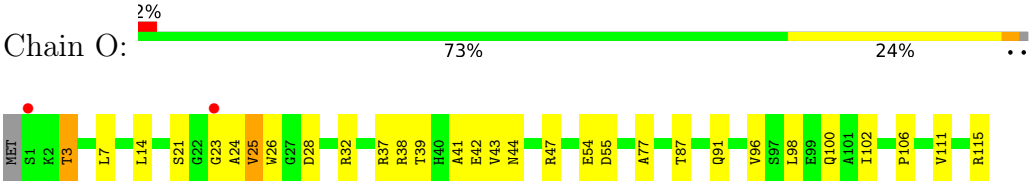


• Molecule 16: 50S ribosomal protein L18P



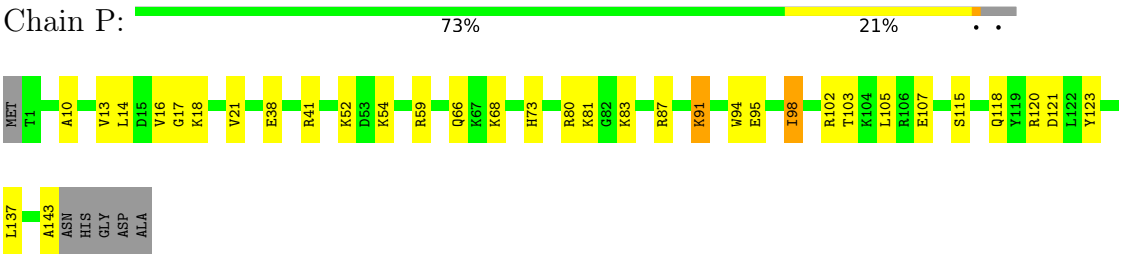
• Molecule 17: 50S ribosomal protein L18e

Chain O:



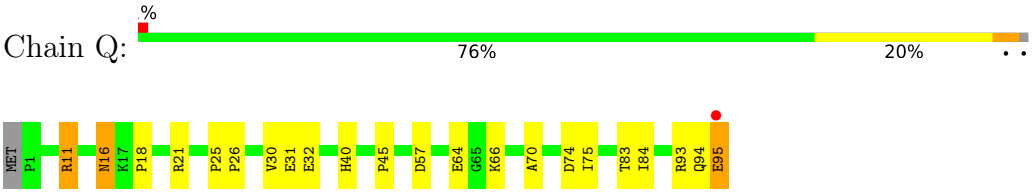
• Molecule 18: 50S ribosomal protein L19E

Chain P:



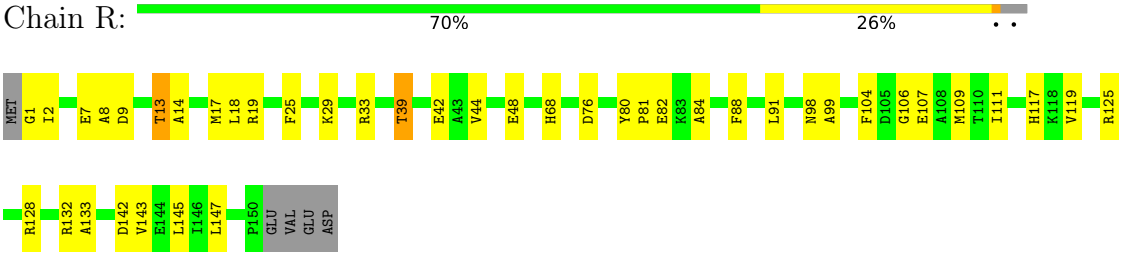
• Molecule 19: 50S ribosomal protein L21e

Chain Q:



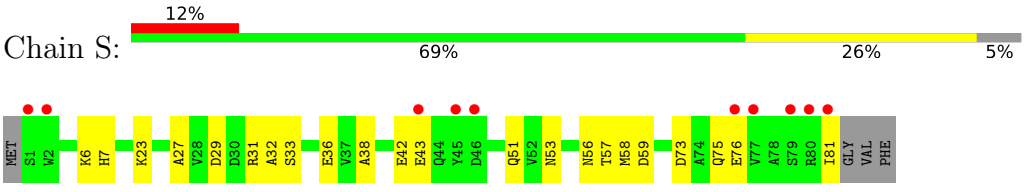
• Molecule 20: 50S ribosomal protein L22P

Chain R:



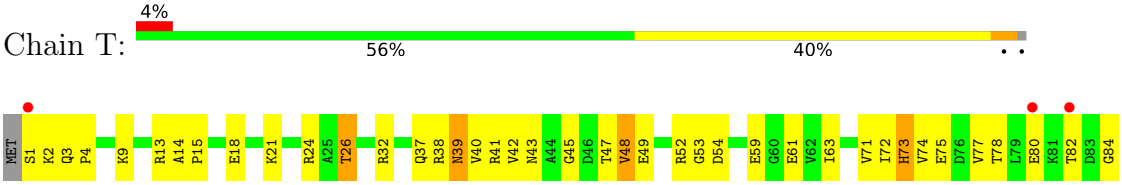
• Molecule 21: 50S ribosomal protein L23P

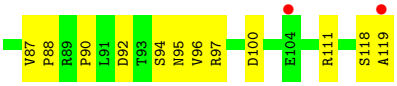
Chain S:



• Molecule 22: 50S ribosomal protein L24P

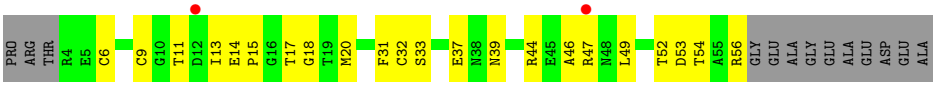
Chain T:





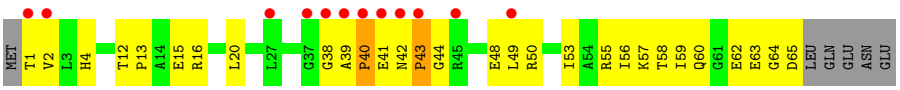
• Molecule 23: 50S ribosomal protein L24E

Chain U:



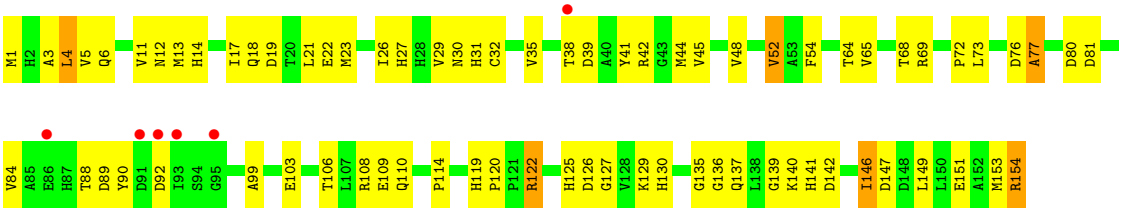
• Molecule 24: 50S ribosomal protein L29P

Chain V:



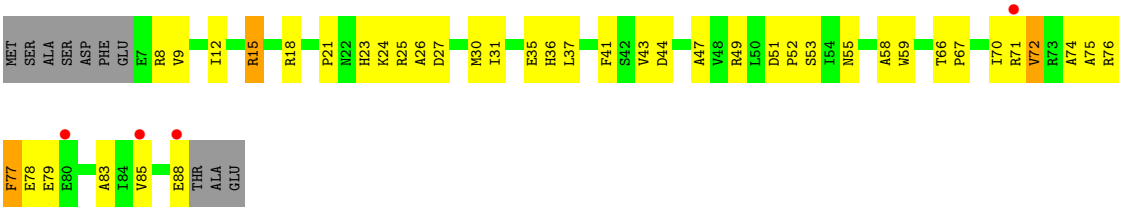
• Molecule 25: 50S ribosomal protein L30P

Chain W:



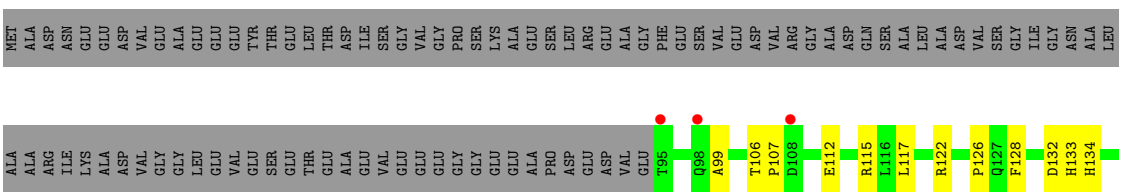
• Molecule 26: 50S ribosomal protein L31e

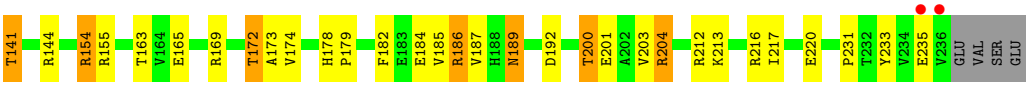
Chain X:



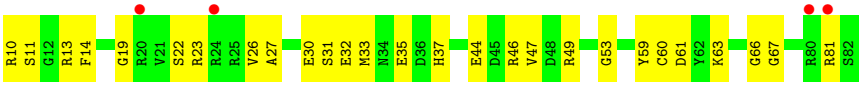
• Molecule 27: 50S ribosomal protein L32E

Chain Y:

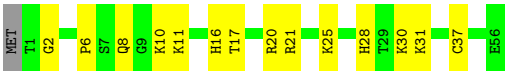




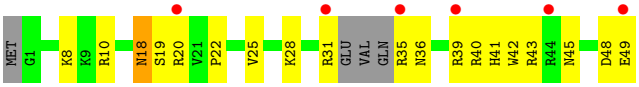
• Molecule 28: 50S ribosomal protein L37Ae



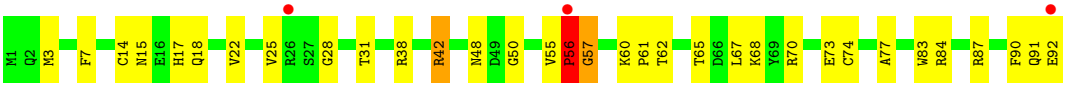
• Molecule 29: 50S ribosomal protein L37e



• Molecule 30: 50S ribosomal protein L39e



• Molecule 31: 50S ribosomal protein L44E



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	211.66Å 299.67Å 573.77Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	15.00 – 2.40 85.48 – 2.40	Depositor EDS
% Data completeness (in resolution range)	90.2 (15.00-2.40) 90.6 (85.48-2.40)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.37 (at 2.40Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.188 , 0.222 0.182 , 0.215	Depositor DCC
R_{free} test set	6547 reflections (0.98%)	wwPDB-VP
Wilson B-factor (Å^2)	38.9	Xtriage
Anisotropy	0.263	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 46.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	99039	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.50% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: NA, K, UR3, CL, OMU, OMG, CD, PSU, MG, 1MA

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	0	0.37	0/65959	0.70	27/102870 (0.0%)
2	9	0.35	0/2905	0.73	4/4528 (0.1%)
3	A	0.34	0/1786	0.67	0/2408
4	B	0.34	0/2690	0.65	0/3652
5	C	0.39	0/1884	0.67	0/2551
6	D	0.32	0/1111	0.57	0/1498
7	E	0.32	0/1382	0.57	0/1880
8	F	0.38	0/901	0.57	0/1224
9	G	0.28	0/241	0.48	0/324
10	H	0.33	0/1287	0.66	0/1725
11	I	0.36	0/526	0.56	0/716
12	J	0.34	0/1136	0.61	0/1530
13	K	0.34	0/1001	0.65	0/1347
14	L	0.34	0/1130	0.68	0/1509
15	M	0.36	0/1584	0.64	0/2119
16	N	0.37	0/1474	0.70	0/1999
17	O	0.33	0/874	0.61	0/1181
18	P	0.35	0/1147	0.54	0/1528
19	Q	0.35	0/749	0.69	0/1005
20	R	0.36	0/1172	0.66	0/1578
21	S	0.34	0/648	0.59	0/875
22	T	0.32	0/958	0.64	0/1289
23	U	0.35	0/417	0.58	0/562
24	V	0.31	0/502	0.55	0/675
25	W	0.34	0/1219	0.63	0/1655
26	X	0.33	0/664	0.60	0/895
27	Y	0.35	0/1146	0.63	0/1536
28	Z	0.35	0/590	0.66	0/787
29	1	0.44	0/438	0.68	0/578
30	2	0.37	0/401	0.55	0/529
31	3	0.38	0/771	0.62	0/1024
All	All	0.36	0/98693	0.68	31/147577 (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	60
2	9	0	2
All	All	1	62

There are no bond length outliers.

The worst 5 of 31 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	0	1563	G	C2'-C3'-O3'	9.56	130.53	109.50
1	0	1942	A	C5'-C4'-C3'	9.41	131.06	116.00
1	0	871	G	C5'-C4'-O4'	-8.49	98.91	109.10
1	0	1942	A	C5'-C4'-O4'	7.87	118.55	109.10
1	0	1979	G	C2'-C3'-O3'	7.87	126.82	109.50

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	0	1563	G	C3'

5 of 62 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0	191	A	Sidechain
1	0	196	G	Sidechain
1	0	221	G	Sidechain
1	0	246	G	Sidechain
1	0	270	U	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	712	0

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Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	9	2600	0	1326	54	0
3	A	1753	0	1766	103	0
4	B	2625	0	2533	163	0
5	C	1859	0	1816	109	0
6	D	1094	0	1085	116	0
7	E	1357	0	1266	76	0
8	F	890	0	843	56	0
9	G	240	0	231	17	0
10	H	1266	0	1268	78	0
11	I	519	0	500	72	0
12	J	1120	0	1098	68	0
13	K	992	0	1031	55	0
14	L	1118	0	1076	56	0
15	M	1560	0	1568	59	0
16	N	1445	0	1401	114	0
17	O	865	0	873	29	0
18	P	1136	0	1123	35	0
19	Q	735	0	728	18	0
20	R	1149	0	1122	45	0
21	S	641	0	605	20	0
22	T	950	0	923	48	0
23	U	410	0	364	31	0
24	V	499	0	511	29	0
25	W	1196	0	1137	96	0
26	X	654	0	653	42	0
27	Y	1130	0	1133	53	0
28	Z	579	0	539	27	0
29	1	431	0	426	21	0
30	2	396	0	413	28	0
31	3	755	0	728	29	0
32	0	109	0	0	0	0
32	3	1	0	0	0	0
32	9	1	0	0	0	0
32	A	1	0	0	0	0
32	B	1	0	0	0	0
32	K	1	0	0	0	0
32	T	1	0	0	0	0
32	Y	1	0	0	0	0
33	0	2	0	0	0	0
34	0	72	0	0	0	0
34	9	2	0	0	0	0
34	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
34	C	1	0	0	0	0
34	H	2	0	0	0	0
34	J	1	0	0	0	0
34	L	1	0	0	0	0
34	M	1	0	0	0	0
34	Q	1	0	0	0	0
34	R	2	0	0	0	0
34	S	1	0	0	0	0
34	T	1	0	0	0	0
35	0	10	0	0	0	0
35	3	1	0	0	0	0
35	A	1	0	0	0	0
35	B	1	0	0	0	0
35	J	3	0	0	1	0
35	L	1	0	0	0	0
35	M	1	0	0	0	0
35	N	1	0	0	0	0
35	O	1	0	0	0	0
35	R	1	0	0	0	0
35	Y	1	0	0	0	0
36	1	1	0	0	0	0
36	3	1	0	0	0	0
36	O	1	0	0	0	0
36	U	1	0	0	0	0
36	Z	1	0	0	0	0
37	0	5893	0	0	145	0
37	1	51	0	0	1	0
37	2	40	0	0	5	0
37	3	71	0	0	9	0
37	9	136	0	0	8	0
37	A	127	0	0	18	0
37	B	153	0	0	28	0
37	C	172	0	0	28	0
37	D	49	0	0	20	0
37	E	44	0	0	11	0
37	F	25	0	0	7	0
37	G	20	0	0	3	0
37	H	71	0	0	16	0
37	I	9	0	0	9	0
37	J	55	0	0	5	0
37	K	61	0	0	13	0
37	L	85	0	0	18	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
37	M	121	0	0	10	0
37	N	64	0	0	13	0
37	O	44	0	0	6	0
37	P	65	0	0	3	0
37	Q	52	0	0	2	0
37	R	83	0	0	8	0
37	S	33	0	0	5	0
37	T	40	0	0	5	0
37	U	25	0	0	4	0
37	V	14	0	0	4	0
37	W	67	0	0	10	0
37	X	28	0	0	3	0
37	Y	96	0	0	15	0
37	Z	29	0	0	5	0
All	All	99039	0	59899	2245	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 15.

The worst 5 of 2245 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)
5:C:236:THR:HG22	5:C:239:ALA:H	1.04	1.11
1:0:1160:G:H5'	1:0:1161:A:H5'	1.26	1.09
26:X:37:LEU:HD13	26:X:85:VAL:HG21	1.31	1.09
1:0:960:G:H4'	37:0:6920:HOH:O	1.51	1.08
5:C:5:ILE:HD11	5:C:16:VAL:HG23	1.36	1.07

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	A	235/240 (98%)	217 (92%)	15 (6%)	3 (1%)	12 17
4	B	335/338 (99%)	314 (94%)	14 (4%)	7 (2%)	7 8
5	C	244/246 (99%)	224 (92%)	20 (8%)	0	100 100
6	D	134/177 (76%)	104 (78%)	23 (17%)	7 (5%)	2 1
7	E	170/178 (96%)	159 (94%)	10 (6%)	1 (1%)	25 36
8	F	117/120 (98%)	105 (90%)	10 (8%)	2 (2%)	9 11
9	G	25/348 (7%)	24 (96%)	1 (4%)	0	100 100
10	H	156/171 (91%)	145 (93%)	9 (6%)	2 (1%)	12 17
11	I	68/162 (42%)	53 (78%)	12 (18%)	3 (4%)	2 2
12	J	140/145 (97%)	132 (94%)	5 (4%)	3 (2%)	7 8
13	K	130/132 (98%)	120 (92%)	8 (6%)	2 (2%)	10 14
14	L	141/165 (86%)	120 (85%)	20 (14%)	1 (1%)	22 32
15	M	192/194 (99%)	186 (97%)	6 (3%)	0	100 100
16	N	184/187 (98%)	171 (93%)	8 (4%)	5 (3%)	5 5
17	O	113/116 (97%)	108 (96%)	5 (4%)	0	100 100
18	P	141/149 (95%)	138 (98%)	3 (2%)	0	100 100
19	Q	93/96 (97%)	89 (96%)	4 (4%)	0	100 100
20	R	148/155 (96%)	143 (97%)	4 (3%)	1 (1%)	22 32
21	S	79/85 (93%)	75 (95%)	4 (5%)	0	100 100
22	T	117/120 (98%)	111 (95%)	6 (5%)	0	100 100
23	U	51/66 (77%)	47 (92%)	4 (8%)	0	100 100
24	V	63/71 (89%)	58 (92%)	3 (5%)	2 (3%)	4 3
25	W	152/154 (99%)	147 (97%)	4 (3%)	1 (1%)	22 32
26	X	80/92 (87%)	71 (89%)	7 (9%)	2 (2%)	5 6
27	Y	140/241 (58%)	140 (100%)	0	0	100 100
28	Z	71/73 (97%)	61 (86%)	9 (13%)	1 (1%)	11 15
29	1	54/57 (95%)	52 (96%)	2 (4%)	0	100 100
30	2	42/50 (84%)	42 (100%)	0	0	100 100
31	3	90/92 (98%)	86 (96%)	2 (2%)	2 (2%)	6 7
All	All	3705/4420 (84%)	3442 (93%)	218 (6%)	45 (1%)	13 19

5 of 45 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	B	139	ASP
6	D	137	PRO
6	D	173	GLU
10	H	166	SER
10	H	168	ALA

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	
3	A	179/182 (98%)	166 (93%)	13 (7%)	14	22
4	B	282/283 (100%)	263 (93%)	19 (7%)	16	26
5	C	193/193 (100%)	179 (93%)	14 (7%)	14	22
6	D	117/148 (79%)	108 (92%)	9 (8%)	13	20
7	E	152/156 (97%)	148 (97%)	4 (3%)	46	66
8	F	93/94 (99%)	93 (100%)	0	100	100
9	G	27/283 (10%)	27 (100%)	0	100	100
10	H	132/138 (96%)	125 (95%)	7 (5%)	22	37
11	I	58/130 (45%)	54 (93%)	4 (7%)	15	25
12	J	118/121 (98%)	110 (93%)	8 (7%)	16	25
13	K	106/106 (100%)	103 (97%)	3 (3%)	43	63
14	L	113/127 (89%)	109 (96%)	4 (4%)	36	55
15	M	158/158 (100%)	151 (96%)	7 (4%)	28	45
16	N	149/150 (99%)	142 (95%)	7 (5%)	26	42
17	O	93/94 (99%)	88 (95%)	5 (5%)	22	36
18	P	113/117 (97%)	110 (97%)	3 (3%)	44	65
19	Q	79/80 (99%)	75 (95%)	4 (5%)	24	39
20	R	117/122 (96%)	114 (97%)	3 (3%)	46	66
21	S	71/74 (96%)	71 (100%)	0	100	100
22	T	105/106 (99%)	100 (95%)	5 (5%)	25	41

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
23	U	44/52 (85%)	44 (100%)	0	100 100
24	V	51/57 (90%)	50 (98%)	1 (2%)	55 74
25	W	130/130 (100%)	122 (94%)	8 (6%)	18 29
26	X	66/74 (89%)	63 (96%)	3 (4%)	27 44
27	Y	120/196 (61%)	110 (92%)	10 (8%)	11 17
28	Z	60/60 (100%)	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 68
31	3	79/79 (100%)	76 (96%)	3 (4%)	33 51
All	All	3093/3603 (86%)	2948 (95%)	145 (5%)	26 42

5 of 145 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
22	T	39	ASN
31	3	42	ARG
24	V	43	PRO
26	X	72	VAL
6	D	99	ASP

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

Mol	Chain	Res	Type
20	R	117	HIS
26	X	23	HIS
21	S	53	ASN
25	W	59	GLN
27	Y	189	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	0	2746/2922 (93%)	236 (8%)	34 (1%)
2	9	121/122 (99%)	17 (14%)	2 (1%)
All	All	2867/3044 (94%)	253 (8%)	36 (1%)

5 of 253 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	0	11	A
1	0	31	C
1	0	60	A
1	0	67	A
1	0	69	A

5 of 36 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	0	2536	C
2	9	103	A
1	0	2649	A
1	0	2761	A
1	0	1080	C

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	OMG	0	2588	1	18,26,27	0.96	2 (11%)	19,38,41	0.76	1 (5%)
1	1MA	0	628	1	16,25,26	1.31	3 (18%)	18,37,40	1.08	2 (11%)
1	OMU	0	2587	1	19,22,23	0.20	0	26,31,34	0.41	0
1	PSU	0	2621	1	18,21,22	1.41	2 (11%)	22,30,33	1.19	3 (13%)
1	UR3	0	2619	1	19,22,23	0.47	0	26,32,35	0.67	1 (3%)

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	OMG	0	2588	1	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	1MA	0	628	1	-	0/3/25/26	0/3/3/3
1	OMU	0	2587	1	-	0/9/27/28	0/2/2/2
1	PSU	0	2621	1	-	0/7/25/26	0/2/2/2
1	UR3	0	2619	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	4.79	1.43	1.36
1	0	628	1MA	C2-N3	3.36	1.33	1.29
1	0	2621	PSU	C6-C5	2.79	1.38	1.35
1	0	628	1MA	C6-N6	2.55	1.34	1.27
1	0	2588	OMG	C8-N7	-2.31	1.31	1.35

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

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	0	2621	PSU	C6-C5-C4	2.93	120.25	118.20
1	0	2621	PSU	C6-N1-C2	-2.92	119.70	122.68
1	0	628	1MA	N1-C2-N3	2.76	129.24	126.02
1	0	2621	PSU	O2-C2-N1	2.55	125.60	122.79
1	0	628	1MA	C5-C6-N1	2.48	117.59	113.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 231 ligands modelled in this entry, 231 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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, 95^{th} 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%)	-0.38	56 (2%) 65 63	18, 37, 80, 136	0
2	9	122/122 (100%)	-0.39	5 (4%) 37 36	32, 54, 75, 144	0
3	A	237/240 (98%)	0.38	20 (8%) 11 10	20, 39, 73, 93	0
4	B	337/338 (99%)	0.38	15 (4%) 33 31	21, 46, 72, 83	0
5	C	246/246 (100%)	0.32	11 (4%) 33 31	15, 36, 58, 70	0
6	D	140/177 (79%)	2.55	82 (58%) 0 0	44, 89, 112, 117	0
7	E	172/178 (96%)	0.60	13 (7%) 13 12	38, 59, 78, 83	0
8	F	119/120 (99%)	0.92	24 (20%) 1 0	38, 58, 83, 90	0
9	G	29/348 (8%)	2.54	20 (68%) 0 0	65, 81, 89, 93	0
10	H	160/171 (93%)	0.57	20 (12%) 3 3	32, 47, 77, 88	0
11	I	70/162 (43%)	5.30	67 (95%) 0 0	88, 102, 119, 122	0
12	J	142/145 (97%)	0.25	4 (2%) 53 51	30, 43, 63, 85	0
13	K	132/132 (100%)	0.15	6 (4%) 33 31	28, 43, 62, 71	0
14	L	145/165 (87%)	0.73	17 (11%) 4 4	20, 55, 93, 106	0
15	M	194/194 (100%)	-0.11	1 (0%) 91 89	19, 32, 46, 54	0
16	N	186/187 (99%)	0.62	17 (9%) 9 8	32, 51, 94, 109	0
17	O	115/116 (99%)	0.00	2 (1%) 70 68	28, 44, 61, 69	0
18	P	143/149 (95%)	0.12	0 100 100	31, 45, 57, 64	0
19	Q	95/96 (98%)	0.09	1 (1%) 80 79	27, 35, 52, 59	0
20	R	150/155 (96%)	-0.03	0 100 100	23, 36, 54, 63	0
21	S	81/85 (95%)	0.50	10 (12%) 4 3	32, 47, 68, 72	0
22	T	119/120 (99%)	0.42	5 (4%) 36 35	29, 46, 67, 82	0
23	U	53/66 (80%)	0.36	2 (3%) 40 39	34, 47, 64, 73	0
24	V	65/71 (91%)	1.63	12 (18%) 1 1	40, 59, 99, 103	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
25	W	154/154 (100%)	0.35	6 (3%) 39 38	28, 42, 58, 67	0
26	X	82/92 (89%)	0.43	4 (4%) 29 28	36, 49, 74, 91	0
27	Y	142/241 (58%)	0.01	5 (3%) 44 43	22, 36, 60, 75	0
28	Z	73/73 (100%)	0.39	4 (5%) 25 24	37, 49, 68, 85	0
29	1	56/57 (98%)	0.20	0 100 100	18, 25, 33, 37	0
30	2	46/50 (92%)	0.52	6 (13%) 3 3	29, 50, 75, 86	0
31	3	92/92 (100%)	0.19	3 (3%) 46 45	24, 45, 59, 73	0
All	All	6646/7464 (89%)	0.15	438 (6%) 18 17	15, 42, 85, 144	0

The worst 5 of 438 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
11	I	96	PHE	14.9
24	V	1	THR	11.9
11	I	71	GLY	11.5
11	I	133	THR	10.5
11	I	109	ALA	10.1

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	1MA	0	628	23/24	0.98	0.17	21,24,25,27	0
1	OMU	0	2587	21/22	0.98	0.13	24,26,28,30	0
1	OMG	0	2588	24/25	0.98	0.13	22,25,27,30	0
1	UR3	0	2619	21/22	0.98	0.14	23,27,31,37	0
1	PSU	0	2621	20/21	0.99	0.15	20,25,28,28	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, 95^{th} 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
32	MG	0	8087	1/1	0.52	0.31	71,71,71,71	0
32	MG	0	8050	1/1	0.64	0.15	62,62,62,62	0
32	MG	0	8072	1/1	0.71	0.10	51,51,51,51	0
32	MG	0	8103	1/1	0.73	0.27	57,57,57,57	0
32	MG	9	8095	1/1	0.77	0.14	67,67,67,67	0
34	NA	0	8371	1/1	0.78	0.37	52,52,52,52	0
34	NA	0	8384	1/1	0.79	0.16	54,54,54,54	0
32	MG	0	8102	1/1	0.80	0.10	54,54,54,54	0
34	NA	0	8370	1/1	0.82	0.43	60,60,60,60	0
32	MG	0	8070	1/1	0.83	0.14	41,41,41,41	0
32	MG	0	8047	1/1	0.83	0.10	55,55,55,55	0
34	NA	0	8329	1/1	0.83	0.13	50,50,50,50	0
32	MG	0	8094	1/1	0.84	0.07	62,62,62,62	0
34	NA	C	8304	1/1	0.84	0.20	32,32,32,32	0
32	MG	0	8049	1/1	0.85	0.12	55,55,55,55	0
34	NA	9	8351	1/1	0.86	0.15	43,43,43,43	0
32	MG	0	8112	1/1	0.87	0.13	38,38,38,38	0
32	MG	0	8034	1/1	0.87	0.09	32,32,32,32	0
34	NA	0	8311	1/1	0.87	0.14	48,48,48,48	0
34	NA	H	8322	1/1	0.87	0.26	53,53,53,53	0
34	NA	R	8386	1/1	0.87	0.41	75,75,75,75	0
34	NA	9	8383	1/1	0.88	0.22	44,44,44,44	0
32	MG	0	8101	1/1	0.88	0.29	48,48,48,48	0
34	NA	0	8307	1/1	0.88	0.14	42,42,42,42	0
34	NA	0	8308	1/1	0.88	0.20	43,43,43,43	0
32	MG	0	8052	1/1	0.89	0.07	47,47,47,47	0
34	NA	0	8363	1/1	0.89	0.31	52,52,52,52	0
32	MG	0	8066	1/1	0.90	0.49	76,76,76,76	0
34	NA	0	8376	1/1	0.90	0.40	40,40,40,40	0
32	MG	0	8089	1/1	0.90	0.08	52,52,52,52	0
32	MG	0	8090	1/1	0.90	0.34	55,55,55,55	0
32	MG	0	8067	1/1	0.91	0.14	35,35,35,35	0
34	NA	0	8341	1/1	0.91	0.13	38,38,38,38	0
32	MG	0	8076	1/1	0.91	0.05	43,43,43,43	0
32	MG	0	8077	1/1	0.91	0.13	24,24,24,24	0
34	NA	0	8327	1/1	0.91	0.26	38,38,38,38	0
34	NA	0	8372	1/1	0.91	0.45	55,55,55,55	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
34	NA	0	8373	1/1	0.91	0.13	44,44,44,44	0
32	MG	0	8014	1/1	0.92	0.09	25,25,25,25	0
32	MG	0	8062	1/1	0.92	0.07	42,42,42,42	0
34	NA	0	8314	1/1	0.92	0.30	39,39,39,39	0
34	NA	0	8324	1/1	0.92	0.15	51,51,51,51	0
32	MG	0	8043	1/1	0.92	0.06	34,34,34,34	0
32	MG	0	8116	1/1	0.92	0.16	38,38,38,38	0
34	NA	0	8385	1/1	0.92	0.38	48,48,48,48	0
34	NA	0	8340	1/1	0.92	0.25	46,46,46,46	0
32	MG	0	8045	1/1	0.92	0.07	51,51,51,51	0
34	NA	0	8350	1/1	0.92	0.36	36,36,36,36	0
34	NA	0	8358	1/1	0.92	0.38	67,67,67,67	0
32	MG	0	8085	1/1	0.92	0.08	35,35,35,35	0
32	MG	0	8022	1/1	0.93	0.12	31,31,31,31	0
32	MG	0	8071	1/1	0.93	0.04	61,61,61,61	0
34	NA	0	8310	1/1	0.93	0.12	28,28,28,28	0
34	NA	0	8382	1/1	0.93	0.10	66,66,66,66	0
32	MG	0	8080	1/1	0.93	0.07	42,42,42,42	0
34	NA	0	8357	1/1	0.93	0.09	40,40,40,40	0
32	MG	0	8082	1/1	0.93	0.19	59,59,59,59	0
32	MG	0	8068	1/1	0.93	0.04	45,45,45,45	0
34	NA	0	8369	1/1	0.93	0.21	41,41,41,41	0
34	NA	0	8325	1/1	0.93	0.24	49,49,49,49	0
32	MG	B	8055	1/1	0.93	0.07	43,43,43,43	0
35	CL	J	8521	1/1	0.93	0.17	48,48,48,48	0
32	MG	K	8069	1/1	0.94	0.12	47,47,47,47	0
34	NA	0	8302	1/1	0.94	0.20	45,45,45,45	0
32	MG	0	8046	1/1	0.94	0.06	38,38,38,38	0
32	MG	0	8051	1/1	0.94	0.11	56,56,56,56	0
32	MG	0	8093	1/1	0.94	0.12	37,37,37,37	0
34	NA	0	8377	1/1	0.94	0.23	51,51,51,51	0
32	MG	0	8012	1/1	0.94	0.14	34,34,34,34	0
34	NA	0	8356	1/1	0.94	0.20	37,37,37,37	0
34	NA	0	8313	1/1	0.94	0.11	48,48,48,48	0
32	MG	0	8099	1/1	0.94	0.23	43,43,43,43	0
34	NA	0	8361	1/1	0.94	0.22	38,38,38,38	0
34	NA	A	8345	1/1	0.94	0.09	47,47,47,47	0
34	NA	0	8362	1/1	0.94	0.35	51,51,51,51	0
34	NA	0	8321	1/1	0.94	0.24	40,40,40,40	0
34	NA	0	8365	1/1	0.94	0.19	30,30,30,30	0
34	NA	S	8312	1/1	0.94	0.08	28,28,28,28	0
32	MG	0	8016	1/1	0.94	0.09	32,32,32,32	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
34	NA	0	8333	1/1	0.95	0.09	25,25,25,25	0
34	NA	0	8334	1/1	0.95	0.09	35,35,35,35	0
32	MG	0	8028	1/1	0.95	0.06	26,26,26,26	0
32	MG	0	8013	1/1	0.95	0.15	22,22,22,22	0
34	NA	0	8349	1/1	0.95	0.17	36,36,36,36	0
32	MG	0	8039	1/1	0.95	0.07	34,34,34,34	0
34	NA	0	8315	1/1	0.95	0.18	32,32,32,32	0
34	NA	0	8318	1/1	0.95	0.29	51,51,51,51	0
33	K	0	8201	1/1	0.95	0.15	64,64,64,64	0
32	MG	0	8079	1/1	0.95	0.16	20,20,20,20	0
32	MG	0	8104	1/1	0.95	0.14	47,47,47,47	0
34	NA	0	8326	1/1	0.95	0.19	38,38,38,38	0
34	NA	0	8364	1/1	0.95	0.26	38,38,38,38	0
32	MG	0	8006	1/1	0.95	0.07	27,27,27,27	0
34	NA	0	8366	1/1	0.95	0.24	57,57,57,57	0
34	NA	0	8368	1/1	0.95	0.15	50,50,50,50	0
35	CL	0	8515	1/1	0.95	0.10	50,50,50,50	0
32	MG	0	8064	1/1	0.95	0.14	26,26,26,26	0
34	NA	0	8379	1/1	0.96	0.45	49,49,49,49	0
34	NA	0	8317	1/1	0.96	0.11	27,27,27,27	0
34	NA	0	8336	1/1	0.96	0.07	37,37,37,37	0
32	MG	0	8023	1/1	0.96	0.13	31,31,31,31	0
32	MG	0	8037	1/1	0.96	0.06	34,34,34,34	0
32	MG	0	8097	1/1	0.96	0.08	32,32,32,32	0
32	MG	0	8098	1/1	0.96	0.06	27,27,27,27	0
34	NA	0	8355	1/1	0.96	0.35	48,48,48,48	0
32	MG	3	8078	1/1	0.96	0.09	40,40,40,40	0
34	NA	L	8380	1/1	0.96	0.34	42,42,42,42	0
34	NA	Q	8348	1/1	0.96	0.07	32,32,32,32	0
34	NA	R	8337	1/1	0.96	0.08	34,34,34,34	0
32	MG	0	8105	1/1	0.96	0.13	43,43,43,43	0
32	MG	0	8091	1/1	0.96	0.09	42,42,42,42	0
34	NA	0	8330	1/1	0.96	0.08	38,38,38,38	0
35	CL	J	8502	1/1	0.96	0.12	53,53,53,53	0
34	NA	0	8316	1/1	0.96	0.21	37,37,37,37	0
34	NA	0	8360	1/1	0.97	0.17	43,43,43,43	0
32	MG	0	8031	1/1	0.97	0.12	24,24,24,24	0
32	MG	0	8074	1/1	0.97	0.06	35,35,35,35	0
32	MG	0	8032	1/1	0.97	0.06	24,24,24,24	0
32	MG	0	8033	1/1	0.97	0.10	20,20,20,20	0
32	MG	0	8018	1/1	0.97	0.06	29,29,29,29	0
32	MG	0	8020	1/1	0.97	0.09	25,25,25,25	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
34	NA	0	8367	1/1	0.97	0.28	45,45,45,45	0
34	NA	0	8319	1/1	0.97	0.11	29,29,29,29	0
32	MG	0	8106	1/1	0.97	0.03	31,31,31,31	0
32	MG	0	8107	1/1	0.97	0.07	65,65,65,65	0
32	MG	0	8081	1/1	0.97	0.10	39,39,39,39	0
32	MG	0	8113	1/1	0.97	0.10	36,36,36,36	0
32	MG	0	8059	1/1	0.97	0.08	26,26,26,26	0
34	NA	0	8374	1/1	0.97	0.20	44,44,44,44	0
32	MG	0	8061	1/1	0.97	0.15	34,34,34,34	0
32	MG	0	8001	1/1	0.97	0.11	25,25,25,25	0
34	NA	0	8378	1/1	0.97	0.18	42,42,42,42	0
34	NA	0	8331	1/1	0.97	0.28	40,40,40,40	0
34	NA	0	8381	1/1	0.97	0.14	42,42,42,42	0
34	NA	0	8332	1/1	0.97	0.12	33,33,33,33	0
32	MG	0	8063	1/1	0.97	0.14	62,62,62,62	0
32	MG	Y	8108	1/1	0.97	0.09	27,27,27,27	0
34	NA	0	8335	1/1	0.97	0.19	32,32,32,32	0
32	MG	0	8040	1/1	0.97	0.12	38,38,38,38	0
32	MG	0	8042	1/1	0.97	0.09	29,29,29,29	0
34	NA	0	8301	1/1	0.97	0.12	35,35,35,35	0
34	NA	0	8342	1/1	0.97	0.26	33,33,33,33	0
32	MG	0	8011	1/1	0.97	0.10	24,24,24,24	0
34	NA	M	8347	1/1	0.97	0.17	20,20,20,20	0
34	NA	0	8303	1/1	0.97	0.18	34,34,34,34	0
34	NA	0	8352	1/1	0.97	0.13	40,40,40,40	0
32	MG	0	8044	1/1	0.97	0.09	33,33,33,33	0
32	MG	0	8096	1/1	0.97	0.12	38,38,38,38	0
34	NA	T	8343	1/1	0.97	0.06	31,31,31,31	0
32	MG	0	8027	1/1	0.97	0.07	36,36,36,36	0
35	CL	0	8522	1/1	0.97	0.17	46,46,46,46	0
32	MG	0	8002	1/1	0.97	0.08	28,28,28,28	0
34	NA	0	8359	1/1	0.97	0.26	40,40,40,40	0
35	CL	L	8510	1/1	0.97	0.10	38,38,38,38	0
35	CL	R	8506	1/1	0.97	0.12	40,40,40,40	0
35	CL	Y	8520	1/1	0.97	0.14	39,39,39,39	0
35	CL	3	8504	1/1	0.97	0.07	45,45,45,45	0
32	MG	0	8114	1/1	0.98	0.07	37,37,37,37	0
32	MG	0	8115	1/1	0.98	0.09	44,44,44,44	0
32	MG	0	8083	1/1	0.98	0.08	30,30,30,30	0
32	MG	0	8084	1/1	0.98	0.07	39,39,39,39	0
32	MG	0	8058	1/1	0.98	0.06	28,28,28,28	0
32	MG	0	8038	1/1	0.98	0.13	23,23,23,23	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
32	MG	T	8073	1/1	0.98	0.05	39,39,39,39	0
32	MG	0	8088	1/1	0.98	0.08	21,21,21,21	0
32	MG	0	8009	1/1	0.98	0.14	25,25,25,25	0
34	NA	0	8339	1/1	0.98	0.20	21,21,21,21	0
32	MG	0	8026	1/1	0.98	0.16	27,27,27,27	0
32	MG	0	8041	1/1	0.98	0.10	34,34,34,34	0
32	MG	0	8092	1/1	0.98	0.11	68,68,68,68	0
34	NA	0	8344	1/1	0.98	0.11	25,25,25,25	0
32	MG	0	8015	1/1	0.98	0.18	27,27,27,27	0
34	NA	0	8305	1/1	0.98	0.23	33,33,33,33	0
34	NA	0	8306	1/1	0.98	0.13	31,31,31,31	0
34	NA	H	8309	1/1	0.98	0.09	28,28,28,28	0
34	NA	0	8354	1/1	0.98	0.17	26,26,26,26	0
34	NA	J	8346	1/1	0.98	0.08	36,36,36,36	0
32	MG	0	8010	1/1	0.98	0.16	25,25,25,25	0
32	MG	0	8029	1/1	0.98	0.09	36,36,36,36	0
32	MG	0	8003	1/1	0.98	0.10	22,22,22,22	0
32	MG	0	8019	1/1	0.98	0.05	25,25,25,25	0
32	MG	0	8007	1/1	0.98	0.15	22,22,22,22	0
32	MG	0	8100	1/1	0.98	0.06	62,62,62,62	0
32	MG	0	8048	1/1	0.98	0.07	40,40,40,40	0
35	CL	0	8503	1/1	0.98	0.17	42,42,42,42	0
35	CL	0	8505	1/1	0.98	0.11	42,42,42,42	0
35	CL	0	8511	1/1	0.98	0.11	38,38,38,38	0
35	CL	0	8514	1/1	0.98	0.20	38,38,38,38	0
32	MG	0	8021	1/1	0.98	0.09	24,24,24,24	0
35	CL	0	8517	1/1	0.98	0.10	50,50,50,50	0
32	MG	0	8075	1/1	0.98	0.06	30,30,30,30	0
35	CL	J	8501	1/1	0.98	0.09	46,46,46,46	0
32	MG	0	8035	1/1	0.98	0.07	37,37,37,37	0
32	MG	0	8036	1/1	0.98	0.09	36,36,36,36	0
32	MG	0	8008	1/1	0.98	0.10	24,24,24,24	0
35	CL	M	8518	1/1	0.98	0.20	35,35,35,35	0
35	CL	N	8507	1/1	0.98	0.09	46,46,46,46	0
35	CL	O	8508	1/1	0.98	0.08	53,53,53,53	0
32	MG	0	8053	1/1	0.98	0.10	29,29,29,29	0
32	MG	0	8054	1/1	0.98	0.15	18,18,18,18	0
32	MG	0	8057	1/1	0.98	0.12	36,36,36,36	0
36	CD	O	8405	1/1	0.98	0.08	73,73,73,73	0
32	MG	A	8065	1/1	0.99	0.07	24,24,24,24	0
34	NA	0	8323	1/1	0.99	0.15	32,32,32,32	0
32	MG	0	8005	1/1	0.99	0.12	24,24,24,24	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
35	CL	0	8512	1/1	0.99	0.12	35,35,35,35	0
35	CL	0	8513	1/1	0.99	0.11	45,45,45,45	0
32	MG	0	8109	1/1	0.99	0.13	26,26,26,26	0
32	MG	0	8110	1/1	0.99	0.11	32,32,32,32	0
35	CL	0	8516	1/1	0.99	0.14	42,42,42,42	0
32	MG	0	8111	1/1	0.99	0.09	25,25,25,25	0
34	NA	0	8328	1/1	0.99	0.12	30,30,30,30	0
35	CL	A	8509	1/1	0.99	0.11	49,49,49,49	0
35	CL	B	8519	1/1	0.99	0.14	34,34,34,34	0
32	MG	0	8086	1/1	0.99	0.09	33,33,33,33	0
34	NA	0	8353	1/1	0.99	0.14	20,20,20,20	0
32	MG	0	8004	1/1	0.99	0.14	22,22,22,22	0
33	K	0	8202	1/1	0.99	0.07	38,38,38,38	0
32	MG	0	8024	1/1	0.99	0.15	23,23,23,23	0
32	MG	0	8060	1/1	0.99	0.22	32,32,32,32	0
34	NA	0	8375	1/1	0.99	0.22	43,43,43,43	0
32	MG	0	8025	1/1	0.99	0.09	37,37,37,37	0
32	MG	0	8056	1/1	0.99	0.04	31,31,31,31	0
34	NA	0	8320	1/1	0.99	0.30	38,38,38,38	0
34	NA	0	8338	1/1	0.99	0.06	38,38,38,38	0
36	CD	U	8401	1/1	0.99	0.11	52,52,52,52	0
36	CD	Z	8403	1/1	0.99	0.14	48,48,48,48	0
36	CD	1	8402	1/1	0.99	0.07	44,44,44,44	0
36	CD	3	8404	1/1	0.99	0.09	49,49,49,49	0
32	MG	0	8030	1/1	1.00	0.07	22,22,22,22	0
32	MG	0	8017	1/1	1.00	0.14	13,13,13,13	0

6.5 Other polymers (i)

There are no such residues in this entry.