



wwPDB EM Validation Summary Report ⓘ

Nov 13, 2022 – 12:17 AM EST

PDB ID : 6VMI
EMDB ID : EMD-21242
Title : Structure of the human mitochondrial ribosome-EF-G1 complex (ClassIII)
Authors : Sharma, M.R.; Koripella, R.K.; Agrawal, R.K.
Deposited on : 2020-01-28
Resolution : 2.96 Å (reported)

This is a wwPDB EM 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/EMValidationReportHelp>

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:

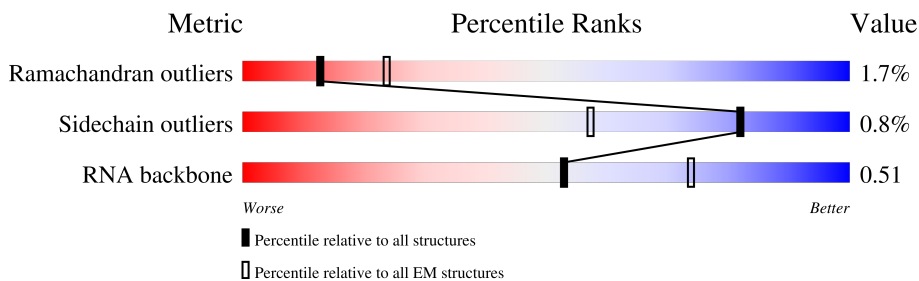
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.96 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.






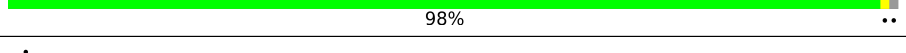
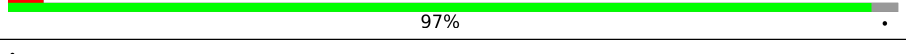
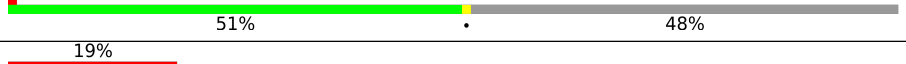

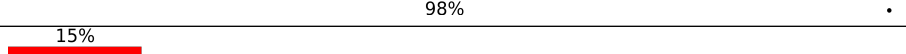
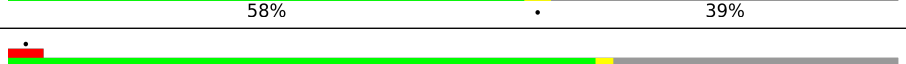
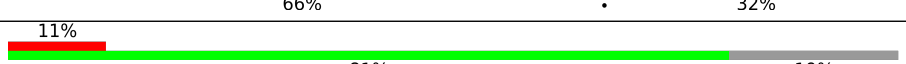
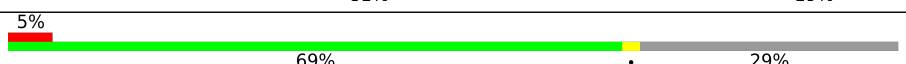
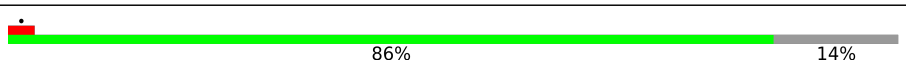

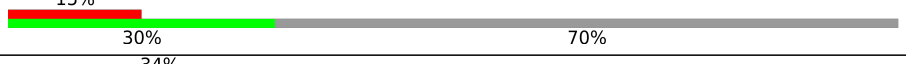
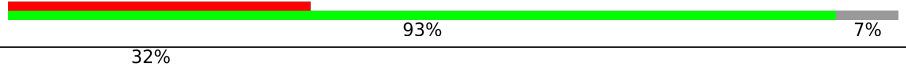

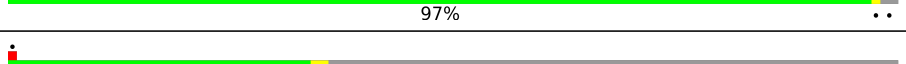

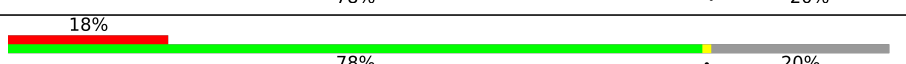






Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AA	954	
2	AB	296	
3	AC	167	
4	AE	125	
5	AI	194	
6	AJ	138	
7	AK	128	
8	AM	137	

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Mol	Chain	Length	Quality of chain
9	AN	130	 82% 18%
10	AO	258	 72% 26%
11	AP	142	 65% 32%
12	AQ	87	 98%
13	AT	173	 97%
14	AW	187	 51% 48%
15	AX	398	 19% 87% 11%
16	A2	118	 14% 98%
17	AH	201	 15% 58% 39%
18	AL	257	 66% 32%
19	AR	360	 11% 81% 19%
20	AS	190	 5% 69% 29%
21	AU	205	 86% 14%
22	AV	414	 12% 86% 11%
23	AY	395	 15% 30% 70%
24	AZ	106	 34% 93% 7%
25	A1	323	 32% 83% 15%
26	A0	218	 10% 97%
27	A3	199	 34% 64%
28	A4	689	 72% 78% 20%
29	AD	430	 18% 78% 20%
30	AF	242	 13% 83% 14%
31	AG	396	 14% 78% 20%
32	A	1559	 75% 23%
33	B	73	 67% 10% 23%







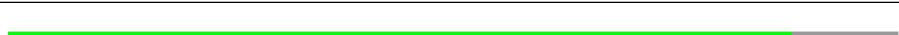
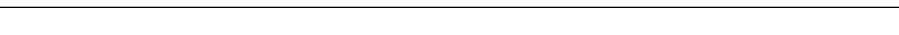
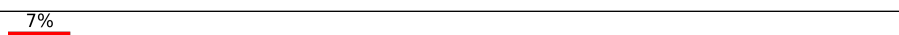
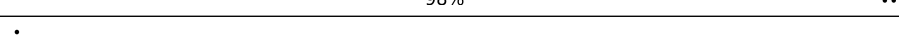
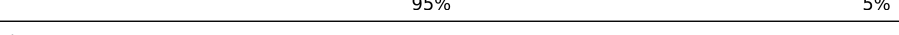
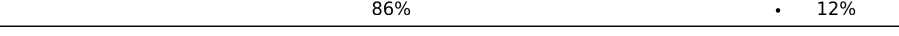











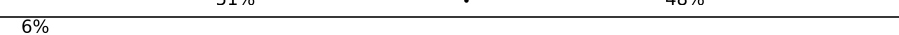

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Mol	Chain	Length	Quality of chain
34	D	305	78% 22%
35	F	311	78% 20%
36	H	267	36% 63%
37	K	178	96%
38	L	145	78% 21%
39	M	296	94%
40	O	175	85% 13%
41	R	149	89% 6%
42	S	205	73% 24%
43	T	212	75% 22%
44	W	148	74% 25%
45	X	256	90% 5% 5%
46	Y	250	68% 30%
47	Z	161	75% 25%
48	0	188	56% 43%
49	1	65	77% 20%
50	2	92	49% 50%
51	3	188	50% 49%
52	4	103	37% 63%
53	8	206	48% 52%
54	b	155	94% 5%
55	e	279	8% 77% 22%
56	g	166	76% 20%
57	i	128	75% 24%
58	j	123	75% 24%




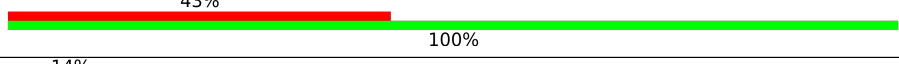
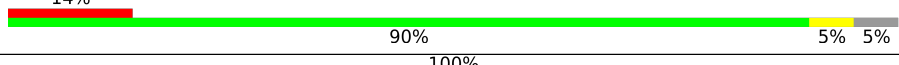
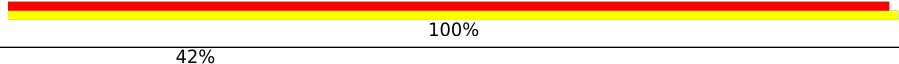
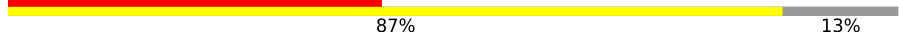
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Mol	Chain	Length	Quality of chain
59	m	128	
60	o	102	
61	q	222	
62	r	196	
63	J	192	
64	I	261	
65	N	251	
66	P	179	
67	U	153	
68	V	216	
69	E	348	
70	5	423	
71	6	380	
72	7	338	
73	9	137	
74	a	142	
75	c	332	
76	d	306	
77	f	194	
78	h	158	
79	k	112	
80	l	138	
81	p	206	
82	s	439	
83	Q	292	

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Mol	Chain	Length	Quality of chain
84	TA	198	
84	TB	198	
84	TC	198	
85	u	65	
86	v	751	
87	A5	11	
88	A6	71	
88	A7	71	

2 Entry composition [i](#)

There are 92 unique types of molecules in this entry. The entry contains 176217 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 12s rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	944	20030	8980	3612	6494	944	0	0

- Molecule 2 is a protein called 28S ribosomal protein S2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	AB	220	1787	1141	324	312	10	0	0

- Molecule 3 is a protein called 28S ribosomal protein S24, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	AC	132	1082	699	195	184	4	0	0

- Molecule 4 is a protein called 28S ribosomal protein S6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AE	122	972	614	177	177	4	0	0

- Molecule 5 is a protein called 28S ribosomal protein S11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AI	136	1011	637	192	178	4	0	0

- Molecule 6 is a protein called 28S ribosomal protein S12, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	AJ	108	838	521	169	142	6	0	0

- Molecule 7 is a protein called 28S ribosomal protein S14, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	AK	101	861	537	179	140	5	0	0

- Molecule 8 is a protein called 28S ribosomal protein S16, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	AM	116	920	582	182	150	6	0	0

- Molecule 9 is a protein called 28S ribosomal protein S17, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	AN	107	846	549	153	141	3	0	0

- Molecule 10 is a protein called 28S ribosomal protein S18b, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	AO	190	1570	998	291	274	7	0	0

- Molecule 11 is a protein called 28S ribosomal protein S18c, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	AP	96	774	498	133	135	8	0	0

- Molecule 12 is a protein called 28S ribosomal protein S21, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	AQ	86	740	458	150	124	8	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AQ	50	ARG	CYS	variant	UNP P82921

- Molecule 13 is a protein called 28S ribosomal protein S25, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	AT	168	1371	877	239	244	11	0	0

- Molecule 14 is a protein called 28S ribosomal protein S28, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	AW	97	766	486	137	139	4	0	0

- Molecule 15 is a protein called 28S ribosomal protein S29, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	AX	353	2860	1828	503	518	11	0	0

- Molecule 16 is a protein called Coiled-coil-helix-coiled-coil-helix domain-containing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	A2	116	925	574	181	162	8	0	0

- Molecule 17 is a protein called 28S ribosomal protein S10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	AH	122	1014	656	172	183	3	0	0

- Molecule 18 is a protein called 28S ribosomal protein S15, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	AL	174	1451	924	271	249	7	0	0

- Molecule 19 is a protein called 28S ribosomal protein S22, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	AR	292	2388	1521	410	449	8	0	0

- Molecule 20 is a protein called 28S ribosomal protein S23, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	AS	135	1111	716	198	196	1	0	0

- Molecule 21 is a protein called 28S ribosomal protein S26, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	AU	177	1499	922	305	268	4	0	0

- Molecule 22 is a protein called 28S ribosomal protein S27, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	AV	367	3009	1931	502	564	12	0	0

- Molecule 23 is a protein called 28S ribosomal protein S31, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	AY	120	1016	657	167	190	2	0	0

- Molecule 24 is a protein called 28S ribosomal protein S33, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	AZ	99	833	531	152	146	4	0	0

- Molecule 25 is a protein called 28S ribosomal protein S35, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	A1	275	2231	1414	380	426	11	0	0

- Molecule 26 is a protein called 28S ribosomal protein S34, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	A0	214	1781	1125	341	310	5	0	0

- Molecule 27 is a protein called Aurora kinase A-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	A3	72	639	409	137	92	1	0	0

- Molecule 28 is a protein called Pentatricopeptide repeat domain-containing protein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	A4	549	3010	1841	573	593	3	0	0

- Molecule 29 is a protein called 28S ribosomal protein S5, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	AD	343	2731	1713	518	487	13	0	0

- Molecule 30 is a protein called 28S ribosomal protein S7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	AF	208	1724	1103	312	298	11	0	0

- Molecule 31 is a protein called 28S ribosomal protein S9, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	AG	315	2587	1640	462	471	14	0	0

- Molecule 32 is a RNA chain called 16s rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
32	A	1527	32395	14536	5844	10488	1527	0	0

- Molecule 33 is a RNA chain called tRNA^{Val}.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
33	B	56	1191	534	214	387	56	0	0

- Molecule 34 is a protein called 39S ribosomal protein L2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	D	239	Total	C	N	O	S	0	0
			1866	1162	377	318	9		

- Molecule 35 is a protein called 39S ribosomal protein L4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	F	250	Total	C	N	O	S	0	0
			2013	1294	365	348	6		

- Molecule 36 is a protein called 39S ribosomal protein L9, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	H	98	Total	C	N	O	0	0
			806	510	156	140		

- Molecule 37 is a protein called 39S ribosomal protein L13, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	K	177	Total	C	N	O	S	0	0
			1451	934	259	251	7		

- Molecule 38 is a protein called 39S ribosomal protein L14, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	L	115	Total	C	N	O	S	0	0
			889	559	171	154	5		

- Molecule 39 is a protein called 39S ribosomal protein L15, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	M	287	Total	C	N	O	S	0	0
			2305	1472	425	402	6		

- Molecule 40 is a protein called 39S ribosomal protein L17, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	O	152	Total	C	N	O	S	0	0
			1245	784	239	215	7		

- Molecule 41 is a protein called 39S ribosomal protein L20, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	R	140	1153	732	231	186	4	0	0

- Molecule 42 is a protein called 39S ribosomal protein L21, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	S	156	1251	806	222	219	4	0	0

- Molecule 43 is a protein called 39S ribosomal protein L22, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	T	166	1368	875	254	232	7	0	0

- Molecule 44 is a protein called 39S ribosomal protein L27, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	W	111	871	558	164	146	3	0	0

- Molecule 45 is a protein called 39S ribosomal protein L28, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	X	243	2027	1310	350	362	5	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	148	ALA	THR	variant	UNP Q13084
X	149	SER	PRO	variant	UNP Q13084
X	150	GLY	LYS	variant	UNP Q13084

- Molecule 46 is a protein called 39S ribosomal protein L47, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	Y	176	1517	970	291	252	4	0	0

- Molecule 47 is a protein called 39S ribosomal protein L30, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Z	120	Total	C	N	O	S	0	0
			978	626	183	166	3		

- Molecule 48 is a protein called 39S ribosomal protein L32, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	0	108	Total	C	N	O	S	0	0
			880	545	172	157	6		

- Molecule 49 is a protein called 39S ribosomal protein L33, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	1	52	Total	C	N	O	S	0	0
			433	278	83	70	2		

- Molecule 50 is a protein called 39S ribosomal protein L34, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	2	46	Total	C	N	O	S	0	0
			376	233	83	59	1		

- Molecule 51 is a protein called 39S ribosomal protein L35, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	3	95	Total	C	N	O	S	0	0
			831	539	162	127	3		

- Molecule 52 is a protein called 39S ribosomal protein L36, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	4	38	Total	C	N	O	S	0	0
			342	217	72	49	4		

- Molecule 53 is a protein called 39S ribosomal protein L40, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	8	99	Total	C	N	O	S	0	0
			836	535	144	155	2		

- Molecule 54 is a protein called 39S ribosomal protein L43, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	b	148	Total	C	N	O	S	0	0
			1178	733	229	213	3		

- Molecule 55 is a protein called 39S ribosomal protein L46, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	e	217	Total	C	N	O	S	0	0
			1762	1124	310	323	5		

- Molecule 56 is a protein called 39S ribosomal protein L49, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	g	132	Total	C	N	O	S	0	0
			1096	709	191	194	2		

- Molecule 57 is a protein called 39S ribosomal protein L51, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	i	97	Total	C	N	O	S	0	0
			827	532	165	126	4		

- Molecule 58 is a protein called cDNA FLJ76418, highly similar to Homo sapiens mitochondrial ribosomal protein L52 (MRPL52), transcript variant 1, mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	j	93	Total	C	N	O	S	0	0
			740	460	143	135	2		

- Molecule 59 is a protein called 39S ribosomal protein L55, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	m	45	Total	C	N	O	S	0	0
			372	232	76	62	2		

- Molecule 60 is a protein called Ribosomal protein 63, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	o	94	Total	C	N	O	S	0	0
			797	501	165	128	3		

- Molecule 61 is a protein called Growth arrest and DNA damage-inducible proteins-interacting protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	q	168	1294	801	255	233	5	0	0

- Molecule 62 is a protein called 39S ribosomal protein S18a, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	r	162	1322	839	252	223	8	0	0

- Molecule 63 is a protein called 39S ribosomal protein L11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	J	175	1330	847	237	244	2	0	0

- Molecule 64 is a protein called 39S ribosomal protein L10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	I	179	1435	925	258	242	10	0	0

- Molecule 65 is a protein called 39S ribosomal protein L16, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	N	222	1786	1143	326	307	10	0	0

- Molecule 66 is a protein called Mitochondrial ribosomal protein L18, isoform CRA_b.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	P	143	1165	729	223	208	5	0	0

- Molecule 67 is a protein called 39S ribosomal protein L23, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	U	152	1224	774	233	214	3	0	0

- Molecule 68 is a protein called 39S ribosomal protein L24, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	V	206	1682	1071	299	304	8	0	0

- Molecule 69 is a protein called 39S ribosomal protein L3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	E	306	2410	1547	419	433	11	0	0

- Molecule 70 is a protein called 39S ribosomal protein L37, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	5	394	3210	2073	560	566	11	0	0

- Molecule 71 is a protein called 39S ribosomal protein L38, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	6	354	2948	1881	525	533	9	0	0

- Molecule 72 is a protein called 39S ribosomal protein L39, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	7	297	2410	1540	409	443	18	0	0

- Molecule 73 is a protein called 39S ribosomal protein L41, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	9	124	997	644	170	181	2	0	0

- Molecule 74 is a protein called 39S ribosomal protein L42, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
74	a	108	896	560	162	169	5	0	0

- Molecule 75 is a protein called 39S ribosomal protein L44, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	c	289	Total	C	N	O	S	0	0
			2322	1483	400	430	9		

- Molecule 76 is a protein called 39S ribosomal protein L45, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	d	257	Total	C	N	O	S	0	0
			2075	1326	363	372	14		

- Molecule 77 is a protein called 39S ribosomal protein L48, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	f	146	Total	C	N	O	S	0	0
			1126	714	186	222	4		

- Molecule 78 is a protein called 39S ribosomal protein L50, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	h	110	Total	C	N	O	S	0	0
			894	568	156	167	3		

- Molecule 79 is a protein called 39S ribosomal protein L53, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	k	96	Total	C	N	O	S	0	0
			743	462	143	133	5		

- Molecule 80 is a protein called 39S ribosomal protein L54, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	l	72	Total	C	N	O	S	0	0
			619	394	112	111	2		

- Molecule 81 is a protein called Peptidyl-tRNA hydrolase ICT1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	p	152	Total	C	N	O	S	0	0
			1227	762	232	229	4		

- Molecule 82 is a protein called 39S ribosomal protein S30, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	s	393	3178	2036	565	563	14	0	0

- Molecule 83 is a protein called 39S ribosomal protein L19, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
83	Q	240	1995	1280	354	352	9	0	0

- Molecule 84 is a protein called 39S ribosomal protein L12, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
84	TA	45	345	222	54	69	0	0
84	TB	27	213	137	33	43	0	0
84	TC	71	352	210	71	71	0	0

- Molecule 85 is a protein called P-site finger.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
85	u	65	325	195	65	65	0	0

- Molecule 86 is a protein called Elongation factor G, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
86	v	712	5546	3494	957	1062	33	0	0

- Molecule 87 is a DNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
87	A5	11	213	104	32	66	11	0	0

- Molecule 88 is a DNA chain called P-site and E-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
88	A6	71	1368	670	204	424	70	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
88	A7	62	1197	586	180	370	61	0	0

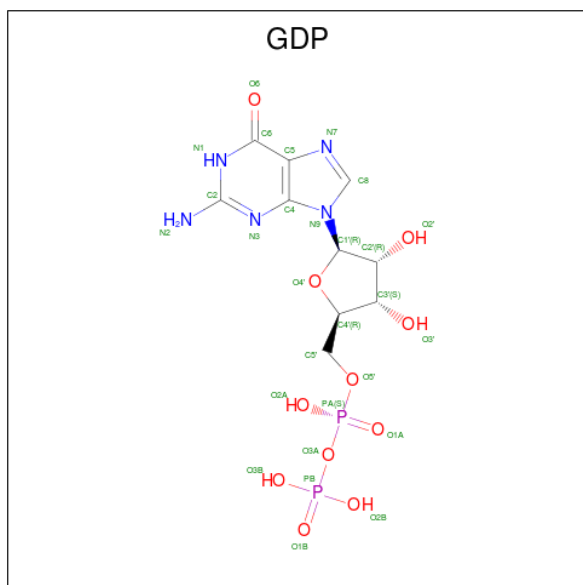
- Molecule 89 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
89	AA	27	Total 27	Mg 27	0
89	AC	1	Total 1	Mg 1	0
89	A	97	Total 97	Mg 97	0
89	D	1	Total 1	Mg 1	0
89	W	1	Total 1	Mg 1	0
89	g	1	Total 1	Mg 1	0
89	E	1	Total 1	Mg 1	0
89	v	1	Total 1	Mg 1	0

- Molecule 90 is ZINC ION (three-letter code: ZN) (formula: Zn).

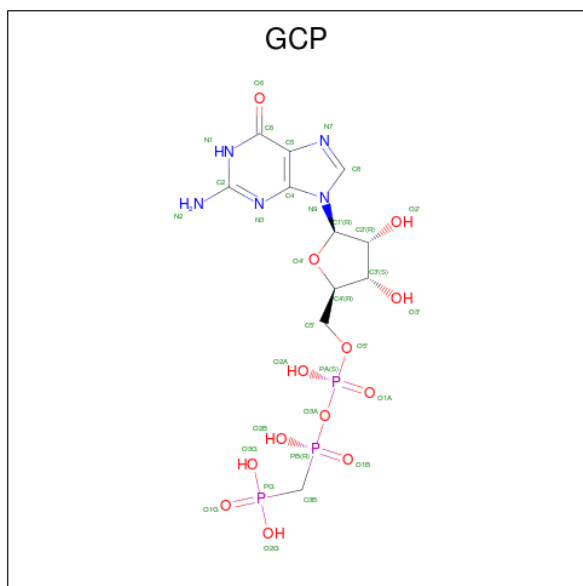
Mol	Chain	Residues	Atoms		AltConf
90	AB	1	Total 1	Zn 1	0
90	AO	1	Total 1	Zn 1	0
90	AP	1	Total 1	Zn 1	0
90	AT	1	Total 1	Zn 1	0
90	0	1	Total 1	Zn 1	0
90	4	1	Total 1	Zn 1	0
90	r	1	Total 1	Zn 1	0

- Molecule 91 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
91	AX	1	28	10	5	11	2	0

- Molecule 92 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (three-letter code: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$).

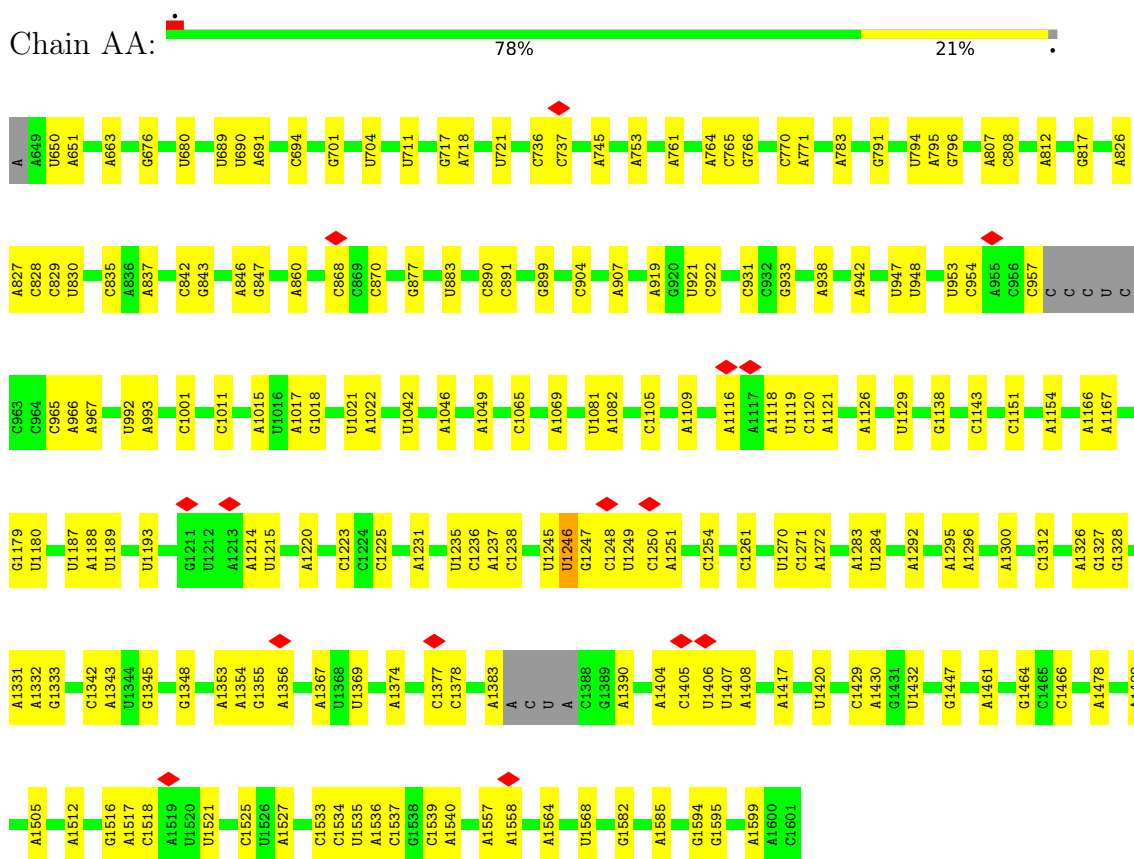


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
92	v	1	32	11	5	13	3	0

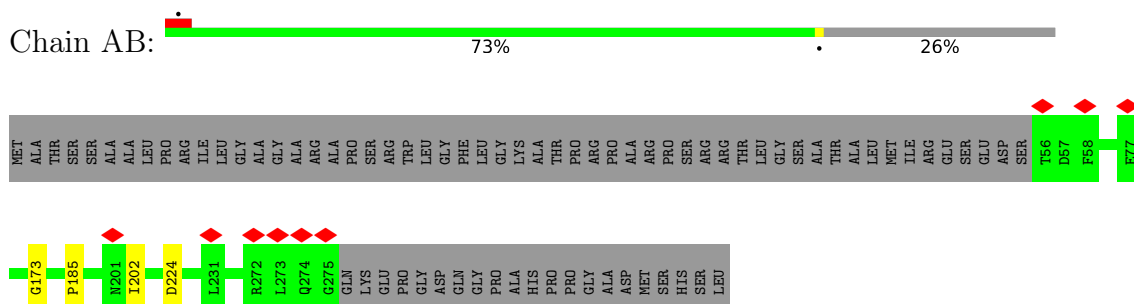
3 Residue-property plots [i](#)


These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

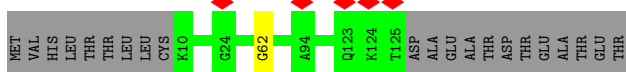
- Molecule 1: 12s rRNA




- Molecule 2: 28S ribosomal protein S2, mitochondrial

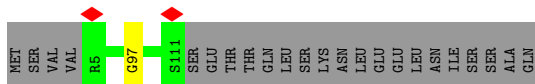


Chain AM:  84% 15%




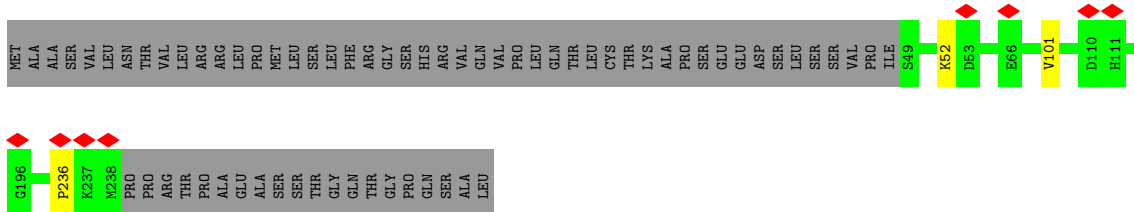
- Molecule 9: 28S ribosomal protein S17, mitochondrial

Chain AN:  82% 18%



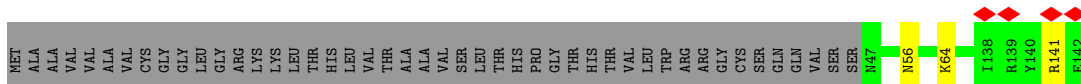
- Molecule 10: 28S ribosomal protein S18b, mitochondrial

Chain AO:  72% 26%



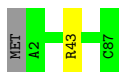
- Molecule 11: 28S ribosomal protein S18c, mitochondrial

Chain AP:  65% 32%



- Molecule 12: 28S ribosomal protein S21, mitochondrial

Chain AQ:  98% ..



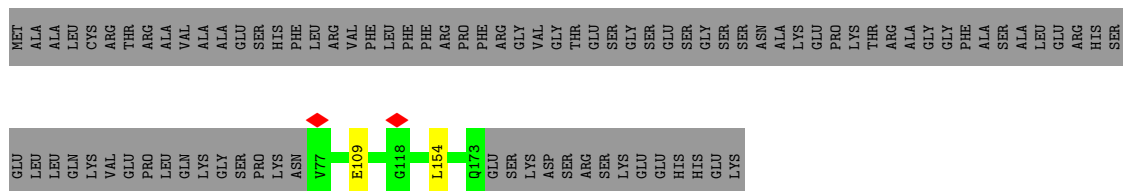
- Molecule 13: 28S ribosomal protein S25, mitochondrial

Chain AT:  97%

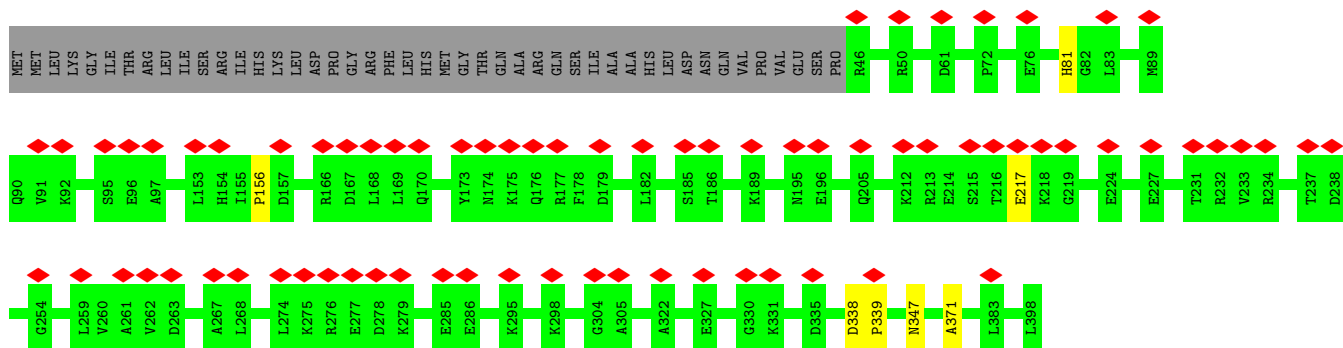
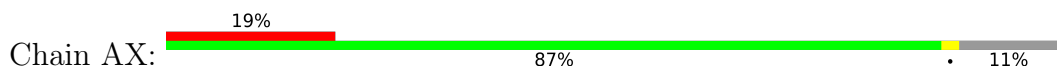


- Molecule 14: 28S ribosomal protein S28, mitochondrial

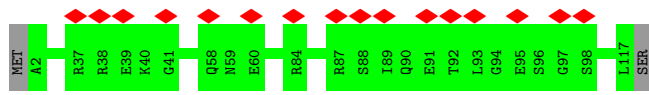
Chain AW:  51% 48%



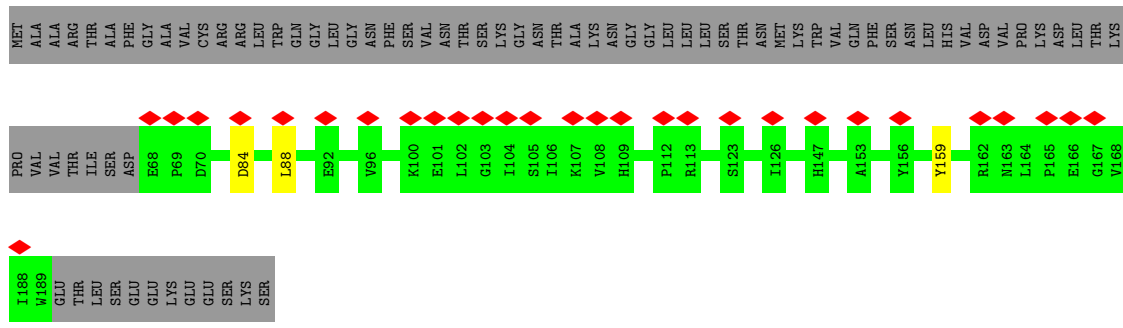
• Molecule 15: 28S ribosomal protein S29, mitochondrial



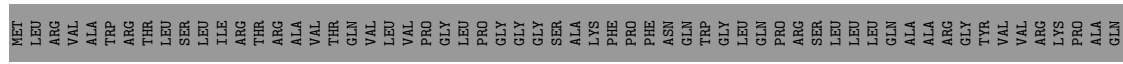
• Molecule 16: Coiled-coil-helix-coiled-coil-helix domain-containing protein 1

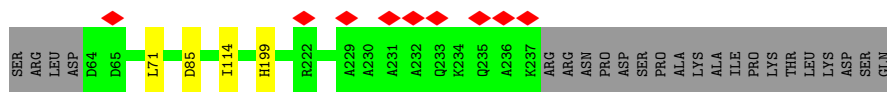


• Molecule 17: 28S ribosomal protein S10, mitochondrial

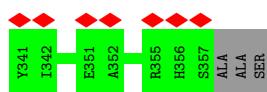
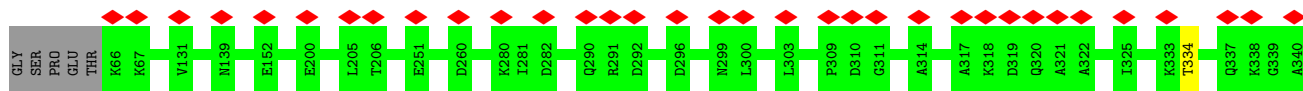
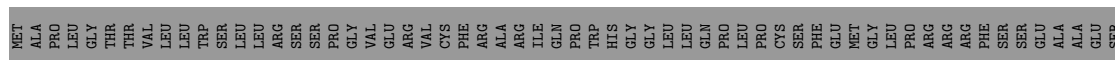
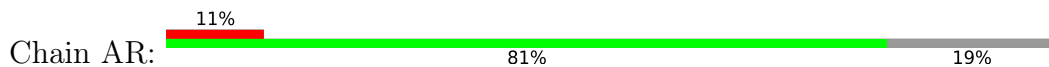


• Molecule 18: 28S ribosomal protein S15, mitochondrial

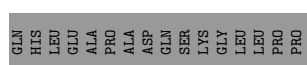
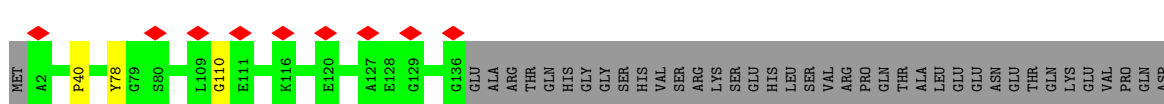




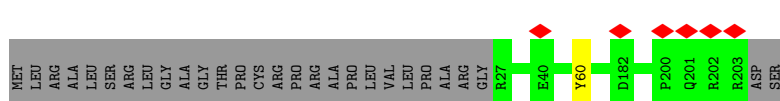
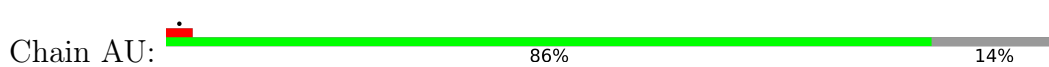
• Molecule 19: 28S ribosomal protein S22, mitochondrial



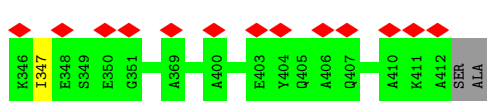
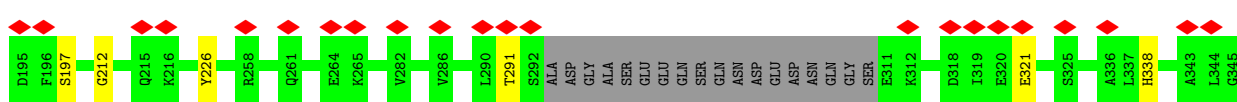
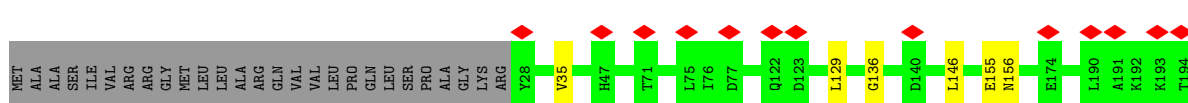
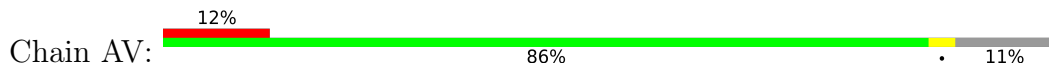
• Molecule 20: 28S ribosomal protein S23, mitochondrial



• Molecule 21: 28S ribosomal protein S26, mitochondrial

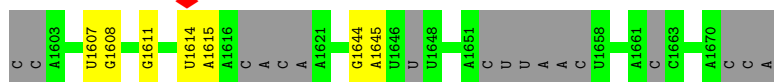


• Molecule 22: 28S ribosomal protein S27, mitochondrial

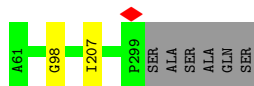
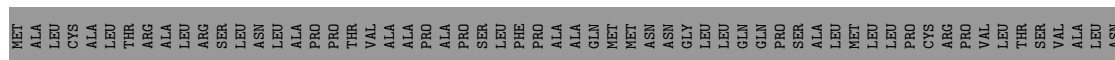




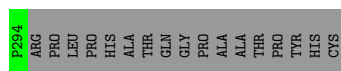
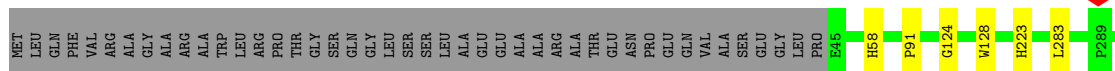
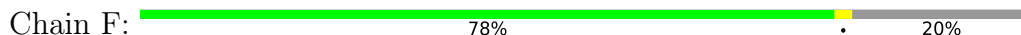
• Molecule 33: tRNA^{Val}



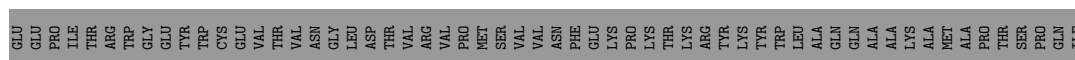
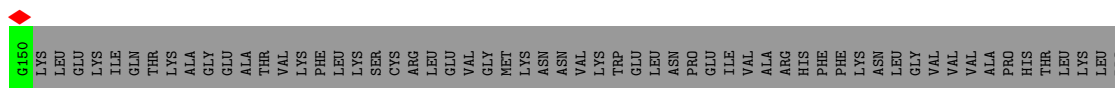
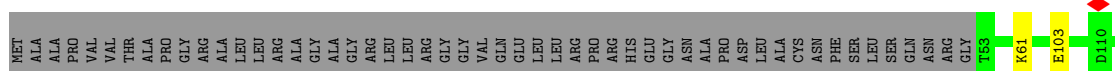
• Molecule 34: 39S ribosomal protein L2, mitochondrial



• Molecule 35: 39S ribosomal protein L4, mitochondrial



• Molecule 36: 39S ribosomal protein L9, mitochondrial

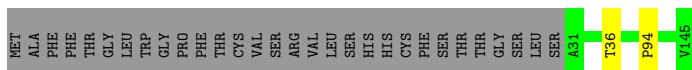
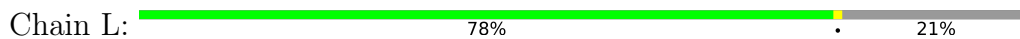


• Molecule 37: 39S ribosomal protein L13, mitochondrial





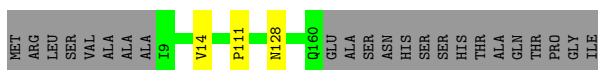
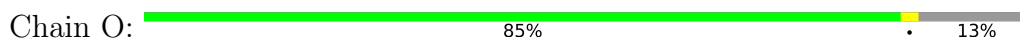
- Molecule 38: 39S ribosomal protein L14, mitochondrial



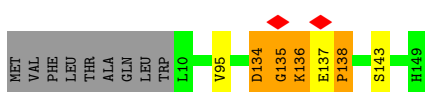
- Molecule 39: 39S ribosomal protein L15, mitochondrial



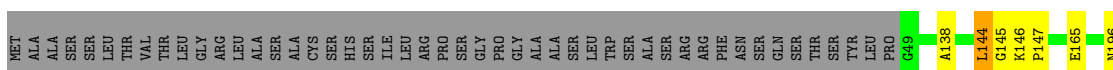
- Molecule 40: 39S ribosomal protein L17, mitochondrial



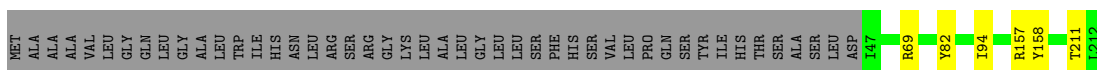
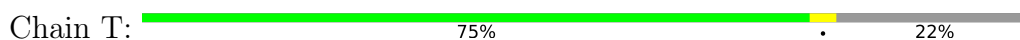
- Molecule 41: 39S ribosomal protein L20, mitochondrial



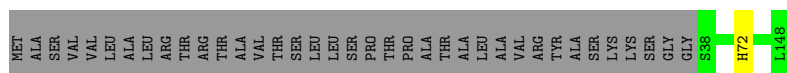
- Molecule 42: 39S ribosomal protein L21, mitochondrial



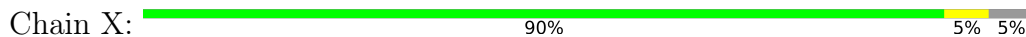
- Molecule 43: 39S ribosomal protein L22, mitochondrial



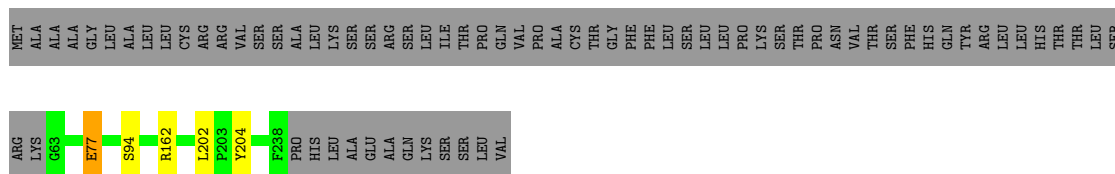
- Molecule 44: 39S ribosomal protein L27, mitochondrial



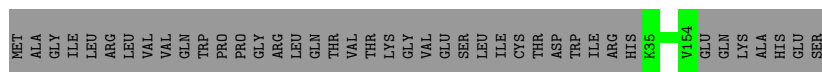
- Molecule 45: 39S ribosomal protein L28, mitochondrial



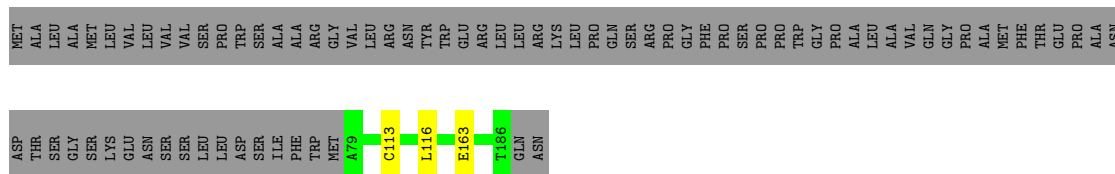
- Molecule 46: 39S ribosomal protein L47, mitochondrial



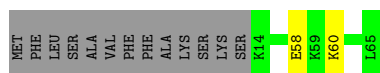
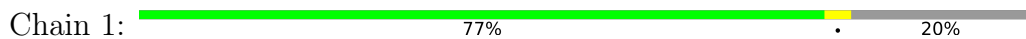
- Molecule 47: 39S ribosomal protein L30, mitochondrial



- Molecule 48: 39S ribosomal protein L32, mitochondrial

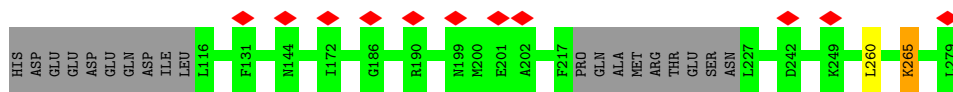


- Molecule 49: 39S ribosomal protein L33, mitochondrial

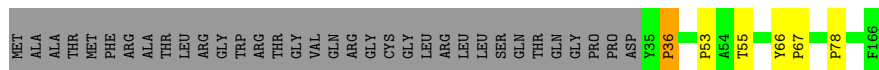
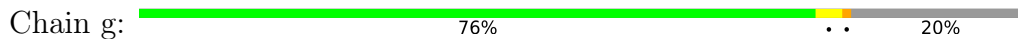


- Molecule 50: 39S ribosomal protein L34, mitochondrial

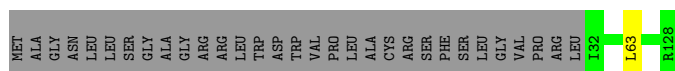




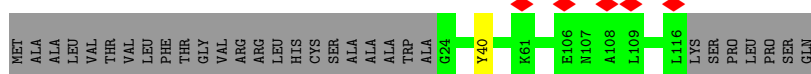
- Molecule 56: 39S ribosomal protein L49, mitochondrial



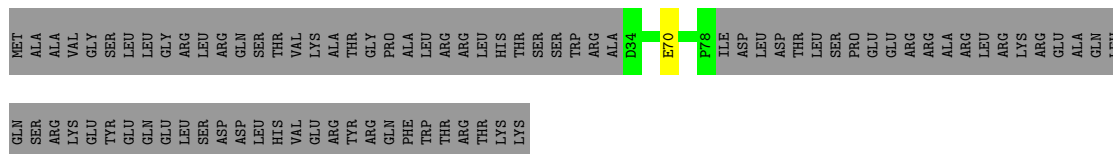
- Molecule 57: 39S ribosomal protein L51, mitochondrial



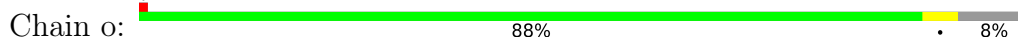
- Molecule 58: cDNA FLJ76418, highly similar to Homo sapiens mitochondrial ribosomal protein L52 (MRPL52), transcript variant 1, mRNA



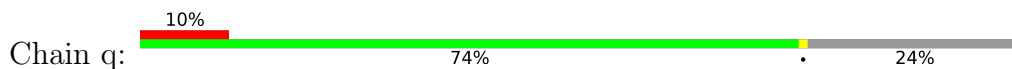
- Molecule 59: 39S ribosomal protein L55, mitochondrial

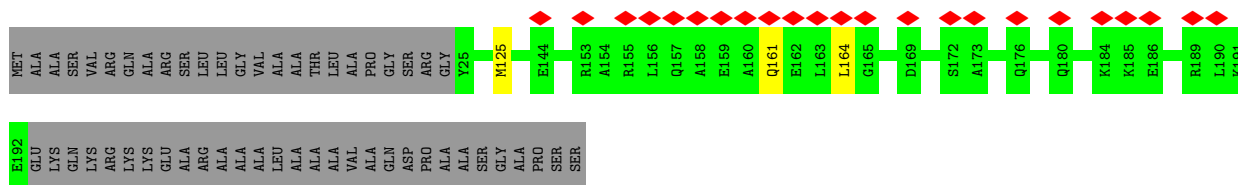


- Molecule 60: Ribosomal protein 63, mitochondrial

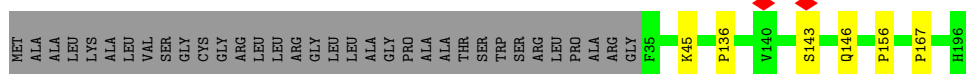
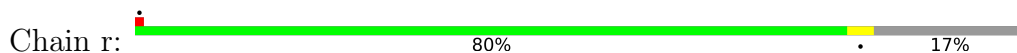


- Molecule 61: Growth arrest and DNA damage-inducible proteins-interacting protein 1

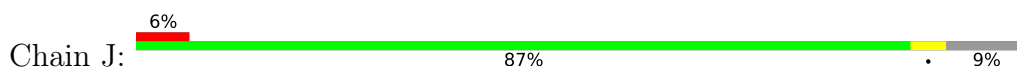




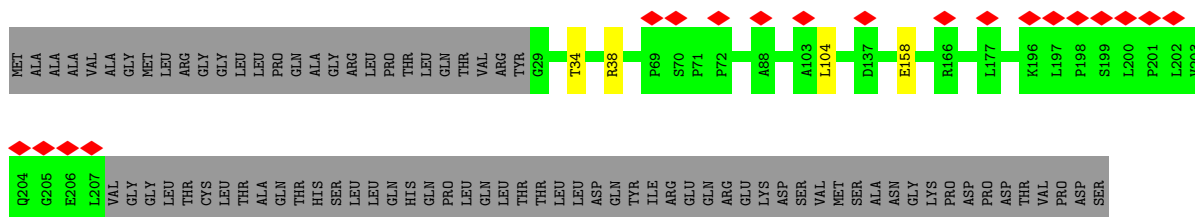
- Molecule 62: 39S ribosomal protein S18a, mitochondrial



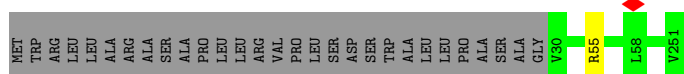
- Molecule 63: 39S ribosomal protein L11, mitochondrial



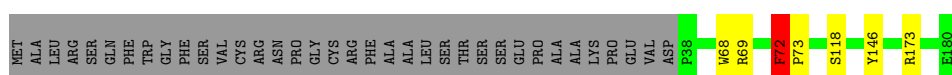
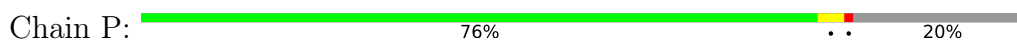
- Molecule 64: 39S ribosomal protein L10, mitochondrial



- Molecule 65: 39S ribosomal protein L16, mitochondrial

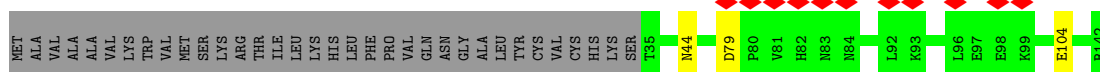
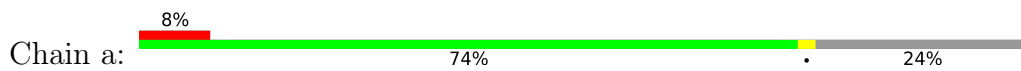


- Molecule 66: Mitochondrial ribosomal protein L18, isoform CRA_b

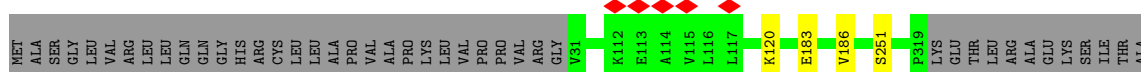
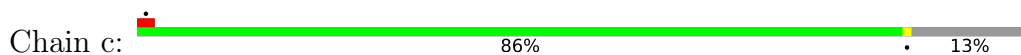


- Molecule 67: 39S ribosomal protein L23, mitochondrial



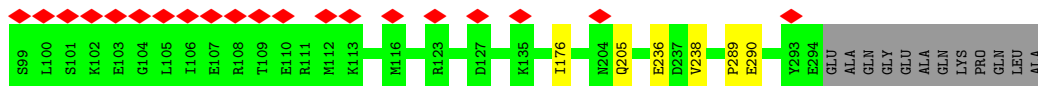
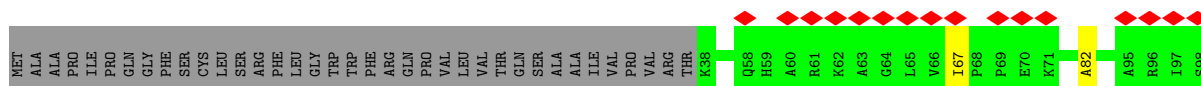
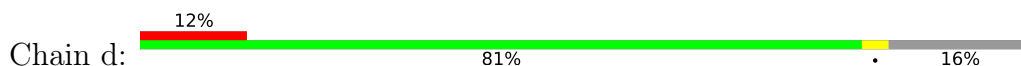


• Molecule 75: 39S ribosomal protein L44, mitochondrial

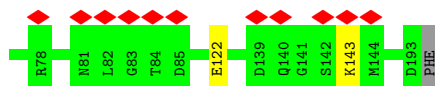
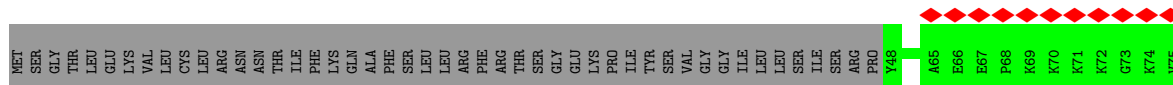


SER

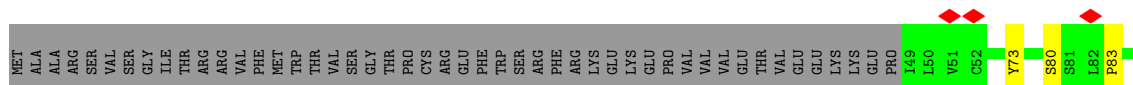
• Molecule 76: 39S ribosomal protein L45, mitochondrial



• Molecule 77: 39S ribosomal protein L48, mitochondrial

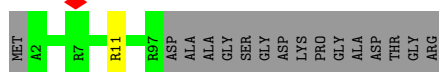
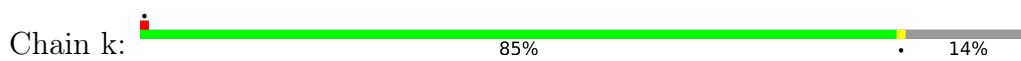


• Molecule 78: 39S ribosomal protein L50, mitochondrial

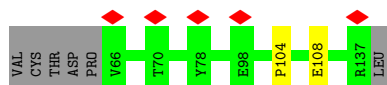
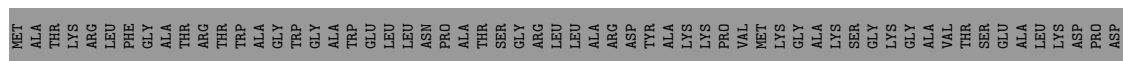


Y158

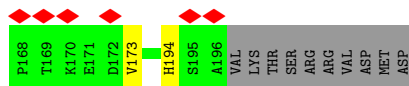
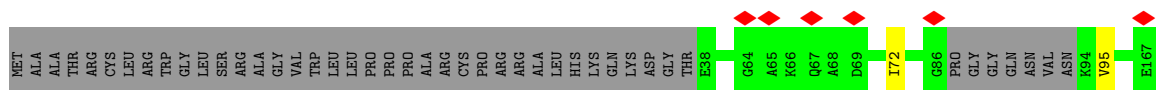
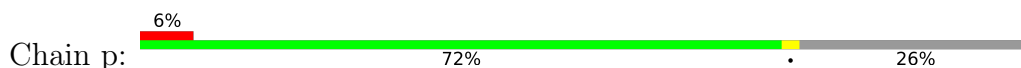
• Molecule 79: 39S ribosomal protein L53, mitochondrial



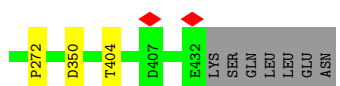
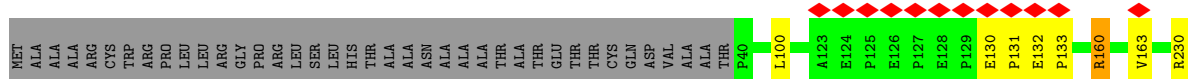
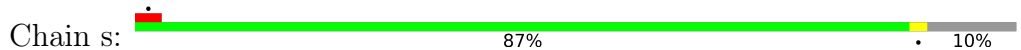
- Molecule 80: 39S ribosomal protein L54, mitochondrial



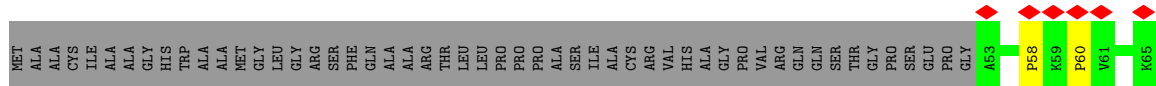
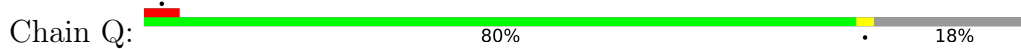
- Molecule 81: Peptidyl-tRNA hydrolase ICT1, mitochondrial

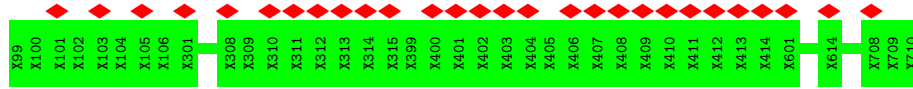


- Molecule 82: 39S ribosomal protein S30, mitochondrial

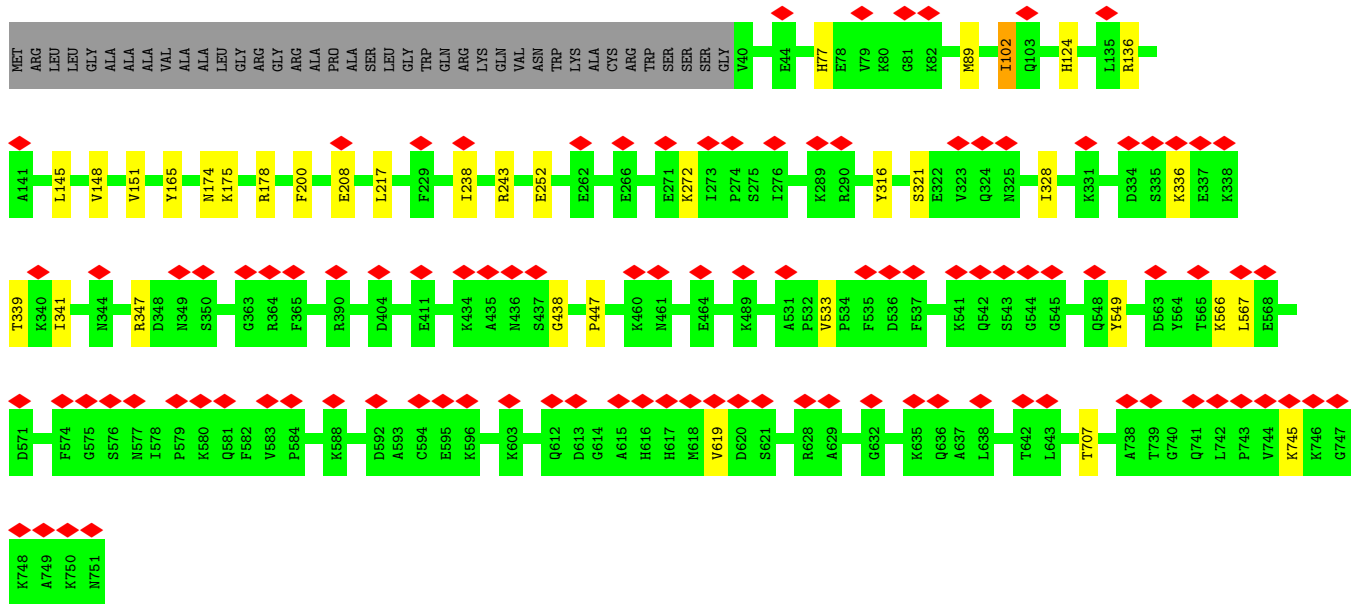
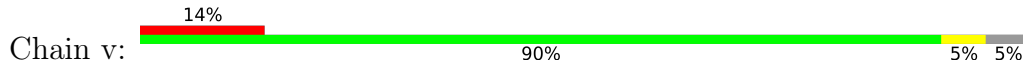


- Molecule 83: 39S ribosomal protein L19, mitochondrial





• Molecule 86: Elongation factor G, mitochondrial



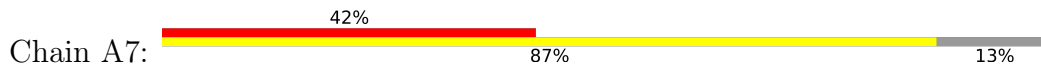
• Molecule 87: mRNA



• Molecule 88: P-site and E-site tRNA



• Molecule 88: P-site and E-site tRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	150347	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	69.2	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	4.076	Depositor
Minimum map value	-1.966	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.115	Depositor
Recommended contour level	0.267	Depositor
Map size (Å)	438.44, 438.44, 438.44	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0961, 1.0961, 1.0961	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: P5P, GDP, GCP, ZN, MG, Y5P

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	AA	0.14	0/22406	0.73	6/34881 (0.0%)
2	AB	0.23	0/1830	0.38	0/2477
3	AC	0.23	0/1112	0.40	0/1505
4	AE	0.23	0/989	0.42	0/1335
5	AI	0.24	0/1031	0.42	0/1390
6	AJ	0.23	0/854	0.42	0/1148
7	AK	0.21	0/879	0.38	0/1182
8	AM	0.23	0/941	0.39	0/1265
9	AN	0.23	0/864	0.41	0/1169
10	AO	0.23	0/1624	0.37	0/2209
11	AP	0.23	0/791	0.38	0/1062
12	AQ	0.22	0/752	0.35	0/1001
13	AT	0.24	0/1402	0.39	0/1883
14	AW	0.23	0/778	0.42	0/1048
15	AX	0.23	0/2932	0.39	0/3968
16	A2	0.23	0/939	0.38	0/1256
17	AH	0.23	0/1037	0.39	0/1403
18	AL	0.23	0/1475	0.35	0/1970
19	AR	0.23	0/2435	0.36	0/3288
20	AS	0.24	0/1138	0.36	0/1533
21	AU	0.23	0/1521	0.35	0/2039
22	AV	0.23	0/3071	0.35	0/4147
23	AY	0.26	0/1046	0.43	1/1410 (0.1%)
24	AZ	0.23	0/851	0.34	0/1133
25	A1	0.23	0/2277	0.37	0/3079
26	A0	0.22	0/1827	0.38	0/2473
27	A3	0.23	0/650	0.36	0/855
28	A4	0.23	0/3028	0.36	0/4197
29	AD	0.23	0/2783	0.38	0/3724
30	AF	0.23	0/1765	0.38	0/2369
31	AG	0.24	0/2642	0.38	0/3538
32	A	0.19	7/36246 (0.0%)	0.78	23/56422 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	B	0.13	0/1328	0.71	0/2056
34	D	0.23	0/1904	0.41	0/2561
35	F	0.23	0/2071	0.39	0/2817
36	H	0.22	0/820	0.41	0/1102
37	K	0.23	0/1495	0.37	0/2029
38	L	0.23	0/904	0.41	0/1218
39	M	0.24	0/2359	0.39	0/3185
40	O	0.23	0/1269	0.39	0/1708
41	R	0.23	0/1174	0.47	4/1572 (0.3%)
42	S	0.24	0/1276	0.51	2/1729 (0.1%)
43	T	0.23	0/1402	0.38	0/1886
44	W	0.24	0/893	0.42	0/1204
45	X	0.23	0/2081	0.37	0/2812
46	Y	0.23	0/1552	0.35	0/2079
47	Z	0.23	0/1003	0.39	0/1354
48	0	0.22	0/895	0.40	0/1201
49	1	0.23	0/438	0.41	0/583
50	2	0.22	0/382	0.38	0/507
51	3	0.23	0/852	0.38	0/1136
52	4	0.22	0/350	0.39	0/461
53	8	0.23	0/855	0.39	0/1152
54	b	0.23	0/1202	0.40	0/1626
55	e	0.23	0/1797	0.40	0/2422
56	g	0.25	0/1132	0.42	0/1543
57	i	0.23	0/849	0.35	0/1135
58	j	0.23	0/755	0.39	0/1016
59	m	0.22	0/379	0.41	0/510
60	o	0.22	0/818	0.35	0/1097
61	q	0.23	0/1325	0.41	1/1799 (0.1%)
62	r	0.22	0/1362	0.38	0/1846
63	J	0.30	0/1348	0.47	0/1813
64	I	0.23	0/1467	0.42	0/1984
65	N	0.24	0/1833	0.39	0/2468
66	P	0.29	0/1191	0.53	3/1611 (0.2%)
67	U	0.24	0/1254	0.38	0/1700
68	V	0.23	0/1727	0.39	0/2341
69	E	0.23	0/2479	0.40	0/3360
70	5	0.29	1/3305 (0.0%)	0.43	0/4502
71	6	0.24	0/3043	0.39	0/4140
72	7	0.23	0/2467	0.39	0/3337
73	9	0.25	0/1025	0.40	0/1379
74	a	0.22	0/923	0.39	0/1254
75	c	0.24	0/2371	0.37	0/3205

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	d	0.24	0/2132	0.40	0/2887
77	f	0.23	0/1144	0.43	0/1551
78	h	0.23	0/917	0.38	0/1249
79	k	0.23	0/754	0.40	0/1017
80	l	0.23	0/636	0.37	0/860
81	p	0.23	0/1246	0.40	0/1675
82	s	0.24	0/3262	0.43	1/4435 (0.0%)
83	Q	0.25	0/2044	0.39	0/2757
84	TA	0.23	0/349	0.41	0/475
84	TB	0.21	0/212	0.39	0/286
84	TC	0.24	0/351	0.48	0/488
86	v	0.28	2/5647 (0.0%)	0.51	6/7623 (0.1%)
All	All	0.22	10/181965 (0.0%)	0.56	47/258102 (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
23	AY	0	1
41	R	0	1
42	S	0	1
66	P	0	1
82	s	0	1
84	TC	0	1
86	v	0	1
All	All	0	7

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
32	A	3089	A	C5-C4	-10.46	1.31	1.38
32	A	3089	A	N9-C4	10.01	1.43	1.37
32	A	3089	A	C2'-C1'	-7.28	1.45	1.53
86	v	174	ASN	C-N	7.27	1.50	1.34
32	A	3089	A	C3'-O3'	-6.64	1.32	1.42

The worst 5 of 47 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
32	A	3089	A	C2-N3-C4	26.44	123.82	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
32	A	3089	A	N1-C6-N6	-19.00	107.20	118.60
32	A	3089	A	C5-C6-N1	17.36	126.38	117.70
32	A	3089	A	N3-C4-C5	-14.89	116.37	126.80
32	A	3089	A	C5-N7-C8	14.31	111.06	103.90

There are no chirality outliers.

5 of 7 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
23	AY	313	PHE	Peptide
66	P	72	PHE	Peptide
41	R	134	ASP	Peptide
42	S	144	LEU	Peptide
82	s	160	ARG	Peptide

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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 PDB entries followed by that with respect to all EM entries.

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	AB	218/296 (74%)	193 (88%)	21 (10%)	4 (2%)	8	33
3	AC	130/167 (78%)	110 (85%)	19 (15%)	1 (1%)	19	53
4	AE	120/125 (96%)	102 (85%)	15 (12%)	3 (2%)	5	25
5	AI	134/194 (69%)	117 (87%)	12 (9%)	5 (4%)	3	15
6	AJ	106/138 (77%)	88 (83%)	15 (14%)	3 (3%)	5	22
7	AK	99/128 (77%)	87 (88%)	10 (10%)	2 (2%)	7	30
8	AM	114/137 (83%)	101 (89%)	12 (10%)	1 (1%)	17	51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	AN	105/130 (81%)	83 (79%)	21 (20%)	1 (1%)	15	48
10	AO	188/258 (73%)	170 (90%)	15 (8%)	3 (2%)	9	36
11	AP	94/142 (66%)	79 (84%)	12 (13%)	3 (3%)	4	19
12	AQ	84/87 (97%)	75 (89%)	9 (11%)	0	100	100
13	AT	166/173 (96%)	149 (90%)	17 (10%)	0	100	100
14	AW	95/187 (51%)	78 (82%)	15 (16%)	2 (2%)	7	29
15	AX	351/398 (88%)	318 (91%)	27 (8%)	6 (2%)	9	34
16	A2	114/118 (97%)	102 (90%)	12 (10%)	0	100	100
17	AH	120/201 (60%)	96 (80%)	20 (17%)	4 (3%)	4	18
18	AL	172/257 (67%)	151 (88%)	17 (10%)	4 (2%)	6	27
19	AR	290/360 (81%)	253 (87%)	36 (12%)	1 (0%)	41	73
20	AS	133/190 (70%)	122 (92%)	8 (6%)	3 (2%)	6	27
21	AU	175/205 (85%)	164 (94%)	11 (6%)	0	100	100
22	AV	363/414 (88%)	312 (86%)	42 (12%)	9 (2%)	5	25
23	AY	118/395 (30%)	105 (89%)	12 (10%)	1 (1%)	19	53
24	AZ	97/106 (92%)	89 (92%)	8 (8%)	0	100	100
25	A1	273/323 (84%)	247 (90%)	23 (8%)	3 (1%)	14	46
26	A0	212/218 (97%)	183 (86%)	27 (13%)	2 (1%)	17	51
27	A3	70/199 (35%)	65 (93%)	4 (6%)	1 (1%)	11	39
28	A4	541/689 (78%)	468 (86%)	61 (11%)	12 (2%)	6	28
29	AD	341/430 (79%)	298 (87%)	38 (11%)	5 (2%)	10	38
30	AF	206/242 (85%)	184 (89%)	19 (9%)	3 (2%)	10	38
31	AG	311/396 (78%)	274 (88%)	35 (11%)	2 (1%)	25	60
34	D	237/305 (78%)	207 (87%)	28 (12%)	2 (1%)	19	53
35	F	248/311 (80%)	217 (88%)	26 (10%)	5 (2%)	7	30
36	H	96/267 (36%)	83 (86%)	11 (12%)	2 (2%)	7	29
37	K	175/178 (98%)	153 (87%)	16 (9%)	6 (3%)	3	17
38	L	113/145 (78%)	101 (89%)	11 (10%)	1 (1%)	17	51
39	M	285/296 (96%)	252 (88%)	26 (9%)	7 (2%)	5	25
40	O	150/175 (86%)	128 (85%)	19 (13%)	3 (2%)	7	30
41	R	138/149 (93%)	124 (90%)	9 (6%)	5 (4%)	3	16

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
42	S	154/205 (75%)	135 (88%)	15 (10%)	4 (3%)	5	24
43	T	164/212 (77%)	148 (90%)	13 (8%)	3 (2%)	8	33
44	W	109/148 (74%)	96 (88%)	12 (11%)	1 (1%)	17	51
45	X	241/256 (94%)	213 (88%)	22 (9%)	6 (2%)	5	25
46	Y	174/250 (70%)	161 (92%)	8 (5%)	5 (3%)	4	21
47	Z	118/161 (73%)	106 (90%)	12 (10%)	0	100	100
48	0	106/188 (56%)	93 (88%)	10 (9%)	3 (3%)	5	22
49	1	50/65 (77%)	42 (84%)	7 (14%)	1 (2%)	7	30
50	2	44/92 (48%)	41 (93%)	2 (4%)	1 (2%)	6	27
51	3	93/188 (50%)	84 (90%)	8 (9%)	1 (1%)	14	46
52	4	36/103 (35%)	33 (92%)	3 (8%)	0	100	100
53	8	97/206 (47%)	84 (87%)	13 (13%)	0	100	100
54	b	146/155 (94%)	129 (88%)	14 (10%)	3 (2%)	7	29
55	e	211/279 (76%)	188 (89%)	22 (10%)	1 (0%)	29	64
56	g	130/166 (78%)	111 (85%)	14 (11%)	5 (4%)	3	15
57	i	95/128 (74%)	75 (79%)	20 (21%)	0	100	100
58	j	91/123 (74%)	83 (91%)	7 (8%)	1 (1%)	14	46
59	m	43/128 (34%)	34 (79%)	8 (19%)	1 (2%)	6	27
60	o	92/102 (90%)	78 (85%)	11 (12%)	3 (3%)	4	18
61	q	166/222 (75%)	154 (93%)	10 (6%)	2 (1%)	13	43
62	r	160/196 (82%)	139 (87%)	17 (11%)	4 (2%)	5	25
63	J	173/192 (90%)	152 (88%)	15 (9%)	6 (4%)	3	17
64	I	177/261 (68%)	164 (93%)	12 (7%)	1 (1%)	25	60
65	N	220/251 (88%)	203 (92%)	16 (7%)	1 (0%)	29	64
66	P	141/179 (79%)	123 (87%)	13 (9%)	5 (4%)	3	17
67	U	150/153 (98%)	121 (81%)	27 (18%)	2 (1%)	12	41
68	V	204/216 (94%)	179 (88%)	25 (12%)	0	100	100
69	E	304/348 (87%)	268 (88%)	32 (10%)	4 (1%)	12	41
70	5	392/423 (93%)	347 (88%)	41 (10%)	4 (1%)	15	48
71	6	352/380 (93%)	302 (86%)	47 (13%)	3 (1%)	17	51
72	7	295/338 (87%)	260 (88%)	28 (10%)	7 (2%)	6	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
73	9	122/137 (89%)	106 (87%)	15 (12%)	1 (1%)	19	53
74	a	106/142 (75%)	95 (90%)	8 (8%)	3 (3%)	5	22
75	c	287/332 (86%)	266 (93%)	17 (6%)	4 (1%)	11	39
76	d	255/306 (83%)	215 (84%)	34 (13%)	6 (2%)	6	26
77	f	144/194 (74%)	122 (85%)	21 (15%)	1 (1%)	22	56
78	h	108/158 (68%)	93 (86%)	13 (12%)	2 (2%)	8	32
79	k	94/112 (84%)	86 (92%)	8 (8%)	0	100	100
80	l	70/138 (51%)	62 (89%)	7 (10%)	1 (1%)	11	39
81	p	148/206 (72%)	130 (88%)	16 (11%)	2 (1%)	11	39
82	s	391/439 (89%)	342 (88%)	40 (10%)	9 (2%)	6	27
83	Q	238/292 (82%)	216 (91%)	16 (7%)	6 (2%)	5	25
84	TA	43/198 (22%)	32 (74%)	11 (26%)	0	100	100
84	TB	25/198 (13%)	24 (96%)	1 (4%)	0	100	100
84	TC	69/198 (35%)	57 (83%)	11 (16%)	1 (1%)	11	39
86	v	710/751 (94%)	565 (80%)	128 (18%)	17 (2%)	6	26
All	All	14720/19244 (76%)	12885 (88%)	1589 (11%)	246 (2%)	13	34

5 of 246 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
18	AL	71	LEU
23	AY	314	PRO
28	A4	252	PRO
28	A4	450	PRO
28	A4	542	PRO

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 PDB entries followed by that with respect to all EM entries.

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	AB	193/249 (78%)	193 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	AC	115/143 (80%)	114 (99%)	1 (1%)	78	91
4	AE	104/107 (97%)	103 (99%)	1 (1%)	76	90
5	AI	104/147 (71%)	104 (100%)	0	100	100
6	AJ	93/118 (79%)	93 (100%)	0	100	100
7	AK	91/113 (80%)	90 (99%)	1 (1%)	73	89
8	AM	95/113 (84%)	95 (100%)	0	100	100
9	AN	93/115 (81%)	93 (100%)	0	100	100
10	AO	171/230 (74%)	171 (100%)	0	100	100
11	AP	87/123 (71%)	87 (100%)	0	100	100
12	AQ	78/79 (99%)	77 (99%)	1 (1%)	69	87
13	AT	153/157 (98%)	153 (100%)	0	100	100
14	AW	84/158 (53%)	84 (100%)	0	100	100
15	AX	312/351 (89%)	311 (100%)	1 (0%)	92	97
16	A2	99/101 (98%)	99 (100%)	0	100	100
17	AH	112/180 (62%)	110 (98%)	2 (2%)	59	82
18	AL	157/226 (70%)	157 (100%)	0	100	100
19	AR	262/318 (82%)	262 (100%)	0	100	100
20	AS	116/164 (71%)	116 (100%)	0	100	100
21	AU	153/174 (88%)	152 (99%)	1 (1%)	84	93
22	AV	328/364 (90%)	324 (99%)	4 (1%)	71	88
23	AY	111/357 (31%)	111 (100%)	0	100	100
24	AZ	89/95 (94%)	89 (100%)	0	100	100
25	A1	253/291 (87%)	250 (99%)	3 (1%)	71	88
26	A0	186/190 (98%)	185 (100%)	1 (0%)	88	95
27	A3	66/166 (40%)	63 (96%)	3 (4%)	27	61
28	A4	83/609 (14%)	83 (100%)	0	100	100
29	AD	286/357 (80%)	285 (100%)	1 (0%)	92	97
30	AF	185/209 (88%)	180 (97%)	5 (3%)	44	74
31	AG	273/342 (80%)	268 (98%)	5 (2%)	59	82
34	D	193/245 (79%)	193 (100%)	0	100	100
35	F	217/262 (83%)	216 (100%)	1 (0%)	88	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
36	H	88/228 (39%)	88 (100%)	0	100	100
37	K	155/156 (99%)	155 (100%)	0	100	100
38	L	98/124 (79%)	97 (99%)	1 (1%)	76	90
39	M	245/249 (98%)	242 (99%)	3 (1%)	71	88
40	O	133/150 (89%)	133 (100%)	0	100	100
41	R	118/126 (94%)	117 (99%)	1 (1%)	81	92
42	S	141/180 (78%)	140 (99%)	1 (1%)	84	93
43	T	146/182 (80%)	143 (98%)	3 (2%)	53	80
44	W	91/119 (76%)	91 (100%)	0	100	100
45	X	217/227 (96%)	211 (97%)	6 (3%)	43	74
46	Y	159/223 (71%)	158 (99%)	1 (1%)	86	94
47	Z	111/147 (76%)	111 (100%)	0	100	100
48	0	97/164 (59%)	97 (100%)	0	100	100
49	1	49/60 (82%)	48 (98%)	1 (2%)	55	80
50	2	40/72 (56%)	40 (100%)	0	100	100
51	3	88/166 (53%)	88 (100%)	0	100	100
52	4	37/89 (42%)	37 (100%)	0	100	100
53	8	91/190 (48%)	91 (100%)	0	100	100
54	b	130/135 (96%)	130 (100%)	0	100	100
55	e	188/236 (80%)	185 (98%)	3 (2%)	62	84
56	g	122/148 (82%)	120 (98%)	2 (2%)	62	84
57	i	86/110 (78%)	85 (99%)	1 (1%)	71	88
58	j	74/97 (76%)	74 (100%)	0	100	100
59	m	40/113 (35%)	40 (100%)	0	100	100
60	o	80/87 (92%)	79 (99%)	1 (1%)	69	87
61	q	114/178 (64%)	114 (100%)	0	100	100
62	r	147/169 (87%)	145 (99%)	2 (1%)	67	86
63	J	138/150 (92%)	136 (99%)	2 (1%)	67	86
64	I	164/232 (71%)	161 (98%)	3 (2%)	59	82
65	N	189/211 (90%)	189 (100%)	0	100	100
66	P	125/154 (81%)	123 (98%)	2 (2%)	62	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
67	U	126/135 (93%)	126 (100%)	0	100	100
68	V	184/191 (96%)	184 (100%)	0	100	100
69	E	260/290 (90%)	259 (100%)	1 (0%)	91	96
70	5	353/368 (96%)	349 (99%)	4 (1%)	73	89
71	6	313/332 (94%)	312 (100%)	1 (0%)	92	97
72	7	272/303 (90%)	272 (100%)	0	100	100
73	9	104/112 (93%)	103 (99%)	1 (1%)	76	90
74	a	101/133 (76%)	101 (100%)	0	100	100
75	c	253/288 (88%)	253 (100%)	0	100	100
76	d	224/274 (82%)	222 (99%)	2 (1%)	78	91
77	f	122/173 (70%)	121 (99%)	1 (1%)	81	92
78	h	104/148 (70%)	103 (99%)	1 (1%)	76	90
79	k	81/90 (90%)	80 (99%)	1 (1%)	71	88
80	l	67/116 (58%)	66 (98%)	1 (2%)	65	85
81	p	134/181 (74%)	132 (98%)	2 (2%)	65	85
82	s	336/381 (88%)	335 (100%)	1 (0%)	92	97
83	Q	221/256 (86%)	220 (100%)	1 (0%)	88	95
84	TA	39/158 (25%)	39 (100%)	0	100	100
84	TB	26/158 (16%)	26 (100%)	0	100	100
86	v	598/630 (95%)	584 (98%)	14 (2%)	50	78
All	All	12561/16442 (76%)	12466 (99%)	95 (1%)	82	92

5 of 95 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
63	J	126	GLN
76	d	205	GLN
64	I	34	THR
70	5	46	LEU
79	k	11	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 201 such sidechains are listed below:

Mol	Chain	Res	Type
56	g	73	GLN
67	U	74	HIS
86	v	506	GLN
58	j	36	ASN
62	r	146	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	940/954 (98%)	190 (20%)	10 (1%)
32	A	1523/1559 (97%)	345 (22%)	18 (1%)
33	B	51/73 (69%)	6 (11%)	1 (1%)
All	All	2514/2586 (97%)	541 (21%)	29 (1%)

5 of 541 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	650	U
1	AA	651	A
1	AA	663	A
1	AA	676	G
1	AA	680	U

5 of 29 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
32	A	1823	A
32	A	3196	G
32	A	2165	C
32	A	2989	G
32	A	1994	A

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

144 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
88	P5P	A6	34	88	16,23,24	1.35	3 (18%)	14,33,36	1.99	2 (14%)
88	P5P	A7	19	88	16,23,24	1.42	2 (12%)	14,33,36	2.19	3 (21%)
88	P5P	A7	49	88	16,23,24	1.39	2 (12%)	14,33,36	2.14	2 (14%)
88	Y5P	A7	22	88	14,19,20	3.49	1 (7%)	18,26,29	1.02	1 (5%)
88	P5P	A6	5	88	16,23,24	1.34	2 (12%)	14,33,36	2.00	2 (14%)
88	Y5P	A7	65	88	14,19,20	3.62	1 (7%)	18,26,29	1.04	1 (5%)
88	Y5P	A6	38	88	14,19,20	3.44	1 (7%)	18,26,29	0.95	1 (5%)
88	P5P	A7	45	88	16,23,24	1.33	2 (12%)	14,33,36	2.29	2 (14%)
88	P5P	A7	11	88	16,23,24	1.37	2 (12%)	14,33,36	2.19	2 (14%)
88	P5P	A6	16	88	16,23,24	1.57	4 (25%)	14,33,36	2.30	3 (21%)
88	Y5P	A7	12	88	14,19,20	3.30	1 (7%)	18,26,29	1.00	1 (5%)
88	Y5P	A6	59	88	14,19,20	3.59	1 (7%)	18,26,29	0.99	1 (5%)
87	Y5P	A5	8	87	14,19,20	3.49	1 (7%)	18,26,29	1.01	2 (11%)
88	P5P	A6	19	88	16,23,24	1.37	2 (12%)	14,33,36	2.16	3 (21%)
88	Y5P	A6	51	88	14,19,20	3.46	1 (7%)	18,26,29	1.00	2 (11%)
88	P5P	A6	71	32,88	16,23,24	1.35	2 (12%)	14,33,36	2.09	2 (14%)
88	Y5P	A6	61	88	14,19,20	3.49	1 (7%)	18,26,29	1.02	1 (5%)
88	P5P	A6	43	88	16,23,24	1.48	2 (12%)	14,33,36	2.33	4 (28%)
87	Y5P	A5	10	87	14,19,20	3.44	1 (7%)	18,26,29	0.99	1 (5%)
88	Y5P	A7	70	88	14,19,20	3.35	1 (7%)	18,26,29	0.97	1 (5%)
88	Y5P	A6	67	88	14,19,20	3.57	1 (7%)	18,26,29	1.03	2 (11%)
87	Y5P	A5	7	87	14,19,20	3.57	1 (7%)	18,26,29	1.03	2 (11%)
88	Y5P	A7	3	88	14,19,20	3.58	1 (7%)	18,26,29	1.09	1 (5%)
88	P5P	A7	1	88	16,20,24	1.45	1 (6%)	14,29,36	2.06	2 (14%)
87	P5P	A5	5	87	16,23,24	1.38	2 (12%)	14,33,36	2.08	2 (14%)
88	Y5P	A6	25	88	14,19,20	3.38	1 (7%)	18,26,29	0.96	1 (5%)
88	Y5P	A7	51	88	14,19,20	3.50	1 (7%)	18,26,29	1.04	2 (11%)
87	Y5P	A5	3	87	14,19,20	3.48	1 (7%)	18,26,29	1.29	2 (11%)
88	P5P	A6	10	88	16,23,24	1.38	2 (12%)	14,33,36	2.07	2 (14%)
88	P5P	A7	39	88	16,23,24	1.35	2 (12%)	14,33,36	2.21	2 (14%)
88	Y5P	A7	59	88	14,19,20	3.62	1 (7%)	18,26,29	1.01	1 (5%)
88	P5P	A6	6	88	16,23,24	1.40	2 (12%)	14,33,36	2.08	2 (14%)
88	Y5P	A7	37	88	14,19,20	3.44	1 (7%)	18,26,29	0.99	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
88	P5P	A7	20	88	16,23,24	1.37	1 (6%)	14,33,36	2.10	2 (14%)
88	Y5P	A6	8	88	14,19,20	3.86	1 (7%)	18,26,29	0.96	1 (5%)
88	Y5P	A6	60	88	14,19,20	3.48	1 (7%)	18,26,29	1.13	2 (11%)
88	P5P	A7	15	88	16,23,24	1.53	4 (25%)	14,33,36	2.05	2 (14%)
88	Y5P	A6	50	88	14,19,20	3.47	1 (7%)	18,26,29	0.98	1 (5%)
88	Y5P	A7	67	88	14,19,20	3.76	1 (7%)	18,26,29	1.16	1 (5%)
88	Y5P	A7	9	88	14,19,20	3.67	1 (7%)	18,26,29	1.47	2 (11%)
88	Y5P	A7	57	88	14,19,20	3.48	1 (7%)	18,26,29	1.02	1 (5%)
88	P5P	A6	18	88	16,23,24	1.42	2 (12%)	14,33,36	2.07	2 (14%)
88	P5P	A6	1	88	16,20,24	1.47	1 (6%)	14,29,36	2.16	2 (14%)
88	P5P	A7	23	88	16,23,24	1.38	2 (12%)	14,33,36	1.99	2 (14%)
88	P5P	A6	27	88	16,23,24	1.33	1 (6%)	14,33,36	2.20	2 (14%)
88	P5P	A6	28	88	16,23,24	1.36	1 (6%)	14,33,36	2.23	2 (14%)
88	Y5P	A7	56	88	14,19,20	3.41	1 (7%)	18,26,29	1.08	1 (5%)
88	Y5P	A6	24	88	14,19,20	3.30	1 (7%)	18,26,29	0.95	1 (5%)
88	P5P	A6	14	88	16,23,24	1.42	3 (18%)	14,33,36	2.00	2 (14%)
88	P5P	A6	20	88	16,23,24	1.36	2 (12%)	14,33,36	2.05	2 (14%)
88	Y5P	A6	56	88	14,19,20	3.43	1 (7%)	18,26,29	1.03	1 (5%)
88	P5P	A7	7	88	16,23,24	1.41	2 (12%)	14,33,36	2.23	2 (14%)
88	Y5P	A6	21	88	14,19,20	3.46	1 (7%)	18,26,29	1.03	2 (11%)
88	P5P	A6	41	88	16,23,24	1.39	3 (18%)	14,33,36	1.93	2 (14%)
88	Y5P	A7	47	88	14,19,20	3.61	1 (7%)	18,26,29	1.12	1 (5%)
87	P5P	A5	11	87	16,23,24	1.34	2 (12%)	14,33,36	2.01	2 (14%)
88	Y5P	A7	66	88	14,19,20	3.68	1 (7%)	18,26,29	1.02	1 (5%)
88	Y5P	A6	65	88	14,19,20	3.50	1 (7%)	18,26,29	0.98	2 (11%)
88	Y5P	A6	22	88	14,19,20	3.52	1 (7%)	18,26,29	0.97	1 (5%)
88	Y5P	A7	25	88	14,19,20	3.39	1 (7%)	18,26,29	0.96	1 (5%)
88	Y5P	A6	33	88	14,19,20	3.29	1 (7%)	18,26,29	1.03	1 (5%)
88	P5P	A6	42	88	16,23,24	1.32	3 (18%)	14,33,36	2.11	2 (14%)
88	Y5P	A7	8	88	14,19,20	3.64	1 (7%)	18,26,29	0.96	2 (11%)
88	Y5P	A6	36	88	14,19,20	3.39	1 (7%)	18,26,29	0.96	1 (5%)
88	P5P	A7	4	88	16,23,24	1.35	1 (6%)	14,33,36	2.22	3 (21%)
88	P5P	A6	7	88	16,23,24	1.42	2 (12%)	14,33,36	2.11	2 (14%)
88	Y5P	A6	63	88	14,19,20	3.57	1 (7%)	18,26,29	1.06	2 (11%)
88	Y5P	A7	46	88	14,19,20	3.58	1 (7%)	18,26,29	1.08	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
88	Y5P	A7	53	88	14,19,20	3.81	1 (7%)	18,26,29	1.17	2 (11%)
88	P5P	A7	6	88	16,23,24	1.35	1 (6%)	14,33,36	2.22	2 (14%)
88	P5P	A7	40	88	16,23,24	1.36	2 (12%)	14,33,36	2.13	2 (14%)
88	Y5P	A7	50	88	14,19,20	3.47	1 (7%)	18,26,29	0.99	1 (5%)
88	Y5P	A6	44	88	14,19,20	3.71	1 (7%)	18,26,29	0.93	1 (5%)
88	P5P	A7	18	88	16,23,24	1.43	3 (18%)	14,33,36	2.17	2 (14%)
88	P5P	A6	2	88	16,23,24	1.41	1 (6%)	14,33,36	2.09	2 (14%)
87	Y5P	A5	1	87	14,19,20	3.75	2 (14%)	18,26,29	1.56	2 (11%)
88	Y5P	A6	13	88	14,19,20	3.34	1 (7%)	18,26,29	0.83	1 (5%)
88	Y5P	A7	24	88	14,19,20	3.35	1 (7%)	18,26,29	0.95	1 (5%)
88	P5P	A7	71	88	16,23,24	1.33	2 (12%)	14,33,36	2.09	2 (14%)
88	P5P	A7	42	88	16,23,24	1.32	2 (12%)	14,33,36	2.17	2 (14%)
88	Y5P	A7	58	88	14,19,20	3.63	1 (7%)	18,26,29	1.05	1 (5%)
87	P5P	A5	6	87	16,23,24	1.36	2 (12%)	14,33,36	2.18	3 (21%)
88	Y5P	A6	9	88	14,19,20	3.62	1 (7%)	18,26,29	1.47	3 (16%)
88	Y5P	A7	61	88	14,19,20	3.45	1 (7%)	18,26,29	1.00	1 (5%)
88	Y5P	A6	69	88	14,19,20	4.08	1 (7%)	18,26,29	1.55	5 (27%)
88	P5P	A6	52	88	16,23,24	1.42	2 (12%)	14,33,36	2.17	3 (21%)
88	Y5P	A7	62	88	14,19,20	3.48	1 (7%)	18,26,29	1.08	1 (5%)
88	Y5P	A6	35	88	14,19,20	3.33	1 (7%)	18,26,29	1.03	1 (5%)
88	Y5P	A7	17	88	14,19,20	3.54	1 (7%)	18,26,29	0.93	1 (5%)
88	P5P	A6	45	88	16,23,24	1.33	2 (12%)	14,33,36	2.14	2 (14%)
88	Y5P	A6	57	88	14,19,20	3.44	1 (7%)	18,26,29	0.98	1 (5%)
88	Y5P	A6	31	88	14,19,20	3.39	1 (7%)	18,26,29	0.97	1 (5%)
88	P5P	A7	10	88	16,23,24	1.35	2 (12%)	14,33,36	2.10	2 (14%)
87	P5P	A5	9	87	16,23,24	1.34	2 (12%)	14,33,36	1.99	2 (14%)
88	P5P	A7	26	88	16,23,24	1.38	2 (12%)	14,33,36	2.19	2 (14%)
88	Y5P	A7	68	88	14,19,20	3.59	1 (7%)	18,26,29	1.30	3 (16%)
88	P5P	A7	16	88	16,23,24	1.53	4 (25%)	14,33,36	2.29	3 (21%)
88	P5P	A6	23	88	16,23,24	1.38	2 (12%)	14,33,36	2.02	2 (14%)
88	Y5P	A6	47	88	14,19,20	3.53	1 (7%)	18,26,29	1.09	2 (11%)
88	P5P	A7	48	88	16,23,24	1.36	2 (12%)	14,33,36	2.16	2 (14%)
88	P5P	A6	26	88	16,23,24	1.41	2 (12%)	14,33,36	2.19	2 (14%)
88	Y5P	A7	63	88	14,19,20	3.48	1 (7%)	18,26,29	1.08	2 (11%)
88	P5P	A6	39	88	16,23,24	1.35	2 (12%)	14,33,36	2.19	2 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
88	Y5P	A6	37	88	14,19,20	3.42	1 (7%)	18,26,29	0.96	1 (5%)
88	P5P	A6	11	88	16,23,24	1.34	1 (6%)	14,33,36	2.16	2 (14%)
88	Y5P	A6	58	88	14,19,20	3.58	1 (7%)	18,26,29	0.95	1 (5%)
88	Y5P	A7	69	88	14,19,20	3.51	1 (7%)	18,26,29	1.00	2 (11%)
88	P5P	A7	14	88	16,23,24	1.41	3 (18%)	14,33,36	1.99	2 (14%)
88	P5P	A6	32	88	16,23,24	1.27	2 (12%)	14,33,36	1.99	2 (14%)
88	Y5P	A6	66	88	14,19,20	3.41	1 (7%)	18,26,29	1.01	2 (11%)
88	Y5P	A7	13	88	14,19,20	3.33	1 (7%)	18,26,29	0.85	1 (5%)
88	P5P	A6	48	88	16,23,24	1.34	2 (12%)	14,33,36	2.11	2 (14%)
88	Y5P	A6	29	88	14,19,20	3.37	1 (7%)	18,26,29	0.96	2 (11%)
88	Y5P	A6	64	88	14,19,20	3.49	1 (7%)	18,26,29	0.93	2 (11%)
87	Y5P	A5	4	87	14,19,20	3.76	2 (14%)	18,26,29	1.53	3 (16%)
88	P5P	A6	54	88	16,23,24	1.40	2 (12%)	14,33,36	2.08	2 (14%)
88	Y5P	A6	3	88	14,19,20	3.41	1 (7%)	18,26,29	1.05	2 (11%)
88	Y5P	A6	68	88	14,19,20	3.70	1 (7%)	18,26,29	1.33	3 (16%)
88	P5P	A7	5	88	16,23,24	1.36	1 (6%)	14,33,36	2.14	2 (14%)
88	Y5P	A6	70	88	14,19,20	3.36	1 (7%)	18,26,29	0.99	1 (5%)
87	P5P	A5	2	87	16,23,24	1.50	2 (12%)	14,33,36	2.09	2 (14%)
88	Y5P	A6	46	88	14,19,20	3.51	1 (7%)	18,26,29	1.04	2 (11%)
88	Y5P	A7	55	88	14,19,20	3.43	1 (7%)	18,26,29	1.10	1 (5%)
88	P5P	A7	54	88	16,23,24	1.41	2 (12%)	14,33,36	2.06	2 (14%)
88	P5P	A7	2	88	16,23,24	1.55	3 (18%)	14,33,36	2.21	2 (14%)
88	Y5P	A6	53	88	14,19,20	3.91	1 (7%)	18,26,29	1.13	3 (16%)
88	P5P	A6	15	88	16,23,24	1.56	4 (25%)	14,33,36	2.08	2 (14%)
88	P5P	A7	27	88	16,23,24	1.34	1 (6%)	14,33,36	2.19	2 (14%)
88	Y5P	A6	30	88	14,19,20	3.56	1 (7%)	18,26,29	1.03	2 (11%)
88	Y5P	A7	60	88	14,19,20	3.58	1 (7%)	18,26,29	1.15	1 (5%)
88	P5P	A7	52	88	16,23,24	1.41	2 (12%)	14,33,36	2.18	3 (21%)
88	P5P	A6	40	88	16,23,24	1.35	1 (6%)	14,33,36	2.09	2 (14%)
88	Y5P	A7	38	88	14,19,20	3.48	1 (7%)	18,26,29	0.97	1 (5%)
88	P5P	A6	49	88	16,23,24	1.38	2 (12%)	14,33,36	2.17	2 (14%)
88	P5P	A7	41	88	16,23,24	1.41	2 (12%)	14,33,36	1.94	2 (14%)
88	Y5P	A6	17	88	14,19,20	3.55	1 (7%)	18,26,29	0.96	1 (5%)
88	Y5P	A6	12	88	14,19,20	3.33	1 (7%)	18,26,29	0.98	1 (5%)
88	P5P	A6	4	88	16,23,24	1.34	2 (12%)	14,33,36	1.99	2 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
88	Y5P	A7	21	88	14,19,20	3.48	1 (7%)	18,26,29	1.14	1 (5%)
88	Y5P	A6	55	88	14,19,20	3.45	1 (7%)	18,26,29	1.13	1 (5%)
88	P5P	A7	43	88	16,23,24	1.54	3 (18%)	14,33,36	2.43	4 (28%)
88	Y5P	A7	64	88	14,19,20	3.67	1 (7%)	18,26,29	0.95	1 (5%)
88	Y5P	A6	62	88	14,19,20	3.55	1 (7%)	18,26,29	1.05	2 (11%)
88	Y5P	A7	44	88	14,19,20	3.72	1 (7%)	18,26,29	0.94	1 (5%)

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
88	P5P	A6	34	88	-	0/3/25/26	0/3/3/3
88	P5P	A7	19	88	-	0/3/25/26	0/3/3/3
88	P5P	A7	49	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	22	88	-	3/7/33/34	0/2/2/2
88	P5P	A6	5	88	-	2/3/25/26	0/3/3/3
88	Y5P	A7	65	88	-	2/7/33/34	0/2/2/2
88	Y5P	A6	38	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	45	88	-	2/3/25/26	0/3/3/3
88	P5P	A7	11	88	-	0/3/25/26	0/3/3/3
88	P5P	A6	16	88	-	2/3/25/26	0/3/3/3
88	Y5P	A7	12	88	-	3/7/33/34	0/2/2/2
88	Y5P	A6	59	88	-	1/7/33/34	0/2/2/2
87	Y5P	A5	8	87	-	3/7/33/34	0/2/2/2
88	P5P	A6	19	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	51	88	-	2/7/33/34	0/2/2/2
88	P5P	A6	71	32,88	-	1/3/25/26	0/3/3/3
88	Y5P	A6	61	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	43	88	-	3/3/25/26	0/3/3/3
87	Y5P	A5	10	87	-	1/7/33/34	0/2/2/2
88	Y5P	A7	70	88	-	3/7/33/34	0/2/2/2
88	Y5P	A6	67	88	-	1/7/33/34	0/2/2/2
87	Y5P	A5	7	87	-	3/7/33/34	0/2/2/2
88	Y5P	A7	3	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	1	88	-	0/2/22/26	0/3/3/3
87	P5P	A5	5	87	-	2/3/25/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
88	Y5P	A6	25	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	51	88	-	2/7/33/34	0/2/2/2
87	Y5P	A5	3	87	-	4/7/33/34	0/2/2/2
88	P5P	A6	10	88	-	0/3/25/26	0/3/3/3
88	P5P	A7	39	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	59	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	6	88	-	3/3/25/26	0/3/3/3
88	Y5P	A7	37	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	20	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	8	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	60	88	-	2/7/33/34	0/2/2/2
88	P5P	A7	15	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	50	88	-	4/7/33/34	0/2/2/2
88	Y5P	A7	67	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	9	88	-	3/7/33/34	0/2/2/2
88	Y5P	A7	57	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	18	88	-	1/3/25/26	0/3/3/3
88	P5P	A6	1	88	-	0/2/22/26	0/3/3/3
88	P5P	A7	23	88	-	0/3/25/26	0/3/3/3
88	P5P	A6	27	88	-	0/3/25/26	0/3/3/3
88	P5P	A6	28	88	-	2/3/25/26	0/3/3/3
88	Y5P	A7	56	88	-	3/7/33/34	0/2/2/2
88	Y5P	A6	24	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	14	88	-	2/3/25/26	0/3/3/3
88	P5P	A6	20	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	56	88	-	4/7/33/34	0/2/2/2
88	P5P	A7	7	88	-	3/3/25/26	0/3/3/3
88	Y5P	A6	21	88	-	3/7/33/34	0/2/2/2
88	P5P	A6	41	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	47	88	-	1/7/33/34	0/2/2/2
87	P5P	A5	11	87	-	0/3/25/26	0/3/3/3
88	Y5P	A7	66	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	65	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	22	88	-	3/7/33/34	0/2/2/2
88	Y5P	A7	25	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	33	88	-	3/7/33/34	0/2/2/2
88	P5P	A6	42	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	8	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	36	88	-	1/7/33/34	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
88	P5P	A7	4	88	-	0/3/25/26	0/3/3/3
88	P5P	A6	7	88	-	3/3/25/26	0/3/3/3
88	Y5P	A6	63	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	46	88	-	3/7/33/34	0/2/2/2
88	Y5P	A7	53	88	-	3/7/33/34	0/2/2/2
88	P5P	A7	6	88	-	3/3/25/26	0/3/3/3
88	P5P	A7	40	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	50	88	-	4/7/33/34	0/2/2/2
88	Y5P	A6	44	88	-	3/7/33/34	0/2/2/2
88	P5P	A7	18	88	-	1/3/25/26	0/3/3/3
88	P5P	A6	2	88	-	0/3/25/26	0/3/3/3
87	Y5P	A5	1	87	-	7/7/33/34	0/2/2/2
88	Y5P	A6	13	88	-	3/7/33/34	0/2/2/2
88	Y5P	A7	24	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	71	88	-	1/3/25/26	0/3/3/3
88	P5P	A7	42	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	58	88	-	3/7/33/34	0/2/2/2
87	P5P	A5	6	87	-	0/3/25/26	0/3/3/3
88	Y5P	A6	9	88	-	5/7/33/34	0/2/2/2
88	Y5P	A7	61	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	69	88	-	3/7/33/34	0/2/2/2
88	P5P	A6	52	88	-	3/3/25/26	0/3/3/3
88	Y5P	A7	62	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	35	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	17	88	-	2/7/33/34	0/2/2/2
88	P5P	A6	45	88	-	2/3/25/26	0/3/3/3
88	Y5P	A6	57	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	31	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	10	88	-	0/3/25/26	0/3/3/3
87	P5P	A5	9	87	-	0/3/25/26	0/3/3/3
88	P5P	A7	26	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	68	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	16	88	-	2/3/25/26	0/3/3/3
88	P5P	A6	23	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	47	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	48	88	-	0/3/25/26	0/3/3/3
88	P5P	A6	26	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	63	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	39	88	-	0/3/25/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
88	Y5P	A6	37	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	11	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	58	88	-	2/7/33/34	0/2/2/2
88	Y5P	A7	69	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	14	88	-	2/3/25/26	0/3/3/3
88	P5P	A6	32	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	66	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	13	88	-	1/7/33/34	0/2/2/2
88	P5P	A6	48	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	29	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	64	88	-	1/7/33/34	0/2/2/2
87	Y5P	A5	4	87	-	7/7/33/34	0/2/2/2
88	P5P	A6	54	88	-	1/3/25/26	0/3/3/3
88	Y5P	A6	3	88	-	1/7/33/34	0/2/2/2
88	Y5P	A6	68	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	5	88	-	2/3/25/26	0/3/3/3
88	Y5P	A6	70	88	-	3/7/33/34	0/2/2/2
87	P5P	A5	2	87	-	2/3/25/26	0/3/3/3
88	Y5P	A6	46	88	-	3/7/33/34	0/2/2/2
88	Y5P	A7	55	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	54	88	-	1/3/25/26	0/3/3/3
88	P5P	A7	2	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	53	88	-	3/7/33/34	0/2/2/2
88	P5P	A6	15	88	-	0/3/25/26	0/3/3/3
88	P5P	A7	27	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	30	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	60	88	-	1/7/33/34	0/2/2/2
88	P5P	A7	52	88	-	3/3/25/26	0/3/3/3
88	P5P	A6	40	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	38	88	-	2/7/33/34	0/2/2/2
88	P5P	A6	49	88	-	0/3/25/26	0/3/3/3
88	P5P	A7	41	88	-	0/3/25/26	0/3/3/3
88	Y5P	A6	17	88	-	4/7/33/34	0/2/2/2
88	Y5P	A6	12	88	-	2/7/33/34	0/2/2/2
88	P5P	A6	4	88	-	0/3/25/26	0/3/3/3
88	Y5P	A7	21	88	-	3/7/33/34	0/2/2/2
88	Y5P	A6	55	88	-	3/7/33/34	0/2/2/2
88	P5P	A7	43	88	-	3/3/25/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
88	Y5P	A7	64	88	-	2/7/33/34	0/2/2/2
88	Y5P	A6	62	88	-	1/7/33/34	0/2/2/2
88	Y5P	A7	44	88	-	3/7/33/34	0/2/2/2

The worst 5 of 214 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
88	A6	69	Y5P	C4-N3	-15.00	1.32	1.46
88	A6	53	Y5P	C4-N3	-14.32	1.33	1.46
88	A6	8	Y5P	C4-N3	-14.11	1.33	1.46
88	A7	53	Y5P	C4-N3	-13.97	1.33	1.46
88	A7	67	Y5P	C4-N3	-13.90	1.33	1.46

The worst 5 of 259 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
88	A7	45	P5P	C6-N1-C2	7.27	126.25	115.84
88	A6	27	P5P	C6-N1-C2	7.13	126.05	115.84
88	A6	28	P5P	C6-N1-C2	7.10	126.01	115.84
88	A7	27	P5P	C6-N1-C2	7.08	125.98	115.84
88	A7	11	P5P	C6-N1-C2	7.07	125.97	115.84

There are no chirality outliers.

5 of 216 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
87	A5	1	Y5P	O4'-C4'-C5'-O5'
87	A5	1	Y5P	C3'-C4'-C5'-O5'
87	A5	2	P5P	O4'-C4'-C5'-O5'
87	A5	4	Y5P	O4'-C4'-C5'-O5'
87	A5	4	Y5P	C3'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 139 ligands modelled in this entry, 137 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
91	GDP	AX	500	-	24,30,30	0.94	1 (4%)	30,47,47	1.30	4 (13%)
92	GCP	v	802	89	27,34,34	1.82	6 (22%)	34,54,54	2.35	8 (23%)

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
91	GDP	AX	500	-	-	0/12/32/32	0/3/3/3
92	GCP	v	802	89	-	5/15/38/38	0/3/3/3

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
92	v	802	GCP	PG-O1G	5.39	1.61	1.50
92	v	802	GCP	C5-C6	4.45	1.49	1.41
92	v	802	GCP	PG-O3G	2.98	1.61	1.54
92	v	802	GCP	PG-O2G	-2.56	1.49	1.54
92	v	802	GCP	C5-C4	2.34	1.47	1.40

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
92	v	802	GCP	PB-O3A-PA	-6.14	113.11	132.56
92	v	802	GCP	C4-C5-C6	-5.80	115.26	120.80
92	v	802	GCP	C2-N1-C6	4.62	123.27	115.93
92	v	802	GCP	C2-N3-C4	4.61	120.62	115.36
92	v	802	GCP	C5-C6-N1	-3.99	117.97	123.43

There are no chirality outliers.

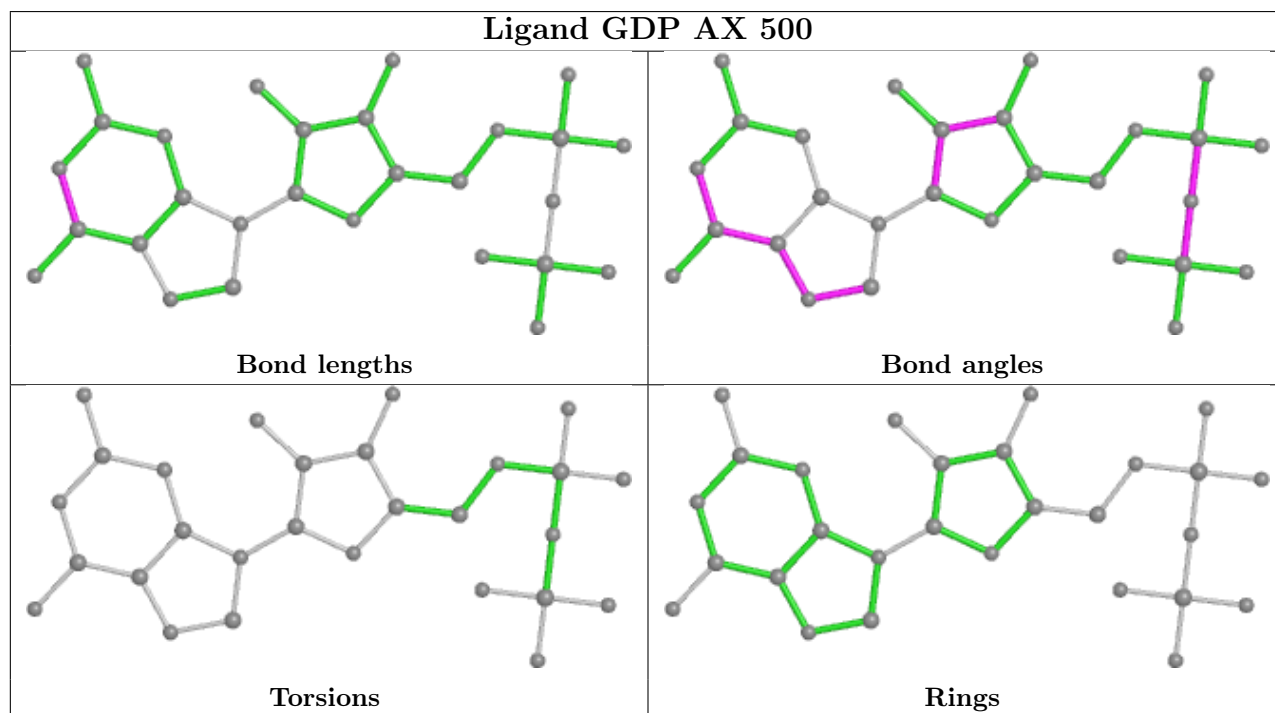
All (5) torsion outliers are listed below:

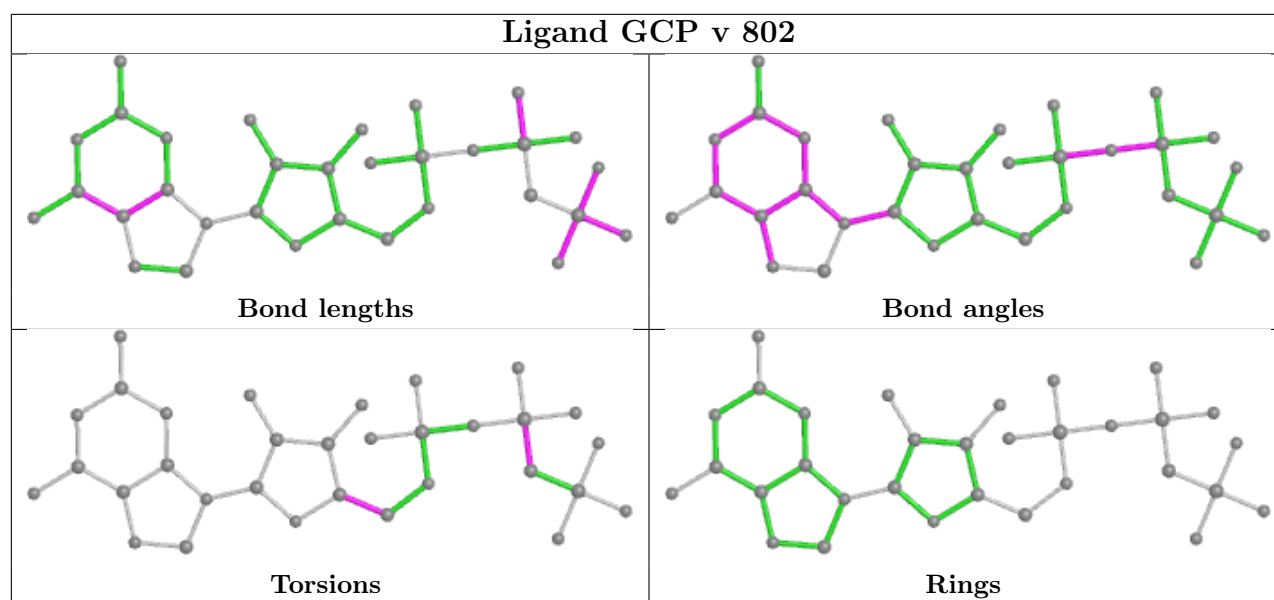
Mol	Chain	Res	Type	Atoms
92	v	802	GCP	PG-C3B-PB-O1B
92	v	802	GCP	PG-C3B-PB-O3A
92	v	802	GCP	O4'-C4'-C5'-O5'
92	v	802	GCP	C3'-C4'-C5'-O5'
92	v	802	GCP	PG-C3B-PB-O2B

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
85	u	4

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	u	414:UNK	C	601:UNK	N	48.04
1	u	106:UNK	C	301:UNK	N	30.88
1	u	315:UNK	C	399:UNK	N	19.09
1	u	615:UNK	C	700:UNK	N	18.25

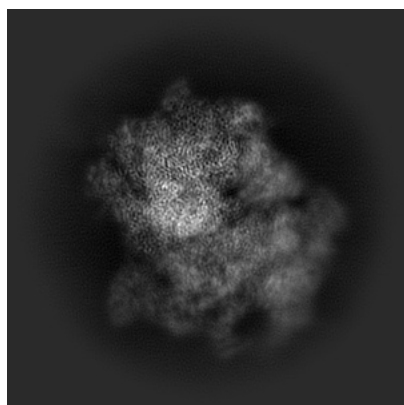
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-21242. These allow visual inspection of the internal detail of the map and identification of artifacts.

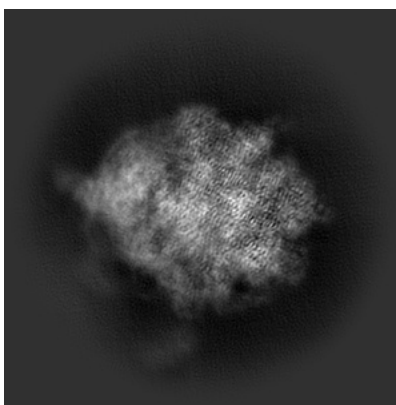
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

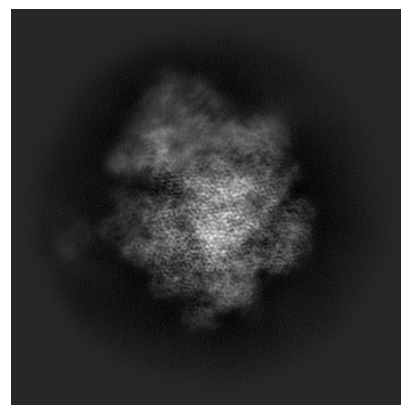
6.1.1 Primary map



X



Y

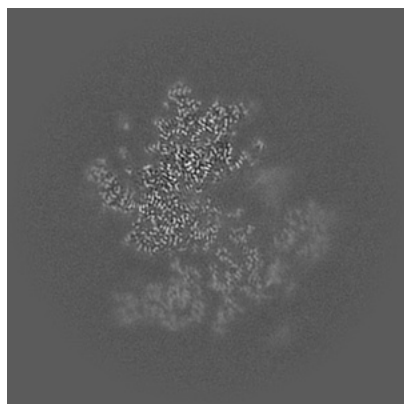


Z

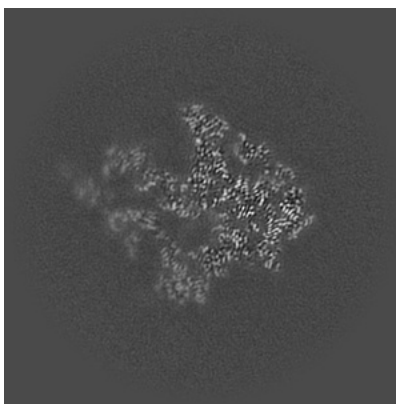
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

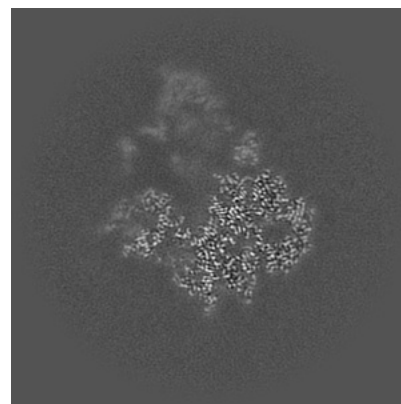
6.2.1 Primary map



X Index: 200



Y Index: 200

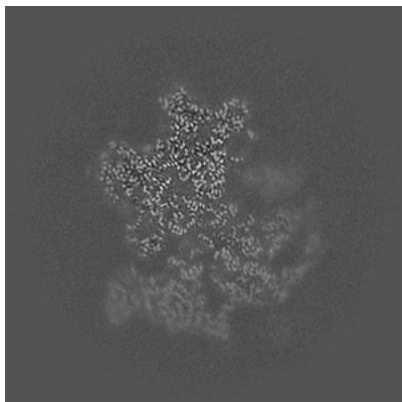


Z Index: 200

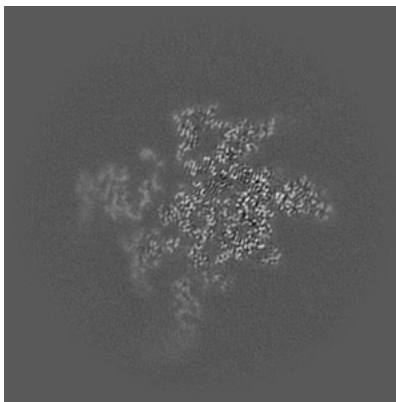
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

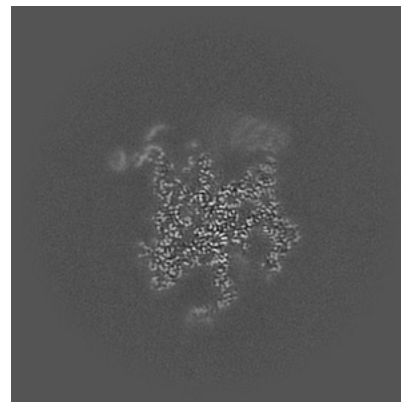
6.3.1 Primary map



X Index: 210



Y Index: 172



Z Index: 242

The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.267. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

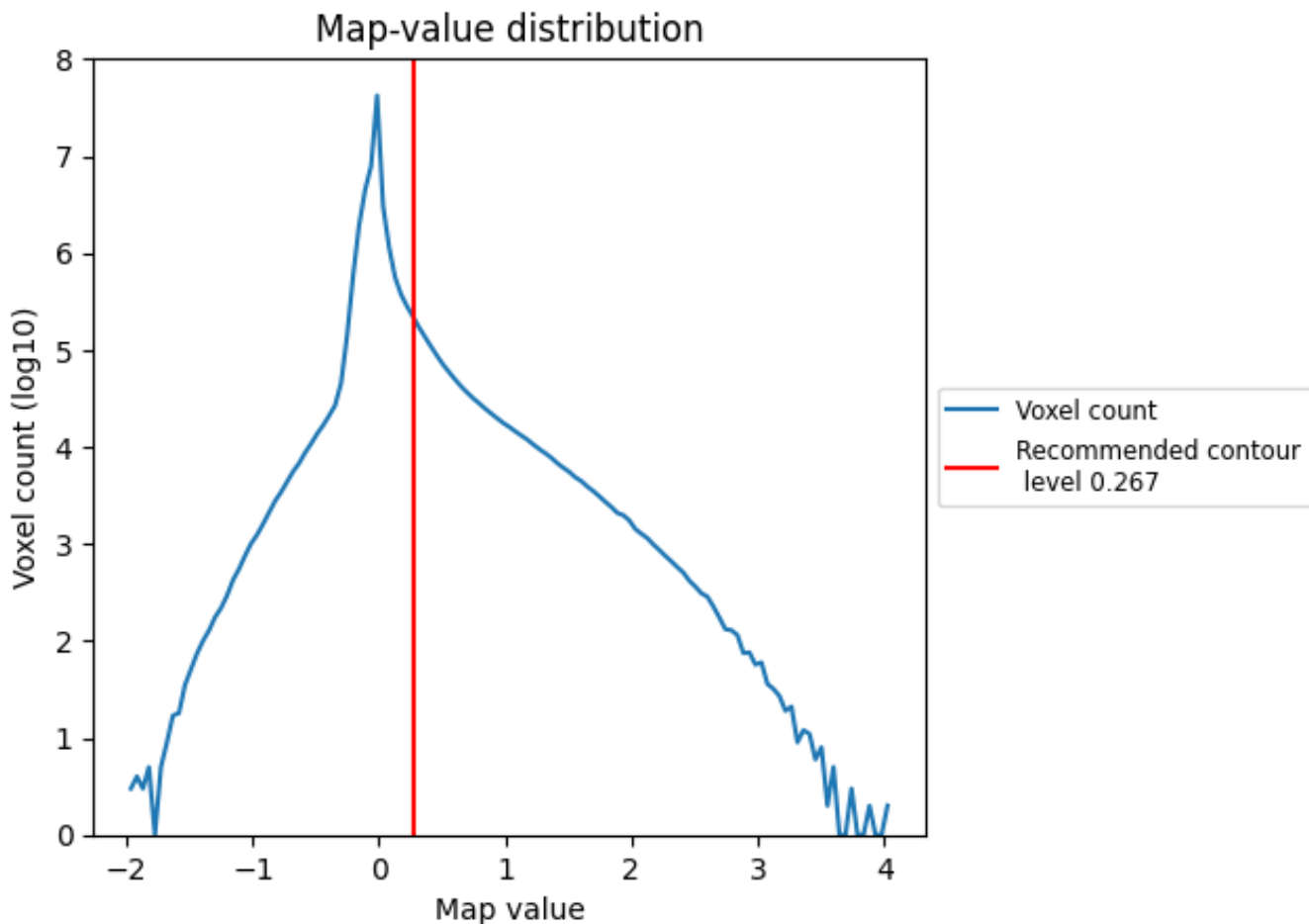
6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

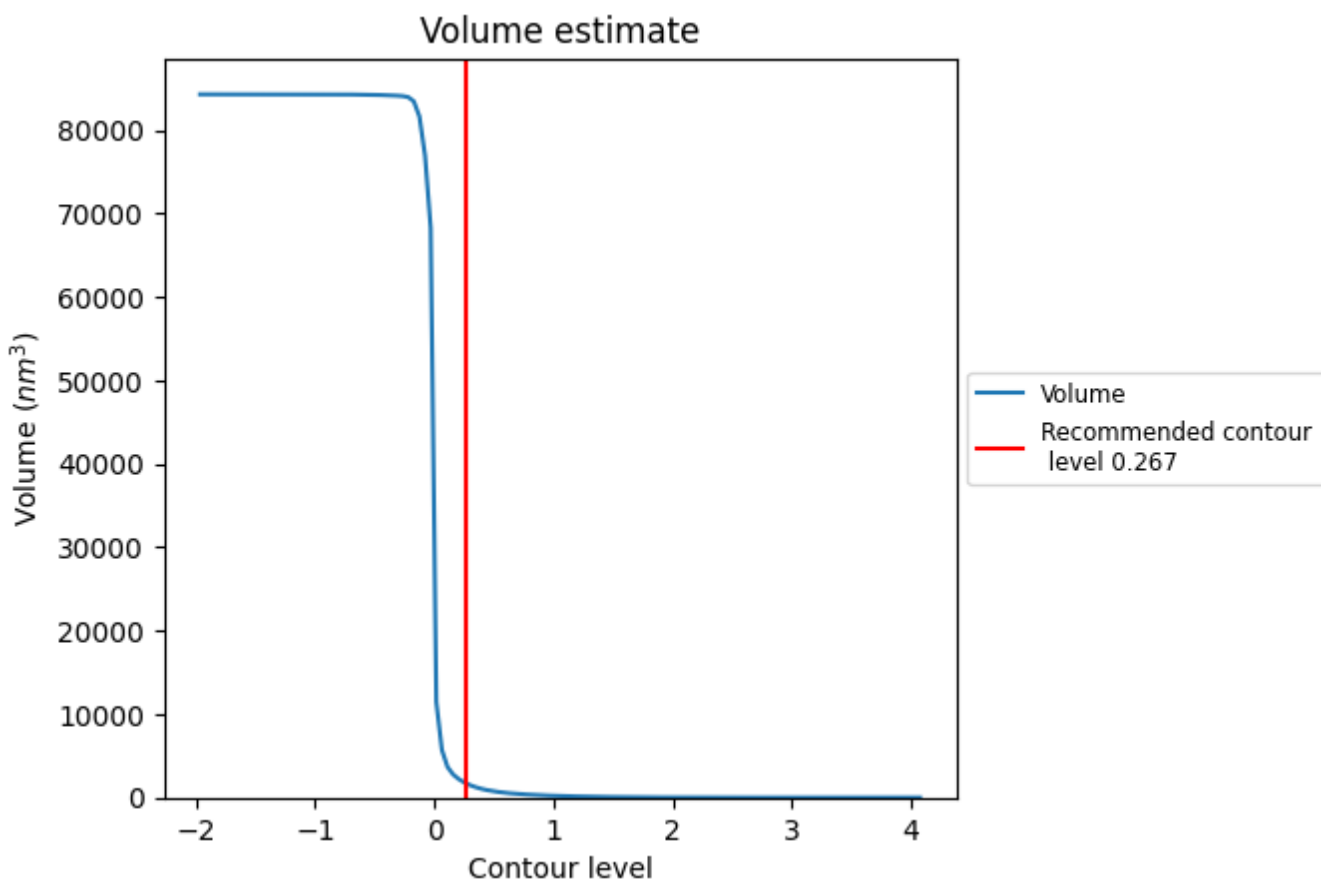
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

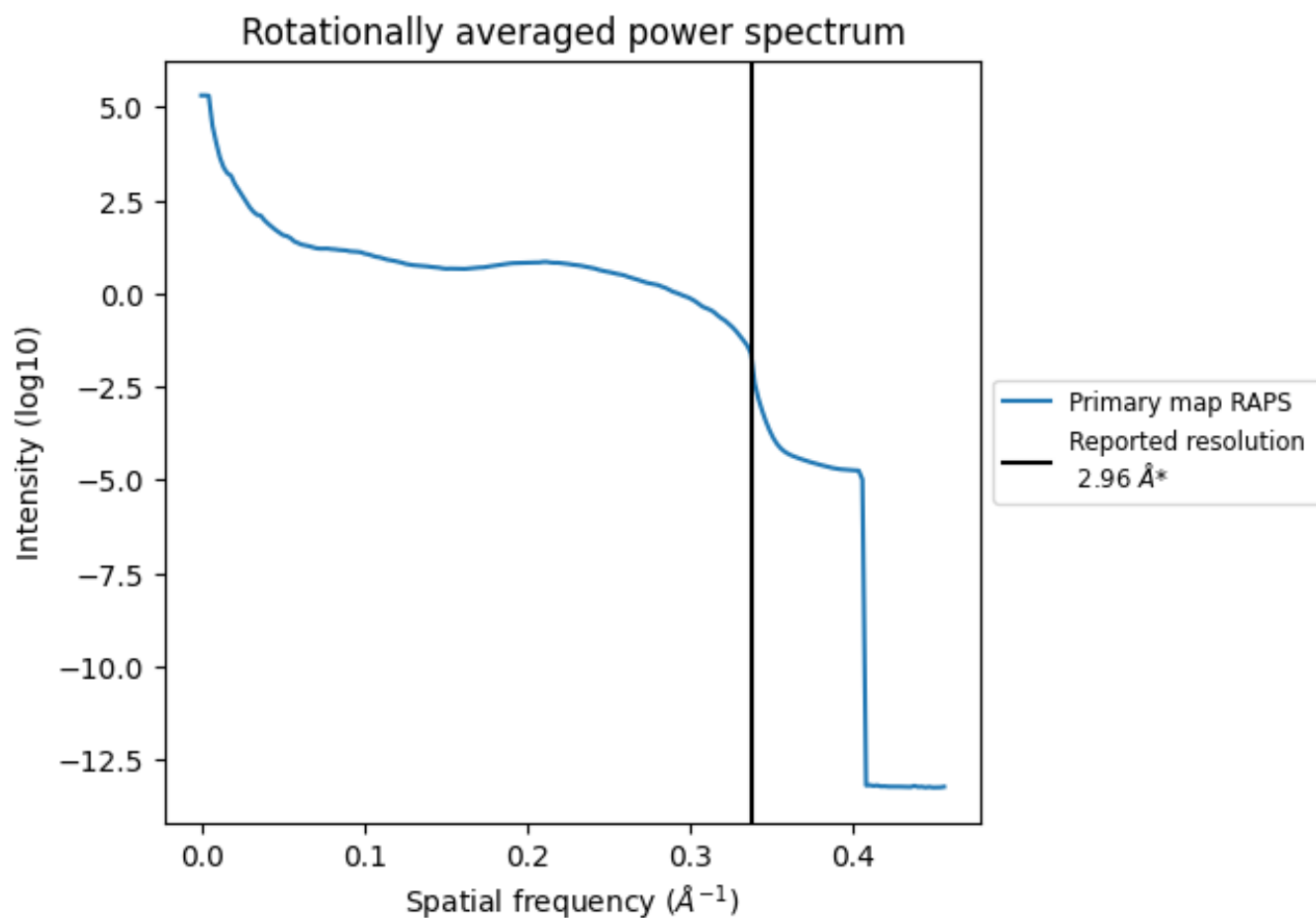
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1709 nm^3 ; this corresponds to an approximate mass of 1544 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.338 Å⁻¹

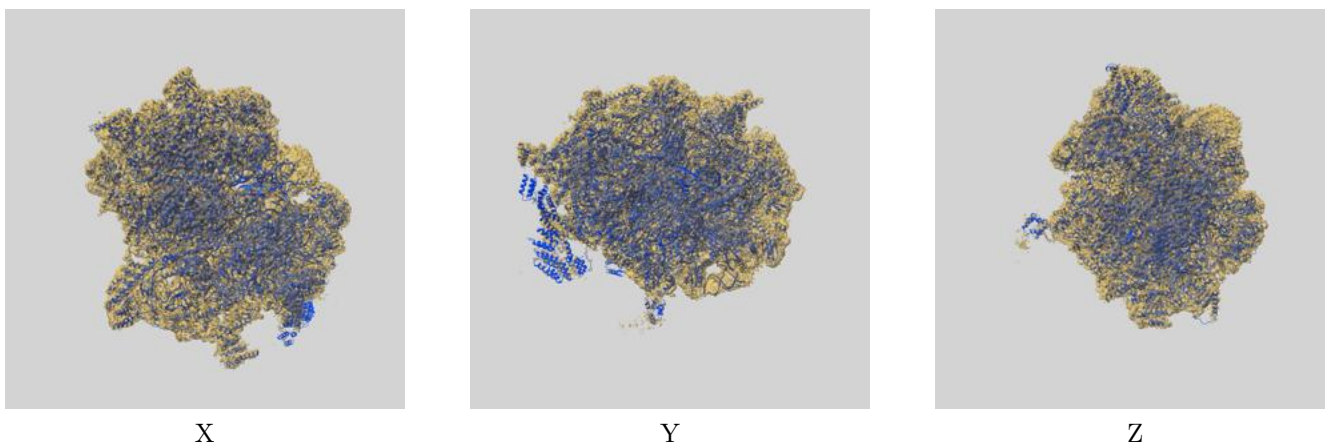
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-21242 and PDB model 6VMI. Per-residue inclusion information can be found in section 3 on page 22.

9.1 Map-model overlay [i](#)



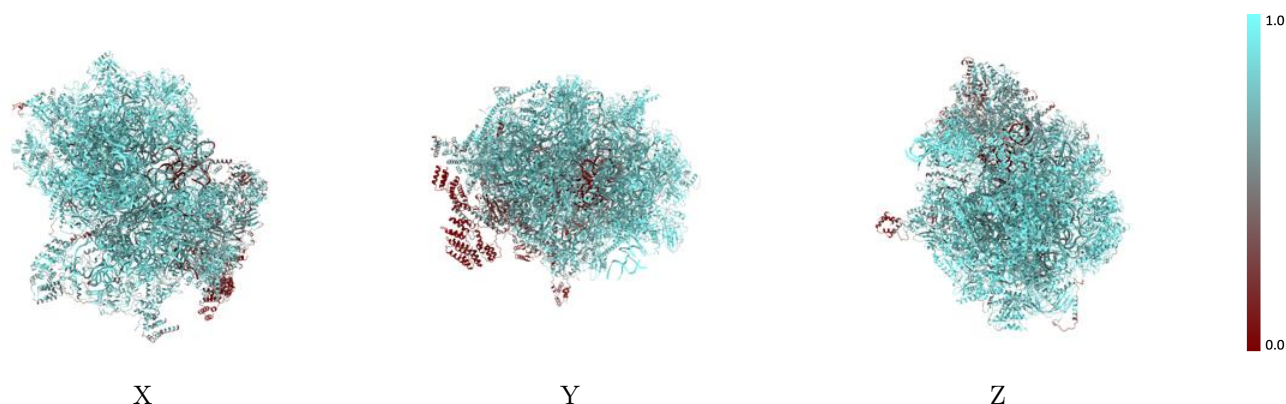
The images above show the 3D surface view of the map at the recommended contour level 0.267 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



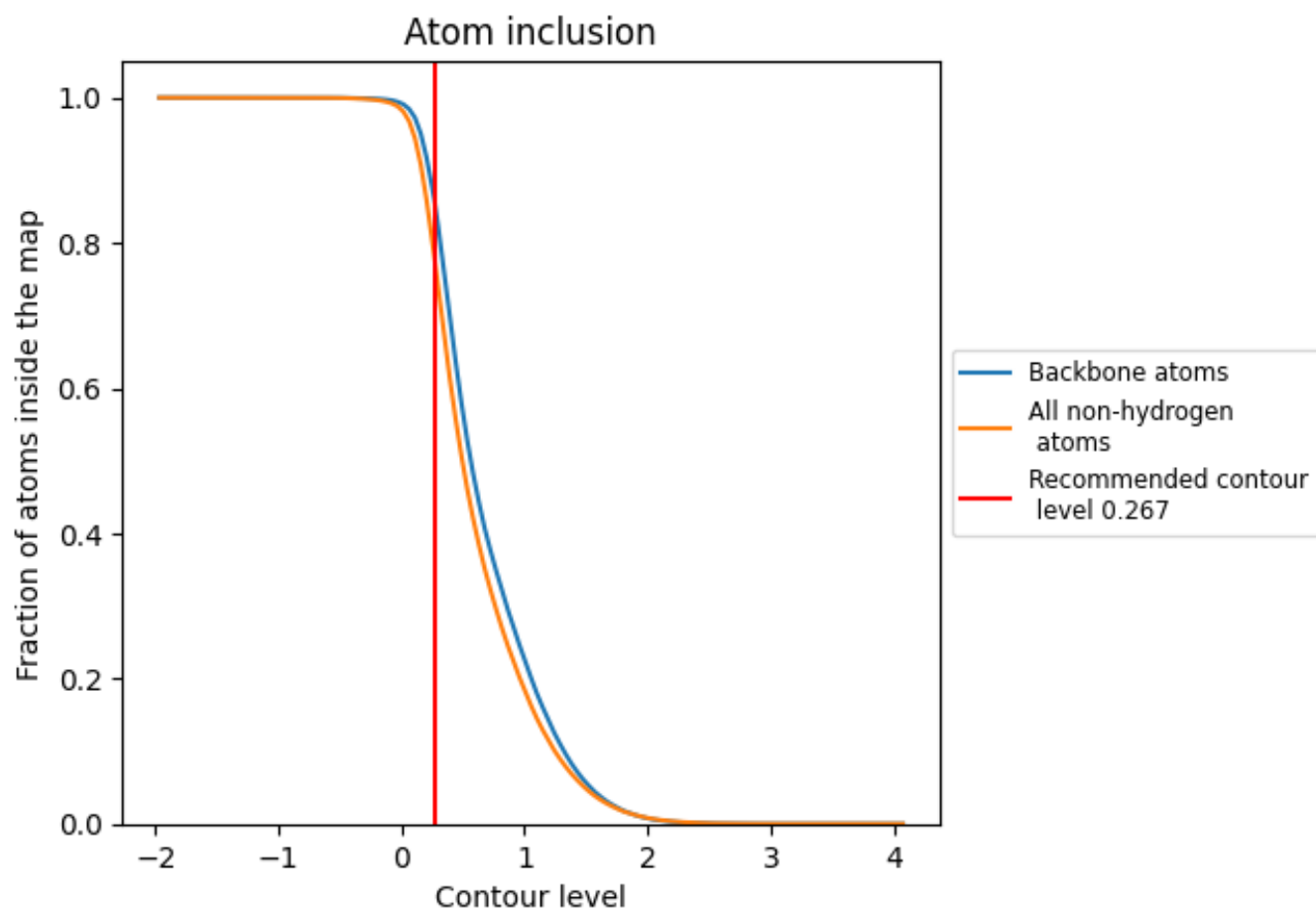
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.267).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary





















































































The table lists the average atom inclusion at the recommended contour level (0.267) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7825	 0.3390
0	 0.8792	 0.4430
1	 0.8548	 0.4410
2	 0.9056	 0.4680
3	 0.9010	 0.5010
4	 0.8991	 0.4740
5	 0.8980	 0.4400
6	 0.8850	 0.4090
7	 0.8655	 0.4100
8	 0.7540	 0.2460
9	 0.8798	 0.4210
A	 0.8464	 0.3370
A0	 0.7343	 0.2560
A1	 0.5089	 0.1810
A2	 0.6547	 0.3540
A3	 0.8095	 0.3390
A4	 0.1430	 0.1650
A5	 0.0469	 0.0780
A6	 0.0270	 0.0710
A7	 0.3893	 0.1280
AA	 0.8654	 0.2980
AB	 0.7758	 0.3190
AC	 0.5067	 0.1970
AD	 0.6204	 0.3110
AE	 0.7640	 0.3890
AF	 0.6419	 0.2680
AG	 0.6447	 0.2310
AH	 0.5832	 0.2180
AI	 0.8288	 0.4060
AJ	 0.7632	 0.3750
AK	 0.5980	 0.1710
AL	 0.7888	 0.3790
AM	 0.7742	 0.2970
AN	 0.8513	 0.4030
AO	 0.7705	 0.2930

































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Chain	Atom inclusion	Q-score
AP	 0.7740	 0.3830
AQ	 0.8310	 0.4000
AR	 0.6721	 0.2350
AS	 0.7051	 0.2830
AT	 0.8030	 0.3480
AU	 0.7516	 0.2540
AV	 0.6785	 0.1770
AW	 0.7607	 0.3350
AX	 0.6233	 0.1760
AY	 0.4185	 0.1470
AZ	 0.4907	 0.1800
B	 0.9463	 0.2990
D	 0.8784	 0.4520
E	 0.8941	 0.4620
F	 0.8952	 0.4560
H	 0.8526	 0.4040
I	 0.7191	 0.3300
J	 0.7351	 0.2970
K	 0.9038	 0.4710
L	 0.8606	 0.4600
M	 0.8915	 0.4540
N	 0.8764	 0.4560
O	 0.8875	 0.4420
P	 0.9121	 0.4350
Q	 0.8486	 0.4350
R	 0.8935	 0.4580
S	 0.9034	 0.4520
T	 0.8847	 0.4580
TA	 0.1570	 0.1180
TB	 0.1831	 0.1980
TC	 0.0739	 0.1600
U	 0.8737	 0.4430
V	 0.8569	 0.4170
W	 0.8791	 0.4580
X	 0.8860	 0.4460
Y	 0.8942	 0.4480
Z	 0.8885	 0.4580
a	 0.7938	 0.3920
b	 0.8972	 0.4720
c	 0.8703	 0.4230
d	 0.7514	 0.3760
e	 0.7235	 0.2060

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Chain	Atom inclusion	Q-score
f	 0.7176	 0.3210
g	 0.8820	 0.4300
h	 0.8406	 0.3600
i	 0.9069	 0.4580
j	 0.8452	 0.4020
k	 0.8036	 0.3520
l	 0.7709	 0.3130
m	 0.8017	 0.2930
o	 0.8556	 0.4260
p	 0.8195	 0.3850
q	 0.7929	 0.3470
r	 0.8852	 0.4230
s	 0.8914	 0.4470
u	 0.5292	 0.1420
v	 0.6749	 0.3110