Full wwPDB EM Validation Report ⓘ

Feb 5, 2024 – 06:23 PM JST

PDB ID	:	8IFE
EMDB ID	:	EMD-35414
Title	:	Arbekacin-added human 80S ribosome
Authors	:	Tomono, J.; Asano, K.; Chiashi, T.; Tanaka, Y.; Yokoyama, T.
Deposited on	:	2023-02-17
Resolution	:	2.57 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

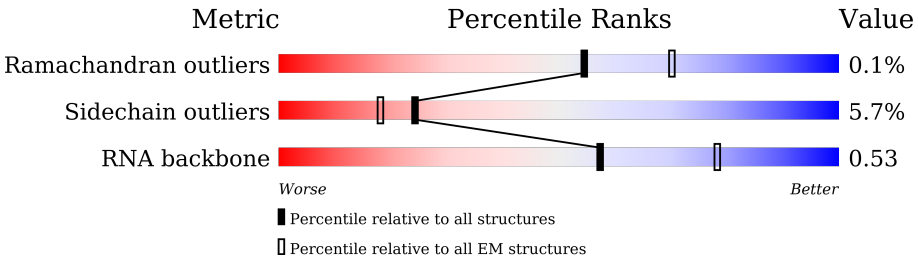
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance

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

The reported resolution of this entry is 2.57 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	1A	5070	10% 56% 17% 27%
2	1B	121	83% 17%
3	1C	157	6% 81% 18%
4	1D	257	93%
5	1E	403	96%
6	1F	427	83% 14%
7	1G	297	7% 93% 6%
8	1H	288	11% 77% 5% 18%

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Mol	Chain	Length	Quality of chain
9	2A	248	88% 9%
10	2B	266	13% 88% 9%
11	2C	192	95%
12	2D	214	12% 93% 6%
13	2E	178	20% 88% 11%
14	2F	211	6% 95% 5%
15	2G	215	63% 35%
16	2H	204	96%
17	2I	203	96%
18	2J	184	80% 17%
19	2K	188	98%
20	2L	196	14% 92% 5%
21	2M	176	94% 6%
22	2N	160	93% 6%
23	2O	128	22% 70% 9% 21%
24	2P	140	91% 6%
25	2Q	157	41% 78% 21%
26	2R	156	71% 6% 23%
27	2S	145	89% 8%
28	2T	136	96%
29	2U	148	99%
30	2V	159	14% 65% 31%
31	2W	115	7% 80% 5% 15%
32	2X	125	8% 82% 14%
33	2Y	135	91% 5%

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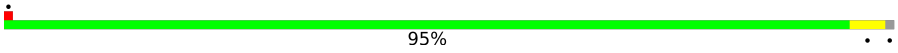
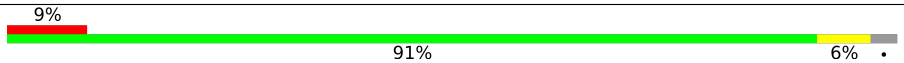
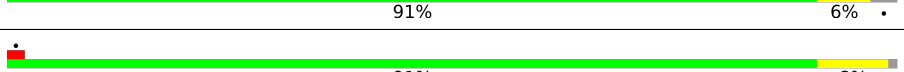
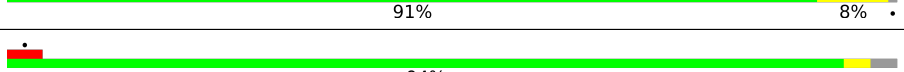
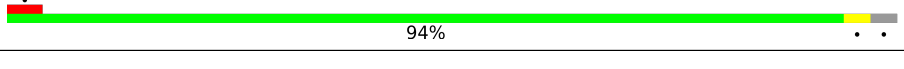
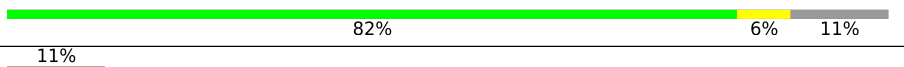
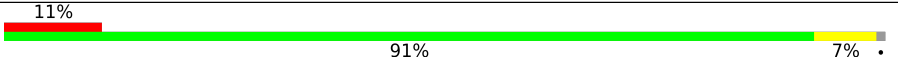
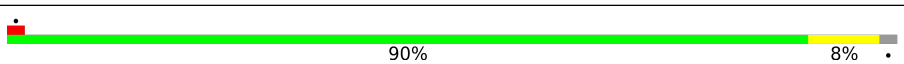
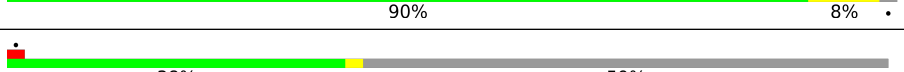
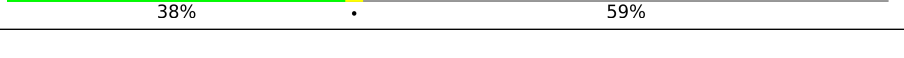
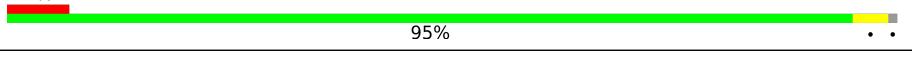
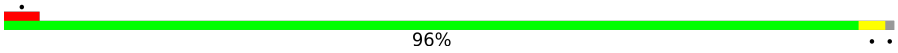
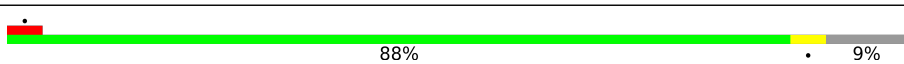
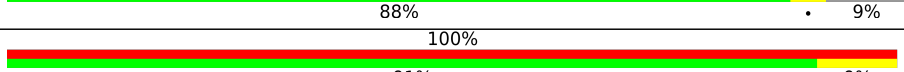
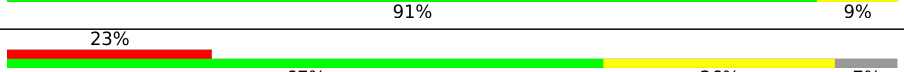
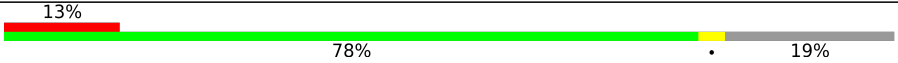
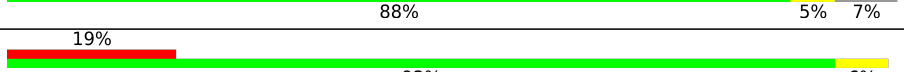
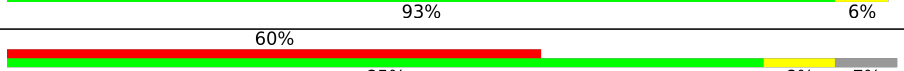
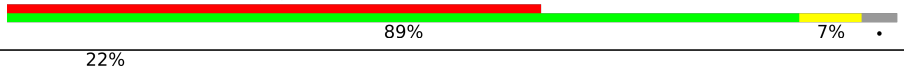
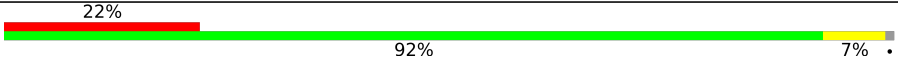
Mol	Chain	Length	Quality of chain
34	2Z	110	
35	2a	117	
36	2b	123	
37	2c	105	
38	2d	97	
39	2e	70	
40	2f	51	
41	2g	128	
42	2h	25	
43	2i	106	
44	2j	92	
45	2k	137	
46	2l	217	
47	2m	1869	
48	2n	295	
49	2o	264	
50	2p	243	
51	2q	263	
52	2r	204	
53	2s	194	
54	2t	208	
55	2u	165	
56	2v	158	
57	2w	145	
58	2x	146	

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Mol	Chain	Length	Quality of chain
59	2y	135	87% 90% 10%
60	2z	152	77% 87% 9% 5%
61	20	145	64% 91% 8%
62	21	119	72% 81% 6% 13%
63	3A	83	60% 93% 7%
64	3B	143	15% 93% 6%
65	3C	115	16% 84% 11%
66	3D	69	59% 87% 6% 7%
67	3E	56	73% 86% 12%
68	3F	317	98% 95%
69	3G	293	15% 72% 24%
70	3H	249	52% 90% 6% 5%
71	3I	194	27% 90% 6% 5%
72	3J	132	92% 89% 8%
73	3K	151	13% 94% 5%
74	3L	151	13% 89% 7%
75	3M	130	7% 95%
76	3N	133	39% 94% 5%
77	3O	125	50% 58% 40%
78	3P	84	63% 94% 5%
79	3Q	59	53% 92% 7%
80	3R	156	43% 41% 57%

2 Entry composition

There are 83 unique types of molecules in this entry. The entry contains 219097 atoms, of which 1012 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 28S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1A	3717	79676	35480	14585	25895	3716	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1A	2113	C	G	conflict	GB 86475748

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	1B	120	2558	1141	456	842	119	0	0

- Molecule 3 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	1C	156	3314	1480	585	1094	155	0	0

- Molecule 4 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	1D	248	1898	1189	389	314	6	0	0

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	1E	402	3238	2060	608	556	14	0	0

- Molecule 6 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	1F	368	Total	C	N	O	S	0	0
			2927	1840	583	489	15		

- Molecule 7 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	1G	293	Total	C	N	O	S	0	0
			2382	1507	434	427	14		

- Molecule 8 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	1H	236	Total	C	N	O	S	0	0
			1904	1222	361	317	4		

- Molecule 9 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	2A	225	Total	C	N	O	S	1	0
			1878	1207	361	301	9		

- Molecule 10 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	2B	241	Total	C	N	O	S	1	0
			1935	1233	374	324	4		

- Molecule 11 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	2C	190	Total	C	N	O	S	0	0
			1518	956	284	272	6		

- Molecule 12 is a protein called 60S ribosomal protein L10-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	2D	213	Total	C	N	O	S	0	0
			1711	1082	329	285	15		

- Molecule 13 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	2E	176	Total	C	N	O	S	0	0
			1410	888	263	253	6		

- Molecule 14 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	2F	210	Total	C	N	O	S	0	0
			1701	1064	352	281	4		

- Molecule 15 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	2G	139	Total	C	N	O	S	0	0
			1138	730	218	183	7		

- Molecule 16 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	2H	203	Total	C	N	O	S	0	0
			1701	1072	359	266	4		

- Molecule 17 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	2I	201	Total	C	N	O	S	0	0
			1650	1063	321	261	5		

- Molecule 18 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	2J	153	Total	C	N	O	S	0	0
			1242	776	241	216	9		

- Molecule 19 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	2K	187	Total	C	N	O	S	0	0
			1513	944	314	250	5		

- Molecule 20 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	2L	187	Total	C	N	O	S	0	0
			1566	971	336	250	9		

- Molecule 21 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	2M	175	Total	C	N	O	S	0	0
			1453	925	283	235	10		

- Molecule 22 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	2N	159	Total	C	N	O	S	0	0
			1298	823	252	217	6		

- Molecule 23 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	2O	101	Total	C	N	O	S	0	0
			825	529	144	150	2		

- Molecule 24 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	2P	131	Total	C	N	O	S	0	0
			979	618	184	172	5		

- Molecule 25 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	2Q	124	Total	C	N	O	S	0	0
			1015	634	207	170	4		

- Molecule 26 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	2R	120	Total	C	N	O	S	0	0
			985	630	185	169	1		

- Molecule 27 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	2S	134	Total	C	N	O	S	0	0
			1115	700	226	186	3		

- Molecule 28 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	2T	135	Total	C	N	O	S	0	0
			1107	714	208	182	3		

- Molecule 29 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	2U	147	Total	C	N	O	S	0	0
			1162	736	237	186	3		

- Molecule 30 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	2V	109	Total	C	N	O	S	0	0
			882	549	192	137	4		

- Molecule 31 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	2W	98	Total	C	N	O	S	0	0
			764	485	135	138	6		

- Molecule 32 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	2X	107	Total	C	N	O	S	0	0
			888	560	171	155	2		

- Molecule 33 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	2Y	128	Total	C	N	O	S	0	0
			1053	667	216	165	5		

- Molecule 34 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	2Z	109	Total	C	N	O	S	0	0
			876	555	174	144	3		

- Molecule 35 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	2a	114	Total	C	N	O	S	0	0
			906	566	187	147	6		

- Molecule 36 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	2b	122	Total	C	N	O	S	0	0
			1015	641	205	168	1		

- Molecule 37 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	2c	102	Total	C	N	O	S	0	0
			832	521	177	129	5		

- Molecule 38 is a protein called 60S ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	2d	86	Total	C	N	O	S	1	0
			713	439	158	111	5		

- Molecule 39 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	2e	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

- Molecule 40 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	2f	50	Total	C	N	O	S	0	0
			444	281	98	64	1		

- Molecule 41 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	2g	52	Total	C	N	O	S	0	0
			430	267	90	67	6		

- Molecule 42 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	2h	24	Total	C	N	O	S	0	0
			230	139	62	26	3		

- Molecule 43 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	2i	105	Total	C	N	O	S	1	0
			870	547	178	139	6		

- Molecule 44 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	2j	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 45 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	2k	125	Total	C	N	O	S	0	0
			1002	622	207	168	5		

- Molecule 46 is a protein called 60S ribosomal protein L10a.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	2l	217	Total	C	N	O	S	0	0
			1741	1113	312	307	9		

- Molecule 47 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	2m	1742	Total	C	N	O	P	0	0
			36900	16458	6595	12106	1741		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2m	582	C	U	conflict	GB 36162
2m	583	C	A	conflict	GB 36162
2m	584	G	A	conflict	GB 36162
2m	798	A	G	conflict	GB 36162
2m	1095	U	C	conflict	GB 36162

- Molecule 48 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	2n	221	Total	C	N	O	S	0	0
			1741	1106	305	322	8		

- Molecule 49 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	2o	214	Total	C	N	O	S	0	0
			1738	1103	310	311	14		

- Molecule 50 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	2p	227	Total	C	N	O	S	0	0
			1765	1125	317	315	8		

- Molecule 51 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	2q	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

- Molecule 52 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	2r	189	Total	C	N	O	S	0	0
			1495	934	284	270	7		

- Molecule 53 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	2s	186	Total	C	N	O	S	0	0
			1497	956	274	266	1		

- Molecule 54 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	2t	206	Total	C	N	O	S	0	0
			1686	1058	332	291	5		

- Molecule 55 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	2u	98	Total	C	N	O	S	0	0
			827	539	148	134	6		

- Molecule 56 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	2v	153	Total	C	N	O	S	0	0
			1247	793	234	214	6		

- Molecule 57 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	2w	127	Total	C	N	O	S	0	0
			1045	663	198	177	7		

- Molecule 58 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	2x	141	Total	C	N	O	S	0	0
			1124	715	212	194	3		

- Molecule 59 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	2y	135	Total	C	N	O	S	0	0
			1090	685	202	198	5		

- Molecule 60 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	2z	145	Total	C	N	O	S	0	0
			1198	751	242	203	2		

- Molecule 61 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	20	143	Total	C	N	O	S	0	0
			1112	697	214	198	3		

- Molecule 62 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	21	103	Total	C	N	O	S	0	0
			817	511	155	147	4		

- Molecule 63 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	3A	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

- Molecule 64 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	3B	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 65 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	3C	102	Total	C	N	O	S	1	0
			829	517	174	133	5		

- Molecule 66 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	3D	64	Total	C	N	O	S	0	0
			506	308	102	94	2		

- Molecule 67 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	3E	55	Total	C	N	O	S	0	0
			459	286	94	74	5		

- Molecule 68 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	3F	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

- Molecule 69 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	3G	222	Total	C	N	O	S	1	0
			1733	1120	301	302	10		

- Molecule 70 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	3H	237	Total	C	N	O	S	0	0
			1923	1200	387	329	7		

- Molecule 71 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	3I	185	Total	C	N	O	S	1	0
			1533	974	309	248	2		

- Molecule 72 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	3J	122	Total	C	N	O	S	0	0
			942	590	165	179	8		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3J	52	GLN	LEU	conflict	UNP P25398
3J	69	LEU	CYS	conflict	UNP P25398
3J	99	ASN	LYS	conflict	UNP P25398

- Molecule 73 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	3K	150	Total	C	N	O	S	0	0
			1208	773	229	205	1		

- Molecule 74 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	3L	140	Total	C	N	O	S	0	0
			1049	642	204	197	6		

- Molecule 75 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	3M	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 76 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	3N	131	Total	C	N	O	S	1	0
			1073	678	212	178	5		

- Molecule 77 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	3O	75	Total	C	N	O	S	0	0
			598	382	111	104	1		

- Molecule 78 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	3P	83	Total	C	N	O	S	0	0
			651	408	121	115	7		

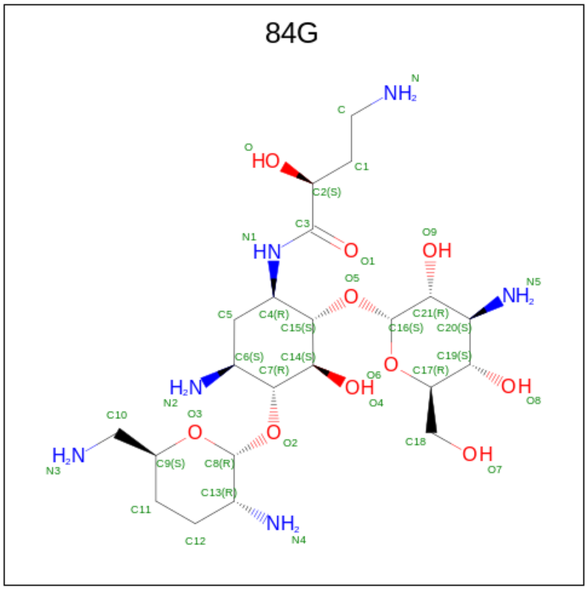
- Molecule 79 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	3Q	58	Total	C	N	O	S	0	0
			459	284	100	74	1		

- Molecule 80 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	3R	67	Total	C	N	O	S	0	0
			548	346	102	93	7		

- Molecule 81 is Arbekacin (three-letter code: 84G) (formula: $C_{22}H_{44}N_6O_{10}$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0
81	1A	1	Total C H N O 82 22 44 6 10	0

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Mol	Chain	Residues	Atoms					AltConf
81	1A	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	1A	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	1A	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	1A	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	1A	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	2D	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	2i	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	2m	1	Total	C	H	N	O	0
			82	22	44	6	10	
81	2m	1	Total	C	H	N	O	0
			82	22	44	6	10	

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

Mol	Chain	Residues	Atoms		AltConf
82	1A	268	Total	Mg	0
			268	268	
82	1B	3	Total	Mg	0
			3	3	
82	1C	5	Total	Mg	0
			5	5	
82	1D	1	Total	Mg	0
			1	1	
82	1E	1	Total	Mg	0
			1	1	
82	2H	1	Total	Mg	0
			1	1	
82	2J	1	Total	Mg	0
			1	1	
82	2L	1	Total	Mg	0
			1	1	
82	2M	2	Total	Mg	0
			2	2	
82	2P	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms	AltConf
82	2Y	1	Total Mg 1 1	0
82	2Z	1	Total Mg 1 1	0
82	2a	1	Total Mg 1 1	0
82	2d	1	Total Mg 1 1	0
82	2m	120	Total Mg 120 120	0
82	20	1	Total Mg 1 1	0
82	3H	1	Total Mg 1 1	0

- Molecule 83 is ZINC ION (three-letter code: ZN) (formula: Zn).

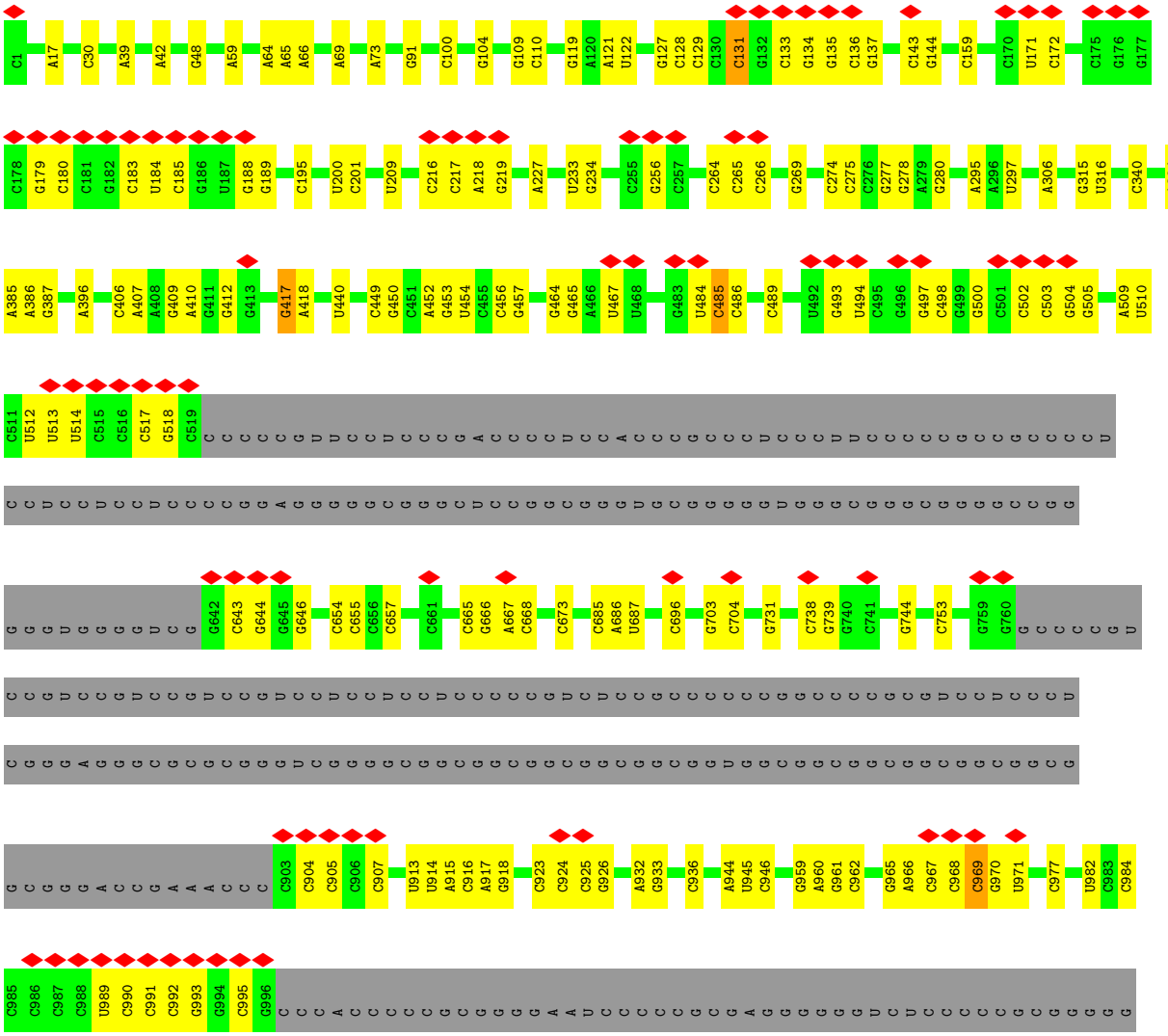
Mol	Chain	Residues	Atoms	AltConf
83	2d	1	Total Zn 1 1	0
83	2g	1	Total Zn 1 1	0
83	2i	1	Total Zn 1 1	0
83	2j	1	Total Zn 1 1	0
83	3C	1	Total Zn 1 1	0
83	3E	1	Total Zn 1 1	0

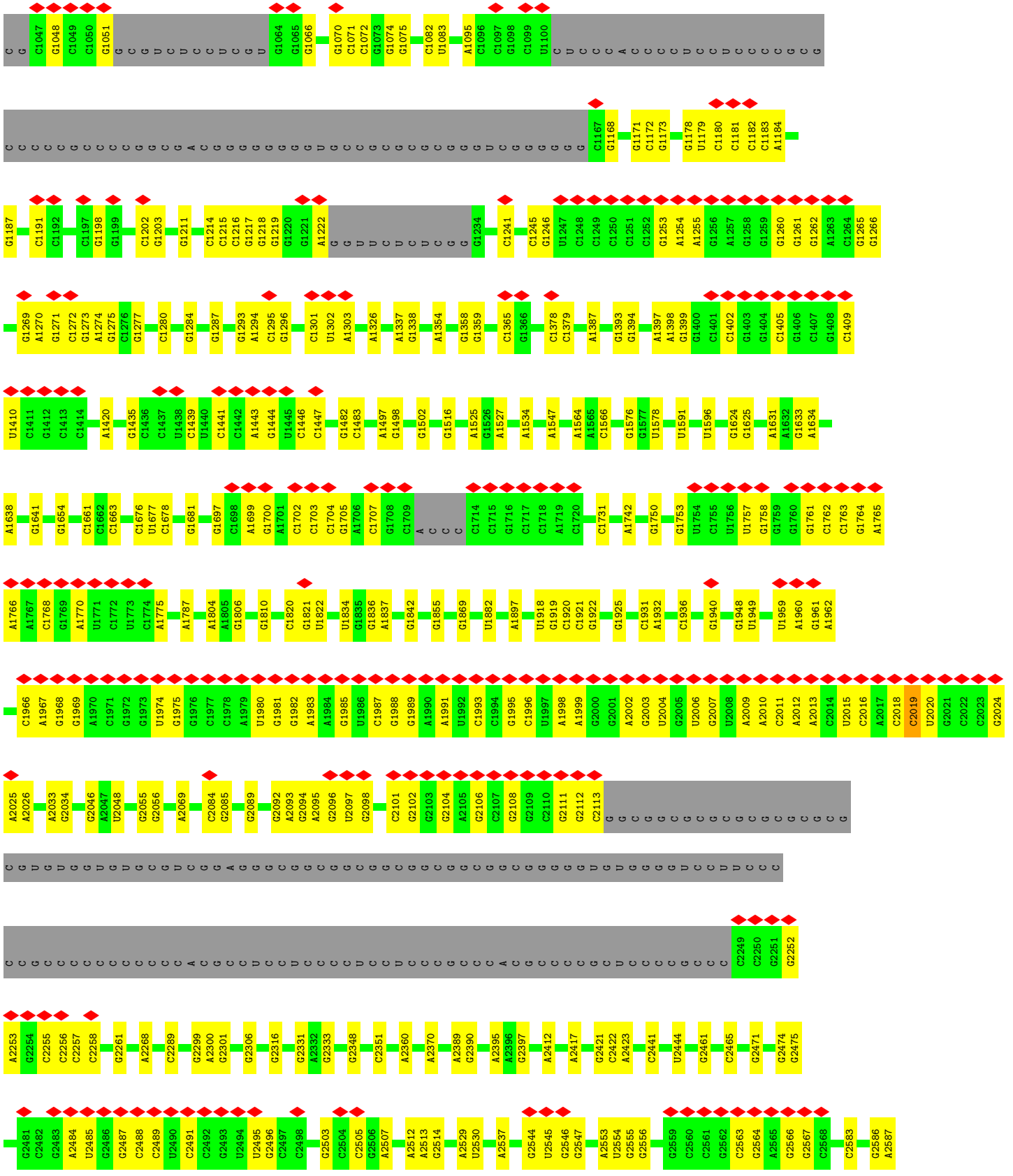
3 Residue-property plots (i)

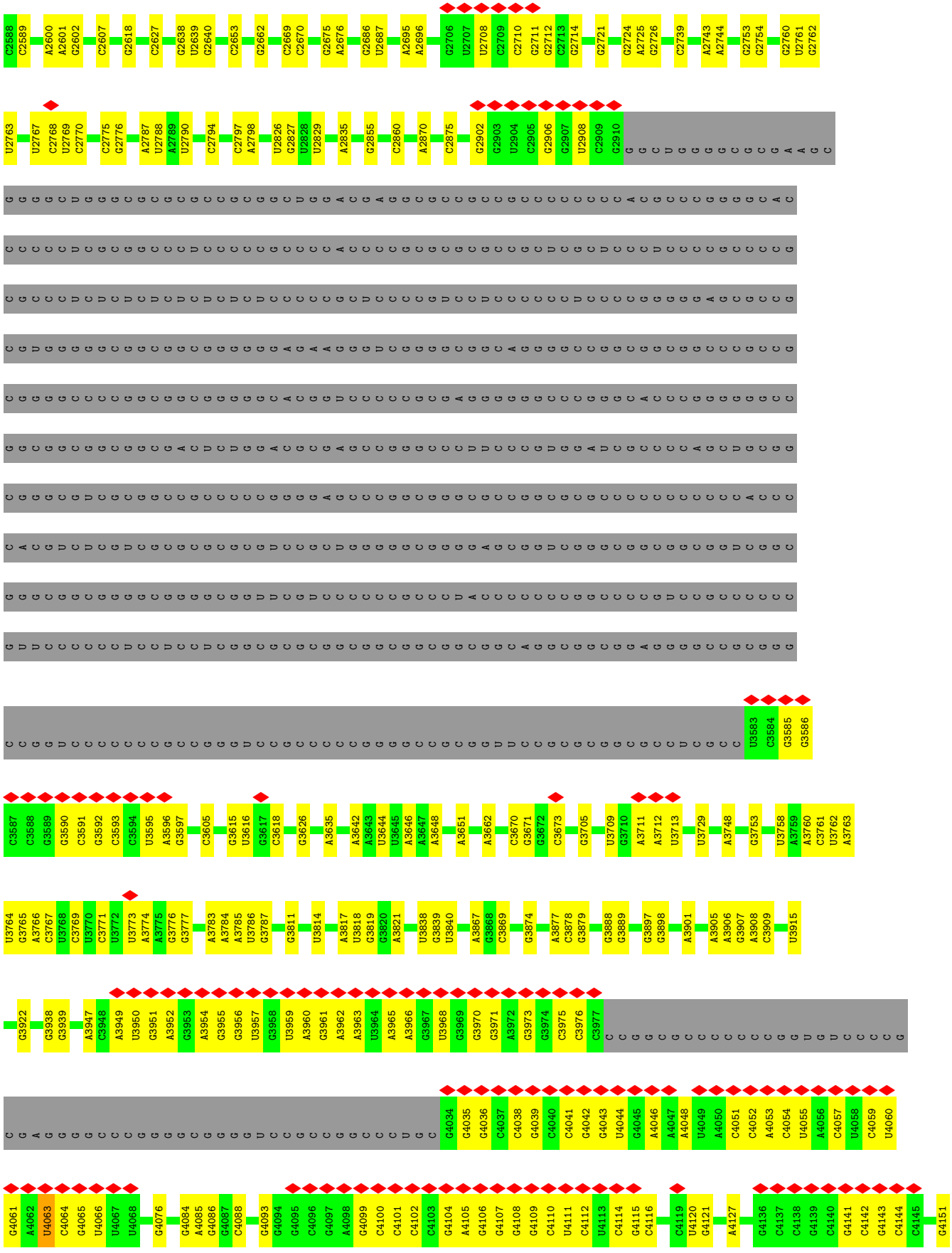
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

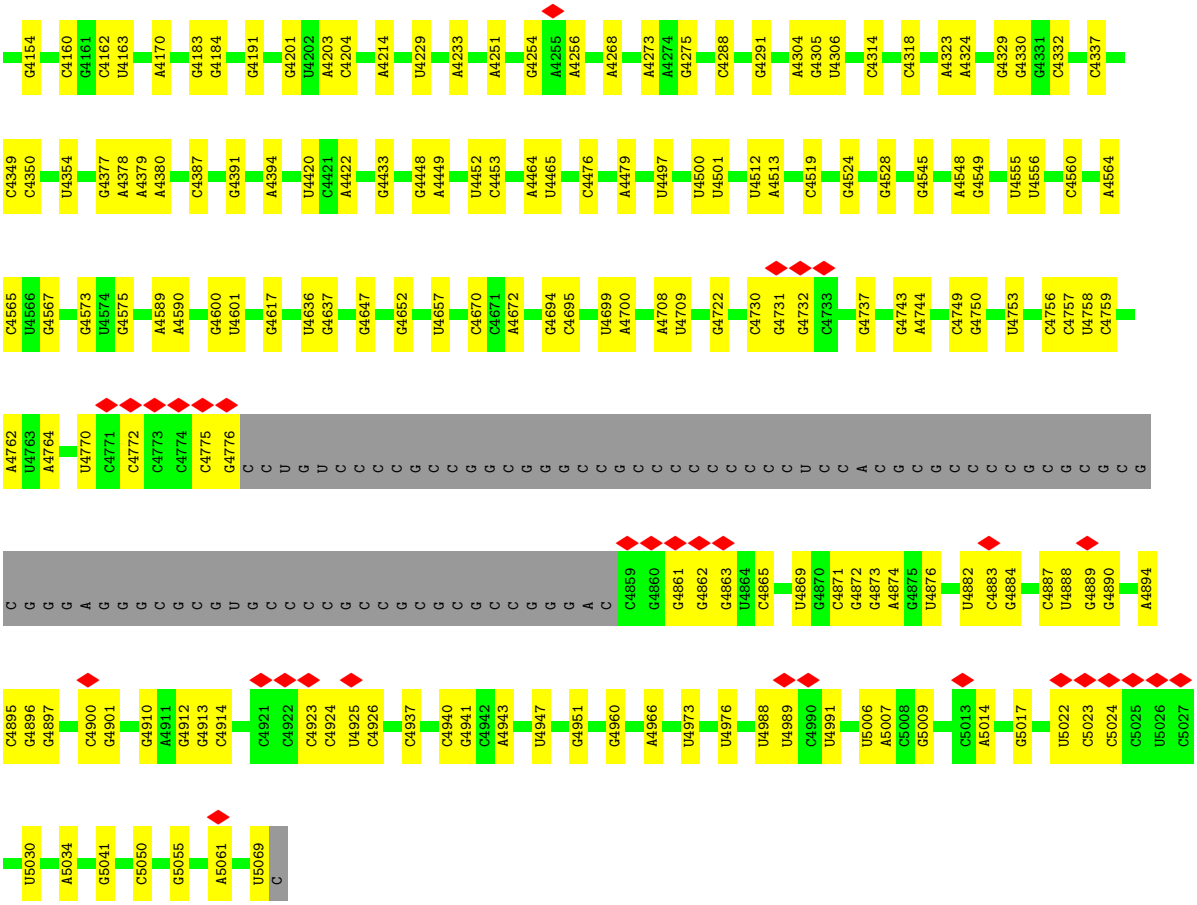
- Molecule 1: 28S ribosomal RNA

Chain 1A:



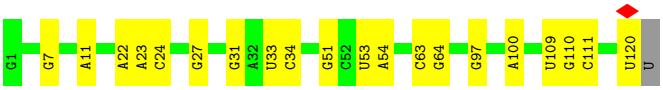



C2588 C2589 A2600 A2601 C2602 C2607 G2618 C2627 G2638 U2639 G2640 C2653 G2662 C2669 C2670 G2675 A2676 G2686 U2687 A2695 A2696 G2706 U2707 U2708 C2709 C2710 G2711 G2712 C2713 G2714 G2721 G2724 A2725 G2726 C2739 A2743 A2744 G2753 G2754 G2760 U2761 G2762
U2763 U2767 C2768 U2769 C2770 C2775 G2776 A2787 U2788 A2789 U2790 C2794 C2797 A2798 U2826 G2827 U2828 U2829 A2835 G2855 C2860 A2870 C2875 G2902 G2903 U2904 C2905 G2906 G2907 U2908 C2909 G2910
U3583 C3584 G3585 G3586
C3587 C3588 G3589 G3590 C3591 G3592 C3593 C3594 U3595 A3596 G3597 C3605 G3615 U3616 G3617 C3618 G3626 A3635 A3642 A3643 U3644 U3645 A3646 A3647 A3648 A3651 A3662 C3670 G3671 G3672 C3673 G3705 U3709 G3710 A3711 A3712 U3713 U3729 A3748 G3753 U3758 A3759 A3760 C3761 U3762 A3763
U3764 G3765 A3766 C3767 U3768 C3769 U3770 C3771 U3772 U3773 A3774 A3775 G3776 G3777 A3783 A3784 A3785 U3786 G3787 G3811 U3814 A3817 U3818 G3819 G3820 A3821 U3838 G3839 U3840 A3867 G3868 C3869 G3874 A3877 C3878 G3879 G3888 G3889 G3897 G3898 A3901 A3905 A3906 G3907 A3908 C3909 U3915
G3922 G3938 G3939 A3947 C3948 A3949 U3950 G3951 A3952 G3953 A3954 A3955 G3956 U3957 G3958 U3959 A3960 G3961 A3962 A3963 U3964 A3965 A3966 G3967 U3968 G3969 G3970 G3971 A3972 G3973 G3974 C3975 C3976 C3977
G4034 G4035 G4036 C4037 C4038 G4039 C4040 C4041 G4042 C4043 U4044 G4045 A4046 A4047 A4048 U4049 A4050 C4051 C4052 A4053 C4054 U4055 A4056 C4057 U4058 C4059 U4060
G4061 A4062 U4063 C4064 G4065 U4066 U4067 U4068 G4076 G4084 A4085 G4086 G4087 C4088 G4093 G4094 G4095 C4096 G4097 A4098 G4099 C4100 C4101 C4102 C4103 G4104 A4105 G4106 G4107 G4108 G4109 C4110 U4111 C4112 U4113 C4114 G4115 C4116 C4119 U4120 G4121 A4127 G4136 C4137 C4138 G4139 C4140 G4141 C4142 G4143 C4144 C4145 G4151



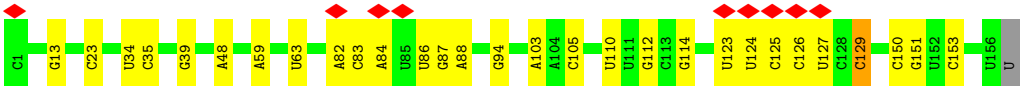
• Molecule 2: 5S ribosomal RNA

Chain 1B:



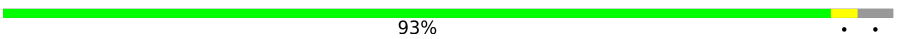
• Molecule 3: 5.8S ribosomal RNA

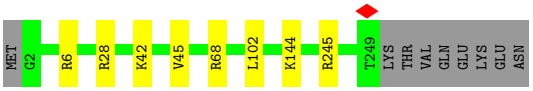
Chain 1C:



• Molecule 4: 60S ribosomal protein L8

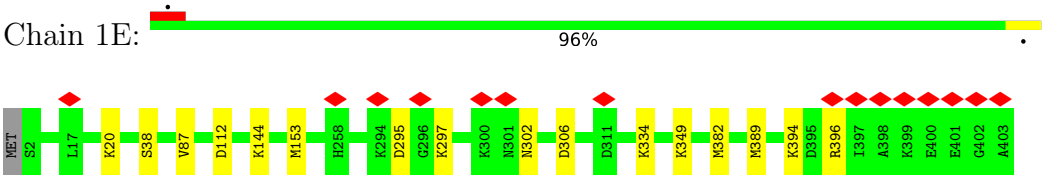
Chain 1D:





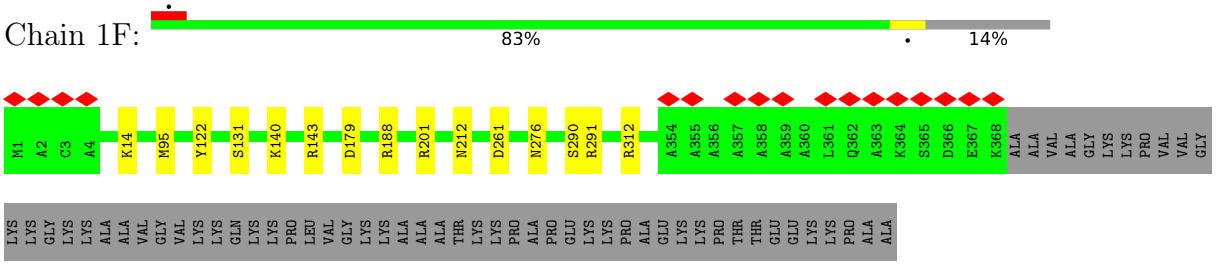
• Molecule 5: 60S ribosomal protein L3

Chain 1E:



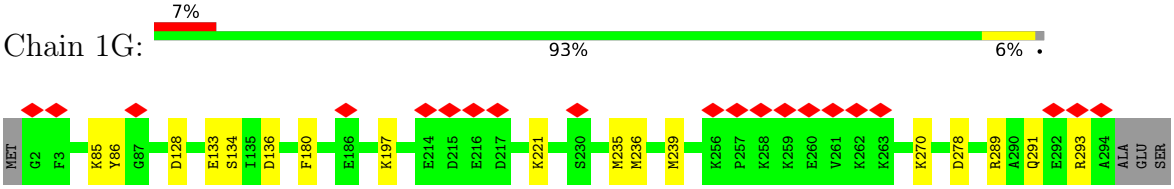
• Molecule 6: 60S ribosomal protein L4

Chain 1F:



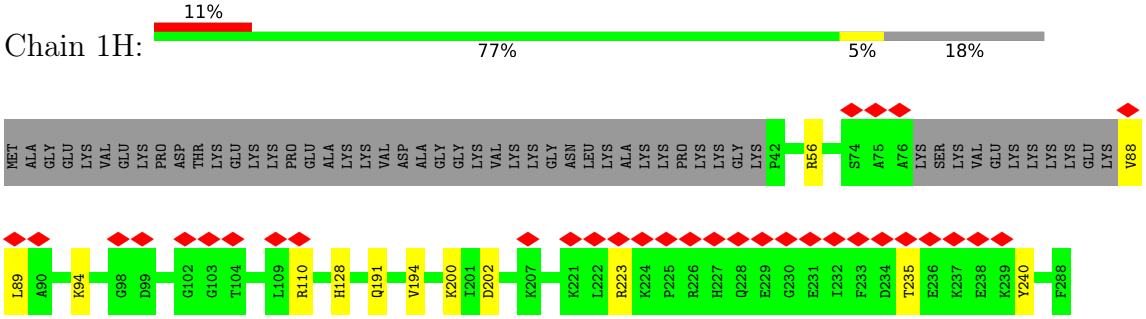
• Molecule 7: 60S ribosomal protein L5

Chain 1G:



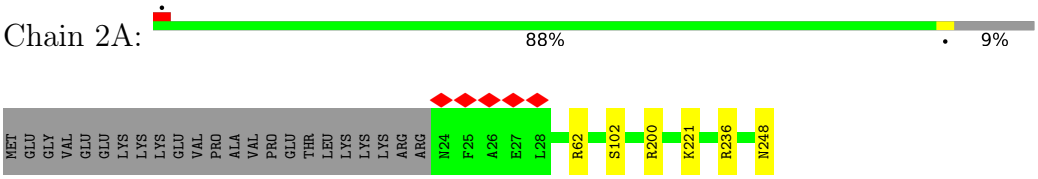
• Molecule 8: 60S ribosomal protein L6

Chain 1H:



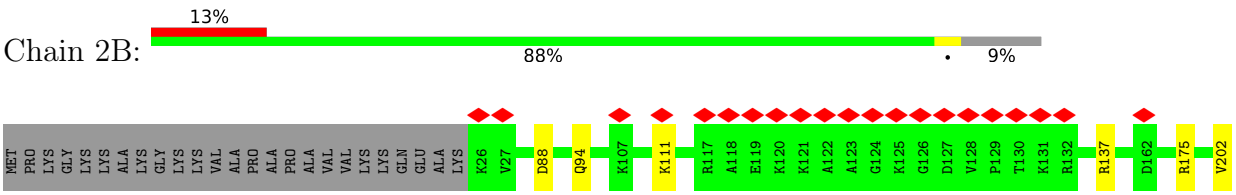
• Molecule 9: 60S ribosomal protein L7

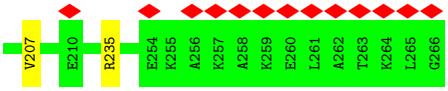
Chain 2A:



• Molecule 10: 60S ribosomal protein L7a

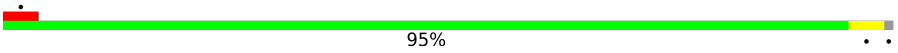
Chain 2B:

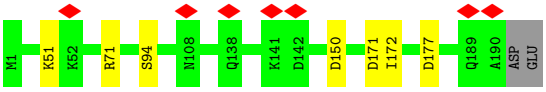




• Molecule 11: 60S ribosomal protein L9

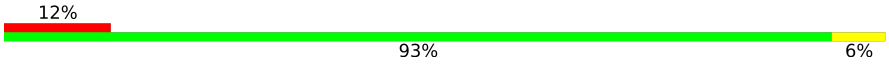
Chain 2C:

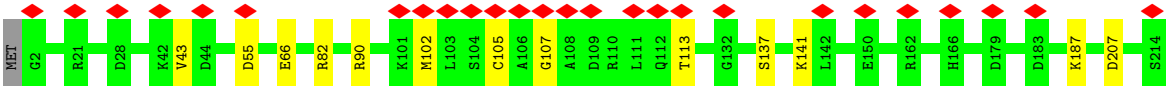




• Molecule 12: 60S ribosomal protein L10-like

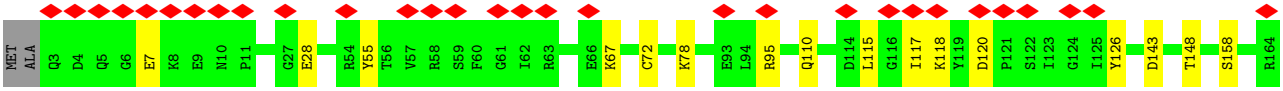
Chain 2D:

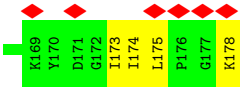




• Molecule 13: 60S ribosomal protein L11

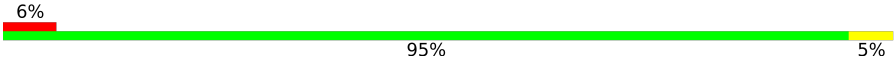
Chain 2E:

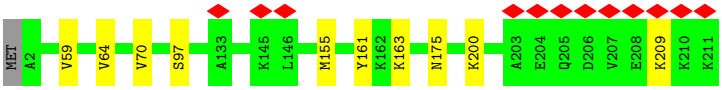




• Molecule 14: 60S ribosomal protein L13

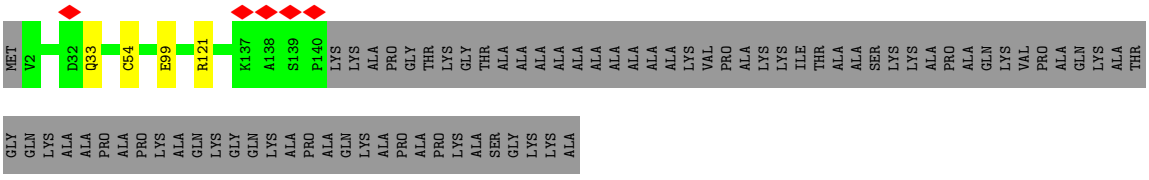
Chain 2F:





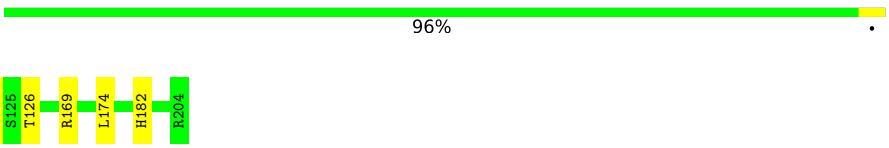
• Molecule 15: 60S ribosomal protein L14

Chain 2G:



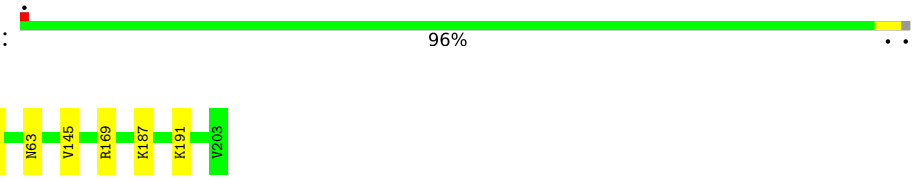
• Molecule 16: 60S ribosomal protein L15

Chain 2H:



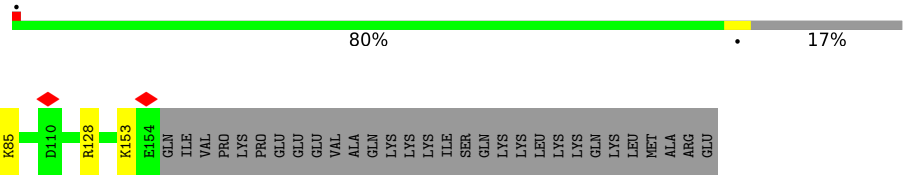
• Molecule 17: 60S ribosomal protein L13a

Chain 2I:



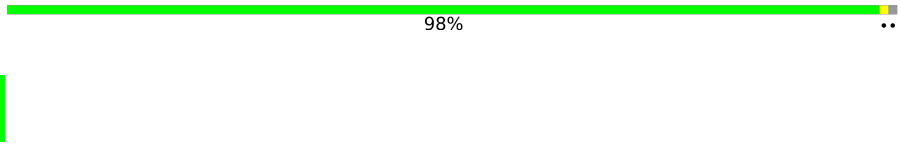
• Molecule 18: 60S ribosomal protein L17

Chain 2J:



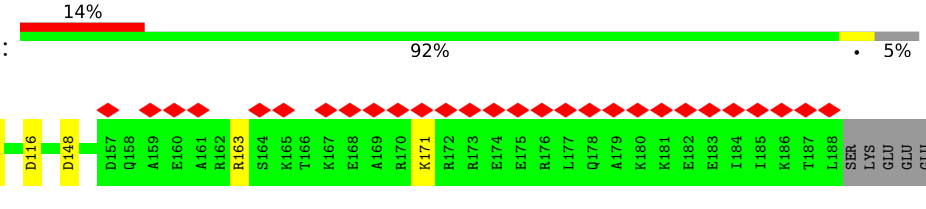
• Molecule 19: 60S ribosomal protein L18

Chain 2K:



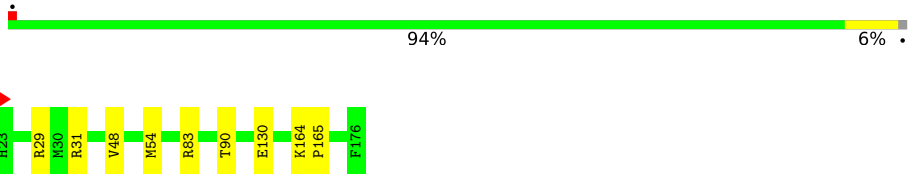
• Molecule 20: 60S ribosomal protein L19

Chain 2L:



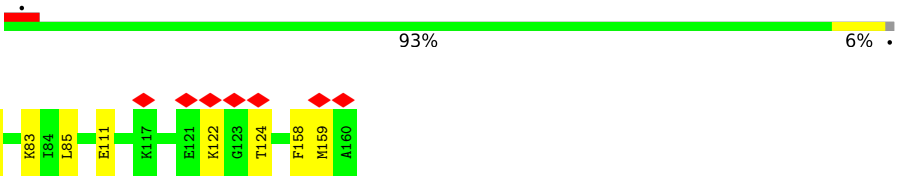
• Molecule 21: 60S ribosomal protein L18a

Chain 2M:



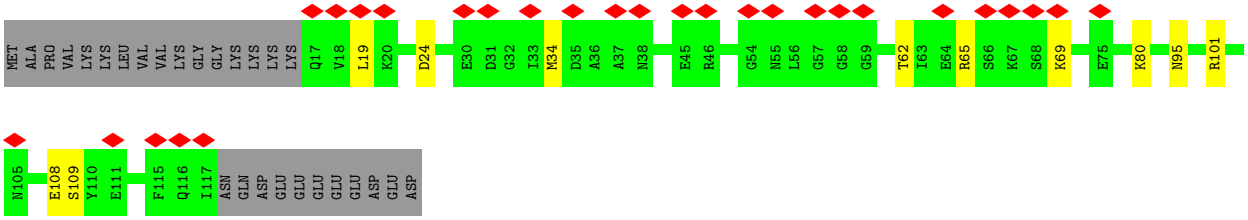
• Molecule 22: 60S ribosomal protein L21

Chain 2N:



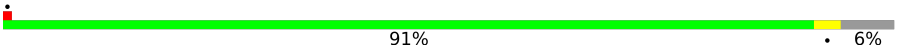
• Molecule 23: 60S ribosomal protein L22

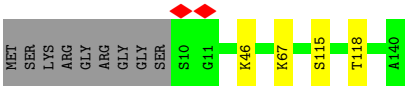
Chain 2O:



• Molecule 24: 60S ribosomal protein L23

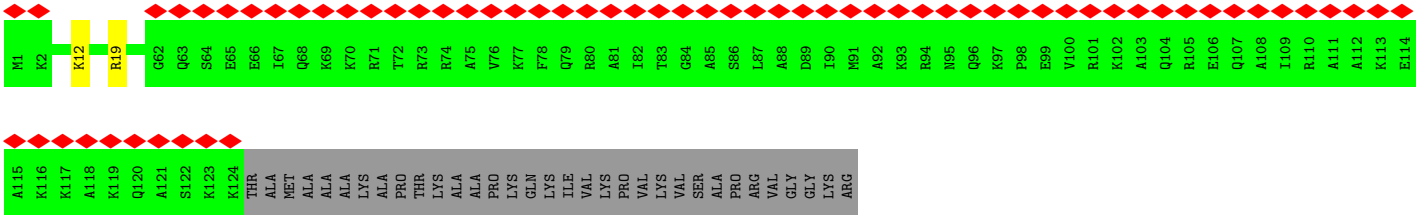
Chain 2P:





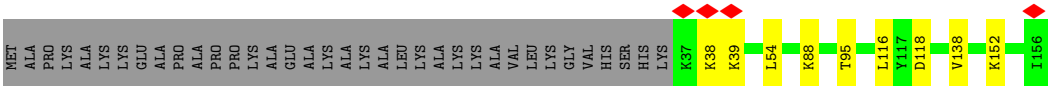
• Molecule 25: 60S ribosomal protein L24

Chain 2Q:



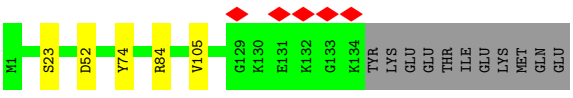
• Molecule 26: 60S ribosomal protein L23a

Chain 2R:



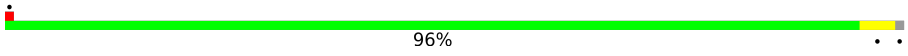
• Molecule 27: 60S ribosomal protein L26

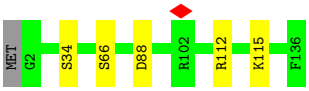
Chain 2S:



• Molecule 28: 60S ribosomal protein L27

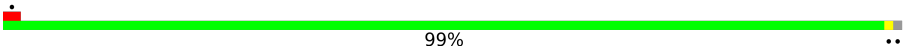
Chain 2T:

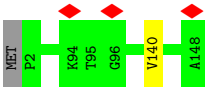




• Molecule 29: 60S ribosomal protein L27a

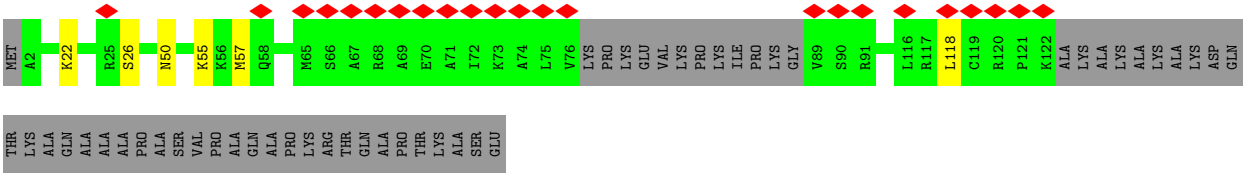
Chain 2U:





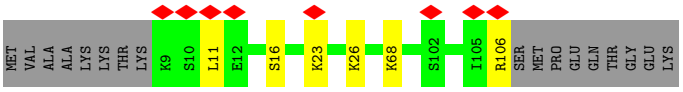
• Molecule 30: 60S ribosomal protein L29

Chain 2V:



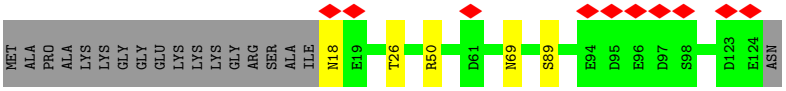
• Molecule 31: 60S ribosomal protein L30

Chain 2W:



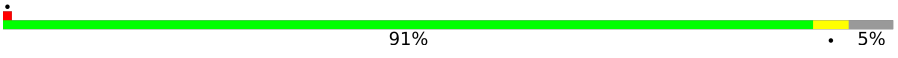
• Molecule 32: 60S ribosomal protein L31

Chain 2X:



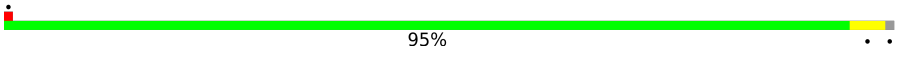
• Molecule 33: 60S ribosomal protein L32

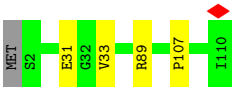
Chain 2Y:



• Molecule 34: 60S ribosomal protein L35a

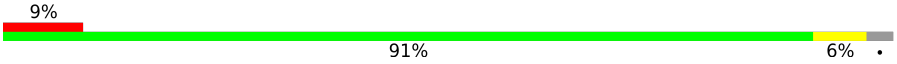
Chain 2Z:

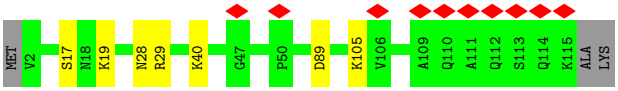




• Molecule 35: 60S ribosomal protein L34

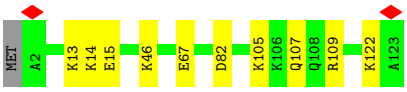
Chain 2a:





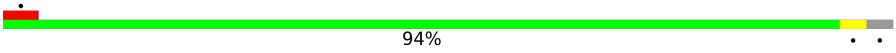
• Molecule 36: 60S ribosomal protein L35

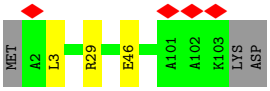
Chain 2b:



• Molecule 37: 60S ribosomal protein L36

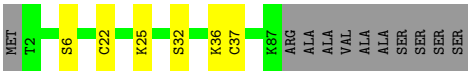
Chain 2c:





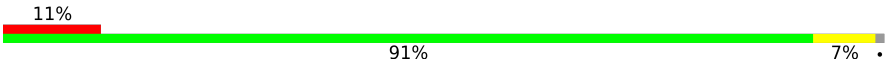
• Molecule 38: 60S ribosomal protein L37

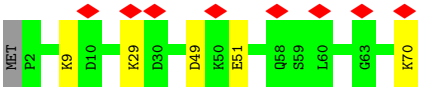
Chain 2d:



• Molecule 39: 60S ribosomal protein L38

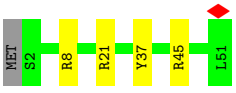
Chain 2e:





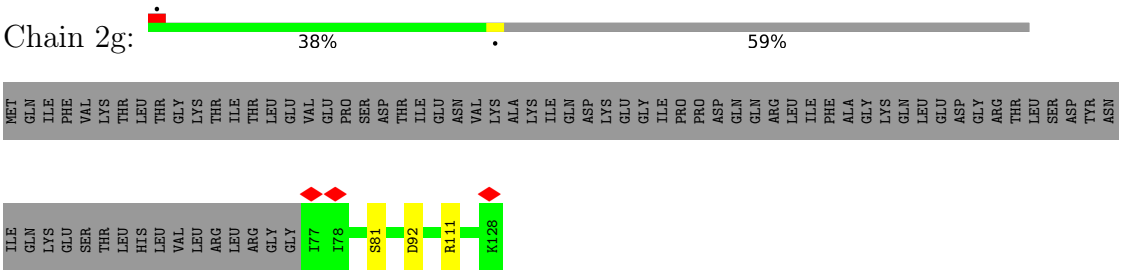
• Molecule 40: 60S ribosomal protein L39

Chain 2f:



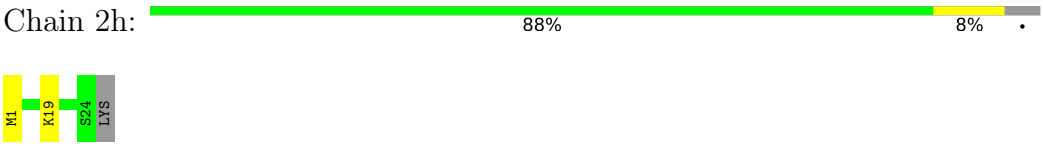
• Molecule 41: Ubiquitin-60S ribosomal protein L40

Chain 2g:



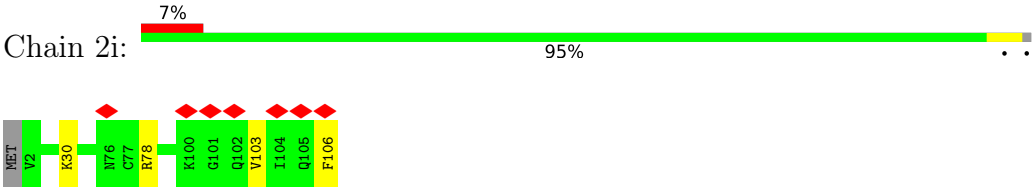
• Molecule 42: 60S ribosomal protein L41

Chain 2h:



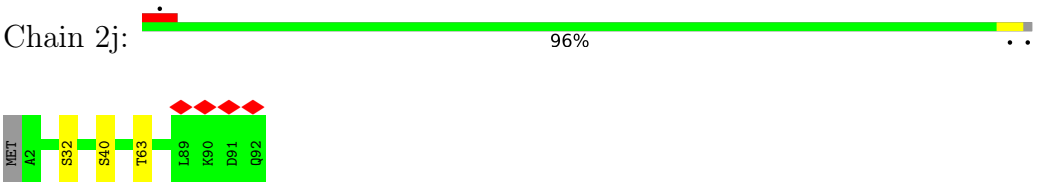
• Molecule 43: 60S ribosomal protein L36a

Chain 2i:



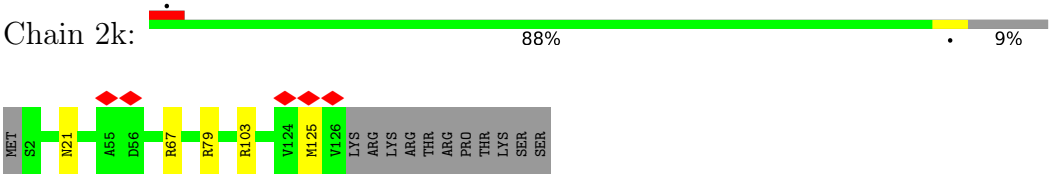
• Molecule 44: 60S ribosomal protein L37a

Chain 2j:



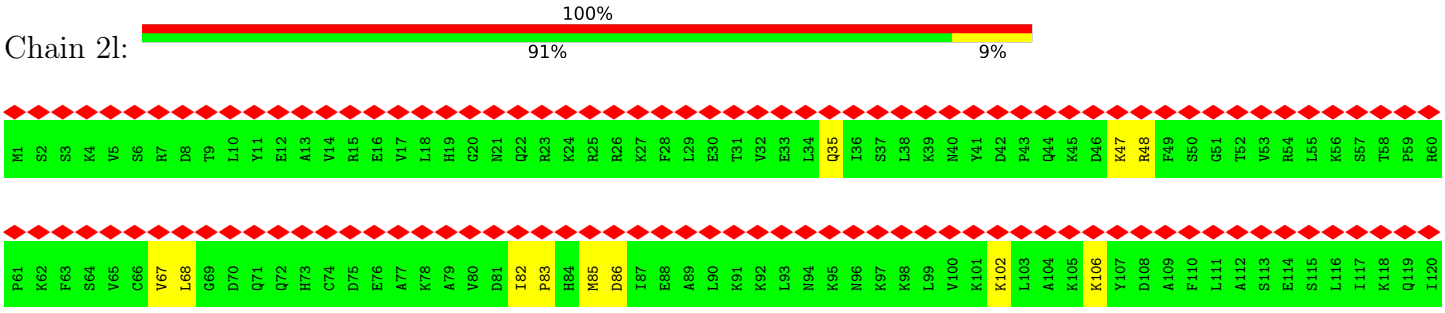
• Molecule 45: 60S ribosomal protein L28

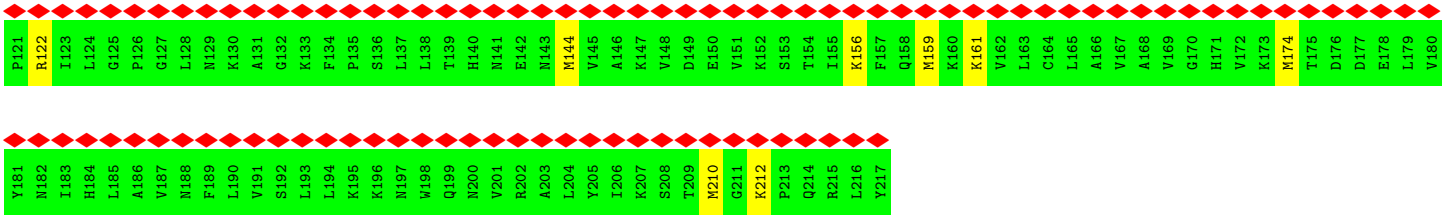
Chain 2k:



• Molecule 46: 60S ribosomal protein L10a

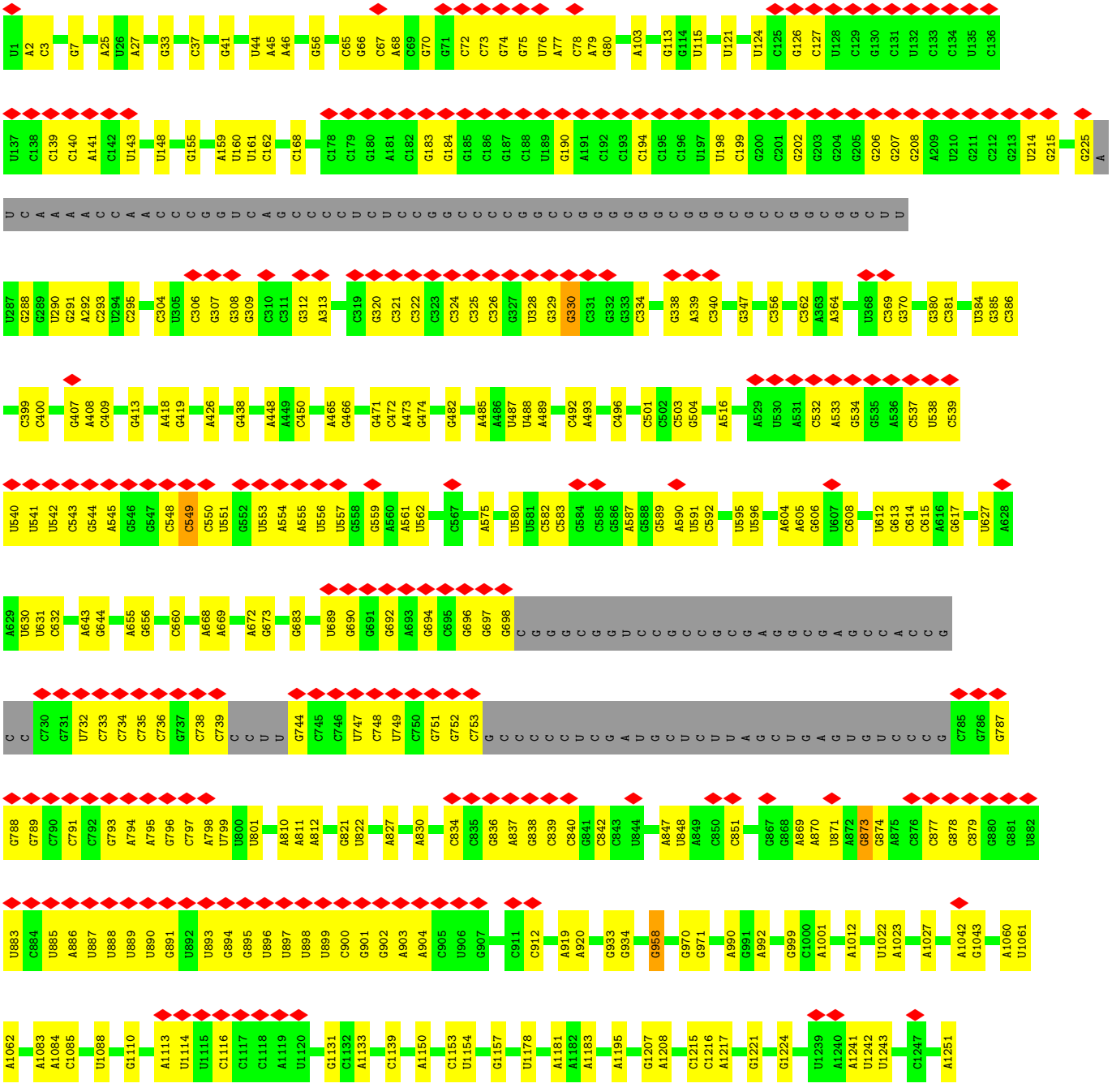
Chain 2l:

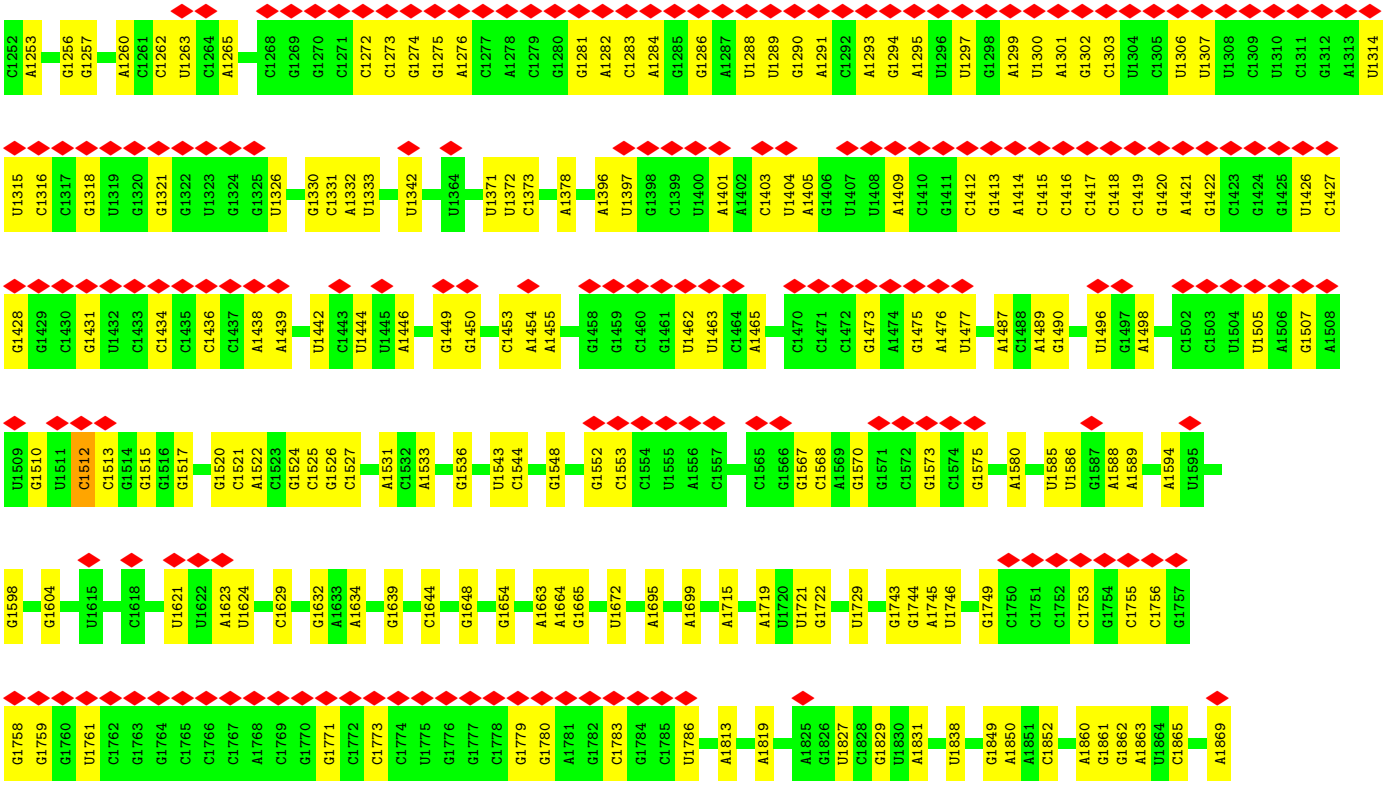




• Molecule 47: 18S ribosomal RNA

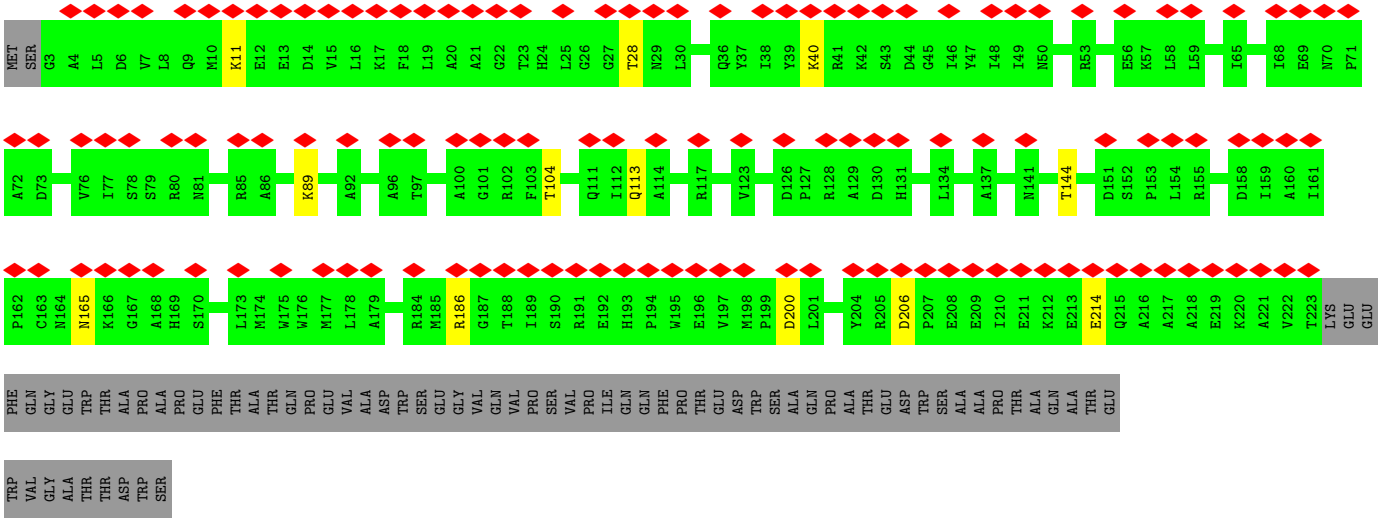
Chain 2m:





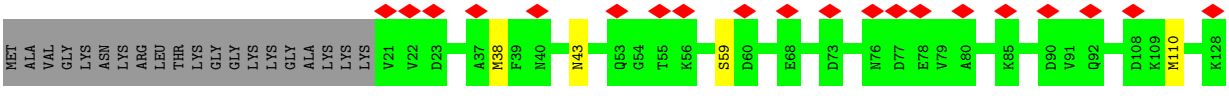
• Molecule 48: 40S ribosomal protein SA

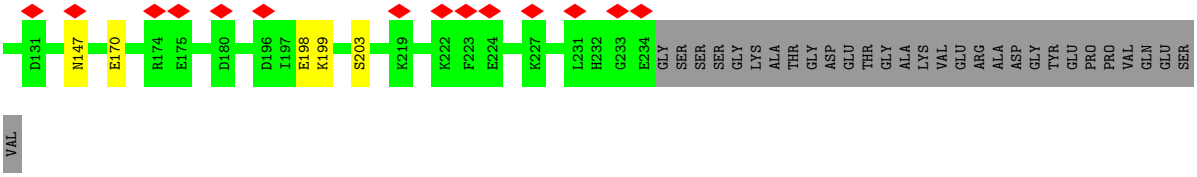
Chain 2n:



• Molecule 49: 40S ribosomal protein S3a

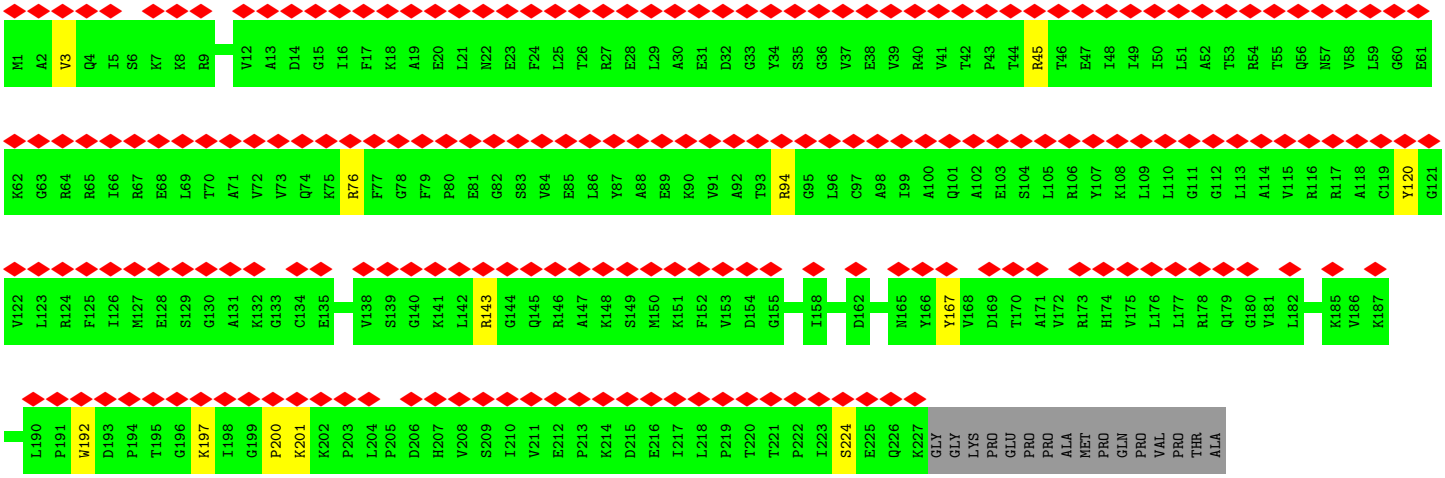
Chain 2o:





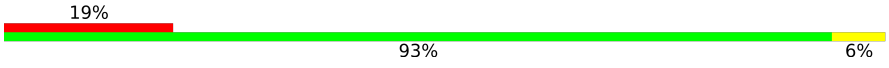
• Molecule 50: 40S ribosomal protein S3

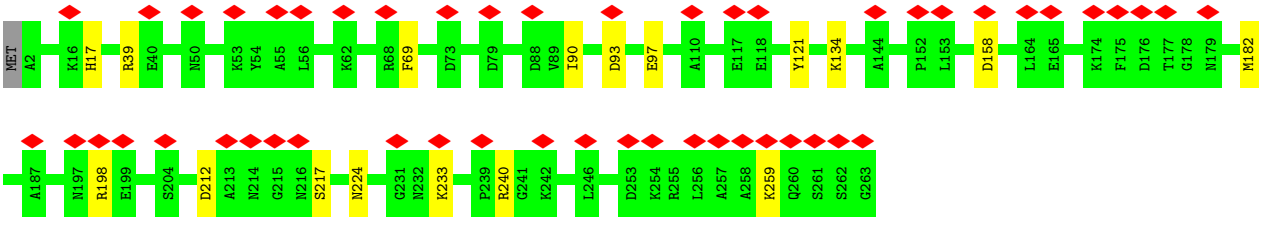
Chain 2p:



• Molecule 51: 40S ribosomal protein S4, X isoform

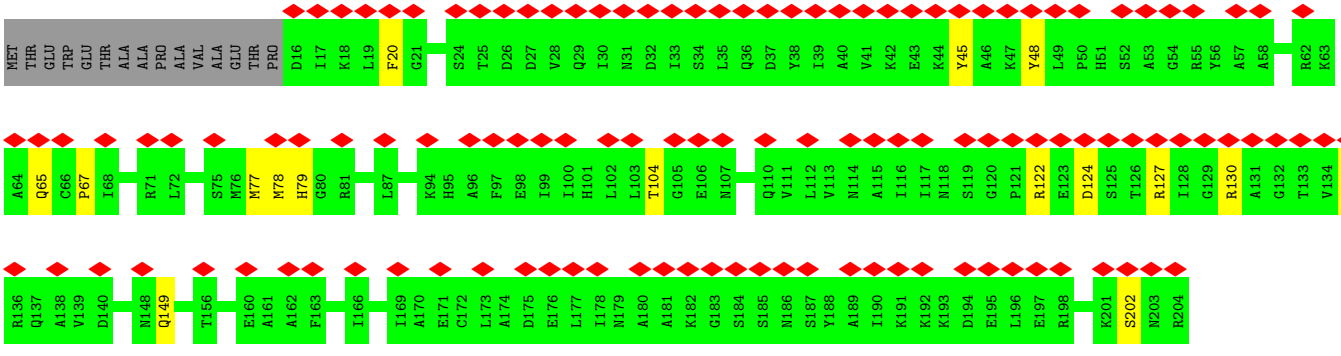
Chain 2q:





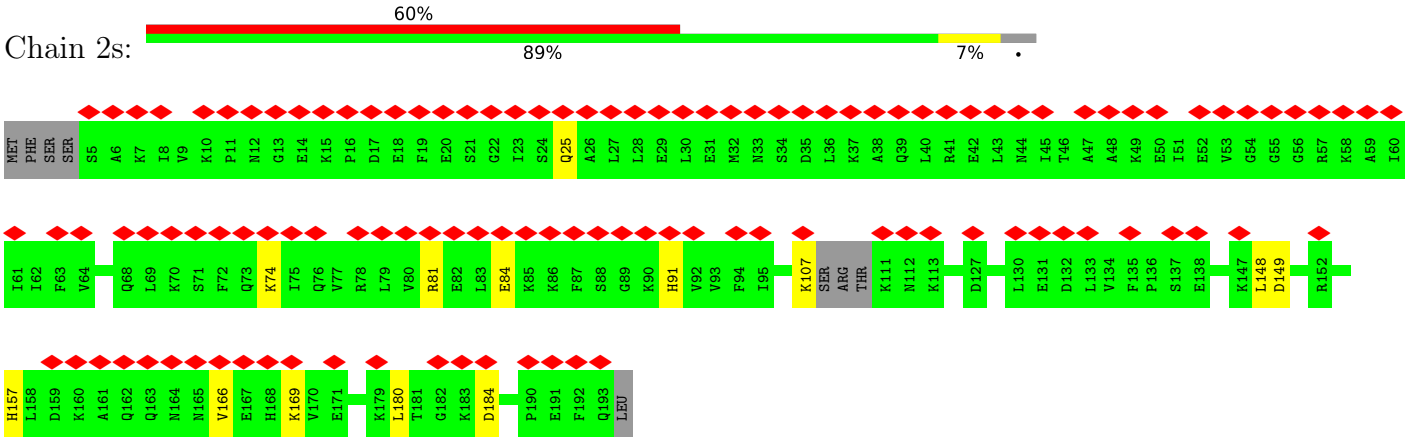
• Molecule 52: 40S ribosomal protein S5

Chain 2r:



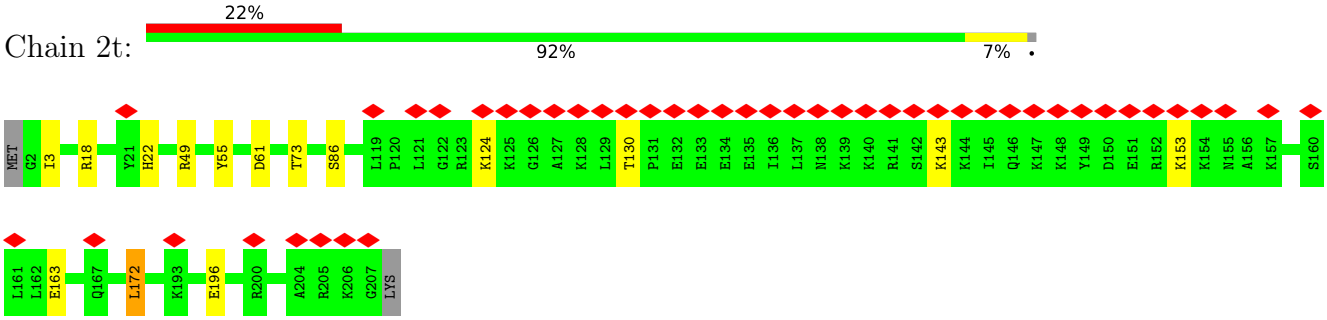
• Molecule 53: 40S ribosomal protein S7

Chain 2s:



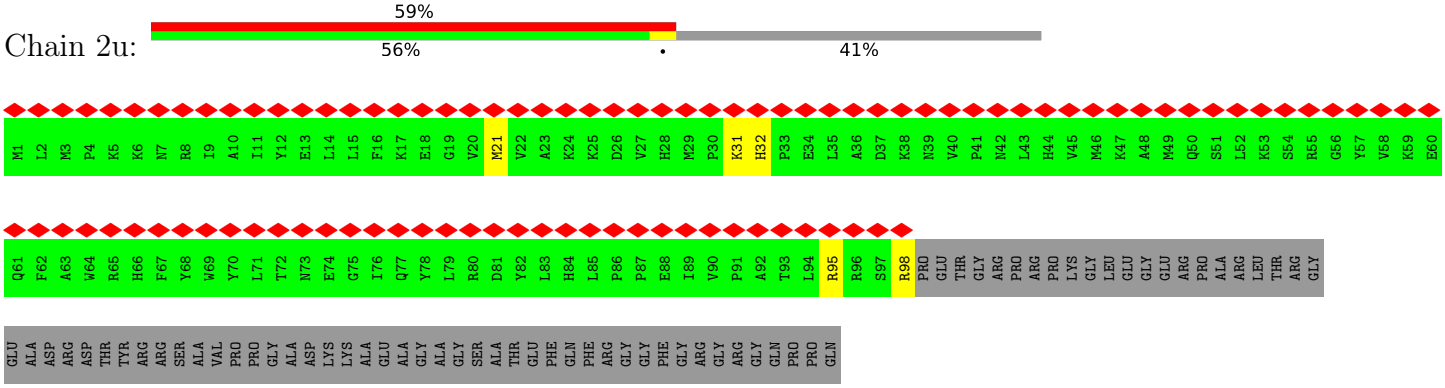
• Molecule 54: 40S ribosomal protein S8

Chain 2t:



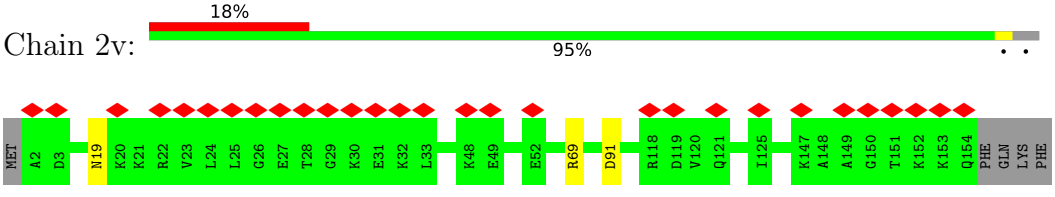
• Molecule 55: 40S ribosomal protein S10

Chain 2u:



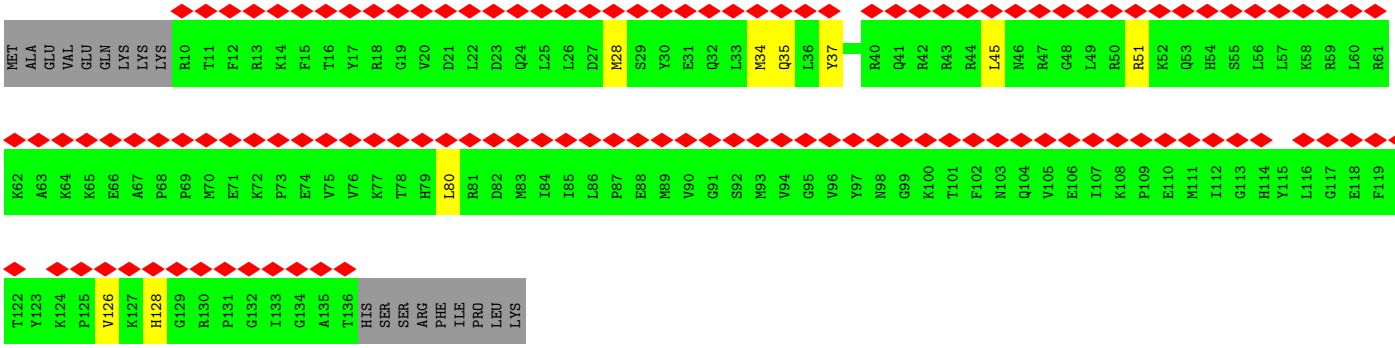
• Molecule 56: 40S ribosomal protein S11

Chain 2v:



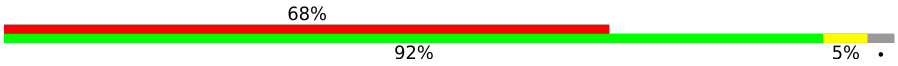
• Molecule 57: 40S ribosomal protein S15

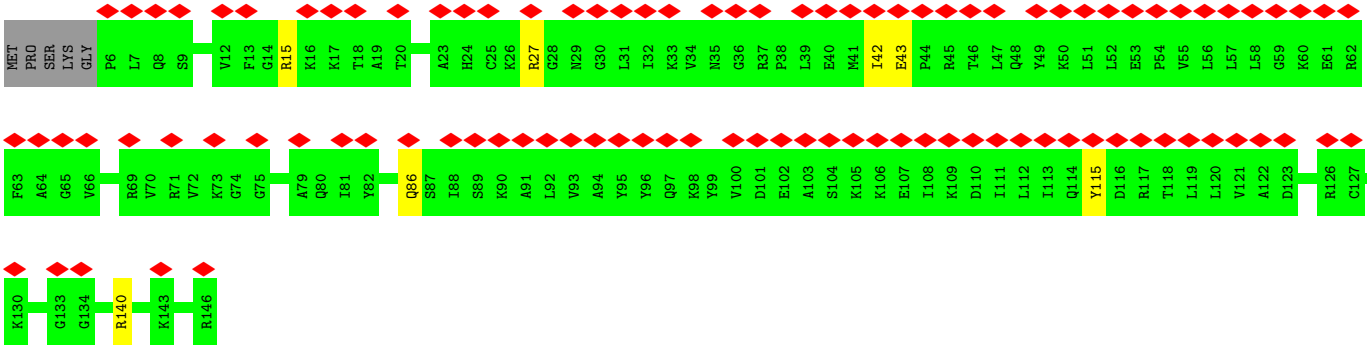
Chain 2w:



• Molecule 58: 40S ribosomal protein S16

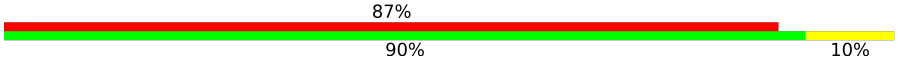
Chain 2x:

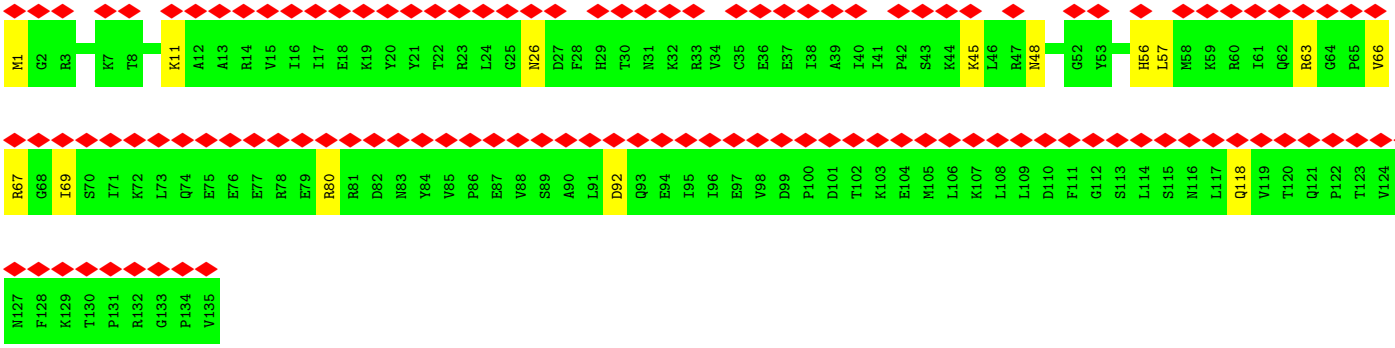




• Molecule 59: 40S ribosomal protein S17

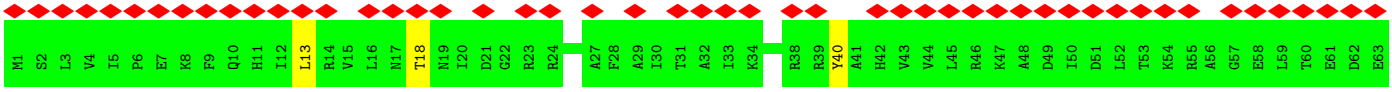
Chain 2y:

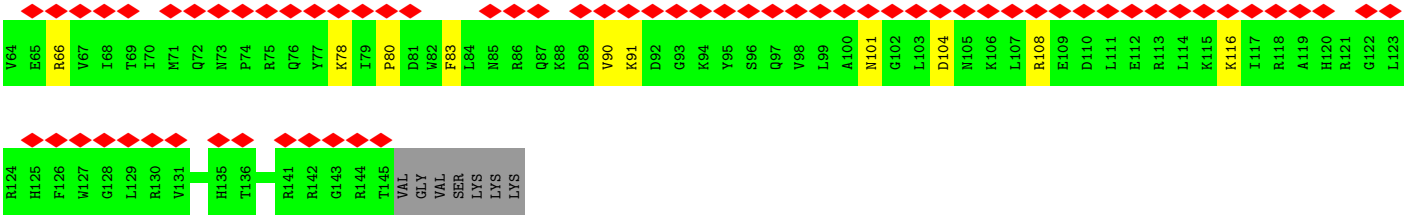




• Molecule 60: 40S ribosomal protein S18

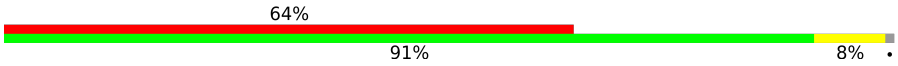
Chain 2z:

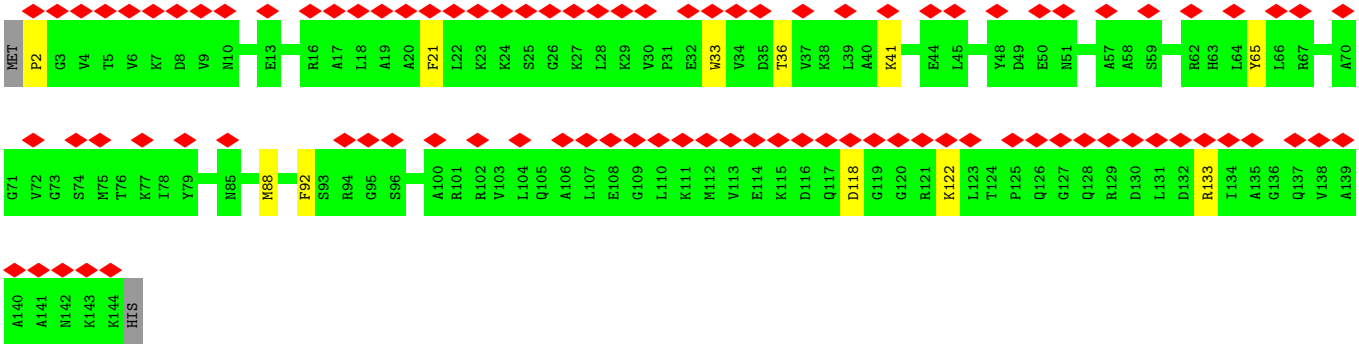




• Molecule 61: 40S ribosomal protein S19

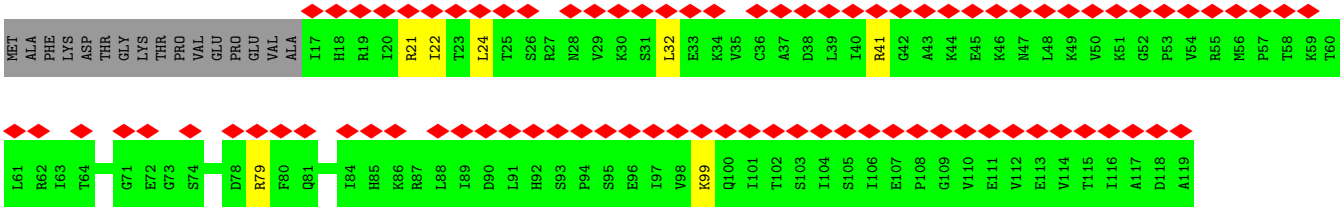
Chain 20:





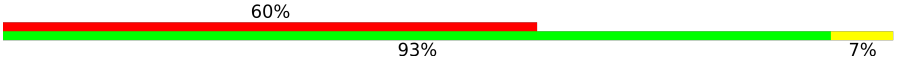
• Molecule 62: 40S ribosomal protein S20

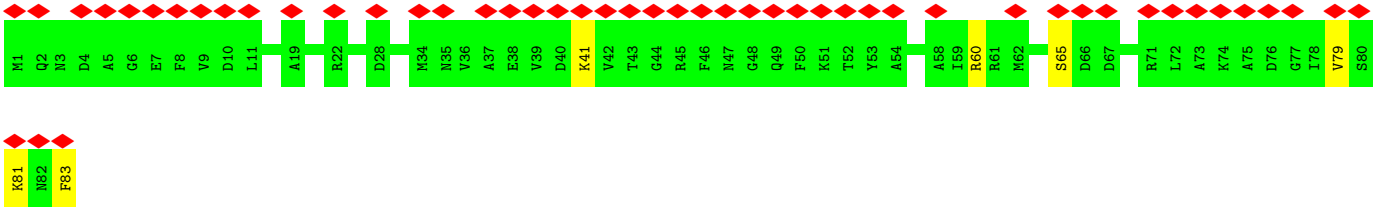
Chain 21:



• Molecule 63: 40S ribosomal protein S21

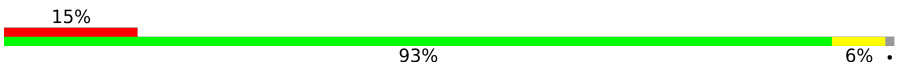
Chain 3A:

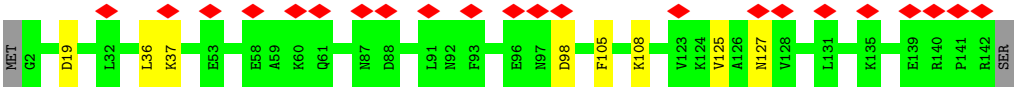




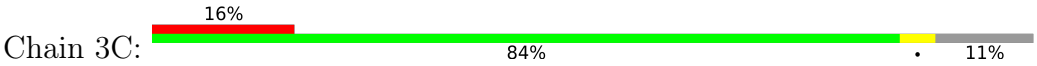
• Molecule 64: 40S ribosomal protein S23

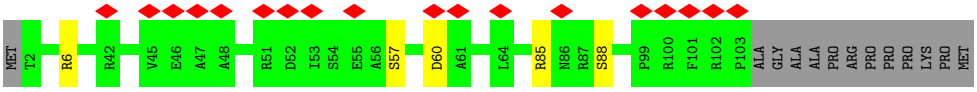
Chain 3B:



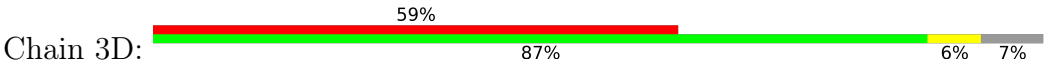


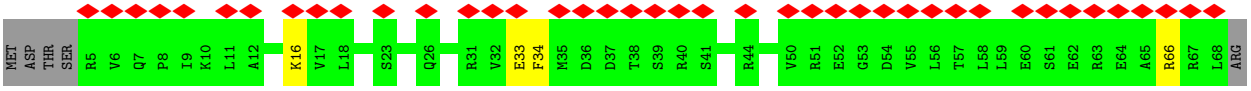
• Molecule 65: 40S ribosomal protein S26



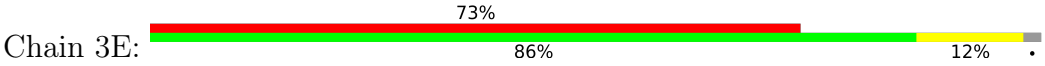


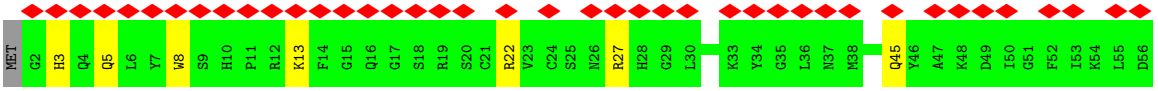
• Molecule 66: 40S ribosomal protein S28



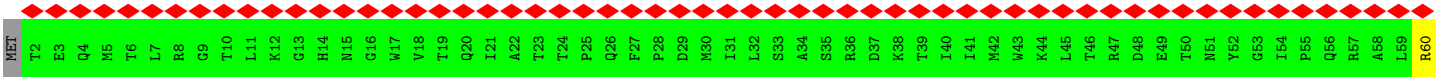


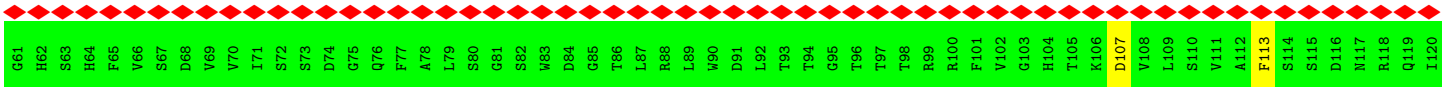
• Molecule 67: 40S ribosomal protein S29

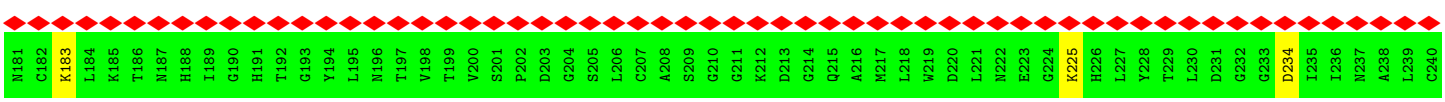


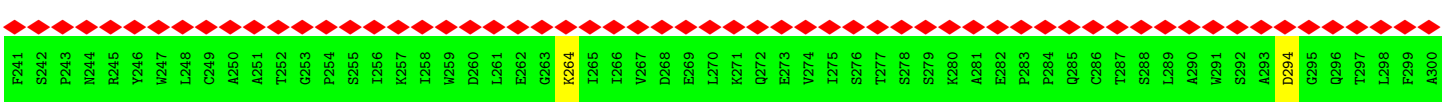


• Molecule 68: Receptor of activated protein C kinase 1



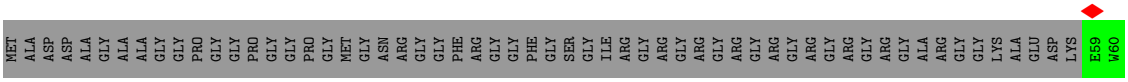


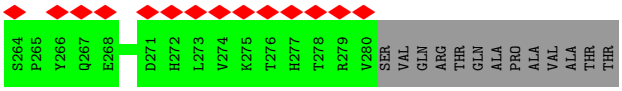




• Molecule 69: 40S ribosomal protein S2

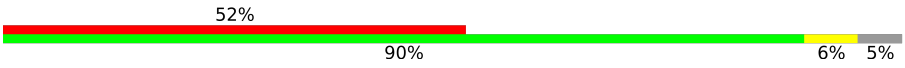
Chain 3G:

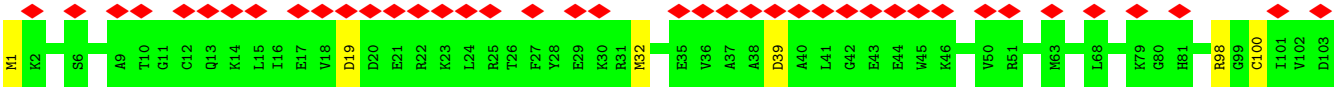


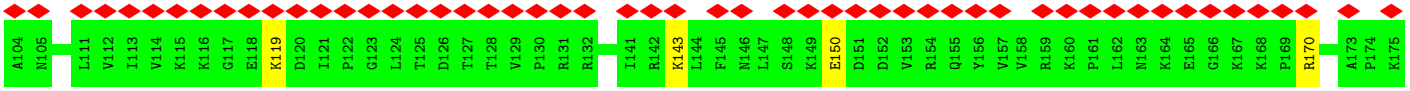


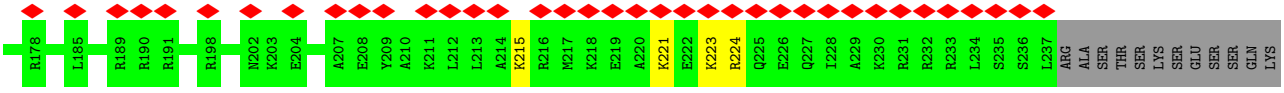
• Molecule 70: 40S ribosomal protein S6

Chain 3H:



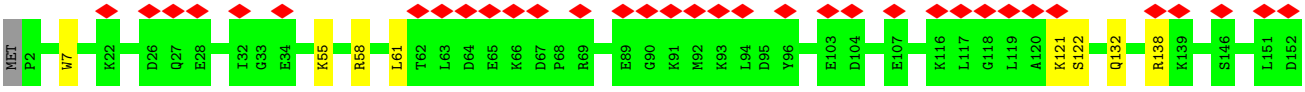


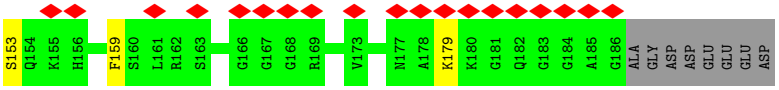




• Molecule 71: 40S ribosomal protein S9

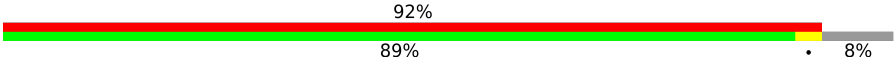
Chain 3I:

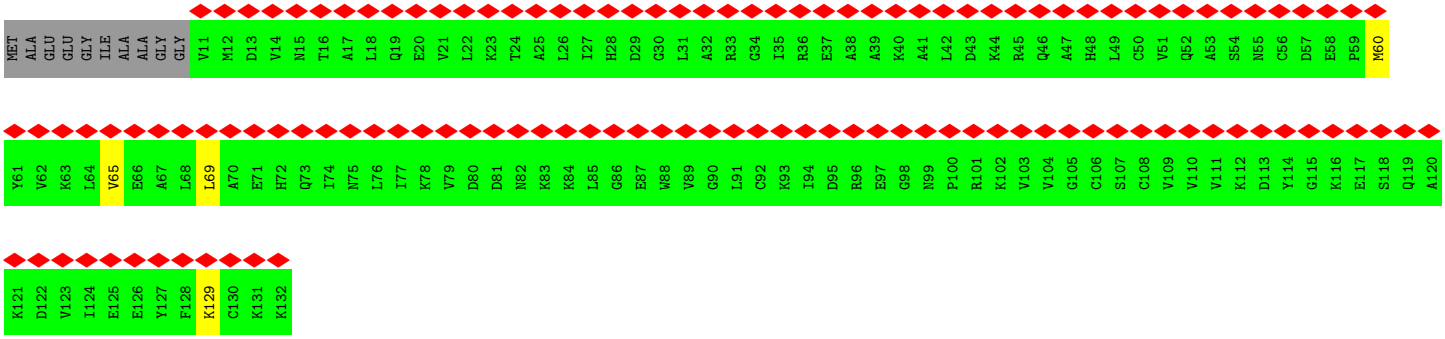




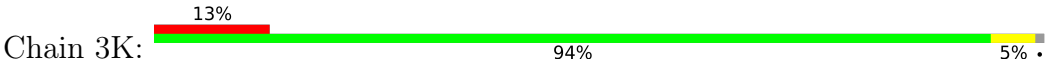
• Molecule 72: 40S ribosomal protein S12

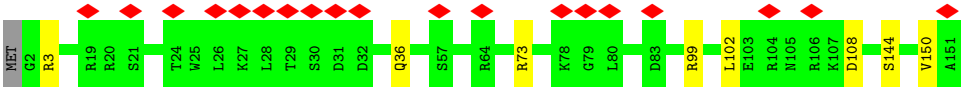
Chain 3J:



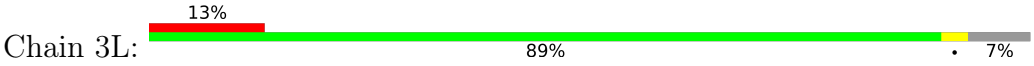


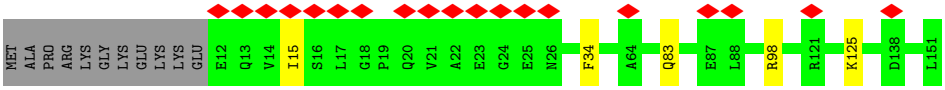
• Molecule 73: 40S ribosomal protein S13



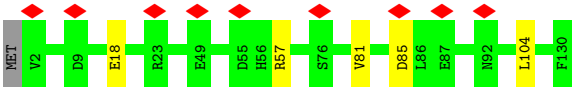


• Molecule 74: 40S ribosomal protein S14

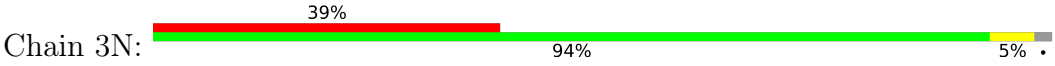


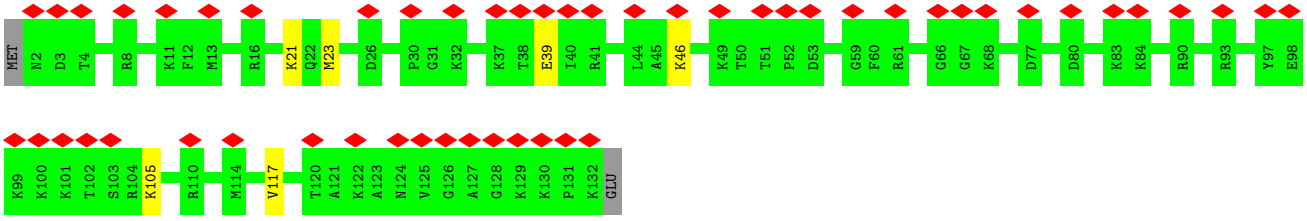


• Molecule 75: 40S ribosomal protein S15a

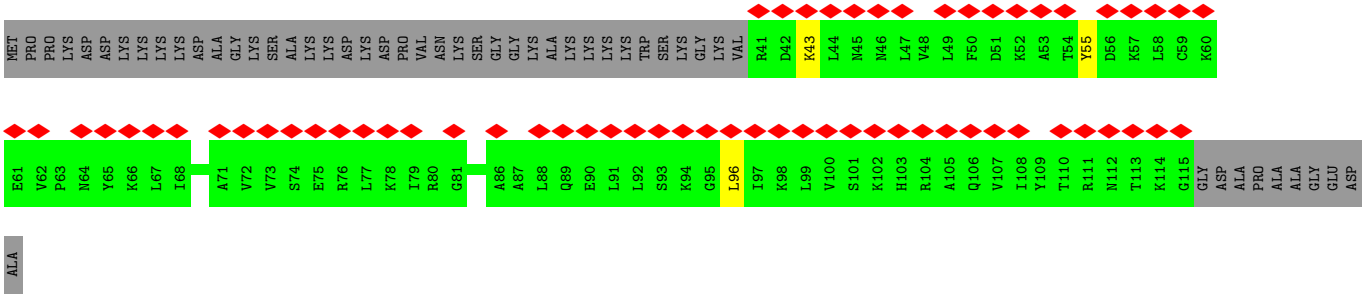


• Molecule 76: 40S ribosomal protein S24

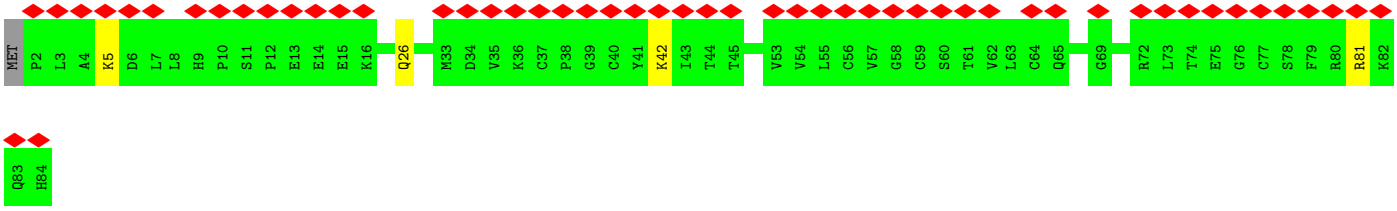




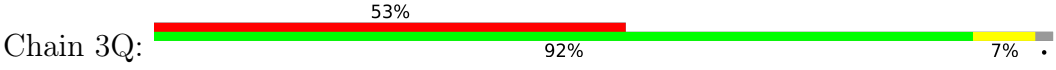
• Molecule 77: 40S ribosomal protein S25

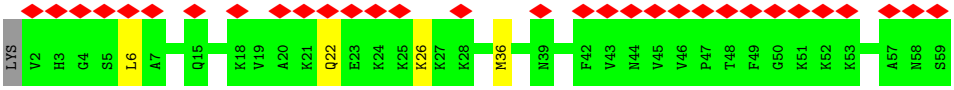


• Molecule 78: 40S ribosomal protein S27

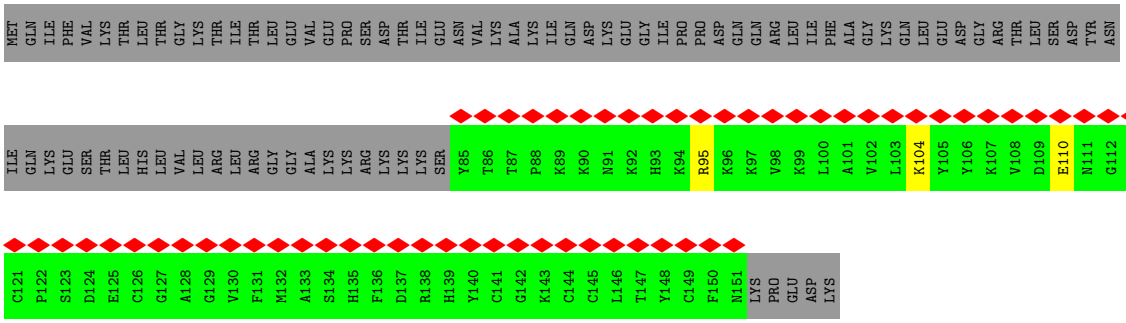


• Molecule 79: 40S ribosomal protein S30





• Molecule 80: Ubiquitin-40S ribosomal protein S27a



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	29424	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1100	Depositor
Maximum defocus (nm)	2300	Depositor
Magnification	60000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.099	Depositor
Minimum map value	-0.030	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	504.32, 504.32, 504.32	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.788, 0.788, 0.788	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MLZ, 84G, MG, ZN

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	1A	0.45	0/89129	0.80	27/139038 (0.0%)
2	1B	0.44	0/2858	0.77	0/4455
3	1C	0.45	0/3701	0.77	1/5766 (0.0%)
4	1D	0.30	0/1936	0.57	0/2596
5	1E	0.29	0/3306	0.54	1/4424 (0.0%)
6	1F	0.27	0/2981	0.55	0/4002
7	1G	0.29	0/2428	0.54	0/3252
8	1H	0.28	0/1942	0.55	0/2606
9	2A	0.29	0/1916	0.54	0/2553
10	2B	0.29	0/1971	0.55	0/2651
11	2C	0.27	0/1537	0.55	0/2066
12	2D	0.27	0/1751	0.55	0/2340
13	2E	0.29	0/1433	0.59	0/1915
14	2F	0.27	0/1732	0.57	0/2315
15	2G	0.28	0/1161	0.53	0/1554
16	2H	0.29	0/1746	0.58	1/2338 (0.0%)
17	2I	0.28	0/1682	0.53	0/2250
18	2J	0.28	0/1268	0.52	0/1701
19	2K	0.29	0/1537	0.59	0/2052
20	2L	0.25	0/1582	0.56	0/2091
21	2M	0.29	0/1493	0.54	0/2003
22	2N	0.28	0/1326	0.52	0/1770
23	2O	0.27	0/839	0.55	0/1126
24	2P	0.28	0/993	0.52	0/1332
25	2Q	0.26	0/1030	0.55	0/1364
26	2R	0.27	0/1002	0.54	1/1345 (0.1%)
27	2S	0.29	0/1132	0.56	0/1504
28	2T	0.30	0/1130	0.55	0/1507
29	2U	0.28	0/1191	0.51	0/1591
30	2V	0.28	0/895	0.56	0/1182
31	2W	0.29	0/774	0.51	0/1038
32	2X	0.28	0/903	0.56	0/1216

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	2Y	0.27	0/1071	0.55	0/1429
34	2Z	0.32	0/895	0.58	0/1198
35	2a	0.28	0/916	0.57	0/1220
36	2b	0.26	0/1023	0.54	0/1351
37	2c	0.26	0/843	0.56	0/1115
38	2d	0.30	0/731	0.62	0/966
39	2e	0.29	0/575	0.53	0/761
40	2f	0.25	0/454	0.57	0/599
41	2g	0.27	0/425	0.54	0/561
42	2h	0.25	0/231	0.71	0/294
43	2i	0.34	0/887	0.59	0/1170
44	2j	0.28	0/718	0.51	0/953
45	2k	0.27	0/1017	0.58	0/1364
46	2l	0.42	1/1769 (0.1%)	0.57	1/2371 (0.0%)
47	2m	0.44	6/41243 (0.0%)	0.80	36/64257 (0.1%)
48	2n	0.25	0/1778	0.51	0/2416
49	2o	0.26	0/1765	0.51	0/2362
50	2p	0.31	1/1793 (0.1%)	0.66	2/2414 (0.1%)
51	2q	0.26	0/2118	0.55	0/2849
52	2r	0.26	0/1516	0.55	0/2037
53	2s	1.50	1/1519 (0.1%)	0.60	3/2033 (0.1%)
54	2t	0.26	0/1715	0.58	1/2287 (0.0%)
55	2u	0.25	0/851	0.55	0/1147
56	2v	0.28	0/1268	0.55	0/1696
57	2w	0.25	0/1065	0.54	0/1423
58	2x	0.25	0/1142	0.54	0/1528
59	2y	0.26	0/1105	0.57	0/1484
60	2z	0.26	0/1216	0.60	2/1628 (0.1%)
61	20	0.36	1/1131 (0.1%)	0.55	0/1515
62	21	0.27	0/827	0.58	0/1110
63	3A	0.26	0/643	0.54	0/860
64	3B	0.27	0/1116	0.53	0/1490
65	3C	0.27	0/847	0.59	0/1135
66	3D	0.24	0/508	0.63	0/680
67	3E	0.28	0/470	0.54	0/623
68	3F	0.24	0/2493	0.53	0/3394
69	3G	0.26	0/1773	0.52	0/2395
70	3H	0.25	0/1946	0.58	0/2590
71	3I	0.26	0/1561	0.59	1/2083 (0.0%)
72	3J	0.36	1/952 (0.1%)	0.47	0/1279
73	3K	0.26	0/1232	0.51	0/1656
74	3L	0.26	0/1062	0.58	0/1425
75	3M	0.28	0/1051	0.57	0/1406

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	3N	0.29	0/1094	0.60	0/1452
77	3O	0.26	0/604	0.62	0/810
78	3P	0.24	0/665	0.51	0/891
79	3Q	0.25	0/465	0.56	0/612
80	3R	0.25	0/560	0.56	0/745
All	All	0.40	11/232954 (0.0%)	0.72	77/342007 (0.0%)

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	2s	107	LYS	CD-CE	57.64	2.95	1.51
47	2m	744	G	C6-N1	35.66	1.64	1.39
47	2m	744	G	N1-C2	30.77	1.62	1.37
47	2m	744	G	N3-C4	27.48	1.54	1.35
47	2m	744	G	C2-N3	24.65	1.52	1.32
47	2m	744	G	C5-C4	22.63	1.54	1.38
47	2m	744	G	C5-C6	19.31	1.61	1.42
46	2l	67	VAL	CB-CG2	-8.64	1.34	1.52
50	2p	200	PRO	CG-CD	-6.75	1.28	1.50
72	3J	65	VAL	CB-CG1	-6.26	1.39	1.52
61	20	2	PRO	CA-C	5.33	1.63	1.52

All (77) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
47	2m	744	G	C2-N3-C4	20.01	121.91	111.90
47	2m	744	G	N1-C2-N3	-14.37	115.28	123.90
50	2p	200	PRO	N-CD-CG	-13.47	83.00	103.20
50	2p	200	PRO	CA-CB-CG	-11.00	83.10	104.00
47	2m	744	G	C4-C5-N7	-9.46	107.01	110.80
53	2s	107	LYS	CD-CE-NZ	9.09	132.60	111.70
47	2m	912	C	N3-C2-O2	-8.93	115.65	121.90
47	2m	1453	C	C2-N1-C1'	8.87	128.56	118.80
1	1A	485	C	C2-N1-C1'	7.95	127.54	118.80
47	2m	912	C	N1-C2-O2	7.86	123.62	118.90
47	2m	744	G	N3-C4-C5	-7.83	124.68	128.60
47	2m	356	C	C2-N1-C1'	7.60	127.16	118.80
1	1A	4924	C	N3-C2-O2	-7.45	116.68	121.90
1	1A	1702	C	C2-N1-C1'	7.43	126.97	118.80
1	1A	3769	C	N3-C2-O2	-7.35	116.75	121.90
47	2m	1513	C	N3-C2-O2	-7.24	116.83	121.90
47	2m	1512	C	N1-C2-O2	7.22	123.23	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1A	2019	C	N1-C2-O2	7.20	123.22	118.90
1	1A	2600	A	N1-C2-N3	7.16	132.88	129.30
47	2m	744	G	N3-C4-N9	7.15	130.29	126.00
1	1A	131	C	N3-C2-O2	-7.11	116.92	121.90
47	2m	549	C	N3-C2-O2	-7.05	116.96	121.90
1	1A	969	C	C2-N1-C1'	6.86	126.34	118.80
47	2m	873	G	N3-C4-N9	6.70	130.02	126.00
1	1A	129	C	N3-C2-O2	-6.67	117.23	121.90
1	1A	655	C	N3-C2-O2	-6.66	117.24	121.90
5	1E	306	ASP	CB-CG-OD1	6.62	124.26	118.30
47	2m	321	C	N1-C2-O2	6.58	122.85	118.90
1	1A	2019	C	N3-C2-O2	-6.55	117.31	121.90
47	2m	1453	C	C6-N1-C1'	-6.49	113.02	120.80
47	2m	1453	C	N1-C2-O2	6.47	122.78	118.90
1	1A	2257	C	C2-N1-C1'	6.34	125.78	118.80
47	2m	549	C	N1-C2-O2	6.23	122.64	118.90
47	2m	630	U	C2-N1-C1'	6.22	125.16	117.70
1	1A	485	C	C6-N1-C1'	-6.21	113.35	120.80
47	2m	744	G	N7-C8-N9	6.16	116.18	113.10
47	2m	1629	C	N3-C2-O2	-6.00	117.70	121.90
3	1C	129	C	N3-C2-O2	-6.00	117.70	121.90
71	3I	61	LEU	CA-CB-CG	5.87	128.79	115.30
1	1A	417	G	O4'-C1'-N9	5.83	112.86	108.20
1	1A	100	C	C2-N1-C1'	5.82	125.20	118.80
47	2m	1022	U	C2-N1-C1'	5.79	124.65	117.70
1	1A	1191	C	N3-C2-O2	-5.76	117.86	121.90
60	2z	80	PRO	N-CD-CG	-5.73	94.60	103.20
1	1A	4093	G	C4-N9-C1'	5.61	133.79	126.50
1	1A	3771	C	C2-N1-C1'	5.61	124.97	118.80
47	2m	1512	C	C2-N1-C1'	5.56	124.92	118.80
47	2m	356	C	N1-C2-O2	5.47	122.19	118.90
47	2m	322	C	N3-C2-O2	-5.46	118.08	121.90
47	2m	356	C	C6-N1-C1'	-5.46	114.25	120.80
53	2s	107	LYS	CG-CD-CE	5.45	128.26	111.90
1	1A	3769	C	N1-C2-O2	5.43	122.16	118.90
1	1A	969	C	N1-C2-O2	5.41	122.14	118.90
47	2m	744	G	N3-C2-N2	5.39	123.68	119.90
1	1A	2255	C	C2-N1-C1'	5.38	124.72	118.80
1	1A	1702	C	C6-N1-C1'	-5.38	114.34	120.80
47	2m	744	G	N1-C2-N2	5.38	121.04	116.20
47	2m	321	C	C2-N1-C1'	5.36	124.69	118.80
26	2R	116	LEU	CA-CB-CG	5.35	127.61	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
47	2m	958	G	C4-N9-C1'	5.35	133.45	126.50
47	2m	330	G	N1-C6-O6	-5.34	116.70	119.90
1	1A	4924	C	N1-C2-O2	5.32	122.09	118.90
53	2s	180	LEU	CA-CB-CG	5.31	127.52	115.30
60	2z	80	PRO	CA-N-CD	-5.31	104.07	111.50
47	2m	330	G	C5-C6-O6	5.30	131.78	128.60
1	1A	1702	C	N1-C2-O2	5.29	122.08	118.90
47	2m	1513	C	C6-N1-C2	-5.28	118.19	120.30
47	2m	744	G	C6-C5-N7	5.27	133.56	130.40
46	2l	67	VAL	CA-CB-CG2	-5.26	103.00	110.90
1	1A	4063	U	C2-N1-C1'	5.20	123.94	117.70
54	2t	172	LEU	CA-CB-CG	5.18	127.22	115.30
47	2m	321	C	N3-C2-O2	-5.15	118.30	121.90
47	2m	1421	A	C8-N9-C4	-5.12	103.75	105.80
1	1A	969	C	C6-N1-C1'	-5.11	114.67	120.80
16	2H	36	LEU	CA-CB-CG	5.11	127.05	115.30
47	2m	559	G	N3-C2-N2	-5.05	116.37	119.90
1	1A	4749	C	C2-N1-C1'	5.03	124.33	118.80

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	
4	1D	246/257 (96%)	223 (91%)	23 (9%)	0	100	100
5	1E	400/403 (99%)	384 (96%)	16 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	1F	366/427 (86%)	342 (93%)	24 (7%)	0	100	100
7	1G	291/297 (98%)	279 (96%)	12 (4%)	0	100	100
8	1H	232/288 (81%)	209 (90%)	23 (10%)	0	100	100
9	2A	224/248 (90%)	215 (96%)	9 (4%)	0	100	100
10	2B	240/266 (90%)	227 (95%)	13 (5%)	0	100	100
11	2C	188/192 (98%)	178 (95%)	10 (5%)	0	100	100
12	2D	211/214 (99%)	192 (91%)	18 (8%)	1 (0%)	29	50
13	2E	174/178 (98%)	163 (94%)	9 (5%)	2 (1%)	14	28
14	2F	208/211 (99%)	190 (91%)	18 (9%)	0	100	100
15	2G	137/215 (64%)	132 (96%)	5 (4%)	0	100	100
16	2H	201/204 (98%)	191 (95%)	9 (4%)	1 (0%)	29	50
17	2I	199/203 (98%)	193 (97%)	6 (3%)	0	100	100
18	2J	151/184 (82%)	143 (95%)	8 (5%)	0	100	100
19	2K	185/188 (98%)	179 (97%)	6 (3%)	0	100	100
20	2L	185/196 (94%)	178 (96%)	7 (4%)	0	100	100
21	2M	173/176 (98%)	160 (92%)	12 (7%)	1 (1%)	25	45
22	2N	157/160 (98%)	150 (96%)	7 (4%)	0	100	100
23	2O	99/128 (77%)	87 (88%)	12 (12%)	0	100	100
24	2P	129/140 (92%)	123 (95%)	6 (5%)	0	100	100
25	2Q	122/157 (78%)	110 (90%)	12 (10%)	0	100	100
26	2R	118/156 (76%)	113 (96%)	4 (3%)	1 (1%)	19	37
27	2S	132/145 (91%)	129 (98%)	3 (2%)	0	100	100
28	2T	133/136 (98%)	124 (93%)	9 (7%)	0	100	100
29	2U	145/148 (98%)	134 (92%)	11 (8%)	0	100	100
30	2V	105/159 (66%)	95 (90%)	10 (10%)	0	100	100
31	2W	96/115 (84%)	92 (96%)	4 (4%)	0	100	100
32	2X	105/125 (84%)	100 (95%)	5 (5%)	0	100	100
33	2Y	126/135 (93%)	118 (94%)	7 (6%)	1 (1%)	19	37
34	2Z	107/110 (97%)	102 (95%)	4 (4%)	1 (1%)	17	34
35	2a	112/117 (96%)	111 (99%)	1 (1%)	0	100	100
36	2b	120/123 (98%)	118 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	2c	100/105 (95%)	96 (96%)	4 (4%)	0	100	100
38	2d	85/97 (88%)	83 (98%)	2 (2%)	0	100	100
39	2e	67/70 (96%)	65 (97%)	2 (3%)	0	100	100
40	2f	48/51 (94%)	44 (92%)	4 (8%)	0	100	100
41	2g	49/128 (38%)	47 (96%)	2 (4%)	0	100	100
42	2h	22/25 (88%)	22 (100%)	0	0	100	100
43	2i	104/106 (98%)	96 (92%)	8 (8%)	0	100	100
44	2j	89/92 (97%)	87 (98%)	2 (2%)	0	100	100
45	2k	123/137 (90%)	115 (94%)	8 (6%)	0	100	100
46	2l	215/217 (99%)	171 (80%)	42 (20%)	2 (1%)	17	34
48	2n	219/295 (74%)	205 (94%)	13 (6%)	1 (0%)	29	50
49	2o	212/264 (80%)	205 (97%)	7 (3%)	0	100	100
50	2p	225/243 (93%)	199 (88%)	26 (12%)	0	100	100
51	2q	260/263 (99%)	245 (94%)	15 (6%)	0	100	100
52	2r	187/204 (92%)	164 (88%)	23 (12%)	0	100	100
53	2s	182/194 (94%)	162 (89%)	20 (11%)	0	100	100
54	2t	204/208 (98%)	199 (98%)	5 (2%)	0	100	100
55	2u	96/165 (58%)	87 (91%)	9 (9%)	0	100	100
56	2v	151/158 (96%)	137 (91%)	14 (9%)	0	100	100
57	2w	125/145 (86%)	118 (94%)	7 (6%)	0	100	100
58	2x	139/146 (95%)	127 (91%)	10 (7%)	2 (1%)	11	21
59	2y	133/135 (98%)	120 (90%)	11 (8%)	2 (2%)	10	20
60	2z	143/152 (94%)	126 (88%)	17 (12%)	0	100	100
61	20	141/145 (97%)	127 (90%)	14 (10%)	0	100	100
62	21	101/119 (85%)	94 (93%)	7 (7%)	0	100	100
63	3A	81/83 (98%)	73 (90%)	8 (10%)	0	100	100
64	3B	139/143 (97%)	129 (93%)	10 (7%)	0	100	100
65	3C	101/115 (88%)	92 (91%)	9 (9%)	0	100	100
66	3D	62/69 (90%)	50 (81%)	12 (19%)	0	100	100
67	3E	53/56 (95%)	49 (92%)	3 (6%)	1 (2%)	8	14
68	3F	311/317 (98%)	284 (91%)	27 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
69	3G	221/293 (75%)	209 (95%)	12 (5%)	0	100	100
70	3H	235/249 (94%)	221 (94%)	14 (6%)	0	100	100
71	3I	184/194 (95%)	164 (89%)	20 (11%)	0	100	100
72	3J	120/132 (91%)	113 (94%)	7 (6%)	0	100	100
73	3K	148/151 (98%)	145 (98%)	3 (2%)	0	100	100
74	3L	138/151 (91%)	122 (88%)	15 (11%)	1 (1%)	22	41
75	3M	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
76	3N	130/133 (98%)	122 (94%)	8 (6%)	0	100	100
77	3O	73/125 (58%)	62 (85%)	11 (15%)	0	100	100
78	3P	81/84 (96%)	70 (86%)	11 (14%)	0	100	100
79	3Q	56/59 (95%)	52 (93%)	4 (7%)	0	100	100
80	3R	65/156 (42%)	55 (85%)	10 (15%)	0	100	100
All	All	11562/12905 (90%)	10759 (93%)	786 (7%)	17 (0%)	54	73

All (17) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
33	2Y	92	ASN
34	2Z	107	PRO
48	2n	28	THR
58	2x	42	ILE
58	2x	43	GLU
21	2M	165	PRO
59	2y	66	VAL
59	2y	69	ILE
16	2H	124	ASP
67	3E	3	HIS
26	2R	38	LYS
46	2l	83	PRO
46	2l	86	ASP
74	3L	15	ILE
13	2E	117	ILE
12	2D	107	GLY
13	2E	174	ILE

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
4	1D	190/199 (96%)	182 (96%)	8 (4%)	30 53
5	1E	348/349 (100%)	333 (96%)	15 (4%)	29 52
6	1F	306/348 (88%)	291 (95%)	15 (5%)	25 46
7	1G	246/250 (98%)	229 (93%)	17 (7%)	15 30
8	1H	209/252 (83%)	196 (94%)	13 (6%)	18 35
9	2A	195/215 (91%)	189 (97%)	6 (3%)	40 64
10	2B	204/223 (92%)	195 (96%)	9 (4%)	28 51
11	2C	169/171 (99%)	162 (96%)	7 (4%)	30 54
12	2D	180/181 (99%)	168 (93%)	12 (7%)	16 31
13	2E	148/149 (99%)	130 (88%)	18 (12%)	5 8
14	2F	176/177 (99%)	166 (94%)	10 (6%)	20 39
15	2G	118/161 (73%)	114 (97%)	4 (3%)	37 60
16	2H	171/172 (99%)	166 (97%)	5 (3%)	42 66
17	2I	173/174 (99%)	167 (96%)	6 (4%)	36 59
18	2J	134/163 (82%)	129 (96%)	5 (4%)	34 57
19	2K	164/165 (99%)	162 (99%)	2 (1%)	71 86
20	2L	166/175 (95%)	159 (96%)	7 (4%)	30 53
21	2M	156/157 (99%)	147 (94%)	9 (6%)	20 38
22	2N	139/140 (99%)	129 (93%)	10 (7%)	14 27
23	2O	91/115 (79%)	80 (88%)	11 (12%)	5 8
24	2P	101/107 (94%)	97 (96%)	4 (4%)	31 55
25	2Q	103/126 (82%)	101 (98%)	2 (2%)	57 77
26	2R	108/133 (81%)	101 (94%)	7 (6%)	17 33
27	2S	124/135 (92%)	119 (96%)	5 (4%)	31 55
28	2T	117/118 (99%)	112 (96%)	5 (4%)	29 52
29	2U	120/121 (99%)	119 (99%)	1 (1%)	81 92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
30	2V	89/126 (71%)	83 (93%)	6 (7%)	16 31
31	2W	83/97 (86%)	77 (93%)	6 (7%)	14 27
32	2X	98/110 (89%)	93 (95%)	5 (5%)	24 44
33	2Y	114/121 (94%)	110 (96%)	4 (4%)	36 59
34	2Z	88/89 (99%)	85 (97%)	3 (3%)	37 60
35	2a	98/100 (98%)	91 (93%)	7 (7%)	14 28
36	2b	109/110 (99%)	99 (91%)	10 (9%)	9 16
37	2c	86/89 (97%)	83 (96%)	3 (4%)	36 59
38	2d	74/80 (92%)	68 (92%)	6 (8%)	11 22
39	2e	64/65 (98%)	59 (92%)	5 (8%)	12 23
40	2f	47/48 (98%)	43 (92%)	4 (8%)	10 20
41	2g	47/115 (41%)	44 (94%)	3 (6%)	17 34
42	2h	23/24 (96%)	21 (91%)	2 (9%)	10 19
43	2i	94/94 (100%)	90 (96%)	4 (4%)	29 52
44	2j	74/75 (99%)	71 (96%)	3 (4%)	30 54
45	2k	109/121 (90%)	104 (95%)	5 (5%)	27 49
46	2l	195/196 (100%)	179 (92%)	16 (8%)	11 21
48	2n	183/243 (75%)	172 (94%)	11 (6%)	19 37
49	2o	195/231 (84%)	186 (95%)	9 (5%)	27 49
50	2p	190/202 (94%)	179 (94%)	11 (6%)	20 38
51	2q	224/225 (100%)	207 (92%)	17 (8%)	13 25
52	2r	159/170 (94%)	143 (90%)	16 (10%)	7 13
53	2s	166/174 (95%)	155 (93%)	11 (7%)	16 32
54	2t	178/180 (99%)	163 (92%)	15 (8%)	11 20
55	2u	89/136 (65%)	84 (94%)	5 (6%)	21 40
56	2v	137/142 (96%)	134 (98%)	3 (2%)	52 74
57	2w	113/130 (87%)	104 (92%)	9 (8%)	12 22
58	2x	117/121 (97%)	112 (96%)	5 (4%)	29 52
59	2y	122/122 (100%)	110 (90%)	12 (10%)	8 14
60	2z	126/132 (96%)	114 (90%)	12 (10%)	8 15
61	20	113/115 (98%)	103 (91%)	10 (9%)	10 18

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
62	21	94/107 (88%)	87 (93%)	7 (7%)	13 26
63	3A	67/67 (100%)	61 (91%)	6 (9%)	9 17
64	3B	113/115 (98%)	105 (93%)	8 (7%)	14 28
65	3C	90/98 (92%)	84 (93%)	6 (7%)	16 31
66	3D	57/62 (92%)	53 (93%)	4 (7%)	15 29
67	3E	48/49 (98%)	42 (88%)	6 (12%)	4 8
68	3F	272/275 (99%)	259 (95%)	13 (5%)	25 47
69	3G	189/225 (84%)	177 (94%)	12 (6%)	18 35
70	3H	207/218 (95%)	193 (93%)	14 (7%)	16 30
71	3I	162/168 (96%)	151 (93%)	11 (7%)	16 30
72	3J	102/108 (94%)	99 (97%)	3 (3%)	42 66
73	3K	130/131 (99%)	122 (94%)	8 (6%)	18 35
74	3L	110/119 (92%)	106 (96%)	4 (4%)	35 59
75	3M	112/113 (99%)	107 (96%)	5 (4%)	27 50
76	3N	114/115 (99%)	108 (95%)	6 (5%)	22 43
77	3O	66/103 (64%)	63 (96%)	3 (4%)	27 50
78	3P	75/76 (99%)	71 (95%)	4 (5%)	22 43
79	3Q	47/48 (98%)	43 (92%)	4 (8%)	10 20
80	3R	60/140 (43%)	57 (95%)	3 (5%)	24 45
All	All	10075/10996 (92%)	9497 (94%)	578 (6%)	24 39

All (578) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	1D	6	ARG
4	1D	28	ARG
4	1D	42	LYS
4	1D	45	VAL
4	1D	68	ARG
4	1D	102	LEU
4	1D	144	LYS
4	1D	245	ARG
5	1E	20	LYS
5	1E	38	SER
5	1E	87	VAL

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Mol	Chain	Res	Type
5	1E	112	ASP
5	1E	144	LYS
5	1E	153	MET
5	1E	295	ASP
5	1E	297	LYS
5	1E	302	ASN
5	1E	334	LYS
5	1E	349	LYS
5	1E	382	MET
5	1E	389	MET
5	1E	394	LYS
5	1E	396	ARG
6	1F	14	LYS
6	1F	95	MET
6	1F	122	TYR
6	1F	131	SER
6	1F	140	LYS
6	1F	143	ARG
6	1F	179	ASP
6	1F	188	ARG
6	1F	201	ARG
6	1F	212	ASN
6	1F	261	ASP
6	1F	276	ASN
6	1F	290	SER
6	1F	291	ARG
6	1F	312	ARG
7	1G	85	LYS
7	1G	86	TYR
7	1G	128	ASP
7	1G	133	GLU
7	1G	134	SER
7	1G	136	ASP
7	1G	180	PHE
7	1G	197	LYS
7	1G	221	LYS
7	1G	235	MET
7	1G	236	MET
7	1G	239	MET
7	1G	270	LYS
7	1G	278	ASP
7	1G	289	ARG

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Mol	Chain	Res	Type
7	1G	291	GLN
7	1G	293	ARG
8	1H	56	ARG
8	1H	88	VAL
8	1H	89	LEU
8	1H	94	LYS
8	1H	110	ARG
8	1H	128	HIS
8	1H	191	GLN
8	1H	194	VAL
8	1H	200	LYS
8	1H	202	ASP
8	1H	223	ARG
8	1H	235	THR
8	1H	240	TYR
9	2A	62	ARG
9	2A	102	SER
9	2A	200	ARG
9	2A	221	LYS
9	2A	236	ARG
9	2A	248	ASN
10	2B	88	ASP
10	2B	94	GLN
10	2B	111	LYS
10	2B	137[A]	ARG
10	2B	137[B]	ARG
10	2B	175	ARG
10	2B	202	VAL
10	2B	207	VAL
10	2B	235	ARG
11	2C	51	LYS
11	2C	71	ARG
11	2C	94	SER
11	2C	150	ASP
11	2C	171	ASP
11	2C	172	ILE
11	2C	177	ASP
12	2D	43	VAL
12	2D	55	ASP
12	2D	66	GLU
12	2D	82	ARG
12	2D	90	ARG

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Mol	Chain	Res	Type
12	2D	102	MET
12	2D	105	CYS
12	2D	113	THR
12	2D	137	SER
12	2D	141	LYS
12	2D	187	LYS
12	2D	207	ASP
13	2E	7	GLU
13	2E	28	GLU
13	2E	55	TYR
13	2E	67	LYS
13	2E	72	CYS
13	2E	78	LYS
13	2E	95	ARG
13	2E	110	GLN
13	2E	115	LEU
13	2E	118	LYS
13	2E	120	ASP
13	2E	126	TYR
13	2E	143	ASP
13	2E	148	THR
13	2E	158	SER
13	2E	173	ILE
13	2E	175	LEU
13	2E	178	LYS
14	2F	59	VAL
14	2F	64	VAL
14	2F	70	VAL
14	2F	97	SER
14	2F	155	MET
14	2F	161	TYR
14	2F	163	LYS
14	2F	175	ASN
14	2F	200	LYS
14	2F	209	LYS
15	2G	33	GLN
15	2G	54	CYS
15	2G	99	GLU
15	2G	121	ARG
16	2H	17	ASP
16	2H	126	THR
16	2H	169	ARG

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Mol	Chain	Res	Type
16	2H	174	LEU
16	2H	182	HIS
17	2I	60	LYS
17	2I	63	ASN
17	2I	145	VAL
17	2I	169	ARG
17	2I	187	LYS
17	2I	191	LYS
18	2J	24	VAL
18	2J	80	GLN
18	2J	85	LYS
18	2J	128	ARG
18	2J	153	LYS
19	2K	4	ASP
19	2K	20	SER
20	2L	34	ASN
20	2L	112	SER
20	2L	113	LYS
20	2L	116	ASP
20	2L	148	ASP
20	2L	163	ARG
20	2L	171	LYS
21	2M	15	ARG
21	2M	29	ARG
21	2M	31	ARG
21	2M	48	VAL
21	2M	54	MET
21	2M	83	ARG
21	2M	90	THR
21	2M	130	GLU
21	2M	164	LYS
22	2N	21	LYS
22	2N	36	LYS
22	2N	72	VAL
22	2N	83	LYS
22	2N	85	LEU
22	2N	111	GLU
22	2N	122	LYS
22	2N	124	THR
22	2N	158	PHE
22	2N	159	MET
23	2O	19	LEU

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Mol	Chain	Res	Type
23	2O	24	ASP
23	2O	34	MET
23	2O	62	THR
23	2O	65	ARG
23	2O	69	LYS
23	2O	80	LYS
23	2O	95	ASN
23	2O	101	ARG
23	2O	108	GLU
23	2O	109	SER
24	2P	46	LYS
24	2P	67	LYS
24	2P	115	SER
24	2P	118	THR
25	2Q	12	LYS
25	2Q	19	ARG
26	2R	39	LYS
26	2R	54	LEU
26	2R	88	LYS
26	2R	95	THR
26	2R	118	ASP
26	2R	138	VAL
26	2R	152	LYS
27	2S	23	SER
27	2S	52	ASP
27	2S	74	TYR
27	2S	84	ARG
27	2S	105	VAL
28	2T	34	SER
28	2T	66	SER
28	2T	88	ASP
28	2T	112	ARG
28	2T	115	LYS
29	2U	140	VAL
30	2V	22	LYS
30	2V	26	SER
30	2V	50	ASN
30	2V	55	LYS
30	2V	57	MET
30	2V	118	LEU
31	2W	11	LEU
31	2W	16	SER

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Mol	Chain	Res	Type
31	2W	23	LYS
31	2W	26	LYS
31	2W	68	LYS
31	2W	106	ARG
32	2X	18	ASN
32	2X	26	THR
32	2X	50	ARG
32	2X	69	ASN
32	2X	89	SER
33	2Y	7	LEU
33	2Y	83	LYS
33	2Y	117	GLN
33	2Y	129	LEU
34	2Z	31	GLU
34	2Z	33	VAL
34	2Z	89	ARG
35	2a	17	SER
35	2a	19	LYS
35	2a	28	ASN
35	2a	29	ARG
35	2a	40	LYS
35	2a	89	ASP
35	2a	105	LYS
36	2b	13	LYS
36	2b	14	LYS
36	2b	15	GLU
36	2b	46	LYS
36	2b	67	GLU
36	2b	82	ASP
36	2b	105	LYS
36	2b	107	GLN
36	2b	109	ARG
36	2b	122	LYS
37	2c	3	LEU
37	2c	29	ARG
37	2c	46	GLU
38	2d	6	SER
38	2d	22	CYS
38	2d	25	LYS
38	2d	32	SER
38	2d	36	LYS
38	2d	37	CYS

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Mol	Chain	Res	Type
39	2e	9	LYS
39	2e	29	LYS
39	2e	49	ASP
39	2e	51	GLU
39	2e	70	LYS
40	2f	8	ARG
40	2f	21	ARG
40	2f	37	TYR
40	2f	45	ARG
41	2g	81	SER
41	2g	92	ASP
41	2g	111	ARG
42	2h	1	MET
42	2h	19	LYS
43	2i	30	LYS
43	2i	78	ARG
43	2i	103	VAL
43	2i	106	PHE
44	2j	32	SER
44	2j	40	SER
44	2j	63	THR
45	2k	21	ASN
45	2k	67	ARG
45	2k	79	ARG
45	2k	103	ARG
45	2k	125	MET
46	2l	35	GLN
46	2l	47	LYS
46	2l	48	ARG
46	2l	68	LEU
46	2l	82	ILE
46	2l	85	MET
46	2l	102	LYS
46	2l	106	LYS
46	2l	122	ARG
46	2l	144	MET
46	2l	156	LYS
46	2l	159	MET
46	2l	161	LYS
46	2l	174	MET
46	2l	210	MET
46	2l	212	LYS

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Mol	Chain	Res	Type
48	2n	11	LYS
48	2n	40	LYS
48	2n	89	LYS
48	2n	104	THR
48	2n	113	GLN
48	2n	144	THR
48	2n	165	ASN
48	2n	186	ARG
48	2n	200	ASP
48	2n	206	ASP
48	2n	214	GLU
49	2o	38	MET
49	2o	43	ASN
49	2o	59	SER
49	2o	110	MET
49	2o	147	ASN
49	2o	170	GLU
49	2o	198	GLU
49	2o	199	LYS
49	2o	203	SER
50	2p	3	VAL
50	2p	45	ARG
50	2p	76	ARG
50	2p	94	ARG
50	2p	120	TYR
50	2p	143	ARG
50	2p	167	TYR
50	2p	192	TRP
50	2p	197	LYS
50	2p	201	LYS
50	2p	224	SER
51	2q	17	HIS
51	2q	39	ARG
51	2q	69	PHE
51	2q	90	ILE
51	2q	93	ASP
51	2q	97	GLU
51	2q	121	TYR
51	2q	134	LYS
51	2q	158	ASP
51	2q	182	MET
51	2q	198	ARG

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Mol	Chain	Res	Type
51	2q	212	ASP
51	2q	217	SER
51	2q	224	ASN
51	2q	233	LYS
51	2q	240	ARG
51	2q	259	LYS
52	2r	20	PHE
52	2r	45	TYR
52	2r	48	TYR
52	2r	65	GLN
52	2r	67	PRO
52	2r	77	MET
52	2r	78	MET
52	2r	79	HIS
52	2r	104	THR
52	2r	122	ARG
52	2r	124	ASP
52	2r	127	ARG
52	2r	130	ARG
52	2r	135	ARG
52	2r	149	GLN
52	2r	202	SER
53	2s	25	GLN
53	2s	74	LYS
53	2s	81	ARG
53	2s	84	GLU
53	2s	91	HIS
53	2s	148	LEU
53	2s	149	ASP
53	2s	157	HIS
53	2s	166	VAL
53	2s	169	LYS
53	2s	184	ASP
54	2t	3	ILE
54	2t	18	ARG
54	2t	22	HIS
54	2t	49	ARG
54	2t	55	TYR
54	2t	61	ASP
54	2t	73	THR
54	2t	86	SER
54	2t	124	LYS

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Mol	Chain	Res	Type
54	2t	130	THR
54	2t	143	LYS
54	2t	153	LYS
54	2t	163	GLU
54	2t	172	LEU
54	2t	196	GLU
55	2u	21	MET
55	2u	31	LYS
55	2u	32	HIS
55	2u	95	ARG
55	2u	98	ARG
56	2v	19	ASN
56	2v	69	ARG
56	2v	91	ASP
57	2w	28	MET
57	2w	34	MET
57	2w	35	GLN
57	2w	37	TYR
57	2w	45	LEU
57	2w	51	ARG
57	2w	80	LEU
57	2w	126	VAL
57	2w	128	HIS
58	2x	15	ARG
58	2x	27	ARG
58	2x	86	GLN
58	2x	115	TYR
58	2x	140	ARG
59	2y	1	MET
59	2y	11	LYS
59	2y	26	ASN
59	2y	45	LYS
59	2y	48	ASN
59	2y	56	HIS
59	2y	57	LEU
59	2y	63	ARG
59	2y	67	ARG
59	2y	80	ARG
59	2y	92	ASP
59	2y	118	GLN
60	2z	13	LEU
60	2z	18	THR

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Mol	Chain	Res	Type
60	2z	40	TYR
60	2z	66	ARG
60	2z	78	LYS
60	2z	83	PHE
60	2z	90	VAL
60	2z	91	LYS
60	2z	101	ASN
60	2z	104	ASP
60	2z	108	ARG
60	2z	116	LYS
61	20	21	PHE
61	20	33	TRP
61	20	36	THR
61	20	41	LYS
61	20	65	TYR
61	20	88	MET
61	20	92	PHE
61	20	118	ASP
61	20	122	LYS
61	20	133	ARG
62	21	21	ARG
62	21	22	ILE
62	21	24	LEU
62	21	32	LEU
62	21	41	ARG
62	21	79	ARG
62	21	99	LYS
63	3A	41	LYS
63	3A	60	ARG
63	3A	65	SER
63	3A	79	VAL
63	3A	81	LYS
63	3A	83	PHE
64	3B	19	ASP
64	3B	36	LEU
64	3B	37	LYS
64	3B	98	ASP
64	3B	105	PHE
64	3B	108	LYS
64	3B	125	VAL
64	3B	127	ASN
65	3C	6	ARG

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Mol	Chain	Res	Type
65	3C	57	SER
65	3C	60	ASP
65	3C	85[A]	ARG
65	3C	85[B]	ARG
65	3C	88	SER
66	3D	16	LYS
66	3D	33	GLU
66	3D	34	PHE
66	3D	66	ARG
67	3E	5	GLN
67	3E	8	TRP
67	3E	13	LYS
67	3E	22	ARG
67	3E	27	ARG
67	3E	45	GLN
68	3F	60	ARG
68	3F	107	ASP
68	3F	113	PHE
68	3F	157	SER
68	3F	170	TRP
68	3F	177	TRP
68	3F	179	LEU
68	3F	183	LYS
68	3F	225	LYS
68	3F	234	ASP
68	3F	264	LYS
68	3F	294	ASP
68	3F	304	ASP
69	3G	61	MET
69	3G	80	GLU
69	3G	91	SER
69	3G	104	ASP
69	3G	117	ARG
69	3G	120	GLN
69	3G	121	ARG
69	3G	176	LYS
69	3G	216	MET
69	3G	220	ASP
69	3G	262	THR
69	3G	263	LYS
70	3H	1	MET
70	3H	19	ASP

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Mol	Chain	Res	Type
70	3H	32	MET
70	3H	39	ASP
70	3H	98	ARG
70	3H	100	CYS
70	3H	119	LYS
70	3H	143	LYS
70	3H	150	GLU
70	3H	170	ARG
70	3H	215	LYS
70	3H	221	LYS
70	3H	223	LYS
70	3H	224	ARG
71	3I	7	TRP
71	3I	55	LYS
71	3I	58	ARG
71	3I	121	LYS
71	3I	122	SER
71	3I	132	GLN
71	3I	138[A]	ARG
71	3I	138[B]	ARG
71	3I	153	SER
71	3I	159	PHE
71	3I	179	LYS
72	3J	60	MET
72	3J	69	LEU
72	3J	129	LYS
73	3K	3	ARG
73	3K	36	GLN
73	3K	73	ARG
73	3K	99	ARG
73	3K	102	LEU
73	3K	108	ASP
73	3K	144	SER
73	3K	150	VAL
74	3L	34	PHE
74	3L	83	GLN
74	3L	98	ARG
74	3L	125	LYS
75	3M	18	GLU
75	3M	57	ARG
75	3M	81	VAL
75	3M	85	ASP

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Mol	Chain	Res	Type
75	3M	104	LEU
76	3N	21	LYS
76	3N	23	MET
76	3N	39	GLU
76	3N	46	LYS
76	3N	105	LYS
76	3N	117	VAL
77	3O	43	LYS
77	3O	55	TYR
77	3O	96	LEU
78	3P	5	LYS
78	3P	26	GLN
78	3P	42	LYS
78	3P	81	ARG
79	3Q	6	LEU
79	3Q	22	GLN
79	3Q	26	LYS
79	3Q	36	MET
80	3R	95	ARG
80	3R	104	LYS
80	3R	110	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
5	1E	301	ASN
6	1F	317	ASN
7	1G	195	HIS
8	1H	211	HIS
10	2B	64	GLN
11	2C	140	GLN
18	2J	80	GLN
18	2J	137	ASN
27	2S	66	GLN
28	2T	28	ASN
29	2U	66	ASN
31	2W	40	GLN
46	2l	35	GLN
51	2q	138	HIS
52	2r	148	ASN
57	2w	53	GLN
57	2w	128	HIS

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Mol	Chain	Res	Type
59	2y	31	ASN
61	20	63	HIS
68	3F	272	GLN
69	3G	267	GLN
72	3J	52	GLN
73	3K	5	HIS
76	3N	85	ASN
77	3O	106	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1A	3704/5070 (73%)	833 (22%)	30 (0%)
2	1B	119/121 (98%)	18 (15%)	2 (1%)
3	1C	155/157 (98%)	29 (18%)	2 (1%)
47	2m	1716/1869 (91%)	480 (27%)	0
All	All	5694/7217 (78%)	1360 (23%)	34 (0%)

All (1360) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1A	17	A
1	1A	30	C
1	1A	39	A
1	1A	42	A
1	1A	48	G
1	1A	59	A
1	1A	64	A
1	1A	65	A
1	1A	66	A
1	1A	69	A
1	1A	73	A
1	1A	91	G
1	1A	104	G
1	1A	109	G
1	1A	110	C
1	1A	119	G
1	1A	121	A
1	1A	122	U
1	1A	127	G
1	1A	128	C

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Mol	Chain	Res	Type
1	1A	131	C
1	1A	133	C
1	1A	134	G
1	1A	135	G
1	1A	136	C
1	1A	137	G
1	1A	143	C
1	1A	144	G
1	1A	159	C
1	1A	171	U
1	1A	172	C
1	1A	179	G
1	1A	180	C
1	1A	183	C
1	1A	184	U
1	1A	185	C
1	1A	188	G
1	1A	189	G
1	1A	195	C
1	1A	200	U
1	1A	201	C
1	1A	209	U
1	1A	216	C
1	1A	217	C
1	1A	218	A
1	1A	219	G
1	1A	227	A
1	1A	233	U
1	1A	234	G
1	1A	256	G
1	1A	264	C
1	1A	265	C
1	1A	266	C
1	1A	269	G
1	1A	274	C
1	1A	275	C
1	1A	277	G
1	1A	278	G
1	1A	280	G
1	1A	295	A
1	1A	297	U
1	1A	306	A

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Mol	Chain	Res	Type
1	1A	315	G
1	1A	316	U
1	1A	340	C
1	1A	384	A
1	1A	386	A
1	1A	387	G
1	1A	396	A
1	1A	407	A
1	1A	409	G
1	1A	410	A
1	1A	412	G
1	1A	418	A
1	1A	440	U
1	1A	449	C
1	1A	450	G
1	1A	452	A
1	1A	453	G
1	1A	454	U
1	1A	456	C
1	1A	457	G
1	1A	464	G
1	1A	465	G
1	1A	467	U
1	1A	484	U
1	1A	485	C
1	1A	486	C
1	1A	489	C
1	1A	493	G
1	1A	494	U
1	1A	497	G
1	1A	498	C
1	1A	500	G
1	1A	502	C
1	1A	503	C
1	1A	504	G
1	1A	505	G
1	1A	509	A
1	1A	510	U
1	1A	512	U
1	1A	513	U
1	1A	514	U
1	1A	517	C

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Mol	Chain	Res	Type
1	1A	518	G
1	1A	643	C
1	1A	644	G
1	1A	646	G
1	1A	654	C
1	1A	657	C
1	1A	665	C
1	1A	666	G
1	1A	667	A
1	1A	668	C
1	1A	673	C
1	1A	685	C
1	1A	686	A
1	1A	687	U
1	1A	696	C
1	1A	703	G
1	1A	704	C
1	1A	731	G
1	1A	738	C
1	1A	739	G
1	1A	744	G
1	1A	753	C
1	1A	904	C
1	1A	905	C
1	1A	907	C
1	1A	913	U
1	1A	914	U
1	1A	915	A
1	1A	916	C
1	1A	917	A
1	1A	918	G
1	1A	923	C
1	1A	924	C
1	1A	925	C
1	1A	926	G
1	1A	932	A
1	1A	933	G
1	1A	936	C
1	1A	944	A
1	1A	945	U
1	1A	946	C
1	1A	959	G

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Mol	Chain	Res	Type
1	1A	960	A
1	1A	961	G
1	1A	962	C
1	1A	965	G
1	1A	966	A
1	1A	967	C
1	1A	968	C
1	1A	969	C
1	1A	970	G
1	1A	971	U
1	1A	977	C
1	1A	982	U
1	1A	984	C
1	1A	989	U
1	1A	990	C
1	1A	991	C
1	1A	992	C
1	1A	993	G
1	1A	995	C
1	1A	1048	G
1	1A	1051	G
1	1A	1066	G
1	1A	1070	G
1	1A	1071	C
1	1A	1072	C
1	1A	1074	G
1	1A	1075	G
1	1A	1082	C
1	1A	1083	U
1	1A	1095	A
1	1A	1168	G
1	1A	1171	G
1	1A	1172	C
1	1A	1173	G
1	1A	1178	G
1	1A	1179	U
1	1A	1180	C
1	1A	1181	C
1	1A	1182	C
1	1A	1183	C
1	1A	1184	A
1	1A	1187	G

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Mol	Chain	Res	Type
1	1A	1198	G
1	1A	1202	C
1	1A	1203	G
1	1A	1211	G
1	1A	1214	C
1	1A	1215	C
1	1A	1216	C
1	1A	1217	G
1	1A	1218	G
1	1A	1219	G
1	1A	1222	A
1	1A	1241	C
1	1A	1245	C
1	1A	1246	G
1	1A	1253	G
1	1A	1254	A
1	1A	1255	A
1	1A	1260	G
1	1A	1261	G
1	1A	1262	G
1	1A	1265	G
1	1A	1266	G
1	1A	1269	G
1	1A	1270	A
1	1A	1271	G
1	1A	1272	C
1	1A	1273	G
1	1A	1274	A
1	1A	1275	G
1	1A	1277	G
1	1A	1280	C
1	1A	1284	G
1	1A	1287	G
1	1A	1293	G
1	1A	1294	A
1	1A	1295	C
1	1A	1296	G
1	1A	1301	C
1	1A	1302	U
1	1A	1303	A
1	1A	1326	A
1	1A	1337	A

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Mol	Chain	Res	Type
1	1A	1338	G
1	1A	1354	A
1	1A	1358	G
1	1A	1359	G
1	1A	1365	C
1	1A	1378	C
1	1A	1379	C
1	1A	1387	A
1	1A	1393	G
1	1A	1394	G
1	1A	1397	A
1	1A	1398	A
1	1A	1399	G
1	1A	1402	C
1	1A	1405	C
1	1A	1409	C
1	1A	1410	U
1	1A	1420	A
1	1A	1435	G
1	1A	1439	C
1	1A	1441	C
1	1A	1443	A
1	1A	1444	G
1	1A	1446	C
1	1A	1447	C
1	1A	1482	G
1	1A	1483	C
1	1A	1497	A
1	1A	1498	G
1	1A	1502	G
1	1A	1516	G
1	1A	1525	A
1	1A	1527	A
1	1A	1534	A
1	1A	1547	A
1	1A	1564	A
1	1A	1566	C
1	1A	1576	G
1	1A	1578	U
1	1A	1591	U
1	1A	1596	U
1	1A	1624	G

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Mol	Chain	Res	Type
1	1A	1625	G
1	1A	1631	A
1	1A	1633	G
1	1A	1634	A
1	1A	1638	A
1	1A	1641	G
1	1A	1654	G
1	1A	1661	C
1	1A	1663	C
1	1A	1676	C
1	1A	1677	U
1	1A	1678	C
1	1A	1681	G
1	1A	1697	G
1	1A	1699	A
1	1A	1700	G
1	1A	1703	C
1	1A	1704	C
1	1A	1705	G
1	1A	1707	C
1	1A	1731	C
1	1A	1742	A
1	1A	1750	G
1	1A	1753	G
1	1A	1757	U
1	1A	1758	G
1	1A	1761	G
1	1A	1762	C
1	1A	1763	C
1	1A	1764	G
1	1A	1765	A
1	1A	1766	A
1	1A	1768	C
1	1A	1770	A
1	1A	1775	A
1	1A	1787	A
1	1A	1804	A
1	1A	1806	G
1	1A	1810	G
1	1A	1820	C
1	1A	1821	G
1	1A	1822	U

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Mol	Chain	Res	Type
1	1A	1834	U
1	1A	1836	G
1	1A	1837	A
1	1A	1842	G
1	1A	1855	G
1	1A	1869	G
1	1A	1882	U
1	1A	1897	A
1	1A	1918	U
1	1A	1919	G
1	1A	1920	C
1	1A	1921	C
1	1A	1922	G
1	1A	1925	G
1	1A	1931	C
1	1A	1932	A
1	1A	1936	C
1	1A	1940	G
1	1A	1948	G
1	1A	1949	U
1	1A	1959	U
1	1A	1960	A
1	1A	1961	G
1	1A	1962	A
1	1A	1966	C
1	1A	1967	A
1	1A	1968	G
1	1A	1969	G
1	1A	1974	U
1	1A	1975	G
1	1A	1980	U
1	1A	1981	G
1	1A	1982	G
1	1A	1983	A
1	1A	1985	G
1	1A	1987	C
1	1A	1988	G
1	1A	1989	G
1	1A	1991	A
1	1A	1993	C
1	1A	1995	G
1	1A	1996	C

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Mol	Chain	Res	Type
1	1A	1998	A
1	1A	1999	A
1	1A	2002	A
1	1A	2003	G
1	1A	2004	U
1	1A	2006	U
1	1A	2007	G
1	1A	2009	A
1	1A	2010	A
1	1A	2011	C
1	1A	2012	A
1	1A	2013	A
1	1A	2015	U
1	1A	2016	C
1	1A	2018	C
1	1A	2020	U
1	1A	2024	G
1	1A	2025	A
1	1A	2026	A
1	1A	2034	G
1	1A	2046	G
1	1A	2048	U
1	1A	2055	G
1	1A	2056	G
1	1A	2069	A
1	1A	2084	C
1	1A	2085	G
1	1A	2089	G
1	1A	2092	G
1	1A	2093	A
1	1A	2094	G
1	1A	2095	A
1	1A	2096	G
1	1A	2097	U
1	1A	2098	G
1	1A	2101	C
1	1A	2102	G
1	1A	2104	G
1	1A	2106	G
1	1A	2108	G
1	1A	2111	G
1	1A	2112	G

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Mol	Chain	Res	Type
1	1A	2113	C
1	1A	2252	G
1	1A	2253	A
1	1A	2256	C
1	1A	2258	C
1	1A	2261	G
1	1A	2268	A
1	1A	2289	C
1	1A	2300	A
1	1A	2301	G
1	1A	2306	G
1	1A	2316	G
1	1A	2331	G
1	1A	2333	G
1	1A	2348	G
1	1A	2351	C
1	1A	2360	A
1	1A	2370	A
1	1A	2390	G
1	1A	2395	A
1	1A	2397	G
1	1A	2412	A
1	1A	2417	A
1	1A	2421	G
1	1A	2422	C
1	1A	2423	A
1	1A	2441	C
1	1A	2444	U
1	1A	2461	G
1	1A	2465	C
1	1A	2471	G
1	1A	2474	G
1	1A	2475	G
1	1A	2484	A
1	1A	2485	U
1	1A	2487	G
1	1A	2488	C
1	1A	2489	C
1	1A	2491	C
1	1A	2495	U
1	1A	2496	G
1	1A	2503	G

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Mol	Chain	Res	Type
1	1A	2505	C
1	1A	2507	A
1	1A	2512	A
1	1A	2513	A
1	1A	2514	G
1	1A	2529	A
1	1A	2530	U
1	1A	2537	A
1	1A	2544	G
1	1A	2545	U
1	1A	2546	G
1	1A	2547	G
1	1A	2553	A
1	1A	2554	U
1	1A	2555	G
1	1A	2556	G
1	1A	2563	C
1	1A	2564	G
1	1A	2566	G
1	1A	2567	G
1	1A	2583	C
1	1A	2586	G
1	1A	2587	A
1	1A	2589	C
1	1A	2601	A
1	1A	2602	G
1	1A	2607	C
1	1A	2618	G
1	1A	2627	C
1	1A	2638	G
1	1A	2640	G
1	1A	2653	C
1	1A	2662	G
1	1A	2669	C
1	1A	2670	C
1	1A	2675	G
1	1A	2676	A
1	1A	2686	G
1	1A	2687	U
1	1A	2695	A
1	1A	2696	A
1	1A	2708	U

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Mol	Chain	Res	Type
1	1A	2710	C
1	1A	2711	G
1	1A	2712	G
1	1A	2714	G
1	1A	2721	G
1	1A	2724	G
1	1A	2725	A
1	1A	2726	G
1	1A	2739	C
1	1A	2743	A
1	1A	2744	A
1	1A	2753	G
1	1A	2754	G
1	1A	2761	U
1	1A	2762	G
1	1A	2763	U
1	1A	2767	U
1	1A	2768	C
1	1A	2769	U
1	1A	2770	C
1	1A	2776	G
1	1A	2787	A
1	1A	2788	U
1	1A	2790	U
1	1A	2794	C
1	1A	2797	C
1	1A	2798	A
1	1A	2826	U
1	1A	2827	G
1	1A	2829	U
1	1A	2835	A
1	1A	2855	G
1	1A	2860	C
1	1A	2870	A
1	1A	2875	C
1	1A	2902	G
1	1A	2906	G
1	1A	2908	U
1	1A	3585	G
1	1A	3586	G
1	1A	3590	G
1	1A	3591	C

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Mol	Chain	Res	Type
1	1A	3592	G
1	1A	3593	C
1	1A	3595	U
1	1A	3596	A
1	1A	3597	G
1	1A	3605	C
1	1A	3615	G
1	1A	3616	U
1	1A	3618	C
1	1A	3626	G
1	1A	3635	A
1	1A	3642	A
1	1A	3644	U
1	1A	3646	A
1	1A	3648	A
1	1A	3651	A
1	1A	3662	A
1	1A	3670	C
1	1A	3671	G
1	1A	3673	C
1	1A	3705	G
1	1A	3709	U
1	1A	3711	A
1	1A	3712	A
1	1A	3713	U
1	1A	3729	U
1	1A	3748	A
1	1A	3753	G
1	1A	3758	U
1	1A	3760	A
1	1A	3761	C
1	1A	3762	U
1	1A	3763	A
1	1A	3765	G
1	1A	3766	A
1	1A	3767	C
1	1A	3773	U
1	1A	3774	A
1	1A	3776	G
1	1A	3777	G
1	1A	3783	A
1	1A	3784	A

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Mol	Chain	Res	Type
1	1A	3785	A
1	1A	3786	U
1	1A	3787	G
1	1A	3811	G
1	1A	3814	U
1	1A	3817	A
1	1A	3818	U
1	1A	3819	G
1	1A	3821	A
1	1A	3838	U
1	1A	3839	G
1	1A	3840	U
1	1A	3867	A
1	1A	3869	C
1	1A	3874	G
1	1A	3877	A
1	1A	3878	C
1	1A	3879	G
1	1A	3889	G
1	1A	3897	G
1	1A	3898	G
1	1A	3901	A
1	1A	3905	A
1	1A	3906	A
1	1A	3907	G
1	1A	3908	A
1	1A	3909	C
1	1A	3915	U
1	1A	3922	G
1	1A	3938	G
1	1A	3939	G
1	1A	3947	A
1	1A	3949	A
1	1A	3950	U
1	1A	3951	G
1	1A	3952	A
1	1A	3954	A
1	1A	3955	G
1	1A	3956	G
1	1A	3957	U
1	1A	3959	U
1	1A	3960	A

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Mol	Chain	Res	Type
1	1A	3961	G
1	1A	3962	A
1	1A	3963	A
1	1A	3965	A
1	1A	3966	A
1	1A	3968	U
1	1A	3970	G
1	1A	3971	G
1	1A	3973	G
1	1A	3975	C
1	1A	3976	C
1	1A	4035	G
1	1A	4036	G
1	1A	4038	C
1	1A	4039	G
1	1A	4041	C
1	1A	4042	G
1	1A	4043	G
1	1A	4044	U
1	1A	4046	A
1	1A	4048	A
1	1A	4051	C
1	1A	4052	C
1	1A	4053	A
1	1A	4054	C
1	1A	4055	U
1	1A	4057	C
1	1A	4059	C
1	1A	4061	G
1	1A	4063	U
1	1A	4064	C
1	1A	4065	G
1	1A	4066	U
1	1A	4076	G
1	1A	4084	G
1	1A	4085	A
1	1A	4086	G
1	1A	4088	C
1	1A	4099	G
1	1A	4100	C
1	1A	4101	C
1	1A	4102	C

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Mol	Chain	Res	Type
1	1A	4104	G
1	1A	4105	A
1	1A	4106	G
1	1A	4107	G
1	1A	4108	G
1	1A	4109	G
1	1A	4111	U
1	1A	4112	C
1	1A	4114	C
1	1A	4115	G
1	1A	4116	C
1	1A	4120	U
1	1A	4121	G
1	1A	4127	A
1	1A	4141	G
1	1A	4142	C
1	1A	4143	G
1	1A	4144	C
1	1A	4151	G
1	1A	4154	G
1	1A	4160	C
1	1A	4162	C
1	1A	4163	U
1	1A	4170	A
1	1A	4183	G
1	1A	4184	G
1	1A	4191	G
1	1A	4201	G
1	1A	4203	A
1	1A	4204	C
1	1A	4214	A
1	1A	4229	U
1	1A	4233	A
1	1A	4251	A
1	1A	4254	G
1	1A	4256	A
1	1A	4268	A
1	1A	4273	A
1	1A	4275	G
1	1A	4288	C
1	1A	4291	G
1	1A	4304	A

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Mol	Chain	Res	Type
1	1A	4305	G
1	1A	4306	U
1	1A	4314	C
1	1A	4318	C
1	1A	4323	A
1	1A	4324	A
1	1A	4329	G
1	1A	4330	G
1	1A	4332	C
1	1A	4337	C
1	1A	4349	C
1	1A	4350	C
1	1A	4354	U
1	1A	4377	G
1	1A	4378	A
1	1A	4379	A
1	1A	4380	A
1	1A	4387	C
1	1A	4391	G
1	1A	4394	A
1	1A	4420	U
1	1A	4422	A
1	1A	4433	G
1	1A	4448	G
1	1A	4449	A
1	1A	4453	C
1	1A	4464	A
1	1A	4465	U
1	1A	4476	C
1	1A	4479	A
1	1A	4497	U
1	1A	4500	U
1	1A	4501	U
1	1A	4512	U
1	1A	4513	A
1	1A	4519	C
1	1A	4524	G
1	1A	4528	G
1	1A	4545	G
1	1A	4548	A
1	1A	4549	G
1	1A	4555	U

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Mol	Chain	Res	Type
1	1A	4556	U
1	1A	4560	C
1	1A	4564	A
1	1A	4565	C
1	1A	4567	G
1	1A	4573	G
1	1A	4575	G
1	1A	4589	A
1	1A	4590	A
1	1A	4600	G
1	1A	4601	U
1	1A	4617	G
1	1A	4636	U
1	1A	4637	G
1	1A	4647	G
1	1A	4652	G
1	1A	4657	U
1	1A	4670	C
1	1A	4672	A
1	1A	4694	G
1	1A	4695	C
1	1A	4700	A
1	1A	4708	A
1	1A	4709	U
1	1A	4722	G
1	1A	4730	C
1	1A	4731	G
1	1A	4732	G
1	1A	4737	G
1	1A	4743	G
1	1A	4744	A
1	1A	4750	G
1	1A	4753	U
1	1A	4756	C
1	1A	4757	C
1	1A	4758	U
1	1A	4759	C
1	1A	4762	A
1	1A	4764	A
1	1A	4770	U
1	1A	4772	C
1	1A	4775	C

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Mol	Chain	Res	Type
1	1A	4776	G
1	1A	4861	G
1	1A	4862	G
1	1A	4863	G
1	1A	4865	C
1	1A	4869	U
1	1A	4871	C
1	1A	4872	G
1	1A	4873	G
1	1A	4874	A
1	1A	4876	U
1	1A	4882	U
1	1A	4883	C
1	1A	4884	G
1	1A	4887	C
1	1A	4888	U
1	1A	4889	G
1	1A	4890	G
1	1A	4894	A
1	1A	4895	C
1	1A	4897	G
1	1A	4900	C
1	1A	4901	G
1	1A	4910	G
1	1A	4912	G
1	1A	4914	C
1	1A	4923	C
1	1A	4925	U
1	1A	4926	C
1	1A	4937	C
1	1A	4940	C
1	1A	4941	G
1	1A	4943	A
1	1A	4947	U
1	1A	4951	G
1	1A	4960	G
1	1A	4966	A
1	1A	4973	U
1	1A	4976	U
1	1A	4988	U
1	1A	4989	U
1	1A	4991	U

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Mol	Chain	Res	Type
1	1A	5006	U
1	1A	5007	A
1	1A	5009	G
1	1A	5014	A
1	1A	5017	G
1	1A	5022	U
1	1A	5023	C
1	1A	5024	C
1	1A	5030	U
1	1A	5034	A
1	1A	5041	G
1	1A	5050	C
1	1A	5055	G
1	1A	5061	A
1	1A	5069	U
2	1B	7	G
2	1B	11	A
2	1B	22	A
2	1B	23	A
2	1B	24	C
2	1B	27	G
2	1B	31	G
2	1B	34	C
2	1B	51	G
2	1B	53	U
2	1B	54	A
2	1B	63	C
2	1B	64	G
2	1B	97	G
2	1B	100	A
2	1B	110	G
2	1B	111	C
2	1B	120	U
3	1C	13	G
3	1C	23	C
3	1C	34	U
3	1C	35	C
3	1C	39	G
3	1C	48	A
3	1C	59	A
3	1C	63	U
3	1C	82	A

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Mol	Chain	Res	Type
3	1C	83	C
3	1C	84	A
3	1C	86	U
3	1C	87	G
3	1C	88	A
3	1C	94	G
3	1C	103	A
3	1C	105	C
3	1C	110	U
3	1C	112	G
3	1C	114	G
3	1C	123	U
3	1C	124	U
3	1C	125	C
3	1C	126	C
3	1C	127	U
3	1C	129	C
3	1C	150	C
3	1C	151	G
3	1C	153	C
47	2m	2	A
47	2m	3	C
47	2m	7	G
47	2m	25	A
47	2m	27	A
47	2m	33	G
47	2m	37	C
47	2m	41	G
47	2m	44	U
47	2m	45	A
47	2m	46	A
47	2m	56	G
47	2m	65	C
47	2m	66	G
47	2m	67	C
47	2m	68	A
47	2m	70	G
47	2m	72	C
47	2m	73	C
47	2m	74	G
47	2m	75	G
47	2m	76	U

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Mol	Chain	Res	Type
47	2m	77	A
47	2m	78	C
47	2m	79	A
47	2m	80	G
47	2m	103	A
47	2m	113	G
47	2m	115	U
47	2m	121	U
47	2m	124	U
47	2m	126	G
47	2m	127	C
47	2m	139	C
47	2m	140	C
47	2m	141	A
47	2m	143	U
47	2m	148	U
47	2m	155	G
47	2m	159	A
47	2m	160	U
47	2m	161	U
47	2m	162	C
47	2m	168	C
47	2m	183	G
47	2m	184	G
47	2m	190	G
47	2m	194	C
47	2m	198	U
47	2m	199	C
47	2m	202	G
47	2m	206	G
47	2m	207	G
47	2m	208	G
47	2m	214	U
47	2m	215	G
47	2m	225	G
47	2m	288	G
47	2m	290	U
47	2m	291	G
47	2m	292	A
47	2m	293	C
47	2m	295	C
47	2m	304	C

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Mol	Chain	Res	Type
47	2m	306	C
47	2m	307	G
47	2m	308	G
47	2m	309	G
47	2m	312	G
47	2m	313	A
47	2m	320	G
47	2m	324	C
47	2m	325	C
47	2m	326	C
47	2m	328	U
47	2m	329	G
47	2m	330	G
47	2m	334	C
47	2m	338	G
47	2m	339	A
47	2m	340	C
47	2m	347	G
47	2m	362	C
47	2m	364	A
47	2m	369	C
47	2m	370	G
47	2m	380	G
47	2m	381	C
47	2m	384	U
47	2m	385	G
47	2m	386	C
47	2m	399	C
47	2m	400	C
47	2m	407	G
47	2m	408	A
47	2m	409	C
47	2m	413	G
47	2m	418	A
47	2m	419	G
47	2m	426	A
47	2m	438	G
47	2m	448	A
47	2m	450	C
47	2m	465	A
47	2m	466	G
47	2m	471	G

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Mol	Chain	Res	Type
47	2m	472	C
47	2m	473	A
47	2m	474	G
47	2m	482	G
47	2m	485	A
47	2m	487	U
47	2m	488	U
47	2m	489	A
47	2m	492	C
47	2m	493	A
47	2m	496	C
47	2m	501	C
47	2m	503	C
47	2m	504	G
47	2m	516	A
47	2m	532	C
47	2m	533	A
47	2m	534	G
47	2m	537	C
47	2m	538	U
47	2m	539	C
47	2m	540	U
47	2m	541	U
47	2m	542	U
47	2m	543	C
47	2m	544	G
47	2m	545	A
47	2m	548	C
47	2m	549	C
47	2m	550	C
47	2m	551	U
47	2m	553	U
47	2m	554	A
47	2m	555	A
47	2m	556	U
47	2m	557	U
47	2m	561	A
47	2m	562	U
47	2m	575	A
47	2m	580	U
47	2m	582	C
47	2m	583	C

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Mol	Chain	Res	Type
47	2m	587	A
47	2m	589	G
47	2m	590	A
47	2m	591	U
47	2m	592	C
47	2m	595	U
47	2m	596	U
47	2m	604	A
47	2m	605	A
47	2m	606	G
47	2m	608	C
47	2m	612	U
47	2m	613	G
47	2m	614	C
47	2m	615	C
47	2m	617	G
47	2m	627	U
47	2m	631	U
47	2m	632	C
47	2m	643	A
47	2m	644	G
47	2m	655	A
47	2m	656	G
47	2m	660	C
47	2m	668	A
47	2m	669	A
47	2m	672	A
47	2m	673	G
47	2m	683	G
47	2m	689	U
47	2m	690	G
47	2m	692	G
47	2m	694	G
47	2m	696	G
47	2m	697	G
47	2m	698	G
47	2m	732	U
47	2m	733	C
47	2m	734	C
47	2m	735	C
47	2m	736	C
47	2m	738	C

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Mol	Chain	Res	Type
47	2m	739	C
47	2m	747	U
47	2m	748	C
47	2m	749	U
47	2m	751	G
47	2m	752	G
47	2m	753	C
47	2m	787	G
47	2m	788	G
47	2m	789	G
47	2m	791	C
47	2m	793	G
47	2m	794	A
47	2m	795	A
47	2m	796	G
47	2m	797	C
47	2m	798	A
47	2m	799	U
47	2m	801	U
47	2m	810	A
47	2m	811	A
47	2m	812	A
47	2m	821	G
47	2m	822	U
47	2m	827	A
47	2m	830	A
47	2m	834	C
47	2m	836	G
47	2m	837	A
47	2m	838	G
47	2m	839	C
47	2m	840	C
47	2m	842	C
47	2m	847	A
47	2m	848	U
47	2m	851	C
47	2m	869	A
47	2m	870	A
47	2m	871	U
47	2m	873	G
47	2m	874	G
47	2m	877	C

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Mol	Chain	Res	Type
47	2m	878	G
47	2m	879	C
47	2m	883	U
47	2m	885	U
47	2m	886	A
47	2m	887	U
47	2m	888	U
47	2m	889	U
47	2m	890	U
47	2m	891	G
47	2m	893	U
47	2m	894	G
47	2m	895	G
47	2m	896	U
47	2m	897	U
47	2m	898	U
47	2m	899	U
47	2m	900	C
47	2m	901	G
47	2m	902	G
47	2m	903	A
47	2m	904	A
47	2m	919	A
47	2m	920	A
47	2m	933	G
47	2m	934	G
47	2m	958	G
47	2m	970	G
47	2m	971	G
47	2m	990	A
47	2m	992	A
47	2m	999	G
47	2m	1001	A
47	2m	1012	A
47	2m	1023	A
47	2m	1027	A
47	2m	1042	A
47	2m	1043	G
47	2m	1060	A
47	2m	1061	U
47	2m	1062	A
47	2m	1083	A

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Mol	Chain	Res	Type
47	2m	1084	A
47	2m	1085	C
47	2m	1088	U
47	2m	1110	G
47	2m	1113	A
47	2m	1114	U
47	2m	1116	C
47	2m	1131	G
47	2m	1133	A
47	2m	1139	C
47	2m	1150	A
47	2m	1153	C
47	2m	1154	U
47	2m	1157	G
47	2m	1178	U
47	2m	1181	A
47	2m	1183	A
47	2m	1195	A
47	2m	1207	G
47	2m	1208	A
47	2m	1215	C
47	2m	1216	C
47	2m	1217	A
47	2m	1221	G
47	2m	1224	G
47	2m	1241	A
47	2m	1242	U
47	2m	1243	U
47	2m	1251	A
47	2m	1253	A
47	2m	1256	G
47	2m	1257	G
47	2m	1260	A
47	2m	1262	C
47	2m	1263	U
47	2m	1265	A
47	2m	1272	C
47	2m	1273	C
47	2m	1274	G
47	2m	1275	G
47	2m	1276	A
47	2m	1281	G

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Mol	Chain	Res	Type
47	2m	1282	A
47	2m	1283	C
47	2m	1284	A
47	2m	1286	G
47	2m	1288	U
47	2m	1289	U
47	2m	1290	G
47	2m	1291	A
47	2m	1293	A
47	2m	1294	G
47	2m	1295	A
47	2m	1297	U
47	2m	1299	A
47	2m	1300	U
47	2m	1301	A
47	2m	1302	G
47	2m	1303	C
47	2m	1306	U
47	2m	1307	U
47	2m	1314	U
47	2m	1315	U
47	2m	1316	C
47	2m	1318	G
47	2m	1321	G
47	2m	1326	U
47	2m	1330	G
47	2m	1331	C
47	2m	1332	A
47	2m	1333	U
47	2m	1342	U
47	2m	1371	U
47	2m	1372	U
47	2m	1373	C
47	2m	1378	A
47	2m	1396	A
47	2m	1397	U
47	2m	1401	A
47	2m	1403	C
47	2m	1404	U
47	2m	1405	A
47	2m	1409	A
47	2m	1412	C

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Mol	Chain	Res	Type
47	2m	1413	G
47	2m	1414	A
47	2m	1415	C
47	2m	1416	C
47	2m	1417	C
47	2m	1418	C
47	2m	1419	C
47	2m	1420	G
47	2m	1422	G
47	2m	1426	U
47	2m	1427	C
47	2m	1428	G
47	2m	1431	G
47	2m	1434	C
47	2m	1436	C
47	2m	1438	A
47	2m	1439	A
47	2m	1442	U
47	2m	1444	U
47	2m	1446	A
47	2m	1449	G
47	2m	1450	G
47	2m	1454	A
47	2m	1455	A
47	2m	1462	U
47	2m	1463	U
47	2m	1465	A
47	2m	1473	G
47	2m	1475	G
47	2m	1476	A
47	2m	1477	U
47	2m	1487	A
47	2m	1489	A
47	2m	1490	G
47	2m	1496	U
47	2m	1498	A
47	2m	1505	U
47	2m	1507	G
47	2m	1510	G
47	2m	1512	C
47	2m	1515	G
47	2m	1517	G

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Mol	Chain	Res	Type
47	2m	1520	G
47	2m	1521	C
47	2m	1522	A
47	2m	1524	G
47	2m	1525	C
47	2m	1526	G
47	2m	1527	C
47	2m	1531	A
47	2m	1533	A
47	2m	1536	G
47	2m	1543	U
47	2m	1544	C
47	2m	1548	G
47	2m	1552	G
47	2m	1553	C
47	2m	1567	G
47	2m	1568	C
47	2m	1570	G
47	2m	1573	G
47	2m	1575	G
47	2m	1580	A
47	2m	1585	U
47	2m	1586	U
47	2m	1588	A
47	2m	1589	A
47	2m	1594	A
47	2m	1598	G
47	2m	1604	G
47	2m	1621	U
47	2m	1623	A
47	2m	1624	U
47	2m	1632	G
47	2m	1634	A
47	2m	1639	G
47	2m	1644	C
47	2m	1648	G
47	2m	1654	G
47	2m	1663	A
47	2m	1664	A
47	2m	1665	G
47	2m	1672	U
47	2m	1695	A

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Mol	Chain	Res	Type
47	2m	1699	A
47	2m	1715	A
47	2m	1719	A
47	2m	1721	U
47	2m	1722	G
47	2m	1729	U
47	2m	1743	G
47	2m	1744	G
47	2m	1745	A
47	2m	1746	U
47	2m	1749	G
47	2m	1753	C
47	2m	1755	C
47	2m	1756	C
47	2m	1758	G
47	2m	1759	G
47	2m	1761	U
47	2m	1771	G
47	2m	1773	C
47	2m	1779	G
47	2m	1780	G
47	2m	1783	C
47	2m	1786	U
47	2m	1813	A
47	2m	1819	A
47	2m	1827	U
47	2m	1829	G
47	2m	1831	A
47	2m	1838	U
47	2m	1849	G
47	2m	1850	A
47	2m	1852	C
47	2m	1860	A
47	2m	1861	G
47	2m	1862	G
47	2m	1863	A
47	2m	1865	C
47	2m	1869	A

All (34) RNA pucker outliers are listed below:

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Mol	Chain	Res	Type
1	1A	264	C
1	1A	385	A
1	1A	406	C
1	1A	417	G
1	1A	504	G
1	1A	914	U
1	1A	1082	C
1	1A	1633	G
1	1A	2019	C
1	1A	2033	A
1	1A	2112	G
1	1A	2299	G
1	1A	2389	A
1	1A	2639	U
1	1A	2675	G
1	1A	2695	A
1	1A	2760	G
1	1A	2775	C
1	1A	3764	U
1	1A	3773	U
1	1A	3888	G
1	1A	4060	U
1	1A	4065	G
1	1A	4110	C
1	1A	4452	U
1	1A	4600	G
1	1A	4699	U
1	1A	4731	G
1	1A	4896	G
1	1A	4913	G
2	1B	33	U
2	1B	109	U
3	1C	86	U
3	1C	87	G

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
41	MLZ	2g	98	41	8,9,10	0.78	0	4,9,11	0.59	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
41	MLZ	2g	98	41	-	1/7/8/10	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
41	2g	98	MLZ	CD-CE-NZ-CM

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 439 ligands modelled in this entry, 416 are monoatomic - leaving 23 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	$\#\|Z\| > 2$
81	84G	1A	5112	-	39,40,40	1.82	6 (15%)	47,57,57	1.24	3 (6%)
81	84G	2m	1901	-	39,40,40	1.78	7 (17%)	47,57,57	2.03	12 (25%)
81	84G	1A	5108	-	39,40,40	1.83	7 (17%)	47,57,57	1.13	3 (6%)
81	84G	2i	201	-	39,40,40	1.94	9 (23%)	47,57,57	1.29	5 (10%)
81	84G	1A	5106	-	39,40,40	1.84	9 (23%)	47,57,57	1.07	5 (10%)
81	84G	1A	5104	82	39,40,40	1.85	8 (20%)	47,57,57	1.22	3 (6%)
81	84G	1A	5105	-	39,40,40	1.83	6 (15%)	47,57,57	1.16	5 (10%)
81	84G	1A	5102	-	39,40,40	1.87	7 (17%)	47,57,57	1.25	5 (10%)
81	84G	1A	5107	-	39,40,40	1.83	8 (20%)	47,57,57	1.12	2 (4%)
81	84G	1A	5111	-	39,40,40	1.82	7 (17%)	47,57,57	1.31	4 (8%)
81	84G	1A	5115	-	39,40,40	1.84	7 (17%)	47,57,57	1.18	6 (12%)
81	84G	2D	301	-	39,40,40	1.82	7 (17%)	47,57,57	1.25	5 (10%)
81	84G	1A	5118	-	39,40,40	1.81	7 (17%)	47,57,57	1.13	3 (6%)
81	84G	1A	5101	-	39,40,40	1.84	6 (15%)	47,57,57	1.49	8 (17%)
81	84G	1A	5117	-	39,40,40	1.82	7 (17%)	47,57,57	1.20	4 (8%)
81	84G	1A	5113	-	39,40,40	1.83	7 (17%)	47,57,57	1.13	3 (6%)
81	84G	1A	5110	-	39,40,40	1.87	7 (17%)	47,57,57	1.07	4 (8%)
81	84G	1A	5116	-	39,40,40	1.82	8 (20%)	47,57,57	1.21	4 (8%)
81	84G	1A	5119	-	39,40,40	1.84	8 (20%)	47,57,57	1.11	4 (8%)
81	84G	1A	5103	-	39,40,40	1.81	6 (15%)	47,57,57	1.05	3 (6%)
81	84G	2m	1902	-	39,40,40	1.83	7 (17%)	47,57,57	1.25	5 (10%)
81	84G	1A	5114	-	39,40,40	1.83	7 (17%)	47,57,57	1.19	4 (8%)
81	84G	1A	5109	-	39,40,40	1.84	6 (15%)	47,57,57	1.18	3 (6%)

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
81	84G	1A	5112	-	-	8/23/76/76	0/3/3/3
81	84G	2m	1901	-	-	3/23/76/76	0/3/3/3
81	84G	1A	5108	-	-	8/23/76/76	0/3/3/3
81	84G	2i	201	-	-	9/23/76/76	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
81	84G	1A	5106	-	-	11/23/76/76	0/3/3/3
81	84G	1A	5104	82	-	7/23/76/76	0/3/3/3
81	84G	1A	5105	-	-	6/23/76/76	0/3/3/3
81	84G	1A	5102	-	-	8/23/76/76	0/3/3/3
81	84G	1A	5107	-	-	10/23/76/76	0/3/3/3
81	84G	1A	5111	-	-	13/23/76/76	1/3/3/3
81	84G	1A	5115	-	-	6/23/76/76	0/3/3/3
81	84G	2D	301	-	-	7/23/76/76	0/3/3/3
81	84G	1A	5118	-	-	5/23/76/76	1/3/3/3
81	84G	1A	5101	-	-	8/23/76/76	1/3/3/3
81	84G	1A	5117	-	-	6/23/76/76	0/3/3/3
81	84G	1A	5113	-	-	5/23/76/76	0/3/3/3
81	84G	1A	5110	-	-	10/23/76/76	0/3/3/3
81	84G	1A	5116	-	-	4/23/76/76	0/3/3/3
81	84G	1A	5119	-	-	7/23/76/76	0/3/3/3
81	84G	1A	5103	-	-	7/23/76/76	0/3/3/3
81	84G	2m	1902	-	-	7/23/76/76	0/3/3/3
81	84G	1A	5114	-	-	9/23/76/76	0/3/3/3
81	84G	1A	5109	-	-	5/23/76/76	0/3/3/3

All (164) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	1A	5111	84G	C3-N1	6.58	1.48	1.34
81	1A	5109	84G	C3-N1	6.51	1.48	1.34
81	1A	5119	84G	C3-N1	6.48	1.48	1.34
81	1A	5112	84G	C3-N1	6.48	1.48	1.34
81	1A	5102	84G	C3-N1	6.47	1.48	1.34
81	1A	5107	84G	C3-N1	6.47	1.48	1.34
81	2i	201	84G	C3-N1	6.47	1.48	1.34
81	1A	5103	84G	C3-N1	6.46	1.48	1.34
81	2m	1902	84G	C3-N1	6.46	1.48	1.34
81	2m	1901	84G	C3-N1	6.45	1.48	1.34
81	1A	5115	84G	C3-N1	6.43	1.48	1.34
81	1A	5110	84G	C3-N1	6.41	1.48	1.34
81	1A	5117	84G	C3-N1	6.40	1.48	1.34
81	1A	5114	84G	C3-N1	6.40	1.48	1.34
81	2D	301	84G	C3-N1	6.38	1.48	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	1A	5118	84G	C3-N1	6.34	1.48	1.34
81	1A	5116	84G	C3-N1	6.34	1.48	1.34
81	1A	5113	84G	C3-N1	6.33	1.48	1.34
81	1A	5105	84G	C3-N1	6.31	1.47	1.34
81	1A	5104	84G	C3-N1	6.31	1.47	1.34
81	1A	5106	84G	C3-N1	6.30	1.47	1.34
81	1A	5101	84G	C3-N1	6.27	1.47	1.34
81	1A	5108	84G	C3-N1	6.25	1.47	1.34
81	2i	201	84G	C19-C20	-5.21	1.47	1.53
81	1A	5110	84G	C19-C20	-5.19	1.47	1.53
81	1A	5101	84G	C19-C20	-5.17	1.47	1.53
81	1A	5102	84G	C19-C20	-5.03	1.47	1.53
81	1A	5104	84G	C19-C20	-5.03	1.47	1.53
81	1A	5113	84G	C19-C20	-5.01	1.47	1.53
81	1A	5111	84G	C19-C20	-4.99	1.47	1.53
81	1A	5108	84G	C19-C20	-4.96	1.47	1.53
81	1A	5114	84G	C19-C20	-4.93	1.47	1.53
81	1A	5109	84G	C19-C20	-4.87	1.47	1.53
81	1A	5105	84G	C19-C20	-4.85	1.47	1.53
81	1A	5115	84G	C19-C20	-4.84	1.47	1.53
81	1A	5117	84G	C19-C20	-4.83	1.47	1.53
81	1A	5112	84G	C19-C20	-4.82	1.47	1.53
81	1A	5103	84G	C19-C20	-4.78	1.47	1.53
81	1A	5106	84G	C19-C20	-4.77	1.47	1.53
81	1A	5116	84G	C19-C20	-4.76	1.47	1.53
81	1A	5107	84G	C19-C20	-4.71	1.47	1.53
81	2m	1902	84G	C19-C20	-4.69	1.47	1.53
81	1A	5119	84G	C19-C20	-4.68	1.47	1.53
81	1A	5118	84G	C19-C20	-4.59	1.47	1.53
81	2D	301	84G	C19-C20	-4.47	1.47	1.53
81	2D	301	84G	C21-C20	-4.28	1.48	1.53
81	2m	1901	84G	C20-N5	4.16	1.53	1.47
81	1A	5110	84G	C21-C20	-3.92	1.48	1.53
81	1A	5102	84G	C21-C20	-3.91	1.48	1.53
81	2m	1901	84G	C19-C20	-3.82	1.48	1.53
81	1A	5104	84G	C21-C20	-3.80	1.48	1.53
81	1A	5109	84G	C21-C20	-3.73	1.48	1.53
81	2i	201	84G	C21-C20	-3.73	1.48	1.53
81	1A	5101	84G	C21-C20	-3.68	1.48	1.53
81	1A	5115	84G	C21-C20	-3.60	1.49	1.53
81	1A	5106	84G	C21-C20	-3.58	1.49	1.53
81	1A	5112	84G	C21-C20	-3.58	1.49	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	1A	5107	84G	C21-C20	-3.51	1.49	1.53
81	1A	5116	84G	C21-C20	-3.51	1.49	1.53
81	1A	5105	84G	C21-C20	-3.48	1.49	1.53
81	1A	5108	84G	C21-C20	-3.48	1.49	1.53
81	2m	1902	84G	C21-C20	-3.41	1.49	1.53
81	1A	5103	84G	C21-C20	-3.40	1.49	1.53
81	1A	5113	84G	C21-C20	-3.37	1.49	1.53
81	1A	5119	84G	C21-C20	-3.37	1.49	1.53
81	1A	5111	84G	C21-C20	-3.37	1.49	1.53
81	1A	5118	84G	C21-C20	-3.34	1.49	1.53
81	1A	5117	84G	C21-C20	-3.32	1.49	1.53
81	1A	5119	84G	C20-N5	3.29	1.52	1.47
81	2m	1902	84G	C20-N5	3.29	1.52	1.47
81	1A	5118	84G	C20-N5	3.29	1.52	1.47
81	1A	5114	84G	C21-C20	-3.28	1.49	1.53
81	1A	5104	84G	C20-N5	3.27	1.52	1.47
81	1A	5111	84G	C20-N5	3.22	1.52	1.47
81	1A	5102	84G	C20-N5	3.21	1.52	1.47
81	1A	5106	84G	C20-N5	3.17	1.52	1.47
81	1A	5108	84G	C20-N5	3.16	1.52	1.47
81	1A	5107	84G	C20-N5	3.15	1.52	1.47
81	1A	5105	84G	C20-N5	3.15	1.52	1.47
81	2i	201	84G	C20-N5	3.14	1.52	1.47
81	1A	5113	84G	C20-N5	3.13	1.52	1.47
81	1A	5117	84G	C20-N5	3.12	1.52	1.47
81	1A	5115	84G	C20-N5	3.11	1.52	1.47
81	1A	5116	84G	C20-N5	3.09	1.52	1.47
81	1A	5114	84G	C20-N5	3.08	1.52	1.47
81	1A	5101	84G	C20-N5	3.04	1.51	1.47
81	1A	5110	84G	C20-N5	3.03	1.51	1.47
81	1A	5109	84G	C20-N5	3.02	1.51	1.47
81	1A	5112	84G	C20-N5	3.00	1.51	1.47
81	2D	301	84G	C20-N5	2.97	1.51	1.47
81	2i	201	84G	O3-C8	2.88	1.49	1.41
81	1A	5103	84G	C20-N5	2.86	1.51	1.47
81	1A	5118	84G	O3-C8	2.73	1.48	1.41
81	1A	5113	84G	O3-C8	2.73	1.48	1.41
81	1A	5101	84G	O3-C8	2.65	1.48	1.41
81	1A	5119	84G	O3-C8	2.65	1.48	1.41
81	1A	5114	84G	O3-C8	2.63	1.48	1.41
81	2m	1902	84G	O3-C8	2.63	1.48	1.41
81	2m	1901	84G	O3-C8	2.63	1.48	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	1A	5107	84G	O3-C8	2.61	1.48	1.41
81	1A	5105	84G	O3-C8	2.59	1.48	1.41
81	1A	5110	84G	O3-C8	2.59	1.48	1.41
81	1A	5103	84G	O3-C8	2.57	1.48	1.41
81	1A	5102	84G	O3-C8	2.54	1.48	1.41
81	1A	5112	84G	O3-C8	2.52	1.48	1.41
81	1A	5116	84G	O3-C8	2.51	1.48	1.41
81	1A	5106	84G	O3-C8	2.50	1.48	1.41
81	1A	5108	84G	O3-C8	2.48	1.48	1.41
81	1A	5101	84G	O1-C3	-2.46	1.18	1.23
81	1A	5104	84G	O3-C8	2.42	1.48	1.41
81	1A	5111	84G	O3-C8	2.42	1.48	1.41
81	1A	5115	84G	O3-C8	2.42	1.48	1.41
81	1A	5109	84G	O3-C8	2.42	1.48	1.41
81	1A	5117	84G	O3-C8	2.41	1.48	1.41
81	2D	301	84G	O3-C8	2.41	1.48	1.41
81	2i	201	84G	O1-C3	-2.33	1.18	1.23
81	1A	5104	84G	O1-C3	-2.32	1.18	1.23
81	1A	5108	84G	O1-C3	-2.29	1.18	1.23
81	1A	5113	84G	O1-C3	-2.29	1.18	1.23
81	1A	5111	84G	O1-C3	-2.29	1.18	1.23
81	1A	5118	84G	O1-C3	-2.27	1.18	1.23
81	1A	5106	84G	O1-C3	-2.27	1.18	1.23
81	2D	301	84G	O1-C3	-2.27	1.18	1.23
81	2i	201	84G	C2-C3	2.25	1.55	1.52
81	1A	5110	84G	O1-C3	-2.24	1.18	1.23
81	2m	1901	84G	O1-C3	-2.24	1.18	1.23
81	1A	5103	84G	O1-C3	-2.24	1.18	1.23
81	1A	5105	84G	O1-C3	-2.23	1.19	1.23
81	2m	1901	84G	O6-C17	2.23	1.49	1.44
81	1A	5114	84G	O1-C3	-2.20	1.19	1.23
81	1A	5104	84G	C11-C12	-2.19	1.47	1.52
81	1A	5115	84G	O6-C17	2.18	1.49	1.44
81	1A	5116	84G	O1-C3	-2.18	1.19	1.23
81	1A	5115	84G	O1-C3	-2.18	1.19	1.23
81	1A	5117	84G	O1-C3	-2.17	1.19	1.23
81	1A	5112	84G	O1-C3	-2.17	1.19	1.23
81	2m	1902	84G	O1-C3	-2.17	1.19	1.23
81	1A	5119	84G	O1-C3	-2.17	1.19	1.23
81	2m	1901	84G	O6-C16	2.16	1.47	1.41
81	1A	5113	84G	O6-C16	2.14	1.47	1.41
81	1A	5107	84G	O1-C3	-2.12	1.19	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	1A	5102	84G	O1-C3	-2.11	1.19	1.23
81	1A	5109	84G	O1-C3	-2.10	1.19	1.23
81	2i	201	84G	C11-C12	-2.09	1.47	1.52
81	1A	5110	84G	O6-C17	2.07	1.49	1.44
81	1A	5118	84G	C11-C12	-2.07	1.47	1.52
81	1A	5106	84G	O6-C17	2.07	1.49	1.44
81	1A	5106	84G	C2-C3	2.07	1.55	1.52
81	1A	5104	84G	C12-C13	-2.06	1.47	1.52
81	1A	5111	84G	O6-C16	2.06	1.47	1.41
81	2D	301	84G	O6-C17	2.06	1.49	1.44
81	2m	1902	84G	C11-C12	-2.05	1.47	1.52
81	1A	5117	84G	O6-C17	2.04	1.49	1.44
81	1A	5114	84G	C11-C12	-2.04	1.47	1.52
81	1A	5107	84G	O6-C16	2.04	1.47	1.41
81	1A	5102	84G	O6-C17	2.03	1.49	1.44
81	2i	201	84G	O6-C16	2.03	1.47	1.41
81	1A	5106	84G	C11-C12	-2.02	1.47	1.52
81	1A	5116	84G	O6-C17	2.02	1.49	1.44
81	1A	5107	84G	C11-C12	-2.02	1.47	1.52
81	1A	5119	84G	C11-C12	-2.01	1.47	1.52
81	1A	5116	84G	C11-C12	-2.01	1.47	1.52
81	1A	5119	84G	O6-C17	2.01	1.49	1.44
81	1A	5108	84G	C11-C12	-2.00	1.47	1.52

All (103) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	2m	1901	84G	C16-C21-C20	6.30	118.86	110.40
81	2m	1901	84G	O6-C17-C19	4.48	117.84	109.69
81	1A	5111	84G	C16-O5-C15	-4.43	107.00	117.96
81	2m	1901	84G	C16-O6-C17	4.39	122.30	113.69
81	1A	5101	84G	C5-C4-C15	4.25	117.38	109.47
81	1A	5104	84G	C16-O5-C15	-3.98	108.11	117.96
81	1A	5101	84G	C14-C15-C4	3.97	118.11	111.18
81	2m	1901	84G	C19-C20-C21	3.94	119.61	111.06
81	2i	201	84G	C8-O2-C7	-3.79	108.59	117.96
81	2m	1901	84G	O6-C16-C21	3.66	118.10	110.35
81	1A	5105	84G	C8-O2-C7	-3.64	108.97	117.96
81	1A	5101	84G	C8-O2-C7	-3.62	109.01	117.96
81	1A	5111	84G	C8-O2-C7	-3.58	109.11	117.96
81	1A	5102	84G	C8-O2-C7	-3.48	109.35	117.96
81	1A	5102	84G	C16-O5-C15	-3.48	109.36	117.96

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	2m	1901	84G	C8-O2-C7	-3.41	109.52	117.96
81	1A	5119	84G	C8-O2-C7	-3.40	109.54	117.96
81	1A	5109	84G	C8-O2-C7	-3.38	109.60	117.96
81	1A	5112	84G	C8-O2-C7	-3.37	109.63	117.96
81	2m	1902	84G	C16-O5-C15	-3.37	109.63	117.96
81	1A	5114	84G	C8-O2-C7	-3.34	109.70	117.96
81	2m	1902	84G	C8-O2-C7	-3.33	109.71	117.96
81	1A	5114	84G	C16-O5-C15	-3.32	109.74	117.96
81	1A	5107	84G	C16-O5-C15	-3.23	109.97	117.96
81	1A	5112	84G	C7-C14-C15	3.22	115.64	108.96
81	1A	5109	84G	C16-O5-C15	-3.21	110.03	117.96
81	2D	301	84G	C8-O2-C7	-3.17	110.12	117.96
81	1A	5118	84G	C16-O5-C15	-3.16	110.15	117.96
81	1A	5105	84G	C16-O5-C15	-3.13	110.21	117.96
81	1A	5117	84G	C16-O5-C15	-3.12	110.25	117.96
81	1A	5107	84G	C8-O2-C7	-3.09	110.31	117.96
81	1A	5115	84G	C8-O2-C7	-3.08	110.34	117.96
81	2m	1901	84G	C16-O5-C15	-3.04	110.44	117.96
81	1A	5108	84G	C8-O2-C7	-2.98	110.58	117.96
81	1A	5113	84G	C16-O5-C15	-2.91	110.76	117.96
81	1A	5119	84G	C16-O5-C15	-2.91	110.77	117.96
81	1A	5111	84G	C16-C21-C20	2.91	114.30	110.40
81	1A	5108	84G	C16-O5-C15	-2.90	110.79	117.96
81	2i	201	84G	C5-C4-C15	2.88	114.82	109.47
81	1A	5113	84G	C8-O2-C7	-2.88	110.85	117.96
81	1A	5104	84G	C8-O2-C7	-2.84	110.94	117.96
81	2m	1901	84G	O9-C21-C20	-2.81	105.18	110.22
81	1A	5113	84G	C8-O3-C9	-2.79	110.05	113.13
81	1A	5110	84G	C8-O2-C7	-2.78	111.09	117.96
81	2m	1901	84G	O8-C19-C20	-2.78	105.23	110.22
81	1A	5106	84G	C16-O5-C15	-2.77	111.12	117.96
81	1A	5116	84G	C1-C-N	2.76	132.73	112.82
81	1A	5115	84G	C16-O5-C15	-2.75	111.16	117.96
81	2m	1902	84G	C1-C-N	2.75	132.65	112.82
81	1A	5101	84G	C4-N1-C3	-2.73	118.24	123.07
81	2D	301	84G	O9-C21-C20	-2.73	105.32	110.22
81	2i	201	84G	C5-C4-N1	-2.70	106.69	110.86
81	1A	5116	84G	C16-O5-C15	-2.62	111.47	117.96
81	1A	5101	84G	C7-C14-C15	2.62	114.39	108.96
81	1A	5116	84G	C8-O2-C7	-2.61	111.51	117.96
81	1A	5117	84G	C8-O2-C7	-2.49	111.81	117.96
81	1A	5110	84G	C16-O5-C15	-2.47	111.84	117.96

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	1A	5116	84G	C5-C4-C15	2.44	114.01	109.47
81	1A	5103	84G	C16-O5-C15	-2.43	111.94	117.96
81	1A	5103	84G	C8-O2-C7	-2.39	112.06	117.96
81	1A	5118	84G	C7-C14-C15	2.37	113.87	108.96
81	2m	1901	84G	C19-C20-N5	-2.35	106.23	111.05
81	1A	5117	84G	O3-C9-C11	2.32	112.36	109.86
81	1A	5111	84G	C7-C14-C15	2.30	113.74	108.96
81	1A	5114	84G	C4-N1-C3	-2.30	119.01	123.07
81	1A	5118	84G	C8-O2-C7	-2.29	112.30	117.96
81	1A	5101	84G	C15-C4-N1	-2.28	106.34	110.58
81	1A	5119	84G	C5-C4-N1	-2.27	107.35	110.86
81	2i	201	84G	C8-O3-C9	2.26	115.63	113.13
81	1A	5105	84G	C5-C4-C15	2.24	113.64	109.47
81	1A	5101	84G	C16-O5-C15	-2.24	112.42	117.96
81	1A	5105	84G	C5-C4-N1	-2.24	107.40	110.86
81	1A	5115	84G	O6-C17-C19	2.22	113.72	109.69
81	1A	5103	84G	C7-C14-C15	2.21	113.56	108.96
81	1A	5109	84G	O6-C17-C19	2.18	113.66	109.69
81	1A	5106	84G	C7-C14-C15	2.16	113.44	108.96
81	2D	301	84G	O5-C15-C14	2.16	113.02	107.28
81	1A	5114	84G	C11-C9-C10	-2.16	108.71	112.83
81	1A	5106	84G	O1-C3-N1	-2.15	118.94	122.93
81	1A	5119	84G	C5-C4-C15	2.15	113.47	109.47
81	1A	5104	84G	C4-N1-C3	-2.15	119.28	123.07
81	1A	5110	84G	C7-C14-C15	2.15	113.41	108.96
81	1A	5112	84G	C4-N1-C3	-2.14	119.29	123.07
81	1A	5105	84G	C8-O3-C9	-2.14	110.76	113.13
81	1A	5117	84G	C11-C9-C10	-2.13	108.76	112.83
81	1A	5102	84G	O6-C17-C19	2.11	113.53	109.69
81	1A	5110	84G	C8-O3-C9	-2.11	110.79	113.13
81	2D	301	84G	O3-C9-C11	2.11	112.13	109.86
81	1A	5102	84G	C4-N1-C3	-2.11	119.34	123.07
81	2m	1901	84G	C4-N1-C3	-2.11	119.35	123.07
81	1A	5115	84G	C7-C14-C15	2.10	113.32	108.96
81	1A	5115	84G	O3-C9-C11	2.10	112.11	109.86
81	1A	5106	84G	O3-C9-C11	2.09	112.11	109.86
81	2m	1902	84G	O3-C9-C11	2.08	112.10	109.86
81	2D	301	84G	C11-C9-C10	-2.08	108.86	112.83
81	2m	1901	84G	C5-C4-C15	2.07	113.32	109.47
81	1A	5102	84G	O3-C9-C11	2.07	112.08	109.86
81	2m	1902	84G	C11-C9-C10	-2.06	108.89	112.83
81	1A	5115	84G	C18-C17-C19	-2.06	108.18	113.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	2i	201	84G	C11-C9-C10	-2.06	108.90	112.83
81	1A	5108	84G	O3-C9-C11	2.04	112.05	109.86
81	1A	5106	84G	C4-N1-C3	-2.03	119.49	123.07
81	1A	5101	84G	O1-C3-N1	-2.02	119.19	122.93

There are no chirality outliers.

All (169) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
81	1A	5102	84G	C-C1-C2-O
81	1A	5102	84G	N-C-C1-C2
81	1A	5102	84G	C1-C2-C3-O1
81	1A	5102	84G	C1-C2-C3-N1
81	1A	5102	84G	O-C2-C3-N1
81	1A	5102	84G	N3-C10-C9-O3
81	1A	5102	84G	N3-C10-C9-C11
81	1A	5103	84G	C-C1-C2-O
81	1A	5103	84G	N-C-C1-C2
81	1A	5103	84G	N3-C10-C9-O3
81	1A	5103	84G	N3-C10-C9-C11
81	1A	5104	84G	N-C-C1-C2
81	1A	5104	84G	N3-C10-C9-O3
81	1A	5104	84G	N3-C10-C9-C11
81	1A	5105	84G	N-C-C1-C2
81	1A	5105	84G	N3-C10-C9-C11
81	1A	5106	84G	C-C1-C2-C3
81	1A	5106	84G	C1-C2-C3-O1
81	1A	5106	84G	C1-C2-C3-N1
81	1A	5106	84G	O-C2-C3-N1
81	1A	5106	84G	N3-C10-C9-O3
81	1A	5106	84G	N3-C10-C9-C11
81	1A	5107	84G	C-C1-C2-O
81	1A	5107	84G	N-C-C1-C2
81	1A	5107	84G	O-C2-C3-N1
81	1A	5107	84G	N3-C10-C9-C11
81	1A	5108	84G	C-C1-C2-C3
81	1A	5108	84G	N3-C10-C9-O3
81	1A	5108	84G	N3-C10-C9-C11
81	1A	5109	84G	N-C-C1-C2
81	1A	5109	84G	N3-C10-C9-O3
81	1A	5109	84G	N3-C10-C9-C11
81	1A	5110	84G	N-C-C1-C2

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Mol	Chain	Res	Type	Atoms
81	1A	5110	84G	C1-C2-C3-O1
81	1A	5110	84G	C1-C2-C3-N1
81	1A	5110	84G	O-C2-C3-N1
81	1A	5110	84G	N3-C10-C9-C11
81	1A	5111	84G	N-C-C1-C2
81	1A	5111	84G	C1-C2-C3-O1
81	1A	5111	84G	C1-C2-C3-N1
81	1A	5111	84G	N3-C10-C9-O3
81	1A	5111	84G	N3-C10-C9-C11
81	1A	5112	84G	N-C-C1-C2
81	1A	5112	84G	N3-C10-C9-O3
81	1A	5113	84G	C-C1-C2-O
81	1A	5113	84G	N-C-C1-C2
81	1A	5113	84G	N3-C10-C9-O3
81	1A	5113	84G	N3-C10-C9-C11
81	1A	5114	84G	C-C1-C2-O
81	1A	5114	84G	O-C2-C3-N1
81	1A	5114	84G	N3-C10-C9-C11
81	1A	5115	84G	C-C1-C2-O
81	1A	5115	84G	N-C-C1-C2
81	1A	5115	84G	N3-C10-C9-O3
81	1A	5116	84G	N-C-C1-C2
81	1A	5116	84G	N3-C10-C9-C11
81	1A	5117	84G	C-C1-C2-C3
81	1A	5117	84G	N-C-C1-C2
81	1A	5117	84G	N3-C10-C9-O3
81	1A	5118	84G	N3-C10-C9-O3
81	1A	5118	84G	N3-C10-C9-C11
81	1A	5119	84G	N-C-C1-C2
81	1A	5119	84G	O-C2-C3-O1
81	1A	5119	84G	N3-C10-C9-C11
81	2D	301	84G	N-C-C1-C2
81	2D	301	84G	N3-C10-C9-O3
81	2i	201	84G	C-C1-C2-O
81	2i	201	84G	C1-C2-C3-O1
81	2i	201	84G	C1-C2-C3-N1
81	2i	201	84G	O-C2-C3-N1
81	2i	201	84G	N3-C10-C9-O3
81	2i	201	84G	N3-C10-C9-C11
81	2m	1901	84G	C-C1-C2-C3
81	2m	1902	84G	O-C2-C3-N1
81	2m	1902	84G	N3-C10-C9-O3

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Mol	Chain	Res	Type	Atoms
81	1A	5101	84G	O6-C16-O5-C15
81	2i	201	84G	O6-C16-O5-C15
81	1A	5106	84G	O3-C8-O2-C7
81	1A	5101	84G	C21-C16-O5-C15
81	1A	5112	84G	C14-C15-O5-C16
81	2D	301	84G	O6-C16-O5-C15
81	2D	301	84G	C21-C16-O5-C15
81	1A	5115	84G	C19-C17-C18-O7
81	1A	5118	84G	O3-C8-O2-C7
81	1A	5119	84G	C19-C17-C18-O7
81	1A	5103	84G	O6-C16-O5-C15
81	1A	5111	84G	C5-C4-N1-C3
81	1A	5103	84G	O3-C8-O2-C7
81	2D	301	84G	C14-C15-O5-C16
81	1A	5115	84G	O6-C17-C18-O7
81	1A	5119	84G	O6-C17-C18-O7
81	1A	5108	84G	C19-C17-C18-O7
81	1A	5114	84G	C19-C17-C18-O7
81	1A	5102	84G	O-C2-C3-O1
81	1A	5106	84G	O-C2-C3-O1
81	1A	5110	84G	O-C2-C3-O1
81	2i	201	84G	O-C2-C3-O1
81	2m	1902	84G	O-C2-C3-O1
81	1A	5101	84G	O3-C8-O2-C7
81	1A	5107	84G	O6-C17-C18-O7
81	1A	5108	84G	O6-C17-C18-O7
81	1A	5114	84G	O6-C17-C18-O7
81	1A	5103	84G	C14-C7-O2-C8
81	1A	5104	84G	C14-C7-O2-C8
81	1A	5101	84G	C-C1-C2-O
81	1A	5106	84G	C-C1-C2-O
81	1A	5108	84G	C-C1-C2-O
81	1A	5111	84G	C-C1-C2-O
81	1A	5117	84G	C-C1-C2-O
81	2m	1901	84G	C-C1-C2-O
81	1A	5107	84G	C14-C15-O5-C16
81	2m	1902	84G	C1-C2-C3-O1
81	1A	5117	84G	C14-C7-O2-C8
81	2m	1902	84G	C1-C2-C3-N1
81	1A	5118	84G	C19-C17-C18-O7
81	1A	5112	84G	C19-C17-C18-O7
81	1A	5105	84G	O3-C8-O2-C7

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Mol	Chain	Res	Type	Atoms
81	1A	5107	84G	O-C2-C3-O1
81	1A	5101	84G	C14-C15-O5-C16
81	2m	1901	84G	O3-C8-O2-C7
81	1A	5116	84G	C14-C7-O2-C8
81	1A	5105	84G	N3-C10-C9-O3
81	1A	5108	84G	N-C-C1-C2
81	1A	5110	84G	N3-C10-C9-O3
81	1A	5111	84G	O-C2-C3-N1
81	1A	5114	84G	N3-C10-C9-O3
81	2m	1902	84G	N-C-C1-C2
81	1A	5119	84G	C14-C15-O5-C16
81	1A	5101	84G	C-C1-C2-C3
81	1A	5107	84G	C-C1-C2-C3
81	1A	5110	84G	C19-C17-C18-O7
81	1A	5111	84G	C19-C17-C18-O7
81	1A	5105	84G	C19-C17-C18-O7
81	1A	5112	84G	O6-C17-C18-O7
81	1A	5101	84G	C14-C7-O2-C8
81	1A	5111	84G	O6-C17-C18-O7
81	2D	301	84G	C14-C7-O2-C8
81	1A	5112	84G	N3-C10-C9-C11
81	1A	5115	84G	N3-C10-C9-C11
81	2m	1902	84G	N3-C10-C9-C11
81	1A	5114	84G	O-C2-C3-O1
81	1A	5108	84G	C14-C7-O2-C8
81	1A	5118	84G	O6-C17-C18-O7
81	1A	5113	84G	O3-C8-O2-C7
81	2i	201	84G	C5-C4-N1-C3
81	1A	5114	84G	C1-C2-C3-O1
81	1A	5117	84G	O3-C8-O2-C7
81	1A	5111	84G	C14-C7-O2-C8
81	1A	5110	84G	C14-C15-O5-C16
81	1A	5111	84G	C14-C15-O5-C16
81	1A	5101	84G	O-C2-C3-O1
81	1A	5104	84G	O-C2-C3-O1
81	1A	5116	84G	O3-C8-O2-C7
81	1A	5105	84G	O6-C17-C18-O7
81	1A	5110	84G	O6-C17-C18-O7
81	1A	5112	84G	C14-C7-O2-C8
81	1A	5106	84G	C14-C15-O5-C16
81	1A	5109	84G	C19-C17-C18-O7
81	1A	5106	84G	N-C-C1-C2

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Mol	Chain	Res	Type	Atoms
81	1A	5112	84G	O-C2-C3-N1
81	1A	5119	84G	O-C2-C3-N1
81	2D	301	84G	C4-C15-O5-C16
81	1A	5109	84G	O3-C8-O2-C7
81	1A	5104	84G	C1-C2-C3-O1
81	1A	5107	84G	C1-C2-C3-O1
81	1A	5111	84G	O-C2-C3-O1
81	1A	5104	84G	O3-C8-O2-C7
81	1A	5107	84G	C1-C2-C3-N1
81	1A	5114	84G	C1-C2-C3-N1

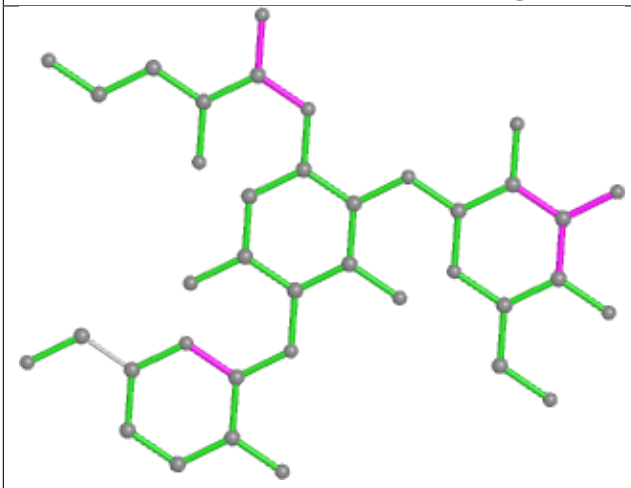
All (3) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
81	1A	5118	84G	C11-C12-C13-C8-C9-O3
81	1A	5111	84G	C11-C12-C13-C8-C9-O3
81	1A	5101	84G	C11-C12-C13-C8-C9-O3

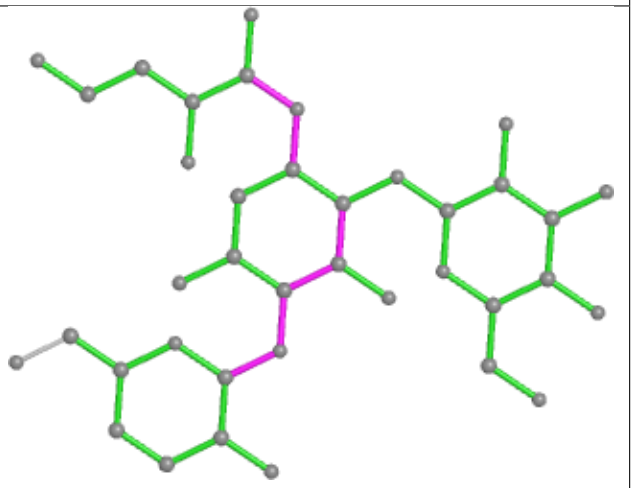
No monomer is involved in short contacts.

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.

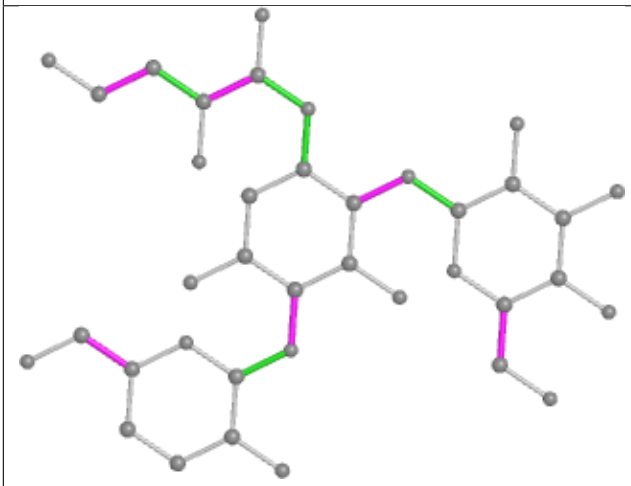
Ligand 84G 1A 5112



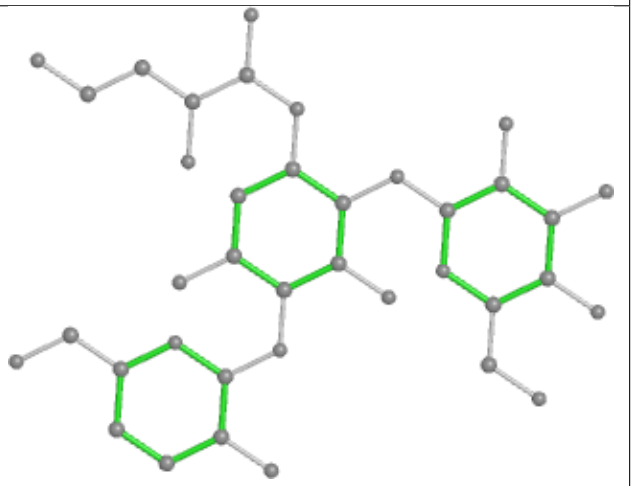
Bond lengths



Bond angles

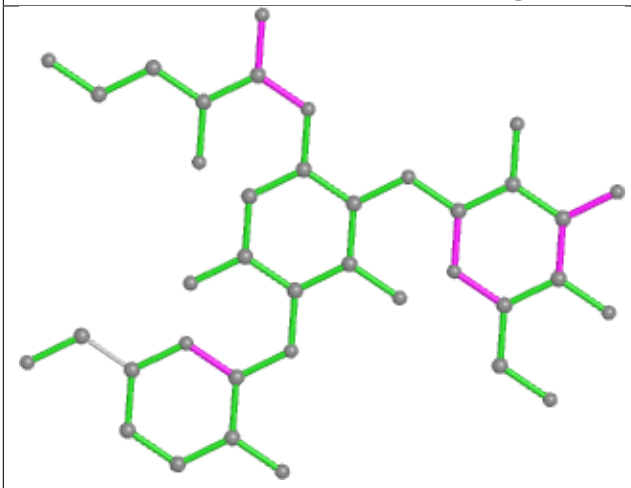


Torsions

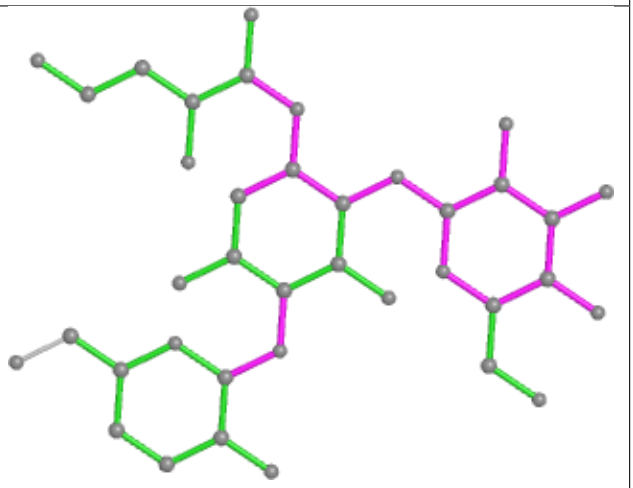


Rings

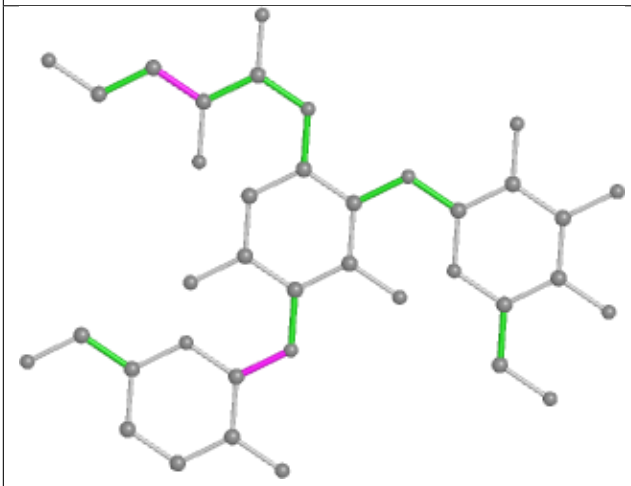
Ligand 84G 2m 1901



Bond lengths



Bond angles



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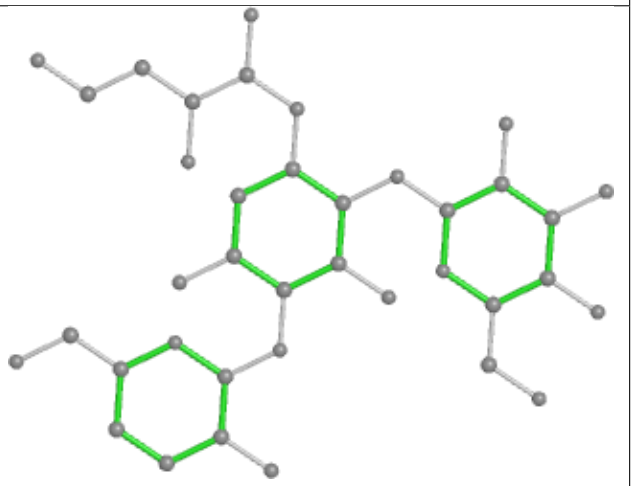
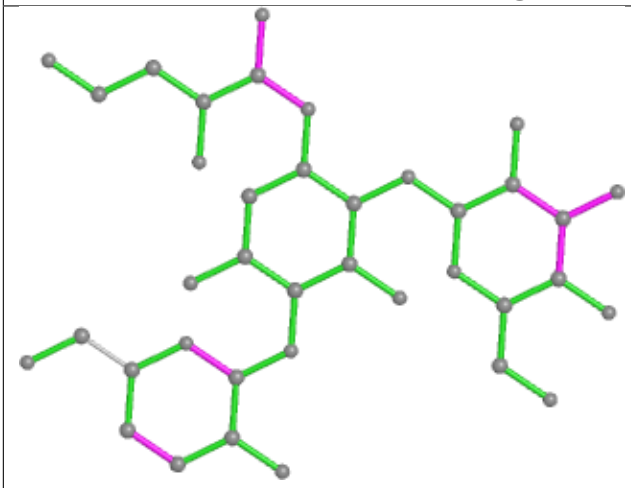
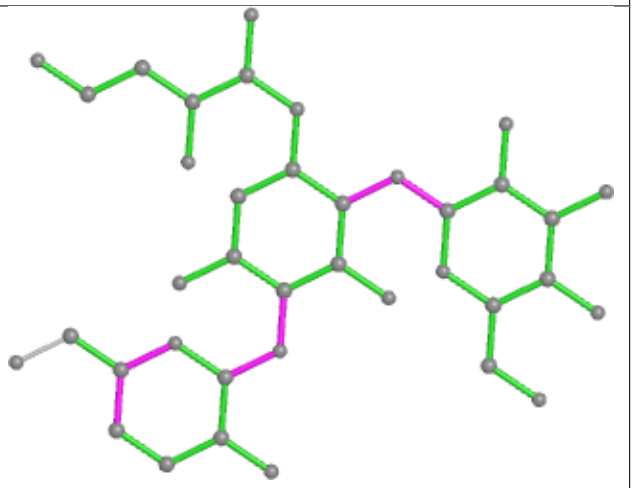


Rings

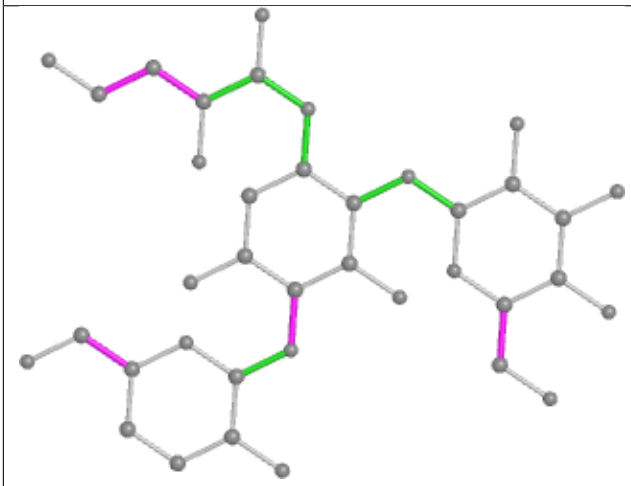
Ligand 84G 1A 5108



Bond lengths



Bond angles



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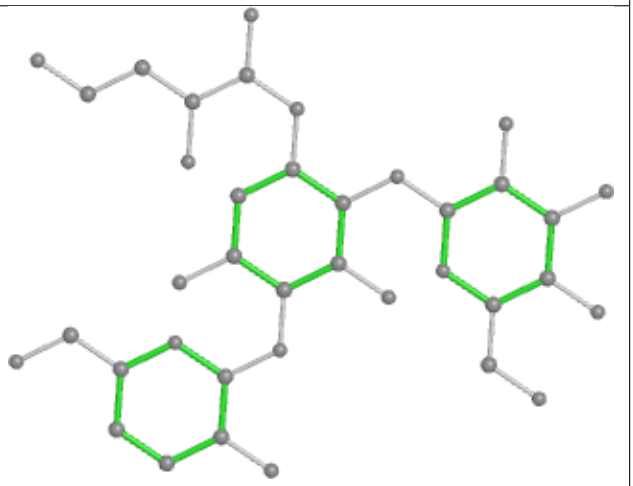
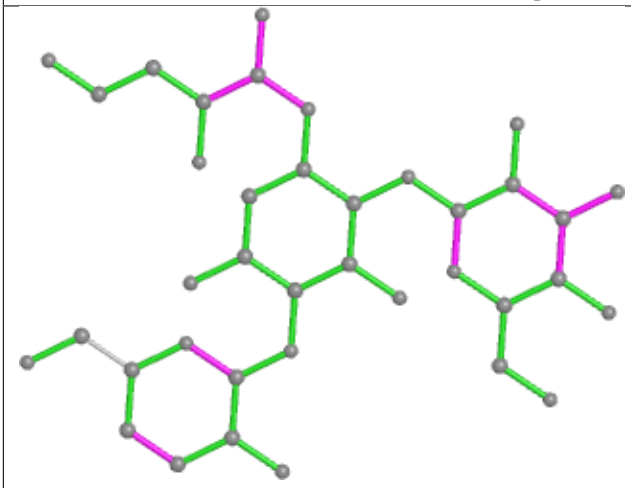
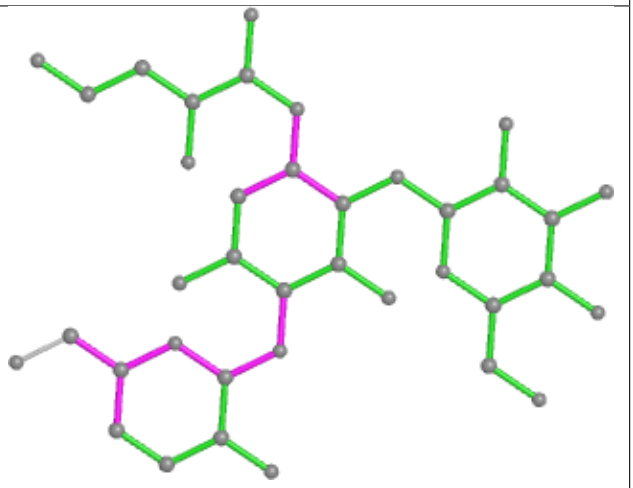


Rings

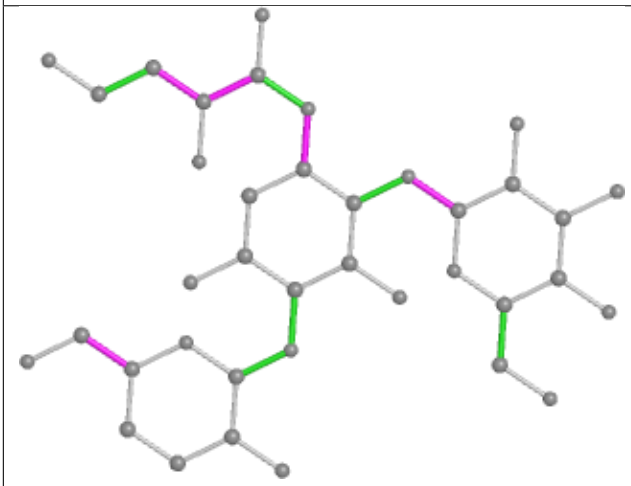
Ligand 84G 2i 201



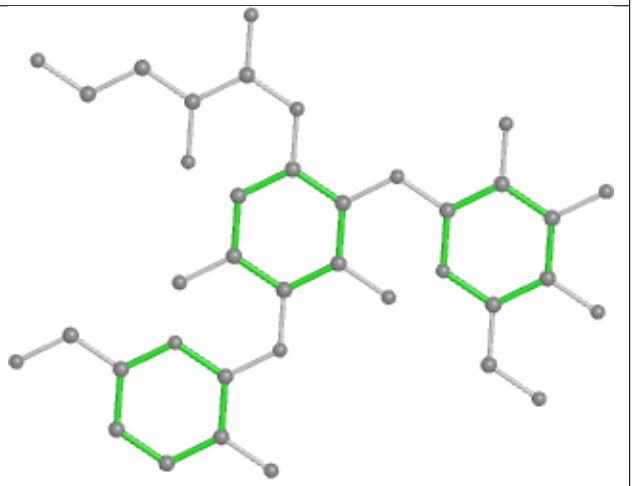
Bond lengths



Bond angles

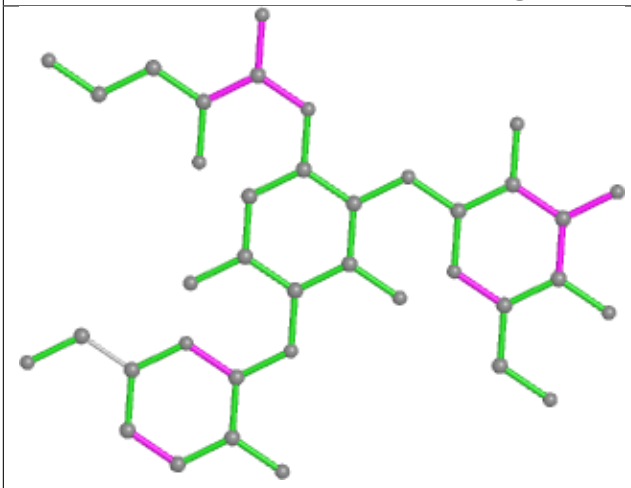


Torsions

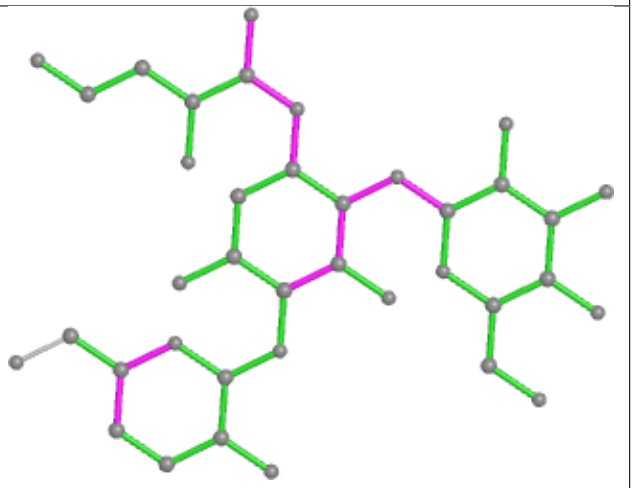


Rings

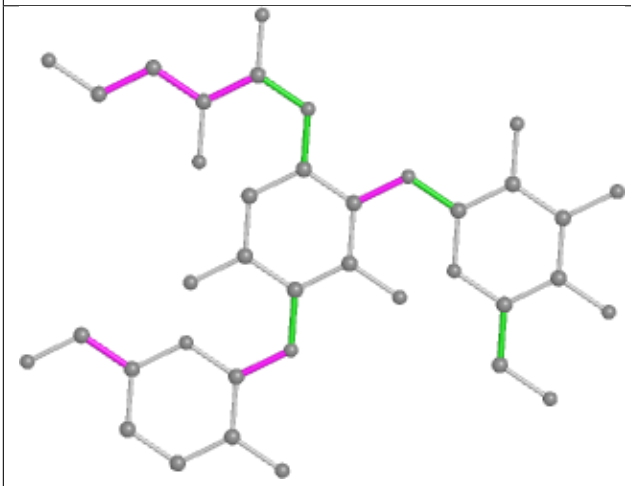
Ligand 84G 1A 5106



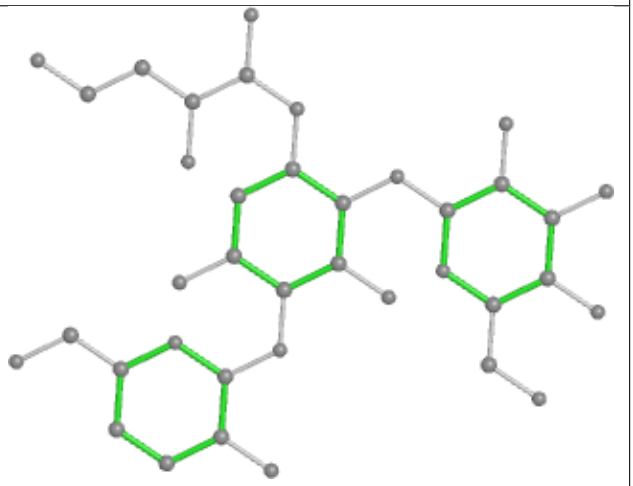
Bond lengths



Bond angles

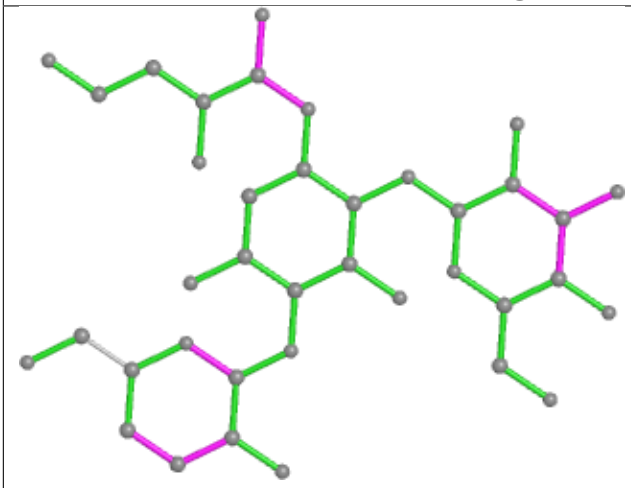


Torsions

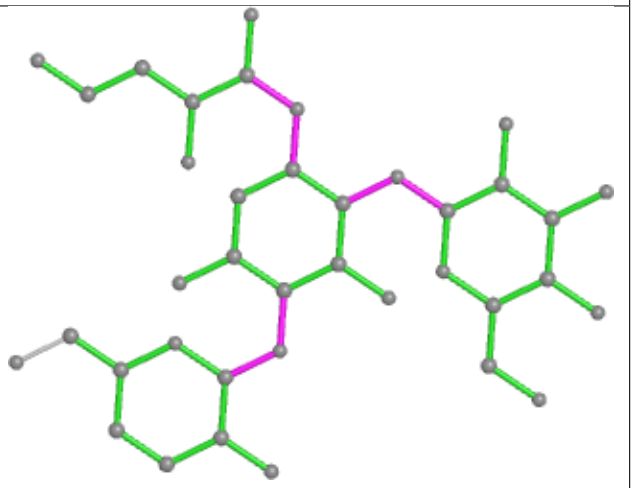


Rings

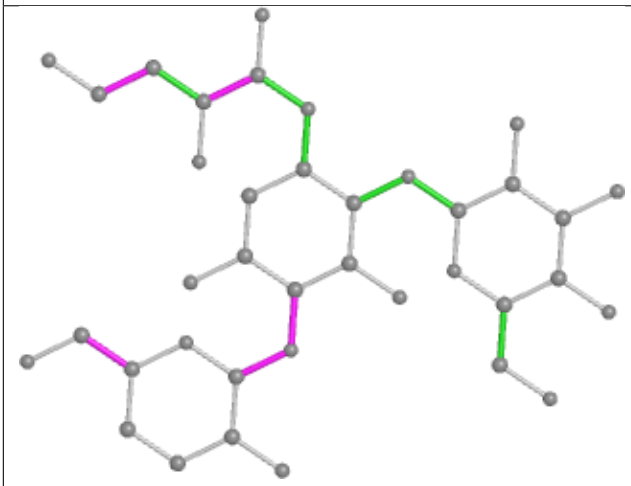
Ligand 84G 1A 5104



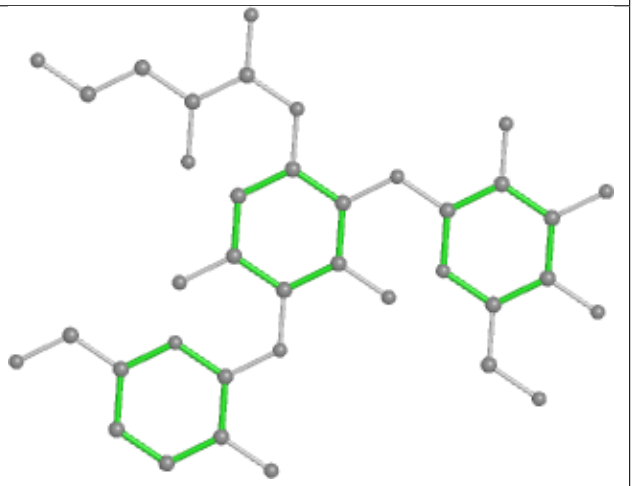
Bond lengths



Bond angles

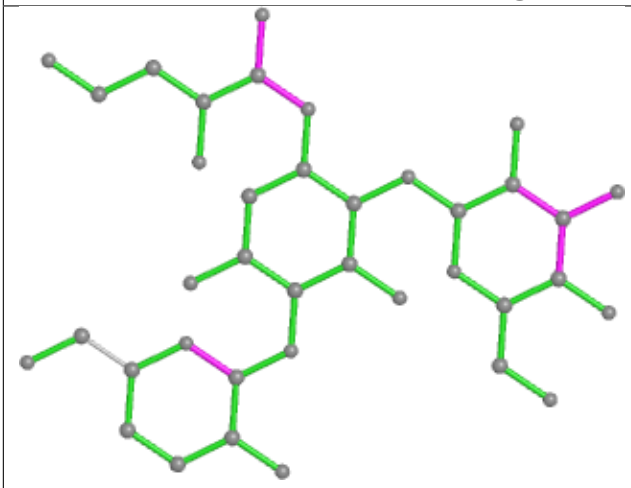


Torsions

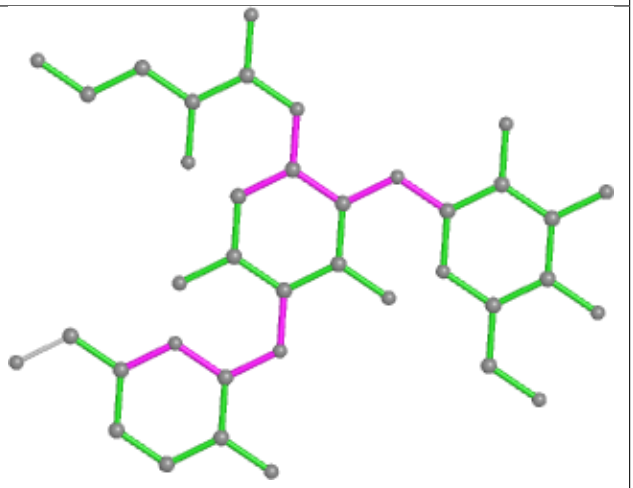


Rings

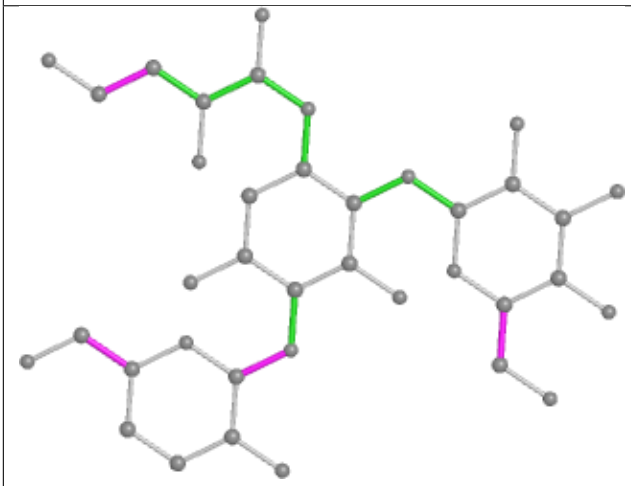
Ligand 84G 1A 5105



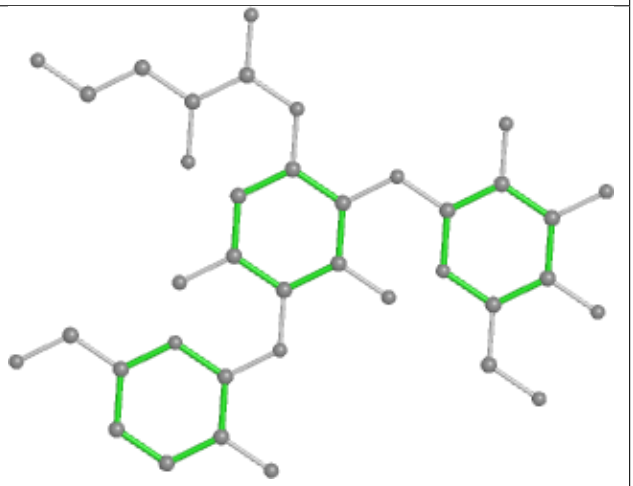
Bond lengths



Bond angles

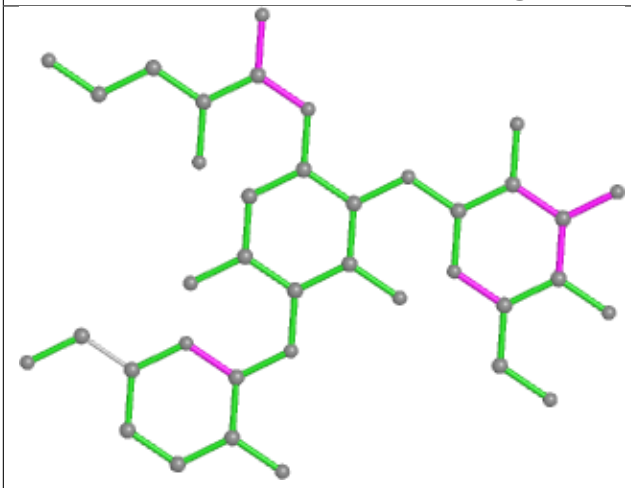


Torsions

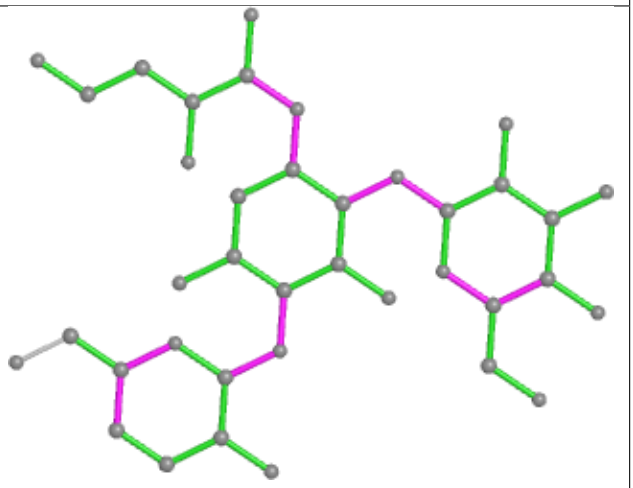


Rings

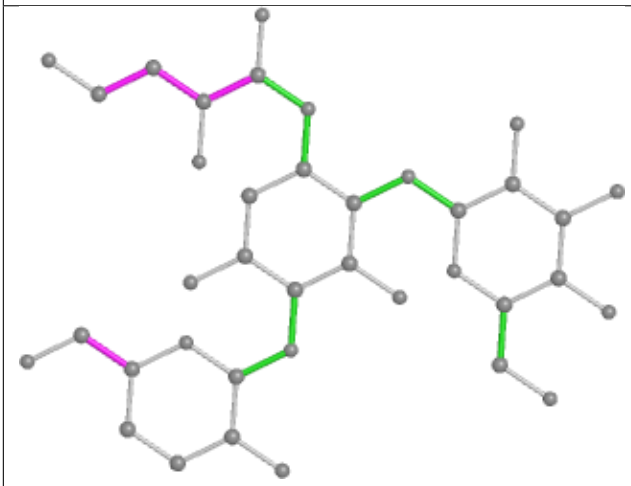
Ligand 84G 1A 5102



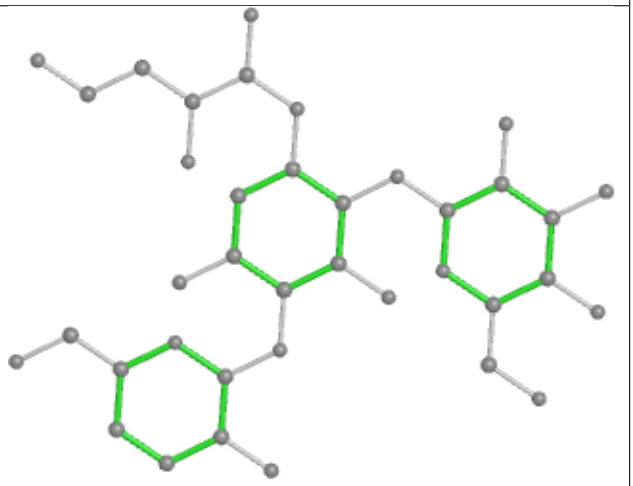
Bond lengths



Bond angles

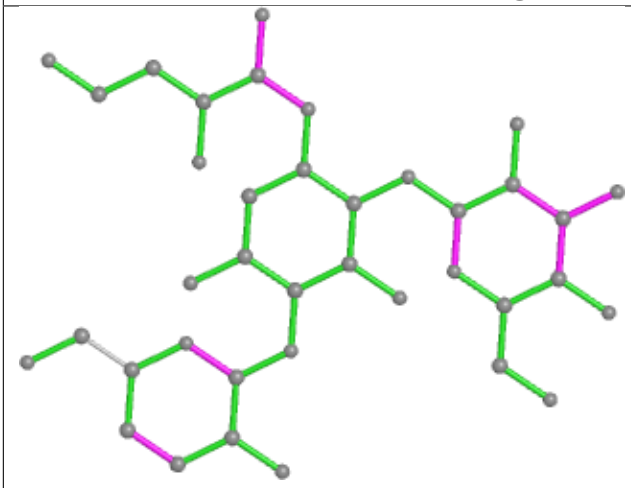


Torsions

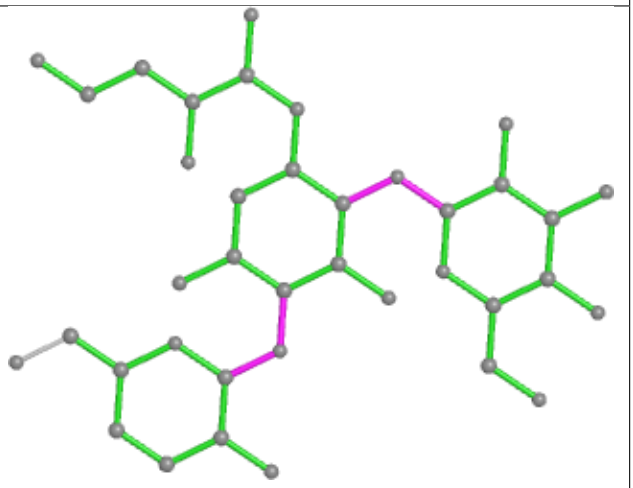


Rings

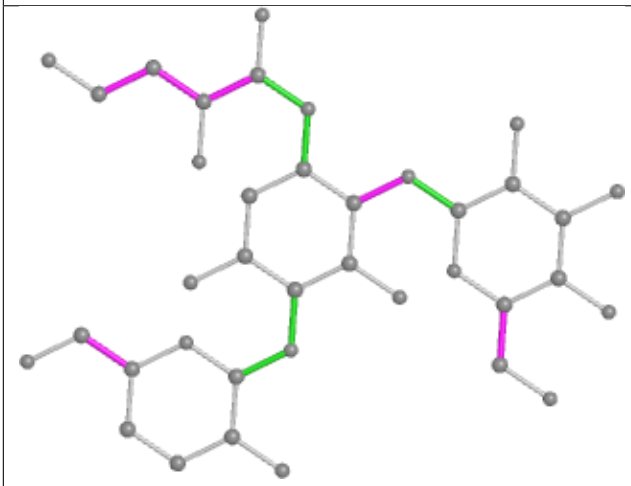
Ligand 84G 1A 5107



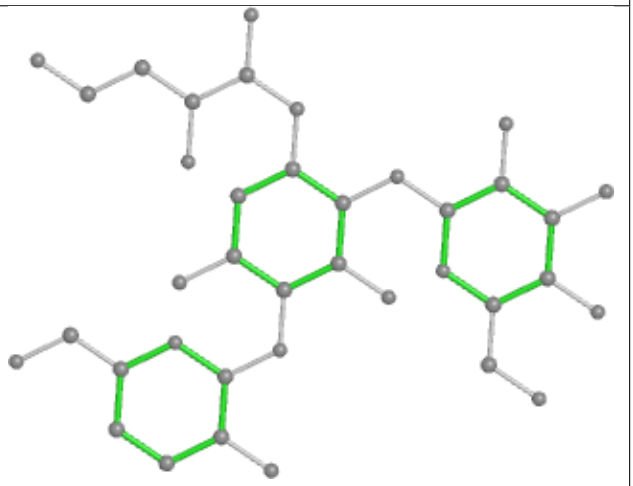
Bond lengths



Bond angles

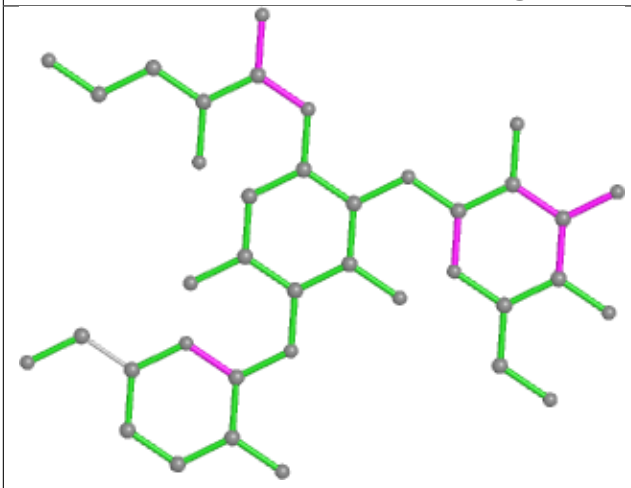


Torsions

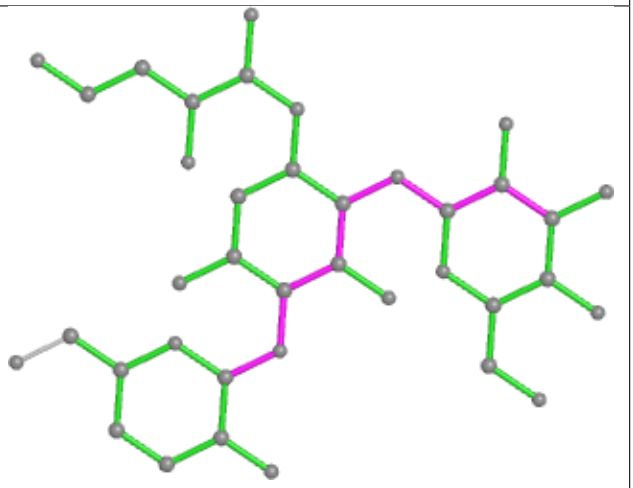


Rings

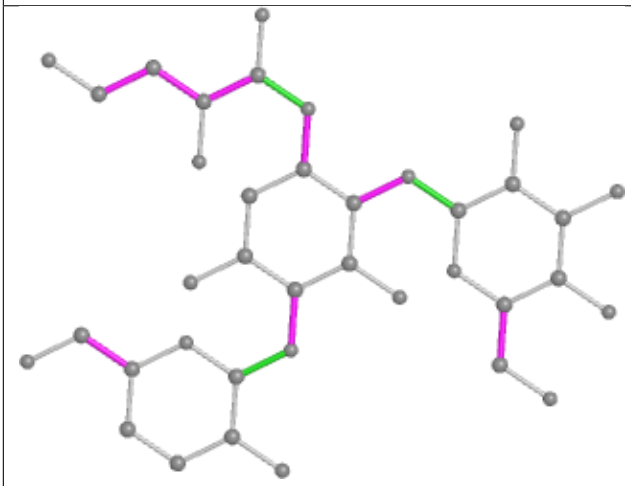
Ligand 84G 1A 5111



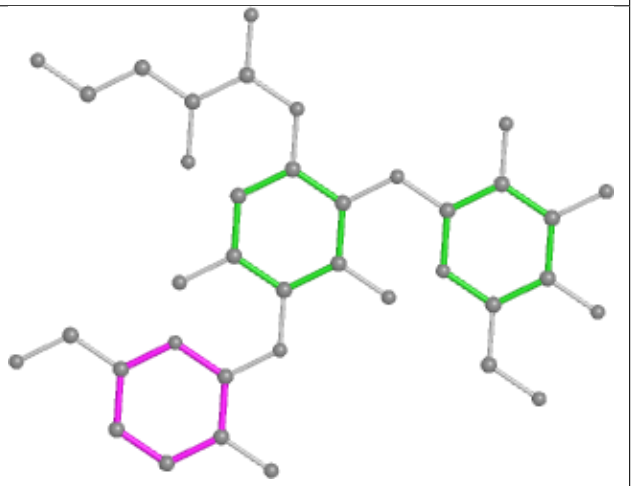
Bond lengths



Bond angles

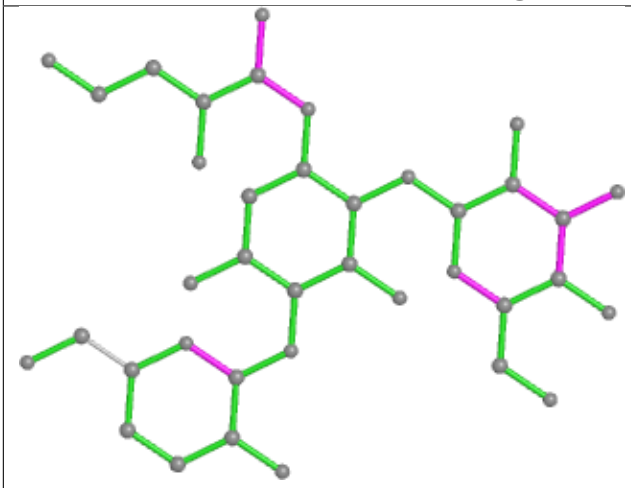


Torsions

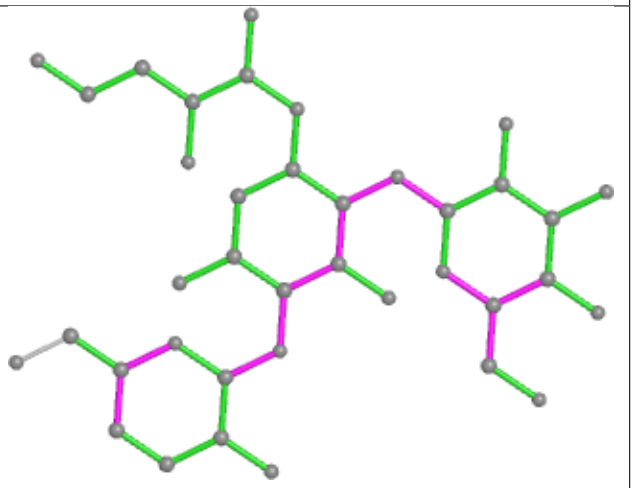


Rings

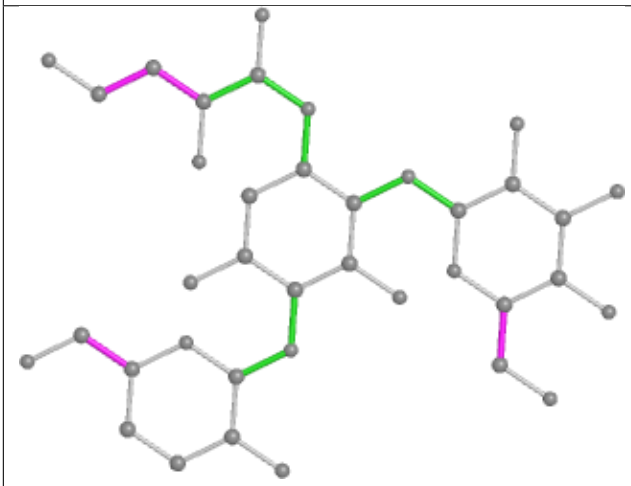
Ligand 84G 1A 5115



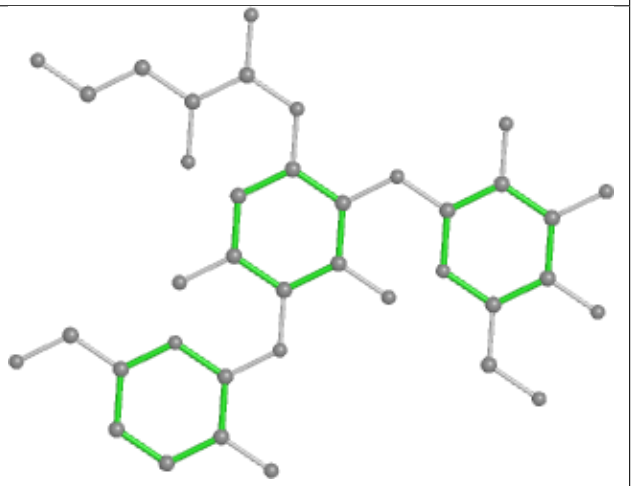
Bond lengths



Bond angles

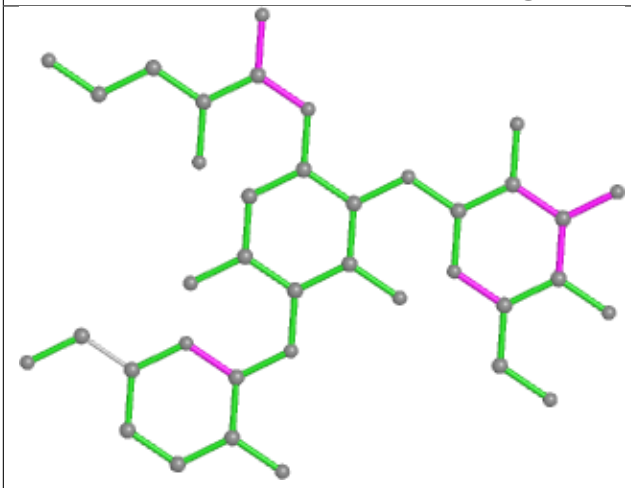


Torsions

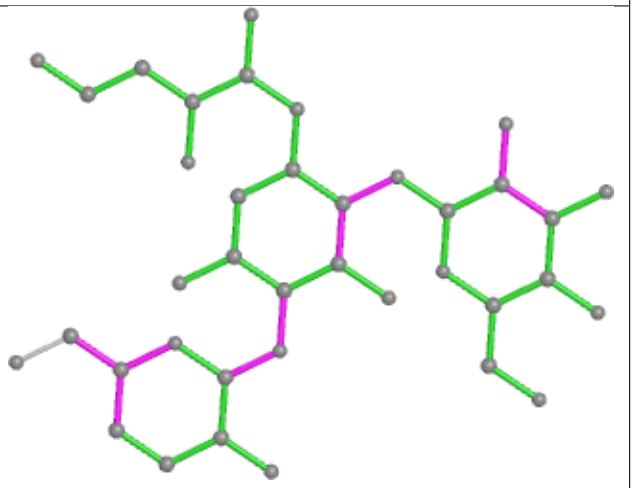


Rings

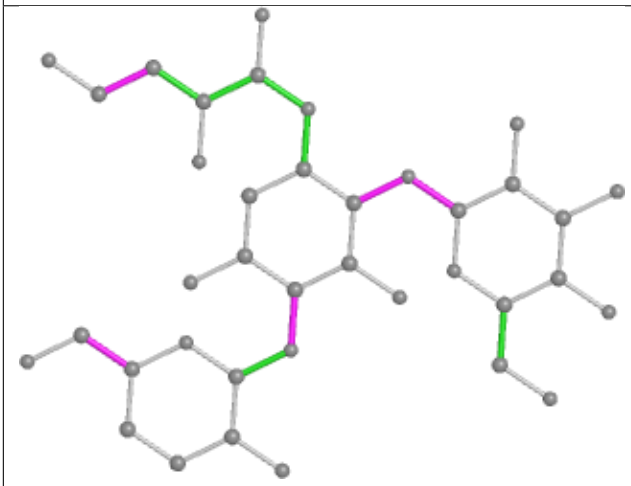
Ligand 84G 2D 301



Bond lengths



Bond angles



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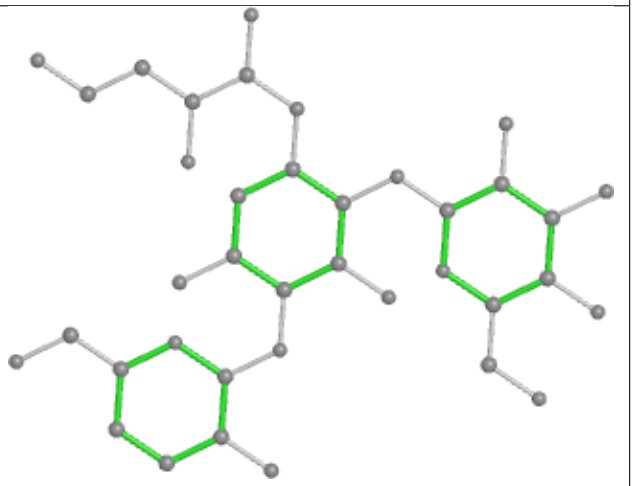
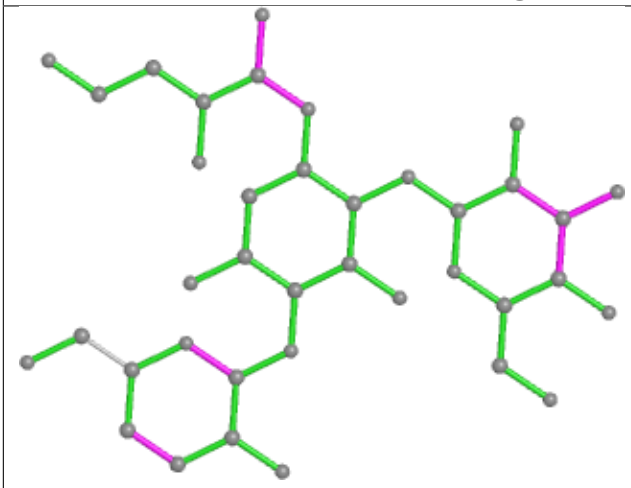
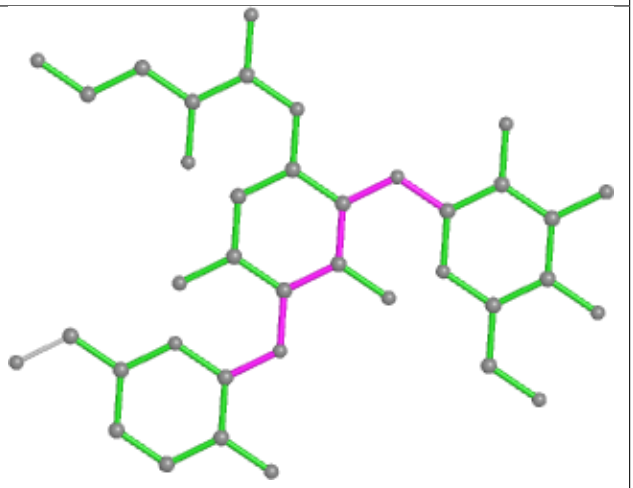


Rings

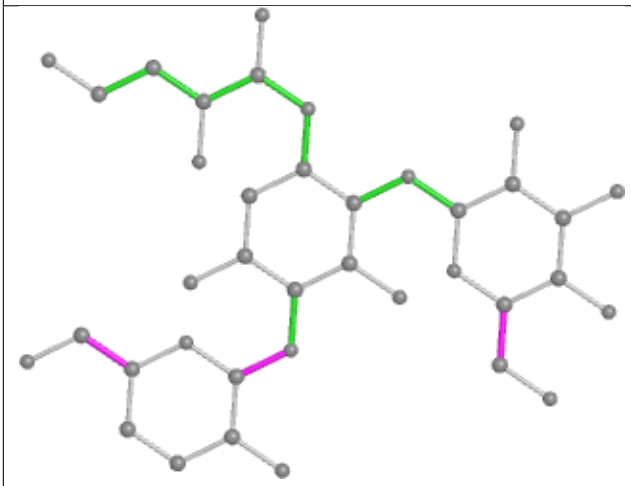
Ligand 84G 1A 5118



Bond lengths



Bond angles



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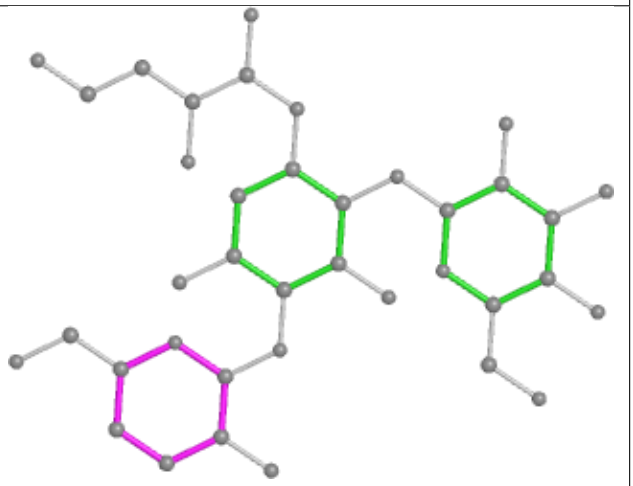
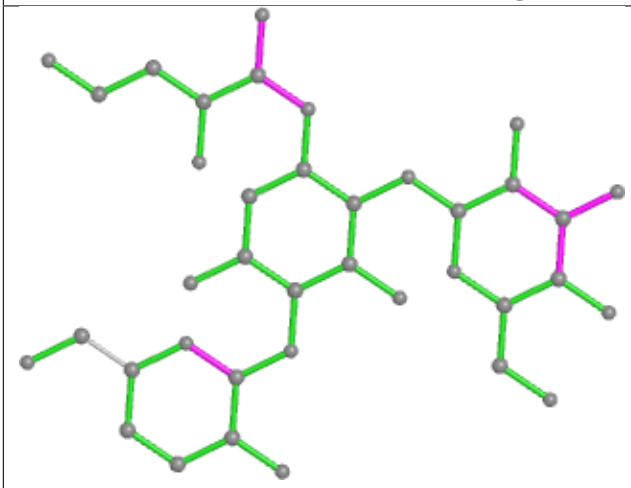
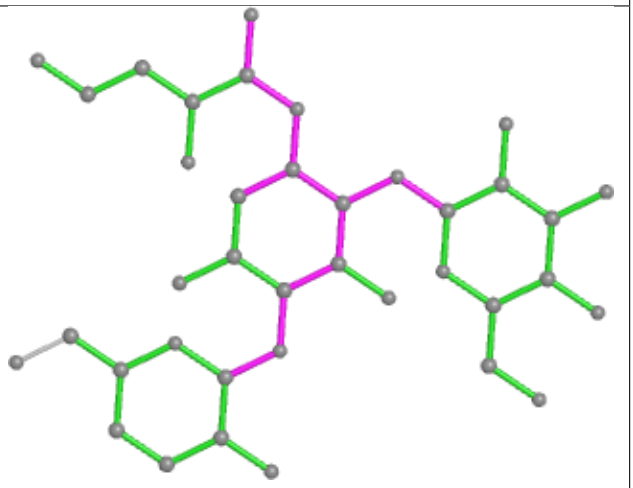


Rings

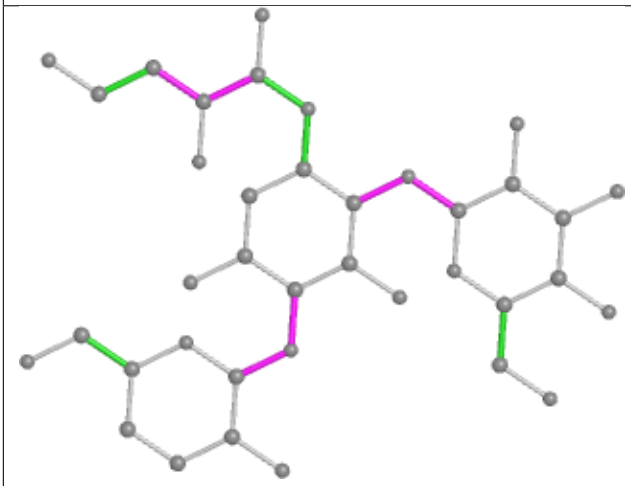
Ligand 84G 1A 5101



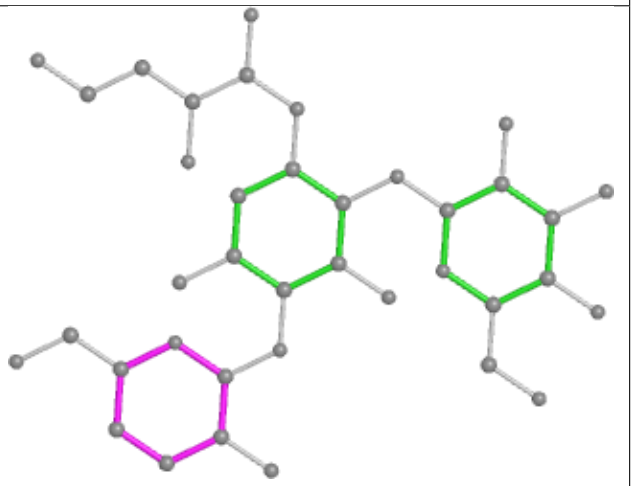
Bond lengths



Bond angles

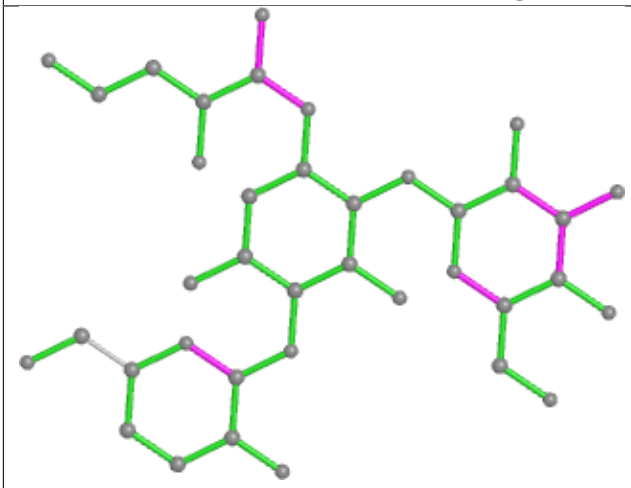


Torsions

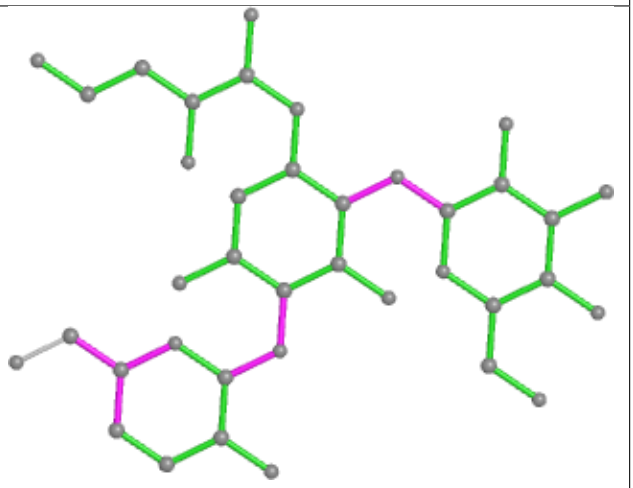


Rings

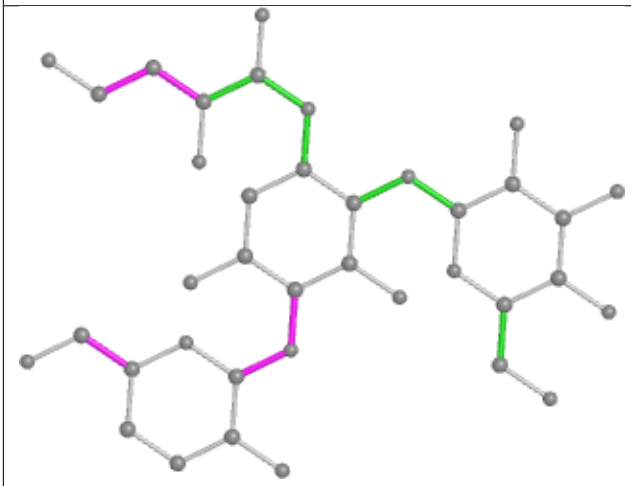
Ligand 84G 1A 5117



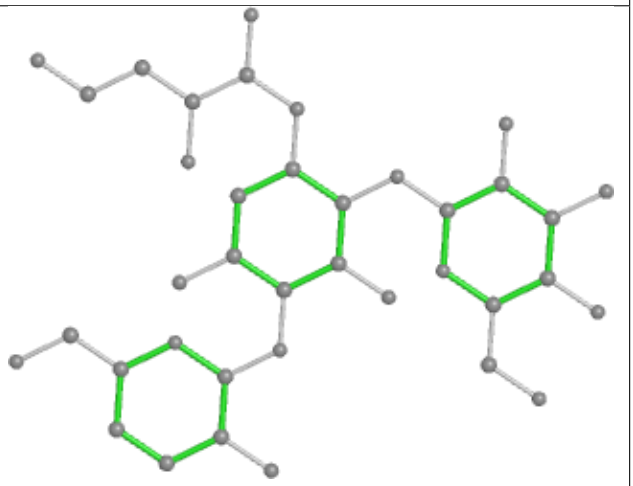
Bond lengths



Bond angles

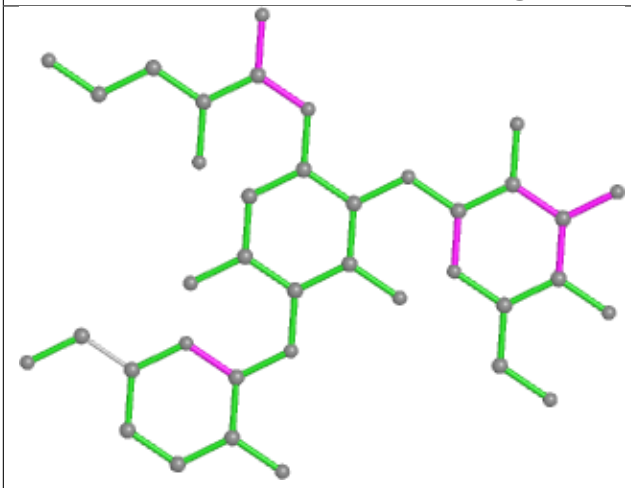


Torsions

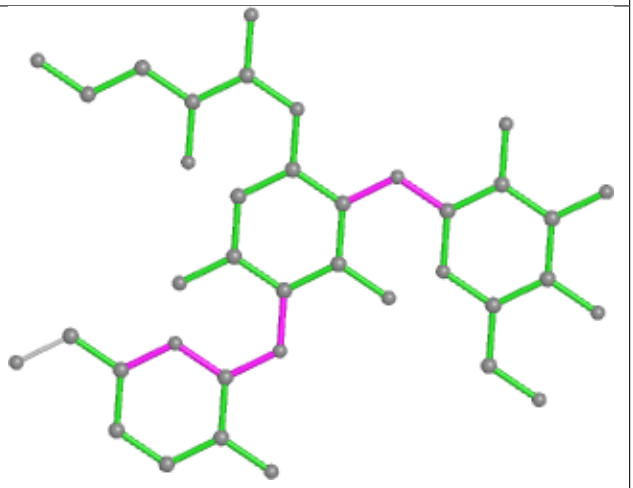


Rings

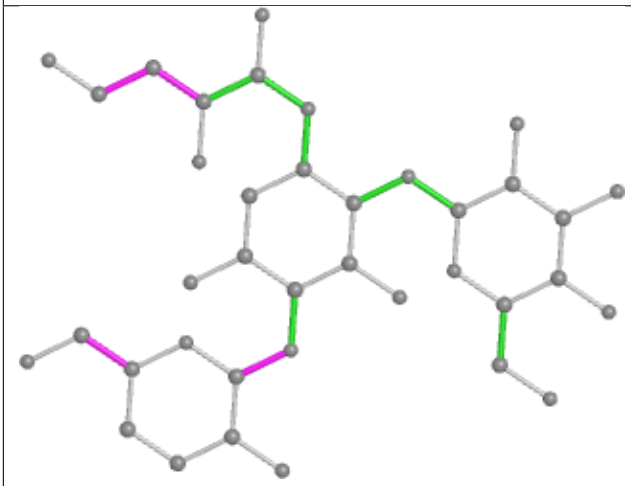
Ligand 84G 1A 5113



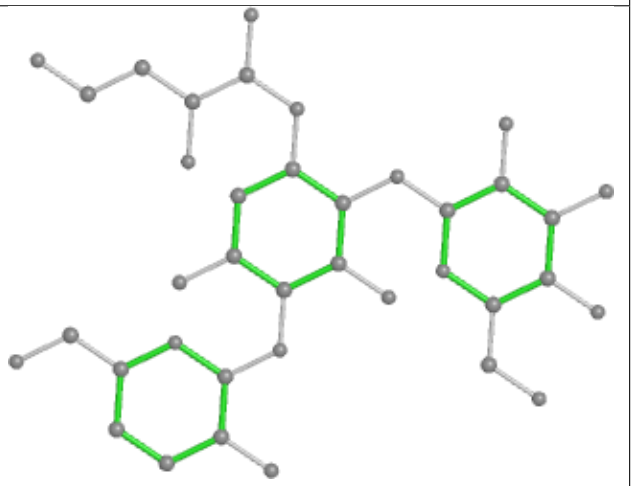
Bond lengths



Bond angles

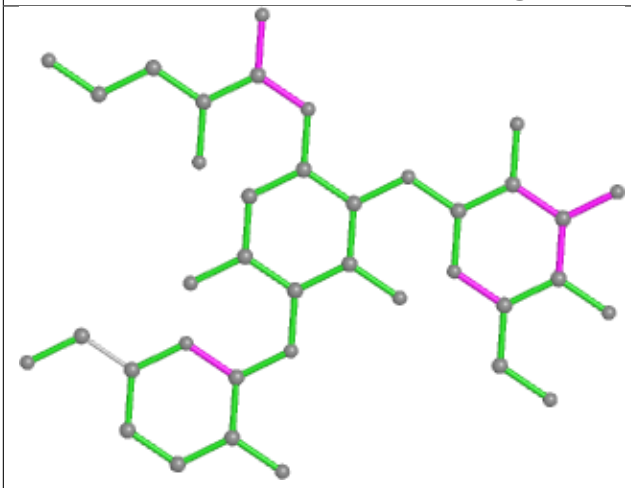


Torsions

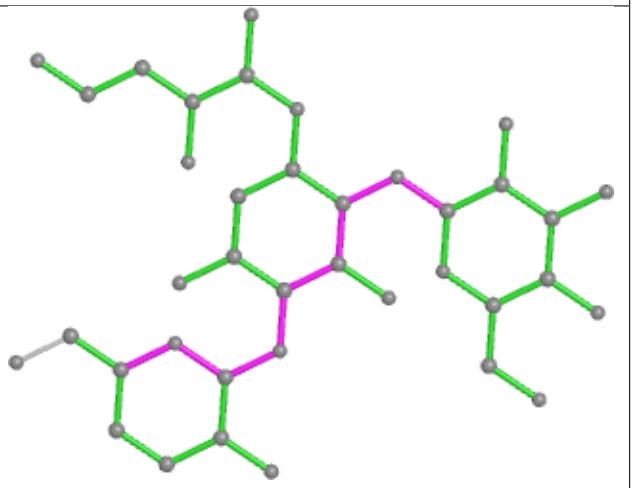


Rings

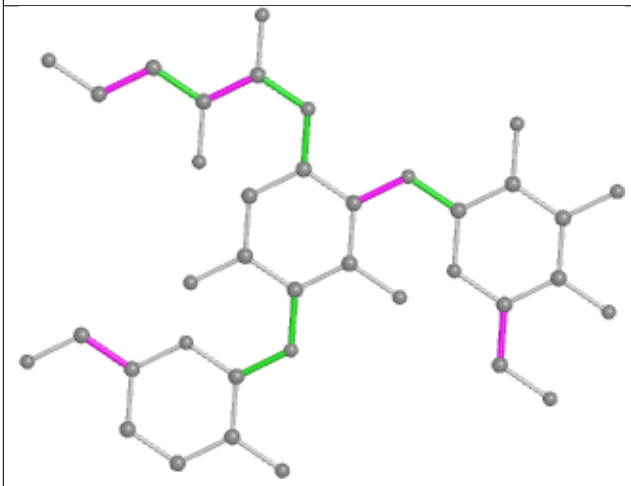
Ligand 84G 1A 5110



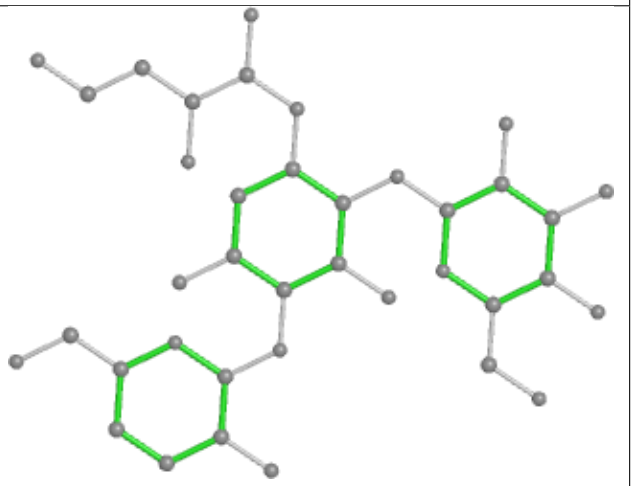
Bond lengths



Bond angles

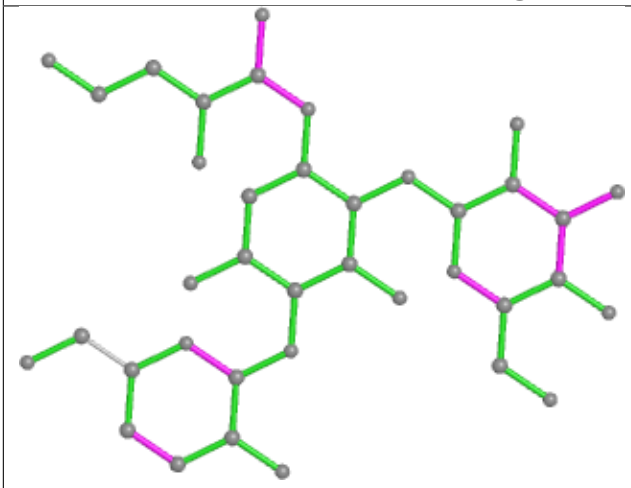


Torsions

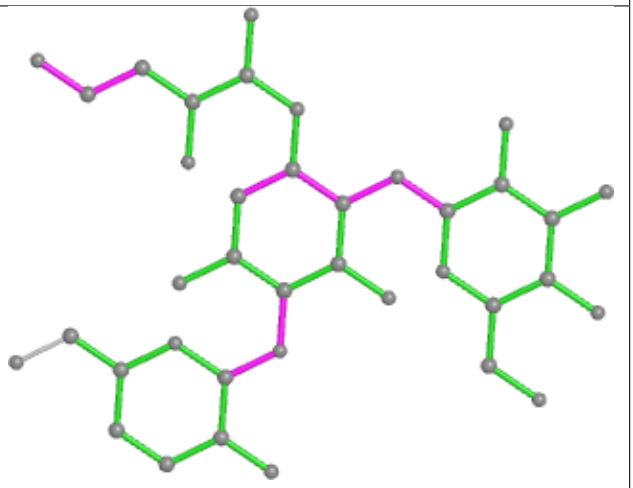


Rings

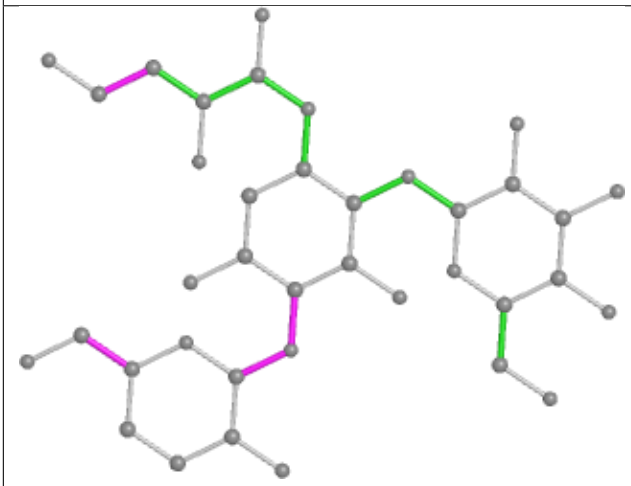
Ligand 84G 1A 5116



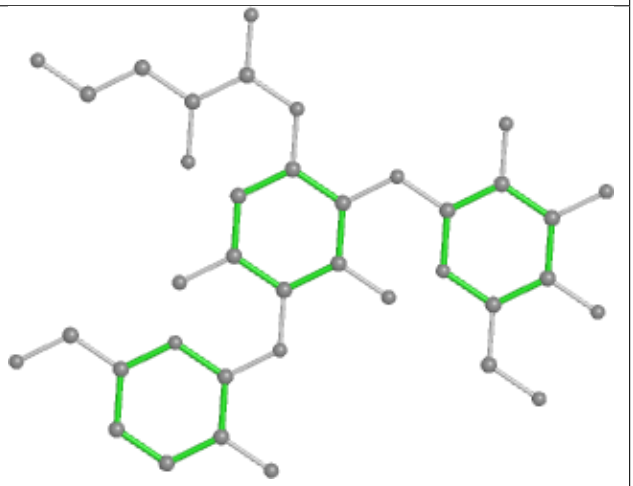
Bond lengths



Bond angles

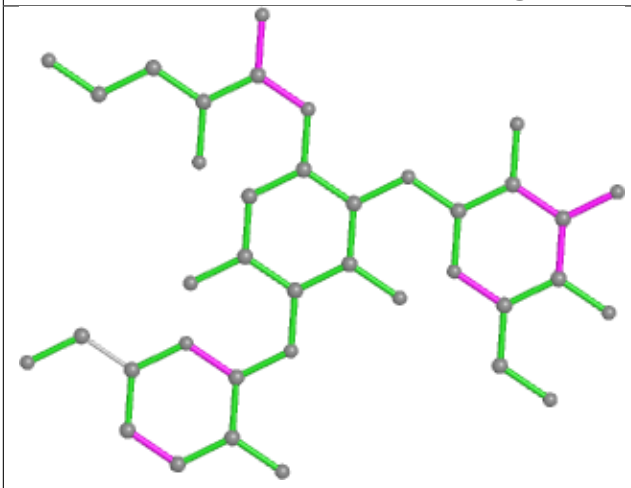


Torsions

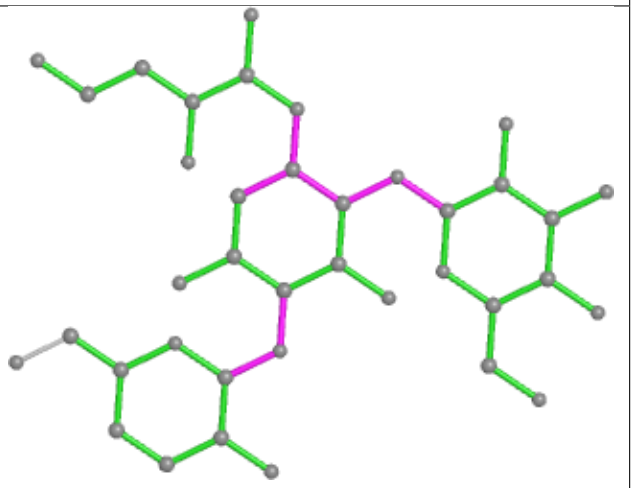


Rings

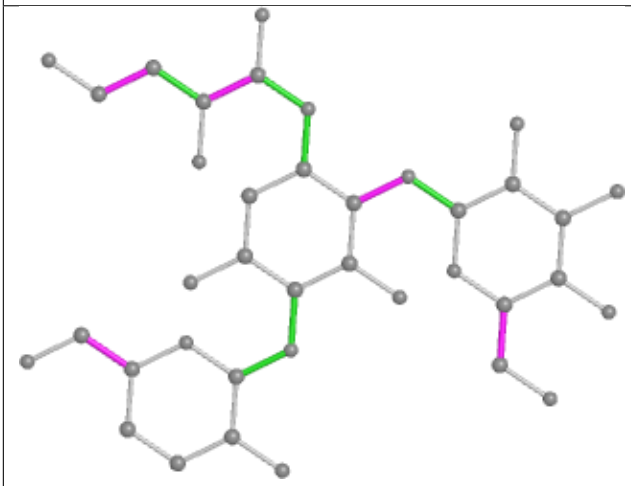
Ligand 84G 1A 5119



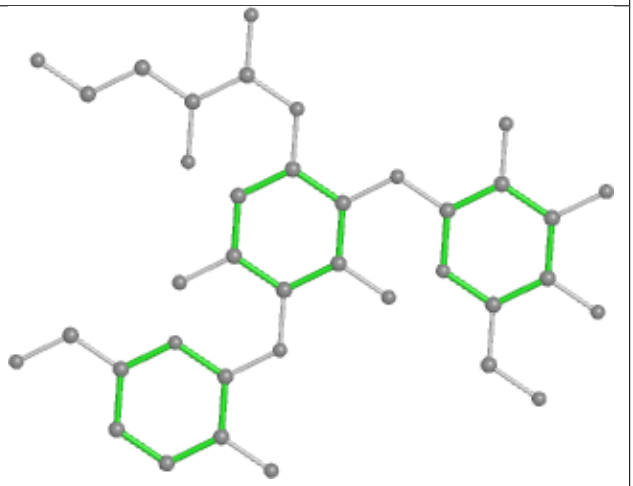
Bond lengths



Bond angles

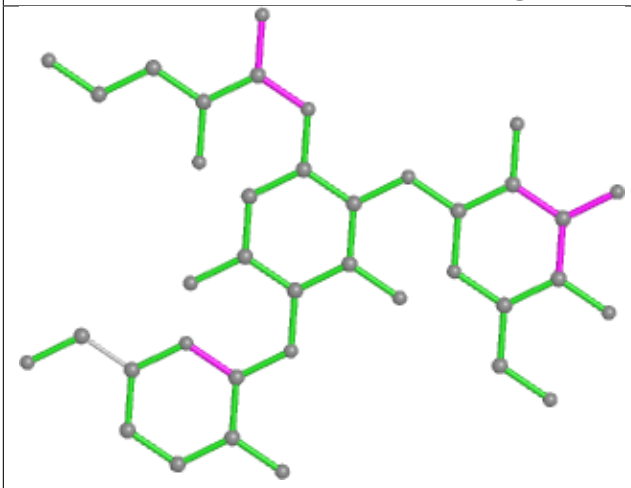


Torsions

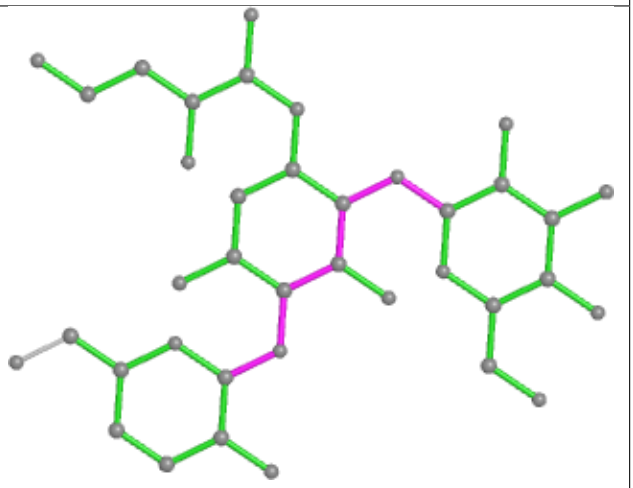


Rings

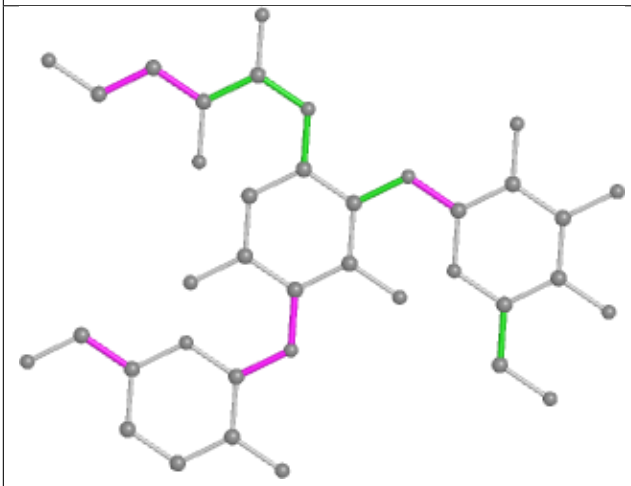
Ligand 84G 1A 5103



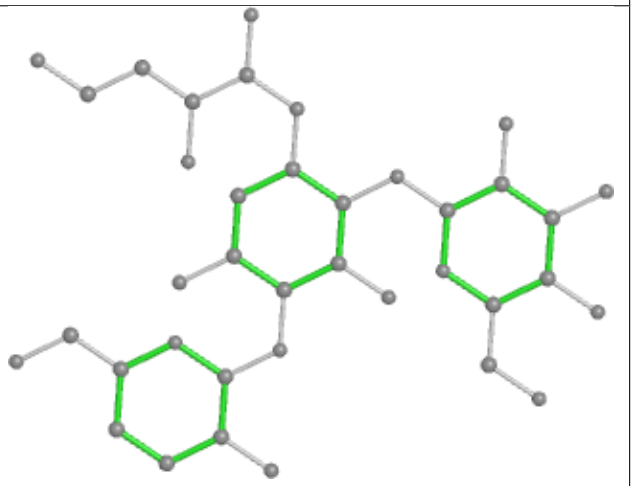
Bond lengths



Bond angles

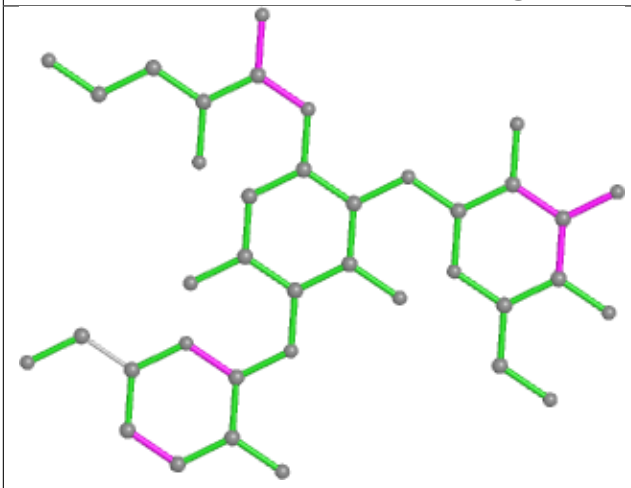


Torsions

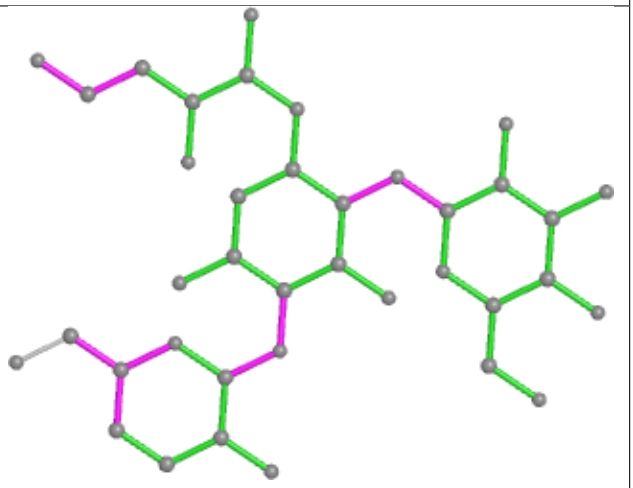


Rings

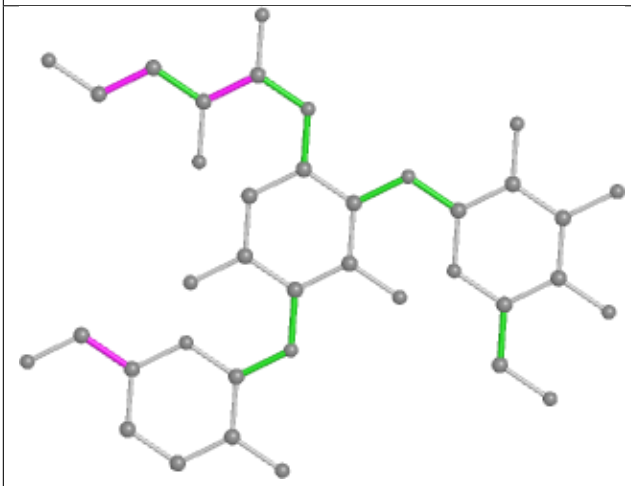
Ligand 84G 2m 1902



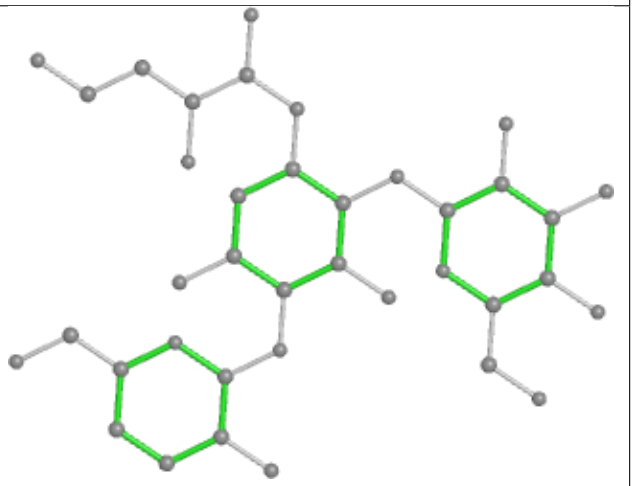
Bond lengths



Bond angles

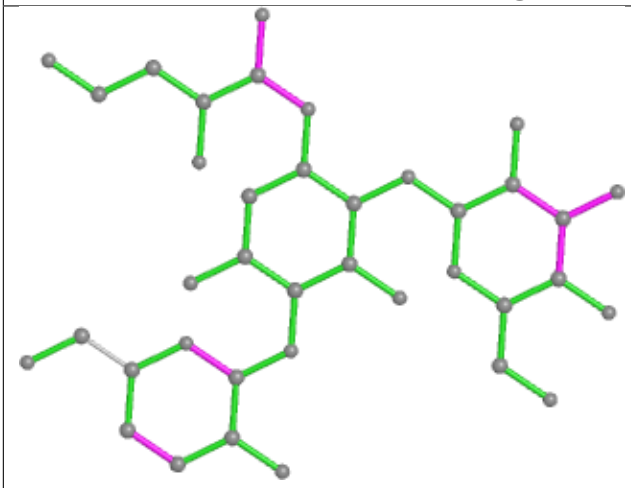


Torsions

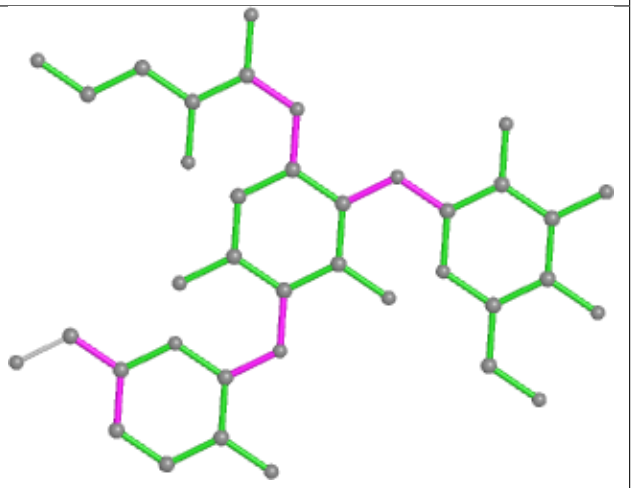


Rings

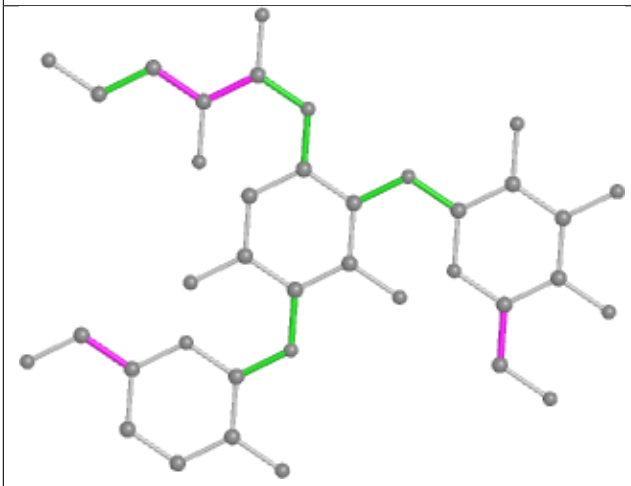
Ligand 84G 1A 5114



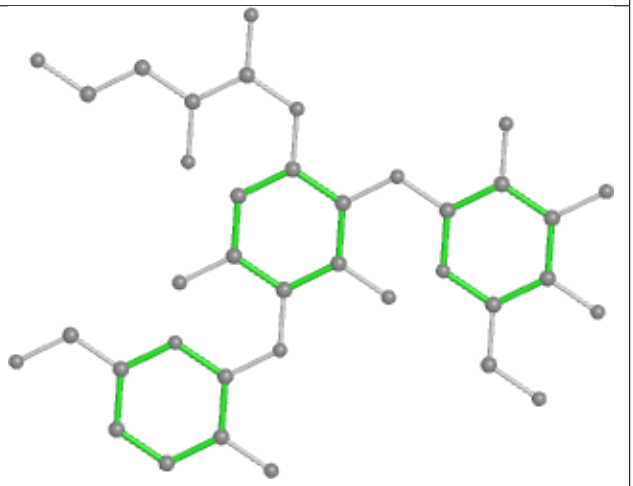
Bond lengths



Bond angles

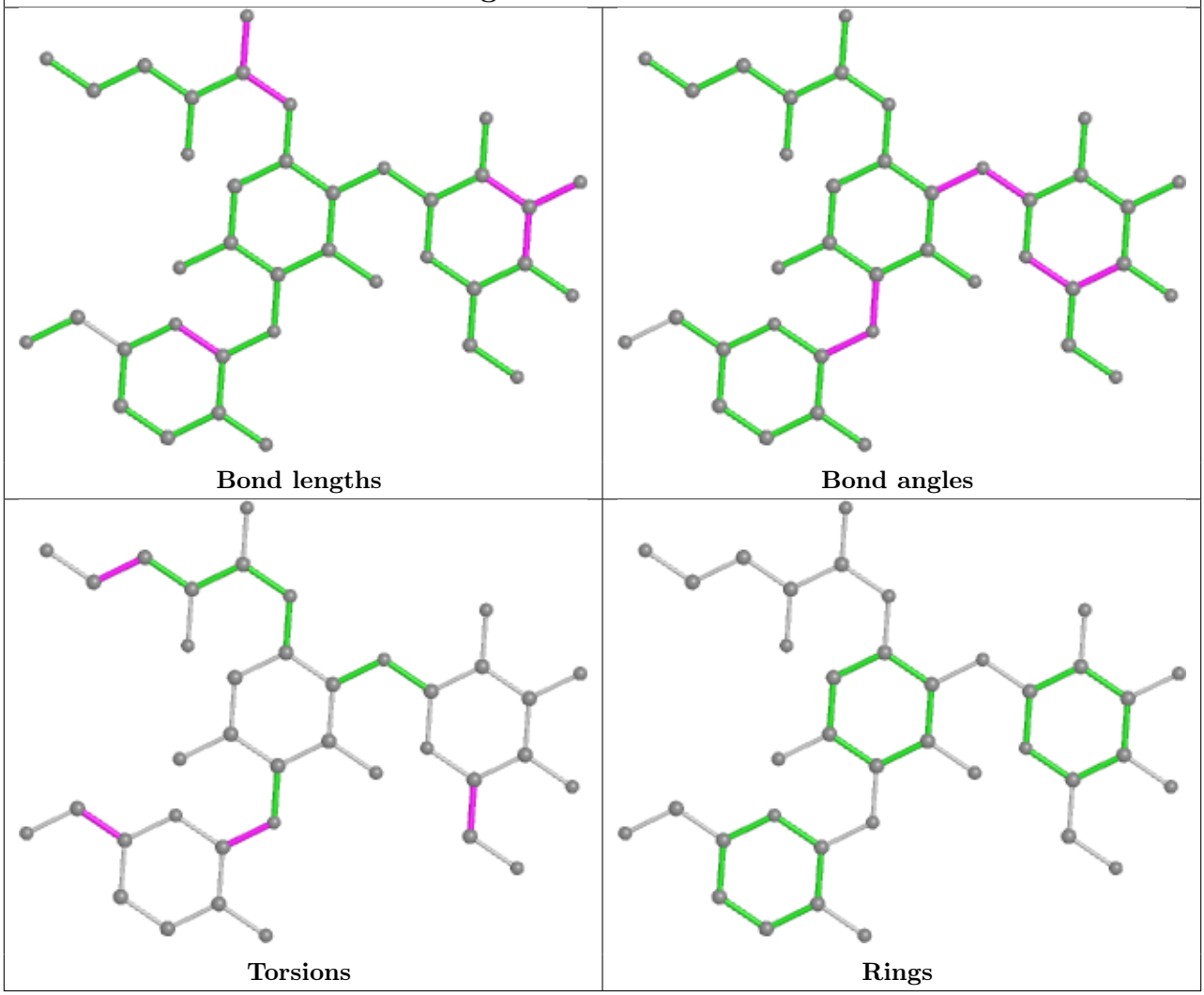


Torsions



Rings

Ligand 84G 1A 5109



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

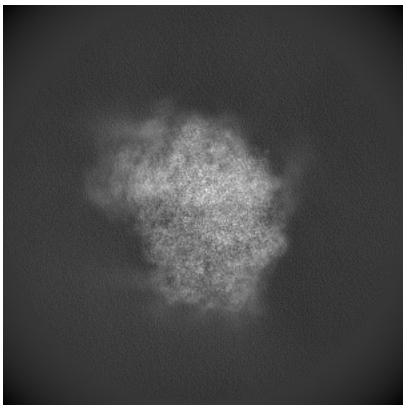
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-35414. These allow visual inspection of the internal detail of the map and identification of artifacts.

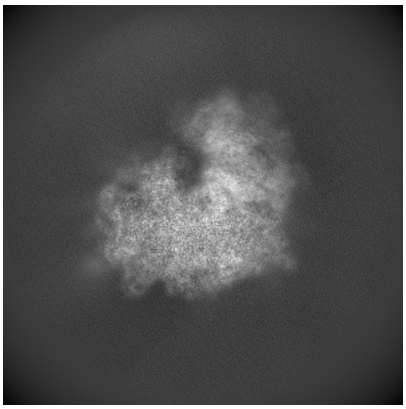
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

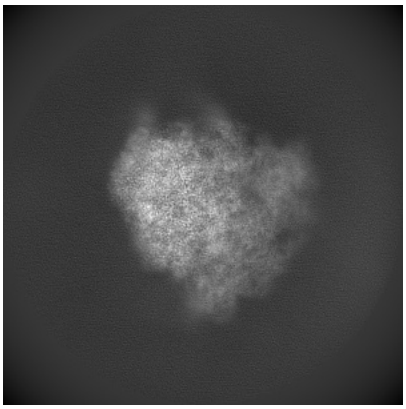
6.1.1 Primary map



X

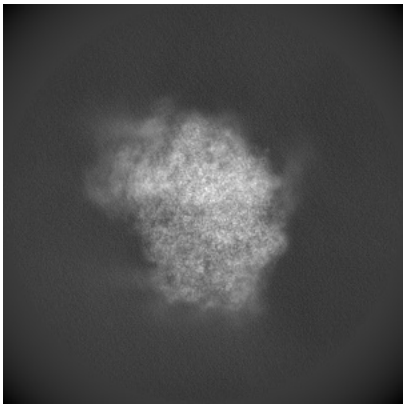


Y

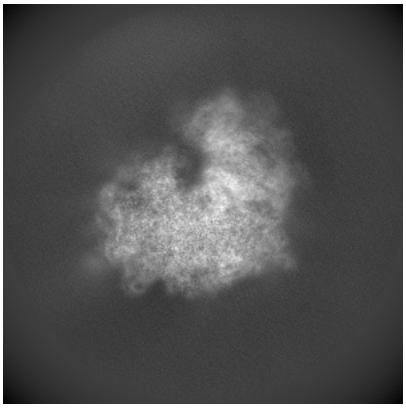


Z

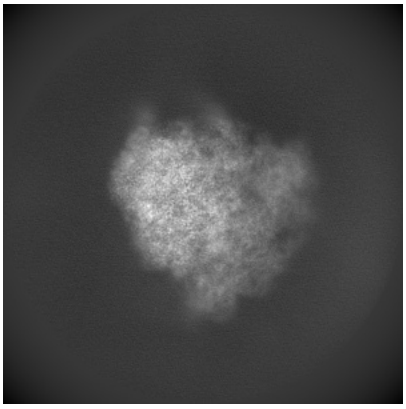
6.1.2 Raw map



X



Y

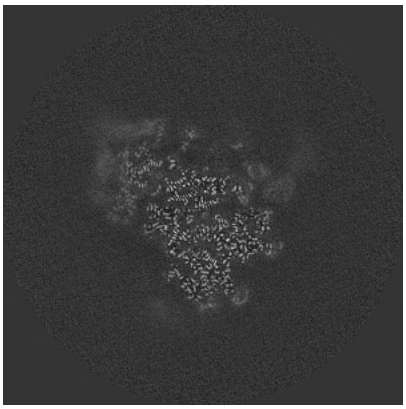


Z

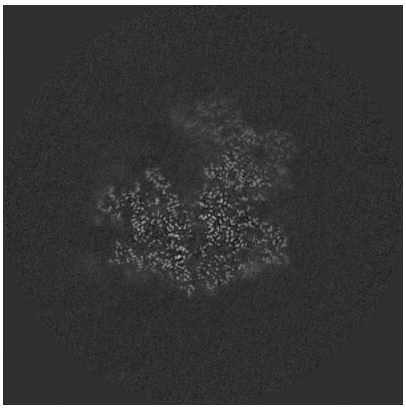
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

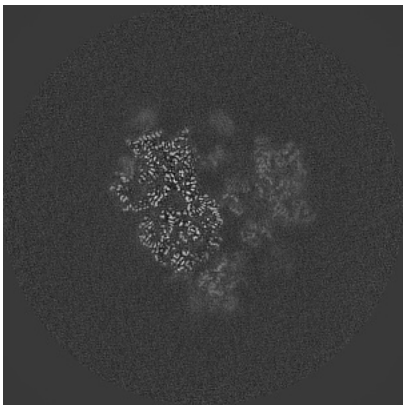
6.2.1 Primary map



X Index: 320

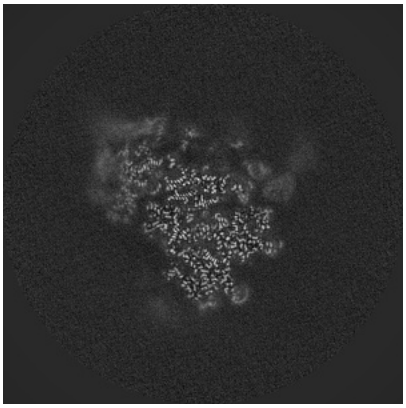


Y Index: 320

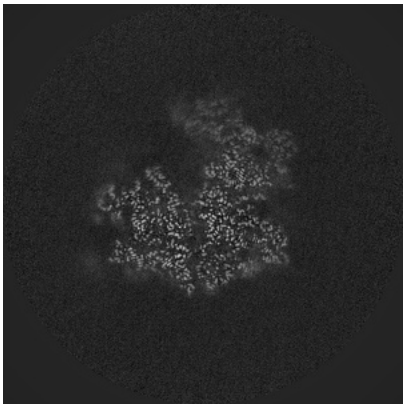


Z Index: 320

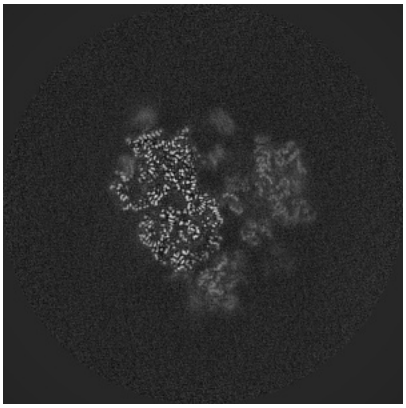
6.2.2 Raw map



X Index: 320



Y Index: 320

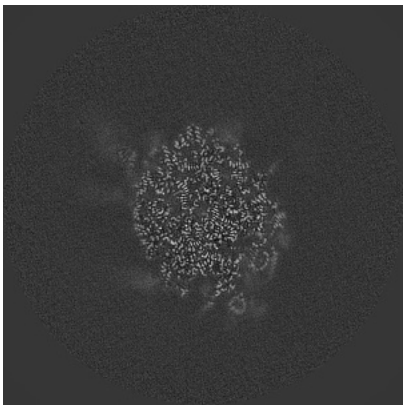


Z Index: 320

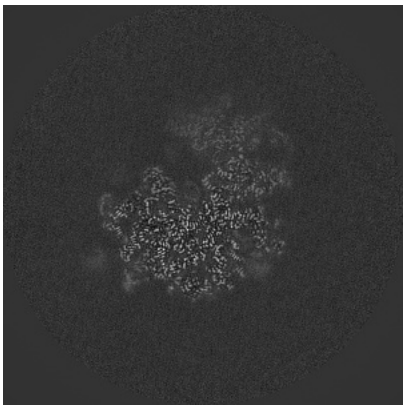
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

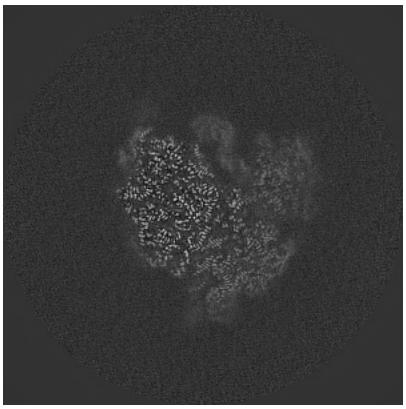
6.3.1 Primary map



X Index: 290

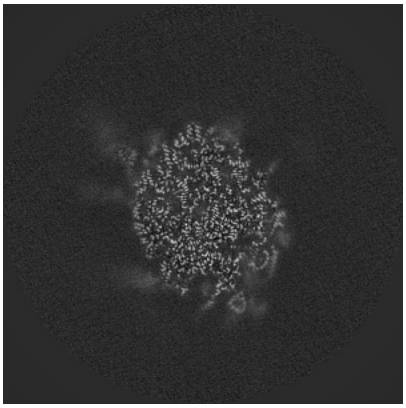


Y Index: 336

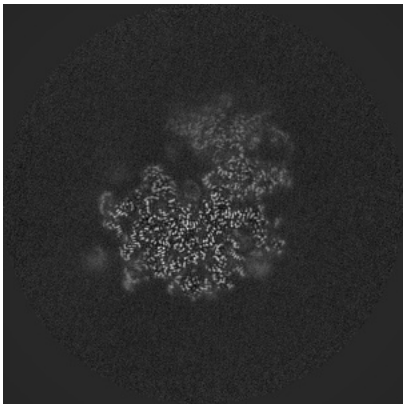


Z Index: 348

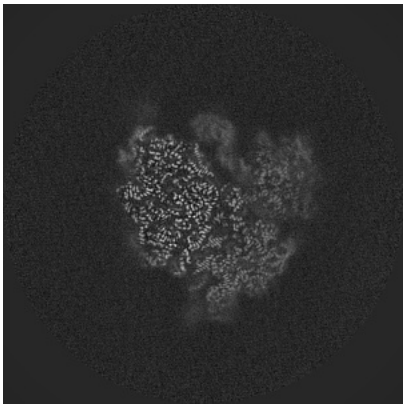
6.3.2 Raw map



X Index: 290



Y Index: 336

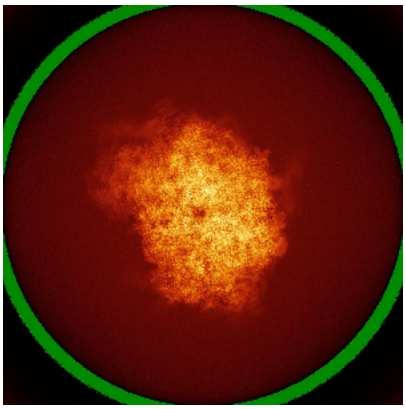


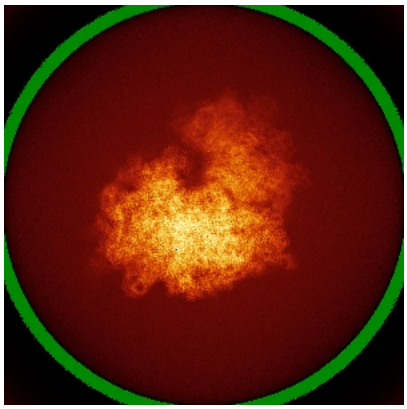
Z Index: 349

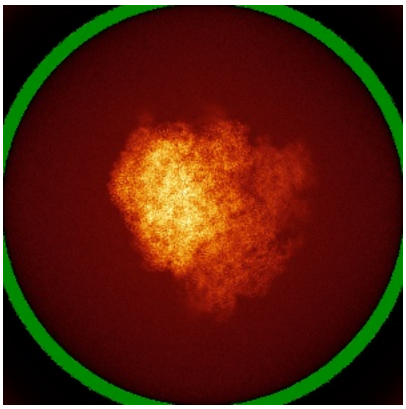
The images above show the largest variance slices of the map in three orthogonal directions.

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

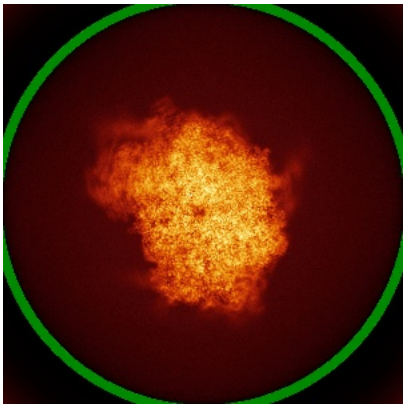
6.4.1 Primary map

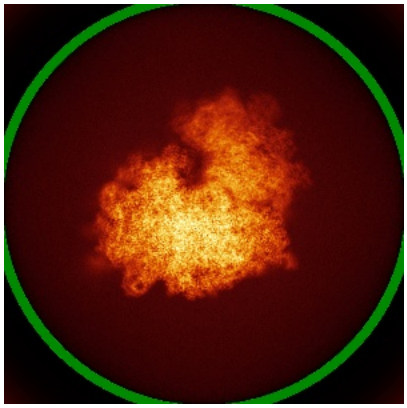

X

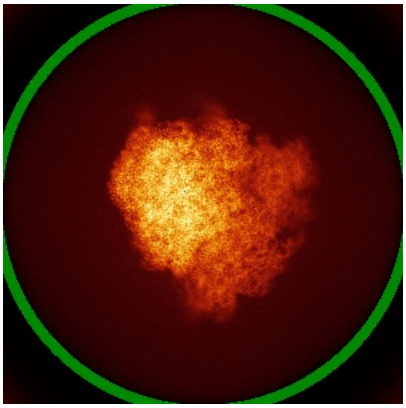

Y


Z

6.4.2 Raw map


X

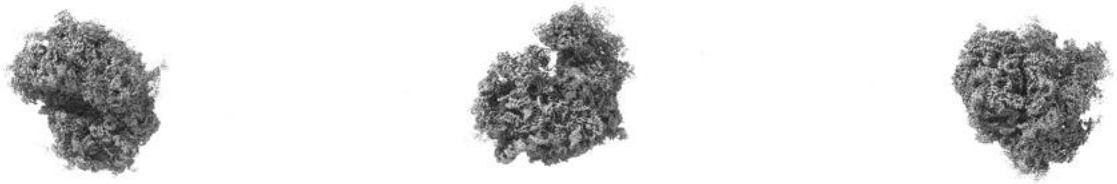

Y


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

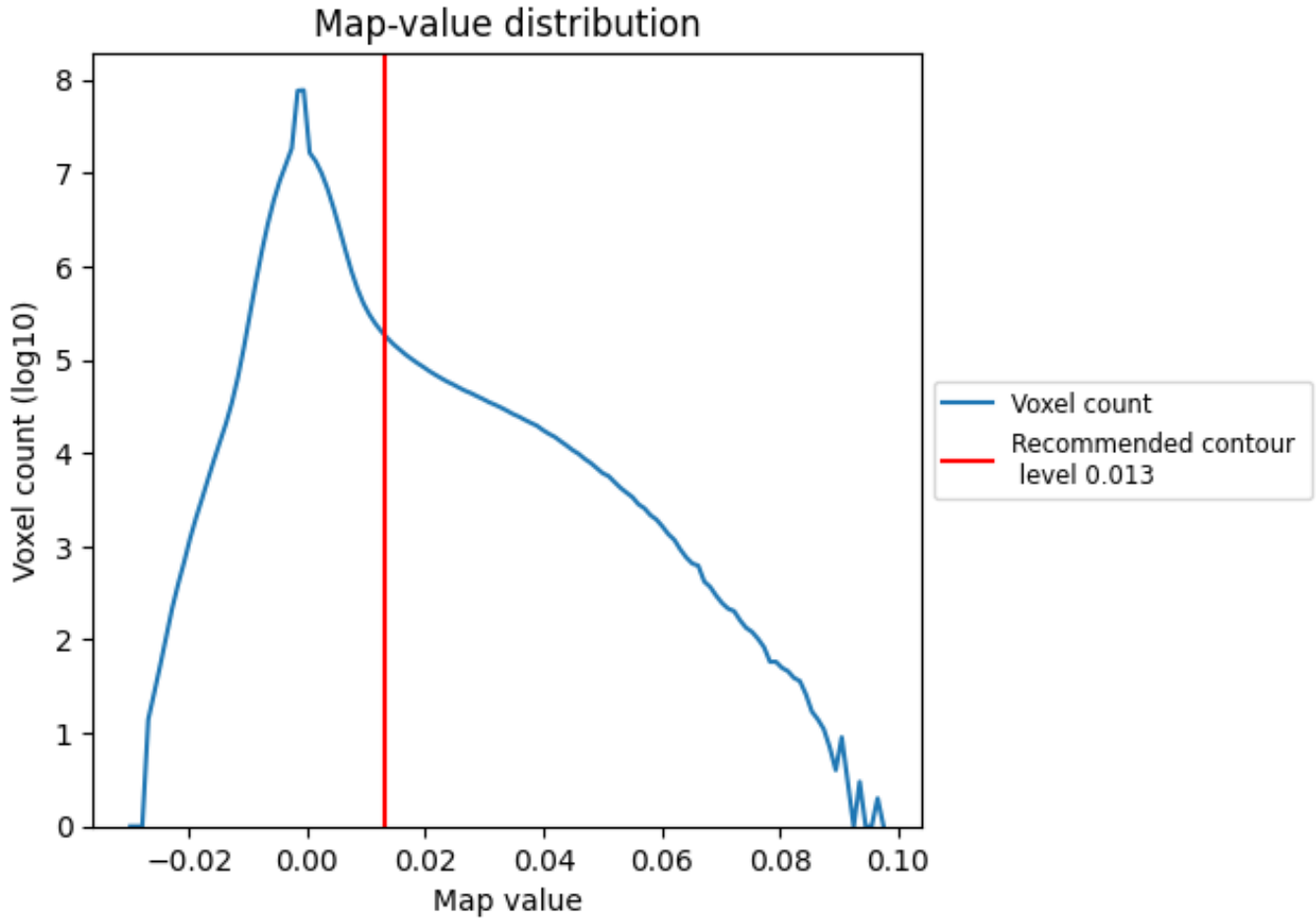
6.6 Mask visualisation (i)

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

7 Map analysis

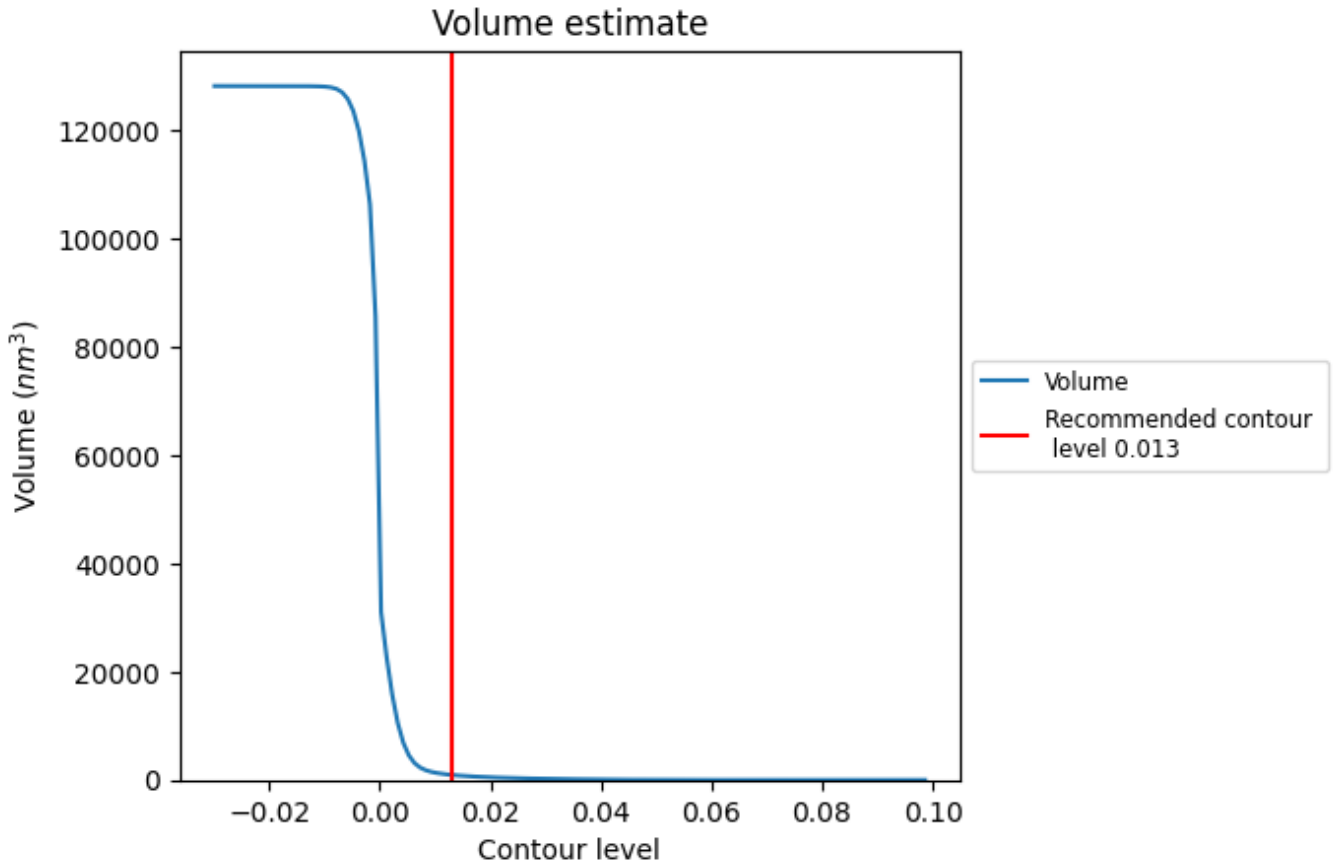
This section contains the results of statistical analysis of the map.

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.

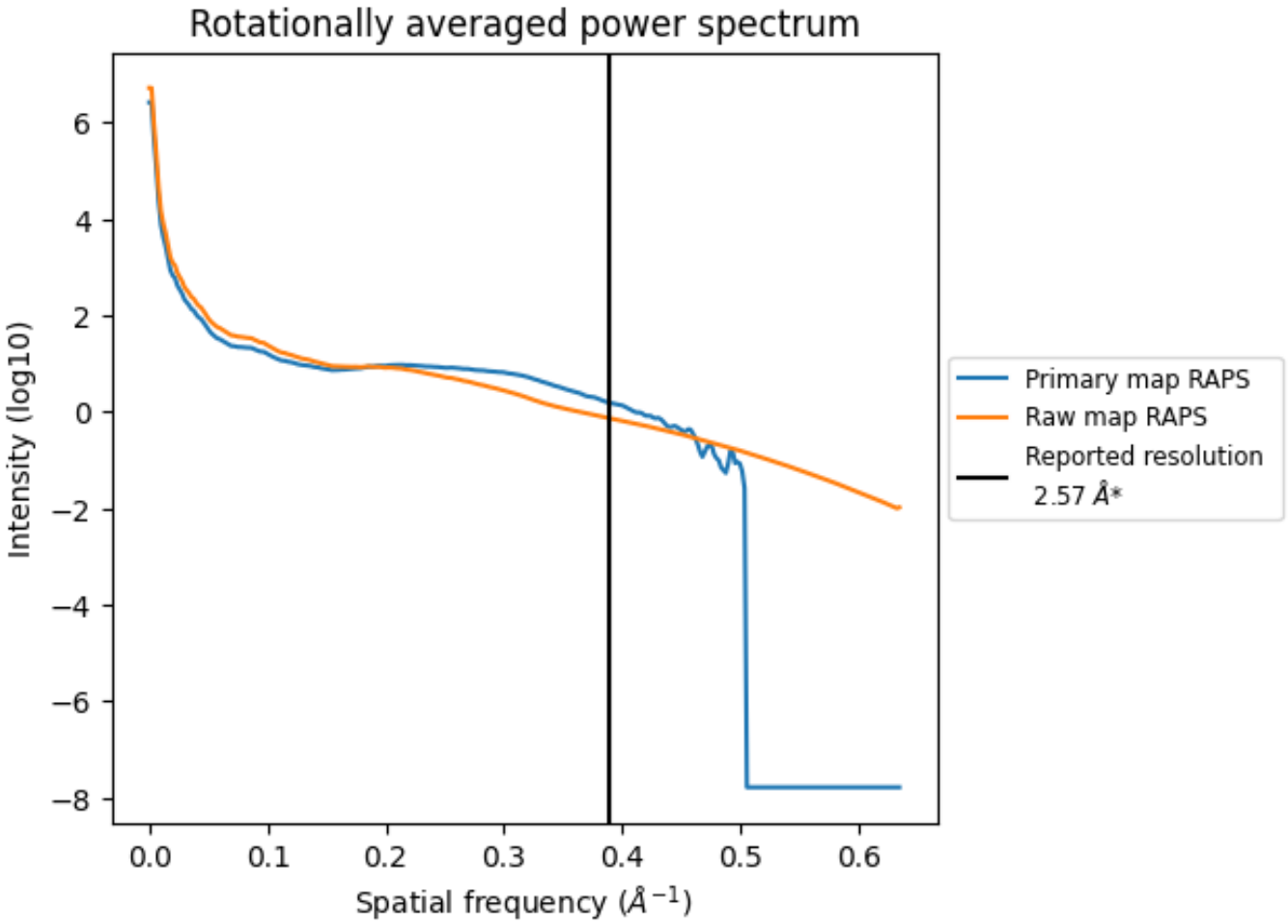
7.2 Volume estimate



The volume at the recommended contour level is 931 nm^3; this corresponds to an approximate mass of 841 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)

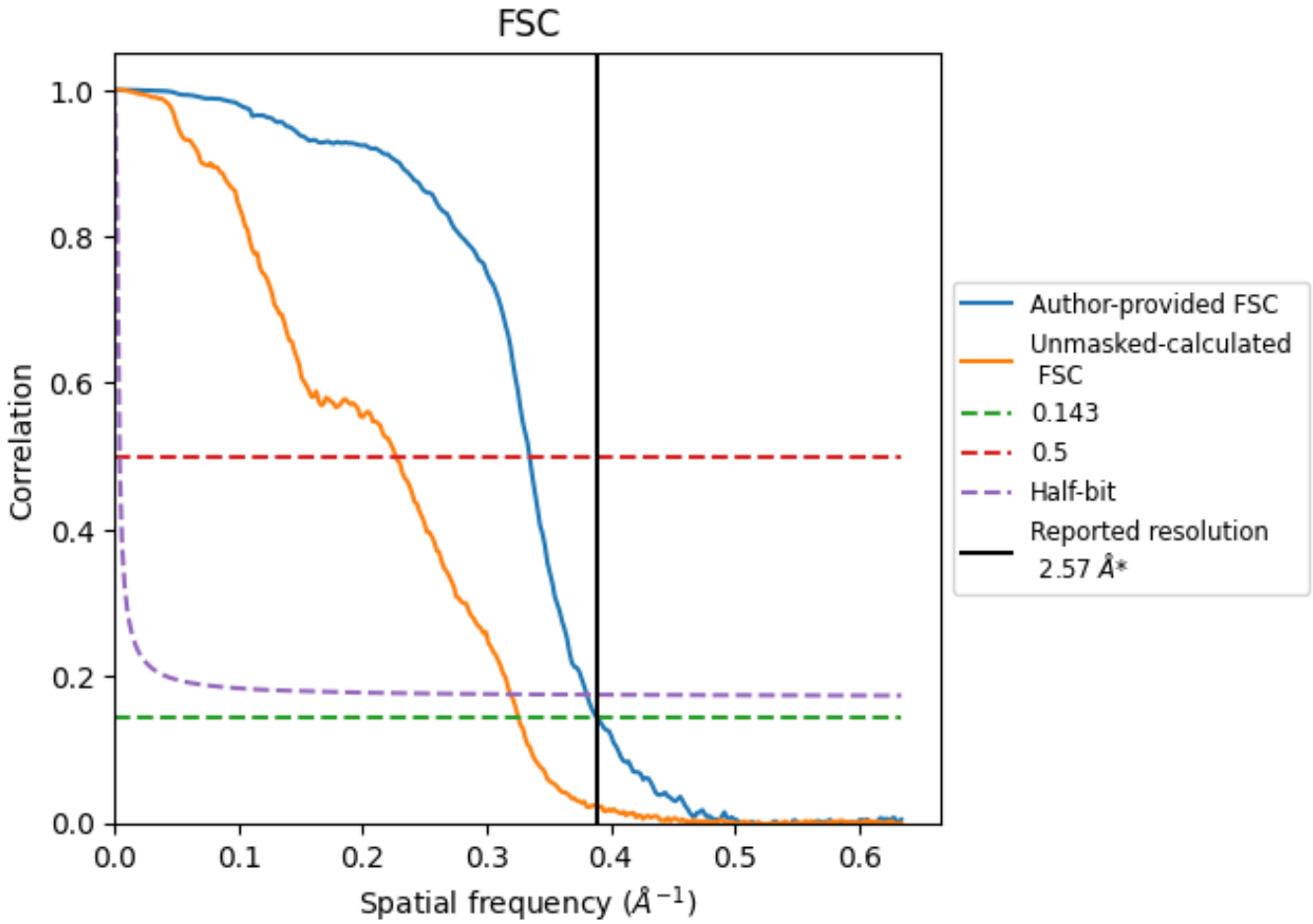


*Reported resolution corresponds to spatial frequency of 0.389 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.389 Å^{-1}

8.2 Resolution estimates (i)

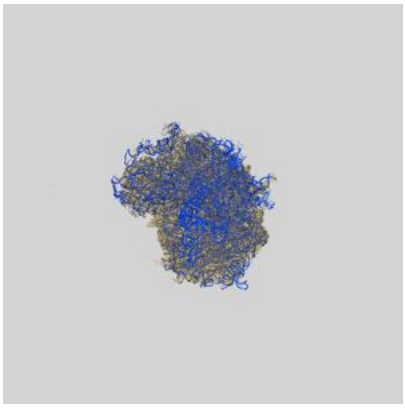
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.57	-	-
Author-provided FSC curve	2.57	2.99	2.63
Unmasked-calculated*	3.07	4.41	3.13

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.07 differs from the reported value 2.57 by more than 10 %

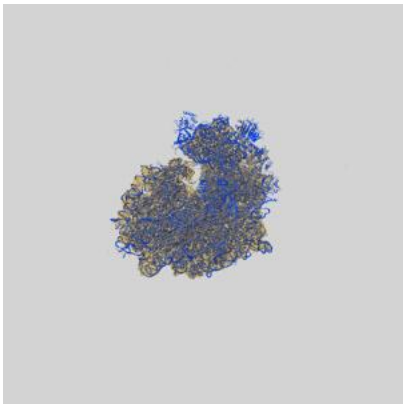
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-35414 and PDB model 8IFE. Per-residue inclusion information can be found in section 3 on page 21.

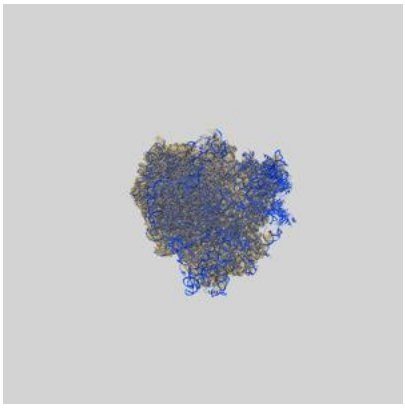
9.1 Map-model overlay



X



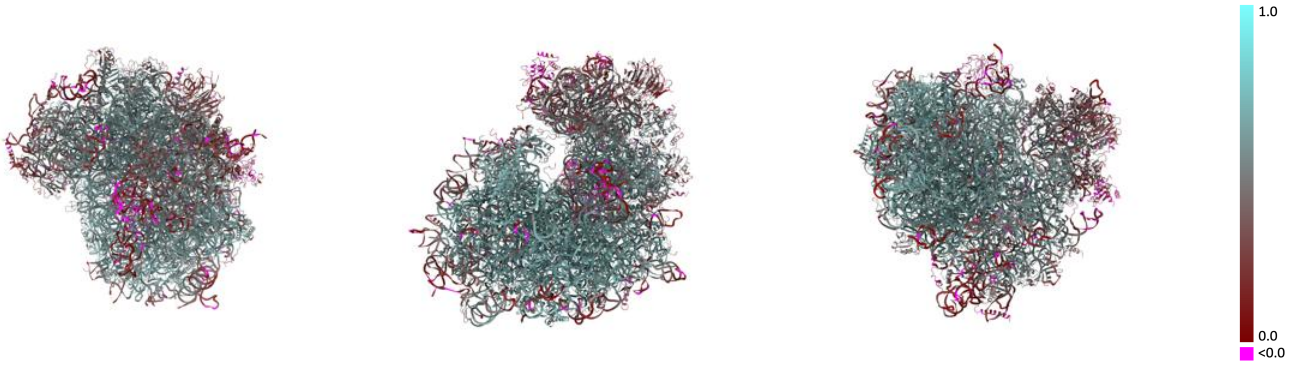
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.013 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

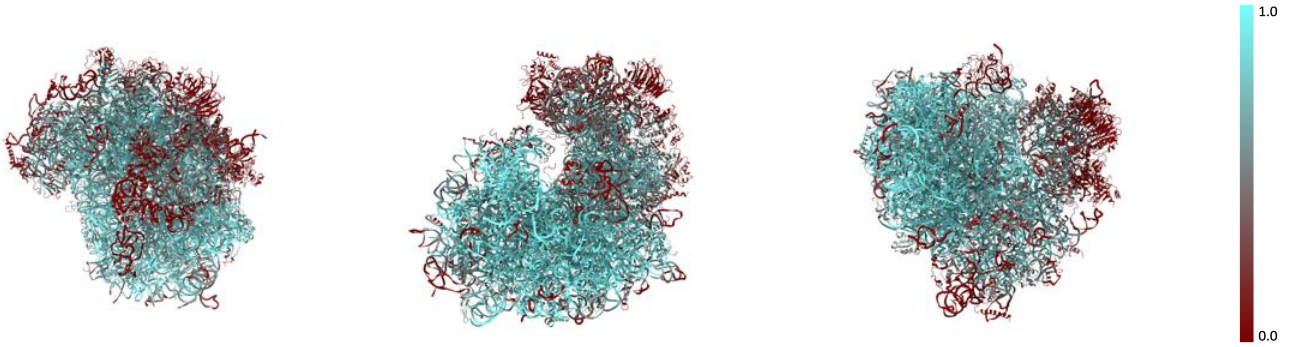
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

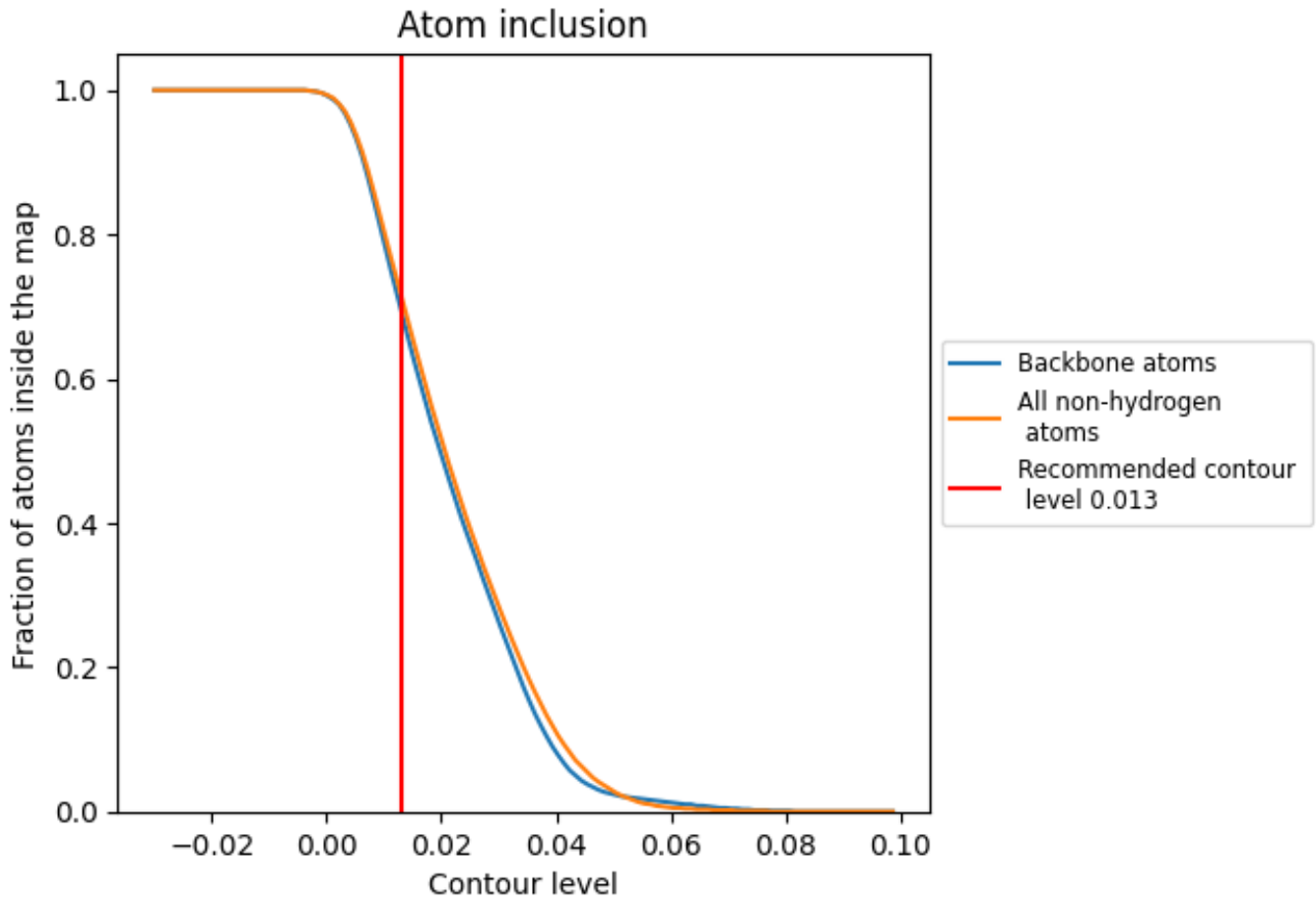
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.013).

9.4 Atom inclusion (i)



At the recommended contour level, 70% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7160	0.5300
1A	0.8280	0.5530
1B	0.9500	0.6200
1C	0.9060	0.6010
1D	0.9320	0.6580
1E	0.8720	0.6290
1F	0.8930	0.6350
1G	0.8160	0.5770
1H	0.7630	0.5590
20	0.3210	0.4190
21	0.1650	0.3550
2A	0.9030	0.6440
2B	0.7550	0.5620
2C	0.8110	0.6030
2D	0.7030	0.5700
2E	0.6140	0.5010
2F	0.8340	0.5990
2G	0.8650	0.6150
2H	0.9540	0.6680
2I	0.9080	0.6460
2J	0.9150	0.6550
2K	0.9450	0.6650
2L	0.7650	0.5820
2M	0.9170	0.6470
2N	0.8520	0.6210
2O	0.5500	0.4620
2P	0.8770	0.6410
2Q	0.4250	0.3940
2R	0.8600	0.6270
2S	0.8660	0.6270
2T	0.8310	0.6070
2U	0.9320	0.6590
2V	0.6920	0.5440
2W	0.8110	0.5930
2X	0.8340	0.6150

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
2Y	0.9210	0.6570
2Z	0.9360	0.6540
2a	0.8510	0.6190
2b	0.8620	0.6160
2c	0.8350	0.6110
2d	0.9350	0.6560
2e	0.6820	0.5600
2f	0.8770	0.6350
2g	0.8420	0.6170
2h	0.8570	0.6510
2i	0.8190	0.6130
2j	0.8550	0.6350
2k	0.9150	0.6320
2l	0.0210	0.1270
2m	0.6600	0.4670
2n	0.3450	0.5060
2o	0.6210	0.5470
2p	0.1420	0.3750
2q	0.5870	0.5320
2r	0.3420	0.4270
2s	0.3190	0.4360
2t	0.6140	0.5280
2u	0.0460	0.2860
2v	0.6770	0.5640
2w	0.0910	0.3310
2x	0.2890	0.4220
2y	0.1740	0.3950
2z	0.2380	0.3770
3A	0.3680	0.5110
3B	0.6490	0.5610
3C	0.6680	0.5500
3D	0.2920	0.4060
3E	0.2600	0.4020
3F	0.0340	0.2940
3G	0.6120	0.5400
3H	0.3580	0.4010
3I	0.5520	0.5010
3J	0.0000	0.0340
3K	0.6470	0.5820
3L	0.6790	0.5550
3M	0.7190	0.5810
3N	0.4720	0.4480

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Chain	Atom inclusion	Q-score
3O	0.1820	0.2990
3P	0.3470	0.4800
3Q	0.3690	0.4350
3R	0.0000	0.0470