WORLDWIDE

wwPDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Jun 19, 2024 – 06:46 pm BST

PDB ID	:	7QI5
EMDB ID	:	EMD-13981
Title	:	Human mitochondrial ribosome in complex with mRNA, A/A-, P/P- and E/E-tRNAs at 2.63 A resolution
Authors	:	Singh, V.; Itoh, Y.; Amunts, A.
Deposited on	:	2021-12-14
Resolution	:	2.63 Å(reported)

This is a Full wwPDB EM Validation 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.dev92
Mogul	:	1.8.4, 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	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.63 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	Percentile Ranks	Value
Clashscore		2
Ramachandran outliers		0.0%
Sidechain outliers		0.0%
RNA backbone		0.60

Worse ... *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
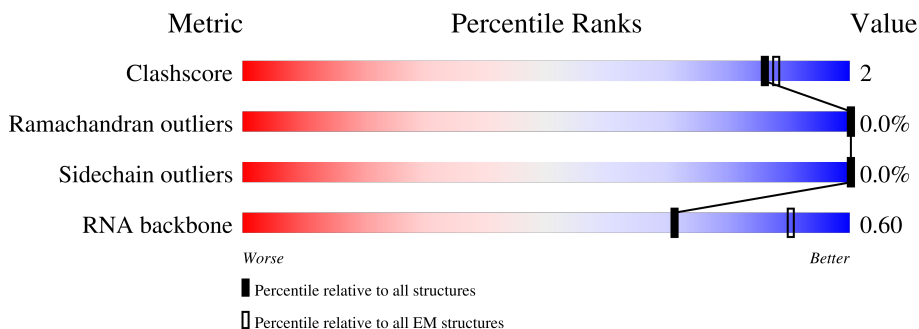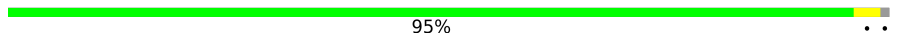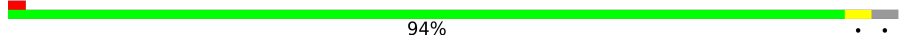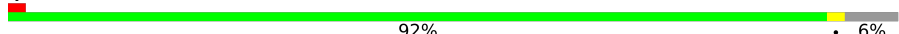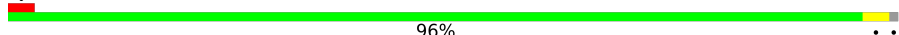
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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 <=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	76% 22% ·
2	AB	296	72% · 24%
3	AC	167	73% 6% 21%
4	AD	430	76% · 20%
5	AE	125	97% ··
6	AF	242	81% 5% 14%
7	AG	396	76% 7% 17%

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Mol	Chain	Length	Quality of chain
8	AH	201	66% 30%
9	AI	194	68% 29%
10	AJ	138	72% 7% 22%
11	AK	128	76% 21%
12	AL	257	66% 32%
13	AM	137	85% 13%
14	AN	130	79% 5% 15%
15	AO	258	73% 25%
16	AP	142	68% 32%
17	AQ	87	95%
18	AR	360	80% 18%
19	AS	190	68% 29%
20	AT	173	94%
21	AU	205	83% 14%
22	AV	414	8% 84% 13%
23	AW	187	50% 47%
24	AX	398	82% 7% 12%
25	AY	395	36% 62%
26	AZ	106	92% 6%
27	A0	217	96%
28	A1	323	80% 6% 14%
29	A2	118	7% 87% 12%
30	A3	199	33% 65%
31	A4	689	83% 15%
32	Aw	68	72% 28%
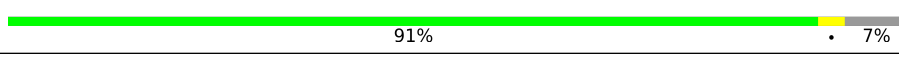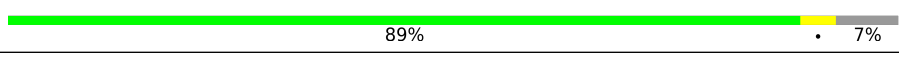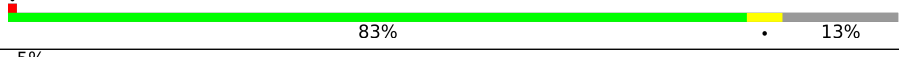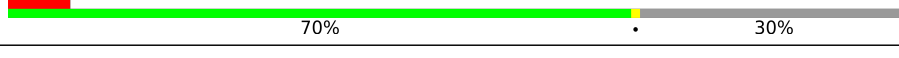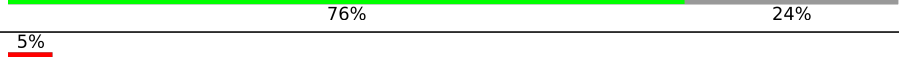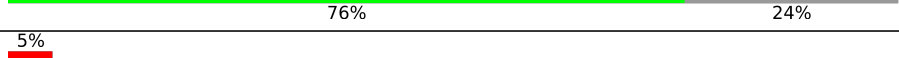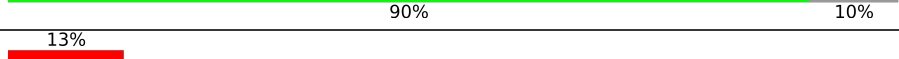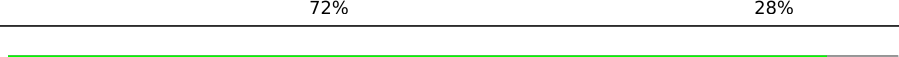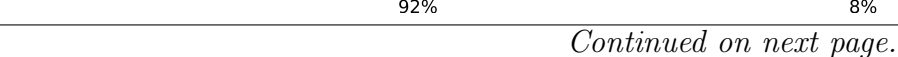
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Mol	Chain	Length	Quality of chain
33	Ax	70	10% / 80% / 20%
34	Ay	70	79% / 21%
35	Az	34	18% / 62% / 38%
36	A	1561	76% / 21%
37	B	72	72% / 25%
38	D	305	75% / 22%
39	E	348	84% / 12%
40	F	311	78% / 19%
41	I	261	23% / 77% / 19%
42	J	192	25% / 88% / 9%
43	K	178	96%
44	L	145	74% / 5% / 21%
45	M	296	93%
46	N	251	86% / 12%
47	O	175	85% / 12%
48	P	180	78% / 20%
49	Q	292	5% / 78% / 18%
50	R	149	91% / 6%
51	S	205	77% / 21%
52	T	206	80% / 19%
53	U	153	10% / 95% / 5%
54	V	216	5% / 88% / 7% / 5%
55	W	148	77% / 22%
56	X	256	93% / 5%
57	Y	250	71% / 28%

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Mol	Chain	Length	Quality of chain
58	Z	161	73% · 24%
59	0	188	55% · 41%
60	1	65	78% 8% 14%
61	2	92	49% · 50%
62	3	188	47% · 49%
63	4	103	35% · 63%
64	5	423	91% · 7%
65	6	380	89% · 7%
66	7	338	83% · 13%
67	8	206	5% 74% · 24%
68	9	137	88% · 9%
69	a	142	7% 70% · 30%
70	b	215	70% 30%
71	c	332	86% 14%
72	d	306	8% 79% 21%
73	e	279	5% 85% 15%
74	f	212	74% 26%
75	g	166	81% 19%
76	h	158	70% 30%
77	i	128	76% 24%
78	j	123	5% 76% 24%
79	k	112	5% 90% 10%
80	l	138	13% 59% 41%
81	m	128	9% 72% 28%
82	o	102	92% 8%

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Mol	Chain	Length	Quality of chain
83	p	206	8% 71% 29%
84	q	222	14% 74% 26%
85	r	196	83% 17%
86	s	439	88% 12%
87	t	198	21% 23% 77%
87	u	198	16% 16% 84%
87	v	198	16% 16% 84%
87	w	198	16% 16% 84%
87	x	198	16% 16% 84%
87	y	198	16% 16% 84%
88	H	267	69% 7% 24%
89	z	325	6% 77% 22%

2 Entry composition ⓘ

There are 101 unique types of molecules in this entry. The entry contains 343544 atoms, of which 153978 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 mitochondrial rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	AA	954	Total 30564	C 9088	H 10304	N 3647	O 6571	P 954	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
2	AB	224	Total 3627	C 1158	H 1809	N 328	O 322	S 10	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
3	AC	132	Total 2172	C 699	H 1089	N 195	O 185	S 4	0	0

- Molecule 4 is a protein called 28S ribosomal protein S5, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	AD	343	Total 5536	C 1713	H 2805	N 518	O 487	S 13	0	0

- Molecule 5 is a protein called 28S ribosomal protein S6, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	AE	122	Total 1972	C 614	H 1000	N 177	O 177	S 4	0	0

- Molecule 6 is a protein called 28S ribosomal protein S7, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	AF	208	Total 3496	C 1104	H 1771	N 312	O 298	S 11	0	0

• Molecule 7 is a protein called 28S ribosomal protein S9, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	AG	327	Total 5377	C 1710	H 2689	N 477	O 487	S 14	0	0

• Molecule 8 is a protein called 28S ribosomal protein S10, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	AH	140	Total 2339	C 745	H 1187	N 194	O 210	S 3	0	0

• Molecule 9 is a protein called 28S ribosomal protein S11, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	AI	137	Total 2081	C 642	H 1061	N 192	O 182	S 4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AI	184	5F0	ASN	conflict	UNP P82912

• Molecule 10 is a protein called 28S ribosomal protein S12, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	AJ	108	Total 1728	C 521	H 889	N 169	O 143	S 6	0	0

• Molecule 11 is a protein called 28S ribosomal protein S14, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	AK	101	Total 1748	C 537	H 886	N 179	O 141	S 5	0	0

• Molecule 12 is a protein called 28S ribosomal protein S15, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	AL	174	Total 2994	C 925	H 1541	N 270	O 251	S 7	0	0

• Molecule 13 is a protein called 28S ribosomal protein S16, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	AM	119	Total 1908	C 594	H 966	N 185	O 157	S 6	0	0

- Molecule 14 is a protein called 28S ribosomal protein S17, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	AN	110	Total 1797	C 562	H 929	N 156	O 147	S 3	0	0

- Molecule 15 is a protein called 28S ribosomal protein S18b, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	AO	193	Total 3153	C 1014	H 1561	N 294	O 277	S 7	0	0

- Molecule 16 is a protein called 28S ribosomal protein S18c, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	AP	97	Total 1588	C 501	H 807	N 134	O 138	S 8	0	0

- Molecule 17 is a protein called MRPS21 isoform 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	AQ	86	Total 1502	C 460	H 758	N 150	O 126	S 8	0	0

- Molecule 18 is a protein called 28S ribosomal protein S22, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	AR	295	Total 4839	C 1533	H 2430	N 413	O 455	S 8	0	0

- Molecule 19 is a protein called 28S ribosomal protein S23, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	AS	135	Total 2227	C 716	H 1116	N 198	O 196	S 1	0	0

- Molecule 20 is a protein called 28S ribosomal protein S25, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	AT	168	Total	C	H	N	O	S	0	0
			2764	877	1393	239	244	11		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
21	AU	176	Total	C	H	N	O	S	0	0
			2989	916	1501	301	267	4		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
22	AV	362	Total	C	H	N	O	S	0	0
			5933	1904	2964	495	558	12		

- Molecule 23 is a protein called 28S ribosomal protein S28, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	AW	100	Total	C	H	N	O	S	0	0
			1593	498	804	141	146	4		

- Molecule 24 is a protein called 28S ribosomal protein S29, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
24	AX	352	Total	C	H	N	O	S	0	0
			5694	1822	2845	499	517	11		

- Molecule 25 is a protein called 28S ribosomal protein S31, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	AY	149	Total	C	H	N	O	S	0	0
			2444	801	1198	207	234	4		

- Molecule 26 is a protein called 28S ribosomal protein S33, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	AZ	100	Total	C	H	N	O	S	0	0
			1698	534	859	153	148	4		

- Molecule 27 is a protein called 28S ribosomal protein S34, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	A0	215	Total 3584	C 1130	H 1797	N 339	O 313	S 5	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
28	A1	279	Total 4561	C 1435	H 2296	N 387	O 432	S 11	0	0

- Molecule 29 is a protein called Coiled-coil-helix-coiled-coil-helix domain-containing protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
29	A2	117	Total 1906	C 579	H 971	N 182	O 166	S 8	0	0

- Molecule 30 is a protein called Aurora kinase A-interacting protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
30	A3	70	Total 1326	C 401	H 701	N 134	O 89	S 1	0	0

- Molecule 31 is a protein called Pentatricopeptide repeat domain-containing protein 3, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
31	A4	588	Total 9538	C 3053	H 4770	N 808	O 879	S 28	0	0

- Molecule 32 is a RNA chain called A/A-tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
32	Aw	68	Total 2159	C 646	H 725	N 248	O 472	P 68	0	0

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Aw	26	U	G	conflict	GB 1896813690
Aw	34	A	U	conflict	GB 1896813690
Aw	35	A	C	conflict	GB 1896813690
Aw	36	C	G	conflict	GB 1896813690
Aw	73	U	A	conflict	GB 1896813690

- Molecule 33 is a RNA chain called P/P-tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
33	Ax	70	Total 2233	C 665	H 751	N 260	O 487	P 70	0	0

- Molecule 34 is a RNA chain called E/E-tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
34	Ay	70	Total 2235	C 665	H 752	N 261	O 487	P 70	0	0

- Molecule 35 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
35	Az	34	Total 1079	C 324	H 360	N 123	O 238	P 34	0	0

- Molecule 36 is a RNA chain called 16S mitochondrial rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
36	A	1558	Total 49871	C 14843	H 16801	N 5963	O 10706	P 1558	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	3107	U	C	conflict	GB 208964619

- Molecule 37 is a RNA chain called mitochondrial tRNAVal.

Mol	Chain	Residues	Atoms						AltConf	Trace
37	B	72	Total 2303	C 685	H 779	N 269	O 498	P 72	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	74	C	G	conflict	GB NC_012920.1
B	76	A	U	conflict	GB NC_012920.1

- Molecule 38 is a protein called 39S ribosomal protein L2, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
38	D	238	Total	C	H	N	O	S	0	0
			3780	1157	1921	376	317	9		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
39	E	305	Total	C	H	N	O	S	0	0
			4822	1545	2416	418	432	11		

- Molecule 40 is a protein called 39S ribosomal protein L4, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
40	F	252	Total	C	H	N	O	S	0	0
			4097	1305	2066	370	350	6		

- Molecule 41 is a protein called 39S ribosomal protein L10, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
41	I	212	Total	C	H	N	O	S	0	0
			3484	1088	1789	304	292	11		

- Molecule 42 is a protein called 39S ribosomal protein L11, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
42	J	175	Total	C	H	N	O	S	0	0
			2739	847	1409	237	244	2		

- Molecule 43 is a protein called 39S ribosomal protein L13, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
43	K	177	Total	C	H	N	O	S	0	0
			2907	936	1452	259	253	7		

- Molecule 44 is a protein called 39S ribosomal protein L14, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
44	L	115	Total	C	H	N	O	S	0	0
			1832	559	942	171	155	5		

- Molecule 45 is a protein called 39S ribosomal protein L15, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
45	M	289	Total	C	H	N	O	S	0	0
			4699	1476	2385	427	405	6		

- Molecule 46 is a protein called 39S ribosomal protein L16, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
46	N	222	Total	C	H	N	O	S	0	0
			3604	1143	1818	326	307	10		

- Molecule 47 is a protein called 39S ribosomal protein L17, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
47	O	154	Total	C	H	N	O	S	0	0
			2554	792	1295	241	219	7		

- Molecule 48 is a protein called 39S ribosomal protein L18, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
48	P	144	Total	C	H	N	O	S	0	0
			2339	733	1166	224	211	5		

- Molecule 49 is a protein called 39S ribosomal protein L19, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
49	Q	239	Total	C	H	N	O	S	0	0
			4021	1277	2031	353	351	9		

- Molecule 50 is a protein called 39S ribosomal protein L20, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
50	R	140	Total	C	H	N	O	S	0	0
			2369	732	1215	231	187	4		

- Molecule 51 is a protein called 39S ribosomal protein L21, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
51	S	161	Total	C	H	N	O	S	0	0
			2659	835	1366	227	227	4		

- Molecule 52 is a protein called 39S ribosomal protein L22, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
52	T	166	Total 2781	C 875	H 1412	N 254	O 233	S 7	0	0

- Molecule 53 is a protein called 39S ribosomal protein L23, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
53	U	152	Total 2483	C 788	H 1232	N 234	O 226	S 3	0	0

- Molecule 54 is a protein called 39S ribosomal protein L24, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
54	V	205	Total 3365	C 1068	H 1689	N 298	O 302	S 8	0	0

- Molecule 55 is a protein called 39S ribosomal protein L27, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
55	W	116	Total 1840	C 577	H 936	N 171	O 153	S 3	0	0

- Molecule 56 is a protein called 39S ribosomal protein L28, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
56	X	244	Total 4105	C 1322	H 2061	N 352	O 365	S 5	0	0

- Molecule 57 is a protein called 39S ribosomal protein L47, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
57	Y	181	Total 3154	C 995	H 1598	N 298	O 259	S 4	0	0

- Molecule 58 is a protein called 39S ribosomal protein L30, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
58	Z	122	Total 2041	C 636	H 1045	N 186	O 171	S 3	0	0

- Molecule 59 is a protein called 39S ribosomal protein L32, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
59	0	110	1815	554	917	176	162	6	0	0

- Molecule 60 is a protein called 39S ribosomal protein L33, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
60	1	56	977	296	513	89	77	2	0	0

- Molecule 61 is a protein called 39S ribosomal protein L34, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
61	2	46	784	233	407	83	60	1	0	0

- Molecule 62 is a protein called 39S ribosomal protein L35, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
62	3	95	1716	539	884	162	128	3	0	0

- Molecule 63 is a protein called 39S ribosomal protein L36, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
63	4	38	704	217	362	72	49	4	0	0

- Molecule 64 is a protein called 39S ribosomal protein L37, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
64	5	394	6419	2073	3209	560	566	11	0	0

- Molecule 65 is a protein called 39S ribosomal protein L38, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
65	6	354	5792	1881	2844	525	533	9	0	0

- Molecule 66 is a protein called 39S ribosomal protein L39, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
66	7	294	Total	C	H	N	O	S	0	0
			4789	1529	2399	405	438	18		

- Molecule 67 is a protein called 39S ribosomal protein L40, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
67	8	157	Total	C	H	N	O	S	0	0
			2696	844	1369	235	246	2		

- Molecule 68 is a protein called 39S ribosomal protein L41, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
68	9	124	Total	C	H	N	O	S	0	0
			1985	644	988	170	181	2		

- Molecule 69 is a protein called 39S ribosomal protein L42, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
69	a	100	Total	C	H	N	O	S	0	0
			1652	529	812	152	154	5		

- Molecule 70 is a protein called Large ribosomal subunit protein mL43.

Mol	Chain	Residues	Atoms						AltConf	Trace
70	b	151	Total	C	H	N	O	S	0	0
			2392	744	1196	231	218	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	2	ACE	-	acetylation	UNP Q8N983

- Molecule 71 is a protein called 39S ribosomal protein L44, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
71	c	286	Total	C	H	N	O	S	0	0
			4621	1470	2322	397	423	9		

- Molecule 72 is a protein called 39S ribosomal protein L45, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
72	d	241	Total	C	H	N	O	S	0	0
			3964	1273	1979	340	359	13		

- Molecule 73 is a protein called 39S ribosomal protein L46, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
73	e	238	Total	C	H	N	O	S	0	0
			3848	1222	1917	339	364	6		

- Molecule 74 is a protein called 39S ribosomal protein L48, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
74	f	157	Total	C	H	N	O	S	0	0
			2523	799	1271	207	242	4		

- Molecule 75 is a protein called 39S ribosomal protein L49, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
75	g	134	Total	C	H	N	O	S	0	0
			2210	719	1097	193	199	2		

- Molecule 76 is a protein called 39S ribosomal protein L50, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
76	h	110	Total	C	H	N	O	S	0	0
			1777	568	882	156	168	3		

- Molecule 77 is a protein called 39S ribosomal protein L51, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
77	i	97	Total	C	H	N	O	S	0	0
			1687	532	859	165	127	4		

- Molecule 78 is a protein called 39S ribosomal protein L52, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
78	j	94	Total	C	H	N	O	S	0	0
			1492	463	747	144	136	2		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
79	k	101	Total 1559	C 479	H 785	N 148	O 142	S 5	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
80	l	82	Total 1363	C 437	H 675	N 120	O 128	S 3	0	0

- Molecule 81 is a protein called 39S ribosomal protein L55, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
81	m	92	Total 1551	C 488	H 760	N 159	O 142	S 2	0	0

- Molecule 82 is a protein called Ribosomal protein 63, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
82	o	94	Total 1604	C 501	H 806	N 165	O 129	S 3	0	0

- Molecule 83 is a protein called Peptidyl-tRNA hydrolase ICT1, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
83	p	147	Total 2429	C 748	H 1224	N 228	O 225	S 4	0	0

- Molecule 84 is a protein called Growth arrest and DNA damage-inducible proteins-interacting protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
84	q	165	Total 2765	C 865	H 1376	N 270	O 249	S 5	0	0

- Molecule 85 is a protein called 39S ribosomal protein S18a, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
85	r	162	Total 2671	C 839	H 1349	N 252	O 223	S 8	0	0

- Molecule 86 is a protein called 39S ribosomal protein S30, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
86	s	386	Total	C	H	N	O	S	0	0
			6298	2023	3143	559	559	14		

- Molecule 87 is a protein called 39S ribosomal protein L12, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
87	t	46	Total	C	H	N	O	0	0
			732	228	378	56	70		
87	u	32	Total	C	H	N	O	0	0
			541	168	284	40	49		
87	v	32	Total	C	H	N	O	0	0
			541	168	284	40	49		
87	w	31	Total	C	H	N	O	0	0
			520	159	275	39	47		
87	x	31	Total	C	H	N	O	0	0
			520	159	275	39	47		
87	y	31	Total	C	H	N	O	0	0
			520	159	275	39	47		

- Molecule 88 is a protein called 39S ribosomal protein L9, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
88	H	202	Total	C	H	N	O	S	0	0
			3397	1067	1736	304	286	4		

- Molecule 89 is a protein called 39S ribosomal protein L1, mitochondrial.

Mol	Chain	Residues	Atoms						AltConf	Trace
89	z	252	Total	C	H	N	O	S	0	0
			4104	1304	2077	336	381	6		

- Molecule 90 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$).

NAD
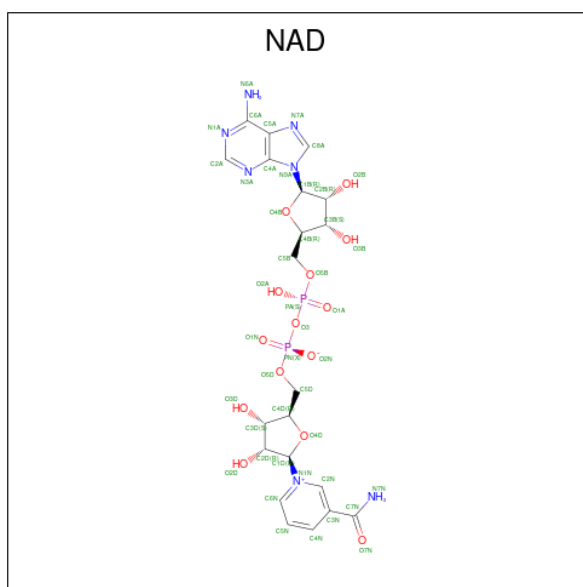
Mol	Chain	Residues	Atoms						AltConf
			Total	C	H	N	O	P	
90	AA	1	70	21	26	7	14	2	0

- Molecule 91 is SPERMINE (three-letter code: SPM) (formula: $C_{10}H_{26}N_4$).

SPM
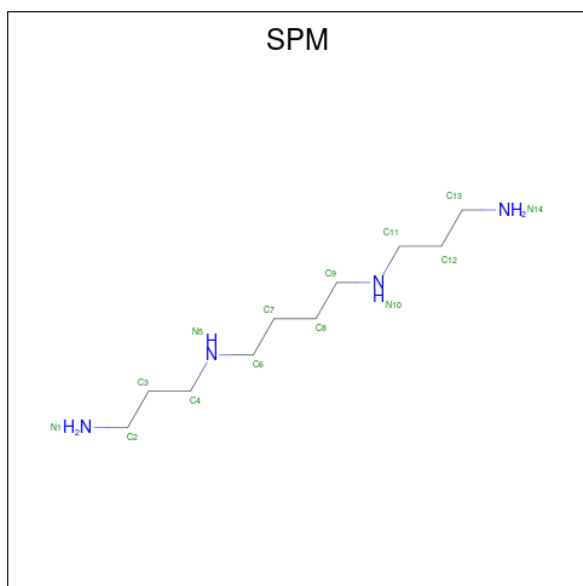
Mol	Chain	Residues	Atoms				AltConf
			Total	C	H	N	
91	AA	1	44	10	30	4	0

- Molecule 92 is SPERMIDINE (three-letter code: SPD) (formula: $C_7H_{19}N_3$).
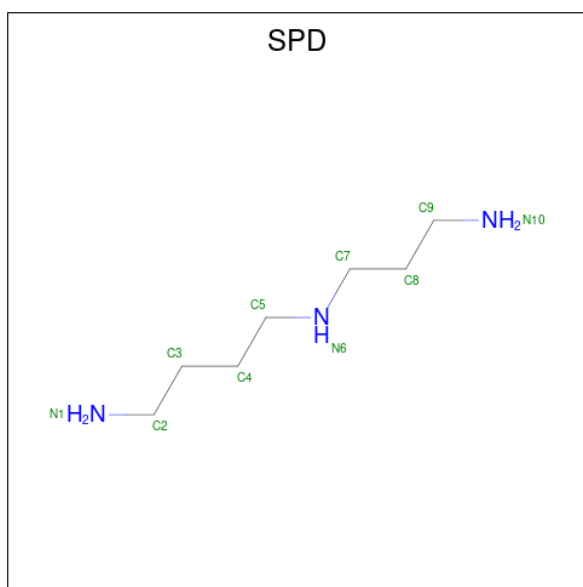
SPD

Mol	Chain	Residues	Atoms				AltConf
92	AA	1	Total 32	C 7	H 22	N 3	0
92	A	1	Total 32	C 7	H 22	N 3	0
92	A	1	Total 32	C 7	H 22	N 3	0
92	A	1	Total 32	C 7	H 22	N 3	0

- Molecule 93 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
93	AA	63	Total 63	Mg 63	0
93	AB	1	Total 1	Mg 1	0
93	AX	1	Total 1	Mg 1	0
93	A3	1	Total 1	Mg 1	0
93	A	138	Total 138	Mg 138	0
93	D	2	Total 2	Mg 2	0
93	E	1	Total 1	Mg 1	0
93	g	1	Total 1	Mg 1	0

- Molecule 94 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
94	AA	18	Total 18	K 18	0
94	A	29	Total 29	K 29	0
94	D	1	Total 1	K 1	0
94	M	1	Total 1	K 1	0
94	W	1	Total 1	K 1	0
94	3	1	Total 1	K 1	0
94	6	1	Total 1	K 1	0
94	i	1	Total 1	K 1	0
94	o	1	Total 1	K 1	0

- Molecule 95 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
95	AO	1	Total 1	Zn 1	0
95	0	1	Total 1	Zn 1	0
95	4	1	Total 1	Zn 1	0

- Molecule 96 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).
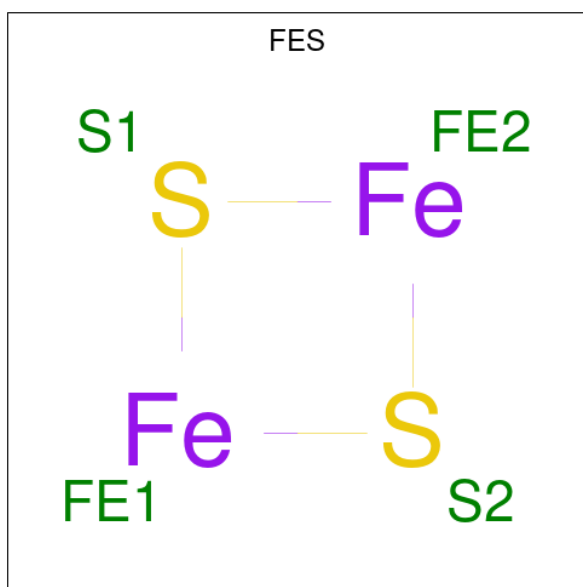
Mol	Chain	Residues	Atoms			AltConf
96	AP	1	Total	Fe	S	0
			4	2	2	
96	AT	1	Total	Fe	S	0
			4	2	2	
96	r	1	Total	Fe	S	0
			4	2	2	

- Molecule 97 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).
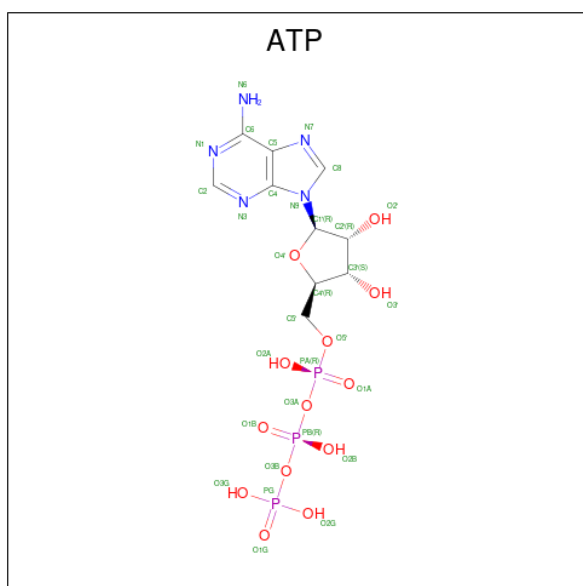
Mol	Chain	Residues	Atoms						AltConf
97	AX	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	

- Molecule 98 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).
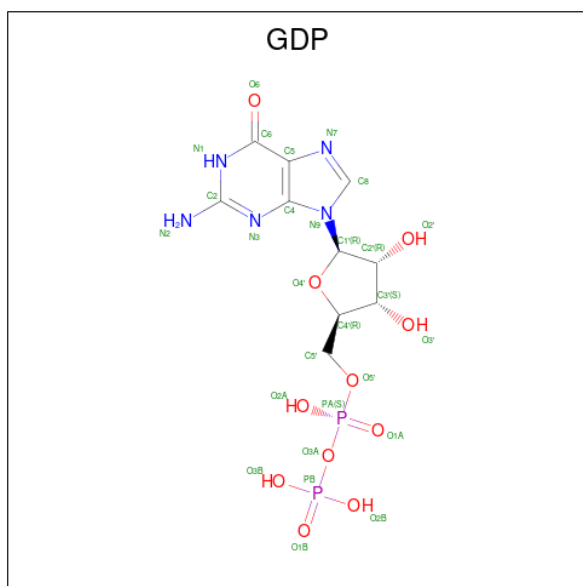
Mol	Chain	Residues	Atoms						AltConf
98	AX	1	Total	C	H	N	O	P	0
			40	10	12	5	11	2	

- Molecule 99 is 1,4-DIAMINOBUTANE (three-letter code: PUT) (formula: $C_4H_{12}N_2$).
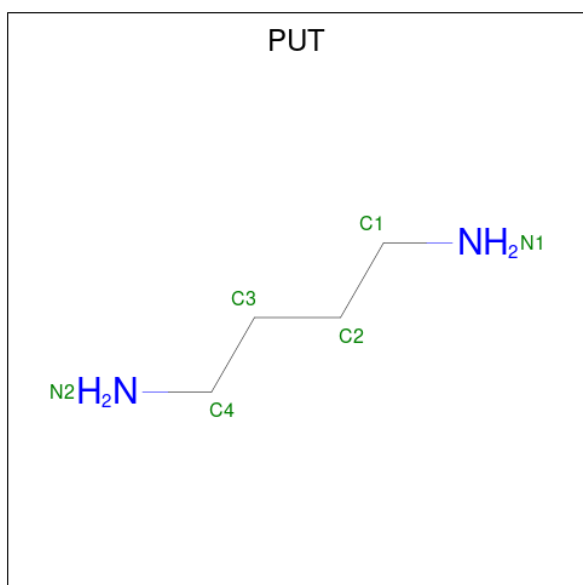
Mol	Chain	Residues	Atoms				AltConf
			Total	C	H	N	
99	A	1	20	4	14	2	0

- Molecule 100 is VALINE (three-letter code: VAL) (formula: $C_5H_{11}NO_2$).
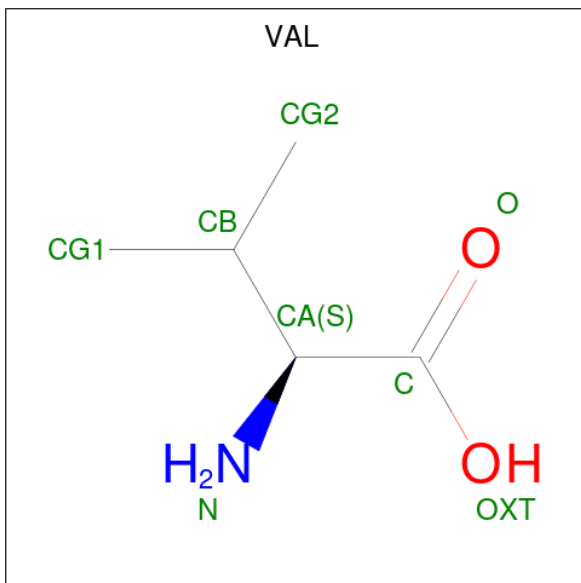
Mol	Chain	Residues	Atoms					AltConf
			Total	C	H	N	O	
100	B	1	18	5	11	1	1	0

- Molecule 101 is water.

Mol	Chain	Residues	Atoms		AltConf
			Total	O	
101	AA	2039	2039	2039	0
101	AB	78	78	78	0
101	AC	55	55	55	0
101	AD	82	82	82	0
101	AE	27	27	27	0
101	AF	39	39	39	0
101	AG	64	64	64	0
101	AH	57	57	57	0

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Mol	Chain	Residues	Atoms		AltConf
101	AI	39	Total 39	O 39	0
101	AJ	25	Total 25	O 25	0
101	AK	51	Total 51	O 51	0
101	AL	42	Total 42	O 42	0
101	AM	22	Total 22	O 22	0
101	AN	39	Total 39	O 39	0
101	AO	37	Total 37	O 37	0
101	AP	31	Total 31	O 31	0
101	AQ	77	Total 77	O 77	0
101	AR	11	Total 11	O 11	0
101	AS	25	Total 25	O 25	0
101	AT	44	Total 44	O 44	0
101	AU	8	Total 8	O 8	0
101	AW	16	Total 16	O 16	0
101	AX	56	Total 56	O 56	0
101	AY	18	Total 18	O 18	0
101	AZ	30	Total 30	O 30	0
101	A0	1	Total 1	O 1	0
101	A1	35	Total 35	O 35	0
101	A2	32	Total 32	O 32	0
101	A3	50	Total 50	O 50	0

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Mol	Chain	Residues	Atoms		AltConf
101	A4	9	Total 9	O 9	0
101	Aw	6	Total 6	O 6	0
101	Ax	7	Total 7	O 7	0
101	Ay	3	Total 3	O 3	0
101	Az	13	Total 13	O 13	0
101	A	2955	Total 2955	O 2955	0
101	B	66	Total 66	O 66	0
101	D	68	Total 68	O 68	0
101	E	66	Total 66	O 66	0
101	F	79	Total 79	O 79	0
101	I	27	Total 27	O 27	0
101	J	1	Total 1	O 1	0
101	K	57	Total 57	O 57	0
101	L	31	Total 31	O 31	0
101	M	51	Total 51	O 51	0
101	N	58	Total 58	O 58	0
101	O	33	Total 33	O 33	0
101	P	81	Total 81	O 81	0
101	Q	29	Total 29	O 29	0
101	R	63	Total 63	O 63	0
101	S	49	Total 49	O 49	0

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Mol	Chain	Residues	Atoms		AltConf
101	T	45	Total 45	O 45	0
101	U	24	Total 24	O 24	0
101	V	5	Total 5	O 5	0
101	W	55	Total 55	O 55	0
101	X	11	Total 11	O 11	0
101	Y	25	Total 25	O 25	0
101	Z	32	Total 32	O 32	0
101	0	28	Total 28	O 28	0
101	1	3	Total 3	O 3	0
101	2	34	Total 34	O 34	0
101	3	44	Total 44	O 44	0
101	4	11	Total 11	O 11	0
101	5	14	Total 14	O 14	0
101	6	100	Total 100	O 100	0
101	7	15	Total 15	O 15	0
101	8	15	Total 15	O 15	0
101	9	17	Total 17	O 17	0
101	a	11	Total 11	O 11	0
101	b	35	Total 35	O 35	0
101	c	18	Total 18	O 18	0
101	d	9	Total 9	O 9	0

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Mol	Chain	Residues	Atoms		AltConf
101	e	13	Total 13	O 13	0
101	f	19	Total 19	O 19	0
101	g	13	Total 13	O 13	0
101	i	46	Total 46	O 46	0
101	j	22	Total 22	O 22	0
101	k	5	Total 5	O 5	0
101	l	5	Total 5	O 5	0
101	m	8	Total 8	O 8	0
101	o	34	Total 34	O 34	0
101	p	8	Total 8	O 8	0
101	r	49	Total 49	O 49	0
101	s	51	Total 51	O 51	0
101	H	7	Total 7	O 7	0

3 Residue-property plots ⓘ

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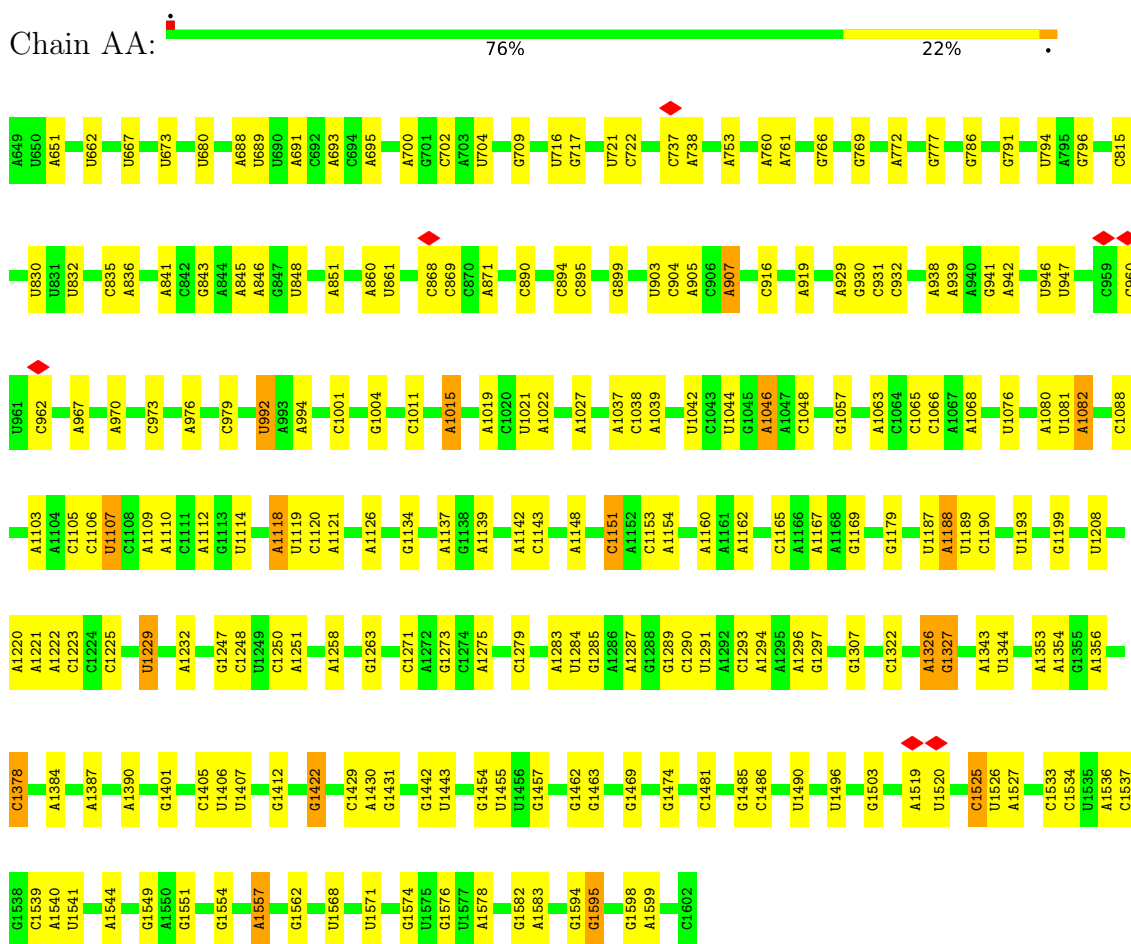
Chain AA:

• Molecule 2: 28S ribosomal protein S2, mitochondrial

Chain AB:

P104 S146 R147 N148 E164 Y165 A166 H167 T168 N201 D211 I222 D241 Q276 K277 GLU PRO GLY ASP GLN GLY PRO ALA HIS PRO PRO GLY ALA ASP MET SER HIS SER LEU
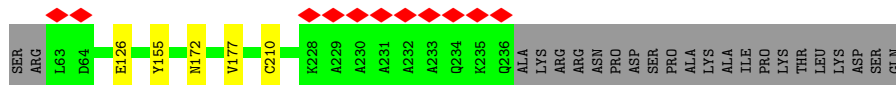
• Molecule 3: 28S ribosomal protein S24, mitochondrial

Chain AC: 73%   6%   21%

MET ALA ALA SER VAL CYS SER GLY LEU LEU GLY PRO ARG VAL LEU SER SER TRP SER ARG GLU GLU LEU PRO CYS ALA TRP ARG ALA LEU HIS THR SER PRO VAL CYS ALA K36 S45 K46 R65 K66 G67 D106 Q107 L108 V109 R113 G114 N115 R152 L167
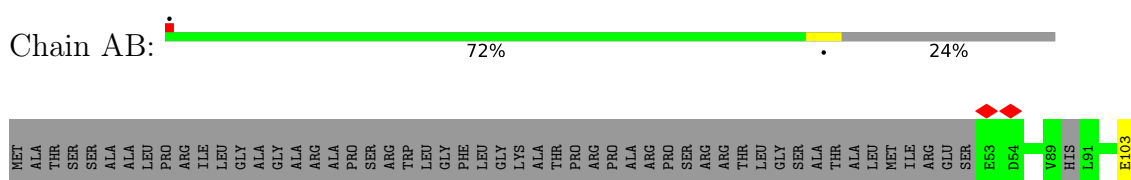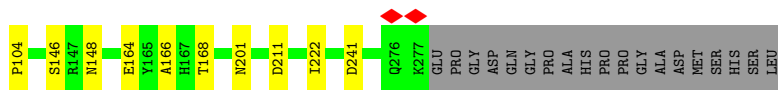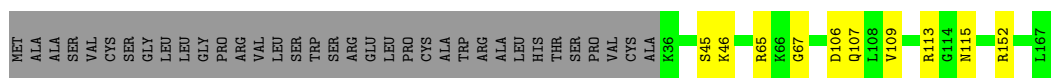
• Molecule 4: 28S ribosomal protein S5, mitochondrial

Chain AD: 76%   20%

MET ALA THR ALA VAL ARG ALA VAL GLY CYS LEU PRO VAL LEU CYS SER GLY THR ALA GLY HIS LEU LEU GLY ARG GLN CYS SER LEU ASN THR LEU PRO ALA ALA SER ILE LEU ALA TRP LYS SER VAL LEU GLY ASN GLY HIS SER SER SER LEU GLY THR ARG ASP THR HIS PRO TYR

ALA SER LEU SER ARG ALA LEU GLN THR GLN CYS CYS ILE SER SER PRO SER HIS LEU MET SER GLN GLN TYR ARG PRO TYR S88 K112 K116 R117 T118 N127 M185 K186 W198 I201 K234 E235 V245 K260 F268 A271 Y312 D331 I340

R351 A363 Q367 Q415 G416 M417 T430

• Molecule 5: 28S ribosomal protein S6, mitochondrial

Chain AE: 97%

MET P2 E17 R123 LYS LYS

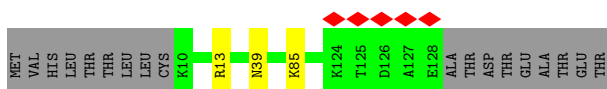• Molecule 6: 28S ribosomal protein S7, mitochondrial

Chain AF: 81%   5%   14%

MET ALA ALA PRO ALA VAL LYS VAL ALA ARG GLY TRP SER SER GLY LEU ALA LEU GLY VAL ARG ALA VAL LEU GLN LEU PRO GLY LEU THR GLN VAL ARG TRP S35 I46 V85 V90 E116 V159 V172 P173 L174 R179 M184 R240 W241 W242
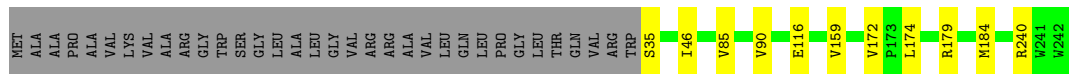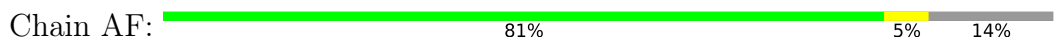
• Molecule 7: 28S ribosomal protein S9, mitochondrial

Chain AG: 76%   7%   17%

MET ALA ALA PRO CYS VAL SER TYR GLY GLY ALA VAL SER TYR ARG LEU LEU LEU TRP GLY LYS ARG GLY SER LEU ALA ARG LYS GLN GLY LEU TRP LYS THR ALA ALA PRO GLU LEU GLN THR ASN VAL ARG SER GLN ILE LEU ARG ARG HIS THR A53 I56 P57 K58 K59 N60 V61

P62 T63 S64 K65 R66 E102 Q176 SER HIS LEU GLN ALA LYS SER LEU LEU PRO GLU LYS THR VAL THR ARG ASP V194 I195 R198 W199 L200 I201 E204 E226 L229 T230 E237 V241 P259 K275 V295 D299 Y300 Q301 R310 E311 Q312 V320

C330 R337 S338 R345 L352 V356 V361 R377 R396

• Molecule 8: 28S ribosomal protein S10, mitochondrial

Chain AH:　　66%　　·　　30%

MET ALA ALA ARG THR ALA PHE GLY ALA VAL CYS ARG ARG LEU TRP GLN GLY LEU GLY ASN PHE SER VAL ASN THR SER LYS ASN GLY ASN THR ALA LYS ASN GLY LEU LEU LEU SER THR ASN MET LYS TRP VAL GLN PHE SER ASN L50 K60 F94 A95 H125 I126 E135

L143 V155 W189 GLU THR LEU SER GLU GLU LYS GLU GLU SER LYS SER
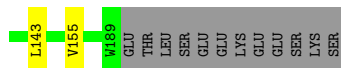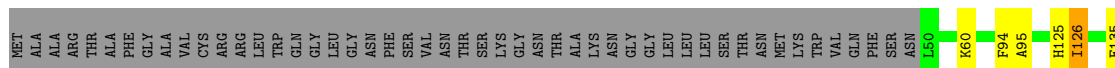
• Molecule 9: 28S ribosomal protein S11, mitochondrial

Chain AI:　　68%　　·　　29%

MET GLN ALA VAL ARG ASN ALA GLY SER ARG PHE LEU ARG SER TRP THR THR PRO GLN THR ALA GLY ARG VAL VAL ALA ARG THR PRO ALA GLY THR ILE CYS THR GLY ALA ARG GLN LEU GLN ASP ALA ALA LYS GLN LYS VAL GLU GLN ASN ALA ALA PRO SER HIS T58 Q98

N178 5F0184 R187 P188 R189 L194

• Molecule 10: 28S ribosomal protein S12, mitochondrial

Chain AJ:　　72%　　7%　　22%

MET SER TRP SER GLY LEU LEU HIS GLY LEU ASN THR SER LEU THR CYS GLY PRO ALA LEU VAL PRO ARG LEU TRP ALA THR CYS SER MET A31 R38 R47 K48 V61 K72 R78 R82 I107 D117 K138

• Molecule 11: 28S ribosomal protein S14, mitochondrial

Chain AK:　　76%　　·　　21%

MET ALA ALA PHE MET LEU GLY SER LEU LEU ARG THR PHE LYS GLN MET VAL PRO SER SER ALA SER GLY GLN VAL ARG SER H28 L120 S121 G122 I123 W128

• Molecule 12: 28S ribosomal protein S15, mitochondrial

Chain AL:　　66%　　·　　32%

MET LEU ARG VAL VAL ALA TRP ARG THR LEU SER LEU ILE ARG THR ARG ALA VAL THR GLN VAL LEU VAL PRO GLY LEU PRO GLY GLY GLY SER ALA LYS SER PHE PRO PHE ASN GLN TRP GLY LEU GLN PRO ARG SER LEU LEU GLN ALA ALA ARG GLY TYR VAL VAL ARG LYS PRO ALA GLN

SER ARG L63 D64 E126 Y155 N172 V177 C210 K228 A229 A230 A231 A232 A233 Q234 K235 Q236 ALA LYS ARG ARG ASN PRO ASP SER PRO ALA LYS ALA ILE PRO LYS THR LEU LYS ASP SER GLN

• Molecule 13: 28S ribosomal protein S16, mitochondrial

Chain AM:

• Molecule 14: 28S ribosomal protein S17, mitochondrial

Chain AN:

• Molecule 15: 28S ribosomal protein S18b, mitochondrial

Chain AO:
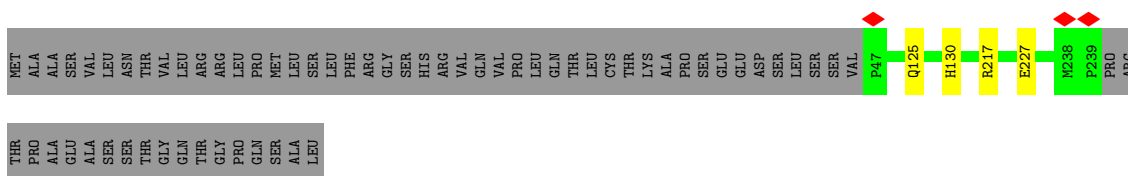
• Molecule 16: 28S ribosomal protein S18c, mitochondrial
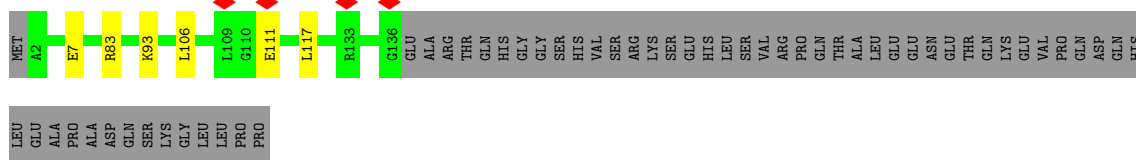
Chain AP:
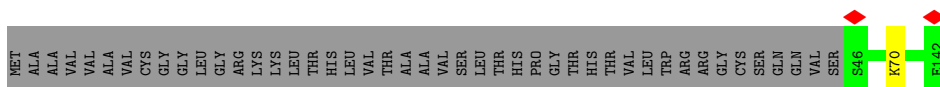
• Molecule 17: MRPS21 isoform 1

Chain AQ:

• Molecule 18: 28S ribosomal protein S22, mitochondrial

Chain AR:
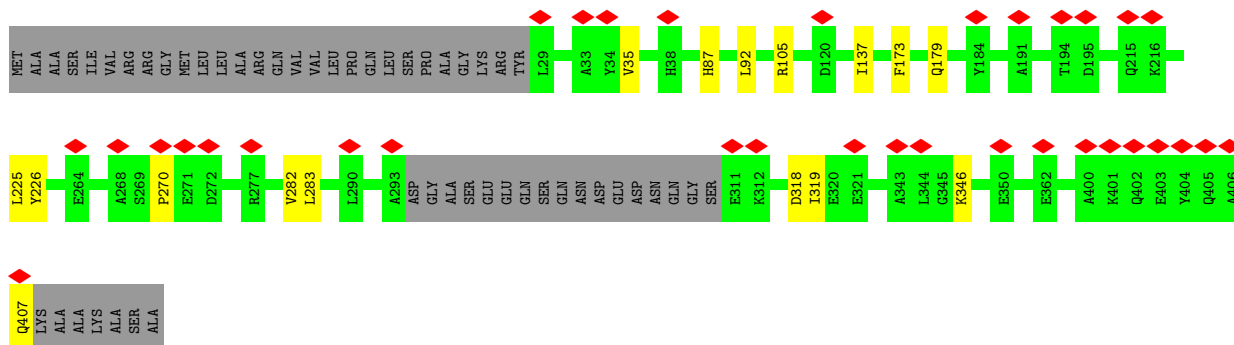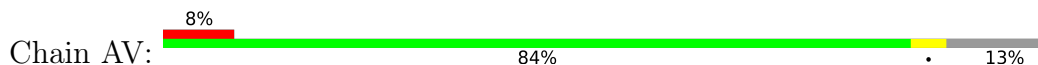

• Molecule 19: 28S ribosomal protein S23, mitochondrial

Chain AS:

68%   .   29%

MET A2 E7 R83 K93 L106 L109 G110 E111 L117 R133 G136 GLU ALA ARG THR GLN HIS GLY GLY SER HIS VAL SER ARG LYS SER GLU HIS LEU SER VAL ARG PRO GLN THR ALA LEU GLU GLU ASN GLU THR GLN LYS GLU VAL PRO GLN ASP GLN HIS

LEU GLU ALA PRO ALA ASP GLN SER LYS GLY LEU LEU PRO PRO

• Molecule 20: 28S ribosomal protein S25, mitochondrial

Chain AT:

94%   . .

MET P2 R6 F7 E91 T92 R132 L136 A166 L167 K168 A169 ASP ALA GLN ASP

• Molecule 21: 28S ribosomal protein S26, mitochondrial

Chain AU:

83%   .   14%

MET LEU ARG ALA LEU SER ARG LEU GLY ALA GLY THR PRO CYS ARG PRO ARG ALA PRO LEU VAL LEU PRO ALA ARG GLY R27 K38 R41 Y60 R120 R202 ARG ASP SER

• Molecule 22: 28S ribosomal protein S27, mitochondrial

Chain AV:

8%
84%   .   13%

MET ALA ALA SER ILE VAL ARG ARG GLY MET LEU LEU ALA ARG GLN VAL VAL LEU PRO GLN LEU SER PRO ALA GLY LYS ARG TYR L29 A33 Y34 V35 H38 H87 L92 R105 D120 I137 F173 Q179 Y184 A191 T194 D195 Q215 K216

L225 Y226 E264 A268 S269 P270 E271 D272 R277 V282 L283 L290 A293 ASP GLY ALA SER GLU GLU GLN SER GLN ASN ASP GLU ASP ASN GLN GLY SER E311 K312 D318 I319 E320 E321 A343 L344 G345 K346 E350 E362 A400 K401 Q402 E403 Y404 A405 A406

Q407 LYS ALA ALA LYS ALA SER ALA

• Molecule 23: 28S ribosomal protein S28, mitochondrial

Chain AW:

50%   .   47%

MET ALA ALA LEU CYS ARG ARG ALA ALA VAL ALA ALA GLU SER HIS PHE LEU ARG ALA VAL PHE LEU PHE ARG PRO PHE ARG GLY VAL GLY THR GLU SER GLY SER GLU GLY SER SER ASN ALA LYS GLU PRO LYS THR ARG ALA GLY PHE ALA SER ALA LEU GLU ARG HIS SER

GLU LEU LEU GLN LYS VAL GLU PRO LEU GLU GLN LYS GLY SER PRO LYS N76 M92 K98 Y113 V123 V162 L163 E164 S175 LYS ASP SER ARG SER LYS GLU GLU HIS HIS GLU LYS
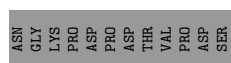
• Molecule 24: 28S ribosomal protein S29, mitochondrial

Chain AX:
82% 7% 12%

MET MET LEU LYS GLY ILE THR ARG LEU ILE SER ARG ILE HIS LYS LEU ASP PRO GLY ARG PHE LEU HIS MET GLY THR GLN ALA ARG GLN SER ILE ALA ALA HIS LEU ASP ASN GLN VAL PRO VAL GLU SER PRO ARG A47 H81 R86 K103 P104 L108 Y119 E129

V141 L151 I152 L153 D167 E183 W187 N190 L244 L247 T272 K279 I282 M297 I306 E379 L383 S384 N385 S389 R393 L398

● Molecule 25: 28S ribosomal protein S31, mitochondrial

Chain AY:
36% 62%

MET PHE PRO ARG VAL SER THR PHE LEU PRO LEU ARG PRO LEU SER ARG HIS PRO LEU SER SER GLY SER PRO GLU THR SER ALA ALA ALA ILE MET LEU LEU THR VAL ARG HIS GLY THR VAL ARG TYR ARG SER SER ALA LEU LEU ALA ARG THR LYS ASN ASN ILE GLN ARG TYR PHE

GLY THR ASN SER VAL ILE CYS SER SER LYS LYS ASP LYS GLN SER VAL ARG THR GLU GLN THR SER LYS GLU THR SER GLN ASP SER GLU LYS ASN THR LYS LYS ASP LEU LEU GLY ILE ILE LYS MET LYS VAL GLU LEU SER THR VAL ASN VAL ARG THR LYS PRO

PRO LYS ARG ARG PRO LEU LYS SER LEU GLU ALA THR LEU GLY ARG LEU ARG ARG ALA THR GLU GLY TYR ALA PRO LYS LYS ARG ILE GLU PRO LEU SER PRO GLU GLU LEU VAL ALA ALA SER ALA VAL ALA ASP SER SER LEU PRO LYS THR THR VAL ASN VAL ARG THR LYS SER GLU LEU LEU SER GLN

LEU GLN GLN HIS GLU GLU SER ARG ALA GLN GLN ARG ASP ALA LYS ARG PRO LYS ILE SER PHE SER ASN ILE ILE SER ASP MET LYS VAL ALA ARG SER ALA THR ALA ARG VAL ARG SER ARG PRO GLU LEU ARG ILE GLN PHE ASP GLU GLY TYR ASP ASN TYR PRO GLY GLN GLU GLU LYS

THR ASP ASP LEU LYS LYS R247 R255 L256 F259 A263 V264 T265 K266 E267 A268 P269 E270 T271 D272 T273 N290 K309 E318 R377 N381 N395

● Molecule 26: 28S ribosomal protein S33, mitochondrial

Chain AZ:
92% 6%

MET SER S3 K46 Y49 G99 A102 ALA LYS ARG LYS

● Molecule 27: 28S ribosomal protein S34, mitochondrial

Chain A0:
96%

ALA ARG K4 E13 R16 D37 L41 R63 D110 P157 E158 D159 T216 P217 V218

● Molecule 28: 28S ribosomal protein S35, mitochondrial

Chain A1:
80% 6% 14%

MET ALA ALA ALA ALA LEU PRO ALA TRP LEU SER LEU GLN SER ARG ALA ARG THR LEU ARG ALA PHE SER THR ALA VAL TYR SER ALA THR PRO VAL PRO THR PRO SER LEU PRO GLU ARG THR PRO GLY ASN E45 R46 P47 R86 P96 L103 H113 L114 D128 F129

D152 R174 Y198 D203 E250 E273 E277 L299 K300 N301 E304 I309 T323

• Molecule 29: Coiled-coil-helix-coiled-coil-helix domain-containing protein 1

Chain A2:

7%

87%　　　　　　　　　　　　　　12%

MET A2 L6 R9 N15 P16 R17 V33 E48 N59 D64 A65 C66 R87 S88 E91 T92 L93 G94 E95 S96 G97 S98 L99 K103 L104 N105 S118

• Molecule 30: Aurora kinase A-interacting protein

Chain A3:

33%　　　　　　　　65%

MET LEU LEU GLY ARG LEU THR SER GLN LEU LEU LEU ARG ALA VAL PRO TRP ALA GLY ARG PRO PRO TRP PRO VAL SER GLY VAL LEU GLY SER ARG VAL CYS GLY PRO LEU TYR SER THR SER PRO ALA GLY PRO GLY ARG ALA ALA SER LEU PRO ARG LYS GLY ALA GLN LEU GLU LEU

GLU GLU MET LEU VAL PRO ARG LYS MET SER VAL SER PRO LEU GLU TRP LEU THR ALA ARG LEU PRO ARG LEU ASP THR GLY THR ALA GLY THR VAL ALA PRO PRO GLN GLN SER SER TYR PRO ALA CYS PRO SER GLN ILE GLY GLU ALA GLU GLN GLY ASP GLY VAL ALA

ASP ALA PRO GLN ILE GLN CYS K128 R144 K145 R155 R197 GLY LYS

• Molecule 31: Pentatricopeptide repeat domain-containing protein 3, mitochondrial

Chain A4:

83%　　　　　　　　　　　　　15%

MET ALA VAL VAL SER ALA VAL ARG TRP LEU GLY LEU LEU ARG SER ARG LEU GLY GLN PRO LEU THR GLY ARG ALA GLY ALA GLY LEU CYS GLU GLN ALA ARG SER CYS ARG PHE TYR SER GLY SER ALA THR LEU SER LYS VAL GLU GLY THR ASP VAL THR GLY ILE E55 V58 Y87

D200 T205 H208 PHE GLN GLN THR GLY GLN SER GLU ALA LEU GLU GLU GLU ASN ASP GLU THR SER ARG ARG LYS ALA GLY HIS Q233 F234 N243 V302 C303 A304 I305 N306 K312 R344 I363 F391 Y458 Q470 I471 D472 Y486 K556 E560

R565 Q566 L596 A654 I655 N656 N665 L666 THR ALA LEU THR SER ASP SER THR ASP SER SER SER ASP SER SER SER ASP THR SER GLU GLY LYS

• Molecule 32: A/A-tRNA

Chain Aw:

72%　　　　　　　　　28%

U1 G2 G3 A7 U8 A9 A16 C20 A21 A22 G30 A46 U48 U49 A50 A55 A56 U61 A65 U68 C71 A72 U73 C74 C75 A76

• Molecule 33: P/P-tRNA

Chain Ax:

10%

80%　　　　　　　　20%

U1 A2 G3 U8 A9 C25 A44 G45 A46 U48 G49 U54 U55 C56 A57 A58 U59 U60 C61 C62 A76

• Molecule 34: E/E-tRNA

Chain Ay:

79%　21%

U1 A2 G3 G4 A23 C28 U29 G30 A37 A44 G45 A46 U48 G49 U59 C75 A76

• Molecule 35: mRNA

Chain Az:

18%
62%　38%

U-1 U0 U1 U8 U11 U12 U13 A14 U15 A16 A17 A18 A19 A22 U23 U24 U25 A26 C27 A32

• Molecule 36: 16S mitochondrial rRNA

Chain A:

76%　21%

G1671 G1681 C1689 A1692 C1693 U1694 C1699 U1700 U1701 A1702 C1703 U1704 A1708 C1711 C1720 A1724 A1727 U1728 U1729 U1730 A1735 A1736 A1737 U1738 A1739 A1740 A1741 G1742 U1745 A1746 G1747 G1748 C1749 G1754 G1760 C1765 A1777 U1778 A1779 U1780 A1781 G1782 G1787

A1790 G1800 A1803 A1804 A1805 U1806 U1807 A1808 U1809 A1810 A1811 A1815 G1816 C1817 A1821 C1827 A1828 A1829 G1830 G1831 A1832 A1836 A1844 G1851 C1852 A1853 U1854 A1855 A1856 A1863 A1869 A1870 A1871 A1882 A1887 G1888 C1889 A1893 C1901 C1902 C1903 G1918 A1937

A1940 A1953 U1954 G1958 A1961 G1969 G1970 A1978 U1979 A1980 G1985 G1990 A1991 C1992 A1993 A1994 A2003 G2004 C2005 G2008 U2013 A2014 C2015 C2016 G2022 G2030 A2031 C2036 U2037 U2038 A2039 A2045 U2048 U2054 U2055 C2059 A2060 U2069 C2070 U2071 U2075

C2079 A2090 U2095 G2098 U2099 A2103 G2108 A2109 A2110 C2111 A2112 G2113 C2125 U2126 A2132 A2135 C2136 C2137 A2142 G2147 A2148 G2149 A2160 A2163 U2168 A2169 G2170 A2181 A2192 A2196 G2197 A2198 A2199 A2200 A2213 A2214 C2219 A2220 C2221 U2222 A2223

C2224 C2225 U2226 A2227 A2228 A2229 A2230 A2231 A2237 A2238 A2239 C2240 A2241 U2242 A2243 U2244 A2245 A2246 C2257 C2258 C2259 A2260 C2261 C2262 C2263 A2281 C2284 U2285 G2289 A2297 G2300 A2306 C2322 C2331 C2332 G2339 G2345 A2350 A2353 A2354 A2355 A2356 C2357 A C U

G2361 A2362 A2363 C2364 U2372 A2373 A2374 A2388 C2389 A2390 A2398 A2399 C2400 A2401 U2404 U2407 C2415 A2444 A2445 A2446 A2447 A2451 A2452 G2453 A2458 A2463 A2472 G2477 U2478 C2479 U2483 C2484 U2485 C2493 U2499 C2502 A2503 A2504 A2505 A2506 A2512 C2520

A2521 C2526 A2527 U2531 A2539 C2540 C2541 U2545 A2558 U2562 C2566 C2570 G2587 G2592 G2593 U2594 A2595 G2596 U2599 A2600 A2601 U2602 C2603 A2617 U2618 G2627 U2628 A2629 U2630 A2633 U2634 G2635 G2652 C2653 U2654 G2655 U2656 U2661 G2673 C2683 G2686

• Molecule 37: mitochondrial tRNAVal

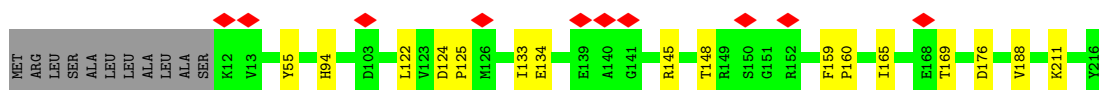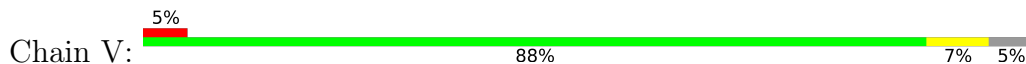Chain B:

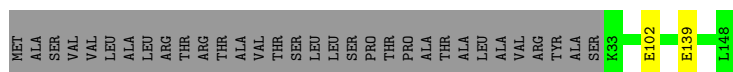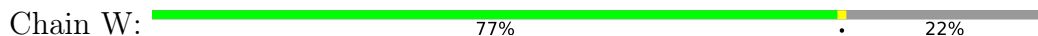• Molecule 38: 39S ribosomal protein L2, mitochondrial

Chain D:
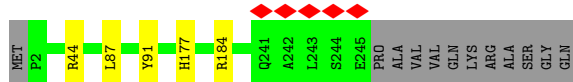

• Molecule 39: 39S ribosomal protein L3, mitochondrial
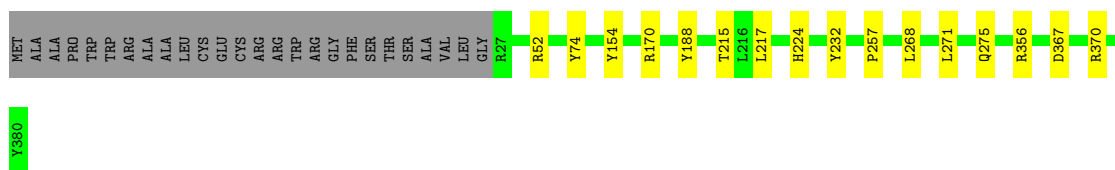
Chain E:
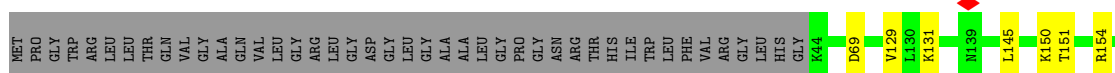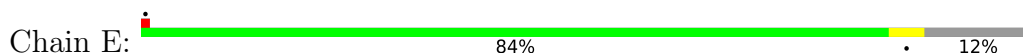
• Molecule 40: 39S ribosomal protein L4, mitochondrial

Chain F:

T258 R295 PRO LEU PRO HIS ALA THR GLN GLY PRO ALA ALA THR PRO TYR HIS CYS
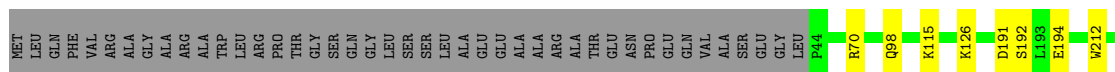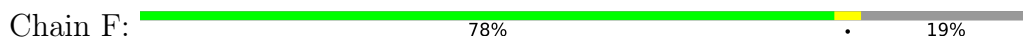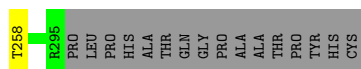
• Molecule 41: 39S ribosomal protein L10, mitochondrial

23%

Chain I:

77%   19%

MET ALA ALA ALA VAL ALA GLY MET LEU ARG GLY GLY LEU LEU LEU PRO GLN ALA GLY ARG LEU LEU PRO THR LEU GLN THR VAL ARG TYR G29 Y53 S70 P71 P72 Q73 E74 F90 Q91 D92 N93 R94 N128 E136 D137 V148 G149 H150 N151 E158 R166 R169

C180 I181 D182 D183 T184 K196 L197 P198 S199 L200 P201 L202 V203 Q204 G205 E206 L207 V208 G209 G210 L211 T212 C213 L214 T215 A216 Q217 T218 H219 S220 L221 L222 Q223 H224 Q225 P226 L227 Q228 L229 Y230 T231 L232 L233 D234 Q235 Y236 I237 R238 E239 Q240 ARG GLU LYS ASP SER VAL MET SER ALA

ASN GLY LYS PRO ASP PRO THR VAL PRO ASP SER

• Molecule 42: 39S ribosomal protein L11, mitochondrial

25%

Chain J:

88%   9%

MET SER LYS LEU GLY ARG ALA ALA ARG GLY LEU ARG LYS PRO GLU VAL GLY G18 V19 I20 R21 A26 G27 L28 A29 M30 P31 G32 P33 P34 L35 Q41 R42 G43 V44 S45 F49 F53 N54 E55 R56 T57 K58 D59 I60 K61 E62 K69 K73 P74 D75 R76 T77 F78

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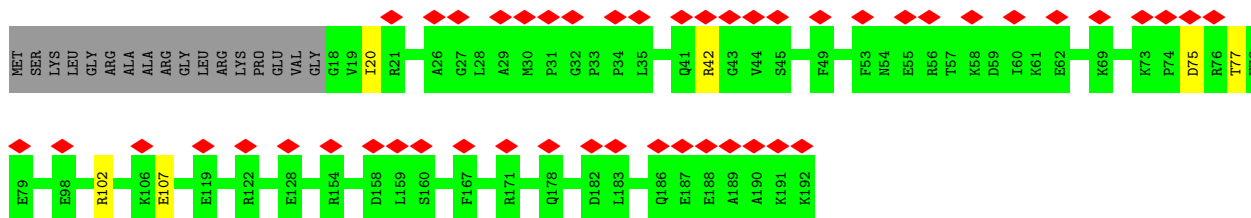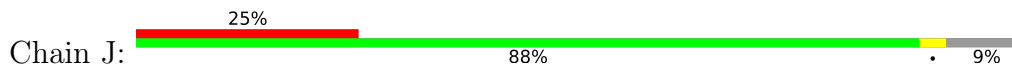
• Molecule 43: 39S ribosomal protein L13, mitochondrial

Chain K:

96%

MET S2 A7 P8 R16 F67 K71 E123 L178

• Molecule 44: 39S ribosomal protein L14, mitochondrial

Chain L:

74%   5%   21%

MET ALA PHE PHE THR GLY LEU TRP GLY PRO PHE THR CYS VAL SER ARG VAL LEU SER HIS HIS CYS PHE SER THR THR GLY SER LEU SER A31 A76 R95 M96 T97 R128 K129 R130 E131 G132 E133 V145
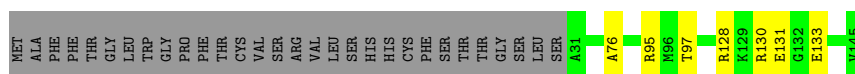
• Molecule 45: 39S ribosomal protein L15, mitochondrial

Chain M:

93%

MET ALA GLY PRO LEU GLN GLY G8 V22 R43 E56 R59 R91 K133 T149 A177 R196 E209 Y222 D250 E251 S296

• Molecule 46: 39S ribosomal protein L16, mitochondrial

Chain N:　86%　12%

MET TRP ARG LEU LEU ALA ARG ALA SER ALA PRO LEU LEU ARG VAL PRO LEU SER ASP SER TRP ALA LEU LEU PRO ALA SER ALA GLY **V30** **L34** **E40** **D41** V59 K67 R73 K155 P212 V251
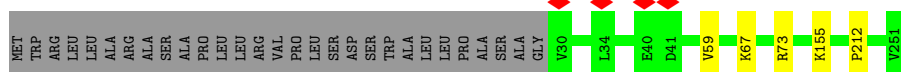
• Molecule 47: 39S ribosomal protein L17, mitochondrial

Chain O:　85%　12%

MET ARG LEU SER VAL ALA ALA ALA I9 Y62 G63 K64 Q100 S140 L144 L145 N146 E161 A162 SER ASN HIS SER SER HIS THR ALA GLN THR PRO GLY ILE

• Molecule 48: 39S ribosomal protein L18, mitochondrial

Chain P:　78%　20%

MET ALA LEU ARG SER ARG PHE TRP GLY LEU PHE SER VAL CYS ARG ASN PRO GLY CYS ARG PHE ALA ALA LEU SER THR SER SER GLU PRO ALA ALA LYS PRO GLU VAL **D37** E126 E138 Q162 E180
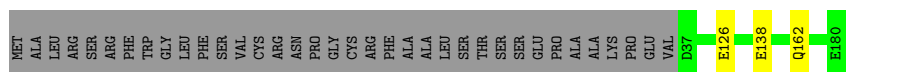
• Molecule 49: 39S ribosomal protein L19, mitochondrial

Chain Q:　5%　78%　18%

MET ALA ALA CYS ILE ALA ALA GLY HIS TRP ALA ALA ALA MET GLY LEU GLY ARG SER PHE GLN ALA ALA ARG THR LEU LEU PRO PRO PRO ALA SER ILE ALA CYS ARG VAL HIS ALA GLY VAL PRO VAL ARG GLN GLN SER THR GLY PRO SER GLU PRO GLY ALA F54 P60 V61 **I62** V63 D64

K65 H66 R67 P68 V69 E70 P71 E72 S77 P78 E79 S141 L145 Q209 E210 P211 N212 N237 F238 E251 E272 S292
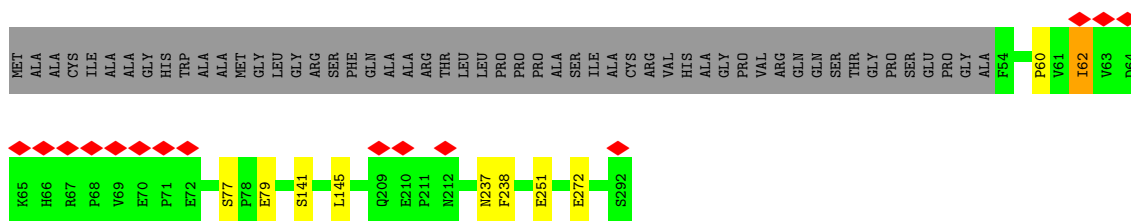
• Molecule 50: 39S ribosomal protein L20, mitochondrial

Chain R:　91%　6%

MET VAL PHE LEU THR ALA GLN LEU TRP L10 R20 Y58 R65 W68 D134 G135 K136 H149

• Molecule 51: 39S ribosomal protein L21, mitochondrial

Chain S:　77%　21%

MET ALA ALA SER SER LEU THR VAL THR LEU GLY ARG LEU ALA SER ALA CYS SER HIS SER ILE LEU LEU ARG PRO SER GLY PRO GLY ALA ALA SER LEU TRP SER ALA ARG ARG PHE ASN SER GLN SER THR S45 T109 D112 D152 L153 L205
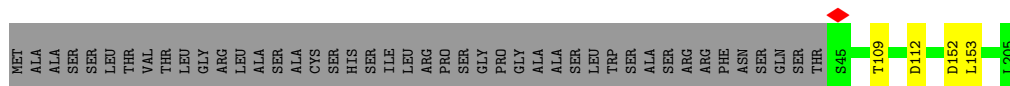
• Molecule 52: 39S ribosomal protein L22, mitochondrial

Chain T:　80%　19%

MET ALA ALA ALA VAL LEU GLY GLN LEU GLY ALA LEU TRP ILE HIS ASN LEU ARG SER ARG GLY LYS LEU ALA LEU GLY VAL LEU PRO GLN SER TYR ILE HIS THR SER ALA SER LEU ASP I41 K78 L206
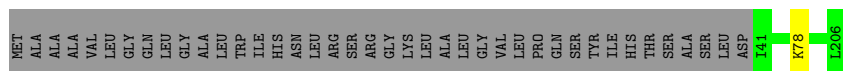
• Molecule 53: 39S ribosomal protein L23, mitochondrial

Chain U:

10%

95% 5%

MET A2 L9 Y10 R11 V19 E47 A66 K78 A100 K114 D115 E116 S117 P118 E119 G120 S121 A122 A123 D124 D125 L126 Y127 E133 L153
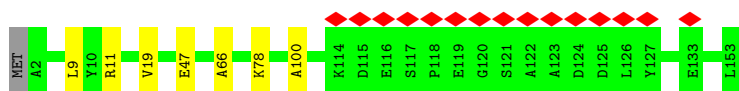
• Molecule 54: 39S ribosomal protein L24, mitochondrial

Chain V:

5%

88% 7% 5%

MET ARG LEU SER ALA LEU LEU ALA LEU ALA SER K12 V13 Y55 H94 D103 L122 V123 D124 P125 M126 I133 E134 E139 A140 G141 R145 T148 R149 S150 G151 R152 F159 P160 I165 E168 T169 D176 V188 K211 Y216

• Molecule 55: 39S ribosomal protein L27, mitochondrial

Chain W:

77% 22%

MET ALA SER VAL VAL LEU ALA LEU ARG THR ARG ALA VAL THR SER LEU LEU SER PRO THR PRO ALA THR ALA LEU ALA VAL ARG TYR ALA SER K33 E102 E139 L148

• Molecule 56: 39S ribosomal protein L28, mitochondrial

Chain X:

93% 5%

MET P2 R44 L87 Y91 H177 R184 Q241 A242 L243 S244 E245 PRO ALA VAL VAL GLN LYS ARG ALA SER GLY GLN

• Molecule 57: 39S ribosomal protein L47, mitochondrial

Chain Y:

71% 28%

MET ALA ALA ALA GLY LEU ALA LEU LEU CYS ARG ARG VAL SER SER ALA LEU LYS SER SER ARG SER LEU ILE THR PRO GLN VAL PRO ALA CYS THR GLY PHE PHE LEU SER LEU LEU PRO LYS SER THR PRO ASN VAL THR SER PHE HIS GLN TYR ARG LEU LEU HIS THR THR LEU SER

ARG LYS G63 G82 K134 R198 A242 E243 ALA GLN LYS SER SER LEU VAL
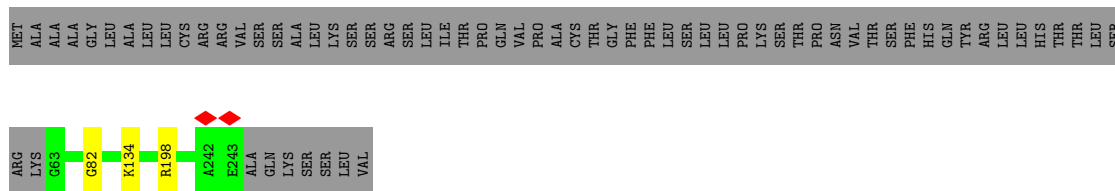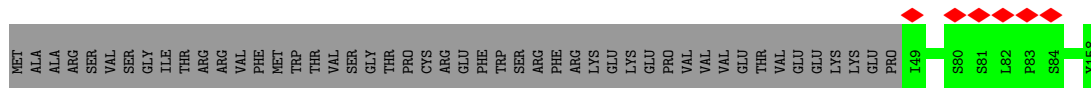
• Molecule 58: 39S ribosomal protein L30, mitochondrial

Chain Z:

73% 24%

MET ALA GLY ILE LEU ARG LEU VAL VAL GLN TRP PRO PRO GLY ARG LEU GLN THR VAL THR LYS GLY VAL GLU SER LEU ILE ILE CYS THR ASP TRP ILE ARG HIS K35 R77 R78 K83 Q156 LYS ALA HIS GLU SER
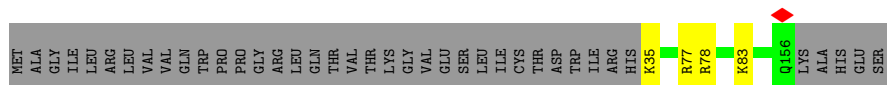
• Molecule 59: 39S ribosomal protein L32, mitochondrial

Chain 0:

55% · 41%

MET ALA LEU ALA MET LEU VAL LEU VAL VAL SER PRO TRP SER ALA ALA ARG GLY VAL LEU LEU ARG ASN TYR TRP GLU ARG LEU LEU ARG LYS LEU PRO GLN SER ARG PRO GLY PHE PRO SER PRO PRO TRP GLY PRO ALA LEU ALA VAL GLN GLY PRO ALA MET PHE THR GLU PRO ALA ASN

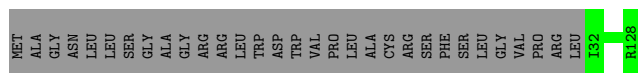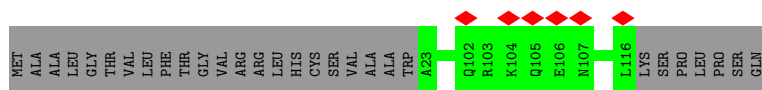ASP THR SER GLY SER LYS GLU ASN SER SER LEU LEU ASP SER ILE PHE TRP MET A79 R95 N96 K102 T153 S166 E167 N188
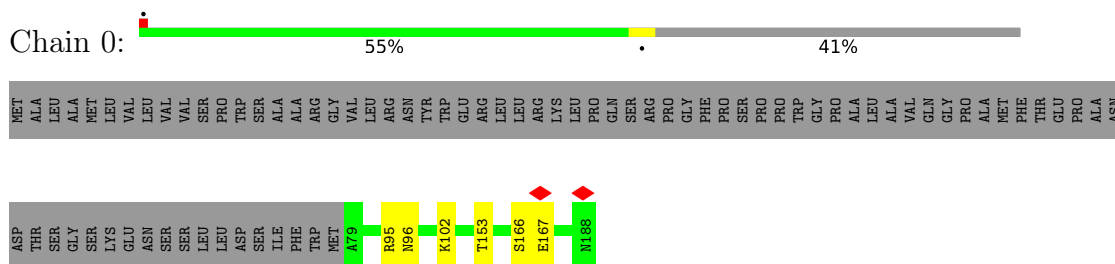
• Molecule 60: 39S ribosomal protein L33, mitochondrial

Chain 1:

78% 8% 14%

MET PHE LEU SER ALA VAL PHE ALA K10 S11 K12 R34 R38 V54 L55 R63 S64 L65
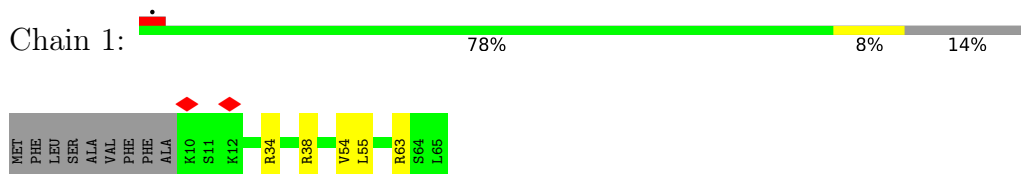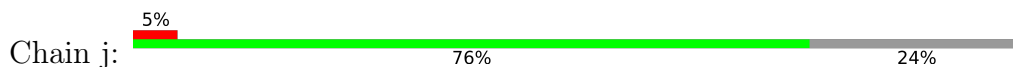
• Molecule 61: 39S ribosomal protein L34, mitochondrial

Chain 2:

49% · 50%

MET ALA VAL LEU ALA GLY SER LEU LEU GLY PRO THR SER ARG SER ALA ALA LEU LEU GLY GLY ARG TRP LEU GLN PRO ARG ALA ALA TRP ARG LEU GLY PHE PRO ASP ALA TRP GLY LEU PRO THR PRO GLN GLN ALA ARG GLY K47 S56 H92

• Molecule 62: 39S ribosomal protein L35, mitochondrial

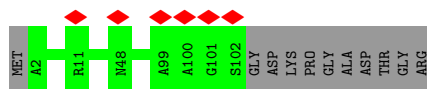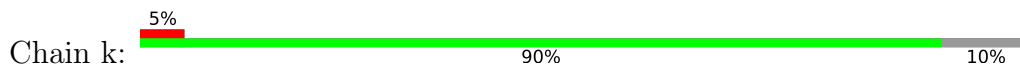Chain 3:

47% · 49%

MET ALA ALA SER ALA PHE GLY ALA VAL ALA ARG ALA ALA SER GLY ILE LEU ARG PRO LEU ASN ILE LEU ALA SER THR TYR ARG ASN CYS VAL LYS ASN ALA SER LEU ILE SER ALA LEU SER THR GLY ARG PHE SER HIS ILE GLN THR PRO VAL VAL SER SER THR PRO ARG LEU

THR THR SER GLU ARG ASN LEU THR CYS GLY HIS THR SER VAL ILE LEU ASN ARG MET ALA PRO VAL LEU PRO SER VAL LEU LYS LEU PRO VAL ARG SER L94 R104 K108 L144 R145 E146 N170 V188

• Molecule 63: 39S ribosomal protein L36, mitochondrial

Chain 4:

35% · 63%

MET ALA ASN LEU PHE ILE ARG LYS MET VAL ASN PRO LEU LEU TYR LEU SER ARG HIS THR VAL LYS PRO ARG ALA ALA LEU SER THR PHE GLY PHE GLY ILE ARG GLY ALA ALA PRO VAL VAL GLU PRO GLY ALA ALA VAL ARG SER LEU LEU SER PRO GLY LEU LEU PRO HIS LEU

LEU PRO ALA LEU GLY F66 W88 M103
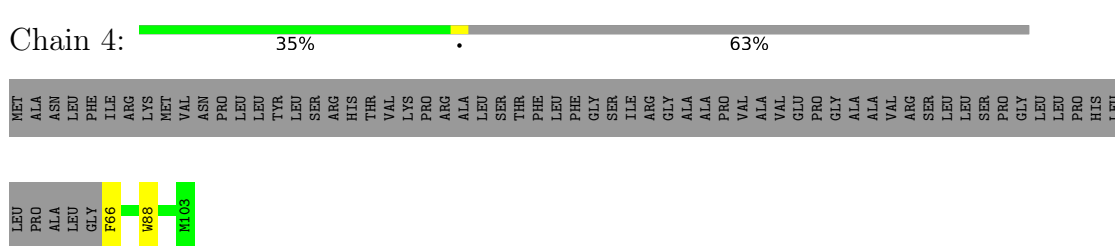
• Molecule 64: 39S ribosomal protein L37, mitochondrial

Chain 5:

91% · 7%

MET ALA LEU ALA SER GLY PRO ALA ARG ARG ALA LEU ALA GLY SER GLY LEU GLY GLY PHE GLY ALA PRO ARG ARG GLY A30 E56 Y105 R110 R144 R173 Y176 C177 P178 I262 H289 T290 D295 R395 A423
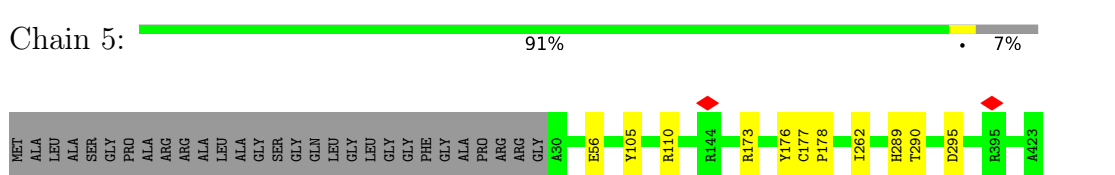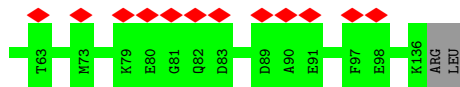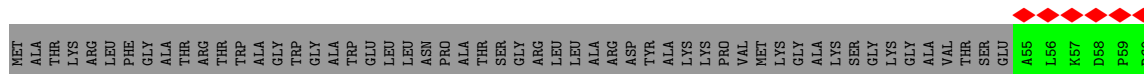
• Molecule 65: 39S ribosomal protein L38, mitochondrial

Chain 6:

• Molecule 66: 39S ribosomal protein L39, mitochondrial
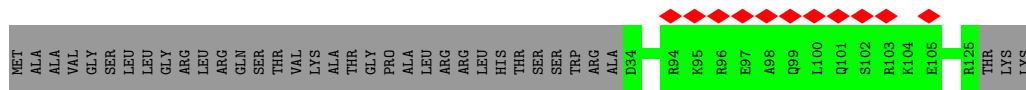
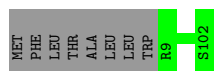Chain 7:
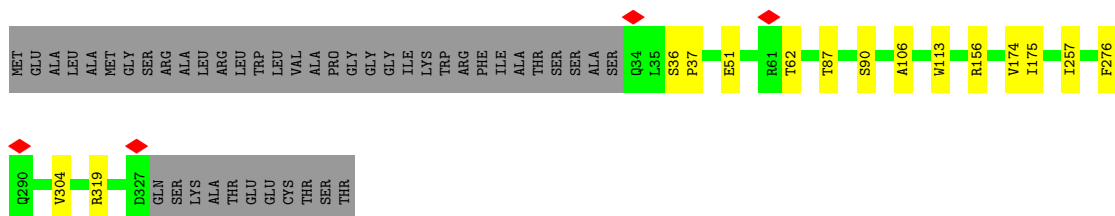
• Molecule 67: 39S ribosomal protein L40, mitochondrial

Chain 8:
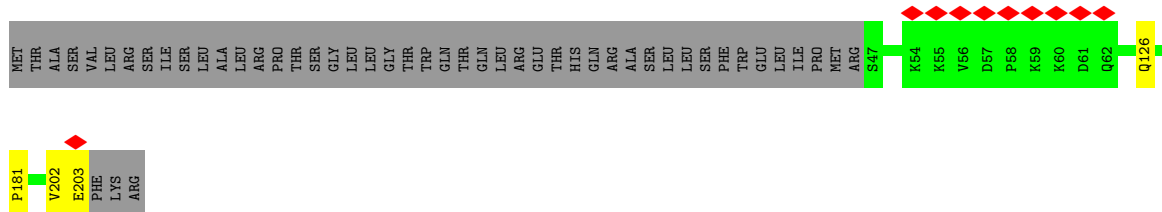
• Molecule 68: 39S ribosomal protein L41, mitochondrial

Chain 9:

• Molecule 69: 39S ribosomal protein L42, mitochondrial

Chain a:
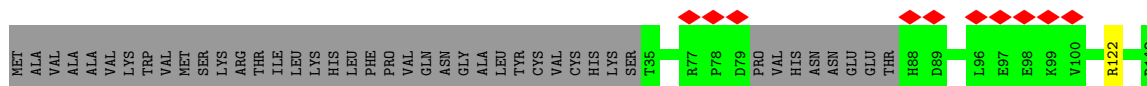
• Molecule 70: Large ribosomal subunit protein mL43

Chain b:

ACE2 D150 P151 ALA PRO ALA GLN ASP THR GLY LEU ARG LEU SER ALA VAL ALA PRO GLN ILE LEU LEU PRO GLY TRP PRO ASP PRO ASP PRO THR VAL ASP PRO ILE SER SER LEU THR SER ALA PRO PRO MET LEU SER ALA VAL SER CYS LEU PRO ILE VAL PRO

ALA LEU THR THR VAL CYS SER ALA

• Molecule 71: 39S ribosomal protein L44, mitochondrial

Chain c:

86% 14%

MET ALA SER GLY LEU VAL ARG LEU LEU GLN GLN GLY HIS ARG CYS LEU LEU ALA LEU ALA PRO VAL ALA PRO LYS LEU VAL LEU PRO PRO VAL ARG GLY V31 G109 I110 GLU LYS GLU ALA V115 L116 L117 K320 GLU THR LEU ARG ALA GLU LYS SER ILE THR ALA SER

• Molecule 72: 39S ribosomal protein L45, mitochondrial

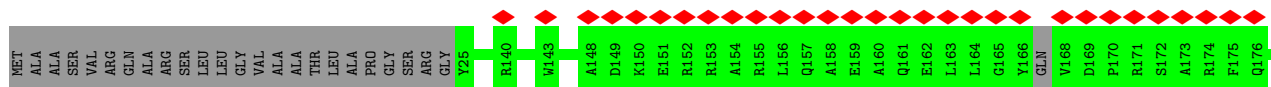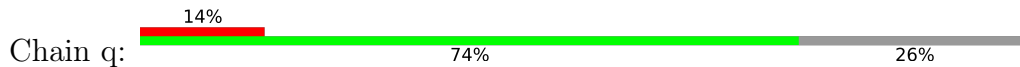Chain d:

8%
79% 21%

MET ALA ALA ALA PRO ILE PRO GLN GLY PHE SER CYS LEU SER ARG PHE LEU GLY TRP TRP PHE ARG GLN PRO VAL LEU VAL THR GLN SER ALA ALA ILE VAL PRO VAL ARG T37 K38 K39 F56 MET GLN HIS ALA ARG LYS ALA GLY L65 V66 I67 P68 P69 E70 K71 A95 R96 I97

S98 SER LEU SER LYS GLU GLY LEU LEU ILE GLU ARG T109 E110 R111 M112 K113 K114 T115 M116 S201 M202 M203 N204 E295 ALA GLN GLY GLU ALA GLN LYS PRO GLN LEU ALA
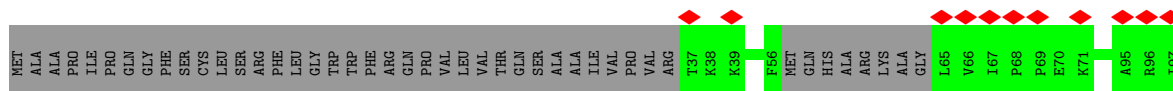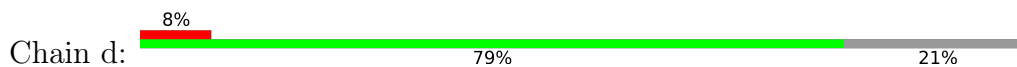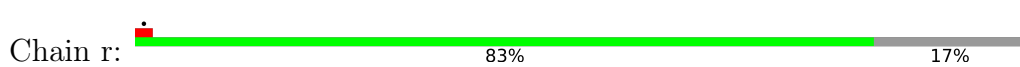
• Molecule 73: 39S ribosomal protein L46, mitochondrial

Chain e:

5%
85% 15%

MET ALA ALA PRO VAL ARG ARG THR LEU LEU GLY VAL ALA GLY LEU GLY TRP ARG ARG PHE GLU ARG LEU TRP ALA GLY SER LEU SER SER ARG SER LEU ALA LEU ALA ALA ALA PRO SER SER ASN G42 K100 K101 K102 A103 D104 L105 H106 D107 E108 E109 D110 E111 Q112 D113 G247

L279
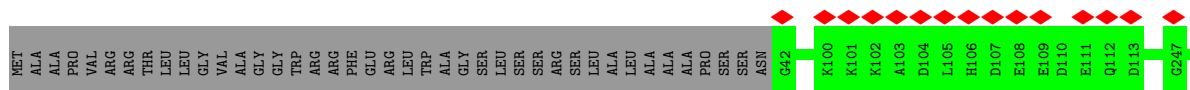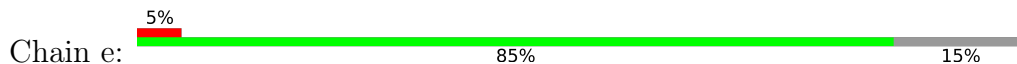
• Molecule 74: 39S ribosomal protein L48, mitochondrial
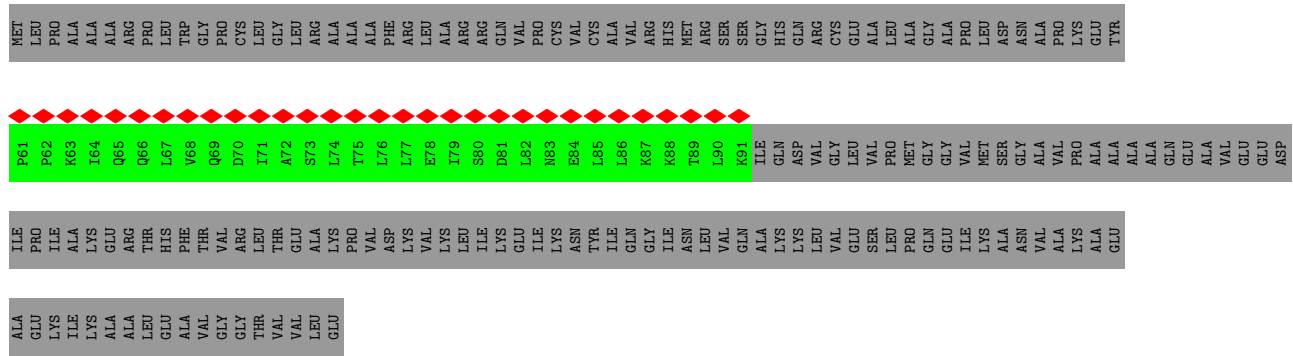
Chain f:

74% 26%

MET SER GLY THR LEU GLU LYS VAL LEU CYS LEU ARG ASN ASN THR ILE PHE LYS GLN ALA PHE SER LEU LEU ARG PHE ARG THR SER GLY GLU LYS PRO ILE TYR SER VAL GLY ILE LEU LEU SER ILE SER ARG PRO Y48 E67 P68 LYS LYS LYS LYS GLY LYS VAL GLU V77

R78 D139 K212
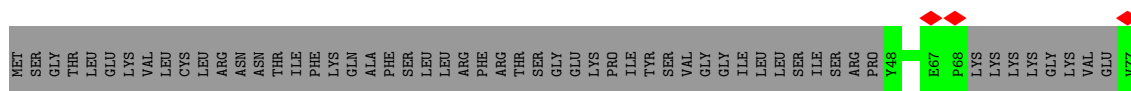
• Molecule 75: 39S ribosomal protein L49, mitochondrial

Chain g:

81% 19%

MET ALA ALA THR MET PHE ARG ALA THR LEU ARG GLY TRP ARG THR GLY VAL GLN ARG GLY CYS GLY LEU ARG LEU SER GLN THR GLN GLY PRO **P33 D34** F166
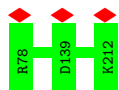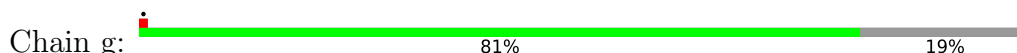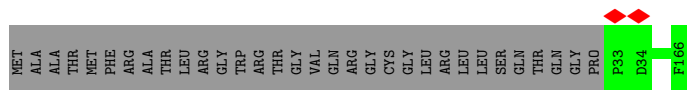
● Molecule 76: 39S ribosomal protein L50, mitochondrial

Chain h:

70%　　　　　　　　30%

MET ALA ALA ARG SER VAL SER GLY ILE THR ARG ARG VAL PHE MET TRP VAL SER GLY THR PRO CYS ARG GLU PHE TRP SER ARG PHE ARG LYS GLU GLU LYS GLU PRO VAL VAL VAL GLU THR VAL GLU GLU LYS LYS GLU PRO **I49 S80 S81 L82 P83 S84** Y158

● Molecule 77: 39S ribosomal protein L51, mitochondrial

Chain i:

76%　　　　　　　　24%

MET ALA GLY ASN LEU LEU SER GLY ALA GLY ARG LEU TRP ASP TRP VAL PRO LEU ALA CYS ARG SER PHE SER LEU GLY VAL PRO ARG LEU **I32 R128**

● Molecule 78: 39S ribosomal protein L52, mitochondrial

Chain j:

5%

76%　　　　　　　　24%

MET ALA ALA LEU GLY THR VAL LEU PHE THR GLY VAL ALA ARG ARG LEU HIS CYS SER VAL ALA ALA TRP **A23 Q102 R103 K104 Q105 E106 N107 L116** LYS SER PRO LEU PRO SER GLN

● Molecule 79: 39S ribosomal protein L53, mitochondrial

Chain k:

5%

90%　　　　　　　　10%

MET **A2 R11 N48 A99 A100 G101 S102** GLY ASP LYS PRO GLY ALA ASP THR GLY ARG

● Molecule 80: 39S ribosomal protein L54, mitochondrial

Chain l:

13%

59%　　　　　　　　41%

MET ALA THR LYS ARG LEU PHE GLY ALA THR ARG THR TRP ALA GLY TRP GLY ALA TRP GLU LEU LEU ASN PRO ALA THR SER GLY ARG LEU LEU ALA ARG ASP TYR ALA LYS LYS PRO VAL MET LYS GLY ALA LYS SER GLY LYS GLY ALA VAL THR SER GLU **A55 L56 K57 D58 P59 D60**

T63 M73 K79 E80 G81 Q82 D83 D89 A90 E91 F97 E98 K136 ARG LEU

● Molecule 81: 39S ribosomal protein L55, mitochondrial

Chain m:

9%

72%　　　　　　　　28%
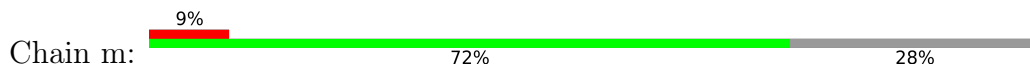
• Molecule 82: Ribosomal protein 63, mitochondrial

Chain o:

• Molecule 83: Peptidyl-tRNA hydrolase ICT1, mitochondrial

Chain p:

• Molecule 84: Growth arrest and DNA damage-inducible proteins-interacting protein 1

Chain q:

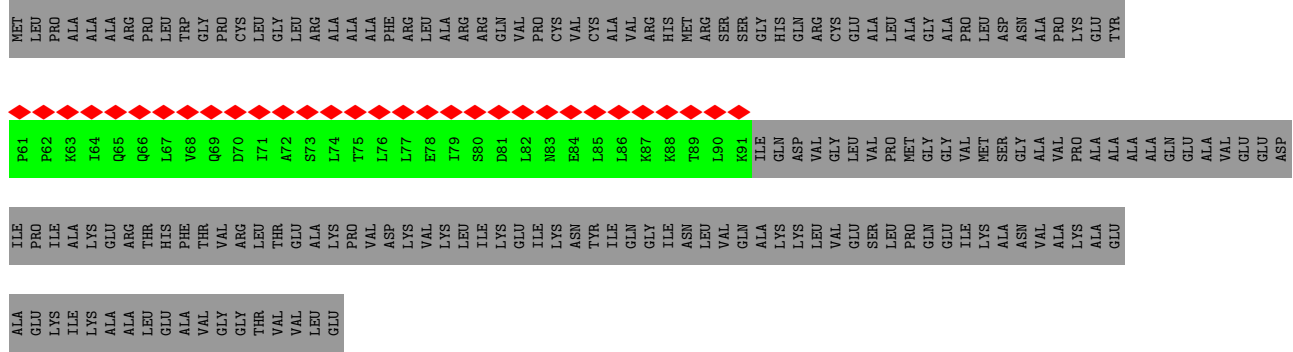• Molecule 85: 39S ribosomal protein S18a, mitochondrial
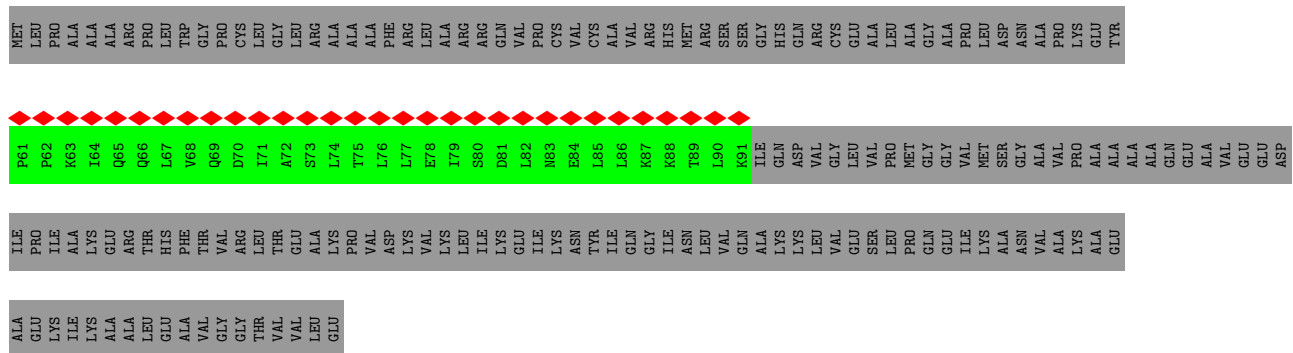
Chain r:

• Molecule 86: 39S ribosomal protein S30, mitochondrial

Chain s:

• Molecule 87: 39S ribosomal protein L12, mitochondrial

Chain t:

21%

23%   77%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS E46 A47 G50 L53 D54 N55 A56 P57 K58 E59 Y60 P61 P62

K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP ILE PRO

ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU ALA GLU

LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 87: 39S ribosomal protein L12, mitochondrial

Chain u:

16%

16%   84%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS GLU ALA LEU ALA GLY ALA PRO LEU ASP ASN ALA PRO LYS GLU Y60

P61 P62 K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP

ILE PRO ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU

ALA GLU LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 87: 39S ribosomal protein L12, mitochondrial

Chain v:

16%

16%   84%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS GLU ALA LEU ALA GLY ALA PRO LEU ASP ASN ALA PRO LYS GLU Y60

P61 P62 K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP

ILE PRO ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU

ALA GLU LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 87: 39S ribosomal protein L12, mitochondrial

Chain w:

16%

16%   84%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS GLU ALA LEU ALA GLY ALA PRO LEU ASP ASN ALA PRO LYS GLU TYR

P61 P62 K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP

ILE PRO ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU

ALA GLU LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 87: 39S ribosomal protein L12, mitochondrial

16%

Chain x: 16%   84%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS GLU ALA LEU ALA GLY ALA PRO LEU ASP ASN ALA PRO LYS GLU TYR

P61 P62 K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP

ILE PRO ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU

ALA GLU LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 87: 39S ribosomal protein L12, mitochondrial

16%

Chain y: 16%   84%

MET LEU PRO ALA ALA ARG PRO LEU TRP GLY PRO CYS LEU GLY LEU ARG ALA ALA ALA PHE ARG LEU ALA ARG ARG GLN VAL PRO CYS VAL CYS ALA VAL ARG HIS MET ARG SER SER GLY HIS GLN ARG CYS GLU ALA LEU ALA GLY ALA PRO LEU ASP ASN ALA PRO LYS GLU TYR

P61 P62 K63 I64 Q65 Q66 L67 V68 Q69 D70 I71 A72 S73 L74 T75 L76 L77 E78 I79 S80 D81 L82 N83 E84 L85 L86 K87 K88 T89 L90 K91 ILE GLN ASP VAL GLY LEU VAL PRO MET GLY VAL MET SER GLY ALA VAL PRO ALA ALA ALA GLN GLU ALA VAL GLU GLU ASP

ILE PRO ILE ALA LYS GLU ARG THR HIS PHE THR VAL ARG LEU THR GLU ALA LYS PRO VAL ASP LYS VAL LYS LEU ILE LYS GLU ILE LYS ASN TYR ILE GLN GLY ILE ASN LEU VAL GLN ALA LYS LYS LEU VAL GLU SER LEU PRO GLN GLU ILE LYS ALA ASN VAL ALA LYS ALA GLU

ALA GLU LYS ILE LYS ALA ALA LEU GLU ALA VAL GLY GLY THR VAL VAL LEU GLU

• Molecule 88: 39S ribosomal protein L9, mitochondrial

Chain H: 69%   7%   24%

MET ALA ALA PRO VAL VAL THR ALA PRO GLY ARG ALA LEU LEU ARG GLY ALA ALA GLY ALA GLY LEU LEU ARG GLY GLY VAL GLN GLU LEU LEU ARG PRO ARG HIS GLU LEU GLY ASN ALA PRO ASP LEU ALA CYS ASN PHE SER LEU SER GLN ASN ARG GLY T53 A65 P71 R75

R78 V79 E84 D85 T86 L146 G150 K151 N178 N179 L208 P209 E210 V223 V231 V238 N239 Q254 GLN ALA ALA LYS ALA MET ALA PRO THR SER PRO GLN ILE

• Molecule 89: 39S ribosomal protein L1, mitochondrial

Chain z:

6%

77%　　　　　　　　　　　　22%

MET ALA ALA ALA VAL ARG CYS MET GLY ARG ALA LEU ILE HIS HIS GLN ARG HIS SER LEU SER LYS MET VAL TYR GLN THR SER LEU CYS SER CYS SER VAL ASN ILE ARG VAL PRO ASN ARG HIS PHE ALA ALA ALA THR LYS SER ALA LYS LYS THR LYS LYS GLY ALA LYS GLU LYS LYS

T61 P62 D63 D128 N155 N163 K168 E171 E172 N173 G174 A175 A176 K186 I187 W188 D189 D190 E191 I192 V193 A194 D195 K212 E235 P312 LYS GLU VAL LYS ASN GLU GLU SER GLU LYS GLU ASP ALA

4　Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	82522	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 $(e^-/\text{Å}^2)$	30	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2800	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	61.722	Depositor
Minimum map value	-28.634	Depositor
Average map value	0.003	Depositor
Map value standard deviation	1.267	Depositor
Recommended contour level	2.8	Depositor
Map size (Å)	448.19998, 448.19998, 448.19998	wwPDB
Map dimensions	540, 540, 540	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GDP, 5MU, PUT, 2MG, OMG, ZN, FES, 1MA, ATP, OMU, SAC, MG, PSU, SPM, SPD, K, MA6, 5F0, NAD, B8T, 5MC, ACE, AYA

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	0.20	0/22537	0.67	0/35085
2	AB	0.24	0/1859	0.49	0/2513
3	AC	0.25	0/1113	0.48	0/1505
4	AD	0.24	0/2783	0.51	0/3724
5	AE	0.24	0/989	0.50	0/1335
6	AF	0.24	0/1767	0.47	0/2373
7	AG	0.24	0/2746	0.48	0/3681
8	AH	0.25	0/1178	0.47	0/1598
9	AI	0.25	0/1030	0.49	0/1386
10	AJ	0.25	0/855	0.55	0/1148
11	AK	0.22	0/880	0.57	0/1182
12	AL	0.24	0/1477	0.46	0/1974
13	AM	0.24	0/963	0.53	0/1295
14	AN	0.24	0/886	0.49	0/1199
15	AO	0.24	0/1648	0.48	0/2243
16	AP	0.24	0/798	0.44	0/1070
17	AQ	0.23	0/748	0.55	0/994
18	AR	0.23	0/2456	0.44	0/3317
19	AS	0.24	0/1138	0.50	0/1533
20	AT	0.24	0/1402	0.46	0/1883
21	AU	0.23	0/1510	0.53	0/2025
22	AV	0.23	0/3030	0.40	0/4093
23	AW	0.25	0/801	0.51	0/1079
24	AX	0.24	0/2921	0.44	0/3954
25	AY	0.24	0/1280	0.39	0/1725
26	AZ	0.25	0/857	0.49	0/1141
27	A0	0.23	0/1834	0.52	0/2484
28	A1	0.24	0/2313	0.45	0/3129
29	A2	0.24	0/941	0.54	0/1257
30	A3	0.23	0/636	0.58	0/839
31	A4	0.24	0/4877	0.43	0/6598

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	Aw	0.30	1/1603 (0.1%)	0.65	0/2488
33	Ax	0.30	1/1655 (0.1%)	0.66	0/2569
34	Ay	0.29	1/1656 (0.1%)	0.66	0/2571
35	Az	0.16	0/803	0.68	0/1244
36	A	0.21	1/36876 (0.0%)	0.68	0/57402
37	B	0.34	1/1627 (0.1%)	0.67	0/2527
38	D	0.24	0/1896	0.56	0/2549
39	E	0.24	0/2475	0.46	0/3355
40	F	0.24	0/2090	0.51	0/2842
41	I	0.24	0/1731	0.48	0/2345
42	J	0.25	0/1348	0.48	0/1813
43	K	0.24	0/1490	0.47	0/2021
44	L	0.24	0/905	0.53	0/1218
45	M	0.25	0/2368	0.53	0/3195
46	N	0.24	0/1833	0.51	0/2468
47	O	0.23	0/1283	0.53	0/1727
48	P	0.24	0/1199	0.54	0/1623
49	Q	0.24	0/2039	0.50	0/2750
50	R	0.23	0/1175	0.54	0/1572
51	S	0.23	0/1320	0.52	0/1789
52	T	0.25	0/1403	0.51	0/1886
53	U	0.25	0/1274	0.54	0/1723
54	V	0.24	0/1721	0.52	0/2333
55	W	0.25	0/926	0.48	0/1244
56	X	0.25	0/2099	0.47	0/2837
57	Y	0.23	0/1593	0.50	0/2136
58	Z	0.23	0/1021	0.47	0/1378
59	0	0.23	0/913	0.52	0/1224
60	1	0.24	0/469	0.56	0/621
61	2	0.22	0/383	0.56	0/507
62	3	0.24	0/853	0.53	0/1136
63	4	0.24	0/350	0.55	0/461
64	5	0.24	0/3305	0.48	0/4502
65	6	0.26	0/3043	0.51	0/4140
66	7	0.24	0/2447	0.46	0/3310
67	8	0.24	0/1354	0.48	0/1819
68	9	0.26	0/1025	0.48	0/1379
69	a	0.24	0/866	0.50	0/1174
70	b	0.24	0/1219	0.54	0/1651
71	c	0.24	0/2347	0.47	0/3171
72	d	0.24	0/2039	0.47	0/2759
73	e	0.24	0/1970	0.47	0/2658
74	f	0.25	0/1273	0.44	0/1716

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
75	g	0.24	0/1151	0.49	0/1569
76	h	0.23	0/918	0.45	0/1249
77	i	0.24	0/850	0.53	0/1135
78	j	0.24	0/760	0.51	0/1023
79	k	0.24	0/777	0.52	0/1048
80	l	0.23	0/707	0.49	0/960
81	m	0.23	0/805	0.58	0/1081
82	o	0.23	0/819	0.57	0/1097
83	p	0.23	0/1223	0.50	0/1641
84	q	0.24	0/1422	0.51	0/1916
85	r	0.24	0/1362	0.53	0/1846
86	s	0.24	0/3239	0.51	0/4400
87	t	0.23	0/358	0.35	0/486
87	u	0.22	0/259	0.34	0/350
87	v	0.22	0/259	0.34	0/350
87	w	0.22	0/246	0.35	0/331
87	x	0.22	0/246	0.34	0/331
87	y	0.22	0/246	0.34	0/331
88	H	0.24	0/1698	0.49	0/2292
89	z	0.25	0/2067	0.48	0/2793
All	All	0.23	5/190930 (0.0%)	0.57	0/271424

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	A	1671	G	OP3-P	-10.76	1.48	1.61
33	Ax	1	U	OP3-P	-10.61	1.48	1.61
32	Aw	1	U	OP3-P	-10.59	1.48	1.61
34	Ay	1	U	OP3-P	-10.59	1.48	1.61
37	B	1	C	OP3-P	-10.55	1.48	1.61

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AA	20260	10304	10285	106	0
2	AB	1818	1809	1807	10	0
3	AC	1083	1089	1088	8	0
4	AD	2731	2805	2804	13	0
5	AE	972	1000	1000	1	0
6	AF	1725	1771	1769	11	0
7	AG	2688	2689	2687	18	0
8	AH	1152	1187	1183	7	0
9	AI	1020	1061	1053	4	0
10	AJ	839	889	887	10	0
11	AK	862	886	885	3	0
12	AL	1453	1541	1540	4	0
13	AM	942	966	965	3	0
14	AN	868	929	928	4	0
15	AO	1592	1561	1557	3	0
16	AP	781	807	806	1	0
17	AQ	744	758	758	4	0
18	AR	2409	2430	2428	4	0
19	AS	1111	1116	1115	4	0
20	AT	1371	1393	1393	4	0
21	AU	1488	1501	1499	5	0
22	AV	2969	2964	2961	11	0
23	AW	789	804	802	4	0
24	AX	2849	2845	2843	20	0
25	AY	1246	1198	1197	6	0
26	AZ	839	859	858	1	0
27	A0	1787	1797	1796	4	0
28	A1	2265	2296	2294	14	0
29	A2	935	971	971	10	0
30	A3	625	701	699	4	0
31	A4	4768	4770	4766	12	0
32	Aw	1434	725	725	0	0
33	Ax	1482	751	752	0	0
34	Ay	1483	752	753	0	0
35	Az	719	360	360	0	0
36	A	33070	16801	16795	161	0
37	B	1524	779	779	4	0
38	D	1859	1921	1920	7	0
39	E	2406	2416	2415	10	0
40	F	2031	2066	2065	6	0
41	I	1695	1789	1785	8	0
42	J	1330	1409	1407	3	0
43	K	1455	1452	1452	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	L	890	942	941	6	0
45	M	2314	2385	2384	10	0
46	N	1786	1818	1817	5	0
47	O	1259	1295	1294	4	0
48	P	1173	1166	1165	3	0
49	Q	1990	2031	2031	8	0
50	R	1154	1215	1214	3	0
51	S	1293	1366	1365	4	0
52	T	1369	1412	1410	1	0
53	U	1251	1232	1232	6	0
54	V	1676	1689	1687	12	0
55	W	904	936	935	2	0
56	X	2044	2061	2060	4	0
57	Y	1556	1598	1597	2	0
58	Z	996	1045	1044	3	0
59	0	898	917	916	5	0
60	1	464	513	511	3	0
61	2	377	407	406	1	0
62	3	832	884	883	6	0
63	4	342	362	361	2	0
64	5	3210	3209	3206	7	0
65	6	2948	2844	2841	12	0
66	7	2390	2399	2397	10	0
67	8	1327	1369	1368	3	0
68	9	997	988	987	3	0
69	a	840	812	810	0	0
70	b	1196	1196	1195	0	0
71	c	2299	2322	2320	0	0
72	d	1985	1979	1976	0	0
73	e	1931	1917	1916	0	0
74	f	1252	1271	1269	0	0
75	g	1113	1097	1097	0	0
76	h	895	882	881	0	0
77	i	828	859	857	0	0
78	j	745	747	746	0	0
79	k	774	785	784	0	0
80	l	688	675	674	0	0
81	m	791	760	796	0	0
82	o	798	806	804	0	0
83	p	1205	1224	1223	0	0
84	q	1389	1376	1374	0	0
85	r	1322	1349	1348	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
86	s	3155	3143	3139	0	0
87	t	354	378	377	0	0
87	u	257	284	283	0	0
87	v	257	284	283	0	0
87	w	245	275	275	0	0
87	x	245	275	275	0	0
87	y	245	275	275	0	0
88	H	1661	1736	1734	12	0
89	z	2027	2077	2076	0	0
90	AA	44	26	26	1	0
91	AA	14	30	26	0	0
92	A	30	66	57	0	0
92	AA	10	22	19	0	0
93	A	138	0	0	0	0
93	A3	1	0	0	0	0
93	AA	63	0	0	0	0
93	AB	1	0	0	0	0
93	AX	1	0	0	0	0
93	D	2	0	0	0	0
93	E	1	0	0	0	0
93	g	1	0	0	0	0
94	3	1	0	0	0	0
94	6	1	0	0	0	0
94	A	29	0	0	0	0
94	AA	18	0	0	0	0
94	D	1	0	0	0	0
94	M	1	0	0	0	0
94	W	1	0	0	0	0
94	i	1	0	0	0	0
94	o	1	0	0	0	0
95	0	1	0	0	0	0
95	4	1	0	0	0	0
95	AO	1	0	0	0	0
96	AP	4	0	0	0	0
96	AT	4	0	0	0	0
96	r	4	0	0	0	0
97	AX	31	12	12	0	0
98	AX	28	12	12	0	0
99	A	6	14	12	0	0
100	B	7	11	8	1	0
101	0	28	0	0	2	0
101	1	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
101	2	34	0	0	0	0
101	3	44	0	0	2	0
101	4	11	0	0	0	0
101	5	14	0	0	1	0
101	6	100	0	0	4	0
101	7	15	0	0	0	0
101	8	15	0	0	2	0
101	9	17	0	0	0	0
101	A	2955	0	0	87	0
101	A0	1	0	0	0	0
101	A1	35	0	0	0	0
101	A2	32	0	0	0	0
101	A3	50	0	0	1	0
101	A4	9	0	0	0	0
101	AA	2039	0	0	60	0
101	AB	78	0	0	7	0
101	AC	55	0	0	3	0
101	AD	82	0	0	2	0
101	AE	27	0	0	0	0
101	AF	39	0	0	2	0
101	AG	64	0	0	3	0
101	AH	57	0	0	1	0
101	AI	39	0	0	2	0
101	AJ	25	0	0	2	0
101	AK	51	0	0	2	0
101	AL	42	0	0	2	0
101	AM	22	0	0	1	0
101	AN	39	0	0	0	0
101	AO	37	0	0	2	0
101	AP	31	0	0	1	0
101	AQ	77	0	0	1	0
101	AR	11	0	0	1	0
101	AS	25	0	0	0	0
101	AT	44	0	0	0	0
101	AU	8	0	0	2	0
101	AW	16	0	0	0	0
101	AX	56	0	0	4	0
101	AY	18	0	0	1	0
101	AZ	30	0	0	0	0
101	Aw	6	0	0	0	0
101	Ax	7	0	0	0	0
101	Ay	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
101	Az	13	0	0	0	0
101	B	66	0	0	0	0
101	D	68	0	0	0	0
101	E	66	0	0	2	0
101	F	79	0	0	3	0
101	H	7	0	0	1	0
101	I	27	0	0	3	0
101	J	1	0	0	0	0
101	K	57	0	0	2	0
101	L	31	0	0	4	0
101	M	51	0	0	2	0
101	N	58	0	0	1	0
101	O	33	0	0	0	0
101	P	81	0	0	3	0
101	Q	29	0	0	1	0
101	R	63	0	0	2	0
101	S	49	0	0	1	0
101	T	45	0	0	1	0
101	U	24	0	0	0	0
101	V	5	0	0	0	0
101	W	55	0	0	1	0
101	X	11	0	0	0	0
101	Y	25	0	0	0	0
101	Z	32	0	0	0	0
101	a	11	0	0	0	0
101	b	35	0	0	0	0
101	c	18	0	0	0	0
101	d	9	0	0	0	0
101	e	13	0	0	0	0
101	f	19	0	0	0	0
101	g	13	0	0	0	0
101	i	46	0	0	0	0
101	j	22	0	0	0	0
101	k	5	0	0	0	0
101	l	5	0	0	0	0
101	m	8	0	0	0	0
101	o	34	0	0	0	0
101	p	8	0	0	0	0
101	r	49	0	0	0	0
101	s	51	0	0	0	0
All	All	189566	153978	153843	573	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including

hydrogen atoms). The all-atom clashscore for this structure is 2.

All (573) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:1046:A:O2'	1:AA:1048:C:OP2	1.97	0.82
1:AA:1327:G:O6	101:AA:1801:HOH:O	1.99	0.80
36:A:3063:G:O2'	36:A:3066:C:OP2	1.98	0.80
36:A:3042:U:OP2	101:A:3501:HOH:O	1.99	0.78
13:AM:85:LYS:NZ	101:AM:201:HOH:O	2.18	0.77
36:A:2103:A:HO2'	58:Z:35:LYS:N	1.83	0.77
45:M:43:ARG:NH2	101:M:402:HOH:O	2.18	0.77
36:A:1777:A:N6	36:A:1780:U:OP2	2.18	0.76
36:A:3147:G:OP1	101:A:3502:HOH:O	2.03	0.76
36:A:3110:C:O2'	39:E:266:ARG:NH1	2.20	0.75
52:T:78:LYS:NZ	101:T:301:HOH:O	2.20	0.75
36:A:2708:C:O2'	59:0:96:ASN:OD1	2.04	0.74
50:R:20:ARG:NH2	101:R:202:HOH:O	2.19	0.74
11:AK:128:TRP:OXT	101:AK:201:HOH:O	2.05	0.74
49:Q:145:LEU:O	101:Q:301:HOH:O	2.05	0.74
6:AF:159:VAL:HG23	6:AF:172:VAL:HG21	1.70	0.74
36:A:2198:A:N1	101:A:3572:HOH:O	2.21	0.73
40:F:126:LYS:O	101:F:6501:HOH:O	2.05	0.73
1:AA:979:C:N3	101:AA:1850:HOH:O	2.21	0.73
62:3:170:ASN:O	101:3:301:HOH:O	2.06	0.73
36:A:2539:A:OP1	101:A:3507:HOH:O	2.07	0.73
1:AA:1151:C:N3	101:AA:1856:HOH:O	2.22	0.72
48:P:138:GLU:OE2	101:P:201:HOH:O	2.07	0.72
36:A:1703:C:OP2	101:A:3509:HOH:O	2.07	0.72
1:AA:1165:C:OP2	101:AA:1804:HOH:O	2.06	0.72
36:A:1970:G:O6	101:A:3503:HOH:O	2.06	0.72
36:A:2090:A:N7	101:A:3584:HOH:O	2.22	0.72
1:AA:1118:A:O2'	4:AD:351:ARG:NH2	2.22	0.72
36:A:2008:G:OP1	101:A:3506:HOH:O	2.07	0.72
1:AA:1139:A:OP2	101:AA:1802:HOH:O	2.05	0.72
36:A:2098:G:O2'	36:A:2099:U:OP2	2.06	0.72
36:A:2132:A:OP2	101:A:3508:HOH:O	2.07	0.72
39:E:337:VAL:O	101:E:501:HOH:O	2.07	0.72
36:A:2865:C:OP1	101:A:3504:HOH:O	2.06	0.72
1:AA:916:C:OP2	101:AA:1805:HOH:O	2.08	0.71
4:AD:127:ASN:OD1	101:AD:501:HOH:O	2.08	0.71
8:AH:94:PHE:CE1	28:A1:114:LEU:HD22	2.25	0.71
36:A:3090:G:N7	101:A:3582:HOH:O	2.22	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:A:2725:A:OP2	101:A:3510:HOH:O	2.08	0.71
7:AG:299:ASP:OD2	7:AG:301:GLN:NE2	2.23	0.71
1:AA:1057:G:OP2	101:AA:1803:HOH:O	2.06	0.71
3:AC:67:GLY:O	101:AC:201:HOH:O	2.07	0.71
24:AX:86:ARG:O	101:AX:601:HOH:O	2.08	0.71
36:A:2479:C:OP1	101:A:3505:HOH:O	2.06	0.71
1:AA:1169:G:N7	101:AA:1858:HOH:O	2.23	0.71
12:AL:210:CYS:O	101:AL:302:HOH:O	2.07	0.71
12:AL:172:ASN:O	101:AL:303:HOH:O	2.08	0.71
36:A:1856:A:OP2	36:A:2986:C:O2'	2.09	0.70
1:AA:976:A:N7	101:AA:1868:HOH:O	2.24	0.70
1:AA:1039:A:OP1	101:AA:1807:HOH:O	2.09	0.70
36:A:1863:A:OP2	101:A:3514:HOH:O	2.08	0.70
36:A:2453:G:OP2	101:A:3517:HOH:O	2.10	0.70
11:AK:122:GLY:O	101:AK:202:HOH:O	2.09	0.70
36:A:2240:C:OP2	101:A:3513:HOH:O	2.08	0.70
36:A:3015:U:OP1	101:A:3515:HOH:O	2.09	0.70
36:A:3176:A:OP2	101:A:3511:HOH:O	2.08	0.70
1:AA:1289:G:O2'	1:AA:1297:G:OP2	2.09	0.70
1:AA:1384:A:N7	101:AA:1873:HOH:O	2.25	0.70
48:P:126:GLU:OE2	101:P:203:HOH:O	2.10	0.70
36:A:2045:A:N7	101:A:3602:HOH:O	2.25	0.69
59:0:102:LYS:O	101:0:301:HOH:O	2.10	0.69
36:A:1782:G:OP2	101:A:3512:HOH:O	2.08	0.69
65:6:170:ARG:NH1	101:6:8105:HOH:O	2.22	0.69
1:AA:1015:A:N7	101:AA:1872:HOH:O	2.25	0.69
36:A:2003:A:N1	101:A:3598:HOH:O	2.24	0.69
56:X:44:ARG:NH2	88:H:84:GLU:OE1	2.26	0.69
18:AR:190:ASP:O	101:AR:401:HOH:O	2.10	0.69
1:AA:1027:A:N1	101:AA:1874:HOH:O	2.25	0.69
36:A:2404:U:OP1	101:A:3519:HOH:O	2.10	0.69
36:A:2740:A:N3	36:A:2921:A:O2'	2.24	0.69
1:AA:1401:G:OP2	101:AA:1814:HOH:O	2.11	0.69
36:A:1969:G:N7	101:A:3614:HOH:O	2.26	0.69
8:AH:135:GLU:OE1	101:AH:301:HOH:O	2.12	0.68
46:N:212:PRO:O	101:N:301:HOH:O	2.10	0.68
1:AA:970:A:N3	101:AA:1871:HOH:O	2.25	0.68
36:A:1730:U:OP2	101:A:3522:HOH:O	2.11	0.68
1:AA:1148:A:OP2	101:AA:1815:HOH:O	2.11	0.68
25:AY:318:GLU:OE1	101:AY:401:HOH:O	2.11	0.68
58:Z:78:ARG:O	58:Z:83:LYS:NZ	2.26	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
65:6:154:TYR:O	101:6:8103:HOH:O	2.11	0.68
1:AA:1287:A:OP2	4:AD:260:LYS:NZ	2.27	0.68
24:AX:167:ASP:OD1	101:AX:602:HOH:O	2.11	0.68
64:5:295:ASP:OD2	101:5:501:HOH:O	2.12	0.68
67:8:126:GLN:OE1	101:8:301:HOH:O	2.10	0.68
2:AB:164:GLU:OE2	101:AB:401:HOH:O	2.10	0.68
36:A:3014:G:OP1	101:A:3525:HOH:O	2.12	0.68
36:A:2111:C:OP2	101:A:3521:HOH:O	2.11	0.67
1:AA:1486:B8T:OP1	101:AA:1817:HOH:O	2.11	0.67
36:A:2526:C:OP1	101:A:3518:HOH:O	2.10	0.67
15:AO:125:GLN:O	101:AO:401:HOH:O	2.12	0.67
24:AX:393:ARG:O	101:AX:603:HOH:O	2.12	0.67
36:A:1830:G:OP2	101:A:3524:HOH:O	2.12	0.67
36:A:2562:U:O2'	38:D:284:ARG:O	2.07	0.67
36:A:2719:G:O6	101:A:3520:HOH:O	2.10	0.67
54:V:55:TYR:HB2	54:V:133:ILE:HD11	1.77	0.67
57:Y:134:LYS:NZ	68:9:76:TYR:OH	2.27	0.67
36:A:1739:A:OP2	101:A:3533:HOH:O	2.13	0.67
39:E:69:ASP:OD1	39:E:154:ARG:NH1	2.28	0.67
1:AA:1554:G:O6	101:AA:1821:HOH:O	2.13	0.67
36:A:1702:A:OP2	101:A:3526:HOH:O	2.12	0.67
36:A:1815:A:N1	101:A:3635:HOH:O	2.28	0.67
45:M:22:VAL:O	101:M:401:HOH:O	2.11	0.67
45:M:91:ARG:NH1	45:M:209:GLU:OE2	2.28	0.67
1:AA:941:G:OP2	101:AA:1822:HOH:O	2.13	0.66
1:AA:1063:A:OP2	101:AA:1818:HOH:O	2.12	0.66
1:AA:1485:G:OP2	101:AA:1820:HOH:O	2.13	0.66
36:A:2944:C:OP2	101:A:3534:HOH:O	2.13	0.66
36:A:2566:C:OP1	101:A:3528:HOH:O	2.12	0.66
65:6:275:GLN:O	101:6:8102:HOH:O	2.11	0.66
43:K:123:GLU:OE2	101:K:201:HOH:O	2.12	0.66
1:AA:992:U:O2'	1:AA:994:A:OP2	2.09	0.66
36:A:2196:A:O2'	36:A:2213:A:N1	2.28	0.66
55:W:139:GLU:OE1	101:W:301:HOH:O	2.12	0.66
1:AA:1112:A:N7	101:AA:1882:HOH:O	2.27	0.66
36:A:2704:A:N7	101:A:3622:HOH:O	2.27	0.66
88:H:178:ASN:OD1	88:H:179:ASN:N	2.28	0.66
1:AA:1068:A:OP2	101:AA:1819:HOH:O	2.13	0.66
2:AB:166:ALA:O	101:AB:403:HOH:O	2.14	0.66
10:AJ:117:ASP:OD1	101:AJ:201:HOH:O	2.13	0.66
24:AX:272:THR:OG1	24:AX:282:ILE:O	2.14	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:1015:A:OP2	101:AA:1827:HOH:O	2.14	0.66
17:AQ:55:GLU:OE1	101:AQ:101:HOH:O	2.14	0.66
36:A:1778:U:OP2	101:A:3531:HOH:O	2.13	0.66
36:A:1852:C:OP1	101:A:3530:HOH:O	2.12	0.66
36:A:2388:A:OP2	101:A:3529:HOH:O	2.12	0.66
1:AA:1114:U:O4	101:AA:1810:HOH:O	2.10	0.65
36:A:1829:A:OP2	101:A:3535:HOH:O	2.14	0.65
67:8:181:PRO:O	101:8:302:HOH:O	2.13	0.65
36:A:2661:U:OP2	101:A:3539:HOH:O	2.15	0.65
44:L:76:ALA:O	101:L:202:HOH:O	2.15	0.65
36:A:2767:A:O2'	36:A:2769:A:N7	2.29	0.65
2:AB:148:ASN:OD1	101:AB:402:HOH:O	2.13	0.65
1:AA:1221:A:N3	101:AA:1895:HOH:O	2.29	0.65
41:I:151:ASN:O	101:I:301:HOH:O	2.14	0.65
62:3:144:LEU:O	101:3:302:HOH:O	2.14	0.65
1:AA:662:U:O4	101:AA:1811:HOH:O	2.10	0.65
31:A4:200:ASP:OD2	31:A4:243:ASN:N	2.30	0.65
36:A:2142:A:OP1	101:A:3537:HOH:O	2.14	0.65
22:AV:270:PRO:O	22:AV:346:LYS:NZ	2.30	0.64
28:A1:152:ASP:OD2	28:A1:174:ARG:NH1	2.29	0.64
1:AA:693:A:N7	101:AA:1898:HOH:O	2.30	0.64
36:A:1882:A:N7	101:A:3643:HOH:O	2.29	0.64
1:AA:667:U:OP1	101:AA:1826:HOH:O	2.14	0.64
4:AD:235:GLU:OE2	101:AD:502:HOH:O	2.14	0.64
36:A:2289:G:N7	101:A:3651:HOH:O	2.30	0.64
36:A:2030:U:H3	36:A:2095:U:HO2'	1.45	0.64
1:AA:1287:A:OP1	101:AA:1828:HOH:O	2.15	0.64
36:A:3013:G:HO2'	63:4:66:PHE:N	1.96	0.64
3:AC:113:ARG:NH1	101:AC:202:HOH:O	2.28	0.64
39:E:129:VAL:CG1	39:E:145:LEU:HD11	2.28	0.64
1:AA:1294:A:OP1	2:AB:201:ASN:ND2	2.30	0.63
36:A:1978:A:OP1	101:A:3541:HOH:O	2.15	0.63
44:L:130:ARG:NH1	44:L:133:GLU:OE2	2.31	0.63
36:A:1990:G:OP1	38:D:269:ARG:NH2	2.30	0.63
1:AA:905:A:O2'	1:AA:907:A:OP1	2.17	0.63
1:AA:895:C:O2	101:AA:1823:HOH:O	2.13	0.63
21:AU:38:LYS:NZ	101:AU:301:HOH:O	2.31	0.63
1:AA:1107:U:O4	30:A3:128:LYS:NZ	2.30	0.63
49:Q:77:SER:OG	49:Q:79:GLU:OE1	2.12	0.63
20:AT:132:ARG:NH1	20:AT:136:LEU:O	2.32	0.62
68:9:16:ASP:OD1	68:9:25:ARG:NH2	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:899:G:O2'	1:AA:907:A:N1	2.23	0.62
3:AC:152:ARG:NH1	31:A4:87:TYR:OH	2.33	0.62
7:AG:275:LYS:O	101:AG:402:HOH:O	2.16	0.62
29:A2:33:VAL:HG21	29:A2:104:LEU:HD23	1.82	0.61
36:A:2014:A:O2'	101:A:3546:HOH:O	2.16	0.61
36:A:2652:G:O6	101:A:3536:HOH:O	2.14	0.61
40:F:212:TRP:O	40:F:258:THR:OG1	2.14	0.61
66:7:175:ILE:O	66:7:319:ARG:NH2	2.33	0.61
1:AA:1154:A:OP2	30:A3:155:ARG:NH2	2.34	0.61
36:A:2447:A:OP2	101:A:3544:HOH:O	2.15	0.61
29:A2:64:ASP:OD1	29:A2:65:ALA:N	2.34	0.61
36:A:2702:G:OP2	101:A:3548:HOH:O	2.16	0.60
88:H:75:ARG:O	101:H:301:HOH:O	2.17	0.60
36:A:2005:C:N4	101:A:3666:HOH:O	2.32	0.60
36:A:3060:C:OP2	101:A:3549:HOH:O	2.17	0.60
39:E:129:VAL:HG11	39:E:145:LEU:HD11	1.84	0.60
36:A:2045:A:N3	101:A:3664:HOH:O	2.32	0.60
36:A:2545:U:O2'	101:A:3532:HOH:O	2.13	0.60
38:D:281:TRP:O	38:D:285:LYS:NZ	2.32	0.60
1:AA:1549:G:O6	101:AA:1831:HOH:O	2.16	0.60
36:A:2239:A:N7	101:A:3667:HOH:O	2.32	0.59
36:A:1787:G:N2	36:A:1790:A:OP2	2.34	0.59
36:A:2048:U:OP2	101:A:3550:HOH:O	2.17	0.59
36:A:2013:U:OP2	101:A:3543:HOH:O	2.15	0.59
1:AA:1574:G:OP1	101:AA:1830:HOH:O	2.16	0.59
65:6:367:ASP:OD1	65:6:370:ARG:NH1	2.35	0.59
7:AG:226:GLU:O	7:AG:230:THR:HG23	2.02	0.59
7:AG:295:VAL:HG22	7:AG:330:CYS:SG	2.42	0.58
7:AG:356:VAL:HG23	7:AG:361:VAL:HG23	1.85	0.58
53:U:11:ARG:NH2	54:V:211:LYS:O	2.36	0.58
1:AA:1222:A:N7	101:AA:1913:HOH:O	2.32	0.58
66:7:62:THR:HG23	66:7:62:THR:O	2.03	0.58
44:L:95:ARG:NH2	101:L:204:HOH:O	2.30	0.58
1:AA:1199:G:N1	1:AA:1422:G:OP2	2.37	0.58
59:0:153:THR:HG22	59:0:153:THR:O	2.04	0.57
50:R:58:TYR:OH	101:R:201:HOH:O	2.11	0.57
29:A2:48:GLU:OE1	29:A2:48:GLU:N	2.35	0.57
22:AV:226:TYR:HE1	22:AV:282:VAL:HG21	1.69	0.57
53:U:9:LEU:O	53:U:11:ARG:NH1	2.38	0.57
1:AA:700:A:N1	1:AA:709:G:O2'	2.33	0.57
36:A:1741:A:OP1	101:A:3551:HOH:O	2.17	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:A:2364:C:OP2	53:U:78:LYS:NZ	2.36	0.57
88:H:53:THR:N	88:H:86:THR:HG1	2.03	0.57
1:AA:1162:A:N7	101:AA:1915:HOH:O	2.32	0.57
22:AV:226:TYR:CE1	22:AV:282:VAL:HG21	2.40	0.56
36:A:1737:A:H61	36:A:1760:G:H1'	1.70	0.56
1:AA:970:A:O2'	101:AA:1808:HOH:O	2.09	0.56
36:A:2499:U:OP2	36:A:2504:A:N6	2.33	0.56
47:O:140:SER:O	47:O:146:ASN:ND2	2.39	0.56
1:AA:841:A:OP1	13:AM:39:ASN:ND2	2.38	0.56
1:AA:973:C:OP2	101:AA:1834:HOH:O	2.17	0.56
1:AA:1232:A:OP2	101:AA:1836:HOH:O	2.18	0.56
36:A:2196:A:N3	101:A:3675:HOH:O	2.32	0.56
36:A:2860:G:O6	101:A:3540:HOH:O	2.15	0.56
47:O:62:TYR:OH	49:Q:272:GLU:OE2	2.23	0.56
51:S:112:ASP:OD2	101:S:301:HOH:O	2.18	0.56
1:AA:1412:G:OP1	24:AX:279:LYS:NZ	2.38	0.56
31:A4:470:GLN:NE2	31:A4:472:ASP:OD2	2.38	0.56
36:A:2355:A:HO2'	36:A:2673:G:HO2'	1.51	0.56
36:A:2697:G:OP2	101:A:3553:HOH:O	2.18	0.56
40:F:70:ARG:NH2	40:F:194:GLU:OE1	2.39	0.56
31:A4:556:LYS:NZ	31:A4:560:GLU:OE2	2.39	0.56
36:A:1958:G:O2'	101:A:3538:HOH:O	2.14	0.56
36:A:2108:G:O6	46:N:67:LYS:NZ	2.38	0.55
36:A:3219:G:O2'	36:A:3221:A:OP2	2.20	0.55
22:AV:92:LEU:HD21	22:AV:137:ILE:HD11	1.89	0.54
36:A:1805:A:OP2	54:V:94:HIS:NE2	2.33	0.54
1:AA:689:U:OP1	101:AA:1838:HOH:O	2.18	0.54
1:AA:1021:U:OP2	29:A2:9:ARG:NH2	2.40	0.54
1:AA:1496:U:OP1	10:AJ:82:ARG:NH2	2.41	0.54
2:AB:211:ASP:OD2	101:AB:405:HOH:O	2.18	0.54
36:A:3152:C:OP1	49:Q:141:SER:OG	2.15	0.54
1:AA:930:G:O6	10:AJ:47:ARG:NH2	2.40	0.54
1:AA:1263:G:N2	101:AA:1958:HOH:O	2.38	0.54
36:A:1953:A:O2'	36:A:2463:A:OP1	2.25	0.54
36:A:1800:G:N1	36:A:1803:A:OP2	2.40	0.54
1:AA:1037:A:OP2	101:AA:1839:HOH:O	2.18	0.54
36:A:2059:C:N4	101:A:3783:HOH:O	2.41	0.54
36:A:3006:U:OP2	101:A:3557:HOH:O	2.19	0.54
1:AA:843:G:N2	1:AA:846:A:OP2	2.36	0.54
1:AA:1595:G:OP2	101:AA:1833:HOH:O	2.17	0.54
20:AT:91:GLU:OE1	21:AU:120:ARG:NH2	2.41	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:A:1720:C:OP2	101:A:3555:HOH:O	2.18	0.54
36:A:2512:A:O2'	36:A:2541:C:OP1	2.20	0.54
29:A2:99:LEU:HD11	29:A2:103:LYS:HB2	1.89	0.54
14:AN:8:VAL:O	14:AN:11:ARG:NH1	2.40	0.54
19:AS:83:ARG:NH1	19:AS:93:LYS:O	2.41	0.53
1:AA:760:A:OP1	101:AA:1841:HOH:O	2.19	0.53
1:AA:1134:G:OP2	10:AJ:38:ARG:NH2	2.40	0.53
1:AA:1142:A:OP1	101:AA:1842:HOH:O	2.19	0.53
36:A:1742:G:O2'	36:A:1754:G:O6	2.21	0.53
36:A:2458:A:O2'	39:E:215:PHE:O	2.23	0.53
65:6:215:THR:OG1	65:6:275:GLN:OE1	2.23	0.53
7:AG:337:ARG:NH2	101:AG:408:HOH:O	2.42	0.53
1:AA:1525:C:O5'	22:AV:105:ARG:NH2	2.42	0.53
6:AF:116:GLU:OE1	101:AF:301:HOH:O	2.19	0.53
19:AS:7:GLU:N	19:AS:7:GLU:OE1	2.40	0.53
1:AA:1576:G:OP2	101:AA:1840:HOH:O	2.18	0.52
36:A:2531:U:O4	38:D:246:ARG:NH2	2.42	0.52
1:AA:1294:A:N1	101:AA:1930:HOH:O	2.34	0.52
4:AD:245:VAL:HG22	4:AD:271:ALA:HB1	1.90	0.52
9:AI:178:ASN:ND2	101:AI:205:HOH:O	2.41	0.52
15:AO:217:ARG:NH1	15:AO:227:GLU:OE2	2.42	0.52
24:AX:151:LEU:CD2	24:AX:247:LEU:HD22	2.39	0.52
36:A:1747:G:OP2	36:A:1749:C:N4	2.41	0.52
2:AB:241:ASP:CG	101:AB:404:HOH:O	2.47	0.52
48:P:162:GLN:NE2	101:P:210:HOH:O	2.36	0.52
36:A:1749:C:OP2	36:A:2899:C:O2'	2.27	0.52
47:O:144:LEU:HD12	66:7:174:VAL:HG11	1.92	0.52
2:AB:241:ASP:OD1	101:AB:404:HOH:O	2.18	0.51
36:A:1745:U:O4	62:3:108:LYS:NZ	2.41	0.51
38:D:257:ILE:O	38:D:262:ARG:NH1	2.40	0.51
1:AA:894:C:N4	10:AJ:117:ASP:OD2	2.43	0.51
36:A:2989:G:O2'	101:A:3523:HOH:O	2.11	0.51
65:6:188:TYR:OH	101:6:8101:HOH:O	2.07	0.51
1:AA:1022:A:OP1	101:AA:1845:HOH:O	2.19	0.51
8:AH:125:HIS:CE1	8:AH:126:ILE:HG23	2.45	0.51
28:A1:46:ARG:HB2	28:A1:47:PRO:HD3	1.92	0.51
1:AA:702:C:OP1	1:AA:848:U:O2'	2.27	0.51
1:AA:1326:A:OP1	101:AA:1837:HOH:O	2.18	0.51
36:A:2237:A:OP2	101:A:3561:HOH:O	2.19	0.51
40:F:98:GLN:NE2	101:F:6509:HOH:O	2.44	0.51
24:AX:81:HIS:CD2	24:AX:190:ASN:HB3	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:A1:250:GLU:OE2	28:A1:301:ASN:ND2	2.44	0.51
10:AJ:78:ARG:NH2	10:AJ:117:ASP:OD2	2.43	0.50
14:AN:67:ARG:NH1	14:AN:80:GLU:OE2	2.44	0.50
24:AX:183:GLU:N	24:AX:183:GLU:OE1	2.41	0.50
36:A:2221:C:OP2	101:A:3556:HOH:O	2.18	0.50
1:AA:1485:G:O6	101:AA:1843:HOH:O	2.19	0.50
41:I:128:ASN:OD1	101:I:302:HOH:O	2.19	0.50
56:X:177:HIS:O	56:X:184:ARG:NH1	2.44	0.50
1:AA:1004:G:O2'	9:AI:98:GLN:NE2	2.44	0.50
36:A:2866:A:OP2	101:A:3558:HOH:O	2.19	0.50
46:N:73:ARG:O	46:N:155:LYS:NZ	2.45	0.50
51:S:109:THR:HG22	51:S:112:ASP:OD2	2.11	0.50
54:V:188:VAL:O	54:V:188:VAL:HG23	2.11	0.50
1:AA:1229:U:O2'	1:AA:1442:G:O4'	2.30	0.50
3:AC:109:VAL:HG23	28:A1:103:LEU:HD11	1.93	0.50
36:A:2170:G:OP1	101:A:3564:HOH:O	2.19	0.50
36:A:3089:A:H3'	36:A:3090:G:H5"	1.94	0.50
1:AA:1443:U:OP2	101:AA:1844:HOH:O	2.19	0.50
7:AG:200:LEU:HD11	7:AG:204:GLU:HB3	1.94	0.50
36:A:3001:G:N7	101:A:3693:HOH:O	2.35	0.50
4:AD:340:ILE:HG22	4:AD:340:ILE:O	2.12	0.50
36:A:2110:A:H5'	46:N:67:LYS:HZ3	1.77	0.50
36:A:2149:G:OP1	101:A:3568:HOH:O	2.20	0.50
62:3:188:VAL:O	65:6:356:ARG:NH2	2.44	0.50
36:A:1740:A:OP1	101:A:3560:HOH:O	2.19	0.49
24:AX:297:MET:HE3	24:AX:306:ILE:HG21	1.93	0.49
36:A:2075:U:O2'	36:A:2833:A:N7	2.34	0.49
36:A:2477:G:OP1	101:A:3565:HOH:O	2.19	0.49
66:7:156:ARG:HG3	66:7:156:ARG:HH11	1.77	0.49
36:A:1817:C:OP2	101:A:3567:HOH:O	2.20	0.49
44:L:97:THR:OG1	101:L:201:HOH:O	2.14	0.49
36:A:1760:G:OP1	45:M:196:ARG:NE	2.39	0.49
49:Q:237:ASN:OD1	49:Q:238:PHE:N	2.46	0.49
36:A:1851:G:H2'	36:A:2693:A:N7	2.28	0.49
28:A1:198:TYR:OH	28:A1:203:ASP:OD1	2.22	0.49
56:X:91:TYR:CE2	88:H:79:VAL:HG11	2.47	0.49
1:AA:845:A:H4'	21:AU:60:TYR:CE2	2.47	0.49
3:AC:106:ASP:OD1	3:AC:107:GLN:N	2.42	0.49
36:A:1735:A:H2'	36:A:1735:A:N3	2.28	0.49
36:A:2712:G:OP1	101:A:3563:HOH:O	2.19	0.49
1:AA:1486:B8T:O2'	101:AA:1848:HOH:O	2.20	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:I:53:TYR:O	101:I:303:HOH:O	2.20	0.49
7:AG:259:PRO:O	101:AG:403:HOH:O	2.20	0.48
36:A:2472:A:OP2	101:A:3566:HOH:O	2.20	0.48
4:AD:312:TYR:N	4:AD:331:ASP:OD2	2.45	0.48
51:S:109:THR:N	51:S:112:ASP:OD2	2.45	0.48
1:AA:769:G:OP2	14:AN:73:ARG:NH2	2.45	0.48
6:AF:172:VAL:HG12	6:AF:240:ARG:HD3	1.94	0.48
37:B:76:A:O2'	100:B:101:VAL:O	2.30	0.48
6:AF:159:VAL:CG2	6:AF:172:VAL:HG21	2.42	0.48
36:A:2777:G:N3	88:H:179:ASN:ND2	2.61	0.48
66:7:257:ILE:O	66:7:257:ILE:HG13	2.14	0.48
29:A2:33:VAL:HG22	29:A2:105:ASN:OD1	2.13	0.48
29:A2:15:ASN:OD1	29:A2:17:ARG:NH1	2.46	0.48
36:A:2016:C:OP2	45:M:59:ARG:NH1	2.47	0.48
36:A:2160:A:OP2	63:4:88:TRP:NE1	2.40	0.48
59:0:95:ARG:O	101:0:302:HOH:O	2.20	0.48
1:AA:1455:U:OP1	101:AA:1847:HOH:O	2.20	0.48
36:A:2339:G:OP2	101:A:3569:HOH:O	2.20	0.48
36:A:3089:A:H3'	36:A:3090:G:C5'	2.44	0.48
15:AO:130:HIS:ND1	101:AO:403:HOH:O	2.26	0.48
18:AR:162:SER:O	18:AR:170:ARG:NH1	2.47	0.48
65:6:257:PRO:HB3	65:6:268:LEU:HD21	1.95	0.48
7:AG:102:GLU:OE1	7:AG:102:GLU:N	2.43	0.47
51:S:152:ASP:OD1	51:S:153:LEU:N	2.48	0.47
60:1:34:ARG:NH1	60:1:38:ARG:O	2.47	0.47
66:7:276:PHE:HB2	66:7:304:VAL:HG22	1.96	0.47
41:I:148:VAL:HG23	41:I:148:VAL:O	2.14	0.47
1:AA:702:C:OP1	21:AU:41:ARG:NH2	2.45	0.47
1:AA:1080:A:O2'	1:AA:1082:A:N7	2.43	0.47
28:A1:299:LEU:HD21	28:A1:309:ILE:HD13	1.96	0.47
42:J:75:ASP:OD1	42:J:77:THR:HG22	2.15	0.47
47:O:64:LYS:NZ	47:O:100:GLN:O	2.48	0.47
64:5:173:ARG:HA	64:5:176:TYR:CE1	2.50	0.47
1:AA:1378:C:O2	24:AX:389:SER:OG	2.30	0.47
36:A:3201:A:H2'	36:A:3202:U:O4'	2.15	0.47
36:A:2725:A:N7	36:A:2990:A:N6	2.64	0.46
22:AV:173:PHE:O	22:AV:179:GLN:NE2	2.48	0.46
1:AA:1557:A:OP1	10:AJ:72:LYS:N	2.47	0.46
4:AD:268:PHE:HB3	7:AG:56:ILE:HD11	1.98	0.46
19:AS:106:LEU:HB2	19:AS:117:LEU:HD11	1.98	0.46
24:AX:108:LEU:HD23	24:AX:141:VAL:HG21	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:1520:U:OP2	22:AV:407:GLN:NE2	2.46	0.46
27:A0:13:GLU:OE2	27:A0:16:ARG:NH1	2.49	0.46
36:A:1954:U:O4	101:A:3562:HOH:O	2.19	0.46
46:N:59:VAL:O	46:N:59:VAL:HG13	2.15	0.46
1:AA:1188:A:OP2	1:AA:1429:C:O2'	2.21	0.46
5:AE:17:GLU:OE1	5:AE:17:GLU:N	2.48	0.46
24:AX:153:LEU:HD21	24:AX:244:LEU:CD2	2.45	0.46
1:AA:1454:G:OP2	7:AG:377:ARG:NH1	2.44	0.46
6:AF:159:VAL:HG23	6:AF:172:VAL:CG2	2.44	0.46
7:AG:198:ARG:NH1	7:AG:201:ILE:HG23	2.31	0.46
45:M:250:ASP:OD1	45:M:251:GLU:N	2.49	0.46
1:AA:1598:G:OP2	101:AA:1851:HOH:O	2.21	0.46
36:A:2220:A:HO2'	36:A:2221:C:P	2.36	0.46
41:I:128:ASN:ND2	41:I:149:GLY:O	2.49	0.46
56:X:87:LEU:O	88:H:78:ARG:NH1	2.47	0.46
1:AA:1038:C:O2'	12:AL:155:TYR:OH	2.31	0.46
6:AF:85:VAL:HG22	24:AX:379:GLU:OE1	2.16	0.46
53:U:47:GLU:OE1	53:U:47:GLU:N	2.45	0.46
54:V:124:ASP:OD1	54:V:125:PRO:HD2	2.16	0.46
14:AN:93:ASP:O	14:AN:97:GLY:N	2.44	0.45
24:AX:153:LEU:HD12	24:AX:187:TRP:HZ2	1.81	0.45
88:H:146:LEU:O	88:H:150:GLY:N	2.45	0.45
1:AA:1044:U:OP1	1:AA:1110:A:O2'	2.30	0.45
25:AY:377:ARG:O	25:AY:381:ASN:ND2	2.49	0.45
37:B:38:C:OP1	65:6:52:ARG:NH1	2.50	0.45
1:AA:1583:MA6:OP1	30:A3:145:LYS:NZ	2.48	0.45
20:AT:92:THR:O	20:AT:92:THR:HG22	2.16	0.45
36:A:2883:A:N3	36:A:2883:A:H2'	2.31	0.45
42:J:20:ILE:HD11	42:J:42:ARG:HD3	1.98	0.45
90:AA:1701:NAD:O2D	101:AA:1849:HOH:O	2.20	0.45
36:A:2946:A:OP2	101:A:3571:HOH:O	2.21	0.45
88:H:223:VAL:N	88:H:231:VAL:O	2.45	0.45
40:F:115:LYS:NZ	101:F:6510:HOH:O	2.44	0.45
22:AV:35:VAL:O	22:AV:35:VAL:HG12	2.17	0.45
62:3:146:GLU:HA	62:3:146:GLU:OE1	2.17	0.45
31:A4:305:ILE:HG22	31:A4:306:ASN:N	2.32	0.45
36:A:1889:C:OP1	45:M:133:LYS:NZ	2.43	0.45
36:A:2353:A:O2'	36:A:2355:A:OP2	2.17	0.45
42:J:102:ARG:N	42:J:107:GLU:OE2	2.49	0.45
54:V:169:THR:HG22	54:V:169:THR:O	2.16	0.45
1:AA:709:G:OP1	13:AM:13:ARG:NH2	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:A4:303:CYS:SG	31:A4:344:ARG:NH2	2.89	0.44
1:AA:769:G:N2	1:AA:772:A:OP2	2.44	0.44
1:AA:1431:G:O2'	1:AA:1457:G:O6	2.32	0.44
36:A:2259:C:O2'	36:A:2261:C:OP2	2.24	0.44
36:A:2281:A:O2'	101:A:3559:HOH:O	2.19	0.44
36:A:1871:A:N3	62:3:104:ARG:NH2	2.65	0.44
45:M:177:ALA:HA	45:M:222:TYR:CD1	2.53	0.44
18:AR:317:ALA:O	18:AR:321:ALA:N	2.50	0.44
24:AX:119:TYR:OH	28:A1:273:GLU:OE2	2.22	0.44
29:A2:99:LEU:HD11	29:A2:103:LYS:CB	2.47	0.44
31:A4:58:VAL:O	31:A4:58:VAL:HG23	2.17	0.44
49:Q:251:GLU:OE1	49:Q:251:GLU:HA	2.16	0.44
54:V:176:ASP:OD1	57:Y:82:GLY:N	2.51	0.44
36:A:2137:C:OP2	58:Z:77:ARG:NH1	2.49	0.44
37:B:44:A:H2'	37:B:45:G:O4'	2.17	0.44
36:A:2135:A:N3	36:A:2135:A:H2'	2.33	0.44
38:D:207:ILE:HG22	38:D:207:ILE:O	2.18	0.44
53:U:66:ALA:HB2	53:U:100:ALA:HA	1.99	0.44
54:V:122:LEU:HD22	54:V:133:ILE:HD13	2.00	0.44
26:AZ:46:LYS:HA	26:AZ:49:TYR:CE1	2.53	0.44
31:A4:458:TYR:HB3	31:A4:486:TYR:CD1	2.53	0.44
1:AA:1490:U:O2'	101:AA:1812:HOH:O	2.10	0.44
36:A:2231:A:N3	36:A:3003:A:O2'	2.39	0.44
36:A:3211:C:HO2'	36:A:3212:C:H5	1.59	0.44
54:V:134:GLU:HG3	54:V:148:THR:HG22	1.99	0.44
66:7:51:GLU:OE1	66:7:51:GLU:HA	2.18	0.44
64:5:289:HIS:CE1	64:5:290:THR:HG1	2.33	0.43
1:AA:1208:U:OP1	101:AA:1852:HOH:O	2.21	0.43
41:I:180:CYS:SG	41:I:184:THR:N	2.92	0.43
43:K:67:PHE:HB3	43:K:71:LYS:HB2	2.00	0.43
49:Q:62:ILE:HG23	49:Q:62:ILE:O	2.17	0.43
54:V:159:PHE:CD1	54:V:160:PRO:HD2	2.53	0.43
1:AA:1293:C:N4	17:AQ:80:ARG:O	2.51	0.43
4:AD:415:GLN:NE2	4:AD:417:MET:SD	2.92	0.43
7:AG:312:GLN:OE1	7:AG:345:ARG:NH1	2.51	0.43
10:AJ:48:LYS:NZ	101:AJ:207:HOH:O	2.47	0.43
28:A1:113:HIS:CD2	28:A1:114:LEU:HG	2.53	0.43
31:A4:596:LEU:H	31:A4:596:LEU:HD12	1.84	0.43
36:A:1807:U:O2'	36:A:1808:A:OP2	2.28	0.43
36:A:2506:A:H1'	36:A:2601:A:N6	2.33	0.43
3:AC:115:ASN:ND2	25:AY:309:LYS:O	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
30:A3:144:ARG:NH2	101:A3:304:HOH:O	2.51	0.43
36:A:1991:A:H5"	36:A:1992:C:OP1	2.19	0.43
39:E:151:THR:HG23	39:E:171:PRO:HB2	2.00	0.43
1:AA:1088:C:O2'	101:AA:1824:HOH:O	2.14	0.43
8:AH:155:VAL:HG21	28:A1:129:PHE:HB2	2.01	0.43
36:A:2710:C:O2'	36:A:3220:A:N1	2.38	0.43
39:E:131:LYS:O	39:E:145:LEU:HD12	2.18	0.43
88:H:65:ALA:HB2	88:H:71:PRO:HA	2.00	0.43
3:AC:65:ARG:NH1	101:AC:205:HOH:O	2.38	0.43
8:AH:155:VAL:HG21	28:A1:129:PHE:CB	2.49	0.43
41:I:197:LEU:HD23	41:I:198:PRO:O	2.18	0.43
1:AA:691:A:N7	1:AA:716:U:O2'	2.50	0.42
7:AG:229:LEU:HD13	7:AG:241:VAL:HG11	2.01	0.42
24:AX:153:LEU:HD21	24:AX:244:LEU:HD22	2.01	0.42
36:A:2015:G:O4'	45:M:56:GLU:HG3	2.19	0.42
36:A:2075:U:OP1	101:A:3577:HOH:O	2.21	0.42
36:A:2855:G:O6	101:A:3552:HOH:O	2.18	0.42
7:AG:237:GLU:OE1	7:AG:237:GLU:N	2.51	0.42
9:AI:189:ARG:NH2	101:AI:208:HOH:O	2.53	0.42
28:A1:86:ARG:NH1	28:A1:96:PRO:O	2.50	0.42
36:A:2112:A:H4'	36:A:2113:G:OP1	2.19	0.42
43:K:16:ARG:O	101:K:202:HOH:O	2.21	0.42
44:L:95:ARG:NH2	101:L:207:HOH:O	2.51	0.42
66:7:87:THR:O	66:7:90:SER:OG	2.30	0.42
1:AA:1279:C:O2'	1:AA:1296:A:N1	2.48	0.42
18:AR:162:SER:HB2	18:AR:165:ILE:HD12	2.01	0.42
36:A:2039:A:N1	36:A:2932:G:O2'	2.45	0.42
1:AA:894:C:OP1	101:AA:1846:HOH:O	2.20	0.42
8:AH:60:LYS:NZ	28:A1:128:ASP:OD2	2.38	0.42
3:AC:45:SER:OG	3:AC:46:LYS:N	2.51	0.42
21:AU:27:ARG:N	101:AU:303:HOH:O	2.51	0.42
55:W:102:GLU:OE2	65:6:74:TYR:N	2.53	0.42
88:H:238:VAL:HG12	88:H:239:ASN:N	2.35	0.42
1:AA:1322:C:N3	4:AD:234:LYS:NZ	2.66	0.42
25:AY:255:ARG:NH1	25:AY:256:LEU:O	2.53	0.42
27:A0:37:ASP:O	27:A0:41:LEU:N	2.52	0.42
28:A1:304:GLU:OE2	28:A1:309:ILE:HD11	2.20	0.42
36:A:2483:U:H2'	36:A:2484:C:O4'	2.19	0.42
36:A:2868:C:H2'	36:A:2869:A:O4'	2.20	0.42
65:6:217:LEU:HD11	65:6:271:LEU:HD12	2.01	0.42
1:AA:1066:C:O2'	9:AI:187:ARG:O	2.38	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:AH:95:ALA:HB3	8:AH:143:LEU:HD21	2.01	0.42
17:AQ:80:ARG:NH2	23:AW:164:GLU:OE1	2.45	0.42
6:AF:90:VAL:HG13	6:AF:184:MET:CE	2.50	0.42
7:AG:320:VAL:HG21	7:AG:352:LEU:HD21	2.00	0.42
36:A:2814:G:O2'	36:A:2983:G:OP1	2.38	0.42
50:R:65:ARG:HA	50:R:68:TRP:CE3	2.55	0.42
53:U:19:VAL:O	53:U:19:VAL:HG13	2.20	0.42
54:V:165:ILE:HG21	68:9:76:TYR:CD2	2.55	0.42
2:AB:103:GLU:N	2:AB:104:PRO:CD	2.82	0.41
27:A0:63:ARG:NH2	27:A0:110:ASP:OD2	2.53	0.41
36:A:1980:A:OP1	61:2:56:SER:OG	2.32	0.41
37:B:12:U:O2'	37:B:14:A:OP1	2.38	0.41
2:AB:222:ILE:O	101:AB:406:HOH:O	2.22	0.41
6:AF:46:ILE:O	6:AF:46:ILE:HG22	2.20	0.41
27:A0:158:GLU:O	27:A0:158:GLU:HG2	2.21	0.41
101:A:3796:HOH:O	41:I:29:GLY:N	2.53	0.41
67:8:202:VAL:O	67:8:203:GLU:HB3	2.20	0.41
25:AY:259:PHE:HB2	31:A4:363:ILE:HD11	2.02	0.41
36:A:2099:U:OP1	101:A:3574:HOH:O	2.21	0.41
64:5:56:GLU:O	64:5:56:GLU:HG3	2.19	0.41
4:AD:112:LYS:NZ	4:AD:235:GLU:O	2.53	0.41
6:AF:35:SER:N	101:AF:304:HOH:O	2.53	0.41
45:M:149:THR:O	45:M:149:THR:HG22	2.19	0.41
1:AA:1057:G:H4'	1:AA:1578:A:H4'	2.02	0.41
16:AP:70:LYS:NZ	101:AP:303:HOH:O	2.53	0.41
23:AW:92:MET:O	23:AW:98:LYS:NZ	2.54	0.41
23:AW:162:VAL:O	23:AW:162:VAL:HG12	2.20	0.41
65:6:224:HIS:HA	65:6:232:TYR:CE2	2.56	0.41
4:AD:198:TRP:HA	4:AD:201:ILE:HD12	2.03	0.41
22:AV:318:ASP:OD1	22:AV:319:ILE:N	2.54	0.41
36:A:2306:A:OP1	101:A:3573:HOH:O	2.21	0.41
64:5:105:TYR:CE1	64:5:262:ILE:HD12	2.56	0.41
1:AA:1065:C:H2'	1:AA:1066:C:O4'	2.21	0.41
1:AA:1143:C:N4	101:AA:1853:HOH:O	2.22	0.41
22:AV:87:HIS:ND1	49:Q:60:PRO:HB2	2.36	0.41
24:AX:103:LYS:N	24:AX:104:PRO:CD	2.83	0.41
36:A:1958:G:OP1	101:A:3576:HOH:O	2.21	0.41
36:A:2398:A:H2'	36:A:2399:A:O4'	2.21	0.41
64:5:110:ARG:O	64:5:110:ARG:HG3	2.20	0.41
31:A4:302:VAL:O	31:A4:312:LYS:NZ	2.51	0.41
36:A:2227:A:N3	36:A:2227:A:H2'	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:A:2728:C:H4'	36:A:2815:OMG:HM22	2.02	0.41
36:A:2778:U:OP1	36:A:2782:A:N6	2.48	0.41
36:A:2909:G:OP1	60:1:63:ARG:NH1	2.47	0.41
43:K:7:ALA:HB3	43:K:8:PRO:HD3	2.02	0.41
88:H:208:LEU:HB3	88:H:209:PRO:HD2	2.03	0.41
1:AA:894:C:H41	10:AJ:78:ARG:NH2	2.19	0.41
7:AG:310:ARG:NE	24:AX:383:LEU:O	2.54	0.41
7:AG:337:ARG:HG3	7:AG:338:SER:N	2.36	0.41
17:AQ:63:ILE:HD13	29:A2:6:LEU:HD21	2.03	0.41
24:AX:129:GLU:OE1	101:AX:605:HOH:O	2.22	0.41
29:A2:59:ASN:ND2	29:A2:66:CYS:SG	2.87	0.41
36:A:2595:A:H2'	36:A:2596:G:O4'	2.21	0.41
44:L:128:ARG:O	44:L:131:GLU:HG3	2.20	0.41
54:V:133:ILE:HD12	54:V:145:ARG:HB3	2.02	0.41
59:0:166:SER:OG	59:0:167:GLU:N	2.54	0.41
4:AD:363:ALA:O	4:AD:367:GLY:N	2.53	0.41
6:AF:174:LEU:O	6:AF:179:ARG:NH1	2.53	0.41
20:AT:6:ARG:HG2	20:AT:7:PHE:CD2	2.56	0.41
24:AX:384:SER:O	24:AX:385:ASN:HB3	2.20	0.41
25:AY:290:ASN:OD1	25:AY:290:ASN:O	2.38	0.41
31:A4:560:GLU:O	31:A4:565:ARG:NH1	2.51	0.41
36:A:1961:A:N1	101:A:3730:HOH:O	2.37	0.41
36:A:1994:A:H61	36:A:2736:C:H4'	1.86	0.41
38:D:230:SER:O	38:D:231:LYS:HB2	2.20	0.41
64:5:177:CYS:HB3	64:5:178:PRO:HD3	2.02	0.41
66:7:36:SER:HB2	66:7:37:PRO:HD2	2.02	0.41
19:AS:111:GLU:HB2	19:AS:117:LEU:HD13	2.03	0.40
36:A:3067:PSU:OP1	39:E:234:THR:OG1	2.24	0.40
22:AV:225:LEU:HD11	22:AV:283:LEU:HD22	2.02	0.40
23:AW:113:TYR:CD1	23:AW:123:VAL:HG22	2.56	0.40
36:A:2757:A:N1	36:A:2789:C:O2'	2.50	0.40
40:F:191:ASP:OD1	40:F:192:SER:N	2.51	0.40
60:1:54:VAL:HG12	60:1:55:LEU:N	2.37	0.40
66:7:106:ALA:O	66:7:113:TRP:N	2.46	0.40
10:AJ:61:VAL:HG22	10:AJ:107:ILE:CD1	2.52	0.40
11:AK:120:LEU:HB3	11:AK:123:ILE:HD12	2.03	0.40
12:AL:126:GLU:HG2	12:AL:177:VAL:HG11	2.03	0.40
36:A:1810:A:H2'	36:A:1811:A:O4'	2.21	0.40
2:AB:146:SER:O	2:AB:168:THR:HA	2.22	0.40
6:AF:90:VAL:HG13	6:AF:184:MET:HE2	2.03	0.40
36:A:2257:C:OP2	101:A:3580:HOH:O	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AA:717:G:O2'	101:AA:1854:HOH:O	2.22	0.40
39:E:281:ASN:ND2	101:E:513:HOH:O	2.54	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	220/296 (74%)	218 (99%)	2 (1%)	0	100	100
3	AC	130/167 (78%)	125 (96%)	5 (4%)	0	100	100
4	AD	341/430 (79%)	331 (97%)	10 (3%)	0	100	100
5	AE	120/125 (96%)	119 (99%)	1 (1%)	0	100	100
6	AF	206/242 (85%)	204 (99%)	2 (1%)	0	100	100
7	AG	323/396 (82%)	315 (98%)	8 (2%)	0	100	100
8	AH	138/201 (69%)	137 (99%)	0	1 (1%)	22	32
9	AI	134/194 (69%)	133 (99%)	1 (1%)	0	100	100
10	AJ	106/138 (77%)	105 (99%)	1 (1%)	0	100	100
11	AK	99/128 (77%)	99 (100%)	0	0	100	100
12	AL	172/257 (67%)	170 (99%)	2 (1%)	0	100	100
13	AM	117/137 (85%)	117 (100%)	0	0	100	100
14	AN	108/130 (83%)	106 (98%)	2 (2%)	0	100	100
15	AO	191/258 (74%)	188 (98%)	3 (2%)	0	100	100
16	AP	95/142 (67%)	94 (99%)	1 (1%)	0	100	100
17	AQ	84/87 (97%)	82 (98%)	2 (2%)	0	100	100
18	AR	293/360 (81%)	284 (97%)	9 (3%)	0	100	100
19	AS	133/190 (70%)	133 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
20	AT	166/173 (96%)	164 (99%)	2 (1%)	0	100	100
21	AU	174/205 (85%)	174 (100%)	0	0	100	100
22	AV	358/414 (86%)	351 (98%)	7 (2%)	0	100	100
23	AW	98/187 (52%)	95 (97%)	3 (3%)	0	100	100
24	AX	350/398 (88%)	342 (98%)	7 (2%)	1 (0%)	41	56
25	AY	147/395 (37%)	147 (100%)	0	0	100	100
26	AZ	98/106 (92%)	97 (99%)	1 (1%)	0	100	100
27	A0	213/217 (98%)	209 (98%)	4 (2%)	0	100	100
28	A1	277/323 (86%)	273 (99%)	4 (1%)	0	100	100
29	A2	115/118 (98%)	115 (100%)	0	0	100	100
30	A3	68/199 (34%)	67 (98%)	1 (2%)	0	100	100
31	A4	584/689 (85%)	577 (99%)	7 (1%)	0	100	100
38	D	236/305 (77%)	231 (98%)	5 (2%)	0	100	100
39	E	303/348 (87%)	298 (98%)	4 (1%)	1 (0%)	41	56
40	F	250/311 (80%)	245 (98%)	5 (2%)	0	100	100
41	I	210/261 (80%)	200 (95%)	10 (5%)	0	100	100
42	J	173/192 (90%)	173 (100%)	0	0	100	100
43	K	175/178 (98%)	173 (99%)	2 (1%)	0	100	100
44	L	113/145 (78%)	112 (99%)	1 (1%)	0	100	100
45	M	287/296 (97%)	284 (99%)	3 (1%)	0	100	100
46	N	220/251 (88%)	218 (99%)	2 (1%)	0	100	100
47	O	152/175 (87%)	149 (98%)	3 (2%)	0	100	100
48	P	142/180 (79%)	142 (100%)	0	0	100	100
49	Q	237/292 (81%)	235 (99%)	1 (0%)	1 (0%)	34	48
50	R	138/149 (93%)	138 (100%)	0	0	100	100
51	S	159/205 (78%)	156 (98%)	3 (2%)	0	100	100
52	T	164/206 (80%)	164 (100%)	0	0	100	100
53	U	150/153 (98%)	148 (99%)	2 (1%)	0	100	100
54	V	203/216 (94%)	199 (98%)	4 (2%)	0	100	100
55	W	114/148 (77%)	113 (99%)	1 (1%)	0	100	100
56	X	242/256 (94%)	241 (100%)	1 (0%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
57	Y	179/250 (72%)	176 (98%)	3 (2%)	0	100	100
58	Z	120/161 (74%)	119 (99%)	1 (1%)	0	100	100
59	0	108/188 (57%)	108 (100%)	0	0	100	100
60	1	54/65 (83%)	54 (100%)	0	0	100	100
61	2	44/92 (48%)	43 (98%)	1 (2%)	0	100	100
62	3	93/188 (50%)	92 (99%)	1 (1%)	0	100	100
63	4	36/103 (35%)	36 (100%)	0	0	100	100
64	5	392/423 (93%)	384 (98%)	8 (2%)	0	100	100
65	6	352/380 (93%)	344 (98%)	8 (2%)	0	100	100
66	7	292/338 (86%)	284 (97%)	8 (3%)	0	100	100
67	8	155/206 (75%)	153 (99%)	2 (1%)	0	100	100
68	9	122/137 (89%)	121 (99%)	1 (1%)	0	100	100
69	a	96/142 (68%)	95 (99%)	1 (1%)	0	100	100
70	b	149/215 (69%)	147 (99%)	2 (1%)	0	100	100
71	c	282/332 (85%)	279 (99%)	3 (1%)	0	100	100
72	d	235/306 (77%)	231 (98%)	4 (2%)	0	100	100
73	e	236/279 (85%)	230 (98%)	6 (2%)	0	100	100
74	f	153/212 (72%)	151 (99%)	2 (1%)	0	100	100
75	g	132/166 (80%)	130 (98%)	2 (2%)	0	100	100
76	h	108/158 (68%)	108 (100%)	0	0	100	100
77	i	95/128 (74%)	93 (98%)	2 (2%)	0	100	100
78	j	92/123 (75%)	90 (98%)	2 (2%)	0	100	100
79	k	99/112 (88%)	99 (100%)	0	0	100	100
80	l	80/138 (58%)	79 (99%)	1 (1%)	0	100	100
81	m	90/128 (70%)	89 (99%)	1 (1%)	0	100	100
82	o	92/102 (90%)	91 (99%)	1 (1%)	0	100	100
83	p	141/206 (68%)	140 (99%)	1 (1%)	0	100	100
84	q	161/222 (72%)	160 (99%)	1 (1%)	0	100	100
85	r	160/196 (82%)	159 (99%)	1 (1%)	0	100	100
86	s	382/439 (87%)	375 (98%)	7 (2%)	0	100	100
87	t	44/198 (22%)	44 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
87	u	30/198 (15%)	30 (100%)	0	0	100	100
87	v	30/198 (15%)	30 (100%)	0	0	100	100
87	w	29/198 (15%)	29 (100%)	0	0	100	100
87	x	29/198 (15%)	29 (100%)	0	0	100	100
87	y	29/198 (15%)	29 (100%)	0	0	100	100
88	H	200/267 (75%)	194 (97%)	6 (3%)	0	100	100
89	z	250/325 (77%)	237 (95%)	12 (5%)	1 (0%)	34	48
All	All	14697/19484 (75%)	14472 (98%)	220 (2%)	5 (0%)	100	100

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	AH	126	ILE
89	z	128	ASP
24	AX	81	HIS
39	E	150	LYS
49	Q	62	ILE

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	197/249 (79%)	197 (100%)	0	100	100
3	AC	115/143 (80%)	115 (100%)	0	100	100
4	AD	286/357 (80%)	286 (100%)	0	100	100
5	AE	104/107 (97%)	104 (100%)	0	100	100
6	AF	185/209 (88%)	185 (100%)	0	100	100
7	AG	285/342 (83%)	285 (100%)	0	100	100
8	AH	130/180 (72%)	130 (100%)	0	100	100
9	AI	104/146 (71%)	104 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	AJ	93/118 (79%)	93 (100%)	0	100	100
11	AK	91/113 (80%)	91 (100%)	0	100	100
12	AL	158/226 (70%)	158 (100%)	0	100	100
13	AM	97/113 (86%)	97 (100%)	0	100	100
14	AN	96/115 (84%)	96 (100%)	0	100	100
15	AO	174/230 (76%)	174 (100%)	0	100	100
16	AP	88/123 (72%)	88 (100%)	0	100	100
17	AQ	78/79 (99%)	78 (100%)	0	100	100
18	AR	264/318 (83%)	264 (100%)	0	100	100
19	AS	116/164 (71%)	116 (100%)	0	100	100
20	AT	153/157 (98%)	153 (100%)	0	100	100
21	AU	152/174 (87%)	152 (100%)	0	100	100
22	AV	325/364 (89%)	325 (100%)	0	100	100
23	AW	87/158 (55%)	87 (100%)	0	100	100
24	AX	311/351 (89%)	311 (100%)	0	100	100
25	AY	137/357 (38%)	137 (100%)	0	100	100
26	AZ	90/95 (95%)	90 (100%)	0	100	100
27	A0	188/189 (100%)	188 (100%)	0	100	100
28	A1	257/291 (88%)	257 (100%)	0	100	100
29	A2	100/101 (99%)	100 (100%)	0	100	100
30	A3	65/166 (39%)	65 (100%)	0	100	100
31	A4	526/609 (86%)	526 (100%)	0	100	100
38	D	192/245 (78%)	192 (100%)	0	100	100
39	E	260/290 (90%)	260 (100%)	0	100	100
40	F	219/262 (84%)	219 (100%)	0	100	100
41	I	194/232 (84%)	194 (100%)	0	100	100
42	J	138/150 (92%)	138 (100%)	0	100	100
43	K	154/155 (99%)	154 (100%)	0	100	100
44	L	98/124 (79%)	98 (100%)	0	100	100
45	M	245/249 (98%)	245 (100%)	0	100	100
46	N	189/211 (90%)	189 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
47	O	134/150 (89%)	134 (100%)	0	100	100
48	P	126/155 (81%)	126 (100%)	0	100	100
49	Q	221/256 (86%)	221 (100%)	0	100	100
50	R	118/126 (94%)	118 (100%)	0	100	100
51	S	146/180 (81%)	146 (100%)	0	100	100
52	T	146/176 (83%)	146 (100%)	0	100	100
53	U	134/135 (99%)	134 (100%)	0	100	100
54	V	183/191 (96%)	183 (100%)	0	100	100
55	W	94/119 (79%)	94 (100%)	0	100	100
56	X	220/229 (96%)	220 (100%)	0	100	100
57	Y	163/223 (73%)	162 (99%)	1 (1%)	86	93
58	Z	113/147 (77%)	113 (100%)	0	100	100
59	0	99/164 (60%)	99 (100%)	0	100	100
60	1	53/60 (88%)	53 (100%)	0	100	100
61	2	40/72 (56%)	40 (100%)	0	100	100
62	3	88/166 (53%)	88 (100%)	0	100	100
63	4	37/89 (42%)	37 (100%)	0	100	100
64	5	353/368 (96%)	353 (100%)	0	100	100
65	6	313/332 (94%)	313 (100%)	0	100	100
66	7	270/303 (89%)	270 (100%)	0	100	100
67	8	146/190 (77%)	146 (100%)	0	100	100
68	9	104/112 (93%)	104 (100%)	0	100	100
69	a	96/133 (72%)	95 (99%)	1 (1%)	76	86
70	b	132/185 (71%)	132 (100%)	0	100	100
71	c	251/288 (87%)	251 (100%)	0	100	100
72	d	223/274 (81%)	223 (100%)	0	100	100
73	e	207/236 (88%)	207 (100%)	0	100	100
74	f	139/188 (74%)	139 (100%)	0	100	100
75	g	124/148 (84%)	124 (100%)	0	100	100
76	h	104/148 (70%)	104 (100%)	0	100	100
77	i	86/110 (78%)	86 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
78	j	74/97 (76%)	74 (100%)	0	100	100
79	k	83/90 (92%)	83 (100%)	0	100	100
80	l	76/116 (66%)	76 (100%)	0	100	100
81	m	85/113 (75%)	85 (100%)	0	100	100
82	o	80/87 (92%)	80 (100%)	0	100	100
83	p	135/181 (75%)	135 (100%)	0	100	100
84	q	142/178 (80%)	142 (100%)	0	100	100
85	r	147/169 (87%)	147 (100%)	0	100	100
86	s	340/381 (89%)	340 (100%)	0	100	100
87	t	40/158 (25%)	40 (100%)	0	100	100
87	u	31/158 (20%)	31 (100%)	0	100	100
87	v	31/158 (20%)	31 (100%)	0	100	100
87	w	30/158 (19%)	30 (100%)	0	100	100
87	x	30/158 (19%)	30 (100%)	0	100	100
87	y	30/158 (19%)	30 (100%)	0	100	100
88	H	182/228 (80%)	182 (100%)	0	100	100
89	z	226/287 (79%)	226 (100%)	0	100	100
All	All	13166/16790 (78%)	13164 (100%)	2 (0%)	100	100

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
57	Y	198	ARG
69	a	122	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (46) such sidechains are listed below:

Mol	Chain	Res	Type
4	AD	302	HIS
4	AD	356	GLN
5	AE	56	GLN
6	AF	113	GLN
6	AF	146	HIS
8	AH	125	HIS
9	AI	87	HIS

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Mol	Chain	Res	Type
9	AI	96	GLN
9	AI	178	ASN
10	AJ	105	HIS
18	AR	288	GLN
20	AT	101	HIS
21	AU	188	ASN
22	AV	380	GLN
24	AX	69	ASN
24	AX	159	HIS
24	AX	250	GLN
28	A1	185	HIS
31	A4	306	ASN
38	D	221	ASN
39	E	125	GLN
39	E	281	ASN
40	F	98	GLN
40	F	188	HIS
46	N	181	HIS
47	O	100	GLN
49	Q	139	GLN
51	S	118	ASN
53	U	84	ASN
53	U	98	GLN
58	Z	150	HIS
59	0	120	HIS
64	5	331	ASN
64	5	367	ASN
65	6	320	GLN
65	6	354	GLN
69	a	126	HIS
70	b	58	ASN
70	b	131	HIS
73	e	252	HIS
77	i	124	HIS
82	o	21	HIS
82	o	94	HIS
86	s	239	ASN
89	z	241	HIS
89	z	266	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	950/954 (99%)	135 (14%)	1 (0%)
32	Aw	67/68 (98%)	18 (26%)	0
33	Ax	68/70 (97%)	13 (19%)	0
34	Ay	68/70 (97%)	14 (20%)	0
35	Az	32/34 (94%)	13 (40%)	0
36	A	1556/1561 (99%)	224 (14%)	3 (0%)
37	B	71/72 (98%)	12 (16%)	0
All	All	2812/2829 (99%)	429 (15%)	4 (0%)

All (429) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	651	A
1	AA	673	U
1	AA	680	U
1	AA	688	A
1	AA	695	A
1	AA	704	U
1	AA	721	U
1	AA	722	C
1	AA	737	C
1	AA	738	A
1	AA	753	A
1	AA	761	A
1	AA	766	G
1	AA	777	G
1	AA	786	G
1	AA	791	G
1	AA	794	U
1	AA	796	G
1	AA	815	C
1	AA	830	U
1	AA	832	U
1	AA	835	C
1	AA	836	A
1	AA	851	A
1	AA	860	A
1	AA	861	U
1	AA	868	C
1	AA	869	C
1	AA	871	A
1	AA	890	C
1	AA	903	U

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Mol	Chain	Res	Type
1	AA	904	C
1	AA	907	A
1	AA	919	A
1	AA	929	A
1	AA	931	C
1	AA	932	C
1	AA	938	A
1	AA	939	A
1	AA	942	A
1	AA	946	U
1	AA	947	U
1	AA	960	C
1	AA	962	C
1	AA	967	A
1	AA	992	U
1	AA	1001	C
1	AA	1011	C
1	AA	1015	A
1	AA	1019	A
1	AA	1042	U
1	AA	1046	A
1	AA	1081	U
1	AA	1082	A
1	AA	1103	A
1	AA	1105	C
1	AA	1106	C
1	AA	1107	U
1	AA	1109	A
1	AA	1118	A
1	AA	1119	U
1	AA	1120	C
1	AA	1121	A
1	AA	1126	A
1	AA	1137	A
1	AA	1151	C
1	AA	1153	C
1	AA	1160	A
1	AA	1167	A
1	AA	1179	G
1	AA	1187	U
1	AA	1188	A
1	AA	1189	U

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Mol	Chain	Res	Type
1	AA	1190	C
1	AA	1193	U
1	AA	1220	A
1	AA	1223	C
1	AA	1225	C
1	AA	1229	U
1	AA	1247	G
1	AA	1248	C
1	AA	1250	C
1	AA	1251	A
1	AA	1258	A
1	AA	1271	C
1	AA	1273	G
1	AA	1275	A
1	AA	1283	A
1	AA	1284	U
1	AA	1285	G
1	AA	1290	C
1	AA	1291	U
1	AA	1307	G
1	AA	1326	A
1	AA	1327	G
1	AA	1343	A
1	AA	1344	U
1	AA	1353	A
1	AA	1354	A
1	AA	1356	A
1	AA	1378	C
1	AA	1387	A
1	AA	1390	A
1	AA	1405	C
1	AA	1406	U
1	AA	1407	U
1	AA	1422	G
1	AA	1430	A
1	AA	1462	G
1	AA	1463	G
1	AA	1469	G
1	AA	1474	G
1	AA	1481	C
1	AA	1503	G
1	AA	1519	A

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Mol	Chain	Res	Type
1	AA	1525	C
1	AA	1526	U
1	AA	1527	A
1	AA	1533	C
1	AA	1534	C
1	AA	1536	A
1	AA	1537	C
1	AA	1539	C
1	AA	1540	A
1	AA	1541	U
1	AA	1544	A
1	AA	1551	G
1	AA	1557	A
1	AA	1562	G
1	AA	1568	U
1	AA	1571	U
1	AA	1582	G
1	AA	1594	G
1	AA	1595	G
1	AA	1599	A
32	Aw	3	G
32	Aw	7	A
32	Aw	9	A
32	Aw	16	A
32	Aw	21	A
32	Aw	22	A
32	Aw	30	G
32	Aw	46	A
32	Aw	49	U
32	Aw	50	A
32	Aw	55	A
32	Aw	56	A
32	Aw	61	U
32	Aw	65	A
32	Aw	68	U
32	Aw	71	C
32	Aw	73	U
32	Aw	74	C
33	Ax	2	A
33	Ax	3	G
33	Ax	8	U
33	Ax	9	A

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Mol	Chain	Res	Type
33	Ax	25	C
33	Ax	44	A
33	Ax	45	G
33	Ax	46	A
33	Ax	48	U
33	Ax	49	G
33	Ax	59	U
33	Ax	62	C
33	Ax	76	A
34	Ay	3	G
34	Ay	4	G
34	Ay	23	A
34	Ay	28	C
34	Ay	29	U
34	Ay	30	G
34	Ay	37	A
34	Ay	44	A
34	Ay	45	G
34	Ay	48	U
34	Ay	49	G
34	Ay	59	U
34	Ay	75	C
34	Ay	76	A
35	Az	0	U
35	Az	1	U
35	Az	8	U
35	Az	11	U
35	Az	12	U
35	Az	13	U
35	Az	15	U
35	Az	18	A
35	Az	22	A
35	Az	25	U
35	Az	26	A
35	Az	27	C
35	Az	32	A
36	A	1681	G
36	A	1689	C
36	A	1692	A
36	A	1693	C
36	A	1694	U
36	A	1699	C

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Mol	Chain	Res	Type
36	A	1700	U
36	A	1704	U
36	A	1708	A
36	A	1711	C
36	A	1724	A
36	A	1727	A
36	A	1728	U
36	A	1748	G
36	A	1765	C
36	A	1805	A
36	A	1807	U
36	A	1808	A
36	A	1809	U
36	A	1810	A
36	A	1821	A
36	A	1827	C
36	A	1828	A
36	A	1829	A
36	A	1832	A
36	A	1836	A
36	A	1844	A
36	A	1854	U
36	A	1856	A
36	A	1869	A
36	A	1871	A
36	A	1882	A
36	A	1887	A
36	A	1893	A
36	A	1901	C
36	A	1903	C
36	A	1918	G
36	A	1937	A
36	A	1940	A
36	A	1958	G
36	A	1985	G
36	A	1993	A
36	A	1994	A
36	A	2003	A
36	A	2015	G
36	A	2022	G
36	A	2030	U
36	A	2031	A

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Mol	Chain	Res	Type
36	A	2036	C
36	A	2037	U
36	A	2039	A
36	A	2054	U
36	A	2055	U
36	A	2060	A
36	A	2069	U
36	A	2070	C
36	A	2071	U
36	A	2079	C
36	A	2099	U
36	A	2113	G
36	A	2125	C
36	A	2126	U
36	A	2147	G
36	A	2160	A
36	A	2163	A
36	A	2168	U
36	A	2181	A
36	A	2192	A
36	A	2198	A
36	A	2200	A
36	A	2214	A
36	A	2219	C
36	A	2220	A
36	A	2221	C
36	A	2222	U
36	A	2225	C
36	A	2226	U
36	A	2227	A
36	A	2228	A
36	A	2230	A
36	A	2237	A
36	A	2239	A
36	A	2241	A
36	A	2243	A
36	A	2245	A
36	A	2246	A
36	A	2262	C
36	A	2263	C
36	A	2284	C
36	A	2285	U

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Mol	Chain	Res	Type
36	A	2297	A
36	A	2300	G
36	A	2322	C
36	A	2331	C
36	A	2332	C
36	A	2345	G
36	A	2350	A
36	A	2353	A
36	A	2357	C
36	A	2363	A
36	A	2372	U
36	A	2374	A
36	A	2390	A
36	A	2399	A
36	A	2401	A
36	A	2404	U
36	A	2407	U
36	A	2415	C
36	A	2444	A
36	A	2446	A
36	A	2451	A
36	A	2478	G
36	A	2484	C
36	A	2485	U
36	A	2493	C
36	A	2502	C
36	A	2520	C
36	A	2521	A
36	A	2527	A
36	A	2540	C
36	A	2558	A
36	A	2570	C
36	A	2587	G
36	A	2592	G
36	A	2593	G
36	A	2599	U
36	A	2600	A
36	A	2601	A
36	A	2603	C
36	A	2618	U
36	A	2627	G
36	A	2629	A

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Mol	Chain	Res	Type
36	A	2630	U
36	A	2633	A
36	A	2635	G
36	A	2654	U
36	A	2656	U
36	A	2683	C
36	A	2686	G
36	A	2694	A
36	A	2696	A
36	A	2706	A
36	A	2718	C
36	A	2719	G
36	A	2723	A
36	A	2724	G
36	A	2725	A
36	A	2732	G
36	A	2745	A
36	A	2761	C
36	A	2762	C
36	A	2765	A
36	A	2767	A
36	A	2768	A
36	A	2775	A
36	A	2781	U
36	A	2782	A
36	A	2786	U
36	A	2787	A
36	A	2788	C
36	A	2791	A
36	A	2810	G
36	A	2832	A
36	A	2833	A
36	A	2847	C
36	A	2864	U
36	A	2865	C
36	A	2882	U
36	A	2883	A
36	A	2884	C
36	A	2885	U
36	A	2886	A
36	A	2887	U
36	A	2888	A

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Mol	Chain	Res	Type
36	A	2889	C
36	A	2893	A
36	A	2910	A
36	A	2911	C
36	A	2913	A
36	A	2917	G
36	A	2922	A
36	A	2928	C
36	A	2932	G
36	A	2935	A
36	A	2956	A
36	A	2989	G
36	A	2990	A
36	A	2992	G
36	A	3005	A
36	A	3007	C
36	A	3016	G
36	A	3041	U
36	A	3053	A
36	A	3054	G
36	A	3060	C
36	A	3090	G
36	A	3100	U
36	A	3102	U
36	A	3108	U
36	A	3109	U
36	A	3110	C
36	A	3111	A
36	A	3112	A
36	A	3113	A
36	A	3157	C
36	A	3158	A
36	A	3162	C
36	A	3169	C
36	A	3172	C
36	A	3176	A
36	A	3183	U
36	A	3199	U
36	A	3200	U
36	A	3207	A
36	A	3208	C
36	A	3209	A

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Mol	Chain	Res	Type
36	A	3210	C
36	A	3212	C
36	A	3217	A
36	A	3218	A
36	A	3228	U
36	A	3229	U
36	A	3230	G
36	A	3231	U
37	B	8	U
37	B	16	C
37	B	21	A
37	B	45	G
37	B	48	U
37	B	54	C
37	B	55	U
37	B	56	U
37	B	58	A
37	B	64	A
37	B	69	U
37	B	76	A

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	AA	1539	C
36	A	2030	U
36	A	2112	A
36	A	2245	A

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
1	5MC	AA	1488	1	18,22,23	0.31	0	26,32,35	0.42	0
79	AYA	k	2	79	6,7,8	0.83	0	5,8,10	0.52	0
1	5MU	AA	1076	1	19,22,23	0.62	0	28,32,35	1.20	3 (10%)
37	2MG	B	10	37	18,26,27	1.16	2 (11%)	16,38,41	0.88	1 (6%)
29	AYA	A2	2	29	6,7,8	0.80	0	5,8,10	0.56	0
36	OMU	A	3039	94,36	19,22,23	0.27	0	26,31,34	0.42	0
1	MA6	AA	1583	1	18,26,27	0.74	0	19,38,41	0.55	0
36	PSU	A	3067	36	18,21,22	0.79	0	22,30,33	2.56	5 (22%)
17	AYA	AQ	2	17	6,7,8	0.79	0	5,8,10	0.51	0
37	PSU	B	39	37	18,21,22	0.78	0	22,30,33	2.54	4 (18%)
1	B8T	AA	1486	93,1	19,22,23	0.31	0	26,31,34	0.32	0
36	OMG	A	3040	36,32	18,26,27	0.92	1 (5%)	19,38,41	0.61	0
36	1MA	A	2617	36	16,25,26	1.15	3 (18%)	18,37,40	0.91	1 (5%)
36	OMG	A	2815	33,94,36	18,26,27	0.94	2 (11%)	19,38,41	0.62	0
53	AYA	U	2	53	6,7,8	0.80	0	5,8,10	0.58	0
1	MA6	AA	1584	1	18,26,27	0.75	0	19,38,41	0.54	0
43	SAC	K	2	43	7,8,9	0.24	0	8,9,11	0.56	0
37	1MA	B	9	37	16,25,26	1.16	2 (12%)	18,37,40	0.88	1 (5%)
9	5F0	AI	184	9	8,8,9	0.58	0	7,9,11	1.17	1 (14%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	5MC	AA	1488	1	-	0/7/25/26	0/2/2/2
79	AYA	k	2	79	-	1/4/6/8	-
1	5MU	AA	1076	1	-	0/7/25/26	0/2/2/2
37	2MG	B	10	37	-	0/5/27/28	0/3/3/3
29	AYA	A2	2	29	-	0/4/6/8	-
36	OMU	A	3039	94,36	-	0/9/27/28	0/2/2/2
1	MA6	AA	1583	1	-	0/7/29/30	0/3/3/3
36	PSU	A	3067	36	-	0/7/25/26	0/2/2/2
17	AYA	AQ	2	17	-	1/4/6/8	-
37	PSU	B	39	37	-	0/7/25/26	0/2/2/2
1	B8T	AA	1486	93,1	-	0/7/27/28	0/2/2/2
36	OMG	A	3040	36,32	-	0/5/27/28	0/3/3/3
36	1MA	A	2617	36	-	0/3/25/26	0/3/3/3
36	OMG	A	2815	33,94,36	-	0/5/27/28	0/3/3/3
53	AYA	U	2	53	-	0/4/6/8	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	MA6	AA	1584	1	-	2/7/29/30	0/3/3/3
43	SAC	K	2	43	-	0/7/8/10	-
37	1MA	B	9	37	-	0/3/25/26	0/3/3/3
9	5F0	AI	184	9	-	0/9/9/10	-

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	B	9	1MA	C6-N6	3.10	1.35	1.27
36	A	2617	1MA	C6-N6	3.09	1.35	1.27
37	B	10	2MG	C8-N7	-3.04	1.29	1.35
37	B	10	2MG	C5-C6	-2.39	1.42	1.47
36	A	2815	OMG	C5-C6	-2.25	1.42	1.47
36	A	3040	OMG	C5-C6	-2.21	1.42	1.47
37	B	9	1MA	C5-C4	-2.14	1.37	1.43
36	A	2617	1MA	C5-C4	-2.10	1.37	1.43
36	A	2815	OMG	C8-N7	-2.08	1.31	1.35
36	A	2617	1MA	C8-N7	-2.01	1.31	1.35

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
37	B	39	PSU	N1-C2-N3	8.06	124.26	115.13
36	A	3067	PSU	N1-C2-N3	8.05	124.25	115.13
37	B	39	PSU	C4-N3-C2	-6.54	116.92	126.34
36	A	3067	PSU	C4-N3-C2	-6.53	116.92	126.34
1	AA	1076	5MU	C4-N3-C2	-4.78	121.17	127.35
36	A	3067	PSU	O2-C2-N1	-3.66	118.76	122.79
37	B	39	PSU	O2-C2-N1	-3.62	118.81	122.79
9	AI	184	5F0	O-C-CB	-2.74	117.45	125.43
1	AA	1076	5MU	C5-C4-N3	2.63	117.56	115.31
37	B	39	PSU	O2-C2-N3	-2.59	116.93	121.82
36	A	3067	PSU	O2-C2-N3	-2.56	116.98	121.82
1	AA	1076	5MU	N3-C2-N1	2.23	117.85	114.89
36	A	3067	PSU	O4'-C1'-C2'	2.18	108.22	105.14
37	B	10	2MG	O6-C6-C5	2.17	128.61	124.37
37	B	9	1MA	N1-C6-N6	2.09	125.08	119.77
36	A	2617	1MA	N1-C6-N6	2.07	125.03	119.77

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	AA	1584	MA6	C5-C6-N6-C9
79	k	2	AYA	C-CA-N-CT
1	AA	1584	MA6	C4'-C5'-O5'-P
17	AQ	2	AYA	CB-CA-N-CT

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	AA	1583	MA6	1	0
36	A	3067	PSU	1	0
1	AA	1486	B8T	2	0
36	A	2815	OMG	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 278 ligands modelled in this entry, 265 are monoatomic - leaving 13 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	$\#|Z| > 2$
92	SPD	A	3302	-	9,9,9	0.33	0	8,8,8	1.17	0
96	FES	r	201	85,41	0,4,4	-	-	-		
90	NAD	AA	1701	93	42,48,48	0.57	0	50,73,73	0.65	1 (2%)
96	FES	AT	201	20,13	0,4,4	-	-	-		
98	GDP	AX	503	-	24,30,30	0.88	1 (4%)	30,47,47	0.61	0
92	SPD	A	3301	-	9,9,9	0.27	0	8,8,8	1.18	0
96	FES	AP	201	5,16	0,4,4	-	-	-		
92	SPD	A	3303	-	9,9,9	0.34	0	8,8,8	1.12	0
97	ATP	AX	501	93	26,33,33	0.75	0	31,52,52	0.65	0
91	SPM	AA	1702	-	13,13,13	0.28	0	12,12,12	0.97	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$\|Z\|$ > 2	Counts	RMSZ	#$\|Z\|$ > 2
100	VAL	B	101	37	4,6,7	0.52	0	6,7,9	0.98	0
99	PUT	A	3304	-	5,5,5	0.24	0	4,4,4	0.52	0
92	SPD	AA	1703	-	9,9,9	0.29	0	8,8,8	1.31	2 (25%)

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
92	SPD	A	3302	-	-	0/7/7/7	-
96	FES	r	201	85,41	-	-	0/1/1/1
90	NAD	AA	1701	93	-	0/26/62/62	0/5/5/5
96	FES	AT	201	20,13	-	-	0/1/1/1
98	GDP	AX	503	-	-	0/12/32/32	0/3/3/3
92	SPD	A	3301	-	-	1/7/7/7	-
96	FES	AP	201	5,16	-	-	0/1/1/1
92	SPD	A	3303	-	-	2/7/7/7	-
97	ATP	AX	501	93	-	0/18/38/38	0/3/3/3
91	SPM	AA	1702	-	-	0/11/11/11	-
100	VAL	B	101	37	-	0/5/6/8	-
99	PUT	A	3304	-	-	0/3/3/3	-
92	SPD	AA	1703	-	-	0/7/7/7	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
98	AX	503	GDP	C5-C6	-2.20	1.42	1.47

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
90	AA	1701	NAD	C5A-C6A-N6A	2.31	123.87	120.35
92	AA	1703	SPD	C4-C5-N6	-2.24	106.09	112.14
92	AA	1703	SPD	C8-C7-N6	-2.09	106.49	112.14

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
92	A	3303	SPD	C4-C5-N6-C7

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Mol	Chain	Res	Type	Atoms
92	A	3301	SPD	N6-C7-C8-C9
92	A	3303	SPD	C8-C7-N6-C5

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
90	AA	1701	NAD	1	0
100	B	101	VAL	1	0

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 then 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.

Ligand NAD AA 1701

Bond lengths

Bond angles

Torsions

Rings

Ligand GDP AX 503

Bond lengths | Bond angles

Torsions | Rings
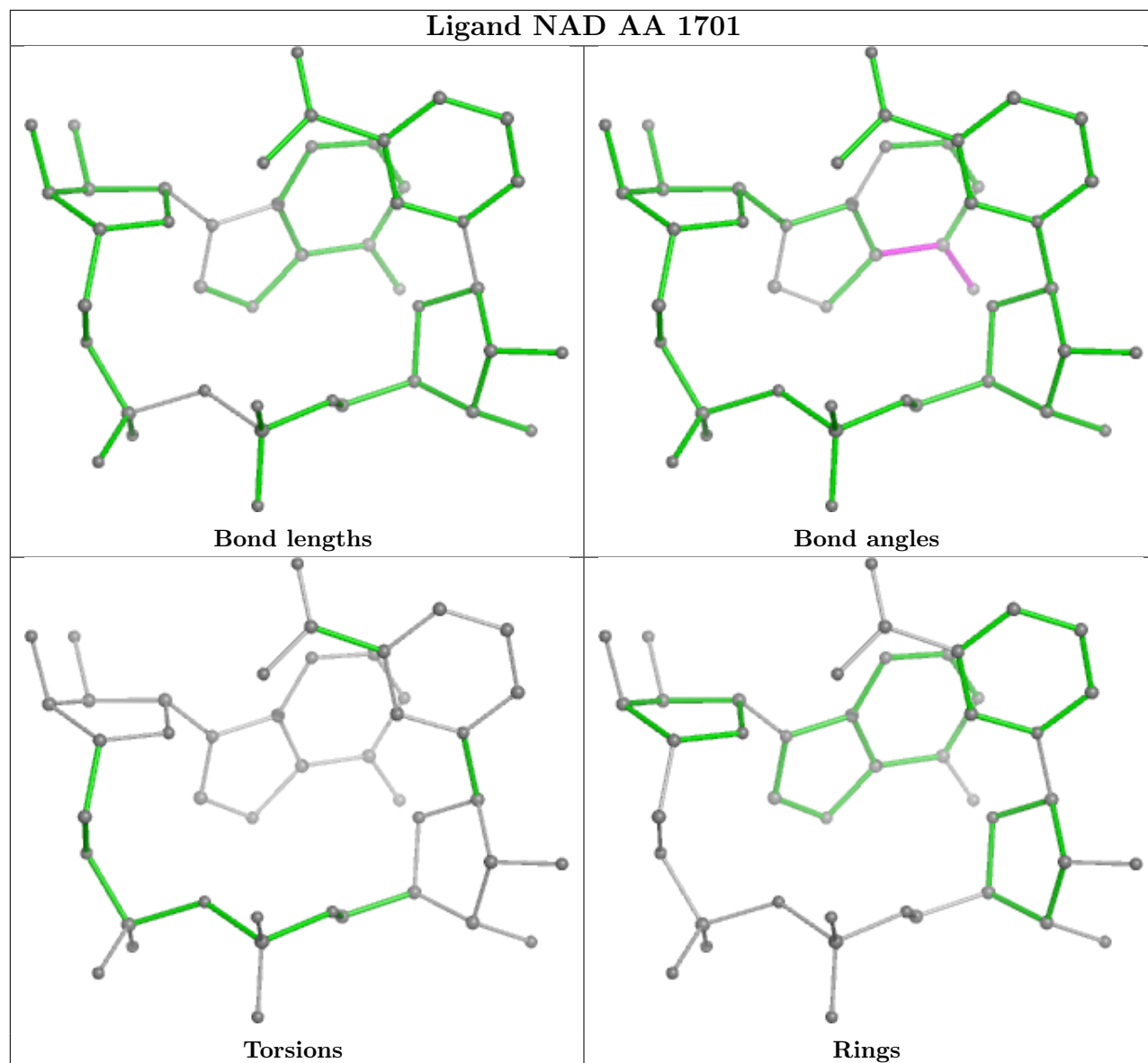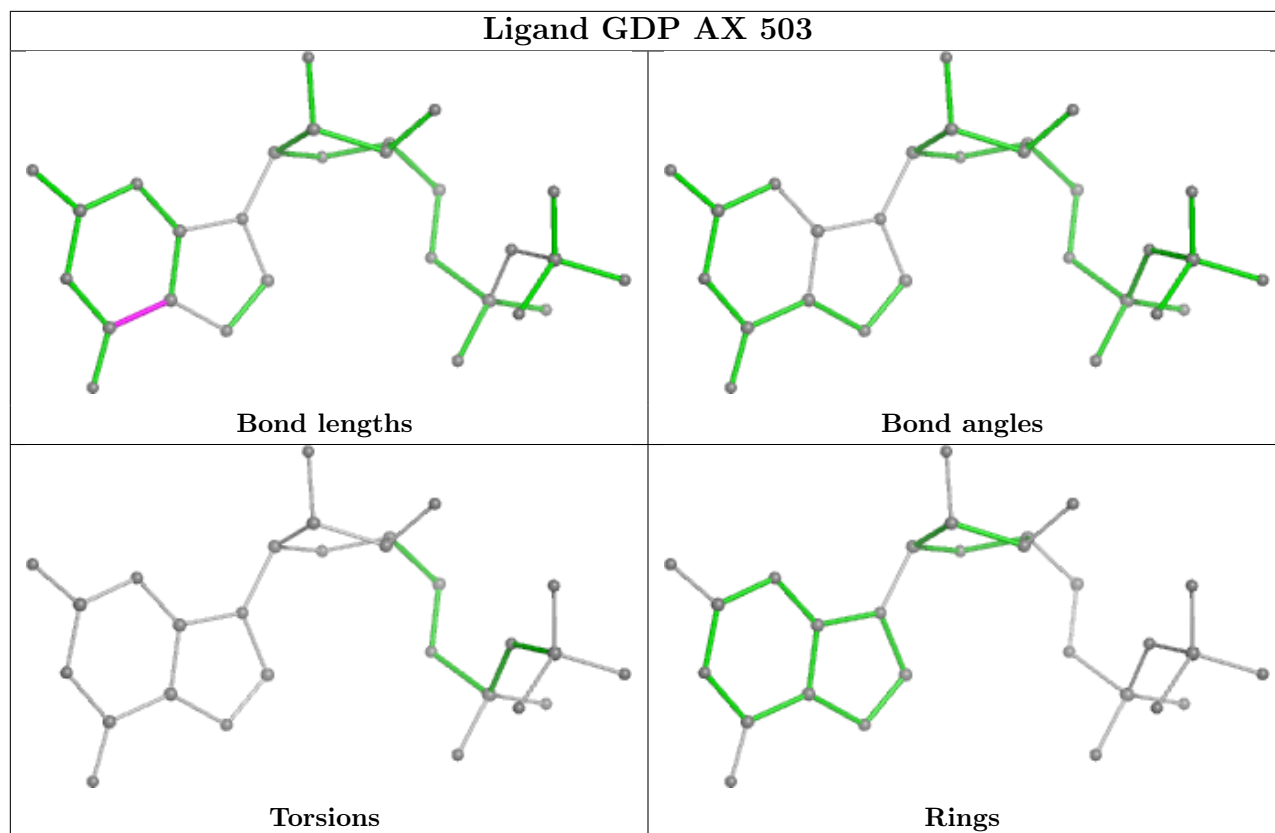
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
34	Ay	1
33	Ax	1
35	Az	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	Ay	15:A	O3'	21:A	P	9.67
1	Ax	15:A	O3'	21:A	P	8.73
1	Az	3:A	O3'	4:A	P	3.00

6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-13981. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections (i)

6.1.1 Primary map
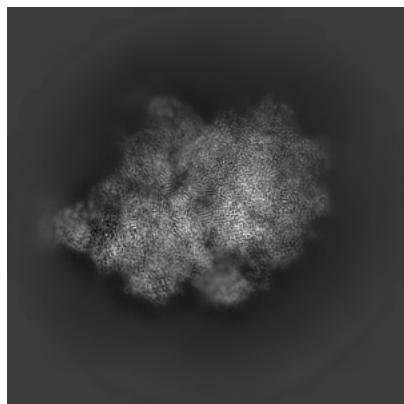
X
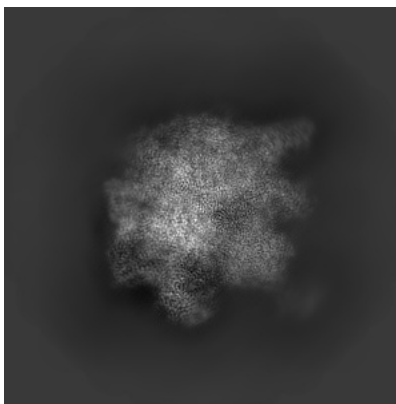
Y
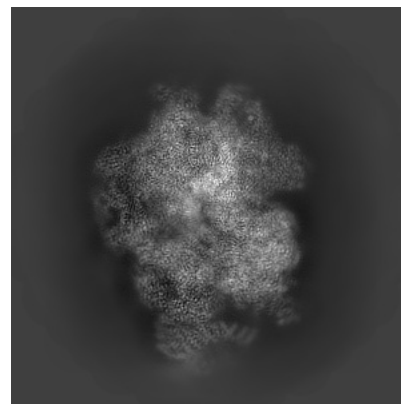
Z

6.1.2 Raw map

X

Y

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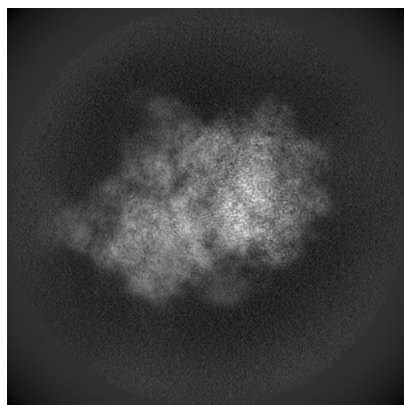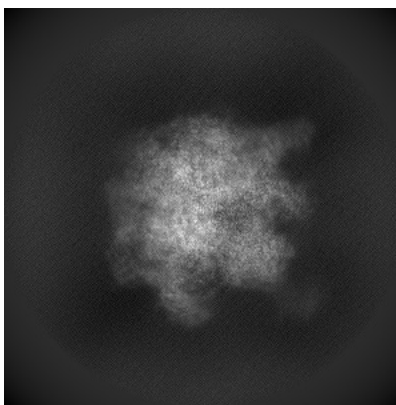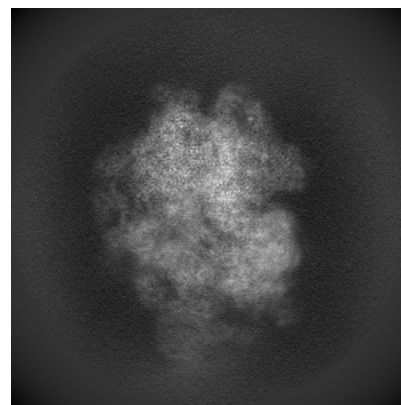
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
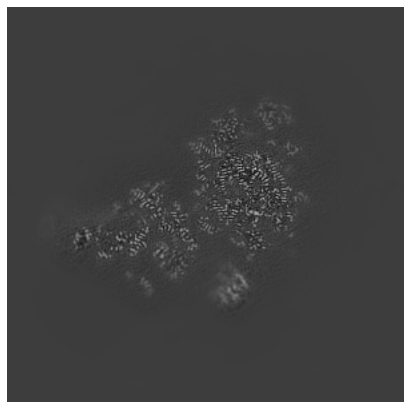
6.2.1 Primary map
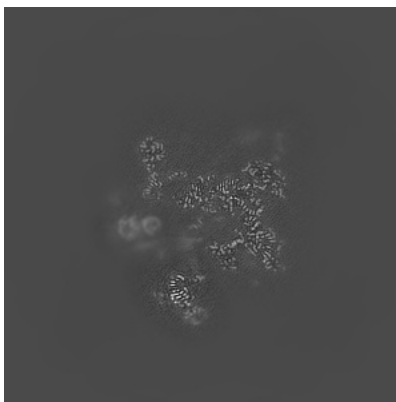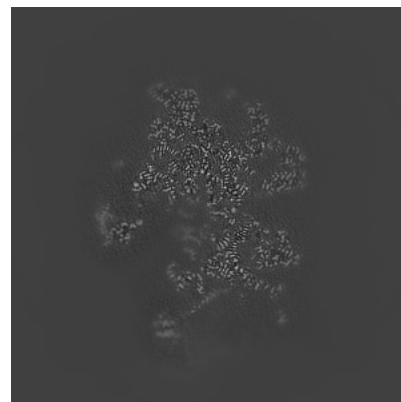
| X Index: 270 | Y Index: 270 | Z Index: 270 |

6.2.2 Raw map
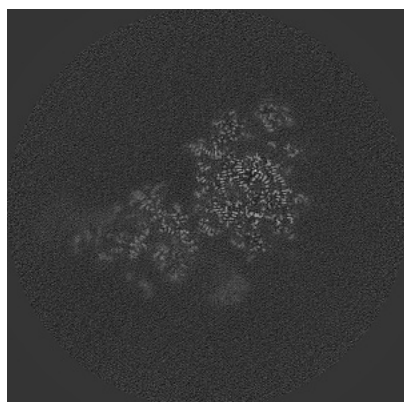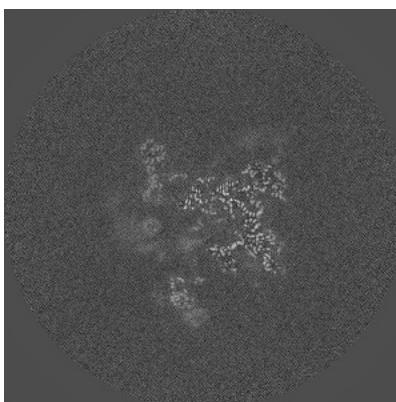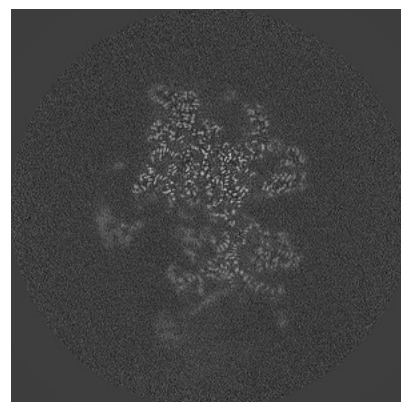
| X Index: 270 | Y Index: 270 | Z Index: 270 |

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

6.3　Largest variance slices ⓘ

6.3.1　Primary map
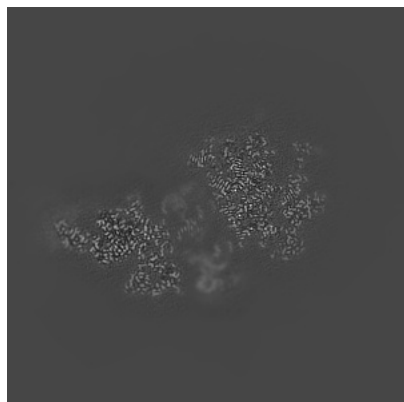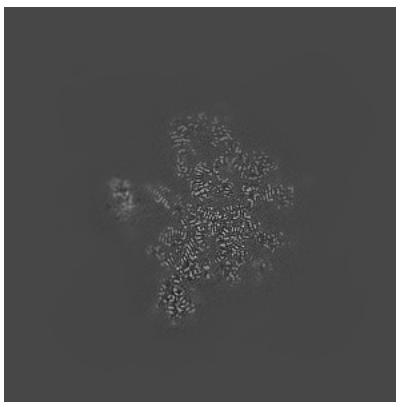
| X Index: 237 | Y Index: 318 | Z Index: 240 |
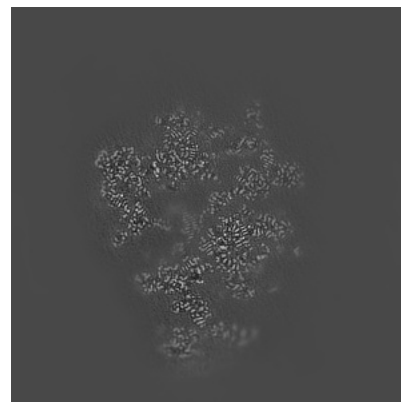
6.3.2　Raw map
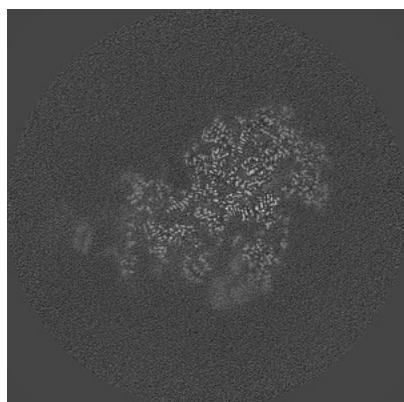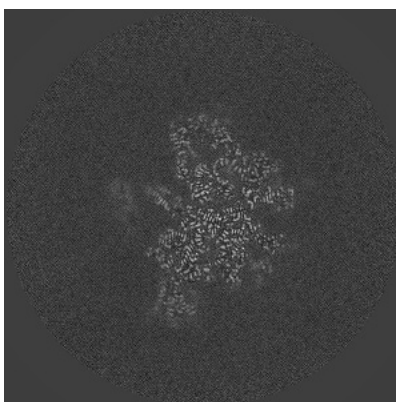
| X Index: 289 | Y Index: 318 | Z Index: 265 |
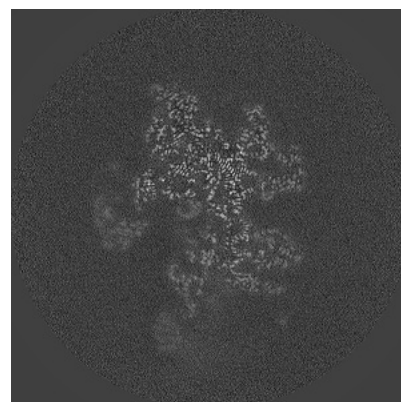
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map
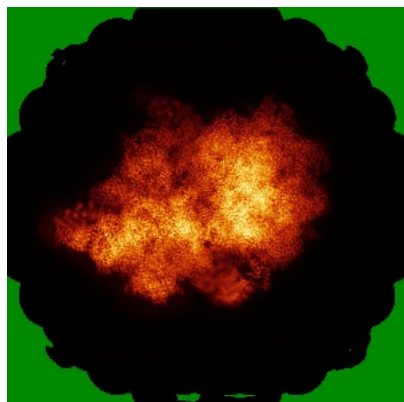
X
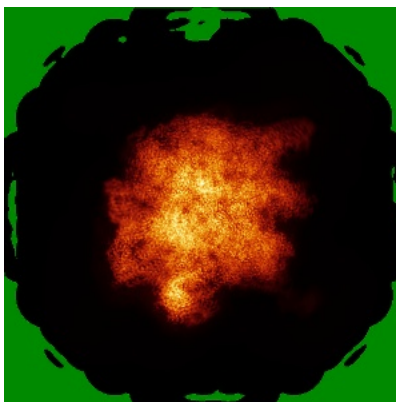
Y
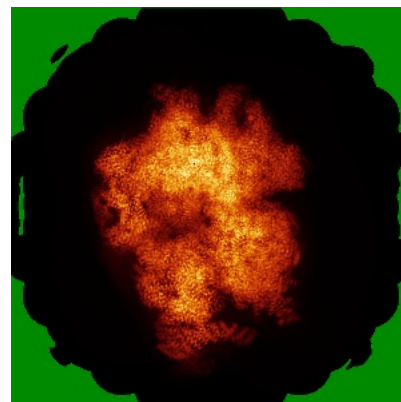
Z

6.4.2 Raw map

X

Y

Z
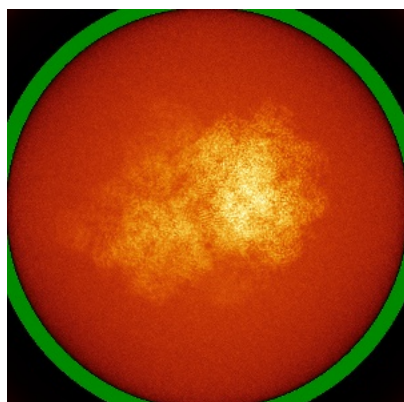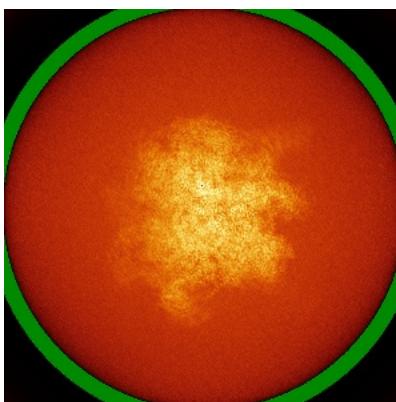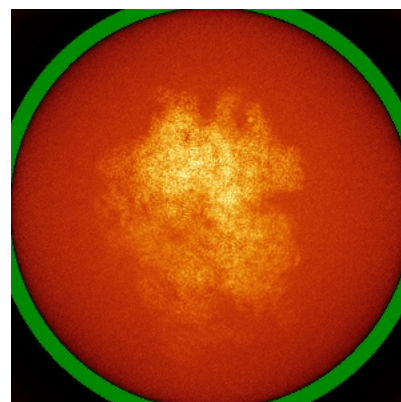
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
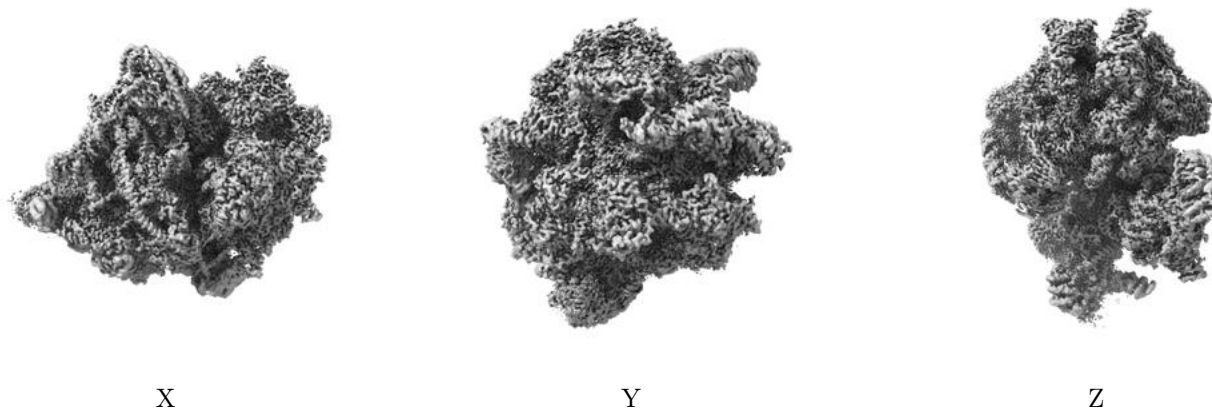
The images above show the 3D surface view of the map at the recommended contour level 2.8. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

| X | Y | Z |
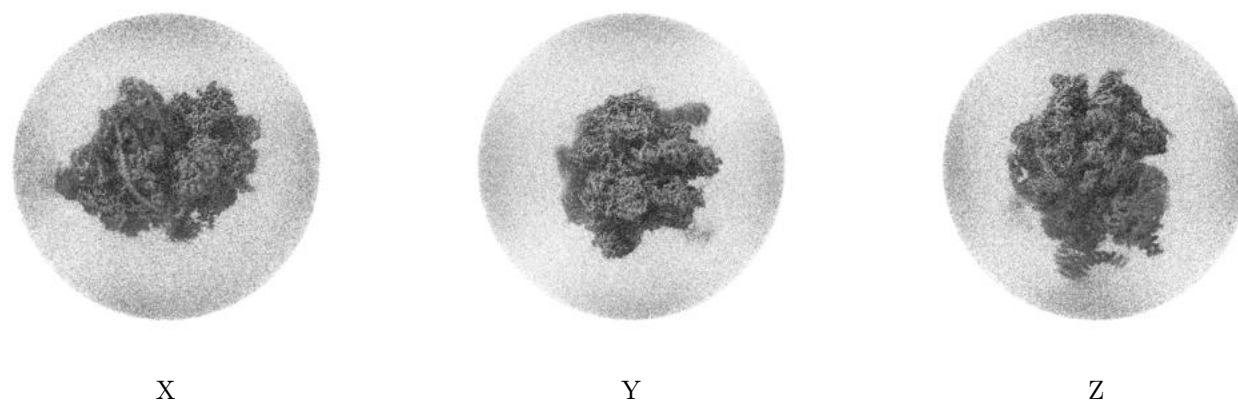
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure

- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.6.1 emd_13981_msk_1.map ⓘ
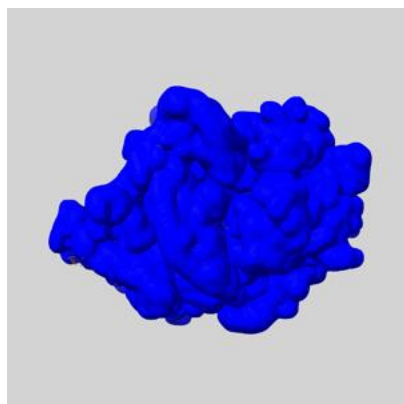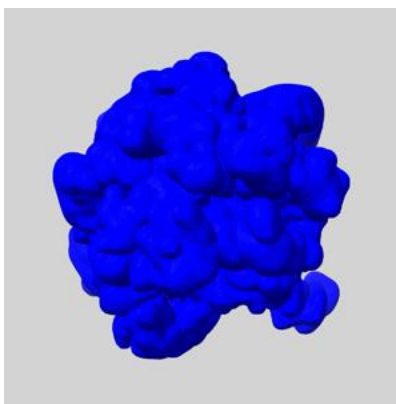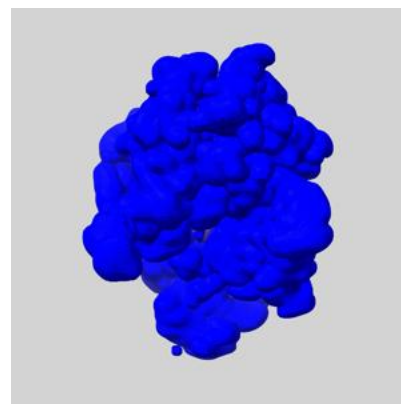
| X | Y | Z |

6.6.2 emd_13981_msk_2.map ⓘ
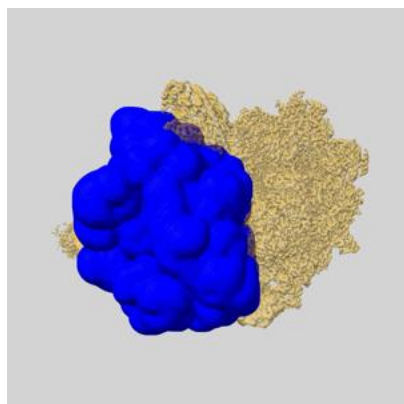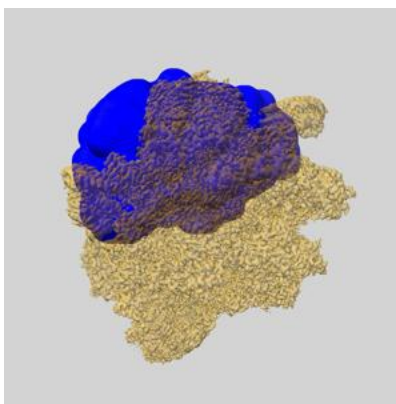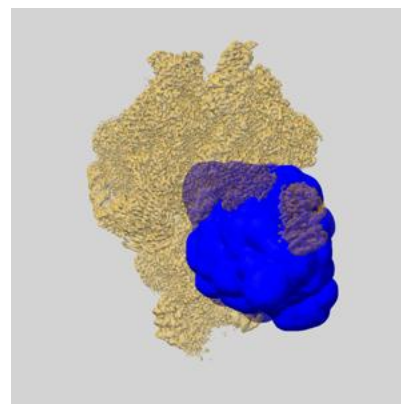
| X | Y | Z |

6.6.3 emd_13981_msk_3.map (i)
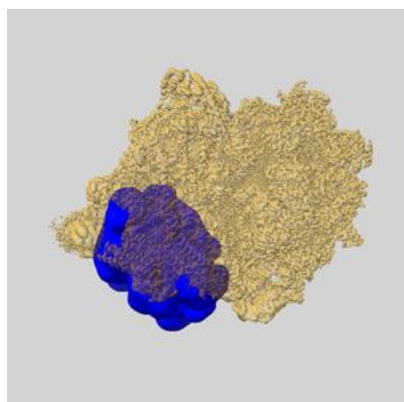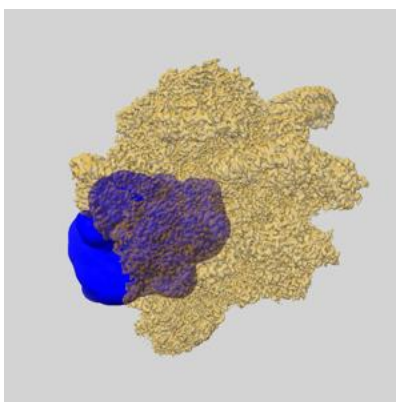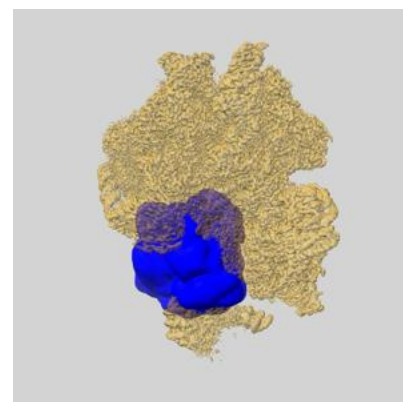
X	Y	Z

6.6.4 emd_13981_msk_4.map (i)
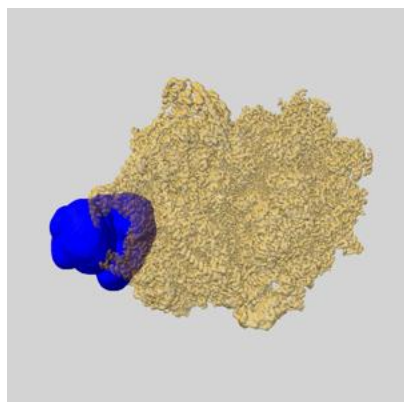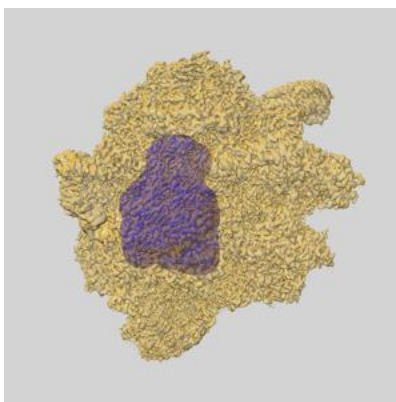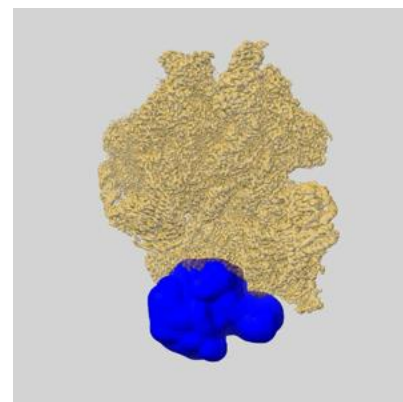
X	Y	Z

6.6.5 emd_13981_msk_5.map (i)
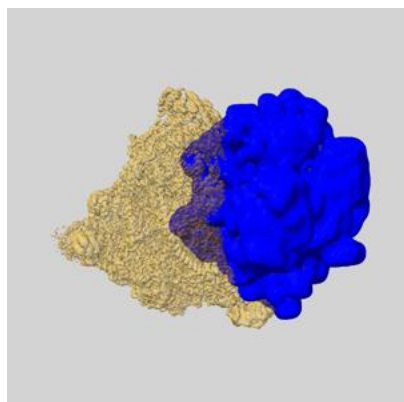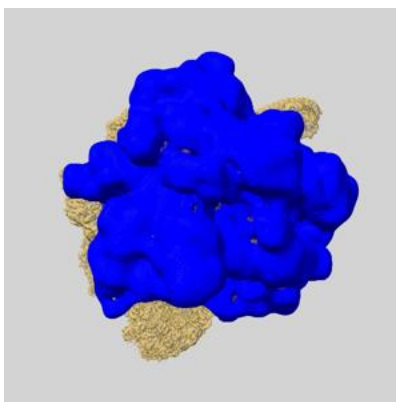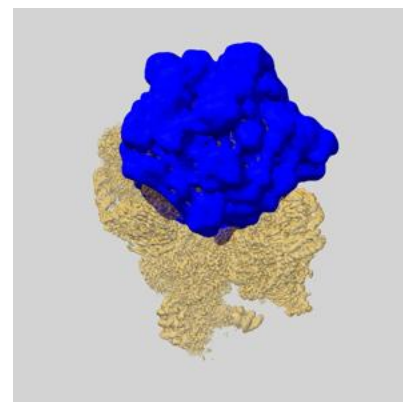
X	Y	Z

6.6.6　emd_13981_msk_6.map ⓘ
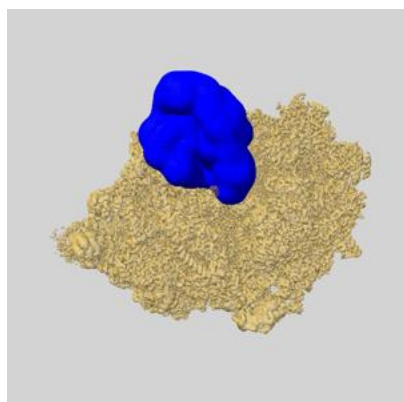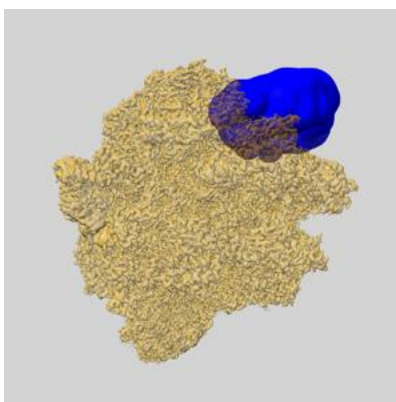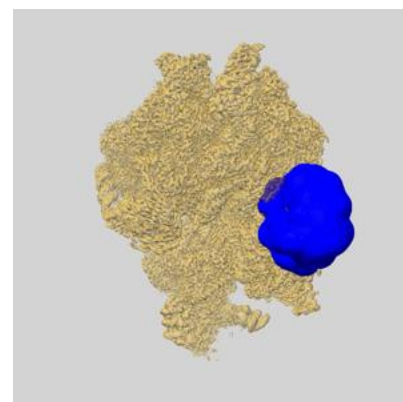
| X | Y | Z |

6.6.7　emd_13981_msk_7.map ⓘ
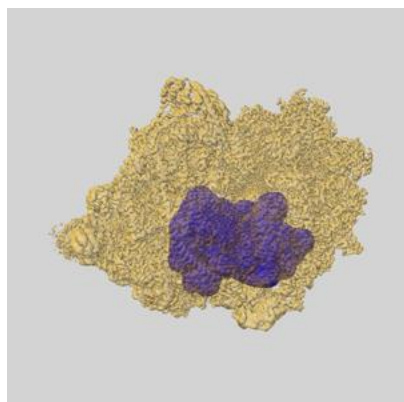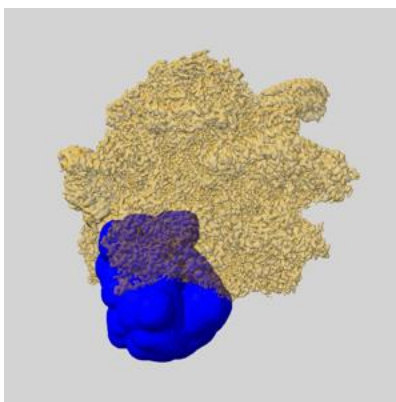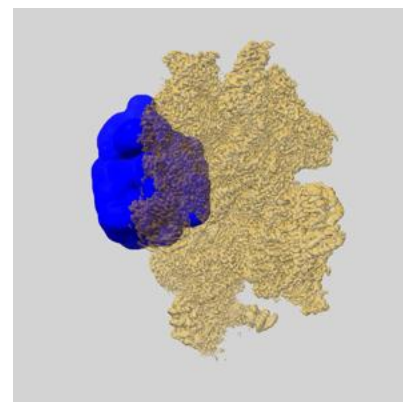
| X | Y | Z |

6.6.8　emd_13981_msk_8.map ⓘ
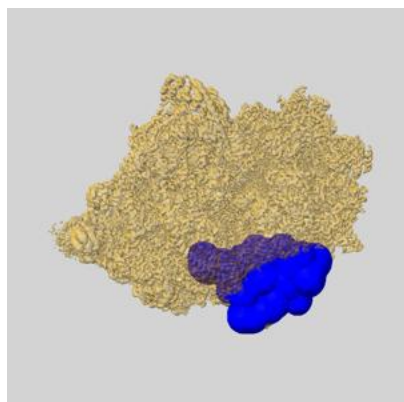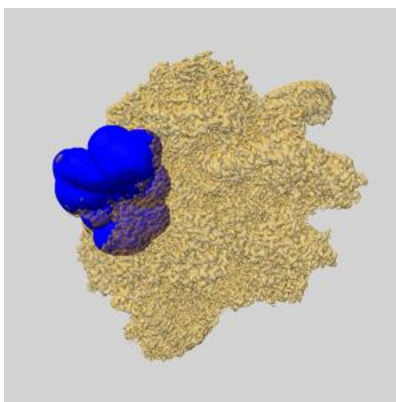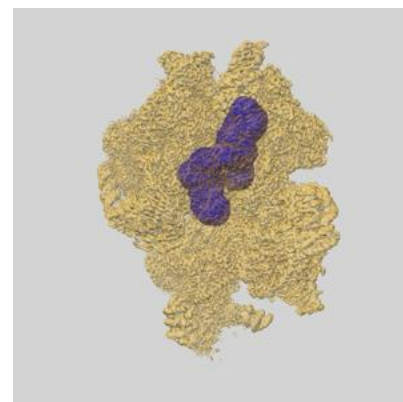
| X | Y | Z |

6.6.9　emd_13981_msk_9.map ⓘ

X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z
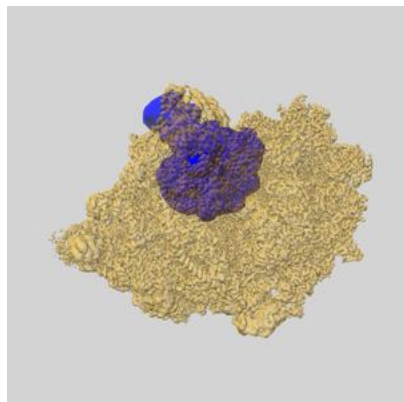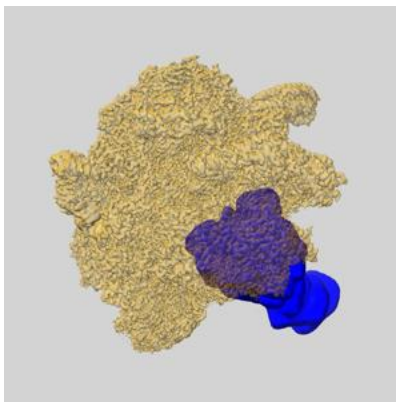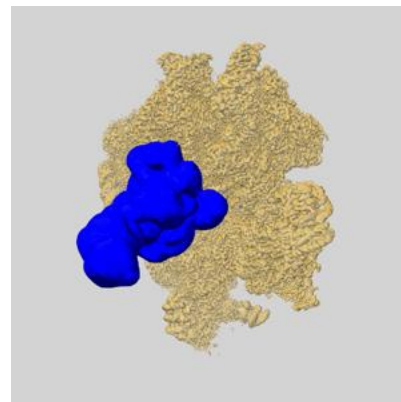
7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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 ⓘ
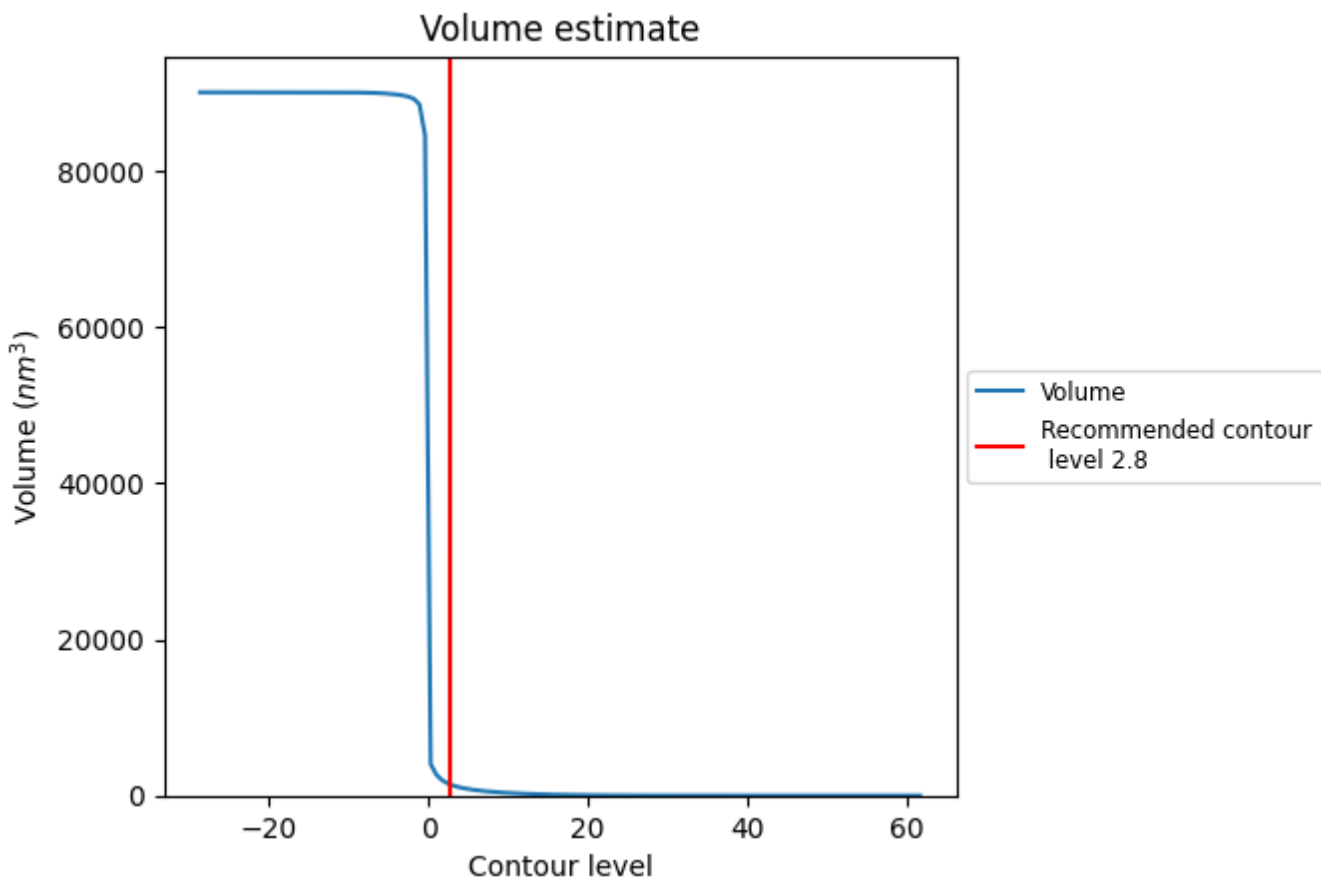
The volume at the recommended contour level is 1416 nm^3; this corresponds to an approximate mass of 1279 kDa.

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 ⓘ
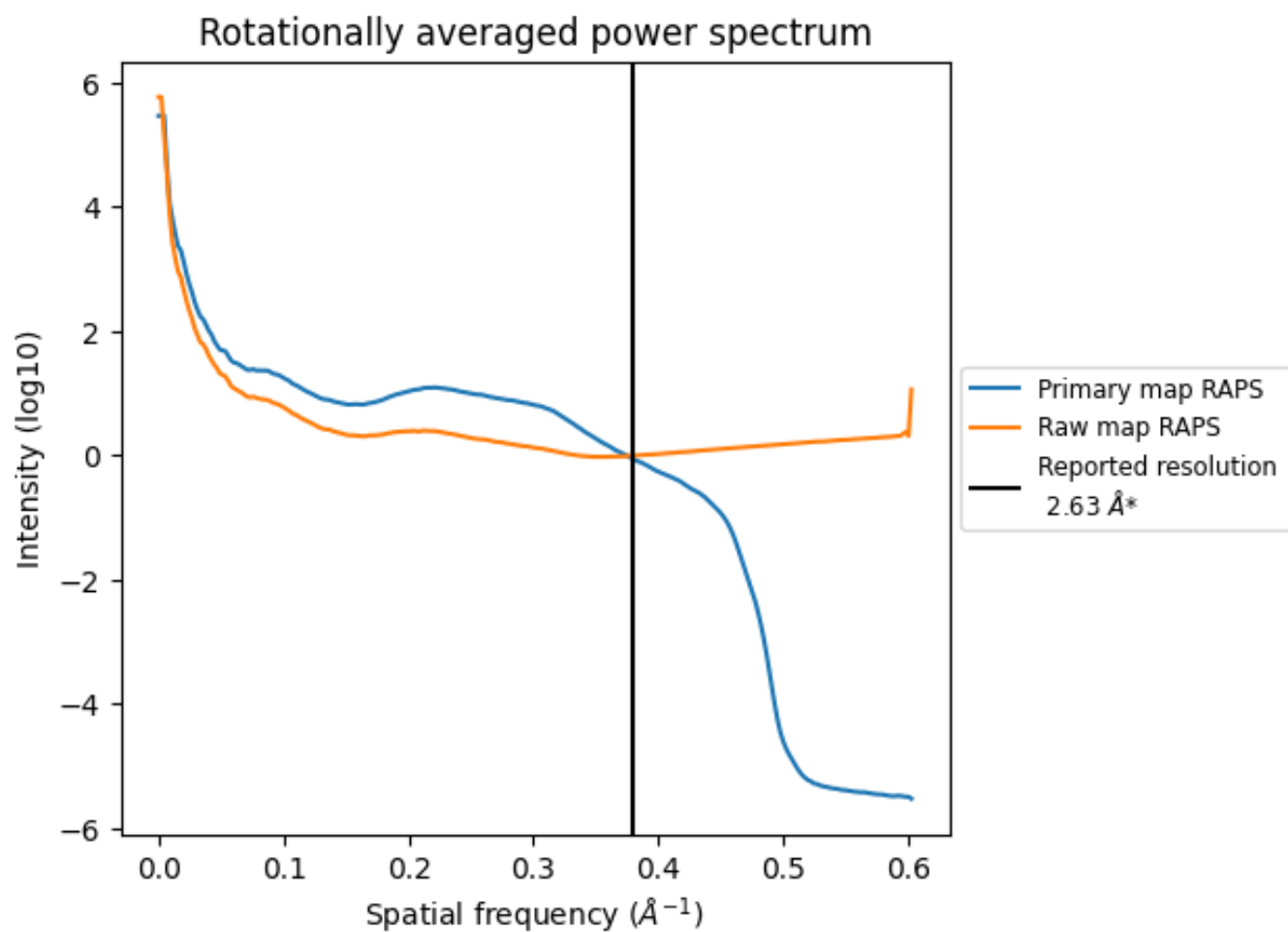
*Reported resolution corresponds to spatial frequency of 0.380 Å^{-1}

8　Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1　FSC ⓘ
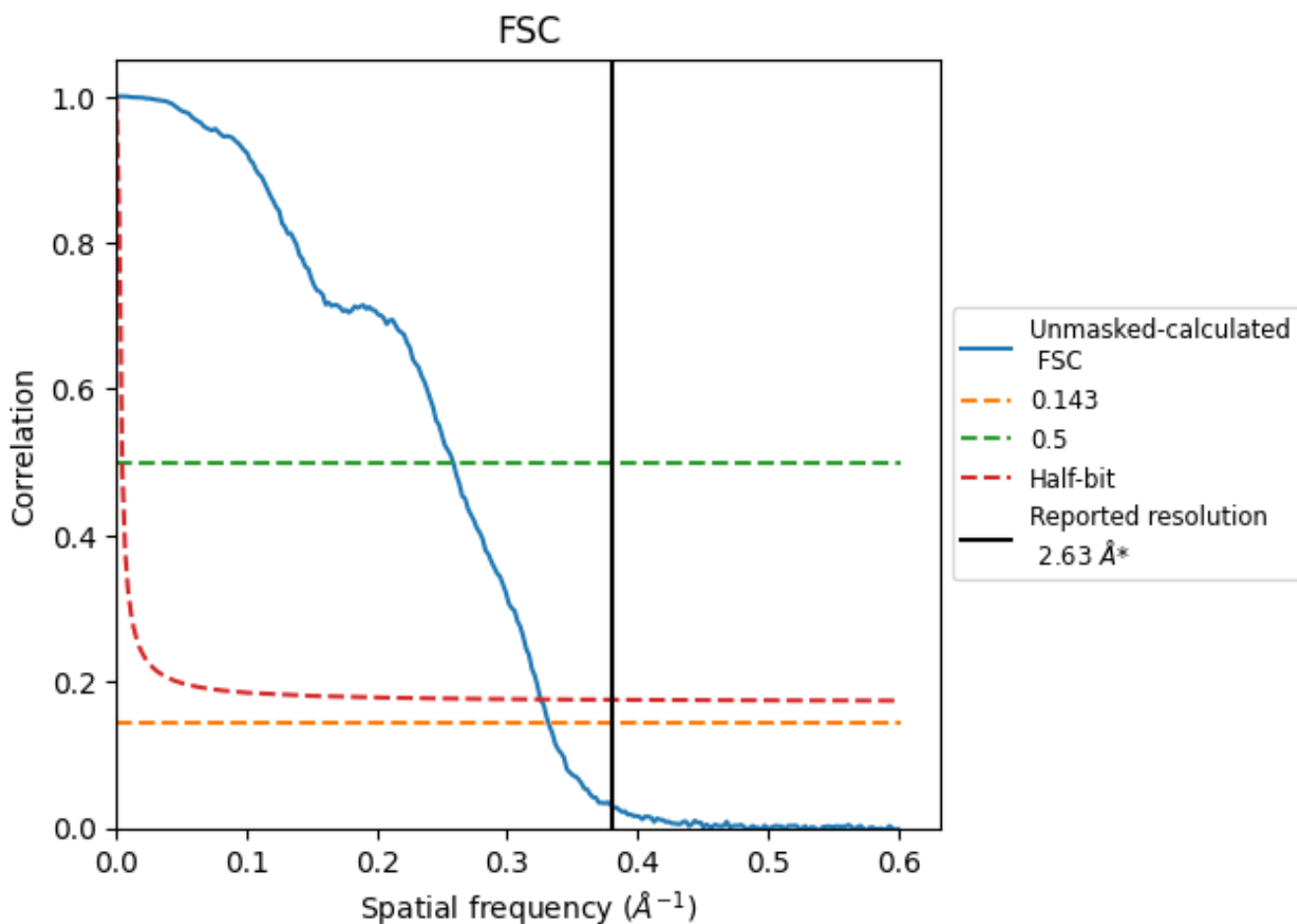
*Reported resolution corresponds to spatial frequency of 0.380 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.63	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.01	3.87	3.07

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.01 differs from the reported value 2.63 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-13981 and PDB model 7QI5. Per-residue inclusion information can be found in section 3 on page 31.

9.1 Map-model overlay ⓘ

X　　　　　Y　　　　　Z
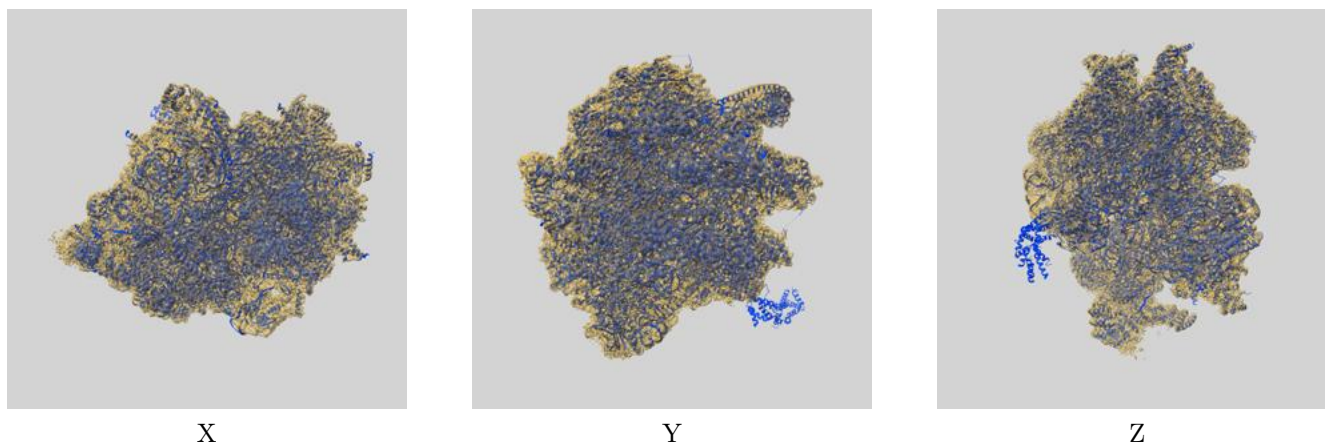
The images above show the 3D surface view of the map at the recommended contour level 2.8 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X Y Z
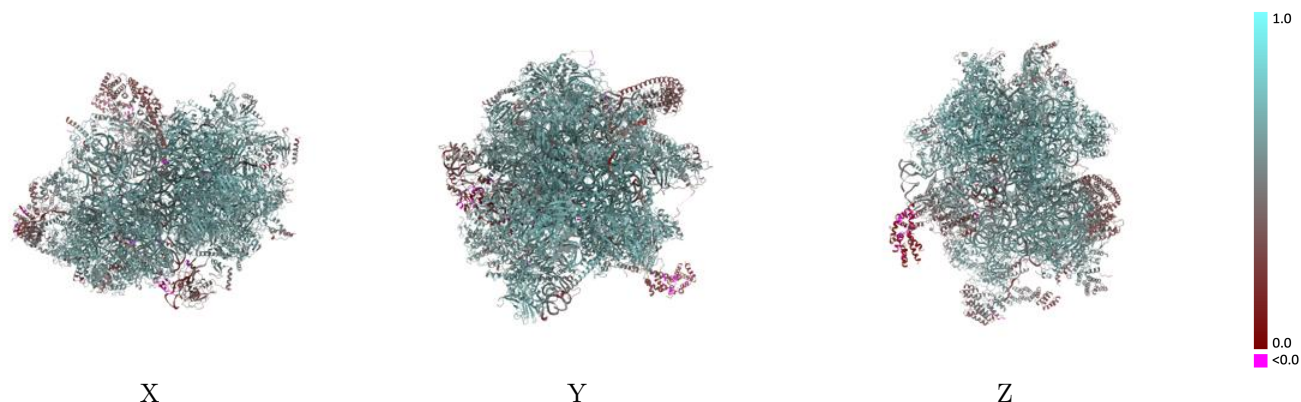
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ

X Y Z
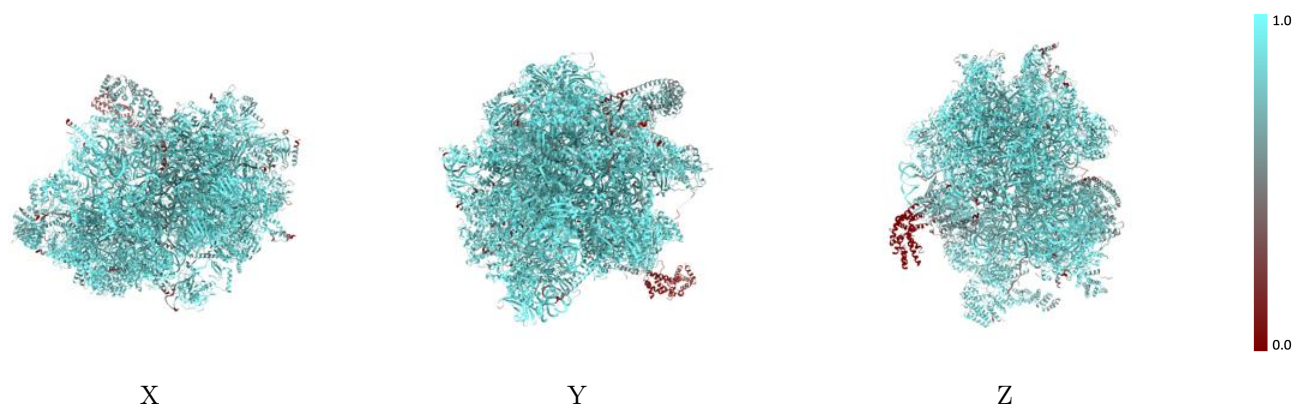
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (2.8).

9.4 Atom inclusion ⓘ
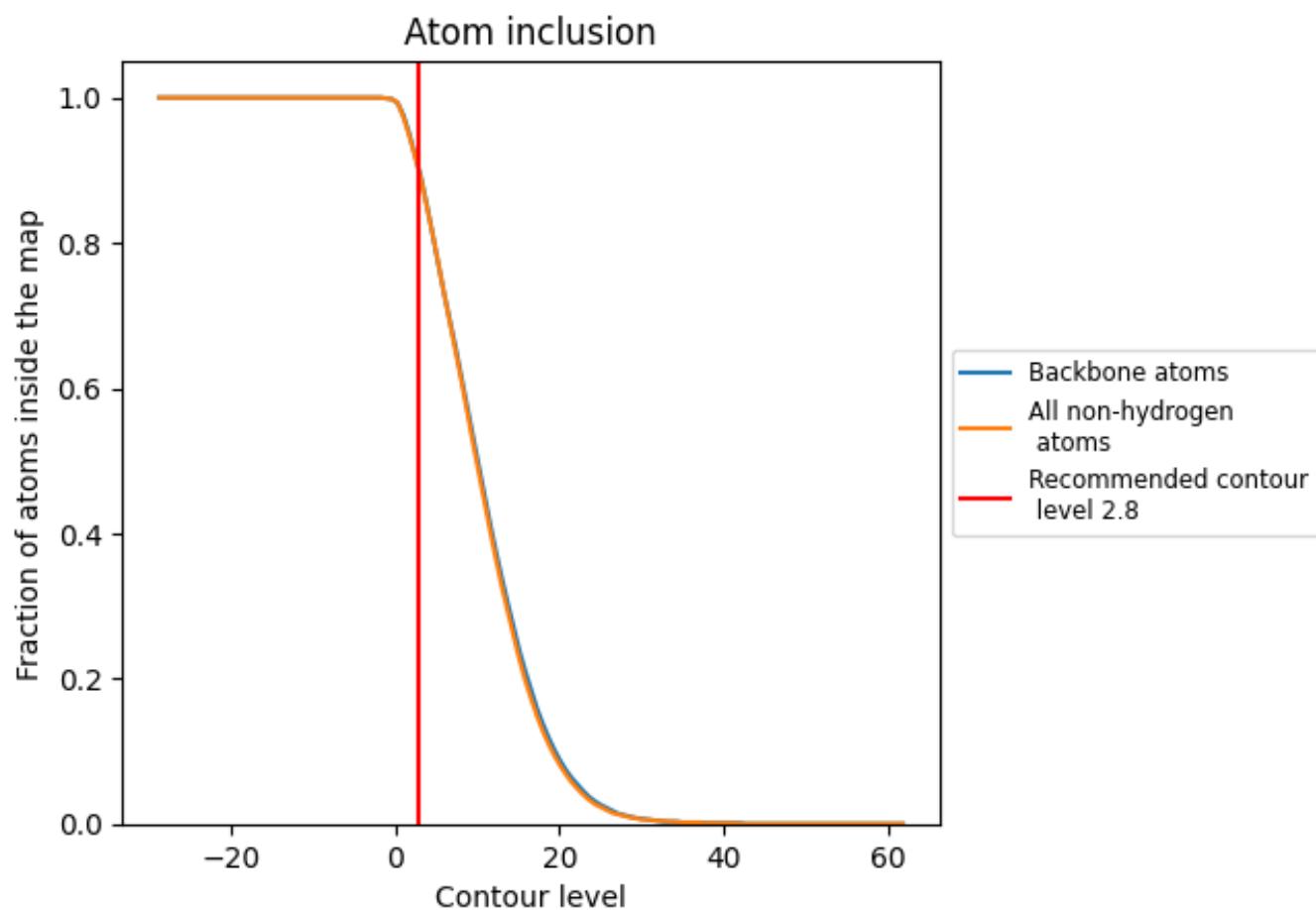
At the recommended contour level, 91% of all backbone atoms, 90% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (2.8) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9040	0.5940
0	0.9130	0.6410
1	0.8960	0.6060
2	0.9950	0.7280
3	0.9860	0.7160
4	0.9660	0.6610
5	0.9290	0.6170
6	0.9530	0.6300
7	0.8520	0.5690
8	0.8120	0.5150
9	0.8730	0.5940
A	0.9740	0.6620
A0	0.8550	0.5140
A1	0.9160	0.5830
A2	0.8650	0.5540
A3	0.9400	0.6400
A4	0.8730	0.4560
AA	0.9850	0.6450
AB	0.9400	0.6180
AC	0.9830	0.6680
AD	0.9130	0.5920
AE	0.9320	0.6050
AF	0.9390	0.6000
AG	0.8930	0.5650
AH	0.9540	0.6210
AI	0.9480	0.6230
AJ	0.9340	0.6190
AK	0.9820	0.6700
AL	0.8780	0.5730
AM	0.9220	0.5940
AN	0.9450	0.6240
AO	0.9220	0.5860
AP	0.9380	0.6290
AQ	0.9690	0.6520
AR	0.8710	0.5340

1.0

0.0
<0.0

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
AS	0.8610	0.5460
AT	0.9190	0.5990
AU	0.8660	0.5350
AV	0.6510	0.3600
AW	0.9170	0.5840
AX	0.9500	0.6050
AY	0.8340	0.5200
AZ	0.9290	0.6050
Aw	0.7910	0.4180
Ax	0.8270	0.4800
Ay	0.9240	0.3230
Az	0.7050	0.3920
B	0.9690	0.5600
D	0.9640	0.6670
E	0.9470	0.6590
F	0.9670	0.6800
H	0.9110	0.4640
I	0.5630	0.4350
J	0.5080	0.3640
K	0.9680	0.6860
L	0.9550	0.6610
M	0.9590	0.6740
N	0.9310	0.6530
O	0.9460	0.6600
P	0.9790	0.6660
Q	0.8730	0.6150
R	0.9680	0.6990
S	0.9500	0.6680
T	0.9680	0.6820
U	0.8550	0.6020
V	0.8480	0.5720
W	0.9770	0.6850
X	0.9070	0.6100
Y	0.9380	0.6460
Z	0.9430	0.6700
a	0.8450	0.5740
b	0.9620	0.6690
c	0.9000	0.6090
d	0.7810	0.5240
e	0.8530	0.5230
f	0.8710	0.5550
g	0.9290	0.6400

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Chain	Atom inclusion	Q-score
h	0.8450	0.5610
i	0.9770	0.7080
j	0.8710	0.5990
k	0.7530	0.5080
l	0.5990	0.4290
m	0.7940	0.4870
o	0.9700	0.6960
p	0.8070	0.5350
q	0.6890	0.4570
r	0.9260	0.6280
s	0.9350	0.6330
t	0.0680	0.2330
u	0.0000	0.2200
v	0.0000	0.1390
w	0.0000	0.0470
x	0.0000	0.0870
y	0.0000	0.0550
z	0.8680	0.2230