



wwPDB X-ray Structure Validation Summary Report

Oct 4, 2023 – 03:04 PM EDT

PDB ID : 6OXA
Title : Dimeric E.coli YoeB bound to Thermus thermophilus 70S pre-cleavage (AAU)
Authors : Pavelich, I.J.; Hoffer, E.D.; Maehigashi, T.; Dunham, C.M.
Deposited on : 2019-05-13
Resolution : 3.25 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the  symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

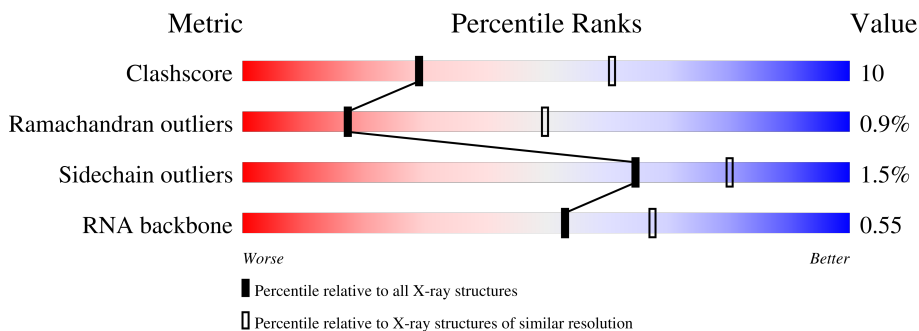
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.25 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	1251 (3.30-3.22)
Ramachandran outliers	138981	1229 (3.30-3.22)
Sidechain outliers	138945	1228 (3.30-3.22)
RNA backbone	3102	1072 (3.62-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	QA	1521	
1	XA	1521	
2	QB	256	
2	XB	256	
3	QC	239	
3	XC	239	

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Mol	Chain	Length	Quality of chain		
4	QD	209	81%	18%	
4	XD	209	79%	20%	
5	QE	162	83%	10%	7%
5	XE	162	81%	12%	7%
6	QF	101	88%	12%	
6	XF	101	81%	18%	.
7	QG	156	90%	10%	.
7	XG	156	88%	12%	.
8	QH	138	81%	17%	..
8	XH	138	80%	20%	.
9	QI	128	74%	25%	.
9	XI	128	78%	20%	..
10	QJ	105	79%	15%	6%
10	XJ	105	65%	27%	9%
11	QK	129	80%	12%	8%
11	XK	129	77%	13%	10%
12	QM	126	71%	21%	. 5%
12	XM	126	79%	15%	6%
13	QN	61	74%	25%	.
13	XN	61	87%	11%	.
14	QO	89	89%	10%	.
14	XO	89	84%	13%	.
15	QP	88	88%	8%	5%
15	XP	88	88%	7%	. 5%
16	QQ	105	83%	12%	5%

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Mol	Chain	Length	Quality of chain
16	XQ	105	84% 11% 5%
17	QR	88	73% 7% 20%
17	XR	88	74% 6% 20%
18	QS	93	65% 24% 11%
18	XS	93	40% 40% 9% 11%
19	QT	106	85% 8% 7%
19	XT	106	74% 20% 7%
20	QU	27	78% 15% 7%
20	XU	27	81% 11% 7%
21	QV	77	75% 18% 6%
21	QW	77	47% 40% 13%
21	XV	77	73% 23% ..
21	XW	77	47% 39% 14%
22	QX	22	23% 36% 23% 9% 9%
22	XX	22	36% 27% 18% 9% 9%
23	QY	84	46% 52% .
23	QZ	84	56% 38% 6%
23	XY	84	56% 44%
23	XZ	84	48% 51% .
24	R0	85	76% 16% 5%
24	Y0	85	84% 12% ..
25	R2	72	76% 18% ..
25	Y2	72	83% 12% .
26	R3	60	92% 7% .
26	Y3	60	88% 10% .

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Mol	Chain	Length	Quality of chain
27	R4	71	66% 24% 6% ..
27	Y4	71	73% 24% .
28	R5	60	82% 17% .
28	Y5	60	78% 18% ..
29	R6	54	67% 31% .
29	Y6	54	87% 11% .
30	R7	49	88% 8% .
30	Y7	49	84% 14% .
31	R9	37	81% 19%
31	Y9	37	76% 24%
32	RA	2915	57% 31% 10% ..
32	YA	2915	56% 32% 9% ..
33	RB	124	56% 32% 6% ..
33	YB	124	60% 28% 8% .
34	RD	276	77% 18% ..
34	YD	276	57% 40% ..
35	RE	206	71% 24% ..
35	YE	206	44% 51% ..
36	RG	182	74% 25% ..
36	YG	182	81% 18% ..
37	RH	180	79% 15% ...
37	YH	180	37% 54% ...
38	RI	148	70% 27% ..
38	YI	148	89% 9% ..
39	RN	140	84% 14% ..







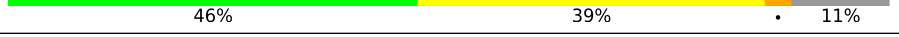



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Mol	Chain	Length	Quality of chain
39	YN	140	86% 12% ..
40	RO	122	85% 15%
40	YO	122	83% 17%
41	RP	150	76% 20% .
41	YP	150	43% 48% 8% .
42	RQ	141	80% 19% .
42	YQ	141	40% 55% 5%
43	RR	118	87% 11% ..
43	YR	118	90% 9% .
44	RS	112	84% 15% .
44	YS	112	76% 21% ...
45	RT	146	71% 22% . 6%
45	YT	146	70% 23% . 6%
46	RU	118	83% 15% ..
46	YU	118	86% 12% ..
47	RV	101	86% 13% .
47	YV	101	49% 50% .
48	RW	113	80% 20%
48	YW	113	86% 14%
49	RX	96	82% 14% .
49	YX	96	83% 12% .
50	RY	110	83% 15% .
50	YY	110	78% 18% ..
51	QL	132	67% 25% .. 5%
51	XL	132	78% 13% . 8%

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Mol	Chain	Length	Quality of chain
52	R1	98	 57% 38% . .
52	Y1	98	 82% 12% . 5%
53	R8	65	 57% 42% .
53	Y8	65	 77% 15% 5% . .
54	RF	210	 61% 33% . .
54	YF	210	 81% 14% .
55	RZ	206	 46% 39% . 11%
55	YZ	206	 58% 30% . 11%
56	ZA	3	 33% 67%
56	ZB	3	 67% 33%

2 Entry composition

There are 59 unique types of molecules in this entry. The entry contains 298432 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	QA	1510	Total 32452	C 14444	N 6009	O 10489	P 1510	0	0	0
1	XA	1507	Total 32389	C 14416	N 5999	O 10467	P 1507	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	QB	235	Total 1907	C 1217	N 342	O 343	S 5	0	0	0
2	XB	236	Total 1915	C 1223	N 343	O 344	S 5	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	QC	205	Total 1605	C 1011	N 313	O 280	S 1	0	0	0
3	XC	205	Total 1605	C 1011	N 313	O 280	S 1	0	0	0

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

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	QE	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			
5	XE	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			

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

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

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

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	QH	137	Total	C	N	O	S	0	0	0
			1108	700	214	192	2			
8	XH	137	Total	C	N	O	S	0	0	0
			1108	700	214	192	2			

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
9	QI	127	Total	C	N	O	0	0	0
			1010	639	197	174			
9	XI	126	Total	C	N	O	0	0	0
			998	633	193	172			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	QJ	99	Total	C	N	O	S	0	0	0
			801	504	157	139	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	XJ	96	777	487	153	136	1	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	QK	119	885	549	168	165	3	0	0	0
11	XK	116	864	537	164	160	3	0	0	0

- Molecule 12 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	QM	120	955	591	197	165	2	0	0	0
12	XM	119	946	585	195	164	2	0	0	0

- Molecule 13 is a protein called 30S ribosomal protein S14 type Z.

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

- Molecule 14 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	QO	88	734	459	147	126	2	0	0	0
14	XO	87	729	457	146	124	2	0	0	0

- Molecule 15 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	QP	84	705	446	140	118	1	0	0	0
15	XP	84	705	446	140	118	1	0	0	0

- Molecule 16 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
16	QQ	100	Total	C	N	O	S	0	0	0
			834	534	155	143	2			
16	XQ	100	Total	C	N	O	S	0	0	0
			834	534	155	143	2			

- Molecule 17 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
17	QR	70	Total	C	N	O	0	0	0
			574	367	112	95			
17	XR	70	Total	C	N	O	0	0	0
			574	367	112	95			

- Molecule 18 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
18	QS	83	Total	C	N	O	S	0	0	0
			665	424	124	115	2			
18	XS	83	Total	C	N	O	S	0	0	0
			656	418	123	113	2			

- Molecule 19 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
19	QT	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			
19	XT	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
20	QU	25	Total	C	N	O	0	0	0
			217	134	52	31			
20	XU	25	Total	C	N	O	0	0	0
			217	134	52	31			

- Molecule 21 is a RNA chain called P-site tRNA-fMet.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
21	QV	77	Total	C	N	O	P	0	0	0
			1640	732	297	535	76			
21	QW	77	Total	C	N	O	P	0	0	0
			1640	732	297	535	76			
21	XV	77	Total	C	N	O	P	0	0	0
			1640	732	297	535	76			
21	XW	77	Total	C	N	O	P	0	0	0
			1640	732	297	535	76			

- Molecule 22 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	QX	20	Total	C	N	O	P	0	0	0
			435	198	87	131	19			
22	XX	20	Total	C	N	O	P	0	0	0
			435	198	87	131	19			

- Molecule 23 is a protein called Addiction module toxin, Txe/YoeB family.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	QY	84	Total	C	N	O	S	0	0	0
			723	464	126	131	2			
23	QZ	84	Total	C	N	O	S	0	0	0
			723	464	126	131	2			
23	XY	84	Total	C	N	O	S	0	0	0
			723	464	126	131	2			
23	XZ	84	Total	C	N	O	S	0	0	0
			723	464	126	131	2			

- Molecule 24 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
24	R0	81	Total	C	N	O	S	0	0	0
			643	398	137	107	1			
24	Y0	82	Total	C	N	O	S	0	0	0
			648	401	138	108	1			

- Molecule 25 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
25	R2	69	Total	C	N	O	S	0	0	0
			581	358	118	104	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
25	Y2	69	581	358	118	104	1	0	0	0

- Molecule 26 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace	
			Total	C	N	O				
26	R3	59	469	298	90	81		0	0	0
26	Y3	59	469	298	90	81		0	0	0

- Molecule 27 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
27	R4	69	565	356	103	101	5	0	0	0
27	Y4	69	565	356	103	101	5	0	0	0

- Molecule 28 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
28	R5	59	459	288	90	76	5	0	0	0
28	Y5	59	459	288	90	76	5	0	0	0

- Molecule 29 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
29	R6	53	453	281	91	77	4	0	0	0
29	Y6	53	453	281	91	77	4	0	0	0

- Molecule 30 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
30	R7	47	409	251	102	54	2	0	0	0
30	Y7	48	418	257	104	55	2	0	0	0

- Molecule 31 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
31	R9	37	Total 307	C 188	N 68	O 47	S 4	0	0	0
31	Y9	37	Total 307	C 188	N 68	O 47	S 4	0	0	0

- Molecule 32 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
32	RA	2891	Total 62266	C 27713	N 11649	O 20014	P 2890	0	0	0
32	YA	2875	Total 61921	C 27560	N 11583	O 19904	P 2874	0	0	0

- Molecule 33 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
33	RB	120	Total 2576	C 1146	N 476	O 834	P 120	0	0	0
33	YB	120	Total 2576	C 1146	N 476	O 834	P 120	0	0	0

- Molecule 34 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
34	RD	272	Total 2115	C 1335	N 420	O 357	S 3	0	0	0
34	YD	274	Total 2135	C 1347	N 426	O 359	S 3	0	0	0

- Molecule 35 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
35	RE	205	Total 1568	C 991	N 300	O 271	S 6	0	0	0
35	YE	204	Total 1559	C 985	N 298	O 270	S 6	0	0	0

- Molecule 36 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
36	RG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			
36	YG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			

- Molecule 37 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
37	RH	174	Total	C	N	O	S	0	0	0
			1336	848	251	236	1			
37	YH	174	Total	C	N	O	S	0	0	0
			1330	845	248	236	1			

- Molecule 38 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
38	RI	146	Total	C	N	O	S	0	0	0
			1136	726	201	208	1			
38	YI	146	Total	C	N	O	S	0	0	0
			1136	726	201	208	1			

- Molecule 39 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
39	RN	138	Total	C	N	O	S	0	0	0
			1104	712	206	182	4			
39	YN	138	Total	C	N	O	S	0	0	0
			1104	712	206	182	4			

- Molecule 40 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
40	RO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			
40	YO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			

- Molecule 41 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
41	RP	150	Total	C	N	O	S	0	0	0
			1145	712	232	198	3			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
41	YP	149	1135	706	230	196	3	0	0	0

- Molecule 42 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
42	RQ	141	1122	715	212	188	7	0	0	0
42	YQ	141	1122	715	212	188	7	0	0	0

- Molecule 43 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
43	RR	117	960	599	202	159	0	0	0
43	YR	117	960	599	202	159	0	0	0

- Molecule 44 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
44	RS	111	882	556	176	150	0	0	0
44	YS	111	882	556	176	150	0	0	0

- Molecule 45 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
45	RT	137	1141	710	234	196	1	0	0	0
45	YT	137	1141	710	234	196	1	0	0	0

- Molecule 46 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
46	RU	117	964	610	202	151	1	0	0	0
46	YU	117	964	610	202	151	1	0	0	0

- Molecule 47 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
47	RV	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			
47	YV	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			

- Molecule 48 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
48	RW	113	Total	C	N	O	S	0	0	0
			900	566	177	155	2			
48	YW	113	Total	C	N	O	S	0	0	0
			900	566	177	155	2			

- Molecule 49 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
49	RX	92	Total	C	N	O	0	0	0
			725	471	131	123			
49	YX	92	Total	C	N	O	0	0	0
			725	471	131	123			

- Molecule 50 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
50	RY	107	Total	C	N	O	S	0	0	0
			818	525	155	132	6			
50	YY	107	Total	C	N	O	S	0	0	0
			818	525	155	132	6			

- Molecule 51 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
51	XL	122	Total	C	N	O	S	0	0	0
			956	603	193	159	1			
51	QL	125	Total	C	N	O	S	0	0	0
			975	614	196	164	1			

- Molecule 52 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
52	Y1	93	Total	C	N	O	S	0	0	0
			729	457	145	126	1			
52	R1	94	Total	C	N	O	S	0	0	0
			737	463	146	127	1			

- Molecule 53 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
53	Y8	64	Total	C	N	O	S	0	0	0
			517	331	102	82	2			
53	R8	64	Total	C	N	O	S	0	0	0
			517	331	102	82	2			

- Molecule 54 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
54	YF	202	Total	C	N	O	S	0	0	0
			1585	1011	297	275	2			
54	RF	202	Total	C	N	O	S	0	0	0
			1585	1011	297	275	2			

- Molecule 55 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
55	RZ	183	Total	C	N	O	S	0	0	0
			1461	933	260	265	3			
55	YZ	183	Total	C	N	O	S	0	0	0
			1461	933	260	265	3			

- Molecule 56 is a RNA chain called CCPuro.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
56	ZA	3	Total	C	N	O	P	0	0	0
			74	40	13	19	2			
56	ZB	3	Total	C	N	O	P	0	0	0
			74	40	13	19	2			

- Molecule 57 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
57	QA	94	Total	Mg	0	0
			94	94		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
57	QD	2	Total 2	Mg 2	0	0
57	QE	1	Total 1	Mg 1	0	0
57	QF	1	Total 1	Mg 1	0	0
57	QV	3	Total 3	Mg 3	0	0
57	QX	1	Total 1	Mg 1	0	0
57	R0	1	Total 1	Mg 1	0	0
57	RA	302	Total 302	Mg 302	0	0
57	RB	3	Total 3	Mg 3	0	0
57	RD	1	Total 1	Mg 1	0	0
57	RE	1	Total 1	Mg 1	0	0
57	RN	1	Total 1	Mg 1	0	0
57	RO	1	Total 1	Mg 1	0	0
57	RP	2	Total 2	Mg 2	0	0
57	RQ	2	Total 2	Mg 2	0	0
57	RR	2	Total 2	Mg 2	0	0
57	RY	1	Total 1	Mg 1	0	0
57	XA	116	Total 116	Mg 116	0	0
57	XD	1	Total 1	Mg 1	0	0
57	XE	1	Total 1	Mg 1	0	0
57	XF	1	Total 1	Mg 1	0	0
57	XL	1	Total 1	Mg 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
57	XM	1	Total Mg 1 1	0	0
57	XV	3	Total Mg 3 3	0	0
57	Y0	2	Total Mg 2 2	0	0
57	Y3	1	Total Mg 1 1	0	0
57	Y9	1	Total Mg 1 1	0	0
57	YA	326	Total Mg 326 326	0	0
57	YB	5	Total Mg 5 5	0	0
57	YF	1	Total Mg 1 1	0	0
57	YG	1	Total Mg 1 1	0	0
57	YO	1	Total Mg 1 1	0	0
57	YD	5	Total Mg 5 5	0	0
57	YQ	3	Total Mg 3 3	0	0
57	YV	1	Total Mg 1 1	0	0
57	YE	5	Total Mg 5 5	0	0
57	R8	1	Total Mg 1 1	0	0

- Molecule 58 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
58	QD	1	Total	Fe S	0	0
			8	4 4		
58	XD	1	Total	Fe S	0	0
			8	4 4		

- Molecule 59 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
59	QN	1	Total	Zn	0	0
			1	1		
59	R4	1	Total	Zn	0	0
			1	1		
59	R5	1	Total	Zn	0	0
			1	1		
59	R6	1	Total	Zn	0	0
			1	1		
59	R9	1	Total	Zn	0	0
			1	1		
59	XN	1	Total	Zn	0	0
			1	1		
59	Y4	1	Total	Zn	0	0
			1	1		
59	Y6	1	Total	Zn	0	0
			1	1		

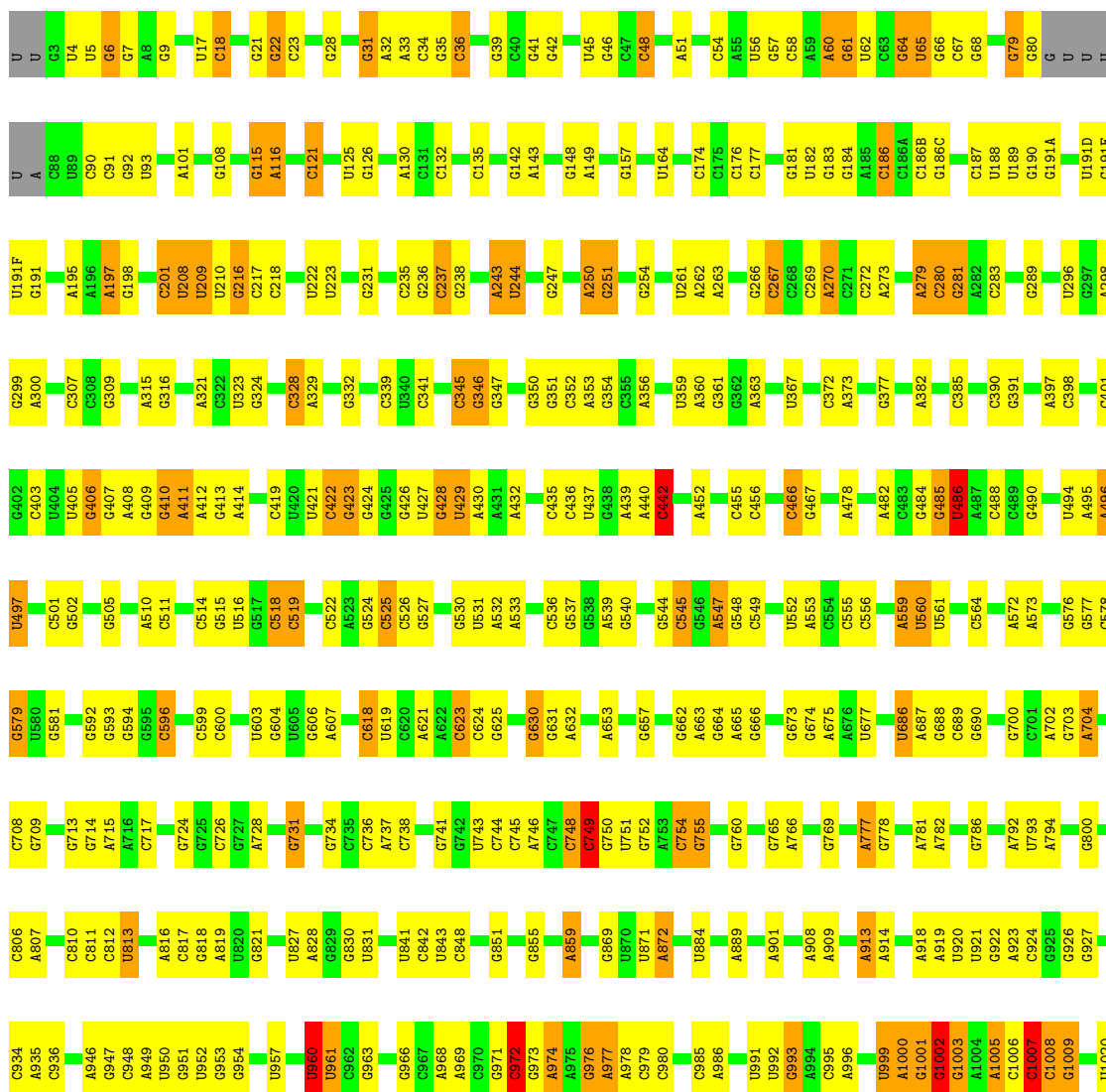
3 Residue-property plots [i](#)

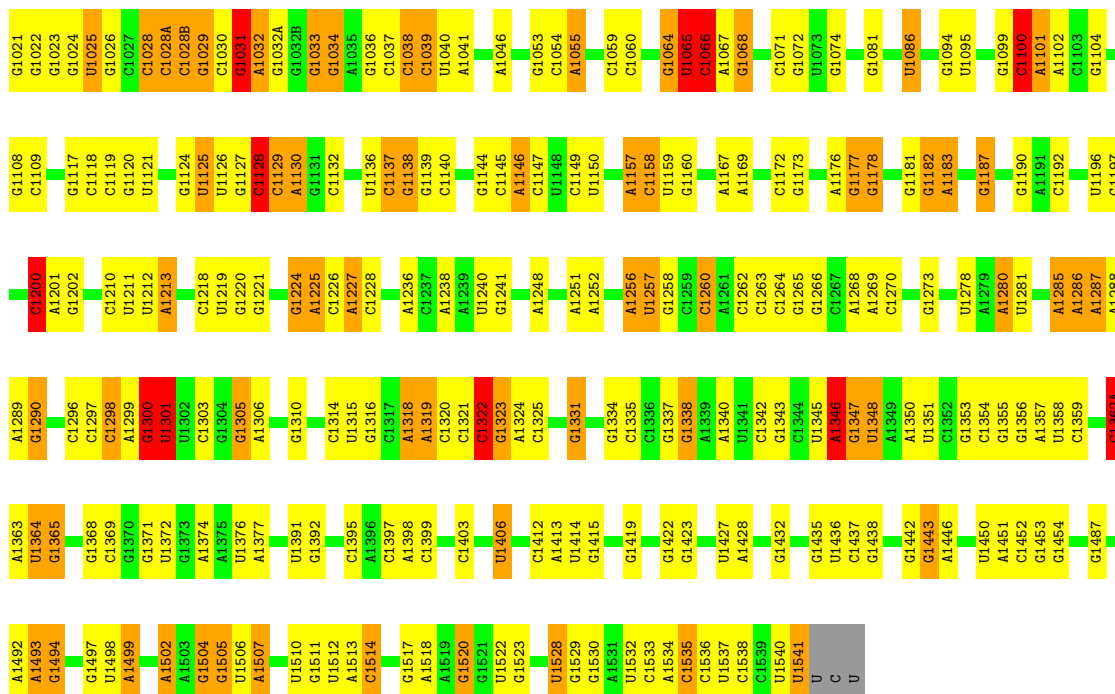
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS failed to run properly.

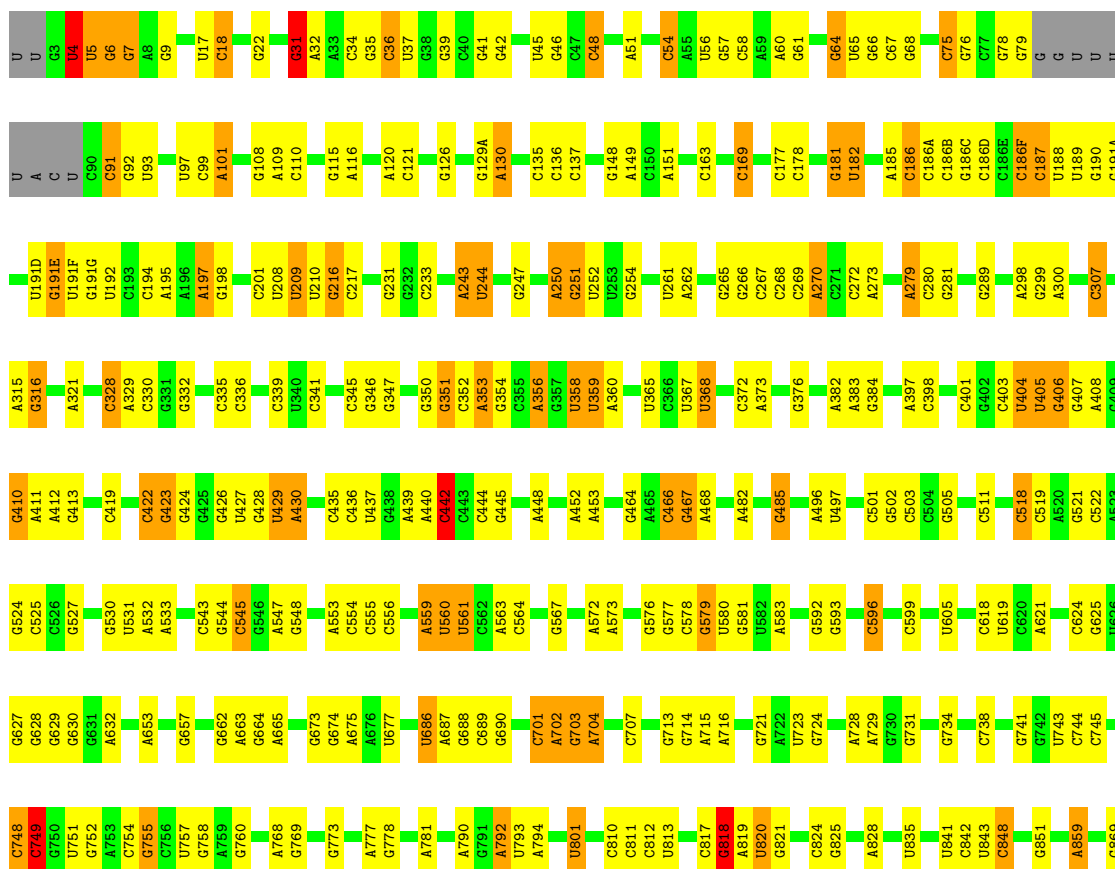
- Molecule 1: 16S rRNA

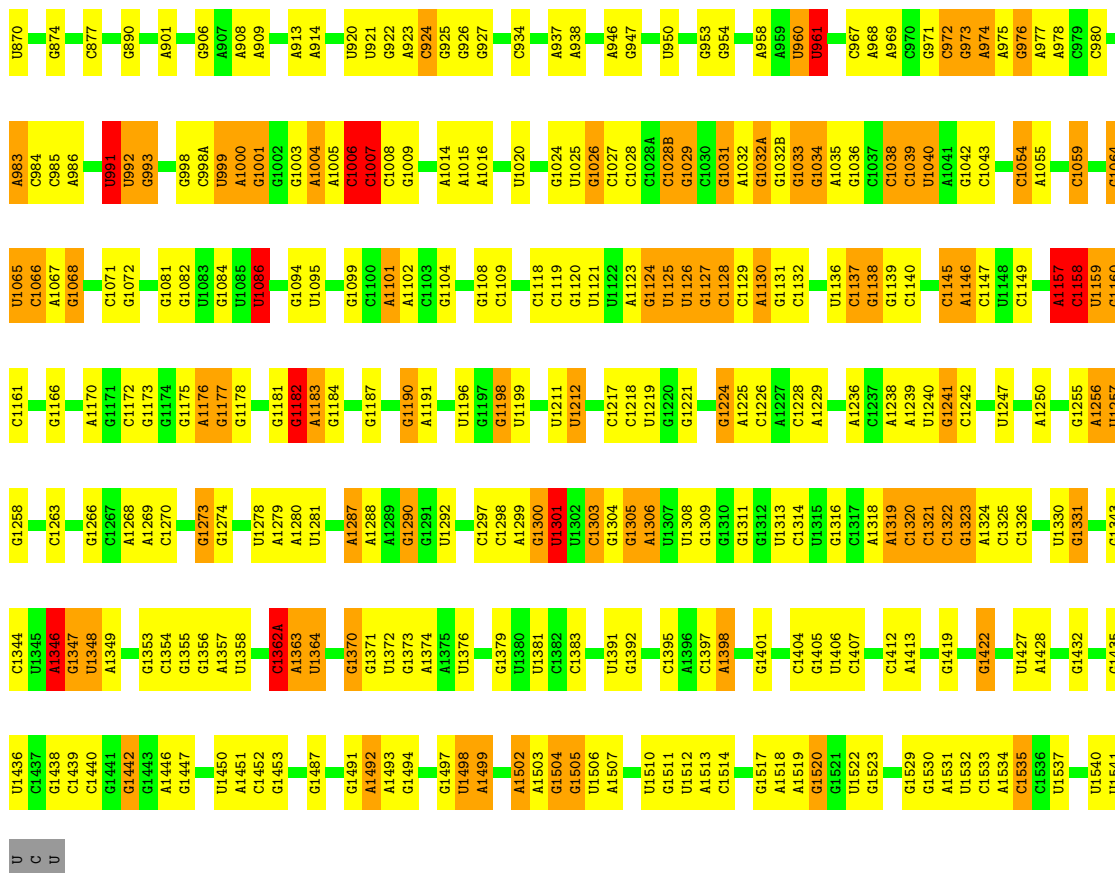
Chain QA:  56% 33% 9% ..



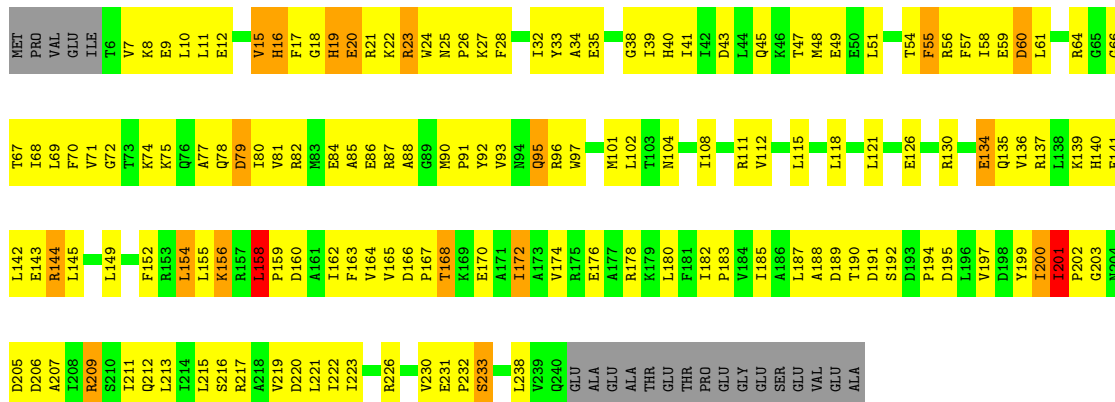
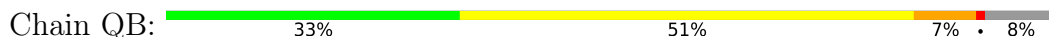


• Molecule 1: 16S rRNA

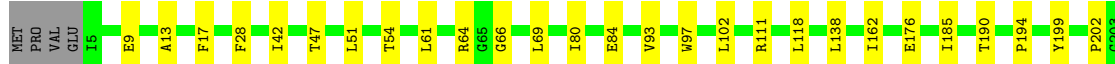
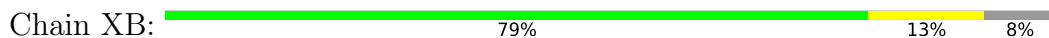


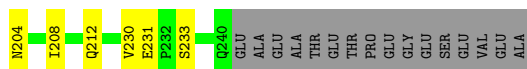


• Molecule 2: 30S ribosomal protein S2

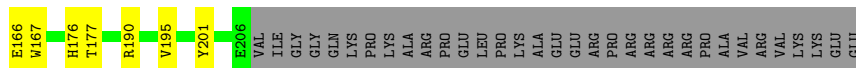


• Molecule 2: 30S ribosomal protein S2

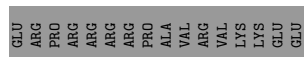
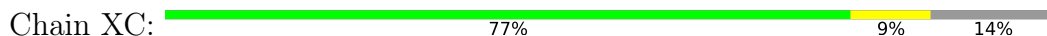




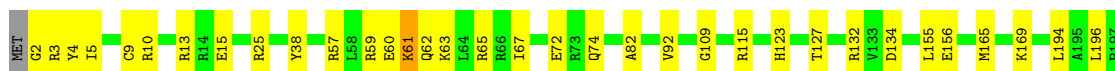
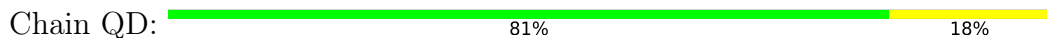
- Molecule 3: 30S ribosomal protein S3



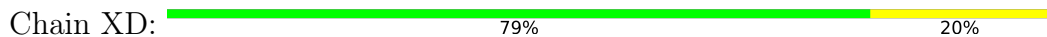
- Molecule 3: 30S ribosomal protein S3



- Molecule 4: 30S ribosomal protein S4




- Molecule 4: 30S ribosomal protein S4



- Molecule 5: 30S ribosomal protein S5




- Molecule 5: 30S ribosomal protein S5

Chain XE:  81% 12% 7%




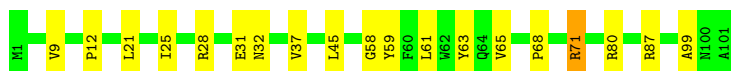
- Molecule 6: 30S ribosomal protein S6

Chain QF:  88% 12%



- Molecule 6: 30S ribosomal protein S6

Chain XF:  81% 18%




- Molecule 7: 30S ribosomal protein S7

Chain QG:  90% 10%




- Molecule 7: 30S ribosomal protein S7

Chain XG:  88% 12%




- Molecule 8: 30S ribosomal protein S8

Chain QH:  81% 17%




- Molecule 8: 30S ribosomal protein S8

Chain XH:  80% 20%




- Molecule 9: 30S ribosomal protein S9

Chain QI:  74% 25%




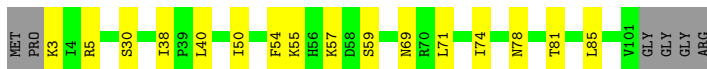
- Molecule 9: 30S ribosomal protein S9

Chain XI:  78% 20%



- Molecule 10: 30S ribosomal protein S10

Chain QJ:  79% 15% 6%




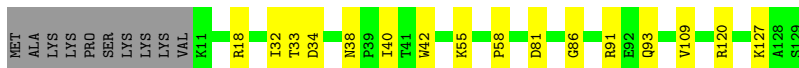
- Molecule 10: 30S ribosomal protein S10

Chain XJ:  65% 27% 9%




- Molecule 11: 30S ribosomal protein S11

Chain QK:  80% 12% 8%




- Molecule 11: 30S ribosomal protein S11

Chain XK:  77% 13% 10%




- Molecule 12: 30S ribosomal protein S13

Chain QM:  71% 21% 5%




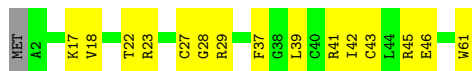
- Molecule 12: 30S ribosomal protein S13

Chain XM:  79% 15% 6%




- Molecule 13: 30S ribosomal protein S14 type Z

Chain QN:  74% 25% .



- Molecule 13: 30S ribosomal protein S14 type Z

Chain XN:  87% 11% .




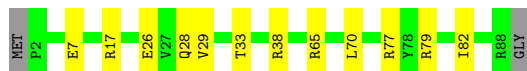
- Molecule 14: 30S ribosomal protein S15

Chain QO:  89% 10% .




- Molecule 14: 30S ribosomal protein S15

Chain XO:  84% 13% .




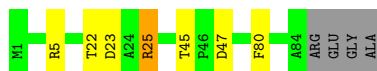
- Molecule 15: 30S ribosomal protein S16

Chain QP:  88% 8% 5%




- Molecule 15: 30S ribosomal protein S16

Chain XP:  88% 7% 5%




- Molecule 16: 30S ribosomal protein S17

Chain QQ:  83% 12% 5%




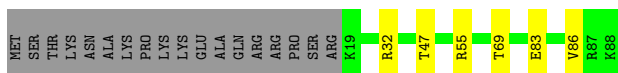
- Molecule 16: 30S ribosomal protein S17

Chain XQ:  84% 11% 5%




- Molecule 17: 30S ribosomal protein S18

Chain QR:  73% 7% 20%



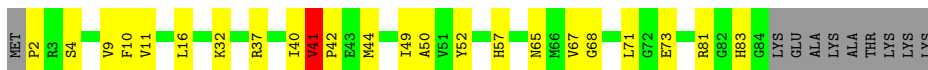
- Molecule 17: 30S ribosomal protein S18

Chain XR:  74% 6% 20%



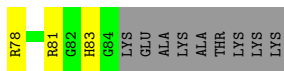
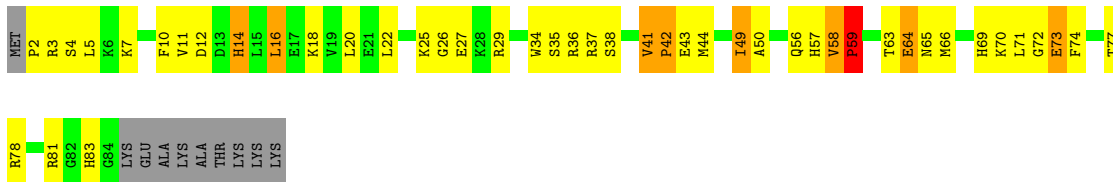
- Molecule 18: 30S ribosomal protein S19

Chain QS:  65% 24% 11%




- Molecule 18: 30S ribosomal protein S19

Chain XS:  40% 40% 9% 11%

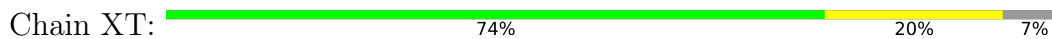


- Molecule 19: 30S ribosomal protein S20

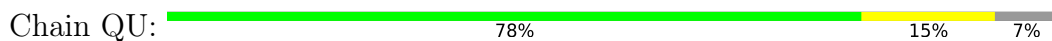
Chain QT:  85% 8% 7%



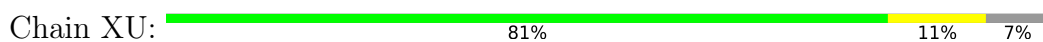
- Molecule 19: 30S ribosomal protein S20



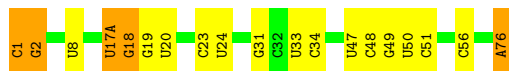
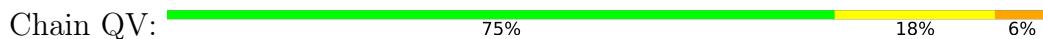
- Molecule 20: 30S ribosomal protein Thx



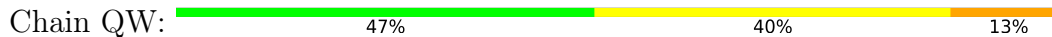
- Molecule 20: 30S ribosomal protein Thx



- Molecule 21: P-site tRNA-fMet



- Molecule 21: P-site tRNA-fMet



- Molecule 21: P-site tRNA-fMet

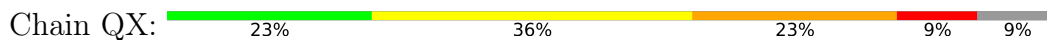


- Molecule 21: P-site tRNA-fMet

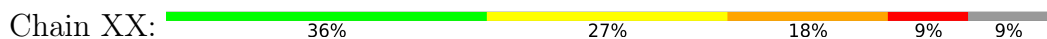




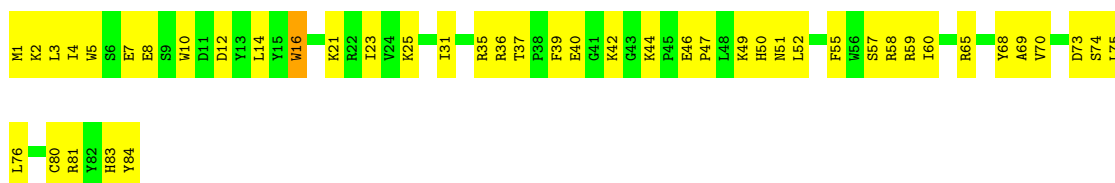
- Molecule 22: mRNA



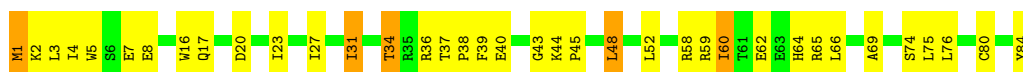
- Molecule 22: mRNA



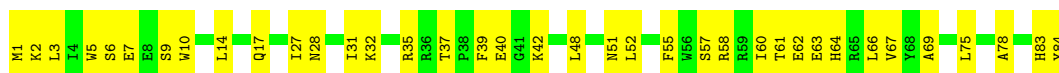
- Molecule 23: Addiction module toxin, Txe/YoeB family



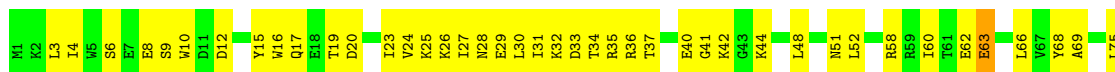
- Molecule 23: Addiction module toxin, Txe/YoeB family



- Molecule 23: Addiction module toxin, Txe/YoeB family

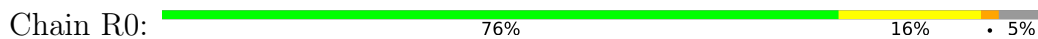


- Molecule 23: Addiction module toxin, Txe/YoeB family

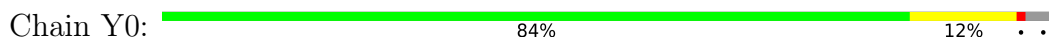




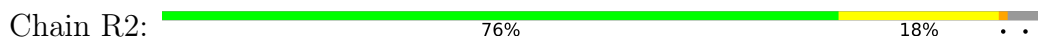
- Molecule 24: 50S ribosomal protein L27



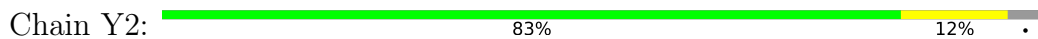
- Molecule 24: 50S ribosomal protein L27



- Molecule 25: 50S ribosomal protein L29



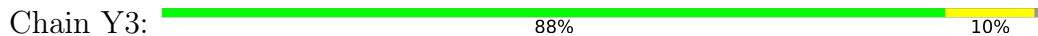
- Molecule 25: 50S ribosomal protein L29



- Molecule 26: 50S ribosomal protein L30

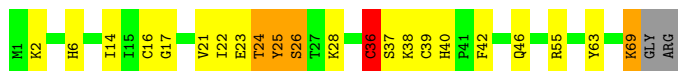


- Molecule 26: 50S ribosomal protein L30



- Molecule 27: 50S ribosomal protein L31

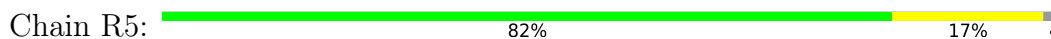




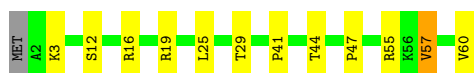
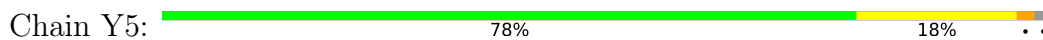
- Molecule 27: 50S ribosomal protein L31



- Molecule 28: 50S ribosomal protein L32



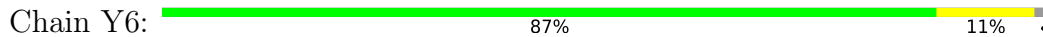
- Molecule 28: 50S ribosomal protein L32



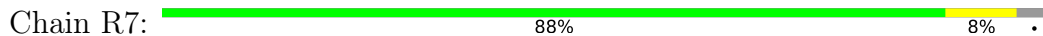
- Molecule 29: 50S ribosomal protein L33



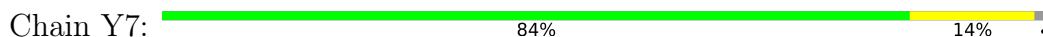
- Molecule 29: 50S ribosomal protein L33



- Molecule 30: 50S ribosomal protein L34

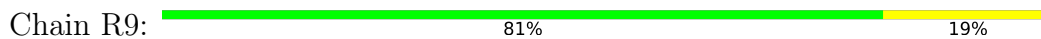


- Molecule 30: 50S ribosomal protein L34

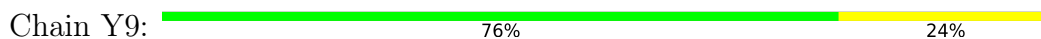




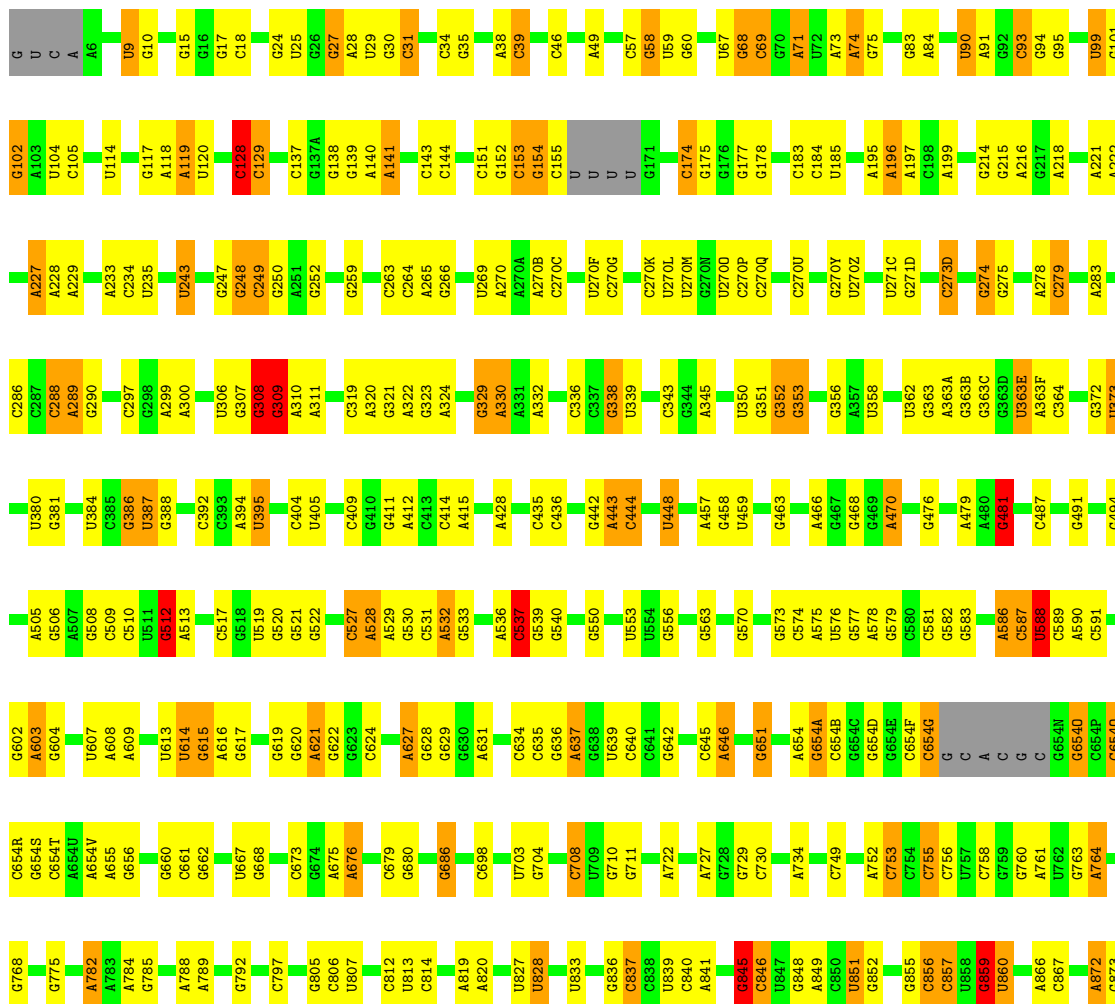
• Molecule 31: 50S ribosomal protein L36



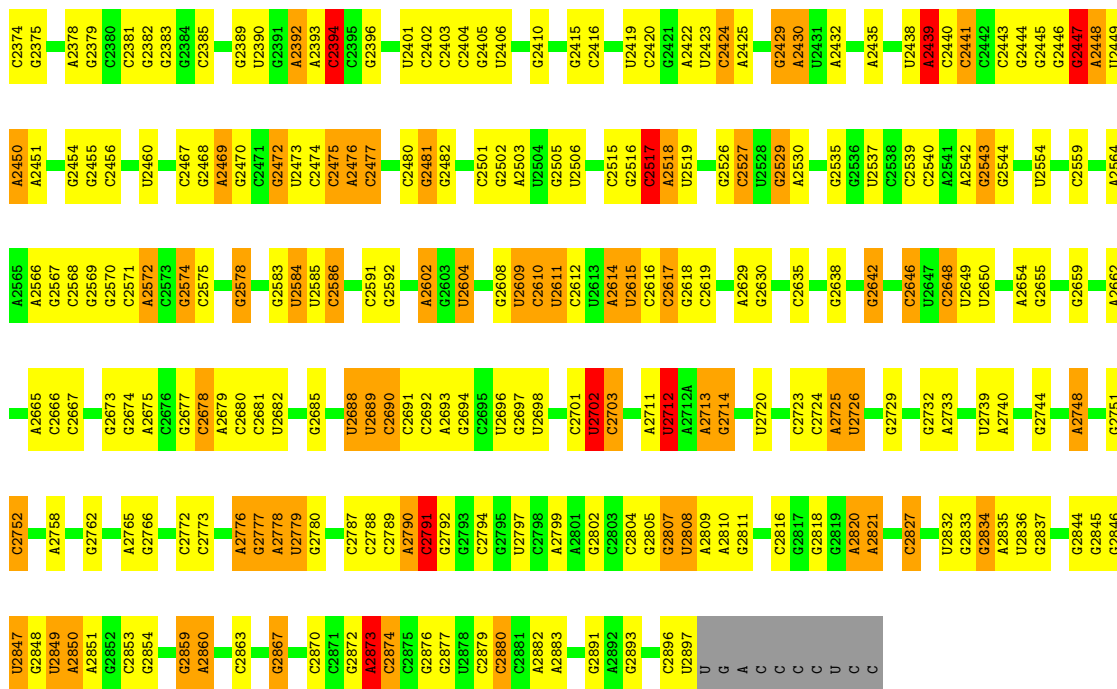
• Molecule 31: 50S ribosomal protein L36



• Molecule 32: 23S rRNA

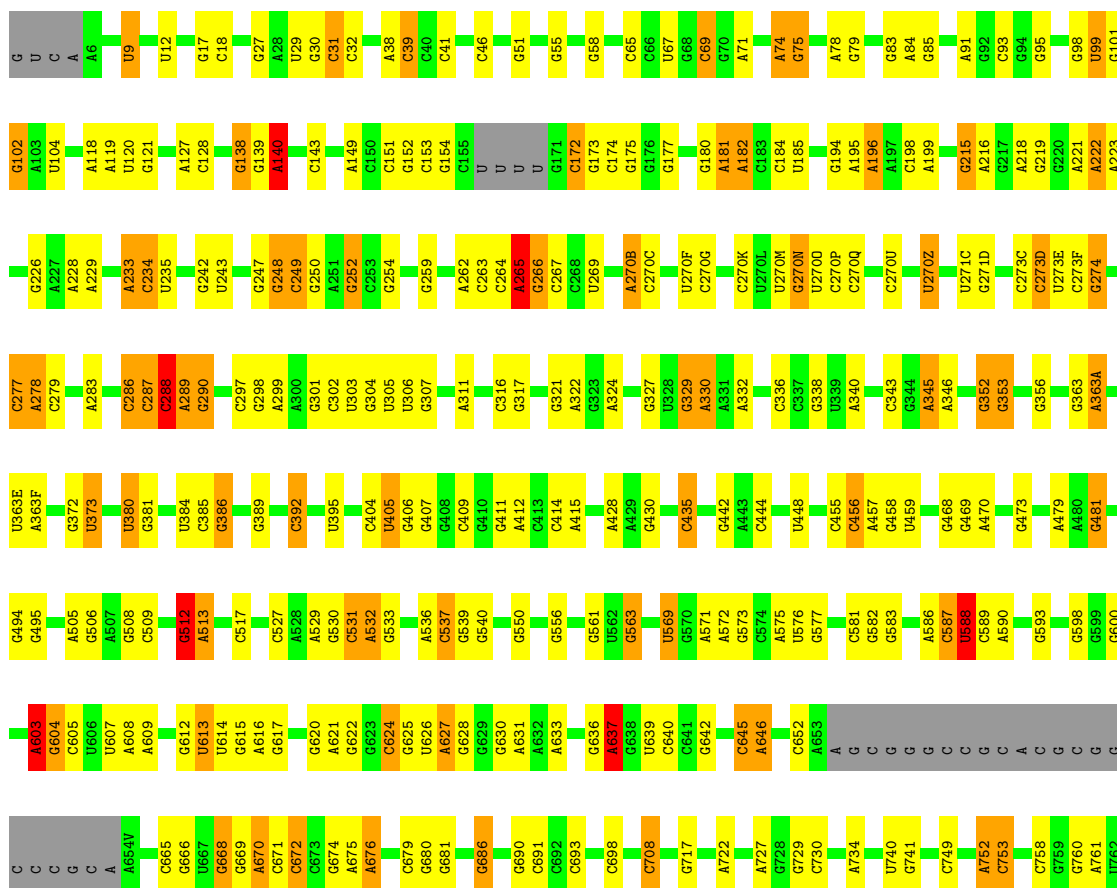


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A2287	G1071	C1179	A1394	U1394	A1490	C1588	A1804	U1689	G2027	U2113	C2185	A2287
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A2298	G987	G1188	A1301	C1408	C1509	U1602	G1824	A1937	C2039	G2124	G2192	A2298
G2304	G989	G1189	A1302	C1409	C1509	A1603	G1824	A1938	C2040	G2125	U2197	G2304
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G2325	A1010	A1220	G1319	C1437	C1534	G1636	G1756	U1964	A2060	C2145	C2226	A2320
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G2365	G1034	U1255	G1157	G1474	G1560	G1666	G1889	G2002	U2092	G2168	G2270	G2365
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G2375	A1045	G1256	U1159	G1476	A1567	G1668	A1901	C2006	G2093	A2170	A2267	G2375
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A2385	G1170	A1265	A1265	A1479	A1571	G1674	G1906	A2019	C2103	G2175	G2271	A2385
G2387	G1171	G1266	G1385	G1480	A1572	U1679	C1909	A2020	G2104	A2176	A2271	G2387
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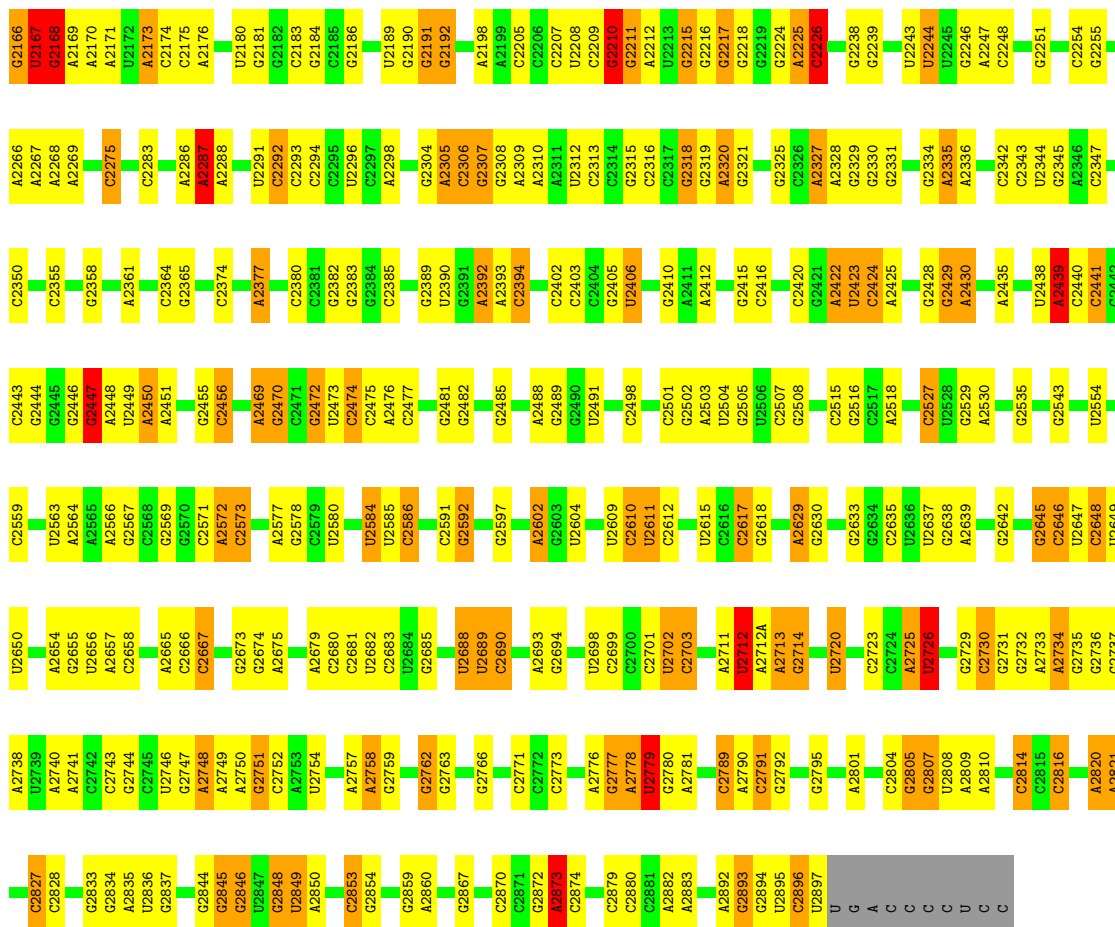


● Molecule 32: 23S rRNA

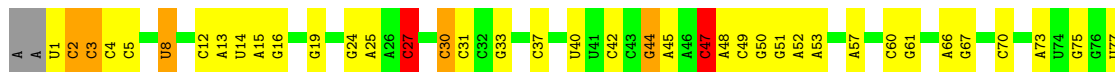
Chain YA: 



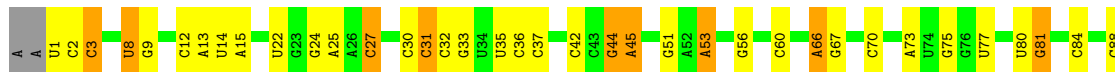
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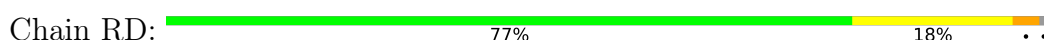
• Molecule 33: 5S rRNA

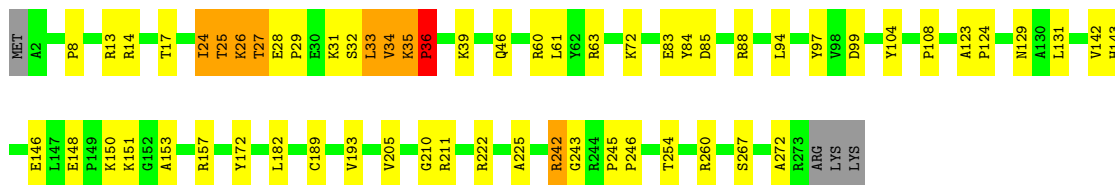


• Molecule 33: 5S rRNA

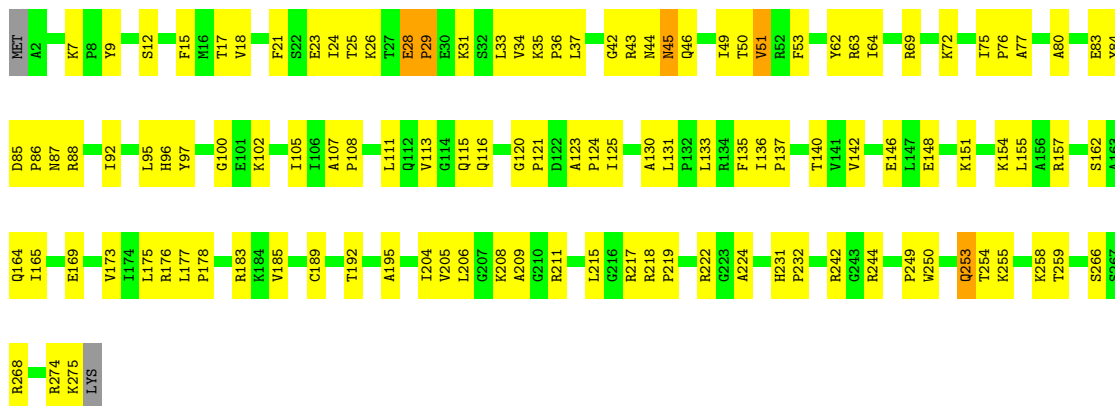


• Molecule 34: 50S ribosomal protein L2

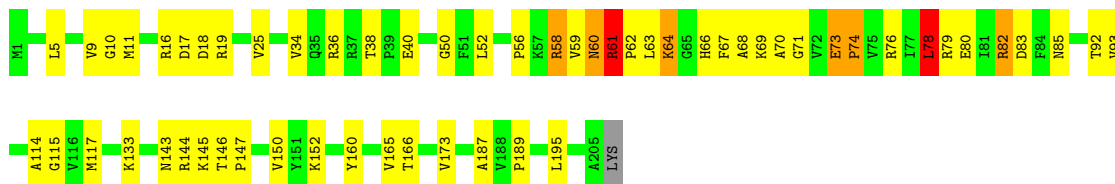




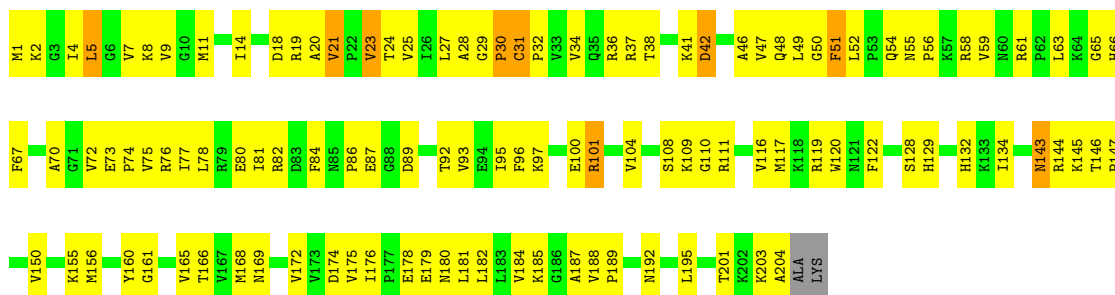
- Molecule 34: 50S ribosomal protein L2



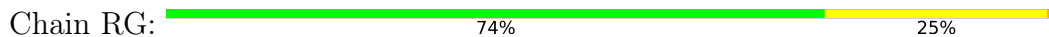
- Molecule 35: 50S ribosomal protein L3



- Molecule 35: 50S ribosomal protein L3



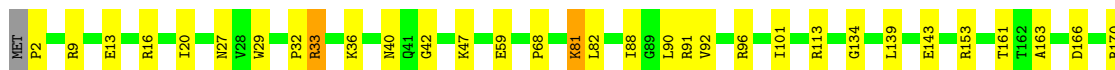
- Molecule 36: 50S ribosomal protein L5





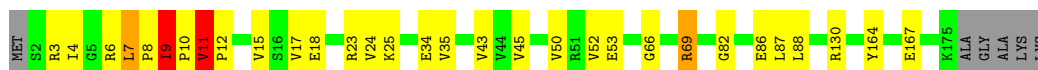
- Molecule 36: 50S ribosomal protein L5

Chain YG: 81% 18% ..



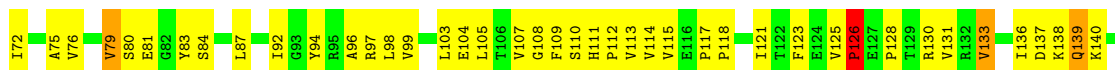
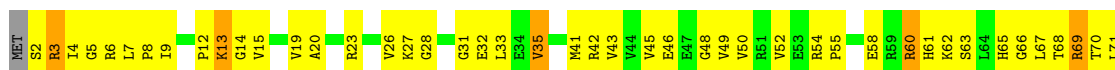
- Molecule 37: 50S ribosomal protein L6

Chain RH: 79% 15% ..



- Molecule 37: 50S ribosomal protein L6

Chain YH: 37% 54% ..



- Molecule 38: 50S ribosomal protein L9

Chain RI: 70% 27% ..



- Molecule 38: 50S ribosomal protein L9

Chain YI: 89% 9% ..



- Molecule 39: 50S ribosomal protein L13

Chain RN: 84% 14% ..



- Molecule 39: 50S ribosomal protein L13

Chain YN: 86% 12% ..



- Molecule 40: 50S ribosomal protein L14

Chain RO: 85% 15% ..



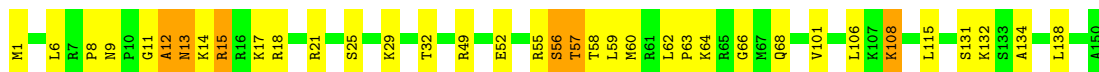
- Molecule 40: 50S ribosomal protein L14

Chain YO: 83% 17% ..



- Molecule 41: 50S ribosomal protein L15

Chain RP: 76% 20% .




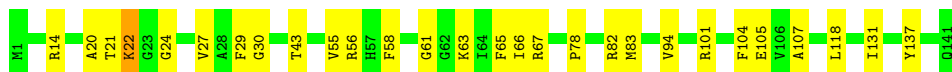
- Molecule 41: 50S ribosomal protein L15

Chain YP: 43% 48% 8% .



- Molecule 42: 50S ribosomal protein L16

Chain RQ:  80% 19%



- Molecule 42: 50S ribosomal protein L16

Chain YQ:  40% 55% 5%



- Molecule 43: 50S ribosomal protein L17

Chain RR:  87% 11%




- Molecule 43: 50S ribosomal protein L17

Chain YR:  90% 9%




- Molecule 44: 50S ribosomal protein L18

Chain RS:  84% 15%



- Molecule 44: 50S ribosomal protein L18

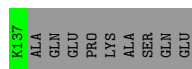
Chain YS:  76% 21%



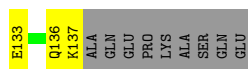
- Molecule 45: 50S ribosomal protein L19

Chain RT:  71% 22% 6%

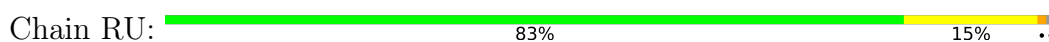




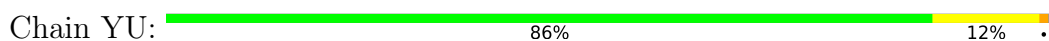
- Molecule 45: 50S ribosomal protein L19



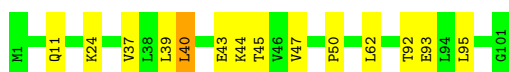
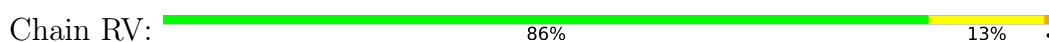
- Molecule 46: 50S ribosomal protein L20



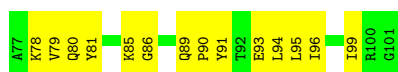
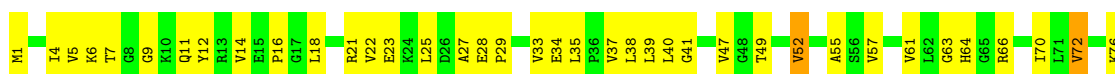
- Molecule 46: 50S ribosomal protein L20



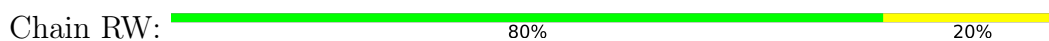
- Molecule 47: 50S ribosomal protein L21



- Molecule 47: 50S ribosomal protein L21

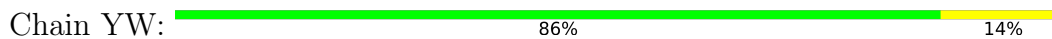


- Molecule 48: 50S ribosomal protein L22

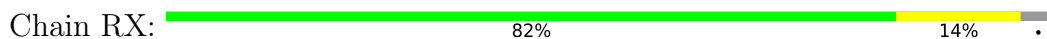




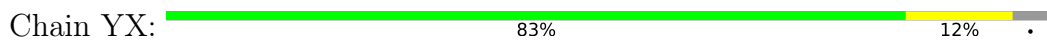
- Molecule 48: 50S ribosomal protein L22



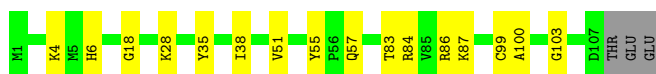
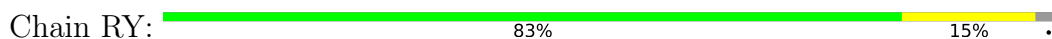
- Molecule 49: 50S ribosomal protein L23



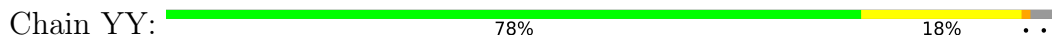
- Molecule 49: 50S ribosomal protein L23



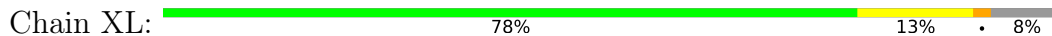
- Molecule 50: 50S ribosomal protein L24



- Molecule 50: 50S ribosomal protein L24

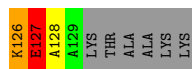
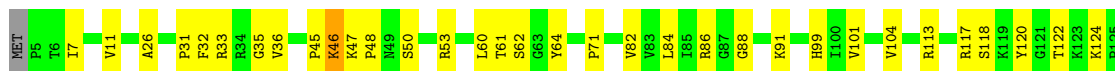


- Molecule 51: 30S ribosomal protein S12

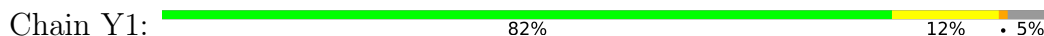


- Molecule 51: 30S ribosomal protein S12

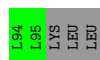
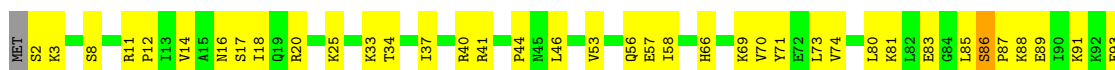




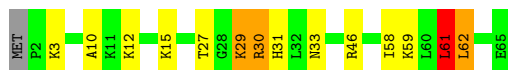
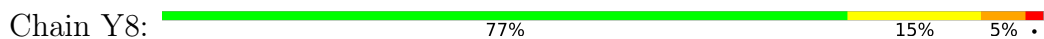
• Molecule 52: 50S ribosomal protein L28



• Molecule 52: 50S ribosomal protein L28



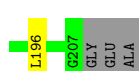
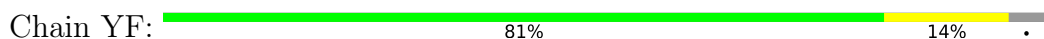
• Molecule 53: 50S ribosomal protein L35



• Molecule 53: 50S ribosomal protein L35

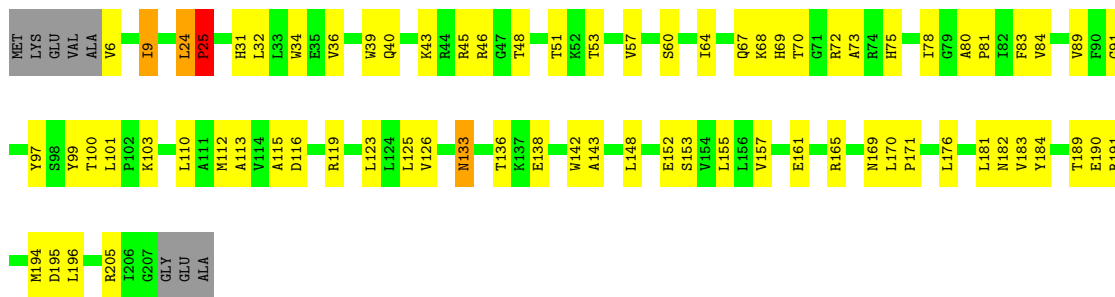


• Molecule 54: 50S ribosomal protein L4

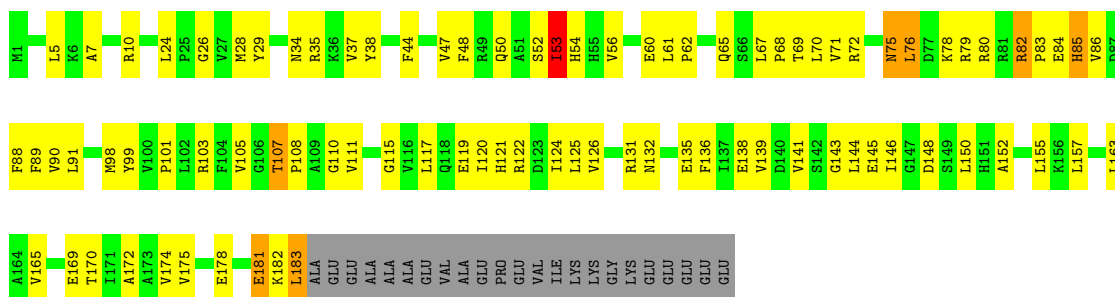


• Molecule 54: 50S ribosomal protein L4

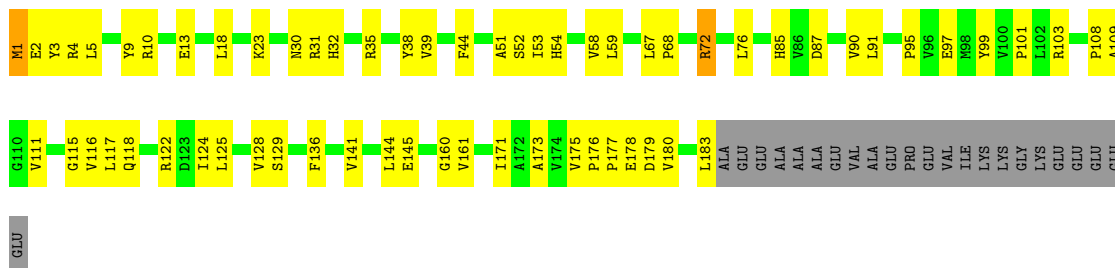




• Molecule 55: 50S ribosomal protein L25



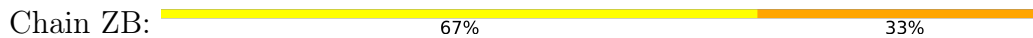
• Molecule 55: 50S ribosomal protein L25



• Molecule 56: CCPuro



• Molecule 56: CCPuro



4 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	212.79Å 453.08Å 608.93Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	146.59 – 3.25	Depositor
% Data completeness (in resolution range)	93.4 (146.59-3.25)	Depositor
R_{merge}	0.23	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.56 (at 3.19Å)	Xtrriage
Refinement program	PHENIX 1.15.2_3472	Depositor
R, R_{free}	0.229 , 0.256	Depositor
Wilson B-factor (Å ²)	60.8	Xtrriage
Anisotropy	0.347	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.43$, $\langle L^2 \rangle = 0.25$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	298432	wwPDB-VP
Average B, all atoms (Å ²)	88.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.35% 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: A2M, ZN, MG, OMU, PPU, SF4

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	QA	0.44	0/36324	1.10	168/56690 (0.3%)
1	XA	0.46	2/36254 (0.0%)	1.08	154/56581 (0.3%)
2	QB	0.72	3/1942 (0.2%)	0.75	1/2619 (0.0%)
2	XB	0.37	0/1950	0.61	0/2630
3	QC	0.32	0/1629	0.56	0/2195
3	XC	0.31	0/1629	0.55	0/2195
4	QD	0.34	0/1733	0.57	0/2318
4	XD	0.35	0/1733	0.56	0/2318
5	QE	0.30	0/1171	0.55	0/1576
5	XE	0.33	0/1171	0.58	0/1576
6	QF	0.34	0/856	0.56	0/1154
6	XF	0.30	0/856	0.56	0/1154
7	QG	0.31	0/1276	0.52	0/1709
7	XG	0.34	0/1276	0.52	0/1709
8	QH	0.54	2/1128 (0.2%)	0.62	1/1517 (0.1%)
8	XH	0.34	0/1128	0.54	0/1517
9	QI	0.37	0/1029	0.68	0/1379
9	XI	0.36	0/1017	0.64	0/1365
10	QJ	0.33	0/814	0.59	0/1095
10	XJ	0.36	0/790	0.64	0/1063
11	QK	0.31	0/900	0.55	0/1213
11	XK	0.32	0/879	0.56	0/1187
12	QM	0.39	0/965	0.69	0/1292
12	XM	0.34	0/956	0.68	0/1281
13	QN	0.38	0/501	0.64	0/664
13	XN	0.35	0/501	0.61	0/664
14	QO	0.29	0/745	0.52	0/992
14	XO	0.30	0/740	0.50	0/987
15	QP	0.31	0/721	0.57	0/970
15	XP	0.32	0/721	0.58	0/970
16	QQ	0.30	0/847	0.53	0/1131
16	XQ	0.32	0/847	0.57	1/1131 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
17	QR	0.29	0/579	0.58	0/768
17	XR	0.31	0/579	0.56	0/768
18	QS	0.37	0/680	0.65	0/915
18	XS	1.02	4/671 (0.6%)	0.84	2/904 (0.2%)
19	QT	0.30	0/765	0.58	0/1007
19	XT	0.31	0/765	0.59	0/1007
20	QU	0.25	0/221	0.56	0/288
20	XU	0.28	0/221	0.66	0/288
21	QV	0.38	0/1832	1.02	2/2855 (0.1%)
21	QW	0.31	0/1832	1.07	8/2855 (0.3%)
21	XV	0.40	0/1832	1.05	5/2855 (0.2%)
21	XW	0.33	0/1832	1.10	6/2855 (0.2%)
22	QX	0.41	0/414	0.89	0/645
22	XX	0.35	0/414	0.91	0/645
23	QY	0.60	0/743	0.67	0/1002
23	QZ	0.60	0/743	0.69	0/1002
23	XY	0.59	0/743	0.72	0/1002
23	XZ	0.60	0/743	0.60	0/1002
24	R0	0.36	0/652	0.68	1/867 (0.1%)
24	Y0	0.40	0/657	0.66	2/874 (0.2%)
25	R2	0.31	0/583	0.61	0/771
25	Y2	0.36	0/583	0.64	0/771
26	R3	0.31	0/474	0.54	0/635
26	Y3	0.33	0/474	0.56	0/635
27	R4	0.54	1/578 (0.2%)	1.01	5/776 (0.6%)
27	Y4	0.36	0/578	0.71	0/776
28	R5	0.34	0/473	0.55	0/639
28	Y5	0.38	0/473	0.56	0/639
29	R6	0.30	0/460	0.55	0/613
29	Y6	0.30	0/460	0.53	0/613
30	R7	0.30	0/417	0.53	0/550
30	Y7	0.30	0/426	0.53	0/561
31	R9	0.32	0/310	0.55	0/407
31	Y9	0.27	0/310	0.54	0/407
32	RA	0.51	2/69739 (0.0%)	1.15	477/108870 (0.4%)
32	YA	0.52	1/69353 (0.0%)	1.13	428/108267 (0.4%)
33	RB	0.46	0/2881	1.16	18/4494 (0.4%)
33	YB	0.51	1/2881 (0.0%)	1.16	23/4494 (0.5%)
34	RD	0.40	1/2165 (0.0%)	0.74	6/2919 (0.2%)
34	YD	0.67	2/2185 (0.1%)	0.81	2/2944 (0.1%)
35	RE	0.40	0/1601	0.78	3/2160 (0.1%)
35	YE	0.64	1/1592 (0.1%)	0.83	1/2149 (0.0%)
36	RG	0.37	0/1499	0.66	0/2016

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
36	YG	0.33	0/1499	0.65	0/2016
37	RH	0.46	1/1362 (0.1%)	0.74	2/1841 (0.1%)
37	YH	0.64	0/1356	0.80	1/1834 (0.1%)
38	RI	0.55	1/1151 (0.1%)	0.91	6/1558 (0.4%)
38	YI	0.33	0/1151	0.69	1/1558 (0.1%)
39	RN	0.33	0/1131	0.67	2/1525 (0.1%)
39	YN	0.32	0/1131	0.66	2/1525 (0.1%)
40	RO	0.34	0/943	0.56	0/1269
40	YO	0.34	0/943	0.57	0/1269
41	RP	0.39	0/1162	0.80	1/1544 (0.1%)
41	YP	0.61	0/1152	0.71	0/1533
42	RQ	0.37	0/1143	0.67	0/1527
42	YQ	0.61	0/1143	0.75	0/1527
43	RR	0.32	0/974	0.62	1/1302 (0.1%)
43	YR	0.30	0/974	0.61	0/1302
44	RS	0.36	0/892	0.69	0/1187
44	YS	0.35	0/892	0.73	2/1187 (0.2%)
45	RT	0.32	0/1155	0.67	0/1542
45	YT	0.35	0/1155	0.71	2/1542 (0.1%)
46	RU	0.36	0/982	0.56	0/1306
46	YU	0.34	0/982	0.58	0/1306
47	RV	0.39	0/790	0.74	0/1057
47	YV	0.62	0/790	0.87	1/1057 (0.1%)
48	RW	0.31	0/911	0.56	0/1220
48	YW	0.33	0/911	0.56	0/1220
49	RX	0.34	0/739	0.54	0/993
49	YX	0.33	0/739	0.55	0/993
50	RY	0.38	0/831	0.62	1/1108 (0.1%)
50	YY	0.33	0/831	0.56	0/1108
51	QL	0.29	0/991	0.55	0/1327
51	XL	0.35	0/972	0.64	1/1301 (0.1%)
52	R1	0.39	0/744	0.55	0/989
52	Y1	0.42	0/736	0.59	0/978
53	R8	0.52	0/525	0.58	0/691
53	Y8	0.42	0/525	0.92	4/691 (0.6%)
54	RF	0.48	2/1620 (0.1%)	0.54	1/2194 (0.0%)
54	YF	0.39	0/1620	0.60	0/2194
55	RZ	0.53	2/1493 (0.1%)	0.65	0/2026
55	YZ	0.36	0/1493	0.52	0/2026
56	ZA	1.50	1/40 (2.5%)	0.89	0/60
56	ZB	0.27	0/40	0.53	0/60
All	All	0.47	27/323056 (0.0%)	1.01	1342/482845 (0.3%)

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
2	QB	0	1
24	Y0	0	1
32	YA	0	1
37	YH	0	1
41	RP	0	1
51	QL	0	1
53	R8	0	1
All	All	0	7

The worst 5 of 27 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	YD	29	PRO	N-CA	13.69	1.70	1.47
18	XS	42	PRO	N-CA	13.61	1.70	1.47
18	XS	59	PRO	N-CA	13.52	1.70	1.47
54	RF	25	PRO	N-CA	13.16	1.69	1.47
38	RI	142	VAL	N-CA	-13.01	1.20	1.46

The worst 5 of 1342 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
32	RA	309	G	O5'-P-OP2	-24.58	81.20	110.70
32	RA	2614	A	C6-N1-C2	-16.89	108.46	118.60
32	RA	2053	G	C5-N7-C8	-16.23	96.18	104.30
32	RA	308	G	OP2-P-O3'	-14.86	72.52	105.20
32	RA	2053	G	C4-C5-N7	14.51	116.61	110.80

There are no chirality outliers.

5 of 7 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	QB	12	GLU	Mainchain
41	RP	11	GLY	Mainchain
24	Y0	8	GLY	Mainchain
32	YA	1162	G	Sidechain
37	YH	13	LYS	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	QA	32452	0	16381	373	0
1	XA	32389	0	16350	345	0
2	QB	1907	0	1958	287	0
2	XB	1915	0	1969	18	0
3	QC	1605	0	1668	24	0
3	XC	1605	0	1668	13	0
4	QD	1703	0	1763	29	0
4	XD	1703	0	1763	37	0
5	QE	1155	0	1213	8	0
5	XE	1155	0	1213	10	0
6	QF	843	0	857	6	0
6	XF	843	0	857	12	0
7	QG	1257	0	1296	9	0
7	XG	1257	0	1296	13	0
8	QH	1108	0	1165	16	0
8	XH	1108	0	1165	16	0
9	QI	1010	0	1037	24	0
9	XI	998	0	1024	20	0
10	QJ	801	0	849	13	0
10	XJ	777	0	816	21	0
11	QK	885	0	904	11	0
11	XK	864	0	881	11	0
12	QM	955	0	1021	22	0
12	XM	946	0	1008	15	0
13	QN	492	0	529	11	0
13	XN	492	0	529	4	0
14	QO	734	0	771	8	0
14	XO	729	0	768	7	0
15	QP	705	0	725	4	0
15	XP	705	0	725	5	0
16	QQ	834	0	904	10	0
16	XQ	834	0	904	7	0
17	QR	574	0	644	4	0
17	XR	574	0	644	4	0
18	QS	665	0	686	44	0
18	XS	656	0	666	73	0
19	QT	763	0	861	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	XT	763	0	861	18	0
20	QU	217	0	234	4	0
20	XU	217	0	234	1	0
21	QV	1640	0	837	11	0
21	QW	1640	0	837	28	0
21	XV	1640	0	837	15	0
21	XW	1640	0	837	22	0
22	QX	435	0	225	19	0
22	XX	435	0	225	12	0
23	QY	723	0	713	91	0
23	QZ	723	0	713	104	0
23	XY	723	0	713	59	0
23	XZ	723	0	713	81	0
24	R0	643	0	667	9	0
24	Y0	648	0	672	15	0
25	R2	581	0	629	11	0
25	Y2	581	0	629	5	0
26	R3	469	0	518	2	0
26	Y3	469	0	518	5	0
27	R4	565	0	559	15	0
27	Y4	565	0	557	10	0
28	R5	459	0	476	9	0
28	Y5	459	0	480	11	0
29	R6	453	0	473	17	0
29	Y6	453	0	473	4	0
30	R7	409	0	454	4	0
30	Y7	418	0	467	6	0
31	R9	307	0	335	5	0
31	Y9	307	0	335	8	0
32	RA	62266	0	31390	616	0
32	YA	61921	0	31212	693	0
33	RB	2576	0	1305	32	0
33	YB	2576	0	1305	22	0
34	RD	2115	0	2194	46	0
34	YD	2135	0	2220	165	0
35	RE	1568	0	1634	50	0
35	YE	1559	0	1618	225	0
36	RG	1474	0	1535	28	0
36	YG	1474	0	1535	22	0
37	RH	1336	0	1418	38	0
37	YH	1330	0	1407	191	0
38	RI	1136	0	1223	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	YI	1136	0	1223	7	0
39	RN	1104	0	1180	12	0
39	YN	1104	0	1180	10	0
40	RO	933	0	996	17	0
40	YO	933	0	996	14	0
41	RP	1145	0	1228	75	0
41	YP	1135	0	1212	193	0
42	RQ	1122	0	1179	29	0
42	YQ	1122	0	1179	172	0
43	RR	960	0	1021	12	0
43	YR	960	0	1021	8	0
44	RS	882	0	943	13	0
44	YS	882	0	943	17	0
45	RT	1141	0	1202	23	0
45	YT	1141	0	1202	41	0
46	RU	964	0	1022	22	0
46	YU	964	0	1021	30	0
47	RV	779	0	852	9	0
47	YV	779	0	852	88	0
48	RW	900	0	964	14	0
48	YW	900	0	964	11	0
49	RX	725	0	778	9	0
49	YX	725	0	778	8	0
50	RY	818	0	913	13	0
50	YY	818	0	913	16	0
51	QL	975	0	1062	40	0
51	XL	956	0	1046	15	0
52	R1	737	0	813	36	0
52	Y1	729	0	802	7	0
53	R8	517	0	582	65	0
53	Y8	517	0	582	31	0
54	RF	1585	0	1632	82	0
54	YF	1585	0	1632	24	0
55	RZ	1461	0	1493	107	0
55	YZ	1461	0	1493	106	0
56	ZA	74	0	51	15	0
56	ZB	74	0	51	14	0
57	QA	94	0	0	0	0
57	QD	2	0	0	0	0
57	QE	1	0	0	0	0
57	QF	1	0	0	0	0
57	QV	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
57	QX	1	0	0	0	0
57	R0	1	0	0	0	0
57	R8	1	0	0	0	0
57	RA	302	0	0	0	0
57	RB	3	0	0	0	0
57	RD	1	0	0	0	0
57	RE	1	0	0	0	0
57	RN	1	0	0	0	0
57	RO	1	0	0	0	0
57	RP	2	0	0	0	0
57	RQ	2	0	0	0	0
57	RR	2	0	0	0	0
57	RY	1	0	0	0	0
57	XA	116	0	0	0	0
57	XD	1	0	0	0	0
57	XE	1	0	0	0	0
57	XF	1	0	0	0	0
57	XL	1	0	0	0	0
57	XM	1	0	0	0	0
57	XV	3	0	0	0	0
57	Y0	2	0	0	0	0
57	Y3	1	0	0	0	0
57	Y9	1	0	0	0	0
57	YA	326	0	0	0	0
57	YB	5	0	0	0	0
57	YD	5	0	0	0	0
57	YE	5	0	0	0	0
57	YF	1	0	0	0	0
57	YG	1	0	0	0	0
57	YO	1	0	0	0	0
57	YQ	3	0	0	0	0
57	YV	1	0	0	0	0
58	QD	8	0	0	0	0
58	XD	8	0	0	0	0
59	QN	1	0	0	0	0
59	R4	1	0	0	0	0
59	R5	1	0	0	0	0
59	R6	1	0	0	0	0
59	R9	1	0	0	0	0
59	XN	1	0	0	0	0
59	Y4	1	0	0	0	0
59	Y6	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	298432	0	202696	4712	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 10.

The worst 5 of 4712 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)
42:YQ:64:ILE:CD1	55:YZ:178:GLU:HG3	1.19	1.65
37:YH:123:PHE:CE1	37:YH:133:VAL:HG12	1.26	1.62
37:YH:5:GLY:HA3	37:YH:65:HIS:CE1	1.22	1.59
41:YP:100:LEU:CD1	41:YP:112:LEU:HD11	1.37	1.55
54:RF:9:ILE:HD11	54:RF:125:LEU:CD1	1.39	1.51

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	QB	233/256 (91%)	212 (91%)	18 (8%)	3 (1%)	12	41
2	XB	234/256 (91%)	208 (89%)	25 (11%)	1 (0%)	34	67
3	QC	203/239 (85%)	190 (94%)	13 (6%)	0	100	100
3	XC	203/239 (85%)	193 (95%)	10 (5%)	0	100	100
4	QD	206/209 (99%)	191 (93%)	13 (6%)	2 (1%)	15	47
4	XD	206/209 (99%)	191 (93%)	13 (6%)	2 (1%)	15	47
5	QE	149/162 (92%)	139 (93%)	9 (6%)	1 (1%)	22	56
5	XE	149/162 (92%)	140 (94%)	8 (5%)	1 (1%)	22	56
6	QF	99/101 (98%)	99 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	XF	99/101 (98%)	98 (99%)	1 (1%)	0	100	100
7	QG	153/156 (98%)	148 (97%)	5 (3%)	0	100	100
7	XG	153/156 (98%)	143 (94%)	10 (6%)	0	100	100
8	QH	135/138 (98%)	130 (96%)	5 (4%)	0	100	100
8	XH	135/138 (98%)	130 (96%)	5 (4%)	0	100	100
9	QI	125/128 (98%)	114 (91%)	10 (8%)	1 (1%)	19	52
9	XI	124/128 (97%)	114 (92%)	10 (8%)	0	100	100
10	QJ	97/105 (92%)	88 (91%)	9 (9%)	0	100	100
10	XJ	94/105 (90%)	85 (90%)	8 (8%)	1 (1%)	14	46
11	QK	117/129 (91%)	109 (93%)	8 (7%)	0	100	100
11	XK	114/129 (88%)	104 (91%)	10 (9%)	0	100	100
12	QM	118/126 (94%)	101 (86%)	13 (11%)	4 (3%)	3	22
12	XM	117/126 (93%)	99 (85%)	17 (14%)	1 (1%)	17	50
13	QN	58/61 (95%)	52 (90%)	5 (9%)	1 (2%)	9	36
13	XN	58/61 (95%)	53 (91%)	4 (7%)	1 (2%)	9	36
14	QO	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
14	XO	85/89 (96%)	83 (98%)	2 (2%)	0	100	100
15	QP	82/88 (93%)	77 (94%)	5 (6%)	0	100	100
15	XP	82/88 (93%)	80 (98%)	2 (2%)	0	100	100
16	QQ	98/105 (93%)	92 (94%)	6 (6%)	0	100	100
16	XQ	98/105 (93%)	94 (96%)	4 (4%)	0	100	100
17	QR	68/88 (77%)	66 (97%)	2 (3%)	0	100	100
17	XR	68/88 (77%)	66 (97%)	2 (3%)	0	100	100
18	QS	81/93 (87%)	68 (84%)	12 (15%)	1 (1%)	13	43
18	XS	81/93 (87%)	73 (90%)	6 (7%)	2 (2%)	5	28
19	QT	97/106 (92%)	87 (90%)	10 (10%)	0	100	100
19	XT	97/106 (92%)	88 (91%)	9 (9%)	0	100	100
20	QU	23/27 (85%)	23 (100%)	0	0	100	100
20	XU	23/27 (85%)	23 (100%)	0	0	100	100
23	QY	82/84 (98%)	78 (95%)	4 (5%)	0	100	100
23	QZ	82/84 (98%)	76 (93%)	6 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
23	XY	82/84 (98%)	78 (95%)	4 (5%)	0	100	100
23	XZ	82/84 (98%)	79 (96%)	3 (4%)	0	100	100
24	R0	79/85 (93%)	73 (92%)	4 (5%)	2 (2%)	5	28
24	Y0	80/85 (94%)	77 (96%)	3 (4%)	0	100	100
25	R2	67/72 (93%)	61 (91%)	5 (8%)	1 (2%)	10	39
25	Y2	67/72 (93%)	64 (96%)	3 (4%)	0	100	100
26	R3	57/60 (95%)	53 (93%)	4 (7%)	0	100	100
26	Y3	57/60 (95%)	53 (93%)	4 (7%)	0	100	100
27	R4	67/71 (94%)	46 (69%)	17 (25%)	4 (6%)	1	10
27	Y4	67/71 (94%)	53 (79%)	13 (19%)	1 (2%)	10	39
28	R5	57/60 (95%)	54 (95%)	3 (5%)	0	100	100
28	Y5	57/60 (95%)	54 (95%)	3 (5%)	0	100	100
29	R6	51/54 (94%)	49 (96%)	2 (4%)	0	100	100
29	Y6	51/54 (94%)	49 (96%)	2 (4%)	0	100	100
30	R7	45/49 (92%)	45 (100%)	0	0	100	100
30	Y7	46/49 (94%)	46 (100%)	0	0	100	100
31	R9	35/37 (95%)	34 (97%)	1 (3%)	0	100	100
31	Y9	35/37 (95%)	34 (97%)	1 (3%)	0	100	100
34	RD	270/276 (98%)	237 (88%)	26 (10%)	7 (3%)	5	27
34	YD	272/276 (99%)	261 (96%)	11 (4%)	0	100	100
35	RE	203/206 (98%)	159 (78%)	34 (17%)	10 (5%)	2	14
35	YE	202/206 (98%)	190 (94%)	9 (4%)	3 (2%)	10	39
36	RG	179/182 (98%)	153 (86%)	24 (13%)	2 (1%)	14	46
36	YG	179/182 (98%)	149 (83%)	29 (16%)	1 (1%)	25	59
37	RH	172/180 (96%)	145 (84%)	20 (12%)	7 (4%)	3	17
37	YH	172/180 (96%)	163 (95%)	7 (4%)	2 (1%)	13	43
38	RI	144/148 (97%)	115 (80%)	24 (17%)	5 (4%)	3	21
38	YI	144/148 (97%)	119 (83%)	21 (15%)	4 (3%)	5	25
39	RN	136/140 (97%)	115 (85%)	18 (13%)	3 (2%)	6	31
39	YN	136/140 (97%)	119 (88%)	15 (11%)	2 (2%)	10	39
40	RO	120/122 (98%)	112 (93%)	8 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
40	YO	120/122 (98%)	113 (94%)	7 (6%)	0	100	100
41	RP	148/150 (99%)	112 (76%)	32 (22%)	4 (3%)	5	26
41	YP	147/150 (98%)	137 (93%)	8 (5%)	2 (1%)	11	40
42	RQ	139/141 (99%)	115 (83%)	22 (16%)	2 (1%)	11	40
42	YQ	139/141 (99%)	134 (96%)	4 (3%)	1 (1%)	22	56
43	RR	115/118 (98%)	106 (92%)	8 (7%)	1 (1%)	17	50
43	YR	115/118 (98%)	107 (93%)	7 (6%)	1 (1%)	17	50
44	RS	109/112 (97%)	91 (84%)	18 (16%)	0	100	100
44	YS	109/112 (97%)	91 (84%)	17 (16%)	1 (1%)	17	50
45	RT	135/146 (92%)	118 (87%)	15 (11%)	2 (2%)	10	39
45	YT	135/146 (92%)	114 (84%)	19 (14%)	2 (2%)	10	39
46	RU	115/118 (98%)	108 (94%)	6 (5%)	1 (1%)	17	50
46	YU	115/118 (98%)	107 (93%)	7 (6%)	1 (1%)	17	50
47	RV	99/101 (98%)	82 (83%)	16 (16%)	1 (1%)	15	47
47	YV	99/101 (98%)	98 (99%)	1 (1%)	0	100	100
48	RW	111/113 (98%)	105 (95%)	5 (4%)	1 (1%)	17	50
48	YW	111/113 (98%)	102 (92%)	8 (7%)	1 (1%)	17	50
49	RX	90/96 (94%)	87 (97%)	3 (3%)	0	100	100
49	YX	90/96 (94%)	86 (96%)	4 (4%)	0	100	100
50	RY	105/110 (96%)	99 (94%)	6 (6%)	0	100	100
50	YY	105/110 (96%)	100 (95%)	5 (5%)	0	100	100
51	QL	123/132 (93%)	109 (89%)	13 (11%)	1 (1%)	19	52
51	XL	120/132 (91%)	100 (83%)	19 (16%)	1 (1%)	19	52
52	R1	92/98 (94%)	86 (94%)	4 (4%)	2 (2%)	6	31
52	Y1	91/98 (93%)	81 (89%)	10 (11%)	0	100	100
53	R8	62/65 (95%)	55 (89%)	7 (11%)	0	100	100
53	Y8	62/65 (95%)	47 (76%)	12 (19%)	3 (5%)	2	14
54	RF	200/210 (95%)	196 (98%)	3 (2%)	1 (0%)	29	62
54	YF	200/210 (95%)	185 (92%)	13 (6%)	2 (1%)	15	47
55	RZ	181/206 (88%)	171 (94%)	9 (5%)	1 (1%)	25	59
55	YZ	181/206 (88%)	175 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	11786/12464 (95%)	10743 (91%)	935 (8%)	108 (1%)	17	50

5 of 108 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	QM	12	ASN
18	QS	41	VAL
27	R4	24	THR
27	R4	25	TYR
34	RD	25	THR

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	QB	203/220 (92%)	180 (89%)	23 (11%)	6	22
2	XB	204/220 (93%)	202 (99%)	2 (1%)	76	85
3	QC	159/188 (85%)	159 (100%)	0	100	100
3	XC	159/188 (85%)	159 (100%)	0	100	100
4	QD	180/181 (99%)	179 (99%)	1 (1%)	86	91
4	XD	180/181 (99%)	180 (100%)	0	100	100
5	QE	116/123 (94%)	115 (99%)	1 (1%)	78	87
5	XE	116/123 (94%)	114 (98%)	2 (2%)	60	78
6	QF	90/90 (100%)	88 (98%)	2 (2%)	52	74
6	XF	90/90 (100%)	88 (98%)	2 (2%)	52	74
7	QG	126/127 (99%)	125 (99%)	1 (1%)	81	89
7	XG	126/127 (99%)	124 (98%)	2 (2%)	62	79
8	QH	118/119 (99%)	117 (99%)	1 (1%)	81	89
8	XH	118/119 (99%)	116 (98%)	2 (2%)	60	78
9	QI	98/99 (99%)	98 (100%)	0	100	100
9	XI	97/99 (98%)	95 (98%)	2 (2%)	53	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	QJ	89/92 (97%)	89 (100%)	0	100	100
10	XJ	86/92 (94%)	85 (99%)	1 (1%)	71	83
11	QK	90/99 (91%)	90 (100%)	0	100	100
11	XK	88/99 (89%)	87 (99%)	1 (1%)	73	84
12	QM	96/101 (95%)	96 (100%)	0	100	100
12	XM	95/101 (94%)	95 (100%)	0	100	100
13	QN	49/50 (98%)	49 (100%)	0	100	100
13	XN	49/50 (98%)	49 (100%)	0	100	100
14	QO	79/80 (99%)	79 (100%)	0	100	100
14	XO	79/80 (99%)	79 (100%)	0	100	100
15	QP	72/74 (97%)	72 (100%)	0	100	100
15	XP	72/74 (97%)	71 (99%)	1 (1%)	67	81
16	QQ	95/97 (98%)	95 (100%)	0	100	100
16	XQ	95/97 (98%)	95 (100%)	0	100	100
17	QR	61/77 (79%)	61 (100%)	0	100	100
17	XR	61/77 (79%)	61 (100%)	0	100	100
18	QS	72/80 (90%)	69 (96%)	3 (4%)	30	59
18	XS	69/80 (86%)	62 (90%)	7 (10%)	7	27
19	QT	76/82 (93%)	76 (100%)	0	100	100
19	XT	76/82 (93%)	75 (99%)	1 (1%)	69	82
20	QU	20/22 (91%)	20 (100%)	0	100	100
20	XU	20/22 (91%)	19 (95%)	1 (5%)	24	55
23	QY	78/78 (100%)	77 (99%)	1 (1%)	69	82
23	QZ	78/78 (100%)	72 (92%)	6 (8%)	13	38
23	XY	78/78 (100%)	78 (100%)	0	100	100
23	XZ	78/78 (100%)	77 (99%)	1 (1%)	69	82
24	R0	65/67 (97%)	63 (97%)	2 (3%)	40	67
24	Y0	65/67 (97%)	64 (98%)	1 (2%)	65	80
25	R2	64/67 (96%)	64 (100%)	0	100	100
25	Y2	64/67 (96%)	64 (100%)	0	100	100
26	R3	51/52 (98%)	50 (98%)	1 (2%)	55	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	Y3	51/52 (98%)	50 (98%)	1 (2%)	55	76
27	R4	62/63 (98%)	59 (95%)	3 (5%)	25	56
27	Y4	62/63 (98%)	62 (100%)	0	100	100
28	R5	51/52 (98%)	51 (100%)	0	100	100
28	Y5	51/52 (98%)	50 (98%)	1 (2%)	55	76
29	R6	51/52 (98%)	51 (100%)	0	100	100
29	Y6	51/52 (98%)	51 (100%)	0	100	100
30	R7	40/42 (95%)	40 (100%)	0	100	100
30	Y7	41/42 (98%)	41 (100%)	0	100	100
31	R9	34/34 (100%)	34 (100%)	0	100	100
31	Y9	34/34 (100%)	34 (100%)	0	100	100
34	RD	214/218 (98%)	213 (100%)	1 (0%)	88	93
34	YD	216/218 (99%)	212 (98%)	4 (2%)	57	76
35	RE	165/166 (99%)	161 (98%)	4 (2%)	49	72
35	YE	164/166 (99%)	158 (96%)	6 (4%)	34	62
36	RG	155/156 (99%)	153 (99%)	2 (1%)	69	82
36	YG	155/156 (99%)	154 (99%)	1 (1%)	86	91
37	RH	145/148 (98%)	140 (97%)	5 (3%)	37	64
37	YH	144/148 (97%)	136 (94%)	8 (6%)	21	52
38	RI	122/124 (98%)	122 (100%)	0	100	100
38	YI	122/124 (98%)	122 (100%)	0	100	100
39	RN	117/119 (98%)	117 (100%)	0	100	100
39	YN	117/119 (98%)	117 (100%)	0	100	100
40	RO	100/100 (100%)	100 (100%)	0	100	100
40	YO	100/100 (100%)	100 (100%)	0	100	100
41	RP	116/116 (100%)	115 (99%)	1 (1%)	78	87
41	YP	115/116 (99%)	104 (90%)	11 (10%)	8	29
42	RQ	111/111 (100%)	111 (100%)	0	100	100
42	YQ	111/111 (100%)	104 (94%)	7 (6%)	18	47
43	RR	100/101 (99%)	100 (100%)	0	100	100
43	YR	100/101 (99%)	100 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
44	RS	87/88 (99%)	87 (100%)	0	100	100
44	YS	87/88 (99%)	87 (100%)	0	100	100
45	RT	120/127 (94%)	120 (100%)	0	100	100
45	YT	120/127 (94%)	118 (98%)	2 (2%)	60	78
46	RU	93/94 (99%)	93 (100%)	0	100	100
46	YU	93/94 (99%)	93 (100%)	0	100	100
47	RV	82/82 (100%)	80 (98%)	2 (2%)	49	72
47	YV	82/82 (100%)	81 (99%)	1 (1%)	71	83
48	RW	92/92 (100%)	91 (99%)	1 (1%)	73	84
48	YW	92/92 (100%)	92 (100%)	0	100	100
49	RX	74/78 (95%)	74 (100%)	0	100	100
49	YX	74/78 (95%)	74 (100%)	0	100	100
50	RY	88/91 (97%)	87 (99%)	1 (1%)	73	84
50	YY	88/91 (97%)	87 (99%)	1 (1%)	73	84
51	QL	104/109 (95%)	102 (98%)	2 (2%)	57	76
51	XL	103/109 (94%)	103 (100%)	0	100	100
52	R1	79/83 (95%)	79 (100%)	0	100	100
52	Y1	78/83 (94%)	75 (96%)	3 (4%)	33	62
53	R8	54/55 (98%)	54 (100%)	0	100	100
53	Y8	54/55 (98%)	54 (100%)	0	100	100
54	RF	161/166 (97%)	159 (99%)	2 (1%)	71	83
54	YF	161/166 (97%)	160 (99%)	1 (1%)	86	91
55	RZ	162/179 (90%)	155 (96%)	7 (4%)	29	59
55	YZ	162/179 (90%)	160 (99%)	2 (1%)	71	83
All	All	9997/10378 (96%)	9849 (98%)	148 (2%)	65	80

5 of 148 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
37	YH	60	ARG
55	RZ	183	LEU
37	YH	133	VAL
18	XS	49	ILE
35	RE	78	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
34	YD	46	GLN
55	YZ	34	ASN
34	YD	116	GLN
55	YZ	85	HIS
35	YE	66	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	QA	1508/1521 (99%)	308 (20%)	50 (3%)
1	XA	1505/1521 (98%)	301 (20%)	48 (3%)
21	QV	77/77 (100%)	7 (9%)	2 (2%)
21	QW	76/77 (98%)	14 (18%)	1 (1%)
21	XV	77/77 (100%)	7 (9%)	1 (1%)
21	XW	76/77 (98%)	15 (19%)	1 (1%)
22	QX	19/22 (86%)	9 (47%)	1 (5%)
22	XX	19/22 (86%)	7 (36%)	2 (10%)
32	RA	2888/2915 (99%)	598 (20%)	47 (1%)
32	YA	2872/2915 (98%)	580 (20%)	42 (1%)
33	RB	119/124 (95%)	26 (21%)	1 (0%)
33	YB	119/124 (95%)	21 (17%)	1 (0%)
56	ZA	1/3 (33%)	1 (100%)	0
56	ZB	1/3 (33%)	0	0
All	All	9357/9478 (98%)	1894 (20%)	197 (2%)

5 of 1894 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	QA	4	U
1	QA	5	U
1	QA	6	G
1	QA	9	G
1	QA	22	G

5 of 197 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	XA	358	U
1	XA	1190	G
1	XA	547	A

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Mol	Chain	Res	Type
1	XA	1004	A
21	XV	1	C

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

8 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$
56	PPU	ZB	76	56,32	32,40,41	0.82	1 (3%)	33,57,60	1.47	6 (18%)
22	OMU	XX	21	1,22	19,22,23	1.20	2 (10%)	26,31,34	1.70	5 (19%)
22	A2M	XX	20	22	18,25,26	0.97	1 (5%)	18,36,39	1.23	2 (11%)
22	A2M	XX	19	22	18,25,26	0.96	1 (5%)	18,36,39	1.31	2 (11%)
56	PPU	ZA	76	56,32	32,40,41	1.30	5 (15%)	33,57,60	1.49	6 (18%)
22	A2M	QX	20	22	18,25,26	1.09	1 (5%)	18,36,39	1.17	2 (11%)
22	A2M	QX	19	22	18,25,26	1.04	1 (5%)	18,36,39	1.29	2 (11%)
22	OMU	QX	21	1,22	19,22,23	1.78	4 (21%)	26,31,34	2.07	9 (34%)

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
56	PPU	ZB	76	56,32	-	6/21/43/44	0/4/4/4
22	OMU	XX	21	1,22	-	2/9/27/28	0/2/2/2
22	A2M	XX	20	22	-	2/5/27/28	0/3/3/3
22	A2M	XX	19	22	-	2/5/27/28	0/3/3/3
56	PPU	ZA	76	56,32	-	5/21/43/44	0/4/4/4
22	A2M	QX	20	22	-	2/5/27/28	0/3/3/3
22	A2M	QX	19	22	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
22	OMU	QX	21	1,22	-	2/9/27/28	0/2/2/2

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	QX	21	OMU	C4-N3	-3.84	1.31	1.38
22	QX	21	OMU	C2-N3	-3.44	1.31	1.38
22	QX	21	OMU	C6-N1	-2.94	1.30	1.38
22	QX	20	A2M	C5-C4	2.58	1.47	1.40
22	QX	21	OMU	C5-C4	-2.57	1.37	1.43

The worst 5 of 34 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
22	QX	21	OMU	C4-N3-C2	-4.88	120.15	126.58
22	QX	21	OMU	N3-C2-N1	4.65	121.07	114.89
22	XX	21	OMU	C4-N3-C2	-4.54	120.59	126.58
22	XX	21	OMU	N3-C2-N1	4.23	120.51	114.89
56	ZA	76	PPU	N1-C6-N6	4.20	121.48	117.06

There are no chirality outliers.

5 of 21 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
22	XX	21	OMU	C3'-C4'-C5'-O5'
22	XX	21	OMU	O4'-C4'-C5'-O5'
56	ZA	76	PPU	C4'-C3'-N3'-C
56	ZA	76	PPU	C5-C6-N6-C10
56	ZB	76	PPU	C5-C6-N6-C9

There are no ring outliers.

8 monomers are involved in 38 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
56	ZB	76	PPU	12	0
22	XX	21	OMU	2	0
22	XX	20	A2M	3	0
22	XX	19	A2M	5	0
56	ZA	76	PPU	11	0
22	QX	20	A2M	2	0
22	QX	19	A2M	3	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	QX	21	OMU	3	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 906 ligands modelled in this entry, 904 are monoatomic - leaving 2 for Mogul analysis.

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	$\# Z > 2$
58	SF4	XD	301	4	0,12,12	-	-	-		
58	SF4	QD	301	4	0,12,12	-	-	-		

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
58	SF4	XD	301	4	-	-	0/6/5/5
58	SF4	QD	301	4	-	-	0/6/5/5

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](#)

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS failed to run properly - this section is therefore empty.

6.4 Ligands [i](#)

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers [i](#)

EDS failed to run properly - this section is therefore empty.