Full wwPDB EM Validation Report

Feb 24, 2022 – 01:14 pm GMT

PDB ID	:	7PUA
EMDB ID	:	EMD-13660
Title	:	Middle assembly intermediate of the Trypanosoma brucei mitoribosomal small subunit
Authors	:	Lenarcic, T.; Leibundgut, M.; Saurer, M.; Ramrath, D.J.F.; Fluegel, T.; Boehringer, D.; Ban, N.
Deposited on	:	2021-09-29
Resolution	:	3.60 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 following versions of software and data (see references ⓘ) were used in the production of this report:

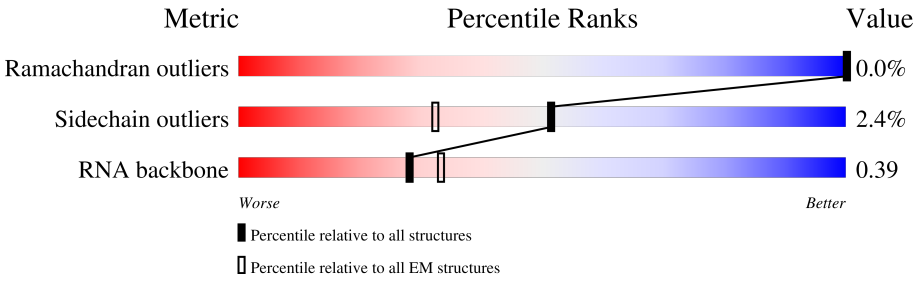
EMDB validation analysis	:	0.0.0.dev97
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.26

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.60 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	CA	621	22% 49% 31% 19%
2	CB	3	33% 67%
3	CC	74	22% 100%
4	CE	435	9% 84% • 14%
5	CF	160	13% 92% 5% •
6	CH	282	• 77% • 22%
7	CI	443	7% 94% • 5%
8	CJ	817	6% 93% • •

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Mol	Chain	Length	Quality of chain
9	CK	326	5% 53% 46%
10	CL	87	10% 90% 6% 5%
11	CN	166	95% 5%
12	CO	429	6% 83% 16%
13	CP	188	95%
14	CQ	307	78% 20%
15	CR	320	16% 37% 61%
16	CS	244	5% 40% 59%
17	CU	193	16% 17% 82%
18	Ca	602	8% 82% 17%
19	Cb	325	13% 44% 54%
20	Cd	440	5% 45% 53%
21	Cg	498	96%
22	Ci	181	8% 88% 9%
23	Cj	257	86% 12%
24	Ck	874	6% 75% 23%
25	Cm	215	14% 14% 86%
26	Cn	250	8% 19% 80%
27	Cp	187	89% 10%
28	DB	1181	91% 6%
29	DC	1165	11% 92% 6%
30	DD	812	93% 6%
31	DE	747	8% 82% 16%
32	DF	666	88% 11%
33	DG	631	86% 12%

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Mol	Chain	Length	Quality of chain
34	DH	581	10% 95%
35	DI	407	94%
36	DJ	396	14% 88% 10%
37	DK	324	10% 80% 19%
38	DL	307	17% 74% 24%
39	DO	282	7% 68% 31%
40	DP	274	76% 23%
41	DR	270	92% 7%
42	DT	247	8% 94%
43	DU	228	12% 94% 5%
44	DV	183	5% 85% 13%
45	DW	179	7% 74% 24%
46	DX	169	75% 24%
47	DY	163	7% 93% 6%
48	DZ	94	5% 30% 70%
49	Da	64	55% 44%
50	F2	1024	86% 13%
51	F3	966	10% 93% 6%
52	F5	754	18% 80% 18%
53	F6	676	34% 75% 23%
54	F7	679	5% 95%
55	F9	607	12% 87% 11%
56	FM	370	5% 86% 12%
56	FN	370	11% 85% 14%
57	FO	334	96%

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Mol	Chain	Length	Quality of chain
58	FP	349	9% 99%
59	FW	263	90% 10%
60	FX	239	92% 8%
61	FZ	178	40% 86% 10%
62	Fb	151	81% 17%
63	Fc	148	7% 54% 44%
64	Fd	143	59% 64% 35%
65	Ff	848	72% 27%
66	Fg	550	93% 5%
67	Fh	318	52% 73% 25%
68	Fi	629	10% 74% 24%
69	IA	787	86% 11%
70	IB	803	13% 60% 39%
71	U8	30	67% 100%
72	UC	9	100%
73	UD	13	15% 100%
74	UF	36	31% 100%
75	UG	15	7% 100%
76	UI	6	17% 100%
77	UK	24	96% 100%
78	UM	8	100%
78	UN	8	25% 100%
78	UQ	8	25% 100%
79	UP	32	41% 100%
80	Ua	10	10% 100%

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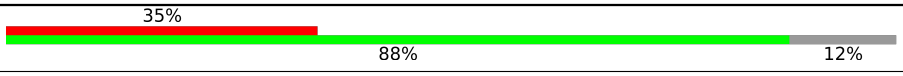
Mol	Chain	Length	Quality of chain
81	Ug	271	

2 Entry composition

There are 89 unique types of molecules in this entry. The entry contains 205280 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 9S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	CA	501	9866	4403	1529	3433	501	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CA	614	U	-	expression tag	GB 13740
CA	615	U	-	expression tag	GB 13740
CA	616	U	-	expression tag	GB 13740
CA	617	U	-	expression tag	GB 13740
CA	618	U	-	expression tag	GB 13740
CA	619	U	-	expression tag	GB 13740
CA	620	U	-	expression tag	GB 13740
CA	621	U	-	expression tag	GB 13740

- Molecule 2 is a RNA chain called 9S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	CB	3	64	29	12	20	3	0	0

- Molecule 3 is a protein called uS3m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	CC	74	646	451	96	98	1	0	0

- Molecule 4 is a protein called Ribosomal_S5_C domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	CE	373	3024	1915	556	538	15	0	0

- Molecule 5 is a protein called bS6m.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	CF	155	Total	C	N	O	S	0	0
			1279	810	226	237	6		

- Molecule 6 is a protein called 30S ribosomal protein S8, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	CH	219	Total	C	N	O	S	0	0
			1799	1130	343	317	9		

- Molecule 7 is a protein called uS9m.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	CI	421	Total	C	N	O	S	0	0
			3352	2111	598	627	16		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CI	370	ALA	VAL	conflict	UNP Q57W62

- Molecule 8 is a protein called LysM domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	CJ	782	Total	C	N	O	S	0	0
			6376	4034	1122	1191	29		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CJ	488	SER	ASN	conflict	UNP C9ZPU0

- Molecule 9 is a protein called uS11m.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	CK	177	Total	C	N	O	S	0	0
			1440	895	273	264	8		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CK	3	ARG	GLN	conflict	UNP Q389T7
CK	138	UNK	ILE	conflict	UNP Q389T7

- Molecule 10 is a protein called uS12m.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	CL	83	Total	C	N	O	S	0	0
			701	480	109	102	10		

- Molecule 11 is a protein called uS14m.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	CN	157	Total	C	N	O	S	0	0
			1322	843	251	220	8		

- Molecule 12 is a protein called uS15m.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	CO	360	Total	C	N	O	S	0	0
			2989	1899	557	517	16		

- Molecule 13 is a protein called bS16m.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	CP	180	Total	C	N	O	S	0	0
			1489	956	274	250	9		

- Molecule 14 is a protein called 30S Ribosomal protein S17, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	CQ	247	Total	C	N	O	S	0	0
			2015	1279	379	348	9		

- Molecule 15 is a protein called bS18m.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	CR	124	Total	C	N	O	S	0	0
			1051	680	196	173	2		

- Molecule 16 is a protein called uS19m.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	CS	99	Total	C	N	O	S	0	0
			822	534	144	140	4		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CS	-11	ILE	ASN	conflict	UNP A0A3L6L621
CS	-10	VAL	CYS	conflict	UNP A0A3L6L621
CS	-9	TYR	LEU	conflict	UNP A0A3L6L621
CS	-8	PHE	LEU	conflict	UNP A0A3L6L621
CS	-7	HIS	PRO	conflict	UNP A0A3L6L621
CS	-6	CYS	LEU	conflict	UNP A0A3L6L621
CS	-5	CYS	LEU	conflict	UNP A0A3L6L621
CS	-4	THR	TYR	conflict	UNP A0A3L6L621
CS	-3	ARG	GLU	conflict	UNP A0A3L6L621
CS	-2	LYS	GLU	conflict	UNP A0A3L6L621
CS	?	-	VAL	deletion	UNP A0A3L6L621
CS	?	-	ARG	deletion	UNP A0A3L6L621

- Molecule 17 is a protein called bS21m.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	CU	35	Total	C	N	O	S	0	0
			288	182	57	47	2		

- Molecule 18 is a protein called mS22.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Ca	501	Total	C	N	O	S	0	0
			4247	2720	753	753	21		

- Molecule 19 is a protein called mS23.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	Cb	149	Total	C	N	O	S	0	0
			1242	801	226	209	6		

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Cb	302	GLY	ARG	conflict	UNP C9ZNU0
Cb	312	UNK	-	expression tag	UNP C9ZNU0

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Chain	Residue	Modelled	Actual	Comment	Reference
Cb	313	CYS	-	expression tag	UNP C9ZNU0
Cb	314	SER	-	expression tag	UNP C9ZNU0
Cb	315	ARG	-	expression tag	UNP C9ZNU0
Cb	316	ASP	-	expression tag	UNP C9ZNU0
Cb	317	GLY	-	expression tag	UNP C9ZNU0
Cb	318	PHE	-	expression tag	UNP C9ZNU0
Cb	319	ALA	-	expression tag	UNP C9ZNU0
Cb	320	LEU	-	expression tag	UNP C9ZNU0
Cb	321	MET	-	expression tag	UNP C9ZNU0
Cb	322	LYS	-	expression tag	UNP C9ZNU0
Cb	323	ALA	-	expression tag	UNP C9ZNU0
Cb	324	ASN	-	expression tag	UNP C9ZNU0
Cb	325	LYS	-	expression tag	UNP C9ZNU0

- Molecule 20 is a protein called mS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	Cd	205	Total	C	N	O	S	0	0
			1768	1124	323	312	9		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Cd	299	UNK	GLY	conflict	UNP Q38DK6
Cd	364	UNK	GLY	conflict	UNP Q38DK6

- Molecule 21 is a protein called mS29.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Cg	487	Total	C	N	O	S	0	0
			3943	2524	691	708	20		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Cg	181	VAL	ALA	conflict	UNP Q585C2
Cg	498	ARG	-	expression tag	UNP Q585C2

- Molecule 22 is a protein called mS33.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Ci	165	Total	C	N	O	S	0	0
			1348	848	247	244	9		

- Molecule 23 is a protein called mS34.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Cj	226	Total	C	N	O	S	0	0
			1792	1138	310	340	4		

- Molecule 24 is a protein called mS35.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Ck	673	Total	C	N	O	S	0	0
			5371	3371	974	1002	24		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Ck	107	SER	LEU	conflict	UNP Q387C7
Ck	144	PHE	LEU	conflict	UNP Q387C7
Ck	253	TYR	PHE	conflict	UNP Q387C7
Ck	339	GLU	VAL	conflict	UNP Q387C7
Ck	815	GLY	ARG	conflict	UNP Q387C7
Ck	871	GLY	GLU	conflict	UNP Q387C7

- Molecule 25 is a protein called mS37.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Cm	31	Total	C	N	O	S	0	0
			232	136	43	47	6		

- Molecule 26 is a protein called mS38.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Cn	49	Total	C	N	O	S	0	0
			425	278	88	56	3		

- Molecule 27 is a protein called Protein FYV4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Cp	168	Total	C	N	O	S	0	0
			1428	904	259	260	5		

- Molecule 28 is a protein called mS49.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	DB	1106	Total	C	N	O	S	0	0
			9112	5669	1712	1703	28		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DB	359	ILE	THR	conflict	UNP C9ZJE4

- Molecule 29 is a protein called mS50.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	DC	1099	Total	C	N	O	S	0	0
			8766	5528	1548	1659	31		

- Molecule 30 is a protein called mS51.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	DD	764	Total	C	N	O	S	0	0
			6308	3998	1131	1143	36		

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DD	1	UNK	-	expression tag	UNP D0A752
DD	2	UNK	-	expression tag	UNP D0A752
DD	3	UNK	-	expression tag	UNP D0A752
DD	4	UNK	-	expression tag	UNP D0A752
DD	5	UNK	-	expression tag	UNP D0A752
DD	6	UNK	-	expression tag	UNP D0A752
DD	7	UNK	-	expression tag	UNP D0A752
DD	8	UNK	-	expression tag	UNP D0A752
DD	9	UNK	-	expression tag	UNP D0A752
DD	10	UNK	-	expression tag	UNP D0A752
DD	11	UNK	-	expression tag	UNP D0A752
DD	12	UNK	-	expression tag	UNP D0A752
DD	13	UNK	-	expression tag	UNP D0A752
DD	14	UNK	-	expression tag	UNP D0A752
DD	15	UNK	-	expression tag	UNP D0A752
DD	16	UNK	-	expression tag	UNP D0A752
DD	17	UNK	-	expression tag	UNP D0A752
DD	26	UNK	ARG	conflict	UNP D0A752

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Chain	Residue	Modelled	Actual	Comment	Reference
DD	27	UNK	MET	conflict	UNP D0A752
DD	28	UNK	MET	conflict	UNP D0A752
DD	29	UNK	ARG	conflict	UNP D0A752
DD	30	UNK	ALA	conflict	UNP D0A752
DD	31	UNK	GLY	conflict	UNP D0A752
DD	32	UNK	SER	conflict	UNP D0A752
DD	33	UNK	GLY	conflict	UNP D0A752
DD	34	UNK	TYR	conflict	UNP D0A752
DD	35	UNK	GLN	conflict	UNP D0A752
DD	36	UNK	GLN	conflict	UNP D0A752
DD	37	UNK	LEU	conflict	UNP D0A752
DD	38	UNK	ARG	conflict	UNP D0A752
DD	39	UNK	ARG	conflict	UNP D0A752
DD	40	UNK	MET	conflict	UNP D0A752
DD	41	UNK	GLY	conflict	UNP D0A752
DD	42	UNK	MET	conflict	UNP D0A752
DD	43	UNK	PRO	conflict	UNP D0A752
DD	44	UNK	MET	conflict	UNP D0A752
DD	45	UNK	GLN	conflict	UNP D0A752
DD	46	UNK	VAL	conflict	UNP D0A752
DD	47	UNK	GLY	conflict	UNP D0A752
DD	48	UNK	MET	conflict	UNP D0A752
DD	49	UNK	GLY	conflict	UNP D0A752
DD	50	UNK	TRP	conflict	UNP D0A752
DD	51	UNK	ARG	conflict	UNP D0A752
DD	52	UNK	LYS	conflict	UNP D0A752
DD	53	UNK	VAL	conflict	UNP D0A752
DD	54	UNK	ASP	conflict	UNP D0A752
DD	55	UNK	SER	conflict	UNP D0A752
DD	56	UNK	PHE	conflict	UNP D0A752

- Molecule 31 is a protein called mS52.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	DE	628	Total	C	N	O	S	0	0
			5114	3243	926	924	21		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DE	378	UNK	LYS	conflict	UNP Q386Q7
DE	384	UNK	THR	conflict	UNP Q386Q7

- Molecule 32 is a protein called mS53.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	DF	594	Total	C	N	O	S	0	0
			4785	3001	904	855	25		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DF	18	THR	ALA	conflict	UNP C9ZXX4
DF	372	ASN	ASP	conflict	UNP C9ZXX4
DF	406	ASN	SER	conflict	UNP C9ZXX4
DF	636	UNK	GLY	conflict	UNP C9ZXX4
DF	638	LYS	ARG	conflict	UNP C9ZXX4

- Molecule 33 is a protein called mS54.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	DG	557	Total	C	N	O	S	0	0
			4511	2835	826	819	31		

- Molecule 34 is a protein called mS55.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	DH	568	Total	C	N	O	S	0	0
			4608	2888	858	840	22		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DH	75	GLN	LYS	conflict	UNP A0A3L6LGC8

- Molecule 35 is a protein called mS56.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	DI	390	Total	C	N	O	S	0	0
			3182	2020	554	594	14		

- Molecule 36 is a protein called mS57.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	DJ	356	Total	C	N	O	S	0	0
			2908	1855	511	528	14		

- Molecule 37 is a protein called mS58.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	DK	264	Total	C	N	O	S	0	0
			2092	1317	375	395	5		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DK	97	ASP	SER	conflict	UNP A0A3L6L3U6

- Molecule 38 is a protein called mS59.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	DL	234	Total	C	N	O	S	0	0
			1904	1216	342	335	11		

- Molecule 39 is a protein called mS62.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	DO	194	Total	C	N	O	S	0	0
			1567	981	286	291	9		

- Molecule 40 is a protein called mS63.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	DP	210	Total	C	N	O	S	0	0
			1784	1145	318	312	9		

- Molecule 41 is a protein called mS65.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	DR	252	Total	C	N	O	S	0	0
			2034	1309	371	344	10		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DR	128	PRO	SER	conflict	UNP C9ZPP1

- Molecule 42 is a protein called Rhodanese domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	DT	239	Total	C	N	O	S	0	0
			2058	1321	364	362	11		

- Molecule 43 is a protein called Ubiquitin-like domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	DU	217	Total	C	N	O	S	0	0
			1730	1091	305	329	5		

- Molecule 44 is a protein called mS69.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	DV	160	Total	C	N	O	S	0	0
			1346	855	252	235	4		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DV	163	ALA	THR	conflict	UNP Q57UZ6

- Molecule 45 is a protein called mS70.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	DW	136	Total	C	N	O	S	0	0
			1160	741	220	194	5		

- Molecule 46 is a protein called mS71.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	DX	129	Total	C	N	O	S	0	0
			1097	697	206	187	7		

- Molecule 47 is a protein called mS72.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	DY	154	Total	C	N	O	S	0	0
			1295	829	247	214	5		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
DY	34	HIS	ASP	conflict	UNP Q57YD4

- Molecule 48 is a protein called mS73.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	DZ	28	Total	C	N	O	S	0	0
			237	156	39	41	1		

- Molecule 49 is a protein called mS74.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Da	36	Total	C	N	O	S	0	0
			320	202	70	46	2		

- Molecule 50 is a protein called PPR_long domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	F2	890	Total	C	N	O	S	0	0
			7125	4483	1254	1349	39		

- Molecule 51 is a protein called mt-SAF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	F3	911	Total	C	N	O	S	0	0
			7039	4391	1250	1346	52		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F3	44	THR	ALA	conflict	UNP Q38E61
F3	190	VAL	ILE	conflict	UNP Q38E61
F3	303	ALA	SER	conflict	UNP Q38E61
F3	418	ASP	ASN	conflict	UNP Q38E61

- Molecule 52 is a protein called mt-SAF5.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	F5	620	Total	C	N	O	S	0	0
			5056	3154	938	933	31		

- Molecule 53 is a protein called DUF4460 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	F6	522	Total	C	N	O	S	0	0
			4195	2655	729	794	17		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F6	285	ARG	HIS	conflict	UNP Q38FQ8
F6	291	ILE	THR	conflict	UNP Q38FQ8
F6	602	ALA	VAL	conflict	UNP Q38FQ8
F6	676	CYS	-	expression tag	UNP Q38FQ8

- Molecule 54 is a protein called mt-SAF7.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	F7	652	Total	C	N	O	S	0	0
			5166	3284	908	938	36		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F7	36	ILE	THR	conflict	UNP Q57UW6
F7	470	GLU	LYS	conflict	UNP Q57UW6
F7	474	VAL	ALA	conflict	UNP Q57UW6

- Molecule 55 is a protein called mt-SAF9.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	F9	540	Total	C	N	O	S	0	0
			4422	2732	830	845	15		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F9	?	-	GLU	deletion	UNP C9ZSL5

- Molecule 56 is a protein called mt-SAF21.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	FM	327	Total	C	N	O	S	0	0
			2457	1521	450	466	20		
56	FN	320	Total	C	N	O	S	0	0
			2403	1484	440	459	20		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
FM	326	HIS	ARG	conflict	UNP C9ZJW2
FM	330	UNK	GLY	conflict	UNP C9ZJW2
FN	326	HIS	ARG	conflict	UNP C9ZJW2
FN	330	UNK	GLY	conflict	UNP C9ZJW2

- Molecule 57 is a protein called mt-SAF22.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	FO	328	Total	C	N	O	S	0	0
			2700	1692	513	481	14		

- Molecule 58 is a protein called mt-SAF23.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	FP	348	Total	C	N	O	S	0	0
			2643	1682	464	487	10		

- Molecule 59 is a protein called LMWPc domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	FW	238	Total	C	N	O	S	0	0
			1960	1227	375	352	6		

- Molecule 60 is a protein called mt-SAF27.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	FX	220	Total	C	N	O	S	0	0
			1741	1093	318	316	14		

- Molecule 61 is a protein called mt-SAF29.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	FZ	160	Total	C	N	O	S	0	0
			1262	786	212	257	7		

- Molecule 62 is a protein called mt-SAF31.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	Fb	125	Total	C	N	O	S	0	0
			1061	682	194	178	7		

- Molecule 63 is a protein called Acyl carrier protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	Fc	83	Total	C	N	O	S	0	0
			660	421	104	134	1		

- Molecule 64 is a protein called DUF4379 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	Fd	93	Total	C	N	O	S	0	0
			738	469	143	118	8		

- Molecule 65 is a protein called DNA photolyase, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	Ff	623	Total	C	N	O	S	0	0
			5006	3176	896	911	23		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Ff	109	ALA	VAL	conflict	UNP D0A9A9
Ff	127	UNK	TYR	conflict	UNP D0A9A9
Ff	138	GLN	ARG	conflict	UNP D0A9A9

- Molecule 66 is a protein called Acyl transferase-like protein, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	Fg	520	Total	C	N	O	S	0	0
			4048	2545	710	763	30		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Fg	159	ILE	VAL	conflict	UNP C9ZYZ4
Fg	271	ILE	VAL	conflict	UNP C9ZYZ4
Fg	363	MET	ARG	conflict	UNP C9ZYZ4
Fg	399	UNK	GLU	conflict	UNP C9ZYZ4
Fg	436	ASP	GLU	conflict	UNP C9ZYZ4

- Molecule 67 is a protein called mt-SAF37.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	Fh	239	Total	C	N	O	S	0	0
			1867	1159	346	348	14		

- Molecule 68 is a protein called mt-SAF38.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	Fi	475	Total	C	N	O	S	0	0
			3797	2410	693	670	24		

- Molecule 69 is a protein called Translation initiation factor IF-2, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	IA	704	Total	C	N	O	S	0	0
			5478	3433	986	1032	27		

- Molecule 70 is a protein called mt-SAF39.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	IB	491	Total	C	N	O	S	0	0
			3867	2415	723	712	17		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
IB	98	LYS	GLU	conflict	UNP D0A0V4
IB	206	ILE	MET	conflict	UNP D0A0V4
IB	572	HIS	ARG	conflict	UNP D0A0V4
IB	798	PRO	ALA	conflict	UNP D0A0V4

- Molecule 71 is a protein called Unk8.

Mol	Chain	Residues	Atoms				AltConf	Trace
71	U8	30	Total	C	N	O	0	0
			150	90	30	30		

- Molecule 72 is a protein called UnkC.

Mol	Chain	Residues	Atoms				AltConf	Trace
72	UC	9	Total	C	N	O	0	0
			45	27	9	9		

- Molecule 73 is a protein called UnkD.

Mol	Chain	Residues	Atoms				AltConf	Trace
73	UD	13	Total	C	N	O	0	0
			65	39	13	13		

- Molecule 74 is a protein called UnkF.

Mol	Chain	Residues	Atoms				AltConf	Trace
74	UF	36	Total	C	N	O	0	0
			180	108	36	36		

- Molecule 75 is a protein called UnkG.

Mol	Chain	Residues	Atoms				AltConf	Trace
75	UG	15	Total	C	N	O	0	0
			75	45	15	15		

- Molecule 76 is a protein called UnkI.

Mol	Chain	Residues	Atoms				AltConf	Trace
76	UI	6	Total	C	N	O	0	0
			30	18	6	6		

- Molecule 77 is a protein called UnkK.

Mol	Chain	Residues	Atoms				AltConf	Trace
77	UK	24	Total	C	N	O	0	0
			120	72	24	24		

- Molecule 78 is a protein called Unk.

Mol	Chain	Residues	Atoms				AltConf	Trace
78	UM	8	Total	C	N	O	0	0
			40	24	8	8		
78	UN	8	Total	C	N	O	0	0
			40	24	8	8		
78	UQ	8	Total	C	N	O	0	0
			40	24	8	8		

- Molecule 79 is a protein called UnkP.

Mol	Chain	Residues	Atoms				AltConf	Trace
79	UP	32	Total	C	N	O	0	0
			160	96	32	32		

- Molecule 80 is a protein called Unka.

Mol	Chain	Residues	Atoms				AltConf	Trace
80	Ua	10	Total	C	N	O	0	0
			50	30	10	10		

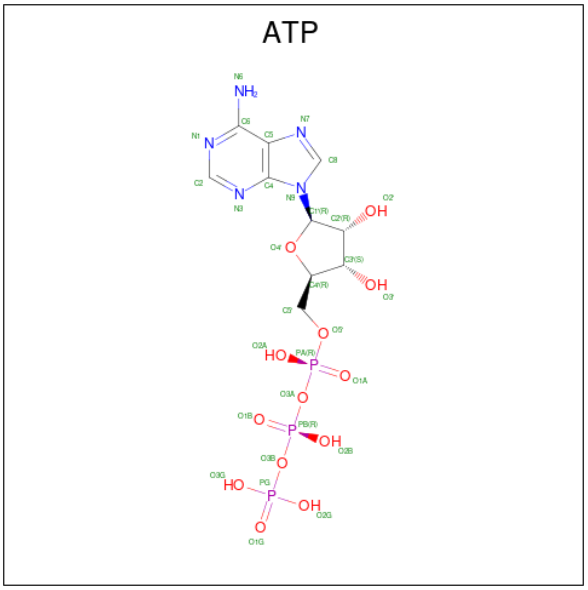
- Molecule 81 is a protein called Unkg.

Mol	Chain	Residues	Atoms				AltConf	Trace
81	Ug	238	Total	C	N	O	0	0
			1190	714	238	238		

- Molecule 82 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

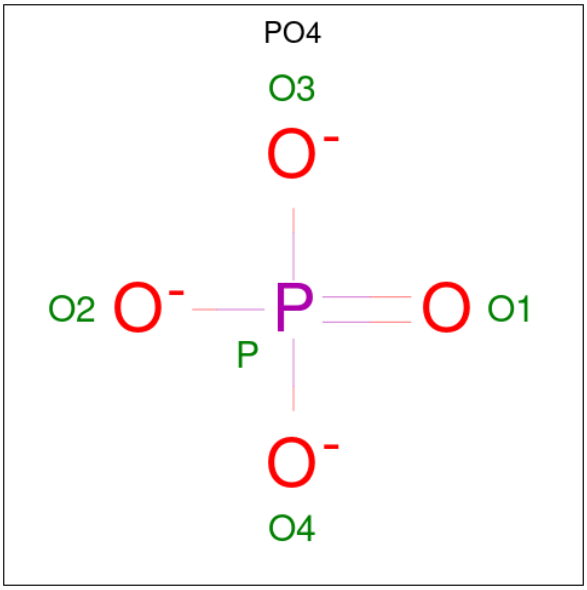
Mol	Chain	Residues	Atoms		AltConf
82	CA	4	Total	Mg	0
			4	4	
82	CQ	1	Total	Mg	0
			1	1	
82	Cg	1	Total	Mg	0
			1	1	
82	IA	1	Total	Mg	0
			1	1	

- Molecule 83 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



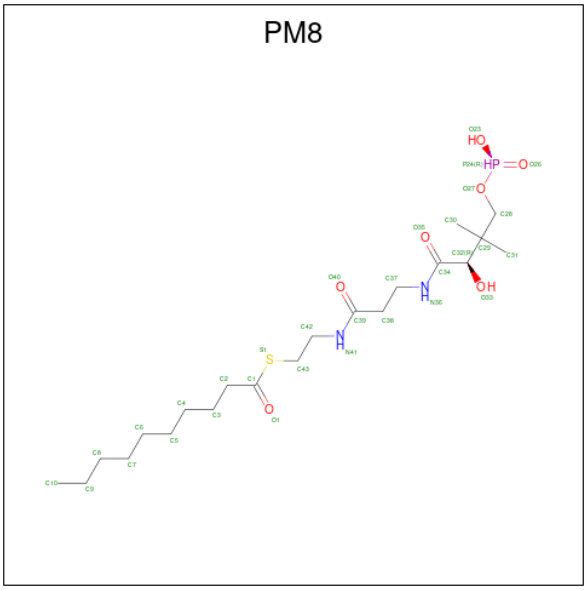
Mol	Chain	Residues	Atoms					AltConf
83	Cg	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 84 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			AltConf
84	FW	1	Total	O	P	0
			5	4	1	
84	IA	1	Total	O	P	0
			5	4	1	

- Molecule 85 is S-(2-{[N-(2-HYDROXY-4-{[HYDROXY(OXIDO)PHOSPHINO]OXY}-3,3-DIMETHYLBUTANOYL)-BETA-ALANYL]AMINO}ETHYL) DECANETHIOATE (three-letter code: PM8) (formula: $C_{21}H_{41}N_2O_7PS$).

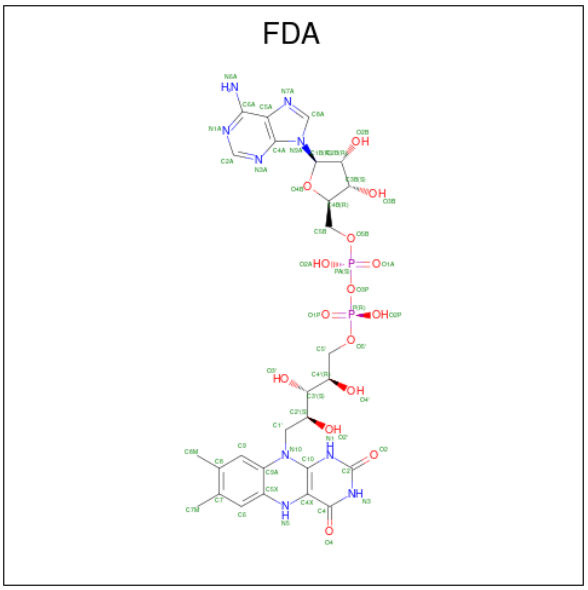


Mol	Chain	Residues	Atoms						AltConf
85	Fc	1	Total	C	N	O	P	S	0
			32	21	2	7	1	1	

- Molecule 86 is ZINC ION (three-letter code: ZN) (formula: Zn).

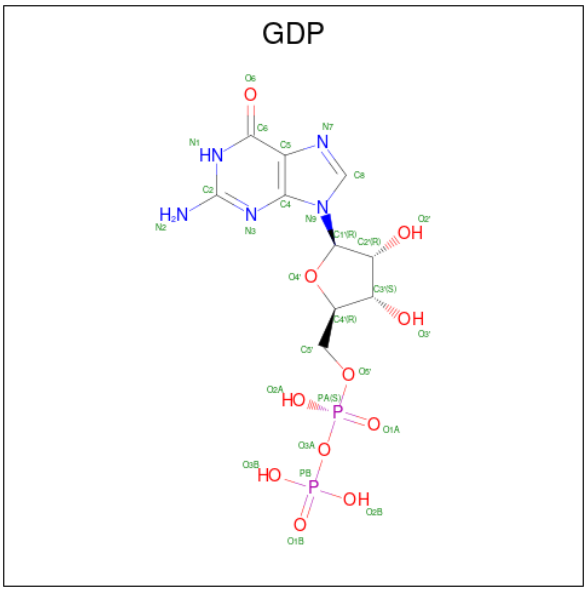
Mol	Chain	Residues	Atoms		AltConf
86	Fd	1	Total	Zn	0
			1	1	

- Molecule 87 is DIHYDROFLAVINE-ADENINE DINUCLEOTIDE (three-letter code: FDA) (formula: $C_{27}H_{35}N_9O_{15}P_2$).



Mol	Chain	Residues	Atoms					AltConf
87	Ff	1	Total	C	N	O	P	0
			53	27	9	15	2	

- Molecule 88 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



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

- Molecule 89 is water.

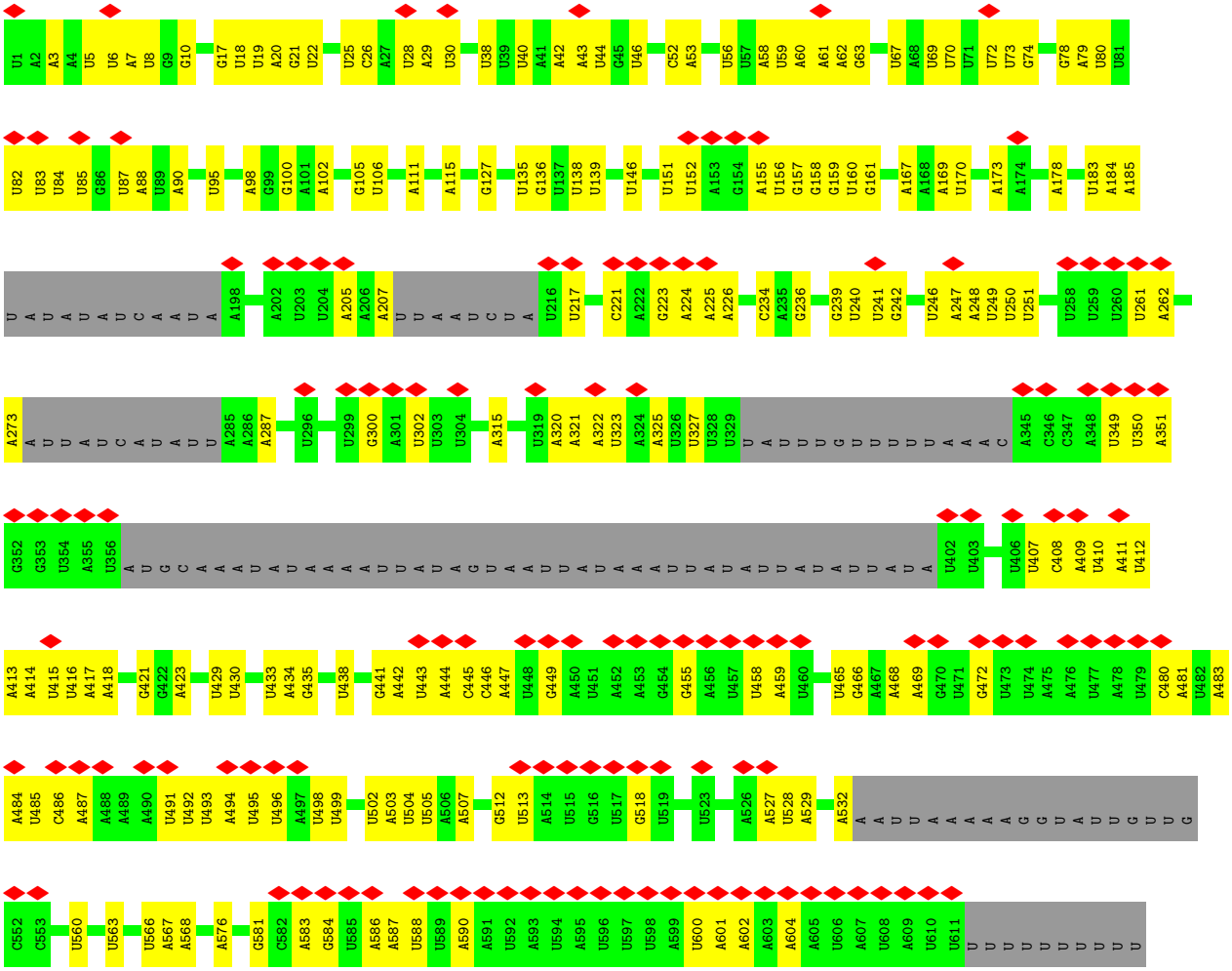
Mol	Chain	Residues	Atoms		AltConf
89	Cg	3	Total	O	0
			3	3	
89	IA	2	Total	O	0
			2	2	

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

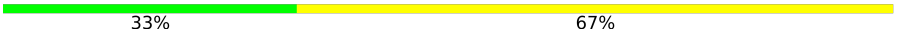
• Molecule 1: 9S rRNA

Chain CA:



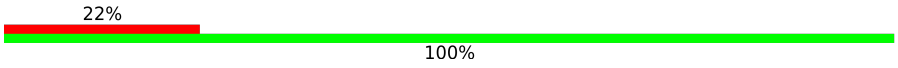
• Molecule 2: 9S rRNA

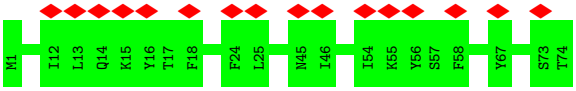
Chain CB:



• Molecule 3: uS3m

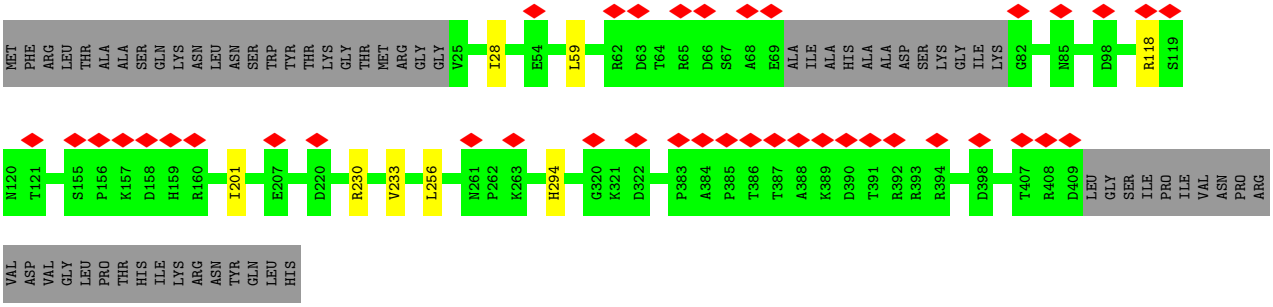
Chain CC:





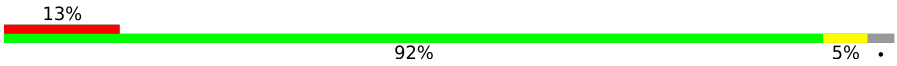
• Molecule 4: Ribosomal_S5_C domain-containing protein

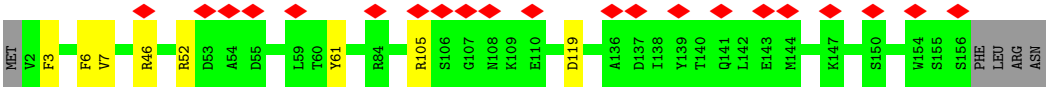
Chain CE:



• Molecule 5: bS6m

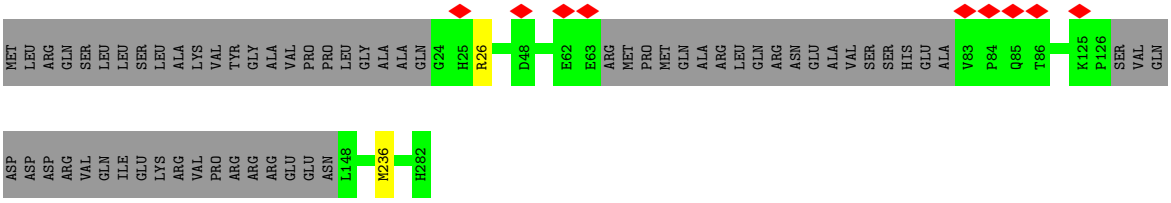
Chain CF:





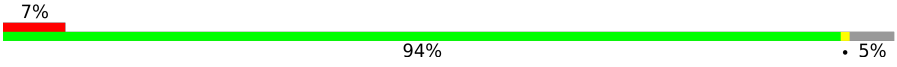
• Molecule 6: 30S ribosomal protein S8, putative

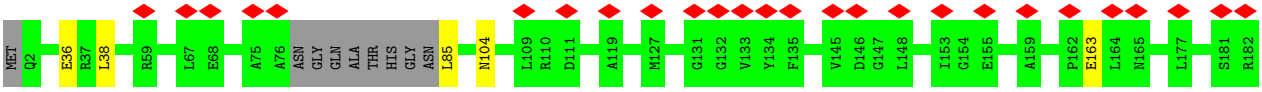
Chain CH:

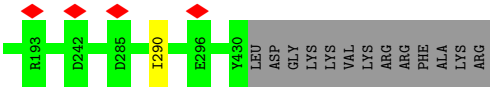


• Molecule 7: uS9m

Chain CI:

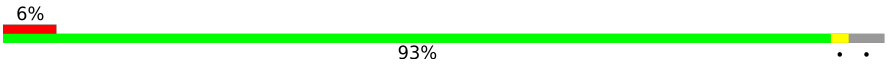


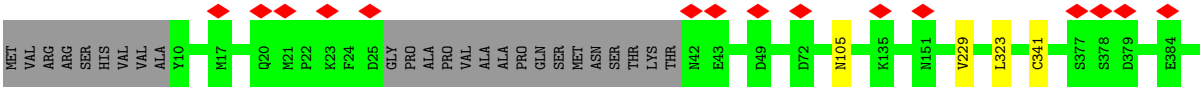


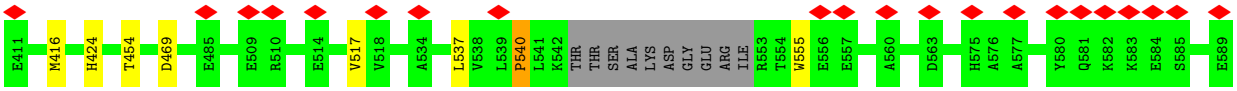


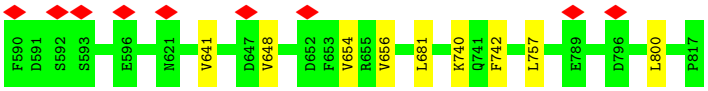
• Molecule 8: LysM domain-containing protein

Chain CJ:



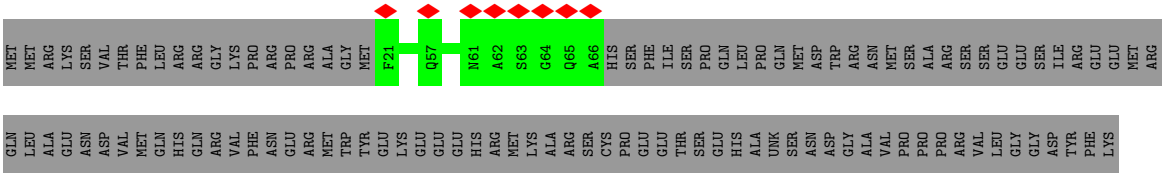






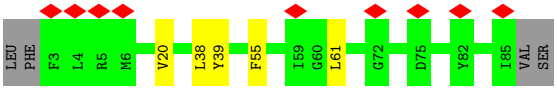
• Molecule 9: uS11m

Chain CK:



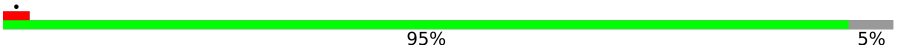
• Molecule 10: uS12m

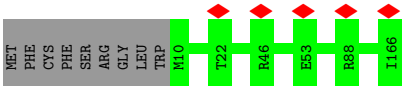
Chain CL:



• Molecule 11: uS14m

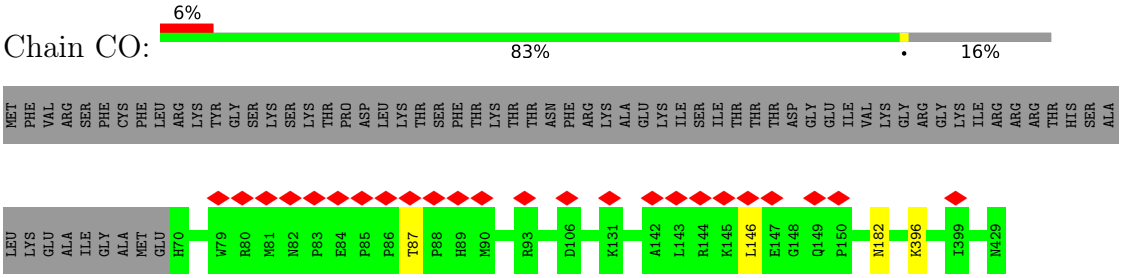
Chain CN:





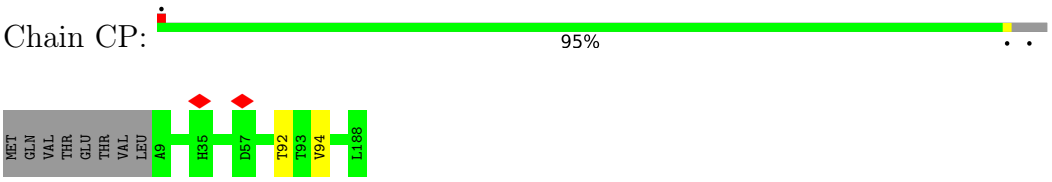
• Molecule 12: uS15m

Chain CO:



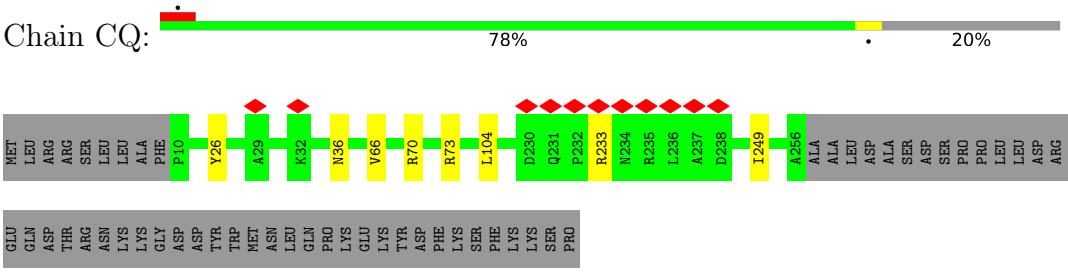
• Molecule 13: bS16m

Chain CP:



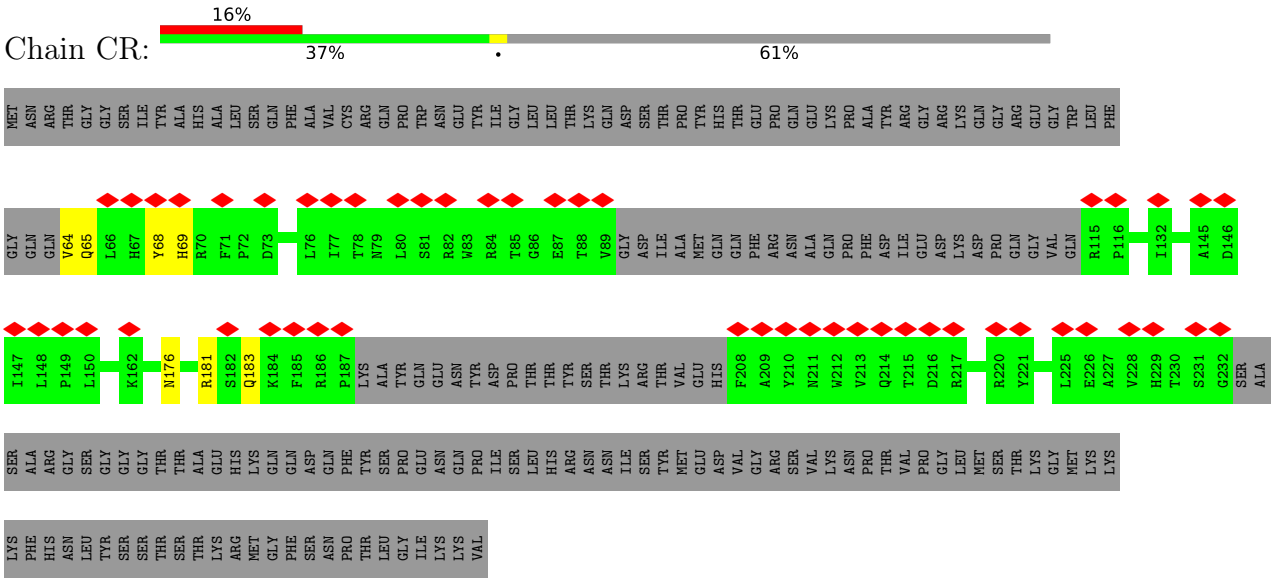
• Molecule 14: 30S Ribosomal protein S17, putative

Chain CQ:



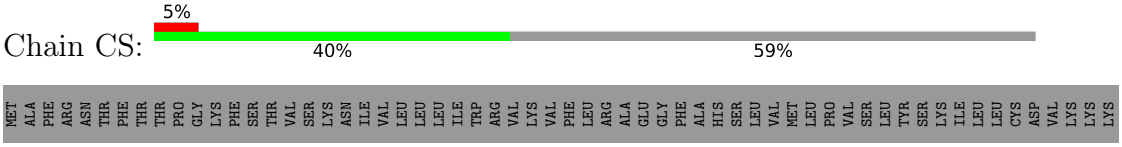
• Molecule 15: bS18m

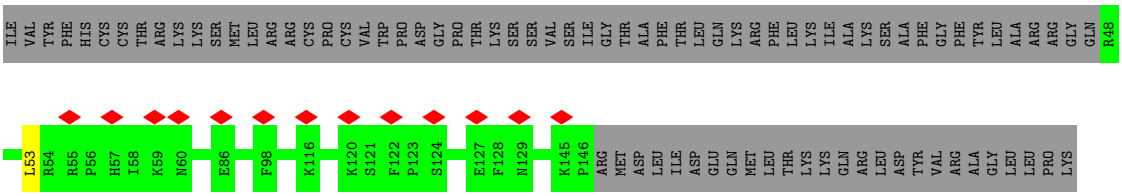
Chain CR:



• Molecule 16: uS19m

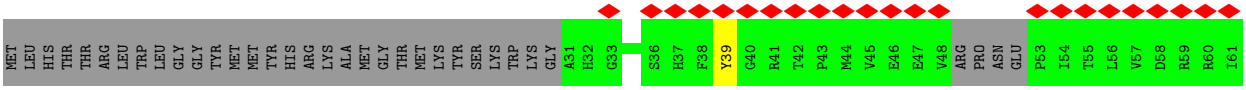
Chain CS:

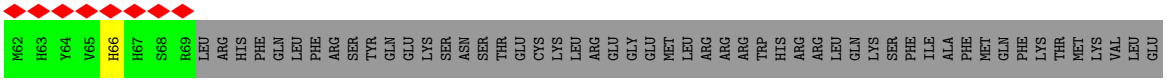




• Molecule 17: bS21m

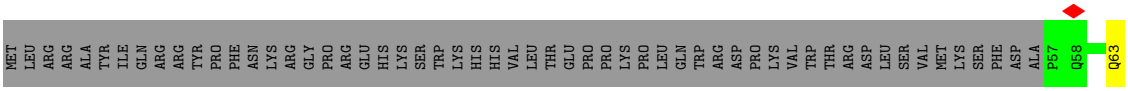
Chain CU:

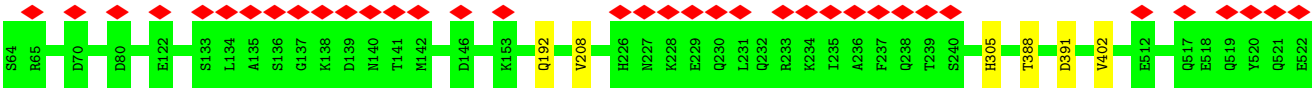


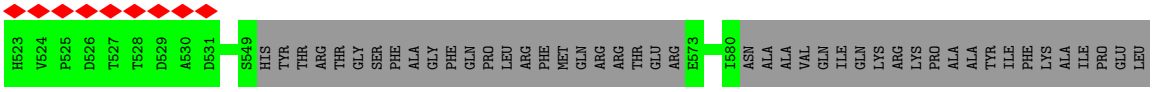


• Molecule 18: mS22

Chain Ca:

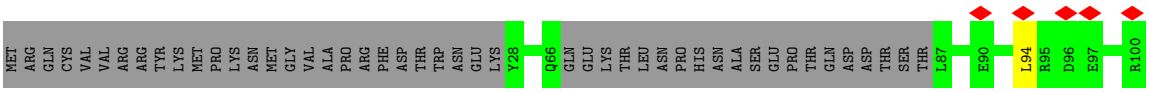


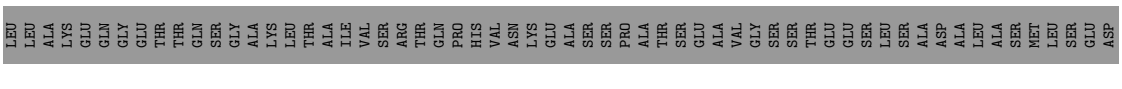


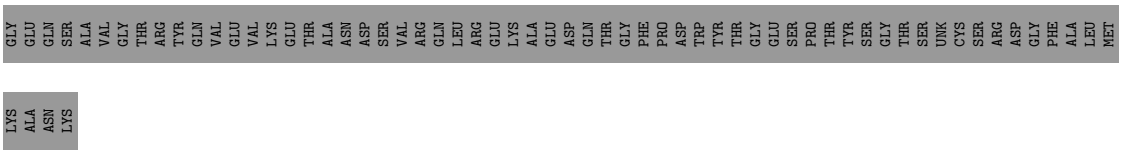


• Molecule 19: mS23

Chain Cb:

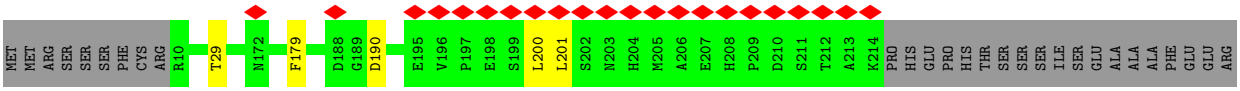






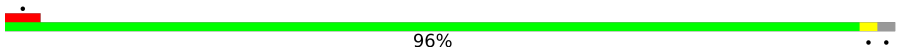
• Molecule 20: mS26

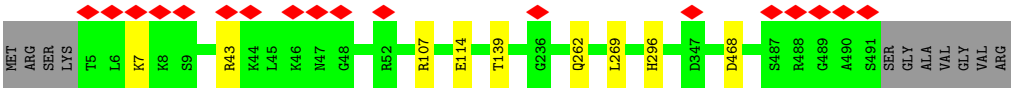
Chain Cd:



• Molecule 21: mS29

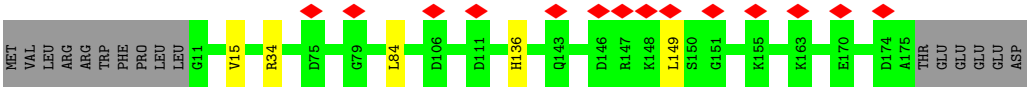
Chain Cg:





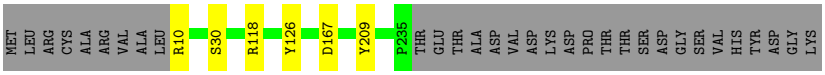
• Molecule 22: mS33

Chain Ci:



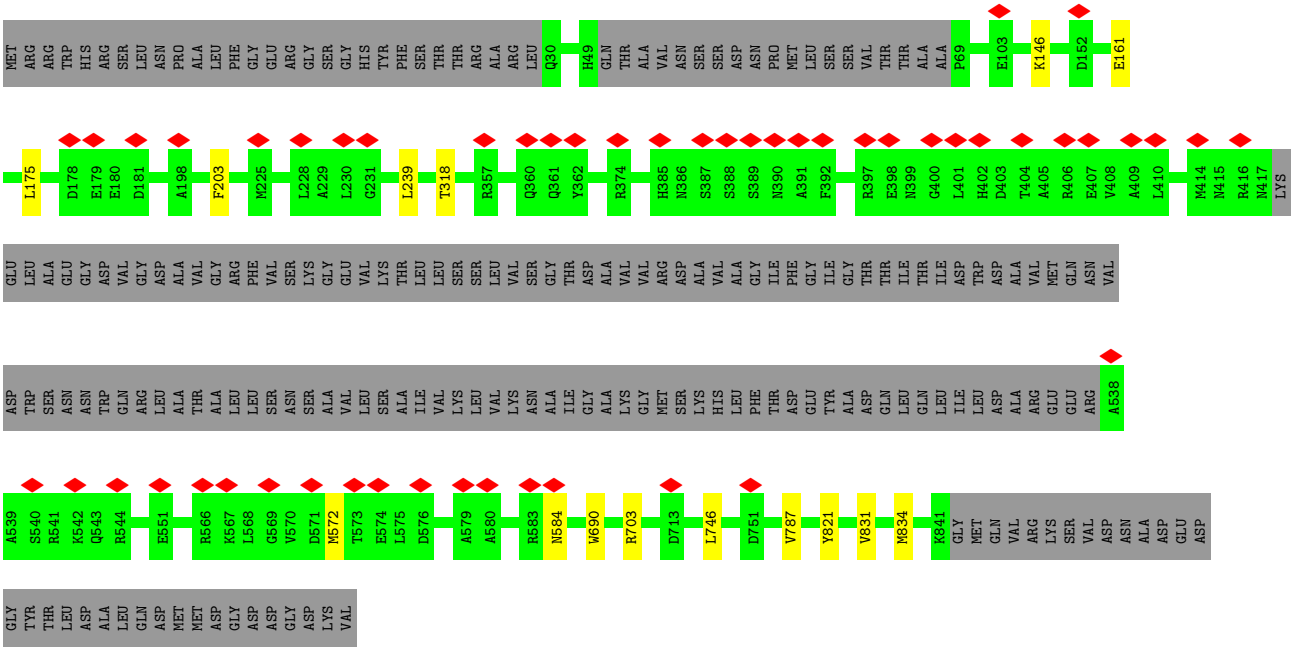
• Molecule 23: mS34

Chain Cj:



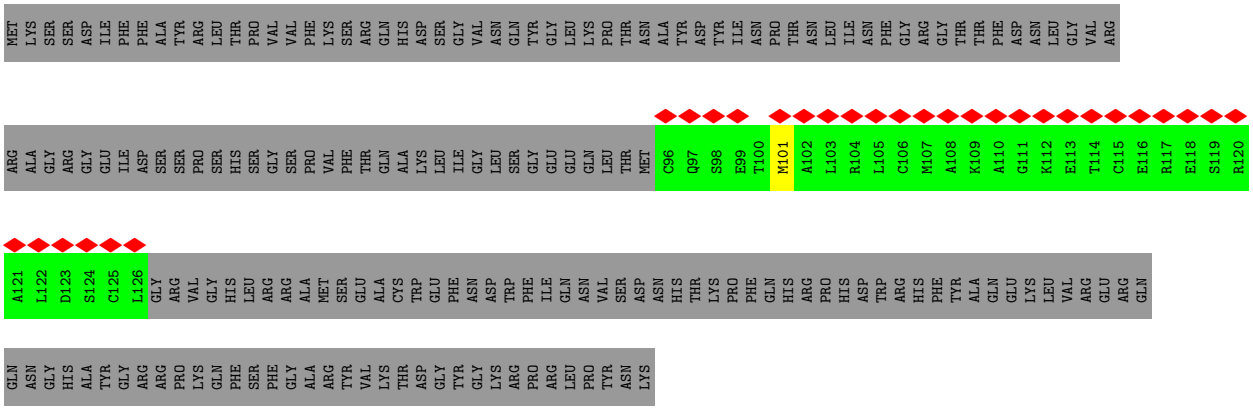
• Molecule 24: mS35

Chain Ck:



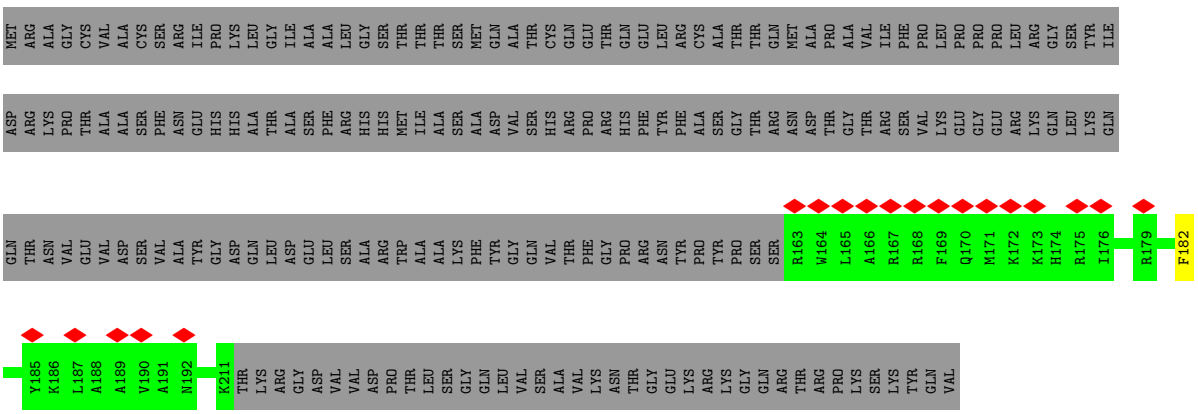
• Molecule 25: mS37

Chain Cm:



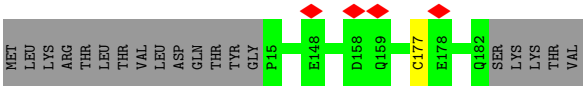
• Molecule 26: mS38

Chain Cn:



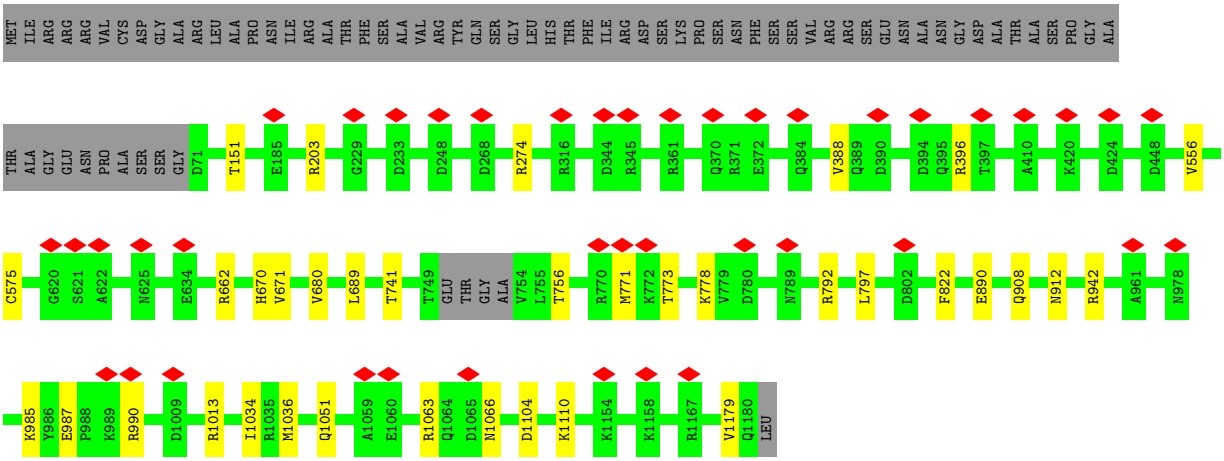
• Molecule 27: Protein FYV4, mitochondrial

Chain Cp:



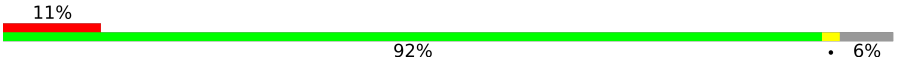
• Molecule 28: mS49

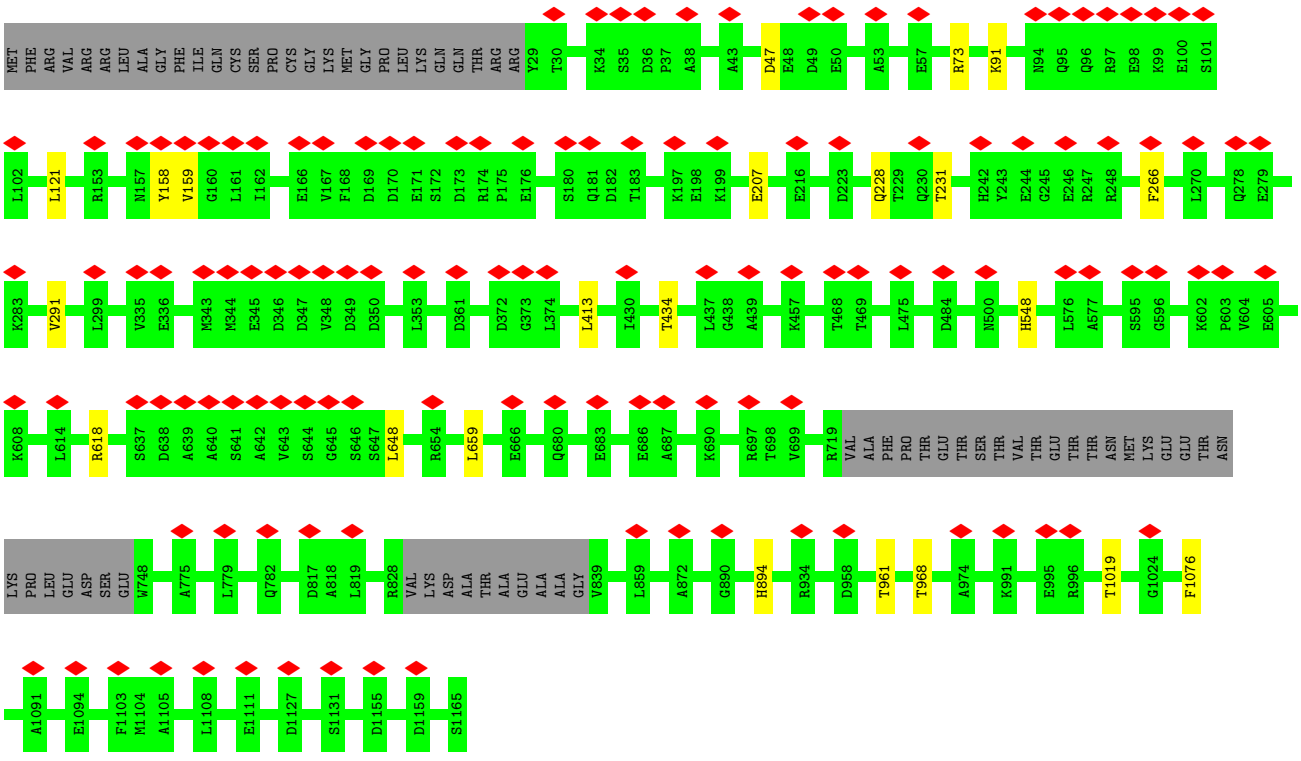
Chain DB:



• Molecule 29: mS50

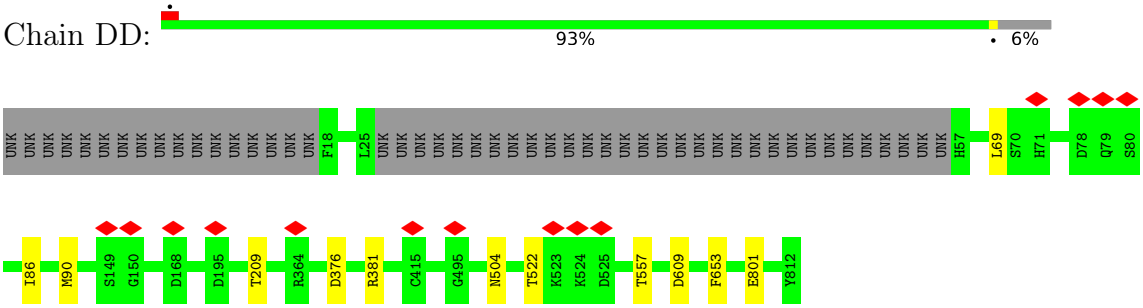
Chain DC:





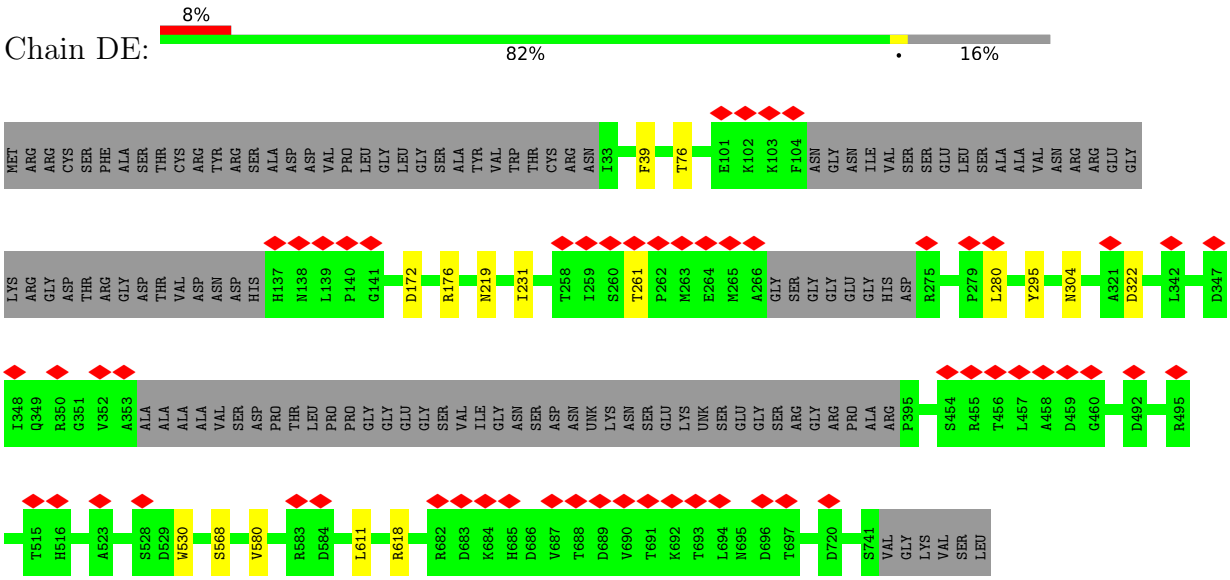
• Molecule 30: mS51

Chain DD:



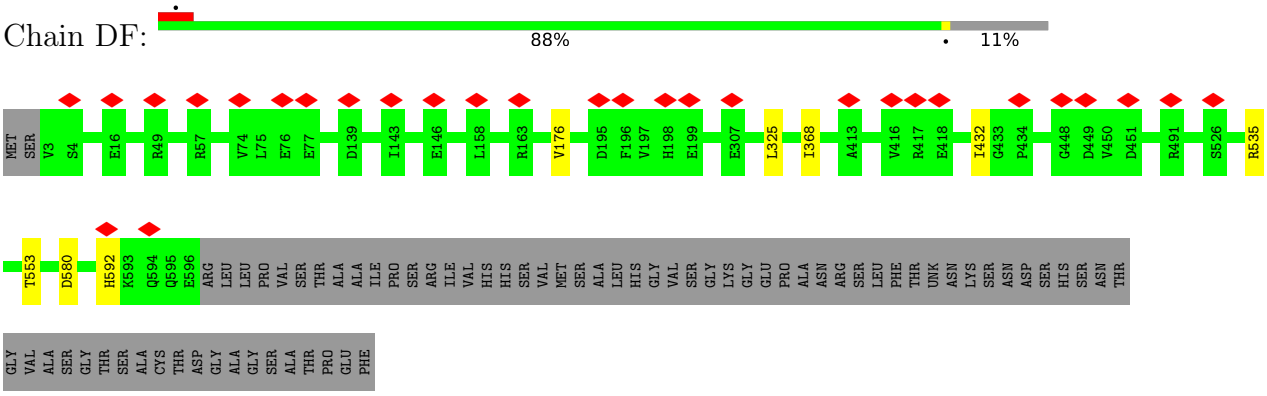
• Molecule 31: mS52

Chain DE:



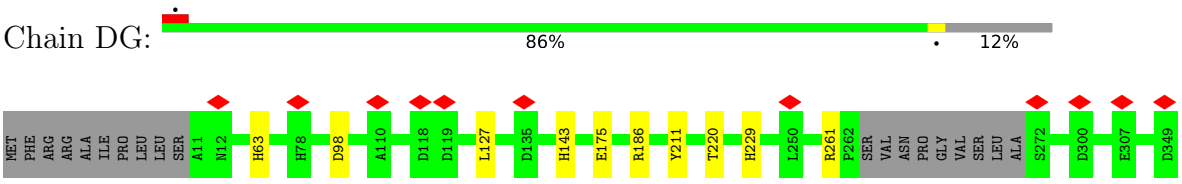
• Molecule 32: mS53

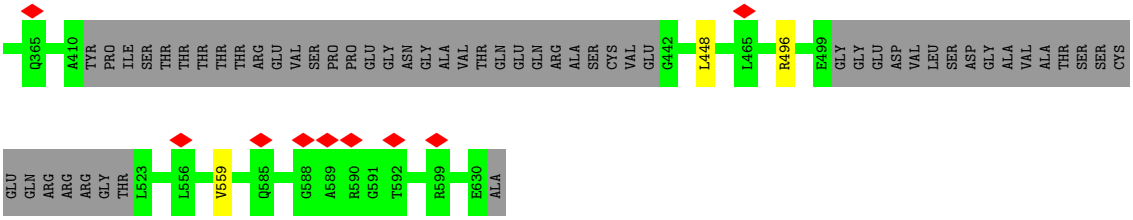
Chain DF:



• Molecule 33: mS54

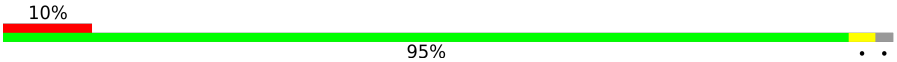
Chain DG:

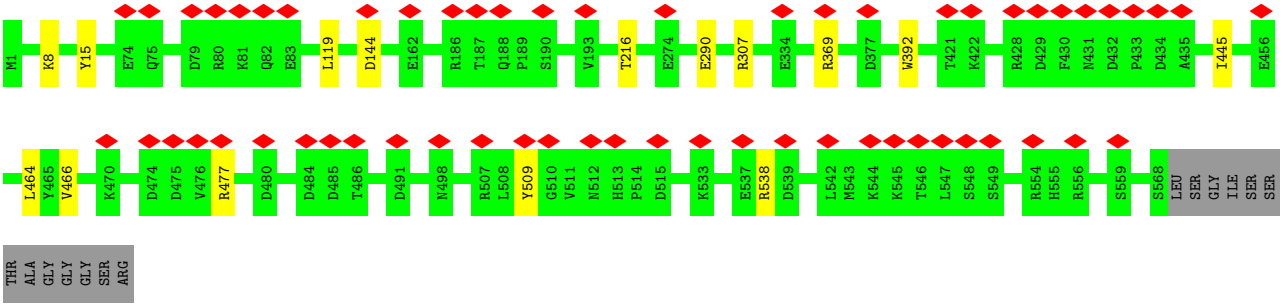




• Molecule 34: mS55

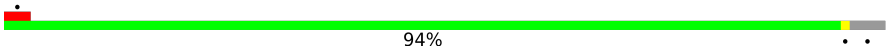
Chain DH:

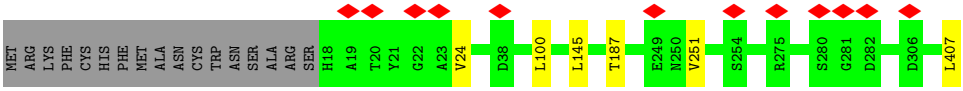




• Molecule 35: mS56

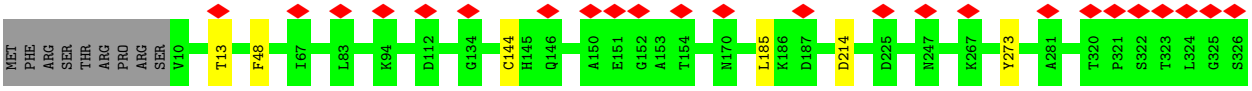
Chain DI:

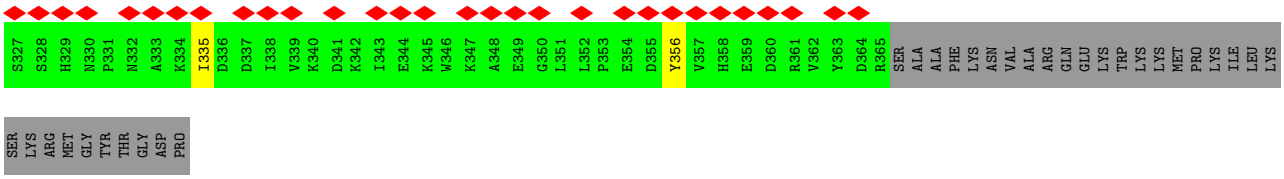




• Molecule 36: mS57

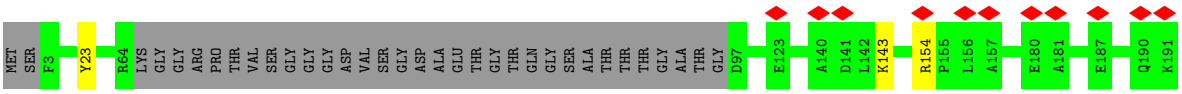
Chain DJ:

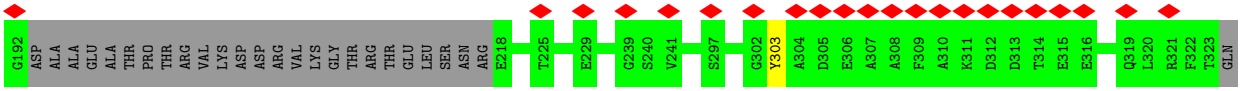




• Molecule 37: mS58

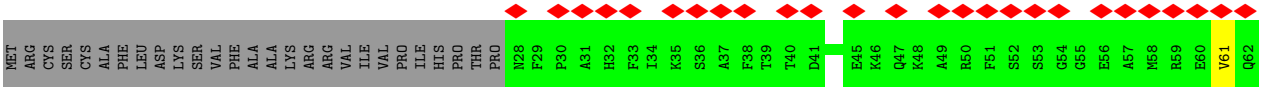
Chain DK:

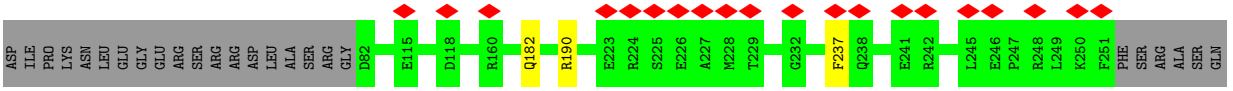


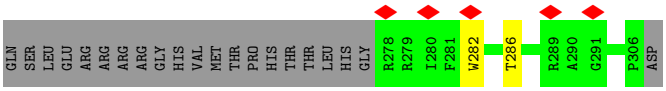


• Molecule 38: mS59

Chain DL:

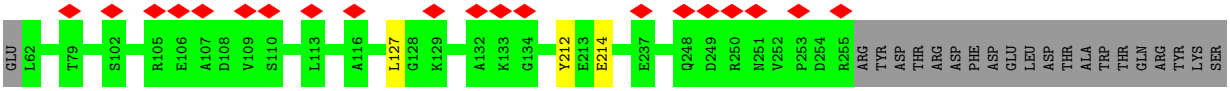


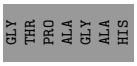




• Molecule 39: mS62

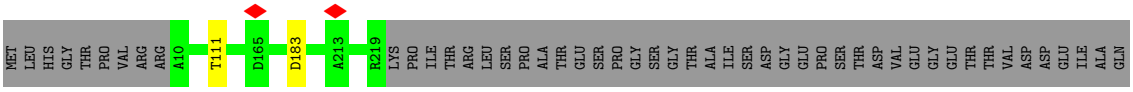
Chain DO:





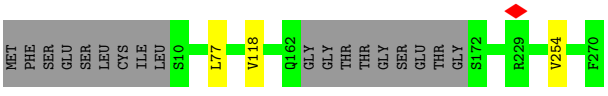
• Molecule 40: mS63

Chain DP:



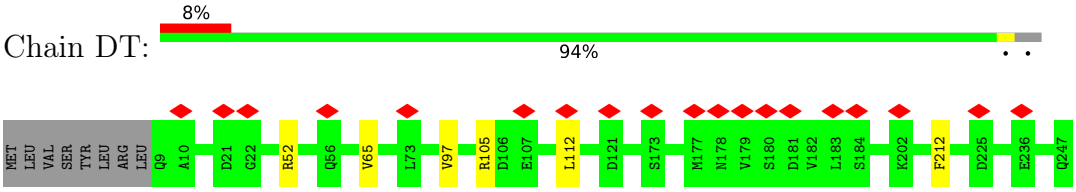
• Molecule 41: mS65

Chain DR:



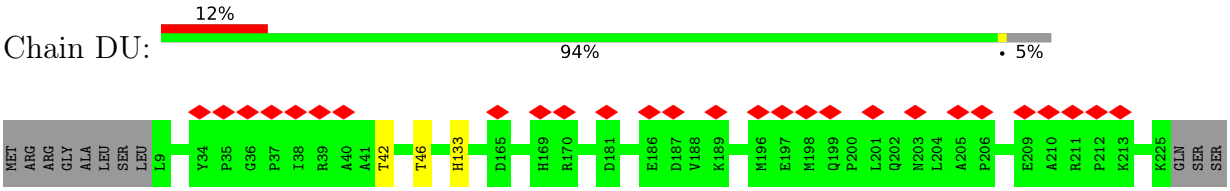
• Molecule 42: Rhodanese domain-containing protein

Chain DT:



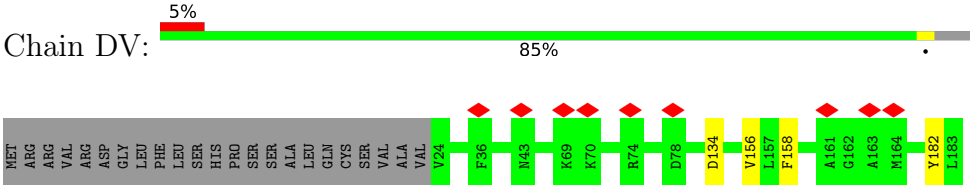
• Molecule 43: Ubiquitin-like domain-containing protein

Chain DU:



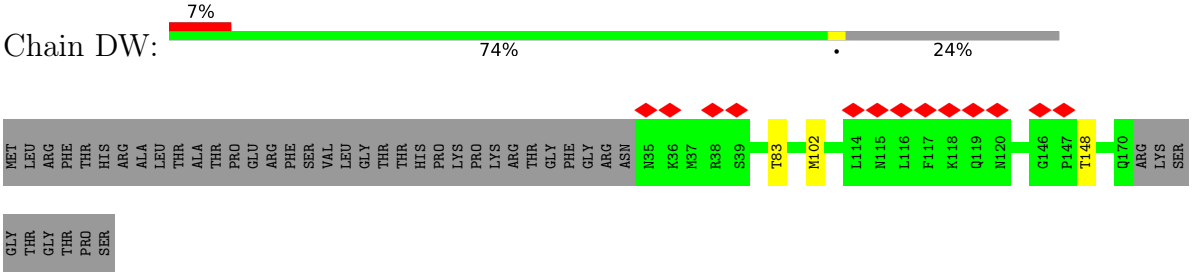
• Molecule 44: mS69

Chain DV:



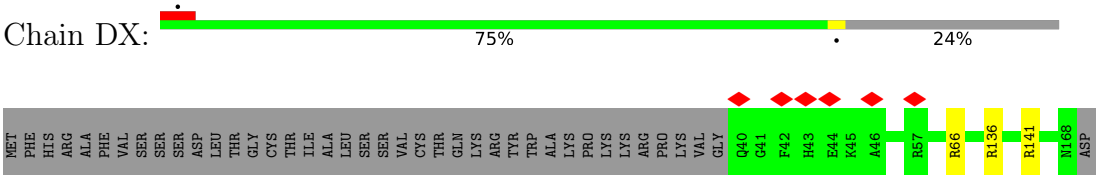
• Molecule 45: mS70

Chain DW:



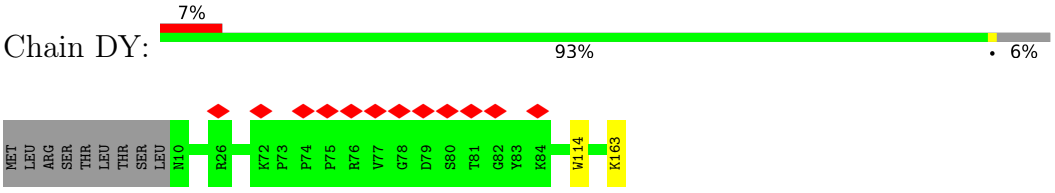
• Molecule 46: mS71

Chain DX:



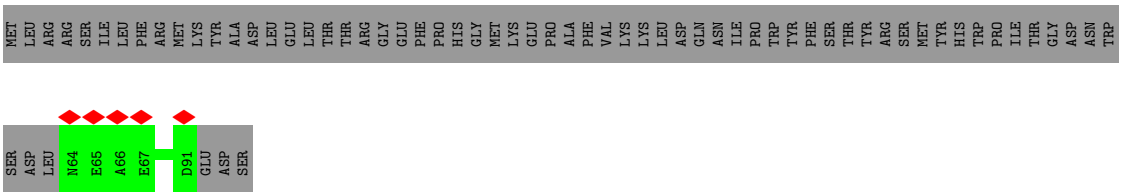
• Molecule 47: mS72

Chain DY:



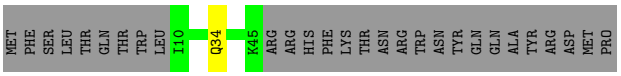
• Molecule 48: mS73

Chain DZ:



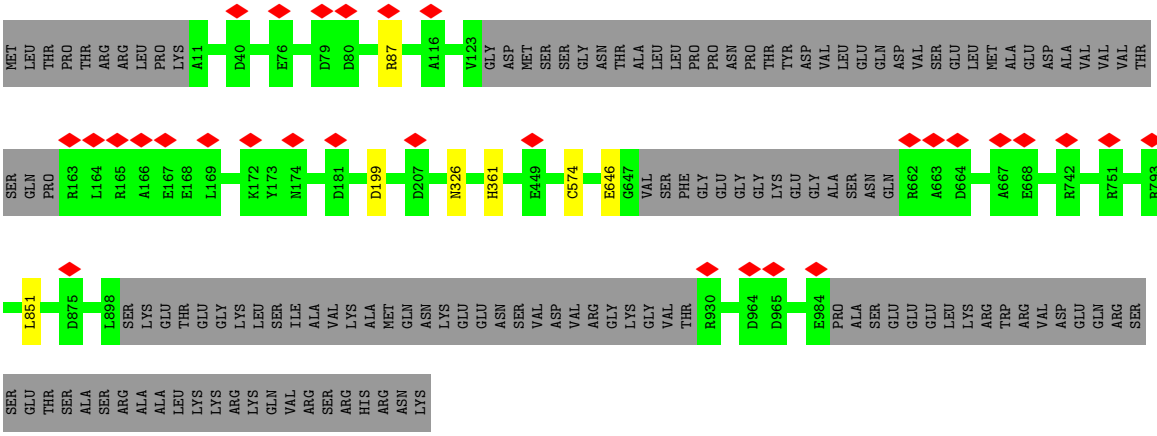
• Molecule 49: mS74

Chain Da:



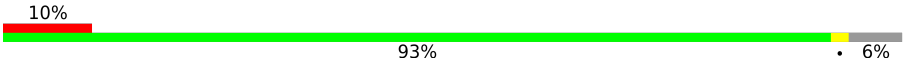
• Molecule 50: PPR_long domain-containing protein

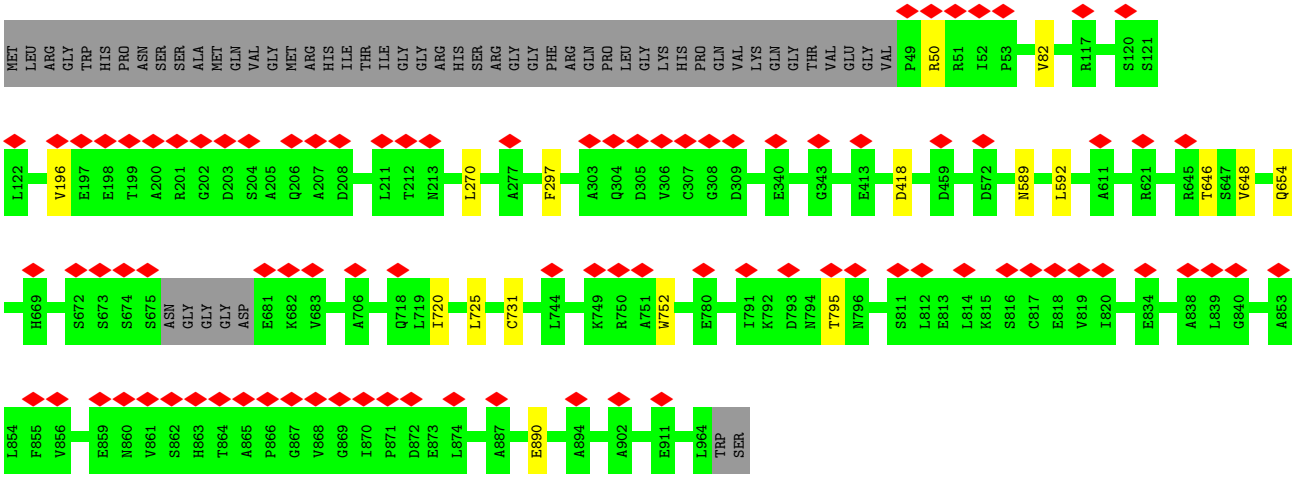
Chain F2:



• Molecule 51: mt-SAF3

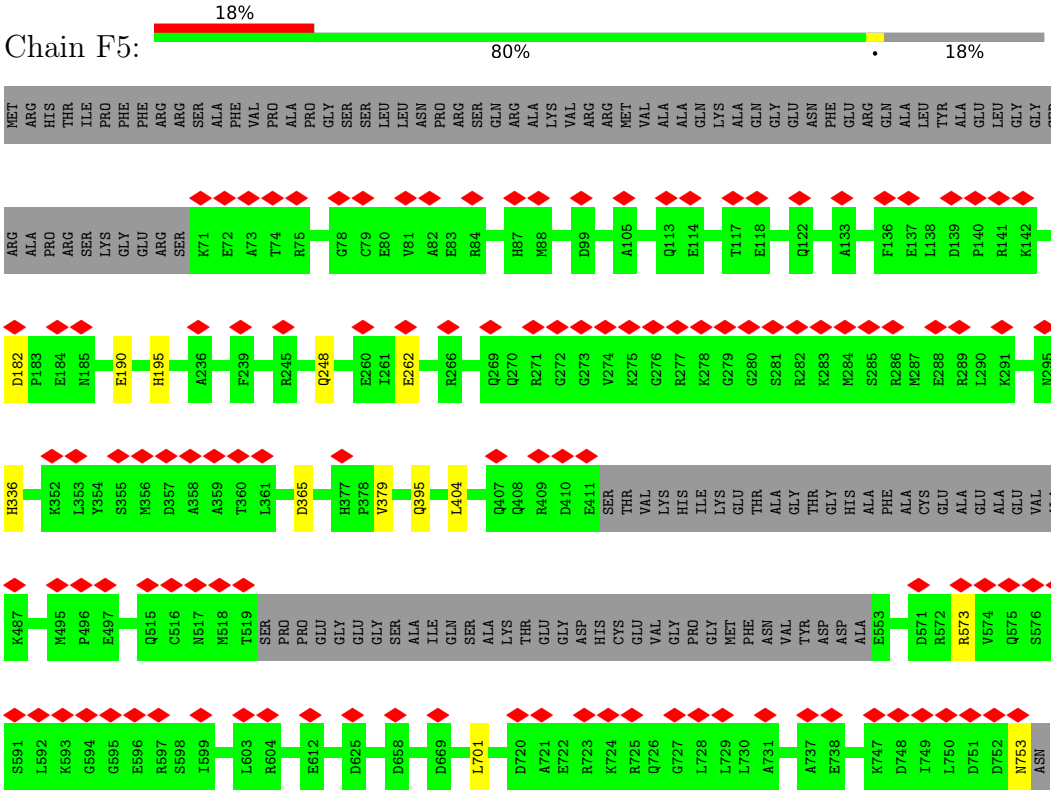
Chain F3:





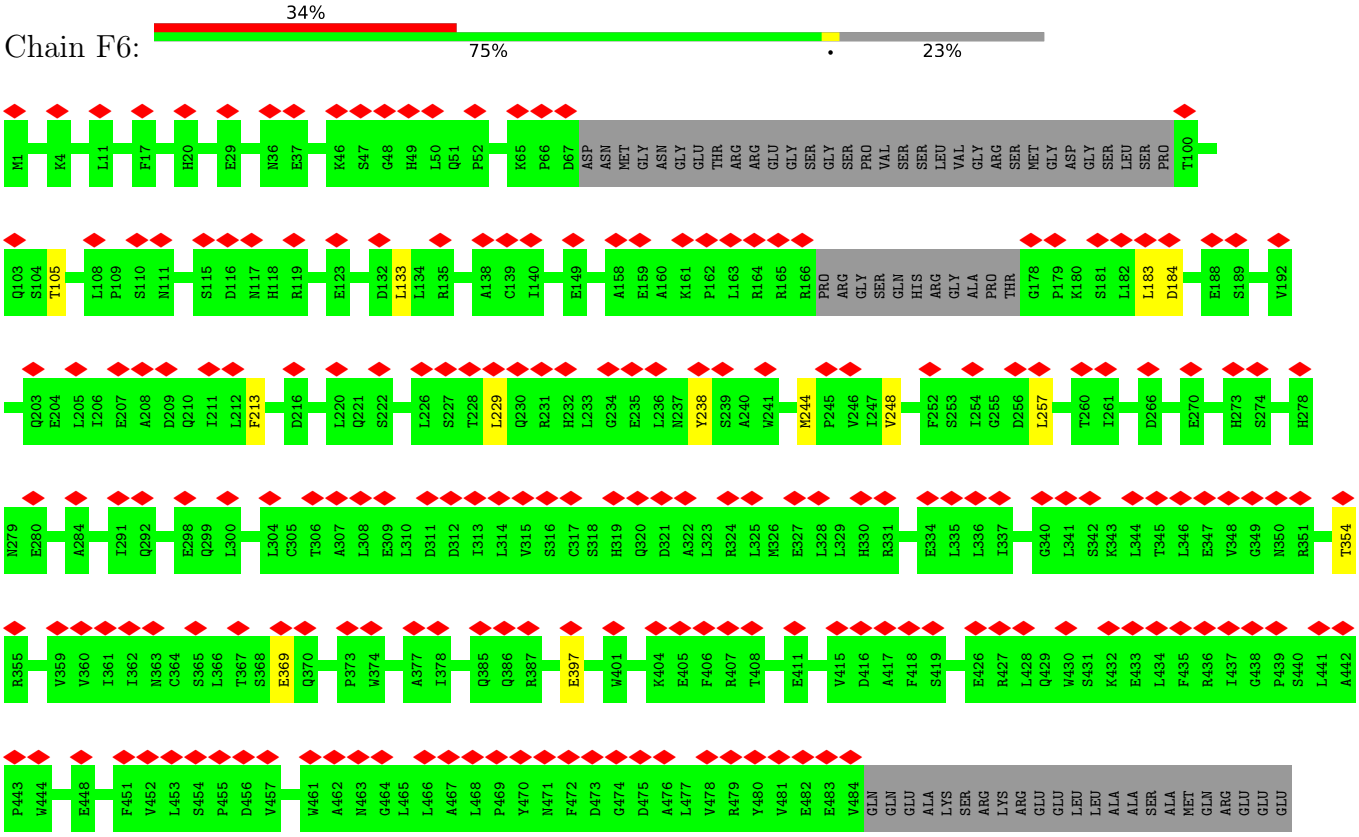
• Molecule 52: mt-SAF5

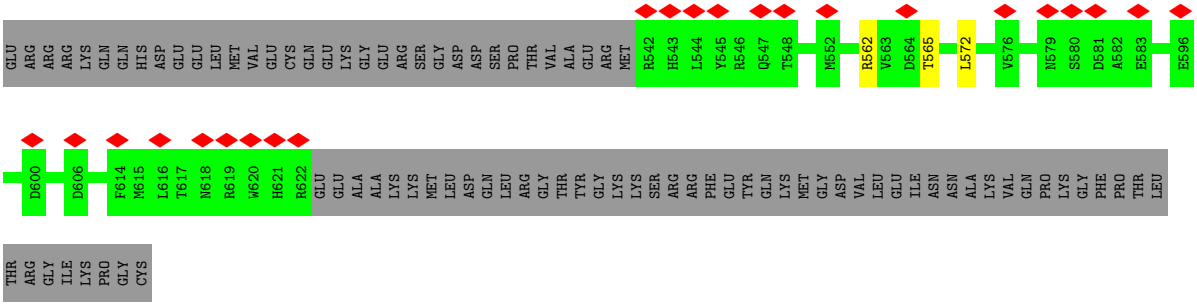
Chain F5:



• Molecule 53: DUF4460 domain-containing protein

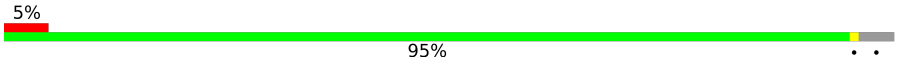
Chain F6:

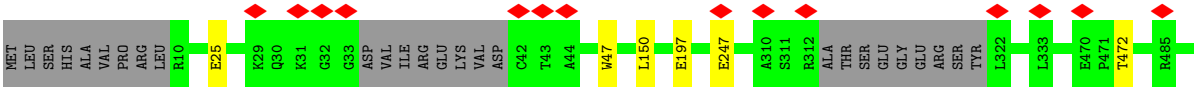


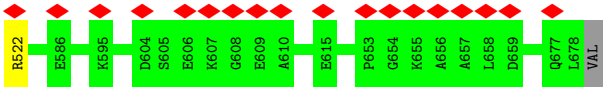


• Molecule 54: mt-SAF7

Chain F7:

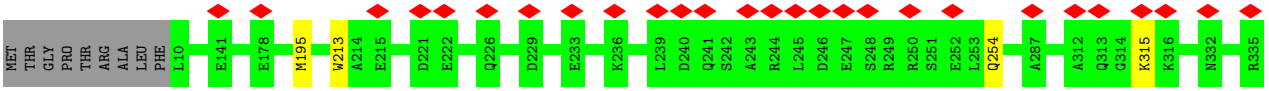


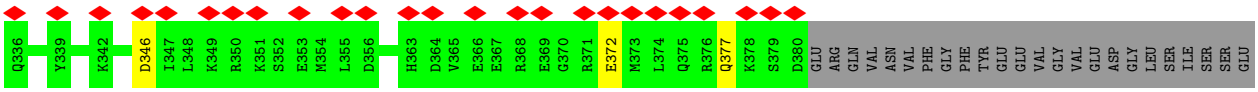


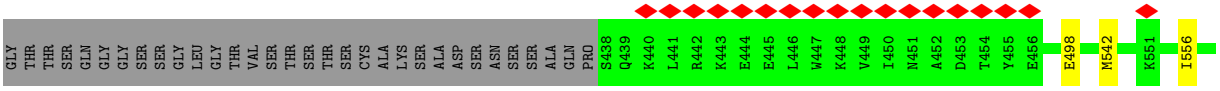


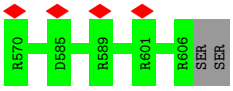
• Molecule 55: mt-SAF9

Chain F9:



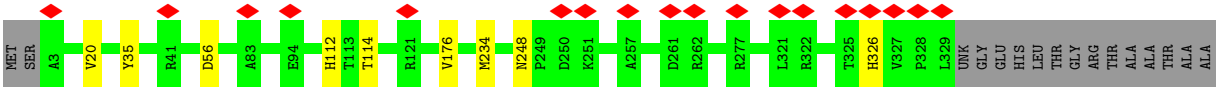






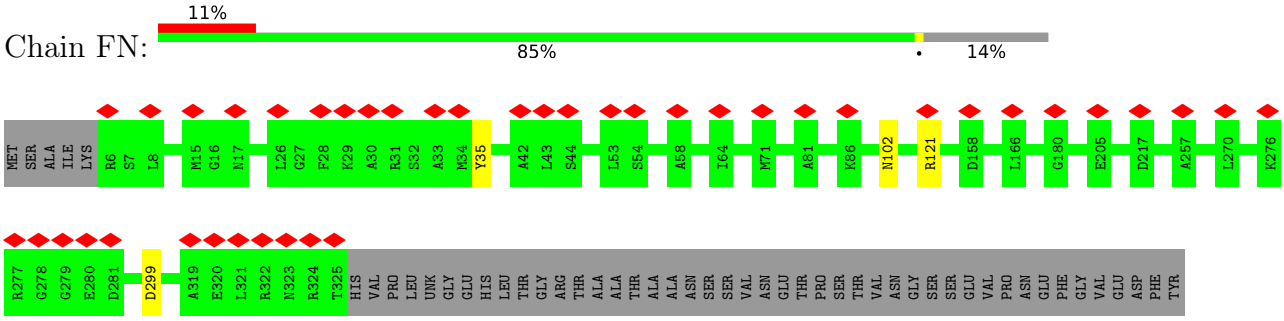
• Molecule 56: mt-SAF21

Chain FM:



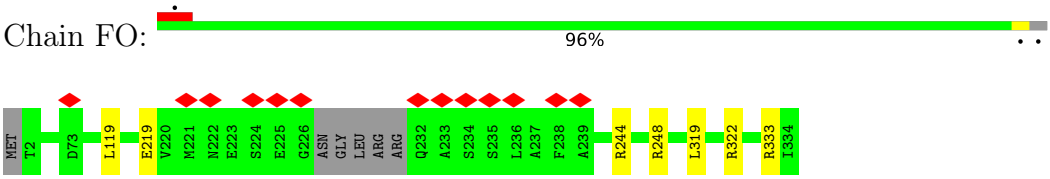
• Molecule 56: mt-SAF21

Chain FN:



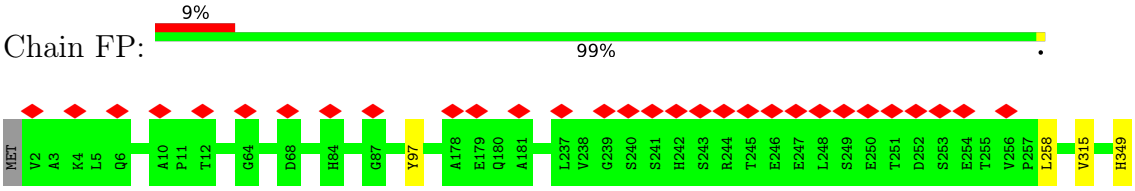
• Molecule 57: mt-SAF22

Chain FO:



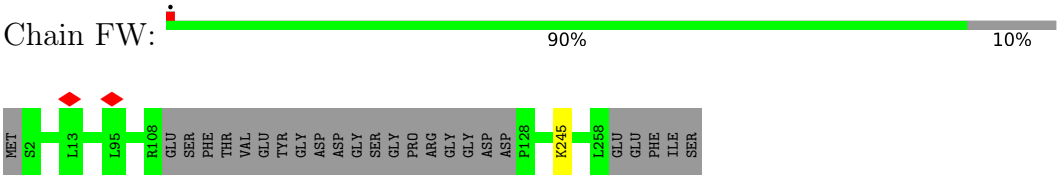
• Molecule 58: mt-SAF23

Chain FP:



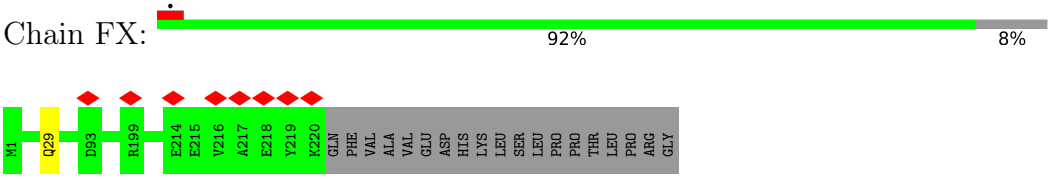
• Molecule 59: LMWPc domain-containing protein

Chain FW:



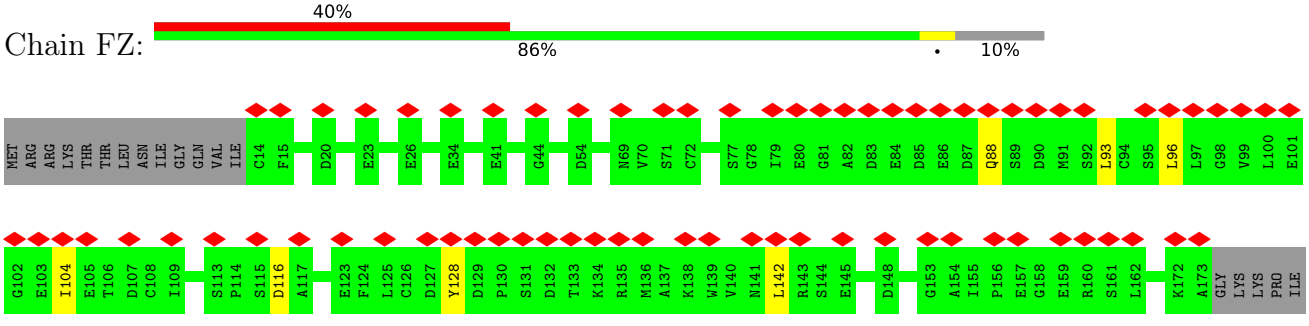
• Molecule 60: mt-SAF27

Chain FX:



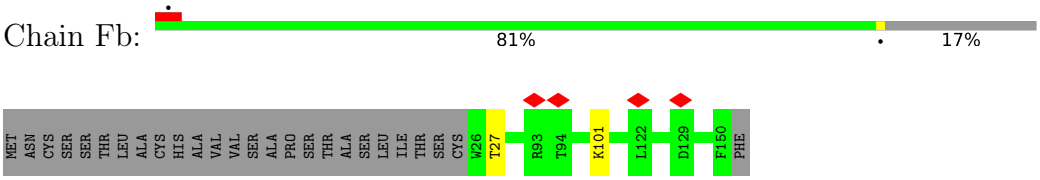
• Molecule 61: mt-SAF29

Chain FZ:



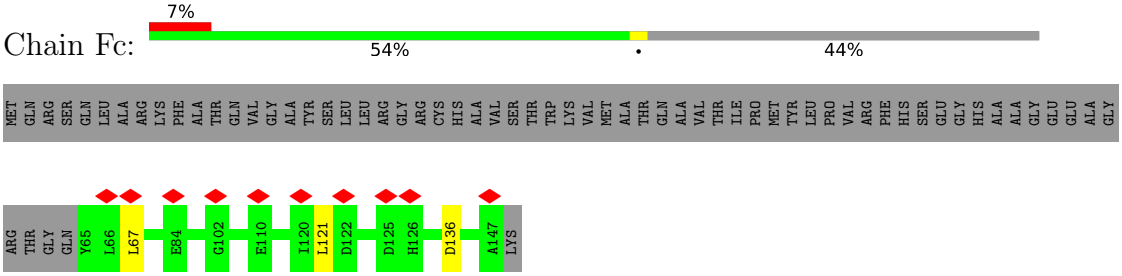
• Molecule 62: mt-SAF31

Chain Fb:



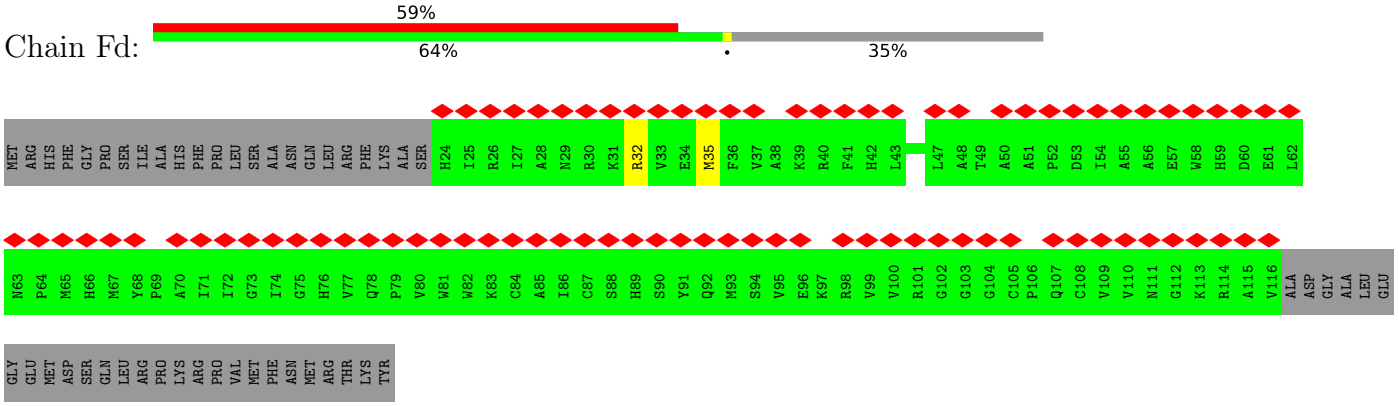
• Molecule 63: Acyl carrier protein

Chain Fc:



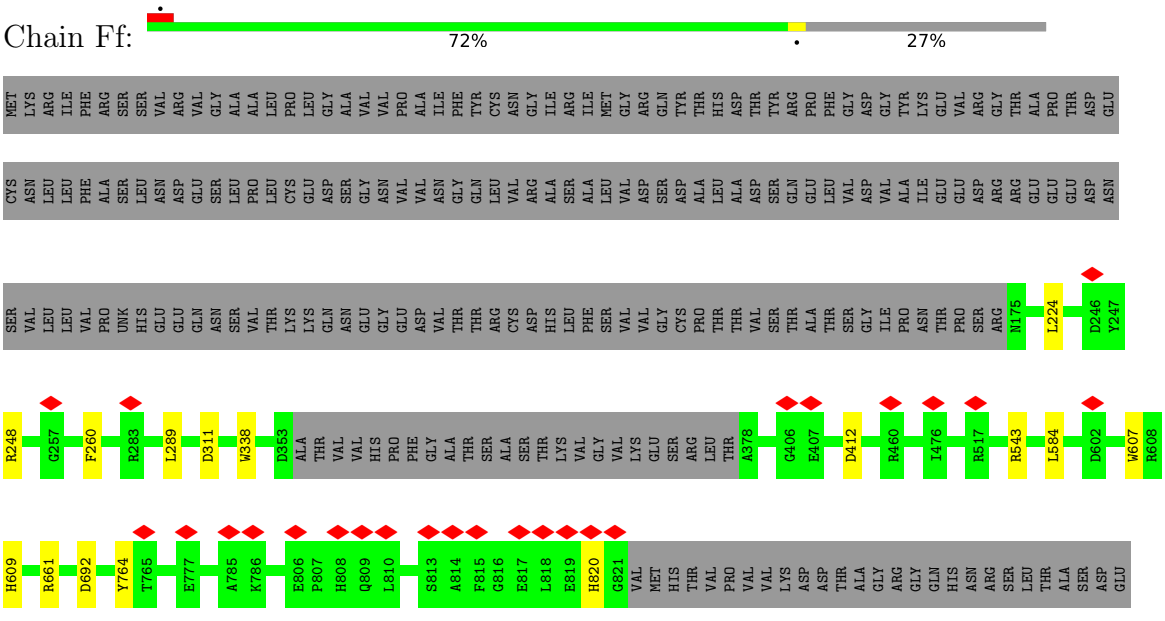
• Molecule 64: DUF4379 domain-containing protein

Chain Fd:



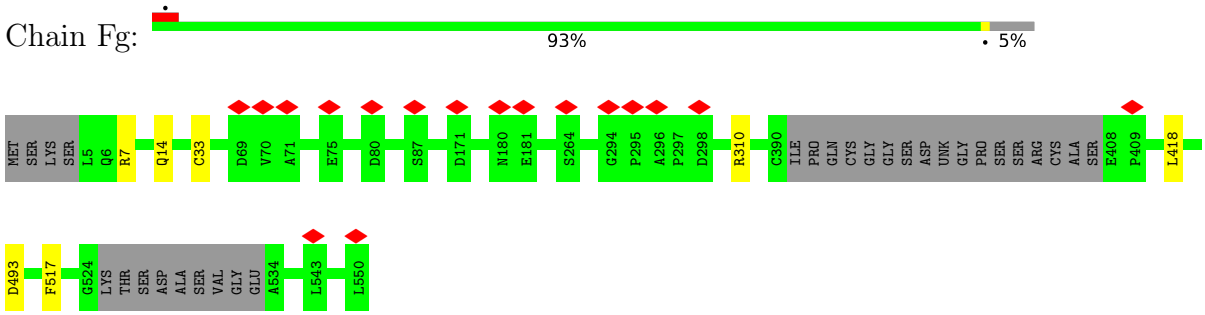
• Molecule 65: DNA photolyase, putative

Chain Ff:



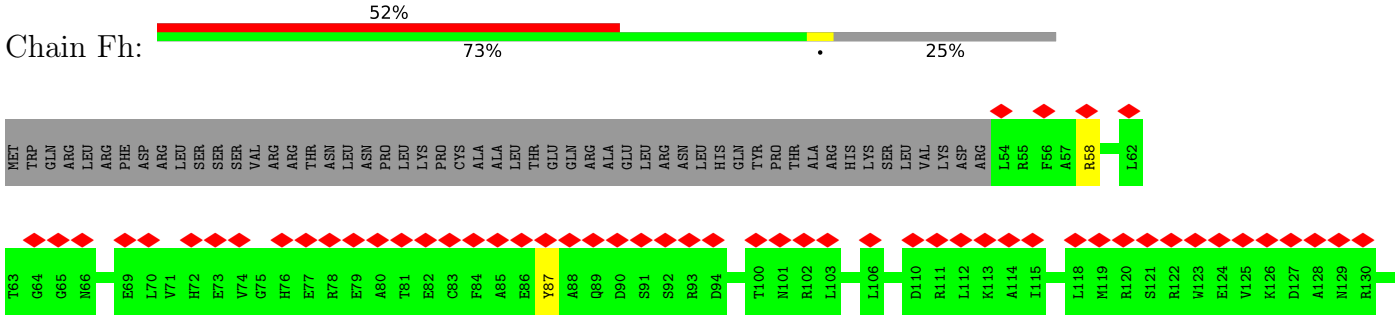
• Molecule 66: Acyl transferase-like protein, putative

Chain Fg:



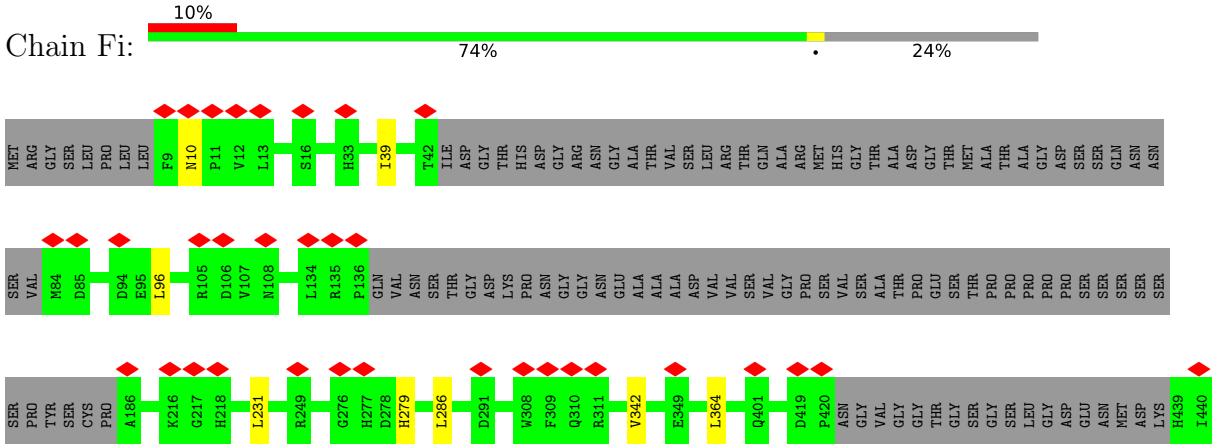
• Molecule 67: mt-SAF37

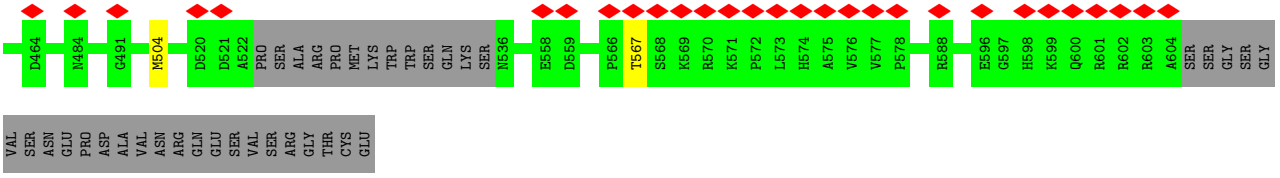
Chain Fh:



• Molecule 68: mt-SAF38

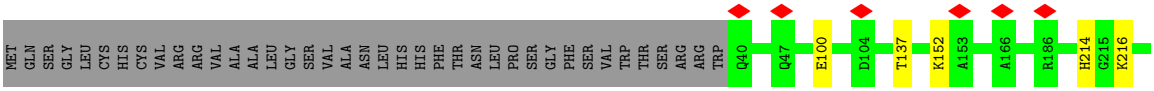
Chain Fi:

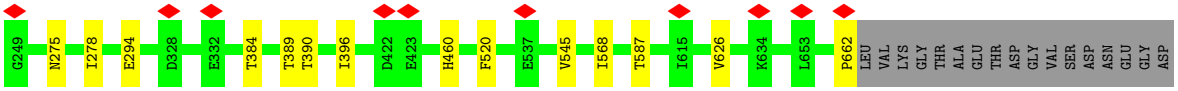


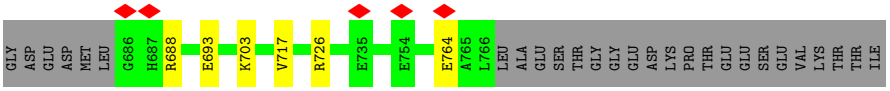


• Molecule 69: Translation initiation factor IF-2, putative

Chain IA:

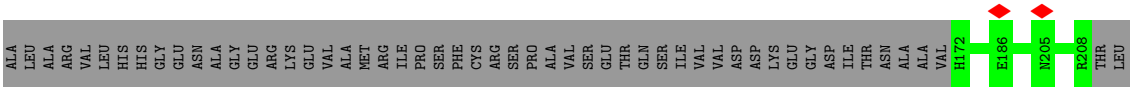


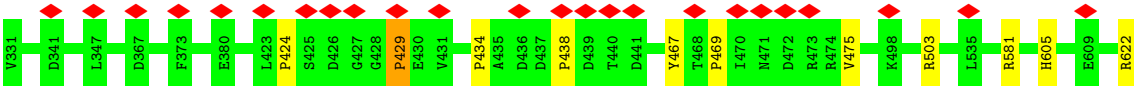


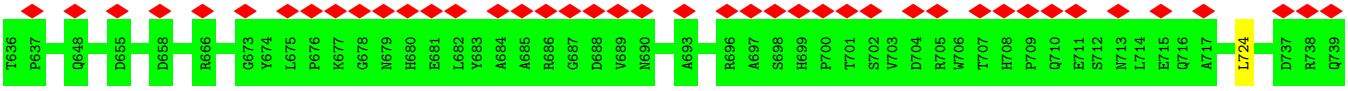


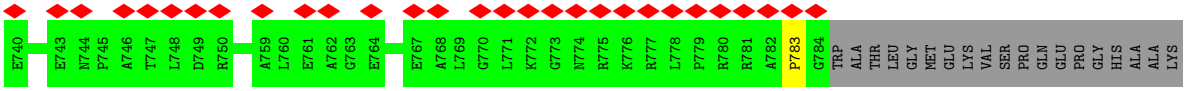
• Molecule 70: mt-SAF39

Chain IB:



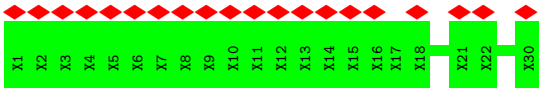






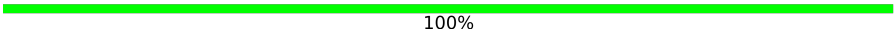
• Molecule 71: Unk8

Chain U8:



• Molecule 72: UnkC

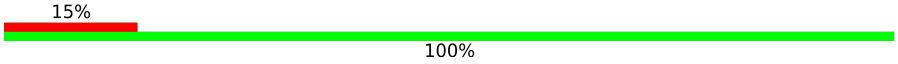
Chain UC:



There are no outlier residues recorded for this chain.

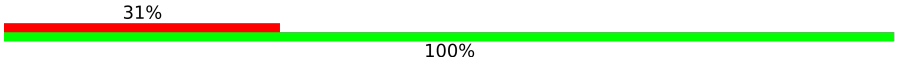
• Molecule 73: UnkD

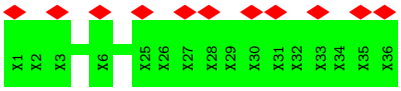
Chain UD:



• Molecule 74: UnkF

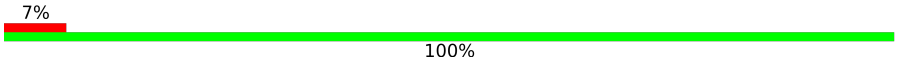
Chain UF:





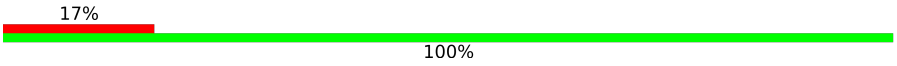
• Molecule 75: UnkG

Chain UG:



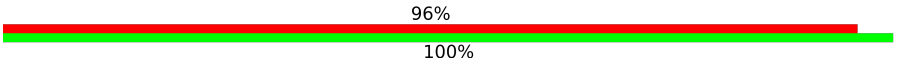
• Molecule 76: UnkI

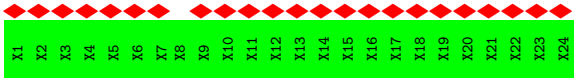
Chain UI:



• Molecule 77: UnkK

Chain UK:





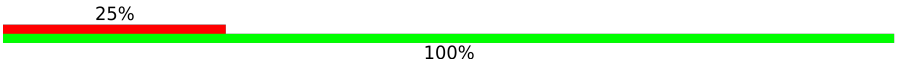
• Molecule 78: Unk

Chain UM:

There are no outlier residues recorded for this chain.

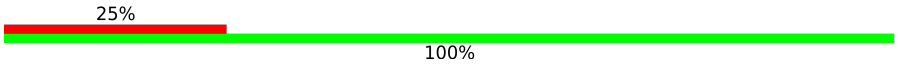
• Molecule 78: Unk

Chain UN:



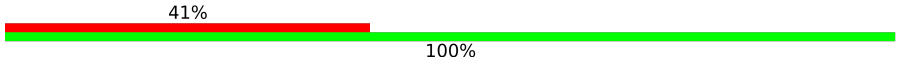
• Molecule 78: Unk

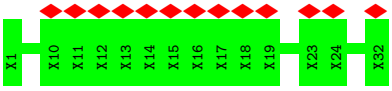
Chain UQ:



• Molecule 79: UnkP

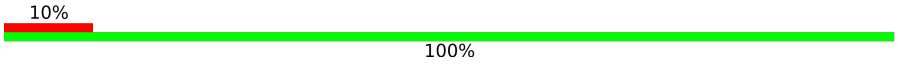
Chain UP:

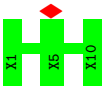




• Molecule 80: Unka

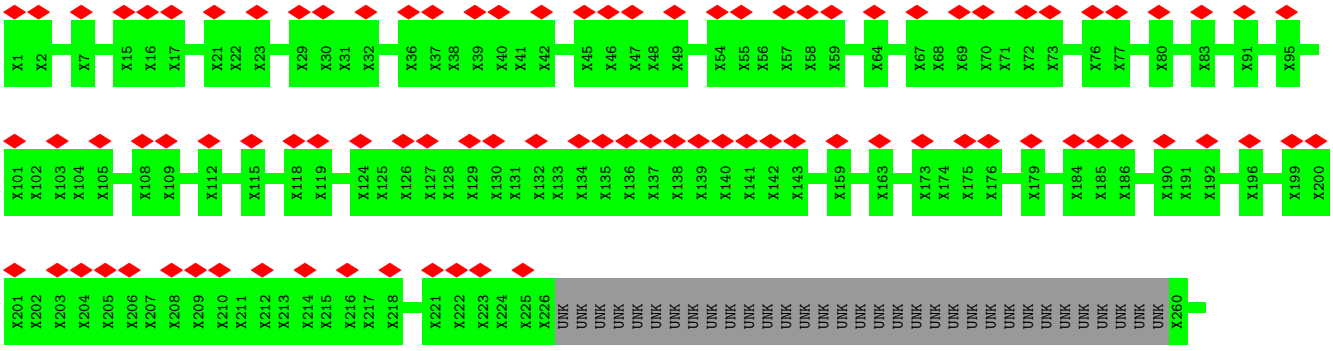
Chain Ua:

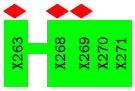




• Molecule 81: Unkg

Chain Ug:




X263
X268
X269
X270
X271

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	38531	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 ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.264	Depositor
Minimum map value	-0.127	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	500.4, 500.4, 500.4	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.39, 1.39, 1.39	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG, FDA, GDP, PO4, PM8, ATP

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	CA	0.19	1/11001 (0.0%)	0.71	2/17084 (0.0%)
2	CB	0.17	0/71	0.61	0/108
3	CC	0.26	0/666	0.43	0/900
4	CE	0.25	0/3100	0.51	0/4193
5	CF	0.25	0/1305	0.50	0/1761
6	CH	0.24	0/1839	0.51	0/2479
7	CI	0.24	0/3420	0.48	0/4619
8	CJ	0.25	0/6561	0.48	1/8927 (0.0%)
9	CK	0.25	0/1468	0.53	0/1971
10	CL	0.30	0/726	0.51	0/981
11	CN	0.24	0/1361	0.48	0/1840
12	CO	0.25	0/3070	0.49	0/4145
13	CP	0.25	0/1533	0.49	0/2074
14	CQ	0.26	0/2072	0.50	0/2808
15	CR	0.25	0/1083	0.49	0/1467
16	CS	0.25	0/851	0.47	0/1150
17	CU	0.22	0/296	0.48	0/397
18	Ca	0.25	0/4378	0.47	0/5921
19	Cb	0.25	0/1273	0.48	0/1711
20	Cd	0.26	0/1818	0.45	0/2447
21	Cg	0.25	0/4064	0.45	0/5518
22	Ci	0.25	0/1388	0.48	0/1878
23	Cj	0.25	0/1842	0.48	0/2511
24	Ck	0.23	0/5469	0.48	0/7396
25	Cm	0.23	0/231	0.49	0/305
26	Cn	0.24	0/434	0.52	0/573
27	Cp	0.25	0/1472	0.49	0/1996
28	DB	0.24	0/9332	0.50	0/12641
29	DC	0.24	0/8971	0.47	0/12172
30	DD	0.26	0/6494	0.48	0/8808
31	DE	0.24	0/5246	0.48	0/7111
32	DF	0.24	0/4895	0.51	0/6635

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	DG	0.25	0/4608	0.49	0/6242
34	DH	0.24	0/4716	0.49	0/6392
35	DI	0.25	0/3248	0.47	0/4401
36	DJ	0.25	0/2993	0.46	0/4063
37	DK	0.24	0/2132	0.46	0/2877
38	DL	0.25	0/1952	0.49	0/2629
39	DO	0.24	0/1597	0.50	0/2153
40	DP	0.24	0/1837	0.46	0/2488
41	DR	0.26	0/2099	0.50	0/2861
42	DT	0.25	0/2133	0.46	0/2889
43	DU	0.25	0/1772	0.49	0/2404
44	DV	0.25	0/1382	0.51	0/1871
45	DW	0.24	0/1202	0.47	0/1639
46	DX	0.24	0/1128	0.49	0/1516
47	DY	0.25	0/1337	0.51	0/1814
48	DZ	0.24	0/246	0.39	0/332
49	Da	0.24	0/332	0.52	0/441
50	F2	0.25	0/7281	0.46	0/9837
51	F3	0.24	0/7158	0.47	0/9686
52	F5	0.24	0/5144	0.48	1/6918 (0.0%)
53	F6	0.24	0/4297	0.46	0/5841
54	F7	0.25	0/5281	0.46	0/7149
55	F9	0.25	0/4497	0.49	0/6031
56	FM	0.24	0/2497	0.47	0/3376
56	FN	0.24	0/2441	0.47	0/3299
57	FO	0.24	0/2763	0.52	0/3735
58	FP	0.25	0/2710	0.46	0/3709
59	FW	0.24	0/2002	0.52	0/2704
60	FX	0.25	0/1783	0.46	0/2410
61	FZ	0.23	0/1287	0.43	0/1737
62	Fb	0.25	0/1092	0.45	0/1471
63	Fc	0.24	0/670	0.44	0/912
64	Fd	0.23	0/759	0.48	0/1028
65	Ff	0.25	0/5149	0.48	0/7008
66	Fg	0.24	0/4129	0.47	0/5595
67	Fh	0.24	0/1902	0.48	0/2566
68	Fi	0.25	0/3899	0.50	0/5296
69	IA	0.26	0/5577	0.49	1/7550 (0.0%)
70	IB	0.24	0/3944	0.55	5/5333 (0.1%)
73	UD	0.25	0/64	0.42	0/88
75	UG	0.24	0/74	0.39	0/102
All	All	0.24	1/208844 (0.0%)	0.50	10/284920 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	CA	302	U	C1'-N1	6.06	1.57	1.48

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
70	IB	429	PRO	N-CA-CB	6.89	111.57	103.30
70	IB	424	PRO	N-CA-CB	6.48	111.08	103.30
8	CJ	540	PRO	N-CA-CB	6.41	110.99	103.30
1	CA	70	U	C2-N1-C1'	6.38	125.35	117.70
69	IA	662	PRO	N-CA-CB	5.96	110.45	103.30
70	IB	434	PRO	N-CA-CB	5.89	110.37	103.30
70	IB	438	PRO	N-CA-CB	5.68	110.11	103.30
70	IB	469	PRO	N-CA-CB	5.67	110.11	103.30
1	CA	70	U	N1-C2-O2	5.48	126.63	122.80
52	F5	182	ASP	CB-CG-OD2	5.21	122.99	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	CC	72/74 (97%)	68 (94%)	4 (6%)	0	100	100
4	CE	369/435 (85%)	357 (97%)	12 (3%)	0	100	100
5	CF	153/160 (96%)	150 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	CH	213/282 (76%)	208 (98%)	5 (2%)	0	100	100
7	CI	417/443 (94%)	406 (97%)	11 (3%)	0	100	100
8	CJ	776/817 (95%)	748 (96%)	27 (4%)	1 (0%)	51	83
9	CK	173/326 (53%)	170 (98%)	3 (2%)	0	100	100
10	CL	81/87 (93%)	78 (96%)	3 (4%)	0	100	100
11	CN	155/166 (93%)	147 (95%)	8 (5%)	0	100	100
12	CO	358/429 (83%)	341 (95%)	17 (5%)	0	100	100
13	CP	178/188 (95%)	168 (94%)	10 (6%)	0	100	100
14	CQ	245/307 (80%)	239 (98%)	6 (2%)	0	100	100
15	CR	118/320 (37%)	110 (93%)	8 (7%)	0	100	100
16	CS	97/244 (40%)	88 (91%)	9 (9%)	0	100	100
17	CU	31/193 (16%)	30 (97%)	1 (3%)	0	100	100
18	Ca	497/602 (83%)	486 (98%)	11 (2%)	0	100	100
19	Cb	145/325 (45%)	141 (97%)	4 (3%)	0	100	100
20	Cd	203/440 (46%)	199 (98%)	4 (2%)	0	100	100
21	Cg	485/498 (97%)	472 (97%)	13 (3%)	0	100	100
22	Ci	163/181 (90%)	157 (96%)	6 (4%)	0	100	100
23	Cj	224/257 (87%)	220 (98%)	4 (2%)	0	100	100
24	Ck	667/874 (76%)	650 (98%)	17 (2%)	0	100	100
25	Cm	29/215 (14%)	29 (100%)	0	0	100	100
26	Cn	47/250 (19%)	47 (100%)	0	0	100	100
27	Cp	166/187 (89%)	163 (98%)	3 (2%)	0	100	100
28	DB	1102/1181 (93%)	1061 (96%)	41 (4%)	0	100	100
29	DC	1093/1165 (94%)	1049 (96%)	44 (4%)	0	100	100
30	DD	760/812 (94%)	733 (96%)	27 (4%)	0	100	100
31	DE	620/747 (83%)	600 (97%)	20 (3%)	0	100	100
32	DF	592/666 (89%)	567 (96%)	25 (4%)	0	100	100
33	DG	549/631 (87%)	533 (97%)	16 (3%)	0	100	100
34	DH	566/581 (97%)	549 (97%)	17 (3%)	0	100	100
35	DI	388/407 (95%)	378 (97%)	10 (3%)	0	100	100
36	DJ	354/396 (89%)	341 (96%)	13 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	DK	258/324 (80%)	247 (96%)	11 (4%)	0	100	100
38	DL	228/307 (74%)	226 (99%)	2 (1%)	0	100	100
39	DO	192/282 (68%)	188 (98%)	4 (2%)	0	100	100
40	DP	208/274 (76%)	201 (97%)	7 (3%)	0	100	100
41	DR	248/270 (92%)	239 (96%)	9 (4%)	0	100	100
42	DT	237/247 (96%)	232 (98%)	5 (2%)	0	100	100
43	DU	215/228 (94%)	209 (97%)	6 (3%)	0	100	100
44	DV	158/183 (86%)	149 (94%)	9 (6%)	0	100	100
45	DW	134/179 (75%)	132 (98%)	2 (2%)	0	100	100
46	DX	127/169 (75%)	117 (92%)	10 (8%)	0	100	100
47	DY	152/163 (93%)	144 (95%)	8 (5%)	0	100	100
48	DZ	26/94 (28%)	24 (92%)	2 (8%)	0	100	100
49	Da	34/64 (53%)	33 (97%)	1 (3%)	0	100	100
50	F2	882/1024 (86%)	866 (98%)	16 (2%)	0	100	100
51	F3	907/966 (94%)	877 (97%)	30 (3%)	0	100	100
52	F5	614/754 (81%)	600 (98%)	14 (2%)	0	100	100
53	F6	514/676 (76%)	507 (99%)	7 (1%)	0	100	100
54	F7	646/679 (95%)	614 (95%)	32 (5%)	0	100	100
55	F9	536/607 (88%)	523 (98%)	13 (2%)	0	100	100
56	FM	325/370 (88%)	316 (97%)	9 (3%)	0	100	100
56	FN	318/370 (86%)	309 (97%)	9 (3%)	0	100	100
57	FO	324/334 (97%)	312 (96%)	12 (4%)	0	100	100
58	FP	346/349 (99%)	335 (97%)	11 (3%)	0	100	100
59	FW	234/263 (89%)	229 (98%)	5 (2%)	0	100	100
60	FX	218/239 (91%)	212 (97%)	6 (3%)	0	100	100
61	FZ	158/178 (89%)	153 (97%)	5 (3%)	0	100	100
62	Fb	123/151 (82%)	117 (95%)	6 (5%)	0	100	100
63	Fc	81/148 (55%)	79 (98%)	2 (2%)	0	100	100
64	Fd	91/143 (64%)	89 (98%)	2 (2%)	0	100	100
65	Ff	619/848 (73%)	587 (95%)	32 (5%)	0	100	100
66	Fg	514/550 (94%)	493 (96%)	21 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
67	Fh	233/318 (73%)	226 (97%)	7 (3%)	0	100	100
68	Fi	465/629 (74%)	447 (96%)	18 (4%)	0	100	100
69	IA	700/787 (89%)	678 (97%)	22 (3%)	0	100	100
70	IB	487/803 (61%)	466 (96%)	19 (4%)	2 (0%)	34	71
73	UD	11/13 (85%)	11 (100%)	0	0	100	100
75	UG	13/15 (87%)	10 (77%)	3 (23%)	0	100	100
All	All	23662/28884 (82%)	22880 (97%)	779 (3%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
70	IB	429	PRO
70	IB	783	PRO
8	CJ	540	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	CC	73/73 (100%)	73 (100%)	0	100	100
4	CE	314/372 (84%)	306 (98%)	8 (2%)	47	75
5	CF	139/144 (96%)	131 (94%)	8 (6%)	20	55
6	CH	192/246 (78%)	190 (99%)	2 (1%)	76	88
7	CI	354/371 (95%)	348 (98%)	6 (2%)	60	82
8	CJ	691/723 (96%)	671 (97%)	20 (3%)	42	72
9	CK	150/283 (53%)	146 (97%)	4 (3%)	44	73
10	CL	75/79 (95%)	70 (93%)	5 (7%)	16	50
11	CN	142/150 (95%)	142 (100%)	0	100	100
12	CO	316/377 (84%)	312 (99%)	4 (1%)	69	86
13	CP	160/168 (95%)	158 (99%)	2 (1%)	69	86

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
14	CQ	216/270 (80%)	208 (96%)	8 (4%)	34	66
15	CR	111/279 (40%)	104 (94%)	7 (6%)	18	53
16	CS	90/220 (41%)	89 (99%)	1 (1%)	73	88
17	CU	31/169 (18%)	29 (94%)	2 (6%)	17	51
18	Ca	440/543 (81%)	433 (98%)	7 (2%)	62	83
19	Cb	128/277 (46%)	123 (96%)	5 (4%)	32	65
20	Cd	186/381 (49%)	181 (97%)	5 (3%)	44	73
21	Cg	429/437 (98%)	420 (98%)	9 (2%)	53	78
22	Ci	144/160 (90%)	139 (96%)	5 (4%)	36	68
23	Cj	193/219 (88%)	187 (97%)	6 (3%)	40	71
24	Ck	583/746 (78%)	568 (97%)	15 (3%)	46	74
25	Cm	26/184 (14%)	25 (96%)	1 (4%)	33	66
26	Cn	43/210 (20%)	42 (98%)	1 (2%)	50	76
27	Cp	157/175 (90%)	156 (99%)	1 (1%)	86	94
28	DB	972/1030 (94%)	936 (96%)	36 (4%)	34	66
29	DC	929/985 (94%)	907 (98%)	22 (2%)	49	75
30	DD	673/673 (100%)	661 (98%)	12 (2%)	59	81
31	DE	552/642 (86%)	536 (97%)	16 (3%)	42	72
32	DF	504/560 (90%)	496 (98%)	8 (2%)	62	83
33	DG	483/543 (89%)	470 (97%)	13 (3%)	44	73
34	DH	496/504 (98%)	481 (97%)	15 (3%)	41	71
35	DI	350/365 (96%)	344 (98%)	6 (2%)	60	82
36	DJ	312/347 (90%)	304 (97%)	8 (3%)	46	74
37	DK	218/261 (84%)	214 (98%)	4 (2%)	59	81
38	DL	199/263 (76%)	193 (97%)	6 (3%)	41	71
39	DO	163/229 (71%)	160 (98%)	3 (2%)	59	81
40	DP	189/239 (79%)	187 (99%)	2 (1%)	73	88
41	DR	221/235 (94%)	218 (99%)	3 (1%)	67	85
42	DT	220/228 (96%)	214 (97%)	6 (3%)	44	73
43	DU	179/201 (89%)	176 (98%)	3 (2%)	60	82
44	DV	145/165 (88%)	141 (97%)	4 (3%)	43	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
45	DW	126/163 (77%)	123 (98%)	3 (2%)	49	75
46	DX	114/149 (76%)	111 (97%)	3 (3%)	46	74
47	DY	137/146 (94%)	135 (98%)	2 (2%)	65	84
48	DZ	23/84 (27%)	23 (100%)	0	100	100
49	Da	32/59 (54%)	31 (97%)	1 (3%)	40	71
50	F2	752/867 (87%)	745 (99%)	7 (1%)	78	90
51	F3	767/809 (95%)	750 (98%)	17 (2%)	52	77
52	F5	533/642 (83%)	517 (97%)	16 (3%)	41	71
53	F6	462/590 (78%)	446 (96%)	16 (4%)	36	68
54	F7	553/577 (96%)	546 (99%)	7 (1%)	69	86
55	F9	449/503 (89%)	439 (98%)	10 (2%)	52	77
56	FM	258/292 (88%)	249 (96%)	9 (4%)	36	68
56	FN	252/292 (86%)	248 (98%)	4 (2%)	62	83
57	FO	285/290 (98%)	278 (98%)	7 (2%)	47	75
58	FP	270/286 (94%)	266 (98%)	4 (2%)	65	84
59	FW	214/234 (92%)	213 (100%)	1 (0%)	88	95
60	FX	178/195 (91%)	177 (99%)	1 (1%)	86	94
61	FZ	140/156 (90%)	133 (95%)	7 (5%)	24	59
62	Fb	113/135 (84%)	111 (98%)	2 (2%)	59	81
63	Fc	77/127 (61%)	74 (96%)	3 (4%)	32	65
64	Fd	77/119 (65%)	75 (97%)	2 (3%)	46	74
65	Ff	524/715 (73%)	509 (97%)	15 (3%)	42	72
66	Fg	446/469 (95%)	439 (98%)	7 (2%)	62	83
67	Fh	189/281 (67%)	181 (96%)	8 (4%)	30	63
68	Fi	413/536 (77%)	403 (98%)	10 (2%)	49	75
69	IA	590/661 (89%)	566 (96%)	24 (4%)	30	64
70	IB	393/675 (58%)	386 (98%)	7 (2%)	59	81
All	All	20555/24778 (83%)	20063 (98%)	492 (2%)	51	75

All (492) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	CE	28	ILE

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Mol	Chain	Res	Type
4	CE	59	LEU
4	CE	118	ARG
4	CE	201	ILE
4	CE	230	ARG
4	CE	233	VAL
4	CE	256	LEU
4	CE	294	HIS
5	CF	3	PHE
5	CF	6	PHE
5	CF	7	VAL
5	CF	46	ARG
5	CF	52	ARG
5	CF	61	TYR
5	CF	105	ARG
5	CF	119	ASP
6	CH	26	ARG
6	CH	236	MET
7	CI	36	GLU
7	CI	38	LEU
7	CI	85	LEU
7	CI	104	ASN
7	CI	163	GLU
7	CI	290	ILE
8	CJ	105	ASN
8	CJ	229	VAL
8	CJ	323	LEU
8	CJ	341	CYS
8	CJ	416	MET
8	CJ	424	HIS
8	CJ	454	THR
8	CJ	469	ASP
8	CJ	517	VAL
8	CJ	537	LEU
8	CJ	555	TRP
8	CJ	641	VAL
8	CJ	648	VAL
8	CJ	654	VAL
8	CJ	656	VAL
8	CJ	681	LEU
8	CJ	740	LYS
8	CJ	742	PHE
8	CJ	757	LEU

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Mol	Chain	Res	Type
8	CJ	800	LEU
9	CK	193	VAL
9	CK	225	ARG
9	CK	255	LEU
9	CK	300	ASN
10	CL	20	VAL
10	CL	38	LEU
10	CL	39	TYR
10	CL	55	PHE
10	CL	61	LEU
12	CO	87	THR
12	CO	146	LEU
12	CO	182	ASN
12	CO	396	LYS
13	CP	92	THR
13	CP	94	VAL
14	CQ	26	TYR
14	CQ	36	ASN
14	CQ	66	VAL
14	CQ	70	ARG
14	CQ	73	ARG
14	CQ	104	LEU
14	CQ	233	ARG
14	CQ	249	ILE
15	CR	64	VAL
15	CR	65	GLN
15	CR	68	TYR
15	CR	69	HIS
15	CR	176	ASN
15	CR	181	ARG
15	CR	183	GLN
16	CS	53	LEU
17	CU	39	TYR
17	CU	66	HIS
18	Ca	63	GLN
18	Ca	192	GLN
18	Ca	208	VAL
18	Ca	305	HIS
18	Ca	388	THR
18	Ca	391	ASP
18	Ca	402	VAL
19	Cb	94	LEU

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Mol	Chain	Res	Type
19	Cb	119	ARG
19	Cb	137	VAL
19	Cb	170	LEU
19	Cb	177	MET
20	Cd	29	THR
20	Cd	179	PHE
20	Cd	190	ASP
20	Cd	200	LEU
20	Cd	201	LEU
21	Cg	7	LYS
21	Cg	43	ARG
21	Cg	107	ARG
21	Cg	114	GLU
21	Cg	139	THR
21	Cg	262	GLN
21	Cg	269	LEU
21	Cg	296	HIS
21	Cg	468	ASP
22	Ci	15	VAL
22	Ci	34	ARG
22	Ci	84	LEU
22	Ci	136	HIS
22	Ci	149	LEU
23	Cj	10	ARG
23	Cj	30	SER
23	Cj	118	ARG
23	Cj	126	TYR
23	Cj	167	ASP
23	Cj	209	TYR
24	Ck	146	LYS
24	Ck	161	GLU
24	Ck	175	LEU
24	Ck	203	PHE
24	Ck	239	LEU
24	Ck	318	THR
24	Ck	572	MET
24	Ck	584	ASN
24	Ck	690	TRP
24	Ck	703	ARG
24	Ck	746	LEU
24	Ck	787	VAL
24	Ck	821	TYR

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Mol	Chain	Res	Type
24	Ck	831	VAL
24	Ck	834	MET
25	Cm	101	MET
26	Cn	182	PHE
27	Cp	177	CYS
28	DB	151	THR
28	DB	203	ARG
28	DB	274	ARG
28	DB	388	VAL
28	DB	396	ARG
28	DB	556	VAL
28	DB	575	CYS
28	DB	662	ARG
28	DB	670	HIS
28	DB	671	VAL
28	DB	680	VAL
28	DB	689	LEU
28	DB	741	THR
28	DB	756	THR
28	DB	771	MET
28	DB	773	THR
28	DB	778	LYS
28	DB	792	ARG
28	DB	797	LEU
28	DB	822	PHE
28	DB	890	GLU
28	DB	908	GLN
28	DB	912	ASN
28	DB	942	ARG
28	DB	985	LYS
28	DB	987	GLU
28	DB	990	ARG
28	DB	1013	ARG
28	DB	1034	ILE
28	DB	1036	MET
28	DB	1051	GLN
28	DB	1063	ARG
28	DB	1066	ASN
28	DB	1104	ASP
28	DB	1110	LYS
28	DB	1179	VAL
29	DC	47	ASP

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Mol	Chain	Res	Type
29	DC	73	ARG
29	DC	91	LYS
29	DC	121	LEU
29	DC	158	TYR
29	DC	159	VAL
29	DC	207	GLU
29	DC	228	GLN
29	DC	231	THR
29	DC	266	PHE
29	DC	291	VAL
29	DC	413	LEU
29	DC	434	THR
29	DC	548	HIS
29	DC	618	ARG
29	DC	648	LEU
29	DC	659	LEU
29	DC	894	HIS
29	DC	961	THR
29	DC	968	THR
29	DC	1019	THR
29	DC	1076	PHE
30	DD	69	LEU
30	DD	86	ILE
30	DD	90	MET
30	DD	209	THR
30	DD	376	ASP
30	DD	381	ARG
30	DD	504	ASN
30	DD	522	THR
30	DD	557	THR
30	DD	609	ASP
30	DD	653	PHE
30	DD	801	GLU
31	DE	39	PHE
31	DE	76	THR
31	DE	172	ASP
31	DE	176	ARG
31	DE	219	ASN
31	DE	231	ILE
31	DE	261	THR
31	DE	280	LEU
31	DE	295	TYR

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Mol	Chain	Res	Type
31	DE	304	ASN
31	DE	322	ASP
31	DE	530	TRP
31	DE	568	SER
31	DE	580	VAL
31	DE	611	LEU
31	DE	618	ARG
32	DF	176	VAL
32	DF	325	LEU
32	DF	368	ILE
32	DF	432	ILE
32	DF	535	ARG
32	DF	553	THR
32	DF	580	ASP
32	DF	592	HIS
33	DG	63	HIS
33	DG	98	ASP
33	DG	127	LEU
33	DG	143	HIS
33	DG	175	GLU
33	DG	186	ARG
33	DG	211	TYR
33	DG	220	THR
33	DG	229	HIS
33	DG	261	ARG
33	DG	448	LEU
33	DG	496	ARG
33	DG	559	VAL
34	DH	8	LYS
34	DH	15	TYR
34	DH	119	LEU
34	DH	144	ASP
34	DH	216	THR
34	DH	290	GLU
34	DH	307	ARG
34	DH	369	ARG
34	DH	392	TRP
34	DH	445	ILE
34	DH	464	LEU
34	DH	466	VAL
34	DH	477	ARG
34	DH	509	TYR

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Mol	Chain	Res	Type
34	DH	538	ARG
35	DI	24	VAL
35	DI	100	LEU
35	DI	145	LEU
35	DI	187	THR
35	DI	251	VAL
35	DI	407	LEU
36	DJ	13	THR
36	DJ	48	PHE
36	DJ	144	CYS
36	DJ	185	LEU
36	DJ	214	ASP
36	DJ	273	TYR
36	DJ	335	ILE
36	DJ	356	TYR
37	DK	23	TYR
37	DK	143	LYS
37	DK	154	ARG
37	DK	303	TYR
38	DL	61	VAL
38	DL	182	GLN
38	DL	190	ARG
38	DL	237	PHE
38	DL	282	TRP
38	DL	286	THR
39	DO	127	LEU
39	DO	212	TYR
39	DO	214	GLU
40	DP	111	THR
40	DP	183	ASP
41	DR	77	LEU
41	DR	118	VAL
41	DR	254	VAL
42	DT	52	ARG
42	DT	65	VAL
42	DT	97	VAL
42	DT	105	ARG
42	DT	112	LEU
42	DT	212	PHE
43	DU	42	THR
43	DU	46	THR
43	DU	133	HIS

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Mol	Chain	Res	Type
44	DV	134	ASP
44	DV	156	VAL
44	DV	158	PHE
44	DV	182	TYR
45	DW	83	THR
45	DW	102	MET
45	DW	148	THR
46	DX	66	ARG
46	DX	136	ARG
46	DX	141	ARG
47	DY	114	TRP
47	DY	163	LYS
49	Da	34	GLN
50	F2	87	ARG
50	F2	199	ASP
50	F2	326	ASN
50	F2	361	HIS
50	F2	574	CYS
50	F2	646	GLU
50	F2	851	LEU
51	F3	50	ARG
51	F3	82	VAL
51	F3	196	VAL
51	F3	270	LEU
51	F3	297	PHE
51	F3	418	ASP
51	F3	589	ASN
51	F3	592	LEU
51	F3	646	THR
51	F3	648	VAL
51	F3	654	GLN
51	F3	720	ILE
51	F3	725	LEU
51	F3	731	CYS
51	F3	752	TRP
51	F3	795	THR
51	F3	890	GLU
52	F5	190	GLU
52	F5	195	HIS
52	F5	248	GLN
52	F5	262	GLU
52	F5	300	LEU

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Mol	Chain	Res	Type
52	F5	315	GLN
52	F5	336	HIS
52	F5	365	ASP
52	F5	379	VAL
52	F5	395	GLN
52	F5	404	LEU
52	F5	573	ARG
52	F5	586	ASN
52	F5	590	ARG
52	F5	701	LEU
52	F5	753	ASN
53	F6	105	THR
53	F6	133	LEU
53	F6	183	LEU
53	F6	184	ASP
53	F6	213	PHE
53	F6	229	LEU
53	F6	238	TYR
53	F6	244	MET
53	F6	248	VAL
53	F6	257	LEU
53	F6	354	THR
53	F6	369	GLU
53	F6	397	GLU
53	F6	562	ARG
53	F6	565	THR
53	F6	572	LEU
54	F7	25	GLU
54	F7	47	TRP
54	F7	150	LEU
54	F7	197	GLU
54	F7	247	GLU
54	F7	472	THR
54	F7	522	ARG
55	F9	195	MET
55	F9	213	TRP
55	F9	254	GLN
55	F9	315	LYS
55	F9	346	ASP
55	F9	372	GLU
55	F9	377	GLN
55	F9	498	GLU

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Mol	Chain	Res	Type
55	F9	542	MET
55	F9	556	ILE
56	FM	20	VAL
56	FM	35	TYR
56	FM	56	ASP
56	FM	112	HIS
56	FM	114	THR
56	FM	176	VAL
56	FM	234	MET
56	FM	248	ASN
56	FM	326	HIS
56	FN	35	TYR
56	FN	102	ASN
56	FN	121	ARG
56	FN	299	ASP
57	FO	119	LEU
57	FO	219	GLU
57	FO	244	ARG
57	FO	248	ARG
57	FO	319	LEU
57	FO	322	ARG
57	FO	333	ARG
58	FP	97	TYR
58	FP	258	LEU
58	FP	315	VAL
58	FP	349	HIS
59	FW	245	LYS
60	FX	29	GLN
61	FZ	88	GLN
61	FZ	93	LEU
61	FZ	96	LEU
61	FZ	104	ILE
61	FZ	116	ASP
61	FZ	128	TYR
61	FZ	142	LEU
62	Fb	27	THR
62	Fb	101	LYS
63	Fc	67	LEU
63	Fc	121	LEU
63	Fc	136	ASP
64	Fd	32	ARG
64	Fd	35	MET

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Mol	Chain	Res	Type
65	Ff	224	LEU
65	Ff	248	ARG
65	Ff	260	PHE
65	Ff	289	LEU
65	Ff	311	ASP
65	Ff	338	TRP
65	Ff	412	ASP
65	Ff	543	ARG
65	Ff	584	LEU
65	Ff	607	TRP
65	Ff	609	HIS
65	Ff	661	ARG
65	Ff	692	ASP
65	Ff	764	TYR
65	Ff	820	HIS
66	Fg	7	ARG
66	Fg	14	GLN
66	Fg	33	CYS
66	Fg	310	ARG
66	Fg	418	LEU
66	Fg	493	ASP
66	Fg	517	PHE
67	Fh	58	ARG
67	Fh	87	TYR
67	Fh	142	LEU
67	Fh	170	GLN
67	Fh	192	VAL
67	Fh	210	ASP
67	Fh	227	TYR
67	Fh	289	LEU
68	Fi	10	ASN
68	Fi	39	ILE
68	Fi	96	LEU
68	Fi	231	LEU
68	Fi	279	HIS
68	Fi	286	LEU
68	Fi	342	VAL
68	Fi	364	LEU
68	Fi	504	MET
68	Fi	567	THR
69	IA	100	GLU
69	IA	137	THR

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Mol	Chain	Res	Type
69	IA	152	LYS
69	IA	214	HIS
69	IA	216	LYS
69	IA	275	ASN
69	IA	278	ILE
69	IA	294	GLU
69	IA	384	THR
69	IA	389	THR
69	IA	390	THR
69	IA	396	ILE
69	IA	460	HIS
69	IA	520	PHE
69	IA	545	VAL
69	IA	568	ILE
69	IA	587	THR
69	IA	626	VAL
69	IA	688	ARG
69	IA	693	GLU
69	IA	703	LYS
69	IA	717	VAL
69	IA	726	ARG
69	IA	764	GLU
70	IB	467	TYR
70	IB	475	VAL
70	IB	503	ARG
70	IB	581	ARG
70	IB	605	HIS
70	IB	622	ARG
70	IB	724	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (421) such sidechains are listed below:

Mol	Chain	Res	Type
3	CC	8	HIS
3	CC	31	ASN
4	CE	116	GLN
4	CE	132	HIS
4	CE	161	GLN
4	CE	218	ASN
5	CF	41	ASN
5	CF	97	ASN
6	CH	29	HIS

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Mol	Chain	Res	Type
6	CH	43	ASN
6	CH	54	GLN
6	CH	55	GLN
6	CH	165	GLN
6	CH	247	HIS
6	CH	267	HIS
7	CI	44	HIS
7	CI	104	ASN
7	CI	152	GLN
7	CI	208	HIS
7	CI	240	ASN
7	CI	318	HIS
8	CJ	82	HIS
8	CJ	116	GLN
8	CJ	134	GLN
8	CJ	151	ASN
8	CJ	209	GLN
8	CJ	274	GLN
8	CJ	288	GLN
8	CJ	301	ASN
8	CJ	321	ASN
8	CJ	432	HIS
8	CJ	438	ASN
8	CJ	450	HIS
8	CJ	461	HIS
8	CJ	476	ASN
8	CJ	581	GLN
8	CJ	642	ASN
8	CJ	761	GLN
8	CJ	769	GLN
8	CJ	776	GLN
8	CJ	791	HIS
8	CJ	792	HIS
8	CJ	798	GLN
8	CJ	807	GLN
9	CK	218	ASN
9	CK	245	GLN
11	CN	23	HIS
11	CN	78	GLN
11	CN	153	ASN
11	CN	162	GLN
12	CO	129	GLN

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Mol	Chain	Res	Type
12	CO	149	GLN
12	CO	165	HIS
12	CO	197	GLN
12	CO	288	GLN
12	CO	306	ASN
13	CP	62	HIS
13	CP	87	HIS
14	CQ	20	GLN
14	CQ	33	ASN
14	CQ	36	ASN
14	CQ	49	ASN
14	CQ	57	HIS
14	CQ	122	GLN
14	CQ	199	ASN
14	CQ	234	ASN
15	CR	65	GLN
15	CR	176	ASN
16	CS	62	HIS
18	Ca	63	GLN
18	Ca	105	GLN
18	Ca	106	ASN
18	Ca	192	GLN
18	Ca	306	HIS
18	Ca	419	GLN
20	Cd	37	HIS
20	Cd	48	ASN
20	Cd	72	ASN
20	Cd	87	GLN
20	Cd	119	HIS
20	Cd	130	GLN
20	Cd	143	GLN
20	Cd	159	HIS
20	Cd	192	ASN
21	Cg	87	GLN
21	Cg	105	HIS
21	Cg	164	HIS
21	Cg	262	GLN
21	Cg	296	HIS
21	Cg	301	HIS
21	Cg	323	GLN
21	Cg	470	GLN
21	Cg	474	GLN

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Mol	Chain	Res	Type
21	Cg	476	GLN
22	Ci	83	ASN
22	Ci	98	HIS
23	Cj	34	HIS
23	Cj	153	HIS
24	Ck	30	GLN
24	Ck	32	GLN
24	Ck	42	HIS
24	Ck	79	HIS
24	Ck	95	HIS
24	Ck	131	ASN
24	Ck	195	GLN
24	Ck	276	GLN
24	Ck	368	HIS
24	Ck	550	GLN
24	Ck	584	ASN
24	Ck	589	GLN
24	Ck	611	ASN
24	Ck	619	GLN
24	Ck	644	HIS
24	Ck	666	HIS
24	Ck	669	ASN
24	Ck	684	GLN
24	Ck	695	GLN
24	Ck	701	HIS
24	Ck	715	GLN
27	Cp	66	HIS
27	Cp	154	GLN
28	DB	77	GLN
28	DB	122	HIS
28	DB	164	GLN
28	DB	190	HIS
28	DB	194	GLN
28	DB	208	GLN
28	DB	239	GLN
28	DB	300	GLN
28	DB	315	GLN
28	DB	340	ASN
28	DB	486	HIS
28	DB	542	GLN
28	DB	661	ASN
28	DB	860	GLN

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Mol	Chain	Res	Type
28	DB	868	HIS
28	DB	891	GLN
28	DB	898	GLN
28	DB	908	GLN
28	DB	981	HIS
28	DB	1029	HIS
28	DB	1051	GLN
28	DB	1101	GLN
28	DB	1124	HIS
28	DB	1131	ASN
29	DC	81	HIS
29	DC	105	ASN
29	DC	205	GLN
29	DC	232	GLN
29	DC	384	HIS
29	DC	406	GLN
29	DC	424	GLN
29	DC	447	ASN
29	DC	500	ASN
29	DC	530	GLN
29	DC	539	ASN
29	DC	574	GLN
29	DC	680	GLN
29	DC	761	ASN
29	DC	821	GLN
29	DC	920	HIS
29	DC	1049	ASN
29	DC	1062	GLN
29	DC	1160	GLN
30	DD	59	ASN
30	DD	76	ASN
30	DD	79	GLN
30	DD	144	ASN
30	DD	156	GLN
30	DD	174	HIS
30	DD	176	HIS
30	DD	273	HIS
30	DD	353	HIS
30	DD	385	ASN
30	DD	387	GLN
30	DD	451	ASN
30	DD	507	GLN

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Mol	Chain	Res	Type
30	DD	542	HIS
30	DD	555	HIS
30	DD	607	GLN
30	DD	675	ASN
30	DD	687	HIS
30	DD	733	GLN
31	DE	219	ASN
31	DE	304	ASN
31	DE	309	HIS
31	DE	414	ASN
31	DE	491	GLN
31	DE	567	HIS
31	DE	573	GLN
32	DF	15	HIS
32	DF	41	ASN
32	DF	62	ASN
32	DF	110	ASN
32	DF	119	HIS
32	DF	140	HIS
32	DF	187	ASN
32	DF	198	HIS
32	DF	292	ASN
32	DF	399	HIS
32	DF	406	ASN
33	DG	191	GLN
33	DG	200	GLN
33	DG	332	GLN
33	DG	396	ASN
33	DG	476	GLN
34	DH	27	GLN
34	DH	58	HIS
34	DH	82	GLN
34	DH	100	HIS
34	DH	105	GLN
34	DH	142	HIS
34	DH	282	ASN
34	DH	450	ASN
34	DH	498	ASN
34	DH	524	HIS
35	DI	101	ASN
35	DI	175	GLN
35	DI	193	ASN

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Mol	Chain	Res	Type
35	DI	370	GLN
36	DJ	53	GLN
36	DJ	174	ASN
36	DJ	293	ASN
37	DK	171	GLN
38	DL	32	HIS
38	DL	116	ASN
39	DO	71	HIS
39	DO	143	HIS
39	DO	206	GLN
40	DP	76	HIS
40	DP	98	HIS
40	DP	116	HIS
40	DP	140	ASN
40	DP	142	ASN
40	DP	143	ASN
40	DP	194	GLN
41	DR	26	ASN
41	DR	35	HIS
41	DR	62	HIS
41	DR	68	HIS
42	DT	23	GLN
42	DT	72	HIS
42	DT	113	GLN
42	DT	215	GLN
43	DU	19	GLN
43	DU	58	HIS
43	DU	63	HIS
43	DU	99	GLN
43	DU	144	GLN
43	DU	155	GLN
44	DV	35	GLN
44	DV	40	HIS
45	DW	66	HIS
45	DW	98	GLN
45	DW	120	ASN
45	DW	132	HIS
45	DW	139	ASN
45	DW	154	HIS
45	DW	157	ASN
45	DW	160	GLN
46	DX	130	GLN

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Mol	Chain	Res	Type
47	DY	10	ASN
47	DY	62	GLN
47	DY	106	GLN
49	Da	30	HIS
49	Da	34	GLN
49	Da	37	HIS
50	F2	219	GLN
50	F2	270	ASN
50	F2	307	ASN
50	F2	379	HIS
50	F2	427	HIS
50	F2	461	HIS
50	F2	530	GLN
50	F2	579	HIS
50	F2	698	HIS
50	F2	739	GLN
50	F2	778	GLN
50	F2	830	GLN
50	F2	840	ASN
50	F2	850	GLN
50	F2	958	ASN
51	F3	182	HIS
51	F3	206	GLN
51	F3	387	ASN
51	F3	405	ASN
51	F3	432	GLN
51	F3	481	HIS
51	F3	576	ASN
51	F3	650	GLN
51	F3	718	GLN
51	F3	724	GLN
51	F3	747	HIS
51	F3	773	ASN
51	F3	796	ASN
51	F3	823	GLN
52	F5	123	GLN
52	F5	158	HIS
52	F5	234	HIS
52	F5	248	GLN
52	F5	255	HIS
52	F5	269	GLN
52	F5	315	GLN

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Mol	Chain	Res	Type
52	F5	485	ASN
52	F5	608	GLN
52	F5	609	GLN
52	F5	711	GLN
52	F5	716	HIS
53	F6	49	HIS
53	F6	203	GLN
53	F6	210	GLN
53	F6	279	ASN
53	F6	363	ASN
53	F6	547	GLN
53	F6	551	HIS
53	F6	587	GLN
54	F7	61	HIS
54	F7	214	HIS
54	F7	343	GLN
54	F7	387	HIS
54	F7	432	GLN
54	F7	450	ASN
54	F7	502	GLN
54	F7	542	ASN
54	F7	612	GLN
54	F7	649	HIS
54	F7	677	GLN
55	F9	211	GLN
55	F9	217	GLN
55	F9	262	HIS
55	F9	302	GLN
55	F9	313	GLN
55	F9	332	ASN
55	F9	464	GLN
55	F9	484	ASN
55	F9	525	ASN
55	F9	547	HIS
56	FM	25	ASN
56	FM	96	ASN
56	FM	248	ASN
56	FN	9	ASN
56	FN	102	ASN
56	FN	170	HIS
56	FN	199	HIS
56	FN	312	HIS

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Mol	Chain	Res	Type
57	FO	76	GLN
57	FO	94	HIS
57	FO	97	ASN
57	FO	125	ASN
57	FO	147	ASN
57	FO	255	GLN
59	FW	20	GLN
59	FW	176	GLN
59	FW	218	HIS
60	FX	29	GLN
60	FX	68	GLN
60	FX	168	HIS
60	FX	212	HIS
61	FZ	45	ASN
61	FZ	63	ASN
61	FZ	150	GLN
62	Fb	31	HIS
62	Fb	76	GLN
62	Fb	91	HIS
62	Fb	127	GLN
62	Fb	134	GLN
63	Fc	96	HIS
63	Fc	132	GLN
64	Fd	42	HIS
64	Fd	59	HIS
64	Fd	66	HIS
64	Fd	76	HIS
65	Ff	180	GLN
65	Ff	202	GLN
65	Ff	487	HIS
65	Ff	646	GLN
65	Ff	710	GLN
66	Fg	14	GLN
66	Fg	96	HIS
66	Fg	178	GLN
66	Fg	448	HIS
66	Fg	484	HIS
66	Fg	499	HIS
67	Fh	67	ASN
67	Fh	89	GLN
67	Fh	165	GLN
67	Fh	170	GLN

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Mol	Chain	Res	Type
68	Fi	10	ASN
68	Fi	123	GLN
68	Fi	205	HIS
68	Fi	215	GLN
68	Fi	272	GLN
68	Fi	288	GLN
68	Fi	380	GLN
68	Fi	405	HIS
68	Fi	482	GLN
68	Fi	485	GLN
68	Fi	562	ASN
68	Fi	594	GLN
69	IA	40	GLN
69	IA	53	GLN
69	IA	71	ASN
69	IA	157	HIS
69	IA	214	HIS
69	IA	227	ASN
69	IA	231	GLN
69	IA	291	GLN
69	IA	316	GLN
69	IA	324	GLN
69	IA	325	GLN
69	IA	462	GLN
69	IA	509	GLN
69	IA	564	GLN
69	IA	724	GLN
69	IA	733	GLN
70	IB	195	GLN
70	IB	358	ASN
70	IB	448	GLN
70	IB	605	HIS
70	IB	699	HIS
70	IB	744	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	CA	494/621 (79%)	188 (38%)	5 (1%)
2	CB	2/3 (66%)	2 (100%)	0
All	All	496/624 (79%)	190 (38%)	5 (1%)

All (190) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	CA	3	A
1	CA	5	U
1	CA	6	U
1	CA	7	A
1	CA	8	U
1	CA	10	G
1	CA	17	G
1	CA	18	U
1	CA	19	U
1	CA	20	A
1	CA	21	G
1	CA	22	U
1	CA	25	U
1	CA	26	C
1	CA	28	U
1	CA	29	A
1	CA	30	U
1	CA	38	U
1	CA	40	U
1	CA	42	A
1	CA	43	A
1	CA	44	U
1	CA	46	U
1	CA	52	C
1	CA	53	A
1	CA	56	U
1	CA	58	A
1	CA	59	U
1	CA	60	A
1	CA	61	A
1	CA	62	A
1	CA	63	G
1	CA	67	U
1	CA	69	U
1	CA	72	U
1	CA	73	U
1	CA	74	G
1	CA	78	G
1	CA	79	A
1	CA	80	U
1	CA	82	U
1	CA	83	U

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Mol	Chain	Res	Type
1	CA	84	U
1	CA	85	U
1	CA	87	U
1	CA	88	A
1	CA	90	A
1	CA	95	U
1	CA	98	A
1	CA	100	G
1	CA	102	A
1	CA	105	G
1	CA	106	U
1	CA	111	A
1	CA	115	A
1	CA	127	G
1	CA	135	U
1	CA	136	G
1	CA	138	U
1	CA	139	U
1	CA	146	U
1	CA	152	U
1	CA	155	A
1	CA	156	U
1	CA	157	G
1	CA	158	G
1	CA	159	G
1	CA	160	U
1	CA	161	G
1	CA	167	A
1	CA	170	U
1	CA	173	A
1	CA	178	A
1	CA	183	U
1	CA	184	A
1	CA	185	A
1	CA	205	A
1	CA	207	A
1	CA	217	U
1	CA	221	C
1	CA	223	G
1	CA	224	A
1	CA	225	A
1	CA	226	A

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Mol	Chain	Res	Type
1	CA	234	C
1	CA	236	G
1	CA	239	G
1	CA	240	U
1	CA	241	U
1	CA	242	G
1	CA	246	U
1	CA	247	A
1	CA	248	A
1	CA	249	U
1	CA	250	U
1	CA	251	U
1	CA	261	U
1	CA	262	A
1	CA	273	A
1	CA	287	A
1	CA	300	G
1	CA	315	A
1	CA	320	A
1	CA	321	A
1	CA	322	A
1	CA	323	U
1	CA	325	A
1	CA	327	U
1	CA	350	U
1	CA	351	A
1	CA	407	U
1	CA	408	C
1	CA	409	A
1	CA	410	U
1	CA	411	A
1	CA	412	U
1	CA	413	A
1	CA	414	A
1	CA	415	U
1	CA	416	U
1	CA	417	A
1	CA	418	A
1	CA	421	G
1	CA	423	A
1	CA	429	U
1	CA	430	U

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Mol	Chain	Res	Type
1	CA	433	U
1	CA	434	A
1	CA	435	G
1	CA	438	U
1	CA	441	G
1	CA	442	A
1	CA	443	U
1	CA	444	A
1	CA	445	C
1	CA	446	C
1	CA	447	A
1	CA	449	G
1	CA	455	G
1	CA	458	U
1	CA	459	A
1	CA	466	G
1	CA	468	A
1	CA	469	A
1	CA	472	G
1	CA	480	C
1	CA	481	A
1	CA	483	A
1	CA	484	A
1	CA	485	U
1	CA	486	C
1	CA	487	A
1	CA	491	U
1	CA	492	U
1	CA	493	U
1	CA	494	A
1	CA	495	U
1	CA	496	U
1	CA	498	U
1	CA	499	U
1	CA	502	U
1	CA	503	A
1	CA	504	U
1	CA	505	U
1	CA	507	A
1	CA	512	G
1	CA	513	U
1	CA	518	G

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Mol	Chain	Res	Type
1	CA	527	A
1	CA	528	U
1	CA	529	A
1	CA	532	A
1	CA	560	U
1	CA	563	U
1	CA	567	A
1	CA	568	A
1	CA	576	A
1	CA	581	G
1	CA	583	A
1	CA	584	G
1	CA	586	A
1	CA	587	A
1	CA	588	U
1	CA	590	A
1	CA	600	U
1	CA	601	A
1	CA	602	A
1	CA	604	A
2	CB	2	A
2	CB	3	U

All (5) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	CA	151	U
1	CA	169	A
1	CA	349	U
1	CA	465	U
1	CA	566	U

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 14 ligands modelled in this entry, 8 are monoatomic - leaving 6 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	$\#\|Z\| > 2$
85	PM8	Fc	201	63	25,31,31	0.20	0	30,38,38	0.46	0
88	GDP	IA	1000	82	24,30,30	1.17	2 (8%)	31,47,47	2.01	8 (25%)
83	ATP	Cg	1000	82	26,33,33	0.60	0	31,52,52	0.76	1 (3%)
84	PO4	IA	1001	82	4,4,4	0.94	0	6,6,6	0.46	0
87	FDA	Ff	901	-	51,58,58	1.21	6 (11%)	60,89,89	2.23	8 (13%)
84	PO4	FW	301	-	4,4,4	0.97	0	6,6,6	0.41	0

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
87	FDA	Ff	901	-	-	12/30/50/50	0/6/6/6
83	ATP	Cg	1000	82	-	2/18/38/38	0/3/3/3
85	PM8	Fc	201	63	-	7/36/38/38	-
88	GDP	IA	1000	82	-	0/12/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
87	Ff	901	FDA	C4X-C10	5.55	1.44	1.38
88	IA	1000	GDP	C5-C6	4.14	1.48	1.41
87	Ff	901	FDA	C4-N3	2.98	1.38	1.33
88	IA	1000	GDP	C5-C4	2.44	1.47	1.40
87	Ff	901	FDA	C4X-C4	2.27	1.45	1.41
87	Ff	901	FDA	C4X-N5	-2.15	1.30	1.33
87	Ff	901	FDA	C9A-N10	2.11	1.41	1.38
87	Ff	901	FDA	C5X-N5	2.10	1.38	1.35

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
87	Ff	901	FDA	C2-N3-C4	13.00	126.12	115.14
87	Ff	901	FDA	C4X-C4-N3	-6.99	113.87	123.43
88	IA	1000	GDP	C2-N3-C4	4.95	121.01	115.36
87	Ff	901	FDA	C10-C4X-N5	4.72	124.52	121.26
88	IA	1000	GDP	C2-N1-C6	3.99	122.27	115.93
88	IA	1000	GDP	C5-C6-N1	-3.98	117.99	123.43
87	Ff	901	FDA	C10-C4X-C4	-3.82	117.42	119.95
88	IA	1000	GDP	PA-O3A-PB	-3.78	119.86	132.83
88	IA	1000	GDP	C4-C5-C6	-3.66	117.31	120.80
87	Ff	901	FDA	C4X-C10-N10	-3.45	116.76	120.30
88	IA	1000	GDP	C3'-C2'-C1'	3.32	105.97	100.98
88	IA	1000	GDP	N3-C2-N1	-3.25	122.89	127.22
87	Ff	901	FDA	C1'-N10-C9A	3.18	120.79	118.29
87	Ff	901	FDA	P-O3P-PA	-2.83	123.12	132.83
88	IA	1000	GDP	C4-C5-N7	-2.61	106.68	109.40
83	Cg	1000	ATP	C5-C6-N6	2.31	123.86	120.35
87	Ff	901	FDA	C5A-C6A-N6A	2.30	123.85	120.35

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
83	Cg	1000	ATP	O4'-C4'-C5'-O5'
85	Fc	201	PM8	O1-C1-S1-C43
85	Fc	201	PM8	C2-C1-S1-C43
87	Ff	901	FDA	C5B-O5B-PA-O1A
87	Ff	901	FDA	C5B-O5B-PA-O2A
87	Ff	901	FDA	O4B-C4B-C5B-O5B
87	Ff	901	FDA	N10-C1'-C2'-O2'
83	Cg	1000	ATP	C3'-C4'-C5'-O5'
87	Ff	901	FDA	C3B-C4B-C5B-O5B
87	Ff	901	FDA	C2'-C3'-C4'-O4'
85	Fc	201	PM8	O33-C32-C34-O35
85	Fc	201	PM8	N41-C42-C43-S1
85	Fc	201	PM8	O33-C32-C34-N36
87	Ff	901	FDA	O3'-C3'-C4'-O4'
85	Fc	201	PM8	C43-C42-N41-C39
87	Ff	901	FDA	N10-C1'-C2'-C3'
87	Ff	901	FDA	C2'-C3'-C4'-C5'
87	Ff	901	FDA	O3'-C3'-C4'-C5'
87	Ff	901	FDA	C4'-C5'-O5'-P

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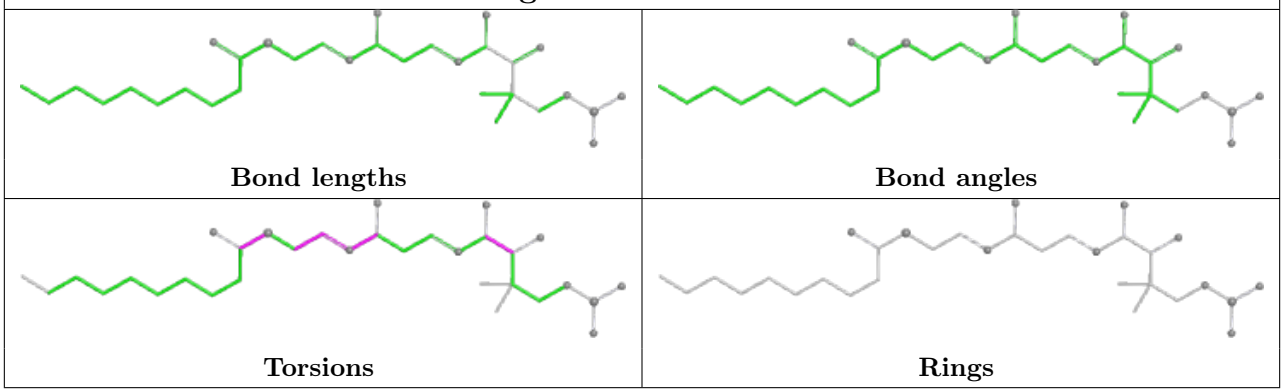
Mol	Chain	Res	Type	Atoms
85	Fc	201	PM8	O40-C39-N41-C42
87	Ff	901	FDA	C5B-O5B-PA-O3P

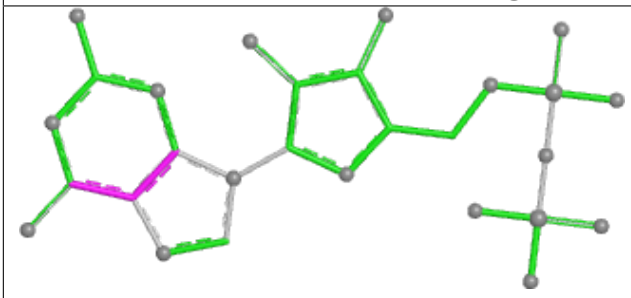
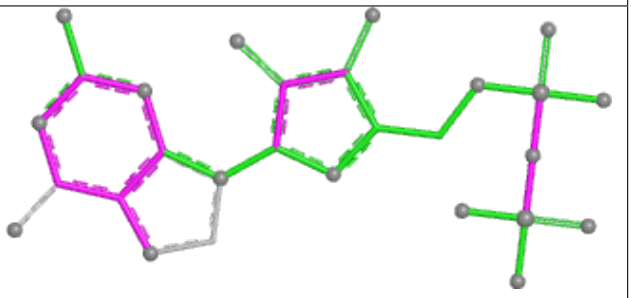
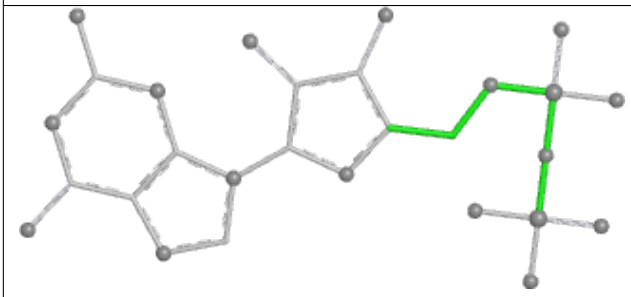
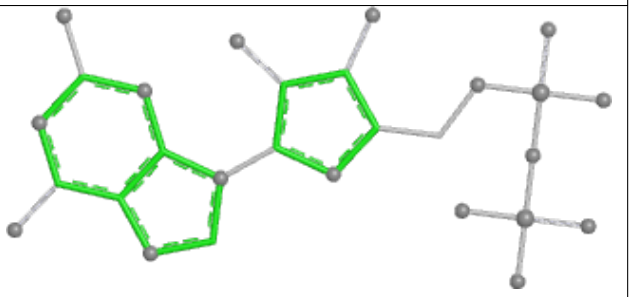
There are no ring outliers.

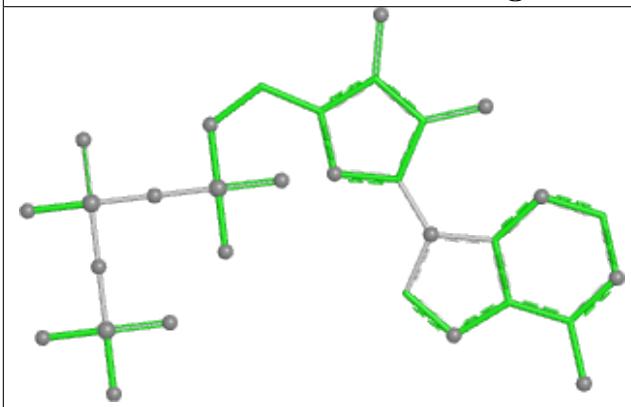
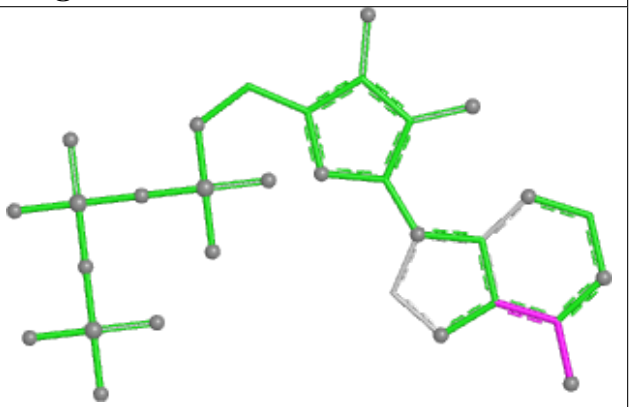
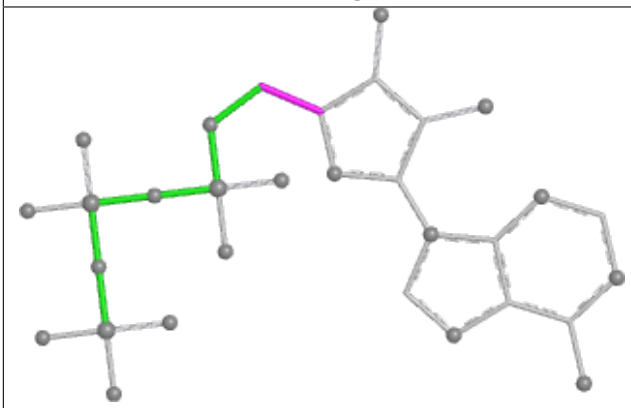
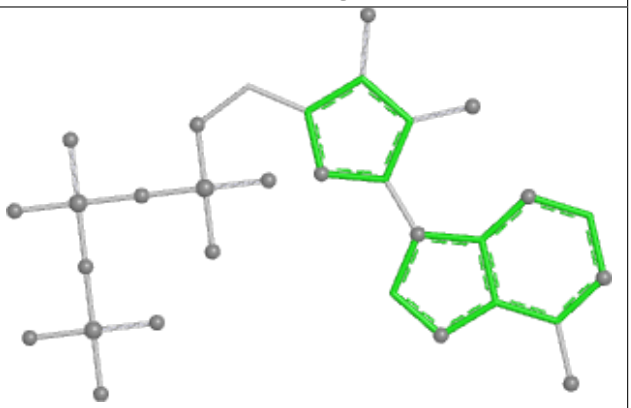
No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

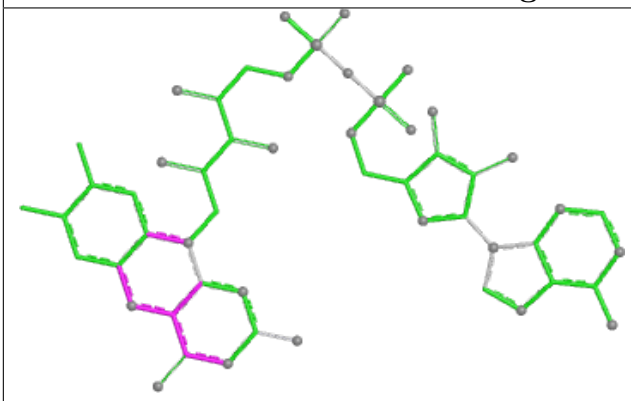
Ligand PM8 Fc 201



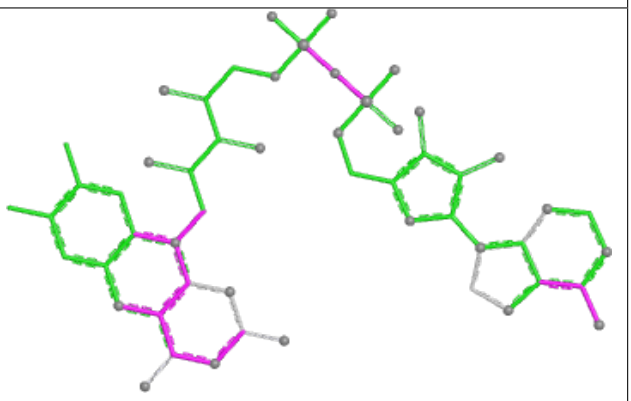
Ligand GDP IA 1000	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand ATP Cg 1000	
 Bond lengths	 Bond angles
 Torsions	 Rings

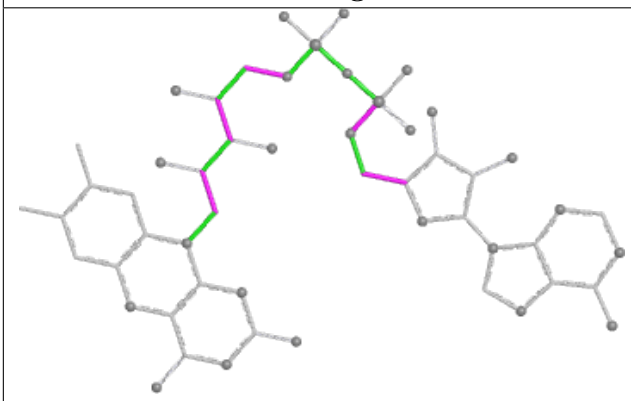
Ligand FDA Ff 901



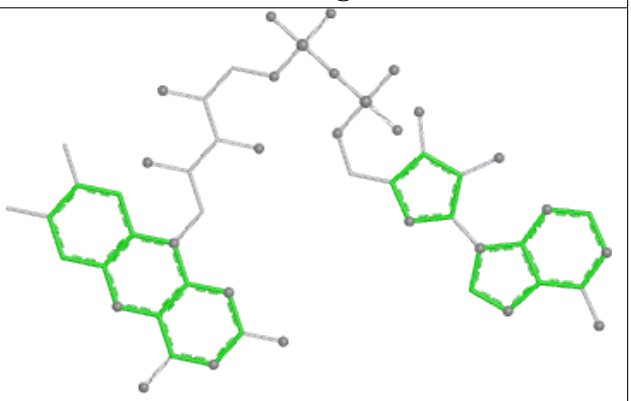
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

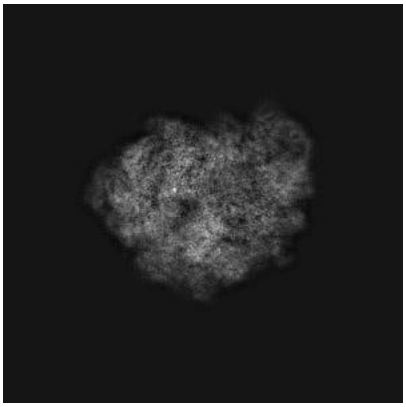
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-13660. These allow visual inspection of the internal detail of the map and identification of artifacts.

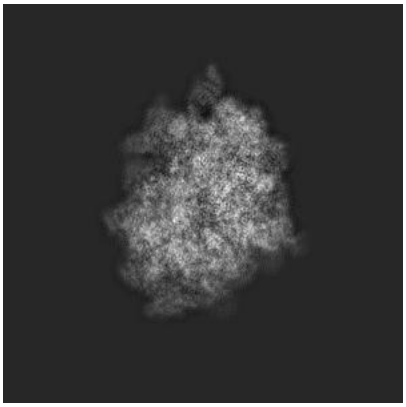
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

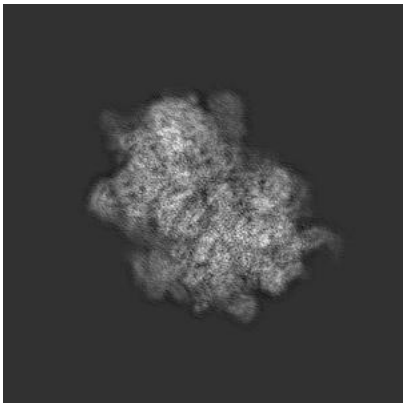
6.1.1 Primary map



X



Y

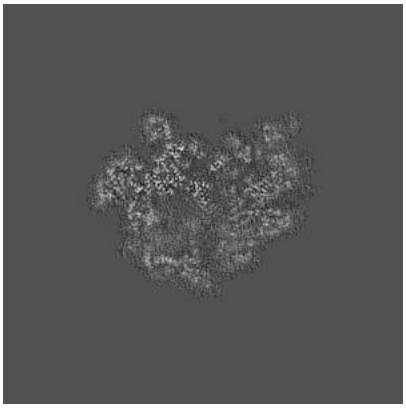


Z

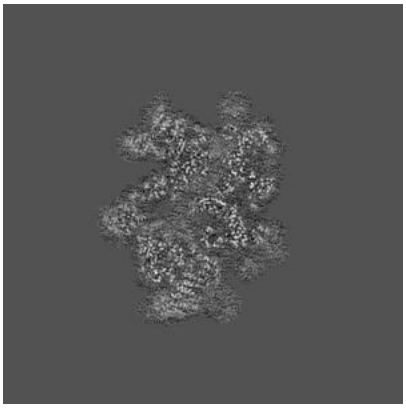
The images above show the map projected in three orthogonal directions.

6.2 Central slices

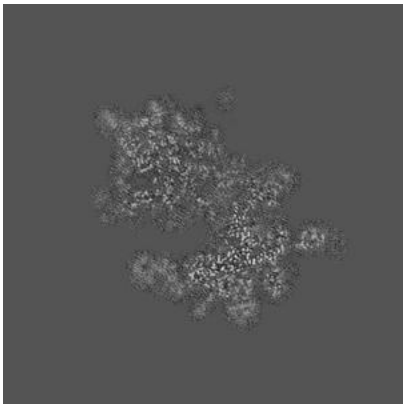
6.2.1 Primary map



X Index: 180



Y Index: 180

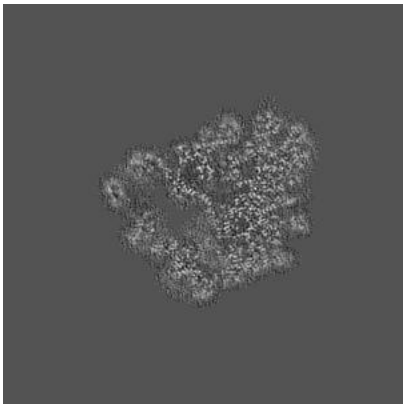


Z Index: 180

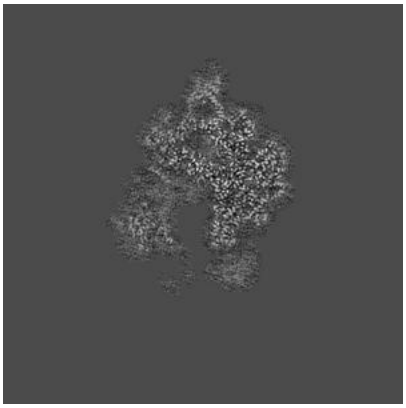
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

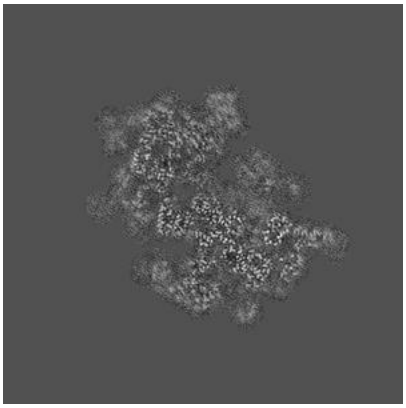
6.3.1 Primary map



X Index: 157



Y Index: 154

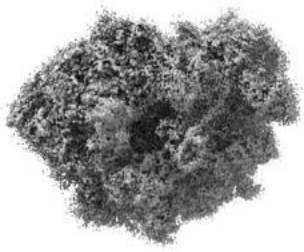


Z Index: 192

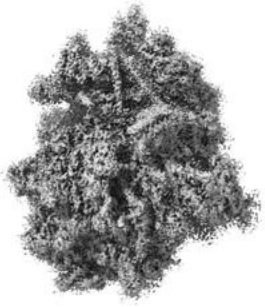
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

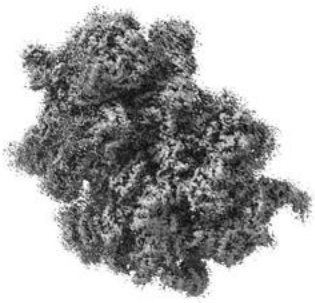
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

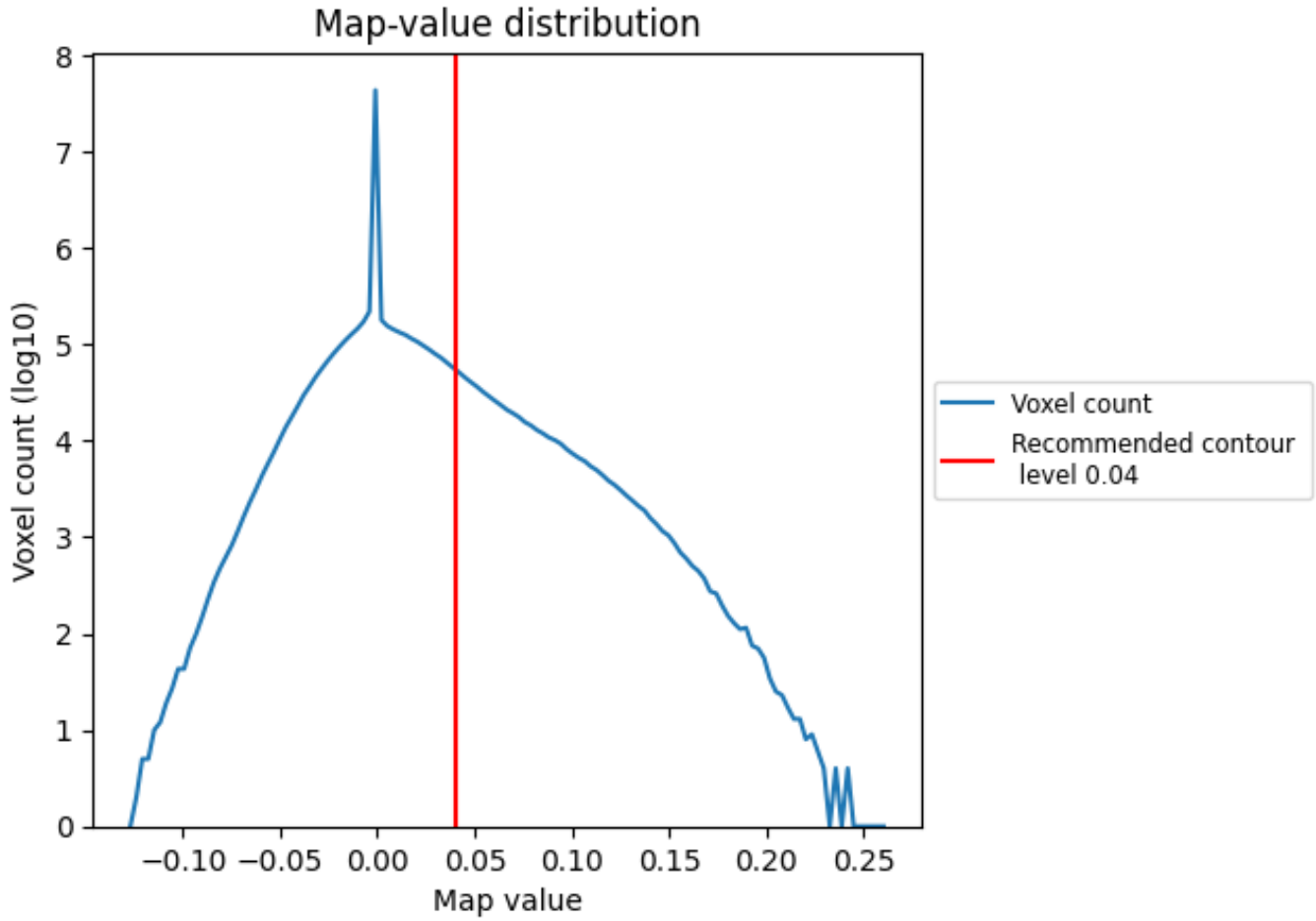
6.5 Mask visualisation (i)

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

7 Map analysis

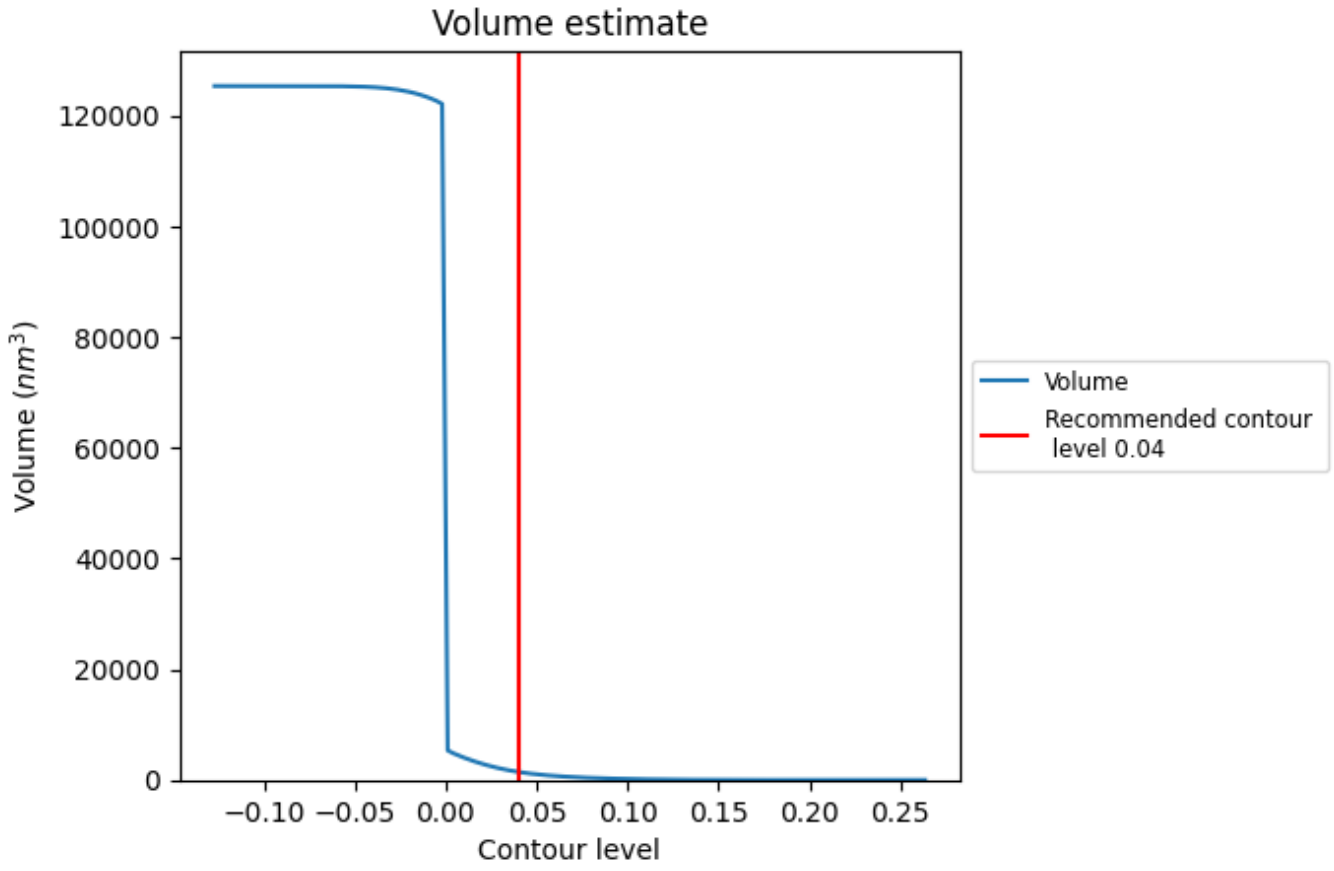
This section contains the results of statistical analysis of the map.

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.

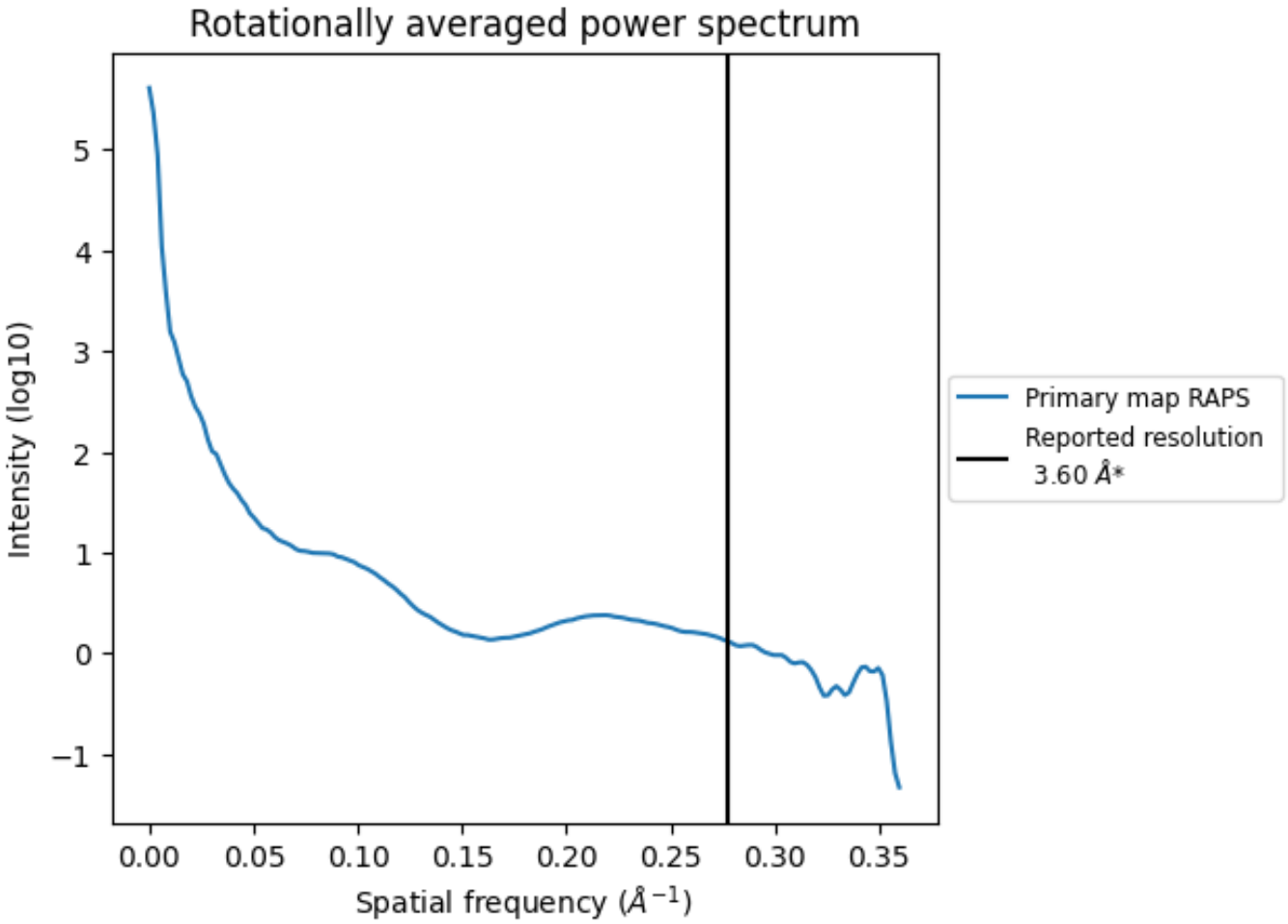
7.2 Volume estimate



The volume at the recommended contour level is 1447 nm^3; this corresponds to an approximate mass of 1307 kDa.

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

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.278 Å^{-1}

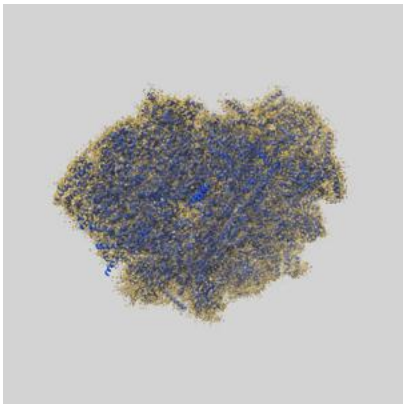
8 Fourier-Shell correlation

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

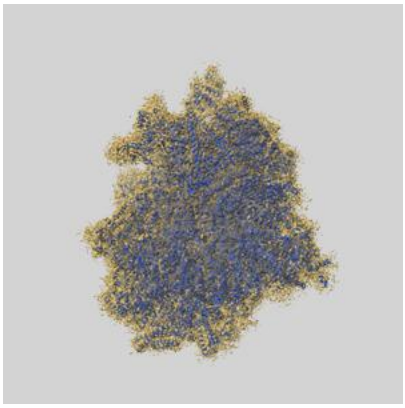
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-13660 and PDB model 7PUA. Per-residue inclusion information can be found in section 3 on page 28.

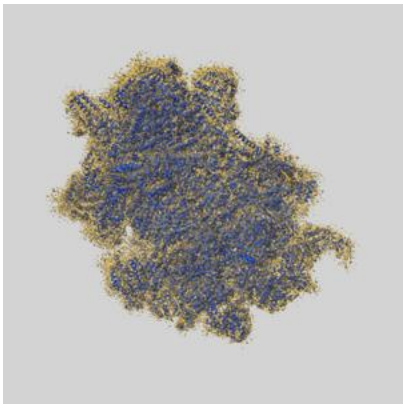
9.1 Map-model overlay



X



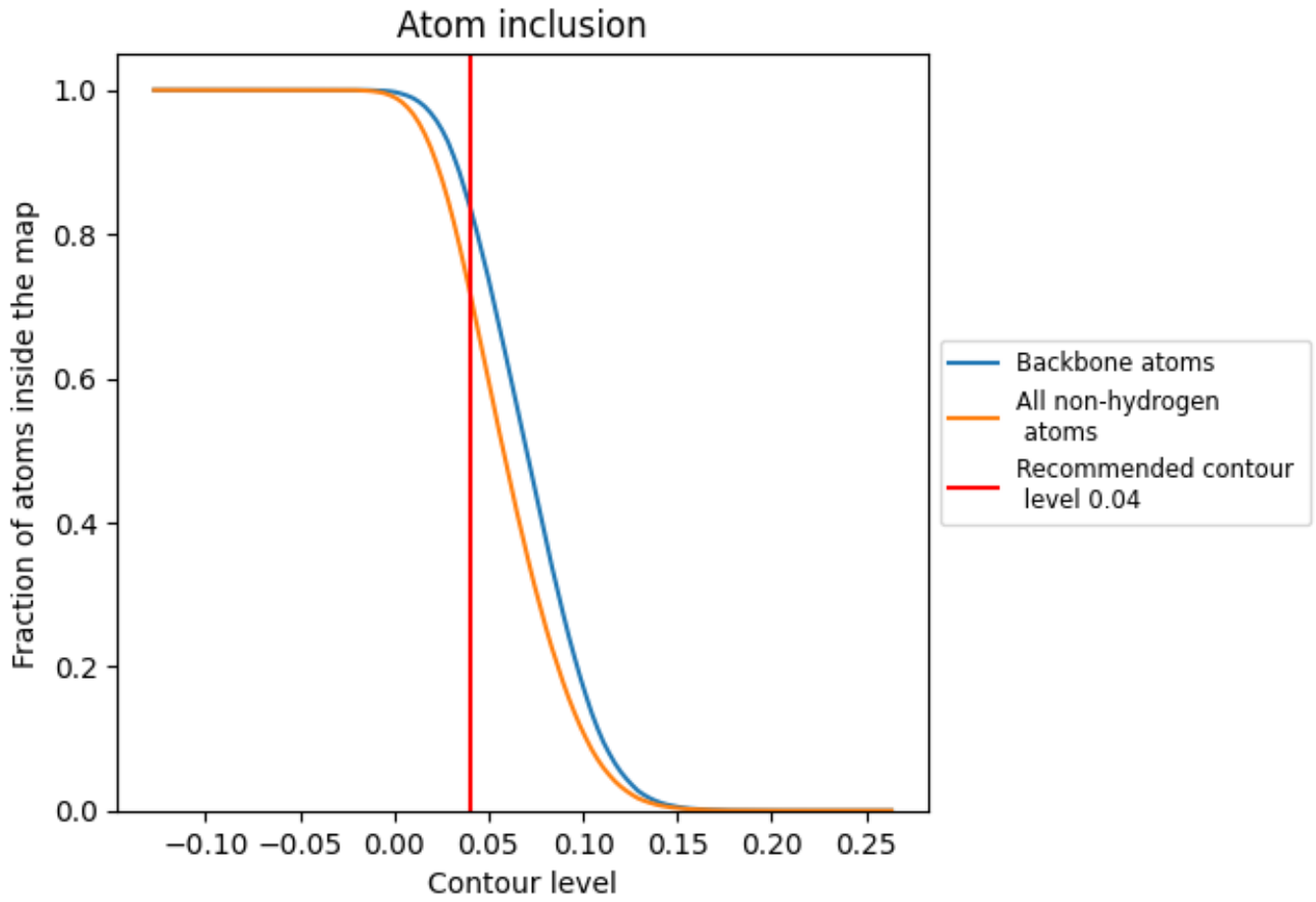
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04 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 Atom inclusion (i)



At the recommended contour level, 84% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.